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MEMO

TO	22nd DAA Board of Directors Becky Bartling, CEO	**DATE**	May 18, 2026
FROM	Dustin Fuller Supervising Env. Planner	**CC**	
PROJECT NAME	Affordable Housing		
SUBJECT	Summary of HAP Grant Studies	**SENT VIA**	Email
ENCLOSED	N/A		

Project Description

The 22nd District Agricultural Association (District) is undergoing a master site planning process to plan immediate, near-term projects and conceptual, long-term projects focusing on enhancing and improving the Del Mar Fairgrounds (Fairgrounds) facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property that the District may be willing to make available for affordable housing development. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds property. Multiple due diligence studies were prepared and are further detailed below.

Initially, five potential housing site locations were selected through this mutual planning effort, with the goal of selecting one site to develop with housing (see Table 1 below and refer to Figure 1, Regional Location, and Figure 2, Potential Housing Sites). Three sites are in the City of Del Mar (Sites 1 through 3), and two sites (Sites 4 and 5) are in the City of San Diego. While studies were undergoing preparation, the District identified a sixth potential housing site located at the intersection of Via De La Valle and Jimmy Durante Boulevard within the City of Del Mar (Site 6).

A prospective housing project would include at least 61 units of lower-income housing in a housing project ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022–2023). Scenarios for 100 percent multi-family lower-income affordable housing development or a mixed-income project were considered. Because the Fairgrounds property is within the Federal Emergency Management Agency (FEMA) mapped floodplain, which is vulnerable to potential

flooding from the nearby San Dieguito River, all six housing site locations would be designed with floodproofing measures, including a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface-level parking. None of the sites are located within FEMA's Regulatory Floodway.

Table 1. Potential Housing Sites

Site Number	Site Name	APN	City	Acreage
Site 1	East Main Stable Gate Site	298-271-03-00	City of Del Mar	1.5
Site 2	South of Stable Gate Site	299-030-05-00 299-030-22-00	City of Del Mar	1.5
Site 3	Adjacent to Fire Station Site	299-030-22-00	City of Del Mar	1.0
Site 4	Surf and Turf RV Park Site	299-042-03-00	City of San Diego	1.5
Site 5	Dirt Lot Site	299-042-03-00	City of San Diego	1.5
Site 6	Intersection Site	298-271-03-00	City of Del Mar	0.8

Several feasibility and constraints studies were prepared for this planning effort over five task orders (Housing Feasibility, Sea Level Rise, CEQA Constraints, Transportation, and Water and Sewer Task Orders). The following sections detail the goals and findings of each report prepared.

Study 1: Housing Feasibility Task Order

Documents prepared for this Task Order are included in the "Housing" folder. A summary memo was created for this Task Order (Housing Assessment Summary Memo folder). Sites 1-5 are included in the "Housing Site Conditions (Sites 1-5)"; Site 6 is included in the "Housing Site Conditions Site 6" folder and "Traffic Memo Site 6" folder. An analysis of the Financial Feasibility is also included.

Housing Site Conditions and Constraints Assessment Report

Goal of the Report: This report analyzes the feasibility of Sites 1 through 5 based on several Objective Criteria to help decision-makers better understand each site's development feasibility.

Findings: Objective Criteria used in this study include Lease Agreement Timing; Potential Financial Feasibility and Eligibility for Tax Credit Financing; Environmental Constraints; Ability to be Implemented in Accordance With State and Local Requirements; No Associated Conflicts with Fairgrounds Operations and Events; and Public Health, Safety, and Security Concerns. The report concluded that Sites 1 through 3 within the City of Del Mar satisfied all Objective Criteria for feasibility, while Sites 4 and 5 within the City of San Diego satisfied all Objective Criteria except the ability to execute a lease agreement within the ENRA negotiating period.

Housing Site Conditions and Constraints Assessment Addendum

Goal of the Report: This report is an addendum to the Housing Site Conditions and Constraints Assessment, as a sixth potential housing site was identified (Site 6). This report analyzes the feasibility of Site 6 based on the same Objective Criteria used for Sites 1 through 5 to help decision-makers better understand the site's development feasibility.

Findings: The report concluded that Site 6 did not satisfy all the Objective Criteria for feasibility. Specifically, Site 6 did not satisfy the ability to execute a lease agreement within the ENRA negotiating period, as the site is in public right-of-way and development would require a reconfiguration of the intersection. Additionally, the site is less than one acre and does not have the potential to be feasible for a housing development of at least 61 lower-income units. Furthermore, the City of Del Mar is currently undergoing street and paving improvements in the Site 6 intersection area as part of a $3.5 million Capital Improvement Project (CIP) to improve mobility along Jimmy Durante Boulevard and Via de la Valle, which has involved extensive coordination between City and District staff. The process to redevelop Site 6 into housing would directly conflict with this CIP. According to the Site 6 Transportation Analysis, the intersection at this site absorbs a significant volume of traffic, and the reconfiguration required to prepare this site for housing development would result in an operational failure in the flow of traffic at the affected intersection.

Transportation Analysis for the 6th Site

Goal of the Report: This report analyzes the potential project-related transportation effects of Site 6 (analysis for Sites 1 through 5 was completed in the report titled Transportation Impact Analysis under the Transportation Task Order).

Findings: The report concludes that development of Site 6 results in the failure of the intersection of Via de la Valle and Jimmy Durante Boulevard. The required reconfiguration, which would include removal of the dual free northbound right-turn lanes and the transition to a shared through/right-turn lane, increases delay to unacceptable levels. Additionally, development of the site directly conflicts with the City of Del Mar's current $3.5 million CIP to improve mobility along Jimmy Durante Boulevard and Via de la Valle, which has involved extensive coordination between City and District staff. Due to the unacceptable operational failure of the intersection and the constraints related to land vacation and existing CIP investments, Site 6 was determined to be technically and logistically infeasible and is not recommended for further consideration.

Analysis of Financial Feasibility and Competitiveness for Tax Credit Financing

Goal of the Report: This report updates previous financial feasibility studies prepared in 2022 using up-to-date information on development costs, affordable and market rents, and interest rates to identify the amount of public funding needed to subsidize a potential project with at least 61 units of lower-income housing.

Findings: The analysis indicates that all five potential sites (Sites 1 through 5) qualify for the maximum site amenity scores, consistent with the scores of other California Tax Credit Allocation Committee (CTCAC) projects that were awarded tax credit financing in 2024 and 2025, indicating that all five potential sites are highly and equally competitive for future 4 percent and 9 percent tax credit financing CTCAC awards. Furthermore, all potential housing sites have sufficient land area to accommodate the Family Housing and Senior Housing Prototypes used in the updated analysis. Therefore, all the potential housing sites are competitive for tax credit financing and capable of accommodating 61 units of lower-income housing.

Study 2: Sea Level Rise Task Order

Documents prepared for this Task Order are included in the "Sea Level Rise" folder. A summary memo was created for this Task Order (Sea Level Rise Vulnerability Assessment Summary Report folder). The full Sea Level Rise Vulnerability Assessment Report is included in the folder of the same name. A Hydrology and Hydraulics Report was done in support of this Task Order and is included in the folder of the same name.

Hydrology and Hydraulics Report

Goal of the Report: This report documents the existing conditions and preliminary hydrologic/hydraulic model results to evaluate the flood hazards on the District's property during various tidal events, sea level rise scenarios, fluvial events within the San Dieguito River, and onsite rainfall events.

Findings: Results from the existing conditions modeling indicate that fluvial flooding from the San Dieguito River presents the dominant flood hazard to the District's property, with widespread inundation occurring during both the 50-year and 100-year fluvial events. The model results were used to determine the following potential mitigation measures at a high level to address fluvial and sea level rise flood hazards, as existing modeling indicated that the site is more vulnerable to fluvial flood hazards than onsite rainfall: (1) targeted ecotone features, (2) perimeter berm protection, and (3) site-wide grading with a floodable frontage. Strategy 1 provides flood protection during the 10-year fluvial event with 2070 sea level rise, while Strategy 2 and Strategy 3 provide flood mitigation and protection during the 50-year fluvial event.

Sea Level Rise Vulnerability Assessment Report and Summary Report

Goal of the Report: The Sea Level Rise (SLR) Vulnerability Assessment, prepared by GHD, describes potential risks to the District's property, including the potential affordable housing sites (Sites 1 through 5), from SLR-related hazards under various flooding and inundation scenarios, and identifies a suite of conceptual adaptation strategies that can be implemented to reduce flood risks. The SLR Vulnerability Assessment Summary Report, prepared by Harris, summarizes GHD's report in a graphically rich and easy-to-read format. Both reports consist of the same data and findings and are therefore both described here.

Findings: The analysis determined that none of the potential affordable housing sites would be exposed to the 10-year fluvial event. All five potential affordable housing sites would be exposed to the 50-year and 100-year fluvial events. However, only Site 3 is exposed to the 10-year fluvial event when combined with SLR projected by 2100. Overall, the results of the flooding modeling suggest that SLR and flood vulnerabilities at the five housing sites would be ranked as follows (from least to most vulnerable): Site 5, Site 4, Site 2, Site 1, and Site 3. Three high-level conceptual adaptation strategies were developed to represent a range of possible actions to address flood risks: Targeted Ecotone Features (Strategy 1), Perimeter Berm Protection (Strategy 2), and Site-Wide Floodable Frontage (Strategy 3). Strategies 1 and 2 would mitigate flood risks for the 10-year and 50-year fluvial events, respectively, with increasing level of impacts on the District's land uses. Strategy 3 includes major land use modification across the Fairgrounds property to rise the northern portion of the site's elevations above the flood hazard zone.

Study 3: CEQA Constraints Task Order

Documents prepared for this Task Order are included in the "CEQA Constraints" folder. The CEQA Constraints Memo folder is found in the folder of the same name. The Biological Constraints Memo and Cultural Resources Letter Report are included and were used to inform the CEQA Constraints Memo.

Biological Resources Constraints Memorandum

Goal of the Report: This report assesses whether there are potential biological resource constraints for the development of housing on the five potential housing sites (Sites 1 through 5).

Findings: The analysis concluded that no sensitive plant or wildlife species or critical habitat areas are within the five sites. All five potential project sites offer a high level of developable opportunity with minimal biological constraints anticipated.

Cultural Resources Letter Report

Goal of the Report: This report assesses if there are potential cultural resource constraints for the development of housing on the five potential housing sites (Sites 1 through 5).

Findings: The analysis concludes that no cultural resources were located as a result of the study, and all five potential project sites are not considered sensitive for the presence of archaeological resources due to their developed nature or disturbance that has occurred historically.

CEQA Constraints Memorandum

Goal of the Report: This report explores CEQA document pathways, potential CEQA impacts that could occur through the development of the potential housing sites, the future studies required for CEQA compliance, preliminary mitigation measures, and the level of CEQA documentation that would likely need to be prepared based on those potential impacts for each of the five sites (Sites 1 through 5).

Findings: The report determined Assembly Bill (AB) 130 Housing Exemption could potentially apply to the project. Future studies would be required to ensure that AB 130 is the appropriate CEQA pathway. If it is determined that AB 130 does not apply to the project, an Initial Study (IS) would be prepared to determine if the project would qualify for a Mitigated Negative Declaration (MND) (if all potential impacts are mitigated) or Environmental Impact Report (EIR) (if there are significant and unavoidable impacts). Should the project not qualify for an exemption, it is anticipated that the following CEQA resource areas may have potential impacts, regardless of the site chosen: aesthetics, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, and tribal cultural resources. Future studies that would be required to support the CEQA document include visual simulations, air quality and greenhouse gas emissions modeling (and a health risk assessment for Site 1), a geotechnical evaluation, a Phase I Environmental Site Assessment, a Hydrology and Water Quality Report, noise modeling, "will-serve" letters from fire, police/sheriff, and school district public service providers, AB 52 tribal consultation, and a Water and Sanitary Sewer Utility Impact Study. Preliminary mitigation measures are detailed within the report. In a scenario where a mixed-income project is selected at Sites 4 or 5 (City of San Diego), even with implementation of mitigation measures, it is anticipated that the project would have a significant and unavoidable transportation vehicle miles traveled (VMT) impact, requiring an EIR CEQA document to be prepared. However, transportation VMT impacts are anticipated to be less than significant under all other scenarios studied including a 100 percent affordable housing project scenario (any site) or a mixed-income project on Sites 1 through 3 (City of Del Mar), and the project could proceed with an IS/MND CEQA document.

Study 4: Transportation Task Order

Documents prepared for this Task Order are included in the "Transportation" folder. A Transportation Analysis and a Transportation Demand Management Plan are included in this Task Order.

Transportation Impact Analysis

Goal of the Report: This report assesses the five potential housing sites (Sites 1 through 5) and determines the potential transportation impacts/constraints of each site.

Findings: All study intersections are calculated to continue to operate at an acceptable level of service or better with the addition of the project located at all five potential housing sites. Therefore, no improvements are necessary from an operations perspective. Any of the proposed development scenarios on any of the proposed

sites that assume 100% affordable housing can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis.

In development scenarios that include both affordable and market rate units, the affordable units can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis. Market rate units on any of the proposed Sites 1 through 5 would be expected to result in a significant transportation impact with mitigation required. Mitigation could include implementation of a robust Transportation Demand Management (TDM) plan or participation in the City of San Diego's Complete Communities Mobility Choices Program, depending on whether the development site is located within the City of Del Mar or the City of San Diego.

Transportation Demand Management Plan

Goal of the Report: TDM is a mitigation tool that is used to improve mobility and reduce congestion, VMT, greenhouse gas emissions, and air pollution. This report details recommended TDM strategies to be incorporated as part of the housing project.

Findings: TDM strategies recommended to be implemented as part of the housing project include on-site amenities (such as an on-site TDM coordinator or information center with vanpool and transit information), transit supportive amenities (such as offering transit passes), carpool supportive amenities, bicycle supportive amenities, and off-site improvements (such as pedestrian access with sidewalk connections or wayfinding signage).

Study 5: Water and Sewer Task Order

Documents prepared for this Task Order are included in the "Water and Sanitary Sewer Utility Impact Study" folder. The Task Order includes a Final Water and Sewer Utility Study as well as a Utility Infrastructure Financial Memo.

Water and Sanitary Sewer Utility Impact Study

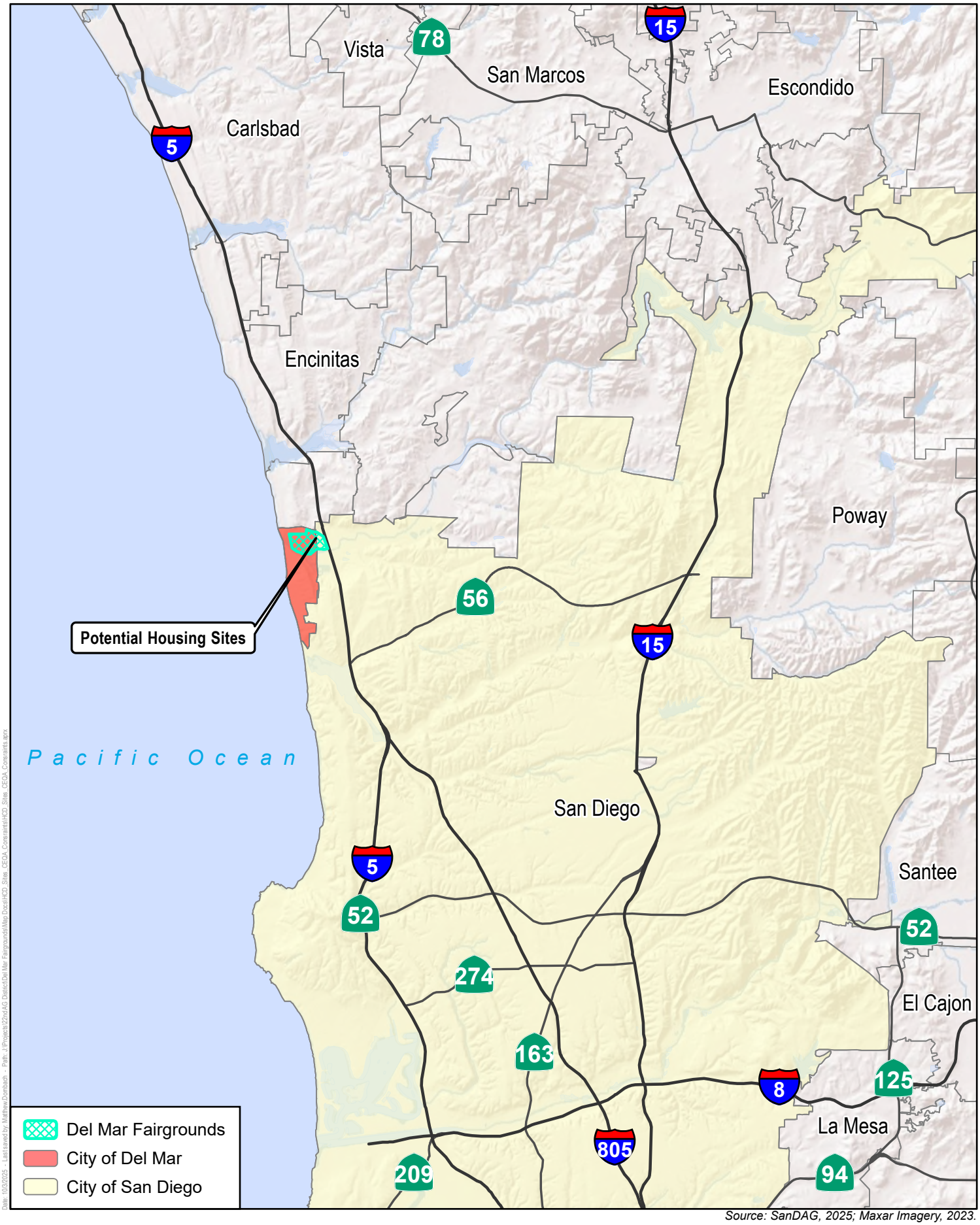
Goal of the Report: This report assesses the capacity of the Fairgrounds' existing water and sanitary sewer systems and identifies the potential impacts of the proposed housing on the Fairgrounds' systems. Sites 1 through 3 were analyzed as part of this report, as these sites are located within the City of Del Mar's water and sanitary sewer system. Sites 4 and 5 are located within the City of San Diego's water and sanitary sewer system and are being studied through a separate effort.

Findings: The report concluded that the existing water system has adequate capacity for supplying the water demands for the proposed affordable housing, and no immediate capital improvements are necessary other than the site-specific expansion of the water distribution system by constructing the service line for the housing development. Additionally, the report concluded that the existing sanitary system has adequate capacity for conveying wastewater flow from the proposed housing. However, existing deficiencies in the sanitary sewer system were discovered through conversations with Operations and Maintenance staff and further condition assessments are recommended to address deficiencies prior to construction of the proposed housing.

Utility Infrastructure Financial Review Memorandum

Goal of the Report: This report summarizes the estimated water and sewer infrastructure costs for the housing sites within the City of Del Mar (Sites 1 through 3) and identifies potential traditional public funding sources and special district financing mechanisms for funding the infrastructure improvements.

Findings: A preliminary cost estimate was developed for each of the three sites (Sites 1 through 3) to quantify the infrastructure upgrades that would be needed for the proposed housing project, with Site 1 having the highest cost estimate and Site 3 having the lowest cost estimate. Recommendations are provided for coordinated technical, financial, and policy actions to improve certainty, allocate infrastructure responsibilities, and establish sustainable funding mechanisms for the District and City of Del Mar.



Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

N

0 1.5 3

Miles

Figure 1
Regional Location

Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

N

0 225 450

Feet

Figure 2

Potential Housing Sites

Summary of Housing Studies: Site Conditions and Constraints, Financial Feasibility, Gap Funding Solutions, and Developer Stakeholder Outreach

Prepared for the State of California's 22nd District Agricultural Association and the City of Del Mar

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1 EXECUTIVE SUMMARY

1.1 Background

Harris & Associates (Harris) was retained by the City of Del Mar (City) and the 22nd District Agricultural Association (District) to conduct a series of housing studies funded through Housing Acceleration Program (HAP) grant funds that the City secured in 2023 through a HAP grant agreement between the City, the California Department of Housing and Community Development (HCD), and the San Diego Association of Governments.

These studies (Harris Housing Studies) were conducted per the Exclusive Negotiating Rights Agreement (ENRA) executed between the City and District that took effect on April 15, 2024. The ENRA and Harris Housing Studies implement the City's state-certified Housing Element by providing a path toward accomplishing the City's goal of developing affordable housing on the Del Mar Fairgrounds (Fairgrounds) property.

The Harris Housing Studies include the following items:

- Housing Site Conditions and Constraints Assessment Study (Housing Site Assessment Study), which analyzed the feasibility of five potential housing sites (Potential Sites) in accordance with the feasibility criteria per the ENRA to help decision-makers better understand each site's development feasibility (Objective Criteria)
- A separate addendum to the Housing Site Assessment Study (Addendum), which was prepared to analyze a sixth Potential Site using the same Objective Criteria
- Analysis of Financial Feasibility and Competitiveness for Tax Credit Financing (Financial Feasibility Memorandum), which analyzed the financial feasibility of several potential housing prototypes (Prototypes) ranging from 61 to 82 units of family housing (Family Housing Prototypes) or 62 to 128 units of senior housing (Senior Housing Prototypes), as well as the Potential Sites' eligibility for Low-Income Housing Tax Credit (LIHTC) financing
- Analysis of additional financing strategies to help to render lower-income housing projects feasible, realistic, and implementable (Analysis of Gap Funding Solutions)
- Meeting minutes summarizing a virtual outreach meeting to discuss the Potential Sites with developer stakeholders active in the San Diego County region (Developer Stakeholder Meeting Minutes)

1.2 Approach

1.2.1 Housing Site Assessment Study and Addendum

Harris was tasked with analyzing the Potential Sites to help decision-makers better understand each site's development feasibility. Harris worked with the City and District to establish the Objective Criteria summarized on **Figure 1-1**.

Figure 1-1: Summary of Objective Criteria

1.2.2 Financial Feasibility Memorandum

Harris analyzed the financial feasibility of Family Housing Prototypes ranging from 61 to 82 units and Senior Housing Prototypes ranging from 62 to 128 units. Current market data was collected to identify the financial feasibility of these Prototypes in 100 percent affordable scenarios, which assume LIHTC funding (Tax Credit Scenarios), as well as separate scenarios assuming a mix of market-rate and income-restricted units (Mixed-Income Scenarios). Details of these Prototypes and affordability scenarios (Tested Scenarios) are detailed herein.

In addition, Harris analyzed each Potential Site's eligibility for tax credit financing by conducting a site amenity self-score per the 2025 California Tax Credit Allocation Committee (CTCAC) application guidelines and comparing these scores to affordable housing projects in San Diego County that had been awarded tax credits during 2024 and 2025.

1.2.3 Analysis of Gap Funding Solutions

The Financial Feasibility Memorandum indicates that significant additional funding will be required to fill the financing gap (Financing Gap), or shortfall, between the total cost to develop each housing Prototype and the total projected value of the Prototype, including funding that a project can secure from committed sources. Harris identified several funding solutions to help close the Financing Gaps, as well as past examples of affordable housing projects that were funded through these mechanisms.

1.2.4 Developer Stakeholder Meeting

On November 3, 2025, Harris conducted a virtual meeting with affordable housing developers active in San Diego County to obtain input on the viability of the Potential Sites. Developer input was noted to help decision-makers better understand the different factors affecting the overall and comparative feasibility of the Potential Sites, including constraints, accessibility, and nearby resources.

1.3 Findings

1.3.1 Housing Site Assessment Study and Addendum

As shown in **Table 1-1**, three Potential Sites within the City of Del Mar—specifically, Sites 1, 2, and 3—satisfied all Objective Criteria for feasibility. The remaining sites, including Site 6 and both Potential Sites within the City of San Diego (Sites 4 and 5) did not satisfy these criteria.

Table 1-1: Housing Site Assessment Study and Addendum Findings – Potential Sites 1-6

	City of Del Mar				City of San Diego	
Objective Criteria	**Site 1**	**Site 2**	**Site 3**	**Site 6**	**Site 4**	**Site 5**
Ability to Execute Lease Agreement within ENRA Negotiating Period	Yes	Yes	Yes	No	No	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units	Yes	Yes	Yes	No	Yes	Yes
Potential to be Eligible for Tax Credit Financing	Yes	Yes	Yes	Yes	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes	Yes	Yes	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements (1)	Yes	Yes	Yes	Yes	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes	Yes	No	Yes	Yes
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes	Yes	Yes	Yes	Yes

(1) A general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.

1.3.2 Financial Feasibility Memorandum

The financial feasibility of each Prototype and Tested Scenario was projected through a calculation of residual land value (RLV), or the difference between a project's total value at completion minus development costs.

As indicated in **Table 1-2**, the Prototypes yielded negative RLV in each Tested Scenario, indicating that a gap financing contribution in the amount of the negative RLV (in addition to free land) would be required for financial feasibility.

Negative RLVs are common in affordable housing projects, as the completed property's value is limited by caps on the rents that can be charged.

Table 1-2: Residual Land Value Summary

	Total Units	Scenario	Residual Land Value [1] Total	Per Unit	Per SF Land (1.0 Acre Site)	Per SF Land (1.5 Acre Site)
Family Housing	61	4% Tax Credit	($9,322,334)	($152,825)	($214)	($143)
	61	9% Tax Credit	($9,408,155)	($154,232)	($216)	($144)
	82	4% Tax Credit	($11,270,466)	($137,445)	($259)	($172)
	82	9% Tax Credit	($10,893,630)	($132,849)	($250)	($167)
	82	Mixed-Income	($13,913,162)	($169,673)	($319)	($213)
Senior Housing	62	4% Tax Credit	($4,814,148)	($77,648)	($111)	($74)
	62	9% Tax Credit	($7,087,840)	($114,320)	($163)	($108)
	128	4% Tax Credit	($9,177,782)	($71,701)	($211)	($140)
	128	9% Tax Credit	($3,505,930)	($27,390)	($80)	($54)
	128	Mixed-Income	($5,358,054)	($41,860)	($123)	($82)

(1) Parentheses indicate a negative Residual Land Value (RLV)

Harris' site amenity scoring, which was conducted for Potential Sites 1–5 in accordance with 2025 CTCAC guidelines for 4 Percent and 9 Percent LIHTC applications, concluded the following:

- As indicated in **Table 1-3**, all five Potential Sites are eligible for the maximum site amenity score in both the 4 Percent and 9 Percent Tax Credit Scenarios, indicating that site amenity scoring is not a differentiating factor in the sites' financial feasibility or competitiveness in either scenario.
- The site amenity scores of all five Potential Sites are equal to the site amenity scores of projects awarded tax credit financing in 2024 and 2025, indicating that all five Potential Sites are highly and equally competitive in this regard.

Table 1-3: Amenity Score Summary – Potential Sites 1–5

Tax Credit Scenario	Eligible Points					
	Maximum Points per CTCAC Application	East Main Stable Gate Site (Site 1)	South of Stable Gate Site (Site 2)	Adjacent to Fire Station Site (Site 3)	Surf & Turf RV Park Site (Site 4)	Dirt Lot Site (Site 5)
4%	10	**10**	**10**	**10**	**10**	**10**
9%	15	**15**	**15**	**15**	**15**	**15**

1.3.3 Analysis of Gap Funding Solutions

The Financial Feasibility Memorandum indicates that under current market conditions, each of the Tested Scenarios for each Prototype yields a negative RLV, meaning the Prototypes would not be financially feasible without additional funding sources to cover development costs. As noted previously in Table 1-2, the Family Housing Prototypes would require approximately $9.3

million to $13.3 million in additional funding, while the Senior Housing Prototypes would require approximately $3.5 million to $9.2 million in additional funding. Harris examined current development and funding trends to identify potential solutions to address this Financing Gap beyond traditional public subsidies such as LIHTC equity and state funding.

To help address the Financing Gap in the Tax Credit Scenarios, the City can consider establishing a Local Housing Trust Fund (LHTF) to create a dedicated, ongoing revenue source for affordable housing that can be funded through a variety of public and private revenue sources including property transfer or tax revenues, development impact fees paid to the City, general fund allocations, donations or philanthropic contributions, and other sources at the discretion of the City. This LHTF would expand on the City's existing affordable housing funding mechanisms. Once established, LHTFs can provide grants or low-interest loans to developers. Harris examined several case studies of affordable housing projects funded through LHTFs, as described in Section 5.

In addition, Harris examined the benefits of applying for funding through a Community Development Financial Institution (CDFI), or certified, private financial institutions that provide flexible funding to affordable housing projects. Development trends indicate that several affordable housing projects have been financed, in part, through CDFIs, including the Low Income Investment Fund (LIIF) and Century Housing Corporation. Both of these institutions can provide flexible, mission-driven financing to help fund affordable housing projects, including at earlier stages of the projects before other sources of funding are available. The affordable housing case studies examined indicate that CDFI financing can help to fund predevelopment, acquisition, bridge, and construction costs, enabling projects to reach financial feasibility, secure tax credit allocations, and move to the construction stage.

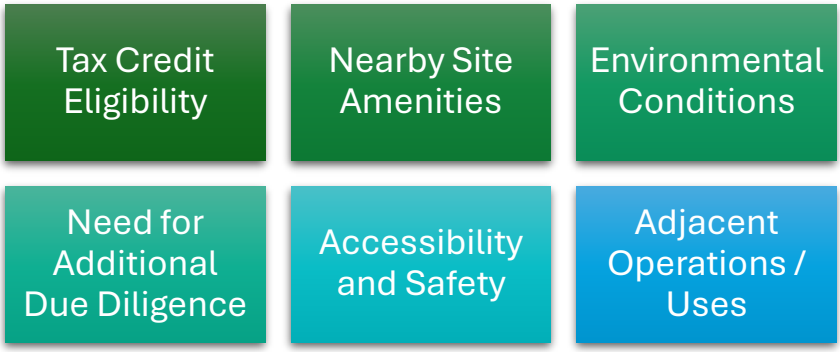
Overall, combining local funding mechanisms such as LHTFs with mission-driven CDFI financing can fill the financing gaps inherent in high-cost California markets, making affordable and mixed-income housing projects financially feasible, viable, and implementable. These approaches provide both upfront capital and long-term sustainability for ongoing affordable housing development.

1.3.4 Developer Stakeholder Meeting

Harris conducted a virtual meeting with members of five organizations including Affirmed Housing, BRIDGE Housing, Community Housing Works, San Diego Community Housing Corporation, and National Community Renaissance (National CORE).

Key agenda items and points of discussion from this meeting, which was conducted on November 3, 2025, are summarized on **Figure 1-2**.

Figure 1-2: Developer Stakeholder Meeting – Key Topics of Discussion



Overarching themes of the comments provided by developer stakeholder attendees are summarized in **Table 1-4**. As noted in the table, developers emphasized the need to fully understand environmental conditions of the sites to discern which site is most feasible for development.

Overall, developers showed strong interest in the Potential Sites, noting that the Fairgrounds' proximity to local amenities would enhance their competitiveness for tax credit financing. Additionally, developers indicated a desire to participate in future stakeholder outreach events. Section 6 of this memorandum provides a comprehensive overview of the Developer Stakeholder Meeting, including comments provided on specific sites.

Table 1-4: Developer Stakeholder Meeting – Overarching Comments

Potential Sites 1-5 Developer Stakeholder Feedback - Overarching Comments	
Local developers expressed interest in the Potential Sites, but emphasized the need to fully understand site conditions before submitting a proposal.	Environmental and geotechnical due diligence studies are important steps in the evaluation of comparative site suitability.
Nearby activities, noise, air quality, and hazardous materials are potential concerns, although some of these factors can be mitigated through design and technology.	Access, circulation, and parking are major considerations given site activity levels and car dependency, especially during large events.
Potential Sites 1-5 are competitive for tax credits and would likely demonstrate maximum site amenity score potential on a CTCAC tax credit application.	Sites with existing uses may be subject to relocation costs.

2 BACKGROUND AND APPROACH

The Harris Housing Studies are being conducted per the ENRA executed between the City and District in March 2024 that took effect April 15, 2024.

The Harris Housing Studies, which will be completed by March 31, 2026, will be supplemented by additional feasibility studies and a conceptual development program in process with the City. The intent is to facilitate consideration of the study findings and site opportunities by the District Board and Del Mar City Council by September 30, 2026.

As communicated to the City in a January 15, 2026, Letter of Inquiry, the HCD expects the City and District to reach mutual agreement on a site for affordable housing development and execute a ground lease by November 30, 2026, as a measure to demonstrate that affordable housing can feasibly be constructed on the Fairgrounds by June 2031. The ENRA is otherwise set to expire on April 15, 2027, unless extended.

2.1 Housing Site Assessment Study and Addendum

The Housing Site Assessment Study and Addendum reflect the District's intent per the ENRA to provide the City with prospective development sites for consideration. Per the ENRA, the City and District are seeking mutual agreement on a site for affordable housing. To help decision-makers better understand each site's development feasibility, Harris completed a Housing Site Assessment Study and Addendum analyzing whether each Potential Site met the established Objective Criteria per the ENRA. Six Potential Sites were identified for consideration. These deliverables are intended to help the City and District reach a mutual agreement on a feasible site based on the information collected and analyzed by Harris.

Previously, conceptual site plans and initial financial feasibility studies prepared by Keyser Marston Associates (KMA) and Stephen Dalton Architects (SDA) were presented to the Del Mar City Council in June 2022 (2022 KMA and SDA Study), with additional housing concepts prepared by SDA in April 2023 (2023 SDA Study). These studies, which are collectively referred to as the Existing Studies, established the feasibility of two Potential Sites described herein as Site 1 and Site 3. Four additional sites were recommended by the District for consideration. The findings of the Existing Studies served as a starting point for Harris' analysis of these six Potential Sites.

Harris analyzed each Potential Site using the Objective Criteria established in prior correspondence with City and District staff to determine each site's feasibility for the development of at least 61 units of affordable housing. The analysis was conducted with the understanding that a site is infeasible if it fails to meet any of the Objective Criteria.

To supplement this analysis, Harris attempted to obtain title report information to understand the applicability of any building-restricted easements on the District property. Both the District and City of Del Mar staff provided Harris with "preliminary" title reports (limited to publicly available data). However, Harris was unable to identify any factors affecting development feasibility within the preliminary title reports analyzed, or in its search of District records.[1]

[1] Due to the condition, age, and limitations of the title reports, Harris cannot attest to all the constraints to development on the Potential Sites. All development restrictions, easements, encumbrances, and liens, as

2.1.1 Potential Sites – City of Del Mar

There are four Potential Sites located within the City of Del Mar, as summarized in **Table 2-1**.

Figure 2-1 illustrates the locations of Sites 1, 2, 3, and 6 on the Fairgrounds property. As previously stated, Sites 1 and 3 were analyzed in the Existing Studies. Sites 2 and 6 were recommended by the District in 2025 for inclusion in the list of Potential Sites.

Table 2-1: Overview of Potential Sites – City of Del Mar

Site #	Site Name	APN(s)	Acres
Site 1	East Main Stable Gate Site	2982710300	1.50
Site 2	South of Stable Gate Site	2990300500, 2990302200	1.50
Site 3 (1)	Adjacent to Fire Station Site	2990302200	1.00
Site 6	Intersection Site	2982710300	0.80

(1) The 2023 SDA Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5-acre new housing site that would also include redevelopment of the fire station. This Study focuses on a 1-acre new housing site detailed in the 2023 SDA Study.

well as the exact areas affected, will need to be confirmed before development can occur at the sites. The exact location would need to be determined by a licensed surveyor or engineer with relevant expertise.

Figure 2-1: Potential Sites – City of Del Mar

2.1.2 Potential Sites – City of San Diego

The District recommended the analysis of additional Potential Sites located on District-owned property within the City of San Diego (Sites 4 and 5). **Table 2-2**, Overview of Potential Sites – City of San Diego, provides an overview of Sites 4 and 5. **Figure 2-2**, Potential Sites – City of San Diego, illustrates the location of Sites 4 and 5 within the Fairgrounds.

Table 2-2: Overview of Potential Sites – City of San Diego

Site #	Site Name	APN(s)	Acres
Site 4	Surf and Turf RV Park Site	2990420300	1.50
Site 5	Dirt Lot Site	2990420300	1.50

Figure 2-2: Potential Sites – City of San Diego

2.2 Financial Feasibility Memorandum

Harris was retained by the City and District to update a financial feasibility analysis prepared in the 2022 KMA and SDA Study, which identified the RLV of several housing Prototypes on the Fairgrounds property. All housing Prototypes tested in the 2022 KMA and SDA Study yielded a negative RLV when the majority of units included in the project were assumed to be income-restricted/affordable, indicating that affordable housing projects built on the Fairgrounds property would not be financially feasible unless financing gaps were filled by other funding sources and/or cash subsidies.

Factors affecting the RLV of a housing Prototype, such as development costs, new development fees, interest rates, and potential revenue from income-restricted, as well as unrestricted (market-

rate) housing units, may change significantly over time. For this reason, Harris examined current market conditions to calculate the current RLV for each Prototype and Tested Scenario. This portion of the Financial Feasibility Memorandum identifies financing gaps across the Prototypes and Tested Scenarios to help decision-makers understand the amount of additional funding that would be necessary for the development of 61 or more lower-income units on Fairgrounds property.

As noted previously, this analysis was conducted using housing Prototypes established in the 2023 SDA Study featuring 61 or more units, including two Family Housing Prototypes ranging from 61 to 82 units and two Senior Housing Prototypes ranging from 62 to 128 units.

Harris used current market data to identify the financial feasibility of the Prototypes detailed in the 2023 SDA Study in the following Tested Scenarios:

- 100 percent affordable (rent-restricted) housing project receiving 4 percent LIHTC financing (**4 Percent Tax Credit Scenario**).
- 100 percent affordable (rent-restricted) housing project receiving 9 percent LIHTC financing (**9 Percent Tax Credit Scenario**).
- Mixed-Income housing project featuring at least 61 units of lower-income housing (**Mixed-Income Scenario**). The Mixed-Income Scenario was tested specifically for the 82-unit Family Housing Prototype and 128-unit Senior Housing Prototype.

The Prototypes, including property specifications and income restrictions across the Tested Scenarios, are summarized in **Table 2-3** and **Table 2-4**. Income restrictions in the 4 and 9 Percent Tax Credit Scenarios were allocated such that the income restriction would **average 50 percent of area median income (AMI) across the project**, thereby ensuring that the affordability assumptions would be consistent with projects recently awarded tax credit financing. In addition, it is important to note that all Prototypes assume podium parking for the ground level of the building.[2]

[2] The Housing Site Assessment Study found that all Potential Sites are located in a 1 percent annual chance flood hazard zone (also known as the 100-year floodplain) and would therefore require the elevation of the first floor above the Base Flood Elevation and floodproofed.

Table 2-3: Family Housing Prototype Overview

	Family Housing								
Prototype / Affordability Scenario	61 Units / 100% Affordable			82 Units / Mixed-Income			82 Units / 100% Affordable		
Construction Type	Type V			Type V			Type V		
Gross Building Area									
Net Residential	43,594	SF		58,691	SF		58,691	SF	
Circulation / Common Area	13,519	SF		16,985	SF		16,985	SF	
Total GBA	57,113			75,676			75,676		
Weighted Average Unit Size	710	SF		720	SF		720	SF	
Stories[(1)]	4			5			5		
Unit Mix									
Studio	1	Units	2%	1	Units	1%	1	Units	1%
1-Bed	25	Units	41%	34	Units	41%	34	Units	41%
2-Bed	18	Units	30%	24	Units	29%	24	Units	29%
3-Bed	17	Units	28%	23	Units	28%	23	Units	28%
Total Units	61			82			82		
Income Restrictions									
Total Market-Rate Units	0	Units	0%	21	Units	26%	0	Units	0%
Affordable Units									
30% of AMI	25	Units	41%	0	Units	0%	34	Units	41%
50% of AMI	20	Units	33%	20	Units	24%	26	Units	32%
80% of AMI	16	Units	26%	41	Units	50%	22	Units	27%
Total Affordable Units	61			61			82		
Parking									
Type	Podium			Podium			Podium		
Number of Spaces	54			54			54		
Type	Paved Lot			Paved Lot			Paved Lot		
Number of Spaces	26			26			26		

(1) Includes residential stories and ground level (podium) parking floor.

Table 2-4: Senior Housing Prototype Overview

	Senior Housing								
Prototype / Affordability Scenario	62 Units / 100% Affordable			128 Units / Mixed-Income			128 Units / 100% Affordable		
Construction Type	Type V			Type V			Type V		
Gross Building Area									
Net Residential	22,880	SF		47,192	SF		47,192	SF	
Circulation / Common Area	14,591	SF		21,910	SF		21,910	SF	
Total GBA	37,471			69,102			69,102		
Weighted Average Unit Size	370	SF		370	SF		370	SF	
Stories[(1)]	3			5			5		
Unit Mix									
Studio	60	Units	97%	124	Units	97%	124	Units	97%
1-Bed	0	Units	0%	0	Units	0%	0	Units	0%
2-Bed	2	Units	3%	4	Units	3%	4	Units	3%
3-Bed	0	Units	0%	0	Units	0%	0	Units	0%
Total Units	62			128			128		
Income Restrictions									
Total Market-Rate Units	0	Units	0%	67	Units	52%	0	Units	0%
Affordable Units									
30% of AMI	25	Units	40%	0	Units	0%	52	Units	41%
50% of AMI	21	Units	34%	20	Units	16%	42	Units	33%
80% of AMI	16	Units	26%	41	Units	32%	34	Units	27%
Total Affordable Units	62			61			128		
Parking									
Type	Podium			Podium			Podium		
Number of Spaces	54			54			54		
Type	Paved Lot			Paved Lot			Paved Lot		
Number of Spaces	26			26			26		

(1) Includes residential stories and ground level (podium) parking floor.

Additionally, Harris conducted an amenity self-score for each Potential Site based on the current amenity scoring guidelines noted in 4 and 9 percent 2025 CTCAC applications, including an analysis of each Potential Site's resource area designation. In addition, Harris analyzed affordable housing projects in San Diego County that had been awarded tax credits during 2024 and 2025 to help the City and District understand how the Potential Sites' site amenity scores compared with those of actual housing projects that were recently awarded tax credit financing. This portion of the Financial Feasibility Memorandum was conducted to help decision-makers understand any difference in competitiveness for tax credit eligibility across the five Potential Sites.[3]

[3] LIHTC site amenity scoring is a component of the California Tax Credit Allocation Committee (CTCAC) evaluation process that measures how well a proposed housing site is served by surrounding amenities, such as transit, schools, grocery stores, parks, and services, that support resident quality of life. Site

2.3 Analysis of Gap Funding Solutions

After completing the Financial Feasibility Memorandum, Harris researched development trends to identify solutions to address the Financing Gap observed in each Prototype and Tested Scenario. This analysis addressed the following questions:

- What funding sources (beyond state and federal funding such as LIHTC equity) have helped fund recent affordable housing projects in California?
- What types of public-private partnerships have been useful in addressing the Financing Gap in new affordable housing projects?
- What steps should be taken (either by the City or developers) for these strategies to be feasible and implementable?

Harris' Analysis of Gap Funding Solutions, summarized in Section 5, outlines several ways to acquire funding sources that can help fill the Financing Gap (particularly at the early stages of the project), and provides cases studies to help exemplify how these funding sources can benefit comparable affordable housing projects.

2.4 Developer Stakeholder Meeting

After Potential Sites 1–5 were selected, Harris emailed members of developer organizations active in San Diego County with a map showing each site's location on the Fairgrounds property, noting that Harris is working with the District and City to analyze each site's feasibility for affordable housing development. As detailed in Section 6, Harris subsequently provided a list of questions to developers before the meeting, encouraging developers to contribute feedback in writing if they were unable to attend the meeting. Harris met with developers on November 3, 2025, to discuss factors affecting the overall and comparative feasibility of the Potential Sites.

amenity scoring is one component of the CTCAC's broader point scoring system and contributes to a project's overall competitiveness. For projects relying on a CTCAC award, it is crucial to evaluate amenity access early in the site selection process.

3 FINDINGS – HOUSING SITE ASSESSMENT STUDY AND ADDENDUM

3.1 Potential Sites – City of Del Mar

The following findings were noted in the Housing Site Assessment Study and Addendum's analysis of Sites 1, 2, 3, and 6, as summarized in **Table 3-1**.

Table 3-1: Housing Site Assessment Study and Addendum Findings – City of Del Mar

	City of Del Mar			
Objective Criteria	**Site 1**	**Site 2**	**Site 3**	**Site 6**
Ability to Execute Lease Agreement within ENRA Negotiating Period	Yes	Yes	Yes	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units	Yes	Yes	Yes	No
Potential to be Eligible for Tax Credit Financing	Yes	Yes	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements	Yes	Yes	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes	Yes	No
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes	Yes	Yes

3.1.1 Lease Agreement Timing

3.1.1.1 *Sites 1–3*

There is no information that would indicate a risk of delays to adhere to ENRA timelines (per original ENRA and ENRA First Amendment). Sites 1–3 are located within the City of Del Mar; therefore, the City would be able to report new units developed on these sites on its Housing Element Annual Progress Report to count toward its Regional Housing Needs Allocation (RHNA).

3.1.1.2 *Site 6*

Site 6 is currently public right-of-way that is being used for mobility of high volumes of traffic year-round. To prepare the site for housing development, the affected intersection would need to be reconfigured such that the dual free northbound right-turn lanes would be removed, with a transition to a shared through/right-turn lane, according to the Transportation Analysis Site 6 Letter Report completed by LLG Engineers (LLG Site 6 Transportation Analysis). The series of actions that would need to be taken by multiple jurisdictions to redevelop the site into housing may risk delays to adhere to ENRA timelines (per original ENRA and ENRA First Amendment). Therefore, there is no basis to conclude that this site is feasible with respect to lease agreement timing.

3.1.2 Potential Financial Feasibility and Eligibility for Tax Credit Financing

3.1.2.1 *Sites 1–3*

Sites 1–3 are 1 to 1.5 acres of developable land, indicating that each site has the potential to be feasible for a housing development of at least 61 lower-income units, per the findings of the Existing Studies. Per Harris' Financial Feasibility Memorandum, which includes amenity self-scores for each Potential Site using the most recent LIHTC scoring criteria, Sites 1–3 are potentially eligible for tax credit financing.

3.1.2.2 *Site 6*

Site 6 encompasses fewer than 1 acre of land. Therefore, this site does not have the potential to be feasible for a housing development of at least 61 lower-income units, per the findings of the Existing Studies. Only sites with at least 1 acre of developable land are considered feasible for the development of 61 or more lower-income units per the ENRA Objective Criteria. The Financial Feasibility Memorandum includes amenity self-scores for Potential Sites 1–5 using the most recent LIHTC scoring criteria and found that each of these sites are potentially eligible for maximum site amenity scores. While an amenity self-score was not conducted for Site 6, Harris believes that any housing development at this site would be eligible for tax credit financing per the findings of the Financial Feasibility Memorandum.

3.1.3 Environmental Constraints

One environmental constraint identified to date is the flood hazard of each Potential Site. None of the Potential Sites within the City of Del Mar are located in the Regulatory Floodway zone. Rather, Sites 1, 2, 3, and 6 are located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development on these sites would require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.

3.1.4 Ability to be Implemented in Accordance with State and Local Requirements

All Potential Sites would be required to comply with federal Emergency Management Agency (FEMA) and California Coastal Commission (CCC) standards for development. No Potential Sites within the City of Del Mar are located on land within the Regulatory Floodway, or within building-restricted areas imposed by the CCC.

3.1.5 No Associated Conflicts with Fairgrounds Operations and Events

All Potential Sites were identified by District staff with the understanding that a buffer from Fairgrounds operations could be designed for any of these locations. All sites will need to be designed to minimize/avoid conflicts with Fairgrounds operations and events. The City of Del Mar is currently undergoing street and paving improvements in the assumed Site 6 intersection area as part of a $3.5 million Capital Improvement Project (CIP) to improve mobility along Jimmy Durante Boulevard and Villa de la Valle, which has involved extensive coordination between City and District staff. The process to redevelop Site 6 into housing would directly conflict with this CIP. Furthermore, according the LLG Site 6 Transportation Analysis, the intersection at Site 6 absorbs a significant volume of traffic, and the reconfiguration required to prepare this site for housing development would result in an operational failure in the flow of traffic at the affected intersection. For this reason, Site 6 does not satisfy this criterion for feasibility.

3.1.6 Public Health, Safety, and Security Concerns

No Potential Sites within the City of Del Mar were deemed infeasible due to known public health, safety, and security concerns. As noted above, a buffer from Fairgrounds operations can be designed for all Potential Sites.

3.2 Potential Sites – City of San Diego

The following findings were noted in the analysis of Sites 4 and 5, as summarized in **Table 3-2**.

Table 3-2: Housing Site Assessment Study Findings – City of San Diego Sites

	City of San Diego	
Objective Criteria	**Site 4**	**Site 5**
Ability to Execute Lease Agreement within ENRA Negotiating Period	No	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units	Yes	Yes
Potential to be Eligible for Tax Credit Financing	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements(1)	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes

(1) A general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.

3.2.1 Lease Agreement Timing

According to information provided by City staff, the City of Del Mar had previously attempted to reach an agreement with the District, the City of San Diego, and HCD to pursue a housing project on sites within the City of San Diego's jurisdictional boundaries, with RHNA credit going to the City of Del Mar. This effort was initiated in 2019, but was unsuccessful. Given this history, it appears highly unlikely that a lease agreement could be executed for Sites 4 and 5 within the ENRA Negotiating Period, which expires April 15, 2027.

For the City of Del Mar to receive RHNA credit on a site located within the City of San Diego, both cities would need to execute an agreement allowing this to occur. Furthermore, this agreement would require HCD approval. This approach would entail the following challenges:

- It is unknown if the City of San Diego would be open to this agreement.
- The agreement would need to expressly allow any housing developed on District-owned property within the City of San Diego jurisdictional boundaries to count toward the RHNA for the City of Del Mar.
- This agreement would require approval from HCD as well as the City Councils of both Cities. It is unknown if HCD and both City Councils would approve this agreement.
- All of the above would need to occur, and the City of Del Mar would need to enter into a lease agreement with the Fairgrounds, no later than April 15, 2027, after which the ENRA negotiation period will end.

Given that the previous effort to reach such an agreement was unsuccessful, the number of actions and agreements that would need to occur between the City of Del Mar, City of San Diego, and the District, and time constraints identified in the Housing Site Assessment Study concluded that there is no basis to render the City of San Diego sites as feasible with respect to lease agreement timing.

3.2.2 Potential Financial Feasibility and Eligibility for Tax Credit Financing

Sites 4 and 5 both feature 1.5 acres of developable land, indicating that each site has the potential to be feasible for a housing development of at least 61 lower-income units. Per Harris' Financial Feasibility Memorandum, which includes amenity self-scores for each Potential Site using the most recent LIHTC scoring criteria, Sites 4–5 are potentially eligible for tax credit financing.

3.2.3 Environmental Constraints

One environmental constraint identified to date is the flood hazard of each Potential Site. Neither of the Potential Site within the City of San Diego are located in the Regulatory Floodway zone. Rather, Sites 4 and 5 are located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development on Sites 4 and 5 would require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.

3.2.4 Ability to be Implemented in Accordance with State and Local Requirements

Sites 4 and 5 would be required to comply with FEMA and CCC standards for development. Sites 4 and 5 are not located on land within the Regulatory Floodway or within building-restricted areas imposed by the CCC. After completion of the Housing Site Assessment Study, an additional consideration to be noted in the Addendum is that Site 5 is zoned as Open Space – Park (OP-1-1) by the City of San Diego, which allows developed, active parks for the purpose of promoting recreation and facilitating the implementation of land use plans. Residential use is not an allowed use in the OP-1-1 zone, which applies to Site 5. If Site 5 is selected, a general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.

3.2.5 Public Health, Safety, and Security Concerns

No Potential Sites within the City of San Diego were deemed infeasible due to known public health, safety, and security concerns. As noted above, a buffer from Fairgrounds operations can be designed for all Potential Sites.

4 FINDINGS – FINANCIAL FEASIBILITY MEMORANDUM

4.1 Financial Feasibility Analysis (Residual Land Value of Prototypes and Tested Scenarios)

The financial feasibility of each Prototype was identified by calculating the RLV under each Tested Scenario. RLV is calculated as a housing project's total value at completion (including any federal and state funding sources) minus estimated development costs (excluding land acquisition), as shown on **Figure 4-1**. A negative RLV indicates a financing gap, or shortfall, between the total cost to develop a housing project and the total projected value of a project, including funding that a project can secure from committed sources.

Figure 4-1: Residual Land Value

As indicated in **Table 4-1**, the Prototypes yielded negative RLV in each Tested Scenario, indicating that a gap financing contribution in the amount of the negative RLV (in addition to free land) would be required for financial feasibility.

Table 4-1: Residual Land Value Summary

			Residual Land Value [1]			
	Total Units	Scenario	Total	Per Unit	Per SF Land (1.0 Acre Site)	Per SF Land (1.5 Acre Site)
Family Housing	61	4% Tax Credit	($9,322,334)	($152,825)	($214)	($143)
	61	9% Tax Credit	($9,408,155)	($154,232)	($216)	($144)
	82	4% Tax Credit	($11,270,466)	($137,445)	($259)	($172)
	82	9% Tax Credit	($10,893,630)	($132,849)	($250)	($167)
	82	Mixed-Income	($13,913,162)	($169,673)	($319)	($213)
Senior Housing	62	4% Tax Credit	($4,814,148)	($77,648)	($111)	($74)
	62	9% Tax Credit	($7,087,840)	($114,320)	($163)	($108)
	128	4% Tax Credit	($9,177,782)	($71,701)	($211)	($140)
	128	9% Tax Credit	($3,505,930)	($27,390)	($80)	($54)
	128	Mixed-Income	($5,358,054)	($41,860)	($123)	($82)

(1) Parentheses indicate a negative Residual Land Value (RLV)

Negative RLVs are not surprising for affordable housing development, in which the value of developments at completion are constrained by restrictions on chargeable rent.

4.1.1 Competitiveness for Tax Credit Financing – Findings and Conclusions

As noted previously, Harris conducted site amenity self-scores for all five Potential Sites in accordance with CTCAC applications for 4 percent and 9 percent tax credits. In addition, Harris analyzed the site amenity scores of projects awarded tax credit financing in San Diego County in 2024 and 2025.

Through this portion of the Financial Feasibility Memorandum, Harris concluded that **Potential Sites 1–5 are eligible for the maximum site amenity score in both the 4 and 9 Percent Tax Credit Scenarios**, indicating that site amenity scoring is not a differentiating factor in the sites' financial feasibility or competitiveness in either scenario.

Table 4-2 notes the findings of this portion of the analysis, comparing the self-scores of the five Potential Sites with the maximum points that can be earned in the 4 and 9 Percent Tax Credit Scenarios.

Table 4-2: Amenity Score Summary – Potential Sites 1–5

Tax Credit Scenario	Eligible Points					
	Maximum Points per CTCAC Application	East Main Stable Gate Site (Site 1)	South of Stable Gate Site (Site 2)	Adjacent to Fire Station Site (Site 3)	Surf & Turf RV Park Site (Site 4)	Dirt Lot Site (Site 5)
4%	10	**10**	**10**	**10**	**10**	**10**
9%	15	**15**	**15**	**15**	**15**	**15**

In the process of conducting site amenity self-scores, Harris also identified the resource area designation of each site, which is derived from statewide maps (opportunity maps) developed by the CTCAC in coordination with the HCD. These maps incorporate data regarding a site's education quality, economic mobility, employment access, and environmental health. Using this data, areas are categorized as Highest Resource, High Resource, Moderate Resource, Low Resource, or High Segregation and Poverty. **Harris concluded that all five Potential Sites are located in Highest Resource areas** and, therefore, would be awarded the same (i.e., maximum) number of points on a CTCAC application with respect to resource area designation.

In addition, the site amenity scores of all five Potential Sites are equal to the site amenity scores of projects awarded tax credit financing in 2024 and 2025, as noted in **Table 4-3**, indicating that all five Potential Sites are highly and equally competitive in this regard.

Table 4-3: 2024–2025 4 Percent CTCAC Award List – San Diego County – Site Amenity Point Scores

Project Name	City	County	Award Year	Total Units (Including Manager's Units)	% Extremely Low (Up to 30% AMI)	% Very Low (30%-50% AMI)	% Low (50%-80% AMI)	Site Amenity Score (Up to 10)
Trolley Stop Apartments	San Diego	San Diego	2025	330	10%	10%	79%	**10**
2581 Commercial Street	San Diego	San Diego	2025	70	11%	11%	76%	**10**
5370 Napa	San Diego	San Diego	2025	100	10%	15%	74%	**10**
16th & Island Apartments	San Diego	San Diego	2025	123	11%	11%	78%	**10**
Spring Street Trolley Station	La Mesa	San Diego	2025	147	27%	32%	39%	**10**
Olive Park Apartments	Oceanside	San Diego	2025	199	25%	6%	68%	**10**
Otay Ranch II	Chula Vista	San Diego	2025	270	13%	7%	79%	**10**
Sol Vista Apartments	Chula Vista	San Diego	2025	96	7%	7%	56%	**10**
707 by Vintage	San Diego	San Diego	2025	200	10%	10%	79%	**10**
Mercado Apartments	San Diego	San Diego	2025	224	34%	20%	45%	**10**
Brookview Senior Villas	Fallbrook	San Diego	2025	61	49%	49%	0%	**10**
SDSU Mission Valley	San Diego	San Diego	2025	126	10%	79%	10%	**10**
Mirka Tower 1	San Diego	San Diego	2025	318	10%	20%	69%	**10**
Mira Mesa	San Diego	San Diego	2025	90	12%	11%	76%	**10**
Hillcrest Hall	San Diego	San Diego	2025	98	15%	11%	72%	**10**
Market Two	San Diego	San Diego	2025	272	10%	10%	78%	**10**
Aero Drive Affordable Apartments	San Diego	San Diego	2025	190	11%	11%	78%	**10**
Monarch Hillside Affordable Apartments	San Diego	San Diego	2024	51	10%	88%	0%	**10**
The Grant at Mission Trails	San Diego	San Diego	2024	48	35%	25%	38%	**10**
Wakeland Riverwalk	San Diego	San Diego	2024	190	25%	24%	50%	**10**
712 Seagaze	Oceanside	San Diego	2024	179	25%	24%	50%	**10**
Alvarado Creek Apartments	San Diego	San Diego	2024	227	18%	13%	69%	**10**
Avanzando San Ysidro	San Diego	San Diego	2024	103	11%	63%	24%	**10**
Quince Street Seniors	Escondido	San Diego	2024	145	10%	10%	77%	**10**
Chula Vista Seniors	Chula Vista	San Diego	2024	58	10%	10%	78%	**10**
El Camino Real Affordable Apartments	Oceanside	San Diego	2024	111	11%	11%	77%	**10**
St. Luke's Affordable	San Diego	San Diego	2024	78	10%	46%	42%	**10**
Kindred	San Diego	San Diego	2024	126	50%	27%	22%	**10**
La Costa Family Apartments	Carlsbad	San Diego	2024	19	16%	16%	68%	**10**
North City Affordable	San Marcos	San Diego	2024	224	13%	38%	47%	**10**
The Trails at Carmel Mountain Ranch	San Diego	San Diego	2024	125	10%	10%	78%	**10**
54th and El Cajon	San Diego	San Diego	2024	95	12%	12%	76%	**10**

5 ANALYSIS OF GAP FUNDING SOLUTIONS

As indicated in the findings of the Financial Feasibility Memorandum, the Tested Scenarios for each of the Prototypes yield a negative RLV under current market conditions, representing a significant Financing Gap that would need to be filled with additional funding in order to render a project financially feasible. Specifically, the tested Family Housing Prototypes would require approximately $9.3 million to $13.3 million in additional funding, while the tested Senior Housing Prototypes would require approximately $3.5 million to $9.2 million in additional funding

The following section outlines several options to potentially address this Financing Gap for a future affordable housing project to ensure that developers have enough funding to complete the project.

5.1 Establish a Local Housing Trust Fund

The City of Del Mar can establish a formal LHTF by consolidating and expanding its existing Housing Reserve Fund and Housing Assistance Fund into a dedicated funding mechanism with clearly defined revenue streams and governance. The LHTF would provide grants or low-interest loans to developers to fill the Financing Gap between project costs and what can be supported by affordable rents and other subsidies. By adopting a formal City ordinance or resolution, the City can define eligibility criteria, funding priorities, administration procedures, and reporting requirements to ensure transparency and accountability. This trust fund would enable the City to leverage additional public and private funding, helping to make a future affordable housing project on the Del Mar Fairgrounds more financially feasible while creating a sustainable resource for ongoing local affordable housing initiatives.

An LHTF is a dedicated pool of money established by a City or County that receives ongoing revenue from specific local sources (such as development fees, affordable housing in-lieu fees, a percentage of property taxes, philanthropic contributions, or land sale proceeds) and is used to help finance affordable housing projects, including new constructions as well as acquisitions of existing projects.

5.1.1 Formation Process

An LHTF can be established through the following process.

5.1.1.1 *Step 1: Council Direction and Policy Framework*

- The Del Mar City Council introduces a resolution or ordinance to formally create an LHTF.
- This document must define the purpose, governing rules, and eligible uses of the LHTF, including the income levels served.

5.1.1.2 *Step 2: Identify and Legally Secure a Dedicated Revenue Source*

A key characteristic of an LHTF is the presence of reliable, recurring funding sources to help fund affordable housing projects within the jurisdiction. Cities can combine multiple public and private revenue sources to fund a LHTF. State law permits a wide range of potential revenue sources, including the items outlined on **Figure 5-1**.

Figure 5-1: Potential LHTF Revenue Sources

The scale of impact that an LHTF can have on affordable housing development relies heavily on the size and reliability of its revenue sources.

5.1.1.3 *Step 3: Adopt Local Housing Trust Fund Guidelines*

Once revenue sources are identified, the City can adopt administrative guidelines that explain how funds will be disbursed, addressing factors such as:

- Eligibility criteria for developers/nonprofits.
- Priority uses.
- Application and funding processes.
- Reporting and public accountability requirements.

5.1.1.4 *Step 4: Public Hearing and Formal Adoption*

Before final adoption, the ordinance and fund guidelines would typically be reviewed in a public hearing, consistent with City procedures and California law, to ensure transparency and public input.

5.1.1.5 *Step 5: Release Notice of Funding Availability for Developers*

After completing these steps, the City and LHTF can release a Notice of Funding Availability to inform developers that funding is available for housing projects. Developers would then submit an application to the LHTF, including project details such as a general description of the project, unit affordability levels, and the estimated development timeline.

Funding from a City-based LHTF can be used to fill the Financing Gap in a new affordable housing project alongside other funding sources such as LIHTC equity.

LHTFs have been used to help fund several recent affordable housing projects in Southern California. The following section provides examples of case studies in which a City or County established an LHTF to advance affordable housing development within the jurisdiction.

5.1.2 LHTF Case Study A – City of Riverside

The City of Riverside's Local Affordable Housing Trust Fund was established by the Riverside City Council in March 2024 to create a dedicated local revenue source for expanding income-restricted housing within the city. The fund is primarily financed by land sale proceeds from City-owned properties purchased with City of Riverside General Fund dollars, but it is deliberately structured to accept additional revenue streams, including grants, charitable contributions, capital

campaign funds organized by private sector organizations, and ongoing contributions from major employers that are expressly dedicated to affordable housing.

The fund can be used to support a wide range of affordable housing activities, including gap funding for new construction projects within the city boundaries. Funding can also be used to offer loans to nonprofit or private developers, with repayments revolving back into the Fund for future investment.

5.1.3 LHTF Case Study B – Housing Trust Fund of Santa Barbara County

The Housing Trust Fund of Santa Barbara County (HTF) is a non-profit Local Housing Trust Fund (as opposed to a city-administered fund) that has operated since 2005, providing affordable housing financing across the region. HTF raises money from multiple public, private, and philanthropic sources rather than relying on a single dedicated tax or funding stream.

Local and regional banks can invest capital into HTF, in some cases as equity-equivalent investment (EQ2) or program-related investments, which help HTF finance local housing projects. Examples of lending partners include Montecito Bank & Trust, Northern Trust, Pacific Western Bank, and American Riviera Bank.

Additionally, HTF received a matching state grant through HCD's LHTF state grant program. This statewide program was designed to leverage local dollars for affordable housing by providing state matching grants to eligible LHTFs. However, this program no longer accepts applications for matching grants as of March 2026.[4]

Projects funded through HTF to date include:

- **Buellton Gardens:** In 2021, HTF provided a $1,775,000 land take-out and predevelopment loan for Buellton Gardens, a 92-unit affordable housing community for families and veterans.
- **Sagunto Place:** In 2019, HTF provided a $544,000 site acquisition loan toward a 23-unit affordable studio apartment complex in Santa Ynez.
- **Casa de las Flores:** In 2014, HTF provided a $430,000 permanent loan for a 43-unit, 100 Percent affordable multi-family rental project in Carpinteria.[5]

5.2 Apply for Funding through a Community Development Financial Institution

Developers can also choose to apply for funding through an existing CDFI that offers flexible, mission-driven financing products that can be paired with public subsidies and tax credits to cover development costs.

The following section provides examples of existing CDFIs, ways in which developers can apply for funding through these CDFIs, and past affordable housing projects that have been funded through CDFIs.

[4] California Department of Housing and Community Development (HCD), Local Housing Trust Fund (LHTF) program (Accessed March, 2026), https://www.hcd.ca.gov/funding/lhtf
[5] Housing Trust Fund of Santa Barbara County, https://www.sbhousingtrust.org/

5.2.1 Low Income Investment Fund

The LIIF is a national CDFI founded in 1984 that provides flexible financing for affordable housing and other projects that benefit low-income communities. Headquartered in San Francisco, LIIF works with non-profit and mission-driven developers, public agencies, and community organizations. As a CDFI, LIIF can provide capital where traditional lenders may be less likely to lend due to early stage risk, long development timelines, or complex financing structures typical of affordable housing projects.

To request funding from LIIF, a developer may undergo the following process, outlined on **Figure 5-2**.

Figure 5-2: LIIF Funding Request Process

LIIF funding can help make affordable housing projects more financially feasible by providing loans at critical stages of the development process when other sources of capital are not yet available. While a project may be funded through multiple sources, such as LIHTC financing and public subsidies, these funding sources are often awarded at different times and disbursed later in the development process. This creates Financing Gaps that can delay or jeopardize a project. LIIF funding would help to fill these gaps by offering predevelopment loans that fund early

activities such as environmental studies, design work, and permitting, or bridge or gap loans that provide short-term capital until tax credit equity or public funding becomes available.

5.2.1.1 *LIIF Case Study A: Aloe Palm Canyon Apartments – Palm Springs, CA*

Aloe Palm Canyon Apartments, a newly constructed, 71-unit affordable rental project in Palm Springs, California that opened in 2025, was funded, in part, through LIIF capital:

- LIIF, in partnership with Lift to Rise (a regional catalyst fund), provided a $10 million construction loan to help finance the development.
- Earlier in the project, LIIF also provided a $1.56 million acquisition and predevelopment loan that helped the developer secure an LIHTC allocation and complete necessary pre-construction steps to help the project move forward.[6]

This project exemplifies how LIIF funding can be integrated into a new construction LIHTC project's capital stack, often making the difference between a project being financially feasible or not in high-cost Southern California markets.

5.2.1.2 *LIIF Case Study B: Sandstone Valley Apartments — Murrieta, CA*

Similarly, LIIF contributed to a 96-unit affordable housing project known as the Sandstone Valley Apartments in Murrieta, California, which is targeted to households earning roughly 30 Percent-70 Percent of AMI. This project is currently in the pre-construction phase. LIIF's contributions are summarized below:

- LIIF provided a $1 million predevelopment line of credit to the developer, BOLD Capital Partners (in joint venture with CRP Affordable Housing).
- This early capital allowed the developer to complete design, entitlement, and financial structuring needed to secure a 4 Percent LIHTC reservation plus bond financing and move toward construction.[7]

For LIHTC projects, early stage bridge/infrastructure capital from CDFIs such as LIIF is often critical to achieving "LIHTC-readiness" and to closing the full financing package to render a housing project financially feasible and implementable.

5.2.2 Century Housing Corporation

Century Housing Corporation (Century, or CHC) is a California-based CDFI that specializes in financing affordable and workforce housing throughout the state. Founded in 1995 and headquartered in Culver City, Century operates as a non-profit lender offering financing solutions, including acquisition and bridge loans as well as construction and permanent loans. CHC partners with local governments, developers, investors, and other CDFIs to expand housing opportunities for low- and moderate-income households.

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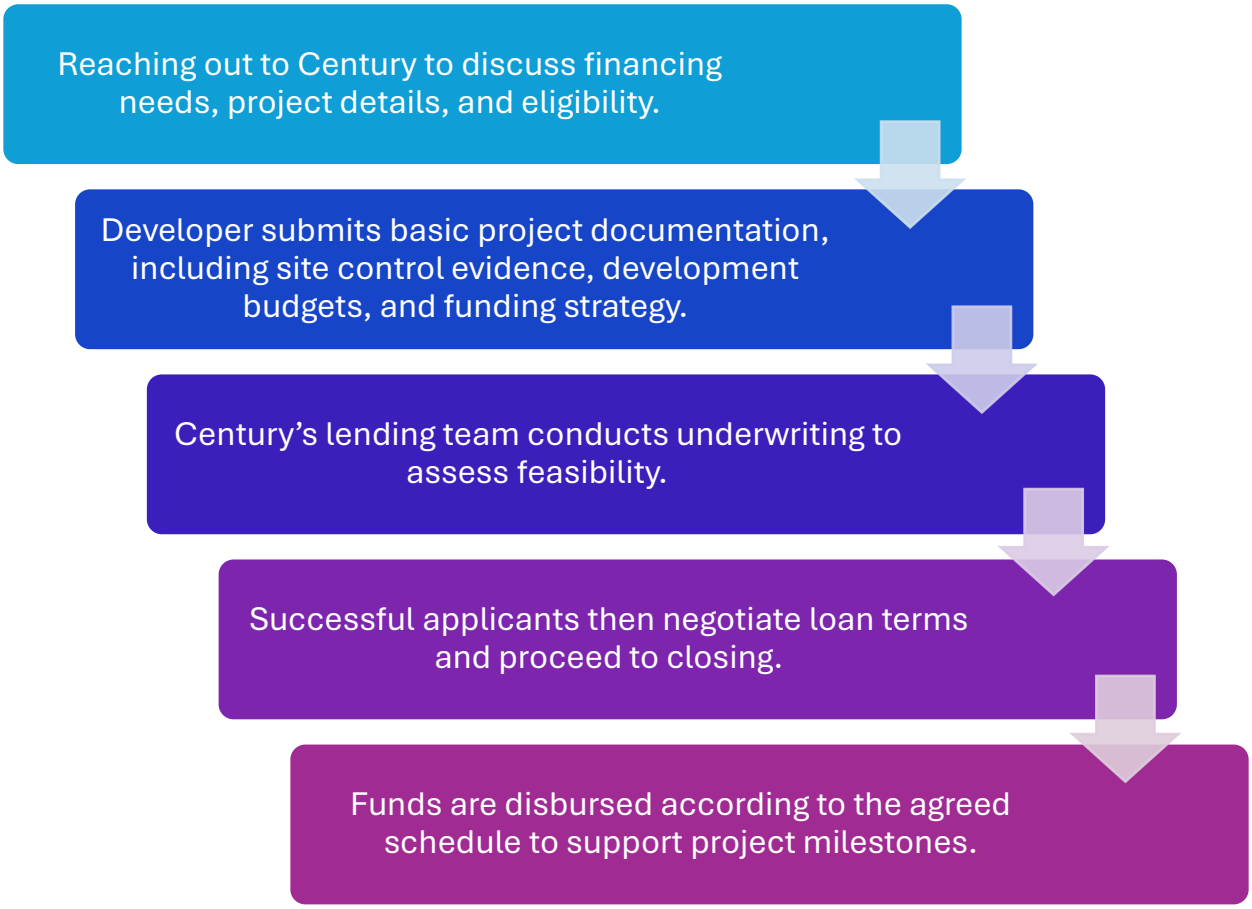
[6] Low Income Investment Fund. (2025, October 16). *LIIF's Kenny Rodgers delivers speech at ribbon-cutting for Aloe Palm Canyon Apartments in Coachella Valley, California*. https://www.liifund.org/2025/10/16/liifs-kenny-rodgers-delivers-speech-at-ribbon-cutting-for-aloe-palm-canyon-apartments-in-coachella-valley-california/.

[7] Low Income Investment Fund. (2024). *LIIF's affordable housing capital innovations driving national impact*. https://www.liifund.org/perspective/liifs-affordable-housing-capital-innovations-driving-national-impact/.

Similar to LIIF, Century's financing helps close the financing gap in affordable housing projects by providing flexible capital at stages where traditional lenders often will not lend. For example, Century can provide bridge loans to developers before other funding sources, such as LIHTC equity and public subsidies, are in place. Additionally, its construction and permanent loans help ensure that a project has the capital needed to build and operate affordable housing as it progresses to later stages of development. This flexible, mission-aligned capital can help fill timing and risk gaps, making projects financially feasible when conventional financing alone would fall short.[8]

Developers seeking funding from Century may follow the steps outlined on **Figure 5-3**.

Figure 5-3: Century Housing Funding Request Process



Century's financing process aligns with standard CDFI lending practices where developers work directly with Century's lending officers to complete required materials and meet underwriting requirements. Century's website outlines its core lending products, including acquisition, bridge, construction, and permanent loans.

5.2.2.1 *Century Housing Case Study – Iris Avenue Apartments*

Century provided $3,150,000 in funding for Iris Avenue Trolley Apartments, an affordable housing project developed by Eden Housing in the City of San Diego that includes 47 Low Income units and 16 units for individuals experiencing homelessness. This project is currently in the pre-

[8] Century Housing Corporation, https://century.org/.

construction phase. As exemplified in this case study, Century continues to play a notable, ongoing role in supporting affordable and socially impactful housing developments, often in partnership with local affordable housing developers.[9]

5.3 Summary

The City can potentially close Financing Gaps for future affordable housing projects by creating a Local Housing Trust Fund that combines various funding sources, including multiple forms of City funding and private contributions. This flexible pool of funding can help to ensure that developments move forward even when highly competitive traditional financing is delayed or insufficient to cover all development costs.

Meanwhile, partnering with a mission-driven CDFI such as LIIF or Century Housing Corporation allows developers to access flexible financing that can fill critical gaps in their affordable housing projects. By providing predevelopment loans, gap financing, or bridge funding, CDFIs help projects move forward that might otherwise stall or be infeasible altogether due to funding shortfalls. CDFI support increases financial feasibility, enabling developers to leverage additional public and private investment while reducing risk, ultimately making it possible to deliver more affordable housing to the community.

Rising development costs are creating increasingly large Financing Gaps for affordable housing projects, as state and federal funding programs alone are usually insufficient to cover total project expenses. For this reason, as indicated in recent development trends, affordable housing developers are increasingly relying on city-based LHTFs, private contributions, and mission-driven CDFI financing to fill these gaps. These local and intermediary funding sources provide flexible capital to support predevelopment, gap, and bridge financing, making projects financially feasible despite escalating costs and allowing communities to continue producing affordable housing units in critical demand.

[9] Century Housing Corporation. *Iris Avenue Apartments*. https://century.org/financing/.

6 DEVELOPER STAKEHOLDER MEETING MINUTES

6.1 Background

On November 3, 2025, Harris conducted a virtual meeting with affordable housing developers active in San Diego County to obtain input on the viability of the Potential Sites (Developer Stakeholder Meeting).[10]

Members of the following organizations attended the Developer Stakeholder Meeting:

- Affirmed Housing
- BRIDGE Housing
- Community Housing Works
- San Diego Community Housing Corporation
- National Community Renaissance (National CORE)

During this Developer Stakeholder Meeting, developers expressed overall interest in the Potential Sites and agreed that each site appears to be eligible for LIHTC financing, with strong potential to achieve maximum CTCAC site amenity scores on an LIHTC application. However, the developers also emphasized that additional due diligence would be required to understand comparative site feasibility, including clarity regarding the intended development, desired yield, height limits, infrastructure capacity, and potential relocation costs for sites with existing uses and improvements. Other considerations included potential public opposition and prevailing wage requirements. Developers noted that both federal and state tax credits may be necessary to make projects financially viable.

A central theme of the discussion was the importance of thoroughly understanding physical site conditions before submitting a proposal; developers highlighted the need for studies assessing the environmental conditions of the Potential Sites. In addition, developers noted that future affordable housing development would need to consider potential relocation costs, as well as accessibility and overall safety, given the high volumes of traffic and activity in and around the Fairgrounds.

Prior to the meeting, Harris emailed the developers a map of the Potential Site boundaries, as well as several questions to guide the meeting agenda:

- What do you believe are the most significant trends across new projects receiving tax credits in Southern California?
- What are your general thoughts on the tax credit eligibility for affordable housing projects developed at these sites?
- Are there potential issues that may affect any of the sites' eligibility to receive tax credit financing? If so, how could these issues be resolved?
- What are your initial/general thoughts on each of the sites noted in the attached map? Are there certain advantages or disadvantages that should be considered regarding

[10] At the time of the Developer Stakeholder Meeting, Site 6 had not been selected as a Potential Site. Therefore, this conversation focused exclusively on Sites 1–5.

development feasibility, constraints, etc.? How do these advantages and disadvantages differ between specific sites?

6.2 Overarching Comments

During the meeting, Harris and the developers discussed these questions, the effect of nearby activity on overall site feasibility, and the efforts that may be necessary to render the sites feasible for housing development.

Developer input is summarized below:

- Developers were generally interested in the sites but emphasized that additional information would be needed to understand site conditions before submitting a proposal.
- The sites would be competitive for tax credits due to their proximity to nearby amenities and would likely demonstrate maximum site amenity score potential on a CTCAC tax credit application.
- Affordable housing development on these sites may result in public opposition.
- Potential relocation costs were noted as a general concern on all sites with existing improvements.
- Developers were interested in the type and scale of development being considered on the Potential Sites, as well as the desired yield. Harris noted that the current development goals are based on the Existing Studies (either 61–82 units of family housing or 61–128 units of senior housing).
- Activity immediately adjacent to the selected sites, including barns for the racetrack and active street corners, should be considered when evaluating site feasibility.
- One attendee noted that once the project reaches a Request for Proposal (RFP) stage, developers would want to review studies on environmental factors such as soil conditions (including methane) and geotechnical information to better understand the site conditions, including those related to floodable first floor and parking requirements. For example, soil conditions of the Potential Sites may affect building foundation requirements.
- Housing projects developed for special needs populations might have more operational requirements.
- While factors such as the nearby operations, noise, atmosphere, and smell may theoretically affect site suitability, developers are familiar with certain design standards to mitigate these factors. Additionally, air quality tests can be performed as needed, or advanced High Efficiency Particulate Area filtration systems can be installed within the units.
- There are some flammable items in and around the Potential Sites, such as hay from the horse racing stables.
- Additional access points designed specifically for future residents may be necessary to ensure the process is safe, especially since there is so much activity during Fairgrounds events.
- These sites will be car-dependent. Therefore, it is important for developers to understand options with respect to parking and access.
- One developer asked about the possibility that sites would be impacted by alternative railroad routes.
- Developers asked about existing on-site water and sewer lines, noting that the length of these lines and the number of connectors should be confirmed.

- Developers were generally interested in height limitations and current zoning—factors that would trigger prevailing wages.
- Housing projects on the Potential Sites may need state tax credits in addition to federal tax credits.

6.3 Site-Specific Comments

In the latter portion of the meeting, Harris asked the attendees whether any of the Potential Sites appeared more or less feasible than the others. The developers emphasized that a definitive assessment of the Potential Sites cannot be made without a comprehensive understanding of site-specific conditions, particularly environmental constraints and physical limitations. However, developers noted several factors potentially affecting comparative site suitability and feasibility, including relocation costs on sites with existing improvements and overall accessibility. Feedback is summarized below.

6.3.1 Site 1 (East Main Stable Gate Site) and Site 2 (South of Stable Gate Site)

- Developers noted that Site 1 (East Main Stable Gate Site) and Site 2 (South of Stable Gate Site) appear relatively accessible, although additional information would be needed regarding the physical site conditions and parking requirements of all sites.

6.3.2 Site 3 (Adjacent to Fire Station Site)

- One developer noted that Site 3 (Adjacent to Fire Station Site) may have different (i.e., softer) soil textures due to its relative proximity to the San Dieguito River.

6.3.3 Site 4 (Surf and Turf RV Park Site) and Site 5 (Dirt Lot Site)

- If housing were developed on the Potential Sites located within the City of San Diego (Sites 4 and 5), it may be difficult to make left turns out of Turf Road, especially during times of the day with higher volumes of traffic. Similarly, residents may have difficulty entering and exiting Site 3 (Adjacent to Fire Station Site) due to the traffic and activities in the immediately adjacent areas.
- Attendees presented several initial comments regarding the transmission lines along Site 4 (Surf and Turf RV Park Site) and Site 5 (Dirt Lot Site) next to Jimmy Durante Boulevard:
    - One attendee noted that these transmission lines would require a setback.
    - OSHA standards have increased in recent years, so it is important to be mindful of the development requirements on sites with transmission lines like this.
    - Undergrounding, if required, would be challenging.
    - Attendees noted that Sites 4 and 5 would be more suitable for development if the site boundaries were farther from the transmission lines.
    - The drainage lines at Sites 4 and 5 would also involve environmental concerns.
- One developer asked about the potential for relocation costs for Site 4 (Surf and Turf RV Park Site), stating it is important to know whether the RV site is used for short-term or long-term rentals.
- Developers noted the hotel next to Site 4 (Surf and Turf RV Park Site). The District currently owns this hotel; attendees believed that this would help with the process of creating a fire easement.

6.4 Disclaimer

While the Developer Stakeholder Meeting sought to gather initial feedback from the development community on the Potential Sites and factors that should be considered for the successful implementation of an affordable housing project on these sites, it is important to note that this meeting was conducted before the Housing Site Assessment Study and Financial Feasibility Memorandum were finalized. Therefore, the findings of these analyses were not presented to attendees of the Developer Stakeholder Meeting. During the meeting, developers expressed interest in attending future outreach efforts.

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Housing Site Conditions and Constraints Assessment

Prepared for the State of California's 22nd District Agricultural Association and the City of Del Mar

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Attachment 1. Title Reports

1 EXECUTIVE SUMMARY

1.1 Background

This Housing Site Conditions and Constraints Assessment Study (Study) is being conducted per the Exclusive Negotiating Rights Agreement (ENRA) executed between the City of Del Mar (City) and the State of California 22nd District Agricultural Association (District) in March 2024 that took effect April 15, 2024. The ENRA and site assessment implements the City's state-certified Housing Element by providing a path toward accomplishing the City's goal of developing affordable housing on Fairgrounds property. The site assessment also supports the District's master site planning process and will help inform the ultimate selection of a development site for affordable housing on Fairgrounds property. **The Study intends to provide information to help the City and District identify the most feasible and desirable site for affordable housing development.**

The Study is funded through Housing Acceleration Program (HAP) grant funds that the City secured in 2023 through a HAP grant agreement between the City, the California Department of Housing & Community Development (HCD), and the San Diego Association of Governments (SANDAG). The City and District executed a Memorandum of Understanding in 2025, which provides for the District to use a portion of City's grant funds to complete feasibility studies including a site assessment.

Harris & Associates (Harris) was retained by the District to identify site locations that are feasible for the development of at least 61 lower-income units on a site that is 1 to 1.5 acres in size on the Del Mar Fairgrounds property (Fairgrounds) within the City of Del Mar. The ultimate objective of the Study is for the City and District to reach a mutual agreement on a feasible site based on the information collected and analyzed by Harris through multiple studies. The City recognizes that there are multiple feasible sites, and the goal is to have the housing site align with the master site planning and ENRA.

1.2 Approach

Harris was tasked with analyzing potential development sites based on Objective Criteria to help decision-makers better understand each site's development feasibility. While this Study does not formally recommend a specific site for development, the Study identifies if each site fulfills the established Objective Criteria based on information known at the time of the Study.

Previously, conceptual site plans and initial financial feasibility studies prepared by Keyser Marston Associates (KMA) and Stephen Dalton Architects (SDA) were presented to the Del Mar City Council in June 2022 (2022 KMA and SDA Study) with additional housing concepts prepared by SDA in April 2023 (2023 SDA Study), which demonstrated development feasibility of two sites included in this analysis. These sites are collectively referred to as the Existing Studies herein. Three additional sites were recommended by the District for inclusion in this Study. The findings of the Existing Studies served as a starting point for Harris' analysis described herein.

1.3 Objective Criteria

Objective Criteria used in this Study will help decision-makers better understand each site's development feasibility. Harris worked with the City and District to establish these Objective Criteria listed on **Figure 1-1,** Summary of Objective Criteria:

Figure 1-1: Summary of Objective Criteria

Financial feasibility under current market conditions and HCD regulations, including competitiveness for tax credit financing, will be assessed by Harris in a subsequent due diligence study to help stakeholders understand the comparative site suitability and feasibility (Financial Feasibility Memorandum). However, this Study analyzes each site's potential to be financially feasible and eligible for tax credit financing based on the findings observed in the Existing Studies.

1.4 Sites Studied

Analysis of site-specific locations for affordable housing on the Fairgrounds has been in process since 2021, which began with studies of two sites identified as Site 1 and Site 3 listed below. The Existing Studies prepared by KMA and SDA demonstrated development feasibility of these sites. In 2025, the District identified four additional sites for a total of six site-specific locations that are being studied for future consideration by the City and District (Potential Sites). This Study analyzes the feasibility of the first five Potential Sites identified (Sites 1-5).[1]

1.4.1 City of Del Mar

Potential Sites 1, 2, and 3 are located within the City of Del Mar, as summarized in **Table 1-1**, Overview of the Potential Sites – City of Del Mar. **Figure 1-2**, Potential Sites – City of Del Mar, illustrates the locations of Sites 1, 2, and 3 on the Fairgrounds property. As previously stated, Sites 1 and 3 were analyzed in the Existing Studies. Site 2 was recommended by the District in 2025 for inclusion in the list of Potential Sites.

[1] After Harris analyzed Sites 1-5 for feasibility, the District identified a sixth potential housing site located at the intersection of Via De La Valle and Jimmy Durante Boulevard within the City of Del Mar (Site 6). A separate addendum to this Study (Addendum) analyzes Site 6's feasibility for housing development using the same Objective Criteria. **This Study focuses specifically on Sites 1-5.**

Table 1-1: Overview of Potential Sites – City of Del Mar

Site #	Site Name	APN(s)	Acres
Site 1	East Main Stable Gate Site	2982710300	1.50
Site 2	South of Stable Gate Site	2990300500, 2990302200	1.50
Site 3 (1)	Adjacent to Fire Station Site	2990302200	1.00

(1) The 2023 SDA Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5-acre new housing site that would also include redevelopment of the fire station. This study focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Figure 1-2: Potential Sites – City of Del Mar

1.4.2 City of San Diego

The District recommended the analysis of additional Potential Sites located on District-owned property within the City of San Diego (referred to herein as Site 4 and Site 5, respectively). **Table 1-2**, Overview of Potential Sites – City of San Diego, provides an overview of Sites 4 and 5. **Figure 1-3**, Potential Sites – City of San Diego, illustrates the location of Sites 4 and 5 within the Fairgrounds.

Table 1-2: Overview of Potential Sites – City of San Diego

Site #	Site Name	APN(s)	Acres
Site 4	Surf and Turf RV Park Site	2990420300	1.50
Site 5	Dirt Lot Site	2990420300	1.50

Figure 1-3: Potential Sites – City of San Diego

1.5 Findings

1.5.1 Potential Sites within the City of Del Mar

The following findings were noted in the analysis of Sites 1, 2 and 3, as summarized in **Table 1-3**, Potential Sites within the City of Del Mar – Summary of Findings:

- **Lease Agreement Timing:** There is no information that would indicate a risk of delays to adhere to ENRA timelines (per original ENRA and ENRA First Amendment). Sites 1–3 are located within the City of Del Mar; therefore, the City would be able to report new units developed on these sites on its Housing Element Annual Progress Report to count toward its regional housing needs allocation (RHNA).
- **Potential Financial Feasibility and Eligibility for Tax Credit Financing:** Sites 1–3 are 1.0 to 1.5 acres of developable land, indicating that each site has the potential to be feasible for a housing development of at least 61 lower-income units, per the findings of the Existing Studies. Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility. The 2022 KMA and SDA Study found that Site 1 is eligible for tax credit financing. Harris' Financial Feasibility Memorandum will include amenity self-scores for each Potential Site using the most recent Low-Income Housing Tax Credit (LIHTC) scoring criteria.
- **Environmental Constraints:** Harris will be analyzing environmental conditions of Sites 1–3 as part of a separate California Environmental Quality Act (CEQA) Constraints Analysis, which will follow this Study. One environmental constraint identified to date is the flood hazard of each Potential Site. None of the Potential Sites within the City of Del Mar are located in the Regulatory Floodway zone. Sites 1–3 are located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development on Sites 1–3 would require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.
- **Ability to be Implemented in Accordance with State and Local Requirements:** Sites 1–3 would be required to comply with federal Emergency Management Agency (FEMA) and California Coastal Commission (CCC) standards for development. Sites 1–3 are not located on land within the Regulatory Floodway, or within building-restricted areas imposed by the CCC.
- **No Associated Conflicts with Fairgrounds Operations and Events:** All Potential Sites were identified by District staff with the understanding that a buffer from Fairgrounds operations could be designed for any of these locations. All sites will need to be designed to minimize/avoid conflicts with Fairgrounds operations and events.

  Public Health, Safety, and Security Concerns: No Potential Sites were deemed infeasible due to known public health, safety, and security concerns. As noted above, a buffer from Fairgrounds operations can be designed for all Potential Sites.

Table 1-3: Potential Sites within the City of Del Mar – Summary of Findings

Objective Criteria	Site 1	Site 2	Site 3
Ability to Execute Lease Agreement within ENRA Negotiating Period	Yes	Yes	Yes
Potential to be Financially Feasible for Development of 61+ Lower Income Units[(1)]	Yes	Yes	Yes
Potential to be Eligible for Tax Credit Financing[(1)]	Yes	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements	Yes	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes	Yes
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes	Yes

(1) Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility.

1.5.2 Potential Sites within the City of San Diego

The following findings were noted in the analysis of Sites 4 and 5, as summarized in **Table 1-4**, Potential Sites within the City of San Diego – Summary of Findings:

- **Lease Agreement Timing:** According to information provided by City staff, the City of Del Mar had previously attempted to reach an agreement with the District, the City of San Diego, and HCD to pursue a housing project on sites within the City of San Diego's jurisdictional boundaries, with RHNA credit going to the City of Del Mar. This effort was initiated in 2019, but was unsuccessful. Given this history, it appears highly unlikely that a Lease Agreement could be executed for Sites 4 and 5 within the ENRA Negotiating Period, which expires April 15, 2027.

  In order for the City of Del Mar to receive RHNA credit on a site located within the City of San Diego, both cities would need to execute an agreement allowing this to occur. Furthermore, this agreement would require HCD approval. This approach would entail the following challenges:
  - It is unknown if the City of San Diego would be open to this agreement.
  - The agreement would need to expressly allow any housing developed on District-owned property within the City of San Diego jurisdictional boundaries to count toward the RHNA for the City of Del Mar.

- This agreement would require approval from HCD as well as the City Councils of both Cities. It is unknown if HCD and both City Councils would approve this agreement.
- All of the above would need to occur, and the City of Del Mar would need to enter into a Lease Agreement with the Fairgrounds, no later than April 15, 2027, after which the ENRA negotiation period will end.

Given that the previous effort to reach such an agreement was unsuccessful, the number of actions and agreements that would need to occur between multiple parties (and uncertainty as to if certain parties would be open to this agreement), and the time constraints involved, there is no basis to render the City of San Diego sites as feasible with respect to Lease Agreement timing.

- **Potential Financial Feasibility and Eligibility for Tax Credit Financing:** Both sites feature 1.5 acres of developable land, indicating that each site has the potential to be feasible for a housing development of at least 61 lower-income units. Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility. Harris' Financial Feasibility Memorandum will include amenity self-scores for each Potential Site using the most recent LIHTC scoring criteria.
- **Environmental Constraints:** Harris will be analyzing environmental conditions of Sites 4 and 5 as part of a separate CEQA Constraints Analysis, which will follow this Study. One environmental constraint identified to date is the flood hazard of each Potential Site. Neither of the Potential Site within the City of San Diego are located in the Regulatory Floodway zone. Rather, Sites 4 and 5 are located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development on Sites 4 and 5 would require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.
- **Ability to be Implemented in Accordance with State and Local Requirements:** Sites 4 and 5 would be required to comply with FEMA and CCC standards for development. Sites 4 and 5 are not located on land within the Regulatory Floodway or within building-restricted areas imposed by the CCC. It is also important to note that Site 5 is zoned as Open Space – Park (OP-1-1) by the City of San Diego, which allows developed, active parks for the purpose of promoting recreation and facilitating the implementation of land use plans. Residential use is not an allowed use in the OP-1-1 zone, which applies to Site 5. If Site 5 is selected, a general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.
- **No Associated Conflicts with Fairgrounds Operations and Events:** All Potential Sites were identified by District staff with the understanding that a buffer from Fairgrounds operations could be designed for any of these locations. All sites will need to be designed to minimize/avoid conflicts with Fairgrounds operations and events.
- **Public Health, Safety, and Security Concerns:** No Potential Sites were deemed infeasible due to known public health, safety, and security concerns.

Table 1-4: Potential Sites within the City of San Diego – Summary of Findings

Objective Criteria	Site 4	Site 5
Ability to Execute Lease Agreement within ENRA Negotiating Period	No	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units[(1)]	Yes	Yes
Potential to be Eligible for Tax Credit Financing[(1)]	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements[(2)]	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes

(1) Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility.
(2) A general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.

2 BACKGROUND

2.1 Exclusive Negotiating Rights Agreement

This Study is being conducted per the ENRA executed between the City and District in March 2024 that took effect April 15, 2024. ENRA and site assessment implements the City's state-certified Housing Element by providing a path toward accomplishing the City's goal of developing affordable housing on Fairgrounds property. The site assessment also supports the District's master site planning process and will help inform the ultimate selection of a development site for affordable housing on Fairgrounds property. **The Study intends to provide information to help the City and District identify the most feasible and desirable site for affordable housing development.**

2.2 Funding

The Study is funded through HAP grant funds that the City secured in 2023 through a HAP grant agreement between the City, HCD, and SANDAG. The City and District executed a Memorandum of Understanding in 2025, which provides for the District to use a portion of City's grant funds to complete feasibility studies including a site assessment.

2.3 Purpose of Study

Harris was retained by the District to identify site locations that are feasible for development of at least 61 lower-income units on a site that is 1 acre to 1.5 acres in size on the Del Mar Fairgrounds property within the City of Del Mar. The ultimate objective of the Study is for the City and District to reach a mutual agreement on a feasible site based on the information collected and analyzed by Harris through multiple studies. The City recognizes that there are multiple feasible sites, and the goal is to have the housing site align with the master site planning and ENRA.

2.3.1 Title Report Disclosure Statement

Harris attempted to obtain title report information to understand the applicability of any building-restricted easements on the District property. Both the District and City of Del Mar staff provided Harris with "preliminary" title reports (limited to publicly available data), included as Attachment 1, Title Reports. However, Harris was unable to identify any factors affecting development feasibility within the preliminary title reports analyzed, or in its search of District records.

Due to the condition, age, and limitations of the title reports, Harris cannot attest to all the constraints to development on the Potential Sites. All development restrictions, easements, encumbrances, and liens, as well as the exact areas affected, will need to be confirmed before development can occur at the sites. The exact location would need to be determined by a licensed surveyor or engineer with relevant expertise.

3 APPROACH

Harris was tasked with analyzing the Potential Sites to help decision-makers better understand each site's development feasibility. Harris worked with the City and District to establish the Objective Criteria outlined in Section 4, Objective Criteria.

In addition, several findings from the Existing Studies prepared in 2022 and 2023 were used to guide the analysis conducted in this Study. Specifically, the Existing Studies established the following:

- It is financially feasible to develop at least 61 lower-income units on any site comprised of 1 to 1.5 acres of developable land within the City of Del Mar.
    - In the Existing Studies, SDA illustrated floor plans for potential developments within Site 1 and Site 3, indicating that the development of 61-unit projects was potentially feasible at these sites.
    - The additional sites recommended by the District for inclusion in this Study feature 1.5 acres of developable land.
- Development in Floodplain Overlay Zone (Federal Insurance Rate Map Zone AE), or any area defined as a 1 percent annual chance flood hazard zone according to FEMA National Flood Insurance Program (NFIP) data, will require that the first-floor level of any new development must be elevated above the Base Flood Elevation and floodproofed.
- The 2022 KMA and SDA Study notes that, based on topographic information supplied by SanGIS, the first floor of a new housing project will need to be set at least 8–10 feet above existing grade.
- Sites located in the Coastal Zone within the jurisdiction of the CCC would be subject to compliance with the California Coastal Act protections for coastal resources and public scenic views, public access, and public health and safety protections from hazards.

4 OBJECTIVE CRITERIA

Harris evaluated the development feasibility of the Potential Sites based on several criteria (Objective Criteria) to help decision-makers better understand each site's development feasibility. Harris worked with the City and District to establish these Objective Criteria, listed in **Figure 4-1**, Summary of Objective Criteria:

Figure 4-1: Summary of Objective Criteria

Sites failing to meet any of the Objective Criteria noted above would not be considered feasible for the purpose of this Study.

4.1 Objective Criteria – Lease Agreement Timing

The Housing Site Conditions and Constraints Assessment and Addendum reports reflect the District's intent per the ENRA to provide the City with prospective development sites for consideration. Additional Harris studies will be completed by March 31, 2026, and will be supplemented by additional feasibility studies and a conceptual development program in process with the City. The intent is to facilitate consideration of the study findings and site opportunities by the District Board and Del Mar City Council by September 30, 2026.

Per the ENRA, the City and District are seeking mutual agreement on a site for affordable housing. Once a development site has been mutually agreed upon, the City and District will begin negotiations to execute a Lease Agreement such as where (1) the District would lease the development site to the City, and (2) the City would, or would cause a designee to, develop and operate the affordable housing development on the development site in accordance with California law and subject to the express approval of the District (Lease Agreement).

As communicated to the City in a January 15, 2026 "Letter of Inquiry", the California Department of Housing and Community Development (HCD) expects the City and District to reach mutual agreement on a site for affordable housing development and execute a ground lease by November 30, 2026 as a measure to demonstrate that affordable housing can feasibly be constructed on the Fairgrounds by June 2031. The ENRA is otherwise set to expire on April 15, 2027, unless extended.

4.2 Objective Criteria – Site Feasibility

4.2.1 Potential Financial Feasibility

According to the Existing Studies prepared during 2022 and 2023, it is feasible to develop at least 61 lower-income units on any site comprised of 1 to 1.5 acres of developable land within the City of Del Mar. Potential Sites 1-5 encompass between 1 and 1.5 acres in total area.

Financial feasibility under current market conditions and HCD regulations, including competitiveness for tax credit financing, will be assessed by Harris in the Financial Feasibility Memorandum, which will follow this Study.

4.2.2 Potential Eligibility for Tax Credit Financing

As noted in the 2022 KMA and SDA Study, affordable housing development requires a significant capital investment to be financially feasible. Affordable housing projects require external funding sources to address the financing 'gap' between the limited revenue that can be derived from income-restricted housing units and the cost to develop the units. The 2022 KMA and SDA Study noted that the use of external funding sources, such as tax credit programs, federal and state funding sources, or cash subsidies, would be necessary to address this financing gap for new affordable housing development.

A site's competitiveness for LIHTC financing is determined, in large part, by the site's proximity to resources and amenities as defined by the California Code of Regulations, California Tax Credit Allocation Committee Regulations implementing the federal and state Low-Income Housing Tax Credit Laws. It is important to note that the 2022 KMA and SDA Study included a financial feasibility analysis that deemed Site 1 eligible for tax credits.

In addition, Harris conducted a virtual meeting with affordable housing developer stakeholders active in San Diego County on November 4th, 2025 (Developer Stakeholder Meeting). Feedback collected during this meeting indicated that the resources and amenities near the Fairgrounds would help the Potential Sites qualify for tax credits, consistent with the findings noted in the 2022 KMA and SDA Study.

Harris' Financial Feasibility Memorandum, which will follow this Study, will include a comprehensive financial feasibility analysis with a detailed breakdown of tax credit eligibility, including amenity scores based on the most recent LIHTC scoring criteria. Furthermore, the Financial Feasibility Memorandum will summarize the input received in the Developer Stakeholder Meeting related to financial feasibility and eligibility for tax credit financing.

4.2.3 Environmental Constraints

Harris will be analyzing the environmental conditions of each Potential Site as part of a separate CEQA Constraints Analysis, which will follow this Study.

One environmental constraint identified to date is that the Fairgrounds is located directly adjacent to the San Dieguito River and Lagoon, and is roughly 0.5 miles from the Pacific Ocean. As a result, flood hazard varies considerably in different portions of the Fairgrounds property. Specifically, according to the FEMA NFIP data, the majority of the Fairgrounds property falls within a 1 percent annual chance flood hazard zone (also known as the 100-year floodplain), with areas

of the Fairgrounds closer to the San Dieguito River and the southern and western portions of the Fairgrounds property within a Regulatory Floodway zone.[2]

While residential development is prohibited in the Regulatory Floodway zone unless a No-Rise Certification is obtained or FEMA mapping is revised through a Conditional Letter of Map Revision process, development within the floodway fringe (which are portions of the 1 percent annual chance flood hazard zone beyond the Regulatory Floodway) is permitted subject to compliance with FEMA and building code standards. As noted in the 2022 KMA and SDA Study, new development on a 1 percent annual chance flood hazard zone (within the floodway fringe) would require that the first-floor level must be elevated above the Base Flood Elevation (BFE) and floodproofed.

While this analysis focuses on environmental constraints known at the time of the Study, including the factors referenced above, additional environmental conditions of the Fairgrounds property are being analyzed within separate studies. During the Developer Stakeholder Meeting, developers noted the importance of fully understanding the environmental conditions of each site before submitting a development proposal.

4.2.4 Implementable in Accordance with State and Local Requirements

All Potential Sites will need to comply with FEMA floodplain development standards and CCC standards for development with respect to Environmentally Sensitive Habitat Areas, as well as the flood and sea-level rise vulnerable locations.

In addition to the Regulatory Floodway areas noted above, which would not be feasible for housing development, certain areas within the Fairgrounds have been mandated by the CCC as building-restricted to restore and protect wetland habitat. Parcels with Environmentally Sensitive Habitat Areas-related constraints and building-restricted areas imposed by CCC are not considered developable, and are therefore excluded from the sites considered for affordable housing development. Section 6, Findings, illustrates the Potential Sites in relation to areas within the Regulatory Floodway zone (as defined by FEMA NFIP data) and parcels that the CCC has mandated as building-restricted to restore and protect wetland habitat.

4.2.5 No Associated Conflicts with Fairgrounds Operations or Events

Presently, the entire Del Mar Fairgrounds property is used to support a variety of uses, including the San Diego County Fair, the Del Mar Thoroughbred Club, and live music events at The Sound concert venue. Any location identified as a development site would need to be altered to minimize/avoid conflicts with Fairgrounds operations and events. The District staff identified the Potential Sites with the understanding that a buffer from Fairgrounds operations could be designed for any of the Potential Site locations.

4.2.6 Public Health, Safety, and Security Concerns

All Potential Sites will need to be developed to protect public health and safety during Fairgrounds operations and events or provide security for all on-site Fairgrounds development.

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[2] The Regulatory Floodway is the portion of the floodplain that conveys most floodwaters. The Regulatory Floodway contains the channel of a river or other watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

5 SITES STUDIED

Analysis of site-specific locations for affordable housing on the Fairgrounds has been in process since 2021, which began with studies of Sites 1 and 3. The 2022 KMA and SDA Study demonstrated the development feasibility of Site 1, while the 2023 SDA Study included a floor plan indicating that Site 3 was suitable for the development of a project featuring at least 61 units. The Existing Studies were presented to the Del Mar City Council in June 2022 and April 2023, respectively. Both Site 1 and Site 3 were recommended for inclusion in this Study, as the Existing Studies had demonstrated that both sites are potentially feasible. In 2025, the District identified four additional sites to be studied (two in the City of Del Mar and two in the City of San Diego) for a total of six site-specific locations that are being studied for future consideration by the City and District. The following section provides an overview of the first five Potential Sites (Sites 1-5) identified for analysis in this Study.

5.1 City of Del Mar Potential Sites

Of the first five Potential Sites identified by the City and the District, three sites (Sites 1, 2, and 3) are located within Fairgrounds property that falls within the City of Del Mar's jurisdictional boundaries, as detailed in **Table 5-2**, Overview of Potential Sites – City of Del Mar, and shown in **Figure 5-5**, Potential Sites – City of Del Mar. Affordable housing units developed within these three Potential Sites can be reported on the City's Housing Element Annual Progress Report and count toward the City's RHNA.

As previously stated, the findings of the Existing Studies indicated that it is feasible to accommodate at least 61 units of lower-income housing on any Fairgrounds property within the City of Del Mar featuring 1.0 to 1.5 acres of developable site area, including Sites 1 and 3.

The following section provides additional information on the three Potential Sites within the City of Del Mar, all of which were analyzed in accordance with the Objective Criteria noted in Section 4, Objective Criteria.

Table 5-1: Overview of Potential Sites – City of Del Mar

Site #	Site Name	APN(s)	Acres
Site 1	East Main Stable Gate Site	2982710300	1.50
Site 2	South of Stable Gate Site	2990300500, 2990302200	1.50
Site 3 (1)	Adjacent to Fire Station Site	2990302200	1.00

(1) The 2023 SDA Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5-acre new housing site that would also include redevelopment of the fire station. This study focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Figure 5-1: Potential Sites – City of Del Mar

5.1.1 Site 1 – East Main Stable Gate Site

Site 1, the East Main Stable Gate Site (APN #2982710300), is occupied by the Del Mar Fairgrounds East Main Stable Gate and parking lot with direct access to and from Jimmy Durante Boulevard. The gate provides access to the racetrack's stable area for track personnel and approved vehicles. The site comprises 1.5 acres of developable land. **Figure 5-2**, Site 1 – East Main Stable Gate Site, provides the property outline and relative location of Site 1, as well as a street-level view of the existing property. Additional details regarding Site 1 are listed below.

Figure 5-2: Site 1 – East Main Stable Gate Site

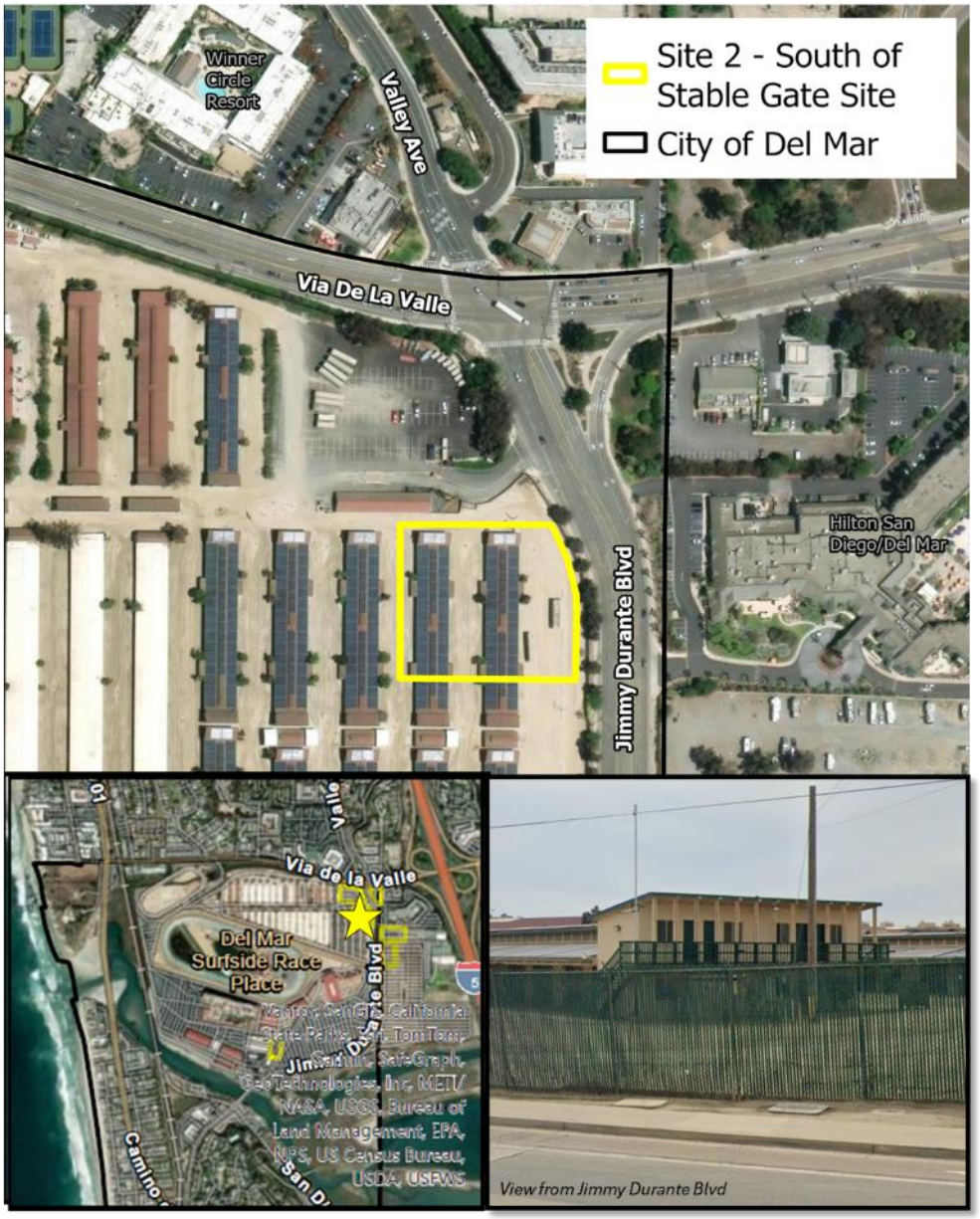
- Site 1 was analyzed as part of the 2022 KMA and SDA Study and was recommended by the District for inclusion in this Study. Floor plans in the Existing Studies indicated that the site was feasible to accommodate at least 61 units of lower-income housing.
- The site is connected to Jimmy Durante Boulevard through an existing access point.
- Site 1 is located within a 1 percent annual chance flood hazard zone within the floodway fringe and is approximately 2,000 feet from the Regulatory Floodway zone. As noted in the 2022 KMA and SDA Study, future development occurring within Site 1 will require that the first-floor level must be elevated above the BFE and floodproofed.

5.1.2 Site 2 – South of Stable Gate Site

Site 2 (APNs #2990300500 and #2990302200), South of Stable Gate Site, which encompasses approximately 1.50 acres total, is located directly south of Site 1. The site is currently used for

horse boarding stables. **Figure 5-3**, Site 2 – South of Stable Gate Site, provides the property outline and relative location of Site 2, as well as a street-level view of the existing property. Additional details regarding Site 2 are listed below.

Figure 5-3: Site 2 – South of Stable Gate Site



- The District recommended the inclusion of Site 2 as a Potential Site.
- The site is connected to Jimmy Durante Boulevard through an existing access point.
- Site 2 is located within a 1 percent annual chance flood hazard zone within the floodway fringe and is approximately 1,750 feet from the Regulatory Floodway zone. The first-floor level of any new development that occurs at this site must be elevated above the BFE and floodproofed.

5.1.3 Site 3 – Adjacent to Fire Station Site

Site 3 (APN # 2990302200), Adjacent to Fire Station Site, features 1.00 acre of developable land, and is located directly north of the existing Del Mar Fire Department station. District office buildings and public restrooms are currently located on this site. **Figure 5-4**, Site 3 – Adjacent to Fire Station Site, provides the property outline and relative location of Site 3, as well as a street-level view of the existing property. Additional details regarding Site 3 are listed below.

Figure 5-4: Site 3 – Adjacent to Fire Station Site

- Site 3 was previously analyzed as part of the 2023 SDA Study, which indicated that at least 61 units of lower-income housing could be developed at this site. This site was also recommended by the District for inclusion in this Study.
- The site can be accessed via Jimmy Durante Boulevard.
- While the site is roughly 725 feet from the San Dieguito River and approximately 275 feet from FEMA's NFIP Regulatory Floodway zone, the site itself falls within the 1 percent annual chance flood hazard zone within the floodway fringe, meaning that development is permitted at this location. The site will require that the first-floor level must be elevated above the BFE and floodproofed.

5.2 City of San Diego Potential Sites

The District requested the analysis of two additional sites on District-owned property within the City of San Diego (Sites 4 and 5), as detailed in **Table 5-2**, Overview of Potential Sites – City of San Diego, and shown in **Figure 5-5**, Potential Sites – City of San Diego.

Sites within the City of San Diego would need to undergo additional steps to be considered feasible per the Objective Criteria. These additional criteria, which are outlined below, seek to ensure that affordable housing units developed on the Potential Sites could be reported on the City of Del Mar's Housing Element Annual Progress Report. These requirements would need to be fulfilled before either Potential Site within the City of San Diego can identified as a final development site, as outlined in Section 4.1:

1) The City of Del Mar and the City of San Diego would need to execute an agreement allowing the City of Del Mar to develop housing units on sites within the City of San Diego.
2) The agreement would need to expressly allow that housing developed on District-owned property within the City of San Diego jurisdictional boundaries will count toward the RHNA for the City of Del Mar.
3) This agreement would need to be approved by HCD as well as the City Councils of both Cities.
4) The City and District would need to execute a ground lease by November 30, 2026 as a measure to demonstrate that affordable housing can feasibly be constructed on the Fairgrounds by June 2031. The ENRA is otherwise set to expire on April 15, 2027, unless extended.

Table 5-2: Overview of Potential Sites – City of San Diego

Site #	Site Name	APN(s)	Acres
Site 4	Surf and Turf RV Park Site	2990420300	1.50
Site 5	Dirt Lot Site	2990420300	1.50

Figure 5-5: Potential Sites – City of San Diego

5.2.1 Site 4 – Surf and Turf RV Park Site

Site 4 (APN #2990420300), the Surf and Turf RV Park Site, is currently occupied by the Del Mar Fairgrounds Surf and Turf RV Park. The 1.5-acre site consists of compacted gravel and has no existing buildings. **Figure 5-6**, Site 4 – Surf and Turf RV Park Site, provides the property outline and relative location of Site 4, as well as a street-level view of the existing property. Additional details regarding Site 4 are listed below.

Figure 5-6: Site 4 – Surf and Turf RV Park Site

- The District recommended the inclusion of Site 4 as a Potential Site.
- The site can be accessed via Turf Road, which connects to Jimmy Durante Boulevard.
- Site 4 is located approximately 1,650 feet from the Regulatory Floodway zone and is located within a 1 percent annual chance flood hazard zone within the floodway fringe per NFIP data. The site will require that the first-floor level must be elevated above the BFE and floodproofed.

5.2.2 Site 5 – Dirt Lot Site

Site 5 (APN #2990420300), the Dirt Lot Site, consists of a 1.50-acre undeveloped dirt lot, located directly south of Site 4. The site is currently used for seasonal parking and is part of a larger dirt property that hosts Del Mar Fairgrounds activities. **Figure 5-7**, Site 5 – Dirt Lot Site Overview, provides the property outline and relative location of Site 4, as well as a street-level view of the existing property. Additional details regarding Site 5 are listed below.

Figure 5-7: Site 5 – Dirt Lot Site Overview

- The District recommended the inclusion of Site 5 as a Potential Site.
- The site can be accessed via Turf Road, which connects to Jimmy Durante Boulevard.
- Site 4 is located approximately 1,275 feet from the Regulatory Floodway zone and is located within a 1 percent annual chance flood hazard zone within the floodway fringe. The site will require that the first-floor level must be elevated above the BFE and floodproofed.

6 FINDINGS

6.1 Potential Sites Within the City of Del Mar

The following are Harris' findings of the Potential Sites within the City of Del Mar (Sites 1, 2, and 3) based on the Objective Criteria detailed in this Study.

- **Lease Agreement Timing:** There is no information that would indicate a risk of delays to adhere to ENRA timelines (per original ENRA and ENRA First Amendment). Sites 1–3 are located within the City of Del Mar; therefore, the City would be able to report new units developed on these sites on its Housing Element Annual Progress Report to count toward its RHNA.
- **Potential Financial Feasibility and Eligibility for Tax Credit Financing:** Sites 1–3 are 1.0 to 1.5 acres of developable land, indicating that each site has the potential to be feasible for a housing development of at least 61 lower-income units, per the findings of the Existing Studies. Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility. The 2022 KMA and SDA Study found that Site 1 is eligible for tax credit financing. Harris' Financial Feasibility Memorandum will include amenity self-scores for each Potential Site using the most recent LIHTC scoring criteria.
- **Environmental Constraints:** Harris will be analyzing environmental conditions of Sites 1–3 as part of a separate CEQA Constraints Analysis, which will follow this Study. One environmental constraint identified to date is the flood hazard of each Potential Site. However, as shown on Figure 6-1, Flooding and CCC Constraints (City of Del Mar Sites), Sites 1–3 are not located within the Regulatory Floodway. Rather, Sites 1–3 are located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development on Sites 1–3 would require that the first-floor level must be elevated above the BFE and floodproofed.
- **Ability to be Implemented in Accordance with State and Local Requirements:** Sites 1–3 would be required to comply with FEMA and CCC standards for development. As shown on Figure 6-1, Sites 1–3 are not located on land within the Regulatory Floodway, or within building-restricted areas imposed by the CCC.
- **No Associated Conflicts with Fairgrounds Operations and Events:** All Potential Sites were identified by District staff with the understanding that a buffer from Fairgrounds operations could be designed for any of these locations. All sites will need to be designed to minimize/avoid conflicts with Fairgrounds operations and events.
- **Public Health, Safety, and Security Concerns:** No Potential Sites were deemed infeasible due to known public health, safety, and security concerns. As noted above, a buffer from Fairgrounds operations can be designed for all Potential Sites.

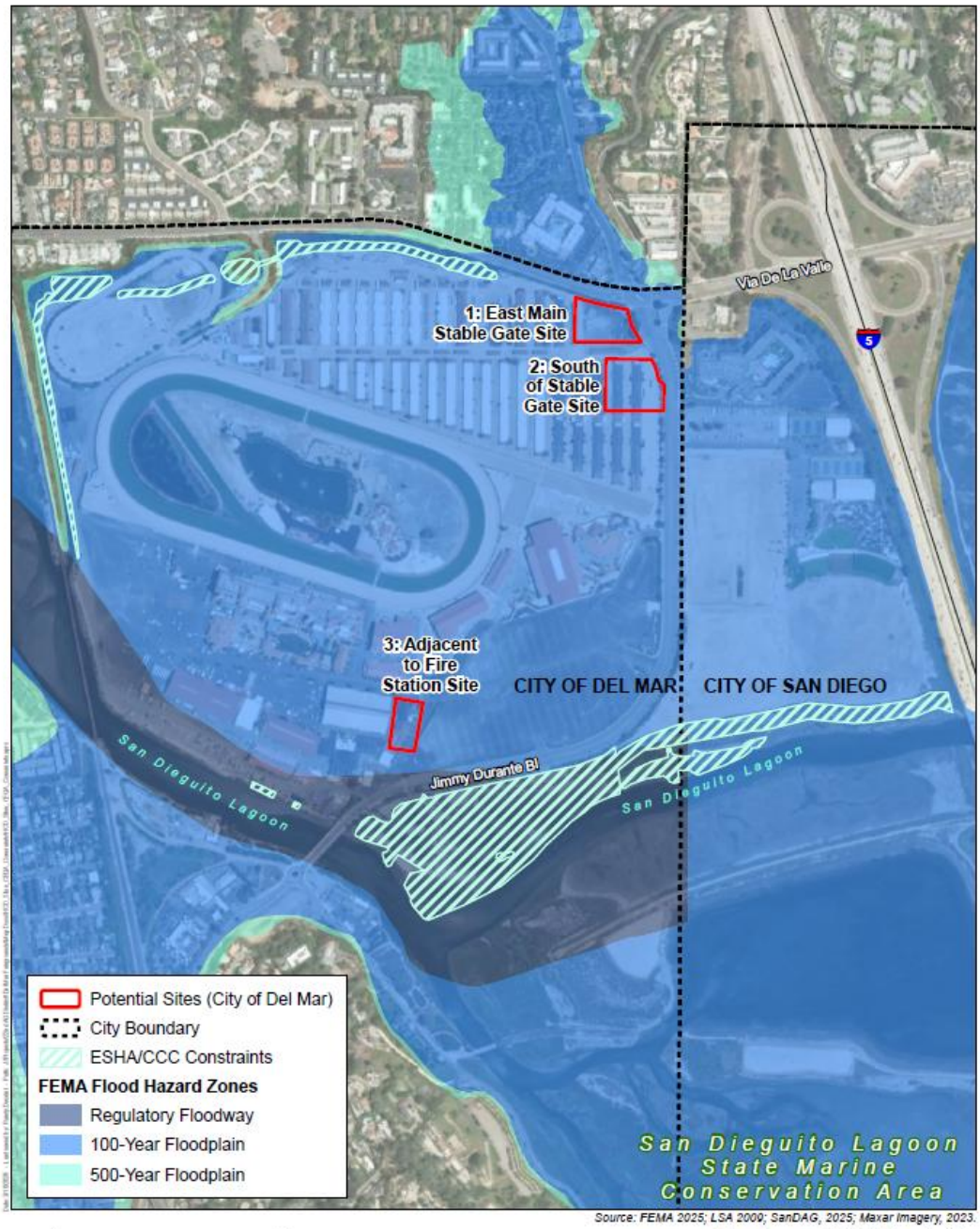
Table 6-1, Potential Sites within the City of Del Mar – Summary of Findings, summarizes the findings noted in the analysis of Sites 1, 2, and 3.

Table 6-1: Potential Sites within the City of Del Mar – Summary of Findings

Objective Criteria	Site 1	Site 2	Site 3
Ability to Execute Lease Agreement within ENRA Negotiating Period	Yes	Yes	Yes
Potential to be Financially Feasible for Development of 61+ Lower Income Units[(1)]	Yes	Yes	Yes
Potential to be Eligible for Tax Credit Financing[(1)]	Yes	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements	Yes	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes	Yes
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes	Yes

(1) Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility.

Figure 6-1: Flooding and CCC Constraints (City of Del Mar Sites)



6.2 Potential Sites Within the City of San Diego

The following are Harris' findings of the Potential Sites within the City of San Diego (Sites 4 and 5) based on the Objective Criteria detailed in this Study:

- **Lease Agreement Timing:** According to information provided by City staff, the City of Del Mar had previously attempted to reach an agreement with the District, the City of San Diego, and HCD to pursue a housing project on sites within the City of San Diego's jurisdictional boundaries, with RHNA credit going to the City of Del Mar. This effort was initiated in 2019, but was unsuccessful. Given this history, it appears highly unlikely that a Lease Agreement could be executed for Sites 4 and 5 within the ENRA Negotiating Period, which expires April 15, 2027.

  In order for the City of Del Mar to receive RHNA credit on a site located within the City of San Diego, both cities would need to execute an agreement allowing this to occur. Furthermore, this agreement would require HCD approval. This approach would entail the following challenges:
  - It is unknown if the City of San Diego would be open to this agreement.
  - The agreement would need to expressly allow any housing developed on District-owned property within the City of San Diego jurisdictional boundaries to count toward the RHNA for the City of Del Mar.
  - This agreement would require approval from HCD as well as the City Councils of both Cities. It is unknown if HCD and both City Councils would approve this agreement.
  - All of the above would need to occur, and the City of Del Mar would need to enter into a Lease Agreement with the Fairgrounds, no later than April 15, 2027, after which the ENRA negotiation period will end.
  - Failure to satisfy these requirements in a timely manner would also render the selection of either San Diego site inconsistent with the City of Del Mar's Housing Element Program 3A, as well as the HAP Grant agreement schedule to have the Coastal Development Permit issued by Coastal Commission by August 2028.

  Given that the previous effort to reach such an agreement was unsuccessful, the number of actions and agreements that would need to occur between multiple parties (and uncertainty as to if certain parties would be open to this agreement), and the time constraints involved, there is no basis to render the City of San Diego sites as feasible with respect to Lease Agreement timing.
- **Potential Financial Feasibility and Eligibility for Tax Credit Financing:** Both sites feature 1.5 acres of developable land, indicating that each site has the potential to be feasible for a housing development of at least 61 lower-income units. Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility. Harris' Financial Feasibility Memorandum will include amenity self-scores for each Potential Site using the most recent LIHTC scoring criteria.
- **Environmental Constraints:** Harris will be analyzing environmental conditions of Sites 4 and 5 as part of a separate CEQA Constraints Analysis, which will follow this Study. One environmental constraint identified to date is the flood hazard of each Potential Site. However, as shown on **Figure 6-2**, Flooding and CCC Constraints (City of San Diego

Sites), Sites 4 and 5 are not located within the Regulatory Floodway. Rather, Sites 4 and 5 are located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development on Sites 4 and 5 would require that the first-floor level must be elevated above the BFE and floodproofed.

- **Ability to be Implemented in Accordance with State and Local Requirements:** Sites 4 and 5 would be required to comply with FEMA and CCC standards for development. As shown on **Figure 6-2**, Sites 4 and 5 are not located on land within the Regulatory Floodway or within building-restricted areas imposed by the CCC. It is also important to note that Site 5 is zoned as Open Space – Park (OP-1-1) by the City of San Diego, which allows developed, active parks for the purpose of promoting recreation and facilitating the implementation of land use plans. Residential use is not an allowed use in the OP-1-1 zone, which applies to Site 5. If Site 5 is selected, a general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.
- **No Associated Conflicts with Fairgrounds Operations and Events:** All Potential Sites were identified by District staff with the understanding that a buffer from Fairgrounds operations could be designed for any of these locations. All sites will need to be designed to minimize/avoid conflicts with Fairgrounds operations and events.
- **Public Health, Safety, and Security Concerns:** No Potential Sites were deemed infeasible due to known public health, safety, and security concerns.

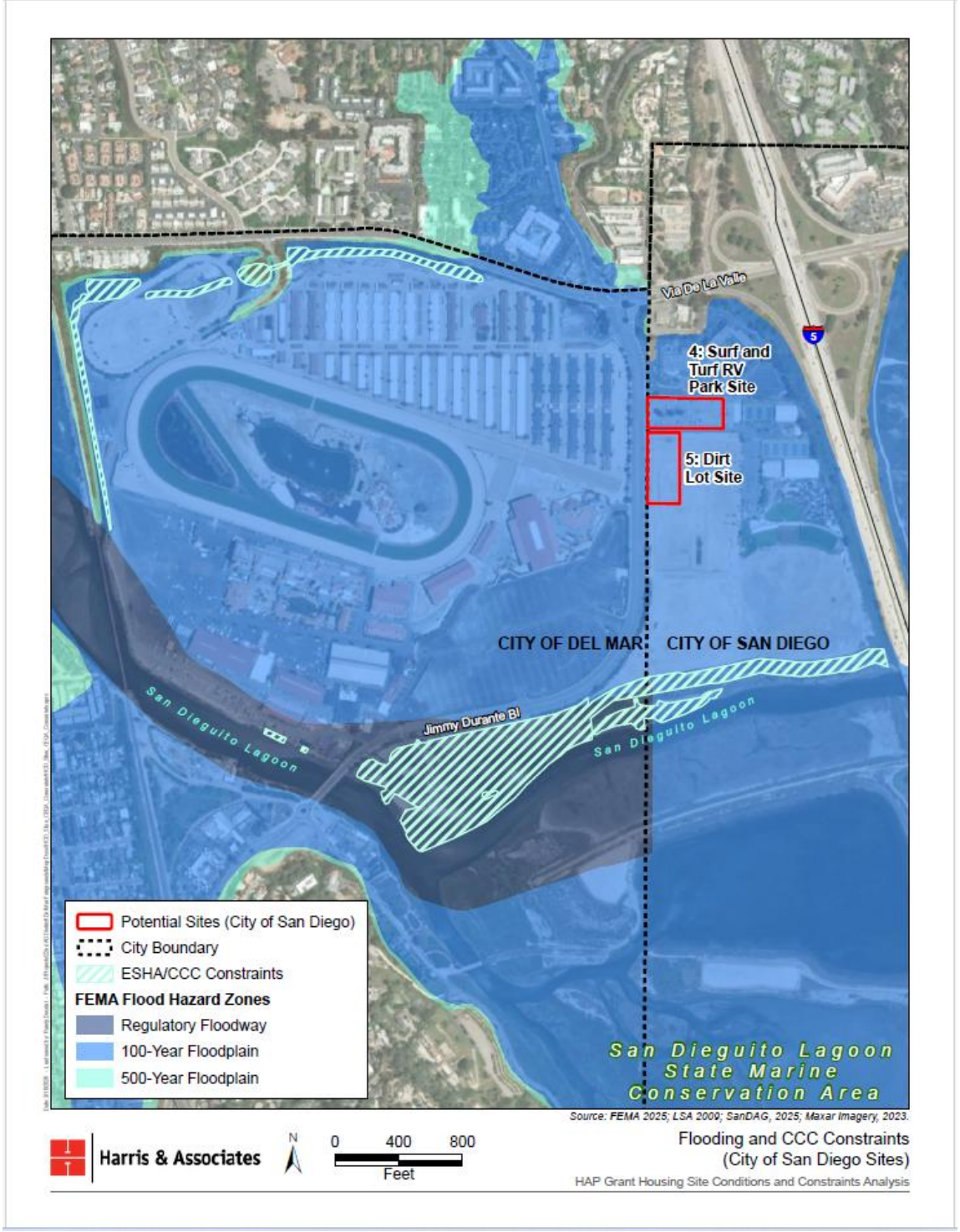
Table 6-2, Potential Sites within the City of San Diego – Summary of Findings, summarizes the findings noted in the analysis of Sites 4 and 5.

Table 6-2: Potential Sites within the City of San Diego – Summary of Findings

Objective Criteria	Site 4	Site 5
Ability to Execute Lease Agreement within ENRA Negotiating Period	No	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units(1)	Yes	Yes
Potential to be Eligible for Tax Credit Financing(1)	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements(2)	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes

(1) Financial feasibility, including competitiveness for tax credit financing, will be assessed in the Financial Feasibility Memorandum to help decision-makers better understand the comparative site suitability and feasibility.
(2) A general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.

Figure 6-2: Flooding and CCC Constraints (City of San Diego Sites)



7 DATA SOURCES

Harris analyzed the following data sources while preparing the Study:

- City of Del Mar. 2023. Appendix E: Phase I Studies (Public Sites). In 6th Cycle Housing Element Update (2021–2029). City of Del Mar. Accessed March 2026. https://www.delmar.ca.us/DocumentCenter/View/8572/Appendix-E---Phase-I-Studies_FINAL.
- SDA (Stephen Dalton Architects). 2023. Summary of Concepts Prepared for City of Del Mar Housing Element Program 3A (Fairgrounds Housing). April 25.
- City of Del Mar and 22nd District Agricultural Association. 2024a. Exclusive Negotiating Rights Agreement (Fairgrounds). April 15.
- City of Del Mar and 22nd District Agricultural Association. 2024b. First Amendment to Fairgrounds Affordable Housing Exclusive Negotiating Rights Agreement (ENRA). December 31.
- First American Title. 2009. Preliminary Title Report File # DIV-3303964, August 21.
- Chicago Title Company. 2023. Preliminary Title Reports, Title # 73723003698, 73723003699, 73723003700, August 23, 2023.
- FEMA (Federal Emergency Management Agency). 2025. National Flood Insurance Program (NFIP) Flood Map Service Center.

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Attachment 1. Title Reports

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1. PR Checklist

PRELIMINARY TITLE REPORT OVERVIEW
Created June 26, 2009

File #: DIV-3303964
Title Officer: Matt Hooks

Property Address: Vacant Land, APN 298-260-15-00, San Diego County, CA
APN #: 298-260-15-00

Date of Prelim:

Prelim Vesting: TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, AS TO PARCELS 1, 7, 8, 9 AND 11; 22ND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, AS TO PARCEL 2; 22ND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, A GOVERNMENTAL AGENCY, AS TO PARCEL 3; TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION, A CORPORATION, AS TO PARCELS 4 AND 5; THE STATE OF CALIFORNIA, AS TO PARCELS 6, 10, 12 AND 13

Taxes:

1st Half Taxes:	x	paid	open
2nd Half Taxes:	x	paid	open
Supplemental Taxes Due:	x	no	yes
Delinquent/Defaulted Taxes Due:	x	no	yes

Comments:

- **The effect of a Document/Deed:** Item#: 55 and 79
- **Lack of Access:** Item#: 6

DISCLAIMER THE TITLE INFORMATION CONTAINED HEREIN IS SUPPLIED AS A COURTESY ONLY AND IS NOT INTENDED TO SUPPLEMENT OR TO EXTEND THE COVERAGE OF THE UNDERLYING TITLE REPORT. REFERENCE SHOULD BE MADE TO THE TITLE REPORT FOR ALL QUESTIONS CONCERNING THE STATUS OF THE TITLE TO THE SUBJECT PROPERTY. FIRST AMERICAN ACCEPTS NO LIABILITY FOR THE INFORMATION CONTAINED HEREIN. REFERENCE SHOULD BE MADE TO THE UNDERLYING TITLE REPORT FOR ALL QUESTIONS CONCERNING THE TITLE STATUS OF THE PROPERTY.

2. Preliminary Report - Amendment No. 2

CLTA Preliminary Report Form
(Rev. 11/06)

Order Number: DIV-3303964 (22)
Page Number: 1

AMENDMENT NO. 2

First American Title Company

411 Ivy Street
San Diego, CA 92101

Dustin Fuller
Del Mar Fairgrounds
22nd DAA/Del Mar Fairgrounds
Del Mar, CA 92014
Phone: (858)792-4212
Fax:

Customer Reference:	22 AG. DISTRICT
Order Number:	DIV-3303964 (22)
Title Officer:	Matt Hooks
Phone:	(909)380-8739
Fax No.:	(866)566-3980
E-Mail:	mhooks@firstam.com
Owner:	22nd Agricultural District
Property:	Del Mar, CA

PRELIMINARY REPORT

In response to the above referenced application for a policy of title insurance, this company hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an Exception below or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said policy or policies are set forth in Exhibit A attached. *The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties.* Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limit of Liability for certain coverages are also set forth in Exhibit A. Copies of the policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Exhibit A of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects, and encumbrances affecting title to the land.

Order Number: DIV-3303964 (22)
Page Number: 2

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

Dated as of August 21, 2009 at 7:30 A.M.

The form of Policy of title insurance contemplated by this report is:

To Be Determined

A specific request should be made if another form or additional coverage is desired.

Title to said estate or interest at the date hereof is vested in:

TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, AS TO PARCELS 1, 7, 8, 9, 11 AND 14; 22ND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, AS TO PARCEL 2; 22ND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, A GOVERNMENTAL AGENCY, AS TO PARCEL 3; TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION, A CORPORATION, AS TO PARCELS 4 AND 5; THE STATE OF CALIFORNIA, AS TO PARCELS 6, 10, 12, 13, 15 AND 16

The estate or interest in the land hereinafter described or referred to covered by this Report is:

A fee.

The Land referred to herein is described as follows:

(See attached Legal Description)

At the date hereof exceptions to coverage in addition to the printed Exceptions and Exclusions in said policy form would be as follows:

1. General and special taxes and assessments for the fiscal year 2009-2010, a lien not yet due or payable.

2. General and special taxes and assessments for the fiscal year 2008-2009 are exempt.

3. The lien of supplemental taxes, if any, assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.

4. Water rights, claims or title to water, whether or not shown by the public records.

5. Rights of the public in and to that portion of the land lying within any road, street or highway.

6. The lack of a right of access to and from the land.

   Notice: Paragraph 4 of the insuring provisions on the face page of the policy will be deleted from the policy to be issued.

   (Affects Parcels 12 and 13)

7. Any adverse claim based upon the assertion that some portion of said land is tide or submerged lands, or has been created by artificial means or has accreted to such portion so created.

8. Any adverse claim based upon the assertion that:

(A) Said land or any part thereof is now or at any time has been below the highest high water mark of the San Dieguito River in the event the boundary of said River has been artificially raised and the decision entered in State of California vs. The Superior Court of Placer County, Respondent, Charles F. Fogerty, et al, Real parties in interest, 29 Cal. 3D 240 (March 20, 1981) applies, or is now or at any time has been below the ordinary high water mark, if said river is in its natural state.

(B) Some portion of said land has been created by artificial means or has accreted to such portion so created.

(C) Some portion of said land has been brought within the boundaries thereof by an avulsive movement of the San Dieguito River or has been formed by accretion to any such portion.

9. Rights, rights of way, reservations and exceptions in the patent recorded September 24, 1889 in Book 5 of Patents, Page 125.

(Affects Parcels 1, 2, 3, 4 and 7)

10. Rights, rights of way, reservations and exceptions in the patent recorded December 4, 1890 in Book 6 of Patents, Page 307.

(Affects Parcels 5 and 6)

11. An easement for public road and incidental purposes, recorded December 2, 1896 in Book 257 of Deeds, Page 212.
In Favor of: The County of San Diego

The location of the easement cannot be determined from record information.

(Affects Parcels 5 and 6)

12. An easement for road and incidental purposes, recorded March 17, 1898 in Book 269 of Deeds, Page 99.
In Favor of: County of San Diego

The location of the easement cannot be determined from record information.

(Affects Parcels 8 through 14)

13. An easement for a water pipe line and power line together with the right of ingress and egress for the purpose of making repairs, alterations and additions to said water pipe and incidental purposes, recorded May 23, 1913 in Book 615 of Deeds, Page 61.
In Favor of: South Coast Land Company and Del Mar Water, Light and

Power Company
Affects: The location of the easement cannot be determined from the information

(Affects Parcels 8, 9, 10, 11 and 16)

14. An easement for ditch line and incidental purposes, recorded May 23, 1913 in Book 615 of Deeds, Page 61.
In Favor of: South Coast Land Company, a corporation

The location of the easement cannot be determined from record information.

(Affects Parcels 8, 9, 10, 11 and 16)

15. The right to construct and maintain a dam and reservoirs, and to collect, impound and divert any and all waters of the Santa Isabel and San Dieguito Rivers, as set forth in the document from The Santa Ana Sugar Company, a corporation, to William G. Henshaw, his heirs and assigns, recorded November 17, 1916 in Book 715 of Deeds, Page 485, records of San Diego County.

(Affects Parcel 11)

16. The right to construct and maintain a dam and reservoirs, and to collect, impound and divert any and all waters of the Santa Isabel and San Dieguito Rivers, as set forth in the document from Jimmie Cochrane Stevens, to William G. Henshaw, his heirs and assigns, recorded December 15, 1916 in Book 721 of Deeds, Page 371, records of San Diego County.

(Affects Parcels 5 and 6)

17. An easement for poles, wires and anchors and incidental purposes, recorded December 26, 1916 in Book 721 of Deeds, Page 428.
In Favor of: San Diego Gas & Electric Company
Affects: As described therein

(Affects Parcels 12 and 13)

18. An easement for public utilities and incidental purposes, recorded September 29, 1922 in Book 898 of Deeds, Page 346.
In Favor of: San Diego Consolidated Gas & Electric Company, a corporation

(Affects Parcels 5 and 6)

19. An easement for 18-inch redwood Pipe Line and incidental purposes, recorded September 23, 1924 in Book 1044 of Deeds, Page 8.
In Favor of: San Dieguito Water Company, a Nevada corporation

(Affects Parcels 5 and 6)

20. An easement for a water pipe lines and incidental purposes, recorded September 27, 1924 in Book 1025 of Deeds, Page 446.
    In Favor of: San Dieguito Water Company, a California Corporation
    Affects: The location of the easement cannot be determined from the information

    (Affects Parcels 8 and 9)

21. An easement for water pipe lines and incidental purposes, recorded June 5, 1925 in Book 1095 of Deeds, Page 145.
    In Favor of: The Santa Fe Irrigation District, a body politic

    The location of the easement cannot be determined from record information.

    (Affects Parcel 3)

22. An easement for water pipe lines and incidental purposes, recorded June 5, 1925in Book 1098 of Deeds, Page 146.
    In Favor of: The Santa Fe Irrigation District, a body politic
    Affects:

    The location of the easement cannot be determined from record information.

    (Affects Parcel 2)

23. An easement for public utilities and incidental purposes, recorded September 30, 1925 in Book 1121 of Deeds, Page 199.
    In Favor of: The San Diego Consolidated Gas & Electric Company, a corporation

    (Affects Parcels 5 and 6)

24. An easement for road purposes and incidental purposes, recorded January 20, 1927 in Book 1281 of Deeds, Page 330.
    In Favor of: E.R. Stevens and Jennie C. Stevens, husband and wife

    (Affects Parcel 3)

25. An easement for that certain pipe line commonly known as La Jolla pipe line as the same was constructed in 1920 and 1921 and as the same now exists on the ground and incidental purposes, recorded May 5, 1927 in Book 1332 of Deeds, Page 187.
    In Favor of: San Dieguito Water Company, a Corporation
    Affects: The location of the easement cannot be determined from the information

26. An easement for public utilities and incidental purposes, recorded March 27, 1928 in Book 1423 of Deeds, Page 470.

In Favor of: The Pacific Telephone and Telegraph Company

(Affects Parcels 4, 5 and 6)

27. An easement for public utilities and incidental purposes, recorded March 27, 1928 in Book 1423 of Deeds, Page 474.
In Favor of: The Pacific Telephone and Telegraph Company

(Affects Parcel 1)

28. An easement for public utilities and incidental purposes, recorded March 27, 1928 in Book 1433 of Deeds, Page 456.
In Favor of: The Pacific Telephone and Telegraph Company

(Affects Parcel 1)

29. An easement for public utilities and incidental purposes, recorded March 27, 1928 in Book 1433 of Deeds, Page 458.
In Favor of: The Pacific Telephone and Telegraph Company

(Affects Parcel 7)

30. An easement for public utilities and incidental purposes, recorded March 27, 1928 in Book 1433 of Deeds, Page 464.
In Favor of: The Pacific Telephone and Telegraph Company, its successors and assigns
Affects: The location of the easement cannot be determined from the information

(Affects Parcels 8 and 9)

31. The effect of a map purporting to show the land and other property, filed February 15, 1929 as Record of Survey No. 361 of Record of Surveys.

(Affects Parcels 1 through 6)

32. An easement for a public highway and incidental purposes, recorded May 14, 1930 in Book 1778 of Deeds, Page 131.
In Favor of: The County of San Diego

(Affects Parcel 3)

33. An easement for public highway and incidental purposes, recorded May 14, 1930in Book 1778 of Deeds, Page 132.
In Favor of: The County of San Diego
Affects:

(Affects Parcel 4)

34. An easement for public highway and incidental purposes, recorded May 14, 1930 in Book 1782 of Deeds, Page 51.
In Favor of: The County of San Diego

(Affects Parcels 2 and 3)

35. An easement for public highway and incidental purposes, recorded May 21, 1930 in Book 1778 of Deeds, Page 184.
In Favor of: The County of San Diego

(Affects Parcel 1)

36. An easement for public highway and incidental purposes, recorded June 10, 1930 in Book 1786 of Deeds, Page 117.
In Favor of: The County of San Diego
Affects: As described therein

(Affects Parcels 5 and 6)

Note: A portion of said easement was vacated and abandoned by document recorded August 6, 1965 as Instrument No. 141425 of Official Records.

37. An easement for public highway and incidental purposes, recorded January 20, 1931 in Book 1843 of Deeds, Page 426.
In Favor of: The County of San Diego

(Affects Parcels 5 and 6)

38. An easement for public utilities and incidental purposes, recorded July 7, 1931 in Book 5, Page 50 of Official Records.
In Favor of: The San Diego Consolidated Gas & Electric Company, a corporation

(Affects Parcels 5 and 6)

39. An easement for public highway and incidental purposes, recorded April 18, 1933 as Book 206, Page 258 of Official Records.
In Favor of: The County of San Diego
Affects: As described therein

(Affects Parcels 5 and 6)

Note: A portion of said easement was vacated and abandoned by document recorded August 6, 1965 as Instrument No. 141425 of Official Records.

40. An easement for pipe line, for the purpose of constructing, operation, repairing, using and maintaining said pipe line and incidental purposes, recorded March 26, 1937 in Book 635, Page 167 of Official Records.
In Favor of: San Diego Water Supply Company, a Corporation
Affects: A portion of said land

(Affects Parcels 8, 9 and 11)

41. An easement for road purposes and incidental purposes, recorded December 23, 1943 as Book 1593, Page 452 of Official Records.
In Favor of: Wilbur H. Babcock and Grace D. Babcock

(Affects Parcel 2)

42. An easement for sewer, water and/or gas mains and pipe lines and incidental purposes, recorded January 31, 1947 in Book 2322, Page 423 of Official Records.
In Favor of: C.E. Toberman Co.
Affects: As described therein

(Affects Parcel 12)

43. An easement for road purposes and incidental purposes, recorded April 21, 1948 in Book 2766, Page 99 of Official Records.
In Favor of: George Allen Bisbee

(Affects Parcel 12)

44. The right to use any and all easements acquired by conveyance dated December 15, 1947 recorded in Book 2589, Page 395 of Official Records in San Diego County on any property located in Township 12 South, 13 South, and 14 South, and Range 3 West, 4 West, 3 West, in the County of San Diego, for the purpose of enabling, permitting and Authorizing Del Mar Sanitary Company, Inc., to lay and maintain sewer pipes and appurtenances thereto and therein as granted by San D. Fraser and Gladys F. Faser, husband and wife as joint tenants, to Del Mar Sanitary Company, Inc., by deed recorded June 6, 1949 in Book 3217, Page 462 of Official Records.

(Affects Parcels 12 and 13)

45. An easement for public utilities and incidental purposes, recorded December 14, 1951 as Instrument No. 152340 in Book 4320, Page 294 of Official Records.
In Favor of: The San Diego Gas & Electric Company, a corporation
Affects: As described therein

(Affects Parcel 2)

46. An easement for a public highway and incidental purposes, recorded April 9, 1953 in Book 4816, Page 140 of Official Records.
In Favor of: The County of San Diego, State of California
Affects: A portion of said land

Said document further recites:

"The grantor further understands that the present intention of the grantee is to construct and maintain a public highway on the lands hereby conveyed in fee and the grantor, for himself, his successors and assigns, hereby waives any claims for any and all damages to grantor's remaining property contiguous to the property hereby conveyed by reason of the location, construction, landscaping or maintenance of said highway."

Said instrument also grants the privilege and right to extend and maintain drainage structures and excavation and embankment slopes beyond the limits of said right of way where required for the construction and maintenance thereof.

(Affects Parcels 5, 6, 8, 9, 10 and 11)

47. An easement for water pumping plant and water pipe or pipe lines and all structures and incidental purposes, recorded June 19, 1953 in Book 4896, Page 222 of Official Records.
In Favor of: County of San Diego
Affects: As described therein

(Affects Parcels 12 and 13)

48. An easement for public utilities and incidental purposes, recorded September 29, 1955 as Instrument No. 128204 in Book 5812, Page 393 of Official Records.
In Favor of: The San Diego Gas & Electric Company, a corporation
Affects: As described therein

(Affects Parcel 2)

49. An offer of dedication for public highway and incidental purposes, recorded May 4, 1959 in Book 7640, Page 296 of Official Records.

To: The County of San Diego

(Affects Parcels 5 and 6)

50. An easement for public utilities and incidental purposes, recorded December 14, 1960 as Instrument No. 242054 of Official Records.
In Favor of: The San Diego Gas & Electric Company, a corporation
Affects: As described therein

(Affects Parcels 5 and 6)

51. The effect of a map purporting to show the land and other property, filed October 8, 1962 as Record Map No. 6097 of Record of Surveys.

(Affects Parcels 12 and 13)

52. The effect of a map purporting to show the land and other property, filed November 9, 1962 as Record Map No. 6109 of Record of Surveys.

(Affects Parcels 8, 9, 10 and 14)

53. An offer of dedication for public highway and incidental purposes, recorded August 6, 1965 as Instrument No. 141424 of Official Records.

To: The County of San Diego

(Affects Parcels 5 and 6)

54. An easement for public utilities and incidental purposes, recorded April 14, 1967 as Instrument No. 52032 of Official Records.
In Favor of: San Diego Gas & Electric Company, a corporation

(Affects Parcels 5 and 6)

55. The effect of a deed executed by Sam D. Fraser and Gladys F. Fraser to City of Del Mar, recorded March 19, 1970 as Instrument No. 86549 of Official Records.

At the date of recording of the document, the grantor had no record interest in the land.

(Affects Parcels 8 and 9)

56. An easement for public utilities and incidental purposes, recorded June 19, 1976 as Instrument No. 76-166029 of Official Records.
In Favor of: San Diego Gas & Electric Company, a corporation

(Affects Parcels 5 and 6)

57. An easement for surface water drainage and incidental purposes, recorded July 16, 1980 as Instrument No. 80-223266 of Official Records.
In Favor of: San Diego County Flood Control District Zone I

(Affects Parcels 2, 3 and 4)

58. The effect of a map purporting to show the land and other property, filed August 21, 1980 as Record of Survey No. 8545 of Record of Surveys.

59. The Terms, Provisions and Easement(s) contained in the document entitled "Agreement and Grant of Easement Public Road Easement" recorded October 5, 1983 as Instrument No. 83-357454 of Official Records.

(Affects Parcels 5, 6, 8, 9 and 11)

60. An easement for embankment slopes and drainage structures and incidental purposes, recorded March 14, 1984 as Instrument No. 84-092146 of Official Records.
In Favor of: The City of Del Mar

(Affects Parcel 10)

61. An easement for road and highway purposes and incidental purposes, recorded March 14, 1984 as Instrument No. 84-092147 of Official Records.
In Favor of: The City of Del Mar

(Affects Parcels 5 and 6)

62. An easement for road and highway purposes and incidental purposes, recorded March 14, 1984 as Instrument No. 84-092148 of Official Records.
In Favor of: The City of Del Mar
Affects: A portion of said land

(Affects Parcels 8, 9 and 11)

63. An easement for embankment slopes, drainage structures, utility purposes and incidental purposes, recorded March 14, 1984 as Instrument No. 84-092148 of Official Records.
In Favor of: The City of Del Mar
Affects: A portion of said land

(Affects Parcels 8, 9 and 11)

64. An easement for utility purposes and incidental purposes, recorded May 29, 1984 as Instrument No. 84-199593 of Official Records.
In Favor of: City of Del Mar

(Affects Parcels 8, 9 and 11)

65. An easement for public utilities, ingress and egress and incidental purposes, recorded June 11, 1984 as Instrument No. 84-216941 of Official Records.
In Favor of: San Diego Gas & Electric Company
Affects: As described therein

(Affects Parcel 10)

66. An easement for public utilities, including water pipelines, sewer pipelines, storm drainage pipelines, and other buried utility conduits and incidental purposes, recorded July 10, 1984 as Instrument No. 84-259356 of Official Records.
In Favor of: The City of Del Mar
Affects: A portion of said land

(Affects Parcels 8, 9 and 11)

67. An easement for public utilities and incidental purposes, recorded August 24, 1984 as Instrument No. 84-324483 of Official Records.
In Favor of: San Diego Gas and Electric Company, a Corporation
Affects: A portion of said land

(Affects Parcels 5, 6, 8, 9, 10 and 11)

68. An easement for public utilities and incidental purposes, recorded August 24, 1984 as Instrument No. 84-324484 of Official Records.
In Favor of: San Diego Gas and Electric Company, a Corporation
Affects: A portion of said land

(Affects Parcels 5, 6, 8, 9 and 11)

69. An easement for public utilities and incidental purposes, recorded August 31, 1984 as Instrument No. 84-334491 of Official Records.
In Favor of: San Diego Gas and Electric Company, a Corporation
Affects: The location of the easement cannot be determined from the information

(Affects Parcels 8 and 9)

70. An easement for public utilities and incidental purposes, recorded August 31, 1984 as Instrument No. 84-334492 of Official Records.
In Favor of: San Diego Gas and Electric Company, a Corporation
Affects: A portion of said land

(Affects Parcels 8, 9 and 11)

71. The terms and provisions contained in the document entitled "Encroachment Permit No. 84-1" recorded September 20, 1984 as Instrument No. 84-357003 of Official Records.

(Affects Parcels 8 and 9)

72. An easement for drainage channel and incidental purposes, recorded October 4, 1984 as Instrument No. 84-377332 of Official Records.
In Favor of: San Diego County Flood Control District, Zone 1

(Affects Parcels 5 and 6)

73. An easement for public, utilities, including water pipelines, sewer pipelines, storm drainage pipelines and other buried utility conduits on property and incidental purposes, recorded November 7, 1984 as Instrument No. 84-421720 of Official Records.
In Favor of: The City of Del Mar, a Municipal Corporation
Affects: A portion of said land

(Affects Parcels 5, 6, 8 and 9)

74. The effect of a map purporting to show the land and other property, filed May 3, 1985 as Record Survey No. 10040 of Record of Surveys.

(Affects Parcel 13)

75. An easement for embankment slopes and drainage structures and incidental purposes, recorded November 8, 1985 as Instrument No. 85-421580 of Official Records.
In Favor of: City of Del Mar
Affects: As described therein

(Affects Parcel 10)

76. The terms and provisions contained in the document entitled "Boundary Line Agreement (BLA), Regarding Lands in and along San Dieguito Lagoon in the City of Del Map, San Diego County, California" recorded February 11, 1986 as Instrument No. 86-054469 of Official Records.

(Affects Parcel 13)

77. An easement for public utilities and incidental purposes, recorded May 25, 1988 as Instrument No. 88-246179 of Official Records.
In Favor of: San Diego Gas and Electric Company, a Corporation
Affects: The location of the easement cannot be determined from the information

(Affects Parcels 8 and 9)

78. An easement for emergency access road and incidental purposes, recorded July 6, 1989 as Instrument No. 89-357076 of Official Records.
In Favor of: PSM Venture I, Ltd., a California Limited Partnership

(Affects Parcels 5 and 6)

79. The effect of a map purporting to show the land and other property, filed September 21, 1989 as Record of Survey Map No. 12340 of Record of Surveys.

(Affects Parcels 8, 9, 10 and 14)

The effect of a document entitled "Certificate of Correction", recorded February 27, 1992 as Instrument No. 1992-0107026 of Official Records.

80. The effect of a map purporting to show the land and other property, filed as Map No. 13414 of Record of Surveys.

(Affects Parcels 8, 9, 10, 11 and 14)

81. The terms and provisions contained in the document entitled "Covenant Regarding Encroachment Permit No. EP 92-29" recorded July 6, 1992 as Instrument No. 1992-0420698 of Official Records.

82. An easement for utilities and incidental purposes, recorded September 1, 1995 as Instrument No. 1995-0390676 of Official Records.
In Favor of: City of Del Mar, a Municipal Corporation

(Affects Parcels 8, 9 and 11)

83. An easement for public water utility and incidental purposes, recorded September 1, 1995 as Instrument No. 1995-0390677 of Official Records.
In Favor of: City of Del Mar, a Municipal Corporation
Affects: A portion of said land

(Affects Parcels 5, 6, 8, 9 and 11)

84. The effect of a map purporting to show the land and other property, filed March 14, 1996 as Record of Survey No. 15130 of Record of Surveys.

(Affects Parcels 8, 9, 10, 11 and 14)

85. The terms and provisions contained in the document entitled "Covenant Regarding Encroachment Permit No. 98-19" recorded September 18, 1998 as Instrument No. 1998-0596382 of Official Records.

86. An easement for water pipe and incidental purposes, recorded May 10, 1999 as Instrument No. 1999-0316039 of Official Records.
In Favor of: San Elijo Joint Powers Authority

(Affects Parcel 11)

87. Any right, title or interest of Del Mar Thoroughbred Club, as disclosed by the financing statement recorded September 11, 2000 as Instrument No. 2000-0485694 of Official Records.

88. The Terms, Provisions and Easement(s) contained in the document entitled "Grant of Easement (San Dieguito River Mouth and Public Trail Project" recorded January 8, 2008 as Instrument No. 2008-0007915 of Official Records.

(Affects Parcels 8, 9, 10, 12, 13, 14, 15 and 16)

89. An easement for public utilities and incidental purposes, recorded October 3, 2008 as Instrument No. 2008-0523530 of Official Records.
In Favor of: San Diego Gas & Electric Company, a corporation

(Affects Parcels 8 and 9)

90. An easement for public utilities and incidental purposes, recorded March 3, 2009 as Instrument No. 2009-0104014 of Official Records.
In Favor of: Pacific Bell Telephone Company, a California corporation dba AT&T California

(Affects Parcels 8, 9 and 11)

91. Additional matters, if any, following review by the Company's Waterways and Boundaries Underwriter.

92. Any right, title or interest of Premier Food Services, Inc., as disclosed by the tax rolls.

93. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.

94. Easements, claims of easement or encumbrances which are not shown by the public records.

95. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.

96. Rights of parties in possession.

97. An easement for water pipeline and incidental purposes, recorded September 27, 1924 in Book 1025 of Deeds, Page 446.
In Favor of: The San Dieguito Mutual Water Company, a California corporation
Affects: As described therein

The location of the easement cannot be determined from record information.

(Affects Parcel 14)

98. The rights, if any, of a city, public utility or special district, pursuant to Section 8345 et seq. of the California Streets and Highways Code, to preserve a public easement in Grand Avenue as the same was vacated by the document recorded June 3, 1933 as Book 223, Page 71 of Official Records.

(Affects Parcel 14)

99. Covenants, conditions, restrictions and easements in the document recorded February 15, 1945 as Book 1819, Page 306 of Official Records, which provide that a violation thereof shall not defeat or render invalid the lien of any first mortgage or deed of trust made in good faith and for value, but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, sexual orientation, marital status, ancestry, disability, handicap, familial status, national origin or source of income (as defined in California Government Code §12955(p)), to the extent such covenants, conditions or restrictions violate 42 U.S.C. § 3604(c) or California Code §12955. Lawful restrictions under state and federal law on the age of occupants in senior housing or housing for older persons shall not be construed as restrictions based on familial status.

(Affects Lot 828 of Parcel 14)

100. An easement for a drainage channel including a pipe or pipe lines, manholes and all structures incidental thereto and incidental purposes, recorded October 22, 1947 as Book 2521, Page 291 of Official Records.

In Favor of:	the County of San Diego
Affects:	As described therein

(Affects Parcel 14)

101. Covenants, conditions, restrictions and easements in the document recorded May 2, 1949 as Boook 3189, Page 467 of Official Records, which provide that a violation thereof shall not defeat or render invalid the lien of any first mortgage or deed of trust made in good faith and for value, but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, sexual orientation, marital status, ancestry, disability, handicap, familial status, national origin or source of income (as defined in California Government Code §12955(p)), to the extent such covenants, conditions or restrictions violate 42 U.S.C. § 3604(c) or California Code §12955. Lawful restrictions under state and federal law on the age of occupants in senior housing or housing for older persons shall not be construed as restrictions based on familial status.

(Affects Lot 829 of Parcel 14)

102. An easement for pipe lines and incidental purposes, recorded November 24, 1952 as Book 4663, Page 75 of Official Records.

In Favor of:	Maria K. Lloyd
Affects:	As described therein

The location of the easement cannot be determined from record information.

(Affects Parcel 14)

103. An easement for public utilities and incidental purposes, recorded June 5, 1973 as Instrument No. 152427 of Official Records.

In Favor of:	The San Diego Gas and Electric Company, a corporation
Affects:	As described therein

(Affects Parcel 14)

104. An easement for pipe line and electric power line and incidental purposes, recorded April 13, 1907 in Book 414 of Deeds, Page 62.
In Favor of: South Coast Land Company
Affects: As described therein

The location of the easement cannot be determined from record information.

(Affects Parcel 16)

105. An easement for pipe line and incidental purposes, recorded September 14, 1915 in Book 689 of Deeds, Page 354.
In Favor of: Del Mar Water, Light and Power Company
Affects: As described therein

(Affects Parcel 16)

106. Abutter's rights of ingress and egress to or from the street or highway abutting said land have been relinquished in the document recorded May 8, 1959 as Document No. 92656, in Book 7650, Page 481, May 8, 1959 as Document No. 92657, in Book 7650, Page 486, May 8, 1959 as Document No. 92658, in Book 7650, Page 491, July 21, 1961 as File No. 125149, August 31, 1961 as File No. 152046 and February 28, 1962 as File No. 33893, all of Official Records.

(Affects Parcel 16)

107. Abutter's rights of ingress and egress to or from the street or highway abutting said land have been relinquished in the document recorded December 18, 1962 as File No. 215740 of Official Records.

(Affects Parcel 15)

108. An easement for maintaining, repairing and operating a main supply line and incidental purposes, recorded January 3, 1966 as File No. 000091 of Official Records.
In Favor of: the City of Del Mar
Affects: As described therein

(Affects Parcel 16)

109. An unrecorded lease dated January 1, 1975, executed by 22nd District Agricultural Association, a state institution as lessor and W & W Enterprises as lessee, as disclosed by a Least Agreement recorded January 9, 1975 as File No. 75-005826 of Official Records.

Defects, liens, encumbrances or other matters affecting the leasehold estate, whether or not shown by the public records.

(Affects Parcel 15)

The lessee's interest under the lease has been assigned to Surf and Turf Recreation, Ltd. by assignment recorded July 2, 1975 as File No. 75-169660 of Official Records.

Document(s) declaring modifications thereof recorded July 2, 1975 as File No. 75-169661 of Official Records.

Document(s) declaring modifications thereof recorded July 2, 1975 as File No. 75-169662 of Official Records.

The lessee's interest under the lease has been assigned to Surf and Turf Recreation Center by assignment recorded October 13, 1977 as File No. 77-420302 of Official Records.

110. The terms and provisions contained in the document entitled Planning Commission Resolution No. 287 - Resolution Granting Conditional Use Permit No. 427-PC recorded May 12, 1975 as File No. 75-114351 of Official Records.

(Affects Parcel 15)

111. An easement for a water main or mains and incidental purposes, recorded May 28, 1976 as File No. 76-164482 of Official Records.
In Favor of: the City of San Diego, a municipal corporation
Affects: As described therein

(Affects Parcel 15)

112. An easement for a water main or mains and incidental purposes, recorded May 28, 1976 as File No. 76-164866 of Official Records.
In Favor of: the City of San Diego, a municipal corporation
Affects: As described therein

(Affects Parcel 15)

113. The terms and provisions contained in the document entitled Conditional Use Permit No. 396-PC/Amendment recorded May 22, 1978 as File No. 78-207793 of Official Records.

(Affects Parcel 15)

114. The terms and provisions contained in the document entitled Planning Commission Resolution No. 3204 Granting Conditional Use Permit No. 10-427-2 recorded June 22, 1982 as Instrument No. 82-191651 of Official Records.

(Affects Parcel 15)

115. An easement for public utilities and incidental purposes, recorded August 24, 1984 as Instrument No. 84-324482 of Official Records.
In Favor of: San Diego Gas & Electric Company, a corporation
Affects: As described therein

(Affects Parcel 15)

Terms and provisions contained in the above document.

116. The terms and provisions contained in the document entitled Real Property Waiver and Consent recorded September 19, 1994 as Instrument No. 1994-0555229 of Official Records.

(Affects Parcel 15)

117. Any right, title or interest of Ace Parking Management, Inc., as disclosed by the Real Property Waiver and Consent recorded September 19, 1994 as Instrument No. 1994-0555229 of Official Records.

(Affects Parcel 15)

118. An unrecorded lease dated December 18, 1995, executed by 22nd District Agricultural Association, an agency of the State of California as lessor and AirTouch Cellular, a California corporation as lessee, as disclosed by a Lease Restriction recorded March 12, 1996 as Instrument No. 1996-0121452 of Official Records.

Defects, liens, encumbrances or other matters affecting the leasehold estate, whether or not shown by the public records.

(Affects Parcel 15)

The terms and provisions contained in the document entitled Lease Restriction recorded March 12, 1996 as Instrument No. 1996-0121452 of Official Records.

119. The terms and provisions contained in the document entitled Site Development Permit No. 161395 and Coastal Development Permit No. 191995 - San Dieguito River Valley Restoration & Coast to Coast Trail (MMRP) recorded October 7, 2005 as Instrument No. 2005-0872125 of Official Records.

(Affects Parcels 15 and 16)

INFORMATIONAL NOTES

Note: The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than the certain dollar amount set forth in any applicable arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. If you desire to review the terms of the policy, including any arbitration clause that may be included, contact the office that issued this Commitment or Report to obtain a sample of the policy jacket for the policy that is to be issued in connection with your transaction.

1. According to the public records, there has been no conveyance of the land within a period of twenty-four months prior to the date of this report, except as follows:

   None

2. This preliminary report/commitment was prepared based upon an application for a policy of title insurance that identified land by street address or assessor's parcel number only. It is the responsibility of the applicant to determine whether the land referred to herein is in fact the land that is to be described in the policy or policies to be issued.

Order Number: DIV-3303964 (22)
Page Number: 22

WIRE INSTRUCTIONS
for
First American Title Company, Demand/Draft Sub-Escrow Deposits
San Diego County, California

First American Trust, FSB
5 First American Way
Santa Ana, CA 92707

ABA 122241255
Credit to First American Title Company
Account No. 3008270000

Reference Title Order Number 3303964 and Title Officer Matt Hooks

Please wire the day before recording.

The map attached, if any, may or may not be a survey of the land depicted hereon. First American expressly disclaims any liability for loss or damage which may result from reliance on this map except to the extent coverage for such loss or damage is expressly provided by the terms and provisions of the title insurance policy, if any, to which this map is attached.

LEGAL DESCRIPTION

Real property in the City of San Diego County, County of San Diego, State of California, described as follows:

PARCEL NO. 1: (APN'S: 298-260-15 AND 298-421-08)

ALL THAT PORTION OF THE WEST 15.0 ACRES OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼, AND THE EAST ½ OF THE SOUTHEAST ¼ OF THE SOUTHWEST ¼ OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, LYING SOUTH OF COUNTY ROAD SURVEY NO. 443.

PARCEL NO. 2: (APN: 298-260-17)

ALL THAT PORTION OF THE EAST ½ OF THE FOLLOWING DESCRIBED LAND WHICH LIES SOUTHERLY OF THE SOUTHERLY LINE OF THE COUNTY ROAD KNOWN AS ROAD SURVEY NO. 443, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAN DIEGO COUNTY:

BEGINNING AT A POINT THAT IS 660.00 FEET NORTH OF THE SOUTH LINE AND 165.00 FEET WEST OF THE EAST LINE OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876; THENCE WEST 660.00 FEET; THENCE NORTH 792.00 FEET; THENCE EAST 660.00 FEET; THENCE SOUTH 792.00 FEET TO THE POINT OF BEGINNING.

PARCEL NO. 3: (APN: 298-260-19)

ALL THAT PORTION OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH IS 40 RODS NORTH OF THE SOUTH LINE AND 30 RODS WEST OF THE EAST LINE OF SAID SOUTHWEST ¼ OF THE SOUTHEAST ¼; THENCE WEST 20 RODS; THENCE NORTH 40 RODS TO THE NORTH LINE OF SAID SOUTHWEST ¼ OF THE SOUTHEAST ¼; THENCE EAST ALONG SAID NORTH LINE, 20 RODS; THENCE SOUTH 40 RODS TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM ALL THAT PORTION LYING NORTHERLY OF THE SOUTHERLY LINE OF THE COUNTY ROAD KNOWN AS ROAD SURVEY NO. 443, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAN DIEGO COUNTY.

PARCEL NO. 4: (APN: 298-260-35)

ALL THAT PORTION OF THE SOUTHEAST ¼ OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF SAID SECTION 2; THENCE NORTH 80 RODS; THENCE AT RIGHT ANGLES WEST 10 RODS; THENCE AT RIGHT ANGLES SOUTH 40 RODS; THENCE AT RIGHT ANGLES WEST 40 RODS; THENCE AT RIGHT ANGLES SOUTH 40 RODS; THENCE AT RIGHT ANGLES EAST 50 RODS TO THE POINT OF COMMENCEMENT.

EXCEPTING THEREFROM THAT PORTION DESCRIBED AS PARCEL 1 IN THE QUITCLAIM DEED TO FRANCESCO'S, A CALIFORNIA CORPORATION RECORDED DECEMBER 30, 1976 AS INSTRUMENT NO. 76-439655 OF OFFICIAL RECORDS.

PARCEL NO. 5: (APN: PORTION OF 298-271-03)

THAT PORTION OF THE SOUTHEAST ¼ OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SECTION 2; THENCE WEST 80 RODS; THENCE NORTH 56 RODS; THENCE EAST 12 RODS; THENCE SOUTH TO A POINT ON THE SOUTH BANK OF THE OLD RIVER CHANNEL AS IT EXISTED ON JUNE 20, 1923; THENCE IN A GENERAL EASTERLY DIRECTION ALONG THE SOUTH BANK OF SAID RIVER CHANNEL, 34 RODS; THENCE NORTH ACROSS THE RIVER CHANNEL TO A POINT ON THE NORTH BANK; THENCE IN A GENERAL EASTERLY AND SOUTHEASTERLY DIRECTION ALONG THE NORTH BANK OF SAID CHANNEL AND ALONG THE SOUTH SIDE OF THE COUNTY ROAD LEADING FROM DEL MAR TO ESCONDIDO AS IT EXISTED ON JUNE 20, 1923, TO ITS INTERSECTION WITH THE EAST LINE OF SAID SECTION 2; THENCE SOUTH ALONG THE EAST LINE OF SAID SECTION 2 TO THE POINT AND PLACE OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA BY DEED RECORDED AUGUST 8, 1961 AS INSTRUMENT NO. 61-135603 OF OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO SERO AMUSEMENT COMPANY, A CALIFORNIA CORPORATION, BY DEED RECORDED JULY 8, 1968 AS INSTRUMENT NO. 68-114128 OF OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION DESCRIBED AS PARCEL 2 IN THE DEED TO FRANCESCO'S, A CALIFORNIA CORPORATION RECORDED DECEMBER 30, 1976 AS INSTRUMENT NO. 76-439655 OF OFFICIAL RECORDS.

PARCEL NO. 6: (APN: PORTION OF 298-271-03)

ALL THAT PORTION OF THE SOUTHEAST ¼ OF THE SOUTHEAST ¼ OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 2; THENCE NORTH 0° 34' EAST ALONG THE EASTERLY LINE OF SAID SECTION, 352.2 FEET; THENCE SOUTH 56° 34' WEST, 167.5 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING SOUTH 56° 34' WEST, 47 FEET; THENCE NORTH 79° 20' WEST, 438.5 FEET; THENCE SOUTH 1° 18' WEST, 87 FEET; THENCE NORTH 51° 32' WEST, 236 FEET; THENCE NORTH 79° 32' WEST, 325 FEET; THENCE NORTH 1° 28' EAST, 112.1 FEET; THENCE NORTH 89° 03' EAST, 237 FEET; THENCE SOUTH 70°

57' EAST, 700 FEET; THENCE NORTH 61° 03' EAST, 45.6 FEET; THENCE SOUTH 23° 11' EAST, 89.75 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION LYING NORTHERLY OF THE CENTER LINE OF ROAD SURVEY NO. 443 AS DESCRIBED AT BOOK 206, PAGE 258 OF OFFICIAL RECORDS, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAN DIEGO COUNTY.

PARCEL NO. 7: (APN: 298-421-09)

THE SOUTH ½ OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE SOUTHWEST ¼ OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876.

EXCEPTING THEREFROM THAT PORTION LYING WITHIN THE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY.

PARCEL NO. 8: (APN: PORTION OF 299-030-01)

ALL THAT PORTION OF THE NORTH HALF OF SECTION 11 OF TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE CORNER OF SECTIONS ONE, TWO, ELEVEN AND TWELVE OF TOWNSHIP FOURTEEN SOUTH, RANGE FOUR WEST, SAN BERNARDINO MERIDIAN, THENCE ALONG THE SECTION LINE BETWEEN SECTIONS TWO AND ELEVEN, SOUTH 89° 50' 30" WEST 127.66 FEET TO THE PLACE OF BEGINNING, AND THE CENTER LINE OF ROAD SURVEY 298, THENCE ALONG SAID CENTER LINE OF ROAD SURVEY 298 SOUTH 46° 19' 30" WEST 361.86 FEET TO THE POINT OF A CURVE CONCAVE SOUTHEASTERLY AND HAVING A RADIUS OF 379 FEET, THENCE ALONG SAID CURVE SOUTHWESTERLY 111.78 FEET, THENCE SOUTH 29° 25' 30" WEST 423.27 FEET, THENCE LEAVING SAID CENTER LINE OF ROAD SURVEY 298, SOUTH 0° 26' 30" EAST 1281.00 FEET, THENCE NORTH 89° 46' EAST 664.40 FEET TO THE SECTION LINE BETWEEN SECTIONS ELEVEN AND TWELVE, THENCE ALONG SAID SECTION LINE SOUTH 0° 16' EAST 661.75 FEET TO THE ONE QUARTER CORNER BETWEEN SECTIONS ELEVEN AND TWELVE, THENCE ALONG THE SOUTH LINE OF THE NORTH ONE HALF OF SECTION ELEVEN SOUTH 89° 44' 30" WEST 1866.40 FEET, THENCE NORTH 70° 36' WEST 329.90 FEET, THENCE NORTH 63° 08' WEST 140.96 FEET, THENCE NORTH 57° 59' WEST 317.33 FEET, THENCE NORTH 55° 42' WEST 177.24 FEET, THENCE NORTH 45° 32' WEST 203.62 FEET, THENCE NORTH 26° 52' WEST 234.44 FEET, THENCE NORTH 19° 38' WEST 181.38 FEET, THENCE NORTH 36° 29' WEST 199.65 FEET, THENCE NORTH 43° 39' WEST 152.66 FEET, THENCE NORTH 23° 58' WEST 123.58 FEET, THENCE NORTH 16° 47' WEST 177.41 FEET, THENCE NORTH 75° 19' WEST 36.35 FEET TO THE EASTERLY RIGHT OF WAY LINE OF THE A. T. & S. F. RAILWAY, THENCE ALONG SAID RIGHT OF WAY LINE NORTH 11° 28' 30" WEST 1143.60 FEET TO THE SECTION LINE BETWEEN SECTIONS TWO AND ELEVEN, THENCE ALONG SAID SECTION LINE NORTH 89° 50' 30" EAST 3479.54 FEET TO THE PLACE OF BEGINNING.

EXCEPTING THEREFROM:

ALL THAT PORTION OF THE NORTHEAST QUARTER OF SECTION 11, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO UNITED STATES GOVERNMENT SURVEY, DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE SOUTHERLY LINE OF SAID NORTHEAST

QUARTER; WITH THE SOUTHWESTERLY TERMINUS OF THE SOUTHEASTERLY LINE OF THAT CERTAIN 100.00 FOOT EASEMENT FOR HIGHWAY DESCRIBED IN PARCEL 1 IN THE DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 9TH, 1953 IN BOOK 4816, PAGE 140 OF OFFICIAL RECORDS, AND DESIGNATED AS ROAD SURVEY NO. 1210; THENCE ALONG SAID SOUTHERLY LINE NORTH 89° 44' 30" EAST, 1135.00 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID SOUTHERLY LINE NORTH 89° 44' 3" EAST TO AN INTERSECTION WITH A LINE DRAWN PARALLEL WITH AND DISTANT 360.00 FEET WESTERLY OF AND MEASURED AT RIGHT ANGLES TO THE EASTERLY LINE OF SAID SECTION 11, SAID INTERSECTION BEING HEREINAFTER REFERRED TO AS POINT "A" OF THIS DESCRIPTION; THENCE CONTINUING NORTH 89° 44' 30" EAST TO THE SOUTHEAST CORNER OF SAID NORTHEAST QUARTER; THENCE NORTHERLY ALONG SAID EASTERLY LINE OF SECTION 11, NORTH 0° 16' EAST, TO THE NORTHERLY TERMINUS OF AN ARC OF A CURVE CONCAVE, NORTHWESTERLY IN THE BOUNDARY OF SAID ROAD SURVEY 1210, AS DESCRIBED IN SAID PARCEL 1, HAVING A RADIUS OF 800 FEET; THENCE SOUTHWESTERLY ALONG THE ARC OF SAID CURVE TO INTERSECTION WITH A LINE THAT IS PARALLEL WITH THE EASTERLY LINE OF SAID SECTION 11, WHICH RUN THROUGH SAID POINT "A"; THENCE SOUTHERLY ALONG SAID PARALLEL LINE TO A POINT THEREON THAT IS DISTANT NORTHERLY 210.00 FEET FROM SAID POINT "A"; THENCE SOUTHWESTERLY TO THE TRUE POINT OF BEGINNING.

PARCEL NO. 9: (APN: PORTION OF 299-030-01)

THAT PORTION OF LOT 2 AND OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 11, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, LYING WITHIN THE FOLLOWING DESCRIBED BOUNDARIES:

BEGINNING AT THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE SOUTH 89° 44' 30" WEST ALONG THE SOUTH LINE OF SAID NORTHEAST QUARTER, 1866.40 FEET TO AN ANGLE POINT IN THE SOUTHERLY LINE OF THE LAND DESCRIBED IN DEED TO THE 22ND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, RECORDED JANUARY 27, 1936 AS DOCUMENT NO. 5873, IN BOOK 475, PAGE 5 OF OFFICIAL RECORDS; SAID ANGLE POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE SOUTHWESTERLY BOUNDARY LINE OF THE LAND DESCRIBED IN SAID DEED, NORTH 70° 36' WEST, 329.90 FEET; NORTH 63° 08' WEST, 140.96 FEET; NORTH 57° 59' WEST, 317.33 FEET; NORTH 55° 42' WEST, 177.24 FEET; NORTH 45° 32' WEST, 203.62 FEET; NORTH 26° 52' WEST, 234.44 FEET; NORTH 19° 38' WEST, 181.38 FEET; NORTH 36° 29' WEST, 199.65 FEET; NORTH 43° 39' WEST, 152.66 FEET; NORTH 23° 58' WEST, 123.58 FEET; NORTH 16° 47' WEST, 177.41 FEET; AND NORTH 25° 19' WEST, 36.35 FEET TO THE EASTERLY LINE OF THE ATCHISON TOPEKA AND SANTA FE RAILWAY, COMPANY'S RIGHT OF WAY, THENCE ALONG THE EASTERLY LINE OF SAID RIGHT OF WAY SOUTH 11° 28' 30" EAST TO THE SOUTHERLY LINE OF SAID LOT 2; THENCE EASTERLY ALONG THE SOUTHERLY LINE OF SAID LOT 2 AND ALONG THE SOUTHERLY LINE OF SAID SOUTHWEST QUARTER OF NORTHEAST QUARTER TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM, THAT PORTION THEREOF LYING SOUTH WESTERLY OF A LINE DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE SOUTH 89° 44' 30" WEST ALONG THE SOUTH LINE OF SAID NORTHEAST QUARTER, 1866.40 FEET TO AN ANGLE POINT IN THE SOUTHERLY LINE OF THE LAND DESCRIBED IN DEED TO THE 22ND DISTRICT AGRICULTURAL ASSOCIATION OF THE STATE OF CALIFORNIA, RECORDED JANUARY 27, 1936 AS DOCUMENT NO. 5873 IN BOOK 475, PAGE 5 OF OFFICIAL

RECORDS; SAID ANGLE POINT BEING THE TRUE POINT OF BEGINNING OF THE LINE HEREIN DESCRIBED; THENCE NORTH 65° 10' 06" WEST 638.21 FEET; THENCE NORTH 58° 20' 17" WEST, 926.37 FEET TO A POINT IN THE EASTERLY LINE OF THE ATCHISON TOPEKA AND SANTA FE RAILWAY COMPANY'S RIGHT OF WAY.

ALSO EXCEPTING THEREFROM THAT PORTION IF ANY NOW OR HERETOFORE LYING BELOW THE MEAN HIGH TIDE LINE OF THE PACIFIC OCEAN, OR ANY ARM THEREOF.

PARCEL NO. 10: (APN: 299-030-04)

THAT PORTION OF THE NORTHEAST QUARTER OF SECTION 11, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF DEL MAR, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE SOUTHERLY LINE OF SAID NORTHEAST QUARTER, WITH THE SOUTHWESTERLY TERMINUS OF THE SOUTHEASTERLY LINE OF THAT CERTAIN 100.00 FOOT EASEMENT FOR HIGHWAY, DESCRIBED IN PARCEL 1 IN THE DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 9, 1953 IN BOOK 4816, PAGE 140 OF OFFICIAL RECORDS, AND DESIGNATED AS ROAD SURVEY NO. 1210; THENCE ALONG SAID SOUTHERLY LINE NORTH 89° 44' 30" EAST 1135.00 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID SOUTHERLY LINE, NORTH 89° 44' 30" EAST TO AN INTERSECTION WITH A LINE DRAWN PARALLEL WITH AND DISTANT 360.00 FEET WESTERLY OF AND MEASURED AT RIGHT ANGLES, TO THE EASTERLY LINE OF SAID SECTION 11, SAID INTERSECTION BEING HEREINAFTER REFERRED TO AS POINT "A" OF THIS DESCRIPTION; THENCE CONTINUING NORTH 89° 44' 30" EAST TO THE SOUTHEAST CORNER OF SAID NORTHEAST QUARTER; THENCE NORTHERLY ALONG SAID EASTERLY LINE OF SECTION 11, NORTH 0° 16' EAST TO THE NORTHERLY TERMINUS OF AN ARC OF A CURVE CONCAVE NORTHWESTERLY IN THE BOUNDARY OF SAID ROAD SURVEY NO. 1210, AS DESCRIBED IN SAID PARCEL 1, HAVING A RADIUS OF 800.00 FEET; THENCE SOUTHWESTERLY ALONG THE ARC OF SAID CURVE, TO AN INTERSECTION WITH A LINE THAT IS PARALLEL WITH THE EASTERLY LINE OF SAID SECTION 11, WHICH RUNS THROUGH SAID POINT "A"; THENCE SOUTHERLY ALONG SAID PARALLEL LINE TO A POINT THEREON THAT IS DISTANT NORTHERLY 210.00 FEET FROM SAID POINT "A"; THENCE SOUTHWESTERLY TO THE TRUE POINT OF BEGINNING.

PARCEL NO. 11: (APN: 299-030-05)

THE NORTHEAST ¼ OF THE SOUTHEAST ¼ OF THE NORTHEAST ¼, AND THE EAST ½ OF THE NORTHEAST ¼ OF THE NORTHEAST ¼ OF SECTION 11, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY.

EXCEPTING THAT PORTION DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY LINE OF SAID SECTION 11, DISTANT THEREON SOUTH 89° 51' 24" WEST 127.66 FEET FROM THE NORTHEASTERLY CORNER OF SAID SECTION 11, SAID POINT BEING ALSO ON THE CENTER LINE OF COUNTY ROAD SURVEY NO. 298; THENCE ALONG THE FOLLOWING COURSES AND DISTANCES; SOUTH 46° 18' 24" WEST A DISTANCE OF 361.86 FEET; THENCE ALONG THE ARC OF A CURVE CONCAVE TO THE SOUTHEAST, HAVING A RADIUS OF 379.0 FEET THROUGH A CENTRAL ANGLE OF 16° 54' A DISTANCE OF 111.78 FEET; THENCE SOUTH 29° 24' 24" WEST A DISTANCE OF 423.27 FEET TO THE INTERSECTION WITH THE WESTERLY LINE OF SAID EAST ½ OF THE NORTHEAST ¼ OF

THE NORTHEAST ¼ OF SECTION 11; THENCE ALONG SAID NORTHERLY LINE OF SECTION 11, NORTH 89° 51' 24" EAST A DISTANCE OF 542.97 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THOMAS J. WESSELS, ET AL, BY DEED RECORDED DECEMBER 2, 1957 IN BOOK 6852, PAGE 203 OF OFFICIAL RECORDS.

PARCEL NO. 12: (APN: 299-030-08)

ALL THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 11, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF DEL MAR, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTH LINE OF LOT 1 - NORTHWEST QUARTER OF THE NORTHWEST QUARTER - WITH THE WESTERLY LINE OF CALIFORNIA STATE HIGHWAY XI-SD-2A, AS SAID HIGHWAY EXISTED ON DECEMBER 11, 1947, THENCE SOUTH 15° 06' 53" WEST, 332.08 FEET; THENCE SOUTH 28° 27' 40" WEST, 185.0 FEET; THENCE SOUTH 13° 57' 10" WEST, 91.0 FEET; THENCE SOUTH 28° 52' 40" WEST, 97.00 FEET; THENCE SOUTH 41° 40' 40" WEST, 202.04 FEET; THENCE NORTH 74° 52' 50" WEST TO THE MEAN HIGH TIDE LINE OF THE PACIFIC OCEAN; THENCE SOUTHERLY ALONG SAID MEAN HIGH TIDE LINE TO A POINT THEREON, INTERSECTED BY A LINE BEARING SOUTH 82° 41' 30" WEST FROM A POINT WHICH BEARS NORTH 55° 52' 15" WEST, 289.96 FEET FROM A POINT ON THE WESTERLY LINE OF THE ABOVE-MENTIONED CALIFORNIA STATE HIGHWAY, DISTANT THEREON NORTH 7° 18' 30" WEST, 400.41 FEET FROM A CONCRETE MONUMENT OPPOSITE STATION 156 PLUS 11.81 B. C.; THENCE FROM SAID AFOREMENTIONED POINT ON SAID MEAN HIGH TIDE LINE, NORTH 82° 41' 30" EAST TO AN ANGLE POINT DESCRIBED ABOVE AS BEARING NORTH 55° 52' 15" WEST 289.96 FEET FROM THE WESTERLY LINE OF SAID STATE HIGHWAY; THENCE SOUTH 55° 52' 15" EAST, 289.96 FEET TO SAID POINT ON THE WESTERLY LINE OF SAID STATE HIGHWAY, BEING THE MOST SOUTHERLY CORNER OF THE LAND HEREIN DESCRIBED; THENCE NORTHERLY ALONG THE WESTERLY LINE OF SAID HIGHWAY TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION GRANTED TO THE STATE OF CALIFORNIA BY DEED DATED MARCH 26, 1952 AND RECORDED MAY 15, 1952 IN BOOK 4468, PAGE 314 OF OFFICIAL RECORDS.

PARCEL NO. 13: (APN: 299-030-09)

THAT PORTION OF LOT 1 - NORTHWEST QUARTER OF THE NORTHWEST QUARTER- AND OF LOT 2 - SOUTH HALF OF THE NORTHWEST QUARTER- AND OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 11, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF DEL MAR, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF, THAT LIES WEST OF THE WEST LINE OF THE 200 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY, AND EAST OF THE EAST LINE OF CALIFORNIA STATE HIGHWAY, DISTRICT XI-SD, ROUTE 2, SECTION "A", AS SAID HIGHWAY EXISTED ON DECEMBER 11, 1947, AND NORTH OF THE SOUTH LINE OF THE SAN DIEGUITO RIVER.

EXCEPTING THEREFROM THAT PORTION GRANTED TO THE STATE OF CALIFORNIA BY DEED DATED MARCH 26, 1952 AND RECORDED MAY 15, 1952 IN BOOK 4468, PAGE 314 OF OFFICIAL RECORDS.

PARCEL NO. 14: (APN: 299-071-04 AND 299-201-01)

ALL THOSE PORTIONS OF LOTS 828 AND 829 OF ARDEN HEIGHTS NO. 6, IN THE CITY OF DEL MAR, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 1592, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID SAN DIEGO COUNTY ON JULY 18, 1913, DESCRIBED AS A WHOLE AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHERLY LINE OF SAID ARDEN HEIGHTS NO. 6, WITH THE SOUTHWESTERLY TERMINUS OF THE SOUTHEASTERLY LINE OF THAT CERTAIN 100 FOOT EASEMENT FOR HIGHWAY, DESCRIBED IN PARCEL 1 IN DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 9, 1953, IN BOOK 4816, PAGE 140 OF OFFICIAL RECORDS, AND DESIGNATED AS ROAD SURVEY 1210; THENCE ALONG SAID NORTHERLY LINE, NORTH 89º 59' EAST, A DISTANCE OF 580.00 FEET TO A POINT HEREINAFTER REFERRED TO AS POINT "A" OF THIS DESCRIPTION; THENCE CONTINUING NORTH 89º 59' EAST, ALONG SAID NORTHERLY LINE, 555.00 FEET; THENCE SOUTHWESTERLY TO THE SOUTHERLY TERMINUS OF A 450 FOOT LINE DRAWN SOUTHERLY AT RIGHT ANGLES TO THE NORTHERLY LINE OF SAID ARDEN HEIGHTS NO. 6, FROM SAID POINT "A"; THENCE NORTHWESTERLY TO AN INTERSECTION WITH THE SOUTHEASTERLY LINE OF THE COUNTY ROAD KNOWN AS SURVEY NO. 470, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID SAN DIEGO COUNTY AND A LINE DRAWN PARALLEL WITH AND 70.00 FEET SOUTHERLY, MEASURED AT RIGHT ANGLES TO THE NORTHERLY LINE OF SAID ARDEN HEIGHTS NO. 6; THENCE NORTH 39º 30' 30" EAST, ALONG SAID SOUTHEASTERLY LINE TO AN INTERSECTION WITH THE NORTHERLY LINE OF SAID ARDEN HEIGHTS NO. 6; THENCE ALONG SAID NORTHERLY LINE, NORTH 89º 59' 00" EAST TO THE POINT OF BEGINNING.

PARCEL 15: (APN: 299-042-01)

ALL THAT PORTION OF SECTION 12, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF SAID SECTION 12, DISTANT THEREON, 273.35 FEET SOUTHERLY OF THE NORTHWEST CORNER OF SAID SECTION 12; THENCE SOUTH 88º 19' 24" EAST ON A LINE THAT IS PARALLEL WITH THE SOUTH LINE OF THE NORTH HALF OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION, A DISTANCE OF 924.66 FEET TO AN INTERSECTION WITH THE BOUNDARY OF LAND DESCRIBED UNDER PARCEL 5A IN THAT CERTAIN FINAL ORDER OF CONDEMNATION RECORDED DECEMBER 18, 1962 AS INSTRUMENT NO. 215740, SERIES 3, OF OFFICIAL RECORDS; THENCE ALONG SAID BOUNDARY, SOUTH 22º 19' 15" EAST 326.23 FEET AND SOUTH 18º 26' 24" EAST 1506.20 FEET (RECORD 1506.17 FEET) TO THE SOUTH LINE OF THE NORTH HALF OF THE SOUTH HALF OF SAID NORTHWEST QUARTER OF SAID SECTION 12; THENCE NORTH 88º 19' 24" WEST ALONG SAID SOUTH LINE 1535.41 FEET TO THE WEST LINE OF SAID SECTION 12; THENCE NORTH 0º 16' 23" EAST ALONG SAID WEST LINE 1712.86 FEET TO THE POINT OF BEGINNING.

PARCEL 16: (APN: 299-042-02)

THAT PORTION OF THE SOUTH HALF OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF DESCRIBED AS FOLLOWS:

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BEGINNING AT THE WEST QUARTER CORNER OF SAID SECTION 12; THENCE ALONG THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 12, NORTH 0º 14' 16" EAST, 253.24 FEET TO THE NORTHWEST CORNER OF THE LAND DESCRIBED IN PARCEL 1A OF DEED TO THE CITY OF SAN DIEGO, RECORDED FEBRUARY 28, 1962, RECORDER'S FILE NO. 33892 OF OFFICIAL RECORDS, BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE BOUNDARY OF SAID LAND, NORTH 76º 49' 45" EAST, 1578.03 FEET TO THE WEST LINE OF THE LAND DESCRIBED IN DEED TO STATE OF CALIFORNIA, RECORDED AUGUST 31, 1961, RECORDER'S FILE NO. 152046 OF OFFICIAL RECORDS; THENCE ALONG SAID WEST LINE NORTH 18º 26' 24" WEST TO THE NORTH LINE OF SAID SOUTH HALF OF THE SOUTH HALF OF THE NORTHWEST QUARTER; THENCE ALONG SAID NORTH LINE NORTH 88º 19' 21" WEST TO THE WEST LINE OF SAID NORTHWEST QUARTER; THENCE ALONG SAID WEST LINE SOUTH 0º 14' 16" WEST TO THE TRUE POINT OF BEGINNING.

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NOTICE

Section 12413.1 of the California Insurance Code, effective January 1, 1990, requires that any title insurance company, underwritten title company, or controlled escrow company handling funds in an escrow or sub-escrow capacity, wait a specified number of days after depositing funds, before recording any documents in connection with the transaction or disbursing funds. This statute allows for funds deposited by wire transfer to be disbursed the same day as deposit. In the case of cashier's checks or certified checks, funds may be disbursed the next day after deposit. In order to avoid unnecessary delays of three to seven days, or more, please use wire transfer, cashier's checks, or certified checks whenever possible.

If you have any questions about the effect of this new law, please contact your local First American Office for more details.

EXHIBIT A
LIST OF PRINTED EXCEPTIONS AND EXCLUSIONS (BY POLICY TYPE)

1. CALIFORNIA LAND TITLE ASSOCIATION STANDARD COVERAGE POLICY - 1990
SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notice of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the public records.

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by their policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

2. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY FORM B - 1970
SCHEDULE OF EXCLUSIONS FROM COVERAGE

1. Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions or location of any improvement now or hereafter erected on the land, or prohibiting a separation in ownership or a reduction in the dimensions of area of the land, or the effect of any violation of any such law, ordinance or governmental regulation.
2. Rights of eminent domain or governmental rights of police power unless notice of the exercise of such rights appears in the public records at Date of Policy.
3. Defects, liens, encumbrances, adverse claims, or other matters (a) created, suffered, assumed or agreed to by the insured claimant; (b) not known to the Company and not shown by the public records but known to the insured claimant either at Date of Policy or at the date such claimant acquired an estate or interest insured by this policy and not disclosed in writing by the insured claimant to the Company prior to the date such insured claimant became an insured hereunder; (c) resulting in no loss or damage to the insured claimant; (d) attaching or

created subsequent to Date of Policy; or (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.

3. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY FORM B - 1970
WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 2 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage by reason of the matters shown in parts one and two following:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

4. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1970
WITH A.L.T.A. ENDORSEMENT FORM 1 COVERAGE
SCHEDULE OF EXCLUSIONS FROM COVERAGE

1. Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions or location of any improvement now or hereafter erected on the land, or prohibiting a separation in ownership or a reduction in the dimensions or area of the land, or the effect of any violation of any such law ordinance or governmental regulation.
2. Rights of eminent domain or governmental rights of police power unless notice of the exercise of such rights appears in the public records at Date of Policy.
3. Defects, liens, encumbrances, adverse claims, or other matters (a) created, suffered, assumed or agreed to by the insured claimant, (b) not known to the Company and not shown by the public records but known to the insured claimant either at Date of Policy or at the date such claimant acquired an estate or interest insured by this policy or acquired the insured mortgage and not disclosed in writing by the insured claimant to the Company prior to the date such insured claimant became an insured hereunder, (c) resulting in no loss or damage to the insured claimant; (d) attaching or created subsequent to Date of Policy (except to the extent insurance is afforded herein as to any statutory lien for labor or material or to the extent insurance is afforded herein as to assessments for street improvements under construction or completed at Date of Policy).
4. Unenforceability of the lien of the insured mortgage because of failure of the insured at Date of Policy or of any subsequent owner of the indebtedness to comply with applicable "doing business" laws of the state in which the land is situated.

5. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1970
WITH REGIONAL EXCEPTIONS

When the American Land Title Association Lenders Policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy, the exclusions set forth in paragraph 4 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage by reason of the matters shown in parts one and two following:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

6. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1992
WITH A.L.T.A. ENDORSEMENT FORM 1 COVERAGE
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy;
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or the extent insurance is afforded herein as to assessments for street improvements under construction or completed at date of policy); or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any statutory lien for services, labor or materials (or the claim of priority of any statutory lien for services, labor or materials over the lien of the insured mortgage) arising from an improvement or work related to the land which is contracted for and commenced subsequent to Date of Policy and is not financed in whole or in part by proceeds of the indebtedness secured by the insured mortgage which at Date of Policy the insured has advanced or is obligated to advance.
7. Any claim, which arises out of the transaction creating the interest of the mortgagee insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the interest of the insured mortgagee being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the subordination of the interest of the insured mortgagee as a result of the application of the doctrine of equitable subordination; or
   (iii) the transaction creating the interest of the insured mortgagee being deemed a preferential transfer except where the preferential transfer results from the failure:
   (a) to timely record the instrument of transfer; or
   (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

7. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1992
WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 6 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

8. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 1992

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
   (a) to timely record the instrument of transfer; or
   (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

9. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 1992
WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 8 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

10. AMERICAN LAND TITLE ASSOCIATION RESIDENTIAL
TITLE INSURANCE POLICY - 1987
EXCLUSIONS

In addition to the Exceptions in Schedule B, you are not insured against loss, costs, attorneys' fees and expenses resulting from:

1. Governmental police power, and the existence or violation of any law or government regulation. This includes building and zoning ordinances and also laws and regulations concerning:
   * land use
   * land division
   * improvements on the land
   * environmental protection

   This exclusion does not apply to violations or the enforcement of these matters which appear in the public records at Policy Date.
   This exclusion does not limit the zoning coverage described in items 12 and 13 of Covered Title Risks.
2. The right to take the land by condemning it, unless:

* a notice of exercising the right appears in the public records on the Policy Date
* the taking happened prior to the Policy Date and is binding on you if you bought the land without knowing of the taking.

3. Title Risks:
* that are created, allowed, or agreed to by you
* that are known to you, but not to us, on the Policy Date - unless they appeared in the public records
* that result in no loss to you
* that first affect your title after the Policy Date - this does not limit the labor and material lien coverage in Item 8 of Covered Title Risks

4. Failure to pay value for your title.

5. Lack of a right:
* to any land outside the area specifically described and referred to in Item 3 of Schedule A, or
* in streets, alleys, or waterways that touch your land
This exclusion does not limit the access coverage in Item 5 of Covered Title Risks.

11. EAGLE PROTECTION OWNER'S POLICY

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE - 2008
ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE - 2008

Covered Risks 16 (Subdivision Law Violation). 18 (Building Permit). 19 (Zoning) and 21 (Encroachment of boundary walls or fences) are subject to Deductible Amounts and Maximum Dollar Limits of Liability

EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning:
a. building
b. zoning
c. land use
d. improvements on the land
e. land division
f. environmental protection
This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.

2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.

3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.

4. Risks:
a. that are created, allowed, or agreed to by You, whether or not they are recorded in the Public Records;
b. that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the policy Date;
c. that result in no loss to You; or
d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.

5. Failure to pay value for Your Title.

6. Lack of a right:
a. to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
b. in streets, alleys, or waterways that touch the Land.
This Exclusion does not limit the coverage described in Covered Risk 11 or 21

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows: Covered Risk 16, 18, 19 and 21, Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A. The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 16:	1% of Policy Amount or $5,000.00 (whichever is less)	$10,000.00
Covered Risk 18:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 19:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 21:	1% of Policy Amount or $2,500.00 (whichever is less)	$5,000.00

12. THIRD GENERATION EAGLE LOAN POLICY AMERICAN LAND TITLE ASSOCIATION EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (1/01/08)

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EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to (i) the occupancy, use, or enjoyment of the Land; (ii) the character, dimensions, or location of any improvement erected on the Land; (iii) the subdivision of land; or(iv) environmental protection; or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
   (b)Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or
   (e) resulting in loss or damage which would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.
6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.
8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.

13. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 2006

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors? rights laws, that the transaction creating the lien of the Insured Mortgage, is

(a) a fraudulent conveyance or fraudulent transfer, or

(b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

14. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 2006

WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 13 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

15. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 2006

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

   (i) the occupancy, use, or enjoyment of the Land;

   (ii) the character, dimensions, or location of any improvement erected on the Land;

   (iii) the subdivision of land; or

   (iv) environmental protection;or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters

   (a) created, suffered, assumed, or agreed to by the Insured Claimant;

   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;

   (c) resulting in no loss or damage to the Insured Claimant;

   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risks 9 and 10); or

   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors? rights laws, that the transaction vesting the Title as shown in Schedule A, is

   (a) a fraudulent conveyance or fraudulent transfer; or

   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

16. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 2006

WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 15 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

PRIVACY POLICY

We Are Committed to Safeguarding Customer Information

In order to better serve your needs now and in the future, we may ask you to provide us with certain information. We understand that you may be concerned about what we will do with such information – particularly any personal or financial information. We agree that you have a right to know how we will utilize the personal information you provide to us. Therefore, together with our parent company, The First American Corporation, we have adopted this Privacy Policy to govern the use and handling of your personal information.

Applicability

This Privacy Policy governs our use of the information which you provide to us. It does not govern the manner in which we may use information we have obtained from any other source, such as information obtained from a public record or from another person or entity. First American has also adopted broader guidelines that govern our use of personal information regardless of its source. First American calls these guidelines its *Fair Information Values*, a copy of which can be found on our website at www.firstam.com.

Types of Information

Depending upon which of our services you are utilizing, the types of nonpublic personal information that we may collect include:

- Information we receive from you on applications, forms and in other communications to us, whether in writing, in person, by telephone or any other means;
- Information about your transactions with us, our affiliated companies, or others; and
- Information we receive from a consumer reporting agency.

Use of Information

We request information from you for our own legitimate business purposes and not for the benefit of any nonaffiliated party. Therefore, we will not release your information to nonaffiliated parties except: (1) as necessary for us to provide the product or service you have requested of us; or (2) as permitted by law. We may, however, store such information indefinitely, including the period after which any customer relationship has ceased. Such information may be used for any internal purpose, such as quality control efforts or customer analysis. We may also provide all of the types of nonpublic personal information listed above to one or more of our affiliated companies. Such affiliated companies include financial service providers, such as title insurers, property and casualty insurers, and trust and investment advisory companies, or companies involved in real estate services, such as appraisal companies, home warranty companies, and escrow companies. Furthermore, we may also provide all the information we collect, as described above, to companies that perform marketing services on our behalf, on behalf of our affiliated companies, or to other financial institutions with whom we or our affiliated companies have joint marketing agreements.

Former Customers

Even if you are no longer our customer, our Privacy Policy will continue to apply to you.

Confidentiality and Security

We will use our best efforts to ensure that no unauthorized parties have access to any of your information. We restrict access to nonpublic personal information about you to those individuals and entities who need to know that information to provide products or services to you. We will use our best efforts to train and oversee our employees and agents to ensure that your information will be handled responsibly and in accordance with this Privacy Policy and First American's *Fair Information Values*. We currently maintain physical, electronic, and procedural safeguards that comply with federal regulations to guard your nonpublic personal information.

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Photographed By T. MILLER, Deputy Recorder

The United States of America, 125

To all to whom these Presents come, Greeting:

Homestead Certificate No. 816

Application 1670

Whereas, There has been deposited in the General Land Office of the United States, a Certificate of the Register of the Land Office at Los Angeles, California, whereby it appears, that, pursuant to the Act of Congress, approved 20th May, 1862, "To secure Homesteads to Actual Settlers on the Public Domain," and the Acts supplemental thereto, the claim of Albert W. Angier has been established and duly consummated, in conformity to law, for the West half of the South East quarter; the South East quarter of the South West quarter & the Lot numbered five of Section two in Township fourteen South of Range four West of San Bernardino Meridian in California, containing one hundred & fifty two acres, and twenty five hundredths of an acre according to the Official Plat of the Survey of the said Land, returned to the General Land Office by the Surveyor-General.

Now, know ye, That there is, therefore, granted by the United States unto the said Albert W. Angier the tract of Land above described; to have and to hold the said tract of Land, with the appurtenances thereof, unto the said Albert W. Angier and to his heirs and assigns forever; subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes, and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by the local customs, laws, and decisions of courts, and also subject to the right of the proprietor of a vein or lode to extract and remove his ore therefrom, should the same be found to penetrate or intersect the premises hereby granted, as provided by law.

In Testimony Whereof, I, Benjamin Harrison President of the United States of America, have caused these letters to be made Patent, and the seal of the General Land Office to be hereunto affixed.

Given under my hand, at the City of Washington, the Ninth day of July, in the year of our Lord one thousand eight hundred and Eighty nine, and of the Independence of the United States the one hundred and fourteenth.

Seal.

By The President: Benjamin Harrison

By: Jno. H. McKean, Secretary.

J. H. Durand, Recorder of the General Land Office.

Recorded Vol. 2 Page 281

Received for Record Sept 24 1889, at 35 min. past 2 o'clock, P M.,

at request of A. W. Angier

Ely Haight, County Recorder.

By H. P. Johnson Jr. Deputy.

Fee $1.75

Photographed By P. G. SHELLEY, Deputy Recorder

Certificate No. 1635

The United States of America,

To all to whom these Presents shall come, Greeting:

Whereas, Peter H. Bask of San Diego County California

has deposited in the General Land Office of the United States, a Certificate of the Register of the Land Office at Los Angeles, California, whereby it appears that full payment has been made by the said

Peter H. Bask

according to the provisions of the Act of Congress of the 24th of April, 1820, entitled "An Act making further provision for the sale of the Public Lands," and the Acts supplemental thereto, for the East half of the North East quarter and the East half of the South East quarter of Section two in Township fourteen South of Range four West of San Bernardino Meridian in California containing one hundred and sixty one acres and seven hundredths of an acre

according to the Official Plat of the Survey of the said Lands, returned to the General Land Office by the Surveyor-General, which said tract has been purchased by the said

Peter H. Bask

Now, know ye, That the United States of America, in consideration of the premises, and in conformity with the several Acts of Congress in such case made and provided, have given and granted, and by these presents do give and grant, unto the said Peter H. Bask

and to his heirs, the said tract above described: to have and to hold the same, together with all rights, privileges, immunities, and appurtenances, of whatsoever nature thereunto belonging, unto the said

Peter H. Bask

and to his heirs and assigns forever; subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes, and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by the local customs, laws, and decisions of courts, and also subject to the right of the proprietor of a vein or lode to extract and remove his ore therefrom, should the same be found to penetrate or intersect the premises hereby granted, as provided by law.

Seal

In Testimony Whereof, I, Benjamin Harrison President of the United States of America, have caused these letters to be made Patent, and the seal of the General Land Office to be hereunto affixed.

Given under my hand, at the City of Washington, the Sixth day of January, in the year of our Lord one thousand eight hundred and Ninety, and of the Independence of the United States the one hundred and fourteenth

By The President: Benjamin Harrison

By M. McKean, Secretary.

J. M. Townsend Recorder of the General Land Office.

Recorded Vol. 5, Page 20

Received for Record Dec 11 1890, at 10 min. past 1 o'clock, P. M.,

at request of E. W. Bushyhead. E. H. Miller County Recorder. By B. E. Moore (D)r Asst.

Received Dec. 5. 1890 at 3½ o'clock P. M. E. H. Miller County Recorder.

Fee $1.50 By H. R. Haight Deputy.

5 Exception 011 257 212

DEED BOOK 257

212

First Road District
No. 7

Know all Men by these Presents. That

Helen O. Buckyhead the undersigned,

do hereby consent to the laying out and establishing of the following described public road, to-wit:

Beginning at a point 236.5 ft. N 76°30' W from the N.W. Corner of Section 2 Twp 13 S. R 4 W. S.B.M. and running thence south westerly through sections 21-22-27-34 of said Twp. to a point near the S. E. Corner of the NE¼ of NE¼ of said Section, thence via Line "B" through Section 2 Twp 14 S. R 4 W. thence via Line "A" to the town of Del Mar, as per survey No. 7 made April 1893 & resurvey Sept. 1896 on file in the Surveyor's office of San Diego County.

and upon the making of the order of the Board of Supervisors establishing the said described road as a public highway. I Helen O. Buckyhead hereby grant the easement of right of way to San Diego County for such public road over the following described land of which I am the owner, to-wit: the East 1/2 of the East ½ of Section 2 Twp 14 S. R 4 W. S.B.M. said Highway to occupy a strip of land 40 feet wide, 20 feet each side of center line of survey.

all in the County of San Diego, State of California.

WITNESS my hand the 19th day of October 1896

Helen O. Buckyhead

State of California, County of San Diego } ss.

On this 19th day of October in the year one thousand eight hundred and ninety-six before me R. N. Shelton N. P. in and for said County, residing therein, duly commissioned and qualified personally appeared Helen O. Buckyhead known to me to be the person described in and whose name is subscribed to the within instrument, and she acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in the County of San Diego, State of California, the day and year above written.

Date of appointment Oct. 29th 1894
Term of office expires Oct 28th 1898

R. N. Shelton
Notary Public in and for the County of San Diego, State of California.

Recorded at request of R. M. Vail Dec 2nd 1896, at 45 min. past 9 o'clock A m.

John J. Forward Recorder.

Fee $ 80 ¢

By W. E. Lindsay Deputy Recorder.

Photographed By P.O. SHELLEY, Deputy Recorder

6 Exception 012 269 99

Photographed By M. DULAC, Deputy Recorder

unto the said Grantee, his heirs and assigns forever.

Witness my hand and seal this 17th day of March 1898

Signed and executed in the presence of C. A. Brown } Mrs Julia Hayward (Seal)

State of California, } ss.
County of San Diego }

On this 17th day of March One Thousand Eight Hundred and Ninety eight, before me, Charles A Brown a Notary Public, in and for said County, residing therein, duly commissioned and sworn, personally appeared Julia Hayward wife of A. M. Hayward known to me to be the person described in and whose name is subscribed to the within instrument, and acknowledged to me that she executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal, at my office, in the County of San Diego, the day and year first above written.

Charles A. Brown
Notary Public in and for the County of San Diego
State of California.

Recorded at Request of Grantee, Mar. 17, 1898 at 10 Min. past 2 o'clock P.M.
Fee 75¢

Jno. P. Forward, Recorder,
By W. E. Burlong Deputy Recorder.

Name of Road Encinitas to Del Mar.
Petitioned by Jacob Gruendike et al.
First and Fifth Road District.
Survey No. Seven.

Know all Men by these Presents:

That The San Dieguito Reclamation Company the undersigned, do hereby consent to the laying out and establishing of the following described public road, to-wit:

Beginning at a point 236-½ feet West from the N. W. corner of Section 22 Twp. 13 S. R. 4 W. S. B. M. and running thence Southerly through Sections 21, 22, 27, 34, and 35 of said Twp. and Sections 2 and 11 Twp. 14 S. R. 4 W. S. B. M. to the Town of Del Mar as per

Photographed By M. DULAC, Deputy Recorder

Survey No 7 made April 1893 and on file in the Surveyors Office of San Diego County Via Line A B & C
and upon the making of the order of the Board of Supervisors establishing the said described road as a public highway We the San Dieguito Rec. Co hereby grant the easement of right of way to San Diego County for such public road over the following described land of which We are the owner. to-wit

The fractional North half and the N ½ of the South half of Section 11 Twp. 14 S.R. 4 W S B M. said highway to occupy a strip of land 40 feet wide 20 feet each side of center line of Survey. Line marked C.
all in the County of San Diego, State of California.

Witness my hand the 17th day of March 1898.

San Dieguito Reclamation Company incorporated Dec. 7

The San Dieguito Reclamation Company
by I. W. Kroff.
President.

State of California, } ss.
County of San Diego }

On this 17th day of March in the year one thousand eight hundred and ninety-eight, before me C. L. Stanton a Notary Public in and for said County of San Diego personally appeared I. W. Kroff, known to me to be the President of the San Dieguito Reclamation Company the Corporation described in, and whose name is subscribed to the within and annexed instrument, and acknowledged to me that such Corporation executed the same.

In Witness Whereof, I have hereunto set my hand, and affixed my Official Seal at my office in the said County of San Diego, the day and year in this Certificate first above written.

NOTARY PUBLIC C. L. Stanton San Diego Co. Cal.

C. L. Stanton
Notary Public in and for said San Diego County
State of California.

Recorded at Request of R. M. Vail Mar. 17. 1898 at 5 min. past 4 o'clock P.M.
Fee 0.50

Jno. J. Forward, Recorder.
By W. E. Burlong, Deputy Recorder.

DEED BOOK 615

61

Photographed By T. FADER, Deputy Recorder

This Indenture, Made the 7th day of May, 1913 between South Coast Land Company a Corporation, party of the first part, and Earl A. Sinks, party of the second part.

Witnesseth: That the said party of the first part, for and in consideration of the sum of Ten Dollars ($10.00) Gold Coin of the United States, to it in hand paid by said party of the second part, receipt whereof is hereby acknowledged, does by these presents grant to the said party of the second part, and to his heirs and assigns forever, all those certain lots, pieces or parcels of land situate, lying and being in the County of San Diego, State of California, and bounded and particularly described as follows, to-wit:

Description

The North Half of the Southwest Quarter of the Northeast Quarter (N½ of S.W¼ of the N.E¼); the North Half of the Southeast Quarter of the Northwest Quarter N½ of the S.E¼ of the N.W¼); the North Half of the Southwest Quarter of the Northwest Quarter (N½ of the S.W¼ of the N.W¼); the South Half of the Northwest Quarter of the Northwest Quarter S½ of N.W¼ of N.W¼) of Section Twelve (12); Also the East Half of the Northeast Quarter of the Northeast Quarter (E½ of N.E¼ of N.E¼); the Northeast Quarter of the Southeast Quarter of the Northeast Quarter N.E¼ of S.E¼ of the N.E¼) in Section Eleven (11) all in Township Fourteen (14) South, Range Four (4) West, S.B.M. containing in all, one hundred ten (110) acres of land.

Expressly Excepting, reserving and retaining unto grantor, its successors and assigns forever, a right of way twenty (20) feet in width, for a water pipe line and power line of the said grantor or the Del Mar Water, Light & Power Company, together with the right of ingress and egress for the purpose of making repairs, alterations and additions to said water pipe line and power line now existing or hereafter constructed.

Also Expressly Excepting, reserving and retaining unto said grantor, its successors and assigns forever, the right to build, and the right of way for the purpose of building a ditch line across the above described conveyed lands for the conveying of water from the San Dieguito River to other lands of the grantor, its successors or assigns lying south and west of the lands hereby conveyed; such ditch line to be used for the purpose of re-claiming and irrigating other lands of grantor, its successors or assigns.

This conveyance is also made subject to the existing lease between South Coast Land Company and A. Burford, expiring November First, 1913, unless earlier terminated pursuant to the provisions therein contained; to which lease reference is hereby made for further particulars.

In Witness Whereof, the said party of the first part by due authority has hereunto executed this instrument the day hereinabove written.

South Coast Land Company.
By H. W. Kellers
President.
And F. A. Tolle
Secretary

South Coast Land Company California Incorporated Feb. 23. 1906.

DEED BOOK 615

62

State of California } ss.
County of Los Angeles.

On this 14 day of May in the year nineteen hundred and 13 before me, Millicent Earll a Notary Public in and for the said County of Los Angeles, State of California, residing therein, duly commissioned and sworn, personally appeared W. W. Keller known to me to be the President and E. J. Tolle known to me to be the Secretary of the South Coast Land Company, Corporation that executed the within instrument, known to me to be the persons who executed the within instrument, on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

NOTARY PUBLIC Millicent Earll LOS ANGELES CO

Millicent Earll
Notary Public in and for said County of
Los Angeles, State of California.

Recorded at Request of S. T. G. Co. (Burt) May 23 1913 at 9 Oclock A. M.
Fee $1.50

John W. Terry County Recorder
By J. H. F. Recorder

COMPARED
K. E. King
DEPUTY COUNTY RECORDER

Kenneth A. McLeod and Annie L. McLeod, husband and wife, For and in consideration of Ten Dollars

Do Hereby Grant to Archibald K. McLeod, All that Real Property situated in the City of San Diego, County of San Diego, State of California, bounded and described as follows:

Lots Six (6) and Seven (7) in Block One Hundred Eighty nine (189) of San Diego Land and Town Company's Addition in the City of San Diego, County of San Diego, State of California, according to the Map thereof No. 379 filed in the office of the Recorder of said San Diego County, October 30, 1886.

To Have and to Hold the above granted and described premises unto the said Grantee his heirs and assigns forever, subject to taxes assessed in 1913 which the purchaser agrees to assume and pay.

Witness our hands and seals this 14th day of April 1913.

Signed and executed in presence of A. E. Bolton — K. A. McLeod Seal; Annie L. McLeod Seal

A.E.B. Dominion of Canada } ss.
Province of Alberta }

A.E.B. On this 15th day of April A. D. Nineteen Hundred and thirteen before me, Samuel Edward Bolton a Notary Public A.E.B. in and for said Province, residing therein, duly commissioned and sworn, personally appeared Kenneth A. McLeod and Annie L. McLeod, husband and wife, known to me to be the persons described in and whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

In Witness Whereof, I have hereunto set my hand and

Photographed By T. FADER, Deputy Recorder

8 Exception 014 615 61

DEED BOOK 615

61

Photographed By T. FADER, Deputy Recorder

This Indenture, Made the 8th day of May, 1913 between South Coast Land Company, a Corporation, party of the first part, and Carl A. Sinke, party of the second part:

Witnesseth: That the said party of the first part, for and in consideration of the sum of Ten Dollars ($10.00) Gold Coin of the United States, to it in hand paid by said party of the second part, receipt whereof is hereby acknowledged, does by these presents grant to the said party of the second part, and to his heirs and assigns forever, all those certain lots, pieces or parcels of land situate, lying and being in the County of San Diego, State of California, and bounded and particularly described as follows, to-wit:

Description

The North Half of the Southwest Quarter of the Northeast Quarter (N½ of S.W¼ of the N.E¼); the North Half of the Southeast Quarter of the Northwest Quarter N½ of the S.E¼ of the N.W¼); the North Half of the Southwest Quarter of the Northwest Quarter (N½ of the S.W¼ of the N.W¼); the South Half of the Northwest Quarter of the Northwest Quarter (S½ of N.W¼ of N.W¼) of Section Twelve (12); Also the East Half of the Northeast Quarter of the Northeast Quarter (E½ of N.E¼ of N.E¼); the Northeast Quarter of the Southeast Quarter of the Northeast Quarter (N.E¼ of S.E¼ of the N.E¼) in Section Eleven (11) all in Township Fourteen (14) South, Range Four (4) West, S.B.M. containing in all, one hundred ten (110) acres of land.

Expressly Excepting, reserving and retaining unto grantor, its successors and assigns forever, a right of way twenty (20) feet in width, for a water pipe line and power line of the said grantor or the Del Mar Water, Light & Power Company, together with the right of ingress and egress for the purpose of making repairs, alterations and additions to said water pipe line and power line now existing or hereafter constructed.

Also Expressly Excepting, reserving and retaining unto said grantor, its successors and assigns forever, the right to build, and the right of way for the purpose of building a ditch line across the above described conveyed lands, for the conveying of water from the San Dieguito River to other lands of the grantor, its successors or assigns lying south and west of the lands hereby conveyed; such ditch line to be used for the purpose of reclaiming and irrigating other lands of grantor, its successors or assigns.

This conveyance is also made subject to the existing lease between South Coast Land Company and A. D. Burford, expiring November First, 1913, unless earlier terminated pursuant to the provisions therein contained; to which lease, reference is hereby made for further particulars.

In Witness Whereof, the said party of the first part by due authority has hereunto executed this instrument the day hereinabove written.

South Coast Land Company.

By W. W. Kellers President.

And E. A. Tolle Secretary.

South Coast Land Company California Incorporated Feb. 23, 1906.

DEED BOOK 615

62

State of California } ss.
County of Los Angeles.

On this 14 day of May in the year nineteen hundred and 13 before me Millicent Earll a Notary Public in and for the said County of Los Angeles, State of California, residing therein duly commissioned and sworn, personally appeared W. W. Keller known to me to be the President, and E. J. Tolle known to me to be the Secretary of the South Coast Land Company, Corporation that executed the within instrument, known to me to be the persons who executed the within instrument, on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

In Witness Whereof I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Millicent Earll
Notary Public in and for said County of
Los Angeles, State of California.

Recorded at Request of S. T. G. Co. (Burt) May 22 1913 at 9 Oclock A. M.
Fee $1.50
John W. Terry County Recorder
By J. H. E. Recorder

COMPARED
H. E. King
DEPUTY COUNTY RECORDER

Kenneth A. McLeod and Annie L. McLeod, husband and wife, For and in consideration of Ten Dollars
Do Hereby Grant to Archibald K. McLeod, All that Real Property situated in the City of San Diego, County of San Diego, State of California, bounded and described as follows:
Lots Six (6) and Seven (7) in Block One Hundred Eighty nine (189) of San Diego Land and Town Company's Addition in the City of San Diego, County of San Diego, State of California, according to the Map thereof No. 379, filed in the office of the Recorder of said San Diego County, October 30, 1886.
To Have and to Hold the above granted and described premises unto the said Grantee his heirs and assigns forever, subject to taxes assessed in 1913 which the purchaser agrees to assume and pay.
Witness our hands and seals this 14th day of April 1913.
Signed and executed in presence } K. A. McLeod Seal
of S. E. Bolton } Annie L. McLeod Seal

S.E.B. Dominion of Canada }
Province of Alberta } ss.
S.E.B. On this 15th day of April A.D. Nineteen Hundred and thirteen before me, Samuel Edward Bolton a Notary Public
S.E.B. in and for said Province, residing therein, duly commissioned and sworn, personally appeared Kenneth A. McLeod and Annie L. McLeod, husband and wife, known to me to be the persons described in and whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.
In Witness Whereof I have hereunto set my hand and

Photographed By T. FADER, Deputy Recorder

First American Title

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Photographed By V. WHELAN, Deputy Recorder

that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my Official Seal at my office in the City of San Diego, County of San Diego, State of California, the day and year in this certificate first above written.

G. E. Bell

Notary Public in and for the County of San Diego, State of California.

(NOTARY PUBLIC G. E. Bell SAN DIEGO CO. CAL.)

Recorded at Request of Geo. Nov. 17 1916 at 18 Min Past 11 O'clock A.M.

Glenn H. Terry, County Recorder

21388 Fee $1.00

F.M. Drummond

The Santa Ana Sugar Company, a corporation, for and in consideration of Ten Dollars ($10.00), the receipt of which is hereby acknowledged, does hereby grant and convey to Wm. G. Henshaw, his heirs and assigns, the right to construct and maintain a dam and reservoir in Section 18, Township 12 South, Range 2 West, San Bernardino Meridian, and known as Carroll Valley in the County of San Diego, State of California, on the San Dieguito River, and dams and reservoirs at any point or places from said San Dieguito or Santa Isabel Rivers or their branches, east of Section 18, Township 13 South, Range 2 West, S. B. M. and the right to perpetually collect and impound by and in such dams and reservoirs any and all waters of the Santa Isabel and San Dieguito Rivers, and the right to perpetually divert any and all the said waters so collected and impounded from the water shed of the Santa Isabel or San Dieguito Rivers into other watersheds and parts of said County of San Diego, State of California; and we do hereby consent to the construction and maintenance of such dams and reservoirs and to the collecting and impounding of the said waters therein and thereby, and to the said diversion of said waters as aforesaid.

This instrument shall not be construed as a waiver of our rights to any of the underground or surface waters which may flow over, under and across our property and which originate in the said Santa Isabel or San Dieguito Rivers to the west of and below the said dams and reservoirs after the same are constructed.

It is understood that said Santa Ana Sugar Company is the owner of the following described land situated in the Valley of the Santa Isabel or San Dieguito Rivers in said county and state, to-wit:

S½ of S.W.¼ of S.E.¼; W½ of S½ of N½ of S.W.¼ of S.W.¼ and W½ of S½ of S½ of S.W.¼ of Section 1, T. 14 S. R. 4 W.

Re N½ of N.W.¼ of N.W.¼; S½ of N.W.¼ of N.W.¼; W½ of

DEED BOOK 715

Photographed By V. WHELAN, Deputy Recorder

S½ of NW¼; and N½ of SW¼ of NE¼ of Section 12, T. 14 S. R. 4 W. The E½ of NE¼ of NE¼; and NE¼ of SE¼ of NE¼ of Section 11, T. 14 S. R. 4 W.

The NE¼ of NW¼ and NW¼ of NE¼ of Section 12, T. 14 S. R. 4 W.;

All that portion of the N½ of SE¼ Sec. 6, T. 14 S. R. 3 W. S. B. M. described as follows: Beginning at the SE corner of the N½ of SE¼ of said Sec. 6, T. 14 S. R. 3 W. S. B. M. running thence North 0.00 degrees 24½' East (all bearings being from true meridian) along the east line of Sec. 6, 182.7 feet; thence North 59 degrees 29' West 1869.6 feet; thence North 77 degrees 38' West 201 feet; thence North 67 degrees 27' West 2559 feet; thence North 30 degrees 42' West 316 feet to a point in the center of County Road; thence following the center line of said county road South 35 degrees 10' West 483 feet; thence South 56 degrees 05' West 694.6 feet; thence South 82 degrees 46' West 399.8 feet; thence South 0.00 degrees 24½' West 2044.9 feet to the SW corner of said N½ of SE¼ of said Section 6; said point being in the center of the County road running West and South through said Sec. 6; thence South 89 degrees 27' East 2752.8 feet, more or less to the point of beginning; excepting therefrom any portions thereof lying within the boundaries of any public road.

The S½ of SW¼ of Section 6, T. 14 S. R. 3 W.; and the N½ of NW¼ of Section 7, T. 14 S. R. 3 W. S. B. M.

And it is hereby agreed that this grant and the consent hereby given shall apply to and bind the heirs, lessees and assignees of the said Santa Ana Sugar Company and all successors in interest of the said Santa Ana Sugar Company in and to said land.

To have and to hold all the above mentioned rights and privileges unto the said Wm. F. Renshaw, his heirs and assigns forever.

In Witness Whereof, the Santa Ana Sugar Company has hereunto caused its Corporate name to be signed and its Corporate seal to be affixed the 14th day of October, 1916, by its Vice President and Secretary thereunto duly authorized by resolution of its Board of Directors.

Santa Ana Sugar Company
Santa Ana Sugar Company Santa Ana Cal. Incorporated June 12, 1911

By A. Setty Vice President

By A. J. Brookshanks Secretary.

State of California } ss
County of Orange }

On this 16th day of October in the year of our Lord One Thousand Nine Hundred and sixteen before me B. D. Parker a Notary Public in and for said County residing therein, duly commissioned and sworn, personally appeared A. Setty known to me to be the Vice President and A. J. Brookshanks known to me to be the Secretary of the Corporation described in and that executed the attached instrument and known to me to be the persons who executed the attached instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

In Witness Whereof, I have hereunto set my hand and

DEED BOOK 715

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Photographed By R. WHELAN, County Recorder

affixed my official seal, the day and year in this certificate first above written.

R. J. Parker
Notary Public in and for said County.

Recorded at Request of R. L. Malvin Nov. 17, 1916 at 39 Min Past 11 O'clock A.M.
John L. Terry County Recorder
By W. Howard Terry Deputy

21390 Fee $1.00

COMPARED
F.H. Drummond

El Monte Ranch Company a Corporation, having its principal place of business in City of San Diego, County of San Diego California, by virtue of a resolution authorizing the same passed at a meeting of its Directors, for and in consideration of the sum of Ten Dollars

Does Hereby Grant to William Lubin

All that Real Property, situated in County of San Diego, State of California, bounded and described as follows:

All that portion of the El Monte Rancho in the County of San Diego State of California, according to map thereof filed in the office of the County Recorder of said San Diego County August 26th, 1918 and numbered 1146 of the maps filed in said office, and being also a portion of Lots Sixty two (62) and Sixty three (63) in the Subdivision of Tract "d" Tract of the Rancho El Cajon, according to map thereof in Book 170, page 71 of deeds, in the office of the said County Recorder, described as follows:

Commencing at a point on the Southerly line of said El Monte Rancho as shown on said map thereof, which point is North 44° 37' East five hundred twenty three and nine tenths (523.9) feet from Corner No. 28 of said El Monte Rancho; thence North 45° 23' West nineteen hundred fifty seven and six tenths (1957.6) feet; thence North 57° 37' East sixteen hundred sixty six and one tenth (1666.1) feet; thence South 45° 23' East fifteen hundred eighty three and seven tenths (1583.7) feet to a point on the Southerly line of said El Monte Rancho; thence along said Southerly line South 44° 37' West sixteen hundred twenty three and four tenths (1623.4) feet to the point of commencement.

To Have and to Hold the above granted and described premises, unto the said Grantee his heirs and assigns forever.

In Witness Whereof said Corporation has caused this Deed to be signed by its President and Secretary and its Corporate Seal to be affixed thereto, this Fifteenth day of November 1916.

El Monte Ranch Company
By Geo. Buenham
Vice-President
By Geo. J. Bach
Secretary

State of California, County of San Diego } ss.

On this Fifteenth day of November

Photographed By C. TOY, Deputy Recorder

I Jennie Cochrane Stevens for and in consideration of $10.00 the receipt of which is hereby acknowledged, do hereby grant and convey to William G. Reinhaus, heirs and assigns, the right to construct and maintain a dam and reservoir in Section 18. Township 13 South, Range 2 West San Bernardino Meridian, and known as Pamo Carroll in the County of San Diego, State of California, and dams and reservoirs at any point, points or places above an elevation of 200 feet above sea level upon the San Pasqual and Santa Ysabel Rivers, or their branches and the right to perpetually collect and impound by and in such dams and reservoirs any and all waters of the Santa Ysabel and San Pasqual Rivers and any and all waters that may flow therein, and the right to perpetually divert any and all the said waters so collected and impounded, from the watershed of the Santa Ysabel or San Pasqual Rivers above said elevation of 200 feet above sea level into other watersheds and parts of said County of San Diego, and I do hereby consent to the construction and maintenance of such dams and reservoirs and to the collecting and impounding of the said waters therein and thereby, and to the said diversion of said waters as aforesaid.

This instrument shall not be construed as a waiver of my rights to any of the waters which may flow into the said Santa Ysabel or San Pasqual Rivers to the west of and below the said dams and reservoirs after the same are constructed.

It is understood that I am the owner of the following described land situated in the valley of the Santa Ysabel or San Pasqual Rivers in said County and State to wit

S E ¼ of N E ¼ and the E ½ of S E ¼, all in Section 2 Township 13 South, Range 1 West S B M.

It is mutually agreed that I am not waiving any of my rights to any water that may flow over under or across the property above described, after said dams are constructed.

And it is hereby agreed that this grant and the consent hereby given shall apply to and bind my heirs, lessees and assigns and all my successors in interest in said land.

To have and to hold all the above mentioned rights and privileges unto the said William G. Reinhaus his heirs and assigns forever.

Witness my hand this 11 day of December 1916.

Jennie Cochran Stevens

E. R. Stevens

State of California } ss.
County of San Diego }

On this 11 day of December A. D. 1916, before me Robert N. Colburn a Notary Public in and for the said County of San Diego, State of California, residing therein,

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Photographed By C. TOY, Deputy Recorder

duly commissioned and sworn, personally appeared Jennie Cochran Stevens and E. P. Stevens, known to me to be the persons whose names they subscribed to the within instrument, and they duly acknowledged to me that they executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal at my office in the County of San Diego the day and year in this certificate first above written.

Robert W. Colburn

Notary Public in and for San Diego County, State of California.

My Commission Expires Jan. 3. 1919.

Recorded at request of Ed Fletcher (Makins) Dec. 15. 1916 At 5 Min past 4 o'clock P. M.

John D. Fenny, County Recorder.

COMPARED

23291 Fee $1.00 J. W. Drummond By N. C. Parsons Deputy

DEPUTY COUNTY RECORDER

A. Petin Jauregui and Maria Jauregui, husband and wife, for and in consideration of $1.00, the receipt of which is hereby acknowledged, do hereby grant and convey to Ed. Fletcher, his heirs and assigns the right to construct and maintain a dam and reservoir in Section 18, Township 13 South, Range 2 West, San Bernardino Meridian, and known as Carroll Valley, in the County of San Diego, State of California, on the San Dieguito River, and dams and reservoirs at any point or places upon said San Dieguito or Santa Ysabel Rivers or their branches, east of Section 18, Township 13 South, Range 2 West, S. B. M. and the right to perpetually collect and impound by and in such dams and reservoirs any and all waters of the Santa Ysabel and San Dieguito Rivers, and the right to perpetually divert any and all the said waters so collected and impounded, from the watershed of the Santa Ysabel or San Dieguito Rivers into other watersheds and parts of said County of San Diego, State of California, and I do hereby consent to the construction and maintenance of such dams and reservoirs and to the collecting and impounding of the said waters therein and thereby, and to the said diversion of said waters as aforesaid.

This instrument shall not be construed as a waiver of my rights to any of the underground or surface waters which may flow over, under and across my property and which now are in the said Santa Ysabel or San Dieguito Rivers to the west of and below the said dams and reservoirs after the same are constructed.

It is understood that I am the owner of the

DEED BOOK 1721

following described land situated in the valley of the Santa Ysabel or San Dieguito River in said County and State, to-wit

N½ of SE¼ of SE¼ of NW¼ of Section 1, Township 14 South, Range 4 West S.B.M. containing 2.5 acres more or less.

And it is hereby agreed that this grant and the consent hereby given shall apply to and bind my heirs, lessees and assigns, and all my successors in interest in said land.

To have and to hold all the above mentioned rights and privileges unto the said E. A. Fletcher his heirs and assigns, forever.

Witness my hand this 15 day of December 1916.

Peter Jauregui.

Maria Jauregui.

State of California } ss.
County of San Diego }

On this 16th day of December A.D. 1916 before me, Ray L. Makin a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared Peter Jauregui and Maria Jauregui known to me to be the persons whose names are subscribed to the within instrument and they duly acknowledged to me that they executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal at my office in the County of San Diego the day and year in this certificate first above written.

Ray L. Makin

NOTARY PUBLIC Ray L. Makin San Diego Co.

Notary Public in and for the County of San Diego State of California.

Recorded at request of Ray L. Makin Dec. 16, 1916 At 5 Min past 9 o'clock A.M.

John L. Terry County Recorder
By V. C. Carsons, Deputy

23215 Fee $1.00

COMPARED
F.W. Drummond
County Recorder

Southern Title Guaranty Company a corporation organized under the laws of the State of California, and having its principal place of business in the City of San Diego County of San Diego State of California. For and in consideration of Ten Dollars,

Does Hereby Grant to J. N. Doubenmier, All that real Property situated in the City of San Diego County of San Diego, State of California, bounded and described as follows:

Lots A and B in Block Three Hundred twenty-seven of Horton's Addition, according to the Map thereof made by L. L. Lockington on file in the office of the Recorder

Photographed By C. TOY, Deputy Recorder

DEED BOOK 1721

Photographed By C. TOY, Deputy Recorder

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In Witness Whereof I have hereunto set my hand and affixed my official seal at my office in the County of San Diego the day and year in this certificate first above written.

Abram Rosenthal
Notary Public in and for said County and State.

Recorded at request of Title Dec 26 1916
At 1 o'clock P M.
John L. Terry, County Recorder
By K. A. Lytle Deputy

23919 Fee $1.70

COMPARED
F.W. Drummond
DEPUTY COUNTY RECORDER

Easement

South Coast Land Company, a corporation of, in consideration of One Dollar and other value received do grant to the San Diego Consolidated Gas & Electric Company, a corporation, organized under the laws of the State of California, the perpetual right and easement to enter upon that certain real property situated in the County of San Diego, State of California described as follows, to wit:

A strip of land twenty four (24) feet in width the center line of which is described as follows:

Beginning at a point on the north line of Section Eleven (11) Township Fourteen (14) South, Range Four (4) West, S.B.M. 1760.5 feet west from the north west corner of northeast quarter (NE¼) of said Section Eleven (11) thence south Twenty (20) degrees, Twenty-seven (27) minutes East Three Hundred Fifty (350) feet thence south Fifteen (15) degrees thirty three (33) minutes East Twenty one hundred forty (2140) feet thence south Nine (9) degrees Fifty eight (58) minutes East 122.8 feet to a concrete monument on the West line of the State Highway;

for the purpose of placing, constructing, repairing and maintaining and using poles and cross arms thereon, and of stringing and placing upon such poles and cross arms, wires for the transmission of electric current for all purposes for which it may be used, and also the perpetual right and easement of constructing, replacing, maintaining and repairing all such poles, cross arms and wires upon the said above described real property, and to that end and for that purpose to go upon said land to place, construct, repair and replace such poles and wires and maintain the same in a suitable and proper condition for use. It is agreed by the parties hereto that the said cross arms may be of any length not exceeding 24 feet, and may extend

DEED BOOK 1721

Photographed By C. TOY, Deputy Recorder

12 ft. No each side of the center line of said strip of land, and over land of the grantor herein not included in said strip, and the said easement to construct, maintain and use such crossarms and stringers and maintain and use at any place thereon wires for the purposes aforesaid, are hereby granted.

Provided However, That in using said strip of land for the purposes above mentioned, and in exercising the right of entry under said easement, the said San Diego Consolidated Gas & Electric Company, its successors or assigns, will interfere as little as possible with the free usage of said strip of land, and the land adjacent thereto by the said South Coast Land Company, its successors or assigns; and Provided Further, and the said easement is granted upon the express condition, viz: that in the event the said South Coast Land Company, its successors or assigns shall hereafter desire to subdivide the property over across and upon which the said easement is granted or of which the said strip of land is a part, or to dedicate to the public use, streets or roads thereon or thereon, or to construct and maintain buildings or improvements of any kind or character on said strip of land, or any part thereof, then and in that event and upon the subdivision of said property, or upon the dedication of such streets or roads, and upon written notice thereof to the said San Diego Consolidated Gas & Electric Company, its successors or assigns, or upon having received notice in writing by said South Coast Land Company, its successors or assigns, that it the said South Coast Land Company, its successors or assigns, desires to erect and maintain buildings or improvements upon said strip of land, the said San Diego Consolidated Gas & Electric Company, its successors or assigns will promptly remove its poles and wires from the above described land to or proper positions along such street or road in such subdivided property, or along such dedicated street or road, as most closely follows the line of the said easement as herein granted, or to such other point as may be designated by the said South Coast Land Company, its successors or assigns, and the said San Diego Consolidated Gas & Electric Company, its successors or assigns will thereupon quitclaim to the said South Coast Land Company, its successors or assigns all right, title and interest in and to the strip of land hereinabove described and in and to the said easement thereon granted, and upon the execution and delivery of such conveyance the said South Coast Land Company,

Photographed By C. TOY, Deputy Recorder

its successor or assigns, will grant to said San Diego Consolidated Gas & Electric Company, its successor or assigns, a similar easement along the strips of land to which said poles and wires have been removed as aforesaid, or reserve in such dedication a right for said San Diego Consolidated Gas & Electric Company, its successors or assigns, to occupy said street or road for the purposes hereinabove set forth.

It is further agreed by the parties hereto that the San Diego Consolidated Gas & Electric Company may erect and place on each side of the strips above described, such anchorages as may be necessary to guy the line constructed over said property. Said anchorages to be permitted on land of the grantor herein not included in above described strips. Subject to each and all of the above conditions.

The said corporation is to be responsible for all damage that may be caused by the construction, operation and maintenance of said poles or wires upon said land for which in law it would be liable.

To Have and to Hold, all such rights and easements unto the said corporation, its successors and assigns forever.

In Witness Whereof, we have hereunto set our hands this 16 day of August 1916.

Signed, sealed and delivered in presence of

South Coast Land Company
by Wm. G. Beckhoff, Pres.
by F. N. Tolle, Secy.

South Coast Land Company of California Incorporated Feb. 29 1906

State of California
County of Los Angeles

On this 16th day of August A. D. 1916 before me, Anne Murray a Notary Public in and for the said County and State residing therein duly commissioned and sworn, personally appeared Wm. G. Beckhoff known to me to be the President and F. N. Tolle known to me to be the Secretary of the South Coast Land Company the corporation that executed the within instrument known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Anne Murray

Anne Murray

Notary Public in and for said County and State

My Commission Expires Nov. 14. 1917.

DEED BOOK 1721

Recorded at request of Grantee, Dec 26. 1916. At 1 o'clock
John L. Terry County Recorder
By H. A. Lyels, Deputy

C.W.
23920 Fee $1.70 COMPARED: F.W. Drummond SAN DIEGO COUNTY RECORDER

Easement

We, Joseph E. Sibley and John A. Sibley, of
in consideration of One Dollar and other value
received, do grant to the San Diego Consolidated
Gas & Electric Company, a corporation organized
under the laws of the State of California the perpetual
right and easement to enter upon that certain real
property situated in the County of San Diego, State
of California, described as follows, to wit:
The East Twenty-four (24) feet of Lots "K" and "L" in
"F" of Block Three (3) South Oceanside, according to
Map No. 622 filed in the office of the Recorder of San
Diego County, California,
for the purpose of placing, constructing, repairing
and maintaining and removing poles and cross
arms thereon, and of stringing and replacing upon
such poles and cross arms, wires for the trans-
mission of electric current for all purposes for
which it may be used, and also the perpetual right
and easement of constructing, replacing, main-
taining and repairing all such poles, cross arms
and wires upon the said above described real
property and to that end and for that purpose to
go upon said land to place, construct, repair and
replace such poles and wires and maintain the
same in a suitable and proper condition for use; it
is agreed by the parties hereto that the said cross
arms may be of any length not exceeding 24 feet
and may extend 12 feet on each side of the center
line of said strip of land and over land of the
grantor herein not included in said strip, and
the right and easement to construct, maintain
and use such cross arms and string and
maintain and use at any place thereon wires
for the purposes aforesaid, are hereby granted.
The said corporation is to be responsible
for all damage that may be caused by the con-
struction, operation and maintenance of said
poles or wires upon said land for which it shall
it would be liable.
To Have and to Hold, all such rights
and easements unto the said corporation, its
successors and assigns forever.
In Witness Whereof we have hereunto set our
hands this 5th day of September 1916.

Signed, Sealed and Delivered in presence
of Esther L. Berry, G. C. Norman.

Joseph E. Sibley
John A. Sibley

Photographed By C. TOY, Deputy Recorder

DEED BOOK 898

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9.29.22 pg 316 Deeds

and year in this certificate first written.

L. E. Hanson

U. E. Hanson Notary Public State of Utah

Notary Public in and for the County of Weber, State of Utah. My Commission Expires April 18, 1926.

Recorded at request of Stee Sep 29 1922 at 20 min past 11 o'clock A.M.

John H. Perry, County Recorder

Fee $1.00 By H. C. Parsons, Deputy 30175

EASEMENT

I, Jennie Cochran Stevens of San Diego County, California, in consideration of One Dollar, and other value received, do grant to the San Diego Consolidated Gas & Electric Company, a corporation, organized under the laws of the State of California, the perpetual right and easement to enter upon that certain real property situated in the County of San Diego, State of California, described as follows, to wit: A strip of land Two (2) feet in width, being One (1) foot on each side of the following described center line.

Beginning at a point on the East line of Section Two (2), Township Fourteen (14) South, Range Four (4) West, San Bernardino Meridian, which point is Four Hundred Six and Three-tenths (406.3) feet North of the South-east corner of said Section Two (2), thence South Sixty-two (62) degrees, Nineteen (19) minutes, West, a distance of Twelve and Four-tenths (12.4) feet, thence South Twenty-nine (29) degrees, Forty-nine (49) minutes, West, to a point on the South line of said Section Two (2), which point is Two Hundred Thirty-eight and Two-tenths (238.2) feet West of the South-east corner of said Section Two (2).

It is agreed by the parties hereto that the San Diego Consolidated Gas & Electric Company may erect and maintain on land adjacent to the above described strip of land, such anchorage as may be necessary to properly guy the line constructed over said property. Said anchorage to be placed on land of the Grantor herein not included in the above described strip of land.

Above described strip of land to be used for the purpose of placing, constructing, repairing and maintaining, and using poles and cross-arms thereon, and of stringing and placing upon such poles and cross-arms, wires for the transmission of electric current for all purposes for which it may be used, and also the perpetual right and easement of constructing, replacing, maintaining, and repairing all such poles, cross-arms and wires upon the said above described real property, and to that end and for that purpose to go upon said land to place, construct, repair and replace such poles and wires and maintain the same in a suitable and proper condition for use. It is agreed by the parties hereto that the said cross-arms may be of any length not exceeding ten (10) feet, and may extend five (5) feet on each side of the center line of said strip of land and over land of the grantor herein not included in said strip, and the right and easement to construct, maintain and use such cross-arms and string and maintain and use at any place thereon wires for the purpose aforesaid, are hereby granted.

The said corporation is to be responsible for all damage that may be caused by the construction, operation and maintenance of said poles or wires upon said land for which in law it would be liable.

TO HAVE AND TO HOLD all such rights and easements unto the said corporation, its

Photographed By M. DULAC, Deputy Recorder

E-1000

for: public utilities

effects 298-271-03

RW-AFP pds 5 & 6

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successors and assigns forever.

IN WITNESS THEREOF I have hereunto set my hand this 9th day of August 1922.

Signed, sealed and delivered in presence of

Jennie Cochran Stevens

R. S. Ruffin

STATE OF CALIFORNIA,)
) ss.
County of San Diego.)

On this 9th day of August A. D. 1922 before me, Ray C. Cavell a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared R. S. Ruffin known to me to be the person whose name is subscribed to the within instrument, as a Witness thereto, who being by me duly sworn, deposes and says:

That he resides in San Diego, California and that he was present and saw Jennie Cochran Stevens personally known to him to be the same person whose name is subscribed to the within and annexed instrument, execute and deliver the same, and she acknowledged to said affiant that she executed the same; and that said affiant subscribed his name thereto as a Witness.

IN WITNESS THEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

Ray C. Cavell

Notary Public in and for the County of San Diego, State of California.

Ray C. Cavell

Recorded at request of Otee Sep 29 1922 at 20 min past 11 o'clock A.M.

John H. Perry, County Recorder

By E. C. Parsons, Deputy

30176

Fee$1.10

EASEMENT

I, Ellen Thompson of San Diego, California, in consideration of One Dollar, and other value received, do grant to the San Diego Consolidated Gas & Electric Company a corporation, organized under the laws of the State of California, the perpetual right and easement to enter upon that certain real property situated in the City of National City, County of San Diego, State of California, described as follows, to wit: Lot Sixty-three (63), Block Four (4) of Paradena Park, as per map thereof on file in the office of the Recorder of the said County of San Diego.

for the purpose of placing, constructing , repairing, and maintaining and using poles and cross-arms thereon, and of stringing and placing upon such poles and cross-arms, wires for the transmission of electric current for all purposes for which it may be used, and also the perpetual right and easement of constructing, replacing, maintaining and repairing all such poles, cross-arms and wires upon the said above described real property, and to that end and for that purpose to go upon said land to place, construct, repair and replace such poles, and wires and maintain the same in a suitable and proper condition for use.

The said corporation is to be responsible for all damage that may be caused by the construction, operation and maintenance of said poles or wires upon said land for which in law it would be liable.

TO HAVE AND TO HOLD all such rights and easements unto the said corporation, its successors and assigns forever.

IN WITNESS WHEREOF I have hereunto set my hand this 12th day of August 1922.

Signed, sealed and delivered in presence of

Ellen Thompson

E. K. Adams

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Photographed By M. DULAC, Deputy Recorder

First American Title

Photographed By T. MILLER, Deputy Recorder

INDENTURE made this 17th day of September, 1924, by and between CLARA E. COULTER, first party, and the SAN DIEGUITO WATER COMPANY, a Nevada corporation, second party.

IN CONSIDERATION of the sum of Ten (10) Dollars, lawful money of the United States, to her in hand paid by the second party, receipt whereof is hereby acknowledged, the first party hereby grants to the second party, its successors and assigns, the right-of-way following:

A right-of- way for 18-inch Redwood Pipe Line as constructed through and across the South-east quarter of the Southeast quarter of the Southeast quarter of the Southeast quarter of Section 2, Township 14 South, Range 4 West, San Berardino Base and Meridian.

Together with the right of ingress to and egress from said right-of-way for the purpose of maintaining, repairing, operating and/ or relaying said pipe line.

TO HAVE AND TO HOLD the same so long as the second party, or its succeessore or assigns, shall maintain and operate said pipe line.

By acceptance and use of the rights hereby given the second party for itself, its successors and assigns, agrees:

1. That said pipe line will at all times be maintained as free from leaks as possible by the exercise of reasonable diligence to prevent leaks therein.

2. That should leaks develop in said pipe line the same will be promptly repaired and any damage to the land of the first party resulting from such leaks will be promptly paid, the amount thereof to be fixed by agreement between the parties or their successors or assigns, as the case may be, if possible, and if not possible, then to be fixed by arbitration of a board of arbitrators chosen in the usual manner, the cost of such arbitration to be borne and paid as such board of arbitrators direct.

3. That when the maintainence and operation of said pipe line is discontinued by the second party, its successors or assigns, the same will be removed from the lands of the first party within ninety days thereafter, and the land of the first party occupied by said pipe line will be restored as nearly as possible to the condition in which it was at the time said pipe line was laid, all at the cost and expense of the second party, its successors and assigns.

IN WITNESS WHEREOF, the first party has duly executed this indenture the day and year first above written.

Clara E. Coulter, First Party.

State of California,)
)ss
County of San Diego,)

On this 17th day of Septe_, 1924, before me, Lou B. Mathews, a Notary Public in and for said County of San Diego, State of California, personally appeared Clara E. Coulter, personally known to me to be the person whose name is subscribed to the within instrument, and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said county the day and year in this certificate first above written.

Lou B. Mathews

Lou B. Mathews
San Diego Co. Cal.

Notary Public in and for said County and State.

My Commission expires December 7th, 1926.

Form Approved
U.S. Clotfelter
Atty.

Recorded at request of Union Title Insurance Co. (Whelan) Sep 23 1924 at 9 o'clock
John H. Ferry, County Recorder. 40307
By N. C. Parsons, Deputy.

A. M.

Fee $1.10

DEPUTY COUNTY RECORDER

Photographed By V. WHELAN, Deputy Recorder

seal in said County the day and year in this certificate first above written.

Lou B. Mathews

Notary Public in and for said County and State

My Commission expires December 7th, 1926

Lou B. Mathews

Recorded at request of C.W. Jones Sep 27, 1924 at 16 min past 9 o'clock A. M.

Fee $1.20 John H. Perry, County Recorder

41071 E. Baird

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INDENTURE made this 19th day of February 1921 by and between SOUTH COAST LAND CO., a California, Corporation, hereinafter called the Grantor, and the SAN DIEGUITO MUTUAL WATER COMPANY, a California Corporation, hereinafter called the Grantee

W I T N E S S E T H :

For a valuabe consideration, receipt whereof is hereby acknowledged, Grantor hereby grants and conveys to the Grantee, its successors and assigns.

An easement for a Right of Way for a water pipe line as now laid and constructed over and upon Lots 642, 644, 645 and 832 in Arden Heights No. 6 Del Mar, and across Block 15 Del Mar Resub. No. 1, and the W.½ of the NE¼ of the N.E.¼, the N.W.¼ of the S.E.¼ of the N.E.¼ the E.½ of the S.W.¼ of the N.E.¼ and the N.E.¼ of the N.W.¼ of the S.E.¼ all in Sec. 11, Twp. 14 South, Range 4 West S.B.M.

Together with all and singular the tenements and improvements thereon and the right of ingress and egress to the agents and employes of the Grantee, its successors and assigns, for the purpose of using, maintaining, repairing and renewing said pipe line; said right of ingress and egress to be exercised in such way as will do the least damage to the land of the Grantor, and to crops growing thereupon.

TO HAVE AND TO HOLD the same unto the Grantee, its successors and assigns forever, subject to the obligation of the Grantee to maintain the pipe line upon said land in good condition, and repair; promply to repair any leaks therein which may occur; and promptly to recover any portion of said pipe line that shall be uncovered for any purpose all at the cost and expense of the Grantee. The Grantee further agrees to pay Grantor any damages occuring by reason of leaks or breaks in said pipe line not occasioned by acts of Grantor. In case of failure of Grantor and Grantee to agree upon the amount of said damage, the amount thereof shall be appraised by a Board od Arbitration composed of one member appointed by Grantor and one member by Grantee. In the event the arbitrators so appointed cannot agree as to the amount of damage, then said two arbitrators shall select a third and the decision of two of said Board of Arbitration shall be final and ibinding on all parties.

In witness whereof the Grantor has duly executed this indenture the day and year first above written.

SOUTH COAST LAND CO.

South Coast Land Company California Incorporated Feb. 23, 1906

Wm. G. Merckhoff
President

F. H. Tolle
Secretary

State of California,)
)-s.
County of Los Angeles)

On this 19th day of February A. D. 1921 before me Anne Murray a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared Wm. G. Merckhoff known to me to be the President and F.H.Tolle known to me to be the Secretary of the Corporation that executed th within instrument, known

Photographed By V. WHELAN, Deputy Recorder

to me to be the persons who executed the within instrument on behalf of the corporation herein named, and acknowledged to me that such Corporation executed the same.

In Witness whereof I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Anne Murray

Anne Murray

Notary Public in and for the said County and State

My commission expires Nov.15, 1921

Recorded at Request of C.W.Jones Sep 27, 1924 at 17 min past 9 o'clock A. M.

Fee $1.20 [illegible] John H. Perry, County Recorder

41072

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Deed No. 18.

AT&SF ASSISTANT SECRETARY'S DEED NO. --

DEED

from

SANTA FE LAND IMPROVEMENT COMPANY

to

THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY.

Covering land in San Diego County, California.

Dated Aug. 14, 1924.

THIS INDENTURE, made this 14th day of August, 1924, between the SANTA FE LAND IMPROVEMENT COMPANY, a corporation of the State of California, party of the first part, and the ATCHISON TOPEKA AND SANTA FE RAILWAY COMPANY, a corporation of the State of Kansas, party of the second part, WITNESSETH:

That the said party of the first part for and in consideration of the sum of One Dollar, lawful money of the United States, to it in hand paid by the said party of the second part, receipt whereof is hereby acknowledged has remised, released and forever quitclaimed and by these presents does remise, release and forever quitclaim unto said party of the second part all the right, title, interest and estate whatsoever, of the said party of the first part in and to that said piece and parcel of land lying and being in the County of San Diego, State of California, and particularly described as follows:

Commencing at the Northwest corner of the Southwest Quarter of the Southeast Quarter of Section 11, Township 14 South, Range 4 West S.B.M; thence North 0 degrees 17½ minutes East 1065.71 feet; thence South 69 degrees 42 minutes 30 seconds East 423.34 feet to point of beginning; thence south 74 degrees 35 minutes East a distance of 100 feet; thence North 17 degrees 31 minutes 30 seconds East a distance of 50 feet to a point in the southerly right of way line of the stem of Del Mar wye, said point being 25 feet distant southerly on a radial line from the center line of track opposite Engineer's Station 1 plus 95.42 feet; thence following said right of way line on a curve concave to the Southwest with a radius of 1407.69 feet, a distance of 103.66 feet, the chord of said curve bearing North 74 degrees 35 minutes West; thence South 13 degrees 18 minutes 30 seconds West a distance of 50 feet to point of beginning.

Said parcel of land was conveyed to said Improvement Company by quit-claim deed Secretary's No. 4656 dated September 2, 1911, and recorded in Book 536, page 56 of Deeds, Records of said County.

DEED BOOK 1095

145

Photographed By V. WHELAN, Deputy Recorder

OLIVER J. STOUGH and FLORANCE A. STOUGH, his wife, of the City of San Diego, County of San Diego, and State of California, for and in consideration of the sum of Ten Dollars ($10.00)

Do Hereby Grant to Henry Seger, of the City of Chicago, County of Cook and State of Illinois,

All that Real Property situated in the City of San Diego, County of San Diego, State of California, bounded and described as follows:

Lots Twenty-three (23) and twenty-four (24) in Block One hundred and fifty-eight (158). of PACIFIC BEACH, according to amended map of same filed in the office of the County Recorder of said San Diego County, on the 28th day of September, A.D.1898, by the Trustees of the Pacific Beach Company, said map being numbered 854.

Traffic in intoxicating liquors is prohibited on these premises.

TO HAVE AND TO HOLD the above granted and described premises, unto the said Grantee his, heirs and assigns forever.

WITNESS our hands and seals, this 28th day of May 1904.

Signed and executed in the presence of__) Oliver J. Stough (Seal)

Florance A. Stough (Seal)

STATE OF CALIFORNIA)
) ss.
County of San Diego)

On this 2nd day of June A.D., Nineteen Hundred & four before me, W.R.Rogers a Notary Public in and for said County, residing therein, duly commissioned and sworn, personally appeared OLIVER J. STOUGH and FLORANCE A. STOUGH, his wife, known to me to be the persons whose names are subscribed to the within instrument, and they acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal as Notary Public at my office in the City of San Diego, County of San Diego, State of California, the day and year in this Certificate first above written.

NOTARIAL SEAL W.R. Rogers SAN DIEGO CAL.

W.R.Rogers

Notary Public in and for the County of San Diego,

State of California.

Recorded at Request of J. Laughlin Jun 5 1925 at 19 Min past 11 o'clock A. M.

Fee $ .80 John H. Ferry, County Recorder 27079

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EASEMENT.

THIS INDENTURE, Made and entered into this 12nd day of May, 1925, by and between E.C.BATCHELLER and MAUD C. BATCHELLER, husband and wife, parties of the first part, and the SANTA FE IRRIGATION DISTRICT, a body politic, party of the second part, WITNESSETH:

That in consideration of the sum of One Dollar ($1.00), lawful money of the United States to them in hand paid by said second party, receipt whereof is hereby acknowledged, the first parties hereby grant to the second party, its successors and assigns, rights-of-way for water pipe lines as constructed by the Santa Fe Irrigation District or to be constructed by it as necessity may require across the following described property:

Photographed By P. A. JENSEN, Deputy Recorder

The West five (5) acres of the North twelve and one-half (12½) acres of the East twenty-five (25) acres of the Southwest quarter of the Southeast quarter (SW¼ of SE¼), Section 2, Township 14 South, Range 4, West, S.B.B.M, and

The West one (1) acre of the East two and one-half (2½) acres of the South four (4) acres of the Northwest quarter of Southeast quarter (NW¼ of SE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M.

with right of ingress to and egress from said rights-of-way for the purpose of constructing, maintaining, repairing, operating or relaying said pipe lines as constructed or to be constructed.

By acceptance and acknowledgment of the rights-of-way herein given, the party of the second part, for itself, its successors and assigns, agrees:

I.

That said pipe lines as constructed or to be constructed will at all times be maintained as free from leaks as possible by the exercise of reasonable diligence to prevent leaks therein.

II.

That should leaks develop in said pipe lines, as constructed or to be constructed, same will be promptly repaired and that damage to the lands of the first parties caused by such leaks will be promptly remedied.

III.

That said pipe lines will be constructed so as to have a depth of cover of eighteen inches (18") over the top of said pipe lines.

IV.

That said pipe lines which may be constructed as necessity may require will be so located as to do the least possible damage to the lands upon which they are respectively located or installed. All work of trench digging, pipe laying and backfilling done in connection with the installation, maintenance or use of said pipe lines will be done as expeditiously as possible and in such manner and at such times as to interfere as little as possible with the use of the land adjacent thereto.

V.

The location of the above described property is more particularly shown on the attached map, marked "Exhibit A", and hereby referred to and made a part hereof.

IN WITNESS WHEREOF the first parties have hereunto affixed their hands and seals the day and year first above written.

E.C.Batchelder

Maud Clark Batchelder

STATE OF CALIFORNIA)
County of San Diego) ss.

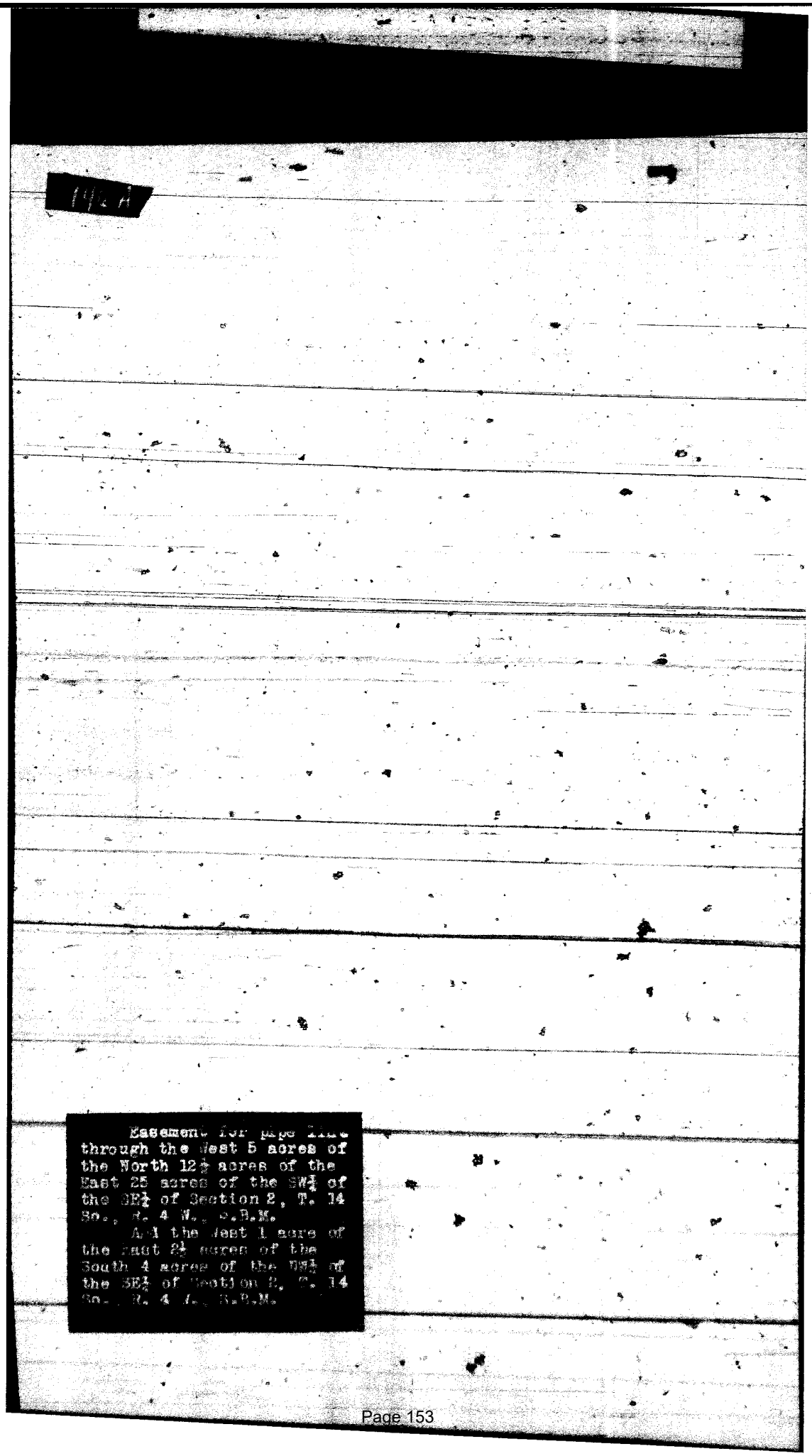
On this 22nd day of May, 1925, before me, N.E.Hyer, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared E.C.B. CHELDER and MAUD C. BATCHELDER, known to me to be the persons whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

IN WITNESS WHEREOF I have hereuntoset my hand and affixed my official seal the day and year in this certificate first above written.

NOTARY PUBLIC N.E. Hyer

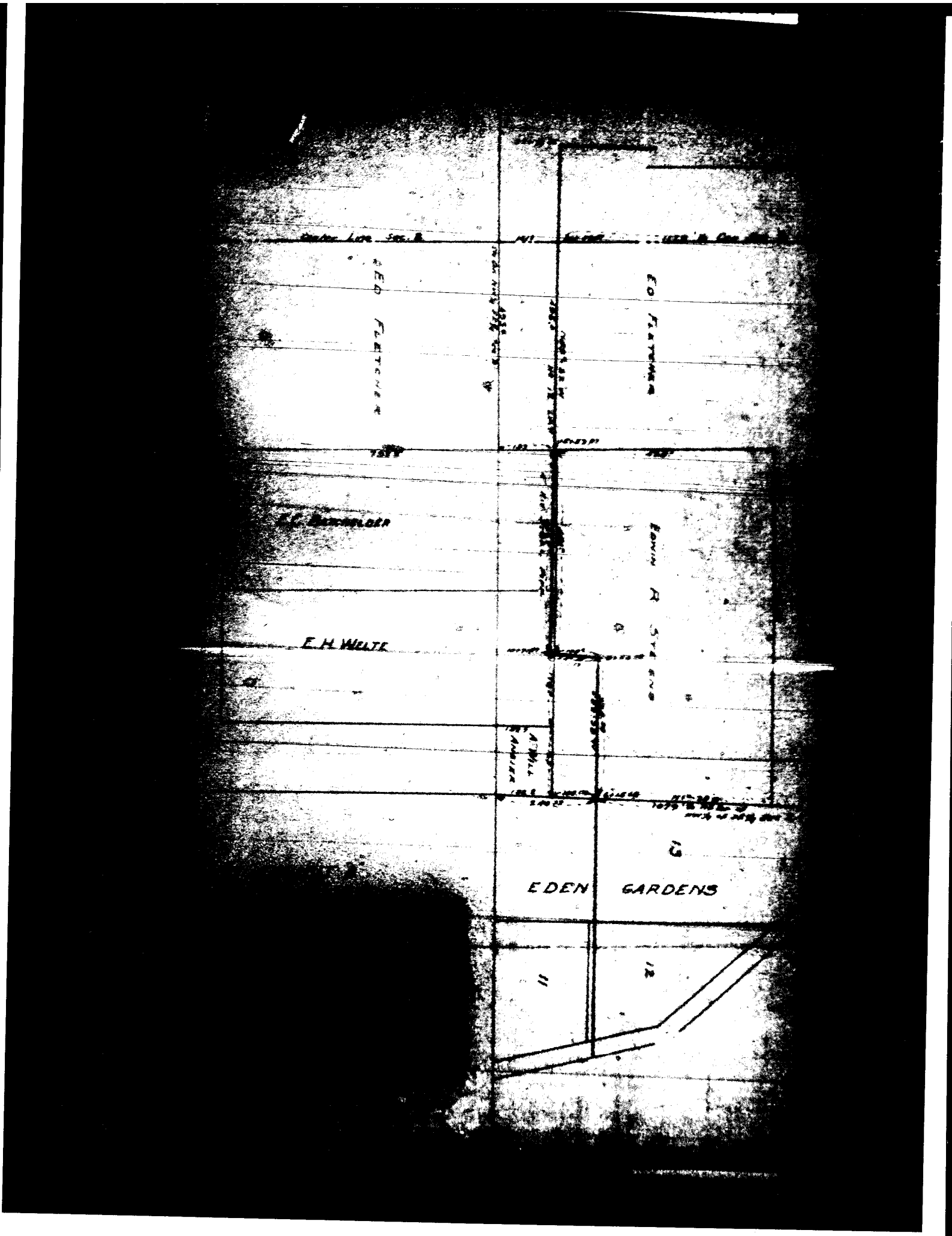
N.E.Hyer

Notary Public in and for the County of San Diego, State of California.



Easement for pipe line through the West 5 acres of the North 12½ acres of the East 25 acres of the SW¼ of the SE¼ of Section 2, T. 14 So., R. 4 W., S.B.M.

And the West 1 acre of the East 2½ acres of the South 4 acres of the NW¼ of the SE¼ of Section 2, T. 14 So., R. 4 W., S.B.M.


E H WELTE
EDEN GARDENS

DEED BOOK 1095

Recorded at Request of Otee Jun 5 1925 at 21 Min past 11 o'clock A. M.

Fee $1.50 John H. Perry, County Recorder 27081

COMPARED: L. Shannon
DEPUTY COUNTY RECORDER

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EASEMENT.

THIS INDENTURE Made and entered into this 19th day of May, 1925, by and between ED FLETCHER and MARY C.B.FLETCHER, husband and wife, parties of the first part, and the SANTA FE IRRIGATION DISTRICT, a body politic, party of the second part, WITNESSETH:

That in consideration of the sum of One Dollar ($1.00), lawful money of the United States, to them in hand paid by said second party, receipt of which is hereby acknowledged, the first parties hereby grant to the second party, its successors and assigns, rights-of-way for water pipe lines as constructed by the Santa Fe Irrigation District or to be constructed by it as necessity may require across the following described property:

The West 15 acres of the southwest quarter of the northeast quarter (SW¼ of NE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M.

The West 15 acres of the northwest quarter of the northeast quarter (NW¼ of NE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M.

The Northeast 12½ acres of the northwest quarter of the northeast quarter (NW¼ of NE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M.

The southwest quarter of the northeast quarter (SW¼ of NE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M.

The north half of the northeast quarter of the northeast quarter (N½ of NE¼ of NE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M.

The northwest quarter of the southwest quarter (NW¼ of SW¼), Section 6, Township 14 South, Range 3 West, S.B.B.M.

The fractional northeast quarter of the southwest quarter (NE¼ of SW¼), Section 6, Township 14 South, Range 3 West, S.B.B.M.

The southeast quarter of the northwest quarter (SE¼ of NW¼), Section 6, Township 14 South, Range 3 West, S.B.B.M.

Lots 1, 2 and 3 and the southwest quarter of the northeast quarter (SW¼ of NE¼), Section 6, Township 14 South, Range 3 West, S.B.B.M.

The fractional northwest quarter of the southeast quarter (NW¼ of SE¼), Section 6, Township 14 South, Range 3 West, S.B.B.M.

The fractional northeast quarter of the southeast quarter (NE¼ of SE¼), Section 6, Township 14 South, Range 3 West, S.B.B.M.,

ident, and A. I. Hitchings, known to me to be the Secretary, of the corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in the County of Los Angeles, the day and year in this certificate first above written.

NOTARY PUBLIC Louise Anderson LOS ANGELES CO.

LOUISE ANDERSON
Notary Public in and for the County of
Los Angeles, State of California.
My Commission Expires Nov. 27, 1927.

Recorded at request of Ctee, Jun. 5, 1925 at 23 Min. past 11 o'clock A.M.

Fee $1.40 COMPARED: Gertrude M. Ellis DEPUTY COUNTY RECORDER John H. Merry, County Recorder 27083

----------OOOOOOOOO----------

EASEMENT

THIS INDENTURE, Made and entered into this 23 day of May, 1925, by and between E. H. WELTE, party of the first part, and the SANTA FE IRRIGATION DISTRICT, a body politic, party of the second part,

WITNESSETH: That in consideration of the sum of One Dollar ($1.00), lawful money of the United States to him in hand paid by said second party, receipt whereof is hereby acknowledged, the first party hereby grants to the second party, its successors and assigns, rights-of-way for water pipe lines as constructed by the Santa Fe Irrigation District or to be constructed by it as necessity may require across the following described property:

The East five (5) acres of the West ten (10) acres of the North twelve and one-half (12½) acres of the East twenty-five (25) acres of the Southwest quarter of the Southeast quarter (SW¼ of SE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M., and

The East one (1) acre of the West two (2) acres of the East two and one-half (2½) acres of the South four (4) acres of the Northwest quarter of the Southeast quarter (NW¼ of SE¼), Section 2, Township 14 South, Range 4 West, S.B.B.M.

with right of ingress to and egress from said rights-of-way for the purpose of constructing, maintaining, repairing, operating or relaying said pipe lines as constructed or to be constructed.

By acceptance and acknowledgment of the rights-of-way herein given, the party of the second part, for itself, its successors and assigns, agrees:

I.

That said pipe lines as constructed or to be constructed will at all times be maintained as free from leaks as possible by the exercise of reasonable diligence to prevent leaks therein.

II.

That should leaks develop in said pipe lines, as constructed or to be constructed, same will be promptly repaired and that damage to the lands of the first party caused by such leaks will be promptly remedied.

III.

That said pipe lines will be constructed so as to have a depth of cover of eighteen (18) inches over the top of said pipe lines.

Photographed By T. FADER, Deputy Recorder

Photographed By T. FADER, Deputy Recorder

IV.

That said pipe lines which may be constructed as necessity may require will be so located as to do the least possible damage to the lands upon which they are respectively located or installed. All work of trench digging, pipe laying and backfilling done in connection with the installation, maintenance or use of said pipe lines will be done as expeditiously as possible and in such manner and at such times as to interfere as little as possible with the use of the land adjacent thereto.

V.

The location of said pipe lines as already constructed across the above described property is more particularly shown on the attached map, marked "Exhibit A", and hereby referred to and made a part hereof.

IN WITNESS WHEREOF the first party has hereunto affixed his hand and seal the day and year first above written.

E. H. WELTE

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

On this 25 day of May, 1925, before me, E. C. Batchelder, a Notary Public in and for the County of San Diego, State of California, residing therein, duly commissioned and sworn, personally appeared E. H. WELTE, known to me to be the person who executed the within instrument, and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in the County of San Diego, the day and year in this certificate first above written.

NOTARY PUBLIC E. C. Batchelder SAN DIEGO CO. CALIF.

E. C. BATCHELDER
Notary Public in and for the County
of San Diego, State of California.

Recorded at request of Otee, Jun. 5, 1925 at 24 Min. past 11 o'clock A.M.

27064

Fee $1.40

John H. Perry, County Recorder

COMPARED:
Gertrude H. Ellis
DEPUTY COUNTY RECORDER

----------COOOOOOOO----------

GRANT DEED

INDIVIDUAL

We, Charles W. Detwiler, and Hilda M. Detwiler, husband and wife,

For and in consideration of TEN DOLLARS,

DO HEREBY GRANT to Clarence E. Detwiler and Pearl L. Detwiler, husband and wife, as joint tenants,

ALL THAT REAL PROPERTY situated in County of San Diego, State of California, bounded and described as follows:

Lots Nine (9) and Ten (10) in Block Thirty-three (33) of the Resubdivision of Blocks "H" and "I" of Peralta, according to Map thereof No. 1026, filed in the office of the Recorder of said San Diego County, March 8, 1907.

WITNESS our hands and seals this 1st day of June, 1925.

Signed and executed) DOCUMENTARY ... Int. Rev. ... Jun. 8, 1925 ... $1. CHARLES W. DETWILER (SEAL)
in presence of - - -)
HILDA M. DETWILER (SEAL)

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

On this 3rd day of June, A.D. Nineteen Hundred and twenty-five before me,

Photographed By P.C. SHELLEY, Deputy Recorder

Orig 1121

known to me to be the Secretary of the SOUTH COAST LAND COMPANY, the corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Grace M. Chaney.
Notary Public in and for said County and State.
My commission expires May 25, 1927.

Recorded at request of Union Title Insurance Co Sep 29 1925 at 9 o'clock A.M.
Fee $1.50 John H. Perry, County Recorder.
47609 By N.C.Parsons. Deputy.

COMPARED Mary K. Stuart

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EASEMENT.

I, Jennie C. Stevens of ----

in consideration of One Dollar, and other value received, do grant to the San Diego Consolidated Gas & Electric Company, a corporation, organized under the laws of the State of California, the perpetual right and easement to enter upon that certain real property situated in the County of San Diego, State of California, described as follows, to-wit;

The East Twenty-four (24) feet of that portion of the Southeast Quarter of the Southeast Quarter of Section 2, Township 14 South, Range 4 West, San Bernardino Meridian, lying North of the San Dieguito River

for the purpose of placing, constructing, repairing and maintaining and using poles and cross-arms thereon, and of stringning and placing upon such poles and cross-arms, wires for the transmission of electric current for all purposes for which it may be used, and also the perpetual right and easement of constructing, replacing, maintaining and repairing all such poles, cross-arms and wires upon the said above described real property and to that end and for that purpose to go upon said land to place, construct, repair and replace such poles and wires and maintain the same in a suitable and proper condition for use.---------

The said corporation is to be responsible for all damage that may be caused by the construction, operation and maintenance of said poles or wires upon said land for which in law it would be liable.

TO HAVE AND TO HOLD all such rights and easements unto the said corporation, its successors and assigns forever.

IN WITNESS WHEREOF I have hereunto set my hand this 31st day of July 1925.

Signed, sealed and delivered in presence of) Jennie C. Stevens.
T.C.Linderfelt.)

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) SS

On this 31st day of July A.D. 1925, before me, R.S.Ruffin, a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared T.C.Linderfelt, known to me to be the person whose name is subscribed to the within instrument as a Witness thereto, who being by me duly sworn, deposes and says;

That he resides in San Diego, California, and that he was present and saw Jennie C. Stevens personally known to him to be the same person whose name is subscribed to the within and annexed instrument, execute and deliver the same, and she acknowledged to said affiant that she executed the same; and that said affiant subscribed his name thereto as a Witness.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

R.S. Ruffin

R.S.Ruffin.
Notary Public in and for the County of
San Diego, State of California.
My commission expires May 25 1927

Recorded at request of Grantee Sep 30 1925 at 10 o'clock A.M.
Fee $1.00 John H. Perry, County Recorder. 47937
By H.C.Parsons. Deputy.

---------oOOpOO-------

EASEMENT.

We, S.D.Stewart and Sarah Helen Stewart,
in consideration of One Dollar, and other value received, do grant to the San Diego Consolidated Gas & Electric Company, a corporation, organized under the laws of the State of California, the perpetual right and easement to enter upon that certain real property situated in the City of San Diego, County of San Diego, State of California, described as follows, to-wit; The North Two (2) feet ---------- of the West Forty-five (45) feet of Lot Twenty-eight (28) of Block Nineteen (19) of Fairmount Addition to City Heights, as per map thereof filed in the office of the Recorder of the said County of San Diego.

It is understood and agreed that but one pole is to be placed on the above described strip of land which pole will be as near as possible to the North line of said strip of land, and it is further agreed that the cross-arms and wires installed on said pole may overhang six feet on the South side of the center line of said above described Two (2) foot strip of land.

Above described strip of land to be used
for the purpose of placing, constructing, repairing and maintaining and using poles and cross-arms thereon, and of stringing and placing upon such poles and cross-arms, wires for the transmission of electric current for all purposes for which it may be used, and also the perpetual right and easement of constructing, replacing, maintaining and repairing all such poles, cross-arms and wires upon the said above described real property, and to that end and for that purpose to go upon said land to place, construct, repair and replace such poles and wires and maintain the same in a suitable and proper condition for use.

The said corporation is to be responsible for all damage that may be caused by the construction, operation, and maintenance of said poles or wires upon said land for which in law it would be liable.

TO HAVE AND TO HOLD all such rights and easements unto the said corporation, its successors and assigns forever.

Photographed By P.G. SHELLEY, Deputy Recorder

Photographed By P. A. JENSEN, Deputy Recorder

EASEMENT

For and in consideration of the sum of ONE DOLLAR, to us in hand paid, we, E.C.Batchelder, and Maud Clark Batchelder, husband and wife, of Del Mar, Calif., hereby grant to E.H.Stevens and Jennie C. Stevens, husband and wife, and to their Grantees or Assigns, an easement for a right of way, for road purposes over and across the east ten feet of the following described property, viz,:

The West Half of the following described tract of land; Commencing at a point that is 40 rods North of the South line and 10 rods West of the East line of the Southwest quarter of the Southeast Quarter of Section 2, Township 14 South, Range 4 West, S.B.M.; thence West 40 rods; thence North 48 rods; thence East 40 rods; thence South 48 rods to the point of commencement.

WITNESS our hands and seals this 10th day of January, 1927.

E.C.Batchelder

Maud Clark Batchelder

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

On this 10th day of January, 1927, before me, B.N.Jefferson, a Notary Public in and for the said County of San Diego, State of California, residing therein duly commissioned and sworn, personally appeared E.C.Batchelder and Maud Clark Batchelder personally known to me to be the persons whose names are subscribed to the within instrument, and they duly acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the County of San Diego, the day and year in this certificate first above written.

NOTARY PUBLIC B.N. Jefferson

B.N.Jefferson

Notary Public in and for the County of San Diego,

State of California.

My Commission expires Jan. 30, 1930

Recorded at Request of SOUTHERN TITLE & TRUST CO Jan 20 1927 at 9 o'clock A.M.

JOHN H. PERRY, COUNTY RECORDER

Fee $1.00

By L.B.Woodard, Deputy

4109

COMPARED C.A. Schumacher COUNTY RECORDER

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Percy M. Allen and Adele L. Allen, husband and wife,

For and in consideration of Ten and no/100 DOLLARS,

DO HEREBY GRANT TO John M. Jones

ALL THAT REAL PROPERTY situated in the City of Oceanside, County of San Diego, State of California, bounded and described as follows:

Lot One In Block Three (3) of Jarvis' Addition to Oceanside, according to the map thereof No. 163 filed in the office of the Recorder of said San Diego County, February 26, 1887.

Photographed By P. A. JENSEN, Deputy Recorder

THIS INDENTURE, made this 4th day of May, 1927,

by and between SOUTH COAST LAND COMPANY, a corporation, and

SECURITY TRUST & SAVINGS BANK, a corporation, as Trustee under and by virtue of a Trust Indenture executed by South Coast Land Company, a corporation, to said Security Trust & Savings Bank, a Corporation, as Trustee, recorded in Book 1324, Page 387 of Deeds, Records of San Diego County, State of California, Grantors, and San Dieguito Water Company, a corporation, Grantee;

WITNESSETH: That the Grantors, in consideration of the sum of Ten Dollars ($10.00) lawful money of the United States, to them in hand paid by the Grantee, receipt of which is hereby acknowledged, do hereby grant unto the said Grantee, an easement and right of way in, through and across the lands traversed by that certain Pipe Line commonly known as La Jolla Pipe Line as the same was constructed in 1920 and 1921 and as the same now exists on the ground, beginning at Lockwood Mesa Reservoir #1 situated in the northwest Quarter of the Southwest Quarter of Section 1, Township 14 South, Range 4 West, S.B.M. and running thence in a generally southerly direction to a point on the Westerly line of the Northeast Quarter of the Southeast Quarter of Section 23, Township 14 South, Range 4 West, S. B. M., being also a point on the East line of Del Mar according to map thereof No. 568, filed in the office of the County Recorder of said San Diego County, October 7, 1885, together with the right of ingress and egress for the purpose of operating, using and maintaining such Pipe Line. Said right of ingress and egress to be exercised in such way as will do the least damage to the land of the Grantor and to improvements thereupon.

It is understood that the Grantors herein grant only that portion of the above described right of way which is included within lands of the Grantors or in which said Grantors are interested.

It is intended hereby to confirm the rights of way heretofore granted for all or any portions of said La Jolla Pipe Line and to grant a right of way for the said Pipe Line, at the location where the same was constructed and now exists, covering any portions thereof for which a right of way has not heretofore been granted.

TO HAVE AND TO HOLD the same unto the Grantee, its successors and assigns forever, subject to the obligation of the Grantee to maintain the pipe line upon said land in good condition and repair; promptly to repair any leaks therein which may occur; and promptly to recover any portion of said pipe line that shall be uncovered for any purpose all at the cost and expense of the Grantee. The Grantee further agrees to pay Grantor any damages occuring by reason of leaks or breaks in said pipe line not occasioned by acts of Grantor. In case of failure of Grantor and Grantee to agree upon the amount of said damage, the amount thereof shall be appraised by a Board of Arbitration composed of one member appointed by Grantor and one member by Grantee. In the event the arbitrators so appointed cannot agree as to the amount of damage, then said two arbitrators shall select a third and the decision of two of said Board of Arbitration shall be final and binden all parties.

IN WITNESS WHEREOF, the Grantors have hereunto caused their corporate names to be subscribed, and their corporate seals to be affixed, by their officers thereunto duly authorized as of the day and year first hereinabove written. Executed in duplicate.

South Coast Land Company California. Incorporated Feb. 23, 1906.

SOUTH COAST LAND COMPANY

By W. B. Holmes Vice President

By H. Kressmann Secretary

Photographed By P. A. JENSEN, Deputy Recorder

--- Bank. Los Angeles Cal. Incorporated Jany 11th, 1889.

SECURITY TRUST & SAVINGS BANK, as Trustee

By: E. G. Taylor Vice-President

COH

By: J. H. Griffin Asst. Secretary

STATE OF CALIFORNIA)
)ss.
County of Los Angeles)

On this Fourth (4) day of May A.D. 1927, before me, Wilbert Burkert a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared W. S. Holmes known to me to be the Vice President and H. Kressmann known to me to be the Secretary of the South Coast Land Company the Corporation that executed the within Instrument, known to me to be the persons who executed the within Instrument, on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Wilbert Burkert

Notary Public in and

for said County and State.

My Commission Expires Dec.

12, 1928.

Wilbert Burkert

STATE OF CALIFORNIA)
) ss.
COUNTY OF Los Angeles)

On this 4th day of May, A.D. 1927, before me, Mary A. Paul, a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared E. G. Taylor, known to me to be the Vice-President and J. H. Griffin, known to me to be the Asst. Secretary of the Security Trust & Savings Bank, the Corporation that executed the within Instrument, known to me to be the persons who executed the within Instrument, on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Mary A. Paul

Notary Public in and for

said County and State.

Mary A. Paul

Recorded at Request of Union Title Insurance Co. May 5 1927 at 20 Min. past 3 o'clock P.M.

John H. Perry, County Recorder

Fee $1.60 By N. C. Parsons Deputy 27252

RECORDED:
G. D. Starke
DEPUTY COUNTY RECORDER

------oooOOOooo------

Photographed By P. A. JENSEN, Deputy Recorder

MERCY HOSPITAL OF THE SISTERS OF MERCY, OF THE CITY OF SAN DIEGO, CALIFORNIA, a corporation (formerly St. Joseph's Hospital and Sanitarium of the Sisters of Mercy of the City of San Diego, State of California, a corporation, a Corporation, having its principal place of business in San Diego, County of San Diego, California, by virtue of a resolution authorizing the same, passed at a meeting of its Directors, for and in consideration of the sum of TEN DOLLARS,

DOES HEREBY GRANT TO CHARLES T. CHANDLER

All that Real Property situated in the City of San Diego, County of San Diego, State of California, bounded and described as follows:

All of Block Seventy-six and one-half (76½) of University Heights, as per Map recorded in Book 8, page 36 et seq., of Lis Pendens, in the office of the Recorder of said County,

Also that portion of the West ten feet of Florida Street lying immediately east of and adjoining Lots Eight, Nine and Ten in said Block Seventy-six and one-half (76½) as closed October 9, 1911 by Resolution No. 9365 of the Common Council of the City of San Diego. Also that portion of the Northwest twenty-five feet of Mission Avenue lying immediately Southeast of and adjoining the above described property as closed September 27, 1926, by Resolution No. 39215 of the Common Council of the City of San Diego, California.

This deed is made in pursuance of an order of the Superior Court of the State of California in and for San Diego County dated March 10, 1924, recorded March 10, 1924 in book 991, page 295 of Deeds in the office of the County Recorder of said San Diego County granting authority to St. Joseph's Hospital and Sanitarium of the Sisters of Mercy of the City of San Diego to sell.

To Have and to Hold the above granted and described premises unto the said Grantee his heirs and assigns forever,

In Witness Whereof, said Corporation has caused this deed to be signed by its President and Secretary and its Corporate Seal to be affixed thereto, this 29th day of April, 1927.

Mercy Hospital of the Sisters of Mercy, California. Of the City of San Diego. SEAL.

MERCY HOSPITAL OF THE SISTERS OF MERCY
OF THE CITY OF SAN DIEGO, CALIFORNIA.
By Sister Mary Liguori McNamara President
Sister Mary Patrice O'Dwyer Secretary

State of California)
) ss.
County of San Diego)

On this 29th day of April, A.D. Nineteen Hundred and seven before me, Lela I. Stillman a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared Sister Mary Liguori McNamara Known to me to be the President, and Sister Mary Patrice O'Dwyer known to me to be the Secretary of the Corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my Official Seal, at my office, in said County of San Diego, State of California, the day and year in this certificate first above written.

Lela I. Stillman. NOTARY PUBLIC

Lela I. Stillman
Notary Public in and for
the County of San Diego,
State of California. My Commission Expires April 17, 1928.

Photographed By P. A. JENSEN, Deputy Recorder

Recorded at Request of Union Title Insurance Co. May 5 1927 at 53 Min. past 3 o'clock P.M.
John H. Ferry, County Recorder
Fee $1.50 By L. B. Woodard Deputy 27257

------oooOOOooo-------

CHARLES T. CHANDLER AND ADDIE B. CHANDLER, husband and wife

For and in consideration of TEN DOLLARS,

Do hereby grant to GEO. W. WOMACK AND LAURA E. WOMACK, husband and wife as joint tenants

All that Real Property situated in the City of San Diego, County of San Diego, State of California, bounded and described as follows:

All of Block Seventy-six and one-half (76½) of University Heights, as per Map recorded in Book 8, page 36 et seq. of Lis Pendens, in the office of the Recorder of said County.

Also that portion of the West ten feet of Florida Street lying immediately east of and adjoining Lots Eight, Nine and Ten in said Block Seventy-six and one-half (76½) as closed October 9, 1911 by Resolution No. 9365 of the Common Council of the City of San Diego.

Also that portion of the Northwest twenty-five feet of Mission Avenue lying immediately Southeast of and adjoining the above described property as closed September 27, 1926, by Resolution No. 39215 of the Common Council of the City of San Diego, California.

WITNESS our hands and seals this 4th day of May, 1927.

Signed and executed in presence of ----

Charles T. Chandler (SEAL)
Addie B. Chandler (SEAL)

STATE OF CALIFORNIA)
County of San Diego) ss.

On this fourth day of May, Nineteen Hundred and twenty-seven before me, Lela I. Stillman a Notary Public in and for said County and State, residing therein, duly commissioned and sworn personally appeared Charles T. Chandler and Addie B. Chandler, husband and wife known to me to be the persons described in and whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal, at my office, in said County of San Diego, State of California, the day and year in this certificate first above written.

Lela I. Stillman.

Lela I. Stillman
Notary Public in and for the County of San Diego, State of California. My Commission Expires April 17, 1928.

Recorded at Request of Union Title Insurance Co. May 5 1927 at 54 Min. past 3 o'clock P.M.
John H. Ferry, County Recorder
Fee $1.20 By L. B. Woodard Deputy 27258

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Photographed By M. DULAC, Deputy Recorder

STATE OF CALIFORNIA,)
)SS.
COUNTY OF ORANGE.)

On this 15th day of December, 1927, before me, Roger C. Dutton, a Notary Public, in and for said County and State, residing therein, duly commissioned and sworn, personally appeared E. H. Metcalf, known to me to be the President, and Geo. D. Ehrle, known to me to be the Secretary of the corporation described in and that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Roger C. Dutton, Notary Public, Orange Co. Cal.

Roger C. Dutton,
Notary Public in and for said Orange County, California.

Recorded at Request of Pac. E. & T. Co. Mar 27, 1928, at 1 o'clock P. M.,
John H. Ferry, County Recorder,
By N. C. Parsons, Deputy.

Fee $1.10

(X)MPARED

Janice Westbrook
DEPUTY COUNTY RECORDER

18036.

.....0000000000.....

January 3, 1928,

For and in consideration of the sum of ONE ($1.00) DOLLARS, receipt whereof is hereby acknowledged, a right-of-way is hereby granted to THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY, its successors and assigns, with the right to erect and maintain poles and anchors, with the necessary wires and fixtures thereon, and to keep same free from foliage across that certain property belonging to CLARA E. COULTER, a single woman, and situated in the County of San Diego, State of California, and described as follows:

Beginning at the Southeast corner of Sec. 2, Twp. 14, S., R. 4W. SBB & M. thence W. 80 rods; thence No. 56 rods, thence E. 12 rods; thence S. to a point on the South bank of the old river channel; thence in a general easterly direction along the South bank of said river channel 34 rods; thence No. across the river channel to a point on the No. bank; thence in a general easterly and southeasterly direction along the North Bank of said channel and along the South side of the County road leading from Del Mar to Escondido, to its intersection with the East line of said Sec. 2, thence South along the East line of said Sec. 2 to the point and place of beginning, being ten acres more or less. Also all that portion of the Southeast Quarter of Sec. 2, Twp. 14 S., Range 4W. SBB & M, described as follows:

Commencing at the S. E. corner of the S. W., 1/4 of the S. E. 1/4 of said Sec. 2, thence No. 80 rods, thence at right angles W. 10 rods, thence at right angles S. 40 rods, thence at right angles W. 40 rods, thence at right angles S. 40 rods, thence at right angles E. 50 rods to point of commencement, as recorded in Deed Book 999, Page 33, records of San Diego County, California. Said poles to be located (1) in line with and one (1) foot North of the South property line to a point approximately 162 feet Westerly from the S. E. corner of the above described property, (2) N. 40° 21' E. 92. ft,; (3) N. 4° 51' W. 100 ft. along the present Del Mar Escondido Road; (4) N. 26° 56' E. 140 ft.; (5) N. 53° 44' E. 62 feet to a point in the East line of Sec. 2, T-14-S, R-4-W, approximately 336 ft. Northerly from the S. E. corner of the said Sec. 2. One anchor to be placed approximately 23 feet Southeasterly from the pole to be placed at the Northeasterly terminus

Photographed By M. DULAC, Deputy Recorder

of said course #(2). One guy stub pole to be placed across the road approximately 42 ft. westerly from the pole to be placed at the Northerly terminus of course #(3). One anchor to be placed 15 feet westerly from the above described guy stub pole.

The right is also hereby granted the TELEPHONE COMPANY to place and maintain gates in fences at the point or points where the right-of-way intersects said fences.

The grantor agrees not to grant any right or permit for the erection or maintenance of any electric power transmission line or lines upon or over said property, parallel with and within four Hundred feet of the lines placed by the TELEPHONE COMPANY, or for the erection and maintenance of any such line or lines across the TELEPHONE COMPANY'S lines placed upon said right-of-way at an angle of less than thirty-five (35) degrees.

It is understood that the employees of said TELEPHONE COMPANY shall, at any time when necessary, have access to said right-of-way and the poles and wires thereon, for purposes of repairs, etc., provided always that said TELEPHONE COMPANY shall be responsible for any damage which may be unnecessarily done to the property above described.

Clara E. Coulter.

WITNESS: John S. Till.

Form Approved
O. LAWLIN, Atty.

STATE OF CALIFORNIA,)
)SS.
COUNTY OF LOS ANGELES.)

On this 16th day of January in the year nineteen hundred and 28, A. D., before me, Karl A. Lunt, a Notary Public in and for the said County of Los Angeles, State of California, residing therein, duly commissioned and sworn, personally appeared John S. Till, personally known to me to be the person whose name is subscribed to the within instrument as a subscribing witness thereto, who being by me duly sworn, deposed and said that he resides in the said County of Los Angeles, State of California, that he was present and saw Clara E. Coulter, personally known to him to be the same person described in and whose name is subscribed to the within instrument as a party thereto sign and execute the same; and that he, the affiant, then and there subscribed his name to said instrument as a witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said county the day and year in this certificate first above written.

Karl A. Lunt,
Notary Public in and for Los Angeles County, State of California.

Recorded at Request of Gtee. Mar 27, 1928, at 1 o'clock P. M.,
John H. Perry, County Recorder,
By N. C. Parsons, Deputy.

Fee $1.40

18037,

COMPARED
DEPUTY COUNTY RECORDER

.....000000000000.....

Nov. 2, 1927.

For and in consideration of the sum of ONE ($1.00) DOLLARS, receipt whereof is hereby acknowledged, a right-of-way is hereby granted to THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY, its successors and assigns, with the right to erect and maintain wires and cable with the necessary wires and fixtures thereon, and to keep same free from foliage across that certain property belonging to BRIGGS C. KECK, a single man, and situated in the County of San Diego, State of California, and described as follows:

First American Title

Photographed By M. DULAC, Deputy Recorder

October 25, 1927.

For and in consideration of the sum of ONE ($1.00) DOLLARS, receipt whereof is hereby acknowledged, a right-of-way is hereby granted to THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY, its successors and assigns, with the right to erect and maintain five (5) poles, with the necessary wires and fixtures thereon, and to keep same free from foliage across that certain property belonging to ED FLETCHER AND MARY C. B. FLETCHER, his wife, and situated in the County of San Diego, State of California, and described as follows:

E½ of the SE¼ of the SW¼ of Section 2, Twp. 14, S. R. 4 W. S. B. & B. M. as recorded in Deed Book 815, Page 129, records of San Diego County, California.

Poles to be located in line with and one (1) foot North of the South property line.

A condition of this easement is that said PACIFIC TELEPHONE & TELEGRAPH COMPANY agrees that at their own expense to change the location of any poles to confirm to any subdivision of the property.

The right is also hereby granted the TELEPHONE COMPANY TO place and maintain gates in fences at the point or points where the right-of-way intersects said fences.

The grantor agrees not to grant any right or permit for the erection or maintenance of any electric power transmission line or lines upon or over said property, parallel with and within four hundred feet of the lines placed by the TELEPHONE COMPANY, or for the erection and maintenance of any such line or lines across the TELEPHONE COMPANY'S lines placed upon said right-of-way at an angle of less than thirty-five (35) degrees.

It is understood that the employes of said TELEPHONE COMPANY shall, at any time when necessary, have access to said right-of-way and the poles and wires thereon, for purposes of repairs, etc., provided always that said TELEPHONE COMPANY shall be responsible for any damage which may be unnecessarily done to the property above described.

WITNESS;)
)
JOHN S. TILL.)

Ed Fletcher,

Mary C. B. Fletcher.

Form Approved
O. LAWLIN, Atty.

STATE OF CALIFORNIA,)
)SS.
COUNTY OF LOS ANGELES.)

On this 29th day of November in the year nineteen hundred and 27 A. D., before me, Karl A. Lunt, a Notary Public in and for the said County of Los Angeles, State of California, residing therein, duly commissioned and sworn, personally appeared John S. Till, personally known to me to be the same person whose name is subscribed to the within instrument as a subscribing witness thereto, who being by me duly sworn, deposed and said that he resides in the said County of Los Angeles, State of California, that he was present and saw Ed Fletcher and Mary C. B. Fletcher, personally known to him to be the same persons described in and whose names are subscribed to the within instrument as a party thereto sign and execute the same; and that he, the affiant, then and there subscribed his name to said instrument as a witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said County the day and year in this certificate first above written.

Karl A. Lunt.

Karl A. Lunt,

Notary Public in and for Los Angeles County, State of California.

Recorded at Request of Gtee. Mar 27, 1928, at 1 o'clock P. M.,

John H. Ferry, County Recorder,

By N. C. Parsons, Deputy.

Fee $1.20

COMPARED

Janice Fatbrook

DEPUTY COUNTY RECORDER

18040.

.....00000000000.....

Photographed By T. FADER, Deputy Recorder

Recorded at request of Union Title Insurance Co. Mar 26 1928 at 35 Min.past 2 o'clock P.M.

JOHN H.FERRY,COUNTY RECORDER

Fee $8.20

BY L.B.WOODARD,DEPUTY

17752

.....000000000000000000.....

October 25,1927

For and in consideration of the sum of One ($1.00) Dollar,receipt whereof is hereby acknowledged,a right-of-way is hereby granted to THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY,its successors and assigns, with the right to erect and maintain three (3) poles,with the necessary wires and fixtures thereon,and to keep same free from foliage across that certain property belonging to Ed Fletcher and Mary C.B.Fletcher, his wife and situated in the County of San Diego,State of California, and described as follows;

W.15 acres of the S.W.¼ of the S.E.¼ of Section 2, Twp 14, S.R. 4 W.S.B.& B.M. as recorded in deed Book 815, Page 129,records of San Diego County, California,

Poles to be located in line with and one (1) foot north of the south property line.

A condition of this easement is that said Pacific Telephone & Telegraph Company agrees that at their own expense to change the location of any poles to confirm to any subdivision of the property.

The right is also hereby granted the Telephone Company to place and maintain gates in fences at the point or points where the right-of-way intersects said fences.

The grantor agrees not to grant any right or permit for the erection or maintenance of any electric power transmission line or lines upon or over said property,parallel with and within four hundred feet of the lines placed by the Telephone Company,or for the erection and maintenance of any such line or lines across the Telephone Company's lines placed upon said right-of-way at an angle of less than thirty-five (35) degrees.

It is understood that the employes of said Telephone Company shall at any time when necessary ,have access to said right-of-way and the poles and wires thereon, for purposes of repairs, etc., provided always that said Telephone Company shall be responsible for any damage which may be unnecessarily done to the property above described.

ED FLETCHER

MARY C.B.FLETCHER

WITNESS: JOHN S. TILL
Form Approved O Lawler
Atty

STATE OF CALIFORNIA,)
)ss.
COUNTY OF LOS ANGELES)

On this 29th day of November,in the year nineteen hundred and 27 I.D. before me, KARL A.LUNT a Notary Public in and for the said County of LOS ANGELES, State of California, residing therein, commissioned and sworn,personally appeared

Photographed By T. FADER, Deputy Recorder

JOHN S.TILL personally known to me to be the same person whose name is subscribed to the within instrument as a subscribing witness thereto,who being by me duly sworn, deposed and said that he resides in the said County of Los Angeles,State of California, that he was present and saw ED FLETCHER and MARY C.B.FLETCHER personally known to him to be the same persons described in and whose names are subscribed to the within instrument as a party thereto sign and execute the same; and that he the affiant then and there subscribed his name to said instrument as a witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said County the day and year in this certificate first above written.

KARL A.LUNT

Notary Public in and for Los Angeles County,

KARL A.LUNT State of California.

(Witness)------

Recorded at request of Gtee Mar 27 1928 at 1 o'clock P.M.

18041 JOHN H.PERRY,COUNTY RECORDER

FEE $1.20 BY N.C.PARSONS,DEPUTY

.....OOOOOOOC.....

October 27,1927

For and in consideration of the sum of One ($1.00) Dollar receipt whereof is hereby acknowledged,a right-of-way ,is hereby granted to THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY,its successors and assigns, with the right to erect and maintain two (2) anchors with the necessary wires and fixtures thereon, and to keep same free from foliage across that certain property belonging to ED FLETCHER and MARY C.B.FLETCHER,his wife, and situated in the County of San Diego,State of California, and described as follows;

N.E.¼ of the S.W. ¼ Ex. 3.68 acres M & B to County of San Diego of Sec.6, Twp 14-S,R-3-W. S.B.& B.M. as recorded in deed Book 708,Page 470 ,being the same property recorded from Sarah Helen Hyer to B.Bixler in deed Book 746,Page 113,records of San Diego County,Cal Said anchors to be placed approximately 20 feet north of the north line of the County Road, one at a point 175 feet west of the east property line and one at a point approximately 525 feet west of the east property line.

A condition of this easement is that said Pacific Telephone & Telegraph Company agrees that at their own expense to change the location of any poles to confirm to any subdivision of the property.

The right is also hereby granted the Telephone Company to place and maintain gates in fences at the point or points where the right-of -way intersects said fences.

The grantor agrees not to grant any right or permit for the erection or maintenance of any electric power transmission line or lines upon or over said property, parallel with and within four hundred feet of the lines placed by the Telephone Company, or for the erection and maintenance of any such line or lines across the Telephone Company's

Photographed By T. FADER, Deputy Recorder

lines placed upon said right-of-way at an angle of less than thirty-five (35) degrees.

It is understood that the employes of said Telephone Company shall,at any time when necessary,have access to said right-of-way and the poles and wires thereon, for purposes of repairs,etc., provided always that said Telephone Company shall be responsible for any damage which may be unnecessarily done to the property above described.

ED FLETCHER

MARY C.B.FLETCHER

WITNESS JOHN S.TILL
Form Approved
O Lawler
Atty

STATE OF CALIFORNIA,)
)ss.
COUNTY OF LOS ANGELES,)

On this 29th day of November in the year nineteen hundred and 27 A.D. before me Karl A.Lunt a Notary Public in and for the said County of Los Angeles,State of California, residing therein, duly commissioned and sworn, personally appeared John S.Till personally known to me to be the the same person whose name is subscribed to the within instrument as a subscribing witness thereto,who being by me duly sworn,deposed and said that he resides in the said County of Los angeles, State of California, that he was present and saw Ed Fletcher and Mary C.B.Fletcher personally known to him to be the same persons described in and whose names are subscribed to the within instrument as a party thereto sign and execute the same; and that he,the affiant, then and there subscribed his name to said instrument as a witness.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal in said county the day and year in this certificate first above written.

KARL A.LUNT

KARL A.LUNT
Notary Public in and for Los Angeles,County,
State of California.

(Witness) ------

Recorded at request of Gtee Mar 27 1928 at 1 o'clock P.M.

18042

FEE $1.30

JOHN H.PERRY,COUNTY RECORDER

By M.C.PARSONS,DEPUTY

.....OOOOOOOOOOOOOO.....

October 27,1927

For and in consideration of the sum of One ($1.00) Dollar, receipt whereof is hereby acknowledged,a right-of-way is hereby granted to THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY,its successors and assigns, with the right to erect and maintain two (2) poles,with the necessary wires and fixtures thereon, and to keep same free from foliage across that certain property belonging to MARY C.GRAY a single person and situated in the County of San Diego,State of California, and described as follows;

Photographed By T. FADER, Deputy Recorder

S½ of the S.W.¼ of the S.E. ¼ of the S.W. ¼ of Sec. 2,Twp 14 S.R. 4 W S.B. & B.M.

Poles to be located one (1) foot north of the south property line.

A condition of this easement is that said Pacific Telephone & Telegraph Company agrees that at their own expense to change the location of any poles to confirm to any subdivision of the property.

The right is also hereby granted the Telephone Company to place and maintain gates in fences at the point or points where the right-of-way intersects said fences.

The grantor agrees not to grant any right or permit for the erection or maintenance of any electric power transmission line or lines upon or over said property parallel with and within four hundred feet of the lines placed by the Telephone Company,or for the erection and maintenance of any such line or lines across the Telephone Company's lines placed upon said right-of-way at an angle of less than thirty-five (35) degrees

It is understood that the employes of said Telephone Company shall at any time when necessary,have access to said right-of-way and the poles and wires thereon, for purposes of repairs, etc. provided always that said Telephone Company shall be responsible for any damage which may be unnecessarily done to the property above described.

MARY C.GRAY

WITNESS John S.Till

Form Approved
C Lawler
Atty

STATE OF CALIFORNIA, }
}ss.
COUNTY OF LOS ANGELES }

On this 29th day of November in the year nineteen hundred and 27 A.D. ,before me Karl A.Lunt a Notary Public in and for the said County of Los Angeles, State of California residing,therein, duly commissioned and sworn, personally appeared John S.Till personally known to me to be the same person whose name is subscribed to the within instrument as a subscribing witness thereto, who being by me duly sworn, deposed and said that he resides in the said County of Los Angeles,State of California, that he was present and saw Mary C.Gray personally known to him to be the same person described in and whose name is subscribed to the within instrument as a party thereto sign and execute the same; and that he, the affiant, then and there subscribed his name to said instrument as a witness.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal in said county the day and year in this certificate first above written.

KARL A.LUNT
Notary Public in and for Los Angeles County,State of California.

KARL A.LUNT
(Witness)..

Recorded at request of Gtee Mar 27 1928 at 1 o'clock P.M.

JOHN H.PERRY,COUNTY RECORDER
BY N.C.PARSONS,DEPUTY

18043

FEE $1.10

....000000....

Photographed By T. FADER, Deputy Recorder

Fe Valley Land Co ,whose names are subscribed to the within and annexed instrument, execute the same for and on behalf of the Corporation therein named,and they acknowledged to said affiant that said Corporation executed the same; and that said affiant subscribed his name thereto as a Witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said County the day and year in this certificate first above written.

KARL A.LUNT

Notary Public in and for the County of Los Angeles ,State of California.

KARL A.LUNT

Recorded at request of Gtee Mar 27 1928 at 1 o'clock P.M.

18045 JOHN H.PERRY,COUNTY RECORDER

FEE $1.40 BY M.C.PARSONS,DEPUTY

.....00000000000.....

7-A-168 Los Angeles,Calif.,Nov.5th,1927.

For and in consideration of the sum of One ($1.00) Dollar, receipt whereof is hereby acknowledged,a right-of-way is hereby granted to The Pacific Telephone and Telegraph Company its successors and assigns,with the right to erect and maintain crossarms and wires overhang__ with the necessary wires and fixtures thereon,and to keep same free from foliage across that certain property belonging to South Coast Land Company a Corporation, and situated in the County of San Diego, State of California, and described as follows;

The N.W.1/4 of the N.E. 1/4 the W. 1/2 of the N.E. 1/4 of the N.E. 1/4 and all of the N.E.1/4 of the N.W 1/4 excepting that portion thereof deeded to the Atchison, Topeka and Santa Fe Railway Company,all in Sec.11,Twp 14-S, R-4-W. S.B.B.& M.

Said crossarms and wires to overhang entire north property line of the above described property for a distance not to exceed five (5) feet.

It is understood that the employes_ of said Telephone Company shall, at any time when necessary,have access to said right-of-way and the poles and wires thereon, for purposes of repairs, etc. provided always that said Telephone Company shall be responsible for any damage which may be unnecessarily done to the property above described.

SOUTH COAST LAND CO.

W.B.HOLMES, Vice Pres

J.E.Voigts Asst.Secy.

SOUTH COAST LAND COMPANY INCORPORATED FEB.23,1906 CALIFORNIA

WITNESS-WILBUR BURKERT

Form Approved O Lawler Atty

STATE OF CALIFORNIA, }ss.
COUNTY OF LOS ANGELES }

On this 7th day of November, A.D. 1927,before me, Wilbert Burkert a Notary

Photographed By T. FADER, Deputy Recorder

Public in and for the said County and State,residing therein, duly commissioned and sworn, personally appeared W.B.HOLMES known to me to be the Vice President and J.E. WRIGHTS known to me to be the Asst. Secretary of the SOUTH COAST LAND COMPANY the Corporation that executed the within Instrument, known to me to be the persons who executed the within Instrument, on behalf of the Corporation therein named,and acknowledged to me that such Corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

WILBERT BURKERT

Wilbert Burkert Notary Public in and for said County and State.

My Commission Expires Dec.12,1928

Recorded at request of Gtee Mar 27 1928 at 1 o'clock P.M.

JOHN H.FERRY,COUNTY RECORDER

18048

FEE $.90 BY M.C.PARSONS,DEPUTY

.....00000000000.....

R.W.ALLEN ,a single man,

For and in consideration of the sum of Ten and no/1.00 Dollars

DO HEREBY GRANT to Charles Helton and Cora Helton,husband and wife, as joint tenants,

ALL THAT REAL PROPERTY situated in the County of San Diego, State of California, bounded and described as follows:

The Southwest Quarter of the Northeast Quarter, and the Southeast Quarter of the Northwest Quarter of Section Fourteen (14) ,Township Eighteen (18) South , Range 2 East, S.B.M., County of San Diego,State of California,except the South half of the Southwest Quarter of the Northeast Quarter of said Section 14,Township 18 S.Range 2 East,described above.

WITNESS our hands and seals this 2nd day of February, 1928.

Signed and Executed in Presence of -) R.W.ALLEN (SEAL)

STATE OF CALIFORNIA,)
)ss.
COUNTY OF SAN DIEGO)

On this 2nd day of February, 1928,before me ,E.W.DICKENSON,a Notary Public in and for said County and State,personally appeared R.W.ALLEN, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same.

WITNESS my hand and official seal the day and year in this Certificate first above written.

E.W.DICKENSON

Notary Public in and for said County and State.

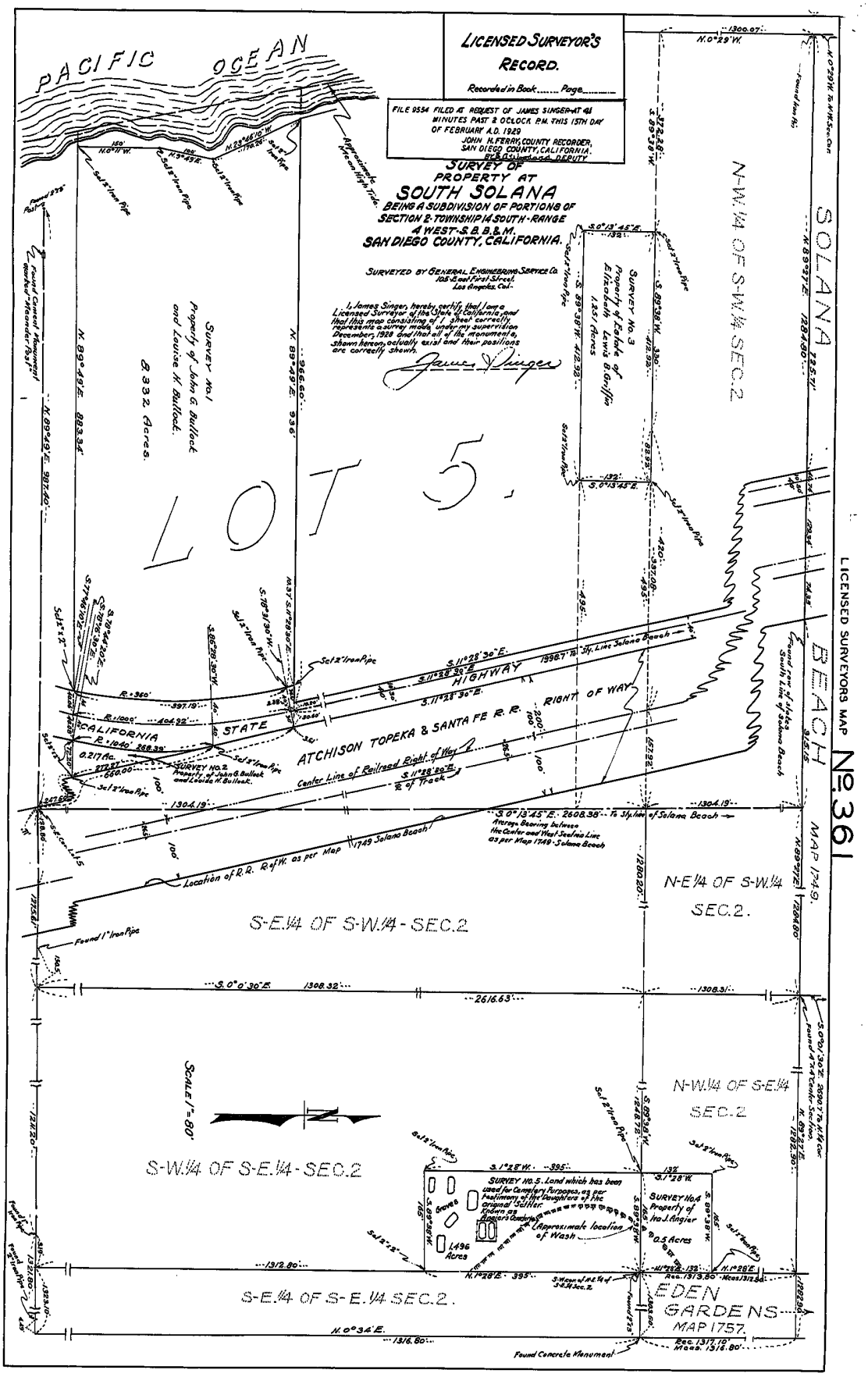
Recorded at request of Gtee Mar 27 1928 at 4 Min.past 2 o'clock P.M.

18058

JOHN H.FERRY,COUNTY RECORDER

FEE $.90 BY L.B.WOODARD,DEPUTY

.....00000000.....


LICENSED SURVEYOR'S RECORD.
Recorded in Book..... Page.....
FILE 9534 FILED AT REQUEST OF JAMES SINGER AT 48 MINUTES PAST 2 O'CLOCK P.M. THIS 15TH DAY OF FEBRUARY A.D. 1929
JOHN H. FERRY, COUNTY RECORDER, SAN DIEGO COUNTY, CALIFORNIA.
By [illegible] DEPUTY
SURVEY OF PROPERTY AT SOUTH SOLANA
BEING A SUBDIVISION OF PORTIONS OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, S.B.B.&M. SAN DIEGO COUNTY, CALIFORNIA.
SURVEYED BY GENERAL ENGINEERING SERVICE CO. 105 E. 2nd First Street, Los Angeles, Cal.
I, James Singer, hereby certify that I am a Licensed Surveyor of the State of California and that this map consisting of 1 sheet correctly represents a survey made under my supervision December, 1928 and that all of the monuments shown hereon, actually exist and their positions are correctly shown.
James Singer
PACIFIC OCEAN
SOLANA BEACH
MAP 1749
LICENSED SURVEYORS MAP No. 361
LOT 5.
Survey No. 1 Property of John G. Bullock and Louise H. Bullock. 2.332 Acres.
Survey No. 3 Property of Estate of Elizabeth Lewis B. Griffin 1.85 Acres
Survey No. 4 Property of Ira J. Angier 0.5 Acres
Survey No. 2 Property of John G. Bullock and Louise H. Bullock.
STATE HIGHWAY
CALIFORNIA
ATCHISON TOPEKA & SANTA FE R.R. RIGHT OF WAY
Center Line of Railroad Right of Way
Location of R.R. R of W. as per Map 1749 Solana Beach
Found Corner of 16th St. and South Line of Solana Beach
Found Concrete Monument
Found 1" Iron Pipe
Sol 2" Iron Pipe
Approximate High Tide
Survey Bearing between the Center and West Section Line as per Map 1749 Solana Beach
Approximate location of Wash
Stones
1.496 Acres
0.217 Ac.
N-W.1/4 OF S-W.1/4 SEC. 2
N-E.1/4 OF S-W.1/4 SEC. 2.
S-E.1/4 OF S-W.1/4 - SEC. 2
S-W.1/4 OF S-E.1/4 - SEC. 2
N-W.1/4 OF S-E.1/4 SEC. 2
S-E.1/4 OF S-E.1/4 SEC. 2.
EDEN GARDENS MAP 1757.
SCALE 1" = 80'

DEED BOOK 1778
131
PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

seal the day and year in this certificate first above written.

Jos. H. Egermayer JHE.

Jos. H. Egermayer

Notary Public in and for the County of San Diego, State of California.

Recorded at request of Lorance R. Folda MAY 14 1930 at 33 Min. past 10 o'clock A.M.

Fee $2.40

John H. Ferry, County Recorder.

By L. B. Woodard, Deputy.

24051

--oo--

EASEMENT FOR COUNTY ROAD

ROAD SURVEY 443

I_ C. W. BABCOCK and _, for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

Portion of the SW¼ of the SE¼ of Section 2, T. 14 S., R. 4 W., S.B.M.

Said right-of-way being more particularly described as follows: All that portion of that certain tract of land as conveyed to C.W. Babcock by deed recorded in Deed Book 1499 at page 480, records of San Diego County, being a strip of land 80 feet wide, 40 feet each side of a center line described as follows:

Beginning at a point on the west line of said tract of land so conveyed in said deed, from which the southwest corner of said tract of land bears S.1° 13' W. and distant 58.7 feet, and running thence from said point of beginning N.89° 55' E. 329.12 feet to the east line of said tract of land, from which the southeast corner of said tract bears S.1° 25' W. and distant 57 feet.

This easement is granted upon the express condition that, should the grantor suffer the loss of any Avocado Trees lying within the above described right of way, the County of San Diego shall compensate the grantor for such loss, at the rate of five dollars ($5.00) per tree; It is further understood and agreed that the County of San Diego shall remove, the present fence and rebuild the same along the new right of way line. The above condition regarding the Avocado Trees, shall mean that the grantor, shall be compensated for any and all trees lying within the above described right of way.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor executors, administrators or assigns.

WITNESS My hand and Seal this 12th day of May, 1930

C W Babcock (SEAL)

STATE OF CALIFORNIA,)
) SS.
County of San Diego.)

On this 12th day of May in the year 1930, before me, J. B. McLEES, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared C. W. Babcock known to me to be the person described in and whose name is subscribed to and who executed the annexed instrument, and

acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Court at at my office in the County of San Diego, the day and year in this Certificate first above written.

J. B. McLEES,

County Clerk and ex officio Clerk of the Superior Court,

By Albert W Daniels
Deputy.

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of C.W. Babcock dated May 12th, 1930, conveying lands therein described to the County of San Diego, for highway purposes.(Road Survey 443) be and the same is hereby accepted.

State of California,)
) SS.
County of San Diego.)

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 12th day of May, 1930 relating to the attached deed.

J. B. McLEES, Clerk.

By C Buckley Deputy.

BOARD OF SUPERVISORS SAN DIEGO COUNTY, CAL.

FILED May 12 1930 J B McLees, County, By C. Buckley,Deputy.

Recorded at request of County Board of Supervisors MAY 14 1930 at 9 Min. past 11 o'clock A.M. John H. Ferry, County Recorder. 24036

Fee $---- By L. B. Woodard, Deputy.

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EASEMENT FOR COUNTY ROAD

ROAD SURVEY 443

I CLARA E. COULTER and __ for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

The SW¼ of the SE¼ of Section 2, T. 14 S., R.4 W., S.B.M.

Said right-of-way being more particularly described as follows; A strip of land 80 feet wide, 40 feet each side of a center line described as follows:

Beginning at a point on the east line of said SW¼ of the SE¼ of said section, from which the southeast corner of said ¼-¼ section bears southerly and distant 623.06 feet, and running thence from said point of beginning N.72° 37' W. to an intersection with the east line of that certain tract of land as conveyed to E.H. Welte by deed recorded in Deed Book 276 at page 146, records of said County.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor executors, administrators or assigns.

WITNESS My hand and Seal this 12th day of May, 1930

Clara E. Coulter (SEAL)

PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

DEED BOOK 1778

PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Court at at my office in the County of San Diego, the day and year in this Certificate first above written.

J. B. McLEES,

County Clerk and ex officio Clerk of the Superior Court,

By Albert W Daniels
Deputy.

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of C.W. Babcock dated May 12th, 1930, conveying lands therein described to the County of San Diego, for highway purposes.(Road Survey 443) be and the same is hereby accepted.

State of California,)
) SS.
County of San Diego.)

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 12th day of May, 1930 relating to the attached deed.

J. B. McLEES, Clerk.

By C Buckley Deputy.

BOARD OF SUPERVISORS SAN DIEGO COUNTY, CAL.

FILED May 12 1930 J B McLees, County, By C. Buckley, Deputy.

Recorded at request of County Board of Supervisors MAY 14 1930 at 9 Min. past 11 o'clock A.M.

John H. Ferry, County Recorder. 24036

Fee $----

By L. B. Woodard, Deputy.

--oOo--

EASEMENT FOR COUNTY ROAD

ROAD SURVEY 443

I CLARA E. COULTER and __ for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

The SW¼ of the SE¼ of Section 2, T. 14 S., R.4 W., S.B.M.

Said right-of-way being more particularly described as follows; A strip of land 80 feet wide, 40 feet each side of a center line described as follows:

Beginning at a point on the east line of said SW¼ of the SE¼ of said section, from which the southeast corner of said ¼-¼ section bears southerly and distant 623.06 feet, and running thence from said point of beginning N.72° 37' W. to an intersection with the east line of that certain tract of land as conveyed to E.H. Welte by deed recorded in Deed Book 276 at page 145, records of said County.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor executors, administrators or assigns.

WITNESS My hand and Seal this 12th day of May, 1930

Clara E. Coulter (SEAL)

PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

STATE OF CALIFORNIA,)
) SS.
County of San Diego.)

On this 12th day of May in the year 1930, before me, J. B. McLEES, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared Clara E. Coulter known to me to be the person described in and whose name is subscribed to and who executed the annexed instrument, and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Court at my office in the County of San Diego, the day and year in this Certificate first above written.

J. B. McLEES,

County Clerk and ex-officio Clerk of the Superior Court,

By Albert W Daniels
Deputy.

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of Clara E Coulter dated May 12th 1930, conveying lands therein described to the County of San Diego, for highway purposes (Road Survey 443) be and the same is hereby accepted.

State of California,)
) SS.
County of San Diego.)

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 12th day of May, 1930 relating to the attached deed.

J. B. McLEES, Clerk.

BOARD OF
SUPERVISORS
SAN DIEGO
COUNTY, CAL.

By C Buckley Deputy.

FILED MAY 12 1930 J.B.McLees, County Clerk By C. Buckley Deputy.

Recorded at request of County Board of Supervisors MAY 14 1930 at 10 Min. past 11 o'clock A.M.

John H. Ferry, County Recorder.

Fee $----

By L. B. Woodard, Deputy.

24037

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PHOTOGRAPHED BY: T. MILLER, DEPUTY RECORDER

STATE OF CALIFORNIA }
COUNTY OF SAN DIEGO } SS.

On this 14th day of May, 1930, before me, Lawrie Macgregor a Notary Public in and for the said County of San Diego, State of California, residing therein, duly commissioned and sworn, personally appeared C. W. Wilson known to me to be the Vice President, and C. L. Reed known to me to be the Assistant Secretary of the Corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the County of San Diego, the day and year in this certificate first above written.

NOTARY PUBLIC Lawrie Macgregor San Diego Co., Cal.

Lawrie Macgregor

Notary Public in and for said County and State.
My Commission Expires Feb. 20, 1932.

Recorded at Request of Trustee May 14 1930 at 40 Min. past 11 o'clock A. M.

John H. Ferry, County Recorder

M068 Fee $2.00 COMPARED: Lewis Landmesser DEPUTY COUNTY RECORDER

By L. B. Woodard Deputy

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EASEMENT FOR COUNTY ROAD

ROAD SURVEY 443

I E. H. WELTE and ___ for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

Portion of the SW¼ of the SE¼ of Section 2, T. 14S., R. 4E., S.B.M.

Said right-of-way being more particularly described as follows: All that portion of that certain tract of land as conveyed to E. H. Welte by deed recorded in Deed Book 276 at page 146, records of San Diego County, being a strip of land 80 feet wide, 40 feet each side of a center line described as follows:

Beginning at a point on the west line of said tract of land so conveyed, from which the southwest corner of said tract bears S. 1° 25' W. and distant 57 feet, and running thence from said point of beginning N. 89° 55' E. 87.26 feet to the beginning of a curve to the right having a radius of 730 feet; thence along said curve through an angle of 17° 28' a distance of 226.64 feet; thence S. 72° 37' E. to an intersection with the east line of the tract of land so conveyed to Welte.

This easement is granted with the understanding that all rights-of-way along said highway are donated free of charge, and it is further understood that if any party or parties be compensated for rights of way along said highway, this easement is null and void, until the grantor has been compensated accordingly.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor __ executors,

administrators or assigns.

WITNESS my hand and Seal this 12th day of May, 1930.

E. H. Welte (SEAL)

STATE OF CALIFORNIA, }
County of San Diego. } ss.

On this 12th day of May in the year 1930, before me, J. B. McLEES, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared E. H. Welte known to me to be the person described in and whose name is subscribed to and who executed the annexed instrument, and acknowledged to me that he executed the same.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Court at my office in the County of San Diego, the day and year in this Certificate first above written.

J. B. McLEES,
County Clerk and ex-officio Clerk of the Superior Court.
By Albert W. Daniels Deputy.

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of E. H. Welte dated May 12th, 1930, conveying lands therein described to the County of San Diego, for highway purposes (Road Survey 445) be and the same is hereby accepted.

State of California, }
County of San Diego, } ss.

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 13th day of May, 1930 relating to the attached deed.

Board of Supervisors San Diego County, Cal.

J. B. McLEES, Clerk.
By C. Buckley Deputy.

Filed May 12 1930 J. B. McLEES, COUNTY CLERK BY C. Buckley DEPUTY

RECORDED AT REQUEST OF COUNTY BOARD OF SUPERVISORS May 14 1930 at 15 Min. past 11 o'clock A.M.

John H. Ferry, County Recorder
By L.B. Woodard Deputy

24040 Fee $--

COMPARED: Laurie Granmason DEPUTY COUNTY RECORDER

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Rec'd for recordation 2-1-38 at request of Grantee Trust Deed San Diego 785 Page 439 Official records

Escrow No. 8619
SAN DIEGO TRUST & SAVINGS BANK

DEED OF TRUST

THIS DEED OF TRUST, Made this 28nd day of April, 1930,

Between W. D. RECORD and BESS BUELL, both single women, herein called TRUSTOR, SAN DIEGO TRUST & SAVINGS BANK a Corporation, of San Diego, California, herein called Trustee, and SAN DIEGO TRUST & SAVINGS BANK, a Corporation, herein called BENEFICIARY,

Witnesseth: That Trustor hereby GRANTS to TRUSTEE, IN TRUST, WITH POWER OF SALE, all that property in the City of San Diego, County of San Diego, State of California, described as:

Commencing at the Northeast corner of Lot Forty-six (46) in Block Eighteen (18) of University Heights, according to the Partition Map of the East Half of Pueblo Lot 1110, being Map No. 937, filed in the office of the Recorder of said San Diego County, January

PHOTOGRAPHED BY: T. MILLER, DEPUTY RECORDER

DEED BOOK 1778

PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

184

5-21-30

1778/184

Deeds

EASEMENT FOR COUNTY ROAD

ROAD SURVEY 443

WE W. H. BABCOCK and ED A MARY C. B. FLETCHER, for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

West 15 Acres of the SW¼ of the SE¼ and the East 1/2 of the SE¼ of the SW¼ of Section 2, T. 14 S., R. 4 W., S.B.M.

Said right-of-way being more particularly described as follows: A strip of land 80 feet wide, 40 feet each side of a center line described as follows:

Beginning at a point on the east line of the West 15 Acres of the SW¼ of the SE¼ of Section 2,from which the southwest corner of that certain tract of land as conveyed to C.W. Babcock by deed recorded in Deed Book 1499 at page 480, records of San Diego County, bears S. 1° 13' W. 58.7 feet, and running thence from said point of beginning S.89° 58' W. 119.66 feet to the beginning of a curve to the left having a radius of 2000 feet; thence along said curve through an angle of 4° 45' a distance of 165.61 feet; thence S. 85° 10' W. 299.38 feet to the beginning of a curve to the right having a radius of 2000 feet; thence along said curve through an angle of 3° 42' a distance of 129.15 feet; thence S. 88° 58' W. to an intersection with the west line of the E½ of the SE¼ of the SW¼ of said Section 2, said intersection being the northeast corner of that certain tract of land as conveyed to Carrie Ivabelle Angier by deed recorded in Deed Book 502 at page 487, records of said County.

W.H. Babcock agrees to be a party to this easement upon the following conditions: that the county of San Diego shall pay for all avocado Trees lying within the above described right-of-way at the rate of five dollars ea ($5.00) each, and the said county shall remove the present fence ------ - - and rebuild the same along the new right of way line.

As a further consideration it is mutually agreed and understood that any easements or rights of way for road purposes heretofore granted, if any, will be closed officially by the Board of Supervisors and revert back to the abutting property within six months from date.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor executors, administrators or assigns.

WITNESS our hands and seals this 12th day of May, 1930

W.H. Babcock (SEAL)

Ed Fletcher (SEAL)

Mary C. B. Fletcher (SEAL)

STATE OF CALIFORNIA, } ss.
County of San Diego. }

On this 12th day of May in the year 1930, before me, J. H. McINNIS, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared W.H. Babcock, Ed Fletcher, and Mary C.B. Fletcher known to me to be the person described in and whose names are subscribed to and who executed the annexed instrument, and acknowledged to me that they executed the same.

E-100D

RW.AP Pd 1

offers

298-260-15 & 298-421-06

217

PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Court at my office in the County of San Diego, the day and year in this Certificate first above written.

J. B. McLEES.

County Clerk and ex-officio Clerk of the Superior Court.

By Albert W Daniels

Deputy.

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of W.H. Babcock-Jr. Fletcher and Mary C.B. Fletcher- dated May 12th, 1930, conveying lands therein described to the County of San Diego, for highway purposes (Road Survey 445) be and the same is hereby accepted.

State of California, } SS.
County of San Diego. }

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 19th day of May, 1930 relating to the attached deed.

BOARD OF SUPERVISORS SAN DIEGO COUNTY, CAL.

J. B. McLees, Clerk

By C Buckley Deputy.

FILED MAY 19 1930 J. B. McLees, County Clerk By C. Buckley, Deputy.

Recorded at request of Ctee. MAY 21 1930 at 28 Min. past 11 o'clock A.M.

Fee $-----

John H. Ferry, County Recorder.

By L. H. Woodard, Deputy.

85048

--oo--

AMC 85950 ATG

I, SALVADOR SAINZ, a widower

For and in consideration of Ten ($10.00) DOLLARS,

DO HEREBY GRANT TO Antonia R de Miranda

ALL THAT REAL PROPERTY situated in the County of San Diego, State of California, bounded and described as follows:

Lot Ninety-eight (98) of the Boundary Tract, according to the Map thereof No.1690, filed in the office of the Recorder of said San Diego County September 24, 1918.

WITNESS my hand this 1 day of February 1929.

SIGNED AND EXECUTED IN PRESENCE OF) Salvador Sainz

STATE OF CALIFORNIA, } SS.
County of San Diego. }

On this 16th day of FEBRUARY 1929 before me, CHARLES C. OTIS a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared SALVADOR SAINZ known to me to be the person described in and whose name is sub-

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DEED BOOK 1786
117

PHOTOGRAPHED BY: T. MILLER, DEPUTY RECORDER

EASEMENT FOR COUNTY ROAD

Road Survey 443

We Jennie C. Stevens, E.R. Stevens, Clara E. Coulter, Joseph C. Coulombe and Blanche D. Coulombe, for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

SE¼ of the SE¼ of Section 2, T. 14 S., R. 4 W., S.B.M.

Said right-of-way being more particularly described as follows: A strip of land 80 feet wide, 40 feet each side of a center line described as follows:

Beginning at a point on the west line of said SE¼ of the SE¼ of said section, from which the southwest corner of said ¼-¼ section bears southerly and distant 623.06 feet, and running thence from said point of beginning S. 72° 37' E. 825.53 feet to the beginning of a curve to the left having a radius of 800 feet; thence along said curve through an angle of 39° 15' 40" a distance of 548.19 feet, to a point on the east line of said SE¼ of the SE¼ from which the southeast corner of said ¼-¼ section bears S.0° 39' W. and distant 394.05 feet.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor ___ executors, administrators or assigns.

WITNESS our hands and Seals this 12th day of May, 1930.

Jennie C. Stevens (Seal)
E.R. Stevens (Seal)
Clara E. Coulter (Seal)
Joseph C. Coulombe ____
Blanche D. Coulombe ____

STATE OF CALIFORNIA,)
) ss.
County of San Diego.)

On this 12th day of May in the year 1930, before me, J.B. McLees, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared Jennie C. Stevens, E.R. Stevens and Clara E. Coulter known to me to be the persons described in and whose names are subscribed to and who executed the annexed instrument, and acknowledged to me that they executed the same.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Court at at my office in the County of San Diego, the day and year in this Certificate first above written.

J.B. McLees,
County Clerk and ex-officio Clerk of the Superior Court,
By Albert W. Daniels Deputy.

State of Indiana
ss:
County of Howard

Before me personally appeared Joseph C. Coulombe and Blanche D. Coulombe and acknowledged the foregoing instrument to be their free act and deed this fifth day of June, 1930.

Notary Public SEAL Indiana

Mae Boyl
Notary Public
My Commission Expires October 9th, 1930

DEED BOOK 1786

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of Jennie C. Stevens, E.R. Stevens, Clara E. Coulter, Joseph C. Coulombe and Blanche D. Coulombe, dated May 12th, 1930, conveying lands therein described to the County of San Diego, for highway purposes, (Road Survey 443) be and the same is hereby accepted.

State of California,)
) ss.
County of San Diego.)

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 9th day of June, 1930, relating to the attached deed.

J.B. McLees, Clerk.
By C. Buckley Deputy

Board of Supervisors San Diego County, Cal.

Filed
Jun 9 - 1930
J.B. McLees, County Clerk
By C. Buckley Deputy.

Recorded at request of County Board of Supervisors Jun 10 1930 at 2 o'clock P.M.
John H. Ferry, County Recorder
27882. Fee $____ By N.C. Parsons, Deputy

PHOTOGRAPHED BY: T. MILLER, DEPUTY RECORDER

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Reg. #2141
S-7000
g-264

UNION TRUST COMPANY OF SAN DIEGO

a corporation, of the City of San Diego, County of San Diego, State of California,

For and in consideration of the sum of TEN AND NO/100 DOLLARS,

Does Hereby Grant to E.D. BARRETT AND E. RENA BARRETT, husband and wife as joint tenants

All That Real Property Situated in the County of San Diego, State of California, bounded and described as follows:

Lot No. Thirty-four (34) of Kensington Heights Unit Number Two, as per Map No. 1912, filed in the office of the County Recorder of said County, May 24, 1926.

Subject to State and County taxes for the fiscal year 1930-31, Road Improvement District taxes, Kensington Sewer District taxes, Kensington Park Maintenance District taxes, conditions, restrictions, reservations, easements and rights of way.

The above described property is conveyed by said grantor and the conveyance of the same is accepted by said grantee subject to all terms, conditions, covenants, restrictions, reservations and easements now of record, and also those conditions, covenants, restrictions and easements more particularly set forth in that Certain Declaration of Restrictions executed by UNION TRUST COMPANY OF SAN DIEGO, a corporation, on August 12, 1926, and recorded on August 27, 1926, in Book 1219, Page 426, of Deeds, records of said San Diego County, which said conditions, covenants, restrictions,

No. 103

Re Vacation and Abandonment of a Portion of an Easement Northerly of Border Road (R. S. 443).....

RESOLUTION VACATING AND ABANDONING
A PORTION OF COUNTY HIGHWAY SUPERSEDED BY RELOCATION

ON MOTION of Supervisor Cozens, seconded by Supervisor Boney, the following resolution is adopted:

WHEREAS, J. M. Jayne, representing V. P. Coppedge, has requested the vacation of the hereinafter described portion of a County highway (Document No. 356560); and

WHEREAS, the County Planning Commission has recommended said portion of County highway be vacated (Document No. 362274); and

WHEREAS, it appears to this Board that said portion of County highway as recommended for vacation by said Commission is not needed for present or prospective use as a County highway and that said portion has been superseded by relocation; NOW THEREFORE

BE IT RESOLVED that this Board of Supervisors finds that the hereinafter described portion of County highway has been superseded by relocation and that the vacation thereof will not cut off all access to the property of any person which, prior to such relocation, adjoined said portion of County highway.

BE IT FURTHER RESOLVED that the hereinafter described portion of County highway be and is hereby vacated and abandoned:

111125
FILE/PAGE NO.
RECORDED REQUEST OF
County Board of Supervisors
AUG 6 9 45 AM '65
SERIES 6 BOOK 1965
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
A. S. GRAY, RECORDER

NO FEE

Those portions of Road Survey No. 443, according to plat thereof filed in the Office of the County Surveyor of the County of San Diego in the SE¼ of the SE¼ of Section 2, T.14 S., R.4 W., S.B.B.&M. described in the easements to said County of San Diego recorded in Book 1786, Page 117 of the Deeds; Book 206, Page 258 of Official Records and as Document No. 187075 recorded October 18, 1963, of Official Records in said Office of the County Recorder, lying within the parcel of land described in Deed to V. P. Coppedge recorded June 17, 1958, as Document No. 95834 in Book 7125, Page 500 of Official Records in said Office of the County Recorder, and lying northerly of a line that is concentric with and distant 51 feet northerly measured radially from the following described line and the easterly prolongation thereof:

Beginning at a point on the east line of said Section 2 distant thereon N. 0° 34' E. 359.64 feet from the southeast corner of said section, being a point on a curve the center of which bears N. 7° 36'58" W. 1500 feet from said point; thence westerly along said curve a distance of 250 feet.

PASSED AND ADOPTED by the Board of Supervisors of the County of San Diego, State of California, this 3rd day of August, 1965, by the following vote:

AYES: Supervisors Gibson, Boney, Dent, Austin, and Cozens

NOES: Supervisors None

ABSENT: Supervisors None

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STATE OF CALIFORNIA,)
ss.
COUNTY OF SAN DIEGO,)

I, HELEN KLECKNER, Clerk of the Board of Supervisors of the County of San Diego, State of California, hereby certify that I have compared the foregoing copy with the original resolution passed and adopted by said Board, at a regular meeting thereof, at the time and by the vote therein stated, which original resolution is now on file in my office; that the same contains a full, true, and correct transcript therefrom and of the whole thereof.

Witness my hand and the seal of said Board of Supervisors, this 3rd day of August, 1965.

HELEN KLECKNER
Clerk of the Board of Supervisors

(SEAL)

By Sara Drew
Deputy

DEED BOOK 1843

PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

instrument, and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Court at at my office in the County of San Diego, the day and year in this Certificate first above written.

SUPERIOR COURT San Diego County, Cal.

J. B. McLEES,
County Clerk and ex-officio Clerk
of the Superior Court,
BY ALBERT W. DANIELS, Deputy.

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of SOPHIE LAMPE dated January 17th, 1931, conveying lands therein described to the County of San Diego, for highway purposes (Road Survey No. 305) be and the same is hereby accepted.

STATE OF CALIFORNIA,)
COUNTY OF SAN DIEGO.) SS.

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 19th day of January, 1931 relating to the attached deed.

BOARD OF SUPERVISORS San Diego County, Cal.

J. B. McLEES, Clerk.
By F. BREEN, Deputy.

FILED JAN 19 1931 J. B. McLEES, COUNTY CLERK BY F. BREEN, DEPUTY

Recorded At Request Of COUNTY BOARD OF SUPERVISORS JAN 20 1931 At 46 Min. past 1 o'clock P. M.

O. M. SWOPE, County Recorder
BY D. COLE, Deputy.

3146

COMPARED
H. Wan[illegible]
DEPUTY COUNTY RECORDER

FEE$____

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EASEMENT FOR COUNTY ROAD
ROAD SURVEY 470

I CLARA COULTER and, for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

SE¼ of the SE¼ of Section 2, T. 14 S., R. 4W., S. B. M.

Said right-of-way being more particularly described as follows:

A strip of land 80 feet wide, 40 feet each side of a center line described as follows:

Beginning at a point on the south line of said Section 2, from which the southeast corner of said section bears N. 89° 53' 30" E. and distant 265.71 feet and

PHOTOGRAPHED BY: J. BAKER, DEPUTY RECORDER

running thence from said point of beginning N. 29° 28' 30" E. 429.72 feet to an intersection with the center line of that certain County highway known as Road Survey 443, the same being at Engineers Station 39+78.29 of said Road Survey 443.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantors, executors, administrators or assigns.

WITNESS my hand and Seal this 19th day of January, 1931.

CLARA E. COULTER (SEAL)

STATE OF CALIFORNIA, }
COUNTY OF SAN DIEGO. } SS.

On this 19th day of JANUARY in the year 1931, before me, J. B. McLEES, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared CLARA COULTER known to me to be the person described in and whose name is subscribed to and who executed the annexed instrument, and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Court at my office in the County of San Diego, the day and year in this Certificate first above written.

SUPERIOR COURT San Diego County, Cal.

J. B. McLEES
County Clerk and ex-officio Clerk of the Superior Court
BY ALBERT W. DANIELS, Deputy.

BE IT RESOLVED, by the Board of Supervisors of San Diego County, that the deed of CLARA COULTER dated January 19th, 1931, conveying lands therein described to the County of San Diego for highway purposes (Road Survey No. 470) be and the same is hereby accepted.

STATE OF CALIFORNIA, }
COUNTY OF SAN DIEGO. } SS.

I hereby certify that the above and foregoing is a full, true and complete copy of a resolution adopted by the Board of Supervisors of San Diego County on the 19th day of January, 1931 relating to the attached deed.

BOARD OF SUPERVISORS San Diego County, Cal.

J. B. McLEES, CLERK
BY F. BREEN, DEPUTY.

FILED JAN 19 1931 J. B. McLEES, COUNTY CLERK BY F. BREEN, DEPUTY.

Recorded At Request Of COUNTY BOARD OF SUPERVISORS JAN 20 1931 At 47 Min. past 1 o'clock P. M.

O. M. SWOPE, County Recorder
BY D. COLE, Deputy.

3147
FEE $____

COMPARED
H. Warfield
DEPUTY COUNTY RECORDER

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PHOTOGRAPHED BY M. BRADLEY, DEPUTY RECORDER

50

Recorded at request of Grantee Jul 7 1931 20 Min. past 10 A. M. 35194

Fee $1.30 O. M. Swope, County Recorder.

By Deputy, D.Cole,

COMPARED J. F. Sullivan DEPUTY COUNTY RECORDER

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EASEMENT

I, CLARA E. COULTER of ___ in consideration of One Dollar, and other value received, do grant to the San Diego Consolidated Gas & Electric Company, a corporation, organized under the laws of the State of California, the perpetual right and easement to enter upon that certain real property situated in the County of San Diego, State of California, described as follows, to-wit:

A strip of land Two (2) feet in width being (1) One foot on each side of the following described center line: Commencing at a point on the South line of Section Two (2), Township Fourteen (14) South, Range Four (4) West, San Bernardino Meridian, which point is West a distance of Two Hundred Thirty-seven and Forty-five Hundredths (237.45) feet from the Southeast corner of said Section Two (2); thence from said point of commencement North Forty-two (42) Degrees, Sixteen (16) Minutes East a distance of One Hundred Ninety and Three Tenths (190.3) feet; thence North Thirty-one (31) Degrees, Twenty-nine (29) Minutes West a distance of One Hundred Sixty-six and Three Tenths (166.3) feet, thence North Eighty-three (83) Degrees, Twenty-five (25) Minutes West a distance of Three Hundred Fifteen (315) feet to the true point of beginning of the strip of land herein described, thence from said true point of beginning South Eleven (11) Degrees, Fifty-nine (59) Minutes West a distance of Thirty (30) feet. For the purpose of placing and maintaining thereon one anchor and anchor guy for the support of the electric power pole line erected on the adjoining road.

Also: A strip of land Two (2) feet in width being One (1) foot on each side of the following described center line: Beginning at a point on the South line of said Section Two (2) which point is West a distance of Two Hundred Thirty-seven and Forty-five Hundredths (237.45) feet from the Southeast corner of said Section Two (2), thence from said point of beginning North Forty-two (42) Degrees, Sixteen (16) Minutes East a distance of One Hundred Ninety and Three Tenths (190.3) feet; thence North Thirty-one (31) Degrees, Twenty-nine (29) Minutes West a distance of One Hundred Sixty-six and Three Tenths (166.3) feet.

Excepting from the above described strips of land any portions thereof lying within any deeded or dedicated street, road, or highway.

for the purpose of placing, constructing, repairing and maintaining and using cross-arms, thereon, and of stringing and placing upon such cross-arms, wires for the transmission of electric current for all purposes for which it may be used, and also the perpetual right and easement of constructing, replacing, maintaining and repairing all such cross-arms and wires upon the said above described real property, and to that end and for that purpose to go upon said land to place, construct, repair and replace such wires and maintain the same in a suitable and proper condition for use. It is agreed by the parties hereto that the said cross-arms may be of any length not exceeding 12 feet, and may extend 6 feet on each side of the center line of said strip of land and over land of the grantor herein not included in said strip, and the right and easement to construct, maintain and use such cross-arms and string and maintain and use at any place thereon wires for the purpose aforesaid, are hereby granted.

The said corporation is to be responsible for all damage that may be caused by the construction, operation and maintenance of said wires and anchorage upon said land for which in law it would be liable.

TO HAVE AND TO HOLD all such rights and easements unto the said corporation, its successors and assigns forever.

IN WITNESS WHEREOF, I have hereunto set my hand this 15th day of June 1931.

Signed, sealed and delivered in presence of Clara E.Coulter
Oliver E. Owen Jr.

Drawn By O E O
Checked by W.S.Z.

State of California,)
)ss
County of San Diego.)

On this 15th day of June, A.D. 1931, before me, R.S.Ruffin a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared Oliver E. Owen, Jr. known to me to be the person whose name is subscribed to the within instrument, as a Witness thereto, who being by me duly sworn, deposes and says: That he resides in San Diego, California and that he was present and saw Clara E.Coulter personally known to him to be the same person whose name is subscribed to the within and annexed Instrument, execute and deliver the same, and she acknowledged to said affiant that she executed the same; and that said affiant subscribed his name thereto as a Witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

R.S. Ruffin

R.S.Ruffin
Notary Public in and for the County of
San Diego, State of California.

35125 Recorded at request of Grantee Jul 7 1931 20 Min. past 10 A. M.
Fee $1.30

O. M.Swope, County Recorder.
By Deputy D.Cole.

COMPARED
J F Sullivan
DEPUTY COUNTY RECORDER

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EASEMENT

We, Grossmont Park Company and W. H.Babcock of __ in consideration of One Dollar, and other value received, do grant to the San Diego Consolidated Gas & Electric Company, a corporation, organized under the laws of the State of California, the perpetual right and easement to enter upon that certain real property situated in the County of San Diego, State of California, described as follows, to-wit:

The East Two (2) feet of the West Eighteen (18) feet of the Southwest Quarter (SW¼) of the Northwest Quarter (NW¼) of the Southeast Quarter (SE¼) and the East Two (2) feet of the West Eighteen (18) feet of the Northwest Quarter (NW¼) of the Southwest Quarter (SW¼) of the Southeast Quarter (SE¼) all of Section Two (2), Township Fourteen (14) South, Range Four (4) West, San Bernardino Meridian as said Quarter Sections are shown on Licensed Surveyors Map No. 361 filed in the office of the Recorder of the said County of San Diego.

for the purpose of placing, constructing, repairing and maintaining and using poles and cross-arms, thereon, and of stringing and placing upon such poles and cross-arms, wires for the transmission of electric current for all purposes for which it may be used, and also the perpetual right and easement of constructing, replacing, maintaining

PHOTOGRAPHED BY M. BRADLEY, DEPUTY RECORDER

PHOTOGRAPHED BY R. MC KINNON DEPUTY RECORDER

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of the said property so sought to be homesteaded is as follows, to-wit: Five-room frame dwelling and frame garage on forty-six and one-third feet frontage by seventy-five feet deep, located at 4489 Maryland Street, City and County of San Diego, State of California.

IN WITNESS WHEREOF I have hereunto set my hand this 17th day of April, A. D., 1933.

Herman Amann

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss. HERMAN AMANN being first duly sworn, deposes and says: That he is the declarant in the foregoing declaration of homestead; that he has read the foregoing declaration and knows the contents thereof, and that the matters therein stated are true of his own knowledge.

Herman Amann

Subscribed and sworn to before me this 17th day of April, 1933.
Notley S. Hammack
Notary Public in and for the County of San Diego, State of California.

NOTARY PUBLIC

Recorded at request of Attorney APR 18 1933 15 min. past 2 P. M.
Fee $1.00 O. M. SWOPE, County Recorder
21273 /5 By Deputy J. L. Squire.

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EASEMENT FOR COUNTY ROAD

ROAD SURVEY 443

WE, Jennie C. Stevens and E. R. Stevens, husband and wife and Blanche D. Coulombe and Joseph C. Coulombe, husband and wife for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

The SE¼ of the SE¼ of Section 2, T. 14 S., R. 4 W., S.B.M.

Said right-of-way being more particularly described as follows:

A strip of land 80 feet wide, 40 feet each side of the following described center line:

Beginning at a point on the west line of the SE¼ of the SE¼ of said Section from which the southwest corner of said ¼-¼ section bears south and distant 623.06 feet, and running thence from said point of beginning S. 72° 37' E. 873.66 feet to the beginning of a curve to the left having a radius of 750 feet; thence along said curve through an angle of 38° 15' 40" a distance of 500.84 feet to a point on the east line of the SE¼ of the SE¼ of said Section 2, from which the southeast corner of said ¼-¼ section bears S. 0° 34' W. and distant 374.47 feet.

It is understood that the undersigned grantor grant only that portion of the above described right of way to which they hold title and in which they are interested.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor their executors, administrators or assigns.

WITNESS our hands and Seals this 12th day of April, 1933.

Jennie C. Stevens (SEAL)
E. R. Stevens (SEAL)
Blanche D. Coulombe (SEAL)
Joseph C. Coulombe ____

STATE OF CALIFORNIA)
County of San Diego) ss. On this 12th day of April in the year 1933, before me, J. B. McLEES, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared Jennie C. Stevens, E. R. Stevens, Blanche D. Coulombe, and Joseph C. Coulombe known to me to be the persons described in and whose names are subscribed to and who executed the annexed instrument, and acknowledged to me that they executed the same.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Court at at my office in the County of San Diego, the day and year in this Certificate first above written.

SUPERIOR COURT San Diego County, Cal

J. B. McLEES,
County Clerk and ex-officio Clerk of the Superior Court
By Albert W. Daniels, Deputy.

In the Matter of Accepting Easement for Road Survey 443 First Road District . . . . .)

(SOLANA BEACH to RANCHO SANTA FE)

ON MOTION of Supervisor Hastings, seconded by Supervisor McMullen, the following Resolution is adopted by the Board of Supervisors;

WHEREAS, JENNIE C. STEVENS and E. R. STEVENS, husband and wife, and BLANCHE D. COULOMBE and JOSEPH C. COULOMBE, husband and wife, have tendered to this Board a deed dated April

PHOTOGRAPHED BY R. MC KINNON DEPUTY RECORDER

12th, 1933, conveying to the County of San Diego, an easement for a public highway eighty (80) feet in width, over and across:

The SE¼ of the SE¼ of Section 2, T. 14 S., R. 4 W., S.B.M.

NOW, THEREFORE, THE BOARD OF SUPERVISORS OF SAN DIEGO COUNTY, STATE OF CALIFORNIA, HEREBY RESOLVES AS FOLLOWS:

That the said deed be, and the same is hereby accepted, and the Clerk of this Board is hereby ordered and directed to cause the same to be recorded in the office of the County Recorder of the County of San Diego, State of California.

Passed and adopted by the Board of Supervisors of the County of San Diego, State of California, this 17th day of April, 1933, by the following vote, to-wit:

AYES: Supervisors, Hastings, Richards, Trussell, McMullen and Burley.

NOES: Supervisors, None

ABSENT: Supervisors, None

STATE OF CALIFORNIA)
County of San Diego) ss. I, J. B. McLEES, do hereby certify that I am the County Clerk of the County of San Diego, State of California, and ex-officio Clerk of the Board of Supervisors of the said County. That the foregoing Resolution was passed and adopted by the Board of Supervisors, at an adjourned meeting thereof at the time and by the vote above stated.

Board of Supervisors San Diego County, Cal.

J. B. McLEES, County Clerk
and ex-officio Clerk of the Board of Supervisors.
By C. Buckley, Deputy.

FILED APR 17 1933 J. B. McLees, County Clerk, By Helen Buck, Deputy.
Recorded at request of County Board of Supervisors APR 18 1933 50 min. past 4 P. M.
Fee XX
21290 /8
COMPARED
C Bayless
DEPUTY COUNTY RECORDER
O. M. SWOPE, County Recorder
By Deputy D. Cole.

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EASEMENT FOR COUNTY ROAD

ROAD SORVEY 443

WE, Peter Jaurequi and Marie Jaurequi husband and wife, for and in consideration of the sum of ONE DOLLAR ($1.00) do hereby grant to the COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, an Easement for the purpose of a right-of-way 80 feet wide, for use as a public highway, across and over the following described property.

S½ of the SW¼ of Section 1, T. 14 S., R. 4 W., S.B.M.

Said right -of-way being more particularly described as follows:

A strip of land 80 feet wide, 40 feet each side of the following described center line:

Beginning at a point on the west line of said Section 1, from which the southwest corner of said section bears S. 0° 34' W. and distant 374.47 feet, said point lying on a curve concave northerly the radius of which bears at said point N. 20° 52' 40" W. 750 feet, and running thence from said point of beginning along the arc of said curve through a central angle of 7° 36' 20" a distance of 99.55 feet; thence N. 61° 31' E. 811.59 feet to the beginning of a curve to the right having a radius of 700 feet; thence along said curve through an angle of 32° 21' a distance of 395.23 feet; thence S. 86° 08' E. 584.11 feet to the beginning of a curve to the left having a radius of 2000 feet; thence along said curve through an angle of 17° 43' a distance of 618.43 feet; thence N. 75° 09' E. 381.32 feet to a point on the north and south center line of said Section 1, from which the southeast corner of the SE¼ of the SW¼ of said section bears S. 0° 04' 30" E. and distant 1013.96 feet.

It is understood that the undersigned grantors grant only that portion of the above described right of way to which they hold title and in which they are interested.

It is further understood that, upon the granting of this easement, an easement previously granted to the County July 23, 1930, and recorded in Deed Book 1797, at page 209, will be vacated and abandoned.

Said easement to continue in full force and effect so long as said property is used for road purposes and until that portion of the public highway contained in the above described premises has been lawfully vacated by the duly constituted public authorities, at which time said property shall revert to the grantor their executors, administrators or assigns.

WITNESS our hands and Seals this 12th day of April, 1933.

Peter Jaurequi (SEAL)
Marie Jaurequi (SEAL)

STATE OF CALIFORNIA)
County of San Diego) ss. On this 12th day of April in the year 1933, before me, J. B.

No. 103

Re Vacation and Abandonment of a Portion of an Easement Northerly of Border Road (R. S. 443).....

RESOLUTION VACATING AND ABANDONING
A PORTION OF COUNTY HIGHWAY SUPERSEDED BY RELOCATION

ON MOTION of Supervisor Cozens, seconded by Supervisor Boney, the following resolution is adopted:

WHEREAS, J. M. Jayne, representing V. P. Coppedge, has requested the vacation of the hereinafter described portion of a County highway (Document No. 356560); and

WHEREAS, the County Planning Commission has recommended said portion of County highway be vacated (Document No. 362274); and

WHEREAS, it appears to this Board that said portion of County highway as recommended for vacation by said Commission is not needed for present or prospective use as a County highway and that said portion has been superseded by relocation; NOW THEREFORE

BE IT RESOLVED that this Board of Supervisors finds that the hereinafter described portion of County highway has been superseded by relocation and that the vacation thereof will not cut off all access to the property of any person which, prior to such relocation, adjoined said portion of County highway.

BE IT FURTHER RESOLVED that the hereinafter described portion of County highway be and is hereby vacated and abandoned:

141125
FILE/PAGE NO.
RECORDED REQUEST OF
County Board of Supervisors
AUG 6 9 45 AM '65
SERIES 6 BOOK 1965
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
A. S. GRAY, RECORDER

NO FEE

Those portions of Road Survey No. 443, according to plat thereof filed in the Office of the County Surveyor of the County of San Diego in the SE¼ of the SE¼ of Section 2, T.14 S., R.4 W., S.B.B.&M. described in the easements to said County of San Diego recorded in Book 1786, Page 117 of the Deeds; Book 206, Page 258 of Official Records and as Document No. 187075 recorded October 18, 1963, of Official Records in said Office of the County Recorder, lying within the parcel of land described in Deed to V. P. Coppedge recorded June 17, 1958, as Document No. 95834 in Book 7125, Page 500 of Official Records in said Office of the County Recorder, and lying northerly of a line that is concentric with and distant 51 feet northerly measured radially from the following described line and the easterly prolongation thereof:

Beginning at a point on the east line of said Section 2 distant thereon N. 0° 34' E. 359.64 feet from the southeast corner of said section, being a point on a curve the center of which bears N. 7° 36'58" W. 1500 feet from said point; thence westerly along said curve a distance of 250 feet.

PASSED AND ADOPTED by the Board of Supervisors of the County of San Diego, State of California, this 3rd day of August, 1965, by the following vote:

AYES: Supervisors Gibson, Boney, Dent, Austin, and Cozens

NOES: Supervisors None

ABSENT: Supervisors None

- - -

STATE OF CALIFORNIA,)
ss.
COUNTY OF SAN DIEGO,)

I, HELEN KLECKNER, Clerk of the Board of Supervisors of the County of San Diego, State of California, hereby certify that I have compared the foregoing copy with the original resolution passed and adopted by said Board, at a regular meeting thereof, at the time and by the vote therein stated, which original resolution is now on file in my office; that the same contains a full, true, and correct transcript therefrom and of the whole thereof.

Witness my hand and the seal of said Board of Supervisors, this 3rd day of August, 1965.

HELEN KLECKNER
Clerk of the Board of Supervisors

(SEAL)

By Sara Drew
Deputy

ASSIGNMENT OF CONTRACT FOR SALE OF REAL ESTATE

THIS INDENTURE, made this 10th day of March, 193".

WITNESSETH: That GEORGE B. FORD, the husband Vendee, named in the Real Estate Contract herein mentioned for and in consideration of the sum of One Dollar, lawful money of the United States, to him in hand paid, by IRIS V. MOORE, have sold, and by these presents do sell, transfer, assign and set over, unto the said IRIS V. MOORE a spinster, for the sale of the following described real estate situated in the County of San Diego, State of California, to-wit:

"All that portion of Lot 4 in Block 213 of Escondido, in the City of Escondido, County of San Diego, State of California, according to the map thereof, No. 336, filed in the office of the County Recorder of said San Diego County, July 10, 1886, described as follows: Beginning at the southwesterly corner of said Lot 4, thence easterly along the southerly line of said Lot 4, 100 feet, thence northerly and parallel with the easterly line of said Lot 4, 140 ft., thence westerly at right angles and parallel with the southerly line of said Lot 4, to the westerly line of said Lot 4, thence southerly along the westerly line of said Lot 4, to the point of beginning,"

being more particularly described in said contract, which said contract was made and executed by MARY ROSS, and bears the date of June 22nd, 1934.

TO HAVE AND TO HOLD the same, as well as my interest and estate in said property unto the said IRIS V. MOORE, her heirs, executors, administrators and assigns, for their use and benefit forever, subject, nevertheless, to the covenants, conditions and payments, therein mentioned, and I hereby authorize and empower the said IRIS V. MOORE, upon the performance of the said covenants, and conditions, to demand and receive of and from MARY ROSS, the deed covenant to be given in the said contract in the manner, to all intents and purposes, as I might or could do, were these presents not executed.

IN WITNESS hereof, I have hereunto affixed my hand and seal, the day and year above written.

George B.Ford

Witnesses:

State of Washington)
County of King) ss

I, the undersigned, a Notary Public in and for the State of Washington, residing at Seattle, do hereby certify that on this 10th day of March, 1937, personally appeared before me GEORGE B. FORD, to me known to be the individual described in and who executed the within instrument and acknowledged to me that he signed and sealed the same as his free and voluntary act and deed for the uses and purposes herein mentioned.

GIVEN UNDER MY HAND AND OFFICIAL SEAL this 10th day of March, 1937.

Harry J. Nutt
Notary Public in and for the State of Washington, residing at Seattle.

Harry J. Nutt
Notary Public
State of Washington
Commission expires Feb.4, 1939.

Recorded at request of Bank of America, Escondido, Cal. Mar 26 1937 14 Min. past 9 A. M.
Fee $1.20 -E-
O. M. Swope, County Recorder.
By Deputy H. Zervas. 15056

------OOOOOOOOOOOOO-----

RIGHT OF WAY

THIS INDENTURE made this 15th day of March, in the year 1937, between TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION of the State of California, existing under and by virtue of the laws of the State of California, party of the first part, and SAN DIEGO WATER SUPPLY COMPANY, a corporation, created and existing under and by virtue of the laws of the State of Nevada, party of the second part.

WITNESSETH:
That the said party of the first part, for and in consideration of the sum of $1.00 to it in hand paid by the said party of the second part, the receipt whereof is hereby

PHOTOGRAPHED BY S.WRIGHT JR. DEPUTY RECORDER

State of California }
County of San Diego } SS.

On this 19th day of February, 1940, before me, Dorothy Ranken, a Notary Public in and for said County, personally appeared Harold B. Starkey, known to me to be the Vice President, and H.K. RUMBAUGH, known to me to be the Secretary of the corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

Dorothy Ranken

Dorothy Ranken
Notary Public in and for said County and State.

RECORDED AT REQUEST OF UNION TITLE INS. & TRUST CO.
DEC 23 1943 at 9 A.M.

ROGER N. HOWE, County Recorder
By Deputy D. Cole

1.00 - 3
84121

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PALMER-BILT HOMES, a co-partnership, consisting of Alex Oser and Alden Chas. Palmer for and in consideration of the sum of Ten and no/100 Dollars DO HEREBY GRANT TO HAROLD R. WHITBY and KATHERINE M. WHITBY, husband and wife, as joint tenants ALL THAT REAL PROPERTY situated in the City of San Diego County of San Diego, State of California, bounded and described as follows:

Lot 47 of Crown Point, in City of San Diego, County of San Diego, State of California, according to Map thereof No.1891, filed in the office of the County Recorder of San Diego County, March 2, 1926.

WITNESS our hands and seals this 29th day of November, 1943.

U. S. I. R.	I. & T. R.
San Diego, Calif.	Dec 23 1943
1 Dollar	10 Cents

CO.

PALMER-BILT HOMES, a co-partnership

By: Alex Oser Partner (SEAL)

By: Alden Chas. Palmer Partner (SEAL)

State of California }
County of San Diego } SS.

On this 14th day of November, 1943, before me, the undersigned, a Notary Public in and for said County and State, personally appeared Alex Oser and Alden Chas. Palmer known to me to be the partners of the partnership that executed the foregoing instrument, and acknowledged to me that such partnership executed the same.

WITNESS my hand and official seal the day and the year in this certificate first above written.

J.F. Simmons
Notary Public in and for said County and State.
My commission expires June 17, 1947

NOTARY PUBLIC San Diego Co., Calif.

RECORDED AT REQUEST OF UNION TITLE INS. & TRUST CO.
DEC 23 1943 at 9 A.M.

ROGER N. HOWE, County Recorder
By Deputy D. Cole

1.00 - 4
84127

--------0000000-------

E.H. WELTE, for and in consideration of the sum of Ten Dollars Do HEREBY GRANT TO WILBUR H. BABCOCK and GRACE D. BABCOCK, husband and wife, as joint tenants, ALL THAT REAL PROPERTY situated in the County of San Diego, State of California, bounded and described as follows:

An easement and right of way for road purposes and incidents thereto, in, over, along and across the West ten feet of the following described land:

The East Half of that certain tract of land described as beginning at a point that is 40 rods North of the South line and 10 rods West of the East line of the Southwest Quarter of the Southeast Quarter of Section Two, Township Fourteen South, Range Four West of the San Bernardino Meridian; thence West 40 rods; thence North 48 rods; thence East 40 rods; thence South 48 rods to the point of beginning.

WITNESS my hand and seal this 30th day of November, 1943.

E.H. Welte (SEAL)

State of California, }
County of San Diego } SS.

On this 2nd. day of December, 1943, before me, the undersigned, a Notary Public in and for said County and State, personally appeared E.H. WELTE, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same.

WITNESS my hand and official seal the day and the year in this certificate first above written.

Albert B. Willis
Notary Public in and for said County and State.
My commission expires February 1, 1947

Albert B. Willis

RECORDED AT REQUEST OF UNION TITLE INS. & TRUST CO.
DEC 23 1943 at 9 A.M.

ROGER N. HOWE, County Recorder
By Deputy D. Cole

1.00 - 3
84139

----------OOOOOOOO----------

FOR INSTRUMENT AFFECTING THIS 2nd Deed
SEE BOOK 2646 PAGE 7 OFF. REC., FILED 12-7 1943

THIS DEED OF TRUST, made this 2nd day of December, 1943 Between Clayton G. Lyons and Shirley Irene Lyons, husband and wife hereinafter called the TRUSTOR, UNION TITLE INSURANCE AND TRUST COMPANY, a corporation, of San Diego, California, hereinafter called the TRUSTEE, and VIRGINIA PETERSON, a married woman hereinafter called the BENEFICIARY:

WITNESSETH: That Trustor hereby grants to Trustee, in trust, with power of sale, all that property in the City of San Diego County of San Diego, State of California, described as:

The West Sixty-two and one-half feet of Lots Forty-seven to Fifty, inclusive in Block "E" of Teralta Heights Subdivision No. Two, according to Map thereof No. 1017 filed in the office of the County Recorder of said San Diego County November 8, 1906.

FOR THE PURPOSE OF SECURING:

FIRST. Payment of the indebtedness evidenced by that certain promissory note (and any renewal or extension thereof) in form as follows:

$4300.00 San Diego, California, December 2, 1943

In installments and at the times hereinafter stated, for value received I promise to pay to VIRGINIA PETERSON, a married woman or order, at San Diego, California the principal sum of FORTY-THREE HUNDRED and No/100 Dollars with interest from December 2, 1943 on the amounts of principal remaining from time to time unpaid, until said principal sum is paid, at the rate of six per cent per annum. Principal and interest payable in monthly installments of ONE HUNDRED AND NO/100 Dollars, or more each, on the 2nd day of each and every month, beginning January 2, 1944 and so continuing until November 2, 1944. Beginning December 2, 1944 the monthly installments shall become $45.00 or more including interest at 6% and so continuing until December 2, 1946 when the unpaid balance of principal and interest shall become due and payable.
Each of said payments shall be credited as follows: First on the interest then due; and the remainder on the principal sum; and interest shall thereupon cease upon the amount so credited on the said principal sum. Should the interest not be so paid it shall, at the option of the holder of this note, become a part of the principal and thereafter bear like interest as the principal. Should default be made in the payment of any of said installments when due, then the whole sum of principal and interest shall become immediately due and payable at the option of the holder of this note. Should suit be commenced or an attorney employed to enforce payment of this note, the undersigned, agrees to pay in addition, a reasonable sum as attorney's fees. Principal and interest payable in lawful money of the United States. This note is secured by a certain Deed of Trust to the UNION TITLE INSURANCE AND TRUST COMPANY, a corporation, and is given as part of the purchase price of the real property.

Clayton G. Lyons
Shirley Irene Lyons

SECOND. Payment of all other sums, with interest, becoming due or payable under the provisions hereof, or any part thereof;
THIRD. Payment of such additional sums, with interest thereon, as may be hereafter borrowed from said Beneficiary by the maker of said note when evidenced by another promis-

Recorded at request of Union Title Insurance & Trust Co. Jan 31 1947 9 A. M.

Roger N. Howe, County Recorder 3.60-30
By Deputy H. Zervas 11533

--00000--

COMPARED

Affix I.R.S. $4.95

Corporation Grant Deed

C. E. Toberman Company, a corporation organized under the laws of the State of California, with its principal place of business at 6763 Hollywood Boulevard, Hollywood, California, in consideration of Ten and no/100 ($10.00) Dollars, to it in hand paid, receipt of which is hereby acknowledged, does hereby grant to Stephen C. Fletcher and Louise W. Fletcher, husband and wife, as joint tenants, the real property in the County of San Diego, State of California, described as

That portion of Section 11, Township 14 South, Range 4 West, San Bernardino Meridian, in the County of San Diego, State of California, according to Swamp and Overflow Lands Survey No. 15, described as follows:

Beginning at the most Northerly corner of Lot 13 of North Strand, as the same is shown on Map No. 1737, filed in the office of the County Recorder September 14, 1922; thence South 80°50' West along the Southerly line of 27th Street as shown on said Map No. 1737, a distance of 194.34 feet; thence North 9°10' West, 520.0 feet; thence North 80°48' East, 183.18 feet more or less to a point in the West line of 100 foot California State Highway as described in deed from South Coast Land Company to State of California, dated February 24, 1931 and recorded in Book 1864, page 343 of Deeds, said point being on the arc of a curve concave to the East having a radius of 10,050 feet; thence following the Westerly line of said State Highway in a Northerly direction a distance of 680 feet to the true point of beginning; thence following the Westerly line of said State Highway in a Northerly direction to the South Bank of the San Dieguito River, as located on May 4, 1936, date of deed from Wm. G. Kerckhoff Company to C. E. Toberman Company; thence following said river bank and the mean high tide line of the Pacific Ocean Westerly and Southerly to intersection with a line which bears South 80°48' West from the true point of beginning; thence along said line, North 80°48' East to the true point of beginning.

Excepting, therefrom that portion thereof, if any, heretofore or now lying below the mean high tide line of the Pacific Ocean. C.E.T. J.W.F.

Excepting, retaining and reserving unto the seller, its successors and assigns a 12 foot wide easement and right of way extending north through said property hereby conveyed from the North side of 29th Street with a bearing of North 8°15'30" West, and with a center line of easement at its point of intersection with the North side of 29th Street at a distance of 141.35 feet West from the Westerly boundary of the California State Highway described above for sewer, water and/or gas mains and pipe lines in, under and across said property, together with the right to enter on said property for purposes of reconstruction and repairing or altering any of the same; provided, however, that such pipe shall be so located as to interfere with the property as little as possible.

Subject to: Second installment general and special County and City Taxes for the fiscal year 1946-1947;

Covenants, conditions, restrictions, reservations, easements, rights and rights of way of record, if any.

U. T. I. & T. Co. San Diego, Calif. Jan 31 1947
2 Dollars | 2 Dollars | 50 cents | 40 cents | 5 cents

In Witness whereof, said Corporation has caused its corporate name and seal to be affixed hereto and this instrument to be executed by its President and Secretary thereunto duly authorized, this 31st day of December, 1946.

C. E. Toberman
Company
Incorporated
April 24, 1912

C. E. Toberman Company
By C. E. Toberman President
By Josephine W. Toberman Secretary

State of California)
County of Los Angeles)ss.

On this 2nd day of January 1947, before me, the undersigned, a Notary Public in and for said County, personally appeared C. E. Toberman, known to me to be the President and Josephine W. Toberman, known to me to be the Secretary of C. E. Toberman Company, the corporation that executed the within and foregoing instrument, and known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

Witness my hand and official seal.

D. B. Mathew
Notary Public in and for said County and State.
My commission expires July 6, 1950

Recorded at request of Union Title Insurance & Trust Co. Jan 31 1947 9 A. M.

1.80-12
11532

Roger N. Howe, County Recorder
By Deputy H. Zervas

--0000--

Grant Deed

In consideration of $10.00, receipt of which is acknowledged, Douglas Fairbanks, Jr., a married man, Robert Fairbanks, a married man, Frances Wilcox, a married woman, all of whom hold title as their separate property, and Bank of America National Trust and Savings Association, a national banking association, as Trustee under the Last Will and Testament of Douglas Fairbanks, deceased, do hereby grant to Sylvia Stanley of Alderley, a married woman, the real property described as follows:

An undivided one-half interest in and to all that portion of Lot Five (5) of Section Two (2), Township Fourteen (14) South, Range Four (4) West, S.B.M., according to United States Government Survey thereof approved January 18, 1876, in the County of San Diego, State of California, described as follows: Commencing at a point on the Easterly line of said Lot five (5), distant thereon 8 rods South of the Northeast corner of said Lot five (5), thence Westerly 80 rods, more or less, to the line of mean high tide of the Pacific Ocean, thence Southerly along said mean high tide line to intersection with a line drawn parallel with and 20 rods South of the North line of the property herein described, thence Easterly along said parallel line to the East line of said Lot five (5), thence Northerly along said East line, 20 rods to the point of commencement, excepting therefrom that portion thereof included within the 200 foot right of way of the California Southern Railroad Company, now Atchison, Topeka and

GRANT OF EASEMENT.

WHEREAS, the Wm. G. Kerckhoff Company was heretofore the owner of two contiguous parcels of land near Del Mar, California; and

WHEREAS, Samuel D. Fraser and Gladys F. Fraser, husband and wife, acquired one of the parcels of property by deed dated 4th day of April, 1947, and recorded in Book 2418, Page 314 of the Official Records of San Diego County, California; and

WHEREAS, George Allen Bisbee acquired a contiguous piece of property by deed dated 11th of December, 1947, and recorded in Book 2445, Page 399 of Official Records of said San Diego County, the property being sometimes known as Stockton Point; and

WHEREAS, at the said time and place of the said Fraser and wife acquiring the property heretofore mentioned, the said Frasers then and there agreed to give access over the said property so conveyed to them from the beach land of Stockton Point, and in favor of the purchaser of the said Stockton Point land to any road or highway that may be existing, for the purpose of allowing the persons residing on the said Stockton Point to drive to the said beach, using any entrance from the State Highway available to the land deeded as aforesaid to said Frasers, said agreement being between the said Kerckhoff Company and the said Samuel D. Fraser and wife,

NOW, THEREFORE, pursuant to the said agreement last mentioned, the said Frasers hereby grant to George Allen Bisbee, for the benefit of the said Stockton Point, a right of way for a driveway and other purposes, and limited in its boundaries by the boundaries of the land hereinafter described, (which land is, for convenience sake, described as two parcels whose Northeasterly and Southwesterly ends are contiguous), as follows:

Parcel 1 is a parcel of land 20 feet wide, beginning at the most Southwesterly end of the property deeded to George Allen Bisbee in the aforesaid deed, and contiguous to and lying along the Southeasterly side of said property deeded to George Allen Bisbee, and

being a series of contiguous strips of land 20 feet wide along and Southeasterly from the following bearings of said land so deeded to George Allen Bisbee, to-wit: North 41°40'40" East 202.04 feet to a point; thence North 28°52'40" East 97.0 feet to a point; thence North 13°57'10" East 91.0 feet to a point; thence North 28°27'40" East 185.0 feet to a point.

Parcel 2 lies contiguous to the Northeast side of Parcel 1 just described, and is all the land lying between the property conveyed to George Allen Bisbee in the aforesaid deed, and the hereinafter described lines, to-wit: The Northeasterly end line of Parcel 1 and a line beginning at the Northeasterly corner of the said Parcel 1 just described; thence along a curve concave to the Southeasterly and having a radius of ninety (90) feet through an arc 60° more or less to the point on the Westerly line of the present State Highway; thence along the State Highway to the Northwesterly point of the property deeded to George Allen Bisbee in the aforesaid described deed.

The Grantors further agree that if the said State Highway is moved, and they have access thereto, that this easement is extended to give access to the said Highway.

Dated this 16th day of April, 1948.

Samuel D. Fraser

Gladys F. Fraser

STATE OF CALIFORNIA)
) SS.
COUNTY OF San Diego)

On this 16 day of April, 1948, before me, Elsie M. Davenport, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared Samuel D. Fraser and Gladys F. Fraser, husband and wife, known to me to be the persons whose names are subscribed to the foregoing instrument, and acknowledged to me that they executed the same.

IN WITNESS MY HAND AND OFFICIAL SEAL.

Elsie M. Davenport
Notary Public in and for said
County and State

(SEAL)

My Commission Expires Feb. 20, 1951

-2-

INDEXED

When recorded return to

G. A. BISBEE
354 S. Spring St.,
Los Angeles 13, Calif.

Freer
to
Bisbee

DOCUMENT No. 40955
RECORDED AT REQUEST OF
G. A. Bisbee

APR 21 1948
30 Min 10
Book 2766 Page 99
OFFICIAL RECORDS
County of San Diego, California

Fee $2.10 Folios 8
ROGER N. HOWE, County Recorder
By

BOOK 2766 PAGE 101

395

WM. G. KERCKHOFF COMPANY, a California corporation, successor of South Coast Land Company, a corporation, does hereby grant unto [redacted] and GLADYS F. FRASER, husband and wife, the right to use any and all easements heretofore reserved by the Grantor herein in any property located in Townships 12 South, 13 South and 14 South and Ranges 3 West, 4 West and 5 West in the County of San Diego, State of California, for the purpose of enabling, permitting and authorizing said Grantee herein to lay and maintain sewer pipes and appurtenances thereto and therein.

IN WITNESS WHEREOF, the said WM. G. KERCKHOFF COMPANY, successor of South Coast Land Company, a corporation, has caused this instrument to be signed by its President and Secretary and its corporate seal to be affixed hereto this 5th day of December, 1947.

WM. G. KERCKHOFF COMPANY
a corporation

BY _____
President

BY _____
Secretary

State of California)
County of Los Angeles) ss

On this 15th day of December, 1947, before me Dorcas Schrego, a Notary Public in and for said County and State, personally appeared H. Kreusam, known to me to be the President and J.T. Kennedy, known to me to be the Secretary of the Corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

_____
Notary Public in and for said County and State.

My Commission Expires November 18, 1948

Book 2589 Page 395 O.R.

Best Copy Available

[redacted] County of [redacted], State of California, for the purpose [redacted] and authorizing said Grantee herein to lay and maintain [redacted] thereto and therein.

IN WITNESS WHEREOF, the said WM. G. KERCKHOFF COMPANY, [redacted] Coast Land Company, a corporation, has caused this instrument to be [redacted] President and Secretary and its corporate seal to be affixed hereto this 5th day of December, 1947.

WM. G. KERCKHOFF COMPANY
a corporation

BY [redacted]

BY [redacted]
Secretary

State of California)
County of Los Angeles) ss

On this 5th day of December, 1947, before me Norma Behrens, a Notary [redacted] and for said County and State, personally appeared H. Krossman, known [redacted] the President and J.F. Kennedy, known to me to be the Secretary of the Co[redacted] that executed the within instrument, known to me to be the persons who [redacted] within instrument on behalf of the corporation therein named, and acknowl[redacted] that such corporation executed the same.

[redacted]
Notary Public in and [redacted] and State.

My Commission [redacted]

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396
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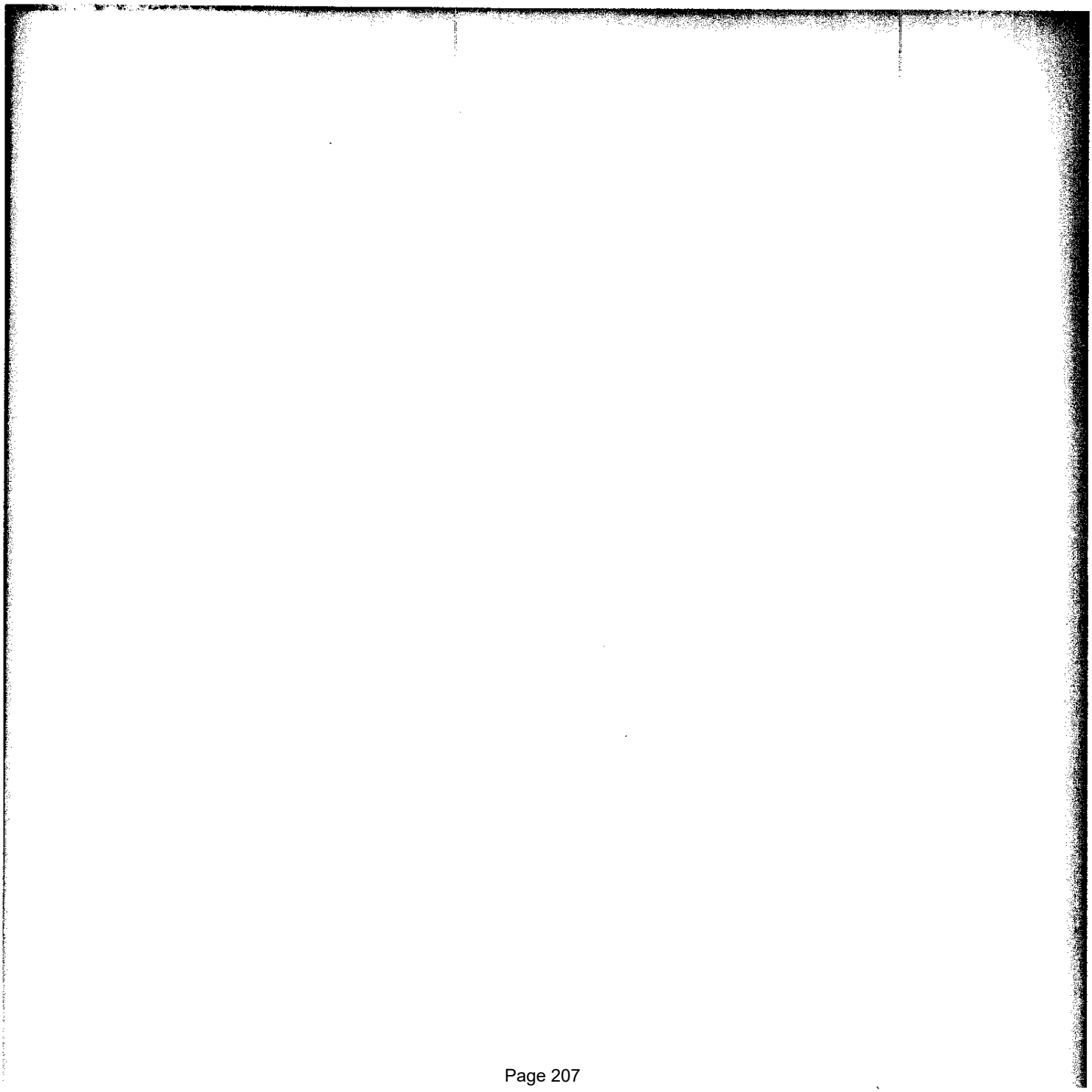


397

WM. G. KERCKHOFF COMPANY, a California [illegible]

Land Company, a corporation, does hereby grant unto the [illegible] POWER COMPANY, a corporation, the right to use any and all easements heretofore reserved by the Grantor herein in any property located in Townships 12 South, 13 South and 14 South and Ranges 3 West, 4 West and 5 West in the County of San Diego, State of California, for the purpose of enabling, permitting and authorizing said Grantee herein to lay and maintain water pipes and water hydrants and appurtenances thereto and therein.

IN WITNESS WHEREOF, the said WM. G. KERCKHOFF COMPANY, successor of South Coast Land Company, a corporation, has caused this instrument to be signed by its President and Secretary and its corporate seal to be affixed hereto this 5th day of December, 1947.

WM. G. KERCKHOFF COMPANY
a corporation

BY H. Kreesmann
President

BY J.F. Kennedy
Secretary

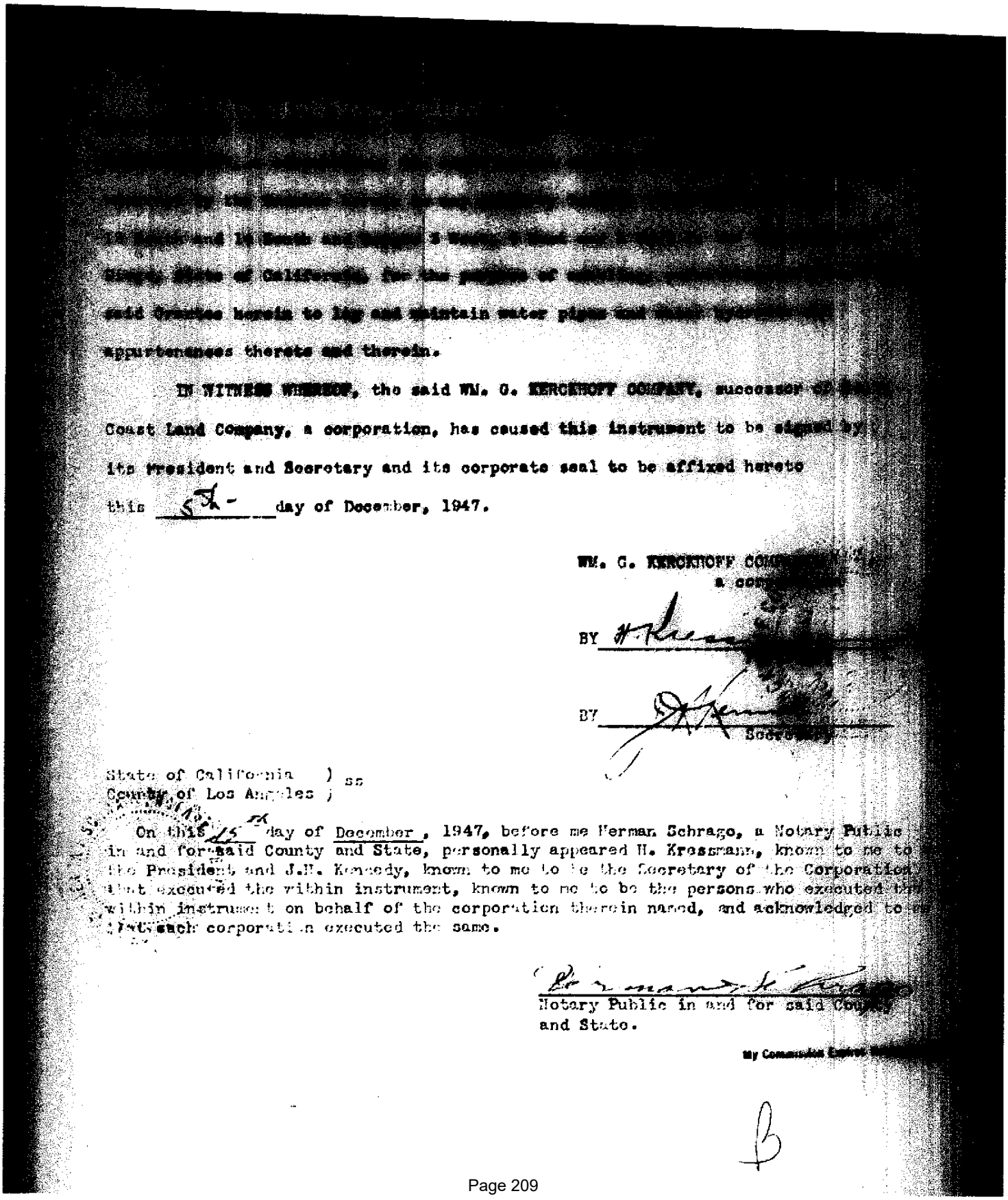
State of California)
County of Los Angeles) ss

On this 15th day of December, 1947, before me Herman Schrago, a Notary Public in and for said County and State, personally appeared H. Kreesmann, known to me to be the President and J.F. Kennedy, known to me to be the Secretary of the Corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

Herman Schrago
Notary Public in and for said County and State.

My Commission Expires November [illegible]

A



...State of California, for the purpose of ...
said Grantee herein to lay and maintain water pipes and ...
appurtenances thereto and thereon.

IN WITNESS WHEREOF, the said WM. G. KERCKHOFF COMPANY, successor ... Coast Land Company, a corporation, has caused this instrument to be signed by its President and Secretary and its corporate seal to be affixed hereto this 5th day of December, 1947.

WM. G. KERCKHOFF CO...
a corporation

BY H. Kr...

BY ... Secretary

State of California)
County of Los Angeles) ss

On this 5th day of December, 1947, before me Herman Schrago, a Notary Public in and for said County and State, personally appeared H. Krossmann, known to me to be the President and J.W. Kennedy, known to me to be the Secretary of the Corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

Notary Public in and for said County and State.

My Commission Expires ...

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398
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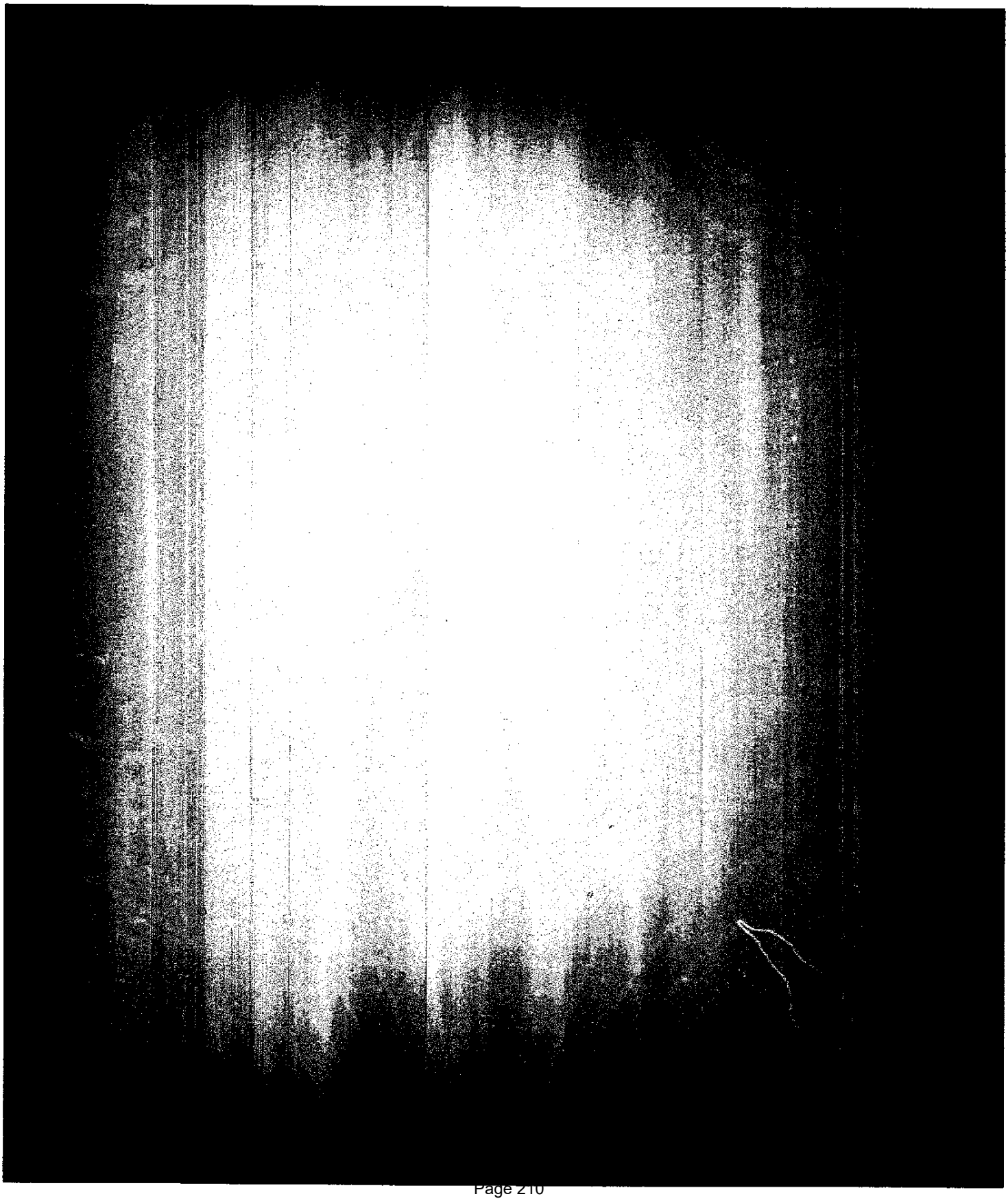


BOOK 3217 PAGE 462

DEED OF ESEMENT

SAM D. FRASER, and GLADYS F. FRASER, Husband and Wife as Joint Tenants, do hereby grant unto DEL MAR SANITARY COMPANY, Inc., A California Corporation, the right to use any and all easements acquired by conveyance dated the 11th day of December, 1947, and recorded in Book 2589 on Page 395 of Official Records, San Diego County, State of California, on any property located in Townships 12 South, 13 South, and 14 South, and Ranges 3 West, 4 West and 5 West in the County of San Diego, State of California, for the purpose of enabling, permitting and authorizing said Grantee herein to lay and maintain sewer pipes and appurtenances thereto and therein.

IN WITNESS WHEREOF We have hereunto set our hands and seals this 26th day of May, 1949.

Sam D. Fraser

Sam D. Fraser

Gladys F. Fraser

Gladys F. Fraser

STATE OF CALIFORNIA }
COUNTY OF SAN DIEGO } ss

On this 3rd day of June, 949, before me Mary K. Dougherty A Notary Public in and for said Couty, personally appeared Sam D. Fraser, and Gladys F. Frase, known to me to be the persons whose names are subscribed to the within instrument, and acknowledged that they executed thesame.

Witness my hand and official eal.

Mary K. Dougherty

Notary Public in and for said County and State

My commission expires June 7, 1949

49825

DOCUMENT NO.
RECORDED AT REQUEST OF
UNION TITLE INSURANCE AND TRUST CO.

JUN 6 1949
at 55 Minutes Past 9
BOOK 3217 PAGE 462
OFFICIAL RECORDS
San Diego County, California
Wm. Vaus, County Recorder

INDEXED

BOOK 4320 PAGE 294

RIGHT OF WAY

I, Ebba Sterman

, hereinafter called the "Grantor," for and in consideration of the sum of One Dollar, and other value received, do hereby grant to the San Diego Gas & Electric Company, a corporation, its successors and assigns, hereinafter called the "Grantee," the right, easement and privilege of placing, erecting, constructing, repairing, replacing, maintaining and using, for the transmission and distribution of electricity and for all purposes connected therewith, a line of [redacted] wires suspended thereon and all necessary [redacted], crossarms and braces and other fixtures for use in connection therewith, together with the right of ingress thereto and egress therefrom to and along said line, over and across the Grantor's land situate in the County of San Diego, State of California, and more particularly described as follows: That certain portion of the W½ of the SE¼ of Section 2, Township 14 South, Range 4 West, San Bernardino Meridian, described in a Deed recorded in Book 1728, Page 172, Official Records of said County of San Diego, excepting therefrom that portion thereof described in Deed recorded in Book 3793, Page 199 of said Official Records.

The route of said line of [redacted] wires across said land shall be as follows: Within the East 6.0 feet of the above described property.

IT IS UNDERSTOOD AND AGREED BY THE PARTIES HERETO, THAT, SHOULD THE GRANTEES WIRES INTERFERE WITH ANY IMPROVEMENTS, OR TREES, ON GRANTORS PROPERTY, THE GRANTEE HEREBY AGREES TO RELOCATE ITS WIRES ON GRANTORS PROPERTY, AT NO COST TO SAID GRANTOR.

The Grantee is also hereby granted the right to trim any trees along said line of poles and wires whenever considered by it necessary for the proper operation and use of the rights hereby granted.

In Witness Whereof, the Grantor has executed these presents this 15th day of November 19 51

Executed in the Presence of:

C B Smith
Witness.

Ebba Sterman

Witness.

DRAWN BY [illegible]
CHECKED BY [illegible]
SKETCH NO. M-[illegible]

NOTARIES—USE PROPER FORM ON BACK.

BOOK 4320 PAGE 295

WITNESS FORM

STATE OF CALIFORNIA, County of San Diego. } ss.

On this 15th day of November A. D. 19 51 before me, Arleen G. Germo a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared C. B. Smith known to me to be the person whose name subscribed to the within instrument, as a Witness thereto, who being by me duly sworn, deposes and says: That he resides in San Diego, California and that he was present and saw Ebba Stenman personally known to him to be the same person whose name is subscribed to the within and annexed instrument, execute and deliver the same, and he acknowledged to said affiant that he executed the same; and that said affiant subscribed his name thereto as a Witness.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

Arleen G. Germo
Notary Public in and for the County of San Diego, State of California
My Commission Expires February 23, 1955

GENERAL FORM

STATE OF .....
County of ..... } ss.

On this .....day of.....A.D. 19....., before me, ...
a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared .....personally known to me to be the person whose name.....subscribed to the within Instrument, and duly acknowledged to me that .....he..... executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

.....
Notary Public in and for said County and State.

RIGHT OF WAY

Ebba Stenman

TO

SAN DIEGO GAS & ELECTRIC COMPANY

INDEXED

DOCUMENT NO. 156281
RECORDED AT REQUEST OF
SAN DIEGO GAS & ELECTRIC CO.

DEC 14 1951
at 4 Minutes Past 2
BOOK 4320 PAGE 294
OFFICIAL RECORDS
San Diego County, California
ROGER N. HOWE, County Recorder

4/1/60

BOOK 4816 PAGE 140

EXCERPT FROM BOARD OF SUPERVISORS' MINUTES OF ADJOURNED REGULAR MEETING, APRIL 9, 1953 (#1)

Re Accepting Easement for Road Survey No. 1210) (Fairgrounds Road, Del Mar)

ON MOTION of Supervisor Bird, seconded by Supervisor Robbins the following resolution is adopted by the Board of Supervisors:

WHEREAS, 22nd DISTRICT AGRICULTURAL ASSOCIATION, by Chaffee C. Young, President, and Paul T. Mannen, Secretary, has tendered to this Board an easement dated April 8, 1953, conveying to the County of San Diego a right of way for a public highway across and over the following described property:

The SE¼ of SE¼ of Section 2 and the E ½ of NE¼ and the SW¼ of NE¼ of Section 11, T. 14 S., R. 4 W., S.B.B. & M.;

NOW THEREFORE, THE BOARD OF SUPERVISORS OF SAN DIEGO COUNTY, CALIFORNIA, HEREBY RESOLVES AS FOLLOWS:

That the said easement be, and the same is hereby accepted; and the Clerk of this Board is hereby ordered and directed to cause the same to be recorded in the office of the County Recorder of the County of San Diego, State of California.

PASSED AND ADOPTED by the Board of Supervisors of the County of San Diego, State of California, this 9th day of April, 1953, by the following vote:

AYES: Supervisors Gibson, Bird and Robbins
NOES: Supervisors None
ABSENT: Supervisors Rossi and Howell

STATE OF CALIFORNIA,)
County of San Diego,) ss.

I, T. H. SEXTON, County Clerk of the County of San Diego, State of California, and ex-officio Clerk of the Board of Supervisors of said County, hereby certify that I have compared the foregoing copy with the original resolution passed and adopted by said Board, at an adjourned regular meeting thereof, at the time and by the vote therein stated, which original resolution is now on file in my office; that the same contains a full, true and correct transcript therefrom and of the whole thereof.

WITNESS my hand and the Seal of said Board of Supervisors this 9th day of April, A.D., 1953.

(SEAL)

T. H. SEXTON, County Clerk
and ex-officio Clerk of the
Board of Supervisors

By C. Seger
Deputy

BOOK 4816 PAGE 141

Easement for County Highway

ROAD SURVEY NO: 1210

Know All Men by These Presents: 22nd District Agricultural Association

Grantor of Del Mar, County of San Diego, State of California, owner of the hereinafter described lands, for and in consideration of One and no/100 dollars ($1.00) to them in hand paid by the County of San Diego, State of California, or on its behalf, the receipt whereof is hereby acknowledged, and the benefits to accrue to them by reason of the location and establishment by the County of San Diego, State of California, of a public highway upon, over and across said lands, they do hereby signify their approval of and consent to the location, establishment and construction of such highway thereon and they do by these presents hereby grant, convey and dedicate to the County of San Diego, State of California, grantee, the right of way and incidents thereto for such public highway upon, over and across the said lands, hereinafter described, lying and being in the County of San Diego, State of California, and particularly described as follows, to-wit:

THE SE¼ OF SE¼ OF SECTION 2 AND THE E½ OF NE¼ AND THE SW¼ OF NE¼ OF SECTION 11, T.14 S., R.4 W., S.B.B.& M.

Said highway right of way hereby granted, conveyed and dedicated is more particularly described as follows.

APR -9 1953

BC: 1596 PAGE 222

EXCERPT FROM THE BOARD OF SUPERVISORS' MINUTES OF JUNE 16, 1953 (177)

Re Accepting Easement for Pumping Station and Water Lines at Mouth of the San Dieguito River

ON MOTION of Supervisor Bird, seconded by Supervisor Gibson, the following resolution is adopted by the Board of Supervisors:

WHEREAS, SAM D. FRASER AND GLADYS F. FRASER, husband and wife, have tendered to this Board an easement dated June 12, 1953, conveying to the County of San Diego a right of way for the installation, construction, operation, maintenance, repair, replacement, and reconstruction of a water pumping plant and water pipe or pipe lines, and all structures incidental thereto upon, through, under over and across the following described property:

A portion of Lot 1 (Northwest Quarter of Northwest Quarter) of Section 11, Township 14 South, Range 4 West, S.B.B.M., according to United States Government Survey approved January 18, 1876, as more particularly described in said easement;

NOW THEREFORE, THE BOARD OF SUPERVISORS OF SAN DIEGO COUNTY, CALIFORNIA, HEREBY RESOLVES AS FOLLOWS:

That the said easement be, and the same is hereby accepted, and the Clerk of this Board is hereby ordered and directed to cause the same to be recorded in the office of the County Recorder of the County of San Diego, State of California.

PASSED AND ADOPTED by the Board of Supervisors of the County of San Diego, State of California, this 16th day of June, 1953, by the following vote:

AYES: Supervisors Gibson, Bird, Robbins, Rossi and Howell

NOES: Supervisors None

ABSENT: Supervisors None

- - -

STATE OF CALIFORNIA, }
County of San Diego, } ss.

I, T. H. SEXTON, County Clerk of the County of San Diego, State of California, and ex-officio Clerk of the Board of Supervisors of said County, hereby certify that I have compared the foregoing copy with the original resolution passed and adopted by said Board, at a regular meeting thereof, at the time and by the vote therein stated, which original resolution is now on file in my office; that the same contains a full, true and correct transcript therefrom and of the whole thereof.

Witness my hand and the Seal of said Board of Supervisors, this 16th day of June, A. D. 1953.

SEAL

T. H. SEXTON,
County Clerk and ex-officio Clerk of the Board of Supervisors.
By C. Segar Deputy.

EASEMENT
for
WATER LINES, WATER PUMPING PLANT AND APPURTENANCES

KNOW ALL MEN BY THESE PRESENTS: Sam D. Fraser and Gladys F. Fraser, husband and wife, hereinafter designated Grantor, for and in consideration of the sum of One Dollar ($1.00) in hand paid by the County of San Diego, or on its behalf, the receipt of which is hereby acknowledged, do hereby grant and convey to the County of San Diego, hereinafter designated Grantee, an easement for the installation, construction, operation, maintenance, repair, replacement, and reconstruction of a water pumping plant and water pipe or pipe lines, and all structures incidental thereto upon, through, under over and across the following described real property lying and being in the County of San Diego, State of California, and particularly described as follows, to-wit:

That portion of Lot 1 (Northwest Quarter of Northwest Quarter) of Section 11, Township 14 South, Range 4 West, S.B.B.M., according to United States Government Survey approved January 13, 1875, described as follows:

Beginning at the intersection of the North line of said Lot 1 with the Westerly line of that certain parcel of land described in deed from the South Coast Land Company to the State of California, recorded March 10, 1931, in Book 1304, page 243, of Deeds in the Office of the Recorder of said San Diego County; thence along said North line North 89°30'35" East, 10.31 feet to Engineer's Station 175 + 13.37 P.O.C. on the center line of the California Department of Public Works' Survey between Del Mar and Encinitas, Road XI-SD-2-A, said station being a point in a curve concave Westerly having a radius of 3,200 feet; thence Southerly along said curve a distance of 617.30 feet; thence tangent to said curve along said center line South 7°40' East 318.27 feet, being Engineer's Station 181 + 26.2 of said Survey; thence at right angles to said center line North 82°20' East, 65.00 feet to the true point of beginning; thence North 7°40' West, 10.00 feet; thence North 82°20' East, 20.00 feet; thence South 7°40' East, 20.00 feet; thence South 82°20' West, 20.00 feet; thence North 7°40' West, 10.00 feet to the true point of beginning;

TOGETHER WITH a strip of land 10 feet wide in said Lot 1 of Section 11, Township 14 South, Range 4 West, lying 5 feet on each side of a center line described as follows:

Beginning at a point which bears North 82°20' East, 65.00 feet from Engineer's Station 165 + 86.2 of said California Department of Public Works Survey of Road XI-SD-2-A; thence South 82°20' West 119.85 feet to a point in the Westerly right-of-way line of said State Highway; thence North 74°30'34" West, 460.20 feet; thence North 74°32'50" West to the Mean High Tide Line of the

Pacific Ocean, excepting that portion of the hereinbefore strip of land within the limits of said State Highway XI-SD-2-A.

The Grantor hereby covenants and agrees for himself, his heirs, successors and assigns, that there shall not be constructed or maintained upon the above described real property or within said easement any building or structure of any nature or kind that will interfere with the installation, construction, operation, maintenance, repair, replacement or reconstruction of said water pipe line or pipe lines or water pumping plant, or other structures incidental thereto placed or located within said easement, or that will interfere with the ingress or egress along said easement by said Grantee, its agents or representatives.

Dan Fraser

Gladys H. Fraser

STATE OF CALIFORNIA)
: ss
COUNTY OF SAN DIEGO)

On this 12th day of June, in the year 1953, before me, E. H. SEXTON, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared DAN D. FRASER and GLADYS H. FRASER, husband and wife, known to me to be the persons described in and whose names are subscribed to and who executed the annexed instrument, and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Court at my office in the County of San Diego, the day and year in this Certificate first above written.

DOCUMENT NO. 83658
RECORDED REQUEST OF
County Board of Supervisors

JUN 19 9 04 AM '53
BOOK 4896 PAGE 222
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
ROGER N. HOWE, RECORDER
fee

E. H. SEXTON
County Clerk and ex-officio Clerk of the Superior Court

By Grace Cook Deputy

JUN 15 1953

Document No. 83658

APPROVED AS TO FORM
JOHN DE LAP, District Attorney
and County Counsel

By William Jones Lee, Jr. Deputy

45. Exception 048 128204

BOOK 5812 PAGE 393

RIGHT OF WAY

I, Ebba Stenman

..... hereinafter called the "Grantor," for and in consideration of the sum of One Dollar, and other value received, do hereby grant to the San Diego Gas & Electric Company, a corporation, its successors and assigns, hereinafter called the "Grantee," the right, easement and privilege of placing, erecting, constructing, repairing, replacing, maintaining and using, for the transmission and distribution of electricity and for all purposes connected therewith, a line of poles with wires suspended thereon and all necessary and proper guys, anchorage, crossarms and braces and other fixtures for use in connection therewith, together with the right of ingress thereto and egress therefrom to and along said line, over and across the Grantor's land situate in the County of San Diego, State of California, and more particularly described as follows:

That certain portion of the SW¼ of the SE¼ of Section 2, Township 14 South, Range 4 West, San Bernardino Meridian, described in a Deed recorded in Book 1930 at Page 426 Official Records of said County of San Diego, excepting therefrom those certain portions described in Deeds recorded in Book 4725 at Page 205 and Book 5451 at Page 502 of said Official Records.

The route of said line of poles and wires across said land shall be as follows:

Beginning at a point which bears North 89° 38' West, 476.11 feet; thence South 2° 08' 30" West, 249.64 feet from the Northeast corner of said SW¼ of the SE¼ of Section 2; thence from said point of beginning South 2° 08' 30" West to the Southerly line of the above described property.

It is understood and agreed by the parties hereto that the right of way herein conveyed will not extend more than 60 feet, measured at right angles, on each side of the above described route of said line of poles and wires, and that the Grantee may place, erect and maintain, on the lands of the Grantor adjacent to the above described right of way such anchorage as may be necessary to properly guy the pole line constructed over said right of way.

Excepting from the above described right of way any portion thereof not lying within the above described lands of the Grantor herein.

The Grantee is also hereby granted the right to trim any trees along said line of poles and wires whenever considered by it necessary for the proper operation and use of the rights hereby granted.

In Witness Whereof, the Grantor executed these presents this 12th day of September 1935

Executed in the Presence of:

Clifford L. Hawley — Witness. Ebba Stenman

Witness.

DRAWN BY John E. NOTARIZE
CHECKED BY [illegible]
SKETCH NO. B-1436 A

USE PROPER FORM ON BACK.

#128204 O.R. Book 5812 Page 393

Best Copy A

BOOK 5812 PAGE 393

RIGHT OF WAY

I, Ebba Sterman

hereinafter called the "Grantor," for and in consideration of the sum of One Dollar, and other value received, do hereby grant to the San Diego Gas & Electric Company, a corporation, its successors and assigns, hereinafter called the "Grantee," the right, easement and privilege of placing, erecting, constructing, repairing, replacing, maintaining and using, for the transmission and distribution of electricity and for all purposes connected therewith, a line of poles with wires suspended thereon and all necessary and proper guys, anchorage, crossarms and braces and other fixtures for use in connection therewith, together with the right of ingress thereto and egress therefrom to and along said line, over and across the Grantor's land situate in the County of San Diego, State of California, and more particularly described as follows:

That certain portion of the SW¼ of the SE¼ of Section 2, Township 14 South, Range 4 West, San Bernardino Meridian, described in a Deed recorded in Book 1930 at Page 426 Official Records of said County of San Diego, excepting therefrom those certain portions described in Deeds recorded in Book 4725 at Page 205 and Book [illegible] at Page 502 of said Official Records.

The route of said line of poles and wires across said land shall be as follows:

Beginning at a point which bears North 89° 38' West, 476.11 feet; thence South 2° 08' 30" West, 249.64 feet from the Northeast corner of said SW¼ of the SE¼ of Section 2; thence from said point of beginning South 2° 08' 30" West to the Southerly line of the above described property.

It is understood and agreed by the parties hereto that the right of way herein conveyed shall not extend more than 60 feet, measured at right angles, on each side of the above described route of said line of poles and wires, and that the Grantee may place, erect and maintain, on the lands of the Grantor adjacent to the above described right of way such anchorage as may be necessary to properly guy the pole line constructed over said right of way.

Excepting from the above described right of way any portion thereof not lying within the above described lands of the Grantor herein.

The Grantee is also hereby granted the right to trim any trees along said line of poles and wires whenever considered by it necessary for the proper operation and use of the rights hereby granted.

therewith, a line of poles with wires suspended thereon and all necessary and proper guys, anchorage, crossarms and braces and other fixtures for use in connection therewith, together with the right of ingress thereto and egress therefrom to and along said line, over and across the Grantor's land situate in the County of San Diego, State of California, and more particularly described as follows:

That certain portion of the SW¼ of the SE¼ of Section 2, Township 14 South, Range 4 West, San Bernardino Meridian, described in a Deed recorded in Book 1930 at Page 426 Official Records of said County of San Diego, excepting therefrom those certain portions described in Deeds recorded in Book 4725 at Page 205 and Book 5491 at Page 502 of said Official Records.

The route of said line of poles and wires across said land shall be as follows:

Beginning at a point which bears North 89° 38' West, 476.11 feet; thence South 2° 08' 30" West, 249.64 feet from the Northeast corner of said SW¼ of the SE¼ of Section 2; thence from said point of beginning South 2° 08' 30" West to the Southerly line of the above described property.

It is understood and agreed by the parties hereto that the right of way herein conveyed shall not extend more than 6.0 feet, measured at right angles, on each side of the above described route of said line of poles and wires, and that the Grantee may place, erect and maintain, on the lands of the Grantor adjacent to the above described right of way such anchorage as may be necessary to properly guy the pole line constructed over said right of way.

Excepting from the above described right of way any portion thereof not lying within the above described lands of the Grantor herein.

The Grantee is also hereby granted the right to trim any trees along said line of poles and wires whenever considered by it necessary for the proper operation and use of the rights hereby granted.

In Witness Whereof, the Grantor executed this [illegible] day of [illegible] 19[illegible]

Executed in the Presence of:

[illegible]

repairing, replacing, maintaining and using for the ... therewith, a line of poles with wires ... and other fixtures for use in connection ... along said line, over and across the Grantor's land ... in the County of San Diego, State of California, and more particularly described as follows:

That certain portion of the SW¼ of the SE¼ of Section 2, Township 14 South, Range 4 West, San Bernardino Meridian, described in a Deed recorded in Book 1930 at Page 426 Official Records of said County of San Diego, excepting therefrom t ose certain portions described in Deeds recorded in Book 4725 at Page 205 and Book 5451 at Page 502 of said Official Records.

The route of said line of poles and wires across said land shall be as follows:

Beginning at a point which bears North 89° 38' West, 476.11 feet; thence South 2° 08' 30" West, 249.64 feet from the Northeast corner of said SW¼ of the SE¼ of Section 2; thence from said point of beginning South 2° 08' 30" West to the Southerly line of the above described property.

It is understood and agreed by the parties hereto that the right of way herein conveyed shall not extend more than 6.0 feet, measured at right angles, on each side of the above described route of said line of poles and wires, and that the Grantee may place, erect and maintain, on the lands of the Grantor adjacent to the above described right of way such anchorage as may be necessary to properly guy the pole line constructed over said right of way.

Excepting from the above described right of way any portion thereof not lying within the above described lands of the Grantor herein.

The Grantee is also hereby granted the right to ... it necessary for the proper operation and use of the ...

In Witness Whereof, the Grantor ... executed in the Presence of:

...

BOOK 5812 PAGE 394

WITNESS FORM

STATE OF CALIFORNIA, County of San Diego. } ss.

On this 12th day of September A. D. 1955, before me, Lillian Hicks

a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared Milford S. Hunter known to me to be the person whose name is subscribed to the within instrument, as a Witness thereto, who being by me duly sworn, deposes and says: That he resides in San Diego, California and that he was present and saw Ebbe Stenman personally known to him to be the same person whose name is subscribed to the within and annexed Instrument, execute and deliver the same, and acknowledged to said affiant that she executed the same; and that said affiant subscribed his name thereto as a Witness.

LILLIAN HICKS, NOTARY PUBLIC, SAN DIEGO CO., CALIF.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

Lillian Hicks
Notary Public in and for the County of San Diego, State of California
My Commission Expires May 25, 1956.

GENERAL FORM

STATE OF ..... } ss.
County of .....

On this ..... day of ..... A.D. 19....., before me, ...

a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared ..... personally known to me to be the person whose name ..... subscribed to the within instrument, and duly acknowledged to me that ..... executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

.....
Notary Public in and for said County and State.

DOCUMENT NO. 123204
RECORDED REQUEST OF
SAN DIEGO GAS & ELECTRIC CO.
SEP 29 8 03 AM '55
BOOK 5812 PAGE 393
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
WILLIAM N. ROVIG, RECORDER

RIGHT OF WAY

Ebbe Stenman

TO

SAN DIEGO GAS & ELECTRIC COMPANY

Notary Public in and for the [illegible]

Milford S. Hunter

name .... is..... subscribed to the within instrument, as a [illegible]

That ..... he..... [illegible] is .....

.....he..... was [illegible]

personally known to me [illegible]

to the within and foregoing instrument, [illegible]

acknowledged to said affiant that .....he..... executed the same; and that said affiant

subscribed .....his..... name..... thereto as a Witness.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

Notary Public in and for the County of San Diego, State of California

My Commission Expires May 25, 1956.

GENERAL FORM

STATE OF .....,
County of .....,} ss.

On this .....day of.....A.D. 19....., before me, ...

a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared .....personally known to me to be the person.... whose name .....subscribed to the within instrument, and duly acknowledged to me that .....he..... executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public in and for said County and State.

DOCUMENT NO. 128204
RECORDED REQUEST OF
SAN DIEGO GAS & ELECTRIC CO.
SEP 29 9 03 AM '55
BOOK 5812 PAGE 303
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
ROBERT H. HOWE, RECORDER

TO
SAN DIEGO GAS & ELECTRIC
COMPANY

Robe Steeman

RECORDED AT REQUEST OF
SAN DIEGO GAS & ELECTRIC CO.
SEP 29 9 03 AM '55
BOOK 5812 PAGE 303
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
ROBERT H. HOWE, RECORDER

3

46. Exception 049 7640 296

BOOK 7640 PAGE 296

Easement for County Highway

ROAD SURVEYS 443 AND 1164

Know All Men by These Presents: ..... WE ..... EDWARD J. WUNDERLEE

AND ..... CONSTANCE E. WUNDERLEE, ...

..... HUSBAND AND WIFE, ...

Grantors ... of ..... County of ..... SAN DIEGO

State of ..... CALIFORNIA ..... owners ..... of the hereinafter described lands, for and in consideration

of ..... ONE AND 00/100 ..... dollars ($ 1.00)

to ... in hand paid by the County of San Diego, State of California, or on its behalf, the receipt whereof is hereby acknowledged, and the benefits to accrue to ... by reason of the location and establishment by the County of San Diego, State of California, of a public highway upon, over and across said lands, ... WE ... do ... hereby signify ... approval of and consent to the location, establishment and construction of such highway thereon and ... do ... by these presents hereby grant, convey and dedicate to the County of San Diego, State of California, grantee, the right of way and incidents thereto for such public highway upon, over and across the said lands, hereinafter described, lying and being in the County of San Diego, State of California, and particularly described as follows, to-wit:

PARCEL 2.

THAT PORTION OF THE SE¼ OF SE¼ OF SECTION 2, T.14 S., R.4 W., S.B.B.& M., DESCRIBED IN ... TO CONSTANCE E. WUNDERLEE, RECORDED IN BOOK 1053, PAGE 331, OFFICIAL RECORDS OF ... COUNTY, LYING WITHIN A STRIP OF LAND 100 FEET WIDE, 50 FEET ON EACH SIDE OF THAT ... CENTER LINE DESCRIBED IN EASEMENT TO THE COUNTY OF SAN DIEGO, RECORDED ... IN BOOK ... PAGE ... OF OFFICIAL RECORDS OF SAID COUNTY, FOR COUNTY ROAD SURVEY NO. ... A ... WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID COUNTY.

PARCEL 3.

THAT PORTION OF THE NE¼ OF SE¼ OF SAID SECTION 2 SO DESCRIBED IN SAID DEED TO CONSTANCE ... LYING SOUTHERLY OF THE SOUTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL ... AND LYING NORTHEASTERLY OF A CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF ... THE NORTHEASTERLY TERMINUS OF SAID CURVE BEING ITS POINT OF TANGENCY WITH THE ... LINE OF ROAD SURVEY ..., A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY ... OF SAID COUNTY, AND THE WESTERLY TERMINUS OF SAID CURVE BEING ITS POINT OF ... WITH THE SOUTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL ...

PARCEL 4.

THAT PORTION OF THE SE¼ OF SE¼ OF SAID SECTION 2 SO DESCRIBED IN SAID DEED RECORDED ... IN BOOK ..., PAGE 331 OF OFFICIAL RECORDS OF SAID COUNTY, AND OF LOTS 11 AND 12 ... AS SHOWN ON RECORD OF SURVEY NO. 1757 FILED IN THE OFFICE OF THE COUNTY ... OF SAID COUNTY, LYING WITHIN A STRIP OF LAND 80 FEET WIDE, 40 FEET ON EACH ... OF THE FOLLOWING DESCRIBED CENTER LINE:

BEGINNING AT ENGINEER'S STATION 37+94.38 P.O.C. ON THE CENTER LINE OF COUNTY ROAD ... NO. ..., ACCORDING TO PLAT THEREOF ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR ... COUNTY; THENCE N. 33°54'-3"W., 77.50 FEET TO THE BEGINNING OF A TANGENT CURVE TO ... RIGHT HAVING A RADIUS OF 550 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A ... ANGLE OF 13°03'-0" A DISTANCE OF 132.98 FEET; THENCE TANGENT TO SAID CURVE ... 15.10 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT HAVING A

APP ... 1959

Book 7640 Page 296 O.R. #88351

Best Copy Available

BK 7640 PG 296

Easement for County Highway

ROAD SURVEYS 443 AND 1164

Know All Men by These Presents: WE EDWARD J. WUNDERLEE AND CONSTANCE E. WUNDERLEE, HUSBAND AND WIFE, Grantors, of , County of SAN DIEGO State of CALIFORNIA, owners of the hereinafter described lands, for and in consideration of ONE AND 00/100 dollars ($1.00) to us in hand paid by the County of San Diego, State of California, or on its behalf, the receipt whereof is hereby acknowledged, and the benefits to accrue to us, by reason of the location and establishment by the County of San Diego, State of California, of a public highway upon, over and across said lands, we do hereby signify our approval of and consent to the location, establishment and construction of such highway thereon and we do, by these presents hereby grant, convey and dedicate to the County of San Diego, State of California, grantee, the right of way and incidents thereto for such public highway upon, over and across the said lands, hereinafter described, lying and being in the County of San Diego, State of California, and particularly described as follows, to-wit:

PARCEL A.

THAT PORTION OF THE SE¼ OF SE¼ OF SECTION 2, T.14 S., R.4 W., S.B.B.& M., DESCRIBED IN DEED TO CONSTANCE E. WUNDERLEE, RECORDED IN BOOK 1865, PAGE 331, OFFICIAL RECORDS OF SAID COUNTY, LYING WITHIN A STRIP OF LAND 100 FEET WIDE, 50 FEET ON EACH SIDE OF THAT CERTAIN CENTER LINE DESCRIBED IN EASEMENT TO THE COUNTY OF SAN DIEGO, RECORDED IN BOOK , PAGE 296 OF OFFICIAL RECORDS OF SAID COUNTY, FOR COUNTY ROAD SURVEY NO. 443, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID COUNTY.

PARCEL B.

THAT PORTION OF THE SE¼ OF SE¼ OF SAID SECTION 2 SO DESCRIBED IN SAID DEED TO CONSTANCE E. WUNDERLEE, LYING SOUTHERLY OF THE SOUTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL A AND LYING NORTHEASTERLY OF A CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 47.92 FEET, THE SOUTHERLY TERMINUS OF SAID CURVE BEING ITS POINT OF TANGENCY WITH THE NORTHWESTERLY LINE OF ROAD SURVEY 470, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID COUNTY, AND THE WESTERLY TERMINUS OF SAID CURVE BEING ITS POINT OF REVERSE CURVATURE WITH THE SOUTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL A.

PARCEL C.

THOSE PORTIONS OF THE SE¼ OF SE¼ OF SAID SECTION 2 SO DESCRIBED IN SAID DEED RECORDED IN BOOK 1865, PAGE 331 OF OFFICIAL RECORDS OF SAID COUNTY, AND OF LOTS 11 AND 12 OF SAN DIEGO ACRE TRACTS ACCORDING TO MAP THEREOF NO. 1757 FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, LYING WITHIN A STRIP OF LAND 80 FEET WIDE, 40 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTER LINE:

BEGINNING AT ENGINEER'S STATION 37+54.38 P.O.C. ON THE CENTER LINE OF COUNTY ROAD SURVEY NO. 443, ACCORDING TO PLAT THEREOF ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID COUNTY THENCE N.30°54'48"W., 77.50 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 550 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°03'43" A DISTANCE OF 182.98 FEET; THENCE TANGENT TO SAID CURVE N.11°51'05"W., 13.18 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT HAVING A

State of CALIFORNIA ....., owner.S.....of the hereinafter described lands, for and in consideration of ONE AND 00/100.....dollars ($ 1.00) to US .....in hand paid by the County of San Diego, State of California, or on its behalf, the receipt whereof is hereby acknowledged, and the benefits to accrue to.....US....., by reason of the location and establishment by the County of San Diego, State of California, of a public highway upon, over and across said lands, ...WE.....do..... hereby signify .....OUR .....approval of and consent to the location, establishment and construction of such highway thereon and .....WE.....do....., by these presents hereby grant, convey and dedicate to the County of San Diego, State of California, grantee, the right of way and incidents thereto for such public highway upon, over and across the said lands, hereinafter described, lying and being in the County of San Diego, State of California, and particularly described as follows, to-wit:

PARCEL A.

THAT PORTION OF THE SE¼ OF SE¼ OF SECTION 2, T.14 S., R.4 W., S.B.B.& M., DESCRIBED IN DEED TO CONSTANCE E. WUNDERLEE, RECORDED IN BOOK 1865, PAGE 331, OFFICIAL RECORDS OF SAID COUNTY, LYING WITHIN A STRIP OF LAND 100 FEET WIDE, 50 FEET ON EACH SIDE OF THAT CERTAIN CENTER LINE DESCRIBED IN EASEMENT TO THE COUNTY OF SAN DIEGO, RECORDED IN BOOK 206, PAGE 258 OF OFFICIAL RECORDS OF SAID COUNTY, FOR COUNTY ROAD SURVEY NO. 443, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID COUNTY.

PARCEL B.

THAT PORTION OF THE SE¼ OF SE¼ OF SAID SECTION 2 SO DESCRIBED IN SAID DEED TO CONSTANCE E. WUNDERLEE, LYING SOUTHERLY OF THE SOUTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL A, AND LYING NORTHEASTERLY OF A CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 47.95 FEET, THE SOUTHERLY TERMINUS OF SAID CURVE BEING ITS POINT OF TANGENCY WITH THE NORTHWESTERLY LINE OF ROAD SURVEY 470, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID COUNTY, AND THE WESTERLY TERMINUS OF SAID CURVE BEING ITS POINT OF REVERSE CURVATURE WITH THE SOUTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL A.

PARCEL C.

THOSE PORTIONS OF THE SE¼ OF SE¼ OF SAID SECTION 2 SO DESCRIBED IN SAID DEED RECORDED IN BOOK 1865, PAGE 331 OF OFFICIAL RECORDS OF SAID COUNTY, AND OF LOTS 11 AND 12 OF EDEN GARDENS ACCORDING TO MAP THEREOF No. 1757 FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, LYING WITHIN A STRIP OF LAND 80 FEET WIDE, 40 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTER LINE:

BEGINNING AT ENGINEER'S STATION 37+54.38 P.O.C. ON THE CENTER LINE OF COUNTY ROAD SURVEY NO. 443, ACCORDING TO PLAT THEREOF ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAID COUNTY; THENCE N.30°54'48"W., 77.50 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 550 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°03'43" A DISTANCE OF 182.90 FEET; THENCE TANGENT TO SAID CURVE N.11°51'05"W., 13.18 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT HAVING A

APR 28 1959

BOOK 7640 PAGE 297

RADIUS OF 550 FEET THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 23°17'55" A DISTANCE OF 223.55 FEET; THENCE TANGENT TO SAID CURVE N.35°09'W., 18.76 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 550 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 21°53' A DISTANCE OF 210.00 FEET; THENCE TANGENT TO SAID CURVE N.13°16'W., 337.90 FEET TO THE CENTER LINE OF VALLEY AVENUE AS SAID CENTER LINE IS SHOWN ON SAID MAP OF EDEN GARDENS; THENCE N.[illegible]°11'W. ALONG SAID CENTER LINE OF VALLEY AVENUE 283.47 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT HAVING A RADIUS OF 520 FEET; THENCE LEAVING SAID CENTER LINE NORTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 28°47' A DISTANCE OF [illegible].5 FEET TO ITS POINT OF TANGENCY WITH THE CENTER LINE OF STEVENS AVENUE AS SAID CENTER LINE IS SHOWN ON SAID SUBDIVISION; THENCE ALONG SAID CENTER LINE AND TANGENT TO SAID CURVE N.42°05'W., 289.57 FEET TO THE NORTHWESTERLY TERMINUS OF THAT CERTAIN COURSE IN SAID CENTER LINE OF STEVENS AVENUE HAVING A BEARING OF N.42°05'W. AND A DISTANCE OF [illegible].3 FEET AS SHOWN ON THE MAP OF SAID SUBDIVISION.

PARCEL B.

THAT PORTION OF SAID SE¼ OF SE¼ OF SAID SECTION 2, SO DESCRIBED IN SAID DEED RECORDED IN BOOK 1955, PAGE 331, OFFICIAL RECORDS OF SAID COUNTY, LYING NORTHERLY OF THE NORTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL A, LYING WESTERLY OF THE WESTERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL C, AND LYING SOUTHEASTERLY OF A CURVE CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 25 FEET, THE NORTHERLY TERMINUS OF SAID CURVE BEING ITS POINT OF REVERSE CURVATURE WITH THE WESTERLY LINE OF SAID PARCEL C AND THE WESTERLY TERMINUS OF SAID CURVE BEING ITS POINT OF COMPOUND CURVATURE WITH THE NORTHERLY LINE OF SAID PARCEL A.

A

RADIUS OF 550 FEET; THENCE NORTHERLY
23°17'55" A DISTANCE OF 223.65 FEET;
FEET TO THE BEGINNING OF A TANGENT
THENCE NORTHERLY ALONG SAID CURVE
210.06 FEET; THENCE TANGENT TO SAID
OF VALLEY AVENUE AS SAID CENTER LINE
N.13°18'W. ALONG SAID CENTER LINE OF
A TANGENT CURVE TO THE LEFT HAVING A
LINE NORTHWESTERLY ALONG SAID CURVE
261.23 FEET TO ITS POINT OF TANGENCY WITH
CENTER LINE IS SHOWN ON SAID SUBDIVISION; THENCE
TO SAID CURVE N.42°05'W., 289.57 FEET TO THE NORTHWESTERLY TERMINUS OF THAT CERTAIN
COURSE IN SAID CENTER LINE OF STEVENS AVENUE HAVING A BEARING OF N.42°05'W. AND A
DISTANCE OF 423 FEET AS SHOWN ON THE MAP OF SAID SUBDIVISION.

PARCEL D.

THAT PORTION OF SAID SE¼ OF SE¼ OF SAID SECTION 2, SO DESCRIBED IN SAID DEED RECORDED IN BOOK 1865, PAGE 331, OFFICIAL RECORDS OF SAID COUNTY, LYING NORTHERLY OF THE NORTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL A, LYING WESTERLY OF THE WESTERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL C, AND LYING SOUTHEASTERLY OF A CURVE CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 25 FEET, THE NORTHERLY TERMINUS OF SAID CURVE BEING ITS POINT OF REVERSE CURVATURE WITH THE WESTERLY LINE OF SAID PARCEL C AND THE WESTERLY TERMINUS OF SAID CURVE BEING ITS POINT OF COMPOUND CURVATURE WITH THE NORTHERLY LINE OF SAID PARCEL A.

B

RADIUS OF 550 FEET THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 23°17'55" A DISTANCE OF 223.65 FEET; THENCE TANGENT TO SAID CURVE N.85°09'W., 18.76 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 550 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 21°53' A DISTANCE OF 210.00 FEET; THENCE TANGENT TO SAID CURVE N.13°16'W., 337.90 FEET TO THE CENTER LINE OF VALLEY AVENUE AS SAID CENTER LINE IS SHOWN ON SAID MAP OF EDEN GARDENS; THENCE N.13°16'W. ALONG SAID CENTER LINE OF VALLEY AVENUE 283.47 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT HAVING A RADIUS OF 520 FEET; THENCE LEAVING SAID CENTER LINE NORTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 28°47' A DISTANCE OF 261.23 FEET TO ITS POINT OF TANGENCY WITH THE CENTER LINE OF STEVENS AVENUE AS SAID CENTER LINE IS SHOWN ON SAID SUBDIVISION; THENCE ALONG SAID CENTER LINE AND TANGENT TO SAID CURVE N.42°05'W., 289.57 FEET TO THE NORTHWESTERLY TERMINUS OF THAT CERTAIN COURSE IN SAID CENTER LINE OF STEVENS AVENUE HAVING A BEARING OF N.42°05'W. AND A DISTANCE OF 6.3 FEET AS SHOWN ON THE MAP OF SAID SUBDIVISION.

PARCEL D.

THAT PORTION OF SAID SE¼ OF SE¼ OF SAID SECTION 2, SO DESCRIBED IN SAID DEED RECORDED IN BOOK 1365, PAGE 331, OFFICIAL RECORDS OF SAID COUNTY, LYING NORTHERLY OF THE NORTHERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL A, LYING WESTERLY OF THE WESTERLY LINE OF THE HEREINBEFORE DESCRIBED PARCEL C, AND LYING SOUTHEASTERLY OF A CURVE CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 25 FEET, THE NORTHERLY TERMINUS OF SAID CURVE BEING ITS POINT OF REVERSE CURVATURE WITH THE WESTERLY LINE OF SAID PARCEL C AND THE WESTERLY TERMINUS OF SAID CURVE BEING ITS POINT OF COMPOUND CURVATURE WITH THE NORTHERLY LINE OF SAID PARCEL A.

C

7640 pg 298

For the consideration named herein we hereby grant to the County of San Diego the privilege and right to extend drainage structures and excavation and embankment slopes beyond the limits of the herein described right of way where required for the construction and maintenance of said County Highway.

And we, ..., the said grantor...s..., do..... hereby waive all claim for compensation for any and all damages on account of the location, establishment and construction of said highway; and do ... hereby grant to the County of San Diego, State of California, all trees, growths (growing or that may hereafter grow) and roadbuilding material within said right of way, together with the right to use the same in such manner and at such locations as said grantee may deem proper, needful or necessary in the construction, reconstruction and maintenance of said highway..

IN WITNESS WHEREOF... we ...

set ... hands... and seal s... this... 8TH... day of... APRIL ... 1959

Signed, sealed and delivered in the presence of Constance E. Wunderlee (SEAL)
Edward J. Wunderlee (SEAL)
(SEAL)
As subscribing witness. (SEAL)

STATE OF CALIFORNIA)
County of SAN DIEGO) ss.

On this 8th day of April Nineteen Hundred and Fifty Nine before me Grant Tucker, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn personally appeared Constance E. Wunderlee and Edward J. Wunderlee known to me to be the person s described in and whose name s are subscribed to the within instrument and acknowledged to me that t he y executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal, the day and year in this certificate first above written.

at my office in said County of San Diego, State of California

Grant Tucker

Notary Public in and for the County of San Diego, State of California

My Commission Expires April 6, 1959

THE BOARD

FOR COUNTY SURVEYOR AND COUNTY COUNSEL

APPROVED

APR 28 1959

COUNTY SURVEYOR - ROAD COMM.

FOR RECORDS

55351

DOCUMENT NO. ...
RECEIVED

County Board of Supervisors

MAY 6 ... FILED

at 7640 pg 298

OFFICIAL RECORDS

SAN DIEGO COUNTY, CALIF.

ROGER ... COUNTY RECORDER

$0 ...

I hereby certify that the interest in real property conveyed by the foregoing deed or grant to the County of San Diego, a political corporation and of governmental agency, is hereby accepted by order of the Board of Supervisors and said County consents to recordation thereof by its duly authorized officer.

Dated April 28, 1959

A. B. JAMES, County Clerk and ex-officio Clerk of the Board of Supervisors

By Kathleen L. Peterson, Deputy,

pursuant to authority of Resolution Recorded in Book 6771 at page 121, Official Records.

A

7610 PAGE 298

For the consideration named herein we hereby grant to the County of San Diego the privilege and right to extend drainage structures and excavation and embankment slopes beyond the limits of the herein described right of way where required for the construction and maintenance of said County Highway.

And WE ....., the said grantor..s..., do..... hereby waive all claim for compensation for any and all damages on account of the location, establishment and construction of said highway; and do..... hereby grant to the County of San Diego, State of California, all trees, growths (growing or that may hereafter grow) and roadbuilding materials within said right of way, together with the right to use the same in such manner and at such locations as said grantee may deem proper, needful or necessary in the construction, reconstruction and maintenance of said highway.

IN WITNESS WHEREOF..... WE .....

have set OUR hands..... and seal.s..... this..... 8TH ..... day of..... APRIL ..... , 19 59

Signed, sealed and delivered in the presence of Constance E. Wunderlee (SEAL)

Edward J. Wunderlee (SEAL)

..... (SEAL)

As subscribing witness. ..... (SEAL)

STATE OF CALIFORNIA)
County of SAN DIEGO) ss.

On this 8th day of April Nineteen Hundred and Fifty Nine before me Grant Tucker, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn personally appeared Constance E. Wunderlee and Edward J. Wunderlee known to me to be the person s described in and whose name s are subscribed to the within instrument and acknowledged to me that t he y executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal, the day and year in this certificate first above written.

at my office in said County of San Diego, State of California

Grant Tucker

Notary Public in and for the County of San Diego, State of California

My Commission Expires April 1, 1962

ATTEST: CLERK OF THE BOARD

FOR COUNTY SURVEYOR AND COUNTY COUNSEL

APPROVED

APR 23 1959

CO. SURVEYOR - ROAD COMM.

FOR RECORDER

55351

DOCUMENT NO. RECORDED REQUEST OF

County Board of Supervisors

MAY 9 8 30 AM '59

BOOK 7610 PAGE 296

OFFICIAL RECORDS

SAN DIEGO COUNTY, CALIF.

ROGER N. [illegible], RECORDER

FEE $ [illegible]

This is to certify that the interest in real property conveyed by the foregoing deed or grant to the County of San Diego, a political corporation and/or governmental agency, is hereby accepted by order of the Board of Supervisors and said County consents to recordation thereof by its duly authorized officer.

Dated: April 28, 1959

R. B. JAMES, County Clerk and ex-officio Clerk of the Board of Supervisors

By Kathryn L. Thompson, Deputy,

pursuant to authority of Resolution Recorded in Book 6771 at page 121, Official Records.

7610 PAGE 298

For the consideration named herein we hereby [redacted] drainage structures and excavation and embankment [redacted] for the construction and maintenance of said County [redacted]

And WE [redacted] any and all damages on account of the location, [redacted] to the County of San Diego, State of California, [redacted] materials within said right of way, together with the [redacted] and at such times as said grantee may deem proper, needful or necessary in the [redacted] ance of said highway.

IN WITNESS WHEREOF WE [redacted]

have set OUR hands and seals this 8TH day of APRIL 19 59

Signed, sealed and delivered in the presence of

Constance E. Wunderlee (SEAL)

Edward J. Wunderlee (SEAL)

(SEAL)

As subscribing witness. (SEAL)

STATE OF CALIFORNIA }
County of SAN DIEGO } ss.

On this 8th day of April Nineteen Hundred and Fifty Nine before me Grant Tucker, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn personally appeared Constance E. Wunderlee and Edward J. Wunderlee known to me to be the person s described in and whose name s are subscribed to the within instrument and acknowledged to me that t he y executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal, the day and year in this certificate first above written.

at my office in said County of San Diego, State of California

Grant Tucker

Notary Public in and for the County of San Diego, State of California

My Commission Expires April 1, 1961

FOR CLERK OF THE BOARD

FOR COUNTY SURVEYOR AND COUNTY COUNSEL

APPROVED

APR 23 1959

CO. SURVEYOR - ROAD COMM.

FOR RECORDER

DOCUMENT NO. 88351

RECORDED REQUEST OF County Board of Supervisors

MAY 4 9 01 AM '59

BOOK 7610 PAGE 298

OFFICIAL RECORDS

SAN DIEGO COUNTY, CALIF.

ROGER N. [illegible], RECORDER

FEE [illegible]

This is to certify that the interests in real property conveyed by the foregoing deed or grant to the County of San Diego, a political corporation and/or governmental agency, is hereby also given by order of the Board of [illegible] dated [illegible] consents to recordation thereof by [illegible]

[illegible] County Clerk

By [illegible] Deputy

[illegible]

Ruth A. Walker Deputy

GRANT OF RIGHT OF WAY

...22nd District Agricultural Association, a corporation

..., hereinafter called the "Grantor," for and in consideration of the sum of One Dollar, and other valuable consideration, receipt whereof is hereby acknowledged, do hereby grant to the San Diego Gas & Electric Company, a corporation, its successors and assigns, hereinafter called the "Grantee," the right, easement and privilege of placing, erecting, constructing, repairing, replacing, maintaining and using, a line of poles with wires suspended thereon and all necessary and proper guys, anchorage, crossarms, braces and other fixtures for use in connection therewith, at such locations and elevations upon, along and over the hereinafter described right of way as Grantee may now or hereafter deem convenient and necessary from time to time, for the transmission and distribution of electricity for all purposes for which it may be used, together with the right of ingress thereto and egress therefrom, to and along said line, over and across the Grantor's land situate in the County of ... San Diego, State of California, and more particularly described as follows:

That portion of the Southeast Quarter of the Southeast Quarter of Section 2, Township 14 South, Range 4 West, San Bernardino Base & Meridian, described in a Deed recorded in Book 2538, page 311 of Official Records of said County of San Diego.

The center line of said right of way in the aforesaid lands is particularly described as follows:

Commencing at a point on the Easterly line of said Section 2, distant thereon North 0° 34' 00" West, 84.62 feet from the Southeast corner thereof; thence South 81° 42' West, 26.01 feet to the true point of beginning of said center line of right of way; thence from said true point of beginning, continuing South 81° 42' West, 172.39 feet.

Also: Beginning at said true point of beginning; thence North 25° 03' 11" East to the Easterly line of said Section 2.

It is understood and agreed by the parties hereto that the right of way herein conveyed shall be 12 feet in width, being 6 feet measured at right angles, on each side of the above described route of said line of poles and wires.

It is also understood and agreed by the parties hereto that the Grantee may place, erect and maintain, on the lands of the Grantor adjacent to the above described right of way such anchorage as may be necessary to properly guy the power pole line erected over said right of way.

Grantor and ...his... successors in estate shall not erect or construct, or permit to be erected or constructed, any building or other structure, plant any tree or trees, or drill any well or wells, within the limits of said right of way.

The Grantee is also hereby granted the right to trim any trees along or adjacent to said line of poles and wires whenever considered by it necessary for the proper operation and use of the rights hereby granted.

In Witness Whereof, the Grantor ... executed these presents this 2nd day of September 1949.

Executed in the Presence of:

Witness.

Witness.

22nd District Agricultural Association
a corporation

President

Secretary

DRAWN BY EZS
CHECKED BY DEH
SKETCH NO. P-2497 S.C.

V. E. and Records 9-1-49

NOTARIES — USE PROPER FORM ON BACK.

WITNESS FORM

STATE OF CALIFORNIA, County of San Diego. } ss.

On this .....day of.....A. D. 19..... before me, ...

a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared .....,known to me to be the person... whose name ..... subscribed to the within instrument, as a Witness thereto, who being by me duly sworn, deposes... and says...: That ..he..... resides..... in ..... and that ..he..... present and saw ..... personally known to h..... to be the same person..... whose name..... subscribed to the within and annexed Instrument, execute and deliver the same, and .....he....., acknowledged to said affiant that .....he..... executed the same; and that said affiant subscribed .....h..... name..... thereto as a Witness.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

.....
Notary Public in and for the County of San Diego, State of California

GENERAL FORM

STATE OF .....
County of ..... } ss.

On this .....day of.....A.D. 19....., before me, ...

a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared .....personally known to me to be the person.... whose name..... .....subscribed to the within Instrument, and duly acknowledged to me that .....he..... executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

.....
Notary Public in and for said County and State.

Original 51833

GRANT OF RIGHT OF WAY

22nd District Agricultural Association, a corporat

TO

SAN DIEGO GAS & ELECTRIC COMPANY

FILE/PAGE NO. 212054
RECORDED REQUESTED BY
SAN DIEGO GAS & ELECTRIC CO.
Dec 14 9 02 AM '60
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
ROBERT H. WELLCOME, RECORDER

2.50

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss.

On November 22, 1960, before me, the undersigned, a Notary Public in and for said County and State, personally appeared Wilford S. Hunter known to me to be the same person whose name is subscribed to the within instrument as a Witness thereto, who being by me duly sworn, deposes and says:

That he resides in the City of San Diego, County of San Diego, State of California. That he was present and saw V. Earl Roberts known to him to be the President, and D. Robert Jones known to him to be the Secretary of the Corporation named in said instrument, execute and deliver the same, and they acknowledged to said affiant that they executed the same on the behalf of the corporation therein named, and that said affiant subscribed his name thereto as a Witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first written.

(Seal) Mary A. Wilkins
Notary Public in and for said County and State
MARY A. WILKINS
My Commission Expires Oct. 10, 1962

.....
Notary Public in and for said County and State.

R. OF S. MAP No. 6097

COUNTY SURVEYOR'S NOTE:
ATTENTION IS CALLED TO THE FACT THAT THE NORTHWESTERLY LINE OF THE WESTERLY PARCEL SHOWN HEREON AS DETERMINED BY THE PIPES SHOWN AS FOUND ACCORDING TO R. OF S. 1662 IS IN DISAGREEMENT WITH THE PURPORTED LOCATION OF THE SAME LINE AS SHOWN ON R. OF S. 3795 ON WHICH SAID PIPES WERE NOT RECOVERED.

D.K. SPEER, COUNTY SURVEYOR AND ROAD COMMISSIONER

BY: _____ CHIEF DEPUTY COUNTY SURVEYOR

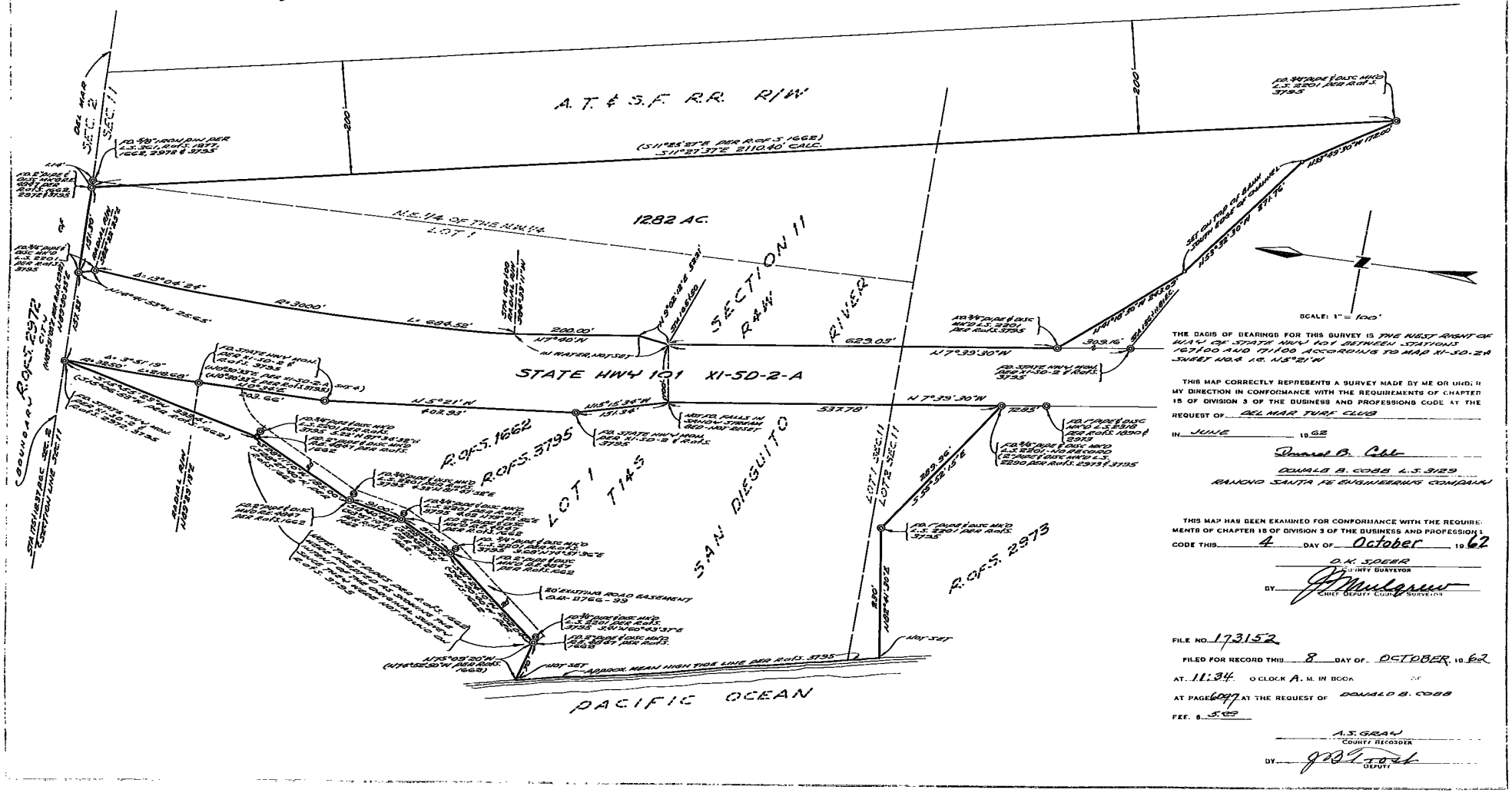
LEGEND:
◎ POINTS FOUND AND DESCRIBED HEREON IN EACH INSTANCE
○ SET ¾" PIPE & DISC MKD L.S. 3129

RECORD OF SURVEY

OF

A PORTION OF THE N.E. ¼ OF THE N.W. ¼ AND A PORTION OF LOT 1 SECTION 11 T14S, R4W, S.B.B.&M.

CITY OF DEL MAR CALIF.
SAN DIEGO COUNTY CALIF.


A.T. & S.F. R.R. R/W
200'
(S11°28'37"E PER R.OF S. 1662)
S11°27'37"E 211.040' CALC.
FD. ¾" PIPE & DISC MKD L.S. 2201 PER R. OF S. 3795
N.E. ¼ OF THE N.W. ¼ LOT 1
12.82 AC.
SECTION 11
T14S R4W
SAN DIEGUITO RIVER
Δ=13°04'24"
R=3000'
L=684.58'
200.00'
N17°40'W
IN WATER, NOT SET
623.05'
N7°39'30"W
STATE HWY 101 XI-SD-2-A
FD. STATE HWY MON. PER R.OF S. 3795
Δ=3°51'19"
R=1850'
L=124.60'
(L=124.59' PER R.OF S. 1662)
N.5°21'W
402.33'
N.7°39'30"W
533.78'
FD. ¾" PIPE & DISC MKD L.S. 3795
FD. ¾" PIPE & DISC MKD L.S. 2201 PER R.OF S. 3795
FD. ¾" PIPE & DISC MKD L.S. 2201 PER R.OF S. 1662
FD. ¾" PIPE & DISC MKD L.

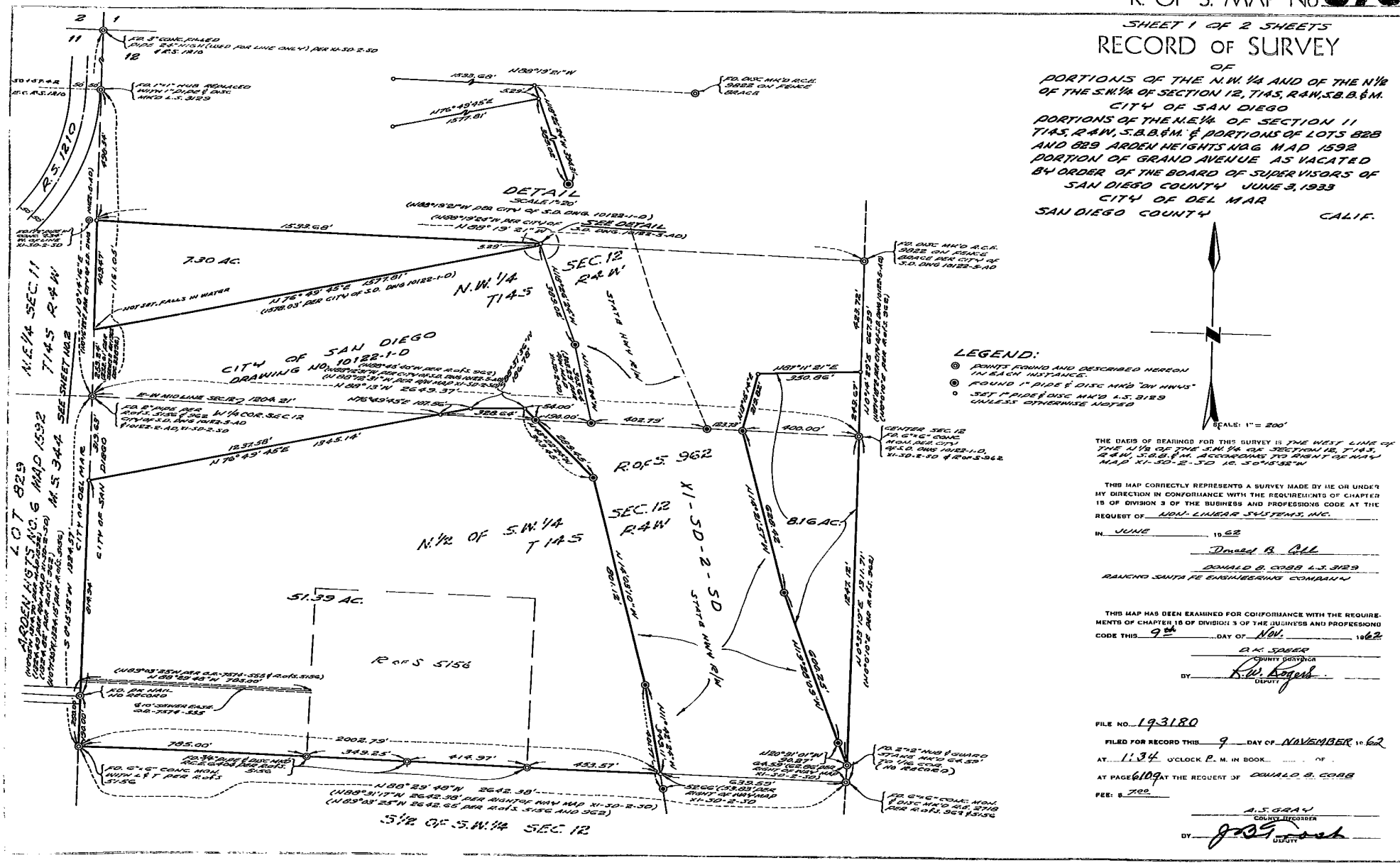
R. OF S. MAP No 6109

SHEET 1 OF 2 SHEETS

RECORD OF SURVEY

OF

PORTIONS OF THE N.W. 1/4 AND OF THE N 1/2 OF THE S.W. 1/4 OF SECTION 12, T14S, R4W, S.B.B.&M.
CITY OF SAN DIEGO
PORTIONS OF THE N.E. 1/4 OF SECTION 11 T14S, R4W, S.B.B.&M. & PORTIONS OF LOTS 828 AND 689 ARDEN HEIGHTS NO.6 MAP 1592
PORTION OF GRAND AVENUE AS VACATED BY ORDER OF THE BOARD OF SUPERVISORS OF SAN DIEGO COUNTY JUNE 3, 1933
CITY OF DEL MAR
SAN DIEGO COUNTY CALIF.



LEGEND:

- POINTS FOUND AND DESCRIBED HEREON IN EACH INSTANCE.
- FOUND 1" PIPE & DISC MK'D "RW HWUS"
- SET 1" PIPE & DISC MK'D L.S. 3129 UNLESS OTHERWISE NOTED

THE DATA OF BEARINGS FOR THIS SURVEY IS THE WEST LINE OF THE N 1/2 OF THE S.W. 1/4 OF SECTION 12, T14S, R4W, S.B.B.&M. ACCORDING TO RIGHT OF WAY MAP XI-SD-2-SD I.E. S0°18'52"W

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF CHAPTER 15 OF DIVISION 3 OF THE BUSINESS AND PROFESSIONS CODE AT THE REQUEST OF NON-LINEAR SYSTEMS, INC.

IN JUNE 1962

Donald B. Cobb

DONALD B. COBB L.S. 3129

RANCHO SANTA FE ENGINEERING COMPANY

THIS MAP HAS BEEN EXAMINED FOR CONFORMANCE WITH THE REQUIREMENTS OF CHAPTER 15 OF DIVISION 3 OF THE BUSINESS AND PROFESSIONS CODE THIS 9th DAY OF NOV. 1962

O.K. SPEER
COUNTY SURVEYOR

BY R.W. Rogers
DEPUTY

FILE NO. 193180

FILED FOR RECORD THIS 9 DAY OF NOVEMBER 1962

AT 1:34 O'CLOCK P. M. IN BOOK ..... OF .....

AT PAGE 6109 AT THE REQUEST OF DONALD B. COBB

FEE: $ 7.00

A.S. GRAY
COUNTY RECORDER

BY J.D. Gooch
DEPUTY

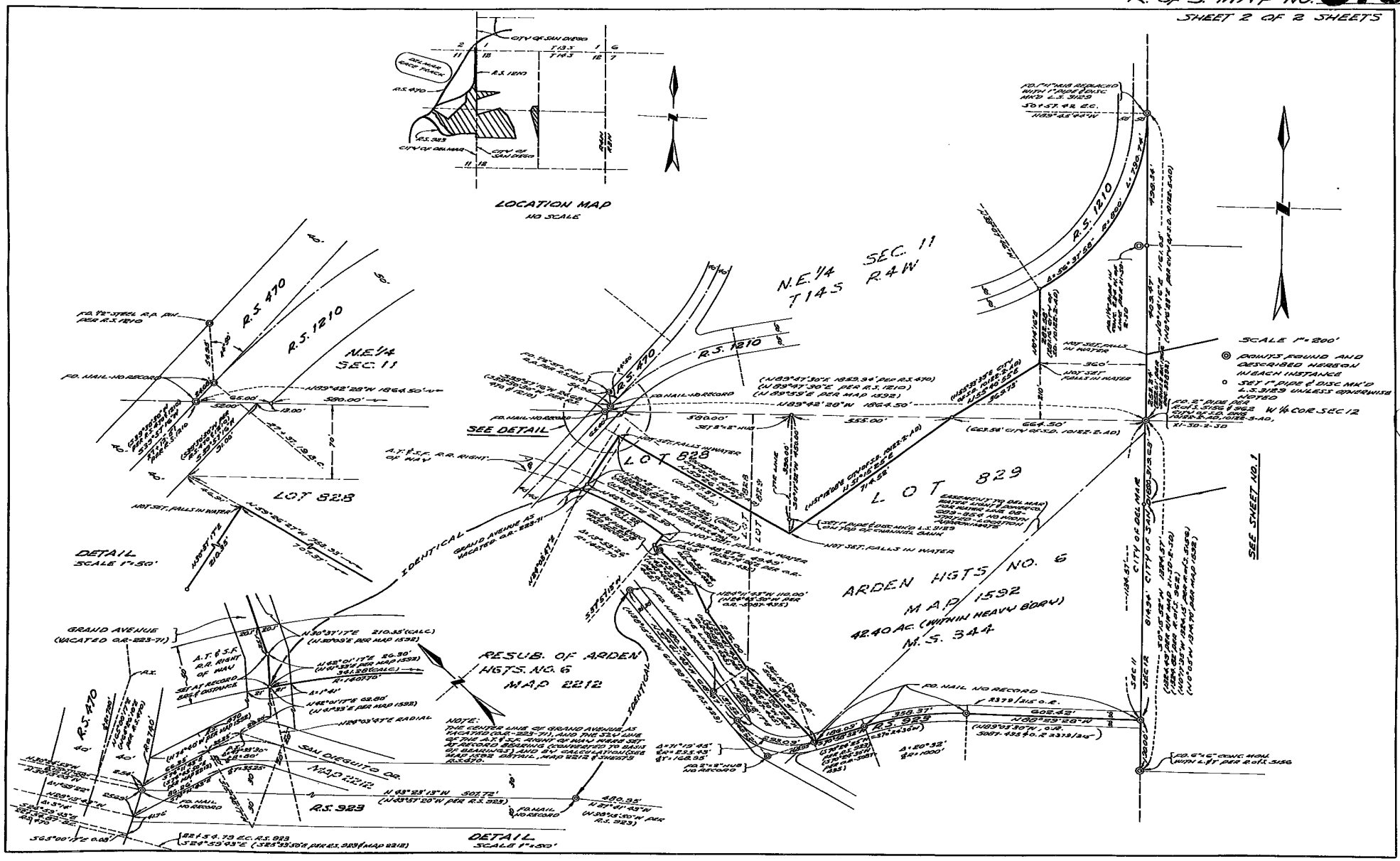
49

Page 237

First American Title

R. of S. MAP NO. 6109

SHEET 2 OF 2 SHEETS



First American Title

SM 12-62 PLAZA 82

EASEMENT FOR COUNTY HIGHWAY

1052

Coord. 296-1691

R.S. No. 443

Parc. No. 65260

Know All Men by These Presents: WE, V. P. COPPEDGE and M. A. COPPEDGE, Husband and Wife, Grantors, of Alturas, County of Modoc, State of California, owners of the hereinafter described lands, for and in consideration of One and 00/100 dollars ($1.00) to us in hand paid by the County of San Diego, State of California, or on its behalf, the receipt whereof is hereby acknowledged, and the benefits to accrue to us, by reason of the location and establishment by the County of San Diego, State of California, of a public highway upon, over and across said lands, we do hereby signify our approval of and consent to the location, establishment and construction of such highway thereon and we do, by these presents hereby grant, convey and dedicate to the County of San Diego, State of California, grantee, the right of way and incidents thereto for such public highway upon, over and across the said lands, hereinafter described, lying and being in the County of San Diego, State of California, and particularly described as follows, to-wit:

That portion of the SE¼ of the SE¼ of Section 2, T.14 S., R.4 W., S.B.B.& M., described in deed to V. P. Coppedge, recorded June 17, 1958, as Document No. 95834 in Book 7125, Page 500, of Official Records in the Office of the Recorder of San Diego County, lying within a strip of land 102 feet wide, 51 feet on each side of the following described center line:

Beginning at a point on the east line of said Section distant thereon N.0°34'E., 359.64 feet from the southeast corner of said Section being a point on a curve, the center of which bears N.7°36'58"W., 1500 feet from said point; thence westerly along said curve and said center line a distance of 250 feet.

O.R.

#65-141424

AUG 3- 1965

1053

For the consideration named herein we hereby grant to the County of San Diego the privilege and right to extend drainage structures and excavation and embankment slopes beyond the limits of the herein described right of way where required for the construction and maintenance of said County Highway.

And we, the said grantors, do hereby waive all claim for compensation for any and all damages on account of the location, establishment and construction of said highway; and do hereby grant to the County of San Diego, State of California, all trees, growths (growing or that may hereafter grow) and roadbuilding materials within said right of way, together with the right to use the same in such manner and at such locations as said grantee may deem proper, needful or necessary in the construction, reconstruction and maintenance of said highway.

IN WITNESS WHEREOF WE

have set our hands and seals this 14th day of July, 1965

Signed, sealed and delivered in the presence of

(SEAL)

V. P. Coppedge (SEAL)

V. P. Coppedge (SEAL)

M. A. Coppedge (SEAL)

M. A. Coppedge (SEAL)

(SEAL)

As subscribing witness.

STATE OF CALIFORNIA, County of San Diego, } ss.

On this 14th day of July in the year 1965, before me, R. B. JAMES, County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of record having a seal, personally appeared V. P. Coppedge and M. A. Coppedge

known to me to be the person s described in and whose names are subscribed to and who executed the annexed instrument, and acknowledged to me that they executed the same.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Court at my office in the County of San Diego, the day and year in this Certificate first above written.

R. B. JAMES, County Clerk and ex-officio Clerk of the Superior Court

By James M. Finch, Deputy

James M. Finch

This is to certify that the interest in real property conveyed by the foregoing deed or grant to the County of San Diego, a political corporation, is hereby accepted by order of the Board of Supervisors on 8-3-65 #102 and said County consents to recordation thereof by its duly authorized officer.

Dated 8-3-65

R. B. JAMES, County Clerk and ex-officio Clerk of the Board of Supervisors

By Hazel E. Moore, Deputy

Helen Kleckner

FOR CLERK OF THE BOARD

Filed for record at request of Grantee JUL 15 2 02 PM 1965 Recorded in Book [illegible] Page [illegible] Records of San Diego County, California

FOR COUNTY SURVEYOR AND COUNTY COUNSEL

APPROVED

JUL 15 1965

L. K. Speer

CO. SURVEYOR - ROAD COMM.

APPROVED AS TO FORM: [illegible] JR. County Counsel

By Donald L. Clark Deputy

FOR RECORDER

FILE/PAGE NO. 141424

RECORDED REQUEST OF County Board of Supervisors

AUG 6 9 45 AM '65

SERIES 6 BOOK 1965 OFFICIAL RECORDS SAN DIEGO COUNTY, CALIF. A. S. GRAY, RECORDER

NO FEE

A

AUG 6 1965

pensation for any and all damages on account of the location, establishment and construction of said hi way; and do hereby grant to the County of San Diego, State of California, all trees, growths (grow or that may hereafter grow) and roadbuilding materials within said right of way, together with the righ use the same in such manner and at such locations as said grantee may deem proper, needful or necess in the construction, reconstruction and maintenance of said highway.

IN WITNESS WHEREOF WE

have set our hands and seal s this 14th day of July, 19

Signed, sealed and delivered in the presence of

As subscribing witness.

V. P. Coppedge (SE
M. A. Coppedge (SE

STATE OF CALIFORNIA, County of San Diego. } ss.

On this 14th day of July in the year 19 65, before me, R. B. JA County Clerk and ex-officio Clerk of the Superior Court in and for said County, which is a court of re having a seal, personally appeared V. P. Coppedge and M. A. Coppedge

known to me to be the person s described in and whose name s are subscribed to said who uted the annexed instrument, and acknowledged to me that they executed the same

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Court at my office i County of San Diego, the day and year in this Certificate first above written.

R. B. JAMES, County Clerk and ex-officio Clerk of the Superior Court

By James M. Finch, D

James M. Finch

This is to certify that the interest in real property conveyed by the foregoing deed or grant to the C of San Diego, a political corporation, is hereby accepted by order of the Board of Supervisors on 8-3-65 102 and said County consents to recordation thereof by its duly authorized of

Dated 8-3-65

R. B. JAMES, County Clerk and ex-officio Clerk of the Board of Super

By Hazel E. Moore, D

362275

FOR CLERK OF THE BOARD

JUL 15 2 02 PM '65

FOR COUNTY SURVEYOR AND COUNTY COUNSEL

APPROVED

JUL 15 1965

CO. SURVEYOR - ROAD COMM.

APPROVED AS TO FORM:
BERTRAM McLEES, JR.
County Counsel
By Donald L. Clark
Deputy

FOR RECORDER

FILE/PAGE NO. 141424
RECORDED REQUEST OF
County Board of Supervisors

AUG 6 9 45 AM '65

SERIES 6 BOOK 1965
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
A. S. GRAY, RECORDER

NO FEE

FORM 105-000-B

1062

EASEMENT OF RIGHT OF WAY
ANCHORAGE

22ND DISTRICT AGRICULTURAL ASSOCIATION, a [redacted] State Agency

....., hereinafter called the "Grantor", for and in consideration of the sum of One Dollar, and other valuable consideration, receipt whereof is hereby acknowledged, do...HEREBY grant to the San Diego Gas & Electric Company, a corporation, its successors and assigns, hereinafter called the "Grantee", the right, easement and privilege of placing, constructing, repairing, replacing, maintaining and using, guy poles and/or anchors of such material, size and/or shape, at such locations upon, under, along and over the hereinafter described right of way as Grantee may, from time to time, deem convenient and necessary for the purpose of supporting that certain electric pole line of Grantee located upon or adjacent to said land, including the right by means of wires, or otherwise, to connect said guy poles and/or anchors with said pole line for the purpose of supporting same, together with the right of ingress thereto and egress therefrom, to and along said right of way over and across the Grantor's land situated in the County of

San Diego, State of California, and more particularly described as follows:

That certain portion of the Southeast Quarter of the Southeast Quarter of Section 2, Township 14 South, Range 4 West, San Bernardino Base and Meridian, in the County of San Diego, State of California, described in a Deed recorded in Book 2538 at page 311 of Official Records of said County of San Diego, excepting therefrom that certain portion thereof described in a Deed recorded August 8, 1961, at Recorder's File/Page No. 135603 of said Official Records.

Said easement of right of way in the aforesaid lands is particularly described as follows:

Within those certain strips of land 4.00 feet in width, lying 2.00 feet, measured at right angles on each side of the following described center line:

Commencing at the Southeast corner of said Section 2; thence North 0° 34' 00" East, along the Easterly line of said Section 2, a distance of 84.62 feet; thence leaving said Easterly line, South 81° 42' 00" West, a distance of 198.40 feet; thence North 38° 15' 30" East, a distance of 226.00 feet to a point, which said point is the TRUE POINT OF BEGINNING of the right of way herein described; thence from said TRUE POINT OF BEGINNING, South 76° 45' 30" East, a distance of 40.00 feet.

ALSO: Beginning at said TRUE POINT OF BEGINNING; thence South 54° 22' 30" East, a distance of 55.00 feet.

No. 52032

In Witness Whereof, the Grantor..... executed these presents this 27th day of March, 19 62

Executed in the Presence of:

..... Witness.

..... Witness.

DRAWN BY.....
CHECKED BY.....
SKETCH NO.....

22ND DISTRICT AGRICULTURAL ASSOCIATION, a [redacted] State Agency

By ..... President

By ..... Secretary

NOTARIES — USE PROPER FORM ON BACK.

STATE OF CALIFORNIA, } ss.
County of San Diego }

OFFICIAL SEAL
MARY A. WILKINS
NOTARY PUBLIC-CALIFORNIA
PRINCIPAL OFFICE IN
SAN DIEGO COUNTY

1003

ON THIS 7th day of April A.D., 19 67 ., before me, the undersigned, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared J. C. Kennedy known to me to be the person whose name is subscribed to the within Instrument, as a Witness thereto, who being by me duly sworn, deposes and says: That he resides in San Diego, California, and that he was present and saw Harold J. McCormick known to him to be the President and Roy Welch known to him to be the Secretary of the [redacted] named in said Instrument, execute and deliver the same, and they acknowledged to said affiant that they executed the same on behalf of the [redacted] therein named, and that said affiant subscribed his name thereto as a Witness.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

(Seal) Mary A. Wilkins
Notary Public in and for said County and State

MARY A. WILKINS
My Commission Expires Oct. 19, 1967

CORPORATION WITNESS FORM

[redacted] the day and year in this certificate first written.

Notary Public in and for the County of San Diego, State of California

GENERAL FORM

STATE OF..... } ss.
County of.....

On this.....day of.....A. D. 19....., before me, ...

a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared .....personally known to me to be the person.... whose name.....subscribed to the within Instrument, and duly acknowledged to me that ....he.... executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public in and for said County and State.

52032

FILE/PAGE NO. .....
RECORDED AT REQUEST OF
SAN DIEGO GAS & ELECTRIC CO.

APR 14 10 00 AM '67

APR 14 1967
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
A. S. GRAY, RECORDER

MAIL TO
SAN DIEGO GAS & ELECTRIC CO.
P. O. BOX 1831
SAN DIEGO 12, CALIFORNIA
ATTN. OF C. F. RAUNER

$2.80

TO
SAN DIEGO GAS & ELECTRIC COMPANY

22ND DISTRICT AGRICULTURAL
State Agency
ASSOCIATION, a [redacted]

Original
EASEMENT OF RIGHT OF WAY
ANCHORAGE

65034

CORPORATION FORM

STATE OF..... } ss.
County of.....

On this.....day of.....A. D. 19....., before me, ...

a Notary Public in and for the said County and State, residing therein, duly commissioned and sworn, personally appeared .....known to me to be the .....President and .....known to me to be the .....Secretary of the .....the Corporation that executed the within Instrument, known to me to be the persons who executed the within Instrument, on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the within instrument pursuant to its By-Laws or a Resolution of its Board of Directors.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public in and for said County and State.

No. 52032

[redacted]

RECORDING REQUESTED BY

CITY OF DEL MAR

AND WHEN RECORDED MAIL TO

City of Del Mar
Name
201 - 15th Street
Street Address
Del Mar, California
City & State

86549

FEE PAID $ PAGE NO.
RECORDED REQUEST OF
City Clerk
MAY 19 12 16 PM '70

BOOK 1970
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
A.S. GRAY, RECORDER

NO FEE

SPACE ABOVE THIS LINE FOR RECORDER'S USE

MAIL TAX STATEMENTS TO

City of Del Mar
Name
201 - 15th Street
Street Address
Del Mar, California
City & State

Documentary Transfer Tax $ 0.00
___ Computed on full value of property conveyed.
___ or computed on full value less liens and encumbrances remaining thereon at time of sale.
Jack H. Shelve City Clerk
Signature of declarant or agent determining tax
Firm Name

XXXXX

Quitclaim Deed

THIS FORM FURNISHED BY TITLE INSURANCE AND TRUST COMPANY

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

SAM D. FRASER and GLADYS F. FRASER

hereby REMISE(S), RELEASE(S) AND FOREVER QUITCLAIM(S) to

CITY OF DEL MAR

the following described real property in the state of California: county of San Diego

All that portion of the East half of the Northwest quarter of Section 11, Township 14 South, Range 4 West, San Bernardino Meridian, in the County of San Diego, State of California, according to United States Government Survey approved January 18, 1876, lying Northeasterly of the right-of-way of the Atchison, Topeka and Santa Fe Railway, EXCEPT therefrom that portion thereof conveyed to 22nd District Agricultural Association of the State of California, by deed recorded January 27, 1936, in the office of the County Recorder of San Diego County, in Book 475, page 5 of Official Records. ALSO EXCEPT therefrom that portion thereof lying Southwesterly of the Southwesterly line of San Dieguito River.

EXCEPTING any portion thereof, if any, now or heretofore lying below the mean high tide line of the Pacific Ocean, or any arm thereof.

Dated MAY 18, 1970

Sam D. Fraser
SAM D. FRASER

Gladys F. Fraser
GLADYS F. FRASER

STATE OF CALIFORNIA
COUNTY OF SAN DIEGO } SS.

On MAY 18, 1970 before me, the undersigned, a Notary Public in and for said State, personally appeared SAM D. FRASER and GLADYS F. FRASER

known to me to be the person S whose name are subscribed to the within instrument and acknowledged that they executed the same.

WITNESS my hand and official seal.

Signature Joan E. Curry
JOAN E. CURRY
Name (Typed or Printed)

If executed by a Corporation the Corporation Form of Acknowledgment must be used.

(This area for official notarial seal)

No. 86549

Title Order No. Escrow or Loan No.

MAIL TAX STATEMENTS AS DIRECTED ABOVE

RESOLUTION NO. ---590

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DEL MAR AUTHORIZING THE CITY CLERK TO ACCEPT AND RECORD A QUIT CLAIM DEED

WHEREAS a quit claim deed has been presented to the City of Del Mar by Sam D. and Gladys F. Fraser and;

WHEREAS the City Council finds that it is in the best public interest to accept said quit claim deed;

NOW, THEREFORE, BE IT RESOLVED that the City Clerk of the City of Del Mar is authorized to accept and record the quit claim deed dated May 18, 1970 from Sam D. and Gladys F. Fraser.

PASSED AND ADOPTED by the City Council of the City of Del Mar, California, this 18th day of May, 1970 by the following vote:

AYES: MAYOR PEARSON, COUNCILMEN STAVER, RYPINSKI, HEINZMANN, STLBER

NOES: NONE

ABSENT: NONE

Original signed by Tom B. Pearson

TOM B. PEARSON
Mayor of the City of Del Mar, Cal.

ATTEST: Original signed by Jack D. Shelver

JACK D. SHELVER
City Manager/Clerk

I hereby certify that the above and foregoing is a full and true copy of Resolution No. 590 of the Resolutions of the City of Del Mar, California, as adopted by the City Council of said City on the 18th day of May, 1970.

Jack D. Shelver, City Clerk of the City of Del Mar, California

No 86549

RIGHT OF WAY 704

TWENTY-SECOND DISTRICT
AGRICULTURAL ASSOCIATION,
a corporation

10-5-58

TO
SAN DIEGO GAS & ELECTRIC COMPANY
MAIL TO: SDG&E, P. O. BOX 1831
S.D., CA, 92112 ATTN: R/W ACQUISITION

76-166029
FILE/PAGE NO.
BOOK 1976
RECORDED REQUEST OF
GAS & ELECTRIC CO.
JUN 1 9 01 AM '76
OFFICIAL RECORDS
SAN DIEGO COUNTY, CALIF.
HARLEY F. BLOOM
RECORDER

$4.00

SPACE ABOVE THIS LINE FOR RECORDER'S USE

TRANSFER TAX NONE
SAN DIEGO GAS & ELECTRIC COMPANY
SIGNATURE

ORIGINAL
RIGHT OF WAY

TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION,

a corporation

hereinafter called "Grantor," for valuable consideration, grant(s) to San Diego Gas & Electric Company, a corporation, hereinafter called "Grantee," an easement and right of way, upon, over, under and across lands hereinafter described, to excavate for, place, lay, construct, operate, use, maintain, repair, replace, reconstruct and/or remove at any time and from time to time, for the transmission and distribution of electricity for all purposes for which it may be used, underground facilities consisting of conduits, manholes, handholes and junction boxes with wires and cables placed therein and aboveground structures consisting of pads, transformers, and other aboveground structures necessary for the operation of said underground facilities and all miscellaneous equipment and material connected therewith, together with the right of ingress thereto and egress therefrom, to and along said facilities, over and across Grantor's land situated in the County of San Diego, State of California, and more particularly described as follows:

That portion of the Southeast Quarter of the Southeast Quarter of Section 2, Township 14 South, Range 4 West, San Bernardino Meridian, described in a Deed recorded November 14, 1947 in Book 2538, Page 311 of Official Records of said County of San Diego.

The said easement and right of way, in the aforesaid lands shall be 8.00 feet in width, being 4.00 feet measured at right angles, on each side of the following described center line:

Commencing at the Southeast corner of said Section 2, being also the Northeast corner of the Northeast Quarter of the Northeast Quarter of Section 11 in said Township 14 South, Range 4 West, said Northeast corner of the Northeast Quarter of the Northeast Quarter bears North 0° 16' 23" East from the Southeast corner of said Northeast Quarter of the Northeast Quarter; thence North 14° 30' 56" West, 94.07 feet to the TRUE POINT OF BEGINNING of the center line herein described; thence from said TRUE POINT OF BEGINNING South 43° 45' 59" West, 12.30 feet to the beginning of a tangent curve concave Southeasterly, having a radius of 47.50 feet; thence Southwesterly and Southerly along the arc of said curve through a central angle of 64° 33' 20", a distance of 53.51 feet.

No. 166029
2

Grantor shall not erect, place or construct, nor permit to be erected, placed or constructed, any building or other structure, plant any tree, dig or drill any well, within the limits of said easement and right of way.

Grantor shall not increase or decrease the ground surface elevations within the boundaries of the said easement and right of way existing at the date of execution of this instrument, without the previous written consent of Grantee.

Grantee shall have the right to trim and cut trees, foliage and roots upon and within said easement and right of way whenever

(CONTINUED ON REVERSE SIDE)

in Grantee's judgment the same shall be necessary or proper for the convenient and safe exercise of the rights herein granted.

The terms, covenants and conditions of this easement and right of way shall be binding upon and inure to the benefit of any heirs, executors, administrators, permittees, licensees, agents or assigns of Grantor and the successors and assigns of Grantee.

In Witness Whereof, Grantor executed this instrument this 14 day of May 19 76

Executed in the Presence of

TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION, a corporation

By Wm Dumond

By

Witness

Witness

(Corp. Seal)

DRAWN Jones
CHECKED
SKETCH D-1410
DATE 4/2/76
MOPAC NO 60958-07

SIGNATURES MUST BE NOTARIZED
NOTARIES USE PROPER FORM

WITNESS FORM

STATE OF CALIFORNIA,
County of San Diego. } ss.

ON THIS day of A.D., 19 before me, the undersigned, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared known to me to be the person whose name is subscribed to the within instrument, as a Witness thereto, who being by me duly sworn, deposes and says:

That he resides in and that he was present and saw

known to h to be the same person whose name subscribed to the within and annexed instrument, execute and deliver the same, and he acknowledged to said affiant that he executed the same, and that said affiant subscribed h name thereto as a Witness.

(Seal)

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public in and for said County and State.

GENERAL FORM

STATE OF
County of } ss

ON THIS day of A.D., 19 before me, the undersigned, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared

known to me to be the person whose name subscribed to the within instrument, and duly acknowledged to me that he executed the same

In Witness Whereof, I have hereunto set my hand and affixed my official seal the and year in this certificate first above written

(Seal)

Notary Public in and for said County and State

No. 166029

CORPORATION FORM

STATE OF California
County of San Diego } ss

ON THIS 14 day of May A.D. 19 76 before me, the undersigned, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared Wm Dumond known to me to be the General Mgr. and known to me to be the of the Corporation that executed the within instrument, known to me to be the persons who executed the within instrument on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the within instrument pursuant to its By-Laws or a Resolution of its Board of Directors.

OFFICIAL SEAL
FRANCES C. CORRIDON
NOTARY PUBLIC CALIFORNIA
PRINCIPAL OFFICE IN
SAN DIEGO COUNTY
My Commission Expires June 6, 1977

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written

Frances C. Corridon
Notary Public in and for said County and State

(Seal)

879

80-223266

FILE/PAGE NO. ____
BOOK 1980
RECORDED REQUEST OF
Clerk of the Board of Supervisors
JUL 16 9 36 AM '80
OFFICIAL RECORDS
SAN DIEGO COUNTY, CAL.
VERA L. LYLE
RECORDER

WHEN RECORDED MAIL TO

The Clerk, Board of Supervisors
San Diego County Administration Center
1600 Pacific Highway
San Diego, California 92101

DOCUMENTARY TRANSFER TAX $ ____ NO FEE

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Parcel No. 80-0205A
Assessor Parcel No. 298-260-19 & 25

Agency: Food and Agriculture
Project: 22nd D.A.A.
File: EAS-1079

AGREEMENT AND GRANT OF EASEMENT
STORM DRAINAGE FACILITIES

THIS AGREEMENT AND GRANT OF EASEMENT is made and entered into by and between the STATE OF CALIFORNIA, acting by and through the 22nd DISTRICT AGRICULTURAL ASSOCIATION, hereinafter called State, and SAN DIEGO COUNTY FLOOD CONTROL DISTRICT ZONE 1, hereinafter called Grantee.

State, pursuant to the provisions of Section 4051 of the Agricultural Code of the State of California, hereby grants unto Grantee, its successors and assigns forever, an easement to construct, maintain, repair, replace and use the land surface and those surface facilities hereinafter referred to, for the purpose of facilitating surface water drainage over and across that certain real property situated in the County of San Diego, State of California, described as follows:

A strip of land of the uniform width of 20.00 feet lying 10.00 feet on each side of the following described centerline: Beginning at the Southeasterly corner of Del Mar Downs, Map thereof No. 7413 on file in the office of the County Recorder of San Diego County; thence along the Southerly boundary of said Map South 89° 55' 16" West 36.44 feet; thence leaving said boundary South 00° 04' 34" East 40.00 feet to the TRUE POINT OF BEGINNING; thence continuing South 00° 04' 34" East 40.00 feet.

APPROVED AS TO FORM AND LEGALITY
COUNTY COUNSEL
BY [signature] DEPUTY 7/11/80

THE PROVISIONS ON THE REVERSE SIDE HEREOF CONSTITUTE A PART OF THIS AGREEMENT

Dated JUN 6 1980

STATE OF CALIFORNIA
22nd District Agricultural Association
By [signature]

APPROVED Dept. of Food & Agriculture
By [signature]

GRANTEE: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT ZONE 1
By [signature]
C.J. Houson

APPROVED: Dept. of General Services
By [signature]

RES-600 (7/79)

No. 223266 80-

PROVIDED, this Grant of Easement is subject to the following terms and conditions:

1. This Grant is subject to existing contracts, leases, licenses, easements, encumbrances, and claims which may affect said property and the use of the word "Grant" herein shall not be construed as a covenant against the existence of any thereof.

2. Grantee waives all claims against State, its officers, agents, and employees, for loss or damage caused by, arising out of, or in any way connected with the exercise of this Easement, and Grantee agrees to save harmless, indemnify, and defend State, its officers, agents, and employees, from any and all loss, damage or liability which may be suffered or incurred by State, its officers, agents, and employees caused by, arising out of, or in any way connected with exercise by Grantee of the rights hereby granted, except those arising out of the sole negligence of State.

3. State reserves the right to use said real property in any manner, provided such use does not unreasonably interfere with Grantee's rights hereunder.

4. State reserves the right to require Grantee, at State expense, to remove and relocate all improvements placed by Grantee upon said real property, upon determination by State that the same interfere with future development of State's property. Within 180 days after State's written notice and demand for removal and relocation of the improvements, Grantee shall remove and relocate the improvements to a feasible location on the property of State, as designated by State, and State shall furnish Grantee with an easement in such new location, on the same terms and conditions as herein stated, all without cost to Grantee, and Grantee thereupon shall reconvey to State the easement herein granted.

5. This Easement shall terminate in the event Grantee fails for a continuous period of 18 months to use the Easement for the purposes herein granted. Upon such termination, Grantee shall forthwith upon service of written demand, deliver to State a quitclaim deed, to its right, title and interest hereunder, and shall, on State request, without cost to State, and within 90 days from written demand by State, remove all property placed by or for Grantee upon said property and restore said premises as nearly as possible to the same condition they were in prior to the execution of this Easement. In the event Grantee should fail to restore the premises in accordance with such request, State may do so at the risk of Grantee, and all costs of such removal and restoration shall be paid by Grantee upon demand.

6. Grantee shall construct surface drainage facilities on said real property in accordance with the plat dated August 31, 1979, titled "Offsite Storm Drain", being project number 6865, numbered L-9174, and being sheet 7 of 15, prepared by Rick Engineering Company for the County of San Diego.

7. Grantee shall properly maintain said facilities at all times and shall be solely responsible for such maintenance.

No. 223266 3 80-

800 (7/78) - REVERSE

80-223266

FILE/PAGE NO.
BOOK 1980
RECORDED REQUEST OF

881

State of California)
County of San Diego) ss.

On May 13, 1980, before me, the undersigned, a Notary Public in and for said County and State, personally appeared C.J. Houson, Director, Department of Sanitation and Flood Control, County of San Diego, known to me to be the person who executed the within instrument on behalf of the County of San Diego and acknowledged to me that the County of San Diego executed the same.

WITNESS my hand and official seal.

Kathleen A. Gomes

Kathleen A. Gomes

OFFICIAL SEAL
KATHLEEN A. GOMES
NOTARY PUBLIC - CALIFORNIA
PRINCIPAL OFFICE IN
SAN DIEGO COUNTY
My Commission Expires January 1, 1983

5620 Friars Road San Diego, CA 92110

State of California
County of San Diego

On June 16, 1980, before me, the undersigned a Notary Public in and for said County and State personally appeared William Dumond known to me to be the Secretary Manager of the 22nd District Agricultural Association and known to me to be the person who executed the within instrument on behalf of the state of California and acknowledged to me that the State of California executed same.

Jewel Hatton

Signature:

OFFICIAL SEAL
JEWEL HATTON
NOTARY PUBLIC - CALIFORNIA
PRINCIPAL OFFICE IN
SAN DIEGO COUNTY
My Comm. Expires DEC 8 1981

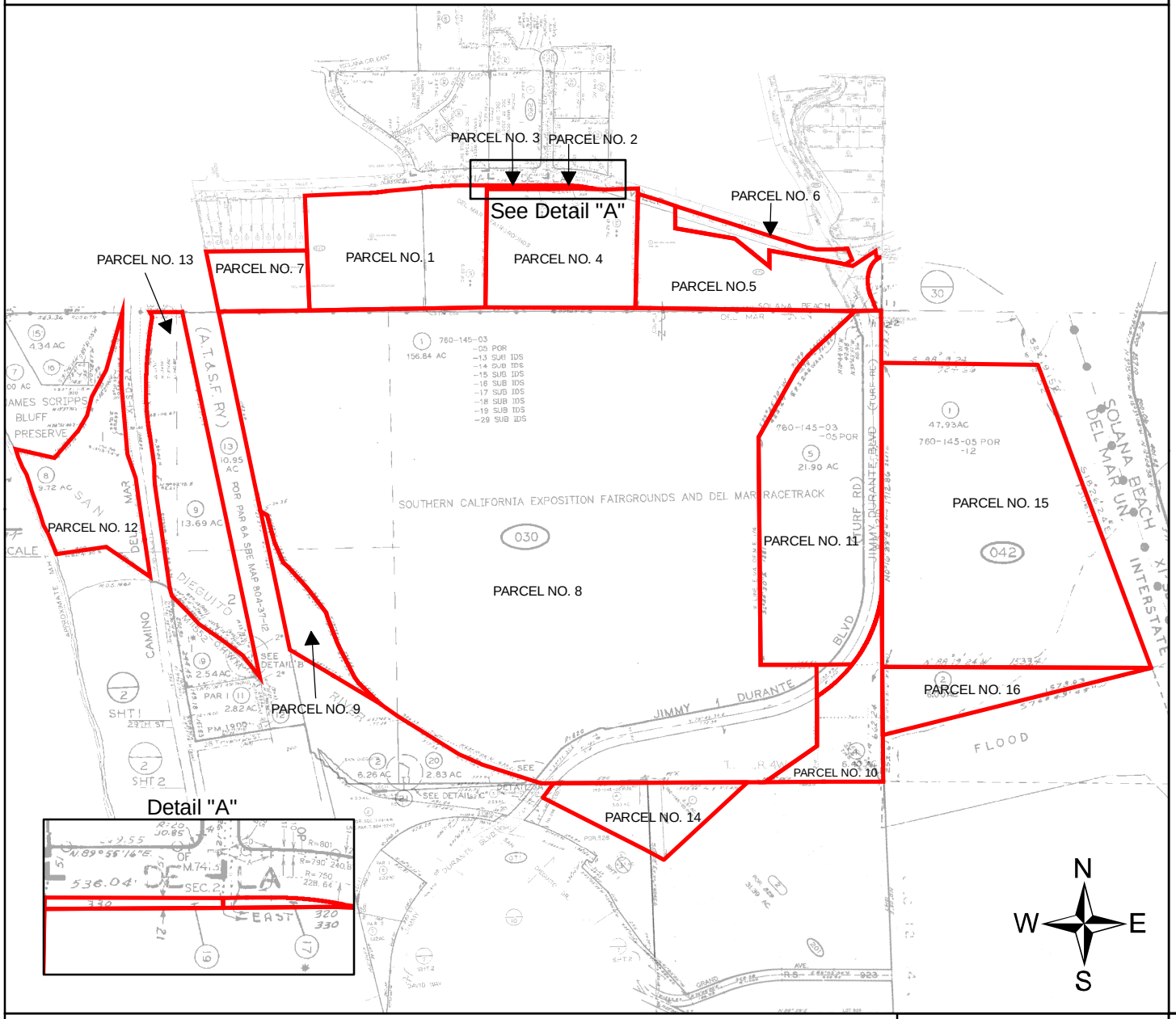
No. 223266 80-

55. Exception_058_8545

First American Title Company

Reference No.: 3303964

County: San Diego



Plotted Easements

Legend

- PARCEL NO. 1
- PARCEL NO. 2
- PARCEL NO. 3
- PARCEL NO. 4
- PARCEL No. 5
- PARCEL No. 6
- PARCEL No. 7
- PARCEL No. 8
- PARCEL No. 9
- PARCEL No. 10
- PARCEL No. 11
- PARCEL NO. 12
- PARCEL NO. 13
- PARCEL NO. 14
- PARCEL NO. 15
- PARCEL NO. 16

09/24/1889 Bk05 Pg125
(Right of Way - Not Plottable)

12/04/1890 Bk6 Pg307
(Right of Way - Not Plottable)

12/02/1896 Bk257 Pg212
(Public Road - Not Plottable)

03/17/1898 Bk269 Pg99
(Road - Not Plottable)

05/23/1913 Bk615 Pg61
(Water Pipeline &
Ditch Line - Not Plottable)

Tax ID: Please Refer Prelim for List of APN's

Short Legal: A Portion of County of San Diego

Map Not To Scale

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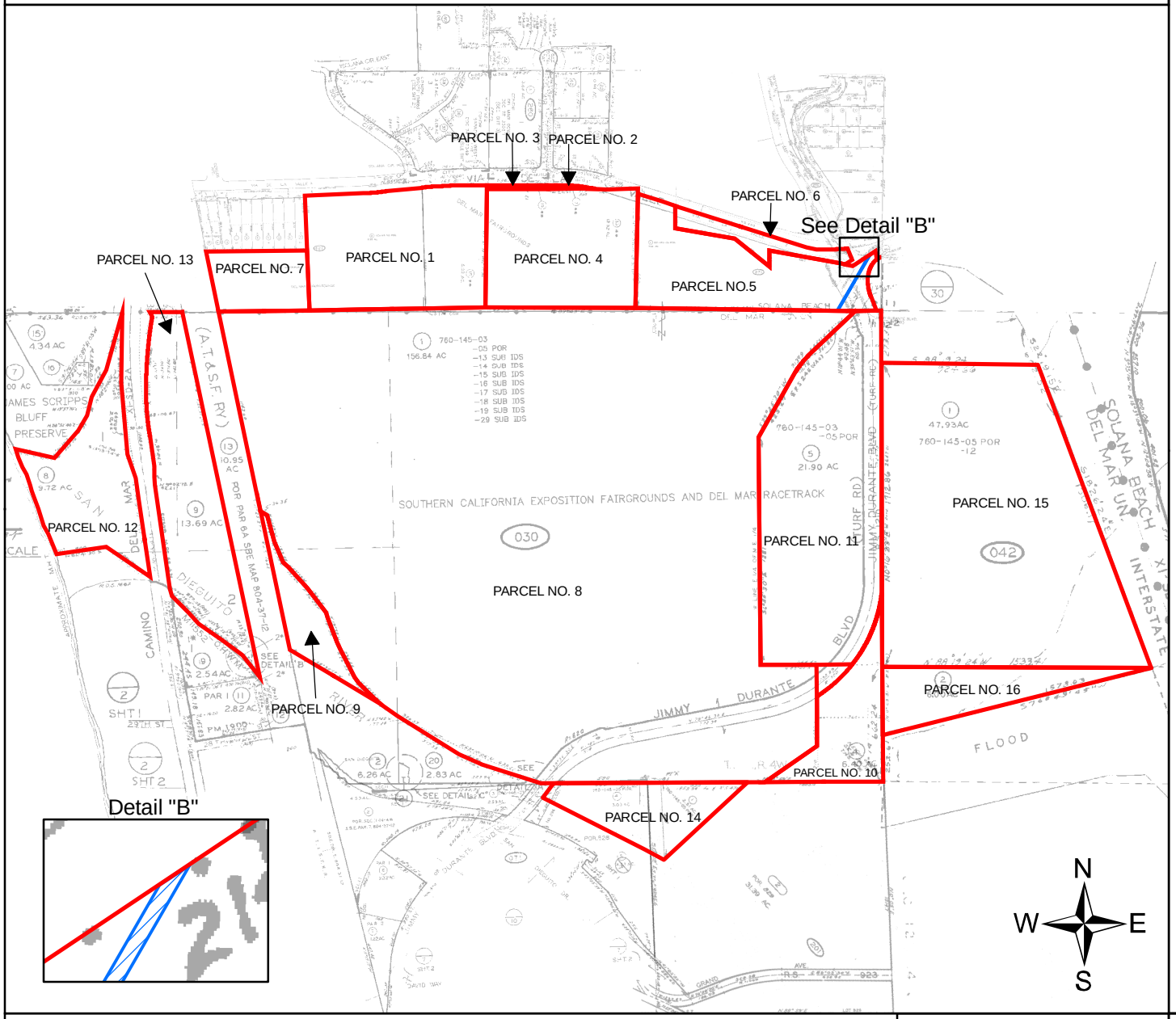
County: San Diego



Plotted Easements

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- PARCEL NO. 3
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- PARCEL No. 5
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- PARCEL No. 9
- PARCEL No. 10
- PARCEL No. 11
- PARCEL NO. 12
- PARCEL NO. 13
- PARCEL NO. 14
- PARCEL NO. 15
- PARCEL NO. 16

12/26/1916 Bk721 Pg428
(Poles - Not Plottable)

09/29/1922 Bk898 Pg346
(Poles)

09/23/1924 Bk1044 Pg8
(Pipeline - Not Plottable)

09/27/1924 Bk1025 Pg446
(Water Pipeline - Not Plottable)

06/05/1925 Bk1095 Pg145
(Water Pipeline - Not Plottable)

Tax ID: Please Refer Prelim for List of APN's

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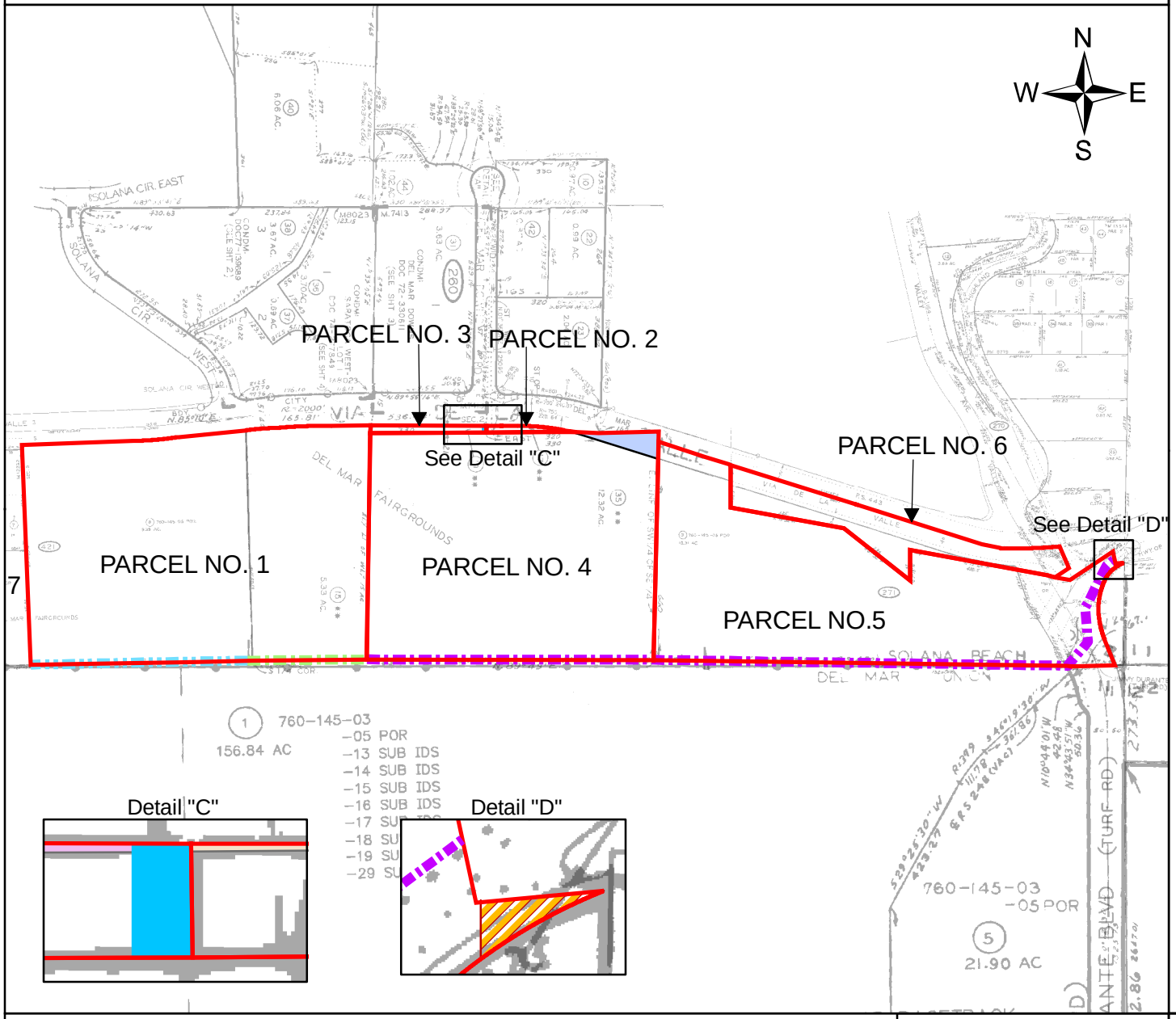

Plotted Easements

Legend

- PARCEL NO. 1
- PARCEL NO. 2
- PARCEL NO. 3
- PARCEL NO. 4
- PARCEL No. 5
- PARCEL No. 6
- 06/05/1925 Bk1098 Pg146 (Water Pipeline - Not Plottable)
- 09/30/1925 Bk1121 Pg199 (Public Utilities)
- 01/20/1927 Bk1281 Pg330 (Road)
- 05/05/1927 Bk1332 Pg187 (Pipeline - Not Plottable)
- 03/27/1928 Bk1423 Pg470 (Undisclosed Width - Poles)
- 03/27/1928 Bk1423 Pg474 (Undisclosed Width - Poles)
- 03/27/1928 Bk1433 Pg456 (Undisclosed Width - Poles)
- 05/14/1930 Bk1778 Pg131 (Public Highway)
- 05/14/1930 Bk1778 Pg132 (Public Highway)
- 05/14/1930 Bk1782 Pg51 (Public Highway)

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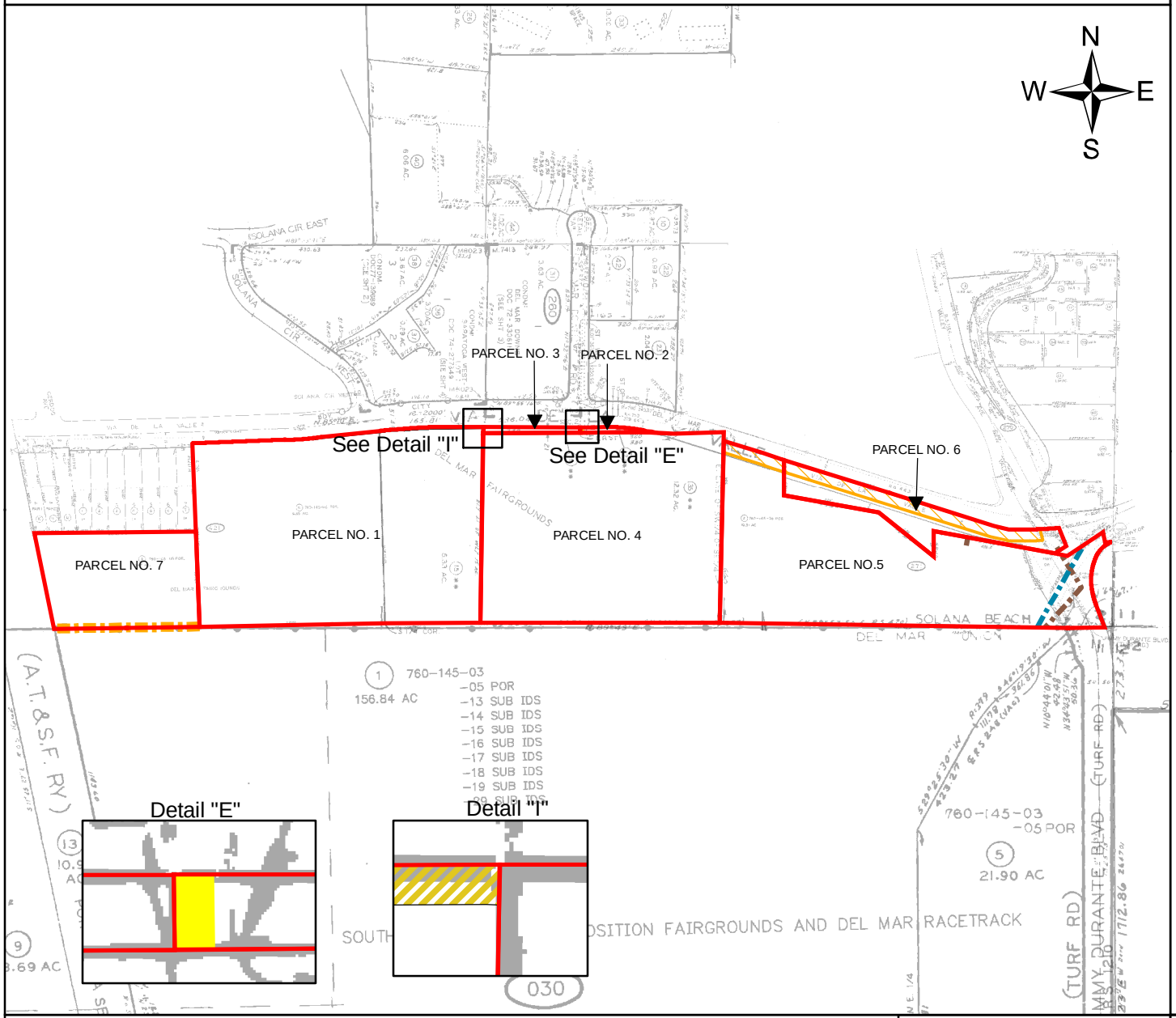

Plotted Easements

Legend

- PARCEL NO. 1
- PARCEL NO. 2
- PARCEL NO. 3
- PARCEL NO. 4
- PARCEL No. 5
- PARCEL No. 6
- PARCEL No. 7

03/27/1928 Bk1433 Pg458 (Undisclosed Width - Poles)

03/27/1928 Bk1433 Pg464 (Public Utilities - Not Plottable)

05/21/1930 Bk1778 Pg184 (Public Highway)

06/10/1930 Bk1786 Pg117 (08/06/1965 # 141425) (Public Highway)

01/20/1931 Bk1843 Pg426 (80' Wide - Public Highway)

07/07/1931 Bk5 Pg50 (2' Wide - Public Utilities)

04/18/1933 Bk206 Pg258 (08/06/1965 # 141425) (Public Highway)

12/23/1943 Bk1593 Pg452 (Road)

01/31/1947 Bk2322 Pg423 (Sewer, Water,Gas Mains & Pipelines - Not Plottable)

12/15/1947 Bk2589 Pg395 (06/06/1949 Bk3217 Pg462) (Maintain Sewer & Water Pipes - Not Plottable)

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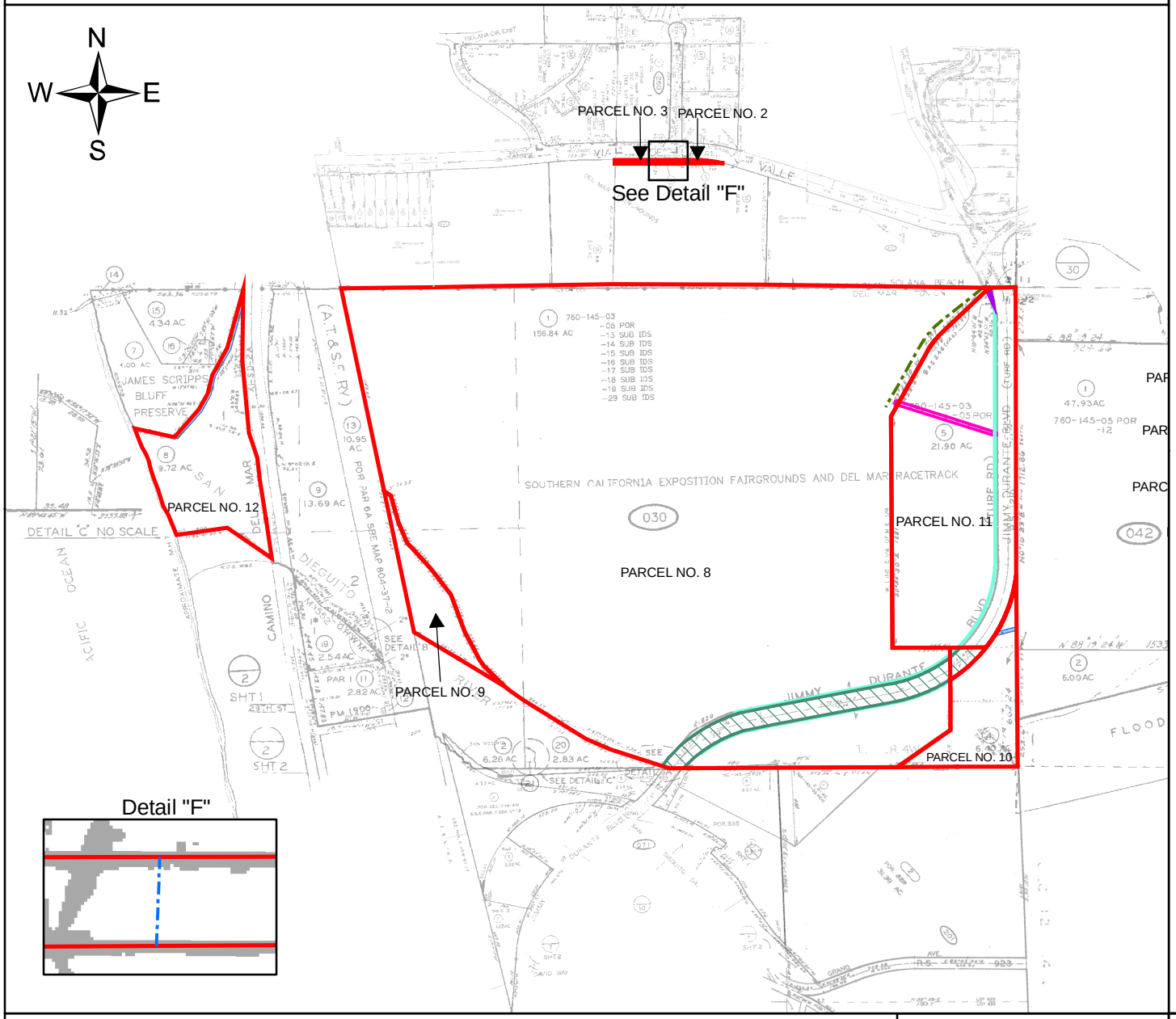

Plotted Easements

Legend

- PARCEL NO. 2
- PARCEL NO. 3
- PARCEL No. 8
- PARCEL No. 9
- PARCEL No. 10
- PARCEL No. 11
- PARCEL NO. 12

12/14/1951 # 152340 Bk4320 Pg294
(Public Utilities - Not Plottable)

04/21/1948 Bk2766 Pg99 (Road)

03/26/1937 Bk635 Pg167
(1.5' Wide - Pipeline)

04/09/1953 Bk4816 Pg140
(Public highway)

09/29/1955 # 128204
Bk5812 Pg393
(With in 6' Wide - Public utilities)

03/14/1984 # 84-092146 (Embankment Slopes and Drainage)

03/14/1984 # 84-092148
(Road & Highway)

03/14/1984 # 84-092148(Embankment Slopes and Drainage)

05/29/1984 # 84-199593 (Utility)

06/11/1984 # 84-216941
(Public Utilities)

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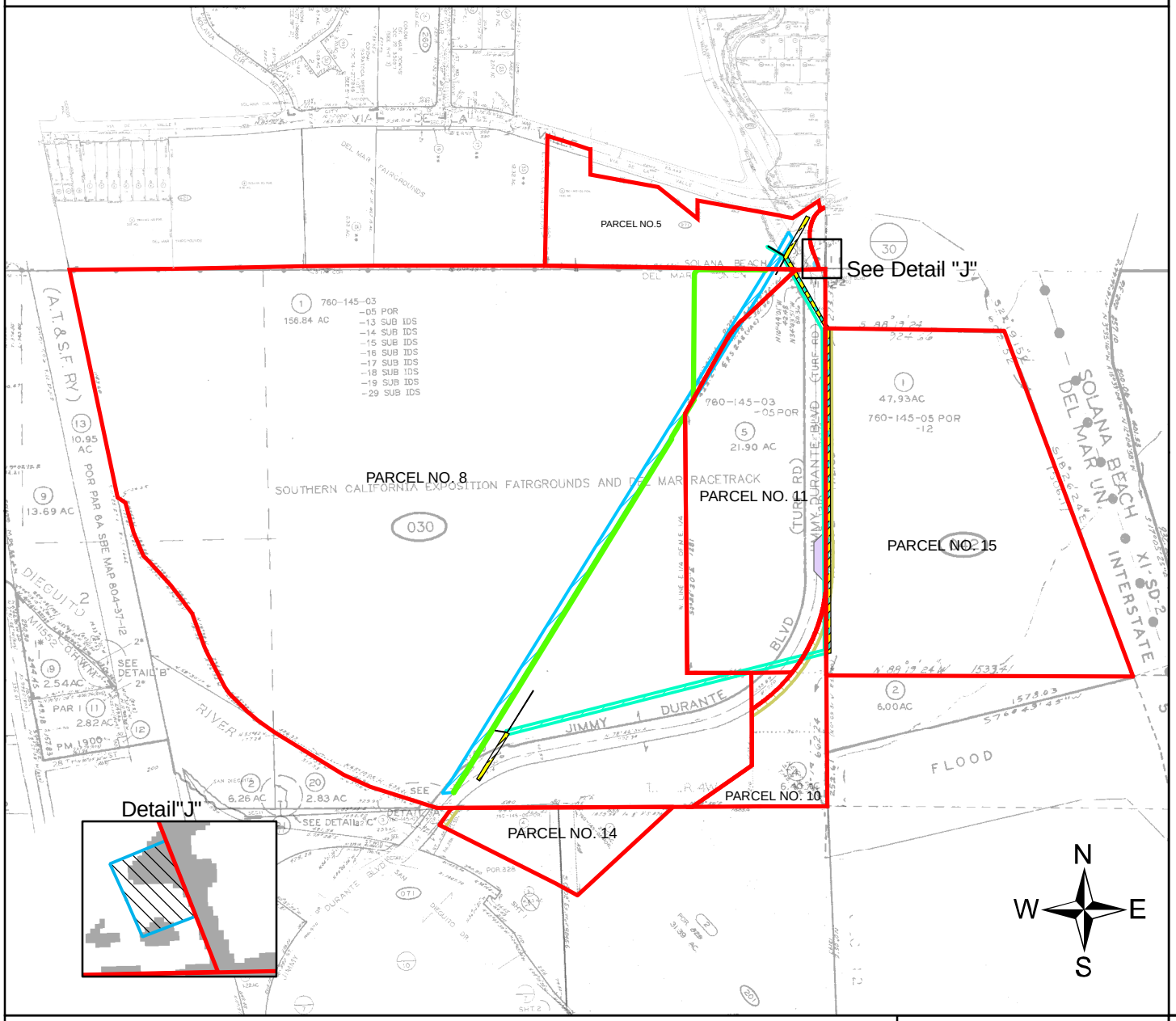

Plotted Easements

Legend

- PARCEL No. 5
- PARCEL No. 8
- PARCEL No. 10
- PARCEL No. 11
- PARCEL NO. 14
- PARCEL NO. 15
- 03/14/1984 # 84-092146 (Embankment Slopes and Drainage)
- 08/24/1984 # 84-324483 (Public Utilities)
- 08/24/1984 # 84-324484 (Public Utilities)
- 08/31/1984 # 84-334491 (Public Utilities - Not Plottable)
- 08/31/1984 # 84-334492 (Public Utilities)
- 10/04/1984 # 84-377332 (Drainage Channel- Not Plottable)
- 11/07/1984 # 84-421720 (Public, Utilities, Water & Sewer Pipelines)
- 11/08/1985 # 85-421580 (Embankment Slopes and Drainage)
- 05/25/1988 # 88-246179 (Public Utilities - Not Plottable)
- 07/06/1989 # 89-357076 (Emergency Access Road)
- 09/01/1995 # 1995-0390676 (Utilities)

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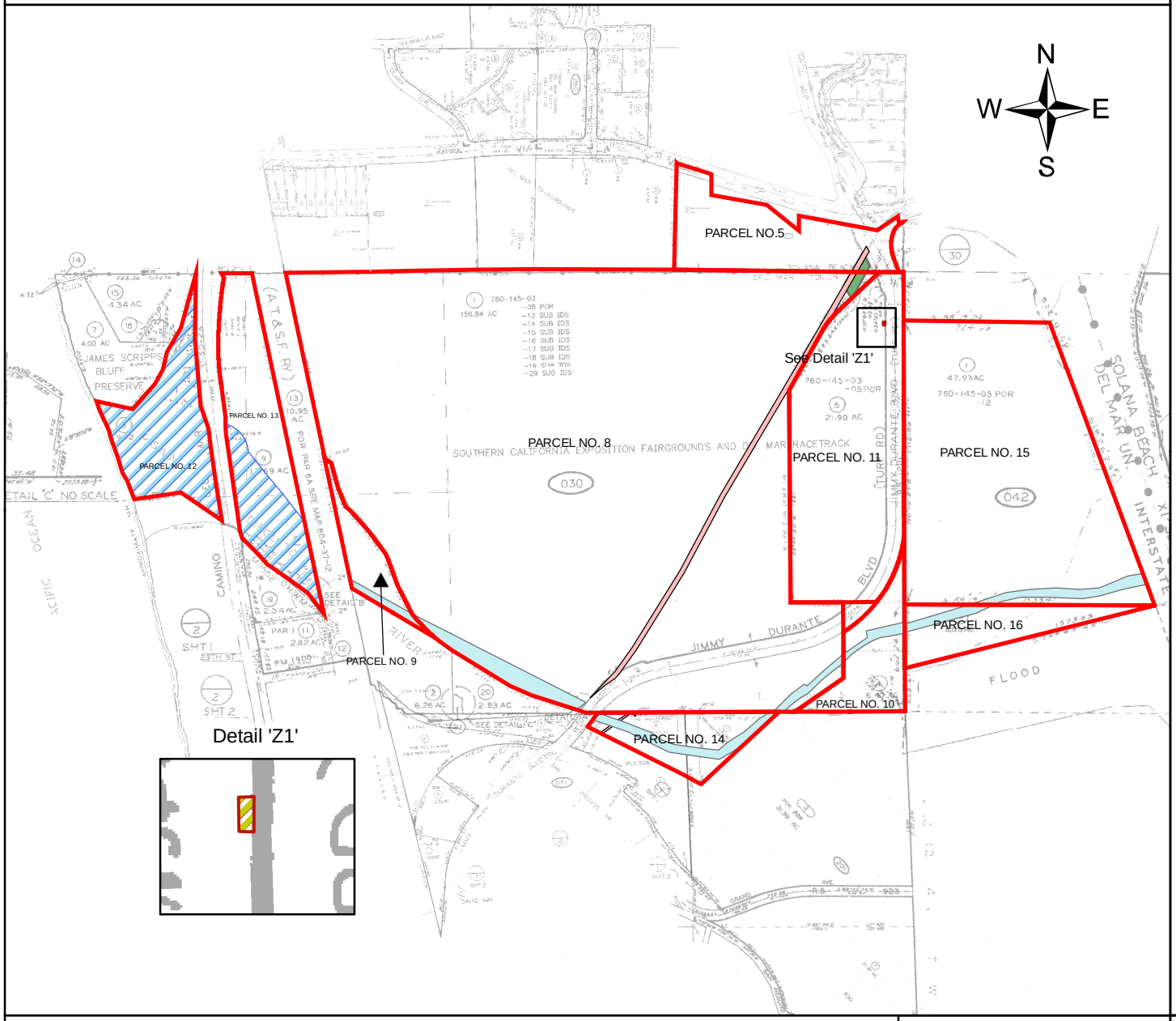

Plotted Easements

Legend

- PARCEL No. 5
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- PARCEL No. 9
- PARCEL No. 10
- PARCEL No. 11
- PARCEL NO. 12
- PARCEL NO. 13
- PARCEL NO. 14
- PARCEL NO. 15
- PARCEL NO. 16
- 07/10/1984 # 84-259356(Public Utilities)
- 09/01/1995 # 0390677(Public Water Utility)
- 05/10/1999 #1999-0316039(Water Pipe)
- 01/08/2008 # 2008-0007915 (Temporary Construction)
- 01/08/2008 # 2008-0007915 (Permanent Maintenance)
- 03/03/2009 # 2009-0104014 (Pole Lines - Not Plottable)
- 06/05/1973 #152427(Public Utilities)
- 10/03/2008 # 2008-0523530 (PUE - Not Plottable)

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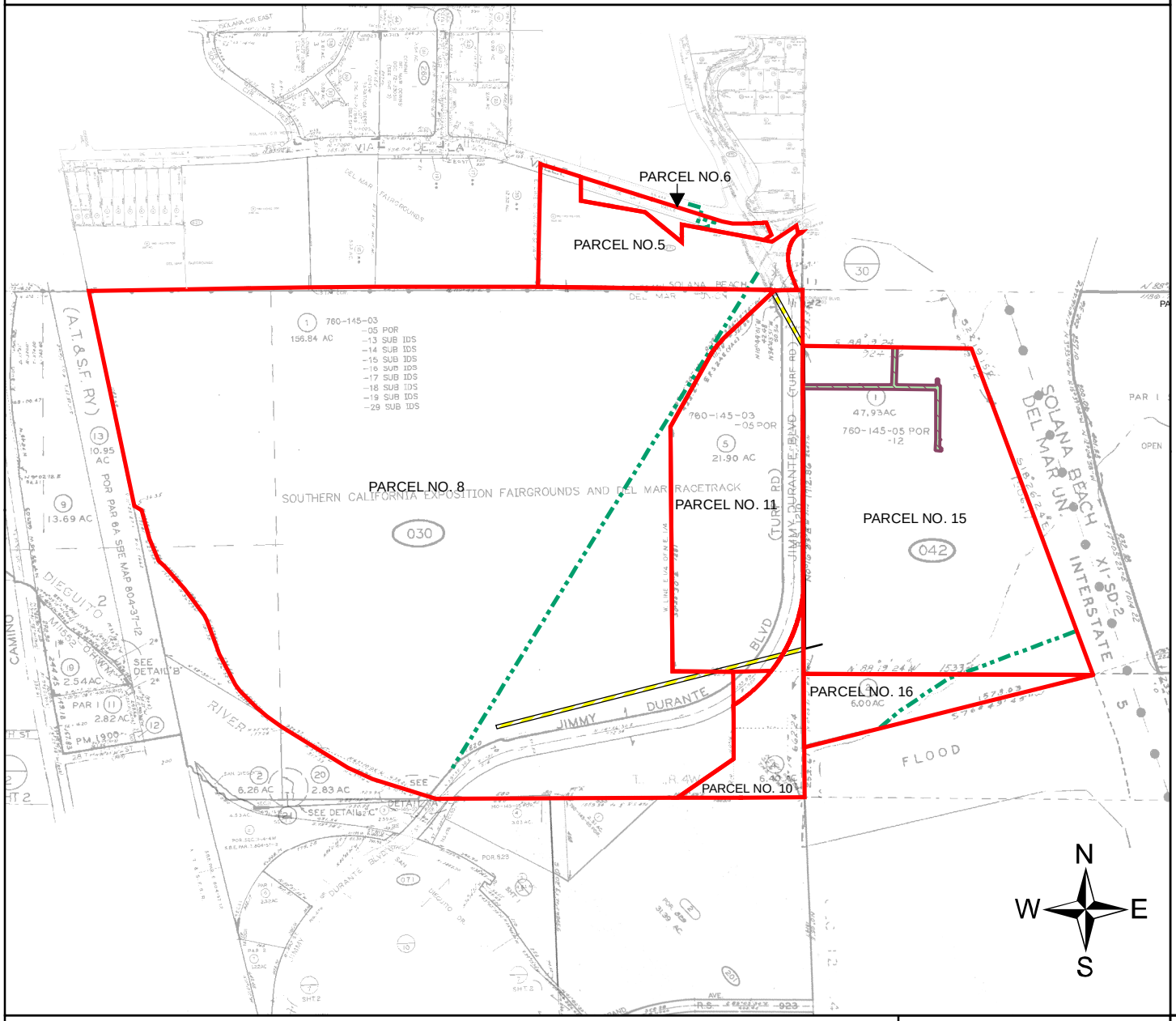

Plotted Easements

Legend

- PARCEL No. 5
- PARCEL No. 6
- PARCEL No. 8
- PARCEL No. 10
- PARCEL No. 11
- PARCEL NO. 15
- PARCEL NO. 16

09/27/1924 Bk1025 Pg446
(Water Pipeline)

10/22/1947 Bk2521 Pg291
(Drainage Channel- Not Plottable)

04/13/1907 Bk414 Pg62
(Pipeline-Not Plottable)

09/14/1915 Bk689 Pg354
(Pipe line- Not Plottable)

01/03/1966 #000091
(10 Inch-Pipeline)

05/28/1976 #76-164866
(Water Mains)

05/28/1976 #76-164482
(Water Mains)

08/24/1984 #84-324482
(Public Utilities)

Tax ID: Please Refer Prelim for List of APN's

Short Legal: A Portion of County of San Diego

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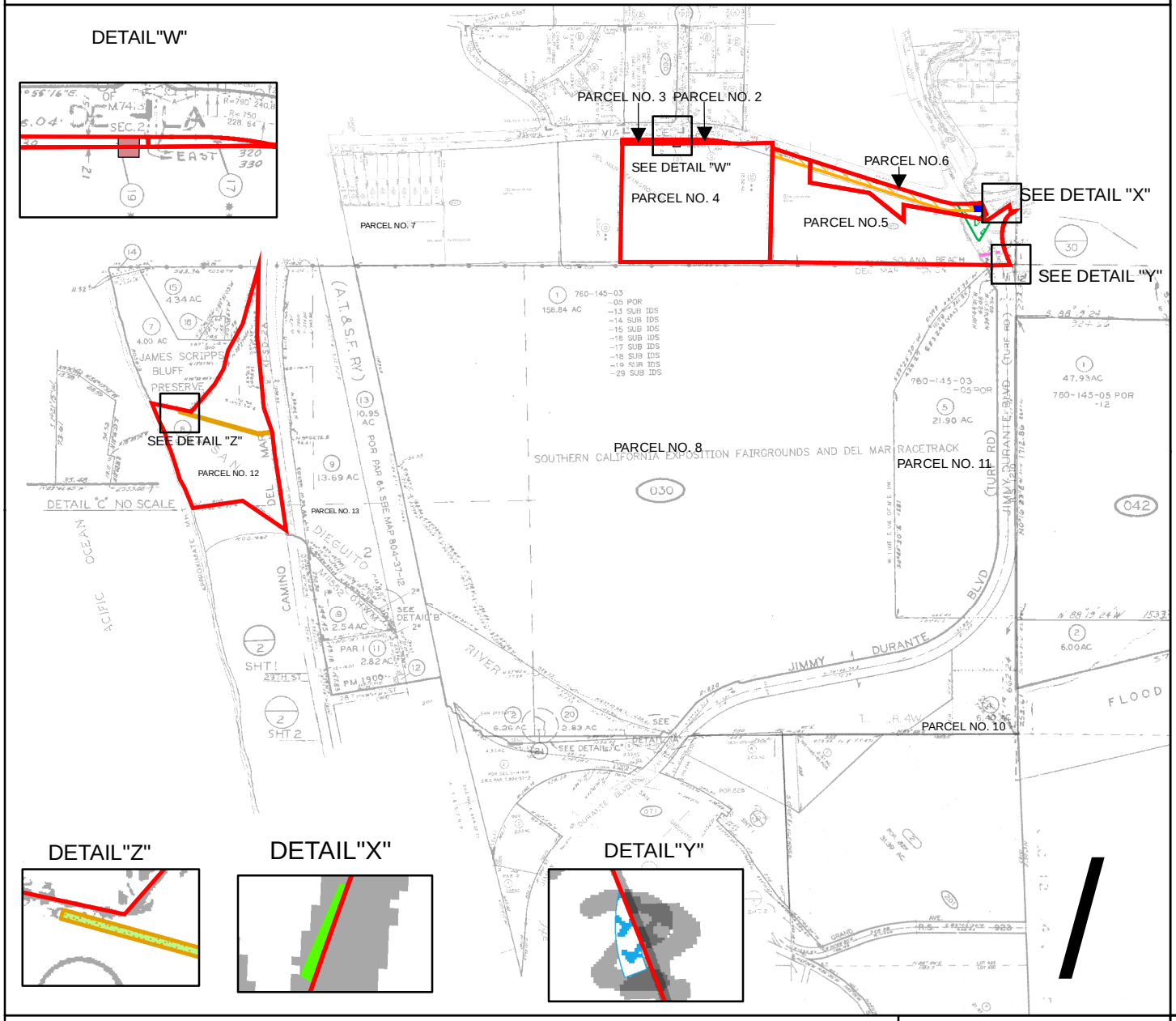

Plotted Easements

Legend

- PARCEL NO. 2
- PARCEL NO. 3
- PARCEL NO. 4
- PARCEL No. 5
- PARCEL No. 6
- PARCEL NO. 12
- 06/19/1953 Bk4896 Pg222 (Water Pumping & Water Pipeline)
- 05/04/1959 Bk7640 Pg296 (Public highway)
- 12/14/1960 # 242054 (Undisclosed Width- Public utilities)
- 08/06/1965 # 141424 (Public utilities)
- 04/14/1967 # 52032 (Public Utilities)
- 06/19/1976 # 76-166029 (Public Utilities)
- 07/16/1980 # 80-223266 (Water Drainage)
- 10/05/1986 # 86-357454 (Public Road - Not Plottable)
- 03/14/1984 # 84-092147 (Road and Highway)

Tax ID: Please Refer Prelim for List of APN's

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Prelim Title Report

Title Officer:
Email:
Title No.: 73723003700

Property Address:

Introducing

CHICAGO TITLE

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CONDITION OF TITLE

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Guarantee Number:

73723003700

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, AND THE GUARANTEE CONDITIONS ATTACHED HERETO AND MADE A PART OF THIS GUARANTEE,

CHICAGO TITLE INSURANCE COMPANY
a corporation, herein called the Company

GUARANTEES

the Assured named in Schedule A of this Guarantee

against loss or damage not exceeding the Amount of Liability stated in Schedule A sustained by the Assured by reason of any incorrectness in the Assurances set forth in Schedule A.

Chicago Title Insurance Company

By:

Michael J. Nolan, President

Attest:

Marjorie Nemzura, Secretary

Chicago Title Company
2365 Northside Drive, Suite 600
San Diego, CA 92108

Countersigned By:

Authorized Officer or Agent

CHICAGO TITLE INSURANCE COMPANY CORPORATE SEAL

ISSUING OFFICE:
Title Officer: Sheila Hollander Chicago Title Company 2365 Northside Drive, Suite 600 San Diego, CA 92108 Phone: 619-521-3502 Fax: 619-785-3383 Main Phone: (619)521-3500 Email: Sheila.Hollander@ctt.com

SCHEDULE A

Amount of Liability	Fee	Title Officer
$5,000.00	$500.00	Sheila Hollander

Date of Guarantee: July 28, 2023 at 12:00 AM

1. Name of Assured: City of Del Mar

2. The estate or interest in the Land which is covered by this Guarantee is:

   Fee

3. The Land referred to in this Guarantee is described as follows:

   SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

4. ASSURANCES:

   According to the Public Records as of the Date of Guarantee,

   a. Title to the estate or interest in the Land is vested in:

      Twenty-Second District Agricultural Association of the State of California and the State of California, acting by and through the 22nd District Agricultural Association

   b. Title to the estate or interest is subject to defects, liens or encumbrances shown in Schedule B which are not necessarily shown in the order of their priority.

END OF SCHEDULE A

EXHIBIT "A"

Legal Description

For APN/Parcel ID(s): 299-030-22-00

ALL THAT PORTION OF THE NORTH HALF OF SECTION ELEVEN (11), TOWNSHIP FOURTEEN (14) SOUTH, RANGE FOUR (4) WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

BEGINNING AT THE CORNER OF SECTIONS 1, 2, 11 AND 12 OF TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN; THENCE ALONG THE SECTION LINE BETWEEN SECTIONS 2 AND 11, SOUTH 89° 50' 30" WEST 127.66 FEET TO THE PLACE OF BEGINNING AND THE CENTER LINE OF ROAD SURVEY 298; THENCE ALONG SAID CENTER LINE OF ROAD SURVEY 298, SOUTH 46° 19' 30" WEST 361.86 FEET TO THE POINT OF A CURVE CONCAVE SOUTHEASTERLY AND HAVING A RADIUS OF 379 FEET; THENCE ALONG SAID CURVE SOUTHWESTERLY 111.78 FEET; THENCE SOUTH 29° 25' 30" WEST 423.27 FEET, MORE OR LESS, TO THE WEST LINE OF THE EAST HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE LEAVING SAID CENTER LINE OF ROAD SURVEY 298 AND FOLLOWING SAID WEST LINE OF THE EAST HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER AND THE WEST LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER, SOUTH 0° 26' 30" EAST 1281.00 FEET, NORTH 89° '48' EAST 664.40 FEET, MORE OR LESS TO THE SECTION LINE BETWEEN SECTIONS 11 AND 12; THENCE ALONG SAID SECTION LINE SOUTH 0° 16' EAST 661.75 FEET, MORE OR LESS TO THE QUARTER CORNER BETWEEN SECTIONS 11 AND 12; THENCE ALONG THE SOUTH LINE OF THE NORTH HALF OF SECTION 11, SOUTH 89° 44' 30" WEST 1866.40 FEET; THENCE NORTH 70° 36' WEST 329.90 FEET; THENCE NORTH 63° 08' WEST 140.96 FEET; THENCE NORTH 57° 59' WEST 317.33 FEET; THENCE NORTH 55° 42' WEST 177.24 FEET; THENCE NORTH 45° 32' WEST 203.62 FEET; THENCE NORTH 26° 52' WEST 234.44 FEET; THENCE NORTH 19° 38' WEST 181.38 FEET; THENCE NORTH 36° 29' WEST 199.65 FEET; THENCE NORTH 43° 39' WEST 152.66 FEET; THENCE NORTH 23° 58' WEST 123.58 FEET; THENCE NORTH 16° 47' WEST 177.41 FEET; THENCE NORTH 75° 19' WEST 36.35 FEET, MORE OR LESS, TO THE EASTERLY RIGHT- OF-WAY LINE OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY; THENCE ALONG SAID RIGHT-OF-WAY LINE NORTH 11° 28' 30" WEST 1143.60 FEET, MORE OR LESS, TO THE SECTION LINE BETWEEN SECTIONS 2 & 11; THENCE ALONG SAID SECTION LINE NORTH 89° 50' 30" EAST 3479.54 FEET, MORE OR LESS TO THE PLACE OF BEGINNING.

EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PROPERTY;

THAT PORTION OF THE NORTHEAST QUARTER OF SECTION 11, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTHERLY LINE OF SAID NORTHEAST QUARTER, WITH THE SOUTHWESTERLY TERMINUS OF THE SOUTHEASTERLY LINE OF THAT CERTAIN 100.00 FEET EASEMENT FOR HIGHWAY, DESCRIBED IN PARCEL 1 IN DEED TO THE COUNTY OF SAN DIEGO, RECORDING DATE APRIL 9, 1953 IN BOOK 4816, PAGE 140 OF OFFICIAL RECORDS, AND DESIGNATED AS ROAD SURVEY NO. 1210; THENCE ALONG SAID SOUTHERLY LINE NORTH 89° 44' 30" EAST 1135.00 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID SOUTHERLY LINE, NORTH 89° 44' 30" EAST TO AN INTERSECTION WITH A LINE DRAWN PARALLEL WITH AND DISTANT 360.00 FEET WESTERLY OF AND MEASURED AT RIGHT ANGLES TO THE EASTERLY LINE OF SAID SECTION 11, SAID INTERSECTION BEING HEREINAFTER REFERRED TO AS POINT "A" OF THIS DESCRIPTION; THENCE CONTINUING NORTH 89° 44' 30" EAST TO THE SOUTHEAST CORNER OF SAID NORTHEAST QUARTER; THENCE NORTHERLY ALONG SAID EASTERLY LINE OF SECTION 11, NORTH 0° 16' EAST TO THE NORTHERLY TERMINUS OF AN ARC OF A CURVE CONCAVE NORTHWESTERLY IN THE BOUNDARY OF SAID ROAD SURVEY NO. 1210, AS DESCRIBED IN SAID PARCEL 1, HAVING A RADIUS OF 800.00 FEET; THENCE SOUTHWESTERLY ALONG THE ARC OF SAID CURVE, TO AN INTERSECTION WITH A LINE THAT IS PARALLEL WITH THE EASTERLY LINE OF SAID SECTION 11, WHICH RUNS THROUGH SAID POINT "A"; THENCE SOUTHERLY ALONG SAID PARALLEL LINE TO A POINT THEREON THAT IS DISTANT NORTHERLY 210.00 FEET FROM SAID POINT "A"; THENCE SOUTHWESTERLY TO THE TRUE POINT OF BEGINNING.

ALSO, EXCEPTING THEREFROM THAT PORTION OF SAID LAND CONVEYED TO THE STATE OF CALIFORNIA, ACTING BY AND THROUGH THE CALIFORNIA STATE LANDS COMMISSION, BY QUITCLAIM DEED RECORDING DATE NOVEMBER 9, 2011 2011-600169 OF OFFICIAL RECORDS.

EXHIBIT "A"

Legal Description

NOTE: THIS COMPANY HAS PROVIDED SAID DESCRIPTION AS AN ACCOMMODATION FOR THE PURPOSE OF FACILITATING THIS REPORT. PURSUANT TO THE SUBDIVISION MAP ACT OF THE STATE OF CALIFORNIA, SAID DESCRIPTION MAY NOT BE AN INSURABLE PARCEL AND SHOULD NOT BE RELIED UPON TO CONVEY, FINANCE OR ENCUMBER SAID LAND UNTIL APPROVED BY THE APPROPRIATE GOVERNING AGENCY.

SCHEDULE B

1. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2023-2024.

2. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.

3. Water rights, claims or title to water, whether or not disclosed by the public records.

4. Rights of the public to any portion of the Land lying within the area commonly known as

   any street, road, alley or highway.

5. Any adverse claim based upon the assertion that some portion of said Land is tide or submerged lands, or has been created by artificial means or has accreted to such portion so created.

6. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	Wm B. Henshaw
Purpose:	right to construct and maintain a dam and reservoir
Recording No.:	in Book 715, Page 485 Deeds
Affects:	the exact location and extent of said easement is not disclosed of record.

7. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	The Pacific Telephone & Telegraph Company
Purpose:	public utilities and incidental purposes
Recording Date:	March 27, 1928
Recording No.:	in Book 1433, Page 464 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

8. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public highway
Recording Date:	February 11, 1931
Recording No.:	in Book 1864, Page 133 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

9. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public highway
Recording Date:	February 11, 1931
Recording No.:	in Book 1866, Page 96 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

SCHEDULE B
(continued)

10. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Water Supply Company
Purpose:	pipe lines
Recording Date:	March 26, 1937
Recording No.:	in Book 635, Page 167 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

11. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public highway
Recording Date:	April 9, 1953
Recording No.:	in Book 4816, Page 140 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

12. The interest, if any, of the grantee in the deed referenced below. At the date of said deed the grantor(s) therein had no apparent record interest in said Land, nor have said grantor(s) subsequently acquired a record interest.

Grantor:	Sam D. Fraser and Gladys F. Fraser
Grantee:	City of Del Mar
Recording Date:	May 19, 1970
Recording No.:	86549 Official Records

13. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	public road and appurtenances
Recording Date:	October 5, 1983
Recording No.:	83-357454 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

14. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	road and highway
Recording Date:	March 14, 1984
Recording No.:	84-092148 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

15. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	embankment slopes, drainage structures an utility
Recording Date:	March 14, 1984
Recording No.:	84-092148 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

SCHEDULE B
(continued)

16. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	utilities
Recording Date:	May 29, 1984
Recording No.:	84-199593 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

17. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	public water system facility
Recording Date:	July 10, 1984
Recording No.:	84-259356 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

18. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	August 31, 1984
Recording No.:	84-334491 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

19. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	August 31, 1984
Recording No.:	84-334492 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

20. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	August 24, 1984
Recording No.:	84-324483 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

21. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	August 24, 1984
Recording No.:	84-324484 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

22. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other matters shown on

Map:	Record of Survey Map No. 13414
Recording Date:	September 5, 1991

SCHEDULE B
(continued)

23. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	public utilities and incidental purposes
Recording Date:	November 7, 1984
Recording No.:	84-421720 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

24. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	May 25, 1988
Recording No.:	88-246179 Official Records
Affects:	the exact location and extent of said easement is not disclosed of record.

25. Matters contained in that certain document

Entitled:	Covenant Regarding Encroachment Permit No. EP 92-29
Recording Date:	July 6, 1992
Recording No.:	1992-0420698 Official Records

Reference is hereby made to said document for full particulars.

26. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	utility for construction, operation and maintenance of water facilities; right of ingress and egress
Recording Date:	September 1, 1995
Recording No.:	1995-0390676 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

27. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	public utilities and incidental purposes
Recording Date:	September 1, 1995
Recording No.:	1995-0390677 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

28. Matters contained in that certain document

Entitled:	Covenant Regarding Encroachment Permit No. 98-19
Recording Date:	September 18, 1998
Recording No.:	1998-0596382 Official Records

Reference is hereby made to said document for full particulars.

SCHEDULE B
(continued)

29. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: Southern California Edison Company, a California Corporation and the San Dieguito River Valley Regional Open Space Park Joint Powers Authority, a Joint Powers Authority
Purpose: San Dieguito River Mouth and Public Trail Project
Recording Date: January 8, 2008
Recording No.: 2008-0007915 Official Records
Affects: the route thereof affects a portion of said land and is more fully described in said document.

30. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: San Diego Gas & Electric Company
Purpose: public utilities and incidental purposes
Recording Date: October 3, 2008
Recording No.: 2008-0523530 Official Records
Affects: the route thereof affects a portion of said land and is more fully described in said document.

31. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: Pacific Bell Telephone Company, a California Corporation dba AT&T California
Purpose: public utilities and incidental purposes
Recording Date: March 3, 2009
Recording No.: 2009-0104014 Official Records
Affects: the route thereof affects a portion of said land and is more fully described in said document.

32. Matters contained in that certain document

Entitled: Compromise Title Settlement Agreement
Recording Date: November 9, 2011
Recording No.: 2011-0600168 Official Records

Reference is hereby made to said document for full particulars.

33. Matters contained in that certain document

Entitled: Del Mar City Council Resolution No. 94-59
Recording Date: August 23, 2013
Recording No.: 2013-0528873 Official Records

Reference is hereby made to said document for full particulars.

34. The search did not disclose any open mortgages or deeds of trust of record, therefore the Company reserves the right to require further evidence to confirm that the property is unencumbered, and further reserves the right to make additional requirements or add additional items or exceptions upon receipt of the requested evidence.

35. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other matters which a correct survey would disclose and which are not shown by the public records.

36. Matters which may be disclosed by an inspection and/or by a correct ALTA/ACSM Land Title Survey of said Land that is satisfactory to the Company, and/or by inquiry of the parties in possession thereof.

37. Any rights of the parties in possession of a portion of, or all of, said Land, which rights are not disclosed by the Public Records.

SCHEDULE B
(continued)

38. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

END OF SCHEDULE B

EXCLUSIONS FROM COVERAGE

Except as expressly provided by the assurances in Schedule A, the Company assumes no liability for loss or damage by reason of the following:

(a) Defects, liens, encumbrances, adverse claims or other matters affecting the title to any property beyond the lines of the Land.

(b) Defects, liens, encumbrances, adverse claims or other matters, whether or not shown by the Public Records (1) that are created, suffered, assumed or agreed to by one or more of the Assureds; or (2) that result in no loss to the Assured.

(c) Defects, liens, encumbrances, adverse claims or other matters not shown by the Public Records.

(d) The identity of any party shown or referred to in any of the schedules of this Guarantee.

(e) The validity, legal effect or priority of any matter shown or referred to in any of the schedules of this Guarantee.

(f) (1) Taxes or assessments of any taxing authority that levies taxes or assessments on real property; or (2) proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not the matters excluded under (1) or (2) are shown by the records of the taxing authority or by the Public Records.

(g) (1) Unpatented mining claims; (2) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (3) water rights, claims or title to water, whether or not the matters excluded under (1), (2) or (3) are shown by the Public Records.

GUARANTEE CONDITIONS

1. DEFINITION OF TERMS

The following terms when used in the Guarantee mean:

(a) the "Assured": the party or parties named as the Assured in Schedule A, or on a supplemental writing executed by the Company.

(b) "Land": the Land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "Land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways.

(c) "Mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(d) "Public Records": those records established under California statutes at Date of Guarantee for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge.

(e) "Date of Guarantee": the Date of Guarantee set forth in Schedule A.

(f) "Amount of Liability": the Amount of Liability as stated in Schedule A.

2. NOTICE OF CLAIM TO BE GIVEN BY ASSURED

The Assured shall notify the Company promptly in writing in case knowledge shall come to the Assured of any assertion of facts, or claim of title or interest that is contrary to the assurances set forth in Schedule A and that might cause loss or damage for which the Company may be liable under this Guarantee. If prompt notice shall not be given to the Company, then all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of the Assured under this Guarantee unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

3. NO DUTY TO DEFEND OR PROSECUTE

The Company shall have no duty to defend or prosecute any action or proceeding to which the Assured is a party, notwithstanding the nature of any allegation in such action or proceeding.

4. COMPANY'S OPTION TO DEFEND OR PROSECUTE ACTIONS; DUTY OF ASSURED TO COOPERATE

Even though the Company has no duty to defend or prosecute as set forth in Paragraph 3 above:

(a) The Company shall have the right, at its sole option and cost, to institute and prosecute any action or proceeding, interpose a defense, as limited in Paragraph 4 (b), or to do any other act which in its opinion may be necessary or desirable to establish the correctness of the assurances set forth in Schedule A or to prevent or reduce loss or damage to the Assured. The Company may take any appropriate action under the terms of this Guarantee, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this Guarantee. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(b) If the Company elects to exercise its options as stated in Paragraph 4 (a) the Company shall have the right to select counsel of its choice (subject to the right of the Assured to object for reasonable cause) to represent the Assured and shall not be liable for and will not pay the fees of any other counsel, nor will the Company pay any fees, costs or expenses incurred by an Assured in the defense of those causes of action which allege matters not covered by this Guarantee.

(c) Whenever the Company shall have brought an action or interposed a defense as permitted by the provisions of this Guarantee, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from an adverse judgment or order.

(d) In all cases where this Guarantee permits the Company to prosecute or provide for the defense of any action or proceeding, the Assured shall secure to the Company the right to so prosecute or provide for the defense of any action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the Assured for this purpose. Whenever requested by the Company, the Assured, at the Company's expense, shall give the Company all reasonable aid in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or lawful act which in the opinion of the Company may be necessary or desirable to establish the correctness of the assurances set forth in Schedule A or to prevent or reduce loss or damage to the Assured. If the Company is prejudiced by the failure of the Assured to furnish the required cooperation, the Company's obligations to the Assured under the Guarantee shall terminate.

(continued)

5. PROOF OF LOSS OR DAMAGE

(a) In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Assured furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

(b) In addition, the Assured may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Guarantee, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Assured shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the Assured provided to the Company pursuant to this paragraph shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Assured to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in the above paragraph, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this Guarantee to the Assured for that claim.

6. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS: TERMINATION OF LIABILITY

In case of a claim under this Guarantee, the Company shall have the following additional options:

(a) To pay or tender payment of the Amount of Liability together with any costs, attorneys' fees, and expenses incurred by the Assured that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

(b) To pay or otherwise settle with the Assured any claim assured against under this Guarantee. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Assured that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay; or

(c) To pay or otherwise settle with other parties for the loss or damage provided for under this Guarantee, together with any costs, attorneys' fees, and expenses incurred by the Assured that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in 6 (a), (b) or (c) of this paragraph the Company's obligations to the Assured under this Guarantee for the claimed loss or damage, other than the payments required to be made, shall terminate, including any duty to continue any and all litigation initiated by the Company pursuant to Paragraph 4.

7. LIMITATION OF LIABILITY

(a) This Guarantee is a contract of Indemnity against actual monetary loss or damage sustained or incurred by the Assured claimant who has suffered loss or damage by reason of reliance upon the assurances set forth in Schedule A and only to the extent herein described, and subject to the Exclusions From Coverage of this Guarantee.

(b) If the Company, or the Assured under the direction of the Company at the Company's expense, removes the alleged defect, lien, or encumbrance or cures any other matter assured against by this Guarantee in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(c) In the event of any litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom.

(d) The Company shall not be liable for loss or damage to the Assured for liability voluntarily assumed by the Assured in settling any claim or suit without the prior written consent of the Company.

8. REDUCTION OF LIABILITY OR TERMINATION OF LIABILITY

All payments under this Guarantee, except payments made for costs, attorneys' fees and expenses pursuant to Paragraph 4 shall reduce the Amount of Liability under this Guarantee pro tanto.

9. PAYMENT OF LOSS

(a) No payment shall be made without producing this Guarantee for endorsement of the payment unless the Guarantee has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions, the loss or damage shall be payable within thirty (30) days thereafter.

10. SUBROGATION UPON PAYMENT OR SETTLEMENT

Whenever the Company shall have settled and paid a claim under this Guarantee, all right of subrogation shall vest in the Company unaffected by any act of the Assured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the Assured would have had against any person or property in respect to the claim had this Guarantee not been issued. If requested by the Company, the Assured shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The Assured shall permit the Company to sue, compromise or settle in the name of the Assured and to use the name of the Assured in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the Assured the Company shall be subrogated to all rights and remedies of the Assured after the Assured shall have recovered its principal, interest, and costs of collection.

(continued)

11. ARBITRATION

Either the Company or the Assured may demand that the claim or controversy shall be submitted to arbitration pursuant to the Title Insurance Arbitration Rules of the American Land Title Association ("Rules"). Except as provided in the Rules, there shall be no joinder or consolidation with claims or controversies of other persons. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the Assured arising out of or relating to this Guarantee, any service of the Company in connection with its issuance or the breach of a Guarantee provision, or to any other controversy or claim arising out of the transaction giving rise to this Guarantee. All arbitrable matters when the amount of liability is Two Million And No/100 Dollars ($2,000,000) or less shall be arbitrated at the option of either the Company or the Assured. All arbitrable matters when the amount of liability is in excess of Two Million And No/100 Dollars ($2,000,000) shall be arbitrated only when agreed to by both the Company and the Assured. Arbitration pursuant to this Guarantee and under the Rules shall be binding upon the parties. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court of competent jurisdiction.

12. LIABILITY LIMITED TO THIS GUARANTEE; GUARANTEE ENTIRE CONTRACT

(a) This Guarantee together with all endorsements, if any, attached hereto by the Company is the entire Guarantee and contract between the Assured and the Company. In interpreting any provision of this Guarantee, this Guarantee shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, or any action asserting such claim, shall be restricted to this Guarantee.

(c) No amendment of or endorsement to this Guarantee can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

13. SEVERABILITY

In the event any provision of this Guarantee, in whole or in part, is held invalid or unenforceable under applicable law, the Guarantee shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

14. CHOICE OF LAW; FORUM

(a) Choice of Law: The Assured acknowledges the Company has underwritten the risks covered by this Guarantee and determined the premium charged therefor in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of Guaranties of the jurisdiction where the Land is located.

Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims that are adverse to the Assured and to interpret and enforce the terms of this Guarantee. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b) Choice of Forum: Any litigation or other proceeding brought by the Assured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

15. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this Guarantee and shall be addressed to the Company at:

Chicago Title Insurance Company
P.O. Box 45023
Jacksonville, FL 32232-5023
Attn: Claims Department

END OF CONDITIONS

Prelim Title Report

Title Officer:
Email:
Title No.: 73723003698

Property Address:

Introducing

CHICAGO TITLE

CHICAGO TITLE PreVIEW Powered by LiveLOOK

LiveLOOK title document delivery system is designed to provide 24/7 real-time access to all information related to a title insurance transaction.

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CONDITION OF TITLE

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Guarantee Number:

73723003698

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, AND THE GUARANTEE CONDITIONS ATTACHED HERETO AND MADE A PART OF THIS GUARANTEE,

CHICAGO TITLE INSURANCE COMPANY
a corporation, herein called the Company

GUARANTEES

the Assured named in Schedule A of this Guarantee

against loss or damage not exceeding the Amount of Liability stated in Schedule A sustained by the Assured by reason of any incorrectness in the Assurances set forth in Schedule A.

Chicago Title Insurance Company

By:

Michael J. Nolan, President

Attest:

Marjorie Nemzura, Secretary

Chicago Title Company
2365 Northside Drive, Suite 600
San Diego, CA 92108

Countersigned By:

Authorized Officer or Agent

CHICAGO TITLE INSURANCE COMPANY CORPORATE SEAL

ISSUING OFFICE:
Title Officer: Sheila Hollander Chicago Title Company 2365 Northside Drive, Suite 600 San Diego, CA 92108 Phone: 619-521-3502 Fax: 619-785-3383 Main Phone: (619)521-3500 Email: Sheila.Hollander@ctt.com

SCHEDULE A

Amount of Liability	Fee	Title Officer
$5,000.00	$500.00	Sheila Hollander

Date of Guarantee: at

1. Name of Assured: City of Del Mar

2. The estate or interest in the Land which is covered by this Guarantee is:

   Fee

3. The Land referred to in this Guarantee is described as follows:

   SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

4. ASSURANCES:

   According to the Public Records as of the Date of Guarantee,

   a. Title to the estate or interest in the Land is vested in:

      Twenty-Second District Agricultural Association, a corporation, as to Parcel 1 and
      The State of California, acting by and through the 22nd District Agricultural Association, as to Parcel 1A

   b. Title to the estate or interest is subject to defects, liens or encumbrances shown in Schedule B which are not necessarily shown in the order of their priority.

END OF SCHEDULE A

EXHIBIT "A"

Legal Description

For APN/Parcel ID(s): 298-271-03-00

PARCEL 1: APN 298-271-03 PORTION

ALL THAT PORTION OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF DEL MAR, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO UNITED STATES GOVERNMENT APPROVED JANUARY 18, 1876; THENCE WEST 80 RODS; THENCE NORTH 56 RODS; THENCE EAST 12 RODS; THENCE SOUTH TO A POINT ON THE SOUTH BANK OF THE OLD RIVER CHANNEL AS IT EXISTED ON JUNE 20, 1923; THENCE IN A GENERAL EASTERLY DIRECTION ALONG THE SOUTH BANK OF SAID RIVER CHANNEL 34 RODS; THENCE NORTH ACROSS THE RIVER CHANNEL TO A POINT ON THE NORTH BANK; THENCE IN A GENERAL EASTERLY AND SOUTHEASTERLY DIRECTION ALONG THE NORTH BANK OF SAID CHANNEL AND ALONG THE SOUTH SIDE OF THE COUNTY ROAD LEADING FROM DEL MAR TO ESCONDIDO AS IT EXISTED ON JUNE 20, 1923, TO ITS INTERSECTION WITH THE EAST LINE OF SAID SECTION 2; THENCE SOUTH ALONG THE EAST LINE OF SAID SECTION 2 TO THE POINT AND PLACE OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION AS CONVEYED IN DEED TO THE STATE OF CALIFORNIA, RECORDED AUGUST 8, 1961 AS PER DOCUMENT NO. 135603 OF OFFICIAL RECORDS DESCRIBED AS FOLLOWS:

THAT PORTION OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO UNITED STATES GOVERNMENT SURVEY THEREOF APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SECTION 2; THENCE ALONG THE EASTERLY LINE OF SAID SECTION 2, NORTH 1°10'02" EAST 290.87 FEET TO A LINE WHICH BEARS NORTH 84°55'10" EAST FROM A POINT BEING AT COORDINATE Y-297, 119.40 FEET AND X-I, 691,726.83 FEET; THENCE ALONG LAST SAID LINE SOUTH 84°55'10" WEST, 24.39 FEET TO SAID POINT; THENCE NORTH 12°12'20" WEST 42 FEET MORE OR LESS TO A POINT IN THE NORTH BANK OF THE OLD RIVER CHANNEL AS IT EXISTED ON JUNE 20, 1923 AND THE SOUTHSIDE OF THE COUNTY ROAD LEADING FROM DEL MAR TO ESCONDIDO AS IT EXISTED ON JUNE 20 1923; THENCE IN A GENERAL EASTERLY DIRECTION ALONG SAID NORTH BANK AND ALONG SAID SIDE 41 FEET MORE OR LESS TO ITS INTERSECTION WITH THE EAST LINE OF SAID SECTION 2; THENCE SOUTHERLY ALONG SAID EAST LINE OF SECTION 2, SOUTH 1°10'02" WEST, 60 FEET, MORE OR LESS TO THE POINT OF BEGINNING.

THE BEARINGS DISTANCES AND COORDINATE USED IN THE ABOVE DESCRIBED DESCRIPTION ARE ON CALIFORNIA COORDINATES SYSTEM, ZONE 6, MULTIPLY ALL DISTANCE IN THE ABOVE DESCRIBED DESCRIPTION BY 1.0000370 TO OBTAIN GROUND LEVEL DISTANCES.

ALSO EXCEPTING THEREFROM THAT PARCEL CONVEYED TO SERRO AMUSEMENT COMPANY DESCRIBED IN DEED RECORDED JULY 8, 1968 AS INSTRUMENT NO. 114128 AND DESCRIBED AS FOLLOWS:

THE MOST EASTERLY 70 FEET OF THAT PORTION OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AND ACCORDING TO THE UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 18, 1876, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SECTION 2; THENCE WEST 80 RODS (1320 FEET); THENCE NORTH 56 RODS (924 FEET) TO THE NORTHWESTERLY CORNER OF THE LAND DESCRIBED AS PARCEL 2 IN DEED TO 22ND DISTRICT AGRICULTURAL ASSOCIATION, A CORPORATION BY DEED RECORDED NOVEMBER 14, 1949, IN BOOK 2538, PAGE 311 OF OFFICIAL RECORDS. BEING THE TRUE POINT OF BEGINNING; THENCE EAST 12 RODS (198 FEET); THENCE SOUTH TO THE CENTER LINE OF ROAD SURVEY NO. 443 AS DESCRIBED IN BOOK 206. PAGE 258 OF OFFICIAL RECORDS, A PLAT OF WHICH IS FILED IN THE OFFICE OF THE COUNTY SURVEYOR OF SAN DIEGO COUNTY; THENCE NORTH 72°37' WEST ALONG SAID CENTER LINE TO ITS

EXHIBIT "A"

Legal Description

INTERSECTION WITH THE WEST LINE OF THE LAND DESCRIBED AS PARCEL 2; THENCE NORTH ALONG THE WEST LINE TO THE TRUE POINT OF BEGINNING. SAID PARCEL OF LAND BEING A PORTION OF THE AFORESAID IS DESCRIBED AS FOLLOWS: THE MOST EASTERLY 70 FEET OF LAND LYING WESTERLY AND PARALLEL TO THE EAST LINE OF THE AFORESAID DESCRIPTION AND LYING BETWEEN THE MOST NORTHERLY LINE OF THE AFORESAID PROPERTY AND THE NORTH LINE OF THE COUNTY ROAD AS DESCRIBED IN THE COUNTY ROAD NO. 443, AS DESCRIBED IN BOOK 206, PAGE 258 OF OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PARCEL CONVEYED TO FRANCESCO'S, A CALIFORNIA CORPORATION, DESCRIBED IN DEED RECORDED DECEMBER 30, 1976 AS INSTRUMENT NO. 76-439655 AND DESCRIBED AS FOLLOWS:

THAT PORTION OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 2; THENCE WEST 1320.00 FEET; THENCE NORTH 924.00 FEET TO THE MOST NORTHWESTERLY CORNER OF LAND DESCRIBED IN PARCEL 2 OF DEED TO TWENTY-SECOND DISTRICT AGRICULTURAL ASSOCIATION, A CORPORATION, RECORDED AUGUST 14, 1947 AS INSTRUMENT NO. 118461 OF OFFICIAL RECORDS AND THE TRUE POINT OF BEGINNING; THENCE EAST 198.00 FEET; THENCE SOUTH TO THE CENTER LINE OF ROAD SURVEY NO. 443, AS DESCRIBED IN DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 17, 1933 IN BOOK 206, PAGE 258 OF OFFICIAL RECORDS; THENCE ALONG SAID CENTER LINE, NORTH 72°37'00" WEST TO AN INTERSECTION WITH THE WEST LINE OF SAID ASSOCIATION LAND; THENCE ALONG SAID WEST LINE, NORTH TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THE EASTERLY 70.00 FEET

PARCEL 1A: APN 298-271-03 PORTION

ALL THAT PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 14 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF DEL MAR, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 2; THENCE NORTH 0°34' EAST ALONG THE EASTERLY LINE OF SAID SECTION, 352.2 FEET; THENCE SOUTH 56°34' WEST, 167.5 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING SOUTH 56°34' WEST, 47 FEET; THENCE NORTH 79°20' WEST, 438.5 FEET; THENCE SOUTH 1°18' WEST 87 FEET; THENCE NORTH 51°32' WEST 236 FEET; THENCE NORTH 79°32' WEST 325 FEET; THENCE NORTH 1°28' EAST, 112.1 FEET; THENCE NORTH 89°03' EAST 237 FEET; THENCE SOUTH 70°57' EAST 700 FEET; THENCE NORTH 61°03' EAST, 45.6 FEET; THENCE SOUTH 23° 11' EAST, 89.75 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION LYING NORTHERLY OF THE CENTER LINE OF ROAD SURVEY NO. 443 AS DESCRIBED AT BOOK 206. PAGE 258 OF OFFICIAL RECORDS, A PLAT OF WHICH IS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR OF SAN DIEGO COUNTY, SAID CENTER LINE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION FROM WHICH THE SOUTHWEST CORNER OF SAID QUARTER SECTION BEARS SOUTH AND DISTANT 623.06 FEET AND RUNNING; THENCE FROM SAID POINT OF BEGINNING SOUTH 72°37' EAST 873.66 FEET TO THE BEGINNING OF A CURVE TO THE LEFT HAVING A RADIUS OF 750 FEET; THENCE ALONG SAID CURVE THROUGH AN ANGLE OF 38°15'40" A DISTANCE OF 500.84 FEET TO A POINT IN THE EAST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 2, FROM WHICH THE SOUTHEAST CORNER OF SAID QUARTER SECTION BEARS SOUTH 0°34' WEST AND DISTANT, 374.47 FEET.

SCHEDULE B

1. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2023-2024.

2. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.

3. Water rights, claims or title to water, whether or not disclosed by the public records.

4. Rights of the public to any portion of the Land lying within the area commonly known as

   any street, road, alley or highway.

5. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego County
Purpose:	public road
Recording No.:	in Book 310, Page 388 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

6. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	Wm. G. Henshaw
Purpose:	construct and maintain a dam and reservoir
Recording No.:	in Book 721, Page 371 and in Book 715, Page 485 Deeds
Affects:	the exact location and extent of said easement is not disclosed of record.

7. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording No.:	in Book 721, Page 438 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

8. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	September 29, 1922
Recording No.:	in Book 898, Page 346 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

9. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Dieguito Water Company
Purpose:	pipe line
Recording Date:	September 23, 1924
Recording No.:	in Book 1044, Page 8 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

SCHEDULE B
(continued)

10. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	Santa Fe Irrigation District
Purpose:	pipelines
Recording Date:	June 5, 1925
Recording No.:	in Book 1095, Page 145 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

11. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Dieguito Mutual Water Company
Purpose:	certain pipeline commonly known as La Jolla Pipeline
Recording Date:	May 5, 1927
Recording No.:	in Book 1332, Page 187 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

Note: Portion vacated by document recorded October 26, 1972 as instrument no. 287464 Official Records.

12. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	The Pacific Telephone & Telegraph Company
Purpose:	public utilities and incidental purposes
Recording No.:	in Book 1423, Page 470 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

13. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	The Pacific Telephone & Telegraph Company
Purpose:	public utilities and incidental purposes
Recording No.:	in Book 1423, Page 474 Deeds
Affects:	the exact location and extent of said easement is not disclosed of record.

14. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	The Pacific Telephone & Telegraph Company
Purpose:	public utilities and incidental purposes
Recording No.:	in Book 1433, Page 456 Deeds
Affects:	the exact location and extent of said easement is not disclosed of record.

15. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	The Pacific Telephone & Telegraph Company
Purpose:	public utilities and incidental purposes
Recording No.:	in Book 1433, Page 458 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

16. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public highway
Recording No.:	in Book 1778, Page 132 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

SCHEDULE B
(continued)

17. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public highway
Recording No.:	in Book 1843, Page 426 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

18. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	July 7, 1931
Recording No.:	in Book 5, Page 50 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

19. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Purpose:	public highway
Recording No.:	in Book 1778, Page 184 Deeds
Affects:	County Road Survey No. 443

20. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public highway
Recording Date:	February 7, 1931
Recording No.:	in Book 1873, Page 31 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

21. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	road
Recording No.:	in Book 206, Page 258 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

22. Recital in Deed from Santa Fe Irrigation District to Twenty-Second District Agricultural Association of the State of California dated October 26, 1946, recorded November 21, 1947, under Recorder's File No. 121215 in Book 556, page 13 of Official Records conveying the property herein described as follows:

It is understood and agreed between the grantor and the grantee, and its successors in interest that the premises hereby conveyed, being within the Santa Fe Irrigation District, have been acquired by such District, have bee acquired by such district through tax deeds to it issued on account of delinquent irrigation assessments; and that under the provisions of the California water code, it is being sold to the grantee herein without any water right whatever, and without any present or future right to demand from santa fe irrigation district water service to any extent whatever to, on or from the benefit of said lands.

23. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	State of California
Purpose:	public road
Recording No.:	in Book 1864, Page 343 Deeds
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

SCHEDULE B
(continued)

Said instrument additionally contains the privilege and right to extend structures and excavation and embankment slopes beyond the limits where required for the construction and maintenance thereof.

24. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public road
Recording Date:	April 9, 1953
Recording No.:	in Book 4816, Page 140 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

Said instrument additionally contains the privilege and right to extend structures and excavation and embankment slopes beyond the limits where required for the construction and maintenance thereof.

25. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	County of San Diego
Purpose:	public road
Recording No.:	in Book 7640, Page 296 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

Said instrument additionally contains the privilege and right to extend structures and excavation and embankment slopes beyond the limits where required for the construction and maintenance thereof.

26. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	December 14, 1960
Recording No.:	242054 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

27. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	June 1, 1976
Recording No.:	76-166029 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

28. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego County Flood Control District Zone 1
Purpose:	storm drainage facilities
Recording Date:	July 16, 1980
Recording No.:	80-223266 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

SCHEDULE B
(continued)

29. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego County Flood Control District Zone 1
Purpose:	flood drainage channel
Recording Date:	June 23, 1982
Recording No.:	82-193388 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

30. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	public road
Recording Date:	October 5, 1983
Recording No.:	83-357454 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

31. A Resolution of the City Council of the City of Del Mar ordering the vacation of Jimmy Durante Way, was recorded July 10, 1984 as instrument no. 84-259356 of Official Records.

Note: Said document reserves public utility easements.

Note: A quitclaim from the City of Del Mar to the 22nd Agricultural Association was recorded September 20, 1984 as instrument no. 84-357004 of Official Records.

32. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	August 24, 1984
Recording No.:	84-324483 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

33. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	August 24, 1984
Recording No.:	84-324484 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

34. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego Gas & Electric Company
Purpose:	public utilities and incidental purposes
Recording Date:	August 31, 1984
Recording No.:	84-334492 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

SCHEDULE B
(continued)

35. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	San Diego County Flood Control District Zone 1
Purpose:	drainage channel easement
Recording Date:	October 4, 1984
Recording No.:	84-377332 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

36. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	public utilities
Recording Date:	November 7, 1984
Recording No.:	84-421720 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

37. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	PSM Venture I, Ltd., a California limited partnership
Purpose:	emergency fire access easement
Recording Date:	July 6, 1989
Recording No.:	89-357076 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

38. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other matters shown on

Map:	Record of Survey Map No. 13414
Recording Date:	September 5, 1991

39. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	City of Del Mar
Purpose:	utility easement
Recording Date:	September 1, 1995
Recording No.:	1995-0390677 Official Records
Affects:	the route thereof affects a portion of said land and is more fully described in said document.

40. Matters contained in that certain document

Entitled:	Covenant Regarding Encroachment Permit No. 98-19
Recording Date:	September 18, 1998
Recording No.:	1998-0596382 Official Records

Reference is hereby made to said document for full particulars.

SCHEDULE B
(continued)

41. Matters contained in that certain document

Entitled: Compromise Title Settlement Agreement
Dated: October 29, 2010
Executed by: State of California acting by and through the State Lands Commission and the State of California, acting by and through the 22nd District Agricultural Association
Recording Date: November 9, 2011
Recording No.: 2011-0600168 Official Records

Reference is hereby made to said document for full particulars.

42. Matters contained in that certain document

Entitled: Declaration of Restrictive Covenants
Dated: April 10, 2013
Executed by: State of California, acting by and through the 22nd District Agricultural Association
Recording Date: July 31, 2013
Recording No.: 2013-0480880 Official Records

Reference is hereby made to said document for full particulars.

43. Matters contained in that certain document

Entitled: Del Mar City Council Resolution No. 94-59
Dated: December 5, 1994
Executed by: City of Del Mar
Recording Date: August 23, 2013
Recording No.: 2013-0528873 Official Records

Reference is hereby made to said document for full particulars.

44. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other matters which a correct survey would disclose and which are not shown by the public records.

45. Matters which may be disclosed by an inspection and/or by a correct ALTA/ACSM Land Title Survey of said Land that is satisfactory to the Company, and/or by inquiry of the parties in possession thereof.

46. Any rights of the parties in possession of a portion of, or all of, said Land, which rights are not disclosed by the Public Records.

END OF SCHEDULE B

EXCLUSIONS FROM COVERAGE

Except as expressly provided by the assurances in Schedule A, the Company assumes no liability for loss or damage by reason of the following:

(a) Defects, liens, encumbrances, adverse claims or other matters affecting the title to any property beyond the lines of the Land.

(b) Defects, liens, encumbrances, adverse claims or other matters, whether or not shown by the Public Records (1) that are created, suffered, assumed or agreed to by one or more of the Assureds; or (2) that result in no loss to the Assured.

(c) Defects, liens, encumbrances, adverse claims or other matters not shown by the Public Records.

(d) The identity of any party shown or referred to in any of the schedules of this Guarantee.

(e) The validity, legal effect or priority of any matter shown or referred to in any of the schedules of this Guarantee.

(f) (1) Taxes or assessments of any taxing authority that levies taxes or assessments on real property; or (2) proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not the matters excluded under (1) or (2) are shown by the records of the taxing authority or by the Public Records.

(g) (1) Unpatented mining claims; (2) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (3) water rights, claims or title to water, whether or not the matters excluded under (1), (2) or (3) are shown by the Public Records.

GUARANTEE CONDITIONS

1. DEFINITION OF TERMS

The following terms when used in the Guarantee mean:

(a) the "Assured": the party or parties named as the Assured in Schedule A, or on a supplemental writing executed by the Company.

(b) "Land": the Land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "Land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways.

(c) "Mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(d) "Public Records": those records established under California statutes at Date of Guarantee for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge.

(e) "Date of Guarantee": the Date of Guarantee set forth in Schedule A.

(f) "Amount of Liability": the Amount of Liability as stated in Schedule A.

2. NOTICE OF CLAIM TO BE GIVEN BY ASSURED

The Assured shall notify the Company promptly in writing in case knowledge shall come to the Assured of any assertion of facts, or claim of title or interest that is contrary to the assurances set forth in Schedule A and that might cause loss or damage for which the Company may be liable under this Guarantee. If prompt notice shall not be given to the Company, then all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of the Assured under this Guarantee unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

3. NO DUTY TO DEFEND OR PROSECUTE

The Company shall have no duty to defend or prosecute any action or proceeding to which the Assured is a party, notwithstanding the nature of any allegation in such action or proceeding.

4. COMPANY'S OPTION TO DEFEND OR PROSECUTE ACTIONS; DUTY OF ASSURED TO COOPERATE

Even though the Company has no duty to defend or prosecute as set forth in Paragraph 3 above:

(a) The Company shall have the right, at its sole option and cost, to institute and prosecute any action or proceeding, interpose a defense, as limited in Paragraph 4 (b), or to do any other act which in its opinion may be necessary or desirable to establish the correctness of the assurances set forth in Schedule A or to prevent or reduce loss or damage to the Assured. The Company may take any appropriate action under the terms of this Guarantee, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this Guarantee. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(b) If the Company elects to exercise its options as stated in Paragraph 4 (a) the Company shall have the right to select counsel of its choice (subject to the right of the Assured to object for reasonable cause) to represent the Assured and shall not be liable for and will not pay the fees of any other counsel, nor will the Company pay any fees, costs or expenses incurred by an Assured in the defense of those causes of action which allege matters not covered by this Guarantee.

(c) Whenever the Company shall have brought an action or interposed a defense as permitted by the provisions of this Guarantee, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from an adverse judgment or order.

(d) In all cases where this Guarantee permits the Company to prosecute or provide for the defense of any action or proceeding, the Assured shall secure to the Company the right to so prosecute or provide for the defense of any action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the Assured for this purpose. Whenever requested by the Company, the Assured, at the Company's expense, shall give the Company all reasonable aid in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or lawful act which in the opinion of the Company may be necessary or desirable to establish the correctness of the assurances set forth in Schedule A or to prevent or reduce loss or damage to the Assured. If the Company is prejudiced by the failure of the Assured to furnish the required cooperation, the Company's obligations to the Assured under the Guarantee shall terminate.

(continued)

5. PROOF OF LOSS OR DAMAGE

(a) In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Assured furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

(b) In addition, the Assured may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Guarantee, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Assured shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the Assured provided to the Company pursuant to this paragraph shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Assured to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in the above paragraph, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this Guarantee to the Assured for that claim.

6. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS: TERMINATION OF LIABILITY

In case of a claim under this Guarantee, the Company shall have the following additional options:

(a) To pay or tender payment of the Amount of Liability together with any costs, attorneys' fees, and expenses incurred by the Assured that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

(b) To pay or otherwise settle with the Assured any claim assured against under this Guarantee. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Assured that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay; or

(c) To pay or otherwise settle with other parties for the loss or damage provided for under this Guarantee, together with any costs, attorneys' fees, and expenses incurred by the Assured that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in 6 (a), (b) or (c) of this paragraph the Company's obligations to the Assured under this Guarantee for the claimed loss or damage, other than the payments required to be made, shall terminate, including any duty to continue any and all litigation initiated by the Company pursuant to Paragraph 4.

7. LIMITATION OF LIABILITY

(a) This Guarantee is a contract of Indemnity against actual monetary loss or damage sustained or incurred by the Assured claimant who has suffered loss or damage by reason of reliance upon the assurances set forth in Schedule A and only to the extent herein described, and subject to the Exclusions From Coverage of this Guarantee.

(b) If the Company, or the Assured under the direction of the Company at the Company's expense, removes the alleged defect, lien, or encumbrance or cures any other matter assured against by this Guarantee in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(c) In the event of any litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom.

(d) The Company shall not be liable for loss or damage to the Assured for liability voluntarily assumed by the Assured in settling any claim or suit without the prior written consent of the Company.

8. REDUCTION OF LIABILITY OR TERMINATION OF LIABILITY

All payments under this Guarantee, except payments made for costs, attorneys' fees and expenses pursuant to Paragraph 4 shall reduce the Amount of Liability under this Guarantee pro tanto.

9. PAYMENT OF LOSS

(a) No payment shall be made without producing this Guarantee for endorsement of the payment unless the Guarantee has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions, the loss or damage shall be payable within thirty (30) days thereafter.

10. SUBROGATION UPON PAYMENT OR SETTLEMENT

Whenever the Company shall have settled and paid a claim under this Guarantee, all right of subrogation shall vest in the Company unaffected by any act of the Assured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the Assured would have had against any person or property in respect to the claim had this Guarantee not been issued. If requested by the Company, the Assured shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The Assured shall permit the Company to sue, compromise or settle in the name of the Assured and to use the name of the Assured in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the Assured the Company shall be subrogated to all rights and remedies of the Assured after the Assured shall have recovered its principal, interest, and costs of collection.

(continued)

11. ARBITRATION

Either the Company or the Assured may demand that the claim or controversy shall be submitted to arbitration pursuant to the Title Insurance Arbitration Rules of the American Land Title Association ("Rules"). Except as provided in the Rules, there shall be no joinder or consolidation with claims or controversies of other persons. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the Assured arising out of or relating to this Guarantee, any service of the Company in connection with its issuance or the breach of a Guarantee provision, or to any other controversy or claim arising out of the transaction giving rise to this Guarantee. All arbitrable matters when the amount of liability is Two Million And No/100 Dollars ($2,000,000) or less shall be arbitrated at the option of either the Company or the Assured. All arbitrable matters when the amount of liability is in excess of Two Million And No/100 Dollars ($2,000,000) shall be arbitrated only when agreed to by both the Company and the Assured. Arbitration pursuant to this Guarantee and under the Rules shall be binding upon the parties. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court of competent jurisdiction.

12. LIABILITY LIMITED TO THIS GUARANTEE; GUARANTEE ENTIRE CONTRACT

(a) This Guarantee together with all endorsements, if any, attached hereto by the Company is the entire Guarantee and contract between the Assured and the Company. In interpreting any provision of this Guarantee, this Guarantee shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, or any action asserting such claim, shall be restricted to this Guarantee.

(c) No amendment of or endorsement to this Guarantee can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

13. SEVERABILITY

In the event any provision of this Guarantee, in whole or in part, is held invalid or unenforceable under applicable law, the Guarantee shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

14. CHOICE OF LAW; FORUM

(a) Choice of Law: The Assured acknowledges the Company has underwritten the risks covered by this Guarantee and determined the premium charged therefor in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of Guaranties of the jurisdiction where the Land is located.

Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims that are adverse to the Assured and to interpret and enforce the terms of this Guarantee. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b) Choice of Forum: Any litigation or other proceeding brought by the Assured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

15. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this Guarantee and shall be addressed to the Company at:

Chicago Title Insurance Company
P.O. Box 45023
Jacksonville, FL 32232-5023
Attn: Claims Department

END OF CONDITIONS

Housing Site Conditions and Constraints Assessment – Site 6 Addendum

Prepared for the State of California's 22nd District Agricultural Association and the City of Del Mar

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1 EXECUTIVE SUMMARY

1.1 Background

This addendum (Addendum) to the Housing Site Conditions and Constraints Assessment Study (Housing Site Assessment Study) is being conducted per the Exclusive Negotiating Rights Agreement (ENRA) executed between the City of Del Mar (City) and the State of California 22nd District Agricultural Association (District) in March 2024 that took effect April 15, 2024. The ENRA and site assessment implement the City's state-certified Housing Element by providing a path toward accomplishing the City's goal of developing affordable housing on the Fairgrounds property. The site assessment also supports the District's master site planning process and will help inform the ultimate selection of a development site for affordable housing on the Fairgrounds property. **Collectively, the Housing Site Assessment Study and Addendum intend to provide information to help the City and District identify the most feasible and desirable site for affordable housing development.**

The Housing Site Assessment Study and Addendum are funded through Housing Acceleration Program (HAP) grant funds that the City secured in 2023 through a HAP grant agreement between the City, the California Department of Housing & Community Development (HCD), and the San Diego Association of Governments. The City and District executed a Memorandum of Understanding in 2025, which allows for the District to use a portion of the City's grant funds to complete feasibility studies, including a site assessment.

Harris & Associates (Harris) was retained by the District to identify site locations that are feasible for the development of at least 61 units of affordable housing on a site that is 1.0 to 1.5 acres in size on the Del Mar Fairgrounds (Fairgrounds) property within the City of Del Mar. The ultimate objective of the Housing Site Assessment Study and Addendum is for the City and District to reach a mutual agreement on a feasible site based on the information collected and analyzed by Harris through multiple studies. The City recognizes that there are multiple feasible sites, and the goal is to have the housing site align with the master site planning and ENRA.

Previously, the District identified five potential housing sites, including three within the City of Del Mar (Sites 1–3), and two within the City of San Diego (Sites 4 and 5). In the Housing Site Assessment Study, Harris analyzed the feasibility of each of these sites based on several criteria (Objective Criteria) to help decision-makers better understand each site's development feasibility, finding that Sites 1–3 within the City of Del Mar satisfied all Objective Criteria for feasibility, while Sites 4 and 5 within the City of San Diego did not satisfy all of these criteria. After Harris completed the Housing Site Assessment Study, the District identified a sixth potential housing site located at the intersection of Via De La Valle and Jimmy Durante Boulevard within the City of Del Mar (Site 6). The primary focus of this Addendum is to analyze Site 6's feasibility for housing development through an analysis of site conditions and constraints.

1.2 Approach

Harris was tasked with analyzing potential development sites based on Objective Criteria to help decision-makers better understand each site's development feasibility. This Addendum

evaluates if Site 6 fulfills the established Objective Criteria based on information known at the time of the Addendum.

Previously, conceptual site plans and initial financial feasibility studies prepared by Keyser Marston Associates (KMA) and Stephen Dalton Architects (SDA) were presented to the Del Mar City Council in June 2022 (2022 KMA and SDA Study), with additional housing concepts prepared by SDA in April 2023 (2023 SDA Study). These studies, which are collectively referred to as the Existing Studies herein, served as a starting point for Harris' Housing Site Assessment Study and Addendum.

1.3 Objective Criteria

Objective Criteria used in this Addendum will help decision-makers better understand Site 6's development feasibility. The Objective Criteria used to evaluate the feasibility of Site 6 are consistent with the criteria used to analyze Sites 1–5. Harris worked with the City and District to establish these Objective Criteria, which are listed on **Figure 1-1**: Summary of Objective Criteria.

Figure 1-1: Summary of Objective Criteria

Financial feasibility under current market conditions and HCD regulations, including competitiveness for tax credit financing, is being assessed by Harris in a separate due diligence study to help stakeholders understand the comparative site suitability and feasibility (Financial Feasibility Memorandum). However, this Addendum analyzes Site 6's potential to be financially feasible and eligible for tax credit financing based on the findings observed in the Existing Studies.

1.4 Site 6 Overview

Analysis of site-specific locations for affordable housing on the Fairgrounds has been in process since 2021, which began with studies of two sites identified as Site 1 and Site 3, which were analyzed in the Housing Site Assessment Study. The Existing Studies prepared by KMA and SDA demonstrated development feasibility of these sites. In 2025, the District identified four additional sites to be studied for a total of six site-specific locations that are being studied for future consideration by the City and District (Potential Sites). While the first five sites (including Sites 1–3 in the City of Del Mar, and Sites 4 and 5 in the City of San Diego) were studied in the Housing Site Assessment Study, this Addendum analyzes the feasibility of the sixth site (Site 6), which is located on the Fairgrounds property and in the public right-of-way (ROW) within the City of Del Mar.

Specifications of Site 6 are summarized in **Table 1-1:** Overview of Potential Site 6 (City of Del Mar). **Figure 1-2**: Potential Site 6 – Aerial Overview, illustrates the location of Site 6 on the Fairgrounds property.

Table 1-1: Overview of Potential Site 6 (City of Del Mar)

Site #	Site Name	APN(s)	Acres
Site 6	Intersection Site	2982710300	0.80

Figure 1-2: Potential Site 6 – Aerial Overview

1.5 Findings

Site 6 does not satisfy the Objective Criteria for housing development feasibility. The following findings were noted in the analysis of Site 6, as summarized in **Table 1-2**: Potential Site 6 - Summary of Findings*:*

- **Lease Agreement Timing:** Site 6 is located within the City of Del Mar; therefore, the City would be able to report new units developed on these sites on its Housing Element Annual Progress Report to count toward its regional housing needs allocation (RHNA). However, the site is currently public ROW that is being used for mobility of high volumes of traffic year-round. To prepare the site for housing development, the affected intersection would need to be reconfigured such that the dual free northbound right-turn lanes would be removed, with a transition to a shared through/right-turn lane, according to the Transportation Analysis Site 6 Letter Report completed by LLG Engineers (LLG Site 6 Transportation Analysis). The series of actions that would need to be taken by multiple jurisdictions to redevelop the site into housing may risk delays to adhere to ENRA timelines (per original ENRA and ENRA First Amendment). Therefore, there is no basis to conclude that this site is feasible with respect to Lease Agreement timing.
- **Potential Financial Feasibility and Eligibility for Tax Credit Financing:** Site 6 encompasses only 0.80 acre of land, which is not currently developable. Per the Existing Studies, a site would need at least 1.0 acre of developable land to be considered feasible for 61 or more units of affordable housing; therefore, Site 6 is considered infeasible for this scale of development. The Financial Feasibility Memorandum includes amenity self-scores for Potential Sites 1–5 using the most recent Low-Income Housing Tax Credit scoring criteria and found that each of these sites are potentially eligible for maximum site amenity scores. While an amenity self-score was not conducted for Site 6, Harris believes that any housing development at this site would be eligible for tax credit financing per the findings of the Financial Feasibility Memorandum.
- **Environmental Constraints:** One environmental constraint identified to date is the flood hazard of Site 6. None of the Potential Sites, including Site 6, are located in the Regulatory Floodway zone. Site 6 is located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development at this site would require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.
- **Ability to be Implemented in Accordance with State and Local Requirements:** A housing project at Site 6 would be required to comply with the Federal Emergency Management Agency (FEMA) and California Coastal Commission (CCC) standards for development. Site 6 is not located on land within the Regulatory Floodway or within building-restricted areas imposed by the CCC.
- **No Associated Conflicts with Fairgrounds Operations and Events:** All Potential Sites, including Site 6, were identified by District staff with the understanding that a buffer from Fairgrounds operations could be designed for any of these locations. Furthermore, any site selected for housing would need to be designed to minimize/avoid conflicts with Fairgrounds operations and events. The City of Del Mar is currently undergoing street and paving improvements in the assumed Site 6 intersection area as part of a $3.5 million Capital Improvement Project (CIP) to improve mobility along Jimmy Durante Boulevard and Villa de la Valle, which has involved extensive coordination between City and District staff. The process to redevelop Site 6 into housing would directly conflict with this CIP. Furthermore, according to the LLG Site 6 Transportation Analysis, the intersection at this

site absorbs a significant volume of traffic, and the reconfiguration required to prepare this site for housing development would result in an operational failure in the flow of traffic at the affected intersection.

- **Public Health, Safety, and Security Concerns:** No Potential Sites (including Site 6) were deemed infeasible due to known public health, safety, and security concerns. As noted above, a buffer from Fairgrounds operations can be designed for all Potential Sites.

Table 1-2: Potential Site 6 – Summary of Findings

Objective Criteria	Site 6
Ability to Execute Lease Agreement within ENRA Negotiating Period	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units	No
Potential to be Eligible for Tax Credit Financing	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes
Ability to be Implemented in Accordance with State and Local Requirements	Yes
No Associated Conflicts with Fairgrounds Operations or Events	No
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes

2 BACKGROUND

2.1 Exclusive Negotiating Rights Agreement

This Addendum is being conducted per the ENRA executed between the City and District in March 2024 that took effect April 15, 2024. ENRA and site assessment implement the City's state-certified Housing Element by providing a path toward accomplishing the City's goal of developing affordable housing on the Fairgrounds property. The site assessment also supports the District's master site planning process and will help inform the ultimate selection of a development site for affordable housing on the Fairgrounds property. **The Housing Site Assessment Study and Addendum intend to provide information to help the City and District identify the most feasible and desirable site for affordable housing development.**

2.2 Funding

The Addendum is funded through HAP grant funds that the City secured in 2023 through a HAP grant agreement between the City, HCD, and the San Diego Association of Governments. The City and District executed a Memorandum of Understanding in 2025, which provides for the District to use a portion of the City's grant funds to complete feasibility studies, including a site assessment.

2.3 Purpose of Housing Site Assessment Study and Addendum

Harris was retained by the District to identify site locations that are feasible for development of at least 61 lower-income units on a site that is 1.0 to 1.5 acres in size on the Fairgrounds property within the City of Del Mar. The ultimate objective of the Housing Site Assessment Study and Addendum is for the City and District to reach a mutual agreement on a feasible site based on the information collected and analyzed by Harris through multiple studies. The City recognizes that there are multiple feasible sites, and the goal is to have the housing site align with the master site planning and ENRA.

3 APPROACH

Harris was tasked with analyzing the Potential Sites, including Site 6, to help decision-makers better understand each site's development feasibility. Harris worked with the City and District to establish the Objective Criteria outlined in Section 4, Objective Criteria.

In addition, several findings from the Existing Studies prepared in 2022 and 2023 were used to guide the analysis conducted in the Housing Site Assessment Study and this Addendum. Specifically, the Existing Studies established the following:

- It is financially feasible to develop at least 61 lower-income units on any site comprised of 1.0 to 1.5 acres of developable land within the City of Del Mar.
    - In the Existing Studies, SDA illustrated floor plans for potential developments within two previously analyzed Potential Sites (Site 1 and Site 3), indicating that the development of 61-unit projects was potentially feasible at these sites.
    - The additional sites recommended by the District for inclusion in this Study feature 1.5 acres of developable land.
- Development in Floodplain Overlay Zone (Federal Insurance Rate Map Zone AE), or any area defined as a 1 percent annual chance flood hazard zone according to FEMA National Flood Insurance Program data, will require that the first-floor level of any new development must be elevated above the Base Flood Elevation and floodproofed.
- The 2022 KMA and SDA Study notes that, based on topographic information supplied by SanGIS, the first floor of a new housing project will need to be set at least 8–10 feet above the existing grade.
- Sites located in the Coastal Zone within the jurisdiction of the CCC would be subject to compliance with the California Coastal Act protections for coastal resources and public scenic views, public access, and public health and safety protections from hazards.

4 OBJECTIVE CRITERIA

Harris evaluated the development feasibility of the Potential Sites based on Objective Criteria to help decision-makers better understand each site's development feasibility. Harris worked with the City and District to establish these Objective Criteria, listed in **Figure 4-1**: Summary of Objective Criteria:

Figure 4-1: Summary of Objective Criteria

If Site 6 fails to meet any of the Objective Criteria noted above, it is not considered feasible for the purpose of this Addendum.

4.1 Objective Criteria – Site Selection and Lease Agreement Timing

The Housing Site Conditions and Constraints Assessment and Addendum reports reflect the District's intent per the ENRA to provide the City with prospective development sites for consideration. Additional Harris studies will be completed by March 31, 2026, and will be supplemented by additional feasibility studies and a conceptual development program in process with the City. The intent is to facilitate consideration of the study findings and site opportunities by the District Board and Del Mar City Council by September 30, 2026.

Per the ENRA, the City and District are seeking mutual agreement on a site for affordable housing. Once a development site has been mutually agreed upon, the City and District will begin negotiations to execute a Lease Agreement such as where (1) the District would lease the development site to the City, and (2) the City would, or would cause a designee to, develop and operate the affordable housing development on the development site in accordance with California law and subject to the express approval of the District (Lease Agreement).

As communicated to the City in a January 15, 2026, "Letter of Inquiry," the HCD expects the City and District to reach mutual agreement on a site for affordable housing development and execute a ground lease by November 30, 2026, as a measure to demonstrate that affordable housing can feasibly be constructed on the Fairgrounds by June 2031. The ENRA is otherwise set to expire on April 15, 2027, unless extended.

4.2 Objective Criteria – Site Feasibility

4.2.1 Potential Financial Feasibility

According to the Existing Studies prepared during 2022 and 2023, it is feasible to develop at least 61 lower-income units on any site comprised of 1.0 to 1.5 acres of developable land within the City of Del Mar. Any Potential Site with fewer than 1.0 acre of developable land is considered infeasible per the Objective Criteria.

Financial feasibility under current market conditions and HCD regulations, including competitiveness for tax credit financing, is being assessed by Harris in the Financial Feasibility Memorandum.

4.2.2 Potential Eligibility for Tax Credit Financing

As noted in the 2022 KMA and SDA Study, affordable housing development requires a significant capital investment to be financially feasible. Affordable housing projects require external funding sources to address the financing 'gap' between the limited revenue that can be derived from income-restricted housing units and the cost to develop the units. The 2022 KMA and SDA Study noted that the use of external funding sources, such as tax credit programs, federal and state funding sources, or cash subsidies, would be necessary to address this financing gap for new affordable housing development.

A site's competitiveness for Low-Income Housing Tax Credit financing is determined, in large part, by the site's proximity to resources and amenities as defined by the California Code of Regulations, California Tax Credit Allocation Committee Regulations implementing the federal and state Low-Income Housing Tax Credit Laws. The 2022 KMA and SDA Study included a financial feasibility analysis that deemed Site 1 eligible for tax credits.

In addition, Harris conducted a virtual meeting with affordable housing developer stakeholders active in San Diego County on November 4, 2025 (Developer Stakeholder Meeting). Feedback collected during this meeting indicated that the resources and amenities near the Fairgrounds would help the Potential Sites qualify for tax credits, consistent with the findings noted in the 2022 KMA and SDA Study.

Harris' Financial Feasibility Memorandum includes a comprehensive financial feasibility analysis with a detailed breakdown of tax credit eligibility for Sites 1–5, including amenity scores based on the most recent Low-Income Housing Tax Credit scoring criteria. Furthermore, the Financial Feasibility Memorandum will summarize the input received in the Developer Stakeholder Meeting related to financial feasibility and eligibility for tax credit financing.

4.2.3 Environmental Constraints

One environmental constraint identified to date is that the Fairgrounds is located directly adjacent to the San Dieguito River and Lagoon, and is roughly 0.5 mile from the Pacific Ocean. As a result, the flood hazard varies considerably in different portions of the Fairgrounds property. Specifically, according to the FEMA National Flood Insurance Program data, the majority of the Fairgrounds property falls within a 1 percent annual chance flood hazard zone (also known as the 100-year

floodplain), with areas of the Fairgrounds closer to the San Dieguito River and the southern and western portions of the Fairgrounds property within a Regulatory Floodway zone.[1]

While residential development is prohibited in the Regulatory Floodway zone, development within the floodway fringe (which are portions of the 1 percent annual chance flood hazard zone beyond the Regulatory Floodway) is permitted subject to compliance with FEMA and building code standards. As noted in the 2022 KMA and SDA Study, new development on a 1 percent annual chance flood hazard zone (within the floodway fringe) would require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.

4.2.4 Implementable in Accordance with State and Local Requirements

All Potential Sites will need to comply with FEMA floodplain development standards and CCC standards for development with respect to Environmentally Sensitive Habitat Areas, as well as the flood and sea-level rise vulnerable locations.

In addition to the Regulatory Floodway areas noted above, which would not be feasible for housing development, certain areas within the Fairgrounds have been mandated by the CCC as building-restricted to restore and protect wetland habitat. Parcels with Environmentally Sensitive Habitat Areas-related constraints and building-restricted areas imposed by the CCC are not considered developable, and are therefore excluded from the sites considered for affordable housing development. Section 6, Findings, illustrates Site 6 in relation to areas within the Regulatory Floodway zone (as defined by FEMA National Flood Insurance Program data) and parcels that the CCC has mandated as building-restricted to restore and protect wetland habitat.

4.2.5 No Associated Conflicts with Fairgrounds Operations or Events

Presently, the entire Fairgrounds property is used to support a variety of uses, including the San Diego County Fair, the Del Mar Thoroughbred Club, and live music events at The Sound concert venue. Any location identified as a development site would need to be altered to minimize/avoid conflicts with Fairgrounds operations and events. The District staff identified the Potential Sites with the understanding that a buffer from Fairgrounds operations could be designed for any of the Potential Site locations.

4.2.6 Public Health, Safety, and Security Concerns

All Potential Sites will need to be developed to protect public health and safety during Fairgrounds operations and events or provide security for all on-site Fairgrounds development.

[1] The Regulatory Floodway is the portion of the floodplain that conveys most floodwaters. The Regulatory Floodway contains the channel of a river or other watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

5 SITE 6 OVERVIEW

5.1 Background – Site Selection

Analysis of site-specific locations for affordable housing on the Fairgrounds has been in process since 2021, which began with studies of Sites 1 and 3. The 2022 KMA and SDA Study demonstrated the development feasibility of Site 1, while the 2023 SDA Study included a floor plan indicating that Site 3 was suitable for the development of a project featuring at least 61 units. The Existing Studies were presented to the Del Mar City Council in June 2022 and April 2023, respectively. Both Site 1 and Site 3 were recommended for inclusion in the Housing Site Assessment Study, as the Existing Studies had demonstrated that both sites are potentially feasible. In 2025, the District identified three additional sites to be studied (Site 2 in the City of Del Mar and Sites 4 and 5 in the City of San Diego). Sites 1–5 were analyzed for feasibility in the Housing Site Assessment Study. Most recently, the City and District proposed to analyze Site 6, which is located at the intersection of Via De La Valle and Jimmy Durante Boulevard in the City of Del Mar.

The following section provides an overview of Site 6, which is analyzed for feasibility (pursuant to the Objective Criteria) in this Addendum.

5.2 Site 6 (City of Del Mar) Overview

Site 6, the Intersection Site, is Fairgrounds property (APN #2982710300) that encompasses approximately 0.80 acre of Fairgrounds property and public ROW and falls within the City of Del Mar's jurisdictional boundaries, as detailed in **Table 5-1**: Overview of Potential Site 6 (City of Del Mar), and shown in **Figure 5-1**: Potential Site 6 – Aerial Overview. The site includes segments of public ROW that are currently used for critical transportation infrastructure in a regional mobility network that provides direct access to Interstate 5 and includes dual free northbound right-turn lanes, sidewalks, and green space associated with the intersection at Via De La Valle and Jimmy Durante Boulevard. For reference, Sites 1 and 2 being studied are located on this same APN 2982710300 immediately west of the Jimmy Durante Boulevard public ROW.

Table 5-1: Overview of Potential Site 6 (City of Del Mar)

Site #	Site Name	APN(s)	Acres
Site 6	Intersection Site	2982710300	0.80

Figure 5-1: Potential Site 6 – Aerial Overview

It is important to note that the City of Del Mar is advancing a $3.5 million CIP street and paving project focused on improving mobility and roadway conditions around the intersection of Jimmy Durante Boulevard and Via De La Valle. The project includes pavement rehabilitation, resurfacing, and updated traffic striping within the existing roadway footprint to enhance safety, traffic flow, and multimodal visibility in this heavily traveled corridor. Because this segment serves as a primary access route to the Fairgrounds, the City has coordinated closely with the District to ensure that the improvements accommodate major event traffic and operational needs while maintaining mobility for residents and visitors.

Figure 5-2: Site 6 – Intersection Site – Aerial and Street View, provides the property outline and relative location of Site 6, as well as a street-level view of the existing property. Additional details regarding Site 6 are listed below.

Figure 5-2: Site 6 – Intersection Site – Aerial and Street View

- The District recommended the consideration of Site 6 as a potential affordable housing development site.
- Presently, the site includes Jimmy Durante Boulevard's dual free northbound right-turn lanes connecting to Via De La Valle east and Interstate 5 south.
- Site 6 is located within a 1 percent annual chance flood hazard zone within the floodway fringe. As noted in the 2022 KMA and SDA Study, future development occurring within Site 6 will require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.

6 FINDINGS

The following are Harris' findings regarding Site 6 based on the Objective Criteria detailed in this Addendum.

- **Lease Agreement Timing:** Site 6 is located within the City of Del Mar; therefore, the City would be able to report new units developed on these sites on its Housing Element Annual Progress Report to count toward its RHNA. However, the site is currently public ROW that is being used for mobility of high volumes of traffic year-round. To prepare the site for redevelopment into housing, a series of complex actions would need to be taken by multiple jurisdictions. Development of the site would require a reconfiguration of the affected intersection in which the dual free northbound right-turn lanes would be removed, with a transition to a shared through/right-turn lane, per the LLG Site 6 Transportation Analysis. Overall, this process may risk delays to adhere to ENRA timelines (per original ENRA and ENRA First Amendment). Therefore, there is no basis to conclude that this site is feasible with respect to Lease Agreement timing.
- **Potential Financial Feasibility and Eligibility for Tax Credit Financing:** Site 6 encompasses fewer than 1.0 acre of land, indicating that this site does not have the potential to be feasible for a housing development of at least 61 lower-income units, per the findings of the Existing Studies. Only sites with at least 1.0 acre of developable land are considered feasible for the development of 61 or more lower-income units per the ENRA Objective Criteria. The Financial Feasibility Memorandum includes amenity self-scores for Potential Sites 1–5 using the most recent Low-Income Housing Tax Credit scoring criteria and found that each of these sites are potentially eligible for maximum site amenity scores. While an amenity self-score was not conducted for Site 6, Harris believes that any housing development at this site would be eligible for tax credit financing per the findings of the Financial Feasibility Memorandum.
- **Environmental Constraints:** An environmental constraint identified to date is the flood hazard of Site 6. However, as shown on **Figure 6-1**: Flooding and CCC Constraints (Site 6)**,** Site 6 is not located within the Regulatory Floodway. Rather, Site 6 is located within the 1 percent annual chance flood hazard zone within the floodway fringe, indicating that new development on this site would require that the first-floor level must be elevated above the Base Flood Elevation and floodproofed.
- **Ability to be Implemented in Accordance with State and Local Requirements:** Site 6 would be required to comply with FEMA and CCC standards for development. As shown on **Figure 6-1**, Site 6 is not located on land within the Regulatory Floodway or within building-restricted areas imposed by the CCC.
- **No Associated Conflicts with Fairgrounds Operations and Events:** All Potential Sites, including Site 6, would need to be designed to minimize/avoid conflicts with Fairgrounds operations and events. The City of Del Mar is currently undergoing street and paving improvements in the assumed Site 6 intersection area as part of a $3.5 million CIP to improve mobility along Jimmy Durante Boulevard and Villa de la Valle, which has involved extensive coordination between City and District staff. The process to redevelop Site 6 into housing would directly conflict with this CIP. Furthermore, according to the LLG Site 6 Transportation Analysis, the intersection at this site absorbs a significant volume of

traffic, and the reconfiguration required to prepare this site for housing development would result in an operational failure in the flow of traffic at the affected intersection.

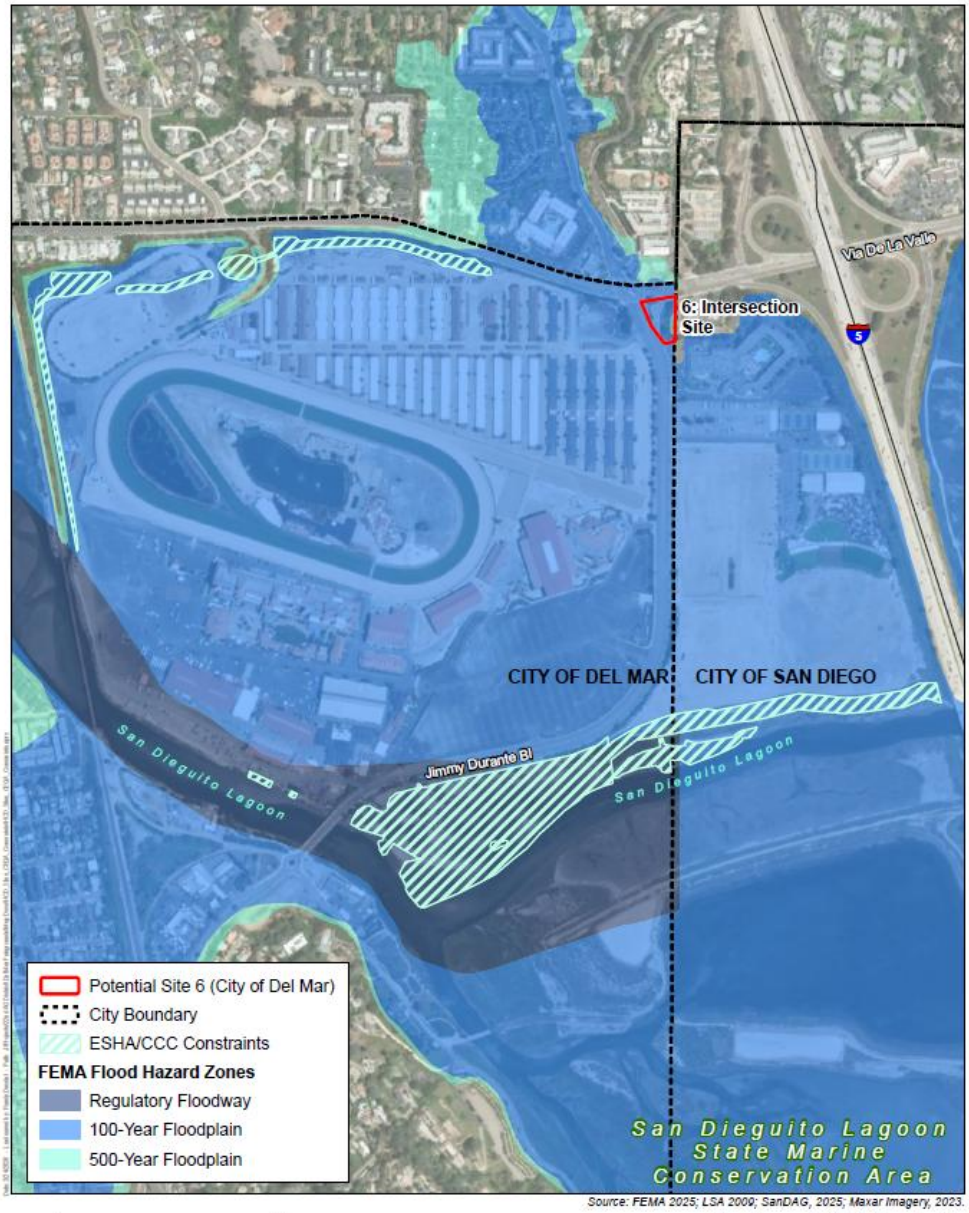
- **Public Health, Safety, and Security Concerns:** None of the Potential Sites (including Site 6) were deemed infeasible due to known public health, safety, and security concerns. A buffer from Fairgrounds operations can be designed for all Potential Sites.

Table 6-1: Potential Site 6 – Summary of Findings, summarizes the findings noted in the analysis of Site 6.

Table 6-1: Potential Site 6 – Summary of Findings

Objective Criteria	Site 6
Ability to Execute Lease Agreement within ENRA Negotiating Period	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units	No
Potential to be Eligible for Tax Credit Financing	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes
Ability to be Implemented in Accordance with State and Local Requirements	Yes
No Associated Conflicts with Fairgrounds Operations or Events	No
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes

Figure 6-1: Flooding and CCC Constraints (Site 6)



DATA SOURCES

Harris analyzed the following data sources while preparing the Addendum:

- City News Service. 2025. Jimmy Durante Boulevard in Del Mar prepares for $3.5M paving, striping project. KPBS Public Media. December 8. Accessed March 2026. https://www.kpbs.org/news/2025/12/08/jimmy-durante-boulevard-in-del-mar-prepares-for-3-5m-paving-striping-project.
- City of Del Mar. 2023. Appendix E: Phase I Studies (Public Sites). In 6th Cycle Housing Element Update (2021–2029). City of Del Mar. Accessed March 2026. https://www.delmar.ca.us/DocumentCenter/View/8572/Appendix-E---Phase-I-Studies_FINAL.
- City of Del Mar. 2025. *Pavement and traffic striping improvements on Jimmy Durante Boulevard* (Agenda Report). December 1. Accessed March 2026. https://www.delmar.ca.us/DocumentCenter/View/11669/Item-7---JDB-Pavement-and-Striping-Improvements-Update.
- SDA (Stephen Dalton Architects). 2023. Summary of Concepts Prepared for City of Del Mar Housing Element Program 3A (Fairgrounds Housing). April 25.
- City of Del Mar and 22nd District Agricultural Association. 2024a. Exclusive Negotiating Rights Agreement (Fairgrounds). April 15.
- City of Del Mar and 22nd District Agricultural Association. 2024b. First Amendment to Fairgrounds Affordable Housing Exclusive Negotiating Rights Agreement (ENRA). December 31.
- FEMA (Federal Emergency Management Agency). 2025. National Flood Insurance Program (NFIP) Flood Map Service Center.
- LLG Engineers, Del Mar HAP Transportation Analysis Site 6 Letter Report. February 20, 2026.
- Place, L. (2025, December 3). *Del Mar plans $3.5M paving, restriping on Jimmy Durante Blvd*. The Coast News Group. Accessed March 2026. https://thecoastnews.com/del-mar-plans-3-5m-paving-restriping-on-jimmy-durante-blvd.

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Subject: **Del Mar Fairgrounds Affordable Housing 6th Site**
Del Mar, California

Linscott, Law and Greenspan, Engineers (LLG) has prepared this letter report to detail analysis of the **6th potential site** for the Del Mar Fairgrounds Affordable Housing project. Analysis for sites #1 through #5 was performed in the report titled *Transportation Analysis Del Mar Affordable Housing*, prepared by LLG Engineers January 2026 (***Attachment A***).

PROJECT DESCRIPTION

The 22nd District Agricultural Association (District) is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property (Property) which the District would be willing to make available for the development of affordable housing. In its 6th Cycle Housing Element Update, the City identified and included a portion of the Property in the Housing Element residential sites inventory as having potential to be developed to accommodate affordable housing units. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. This study of potential affordable housing on Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development (HCD) HAP Cycle 2.

Six (6) potential Project site locations are being considered; four (4) within the City of Del Mar and two (2) within the City of San Diego. The six potential locations are as follows:

- **Site 1: East Main Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southwest corner of the intersection

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of Jimmy Durante Boulevard & Via De La Valle, north of the East Main Stable Gate driveway. Located at the existing "East Main Stable Gate" horse boarding stables.

- **Site 2: South of Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southwest quadrant of the intersection of Jimmy Durante Boulevard & Via De La Valle, approximately 500 feet south of Via De La Valle, south of the East Main Stable Gate driveway. Located south of the existing "East Main Stable Gate" horse boarding stables.
- **Site 3: Adjacent to Fire Station Site –** Within the City of Del Mar on Fairgrounds Property. Located adjacent to the existing "Del Mar Fire Department" fire station.
- **Site 4: Surf and Turf RV Park Site –** Within the City of San Diego. Located on the northeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing Del Mar Fairgrounds Surf & Turf RV Park, north of Turf Road.
- **Site 5: Dirt Lot Site –** Within the City of San Diego. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing "Del Mar Horsepark" dirt parking lot.
- **Site 6: Intersection Site** – Within the City of Del Mar. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Via De La Valle.

The six (6) potential housing sites vary in size. ***Table 1*** summarizes the location and acreage of the sites.

TABLE 1
POTENTIAL HOUSING SITES ACREAGE

Site Number	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	2982710300	City of Del Mar	1.5
2	South of Stable Gate Site	2990300500, 2990302200	City of Del Mar	1.5
3	Adjacent to Fire Station Site	2990302200	City of Del Mar	1
4	Surf and Turf RV Park Site	2990420300	City of San Diego	1.5
5	Dirt Lot Site	2990420300	City of San Diego	1.5
6	Intersection Site	2982710300	City of Del Mar	0.8

All six sites are approximately 1 to 1.5-acres in size, with the 6th site comprising 0.8 acres. For the purpose of this letter report, the assumption is that a prospective housing project would include at least 61 units of lower income housing in a housing project that is a 100% multi-family lower income affordable housing development or a mixed income project, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022-2023).

Figure 1 depicts the Vicinity Map. ***Figure 2*** depicts the Project Area Map and ***Figure 3*** shows the potential housing site locations.

This letter report focuses on Site #6.

EXISTING CONDITIONS

A detailed description of the existing street network in the study area is provided in the *Transportation Analysis* report (*Attachment A*).

Site #6 is located at the intersection of Jimmy Durante Boulevard & Via de la Valle. The following is a description of Jimmy Durante Boulevard and Via de la Valle:

Via De La Valle

Via De La Valle is currently constructed as a two-lane undivided roadway with a two-way left-turn lane. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

Jimmy Durante Boulevard

Jimmy Durante Boulevard is currently constructed as a four-lane undivided roadway with a two-way left-turn lane between Via De La Valle and Jimmy Durante Way. Jimmy Durante Boulevard transitions into a two-lane divided roadway south of San Dieguito Drive. Contiguous sidewalks are provided on the west side of the roadway. Curbside parking is prohibited on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

Figure 4 shows an existing conditions diagram, including signalized intersections and lane configurations. ***Figure 5*** shows the Existing Traffic Volumes.

ACTIVE TRANSPORTATION DISCUSSION

The existing transportation pedestrian, bicycle, and transit network is described below, and shown on ***Figure 6***:

- ***Pedestrian Network*** – Contiguous sidewalks are provided along both sides of Highway 101, Camino Del Mar, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard. .

- ***Bicycle Network*** – Currently, Class II bike lanes are provided along Highway 101, Camino Del Mar, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard. .

- ***Transit*** – The North County Transit District operates bus and rail services in close proximity of the Project. The bus routes serving the immediate Project area include NTCD routes 101 and 308. A description of each route is provided below.

  - ***Bus Route* 101** runs between Oceanside and VA/UCSD/UTC. The route runs along Highway 101 and Camino Del Mar. Weekday service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM. Weekend service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM. The closest Route 101 bus stop to all 5 potential housing sites is located at the Hwy 101 & Via De La Valle intersection.

  - ***Bus Route 308*** runs between Solana Beach and Escondido. The route runs along Lomas Santa Fe and Valley Avenue. Weekday service begins at 5:00 AM with 60-minute headways and ends at 9:10 PM. Weekend service begins at 7:00 AM with 60-minute headways and ends at 9:00 PM. The closest Route 308 bus stop to all 5 potential housing sites is located at Valley Av & Highland Dr (just north of Jimmy Durante Blvd & Via De La Valle).

  - The ***COASTER*** runs between San Diego Santa Fe Depot and Oceanside with 40-minue headways. There is a total of eight (8) stops along this route. The COASTER has a stop at the Solana Beach Transit Center, located approximately 400 feet north of the intersection of Hwy 101 & Lomas Santa Fe Drive. COASTER service provides thirty (30) daily trips on the weekdays with an additional two (2) trips on Fridays. It also provides twenty (20) daily weekend trips.

  - ***Future Transit Services*** – As part of SANDAG's adopted 2021 Regional Plan for the North Coast corridor, Next Generation Rapid bus service (Rapid bus) identified as Rapid 473 is planned to connect Oceanside to Solana Beach to UTC/UC San Diego via Highway 101 Coastal

Communities with a build-out year of 2035. The connecting corridors identified in of SANDAG's adopted 2021 Regional Plan are SR 56, CCT (Coast, Canyons, and Trails), North County Corridor, and SB2S (South Bay to Sorrento Comprehensive Multimodal Corridor Plan).

The planned Next Generation Rapid bus service (Rapid 473), identified in SANDAG's adopted 2021 Regional Plan, would provide future residents of the proposed housing development with enhanced regional transit connectivity throughout North County and the greater San Diego region.

South of Solana Beach, Rapid 473 is intended to serve the UTC area, including the UTC Transit Center near the Westfield UTC Mall on Genesee Avenue. This transit center provides direct connections to UC San Diego via both local bus service and the Mid-Coast Trolley (Blue Line).

The UTC Transit Center also functions as a major regional hub, allowing riders to continue travel south via the trolley to destinations such as downtown San Diego, South Bay communities, and the international border, or eastward via connecting bus services toward East County. As a result, the planned Rapid bus service would significantly expand access to employment, education, healthcare, and regional services for future residents of the proposed housing, supporting the project's consistency with regional mobility, sustainability, and housing–transportation integration goals.

SITE CONSTRAINTS AND CIRCULATION

Site #6 is located at the intersection of Jimmy Durante Boulevard and Via de la Valle. The development requires the following modifications:

- Intersection Reconfiguration: Removal of the dual free northbound (NB) right-turn lanes at the Jimmy Durante Blvd / Via de la Valle intersection.
- Lane Modification: Modification of the existing NB through lane to a shared through/right-turn lane.
- Site Access: A single Right-In / Right-Out (RIRO) driveway on Jimmy Durante Boulevard.

METHODOLOGY

The Project study area, analysis scenarios, and analysis methodology in this letter report is consistent with the *Transportation Analysis* (see Section 5.0 and Section 6.0 of *Attachment A*).

It should be noted that the "with Project" scenarios analysis in this letter report assumes the incorporation of the proposed removal of the dual free-right turn lanes and the conversion of the NB through lane to a shared through/right-turn lane at Intersection #2.

TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

Due to the different alternatives for the proposed housing project, LLG calculated the trip generation for four alternatives.

The Project proposes six potential housing site locations. All six sites are approximately 1 to 1.5-acres in size and would include a multi-family lower income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing.

Affordable housing and senior affordable housing generate trips at different rates. Therefore, for the sake of consistency and simplicity, all technical reports prepared by LLG assume the Project development would be the alternative calculated to generate the highest number of trips, which provides a conservative analysis. This report assumes the Project will construct 61 units of affordable multi-family housing and 21 units of market rate multi-family housing.

Table 2 summarizes the traffic generation assuming the Project development is 61 units of affordable multi-family housing and 21 units of market rate multi-family housing. The project is calculated to generate 497 ADT with 39 AM peak hour trips (11 inbound and 28 outbound) and 48 PM peak hour trips (29 inbound / 19 outbound).

The distribution of project trips was based on the location of likely destinations for the residential project traffic in this area, including shopping opportunities, schools and employment. The proximity of the project to I-5 was also taken into account. While family housing and senior housing would not have identical trip distributions, the distributions would be similar and since family housing was found to be the highest trip generator, this land use type was used as the basis for the trip distribution.

Figure 7 shows the trip distribution. This figure shows that 70% of peak commuter trips are estimated to be oriented to / from I-5 with 13% into Solana Beach and 7% towards Del Mar. The remaining 10% are oriented to Via De La Valle east of I-5.
It is important to note that the Regional Project Traffic Distribution for all five potential sites is the same. However, the Project Traffic Distribution at the driveways/access points varies depending on the site location.

The proposed access driveway of Site #6 is a right-in / right-out driveway connecting to Jimmy Durante Boulevard.

Figure 8 depicts the Project traffic volumes for Site #6.

TABLE 2
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs) [a]		AM Peak Hour					PM Peak Hour				
		Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Affordable Housing – Income Limits (223)	61 DU	[b]	367	[c]	29:71	9	21	30	[d]	59:41	22	15	37
Multifamily Housing – Low-Rise; Not Close to Transit (220)	21 DU	6.21 /DU	130	0.41/ DU[e]	24:76	2	7	9	0.52/ DU[e]	62:38	7	4	11
Total	**82 DU**		**497**			**11**	**28**	**39**			**29**	**19**	**48**

Footnotes:

a. ADT = Average Daily Traffic
b. Fitted curve equation: T = 3.73(X) + 139.35
c. Fitted curve equation: T = 0.21(X) + 17.21
d. Fitted curve equation: Ln(T) = 0.72 Ln(X) + 0.64
e. Due to the small number of units proposed, ITE's fitted curve equation for this use type results in an overly conservative trip rate of approximately 11 ADT per DU. ITE's average rate of 6.21 ADT/DU is a more realistic assumption and is in line with SANDAG and City of San Diego rates of 6 ADT / DU for the same use type.

General Notes:

1. DU = Dwelling Units
2. Rates are based on ITE Trip Generation Manual, 12th Edition.
3. (###) = ITE Land Use Code

EXISTING + PROJECT ANALYSIS

Existing + Project is defined as the Existing day traffic plus the traffic generated by the Project Site #6.

Note: 'With Project' analysis for Site #6 incorporates the proposed removal of the dual free-right turn lanes and the conversion of the NB through lane to a shared through/right-turn lane at Intersection #2.

Figure 9 shows the Existing + Project traffic volumes.

Table 3 summarizes the Existing without and with Project peak hour intersection operations. As seen in *Table 3*, under Existing without Project traffic conditions, all intersections are calculated to operate at LOS D or better. Under Existing + Project conditions, all intersections are calculated to continue to operate at LOS D or better, with the exception of the following:

- Intersection #2 - Jimmy Durante Boulevard & Via de la Valle (LOS E/F during AM/PM peak hours)

This failing LOS can be attributed to the removal of the dual free-right turn lanes and the conversion of the NB through lane to a shared through/right-turn lane as a part of the development of the site.

Based on the City of Del Mar Transportation Impact Guidelines within its *City of Del Mar CEQA Guidelines* (dated June 1, 2020), improvements would be required at Jimmy Durante Boulevard & Via de la Valle as the Project (Site #6) adds 2 or more seconds of delay and causes the average intersection delay to be LOS E or F during the peak hour.

Attachments B and C include the Existing without and with Project (Site #6) peak hour intersection analysis worksheets, respectively.

TABLE 3
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE #6

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?[d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	**40.8**	**D**	**66.0**	**E**	**25.2**	**YES**
		PM	**37.2**	**D**	**195.2**	**F**	**158.0**	
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.4	B	10.5	B	0.1	No
		PM	0.0	A	0.0	A	0.0	No
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.4	B	14.5	B	0.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	12.8	B	12.8	B	0.0	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per City of Del Mar Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

OPENING DAY (YEAR 2028) ANALYSIS

To forecast future traffic volumes for Opening Day (Year 2028) conditions, the SANDAG ABM2+ model was first utilized to determine Year 20250 volumes. Year 2028 traffic volumes were then developed based on a calculated ambient growth factor between Existing Year 2025 and future Year 2050 traffic volumes.

A comparison between SANDAG Year 2050 traffic volumes and existing Year 2025 traffic volumes shows an average growth of 0.45% per year. To be conservative, LLG utilized an ambient growth rate of 1% per year for 3 years to calculate Year 2028 traffic volumes.

Note: 'With Project' analysis for Site #6 incorporates the proposed removal of the dual free-right turn lanes and the conversion of the NB through lane to a shared through/right-turn lane at Intersection #2.

Figure 10 shows the Opening Day (Year 2028) without Project traffic volumes. ***Figure 11*** shows the Opening Day (Year 2028) with Project (Site #6) traffic volumes.

Table 4 summarizes the Opening Day (Year 2028) without and with Project peak hour intersection operations. As seen in *Table 4*, under Opening Day (Year 2028) without Project conditions, all intersections are calculated to operate at LOS D or better. Under Opening Day (Year 2028) + Project conditions, all intersections are calculated to continue to operate at LOS D or better, with the exception of the following:

- Intersection #2 - Jimmy Durante Boulevard & Via de la Valle (LOS E/F during AM/PM peak hours)

This failing LOS can be attributed to the removal of the dual free-right turn lanes and the conversion of the NB through lane to a shared through/right-turn lane as a part of the development of the site.

Based on the City of Del Mar Transportation Impact Guidelines within its *City of Del Mar CEQA Guidelines* (dated June 1, 2020), improvements would be required at Jimmy Durante Boulevard & Via de la Valle as the Project (Site #6) adds 2 or more seconds of delay and causes the average intersection delay to be LOS E or F during the peak hour.

Attachments D and E include the Opening Day (Year 2028) without and with Project (Site #6) peak hour intersection analysis worksheets, respectively.

TABLE 4
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE #6

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?[d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	**42.0**	**D**	**71.5**	**E**	**29.5**	**YES**
		PM	**37.9**	**D**	**203.2**	**F**	**165.3**	
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.0	No
		PM	19.2	B	19.3	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.5	B	10.5	B	0.0	No
		PM	0.0	A	0.0	A	0.0	No
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.8	B	14.8	B	0.0	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.1	B	0.0	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per City of Del Mar Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

CONCLUSION AND RECOMMENDATION

Based on the intersection operations analysis, the development of Site #6 results in the failure of the intersection of Via de la Valle and Jimmy Durante Boulevard (Intersection #2). The required reconfiguration (the removal of the dual free northbound right-turn lanes and the transition to a shared through/right-turn lane) increases delay to unacceptable levels.

Under both Existing + Project and Opening Day (Year 2028) + Project conditions, Intersection #2 is calculated to operate at LOS E or F during peak hours. This stands in contrast to the analysis of Sites 1-5, where all study intersections were calculated to continue operating at an acceptable LOS D or better. Given the high volumes of traffic at this location, the operational failure caused by the intersection reconfiguration represents a significant impact that cannot be mitigated.

Beyond the operational failures, Site #6 presents several critical constraints that impede its viability for housing development:

- The site area is currently less than 1.0 acre and consists entirely of active public right-of-way (ROW) used for high-volume traffic mobility year-round.
- To establish a developable site area, a series of complex actions would be required by multiple jurisdictions to vacate existing major street locations.
- Development of this site directly conflicts with the City of Del Mar's current $3.5 million Capital Improvement Project (CIP). This project is currently undergoing street and paving improvements to enhance mobility at the very intersection Site #6 would require reconfiguring. This involves significant prior coordination between City and District staff that would be rendered obsolete by the development of this site.

Due to the unacceptable operational failure of Intersection #2 and the constraints related to land vacation and existing CIP investments, Site #6 is determined to be technically and logistically infeasible.

Unlike Sites #1-5, which provide viable opportunities for the Del Mar Affordable Housing project with minimal impact on the surrounding transportation network, Site #6 is not recommended for further consideration.

Please let us know if you have any questions. Thank you.

Sincerely,

Linscott, Law & Greenspan, Engineers

John Boarman, P.E.
Principal

Amelia Giacalone
Senior Transportation Planner

cc: File

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Figure 2 - Project Area Map
Figure 3 - Potential Housing Site Locations
Figure 4 - Existing Conditions Diagram
Figure 5 - Existing Traffic Volumes
Figure 6 - Transit Mobility Network
Figure 7 - Project Traffic Distribution
Figure 8 - Project Traffic Volumes – Site #6
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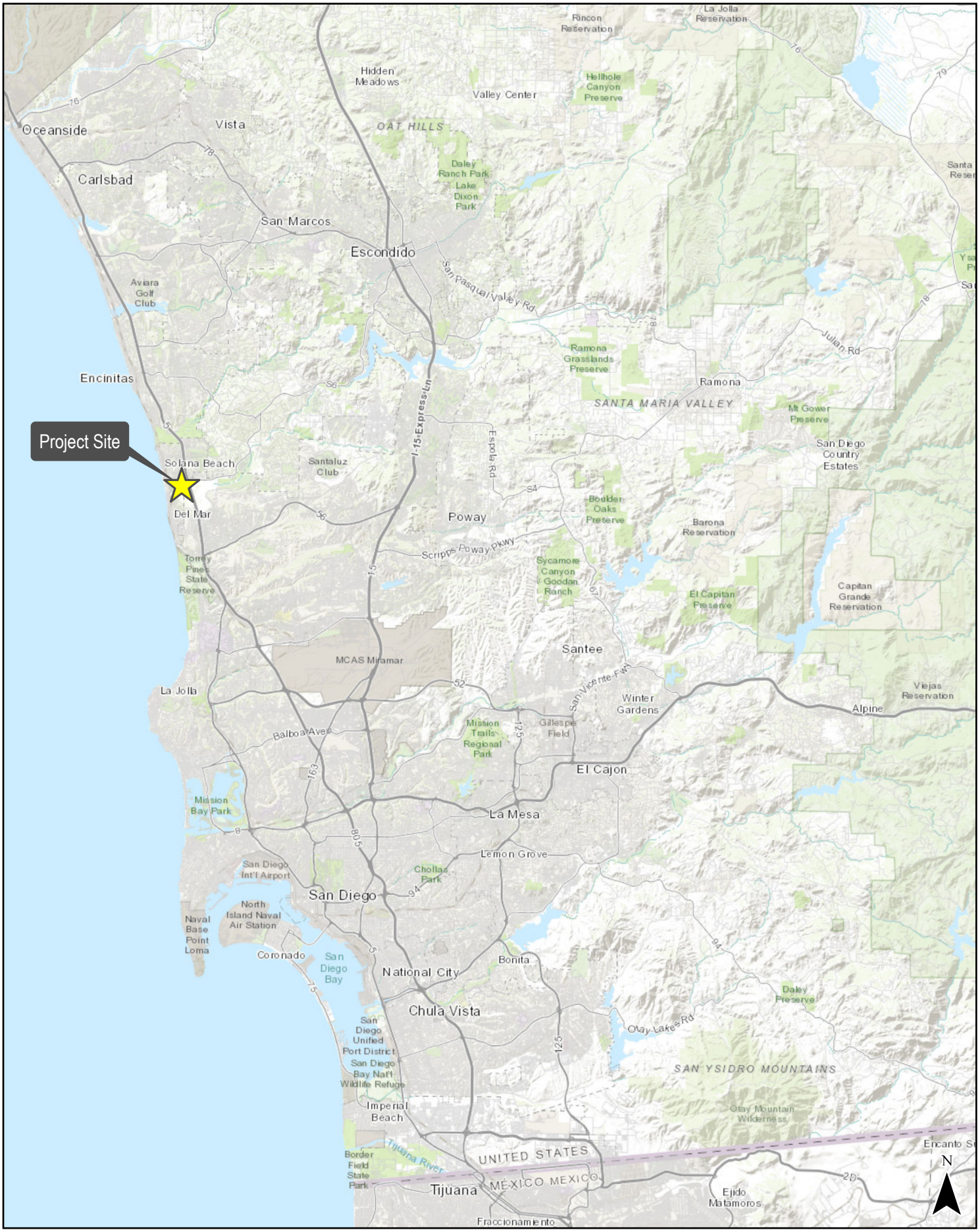
Attachments:

A. Transportation Analysis Del Mar Affordable Housing, prepared by LLG, January 2026
B. Peak Hour Intersection Analysis Worksheets - Existing
C. Peak Hour Intersection Analysis Worksheets – Existing + Project (Site #6)
D. Peak Hour Intersection Analysis Worksheets – Year 2028 without Project
E. Peak Hour Intersection Analysis Worksheets – Year 2028 + Project (Site #6)



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SanGIS, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

Figure 1
Vicinity Map

LLG

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Figure 2

Project Area Map

Del Mar Fairgrounds / Affordable Housing

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Figure 3
Potential Housing Site Locations

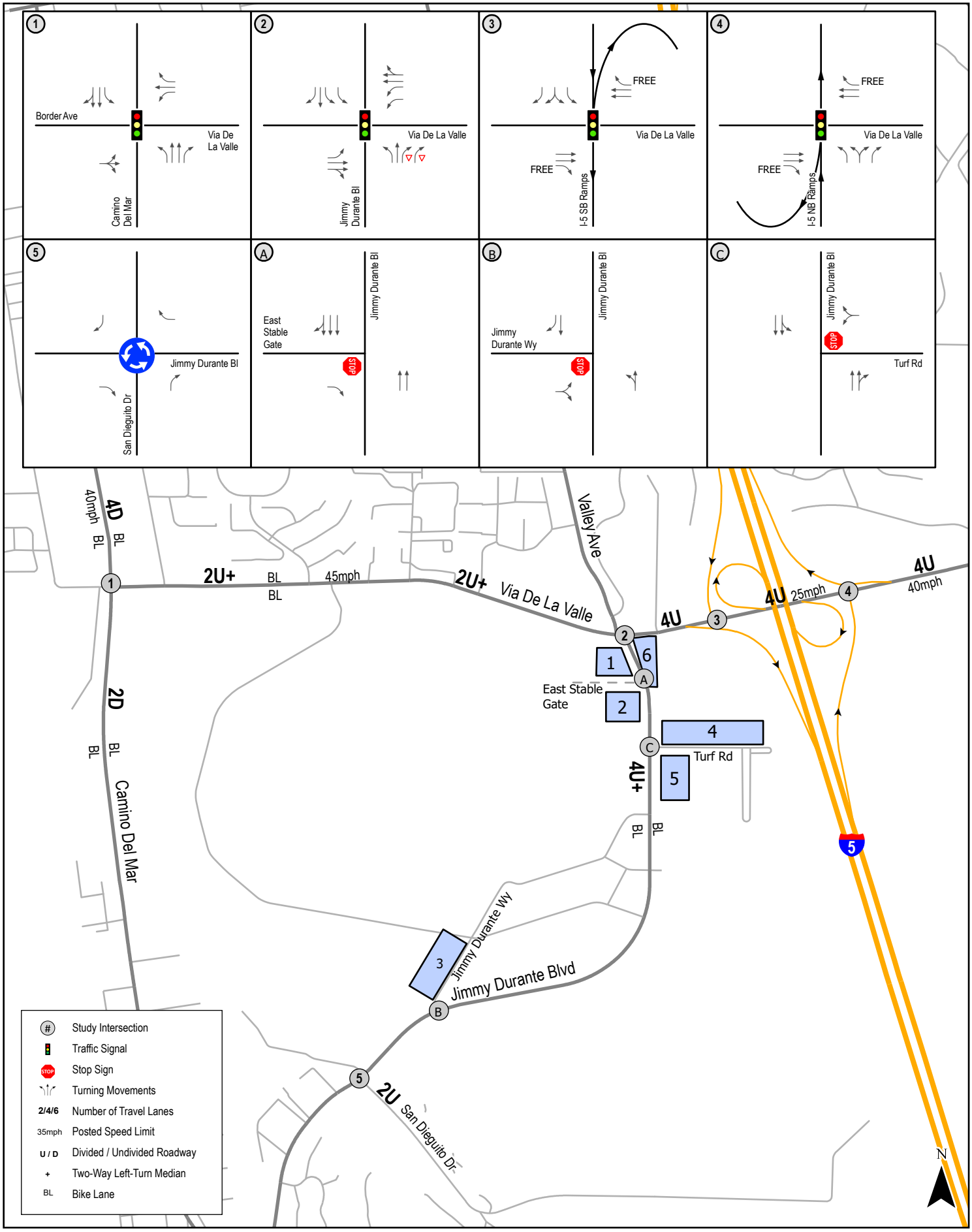

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Figure 4
Existing Conditions Diagram

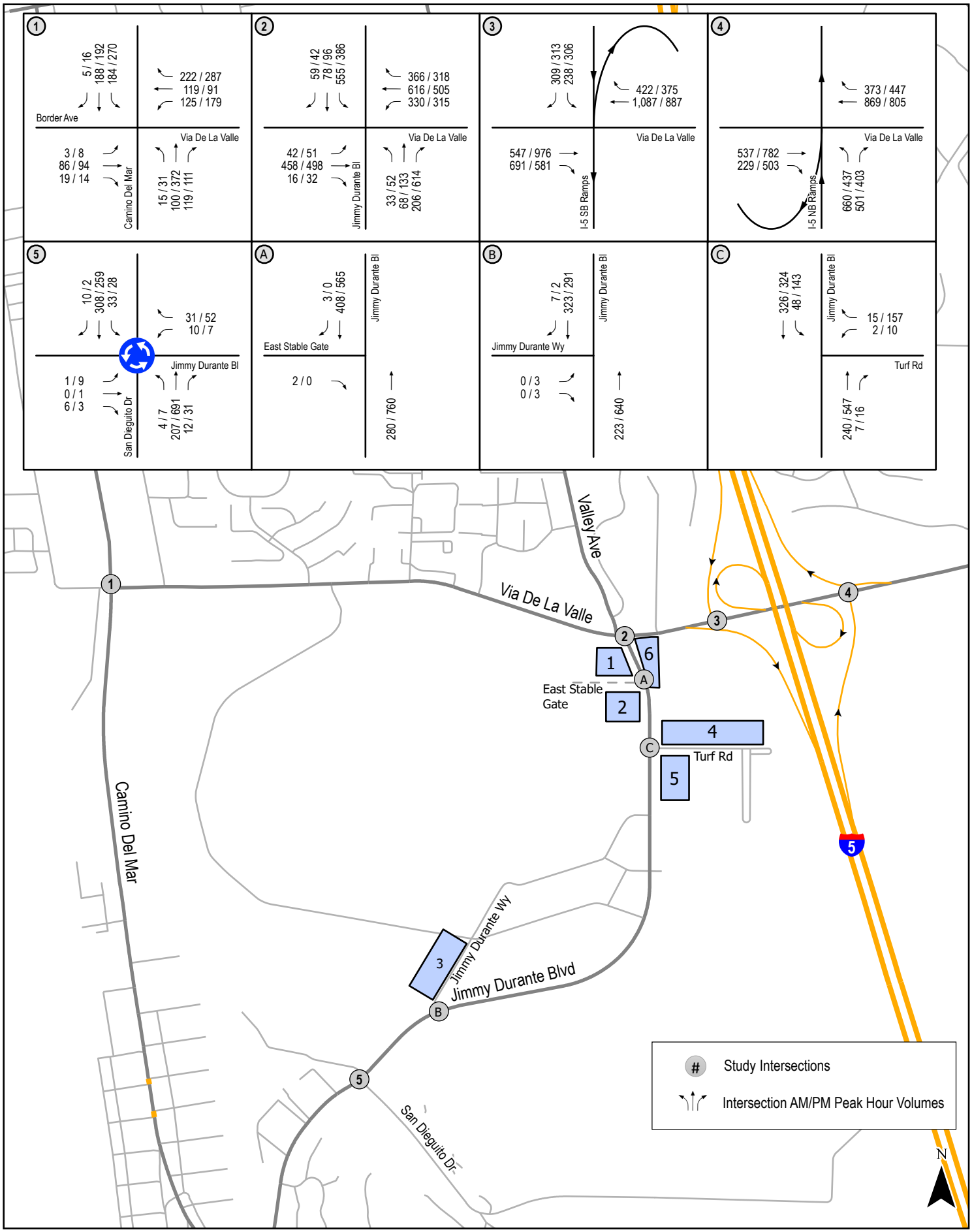

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Figure 5
Existing Traffic Volumes

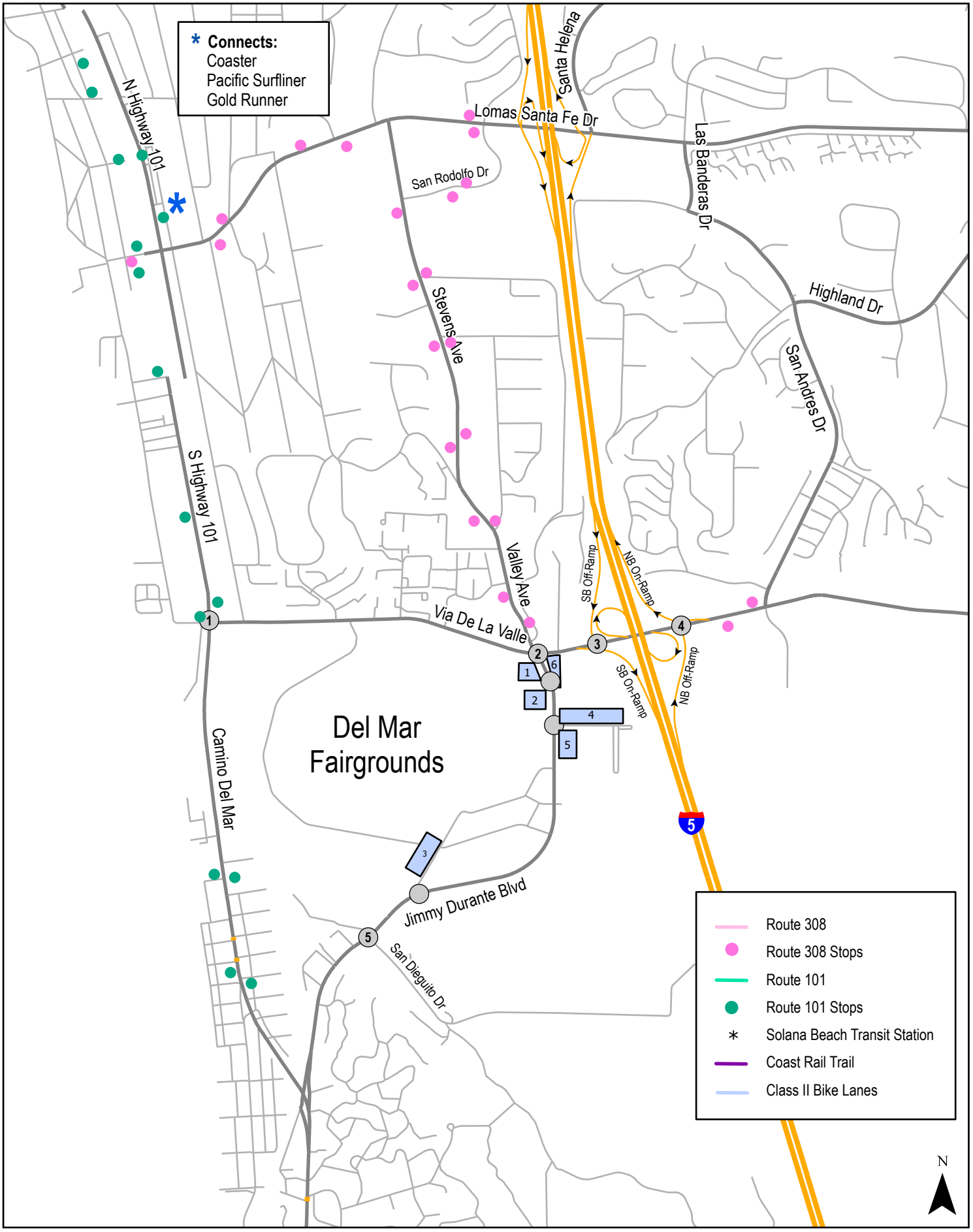

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Figure 3-3
Transit Mobility Network

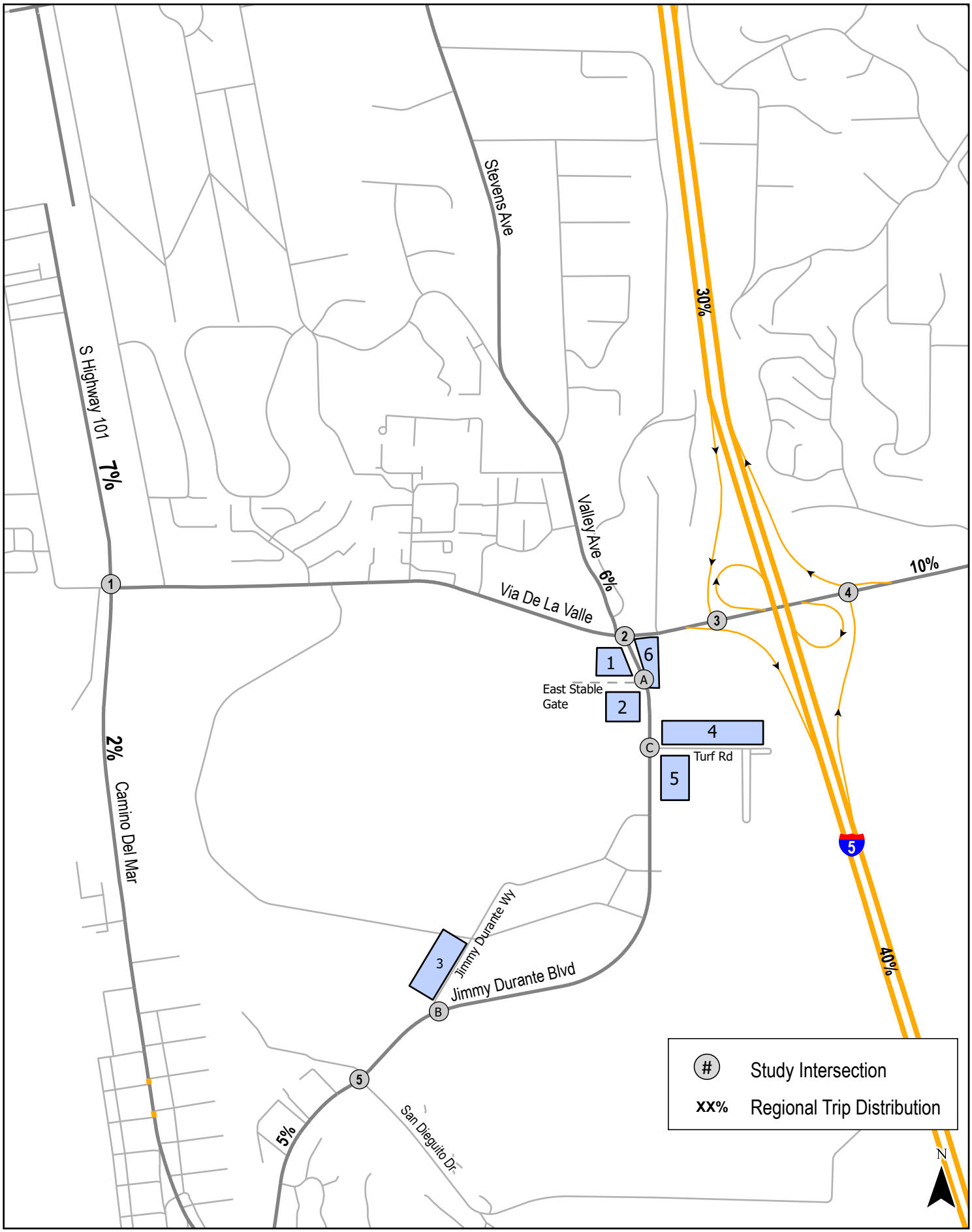

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Figure 7
Project Traffic Distribution

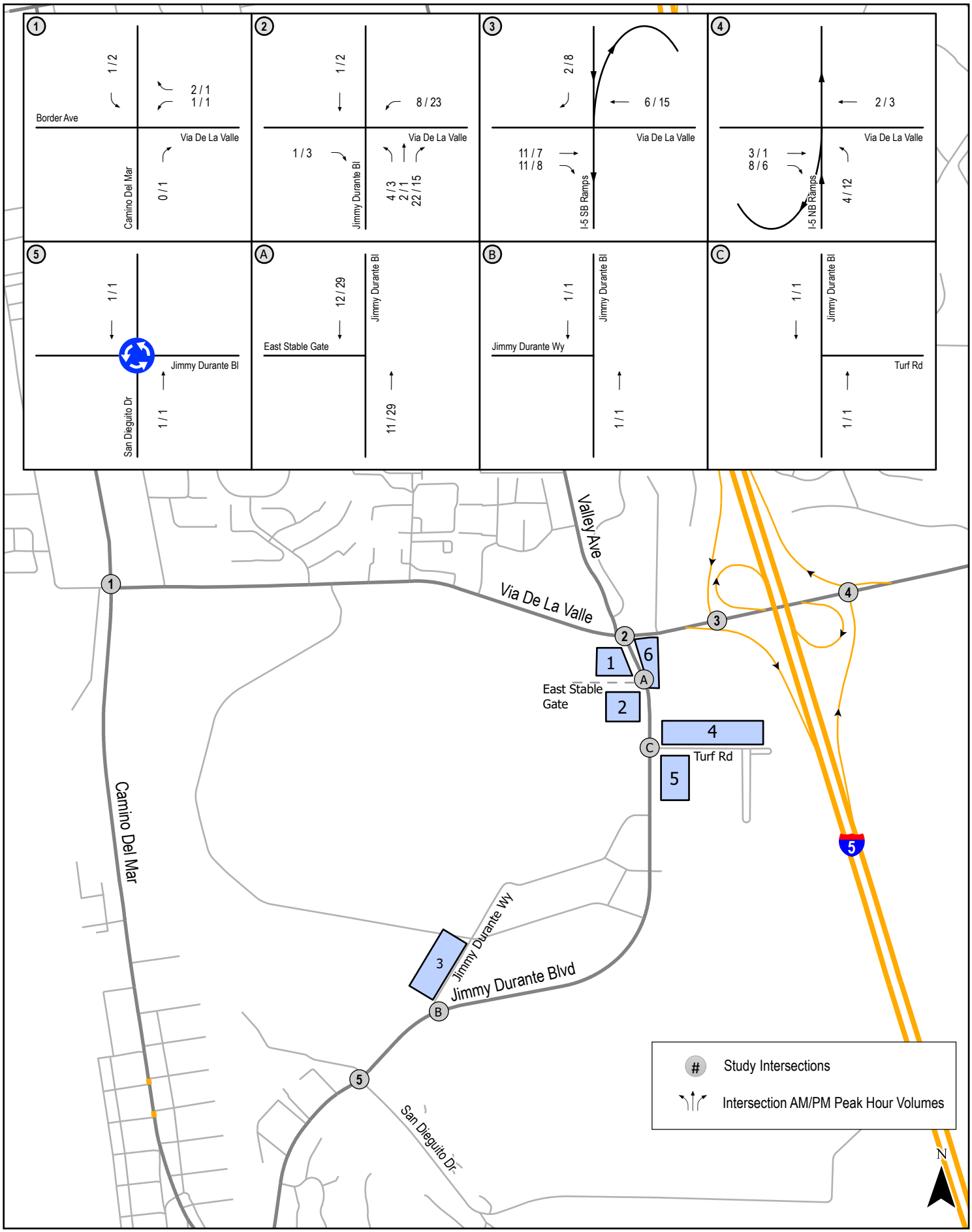

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Figure 8
Site 6 Project Traffic Volumes

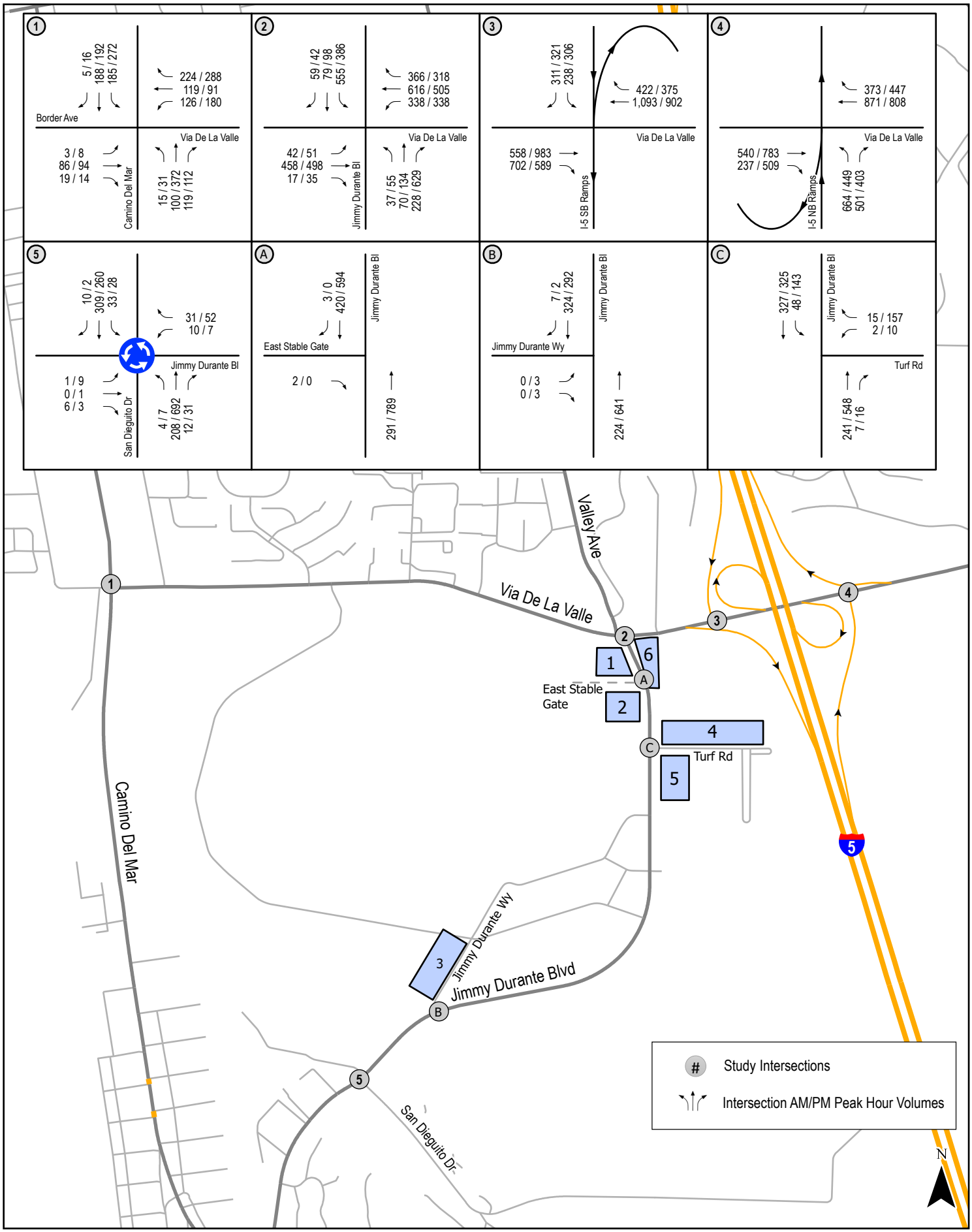

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Figure 9
Existing + Site 6 Project Traffic Volumes

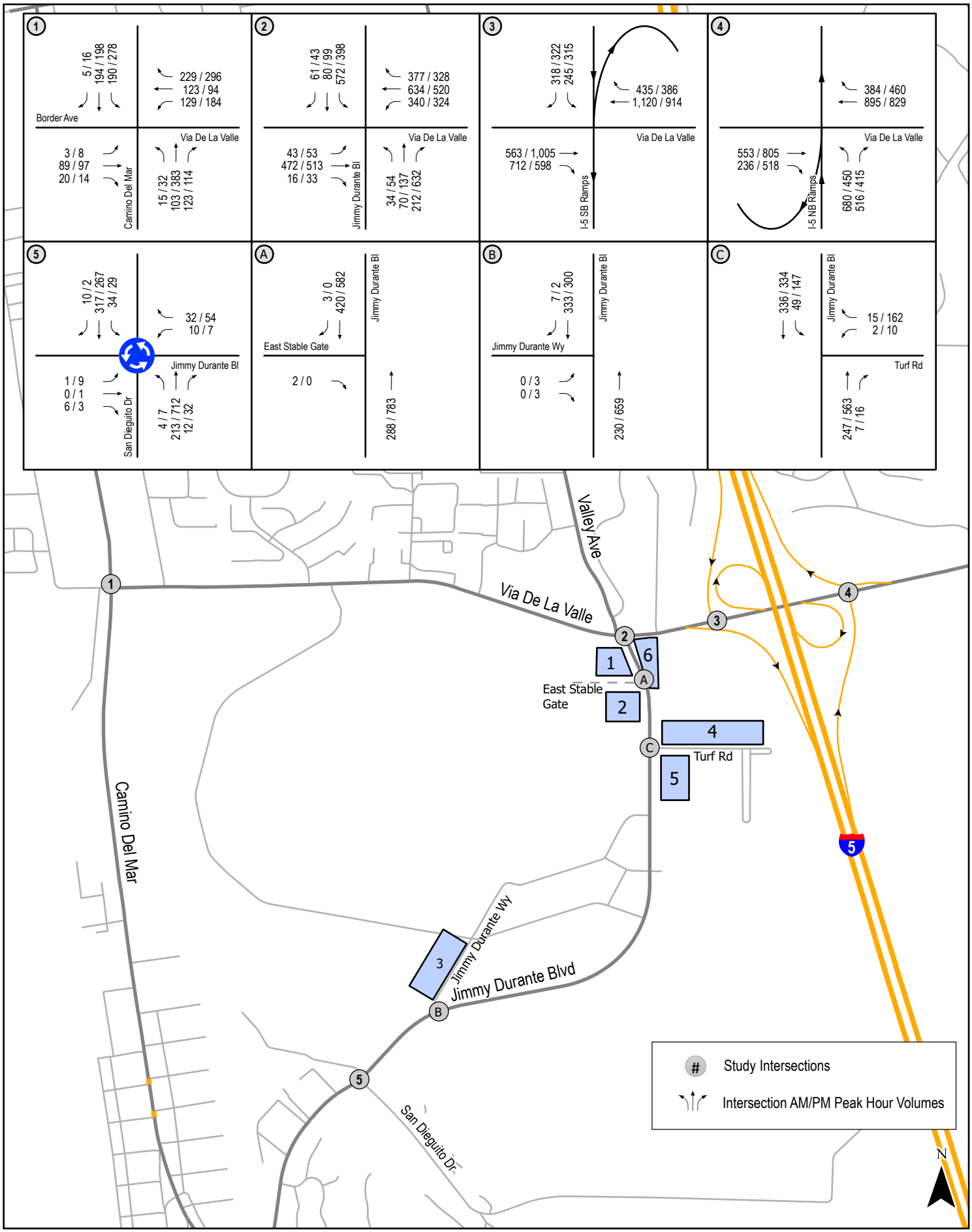

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Figure 10
Opening Day (Year 2028) without Project Traffic Volumes

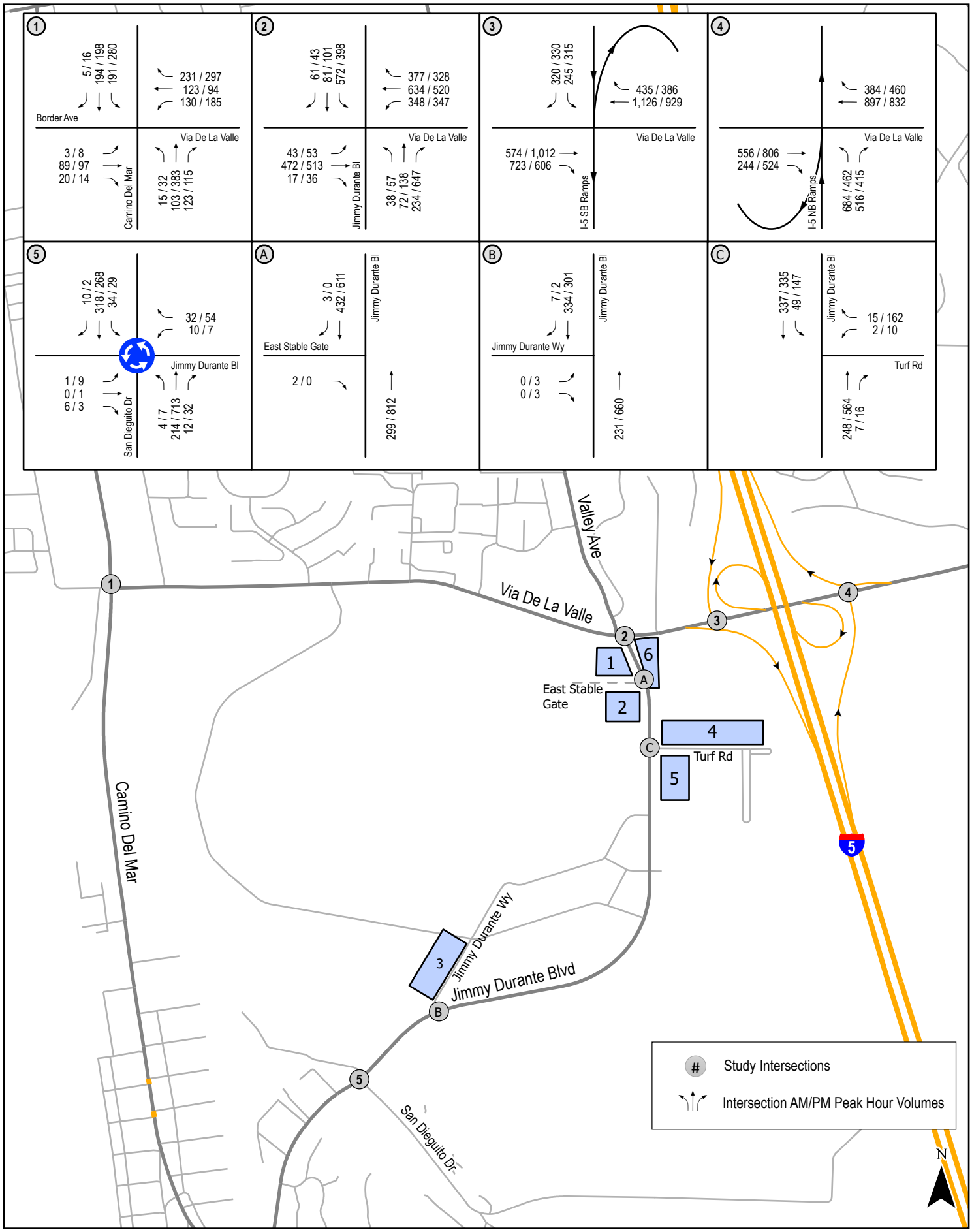

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Figure 11
Opening Day (Year 2028) + Site 6 Project Traffic Volumes

ATTACHMENT A

TRANSPORTATION ANALYSIS DEL MAR AFFORDABLE HOUSING, PREPARED BY LLG ENGINEERS, JANUARY 2026

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TRANSPORTATION ANALYSIS

DEL MAR AFFORDABLE HOUSING

Del Mar, California
January 7, 2026

LLG Ref. 3-25-4115

Prepared by:
Amelia Giacalone
Senior Transportation Planner

&

Zahira Chayeb
Transportation Engineer II

Under the Supervision of:
John Boarman, P. E.
Principal

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G. Growth factor calculations

H. Peak Hour Intersection Analysis Worksheets – Year 2028 without Project

I. Peak Hour Intersection Analysis Worksheets – Year 2028 with Project (Site 1 & Site 2)

J. Peak Hour Intersection Analysis Worksheets – Year 2028 with Project (Site 3)

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TRANSPORTATION IMPACT ANALYSIS

DEL MAR AFFORDABLE HOUSING

Del Mar, California
January 7, 2026

1.0 INTRODUCTION

The 22nd District Agricultural Association (District) owns and operates the Del Mar Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts a variety of uses, including the annual San Diego County Fair, two horse racing seasons, and other events, activities, and celebrations such as concerts and festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year.

The District is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. The District and the City of Del Mar have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. Five potential housing site locations have been selected through this mutual planning effort. Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego.

This Transportation Impact Analysis (TIA) assesses the five potential sites where the housing could be built and determines the potential impacts/constraints of each.

Various intersections within the study area were analyzed to determine potential project-related transportation effects, as set forth in the following sections in this document.

- Project Description
- Existing Conditions Description
- CEQA VMT Discussion
- Project Study Area, Analysis Approach and Methodology
- Substantial Effect Criteria
- Analysis of Existing Conditions
- Project Trip Generation, Distribution and Assignment
- Analysis of Existing + Project Conditions
- Opening Day Conditions
- Analysis of Opening Day Conditions
- Access Assessment
- Conclusion

2.0 PROJECT DESCRIPTION

2.1 Potential Project Locations

Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego. The five potential locations are as follows:

- **Site 1: East Main Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Via De La Valle, north of the East Main Stable Gate driveway. Located at the existing "East Main Stable Gate" horse boarding stables.
- **Site 2: South of Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast quadrant of the intersection of Jimmy Durante Boulevard & Via De La Valle, approximately 500 feet south of Via De La Valle, south of the East Main Stable Gate driveway. Located south of the existing "East Main Stable Gate" horse boarding stables.
- **Site 3: Adjacent to Fire Station Site –** Within the City of Del Mar on Fairgrounds Property. Located adjacent to the existing "Del Mar Fire Department" fire station.
- **Site 4: Surf and Turf RV Park Site –** Within the City of San Diego. Located on the northeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing Del Mar Fairgrounds Surf & Turf RV Park, north of Turf Road.
- **Site 5: Dirt Lot Site –** Within the City of San Diego. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing "Del Mar Horsepark" dirt parking lot.

The five (5) potential housing sites vary in size. ***Table 2-1*** summarizes the location and acreage of the sites.

TABLE 2–1
POTENTIAL HOUSING SITES ACREAGE

Site Number	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	2982710300	City of Del Mar	1.5
2	South of Stable Gate Site	2990300500, 2990302200	City of Del Mar	1.5
3	Adjacent to Fire Station Site	2990302200	City of Del Mar	1.0
4	Surf and Turf RV Park Site	2990420300	City of San Diego	1.5
5	Dirt Lot Site	2990420300	City of San Diego	1.5

Notes:

1. The 2023 Stephen Dalton Architects (SDA) Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5 acre new housing site that would also include redevelopment of the fire station. This study focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Figure 2-1 depicts the Project vicinity, and ***Figure 2-2*** depicts the Project area. ***Figure 2-3*** depicts the potential Project site locations.

2.2 Project Description

The 22nd District Agricultural Association (District) is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property (Property) which the District would be willing to make available for the development of affordable housing.

In its 6th Cycle Housing Element Update, the City identified and included a portion of the Property in the Housing Element residential sites inventory as having potential to be developed to accommodate affordable housing units. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. This study of potential affordable housing on Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development (HCD) HAP Cycle 2.

Five potential housing site locations have been selected through this mutual planning effort. All five sites are approximately 1 to 1.5-acres in size. For the purpose of this study, the assumption is that a prospective housing project would include *at least* 61 units of lower income housing in a housing project that is a 100% multi-family lower income affordable housing development OR a mixed income project, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022-2023).

Due to the Fairgrounds property location within the FEMA-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed accordingly with floodproofing measures and include a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface level parking.

Since there are several alternatives for the proposed housing project, LLG calculated the trip generation for each of the four (4) alternatives. The trip generation calculation summary is included in ***Table 2-2***.

TABLE 2–2
DEL MAR HAP TRIP GENERATION COMPARISON TABLE

Alternative	ADT	AM Total	PM Total	Total Peak Hour Trips
82 DU of Multi-Family Affordable Housing (100% Affordable)	445	34	45	79
61 DU of Multi-Family Affordable Housing 21 DU of Multi-Family Housing (Mixed Income)	497	39	48	87
128 DU of Senior Affordable Housing (100% Affordable)	474	42	22	64
61 DU of Senior Affordable Housing 67 DU of Senior Multi-Family Housing (Mixed Income)	444	33	27	60

Notes:

2. Rates are based on the ITE Trip Generation Manual, 12th Edition
3. ADT = Average Daily Traffic
4. DU = Dwelling Units

Affordable multi-family housing, market rate multi-family housing, affordable senior housing, and market rate senior housing use-types generate trips at different rates. Therefore, the analysis included in this report assumes the Project development would be the alternative calculated to generate the highest number of trips, which provides a conservative analysis. Therefore, this report assumes the Project will construct 61 units of affordable multi-family housing and 21 units of market-rate multi-family housing.

2.3 Project Access

Site 1 and Site 2 – Access for Site 1 and Site 2 would be provided by the East Main Stable Gate driveway, which connects to Jimmy Durante Boulevard.

Since only right-in / right-out turns are permitted at the East Main Stable Gate driveway, outbound residents heading north of the site are expected to make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and inbound residents coming from south of the site are expected to make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

Site 3 – Access to Site 3 would be provided via Jimmy Durante Way, which connects to Jimmy Durante Boulevard.

Site 4 and Site 5 – Access for Site 4 and Site 5 would be provided via Turf Road, which connects to Jimmy Durante Boulevard.

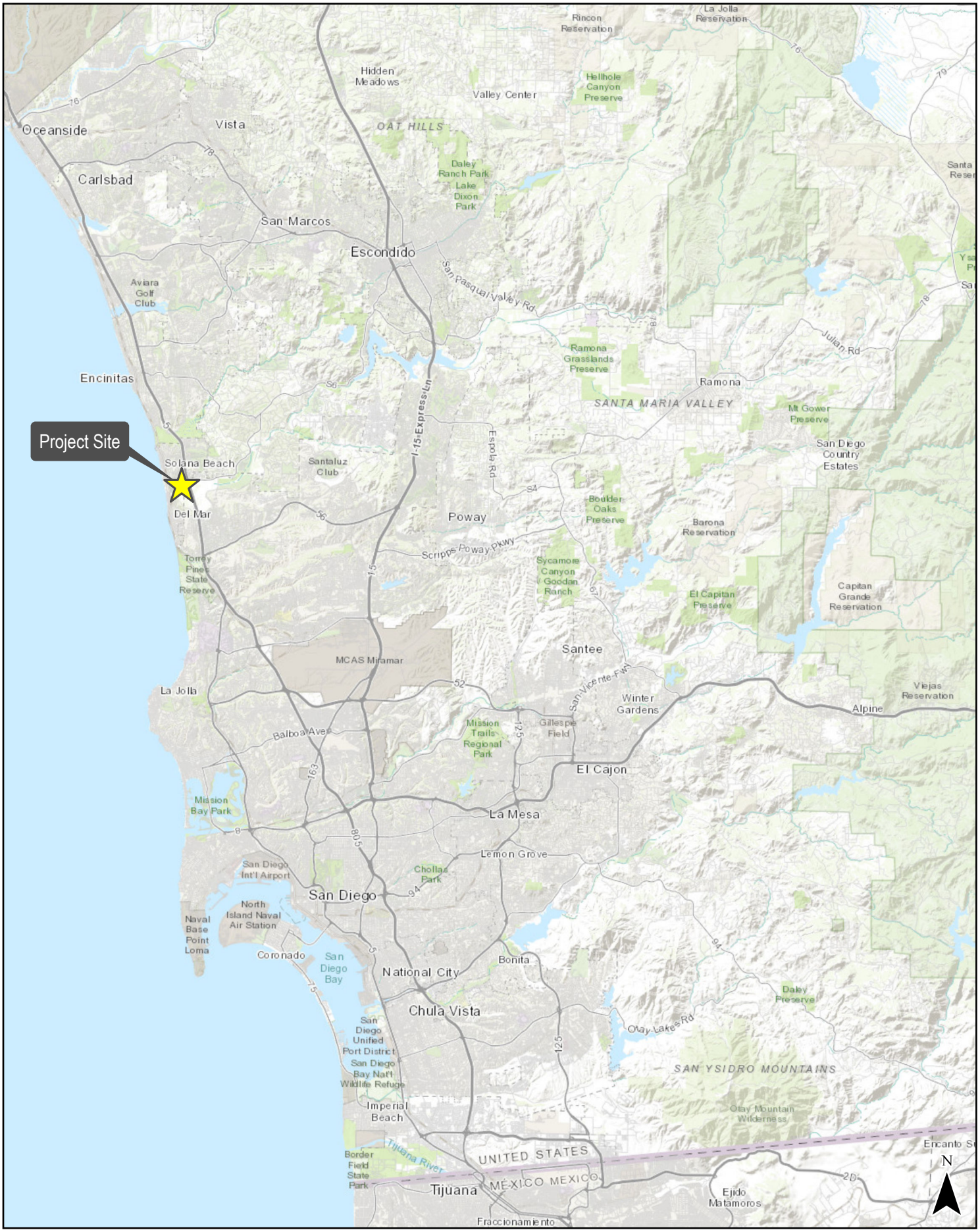

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Figure 2-1
Vicinity Map

LLG

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Figure 2-2

Project Area Map

DEL MAR FAIRGROUNDS / AFFORDABLE HOUSING

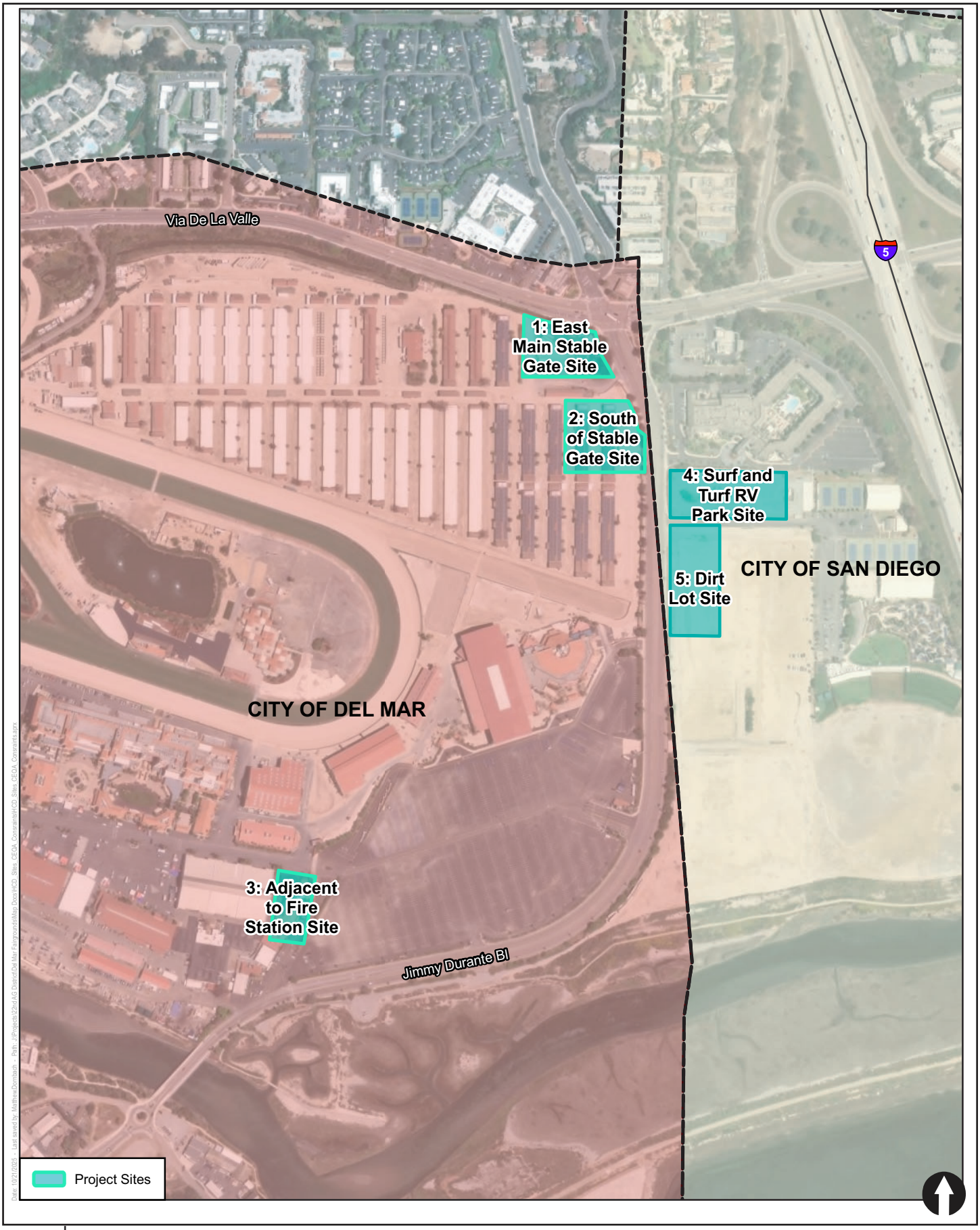

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Figure 2-3

Potential Housing Site Locations

3.0 EXISTING CONDITIONS

Effective evaluation of the traffic effects associated with the proposed Project requires an understanding of the existing transportation system within the project area. ***Figure 3–1*** shows an existing conditions diagram, including signalized intersections and lane configurations.

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Highway 101

Highway 101 is currently constructed as a four-lane divided roadway north of Via De La Valle. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit ranges from 35 mph to 40 mph.

Camino Del Mar

Camino Del Mar is currently constructed as a two-lane divided roadway south of Via De La Valle. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is generally permitted on both sides of the roadway in the Project vicinity. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 40 mph.

Via De La Valle

Via De La Valle is currently constructed as a two-lane undivided roadway with a two-way left-turn lane. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

Valley Avenue

Valley Avenue north of Via de la Valle is currently constructed as a two-lane undivided roadway with a two-way left-turn lane. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted intermittently along the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 35 mph.

Jimmy Durante Boulevard

Jimmy Durante Boulevard is currently constructed as a four-lane undivided roadway with a two-way left-turn lane between Via De La Valle and Jimmy Durante Way. Jimmy Durante Boulevard transitions into a two-lane divided roadway south of San Dieguito Drive. Contiguous sidewalks are provided on the west side of the roadway. Curbside parking is prohibited on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

3.2 Mobility Network

The project area is centrally located just south of Via de la Valle, which provides direct west-east access to Interstate 5, with north-south access provided via Highway 101 (Hwy 101). Via de la Valle and Hwy 101 provide multiple lanes of vehicle travel, sidewalks for pedestrian movement, and on-street bicycle lanes. See ***Figure 3-3***.

The project area is located approximately 2.5 miles (from the furthest proposed site) from the Solana Beach Amtrak/Coaster Station (Solana station). Pedestrian and bicycle access to the Solana station is available via the Coastal Rail Trail – a separated ped/bike trail adjacent to Highway 101 (Hwy 101) that begins at the Hwy 101/Via de la Valle intersection and extends north through Solana Beach. See ***Figure 3-2***.

3.2.1 *Bicycle Network*

Currently, Class II bike lanes are provided along Highway 101, Camino Del Mar, Lomas Santa Fe, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard.

3.2.2 *Pedestrian Conditions*

Contiguous sidewalks are provided along both sides of Highway 101, Camino Del Mar, Lomas Santa Fe, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard.

3.2.3 *Existing Transit Conditions*

Existing Bus Services

Bus service is provided by the North County Transit District (NCTD). The bus routes serving the immediate Project area include NTCD routes 101 and 308. A description of each route is provided below. ***Appendix A*** includes the timetable of these bus routes.

Route 101 runs between Oceanside and VA/UCSD/UTC. The route runs along Highway 101 and Camino Del Mar. Weekday service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM. Weekend service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM.

Route 308 runs between Solana Beach and Escondido. The route runs along Lomas Santa Fe and Valley Avenue. Weekday service begins at 5:00 AM with 60-minute headways and ends at 9:10 PM. Weekend service begins at 7:00 AM with 60-minute headways and ends at 9:00 PM.

Future Bus Services

As part of SANDAG's adopted 2021 Regional Plan for the North County corridor, Next Generation Rapid bus service (Rapid bus) identified as Rapid 473 is planned to connect Oceanside to Solana Beach to UTC/UC San Diego via Highway 101 Coastal Communities with a build-out year of 2035.

Rail Service

Fixed rail service is provided by the North County Transit District (NCTD). The COASTER serves in the immediate Project area. The nearest coaster stop is at the Solana Beach Station, as shown in *Figure 3-2*.

The COASTER runs between San Diego Santa Fe Depot and Oceanside with 40-minue headways. There is a total of eight (8) stops along this route. COASTER service provides thirty (30) daily trips on the weekdays with an additional two (2) trips on Fridays. It also provides twenty (20) daily weekend trips.

Appendix A includes the timetable of this train service.

3.3 Existing Traffic Volumes

Peak hour counts at the study area intersections were conducted on Tuesday, September 16, 2025, when area schools were in session. Peak hour counts at the study area project access driveways were conducted on Wednesday, October 1, 2025, when area schools were in session.

Figure 3–2 shows the Existing Traffic Volumes. ***Appendix B*** contains the manual count sheets.

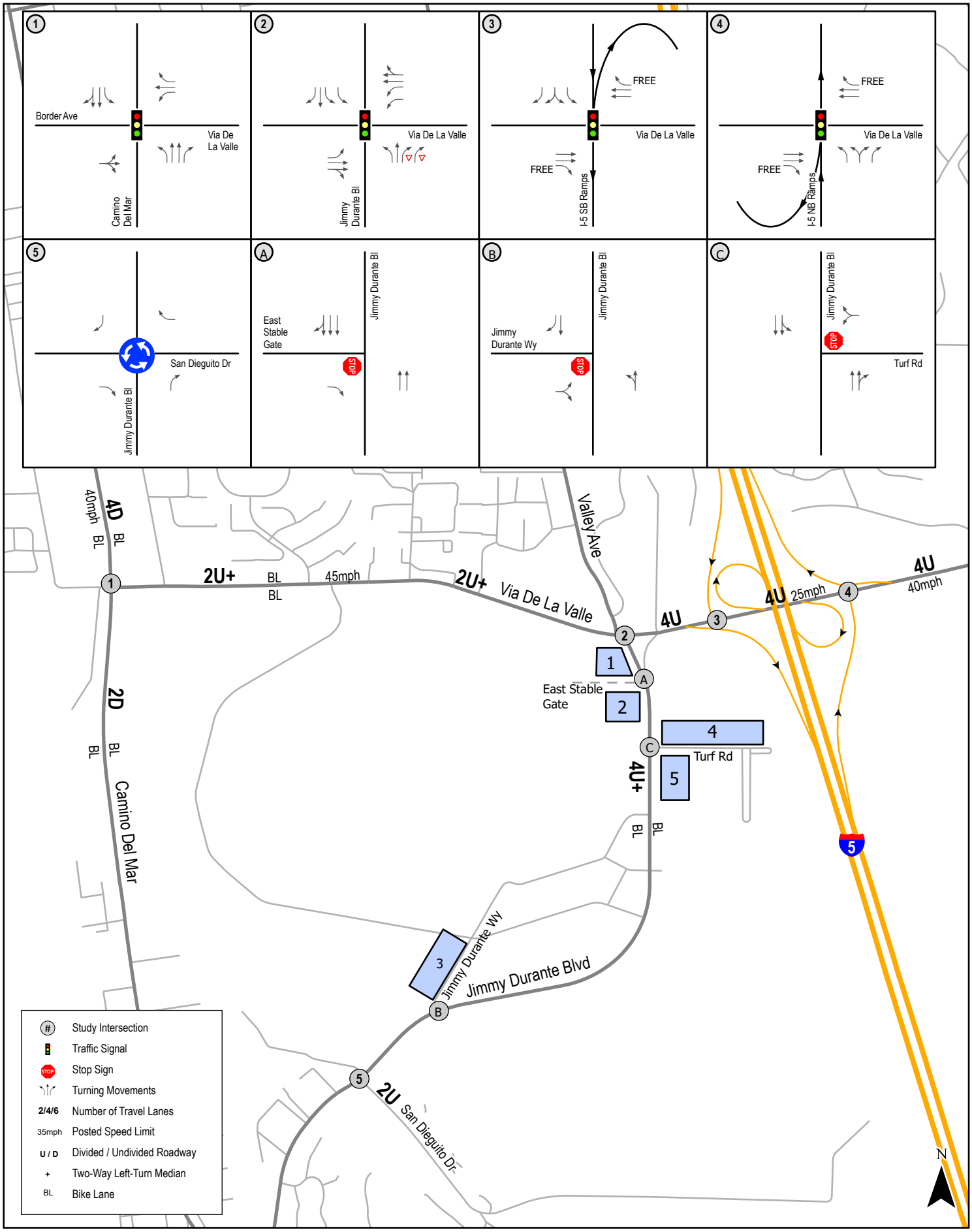

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Figure 3-1
Existing Conditions Diagram

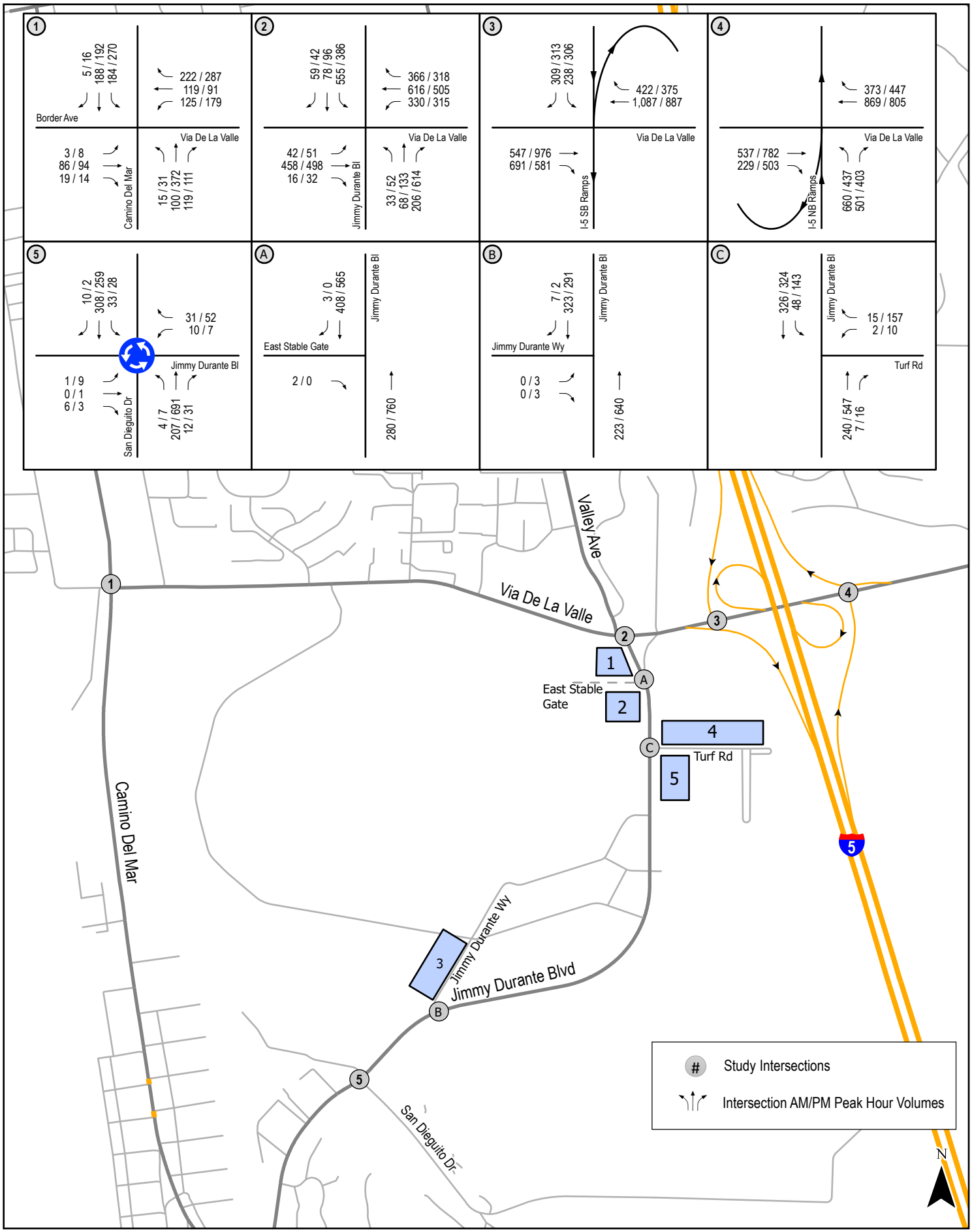

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Figure 3-2
Existing Traffic Volumes

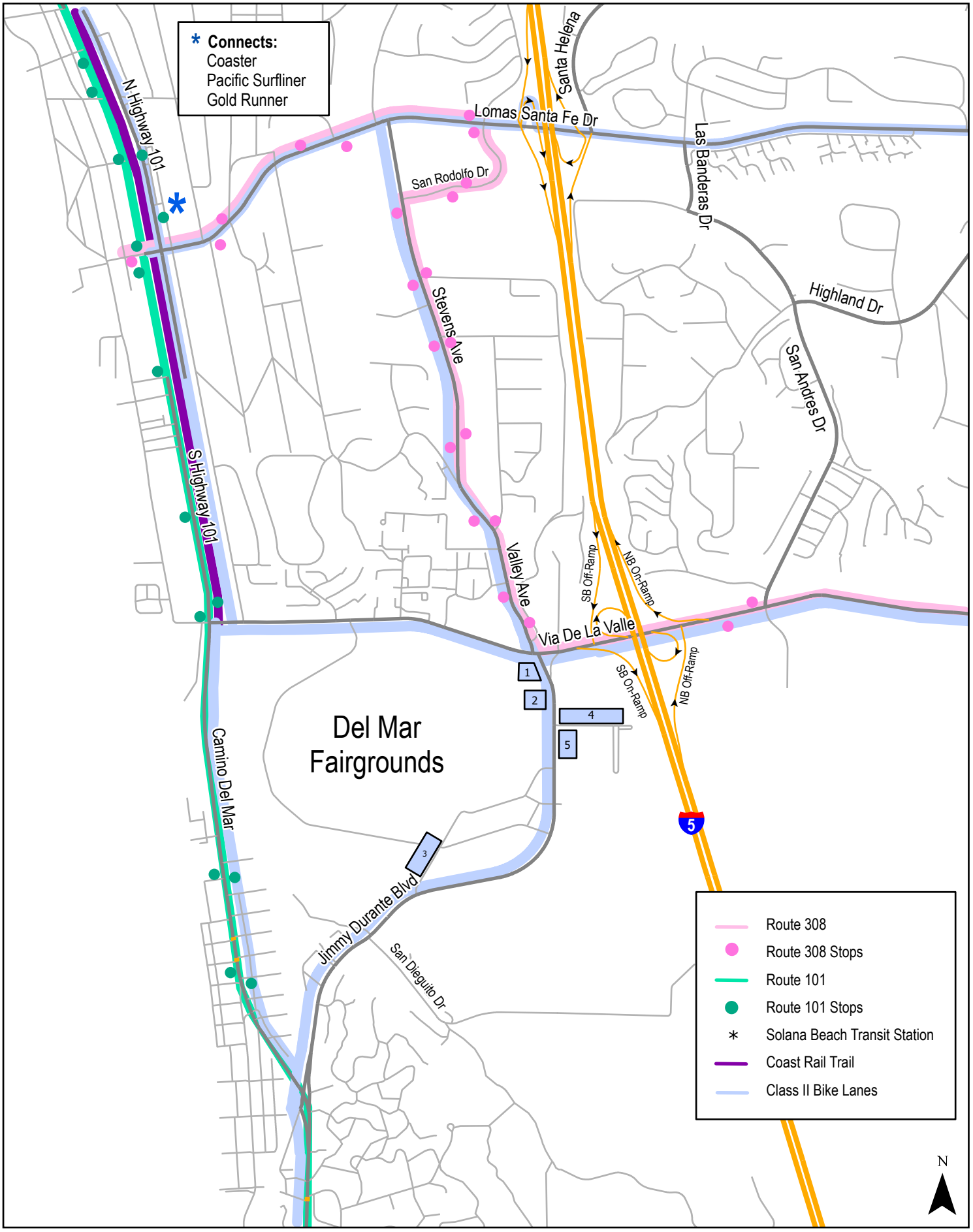

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Figure 3-3
Transit Mobility Network

4.0 CEQA VMT ANALYSIS

An assessment was conducted to determine the Project's potential Vehicle Miles Traveled (VMT) impact. This assessment utilizes methodologies presented within the Governor's Office of Planning and Research (OPR) Technical Advisory developed to assist with implementation of Senate Bill 743 (SB 743), which resulted in a shift in the measure of effectiveness for determining transportation impacts from Level of Service (LOS) and vehicular delay to VMT. VMT analyses are required in all California Environmental Quality Act (CEQA) documents as of July 1, 2020.

The City of Del Mar *CEQA Guidelines*, June 1, 2020, and the City of San Diego's *Traffic Study Manual*, September 2022, provide guidance on the preparation of VMT studies including significance thresholds, screening criteria, and analysis methodology for a variety of land uses.

4.1 Project Screening

Per the City of Del Mar *CEQA Guidelines*, June 1, 2020, the requirement to prepare a detailed transportation Vehicle Miles Traveled (VMT) analysis applies to all land development projects except for those that meet at least one of the provided screening criteria. A project that meets at least one of the screening criteria listed below would be considered to have a less significant impact due to the project or location characteristics.

1. Projects that generate less than 110 trips per day
2. Projects of 18 apartments or less
3. Projects of 11 single dwelling units or less
4. Projects of 2,750 square feet or less of commercial retail
5. Projects of local serving retail that are less than 10,000 square feet and that would offer a new retail option in Del Mar that is currently only offered outside of the City
6. Projects within .5 miles of a high-quality transit stop with fixed route bus service that has bus intervals no longer than 15 minutes during the weekday commute hours (State PRC 2115)
7. Projects with 100 percent affordable units
8. Transit, bicycle, and pedestrian projects
9. Roadway and mobility projects included in the Del Mar Community Plan
10. Amendments to a Land Use Plan or Zoning Ordinance that provide for mixed use zoning that allows up to 20 dwelling units per acre

As noted in *Section 2.2*, the Project (regardless of site location) would include at least 61 units of lower income housing (either multi-family or senior), either in a development that is a 100% affordable OR as part of a mixed income project.

4.1.1 *100% Affordable Housing Scenarios*

Any of the proposed development scenarios that assume 100% affordable housing are considered "screened out" from any further VMT analysis based on screening criteria #7 listed above (projects with 100 percent affordable units). Therefore any of the proposed development scenarios that assume 100% affordable housing are presumed to cause a less than significant impact, and are exempt from any further VMT analysis.

4.1.2 *Mixed Income Housing Scenarios*

In development scenarios that include both affordable and market rate units, the affordable units would continue to be screened out as noted above. Market rate units would likely not be screened out (unless fewer than 18 DU are proposed, in which case screening criteria #2 would apply). Since the market rate component would not be screened out, further VMT analysis is required.

4.2 VMT Assessment – Market Rate Units

In development scenarios that include both affordable and market rate units, the market rate units would not be screened out from VMT analysis as noted above. The Project is considered a "Residential" land use and therefore, the SANDAG Series 14 ABM 2+, Base Year 2016, VMT per resident data was reviewed as applicable to the City of Del Mar and City of San Diego's CEQA Guidelines. The Cities of Del Mar and San Diego measure VMT impacts against different metrics: the average Del Mar VMT per resident of 22.6 VMT for project's located within the City of Del Mar and the average Regional VMT per resident of 18.9 VMT for project's located within the City of San Diego. Therefore, the VMT analysis for Sites 1, 2, and 3, located within the City of Del Mar, and for Sites 4 and 5, located within the City of San Diego (as shown on *Figure 2-3)* were analyzed based on the applicable City guidelines as outlined below.

4.2.1 *Sites 1, 2, and 3 (City of Del Mar)*

Sites 1, 2, and 3 are located within the City of Del Mar. The Project falls under the "Residential" land use type and therefore, per City of Del Mar guidelines, the Project's VMT per resident is considered the same as the VMT per resident of the census tract in which it is located. The site's VMT per resident is then compared to the existing City of Del Mar VMT/resident of 22.6 VMT per City resident as noted in the City's June 1, 2020, *Item 14 Resolution – Update to CEQA Guidelines*, included as ***Appendix L***. A significant VMT impact would be identified if a project or plan/policy would result in VMT that is not at least 15 percent below the existing baseline VMT for Del Mar.

Sites 1, 2, and 3 are located within Census Tract 172. Per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the VMT per resident for Census Tract 172 is 24.2 and the existing City of Del Mar VMT/resident is 22.6. Therefore, the Project site is approximately 107.1 % of the City average. Based on this analysis, a significant VMT impact would be identified for Sites 1, 2, and 3.

Mitigation would be required to reduce Project VMT to 15 percent below the existing baseline, consistent with the Del Mar Climate Action Plan.

If the Project is not able to provide the 15% VMT reduction, the environmental document shall disclose an unmitigated significant transportation impact. Implementation of local Transportation Demand Management (TDM) strategies and mitigation through payment of an in-lieu fee may be required for development on Sites 1, 2, or 3.

4.2.2 *Sites 4 and 5 (City San Diego)*

Sites 4 and 5 are located within the City of San Diego. The Project falls under the "Residential" land use type and is calculated to generate less than 2,400 daily unadjusted driveway trips and therefore, per City of San Diego guidelines, the Project's VMT per resident is considered the same as the VMT per resident of the census tract in which it is located. The site's VMT per resident is then compared to the regional average VMT/resident of 18.9 VMT per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map. A significant VMT impact would be identified if a project would result in VMT that is not at least 15 percent below the regional average VMT/resident.

Sites 4 and 5 are located within Census Tract 83.24. Per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the VMT per resident for Census Tract 83.24 is 24.0 and the regional average VMT/resident is 18.9. Therefore, the Project site is approximately 126.5% % of the regional average. Based on this analysis, a significant VMT impact would be identified for Sites 4 and 5. Mitigation would be required to reduce the project's VMT impact to the greatest extent feasible.

Development of Sites 4 and 5 could choose to participate in the City of San Diego's Complete Communities Mobility Choices Program to mitigate the significant transportation impact to the extent feasible by relying on the Findings and Statement of Overriding Considerations (SOC) from the Complete Communities: Housing Solutions and Mobility Choices Program Final Program Environmental Impact Report (PEIR; May 2020)(SCH No. 2019060003).

4.3 Conclusions

Any of the proposed development scenarios on any of the proposed sites that assume 100% affordable housing can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis.

In development scenarios that include both affordable and market rate units, the affordable units can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis. Market rate units on any of the proposed Sites 1-5 would be expected to result in a significant transportation impact with mitigation required. Mitigation could include implementation of a robust TDM plan or participation in the City of San Diego's Complete Communities Mobility Choices Program, depending on whether the development site is located within the City of Del Mar or the City of San Diego.

5.0 PROJECT STUDY AREA, ANALYSIS APPROACH AND METHODOLOGY

5.1 Project Study Area

The study area includes all intersections in the Project vicinity that are likely to be potentially affected by the Project traffic. The Project study area includes the following intersections:

Intersections

1. Hwy 101 (Camino Del Mar) / Via de la Valle (Border Avenue)
2. Jimmy Durante Boulevard (Valley Ave) / Via de la Valle
3. I-5 SB Ramps / Via de la Valle
4. I-5 NB Ramps / Via de la Valle
5. Jimmy Durante Boulevard / San Dieguito Road

Access Driveways

A. Jimmy Durante Blvd / East Stable Gate (Driveway for Site 1 and 2)
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for Site 3)
C. Jimmy Durante Blvd / Turf Road (Driveway for Site 4 and 5)

5.2 Analysis Scenarios

This study includes analysis of the following scenarios:

- Existing
- Existing + Project (Site 1 and Site 2)
- Existing + Project (Site 3)
- Existing + Project (Site 4 and Site 5)
- Opening Day (Year 2028) Without Project
- Opening Day (Year 2028) + Project (Site 1 and Site 2)
- Opening Day (Year 2028) + Project (Site 3)
- Opening Day (Year 2028) + Project (Site 4 and Site 5)

5.3 Analysis Approach and Methodology

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized intersections, unsignalized intersections and roadway segments.

In the Highway Capacity Manual (HCM) 7th Edition, LOS for signalized intersections is defined in terms of delay. The LOS analysis provides results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. ***Table 5–1*** summarizes the signalized intersections levels of service descriptions.

5.3.1 *Signalized Intersections*

Table 5–2 depicts the criteria, which are based on the average control delay for any particular minor movement (unsignalized intersections) and overall intersection (signalized intersections).

For signalized intersections, LOS criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

LOS A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay in the range 10.1 seconds and 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of Average delay.

LOS C describes operations with delay in the range 20.1 seconds and 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

LOS D describes operations with delay in the range 35.1 seconds and 55.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or higher v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are frequent.

LOS E describes operations with delay in the range of 55.1 seconds to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of over 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

5.3.2 *Unsignalized Intersections*

For unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor movement. For All-Way-Stop-controlled (AWSC) intersections, the overall intersection delay is reported. For two-way-stop-controlled (TWSC) intersections, LOS is not defined for the intersection as a whole, but the worst-case movement (typically the minor street left-turn) delay and LOS are reported.

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This LOS is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits.

LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

TABLE 5–1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

LOS	Description
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation i.e. when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

TABLE 5–2
INTERSECTION LEVEL OF SERVICE (LOS) & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	**Unsignalized Intersections**
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: Highway Capacity Manual 6.

6.0 SUBSTANTIAL EFFECT CRITERIA

The City of Del Mar has published Transportation Impact Guidelines within its *City of Del Mar CEQA Guidelines* (dated June 1, 2020). Consistent with CEQA, these guidelines address VMT since LOS is no longer a standard that can be used to measure significant effects on the environment for CEQA. The City of Del Mar does not have transportation impact guidelines that provide guidelines for a capacity (Level of Service) analysis. Therefore, the San Diego Traffic Engineers' Council (SANTEC) regional guidelines were used to evaluate potential operational effects to traffic that could result from the project.

A project is considered to have a substantial effect if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds shown in ***Table 6–1*** below for freeway segments, roadway segments, and intersections are based on published SANTEC/ITE guidelines with the exception that LOS D is considered acceptable per the City of Del Mar General Plan. If the project exceeds the thresholds in *Table 6–1*, then the project may be considered to have a substantial project effect. A feasible improvement will need to be identified to return the effects within the thresholds (pre-project + allowable increase).

If project traffic causes the location to degrade from an acceptable LOS D or better to LOS E or LOS F, or exceeds the allowable thresholds as shown in *Table 6–1* below for currently LOS E or F operating locations, a substantial effect occurs.

TABLE 6–1
TRAFFIC EFFECTS SIGNIFICANCE THRESHOLDS

Level of Service with Project [a]	Allowable Increase Due to Project Effects [b]				
	Freeways		Roadway Segments		Intersections
	V/C	Speed (mph)	V/C [c]	Speed (mph)	Delay (sec.)
E & F	0.01	1.0	0.02	1.0	2.0

Footnotes:

a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using *Table 3–3* or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D".

b. If a proposed project's traffic causes the values shown in the table to be exceeded, the effects are deemed to be substantial. These effects may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible improvements (within the Transportation Analysis that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a substantial amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating substantial effects.

c. The V/C ratio threshold of 0.02 is based on the fact that such a small change is virtually unnoticeable for the average motorists. For example: for a four-lane roadway (two lane each direction) with a capacity of 40,000 vehicles, the peak hour directional volumes are about 2,800. Two percent of that is 56 vehicles per hour which translate to less than one vehicle per lane in every two minutes for that approach. Such a small change is hardly noticeable to motorists. Therefore, a V/C ratio of 0.02 is a very conservative threshold.

General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections.
4. LOS = Level of Service

7.0 ANALYSIS OF EXISTING CONDITIONS

Table 7-1 summarizes the existing study area peak hour intersection operations. As shown in *Table 7-1*, all the study area intersections are calculated to currently operate at LOS D or better.

Appendix C includes the Existing peak hour intersection analysis worksheets.

TABLE 7–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Delay [a]	LOS [b]
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B
		PM	19.1	B
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D
		PM	37.2	D
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B
		PM	13.9	B
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C
		PM	19.0	B
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A
		PM	8.9	A
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [c]	AM	10.4	B
		PM	0.0	A
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A
		PM	14.4	B
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A
		PM	12.8	B

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. MSSC – Minor Street Stop Controlled intersection. worst delay is reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

8.1 Trip Generation

The Project proposes five potential housing site locations. All five sites are approximately 1 to 1.5-acres in size and would include a multi-family lower income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing.

Trip generation rates for the Project were derived from the Institute of *Transportation Engineers (ITE) Trip Generation Manual, 12th Edition*. The ITE manual was selected over SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates (2002)* because ITE provides a more current (updated in 2025) and comprehensive dataset.

ITE database includes a wider range of land use types, such as low-income affordable and senior housing. Additionally, many local jurisdictions, including the County of San Diego, have begun transitioning from the use of SANDAG rates to ITE rates. Therefore, trip generation rates were taken from the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 12th Edition*. Trip generation rates for the following land uses were reviewed:

- Affordable Housing - Income Limits (ITE land use code 223)
- Multifamily Housing (Low-Rise; Not Close to Rail Transit) (ITE land use code 220)
- Affordable Housing - Senior (ITE land use code 223)
- Senior Adult Housing - Multi-Family (ITE land use code 252)

The land uses listed above generate trips at different rates. As described in *Section 2*.2, due to the different alternatives for the proposed housing project and different trip rates, LLG calculated the trip generation for four (4) alternatives. The trip generation calculation summary is included in *Table 2-1*.

The alternative with the highest trip generation was assumed for the analysis. Therefore, all technical reports prepared by LLG assume the Project development is 61 units of affordable multi-family housing and 21 units of market rate multi-family housing, providing a conservative analysis.

Table 8–1 summarizes the traffic generation assuming the Project development is 61 units of affordable multi-family housing and 21 units of market rate multi-family housing. The project is calculated to generate 497 ADT with 39 AM peak hour trips (11 inbound and 28outbound) and 48 PM peak hour trips (29 inbound / 19 outbound).

8.2 Trip Distribution/Assignment

The distribution of project trips was based on the location of likely destinations for the residential project traffic in this area, including shopping opportunities, schools and employment. The proximity of the project to I-5 was also taken into account. While family housing and senior housing would not have identical trip distributions, the distributions would be similar and since family

housing was found to be the highest trip generator, this land use type was used as the basis for the trip distribution.

Figure 8-1 shows the trip distribution. This figure shows that 70% of peak commuter trips are estimated to be oriented to / from I-5 with 13% into Solana Beach and 7% towards Del Mar. The remaining 10% are oriented to Via De La Valle east of I-5.

It is important to note that the Regional Project Traffic Distribution for all five potential sites is the same. However, the Project Traffic Distribution at the driveways/access points varies depending on the site location.

The assumed access driveway for Site #1 and Site #2 is the existing East Stable Gate driveway. Therefore, the Project traffic assignment for Site #1 and Site #2 is the same. The East Main Stable Gate driveway is a right-in / right-out access point. Therefore, 95% of outbound residents will make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and 5% of inbound residents will make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

The proposed access driveway of Site #3 is the existing Jimmy Durante Way roadway.

The proposed access driveway for Site #4 and Site #5 is the existing Turf Road roadway. Therefore, the Project traffic assignment for Site #4 and Site #5 is the same.

Figure 8-1 depicts the Project traffic distribution. ***Figure 8-2a*** depicts the Project traffic volumes (Site 1 and Site 2). ***Figure 8-2b*** depicts the Project traffic volumes (Site 3). ***Figure 8-2c*** depicts the Project traffic volumes (Site 4 and Site 5). ***Figure 8-3a*** depicts the Existing + Project traffic volumes (Site 1 and Site 2). ***Figure 8-3b*** depicts the Existing + Project traffic volumes (Site 3). ***Figure 8-3c*** depicts the Existing + Project traffic volumes (Site 3).

TABLE 8–1
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)[a]		AM Peak Hour					PM Peak Hour				
		Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Affordable Housing – Income Limits (223)	61 DU	[b]	367	[c]	29:71	9	21	30	[d]	59:41	22	15	37
Multifamily Housing – Low-Rise; Not Close to Transit (220)	21 DU	6.21 /DU	130	0.41/ DU[e]	24:76	2	7	9	0.52/ DU[e]	62:38	7	4	11
Total	**82 DU**		**497**			**11**	**28**	**39**			**29**	**19**	**48**

Footnotes:

a. ADT = Average Daily Traffic
b. Fitted curve equation: T = 3.73(X) + 139.35
c. Fitted curve equation: T = 0.21(X) + 17.21
d. Fitted curve equation: Ln(T) = 0.72 Ln(X) + 0.64
e. Due to the small number of units proposed, ITE's fitted curve equation for this use type results in an overly conservative trip rate of approximately 11 ADT per DU. ITE's average rate of 6.21 ADT/DU is a more realistic assumption and is in line with SANDAG and City of San Diego rates of 6 ADT / DU for the same use type.

General Notes:

1. DU = Dwelling Units
2. Rates are based on ITE Trip Generation Manual, 12th Edition.
3. (###) = ITE Land Use Code

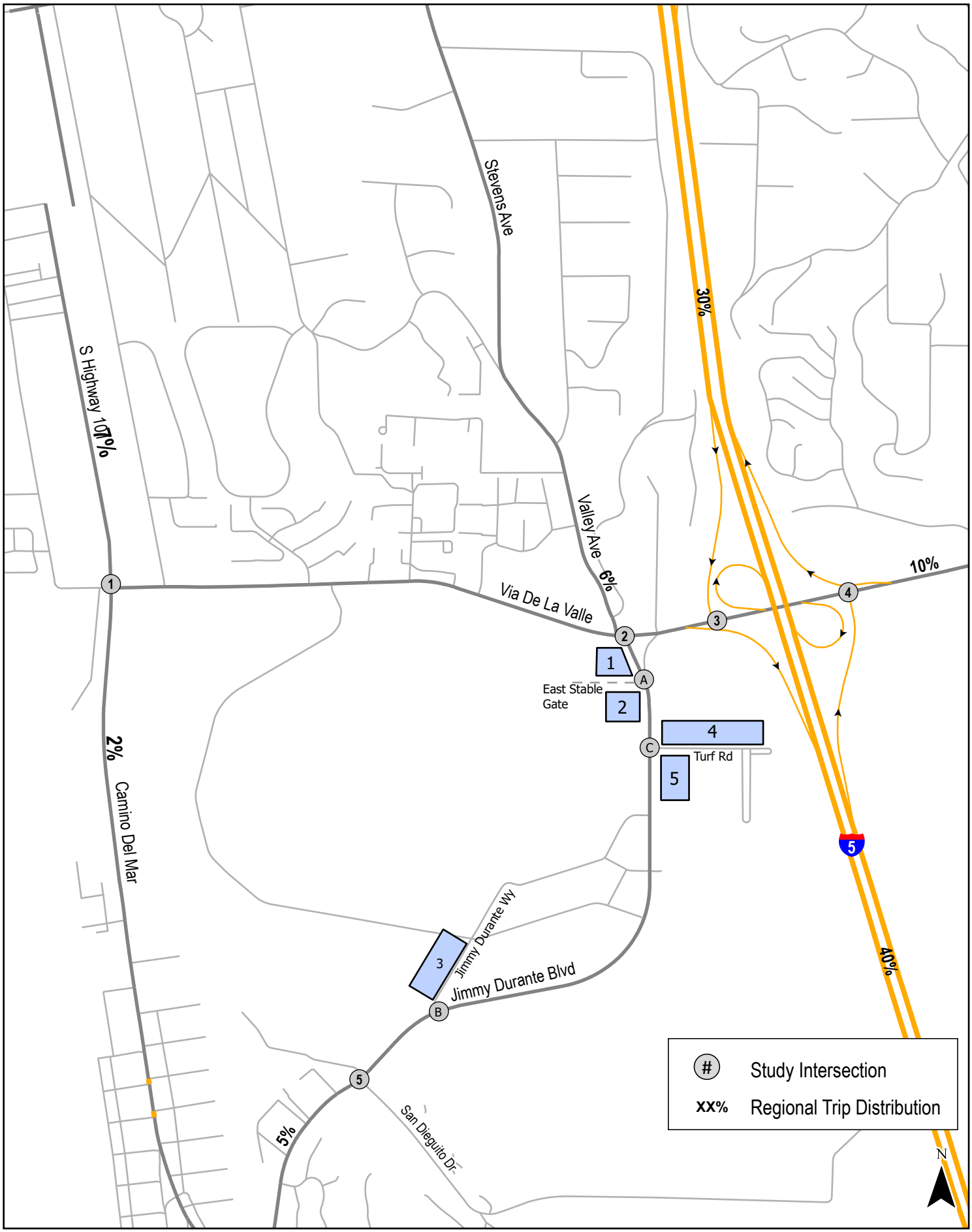

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Figure 8-1
Project Traffic Distribution

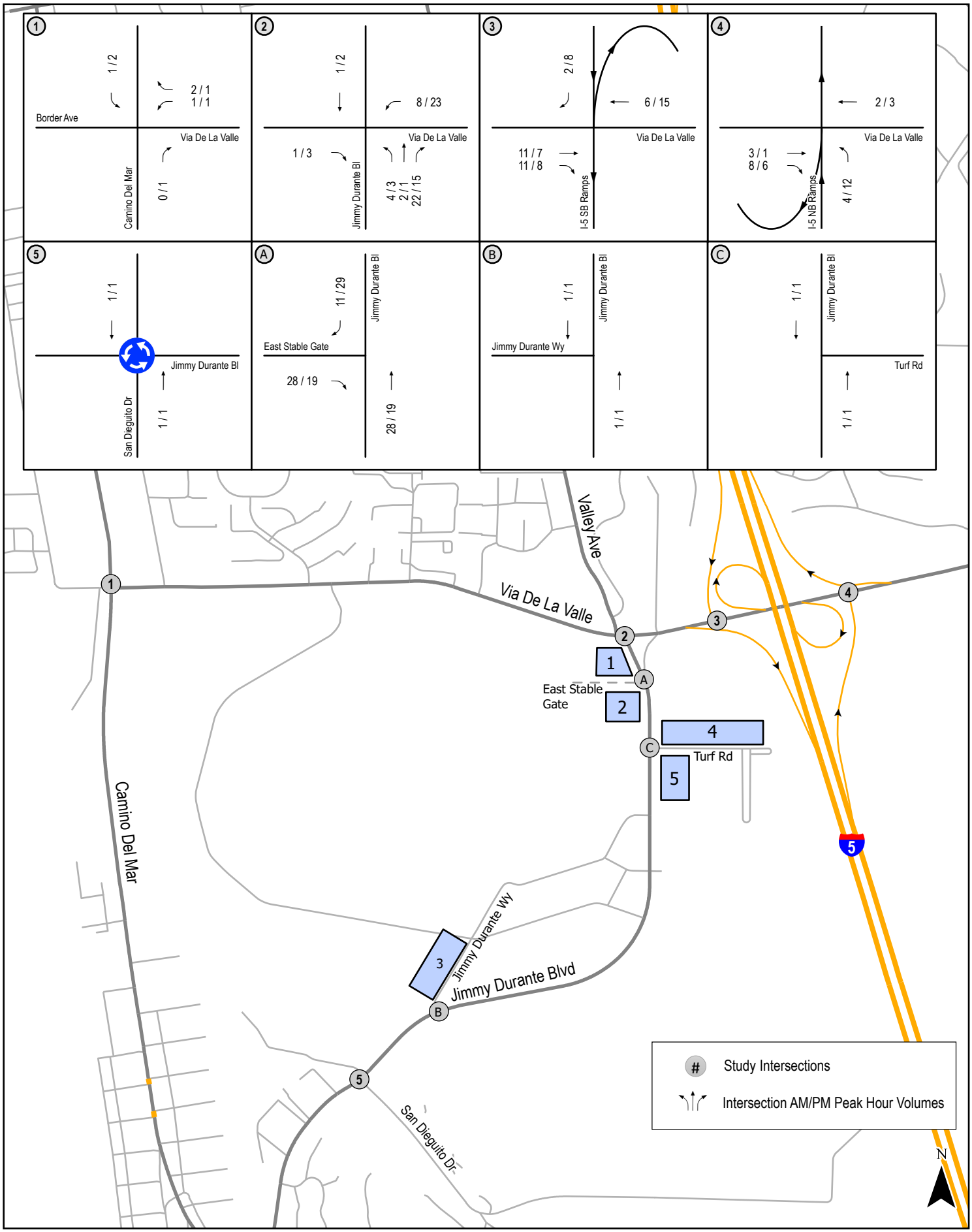

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Figure 8-2A
Site 1 or 2 Project Traffic Volumes

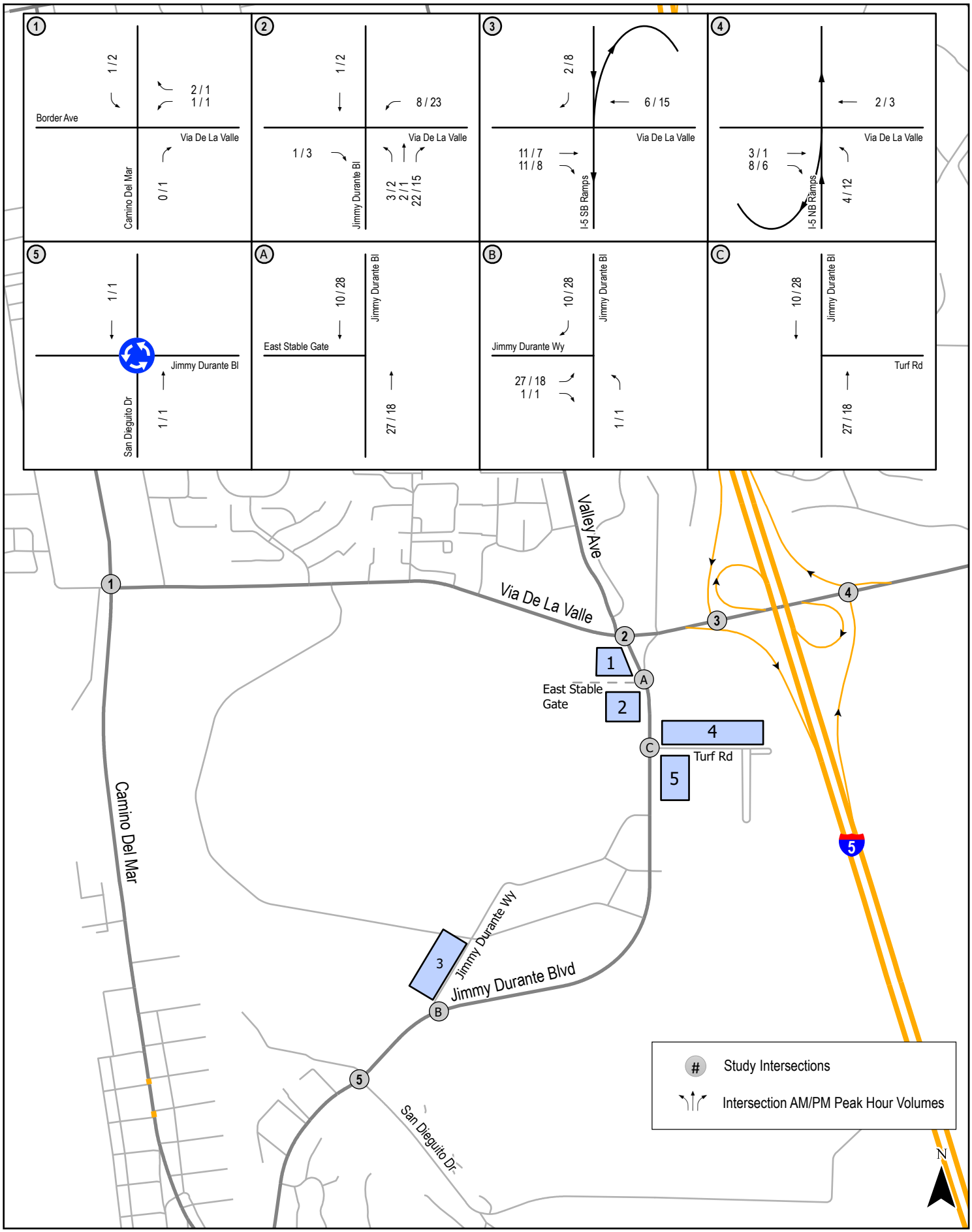

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Figure 8-2B
Site 3 Project Traffic Volumes

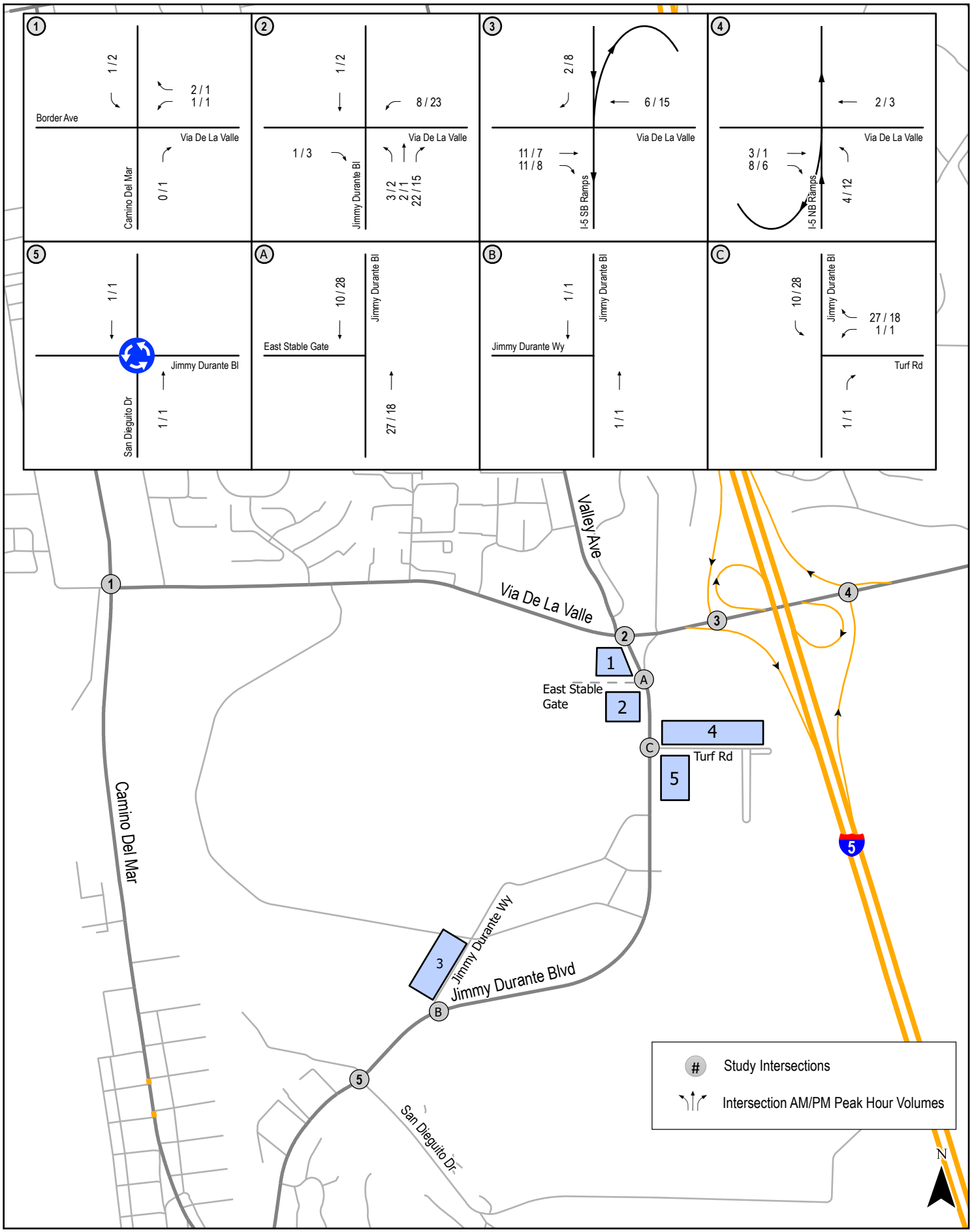

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Figure 8-2C
Site 4 or 5 Project Traffic Volumes

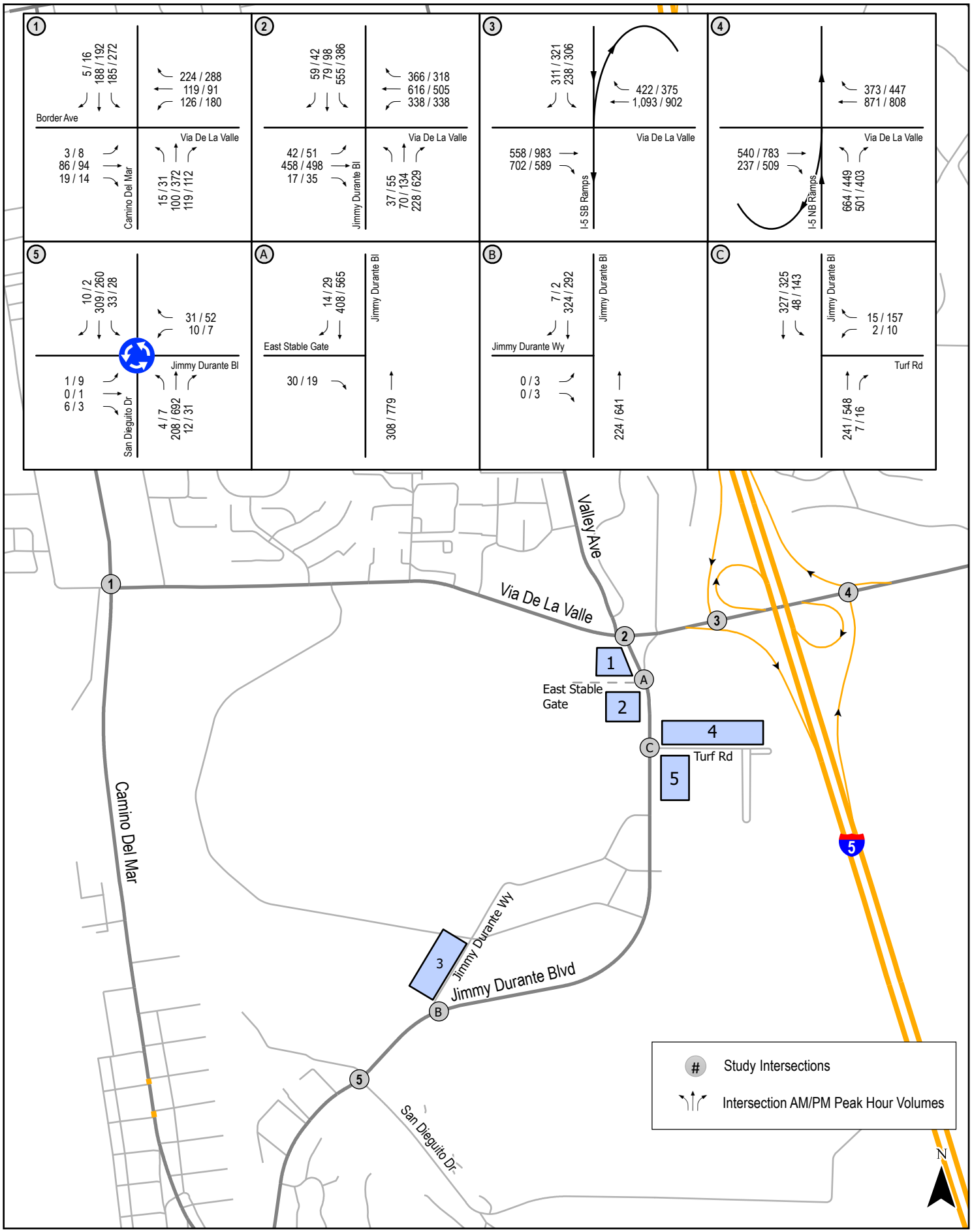

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Figure 8-3A
Existing + Site 1 or 2 Project Traffic Volumes

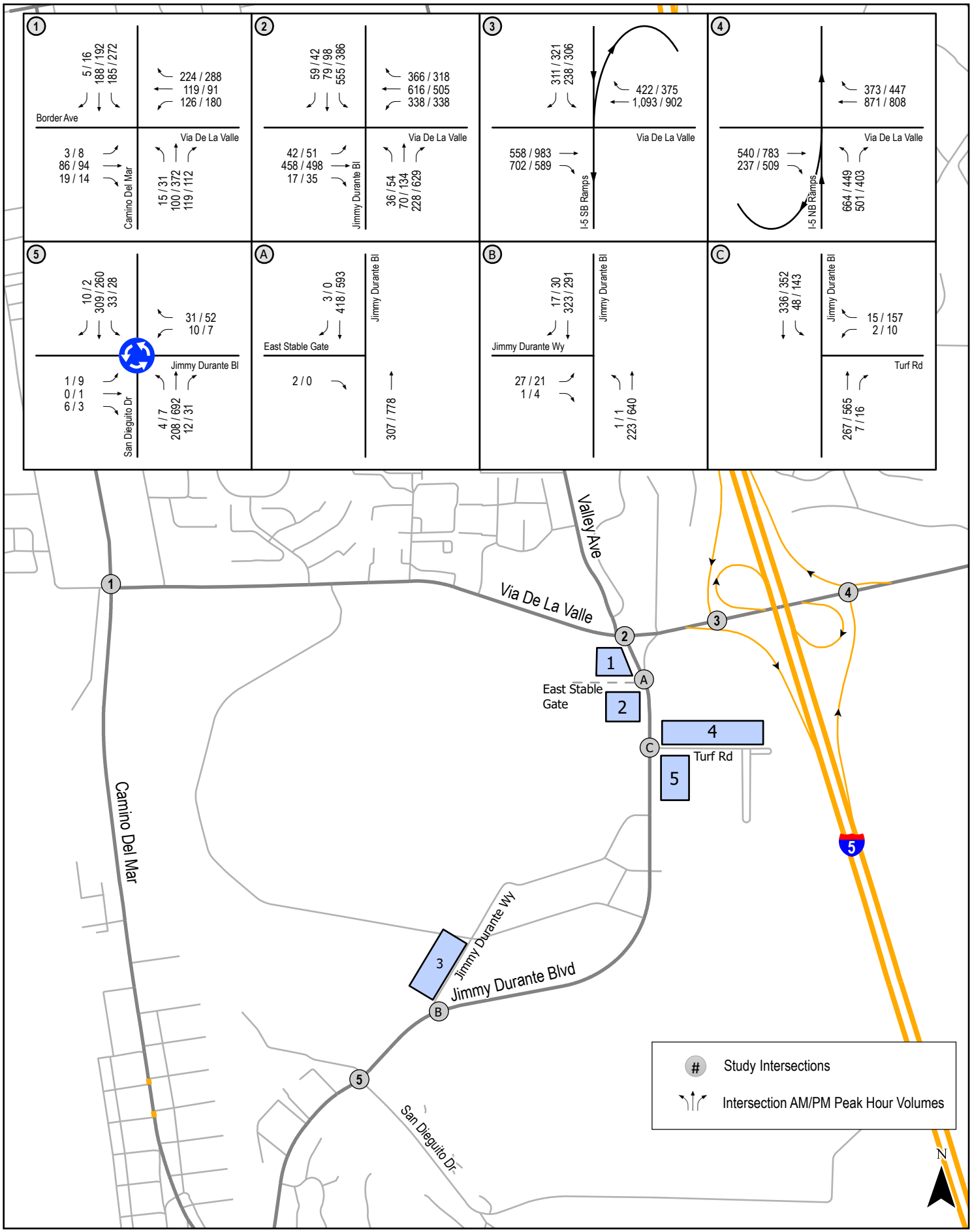

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Figure 8-3B
Existing + Site 3 Project Traffic Volumes

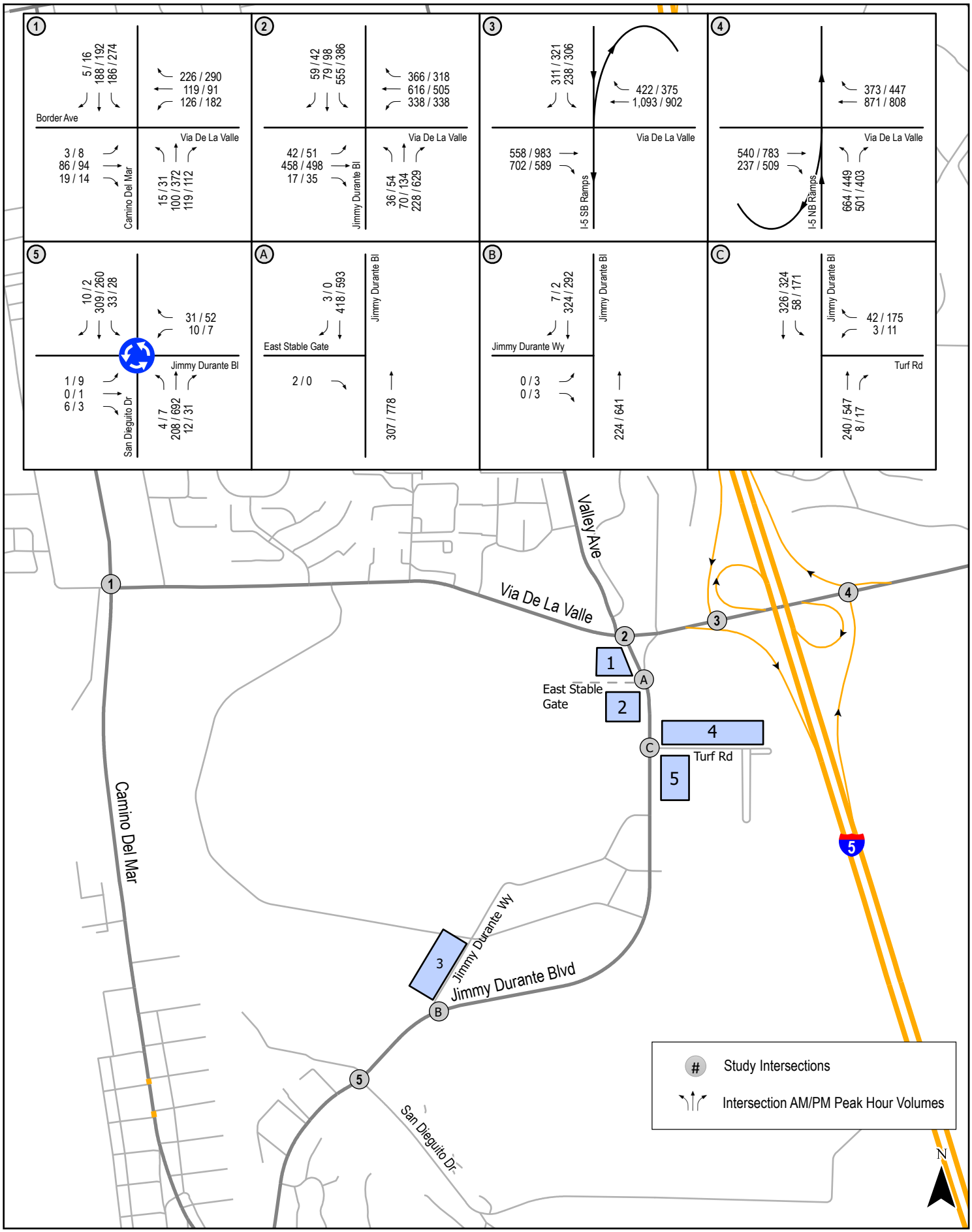

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Figure 8-3C
Existing + Site 4 or 5 Project Traffic Volumes

9.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 1 AND SITE 2

Existing + Project is defined as the Existing day traffic plus the traffic generated by the Project Site #1 or Project Site #2.

9.1 Existing without Project – Site 1 and Site 2

Table 9-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 9-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

9.2 Existing with Project – Site 1 and Site 2

Table 9-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 9-1*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix D includes the Existing with Project (Site 1 and 2) peak hour intersection analysis worksheets.

TABLE 9–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	074	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.4	B	10.8	B	0.4	No
		PM	0.0	A	11.5	B	11.5	No

Continued on the Next Page

TABLE 9–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.4	B	14.5	B	0.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	12.8	B	12.8	B	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

10.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 3

Existing + Project is defined as the Existing day traffic plus the traffic generated the Project Site #3.

10.1 Existing without Project – Site 3

Table 10-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 10-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

10.2 Existing with Project – Site 3

Table 10-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 10-0*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix E includes the Existing with Project (Site 3) peak hour intersection analysis worksheets.

TABLE 10–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	0.7	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.4	B	10.5	B	0.1	No
		PM	0.0	A	0.0	A	0.0	No

Continued on the Next Page

TABLE 10–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	13.2	B	13.2	No
		PM	14.4	B	18.5	C	4.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.6	A	0.1	No
		PM	12.8	B	13.0	B	0.2	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

11.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 4 AND SITE 5

Existing + Project is defined as the Existing day traffic plus the traffic generated by the Project Site #4 or Project Site #5.

11.1 Existing without Project – Site 4 and Site 5

Table 11-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 11-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

11.2 Existing with Project – Site 4 and Site 5

Table 11-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 11-1*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix F includes the Existing with Project (Site 4 and 5) peak hour intersection analysis worksheets.

TABLE 11–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	0.7	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.4	B	10.5	B	0.1	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 11–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.4	B	14.5	B	0.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	12.8	B	13.3	B	0.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

12.0 OPENING DAY (YEAR 2028) CONDITIONS

This section describes the Opening Day (Year 2028) roadway network and traffic volume conditions.

12.1 Network Conditions

The existing street system network illustrated in *Figure 3–1* is used for Opening Day (Year 2028) conditions with no assumed improvements within the study area.

Figure 12–1 shows the Opening Day (Year 2028) without Project traffic volumes. ***Figure 12–2a*** shows the Opening Day (Year 2028) with Project (Site 1 and Site 2) traffic volumes. ***Figure 12–2b*** shows the Opening Day (Year 2028) with Project (Site 3) traffic volumes. ***Figure 12–2c*** shows the Opening Day (Year 2028) with Project(Site 4 and Site 5) traffic volumes.

12.2 Opening Day (Year 2028) Traffic Volumes

To forecast future traffic volumes for Opening Day (Year 2028) conditions, the SANDAG ABM2+ model was first utilized to determine Year 20250 volumes. Year 2028 traffic volumes were then developed based on a calculated ambient growth factor between Existing Year 2025 and future Year 2050 traffic volumes.

A comparison between SANDAG Year 2050 traffic volumes and existing Year 2025 traffic volumes shows an average growth of 0.45% per year. To be conservative, LLG utilized an ambient growth rate of 1% per year for 3 years to calculate Year 2028 traffic volumes.

The growth factor calculations are included in ***Appendix G.***

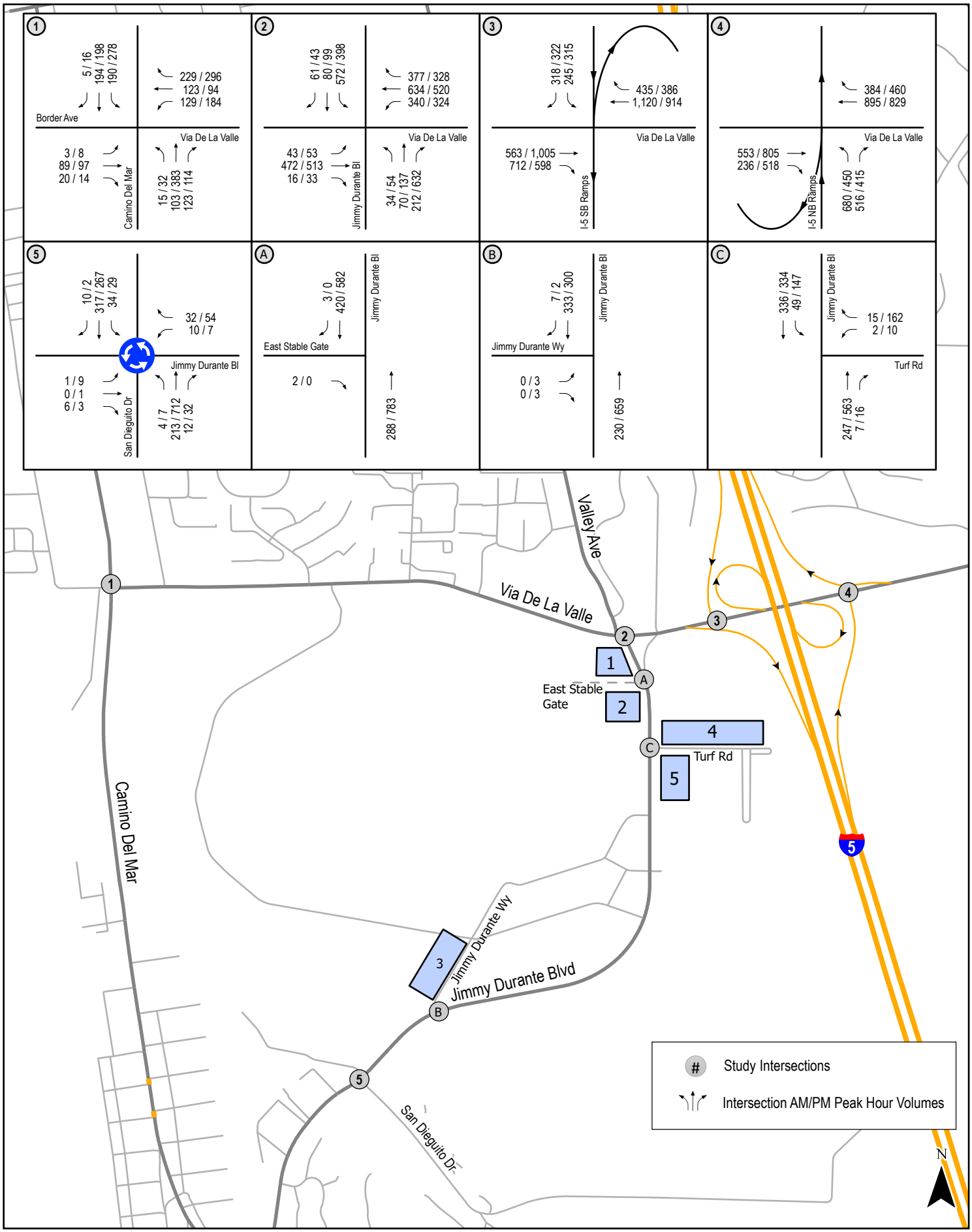

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Figure 12-1
Near-Term (Year 2028) without Project Traffic Volumes

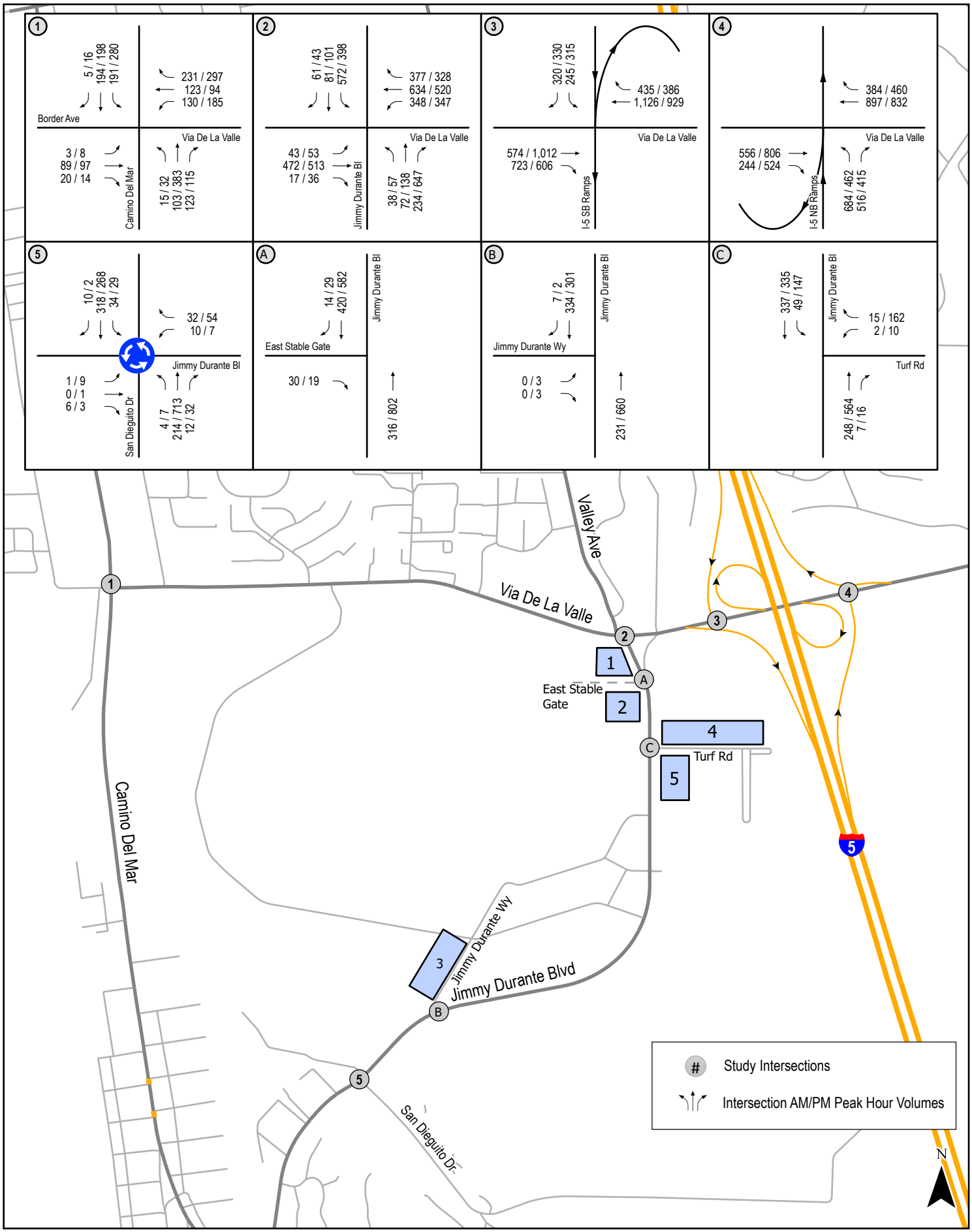

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Figure 12-2A
Near-Term (Year 2028) without Project Sites 1 or 2 Traffic Volumes

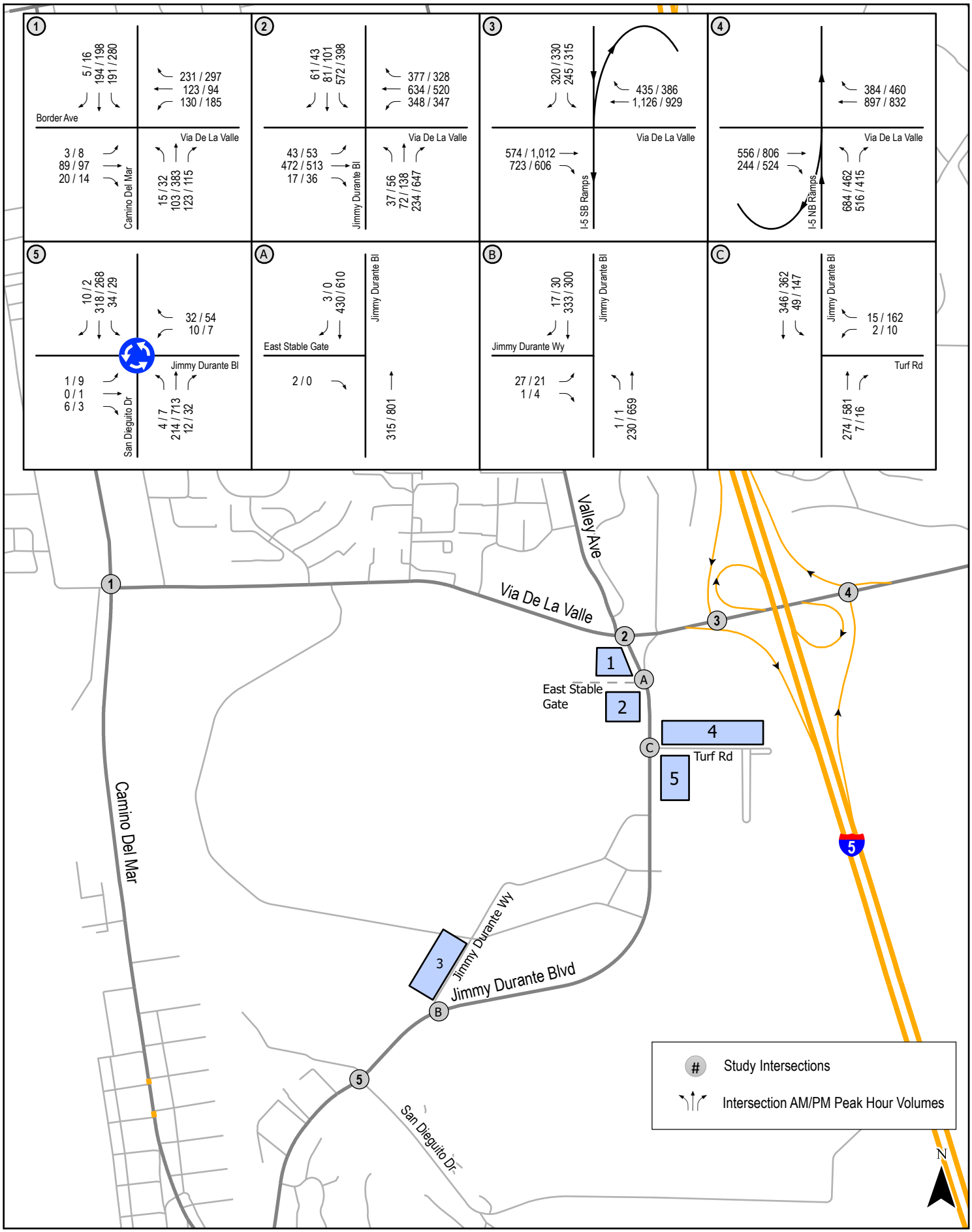

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Figure 12-2B
Near-Term (Year 2028) + Project Site 3 Project Traffic Volumes

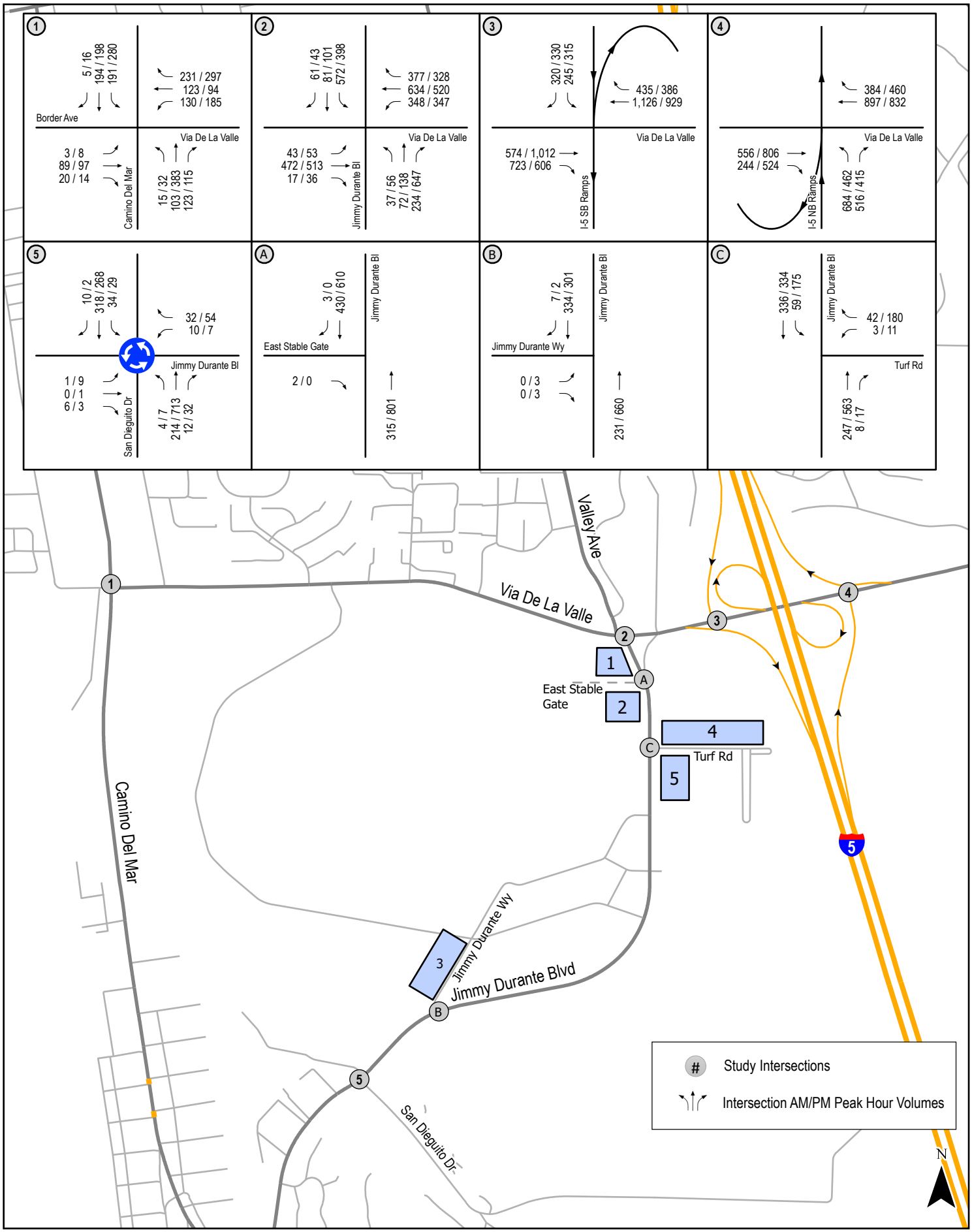

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Figure 12-2C
Near-Term (Year 2028) + Project Site 4 or 5 Project Traffic Volumes

13.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 1 AND SITE 2

The Opening day (Year) for this Project is 2028.

13.1 Opening Day (Year 2028) without Project – Site 1 and Site 2

Table 13-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 13-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

13.2 Opening Day (Year 2028) with Project – Site 1 and Site 2

Table 13-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 13-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix I includes the Opening Day (Year 2028) with Project (Site 1 and 2) peak hour intersection analysis worksheets.

TABLE 13–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	0.6	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.0	No
		PM	19.2	B	19.3	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.5	B	10.8	B	0.3	No
		PM	0.0	A	11.6	B	11.6	No

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TABLE 13–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.8	B	14.8	B	0.0	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.1	B	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

14.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 3

The Opening day (Year) for this Project is 2028.

14.1 Opening Day (Year 2028) without Project – Site 3

Table 14-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 14-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

14.2 Opening Day (Year 2028) with Project – Site 3

Table 14-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 14-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix J includes the Opening Day (Year 2028) with Project (Site 3) peak hour intersection analysis worksheets.

TABLE 14–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	1.3	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.3	No
		PM	19.2	B	19.3	B	0.3	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.5	B	10.5	B	0.0	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 14–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	13.4	B	13.4	No
		PM	14.8	B	19.1	C	4.3	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.2	B	0.1	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

15.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 4 AND SITE 5

The Opening day (Year) for this Project is 2028.

15.1 Opening Day (Year 2028) without Project – Site 4 and Site 5

Table 15-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 15-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

15.2 Opening Day (Year 2028) with Project – Site 4 and Site 5

Table 15-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 15-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix K includes the Opening Day (Year 2028) with Project (Site 4 and 5) peak hour intersection analysis worksheets.

TABLE 15–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	0.6	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.0	No
		PM	19.2	B	19.3	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.5	B	10.5	B	0.0	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 15–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.8	B	14.8	B	0.0	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.6	B	0.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table -1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

16.0 PROJECT ACCESS ASSESSMENT

Site 1 and Site 2
Access for Site 1 and Site 2 would be provided by the East Main Stable Gate driveway, which connects to Jimmy Durante Boulevard. The East Main Stable Gate driveway is a right-in / right-out access point.

Since only right-in / right-out turns are permitted at the East Main Stable Gate driveway, outbound residents heading north of the site are expected to make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and inbound residents coming from south of the site are expected to make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

As seen in *Table 9-1* and *Table 13-1*, the Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2) intersection will continue to operate acceptably at LOS B or better with the addition of Project traffic.

Site 3
Access to Site 3 would be provided via Jimmy Durante Way, which connects to Jimmy Durante Boulevard. The Jimmy Durante Boulevard / Jimmy Durante Way driveway is a full-access, minor street stop-controlled intersection. As seen in *Table 10-1* and *Table 14-1*, the Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3) intersection will continue to operate acceptably at LOS C or better with the addition of Project traffic.

Site 4 and Site 5 – Access for Site 4 and Site 5 would be provided via Turf Road, which connects to Jimmy Durante Boulevard. The Jimmy Durante Boulevard / Turf Road driveway is a full-access, minor street stop-controlled intersection. As seen in *Table 11-1* and *Table 15-1*, the Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5) intersection will continue to operate acceptably at LOS D or better with the addition of Project traffic.

17.0 CONCLUSIONS

17.1 Operations Analysis

Based on the intersection analysis, all study intersections are calculated to continue to operate at LOS D or better with the addition of the Project located at all five (5) proposed sites. Therefore, no improvements are necessary from an operations perspective.

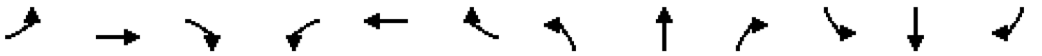
17.2 VMT

Any of the proposed development scenarios on any of the proposed sites that assume 100% affordable housing can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis.

In development scenarios that include both affordable and market rate units, the affordable units can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis. Market rate units on any of the proposed Sites 1-5 would be expected to result in a significant transportation impact with mitigation required. Mitigation could include implementation of a robust TDM plan or participation in the City of San Diego's Complete Communities Mobility Choices Program, depending on whether the development site is located within the City of Del Mar or the City of San Diego.

ATTACHMENT B

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	86	19	125	119	222	15	100	119	184	188	5
Future Volume (veh/h)	3	86	19	125	119	222	15	100	119	184	188	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	126	28	160	153	285	16	110	131	211	216	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	418	91	532	535	440	28	810	341	277	1296	36
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.23	0.23	0.16	0.37	0.37
Sat Flow, veh/h	12	1461	317	1224	1870	1538	1781	3554	1494	1781	3527	98
Grp Volume(v), veh/h	158	0	0	160	153	285	16	110	131	211	108	114
Grp Sat Flow(s),veh/h/ln	1790	0	0	1224	1870	1538	1781	1777	1494	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.2	8.1	0.4	1.2	3.7	5.6	2.0	2.1
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.6	3.2	8.1	0.4	1.2	3.7	5.6	2.0	2.1
Prop In Lane	0.03		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	586	0	0	532	535	440	28	810	341	277	653	679
V/C Ratio(X)	0.27	0.00	0.00	0.30	0.29	0.65	0.56	0.14	0.38	0.76	0.17	0.17
Avail Cap(c_a), veh/h	1222	0	0	974	1210	995	230	1798	756	948	1616	1680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	0.0	13.9	13.8	15.5	24.2	15.3	16.2	20.1	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.6	16.3	0.1	0.7	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.2	1.1	2.5	0.3	0.4	1.1	2.3	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	0.0	14.2	14.1	17.1	40.5	15.3	16.9	24.4	10.7	10.7
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		158			598			257			433	
Approach Delay, s/veh		14.1			15.6			17.7			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.3	17.2		20.1	5.4	24.1		20.1				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.6	5.7		5.4	2.4	4.1		10.1				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.2		2.3				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.3	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	458	16	330	616	366	33	68	206	555	78	59
Future Volume (veh/h)	42	458	16	330	616	366	33	68	206	555	78	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	487	17	388	725	431	42	87	0	694	98	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	1357	47	434	1021	604	175	183		748	405	
Arrive On Green	0.03	0.39	0.39	0.21	0.81	0.81	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3500	122	3456	2113	1251	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	45	247	257	388	609	547	42	87	0	694	98	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.5	13.8	13.9	15.3	21.7	22.0	3.0	6.2	0.0	27.6	6.1	0.0
Cycle Q Clear(g_c), s	3.5	13.8	13.9	15.3	21.7	22.0	3.0	6.2	0.0	27.6	6.1	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	58	689	715	434	858	767	175	183		748	405	
V/C Ratio(X)	0.78	0.36	0.36	0.89	0.71	0.71	0.24	0.47		0.93	0.24	
Avail Cap(c_a), veh/h	65	689	715	479	858	767	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	30.5	30.5	54.4	9.1	9.1	58.3	59.7	0.0	53.8	45.4	0.0
Incr Delay (d2), s/veh	40.1	1.5	1.4	15.3	2.3	2.6	0.7	1.9	0.0	17.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	6.2	6.4	6.9	4.9	4.4	1.4	3.0	0.0	13.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.4	31.9	31.9	69.7	11.4	11.7	59.0	61.6	0.0	70.9	45.7	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		549			1544			129			792	
Approach Delay, s/veh		38.1			26.2			60.8			67.8	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	23.8	60.5		36.2	10.5	73.8		19.5
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0
Max Q Clear Time (g_c+I1), s	17.3	15.9		29.6	5.5	24.0		8.2
Green Ext Time (p_c), s	0.3	2.6		0.6	0.0	8.2		0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	40.8
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	547	691	0	1087	422	0	0	0	238	0	309
Future Volume (veh/h)	0	547	691	0	1087	422	0	0	0	238	0	309
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	651	0	0	1264	0				259	0	336
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	651	0	0	1264	0				259	0	336
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	16.5	0.0	0.0	0.0	0.0				17.4	0.0	12.1
Cycle Q Clear(g_c), s	0.0	16.5	0.0	0.0	0.0	0.0				17.4	0.0	12.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.28		0.00	0.55					0.54	0.00	0.39
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.69	0.00	0.00	0.78	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.6	0.0	0.0	0.0	0.0				43.6	0.0	41.6
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				4.2	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.4	0.0	0.0	0.2	0.0				8.3	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	18.8	0.0	0.0	0.7	0.0				47.8	0.0	43.0
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		651			1264						595	
Approach Delay, s/veh		18.8			0.7						45.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	18.5	19.4	2.0
Green Ext Time (p_c), s	4.8	2.1	12.0

Intersection Summary	
HCM 7th Control Delay, s/veh	15.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	537	229	0	869	373	660	0	501	0	0	0
Future Volume (veh/h)	0	537	229	0	869	373	660	0	501	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	590	0	0	966	0	887	0	363			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	590	0	0	966	0	887	0	363			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.4	0.0	0.0	28.7	0.0	24.6	0.0	22.2			
Cycle Q Clear(g_c), s	0.0	3.4	0.0	0.0	28.7	0.0	24.6	0.0	22.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.37		0.00	0.60		0.53	0.00	0.49			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.0	0.0	26.1	0.0	25.5			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.7	0.0	1.2	0.0	2.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	12.2	0.0	10.7	0.0	8.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	30.7	0.0	27.3	0.0	27.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		590			966			1250				
Approach Delay, s/veh		4.6			30.7			27.4				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.4	30.7	26.6
Green Ext Time (p_c), s	4.2	7.2	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	23.8
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	52	282	403
Demand Flow Rate, veh/h	12	53	287	411
Vehicles Circulating, veh/h	413	274	41	18
Vehicles Exiting, veh/h	16	54	384	309
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.6	5.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	53	287	411
Cap Entry Lane, veh/h	906	1043	1323	1355
Entry HV Adj Factor	1.000	0.981	0.982	0.980
Flow Entry, veh/h	12	52	282	403
Cap Entry, veh/h	904	1022	1297	1326
V/C Ratio	0.013	0.051	0.217	0.304
Control Delay, s/veh	4.1	4.0	4.6	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	280	408	3
Future Vol, veh/h	0	2	0	280	408	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	304	443	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	223	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	664	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	664	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.44	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	664	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	223	323	7
Future Vol, veh/h	0	0	0	223	323	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	242	351	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	593	351	359	0	-	0
Stage 1	351	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	468	692	1200	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	468	692	1200	-	-	-
Mov Cap-2 Maneuver	468	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1200	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	240	7	48	326
Future Vol, veh/h	2	15	240	7	48	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	261	8	52	354

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	546	134	0	0	268	0
Stage 1	265	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	468	890	-	-	1292	-
Stage 1	756	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	447	890	-	-	1292	-
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.46	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	826	462	-
HCM Lane V/C Ratio	-	-	0.022	0.04	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	94	14	179	91	287	31	372	111	270	192	16
Future Volume (veh/h)	8	94	14	179	91	287	31	372	111	270	192	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	124	18	206	105	330	34	413	123	278	198	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	455	63	532	558	459	52	759	318	347	1258	101
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.19	0.38	0.38
Sat Flow, veh/h	45	1527	210	1237	1870	1539	1781	3554	1490	1781	3320	265
Grp Volume(v), veh/h	153	0	0	206	105	330	34	413	123	278	105	109
Grp Sat Flow(s),veh/h/ln	1781	0	0	1237	1870	1539	1781	1777	1490	1781	1777	1809
Q Serve(g_s), s	0.0	0.0	0.0	2.4	2.3	10.7	1.1	5.8	4.0	8.3	2.2	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.0	2.3	10.7	1.1	5.8	4.0	8.3	2.2	2.2
Prop In Lane	0.07		0.12	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	600	0	0	532	558	459	52	759	318	347	673	685
V/C Ratio(X)	0.25	0.00	0.00	0.39	0.19	0.72	0.65	0.54	0.39	0.80	0.16	0.16
Avail Cap(c_a), veh/h	1072	0	0	874	1074	884	204	1532	643	873	1434	1460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	0.0	0.0	15.7	14.6	17.5	26.8	19.6	18.8	21.5	11.5	11.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.1	12.8	0.6	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.8	0.9	3.4	0.6	2.2	1.3	3.4	0.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.2	0.0	0.0	16.1	14.7	19.6	39.6	20.2	19.6	25.8	11.6	11.6
LnGrp LOS	B			B	B	B	D	C	B	C	B	B
Approach Vol, veh/h		153			641			570			492	
Approach Delay, s/veh		15.2			17.7			21.2			19.6	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.5	17.8		22.6	6.2	27.1		22.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.3	7.8		5.6	3.1	4.2		12.7				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		19.1	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	498	32	315	505	318	52	133	614	386	96	42
Future Volume (veh/h)	51	498	32	315	505	318	52	133	614	386	96	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	553	36	328	526	331	56	143	0	482	120	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1455	95	378	1032	648	206	217		596	322	
Arrive On Green	0.04	0.43	0.43	0.18	0.84	0.84	0.12	0.12	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1781	3382	220	3456	2061	1294	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	57	290	299	328	453	404	56	143	0	482	120	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1824	1728	1777	1579	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.4	15.6	15.6	12.9	10.2	10.2	4.0	10.2	0.0	18.8	7.9	0.0
Cycle Q Clear(g_c), s	4.4	15.6	15.6	12.9	10.2	10.2	4.0	10.2	0.0	18.8	7.9	0.0
Prop In Lane	1.00		0.12	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	73	764	785	378	890	790	206	217		596	322	
V/C Ratio(X)	0.78	0.38	0.38	0.87	0.51	0.51	0.27	0.66		0.81	0.37	
Avail Cap(c_a), veh/h	103	764	785	464	890	790	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.5	27.2	27.2	56.2	6.6	6.6	56.5	59.2	0.0	55.7	51.2	0.0
Incr Delay (d2), s/veh	21.4	1.4	1.4	12.3	0.4	0.5	0.7	3.4	0.0	5.0	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	6.8	7.0	5.8	2.7	2.4	1.8	5.0	0.0	8.6	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.9	28.6	28.6	68.5	7.0	7.0	57.2	62.7	0.0	60.8	52.0	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		646			1185			199			602	
Approach Delay, s/veh		33.8			24.0			61.1			59.0	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.5	66.4		30.0	11.6	76.3		22.0
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	14.9	17.6		20.8	6.4	12.2		12.2
Green Ext Time (p_c), s	0.4	3.1		1.8	0.0	5.8		0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	37.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↱	↱
Traffic Volume (veh/h)	0	976	581	0	887	375	0	0	0	306	0	313
Future Volume (veh/h)	0	976	581	0	887	375	0	0	0	306	0	313
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1084	0	0	986	0				352	0	360
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1084	0	0	986	0				352	0	360
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	19.5	0.0	0.0	0.0	0.0				21.7	0.0	11.3
Cycle Q Clear(g_c), s	0.0	19.5	0.0	0.0	0.0	0.0				21.7	0.0	11.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.56		0.00	0.51					0.53	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.65	0.00	0.00	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.2	0.0	0.0	0.0	0.0				34.5	0.0	31.3
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.8	0.0				3.1	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.0	0.0	0.2	0.0				10.0	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.0	0.0	0.0	0.8	0.0				37.6	0.0	31.9
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1084			986						712	
Approach Delay, s/veh		12.0			0.8						34.7	
Approach LOS		B			A						C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	21.5	23.7	2.0
Green Ext Time (p_c), s	9.6	2.7	8.0

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	782	503	0	805	447	437	0	403	0	0	0
Future Volume (veh/h)	0	782	503	0	805	447	437	0	403	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	850	0	0	885	0	632	0	302			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	850	0	0	885	0	632	0	302			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	21.9	0.0	18.4	0.0	20.2			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	21.9	0.0	18.4	0.0	20.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.45		0.00	0.47		0.45	0.00	0.49			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.7	0.0	31.4	0.0	32.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.8	0.0	1.1	0.0	2.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	8.9	0.0	8.2	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.6	0.0	0.0	21.5	0.0	32.5	0.0	34.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		850			885			934				
Approach Delay, s/veh		0.6			21.5			33.2				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	23.9	22.2
Green Ext Time (p_c), s	6.8	6.8	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	76	819	314
Demand Flow Rate, veh/h	21	77	836	321
Vehicles Circulating, veh/h	328	814	47	17
Vehicles Exiting, veh/h	10	69	302	874
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	7.6	10.7	4.7
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	77	836	321
Cap Entry Lane, veh/h	988	602	1315	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	76	819	314
Cap Entry, veh/h	984	593	1287	1326
V/C Ratio	0.021	0.128	0.636	0.237
Control Delay, s/veh	3.8	7.6	10.7	4.7
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	760	565	0
Future Vol, veh/h	0	0	0	760	565	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	826	614	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	307	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	588	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	588	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	640	291	2
Future Vol, veh/h	3	3	0	640	291	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	696	316	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1012	316	-	0	-	0
Stage 1	316	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	265	724	0	-	-	-
Stage 1	739	-	0	-	-	-
Stage 2	495	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	265	724	-	-	-	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.43	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	388	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	157	547	16	143	324
Future Vol, veh/h	10	157	547	16	143	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	171	595	17	155	352

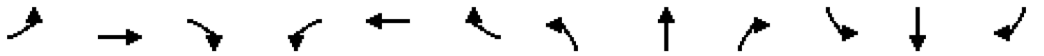
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1090	306	0	0	612	0
Stage 1	603	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	210	690	-	-	963	-
Stage 1	509	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	172	690	-	-	963	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	479	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	12.82	0	3.52
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	869	-
HCM Lane V/C Ratio	-	-	0.283	0.161	-
HCM Control Delay (s/veh)	-	-	12.8	9.5	0.9
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

ATTACHMENT C

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING + PROJECT (SITE 6)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	86	19	126	119	224	15	100	119	185	188	5
Future Volume (veh/h)	3	86	19	126	119	224	15	100	119	185	188	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	126	28	162	153	287	16	110	131	213	216	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	419	91	533	536	441	28	808	339	279	1298	36
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.23	0.23	0.16	0.37	0.37
Sat Flow, veh/h	12	1461	317	1224	1870	1538	1781	3554	1494	1781	3527	98
Grp Volume(v), veh/h	158	0	0	162	153	287	16	110	131	213	108	114
Grp Sat Flow(s),veh/h/ln	1790	0	0	1224	1870	1538	1781	1777	1494	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.3	3.2	8.1	0.4	1.2	3.7	5.7	2.0	2.1
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.7	3.2	8.1	0.4	1.2	3.7	5.7	2.0	2.1
Prop In Lane	0.03		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	587	0	0	533	536	441	28	808	339	279	654	680
V/C Ratio(X)	0.27	0.00	0.00	0.30	0.29	0.65	0.56	0.14	0.39	0.76	0.17	0.17
Avail Cap(c_a), veh/h	1217	0	0	971	1206	991	229	1791	753	944	1609	1673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	0.0	13.9	13.8	15.6	24.3	15.3	16.3	20.1	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.6	16.3	0.1	0.7	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.2	1.1	2.5	0.3	0.4	1.2	2.3	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	0.0	14.3	14.1	17.2	40.6	15.4	17.0	24.4	10.7	10.7
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		158			602			257			435	
Approach Delay, s/veh		14.1			15.6			17.8			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	17.2		20.2	5.4	24.2		20.2				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.7	5.7		5.4	2.4	4.1		10.1				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			16.4									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	458	17	338	616	366	37	70	228	555	79	59
Future Volume (veh/h)	42	458	17	338	616	366	37	70	228	555	79	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	487	18	398	725	431	47	90	292	694	99	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	913	34	443	758	449	394	83	270	748	405	
Arrive On Green	0.03	0.26	0.26	0.21	0.60	0.60	0.22	0.22	0.22	0.22	0.22	0.00
Sat Flow, veh/h	1781	3490	129	3456	2108	1247	1781	377	1222	3456	1870	1585
Grp Volume(v), veh/h	45	247	258	398	611	545	47	0	382	694	99	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1842	1728	1777	1578	1781	0	1598	1728	1870	1585
Q Serve(g_s), s	3.5	16.7	16.8	15.7	45.1	45.7	3.0	0.0	31.0	27.6	6.1	0.0
Cycle Q Clear(g_c), s	3.5	16.7	16.8	15.7	45.1	45.7	3.0	0.0	31.0	27.6	6.1	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	58	465	482	443	639	568	394	0	354	748	405	
V/C Ratio(X)	0.78	0.53	0.53	0.90	0.96	0.96	0.12	0.00	1.08	0.93	0.24	
Avail Cap(c_a), veh/h	65	465	482	479	639	568	394	0	354	768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	44.3	44.4	54.1	26.9	27.0	43.6	0.0	54.5	53.8	45.4	0.0
Incr Delay (d2), s/veh	40.1	4.3	4.2	16.1	22.2	25.1	0.1	0.0	70.7	17.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	7.9	8.2	7.1	17.7	16.3	1.3	0.0	19.1	13.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.4	48.7	48.6	70.2	49.1	52.1	43.7	0.0	125.2	70.9	45.7	0.0
LnGrp LOS	F	D	D	E	D	D	D		F	E	D	
Approach Vol, veh/h		550			1554			429			793	
Approach Delay, s/veh		53.4			55.6			116.3			67.8	
Approach LOS		D			E			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.2	42.8		36.2	10.5	56.5		36.8
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	10.4	* 35		31.1	5.1	49.0		31.0
Max Q Clear Time (g_c+I1), s	17.7	18.8		29.6	5.5	47.7		33.0
Green Ext Time (p_c), s	0.3	2.5		0.6	0.0	0.9		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	66.0
HCM 7th LOS	E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Future Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	664	0	0	1271	0				259	0	338
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	664	0	0	1271	0				259	0	338
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Cycle Q Clear(g_c), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.29		0.00	0.55					0.54	0.00	0.39
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.57	0.00	0.00	0.78	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.7	0.0	0.0	0.0	0.0				43.6	0.0	41.7
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				4.2	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.6	0.0	0.0	0.2	0.0				8.3	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	18.9	0.0	0.0	0.7	0.0				47.8	0.0	43.0
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		664			1271						597	
Approach Delay, s/veh		18.9			0.7						45.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	18.9	19.4	2.0
Green Ext Time (p_c), s	4.9	2.1	12.2

Intersection Summary	
HCM 7th Control Delay, s/veh	16.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Future Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	593	0	0	968	0	892	0	363			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	593	0	0	968	0	892	0	363			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Cycle Q Clear(g_c), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.37		0.00	0.60		0.53	0.00	0.49			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.0	0.0	26.2	0.0	25.5			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.7	0.0	1.2	0.0	2.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	12.2	0.0	10.8	0.0	8.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	30.7	0.0	27.4	0.0	27.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		593			968			1255				
Approach Delay, s/veh		4.6			30.7			27.5				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.5	30.8	26.8
Green Ext Time (p_c), s	4.3	7.2	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	23.8
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	52	283	404
Demand Flow Rate, veh/h	12	53	288	412
Vehicles Circulating, veh/h	414	275	41	18
Vehicles Exiting, veh/h	16	54	385	310
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.6	5.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	53	288	412
Cap Entry Lane, veh/h	905	1042	1323	1355
Entry HV Adj Factor	1.000	0.981	0.982	0.980
Flow Entry, veh/h	12	52	283	404
Cap Entry, veh/h	903	1021	1297	1326
V/C Ratio	0.013	0.051	0.218	0.305
Control Delay, s/veh	4.1	4.0	4.6	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	291	420	3
Future Vol, veh/h	0	2	0	291	420	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	316	457	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	230	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	658	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	658	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.49	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	658	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	224	324	7
Future Vol, veh/h	0	0	0	224	324	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	243	352	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	596	352	360	0	-	0
Stage 1	352	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	467	691	1199	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	467	691	1199	-	-	-
Mov Cap-2 Maneuver	467	-	-	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	797	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1199	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

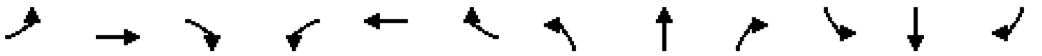
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	241	7	48	327
Future Vol, veh/h	2	15	241	7	48	327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	262	8	52	355

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	548	135	0	0	270	0
Stage 1	266	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	466	889	-	-	1291	-
Stage 1	755	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	889	-	-	1291	-
Mov Cap-2 Maneuver	536	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.46	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	825	461	-
HCM Lane V/C Ratio	-	-	0.022	0.04	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	94	14	180	91	288	31	372	112	272	192	16
Future Volume (veh/h)	8	94	14	180	91	288	31	372	112	272	192	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	124	18	207	105	331	34	413	124	280	198	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	456	63	532	558	459	52	758	318	349	1261	101
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	45	1527	210	1237	1870	1539	1781	3554	1490	1781	3320	265
Grp Volume(v), veh/h	153	0	0	207	105	331	34	413	124	280	105	109
Grp Sat Flow(s),veh/h/ln	1781	0	0	1237	1870	1539	1781	1777	1490	1781	1777	1809
Q Serve(g_s), s	0.0	0.0	0.0	2.4	2.3	10.8	1.1	5.8	4.0	8.4	2.2	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.0	2.3	10.8	1.1	5.8	4.0	8.4	2.2	2.2
Prop In Lane	0.07		0.12	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	601	0	0	532	558	459	52	758	318	349	675	687
V/C Ratio(X)	0.25	0.00	0.00	0.39	0.19	0.72	0.65	0.55	0.39	0.80	0.16	0.16
Avail Cap(c_a), veh/h	1068	0	0	871	1070	881	203	1527	640	870	1429	1454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	0.0	15.7	14.6	17.6	26.9	19.6	18.9	21.5	11.5	11.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.1	12.8	0.6	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.9	0.9	3.5	0.6	2.2	1.3	3.5	0.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.3	0.0	0.0	16.2	14.8	19.7	39.8	20.3	19.7	25.8	11.6	11.6
LnGrp LOS	B			B	B	B	D	C	B	C	B	B
Approach Vol, veh/h		153			643			571			494	
Approach Delay, s/veh		15.3			17.8			21.3			19.7	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.6	17.9		22.6	6.2	27.2		22.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.4	7.8		5.6	3.1	4.2		12.8				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.2									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	498	35	338	505	318	55	134	629	386	98	42
Future Volume (veh/h)	51	498	35	338	505	318	55	134	629	386	98	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	553	39	352	526	331	59	144	676	482	122	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1064	75	401	810	509	397	62	290	596	322	
Arrive On Green	0.04	0.32	0.32	0.19	0.66	0.66	0.22	0.22	0.22	0.17	0.17	0.00
Sat Flow, veh/h	1781	3360	236	3456	2057	1292	1781	278	1303	3456	1870	1585
Grp Volume(v), veh/h	57	292	300	352	454	403	59	0	820	482	122	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1820	1728	1777	1571	1781	0	1580	1728	1870	1585
Q Serve(g_s), s	4.4	18.8	18.9	13.9	21.4	21.5	3.7	0.0	31.2	18.8	8.1	0.0
Cycle Q Clear(g_c), s	4.4	18.8	18.9	13.9	21.4	21.5	3.7	0.0	31.2	18.8	8.1	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		0.82	1.00		1.00
Lane Grp Cap(c), veh/h	73	563	576	401	700	619	397	0	352	596	322	
V/C Ratio(X)	0.78	0.52	0.52	0.88	0.65	0.65	0.15	0.00	2.33	0.81	0.38	
Avail Cap(c_a), veh/h	103	563	576	464	700	619	397	0	352	768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.5	39.1	39.1	55.5	18.2	18.2	43.7	0.0	54.4	55.7	51.3	0.0
Incr Delay (d2), s/veh	21.4	3.4	3.3	14.0	1.8	2.1	0.2	0.0	606.6	5.0	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	8.6	8.9	6.2	6.4	5.7	1.6	0.0	71.4	8.6	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.9	42.5	42.5	69.5	20.0	20.3	43.9	0.0	661.0	60.8	52.0	0.0
LnGrp LOS	F	D	D	E	C	C	D		F	E	D	
Approach Vol, veh/h		649			1209			879			604	
Approach Delay, s/veh		46.5			34.5			619.6			59.0	
Approach LOS		D			C			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	50.5		30.0	11.6	61.3		37.0				
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8				
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2				
Max Q Clear Time (g_c+I1), s	15.9	20.9		20.8	6.4	23.5		33.2				
Green Ext Time (p_c), s	0.4	2.9		1.8	0.0	5.3		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	195.2
HCM 7th LOS	F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Future Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1092	0	0	1002	0				352	0	369
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1092	0	0	1002	0				352	0	369
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Cycle Q Clear(g_c), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.56		0.00	0.51					0.53	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.64	0.00	0.00	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.3	0.0	0.0	0.0	0.0				34.5	0.0	31.4
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.8	0.0				3.1	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.0	0.0	0.2	0.0				10.0	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.0	0.0	0.0	0.8	0.0				37.6	0.0	32.1
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1092			1002						721	
Approach Delay, s/veh		12.0			0.8						34.8	
Approach LOS		B			A						C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	21.7	23.7	2.0
Green Ext Time (p_c), s	9.7	2.7	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Future Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	851	0	0	888	0	645	0	302			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	851	0	0	888	0	645	0	302			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.45		0.00	0.47		0.46	0.00	0.49			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.7	0.0	31.6	0.0	32.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.9	0.0	1.1	0.0	2.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	8.9	0.0	8.4	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.6	0.0	0.0	21.5	0.0	32.7	0.0	34.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		851			888			947				
Approach Delay, s/veh		0.6			21.5			33.4				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.0	22.2
Green Ext Time (p_c), s	6.8	6.8	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	76	821	315
Demand Flow Rate, veh/h	21	77	838	322
Vehicles Circulating, veh/h	329	816	47	17
Vehicles Exiting, veh/h	10	69	303	876
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	7.6	10.8	4.7
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	77	838	322
Cap Entry Lane, veh/h	987	600	1315	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	76	821	315
Cap Entry, veh/h	983	592	1287	1326
V/C Ratio	0.021	0.128	0.638	0.238
Control Delay, s/veh	3.8	7.6	10.8	4.7
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	789	594	0
Future Vol, veh/h	0	0	0	789	594	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	858	646	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	323	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	574	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	574	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	641	292	2
Future Vol, veh/h	3	3	0	641	292	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	697	317	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1014	317	-	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	264	723	0	-	-	-
Stage 1	738	-	0	-	-	-
Stage 2	494	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	264	723	-	-	-	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.46	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	387	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	157	548	16	143	325
Future Vol, veh/h	10	157	548	16	143	325
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	171	596	17	155	353

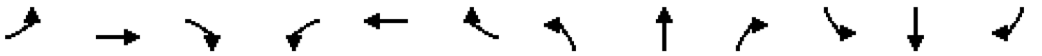
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1092	307	0	0	613	0
Stage 1	604	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	209	689	-	-	962	-
Stage 1	508	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	172	689	-	-	962	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	479	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	12.83	0	3.52
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	868	-
HCM Lane V/C Ratio	-	-	0.283	0.162	-
HCM Control Delay (s/veh)	-	-	12.8	9.5	0.9
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

ATTACHMENT D

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2028



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	89	20	129	123	229	15	103	123	190	194	5
Future Volume (veh/h)	3	89	20	129	123	229	15	103	123	190	194	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	131	29	165	158	294	16	113	135	218	223	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	424	92	535	543	446	28	799	336	284	1301	35
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.22	0.22	0.16	0.37	0.37
Sat Flow, veh/h	11	1462	317	1217	1870	1538	1781	3554	1493	1781	3530	95
Grp Volume(v), veh/h	164	0	0	165	158	294	16	113	135	218	112	117
Grp Sat Flow(s),veh/h/ln	1790	0	0	1217	1870	1538	1781	1777	1493	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.3	8.5	0.4	1.3	3.9	5.9	2.1	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.7	3.3	8.5	0.4	1.3	3.9	5.9	2.1	2.2
Prop In Lane	0.02		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	593	0	0	535	543	446	28	799	336	284	655	681
V/C Ratio(X)	0.28	0.00	0.00	0.31	0.29	0.66	0.56	0.14	0.40	0.77	0.17	0.17
Avail Cap(c_a), veh/h	1203	0	0	957	1191	979	226	1770	744	933	1590	1654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.0	13.9	15.7	24.6	15.6	16.7	20.3	10.7	10.7
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.3	1.7	16.4	0.1	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.2	1.2	2.6	0.3	0.5	1.2	2.4	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	14.3	14.2	17.4	41.0	15.7	17.4	24.6	10.8	10.8
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		164			617			264			447	
Approach Delay, s/veh		14.2			15.7			18.1			17.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.6	17.2		20.5	5.4	24.5		20.5				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.9	5.9		5.6	2.4	4.2		10.5				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.3		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.5	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	472	16	340	634	377	34	70	212	572	80	61
Future Volume (veh/h)	43	472	16	340	634	377	34	70	212	572	80	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	502	17	400	746	444	44	90	0	715	100	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	1335	45	445	1012	598	175	183		760	411	
Arrive On Green	0.03	0.38	0.38	0.22	0.80	0.80	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3504	118	3456	2114	1250	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	46	254	265	400	626	564	44	90	0	715	100	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.6	14.5	14.5	15.8	24.1	24.5	3.2	6.4	0.0	28.5	6.2	0.0
Cycle Q Clear(g_c), s	3.6	14.5	14.5	15.8	24.1	24.5	3.2	6.4	0.0	28.5	6.2	0.0
Prop In Lane	1.00		0.06	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	677	703	445	851	760	175	183		760	411	
V/C Ratio(X)	0.78	0.38	0.38	0.90	0.74	0.74	0.25	0.49		0.94	0.24	
Avail Cap(c_a), veh/h	65	677	703	479	851	760	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	31.3	31.3	54.1	9.7	9.8	58.4	59.8	0.0	53.7	45.0	0.0
Incr Delay (d2), s/veh	40.9	1.6	1.5	16.1	2.8	3.2	0.7	2.0	0.0	19.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.4	6.7	7.1	5.3	4.9	1.5	3.1	0.0	14.3	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	108.0	32.9	32.8	70.2	12.5	13.0	59.1	61.8	0.0	73.1	45.3	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		565			1590			134			815	
Approach Delay, s/veh		39.0			27.2			61.0			69.7	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.2	59.5		36.7	10.6	73.2		19.5				
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8				
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0				
Max Q Clear Time (g_c+I1), s	17.8	16.5		30.5	5.6	26.5		8.4				
Green Ext Time (p_c), s	0.3	2.7		0.3	0.0	8.2		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	42.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	563	712	0	1120	435	0	0	0	245	0	318
Future Volume (veh/h)	0	563	712	0	1120	435	0	0	0	245	0	318
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	670	0	0	1302	0				266	0	346
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	670	0	0	1302	0				266	0	346
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	17.1	0.0	0.0	0.0	0.0				17.9	0.0	12.5
Cycle Q Clear(g_c), s	0.0	17.1	0.0	0.0	0.0	0.0				17.9	0.0	12.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.29		0.00	0.57					0.55	0.00	0.40
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.67	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.8	0.0	0.0	0.0	0.0				43.8	0.0	41.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.8	0.0				4.5	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.7	0.0	0.0	0.2	0.0				8.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.0	0.0	0.0	0.8	0.0				48.3	0.0	43.2
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		670			1302						612	
Approach Delay, s/veh		19.0			0.8						45.4	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	19.1	19.9	2.0
Green Ext Time (p_c), s	5.0	2.1	12.7

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	553	236	0	895	384	680	0	516	0	0	0
Future Volume (veh/h)	0	553	236	0	895	384	680	0	516	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	608	0	0	994	0	914	0	374			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	608	0	0	994	0	914	0	374			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.6	0.0	0.0	29.9	0.0	25.6	0.0	23.1			
Cycle Q Clear(g_c), s	0.0	3.6	0.0	0.0	29.9	0.0	25.6	0.0	23.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.38		0.00	0.62		0.55	0.00	0.50			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.3	0.0	26.4	0.0	25.7			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.8	0.0	1.3	0.0	2.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	0.0	12.7	0.0	11.2	0.0	9.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	31.1	0.0	27.7	0.0	28.2			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		608			994			1288				
Approach Delay, s/veh		4.6			31.1			27.8				
Approach LOS		A			C			C				

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	69.0		69.0		71.0	
Change Period (Y+Rc), s	5.9		5.9		5.1	
Max Green Setting (Gmax), s	63.1		63.1		65.9	
Max Q Clear Time (g_c+I1), s	5.6		31.9		27.6	
Green Ext Time (p_c), s	4.4		7.5		5.8	

Intersection Summary		
HCM 7th Control Delay, s/veh	24.1	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	54	290	414
Demand Flow Rate, veh/h	12	55	295	422
Vehicles Circulating, veh/h	424	282	42	18
Vehicles Exiting, veh/h	16	55	394	319
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.7	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	55	295	422
Cap Entry Lane, veh/h	895	1035	1322	1355
Entry HV Adj Factor	1.000	0.982	0.982	0.980
Flow Entry, veh/h	12	54	290	414
Cap Entry, veh/h	894	1015	1296	1326
V/C Ratio	0.013	0.053	0.223	0.312
Control Delay, s/veh	4.1	4.0	4.7	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	288	420	3
Future Vol, veh/h	0	2	0	288	420	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	313	457	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	230	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	658	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	658	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.49	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	658	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	230	333	7
Future Vol, veh/h	0	0	0	230	333	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	250	362	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	612	362	370	0	-	0
Stage 1	362	-	-	-	-	-
Stage 2	250	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	457	683	1189	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	457	683	1189	-	-	-
Mov Cap-2 Maneuver	457	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	792	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

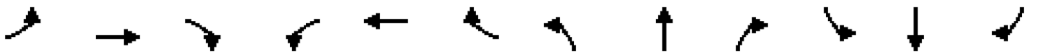
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	247	7	49	336
Future Vol, veh/h	2	15	247	7	49	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	268	8	53	365

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	561	138	0	0	276	0
Stage 1	272	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	457	885	-	-	1284	-
Stage 1	749	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	436	885	-	-	1284	-
Mov Cap-2 Maneuver	529	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	701	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.49	0	1.26
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	820	458	-
HCM Lane V/C Ratio	-	-	0.023	0.041	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	97	14	184	94	296	32	383	114	278	198	16
Future Volume (veh/h)	8	97	14	184	94	296	32	383	114	278	198	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	128	18	211	108	340	36	426	127	287	204	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	463	62	532	564	464	54	762	320	355	1276	99
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	44	1535	204	1233	1870	1539	1781	3554	1490	1781	3329	258
Grp Volume(v), veh/h	157	0	0	211	108	340	36	426	127	287	108	112
Grp Sat Flow(s),veh/h/ln	1783	0	0	1233	1870	1539	1781	1777	1490	1781	1777	1810
Q Serve(g_s), s	0.0	0.0	0.0	2.5	2.5	11.4	1.2	6.2	4.2	8.9	2.3	2.3
Cycle Q Clear(g_c), s	3.8	0.0	0.0	6.3	2.5	11.4	1.2	6.2	4.2	8.9	2.3	2.3
Prop In Lane	0.07		0.11	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	604	0	0	532	564	464	54	762	320	355	681	694
V/C Ratio(X)	0.26	0.00	0.00	0.40	0.19	0.73	0.66	0.56	0.40	0.81	0.16	0.16
Avail Cap(c_a), veh/h	1042	0	0	848	1043	858	198	1487	624	848	1392	1418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	16.0	14.9	18.0	27.6	20.2	19.4	22.0	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.3	13.1	0.6	0.8	4.4	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	2.0	0.9	3.7	0.7	2.4	1.4	3.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	0.0	0.0	16.5	15.1	20.3	40.7	20.8	20.2	26.4	11.8	11.8
LnGrp LOS	B			B	B	C	D	C	C	C	B	B
Approach Vol, veh/h		157			659			589			507	
Approach Delay, s/veh		15.6			18.2			21.9			20.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.1	18.3		23.3	6.4	28.0		23.3				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.9	8.2		5.8	3.2	4.3		13.4				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary		
HCM 7th Control Delay, s/veh		19.6
HCM 7th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	513	33	324	520	328	54	137	632	398	99	43
Future Volume (veh/h)	53	513	33	324	520	328	54	137	632	398	99	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	570	37	338	542	342	58	147	0	498	124	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	1427	92	388	1016	640	210	220		609	329	
Arrive On Green	0.04	0.42	0.42	0.19	0.82	0.82	0.12	0.12	0.00	0.18	0.18	0.00
Sat Flow, veh/h	1781	3382	219	3456	2058	1297	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	59	299	308	338	468	416	58	147	0	498	124	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1825	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.6	16.4	16.4	13.3	11.5	11.6	4.2	10.5	0.0	19.4	8.2	0.0
Cycle Q Clear(g_c), s	4.6	16.4	16.4	13.3	11.5	11.6	4.2	10.5	0.0	19.4	8.2	0.0
Prop In Lane	1.00		0.12	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	76	750	770	388	877	779	210	220		609	329	
V/C Ratio(X)	0.78	0.40	0.40	0.87	0.53	0.53	0.28	0.67		0.82	0.38	
Avail Cap(c_a), veh/h	103	750	770	464	877	779	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.4	28.1	28.1	55.9	7.2	7.2	56.3	59.1	0.0	55.5	50.9	0.0
Incr Delay (d2), s/veh	22.7	1.6	1.6	12.9	0.5	0.6	0.7	3.5	0.0	5.6	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	7.2	7.4	6.0	3.0	2.7	1.9	5.1	0.0	8.9	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	89.1	29.7	29.7	68.8	7.8	7.9	57.0	62.6	0.0	61.1	51.6	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		666			1222			205			622	
Approach Delay, s/veh		35.0			24.7			61.0			59.2	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.9	65.3		30.6	11.8	75.3		22.3
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	15.3	18.4		21.4	6.6	13.6		12.5
Green Ext Time (p_c), s	0.4	3.1		1.8	0.0	6.0		0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	37.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	1005	598	0	914	386	0	0	0	315	0	322
Future Volume (veh/h)	0	1005	598	0	914	386	0	0	0	315	0	322
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1117	0	0	1016	0				362	0	370
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1117	0	0	1016	0				362	0	370
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	20.5	0.0	0.0	0.0	0.0				22.5	0.0	11.6
Cycle Q Clear(g_c), s	0.0	20.5	0.0	0.0	0.0	0.0				22.5	0.0	11.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.57		0.00	0.52					0.55	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.00	0.00	0.86	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.4	0.0	0.0	0.0	0.0				34.8	0.0	31.4
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.9	0.0				3.3	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	0.0	0.2	0.0				10.4	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.1	0.0	0.0	0.9	0.0				38.0	0.0	32.1
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1117			1016						732	
Approach Delay, s/veh		12.1			0.9						35.0	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	22.5	24.5	2.0
Green Ext Time (p_c), s	10.0	2.8	8.4

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	805	518	0	829	460	450	0	415	0	0	0
Future Volume (veh/h)	0	805	518	0	829	460	450	0	415	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	875	0	0	911	0	651	0	311			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	875	0	0	911	0	651	0	311			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.7	0.0	19.0	0.0	21.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.7	0.0	19.0	0.0	21.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.47		0.00	0.48		0.47	0.00	0.50			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.9	0.0	31.6	0.0	32.2			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.9	0.0	1.1	0.0	2.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	9.3	0.0	8.5	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.7	0.0	0.0	21.8	0.0	32.8	0.0	35.2			
LnGrp LOS		A			C		C		D			
Approach Vol, veh/h		875			911			962				
Approach Delay, s/veh		0.7			21.8			33.5				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.7	23.0
Green Ext Time (p_c), s	7.1	7.0	3.9

Intersection Summary	
HCM 7th Control Delay, s/veh	19.2
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	78	844	324
Demand Flow Rate, veh/h	21	79	861	331
Vehicles Circulating, veh/h	338	838	49	17
Vehicles Exiting, veh/h	10	72	310	900
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.9	7.9	11.3	4.8
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	79	861	331
Cap Entry Lane, veh/h	978	587	1313	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	78	844	324
Cap Entry, veh/h	974	579	1285	1326
V/C Ratio	0.022	0.135	0.657	0.244
Control Delay, s/veh	3.9	7.9	11.3	4.8
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	783	582	0
Future Vol, veh/h	0	0	0	783	582	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	851	633	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	316	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	580	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	580	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	659	300	2
Future Vol, veh/h	3	3	0	659	300	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	716	326	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1042	326	-	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	254	715	0	-	-	-
Stage 1	731	-	0	-	-	-
Stage 2	484	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	254	715	-	-	-	-
Mov Cap-2 Maneuver	254	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.77	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	375	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	162	563	16	147	334
Future Vol, veh/h	10	162	563	16	147	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	176	612	17	160	363

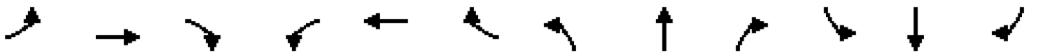
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1122	315	0	0	629	0
Stage 1	621	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	200	681	-	-	949	-
Stage 1	498	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	162	681	-	-	949	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13.06	0	3.58
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	633	853	-
HCM Lane V/C Ratio	-	-	0.296	0.168	-
HCM Control Delay (s/veh)	-	-	13.1	9.6	1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

ATTACHMENT E

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2028 + PROJECT



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Future Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	131	29	167	158	296	16	113	135	220	223	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	426	92	536	544	448	28	796	334	287	1303	35
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.22	0.22	0.16	0.37	0.37
Sat Flow, veh/h	11	1462	317	1217	1870	1538	1781	3554	1493	1781	3530	95
Grp Volume(v), veh/h	164	0	0	167	158	296	16	113	135	220	112	117
Grp Sat Flow(s),veh/h/ln	1790	0	0	1217	1870	1538	1781	1777	1493	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.8	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Prop In Lane	0.02		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	594	0	0	536	544	448	28	796	334	287	656	682
V/C Ratio(X)	0.28	0.00	0.00	0.31	0.29	0.66	0.56	0.14	0.40	0.77	0.17	0.17
Avail Cap(c_a), veh/h	1198	0	0	954	1186	976	225	1763	741	929	1584	1647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.0	13.9	15.7	24.7	15.7	16.8	20.3	10.8	10.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.7	16.4	0.1	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.3	1.2	2.6	0.3	0.5	1.2	2.5	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	14.4	14.2	17.4	41.1	15.8	17.5	24.6	10.9	10.9
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		164			621			264			449	
Approach Delay, s/veh		14.2			15.8			18.2			17.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	17.2		20.6	5.4	24.6		20.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	8.0	5.9		5.6	2.5	4.2		10.5				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.3		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.6	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	472	17	348	634	377	38	72	234	572	81	61
Future Volume (veh/h)	43	472	17	348	634	377	38	72	234	572	81	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	502	18	409	746	444	49	92	300	715	101	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	893	32	453	749	443	394	83	271	760	411	
Arrive On Green	0.03	0.26	0.26	0.22	0.59	0.59	0.22	0.22	0.22	0.22	0.22	0.00
Sat Flow, veh/h	1781	3495	125	3456	2108	1247	1781	375	1223	3456	1870	1585
Grp Volume(v), veh/h	46	255	265	409	628	562	49	0	392	715	101	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1728	1777	1578	1781	0	1598	1728	1870	1585
Q Serve(g_s), s	3.6	17.5	17.5	16.1	49.1	49.8	3.1	0.0	31.0	28.5	6.2	0.0
Cycle Q Clear(g_c), s	3.6	17.5	17.5	16.1	49.1	49.8	3.1	0.0	31.0	28.5	6.2	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	59	454	471	453	631	561	394	0	354	760	411	
V/C Ratio(X)	0.78	0.56	0.56	0.90	0.99	1.00	0.12	0.00	1.11	0.94	0.25	
Avail Cap(c_a), veh/h	65	454	471	479	631	561	394	0	354	768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	45.3	45.3	53.8	28.3	28.5	43.6	0.0	54.5	53.7	45.0	0.0
Incr Delay (d2), s/veh	40.9	5.0	4.8	16.9	31.0	34.9	0.1	0.0	80.2	19.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	8.2	8.6	7.3	20.5	19.0	1.4	0.0	20.0	14.3	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	108.0	50.3	50.1	70.7	59.3	63.4	43.8	0.0	134.7	73.1	45.3	0.0
LnGrp LOS	F	D	D	E	E	F	D		F	E	D	
Approach Vol, veh/h		566			1599			441			816	
Approach Delay, s/veh		54.9			63.6			124.6			69.7	
Approach LOS		D			E			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.5	42.0		36.7	10.6	56.0		36.8				
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8				
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0				
Max Q Clear Time (g_c+I1), s	18.1	19.5		30.5	5.6	51.8		33.0				
Green Ext Time (p_c), s	0.2	2.5		0.3	0.0	0.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	71.5
HCM 7th LOS	E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Future Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	683	0	0	1309	0				266	0	348
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	683	0	0	1309	0				266	0	348
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Cycle Q Clear(g_c), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.30		0.00	0.57					0.55	0.00	0.41
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.53	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.9	0.0	0.0	0.0	0.0				43.8	0.0	41.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.8	0.0				4.5	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	0.0	0.2	0.0				8.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.1	0.0	0.0	0.8	0.0				48.3	0.0	43.2
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		683			1309						614	
Approach Delay, s/veh		19.1			0.8						45.4	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	19.5	19.9	2.0
Green Ext Time (p_c), s	5.1	2.1	12.8

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Future Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	611	0	0	997	0	918	0	374			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	611	0	0	997	0	918	0	374			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Cycle Q Clear(g_c), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.38		0.00	0.62		0.55	0.00	0.50			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.4	0.0	26.4	0.0	25.7			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.8	0.0	1.3	0.0	2.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	0.0	12.7	0.0	11.2	0.0	9.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	31.2	0.0	27.7	0.0	28.2			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		611			997			1292				
Approach Delay, s/veh		4.6			31.2			27.8				
Approach LOS		A			C			C				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		69.0				69.0		71.0				
Change Period (Y+Rc), s		5.9				5.9		5.1				
Max Green Setting (Gmax), s		63.1				63.1		65.9				
Max Q Clear Time (g_c+I1), s		5.6				32.0		27.7				
Green Ext Time (p_c), s		4.4				7.5		5.8				

Intersection Summary		
HCM 7th Control Delay, s/veh	24.1	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	54	291	416
Demand Flow Rate, veh/h	12	55	296	424
Vehicles Circulating, veh/h	426	283	42	18
Vehicles Exiting, veh/h	16	55	396	320
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.2	4.0	4.7	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	55	296	424
Cap Entry Lane, veh/h	894	1034	1322	1355
Entry HV Adj Factor	1.000	0.982	0.982	0.980
Flow Entry, veh/h	12	54	291	416
Cap Entry, veh/h	892	1014	1296	1326
V/C Ratio	0.013	0.053	0.224	0.313
Control Delay, s/veh	4.2	4.0	4.7	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	299	432	3
Future Vol, veh/h	0	2	0	299	432	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	325	470	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	236	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	652	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	652	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.54	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	652	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	231	334	7
Future Vol, veh/h	0	0	0	231	334	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	251	363	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	614	363	371	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	251	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	455	682	1188	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	682	1188	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	791	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1188	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

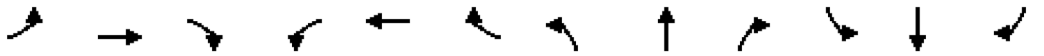
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	248	7	49	337
Future Vol, veh/h	2	15	248	7	49	337
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	270	8	53	366

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	563	139	0	0	277	0
Stage 1	273	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	456	884	-	-	1283	-
Stage 1	748	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	435	884	-	-	1283	-
Mov Cap-2 Maneuver	528	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.5	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	819	457	-
HCM Lane V/C Ratio	-	-	0.023	0.042	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Future Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	128	18	213	108	341	36	426	128	289	204	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	463	62	532	564	464	54	761	319	357	1279	99
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	44	1535	204	1233	1870	1539	1781	3554	1490	1781	3329	258
Grp Volume(v), veh/h	157	0	0	213	108	341	36	426	128	289	108	112
Grp Sat Flow(s),veh/h/ln	1783	0	0	1233	1870	1539	1781	1777	1490	1781	1777	1810
Q Serve(g_s), s	0.0	0.0	0.0	2.7	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Cycle Q Clear(g_c), s	3.8	0.0	0.0	6.5	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Prop In Lane	0.07		0.11	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	605	0	0	532	564	464	54	761	319	357	683	695
V/C Ratio(X)	0.26	0.00	0.00	0.40	0.19	0.73	0.67	0.56	0.40	0.81	0.16	0.16
Avail Cap(c_a), veh/h	1038	0	0	844	1039	855	197	1482	621	844	1386	1413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	16.1	15.0	18.1	27.7	20.3	19.5	22.1	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.3	13.1	0.6	0.8	4.4	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	2.0	0.9	3.7	0.7	2.4	1.4	3.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	0.0	0.0	16.6	15.1	20.4	40.9	20.9	20.3	26.5	11.8	11.8
LnGrp LOS	B			B	B	C	D	C	C	C	B	B
Approach Vol, veh/h		157			662			590			509	
Approach Delay, s/veh		15.6			18.3			22.0			20.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	18.3		23.3	6.4	28.1		23.3				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	11.0	8.2		5.8	3.2	4.3		13.5				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.7									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	513	36	347	520	328	57	138	647	398	101	43
Future Volume (veh/h)	53	513	36	347	520	328	57	138	647	398	101	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	570	40	361	542	342	61	148	696	498	126	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	1044	73	409	798	503	397	62	290	609	330	
Arrive On Green	0.04	0.31	0.31	0.20	0.65	0.65	0.22	0.22	0.22	0.18	0.18	0.00
Sat Flow, veh/h	1781	3361	235	3456	2053	1294	1781	277	1303	3456	1870	1585
Grp Volume(v), veh/h	59	301	309	361	469	415	61	0	844	498	126	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1820	1728	1777	1570	1781	0	1580	1728	1870	1585
Q Serve(g_s), s	4.6	19.7	19.8	14.2	23.2	23.3	3.9	0.0	31.2	19.4	8.3	0.0
Cycle Q Clear(g_c), s	4.6	19.7	19.8	14.2	23.2	23.3	3.9	0.0	31.2	19.4	8.3	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		0.82	1.00		1.00
Lane Grp Cap(c), veh/h	76	552	565	409	690	610	397	0	352	609	330	
V/C Ratio(X)	0.78	0.55	0.55	0.88	0.68	0.68	0.15	0.00	2.40	0.82	0.38	
Avail Cap(c_a), veh/h	103	552	565	464	690	610	397	0	352	768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.4	40.1	40.1	55.2	19.1	19.1	43.8	0.0	54.4	55.5	50.9	0.0
Incr Delay (d2), s/veh	22.7	3.8	3.8	14.6	2.3	2.6	0.2	0.0	637.2	5.6	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	9.1	9.3	6.4	6.9	6.2	1.7	0.0	74.4	8.9	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	89.1	43.9	43.9	69.9	21.4	21.8	44.0	0.0	691.6	61.1	51.7	0.0
LnGrp LOS	F	D	D	E	C	C	D		F	E	D	
Approach Vol, veh/h		669			1245			905			624	
Approach Delay, s/veh		47.9			35.6			647.9			59.2	
Approach LOS		D			D			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.8	49.7		30.6	11.8	60.6		37.0
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	16.2	21.8		21.4	6.6	25.3		33.2
Green Ext Time (p_c), s	0.3	2.9		1.9	0.0	5.4		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	203.2
HCM 7th LOS	F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Future Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1124	0	0	1032	0				362	0	379
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1124	0	0	1032	0				362	0	379
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Cycle Q Clear(g_c), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.58		0.00	0.53					0.55	0.00	0.32
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.00	0.00	0.86	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.4	0.0	0.0	0.0	0.0				34.8	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.9	0.0				3.3	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	0.0	0.2	0.0				10.4	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.2	0.0	0.0	0.9	0.0				38.0	0.0	32.2
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1124			1032						741	
Approach Delay, s/veh		12.2			0.9						35.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	22.7	24.5	2.0
Green Ext Time (p_c), s	10.1	2.8	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Future Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	876	0	0	914	0	664	0	311			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	876	0	0	914	0	664	0	311			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.47		0.00	0.49		0.48	0.00	0.50			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.9	0.0	31.8	0.0	32.2			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.9	0.0	1.2	0.0	2.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	9.3	0.0	8.7	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.7	0.0	0.0	21.8	0.0	33.0	0.0	35.2			
LnGrp LOS		A			C		C		D			
Approach Vol, veh/h		876			914			975				
Approach Delay, s/veh		0.7			21.8			33.7				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.8	23.0
Green Ext Time (p_c), s	7.1	7.1	4.0

Intersection Summary	
HCM 7th Control Delay, s/veh	19.3
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	78	845	325
Demand Flow Rate, veh/h	21	79	862	332
Vehicles Circulating, veh/h	339	839	49	17
Vehicles Exiting, veh/h	10	72	311	901
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.9	7.9	11.3	4.8
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	79	862	332
Cap Entry Lane, veh/h	977	586	1313	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	78	845	325
Cap Entry, veh/h	973	578	1285	1326
V/C Ratio	0.022	0.135	0.658	0.245
Control Delay, s/veh	3.9	7.9	11.3	4.8
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	812	611	0
Future Vol, veh/h	0	0	0	812	611	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	883	664	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	332	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	566	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	566	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	660	301	2
Future Vol, veh/h	3	3	0	660	301	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	717	327	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1045	327	-	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	253	714	0	-	-	-
Stage 1	731	-	0	-	-	-
Stage 2	483	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	253	714	-	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.79	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	374	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	162	564	16	147	335
Future Vol, veh/h	10	162	564	16	147	335
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	176	613	17	160	364

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1123	315	0	0	630	0
Stage 1	622	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	199	681	-	-	948	-
Stage 1	498	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	162	681	-	-	948	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13.07	0	3.58
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	632	852	-
HCM Lane V/C Ratio	-	-	0.296	0.169	-
HCM Control Delay (s/veh)	-	-	13.1	9.6	1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

Analysis of Financial Feasibility and Competitiveness for Tax Credit Financing

Prepared for the State of California's 22nd District Agricultural Association and the City of Del Mar

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1 EXECUTIVE SUMMARY

1.1 Background

This Analysis of Financial Feasibility and Competitiveness for Tax Credit Financing (Analysis) was conducted per the Exclusive Negotiating Rights Agreement (ENRA) executed between the City of Del Mar (City) and the 22nd District Agricultural Association (District) that took effect on April 15, 2024. The ENRA and this Analysis implement the City's state-certified Housing Element by providing a path toward accomplishing the City's goal of developing affordable housing on the Del Mar Fairgrounds (Fairgrounds) property.

This Analysis was funded through Housing Acceleration Program (HAP) grant funds that the City secured in 2023 through a HAP grant agreement between the City, the California Department of Housing and Community Development (HCD), and the San Diego Association of Governments. The City and District executed a Memorandum of Understanding in 2025, which provides for the District to use a portion of the City's grant funds to complete feasibility studies, including this Analysis.

Harris & Associates (Harris) was retained by the District and City to update a financial feasibility study prepared by Keyser Marston Associates (KMA) and Stephen Dalton Architects (SDA) (2022 KMA and SDA Study), which was presented to the Del Mar City Council in June 2022, using up-to-date information on development costs, affordable and market rents, and interest rates to identify the amount of public funding needed to subsidize a potential project with at least 61 units of lower-income housing. The 2022 KMA and SDA Study found that public subsidies would be required for an affordable housing project developed on the Fairgrounds.

Before drafting this Analysis, Harris completed a Housing Site Conditions and Constraints Assessment Study (Housing Site Assessment Study) to analyze the development feasibility of five sites consisting of 1 to 1.5 acres on the Fairgrounds property. In addition to helping the City and District understand the amount of financing that would be required for the development of at least 61 units of lower-income housing, a key objective of this Analysis is to help decision-makers understand any differences in the Potential Sites with respect to tax credit eligibility, which is essential to understanding the comparative financial feasibility of the Potential Sites.

1.2 Approach

1.2.1 Financial Feasibility

Previously, a study of conceptual housing site plans was prepared by SDA as part of the 2022 KMA and SDA Study and presented to the Del Mar City Council in June 2022. The 2022 KMA and SDA Study identified concepts for the first Potential Site (referred to as Site 1, or East Main Stable Gate Site herein). SDA completed additional concepts for another Potential Site (Site 3, or Adjacent to Fire Station Site) in April 2023 (2023 SDA Study). These studies (Existing Studies) included site plans of family housing concepts ranging from 61 to 82 units (Family Housing Prototypes) and senior housing concepts ranging from 62 to 128 units (Senior Housing Prototypes), finding that these housing concepts (Prototypes) could be built on any site in the Fairgrounds consisting of at least 1 acre of developable land.

Harris used current market data to identify the financial feasibility of the Prototypes detailed in the Existing Studies in the following scenarios (Tested Scenarios):

- 100 percent affordable (rent-restricted) housing project receiving 4 percent Low-Income Housing Tax Credit (LIHTC) financing (**4 Percent Tax Credit Scenario**).
- 100 percent affordable (rent-restricted) housing project receiving 9 percent LIHTC financing (**9 Percent Tax Credit Scenario**).
- Mixed-Income housing project featuring at least 61 units of lower-income housing (**Mixed-Income Scenario**). The Mixed-Income Scenario was tested specifically for the 82-unit Family Housing Prototype and 128-unit Senior Housing Prototype.

1.2.2 Competitiveness for Tax Credit Financing

In addition, Harris analyzed the comparative financial feasibility of the five Potential Sites by analyzing each site's competitiveness for tax credit financing with respect to nearby site amenities.

LIHTC site amenity scoring is a component of the California Tax Credit Allocation Committee (CTCAC) evaluation process that measures how well a proposed housing site is served by surrounding amenities, such as transit, schools, grocery stores, parks, and services, that support resident quality of life. Site amenity scoring is one component of the CTCAC's broader point scoring system and contributes to a project's overall competitiveness. For projects relying on a CTCAC award, it is crucial to evaluate amenity access early in the site selection process.

Site amenity self-scores of the five Potential Sites was conducted in accordance with 4 percent and 9 percent 2025 CTCAC application guidelines. In addition, Harris analyzed affordable housing projects in San Diego County that had been awarded tax credits during 2024 and 2025 to help the City and District understand how the Potential Sites' site amenity scores compared with those of actual housing projects that were recently awarded tax credit financing.

1.3 Updated Financial Feasibility Analysis – Findings and Conclusions

The financial feasibility of each Prototype was identified by calculating the residual land value (RLV) under each Tested Scenario. RLV is calculated as a housing project's total value at completion (including any federal and state funding sources) minus estimated development costs (excluding land acquisition), as shown on **Figure 1-1**. A negative RLV indicates a financing gap, or shortfall, between the total cost to develop a housing project and the total projected value of a project, including funding that a project can secure from committed sources.

Figure 1-1: Residual Land Value

As indicated in **Table 1-1**, the Prototypes yielded negative RLV in each Tested Scenario, indicating that a gap financing contribution in the amount of the negative RLV (in addition to free land) would be required for financial feasibility.

Table 1-1: Residual Land Value Summary

			Residual Land Value [1]			
	Total Units	Scenario	Total	Per Unit	Per SF Land (1.0 Acre Site)	Per SF Land (1.5 Acre Site)
Family Housing	61	4% Tax Credit	($9,322,334)	($152,825)	($214)	($143)
	61	9% Tax Credit	($9,408,155)	($154,232)	($216)	($144)
	82	4% Tax Credit	($11,270,466)	($137,445)	($259)	($172)
	82	9% Tax Credit	($10,893,630)	($132,849)	($250)	($167)
	82	Mixed-Income	($13,913,162)	($169,673)	($319)	($213)
Senior Housing	62	4% Tax Credit	($4,814,148)	($77,648)	($111)	($74)
	62	9% Tax Credit	($7,087,840)	($114,320)	($163)	($108)
	128	4% Tax Credit	($9,177,782)	($71,701)	($211)	($140)
	128	9% Tax Credit	($3,505,930)	($27,390)	($80)	($54)
	128	Mixed-Income	($5,358,054)	($41,860)	($123)	($82)

(1) Parentheses indicate a negative Residual Land Value (RLV)

Negative RLVs are not surprising for affordable housing development, in which the value of developments at completion are constrained by restrictions on chargeable rent. Harris will provide tailored options/solutions for funding gaps (including public/private partnerships) to achieve financial feasibility in a subsequent due diligence study to ensure that a lower-income project can be feasible, realistic, and implementable.

1.4 Competitiveness for Tax Credit Financing – Findings and Conclusions

As noted previously, Harris conducted site amenity self-scores for all five Potential Sites in accordance with CTCAC applications for 4 percent and 9 percent tax credits. In addition, Harris analyzed the site amenity scores of projects awarded tax credit financing in San Diego County in 2024 and 2025.

Through this portion of the Analysis, Harris concluded the following:

- **All five Potential Sites are eligible for the maximum site amenity score in both the 4 and 9 Percent Tax Credit Scenarios**, indicating that site amenity scoring is not a differentiating factor in the sites' financial feasibility or competitiveness in either scenario.
- **The site amenity scores of all five Potential Sites are equal to the site amenity scores of projects awarded tax credit financing in 2024 and 2025**, indicating that all five Potential Sites are highly and equally competitive in this regard.

Table 1-2 notes the findings of this portion of the Analysis, comparing the self-scores of the five Potential Sites with the maximum points that can be earned in the 4 and 9 Percent Tax Credit Scenarios.

Table 1-2: Amenity Score Summary – Potential Sites 1–5

Tax Credit Scenario	Eligible Points					
	Maximum Points per CTCAC Application	East Main Stable Gate Site (Site 1)	South of Stable Gate Site (Site 2)	Adjacent to Fire Station Site (Site 3)	Surf & Turf RV Park Site (Site 4)	Dirt Lot Site (Site 5)
4%	10	**10**	**10**	**10**	**10**	**10**
9%	15	**15**	**15**	**15**	**15**	**15**

1.4.1 Resource Area Identification

In the process of conducting site amenity self-scores, Harris also identified the resource area designation of each site, which is derived from statewide maps (opportunity maps) developed by the CTCAC in coordination with the HCD. These maps incorporate data regarding a site's education quality, economic mobility, employment access, and environmental health. Using this data, areas are categorized as Highest Resource, High Resource, Moderate Resource, Low Resource, or High Segregation and Poverty. **Harris concluded that all five Potential Sites are located in Highest Resource areas** and, therefore, would be awarded the same (i.e., maximum) number of points on a CTCAC application with respect to resource area designation.

2 BACKGROUND

2.1 Objectives

Harris was retained by the City and District to update a financial feasibility analysis prepared in the 2022 KMA and SDA Study, which identified the RLV of several housing Prototypes on the Fairgrounds property. All housing Prototypes tested in the 2022 KMA and SDA Study yielded a negative RLV when the majority of units included in the project were assumed to be income-restricted/affordable, indicating that affordable housing projects built on the Fairgrounds property would not be financially feasible unless financing gaps were filled by other funding sources and/or cash subsidies.

Factors affecting the RLV of a housing Prototype, such as development costs, new development fees, interest rates, and potential revenue from income-restricted, as well as unrestricted (market-rate) housing units, may change significantly over time. For this reason, Harris examined current market conditions to calculate the current RLV for each Prototype and Tested Scenario. This portion of the Analysis identifies financing gaps across the Prototypes and Tested Scenarios to help decision-makers understand the amount of additional funding that would be necessary for the development of 61 or more lower-income units on Fairgrounds property.

Additionally, Harris conducted an amenity self-score for each Potential Site based on the current amenity scoring guidelines noted in 4 and 9 percent 2025 CTCAC applications, including an analysis of each Potential Site's resource area designation. This portion of the Analysis was conducted to help decision-makers understand any difference in competitiveness for tax credit eligibility across the five Potential Sites.

2.2 Who Qualifies for Affordable Housing: Income and Rent Levels

2.2.1 Income Limits

In California, affordable housing eligibility is determined by comparing a household's income to the area median income (AMI) for the county in which the affordable housing property is located. The AMI is updated annually by the HCD and is based on U.S. Department of Housing and Urban Development (HUD) data. Income limits are adjusted by household size and categorized into the following income levels:

- Extremely Low Income
- Very Low Income
- Low Income
- Moderate Income
- Above Moderate Income

To confirm eligibility, a household's gross annual income, including wages, benefits, and other sources defined by HUD rules, is verified and compared to the applicable income limit for the affordable housing unit. Only households with incomes at or below the maximum allowed for that unit type may initially occupy the unit, and ongoing compliance is monitored through annual

income recertifications and regulatory agreements tied to the project's public funding or tax credits. HCD income limits for San Diego County would be used to determine eligibility for affordable housing units throughout the County, including the City of Del Mar. **Table 2-1** illustrates the 2025 income limits for San Diego County.

Table 2-1: HCD Income Limits – San Diego County (2025)

Household Size (# of Persons)	Extremely Low Income	Very Low Income	Low Income	Moderate Income
1	$34,750	$57,900	$92,700	$109,950
2	$39,700	$66,150	$105,950	$125,550
3	$44,650	$74,450	$119,200	$141,250
4	$49,600	$82,700	$132,400	$156,950
5	$53,600	$89,350	$143,000	$169,500

Source: HCD State of California Department of Housing and Community Development (HCD), 2025 Income Limits for San Diego County, https://www.hcd.ca.gov/sites/default/files/docs/grants-and-funding/income-limits-2025.pdf

2.2.2 Affordable and Market Rents (2025)

Table 2-2 provides an overview of the affordable rent calculations by income level pursuant to the 2025 HCD income limits in San Diego County. Rent estimates for units not subject to rent restrictions (market-rate units) are based on an analysis of recently constructed market-rate multi-family units in northern San Diego County.[1]

[1] Market effective rent per square foot data by bedroom size was analyzed across multi-family properties built since 2015 or currently under construction in the Cities of Del Mar, Encinitas, Solana Beach, La Jolla, and Carlsbad (CoStar Analytics, Q4 2025 data).

Table 2-2: Affordable and Market Rents (2025)

Unit Size	Income-Restricted and Market Rents, 2025[1]			
	Extremely Low Income (30% of 30% of AMI)	Very Low Income (30% of 50% of AMI)	Low Income (30% of 60% of AMI)	Market Rent Per Square Foot[2]
Studio	$687	$1,144	$1,373	$6.09
1 Bed	$785	$1,308	$1,570	$4.72
2 Bed	$883	$1,471	$1,766	$3.83
3 Bed	$981	$1,635	$1,962	$3.11

(1) Income-restricted rents are based on established benchmarks defined in California Health & Safety Code Section 50053 and reflect gross rent. Maximum cash rent will equal the gross rent minus the utility allowance per San Diego County 2025 utility allowance schedule.
(2) Market effective rent per square foot by unit size per CoStar data observed across multi-family properties built since 2015 (CoStar Analytics, accessed Q4 2025)

2.3 Prototypes

As noted previously, the Analysis was conducted using housing Prototypes established in the Existing Studies featuring 61 or more units, including two Family Housing Prototypes ranging from 61 to 82 units and two Senior Housing Prototypes ranging from 62 to 128 units.

The Prototypes, including property specifications and income restrictions across the Tested Scenarios, are summarized in **Table 2-3** and **Table 2-4**. Income restrictions in the 4 and 9 Percent Tax Credit Scenarios were allocated such that the income restriction would **average 50 percent of AMI across the project**, thereby ensuring that the affordability assumptions would be consistent with projects recently awarded tax credit financing. In addition, it is important to note that all Prototypes assume podium parking for the ground level of the building.[2]

[2] The Housing Site Assessment Study found that all Potential Sites are located in a 1 percent annual chance flood hazard zone (also known as the 100-year floodplain) and would therefore require the elevation of the first floor above the Base Flood Elevation and floodproofed.

Table 2-3: Family Housing Prototype Overview

	Family Housing								
Prototype / Affordability Scenario	61 Units / 100% Affordable			82 Units / Mixed-Income			82 Units / 100% Affordable		
Construction Type	Type V			Type V			Type V		
Gross Building Area									
Net Residential	43,594	SF		58,691	SF		58,691	SF	
Circulation / Common Area	13,519	SF		16,985	SF		16,985	SF	
Total GBA	57,113			75,676			75,676		
Weighted Average Unit Size	710	SF		720	SF		720	SF	
Stories[(1)]	4			5			5		
Unit Mix									
Studio	1	Units	2%	1	Units	1%	1	Units	1%
1-Bed	25	Units	41%	34	Units	41%	34	Units	41%
2-Bed	18	Units	30%	24	Units	29%	24	Units	29%
3-Bed	17	Units	28%	23	Units	28%	23	Units	28%
Total Units	61			82			82		
Income Restrictions									
Total Market-Rate Units	0	Units	0%	21	Units	26%	0	Units	0%
Affordable Units									
30% of AMI	25	Units	41%	0	Units	0%	34	Units	41%
50% of AMI	20	Units	33%	20	Units	24%	26	Units	32%
80% of AMI	16	Units	26%	41	Units	50%	22	Units	27%
Total Affordable Units	61			61			82		
Parking									
Type	Podium			Podium			Podium		
Number of Spaces	54			54			54		
Type	Paved Lot			Paved Lot			Paved Lot		
Number of Spaces	26			26			26		

(1) Includes residential stories and ground level (podium) parking floor.

Table 2-4: Senior Housing Prototype Overview

	Senior Housing								
Prototype / Affordability Scenario	62 Units / 100% Affordable			128 Units / Mixed-Income			128 Units / 100% Affordable		
Construction Type	Type V			Type V			Type V		
Gross Building Area									
Net Residential	22,880	SF		47,192	SF		47,192	SF	
Circulation / Common Area	14,591	SF		21,910	SF		21,910	SF	
Total GBA	37,471			69,102			69,102		
Weighted Average Unit Size	370	SF		370	SF		370	SF	
Stories[(1)]	3			5			5		
Unit Mix									
Studio	60	Units	97%	124	Units	97%	124	Units	97%
1-Bed	0	Units	0%	0	Units	0%	0	Units	0%
2-Bed	2	Units	3%	4	Units	3%	4	Units	3%
3-Bed	0	Units	0%	0	Units	0%	0	Units	0%
Total Units	62			128			128		
Income Restrictions									
Total Market-Rate Units	0	Units	0%	67	Units	52%	0	Units	0%
Affordable Units									
30% of AMI	25	Units	40%	0	Units	0%	52	Units	41%
50% of AMI	21	Units	34%	20	Units	16%	42	Units	33%
80% of AMI	16	Units	26%	41	Units	32%	34	Units	27%
Total Affordable Units	62			61			128		
Parking									
Type	Podium			Podium			Podium		
Number of Spaces	54			54			54		
Type	Paved Lot			Paved Lot			Paved Lot		
Number of Spaces	26			26			26		

(1) Includes residential stories and ground level (podium) parking floor.

2.4 Potential Sites

Harris assumes that the Prototypes tested in this Analysis can be built on any site on the Fairgrounds property consisting of at least 1 acre of land that is feasible for housing development.

Prior to completing this Analysis, Harris conducted a Housing Site Assessment Study evaluating the development feasibility of five sites on the Fairgrounds property ranging from 1 to 1.5 acres (Potential Sites). An overview of the three Potential Sites in the City of Del Mar and the two Potential Sites in the City of San Diego is noted in **Table 2-5** and **Table 2-6**. The locations of the

Potential Sites within the City of Del Mar are illustrated on **Figure 2-1**, while the locations of the Potential Sites within the City of San Diego are noted on **Figure 2-2**.

Site Amenity self-scoring, including an analysis of current resource area designations, was conducted across each of the five Potential Sites in accordance with 2025 CTCAC application guidelines.

Table 2-5: Overview of Potential Sites – City of Del Mar

Site #	Site Name	APN(s)	Acres
Site 1	East Main Stable Gate Site	2982710300	1.50
Site 2	South of Stable Gate Site	2990300500, 2990302200	1.50
Site 3 (1)	Adjacent to Fire Station Site	2990302200	1.00

(1) The 2023 SDA Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5-acre new housing site that would also include redevelopment of the fire station. This study focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Figure 2-1: Potential Sites – City of Del Mar

Table 2-6: Overview of Potential Sites – City of San Diego

Site #	Site Name	APN(s)	Acres
Site 4	Surf and Turf RV Park Site	2990420300	1.50
Site 5	Dirt Lot Site	2990420300	1.50

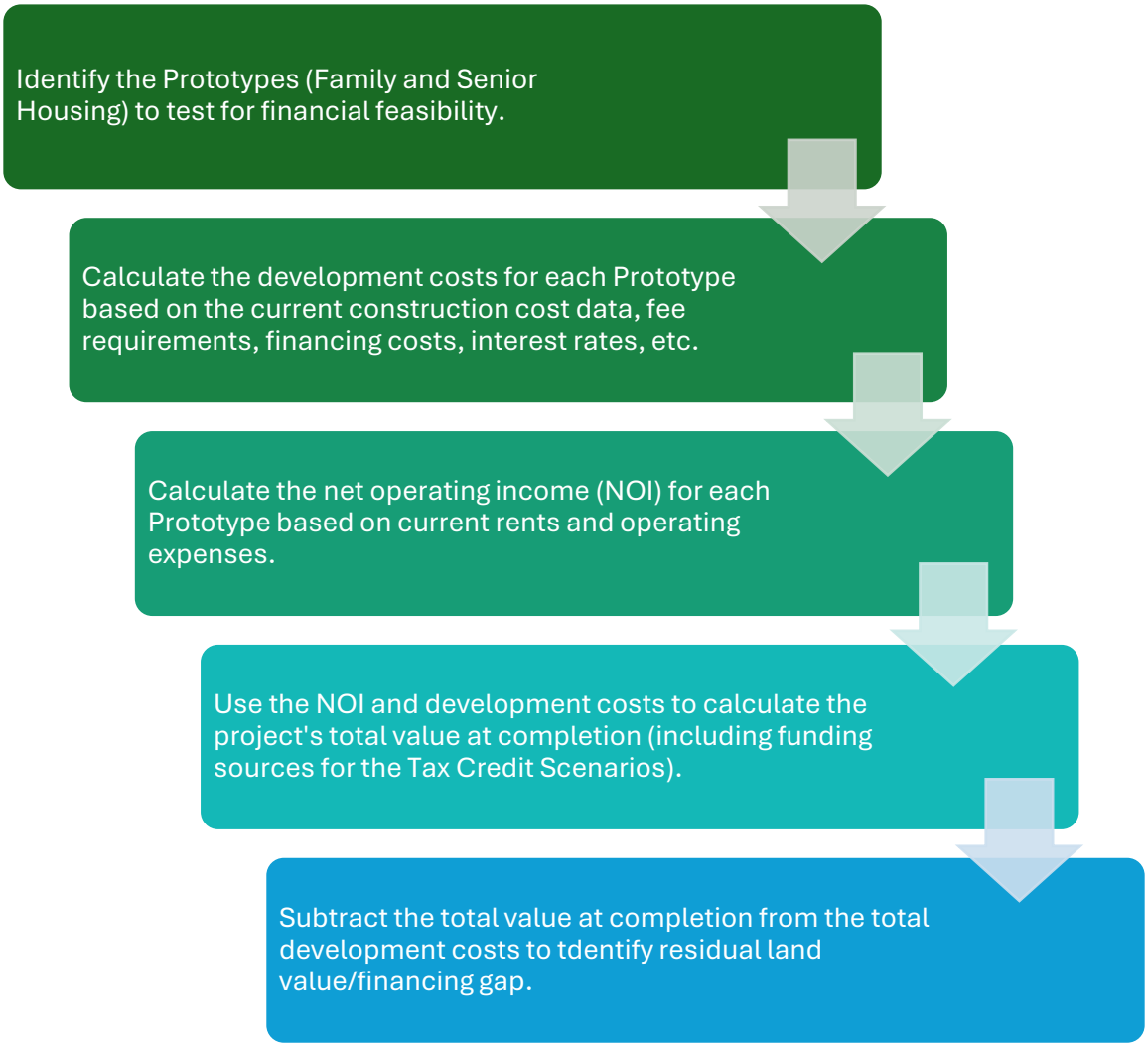
Figure 2-2: Potential Sites – City of San Diego

3 APPROACH

3.1 Financial Feasibility Analysis

Harris' Analysis was designed to identify RLV using current real estate market data. The updated RLV calculations (being compared to the 2022 KMA and SDA Study calculations) intend to help decision-makers understand the current financing gap for each Prototype and Tested Scenario. This portion of the Analysis was conducted using the methodology noted on **Figure 3-1**.

Figure 3-1: Residual Land Value Calculation Overview



3.2 Competitiveness for Tax Credit Financing – Amenity Scoring

Harris identified site amenity self-scores for all five Potential Sites based on each site's proximity to existing amenities, including transportation, schools, and grocery stores, as well as each site's resource area designation. In addition, Harris analyzed projects awarded 4 and 9 percent tax credit financing in 2024 and 2025 to confirm if the projected amenity scores of the Potential Sites was greater than or equal to the 2024 and 2025 awarded projects. This portion of the Analysis sought to understand the Potential Sites' overall competitiveness for tax credit financing and any differences in competitiveness between the Potential Sites.

4 UPDATED FINANCIAL FEASIBILITY ANALYSIS – FINDINGS

The following section summarizes the findings of this Analysis related to financial feasibility and RLV of the Prototypes, including gap financing conclusions for all Tested Scenarios.

The RLV findings with respect to each Tested Scenario are noted in **Table 4-1**. As shown in **Table 4-1**, RLVs vary from approximately −$9,300,000 to −$13,900,000 across the Family Housing Prototypes and approximately −$3,500,000 to −$9,200,000 across the Senior Housing Prototypes. **A negative RLV indicates that a project is not financially feasible without a gap financing contribution**; in these cases, a project would require free land plus an additional financing contribution equal to the negative RLV amount.

Table 4-1: Residual Land Value Summary

			Residual Land Value (1)			
	Total Units	Scenario	Total	Per Unit	Per SF Land (1.0 Acre Site)	Per SF Land (1.5 Acre Site)
Family Housing	61	4% Tax Credit	($9,322,334)	($152,825)	($214)	($143)
	61	9% Tax Credit	($9,408,155)	($154,232)	($216)	($144)
	82	4% Tax Credit	($11,270,466)	($137,445)	($259)	($172)
	82	9% Tax Credit	($10,893,630)	($132,849)	($250)	($167)
	82	Mixed-Income	($13,913,162)	($169,673)	($319)	($213)
Senior Housing	62	4% Tax Credit	($4,814,148)	($77,648)	($111)	($74)
	62	9% Tax Credit	($7,087,840)	($114,320)	($163)	($108)
	128	4% Tax Credit	($9,177,782)	($71,701)	($211)	($140)
	128	9% Tax Credit	($3,505,930)	($27,390)	($80)	($54)
	128	Mixed-Income	($5,358,054)	($41,860)	($123)	($82)

(1) Parentheses indicate a negative Residual Land Value (RLV)

4.1 Development Costs

Total development costs were calculated as the sum of direct costs, indirect costs, financing costs, and entitlement costs. Direct costs (or costs attributable to the physical development of the project) were calculated in accordance with the CoreLogic Marshall & Swift® Cost Approach for new residential construction, a widely used commercial and residential property valuation tool that provides cost-based estimates for building construction.[3]

This Analysis assumes that projects receiving 4 percent LIHTC financing would also receive funding from additional state funding sources (specifically, the Multifamily Housing Program [MHP] and Infill Incentive Grant) and that these latter funding sources would trigger prevailing wage requirements. Prevailing wages are standardized wage rates set by the California Department of Industrial Relations based on surveys of wages paid to workers in specific trades,

[3] The CoreLogic Marshall & Swift® Valuation Service is updated each month. The Analysis referenced January 2026 development cost estimates for new apartment buildings in San Diego County.

such as electricians, carpenters, or laborers, within a defined region.[4] The rates typically include both hourly pay and fringe benefits. The purpose of prevailing wage laws is to ensure fair compensation, prevent the undercutting of local labor standards, and promote quality workmanship on publicly funded projects.[5] This Analysis assumes that prevailing wages would increase a project's direct costs by 25 percent.[6] These additional direct costs also affect indirect and financing costs that are based on direct cost calculations.

For this reason, per-unit development costs for both the 61- and 82-unit Family Housing Prototypes are significantly higher in the 4 Percent Tax Credit Scenario than in the 9 Percent Tax Credit Scenario and Mixed-Income Scenario.

The development cost projections indicate that the Senior Housing Prototypes will be less expensive to build on a per-unit basis, as the assumed weighted average unit size is significantly smaller than that of the Family Housing Prototypes.

Additionally, it is important to note that in both the 4 and 9 Percent Tax Credit Scenarios, Family Housing and Senior Housing Prototypes are less expensive to build on a per-unit basis in the higher-density (i.e., 82- and 128-unit) scenarios than the lower-density (i.e., 61- and 62-unit) scenarios. Housing projects with more units tend to have lower direct costs per unit because economies of scale allow costs to be spread over a larger number of units and construction resources to be used more efficiently.

Table 4-2 through **Table 4-5** summarize development costs across the Family and Senior Housing Prototypes.

[4] California Department of Industrial Relations. *Prevailing Wage Requirements*. Accessed February 2026. https://www.dir.ca.gov/public-works/prevailing-wage.html.

[5] *Chapter 7: Labor Standards* (California Department of Housing and Community Development), accessed February 2026, https://www.hcd.ca.gov/docs/grants-and-funding/chap-07-labor-standards.pdf.

[6] BAE Urban Economics. *The Cost of Affordable Housing: What Drives It and How to Address It*. San Diego: San Diego Housing Commission, April 14, 2025. PDF file, 129 pp. https://sdhc.org/wp-content/uploads/2025/04/Att-1_Affordable-Housing-Cost-Study-4.17.25.pdf.

Table 4-2: Family Housing – 61-Unit Prototype – Development Costs

	61-Unit Family Housing Prototype					
	4% Tax Credit Scenario			9% Tax Credit Scenario		
	Total	Calculation		Total	Calculation	
Direct Costs						
Residential Construction [1]	$13,864,752	$227,291	*per unit*	$13,864,752	$227,291	*per unit*
Podium Parking	$2,949,534	$54,621	*per space*	$2,949,534	$54,621	*per space*
Paved Lot Parking	$86,787	$3,338	*per space*	$86,787	$3,338	*per space*
Landscaping/Amenities	$279,275		*total*	$279,275		*total*
Prevailing Wages	$4,295,087	25%	*of above directs*	$0	-	*of above directs*
Contingency	$1,073,772	5%	*of directs*	$859,017	5%	*of directs*
Total Direct Costs	**$22,549,206**			**$18,039,365**		
Indirect Costs						
Permits & Fees	$5,199,858			$5,199,858		
Legal & Accounting	$338,238	1.5%	*of directs*	$270,590	1.5%	*of directs*
Taxes & Insurance	$338,238	1.5%	*of directs*	$270,590	1.5%	*of directs*
Developer Fee	$3,221,315	14%	*of directs*	$2,500,000	14%	*of directs*
Marketing/Lease-Up	$225,492	1%	*of directs*	$180,394	1%	*of directs*
Contingency	$466,157	5%	*of indirects*	$421,072	5%	*of indirects*
Total Indirect Costs	**$9,789,298**			**$8,842,504**		
Financing Costs						
Loan Fees	$1,046,000			$393,000		
Interest During Construction	$1,568,340			$1,475,303		
Title/Recording/Escrow	$36,600	$600	*per unit*	$36,600	$600	*per unit*
Interest During Lease-Up	$871,300			$819,613		
TCAC/Syndication Fees	$225,120			$180,240		
Operating Lease-Up/Reserves	$232,088			$240,396		
Total Financing Costs	**$3,979,448**			**$3,145,151**		
Total Entitlement Costs	**$181,590**	0.5%	*of above costs*	**$150,135**	0.5%	*of above costs*
Total Development Costs	**$36,499,542**			**$30,177,155**		
Per Unit	**$598,353**			**$494,707**		

(1) Direct costs do not include land costs. Per CoreLogic Marshall & Swift Construction Cost Approach (Calculator Method), residential building costs include certain indirect costs including architect & engineering fees.

Table 4-3: Family Housing – 82-Unit Prototype – Development Costs

	82-Unit Family Housing Prototype								
	4% Tax Credit Scenario			9% Tax Credit Scenario			Mixed-Income Scenario		
	Total	Calculation		Total	Calculation		Total	Calculation	
Direct Costs									
Residential Construction [(1)]	$18,371,154	$224,038	*per unit*	$18,371,154	$224,038	*per unit*	$18,371,154	$224,038	*per unit*
Podium Parking	$2,949,534	$54,621	*per space*	$2,949,534	$54,621	*per space*	$2,949,534	$54,621	*per space*
Paved Lot Parking	$86,787	$3,338	*per space*	$86,787	$3,338	*per space*	$86,787	$3,338	*per space*
Landscaping/Amenities	$279,275		*total*	$279,275		*total*	$279,275		*total*
Prevailing Wages	$5,421,688	25%	*of above directs*	$0	-	*of above directs*	$0	-	*of above directs*
Contingency	$1,355,422	5%	*of directs*	$1,084,338	5%	*of directs*	$1,084,338	5%	*of directs*
Total Direct Costs	**$28,463,860**			**$22,771,088**			**$22,771,088**		
Indirect Costs									
Permits & Fees	$6,893,522			$6,893,522			$6,893,522		
Legal & Accounting	$426,958	1.50%	*of directs*	$341,566	1.50%	*of directs*	$341,566	1.50%	*of directs*
Taxes & Insurance	$426,958	1.50%	*of directs*	$341,566	1.50%	*of directs*	$341,566	1.50%	*of directs*
Developer Fee	$4,066,265	14%	*of directs*	$2,500,000	11%	*of directs*	$910,844	4%	*of directs*
Marketing/Lease-Up	$284,639	1%	*of directs*	$227,711	1%	*of directs*	$227,711	1%	*of directs*
Contingency	$604,917	5%	*of indirects*	$515,218	5%	*of indirects*	$435,760	5%	*of indirects*
Total Indirect Costs	**$12,703,258**			**$10,819,584**			**$9,150,969**		
Financing Costs									
Loan Fees	$1,331,000			$433,000					
Interest During Construction	$1,996,200			$1,594,733					
Title/Recording/Escrow	$49,200	$600	*per unit*	$49,200	$600	*per unit*			
Interest During Lease-Up	$1,109,000			$885,963					
TCAC/Syndication Fees	$284,780			$227,980					
Operating Lease-Up/Reserves	$162,100			$172,314					
Total Financing Costs	**$4,932,280**			**$3,363,189**			**$2,277,109**	10%	*of directs*
Total Entitlement Costs	**$230,497**	0.5%	*of above costs*	**$184,769**	0.5%	*of above costs*	**$170,996**	0.5%	*of above costs*
Total Development Costs	**$46,329,894**			**$37,138,630**			**$34,370,162**		
Per Unit	**$564,999**			**$452,910**			**$419,148**		

(1) Direct costs do not include land costs. Per CoreLogic Marshall & Swift Construction Cost Approach (Calculator Method), residential building costs include certain indirect costs including architect & engineering fees.

Table 4-4: Senior Housing – 62-Unit Prototype – Development Costs

	62-Unit Senior Housing Prototype					
	4% Tax Credit Scenario			9% Tax Credit Scenario		
	Total	Calculation		Total	Calculation	
Direct Costs						
Residential Construction [1]	$9,096,460	$146,717	*per unit*	$9,096,460	$146,717	*per unit*
Podium Parking	$2,949,534	$54,621	*per space*	$2,949,534	$54,621	*per space*
Paved Lot Parking	$86,787		*per space*	$86,787		*per space*
Landscaping/Amenities	$347,299		*total*	$347,299		*total*
Prevailing Wages	$3,120,020	25%	*of above directs*	$0	-	*of above directs*
Contingency	$780,005	5%	*of directs*	$624,004	5%	*of directs*
Total Direct Costs	**$16,380,104**			**$13,104,083**		
Indirect Costs						
Permits & Fees	$3,478,532			$3,478,532		
Legal & Accounting	$245,702	1.50%	*of directs*	$196,561	1.50%	*of directs*
Taxes & Insurance	$245,702	1.50%	*of directs*	$196,561	1.50%	*of directs*
Developer Fee	$2,340,014	14%	*of directs*	$1,872,011	14%	*of directs*
Marketing/Lease-Up	$163,801	1%	*of directs*	$131,041	1%	*of directs*
Contingency	$323,688	5%	*of indirects*	$293,735	5%	*of indirects*
Total Indirect Costs	**$6,797,438**			**$6,168,442**		
Financing Costs						
Loan Fees	$750,000			$319,000		
Interest During Construction	$1,125,000			$1,141,650		
Title/Recording/Escrow	$37,200	$600	*per unit*	$37,200	$600	*per unit*
Interest During Lease-Up	$625,000			$634,250		
TCAC/Syndication Fees	$163,820			$130,940		
Operating Lease-Up/Reserves	$232,088			$240,396		
Total Financing Costs	**$2,933,108**			**$2,503,436**		
Total Entitlement Costs	**$130,553**	0.5%	*of above costs*	**$108,880**	0.5%	*of above costs*
Total Development Costs	**$26,241,203**			**$21,884,840**		
Per Unit	**$423,245**			**$352,981**		

(1) Per CoreLogic Marshall & Swift Construction Cost Approach, residential building costs include certain several costs that are generally calculated separately as indirect costs such as architect & engineering fees.

Table 4-5: Senior Housing – 128-Unit Prototype – Development Costs

	128-Unit Senior Housing Prototype								
	4% Tax Credit Scenario			9% Tax Credit Scenario			Mixed-Income Scenario		
	Total	Calculation		Total	Calculation		Total	Calculation	
Direct Costs									
Residential Construction [1]	$16,775,121	$131,056	*per unit*	$16,775,121	$131,056	*per unit*	$16,775,121	$131,056	*per unit*
Podium Parking	$2,949,534	$54,621	*per space*	$2,949,534	$54,621	*per space*	$2,949,534	$54,621	*per space*
Paved Lot Parking	$86,787	$3,338	*per space*	$86,787	$3,338	*per space*	$86,787	$3,338	*per space*
Landscaping/Amenities	$347,299		*total*	$347,299		*total*	$347,299		*total*
Prevailing Wages	$5,039,685	25%	*of above directs*	$0	-	*of above directs*	$0	-	*of above directs*
Contingency	$1,259,921	5%	*of directs*	$1,007,937	5%	*of directs*	$1,007,937	5%	*of directs*
Total Direct Costs	**$26,458,346**			**$21,166,677**			**$21,166,677**		
Indirect Costs									
Permits & Fees	$5,666,337			$5,666,337			$5,666,337		
Legal & Accounting	$396,875	1.50%	*of directs*	$317,500	1.50%	*of directs*	$317,500	1.50%	*of directs*
Taxes & Insurance	$396,875	1.50%	*of directs*	$317,500	1.50%	*of directs*	$317,500	1.50%	*of directs*
Developer Fee	$3,779,763	14%	*of directs*	$2,500,000	12%	*of directs*	$846,667	4%	*of directs*
Marketing/Lease-Up	$264,583	1%	*of directs*	$211,667	1%	*of directs*	$211,667	1%	*of directs*
Contingency	$525,222	5%	*of indirects*	$450,650	5%	*of indirects*	$367,984	5%	*of indirects*
Total Indirect Costs	**$11,029,655**			**$9,463,654**			**$7,727,654**		
Financing Costs									
Loan Fees	$1,214,000			$458,000					
Interest During Construction	$1,820,340			$1,705,770					
Title/Recording/Escrow	$76,800	$600	*per unit*	$76,800	$600	*per unit*			
Interest During Lease-Up	$1,011,300			$947,650					
TCAC/Syndication Fees	$264,980			$211,180					
Operating Lease-Up/Reserves	$162,100			$172,314					
Total Financing Costs	**$4,549,520**			**$3,571,714**			**$2,116,668**	10%	*of directs*
Total Entitlement Costs	**$210,188**	0.5%	*of above costs*	**$171,010**	0.5%	*of above costs*	**$155,055**	0.5%	*of above costs*
Total Development Costs	**$42,247,708**			**$34,373,055**			**$31,166,054**		
Per Unit	**$330,060**			**$268,539**			**$243,485**		

(1) Per CoreLogic Marshall & Swift Construction Cost Approach, residential building costs include certain several costs that are generally calculated separately as indirect costs such as architect & engineering fees.

4.2 Net Operating Income

Net operating income (NOI) is a core financial metric that represents the income a property generates from operations after deducting operating expenses. The NOI for each Family Housing Prototype was calculated while identifying the RLV for each Tested Scenario as follows:

1) The projected gross income (including net rental revenue[7] and any additional income generated from fees for pets, laundry, and parking) was calculated for the project's first stabilized year of operations.
2) The effective gross income (EGI) for each Tested Scenario was calculated by subtracting the estimated vacancy (the portion of a property's potential rental income that is expected not to be collected due to units being unoccupied or rent not being fully paid) from the gross income.
3) Operating expenses projected for the first stabilized year of operations were subtracted from the Year 1 EGI.

Table 4-6 through **Table 4-9** summarize the NOI findings across all Prototypes and Tested Scenarios. Key findings are noted as follows:

- While NOI projections are equal across 4 and 9 Percent Tax Credit Scenarios, "NOI after debt service payment" is lower in the 4 Percent Tax Credit Scenario due to the assumption of debt service payments for MHP funding.
- In both Family Housing Prototypes, the **NOI is highest in the Mixed-Income Scenario**. Rental revenue derived from market-rate units is significantly higher than the rent derived from affordable units.

[7] Net Rental Revenue derived from affordable units incorporates utility allowances per the 2025 San Diego County Utility Allowance Schedule. Market rents are based on CoStar data analyzed December 2025.

Table 4-6: Family Housing – 61-Unit Prototype – Net Operating Income

	Family Housing					
	100% Affordable - 4% Tax Credits			100% Affordable - 9% Tax Credits		
Total Units	**61**			**61**		
Scheduled Rent [1]	# of Units	$/Month	$/Year	# of Units	$/Month	$/Year
Market-Rate	-	-	-	-	-	-
Studio	-	-	-	-	-	-
1-Bed	-	-	-	-	-	-
2-Bed	-	-	-	-	-	-
3-Bed	-	-	-	-	-	-
Affordable						
Studio						
30% of AMI	1	$593	$7,116	1	$593	$7,116
50% of AMI	0	$1,050	$0	0	$1,050	$0
80% of AMI	0	$1,279	$0	0	$1,279	$0
1-Bed						
30% of AMI	12	$675	$97,200	12	$675	$97,200
50% of AMI	8	$1,198	$115,008	8	$1,198	$115,008
80% of AMI	5	$1,460	$87,600	5	$1,460	$87,600
2-Bed						
30% of AMI	6	$735	$52,920	6	$735	$52,920
50% of AMI	6	$1,323	$95,256	6	$1,323	$95,256
80% of AMI	5	$1,618	$97,080	5	$1,618	$97,080
3-Bed						
30% of AMI	6	$784	$56,448	6	$784	$56,448
50% of AMI	6	$1,438	$103,536	6	$1,438	$103,536
80% of AMI	6	$1,765	$127,080	6	$1,765	$127,080
Total Scheduled Base Rent			**$839,244**			**$839,244**
Other Income [2]	$50	*unit/month*	$36,600	$50	*unit/month*	$36,600
Gross Scheduled Income			$875,844			$875,844
(Less) Vacancy	5%	*of GSI*	($43,792)	5%	*of GSI*	($43,792)
Effective Gross Income			**$832,052**			**$832,052**
Operating Expenses						
(Less) Operating Expenses [2]	$6,400	*unit/year*	($390,400)	$6,400	*unit/year*	($390,400)
(Less) Property Taxes [3]	$274	*unit/year*	($16,714)	$274	*unit/year*	($16,714)
(Less) Replacement Reserves [4]	$300	*unit/year*	($18,300)	$300	*unit/year*	($18,300)
(Less) Tenant Services [5]	$200	*unit/year*	($12,200)	$200	*unit/year*	($12,200)
(Less) Monitoring Fee [6]	$123	*unit/year*	($7,500)	$123	*unit/year*	($7,500)
Total Operating Expenses			**($445,114)**			**($445,114)**
Net Operating Income per Year			**$386,938**			**$386,938**
Debt Service (State Funding)[7]	0.42%	*% of loan*	($38,215)			
NOI (after Debt Service)			**$348,722**			**$386,938**

(1) Scheduled rent amounts reflect the net monthly rent derived from units. Net rental revenue from affordable units incorporate utility allowances per 2025 San Diego County Utility Allowance schedule. Market rents are based on CoStar data analyzed December 2025.
(2) Operating Expenses (excluding taxes) and other income estimated per National Apartment Association (NAA) multi-family data.
(3) Analysis assumes that 100% affordable projects will be exempt from property taxes, and will only be subject to special assessments per https://www.sduhsd.net/Our-District/Facilities/Developer-Fees/index.html.
(4) Estimated at $300 per unit per year for new construction, per CTCAC Regulation §10327(g)(7)(A), https://www.treasurer.ca.gov/ctcac/programreg/2025/clean.pdf.
(5) Based on tenant service estimates in LIHTC projects per Enterprise Community Partners and Novogradac Affordable Housing Cost Models.
(6) Project-wide monitoring fee estimated at $7,500 per year per https://www.calhfa.ca.gov/multifamily/programs/forms/termsheet-perm-tax-exempt.pdf
(7) Debt service calculated as 0.42% of MHP loan assumed for 4% LIHTC proformas.

Table 4-7: Family Housing – 82-Unit Prototype – Net Operating Income

	Family Housing								
	100% Affordable - 4% Tax Credits			100% Affordable - 9% Tax Credits			Mixed-Income		
Total Units	82			82			82		
Scheduled Rent [1]	# of Units	$/Month	$/Year	# of Units	$/Month	$/Year	# of Units	$/Month	$/Year
Market-Rate									
Studio	-	-	-	-	-	-	0	$2,412	$0
1-Bed	-	-	-	-	-	-	8	$2,657	$255,107
2-Bed	-	-	-	-	-	-	6	$2,696	$194,135
3-Bed	-	-	-	-	-	-	6	$3,010	$216,755
Affordable									
Studio									
30% of AMI	1	$593	$7,116	1	$593	$7,116	-	-	-
50% of AMI	0	$1,050	$0	0	$1,050	$0	0	$1,050	$0
80% of AMI	0	$1,279	$0	0	$1,279	$0	1	$1,279	$15,348
1-Bed									
30% of AMI	14	$675	$113,400	14	$675	$113,400	-	-	-
50% of AMI	11	$1,198	$158,136	11	$1,198	$158,136	10	$1,198	$143,760
80% of AMI	9	$1,460	$157,680	9	$1,460	$157,680	16	$1,460	$280,320
2-Bed									
30% of AMI	10	$735	$88,200	10	$735	$88,200	-	-	-
50% of AMI	8	$1,323	$127,008	8	$1,323	$127,008	6	$1,323	$95,256
80% of AMI	6	$1,618	$116,496	6	$1,618	$116,496	12	$1,618	$232,992
3-Bed									
30% of AMI	9	$784	$84,672	9	$784	$84,672	-	-	-
50% of AMI	7	$1,438	$120,792	7	$1,438	$120,792	5	$1,438	$86,280
80% of AMI	7	$1,765	$148,260	7	$1,765	$148,260	12	$1,765	$254,160
Total Scheduled Base Rent			**$1,121,760**			**$1,121,760**			**$1,774,112**
Other Income [2]	$50	*unit/month*	$49,200	$50	*unit/month*	$49,200	$125	*unit/month*	$123,000
Gross Scheduled Income			$1,170,960			$1,170,960			$1,897,112
(Less) Vacancy	5%	*of GSI*	($58,548)	5%	*of GSI*	($58,548)	5%	*of GSI*	($94,856)
Effective Gross Income			**$1,112,412**			**$1,112,412**			**$1,802,257**
Operating Expenses									
(Less) Operating Expenses [2]	$6,400	*unit/year*	($524,800)	$6,400	*unit/year*	($524,800)	$6,400	*unit/year*	($524,800)
(Less) Property Taxes [3]	$274	*unit/year*	($22,468)	$274	*unit/year*	($22,468)	$6,574	*unit/year* [3]	($148,194)
(Less) Replacement Reserves [4]	$300	*unit/year*	($24,600)	$300	*unit/year*	($24,600)	$300	*unit/year*	($24,600)
(Less) Tenant Services [5]	$200	*unit/year*	($16,400)	$200	*unit/year*	($16,400)	$0	*unit/year*	$0
(Less) Monitoring Fee [6]	$91	*unit/year*	($7,500)	$91	*unit/year*	($7,500)	$0	*unit/year*	$0
Total Operating Expenses			**($595,768)**			**($595,768)**			**($697,594)**
Net Operating Income per Year			**$516,644**			**$516,644**			**$1,104,663**
Debt Service (State Funding)[7]	0.42%	*% of loan*	($46,986)				0.42%	*% of loan*	$0
NOI (after Debt Service)			**$469,658**			**$516,644**			**$1,104,663**

(1) Scheduled rent amounts reflect the net monthly rent derived from units. Net rental revenue from affordable units incorporate utility allowances per 2025 San Diego County Utility Allowance schedule. Market rents are based on CoStar data analyzed December 2025.

(2) Operating Expenses (excluding taxes) and other income estimated per National Apartment Association (NAA) multi-family data.

(3) Analysis assumes that 100% affordable projects will be exempt from property taxes, and will only be subject to special assessments per https://www.sduhsd.net/Our-District/Facilities/Developer-Fees/index.html.

(4) Estimated at $300 per unit per year for new construction, per CTCAC Regulation §10327(g)(7)(A), https://www.treasurer.ca.gov/ctcac/programreg/2025/clean.pdf.

(5) Based on tenant service estimates in LIHTC projects per Enterprise Community Partners and Novogradac Affordable Housing Cost Models.

(6) Project-wide monitoring fee estimated at $7,500 per year per https://www.calhfa.ca.gov/multifamily/programs/forms/termsheet-perm-tax-exempt.pdf

(7) Debt service calculated as 0.42% of MHP loan assumed for 4% LIHTC proformas.

Table 4-8: Senior Housing – 62-Unit Prototype – Net Operating Income

	Senior Housing					
	100% Affordable - 4% Tax Credits			100% Affordable - 9% Tax Credits		
Total Units	62			62		
Scheduled Rent [1]	# of Units	$/Month	$/Year	# of Units	$/Month	$/Year
Market-Rate	-	-	-	-	-	-
Studio	-	-	-	-	-	-
1-Bed	-	-	-	-	-	-
2-Bed	-	-	-	-	-	-
3-Bed	-	-	-	-	-	-
Affordable						
Studio						
30% of AMI	24	$593	$170,784	24	$593	$170,784
50% of AMI	20	$1,050	$252,000	20	$1,050	$252,000
80% of AMI	16	$1,279	$245,568	16	$1,279	$245,568
1-Bed						
30% of AMI	-	-	-	-	-	-
50% of AMI	-	-	-	-	-	-
80% of AMI	-	-	-	-	-	-
2-Bed						
30% of AMI	1	$735	$17,640	1	$735	$17,640
50% of AMI	1	$1,323	$31,752	1	$1,323	$31,752
80% of AMI	0	$1,618	$0	0	$1,618	$0
3-Bed						
30% of AMI	-	-	-	-	-	-
50% of AMI	-	-	-	-	-	-
80% of AMI	-	-	-	-	-	-
Total Scheduled Base Rent			**$717,744**			**$717,744**
Other Income [2]	$50	*unit/month*	$37,200	$50	*unit/month*	$37,200
Gross Scheduled Income			$754,944			$754,944
(Less) Vacancy	5%	*of GSI*	($37,747)	5%	*of GSI*	($37,747)
Effective Gross Income			**$717,197**			**$717,197**
Operating Expenses						
(Less) Operating Expenses [2]	$6,400	*unit/year*	($396,800)	$6,400	*unit/year*	($396,800)
(Less) Property Taxes [3]	$274	*unit/year*	($16,988)	$274	*unit/year*	($16,988)
(Less) Replacement Reserves [4]	$300	*unit/year*	($18,600)	$300	*unit/year*	($18,600)
(Less) Tenant Services [5]	$200	*unit/year*	($12,400)	$200	*unit/year*	($12,400)
(Less) Monitoring Fee [6]	$121	*unit/year*	($7,500)	$121	*unit/year*	($7,500)
Total Operating Expenses			**($452,288)**			**($452,288)**
Net Operating Income per Year			**$264,909**			**$264,909**
Debt Service (State Funding) [7]	0.42%	*% of loan*	($46,986)			
NOI (after Debt Service)			**$217,923**			**$264,909**

(1) Scheduled rent amounts reflect the net monthly rent derived from units. Net rental revenue from affordable units incorporate utility allowances per 2025 San Diego County Utility Allowance schedule. Market rents are based on CoStar data analyzed December 2025.
(2) Operating Expenses (excluding taxes) and other income estimated per National Apartment Association (NAA) multi-family data.
(3) Analysis assumes that 100% affordable projects will be exempt from property taxes, and will only be subject to special assessments per https://www.sduhsd.net/Our-District/Facilities/Developer-Fees/index.html.
(4) Estimated at $300 per unit per year for new construction, per CTCAC Regulation §10327(g)(7)(A), https://www.treasurer.ca.gov/ctcac/programreg/2025/clean.pdf.
(5) Based on tenant service estimates in LIHTC projects per Enterprise Community Partners and Novogradac Affordable Housing Cost Models.
(6) Project-wide monitoring fee estimated at $7,500 per year per https://www.calhfa.ca.gov/multifamily/programs/forms/termsheet-perm-tax-exempt.pdf
(7) Debt service calculated as 0.42% of MHP loan assumed for 4% LIHTC proformas.

Table 4-9: Senior Housing – 128-Unit Prototype – Net Operating Income

	Senior Housing								
	100% Affordable - 4% Tax Credits			100% Affordable - 9% Tax Credits			Mixed-Income		
Total Units	128			128			128		
Scheduled Rent [1]	# of Units	$/Month	$/Year	# of Units	$/Month	$/Year	# of Units	$/Month	$/Year
Market-Rate	-	-	-						
Studio	-	-	-	-	-	-	65	$2,180	$1,700,572
1-Bed	-	-	-	-	-	-	-	-	-
2-Bed	-	-	-	-	-	-	2	$2,681	$64,344
3-Bed	-	-	-	-	-	-	-	-	-
Affordable									
Studio									
30% of AMI	50	$593	$355,800	50	$593	$355,800			
50% of AMI	40	$1,050	$504,000	40	$1,050	$504,000	20	$1,050	$252,000
80% of AMI	34	$1,279	$521,832	34	$1,279	$521,832	39	$1,279	$598,572
1-Bed									
30% of AMI	-	-	-	-	-	-	-	-	-
50% of AMI	-	-	-	-	-	-	-	-	-
80% of AMI	-	-	-	-	-	-	-	-	-
2-Bed									
30% of AMI	2	$735	$17,640	2	$735	$17,640			
50% of AMI	2	$1,323	$31,752	2	$1,323	$31,752	0	$1,323	$0
80% of AMI	0	$1,618	$0	0	$1,618	$0	2	$1,618	$38,832
3-Bed									
30% of AMI	-	-	-	-	-	-			
50% of AMI	-	-	-	-	-	-			
80% of AMI	-	-	-	-	-	-			
Total Scheduled Base Rent			**$1,431,024**			**$1,431,024**			**$2,654,320**
Other Income [2]	$50	*unit/month*	$76,800	$50	*unit/month*	$76,800	$128	*unit/month*	$196,608
Gross Scheduled Income			$1,507,824			$1,507,824			$2,850,928
(Less) Vacancy	5%	*of GSI*	($75,391)	5%	*of GSI*	($75,391)	5%	*of GSI*	($142,546)
Effective Gross Income			**$1,432,433**			**$1,432,433**			**$2,708,381**
Operating Expenses									
(Less) Operating Expenses [2]	$6,400	*unit/year*	($819,200)	$6,400	*unit/year*	($819,200)	$6,400	*unit/year*	($819,200)
(Less) Property Taxes [3]	$274	*unit/year*	($35,072)	$274	*unit/year*	($35,072)	$6,574	*unit/year* [3]	($457,172)
(Less) Replacement Reserves [4]	$300	*unit/year*	($38,400)	$300	*unit/year*	($38,400)	$300	*unit/year*	($38,400)
(Less) Tenant Services [5]	$200	*unit/year*	($25,600)	$200	*unit/year*	($25,600)	$0	*unit/year*	$0
(Less) Monitoring Fee [6]	$59	*unit/year*	($7,500)	$59	*unit/year*	($7,500)	$0	*unit/year*	$0
Total Operating Expenses			**($925,772)**			**($925,772)**			**($1,314,772)**
Net Operating Income per Year			**$506,661**			**$506,661**			**$1,393,609**
Debt Service (State Funding)[7]	0.42%	*% of loan*	($46,986)						
NOI (after Debt Service)			**$459,675**			**$506,661**			**$1,393,609**

(1) Scheduled rent amounts reflect the net monthly rent derived from units. Net rental revenue from affordable units incorporate utility allowances per 2025 San Diego County Utility Allowance schedule. Market rents are based on CoStar data analyzed December 2025.

(2) Operating Expenses (excluding taxes) and other income estimated per National Apartment Association (NAA) multi-family data.

(3) Analysis assumes that 100% affordable projects will be exempt from property taxes, and will only be subject to special assessments per https://www.sduhsd.net/Our-District/Facilities/Developer-Fees/index.html.

(4) Estimated at $300 per unit per year for new construction, per CTCAC Regulation §10327(g)(7)(A), https://www.treasurer.ca.gov/ctcac/programreg/2025/clean.pdf.

(5) Based on tenant service estimates in LIHTC projects per Enterprise Community Partners and Novogradac Affordable Housing Cost Models.

(6) Project-wide monitoring fee estimated at $7,500 per year per https://www.calhfa.ca.gov/multifamily/programs/forms/termsheet-perm-tax-exempt.pdf

(7) Debt service calculated as 0.42% of MHP loan assumed for 4% LIHTC proformas.

4.3 Residual Land Value

4.3.1 Tax Credit Scenarios

In the 4 and 9 Percent Tax Credit Scenarios, the RLV represents the sum of all funding assumed for the project minus total development costs. **Table 4-10** and **Table 4-11** summarize these RLV calculations. Appendix A, Residual Land Value Analysis Calculation Backup, provides additional detail on the calculation process for each funding source. Key findings are summarized as follows:

- **All Prototypes yield a negative RLV in the Tax Credit Scenarios**, indicating that the projects would not be financially feasible without additional funding in the amount of the financing gaps (i.e., negative RLV amounts).
- In the 4 Percent Tax Credit Scenario, Harris assumes that the project will receive an MHP loan and an Infill Incentive Grant. Award amounts are estimated based on recent award lists.
- Deferred developer fees[8] are calculated using the CTCAC developer fee calculator, which estimates a deferred developer fee based on a project's construction costs. Only the 4 Percent Tax Credit Scenario was deemed eligible for a deferred developer fee.

Table 4-10: Family Housing – Residual Land Value – Tax Credit Scenarios

	Family Housing Prototypes - Residual Land Value Summary (100% Affordable / Tax Credit Scenarios)			
Number of Units	61	61	82	82
Tax Credit Scenario	4%	9%	4%	9%
Sources of Funds				
Supportable Permanent Loan	$2,939,000	$3,262,000	$3,959,000	$4,355,000
Tax Credit Equity Investment	$14,418,000	$17,507,000	$18,347,000	$21,890,000
Other State Funding Source	$9,098,893	$0	$11,187,163	$0
Deferred Developer Fee	$721,315	$0	$1,566,265	$0
General Partner Equity Contribution	$0	$0	$0	$0
Projected Total Funding	**$27,177,208**	**$20,769,000**	**$35,059,428**	**$26,245,000**
(Less) Development Costs	**($36,499,542)**	**($30,177,155)**	**($46,329,894)**	**($37,138,630)**
Residual Land Value	**($9,322,334)**	**($9,408,155)**	**($11,270,466)**	**($10,893,630)**
RLV Per Unit	($152,825)	($154,232)	($137,445)	($132,849)
RLV Per SF of Land (1.0-Acre Site)	($214)	($216)	($259)	($250)
RLV Per SF of Land (1.5-Acre Site)	($143)	($144)	($172)	($167)

[8] A CTCAC deferred developer fee is the portion of an allowed developer fee that is not paid at construction completion due to limited project funding and is instead deferred for payment from future project cash flow. CTCAC permits fee deferral to help close financing gaps in affordable housing developments, but it is subject to regulatory limits, must be reasonably supported by projected cash flow, and is repaid only after required operating expenses, debt service, and reserve deposits are met. Source: California Tax Credit Allocation Committee, *California Code of Regulations, Title 4, Division 17, Chapter 1, Section 10327 — Financial Feasibility and Determination of Credit Amounts* (California Office of the State Treasurer, 2025).

Table 4-11: Residual Land Value – Senior Housing Prototypes – Tax Credit Scenarios

	Senior Housing Prototypes - Residual Land Value Summary (100% Affordable / Tax Credit Scenarios)			
Number of Units	62	62	128	128
Tax Credit Scenario	4%	9%	4%	9%
Sources of Funds				
Supportable Permanent Loan	$1,837,000	$2,233,000	$3,875,000	$4,271,000
Tax Credit Equity Investment	$10,342,000	$12,564,000	$16,728,000	$19,992,000
Other State Funding Source	$9,248,055	$0	$11,187,163	$0
Deferred Developer Fee	$0	$0	$1,279,763	$6,604,125
General Partner Equity Contribution	$0	$0	$0	$0
Projected Total Funding	**$21,427,055**	**$14,797,000**	**$33,069,926**	**$30,867,125**
(Less) Development Costs	**($26,241,203)**	**($21,884,840)**	**($42,247,708)**	**($34,373,055)**
Residual Land Value	**($4,814,148)**	**($7,087,840)**	**($9,177,782)**	**($3,505,930)**
RLV Per Unit	($77,648)	($114,320)	($71,701)	($27,390)
RLV Per SF of Land (1.0-Acre Site)	($111)	($163)	($211)	($80)
RLV Per SF of Land (1.5-Acre Site)	($74)	($108)	($140)	($54)

4.3.2 Mixed-Income Scenario

In the Mixed-Income Scenario, the RLV was calculated by subtracting the project's total development costs from its market value upon completion. Unlike the Tax Credit Scenarios, the Mixed-Income Scenario calculated the market value of the project as the NOI (divided by the project's Yield on Cost).[9] These calculations are summarized in **Table 4-12** and **Table 4-12**.

- **All Prototypes yield a negative RLV in the Tax Credit Scenarios**, indicating that the project would not be financially feasible without additional funding in the amount of the financing gaps (i.e., negative RLV amounts).
- Due to rent restrictions assumed in the Mixed-Income Scenario (61 units restricted to either Very Low Income or Low Income households) and lack of external funding assumed in these scenarios, the financing gap is higher in the Mixed-Income Scenario than the 9 Percent Tax Credit Scenario for the 82-unit Family Housing Prototype and the 128-unit Senior Housing Prototype.

[9] Yield on cost is calculated as the sum of the market capitalization rate for new multi-family housing projects in San Diego County (estimated at 4.0 percent according to CoStar data accessed February 2026) plus an assumed development spread of 150 basis points, per Loopnet (https://www.loopnet.com/cre-explained/investing/yield-on-cost/). The yield on cost reflects the return required by investors or lenders to justify the project given both market expectations and development risk.

Table 4-12: Family Housing – Residual Land Value – Mixed-Income Scenario

Family Housing - Residual Land Value Summary (Mixed-Income Scenario)	
Number of Units	82
Stabilized Net Operating Income	$1,104,663
Yield on Cost	5.40%
Market Value Upon Completion	**$20,457,000**
(Less) Development Costs	**($34,370,162)**
Residual Land Value	**($13,913,162)**
RLV Per Unit	($169,673)
RLV Per SF of Land (1.0-Acre Site)	($319)
RLV Per SF of Land (1.5-Acre Site)	($213)

Table 4-13: Senior Housing – Residual Land Value – Mixed-Income Scenario

Senior Housing - Residual Land Value Summary (Mixed-Income Scenario)	
Number of Units	128
Stabilized Net Operating Income	$1,393,609
Yield on Cost	5.40%
Market Value Upon Completion	$25,807,578
Net Sales Proceeds	**$25,808,000**
(Less) Development Costs	**($31,166,054)**
Residual Land Value	**($5,358,054)**
RLV Per Unit	($41,860)
RLV Per SF of Land (1.0-Acre Site)	($123)
RLV Per SF of Land (1.5-Acre Site)	($82)

5 COMPETITIVENESS FOR TAX CREDIT FINANCING – FINDINGS

The CTCAC uses a point system to evaluate and award federal and state LIHTC to developers creating affordable housing in California. In the CTCAC application process, site amenities are essential for a project's competitiveness. Site amenities refer to external neighborhood features that improve the livability and accessibility of a proposed housing development, such as proximity to transit, schools, parks, grocery stores, and healthcare services. Both the 4 and 9 percent CTCAC applications award points for site amenities. Therefore, high scores in this section are vital for a project's success in obtaining a CTCAC award.

5.1 Proximity to Qualifying Amenities

In each CTCAC application, a project can earn points for the types of amenities located within certain distances of its potential development site.[10] Typically, each qualifying amenity adds to the total points available, although there is no requirement to reach a specific score or category. Commonly included amenities are public parks, full-scale grocery stores, K–12 public schools and community colleges, public libraries, medical clinics, and public transit stops. To earn full points, these amenities usually need to be within at least a half-mile of the proposed development, although some, such as transit stops, may require closer proximity. The applicant must then provide maps, addresses, and walking path verification with precise measurements that meet CTCAC's strict standards.

5.2 CTCAC Opportunity Map Composite Score

A key site amenity category for both the 4 and 9 percent CTCAC applications is a site's CTCAC resource area classification. Specifically, a site is classified as Highest Resource, High Resource, Moderate Resource, Low Resource, or High Segregation and Poverty areas under the CTCAC Opportunity Map, which evaluates the economic resources, educational opportunities, and environmental quality of a given census tract or block group compared to the surrounding region. If a site is located in a Highest Resource or High Resource area, it earns three points on the 4 percent CTCAC application and eight points on the 9 percent CTCAC application.

5.3 Site Amenity Scoring – 4 Percent and 9 Percent CTCAC Applications

The 9 percent CTCAC application is considered more competitive and caps the site amenity score to a maximum of 15 points, while the less competitive 4 percent CTCAC application caps the maximum site amenity score at 10 points.

A project should aim to maximize its site amenity score if it wants to receive a 4 or 9 percent CTCAC award. **New affordable housing projects in San Diego County awarded 4 and 9 percent tax credits in 2024 and 2025 consistently achieved the maximum site amenity score**, as shown in **Table 5-1** and **Table 5-2**.

[10] Distances between the Potential Sites and qualifying amenities were measured in accordance with Section 4(a) of California Code of Regulations Title 4, Division 17, Chapter 1 CTCAC regulations established February 27, 2019, https://website-qa.treasurer.ca.gov/sites/default/files/2025-12/regulations-clean.pdf

Table 5-1: 2024–2025 4 Percent CTCAC Award List – San Diego County – Site Amenity Point Scores

Project Name	City	County	Award Year	Total Units (Including Manager's Units)	% Extremely Low (Up to 30% AMI)	% Very Low (30%-50% AMI)	% Low (50%-80% AMI)	Site Amenity Score (Up to 10)
Trolley Stop Apartments	San Diego	San Diego	2025	330	10%	10%	79%	**10**
2581 Commercial Street	San Diego	San Diego	2025	70	11%	11%	76%	**10**
5370 Napa	San Diego	San Diego	2025	100	10%	15%	74%	**10**
16th & Island Apartments	San Diego	San Diego	2025	123	11%	11%	78%	**10**
Spring Street Trolley Station	La Mesa	San Diego	2025	147	27%	32%	39%	**10**
Olive Park Apartments	Oceanside	San Diego	2025	199	25%	6%	68%	**10**
Otay Ranch II	Chula Vista	San Diego	2025	270	13%	7%	79%	**10**
Sol Vista Apartments	Chula Vista	San Diego	2025	96	7%	7%	56%	**10**
707 by Vintage	San Diego	San Diego	2025	200	10%	10%	79%	**10**
Mercado Apartments	San Diego	San Diego	2025	224	34%	20%	45%	**10**
Brookview Senior Villas	Fallbrook	San Diego	2025	61	49%	49%	0%	**10**
SDSU Mission Valley	San Diego	San Diego	2025	126	10%	79%	10%	**10**
Mirka Tower 1	San Diego	San Diego	2025	318	10%	20%	69%	**10**
Mira Mesa	San Diego	San Diego	2025	90	12%	11%	76%	**10**
Hillcrest Hall	San Diego	San Diego	2025	98	15%	11%	72%	**10**
Market Two	San Diego	San Diego	2025	272	10%	10%	78%	**10**
Aero Drive Affordable Apartments	San Diego	San Diego	2025	190	11%	11%	78%	**10**
Monarch Hillside Affordable Apartments	San Diego	San Diego	2024	51	10%	88%	0%	**10**
The Grant at Mission Trails	San Diego	San Diego	2024	48	35%	25%	38%	**10**
Wakeland Riverwalk	San Diego	San Diego	2024	190	25%	24%	50%	**10**
712 Seagaze	Oceanside	San Diego	2024	179	25%	24%	50%	**10**
Alvarado Creek Apartments	San Diego	San Diego	2024	227	18%	13%	69%	**10**
Avanzando San Ysidro	San Diego	San Diego	2024	103	11%	63%	24%	**10**
Quince Street Seniors	Escondido	San Diego	2024	145	10%	10%	77%	**10**
Chula Vista Seniors	Chula Vista	San Diego	2024	58	10%	10%	78%	**10**
El Camino Real Affordable Apartments	Oceanside	San Diego	2024	111	11%	11%	77%	**10**
St. Luke's Affordable	San Diego	San Diego	2024	78	10%	46%	42%	**10**
Kindred	San Diego	San Diego	2024	126	50%	27%	22%	**10**
La Costa Family Apartments	Carlsbad	San Diego	2024	19	16%	16%	68%	**10**
North City Affordable	San Marcos	San Diego	2024	224	13%	38%	47%	**10**
The Trails at Carmel Mountain Ranch	San Diego	San Diego	2024	125	10%	10%	78%	**10**
54th and El Cajon	San Diego	San Diego	2024	95	12%	12%	76%	**10**

Table 5-2: 2024–2025 9 Percent CTCAC Award List – San Diego County – Site Amenity Point Scores

Project Name	City	County	Award Year	Total Units (Including Manager's Units)	% Extremely Low (Up to 30% AMI)	% Very Low (30%-50% AMI)	% Low (50%-80% AMI)	Site Amenity Score (Up to 15)
Coast Villas - NPHA	Oceanside	San Diego	2025	56	50%	48%	0%	**15**
Navajo Family Apartments	San Diego	San Diego	2025	45	16%	47%	36%	**15**
Serra Mesa Apartments	San Diego	San Diego	2025	60	27%	25%	47%	**15**
Terrasini	San Diego	San Diego	2024	95	11%	51%	38%	**15**
Alvarado Senior Village	Fallbrook	San Diego	2024	54	78%	20%	0%	**15**
Fox Point Farms	Encinitas	San Diego	2024	40	10%	88%	0%	**15**
Rose Creek Village	San Diego	San Diego	2024	60	67%	0%	32%	**15**

For projects relying on a CTCAC award, it is crucial to evaluate amenity access early in the site selection process and ensure that all supporting documentation aligns with the CTCAC's published standards. Projects targeting the maximum score should document all qualifying amenities within the appropriate distance thresholds. On both 4 and 9 percent CTCAC applications, dedicating time to mapping, verifying, and documenting nearby amenities can significantly improve a project's competitiveness under the CTCAC scoring framework. As **Table 5-3** through **Table 5-8** note, **all five Potential Sites should achieve the maximum site amenity score (including a Highest Resource Area designation), consistent with the scores of CTCAC projects awarded tax credit financing in 2024 and 2025. These findings indicate that the Potential Sites are competitive for future 4 percent and 9 percent CTCAC awards**.

Table 5-3: Site Amenity Self-Score (2025 4 Percent CTCAC Application) – East Main Stable Gate Site (Site 1) and South of Stable Gate Site (Site 2)

Site Amenity	Points	Notes
Transit	4	The Valley Ave. & Highland Drive bus stop on the Breezer 308 bus line is within 1/3 miles from the site, but does not stop every 30 minutes during the core hours noted in the CTCAC application.
Public Park	2	Coast-to-Crest Trail is within 3/4 miles of the site. Additionally, Del Mar Beach is approximately 1.4 miles away.
Library	0	There are no libraries within 1 mile of the site. The San Diego County Library - Del Mar Branch is 1.5 miles from the site.
Grocery Store	5	There is a Whole Foods in the Flower Hill Promenade, which is within 1/2 mile of the site. Additionally, the Valley Farm Market in Del Mar Plaza and Vons in Del Mar Heights are approximately 1.4 and 2.7 miles, respectively.
Schools	0	There are no public schools or community colleges within 1 mile of the site.
Senior Center	0	These points are for Senior Developments only. There are no Senior Centers within 3/4 miles from the site, so no points would be earned in this section. Del Mar Community Connections, a nonprofit partner with the City of Del Mar, is approximately 1.9 miles from the site., and Elderhelp Senior Center is approximately 1.7 miles from the site.
Specific Service Oriented Facility	0	These points are for Special Needs developments only. Hearts of Gold Care Homes in the Del Mar shopping Center is within 1/2 mile from the site (potentially 3 extra points).
Medical Facilities	3	The Sharp Rees-Stealy Del Mar medical clinic is within 1/2 mile of the site. Scripps Coastal Medical Center is approximately 1.1 miles from the site. The University of California, San Diego is approximately 7 miles from the site.
Pharmacy	0	There are no pharmacies located within one mile of the site. There are CVS Pharmacies at 683 Lomas Santa Fe Dr. and 2662 Del Mar Heights Rd. approximately 1.1 and 2.8 miles from the site, respectively.
High Speed Internet	0	Eligibility for points in this category depends on the development. 2 points would be awarded if high speed internet is offered to low-income tenants for free.
Resource Area	3	The site is within the Highest Resource CTCAC/HCD Area.
Conclusion	**A project located on these sites would be eligible for the maximum Site Amenity Score (10 points) on a 2025 4% CTCAC application.**	

Table 5-4: Site Amenity Self-Score (2025 4 Percent CTCAC Application) – Adjacent to Fire Station Site (Site 3)

Site Amenity	Points	Notes
Transit	3	Camino Del Mar & 29th Street bus stop is located within 1/2 miles from the site, but does not stop every 30 minutes during the core hours noted in the CTCAC application.
Public Park	3	Coast-to-Crest Trail is within 1/2 miles of the site, and Del Mar Beach is within 1 mile of the site.
Library	0	There are no libraries within 1 mile of the site. The San Diego County Library - Del Mar Branch is just over 1 mile from the site.
Grocery Store	4	There is a Whole Foods in the Flower Hill Promenade and Valley Market Farm in Del Mar Plaza are within 1 mile of the site. Additionally, the Vons in Del Mar Heights is approximately 2.3 miles.
Schools	0	There are no public schools or community colleges within 1 mile of the site.
Senior Center	0	These points are for Senior Developments only. There are no Senior Centers within 3/4 miles from the site, so no points would be earned in this section. Del Mar Community Connections, a nonprofit partner with the City of Del Mar, is approximately 1.4 miles from the site, and Elderhelp Senior Center is approximately 1.2 miles from the site.
Specific Service Oriented Facility	0	These points are for Special Needs developments only. Hearts of Gold Care Homes in the Del Mar shopping Center is within 1 mile from the site (potentially 2 extra points).
Medical Facilities	2	The Sharp Rees-Stealy Del Mar medical clinic is within 1 mile of the site. Scripps Coastal Medical Center is approximately 1.6 miles from the site. The University of California, San Diego is approximately 6.6 miles from the site.
Pharmacy	0	There are no pharmacies located within one mile of the site. There are CVS Pharmacies at 683 Lomas Santa Fe Dr. and 2662 Del Mar Heights Rd. approximately 1.6 and 2.4 miles from the site, respectively.
High Speed Internet	0	Eligibility for points in this category depends on the development. 2 points would be awarded if high speed internet is offered to low-income tenants for free.
Resource Area	3	The site is within the Highest Resource CTCAC/HCD Area.
Conclusion	**A project located at this site would be eligible for the maximum Site Amenity Score (10 points) on a 2025 4% CTCAC application.**	

Table 5-5: Site Amenity Self-Score (2025 4 Percent CTCAC Application) – Surf and Turf RV Park Site (Site 4) and Dirt Lot Site (Site 5)

Site Amenity	Points	Notes
Transit	4	The Valley Ave. & Highland Drive bus stop on the Breezer 308 bus line is within 1/3 miles from the site, but does not stop every 30 minutes during the core hours noted in the CTCAC application.
Public Park	2	Coast-to-Crest Trail is within 3/4 miles of the site. Additionally, Del Mar Beach is approximately 1.3 miles away.
Library	0	There are no libraries within 1 mile of the site. The San Diego County Library - Del Mar Branch is 1.4 miles from the site.
Grocery Store	5	There is a Whole Foods in the Flower Hill Promenade which is within 1/2 mile of the site. Additionally, the Valley Farm Market in Del Mar Plaza and Vons in Del Mar Heights are approximately 1.3 and 2.7 miles, respectively.
Schools	0	There are no public schools or community colleges within 1 mile of the site.
Senior Center	0	These points are for Senior Developments only. There are no Senior Centers within 3/4 miles from the site, so no points would be earned in this section. Del Mar Community Connections, a nonprofit partner with the City of Del Mar, is approximately 1.8 miles from the site, and Elderhelp Senior Center is approximately 1.6 miles from the site.
Specific Service Oriented Facility	0	These points are for Special Needs developments only. Hearts of Gold Care Homes in the Del Mar shopping Center is within 1 mile from the site (potentially 2 extra points).
Medical Facilities	3	The Sharp Rees-Stealy Del Mar medical clinic is within 1/2 mile of the site. Scripps Coastal Medical Center is approximately 1.2 miles from the site. The University of California, San Diego is approximately 6.9 miles from the site.
Pharmacy	0	There are no pharmacies located within one mile of the site. There are CVS Pharmacies at 683 Lomas Santa Fe Dr. and 2662 Del Mar Heights Rd. approximately 1.2 and 2.7 miles from the site, respectively.
High Speed Internet	0	Eligibility for points in this category depends on the development. 2 points would be awarded if high speed internet is offered to low-income tenants for free.
Resource Area	3	The site is within the Highest Resource CTCAC/HCD Area.
Conclusion	**A project located on these sites would be eligible for the maximum Site Amenity Score (10 points) on a 2025 4% CTCAC application.**	

Table 5-6: Site Amenity Self-Score (2025 9 Percent CTCAC Application) – East Main Stable Gate Site (Site 1) and South of Stable Gate Site (Site 2)

Site Amenity	Points	Notes
Transit	4	The Valley Ave. & Highland Drive bus stop on the Breezer 308 bus line is within 1/3 miles from the site, but does not stop every 30 minutes during the core hours noted in the CTCAC application.
Public Park	2	Coast-to-Crest Trail is within 3/4 miles of the site. Additionally, Del Mar Beach is approximately 1.4 miles away.
Library	0	There are no libraries within 1 mile of the site. The San Diego County Library - Del Mar Branch is 1.5 miles from the site.
Grocery Store	5	There is a Whole Foods in the Flower Hill Promenade, which is within 1/2 mile of the site. Additionally, the Valley Farm Market in Del Mar Plaza and Vons in Del Mar Heights are approximately 1.4 and 2.7 miles, respectively.
Schools	0	There are no public schools or community colleges within 1 mile of the site.
Senior Center	0	These points are for Senior Developments only. There are no Senior Centers within 3/4 miles from the site, so no points would be earned in this section. However, Del Mar Community Connections, a nonprofit partner with the City of Del Mar, is approximately 1.9 miles from the site, and Elderhelp Senior Center is approximately 1.7 miles from the site.
Specific Service Oriented Facility	0	These points are for Special Needs developments only. Hearts of Gold Care Homes in the Del Mar shopping Center is within 1/2 mile from the site (potentially 3 extra points).
Medical Facilities	3	The Sharp Rees-Stealy Del Mar medical clinic is within 1/2 mile of the site. Scripps Coastal Medical Center is approximately 1.1 miles from the site. The University of California, San Diego is approximately 7 miles from the site.
Pharmacy	0	There are no pharmacies located within one mile of the site. There are CVS Pharmacies at 683 Lomas Santa Fe Dr. and 2662 Del Mar Heights Rd. approximately 1.1 and 2.8 miles from the site, respectively.
High Speed Internet	0	Eligibility for points in this category depends on the development. 2 points would be awarded if high speed internet is offered to low-income tenants for free.
Resource Area	8	The site is within the Highest Resource TCAC/HCD Area.
Total	**A project located at these sites would be eligible for the maximum Site Amenity Score (15 points) on a 9% CTCAC application.**	

Table 5-7: Site Amenity Self-Score (2025 9 Percent CTCAC Application) – Adjacent to Fire Station Site (Site 3)

Site Amenity	Points	Notes
Transit	3	Camino Del Mar & 29th Street bus stop is located within 1/2 miles from the site, but does not stop every 30 minutes during the core hours noted in the CTCAC application.
Public Park	3	Coast-to-Crest Trail is within 1/2 miles of the site, and Del Mar Beach is within 1 mile of the site.
Library	0	There are no libraries within 1 mile of the site. The San Diego County Library - Del Mar Branch is just over 1 mile from the site.
Grocery Store	4	There is a Whole Foods in the Flower Hill Promenade and Valley Market Farm in Del Mar Plaza are within 1 mile of the site. Additionally, the Vons in Del Mar Heights is approximately 2.3 miles.
Schools	0	There are no public schools or community colleges within 1 mile of the site.
Senior Center	0	These points are for Senior Developments only. There are no Senior Centers within 3/4 miles from the site, so no points would be earned in this section. Del Mar Community Connections, a nonprofit partner with the City of Del Mar, is approximately 1.4 miles from the site, and Elderhelp Senior Center is approximately 1.2 miles from the site.
Specific Service Oriented Facility	0	These points are for Special Needs developments only. Hearts of Gold Care Homes in the Del Mar shopping Center is within 1 mile from the site (potentially 2 extra points).
Medical Facilities	2	The Sharp Rees-Stealy Del Mar medical clinic is within 1 mile of the site. Scripps Coastal Medical Center is approximately 1.6 miles from the site. The University of California, San Diego is approximately 6.6 miles from the site.
Pharmacy	0	There are no pharmacies located within one mile of the site. There are CVS Pharmacies at 683 Lomas Santa Fe Dr. and 2662 Del Mar Heights Rd. approximately 1.6 and 2.4 miles from the site, respectively.
High Speed Internet	0	Eligibility for points in this category depends on the development. 2 points would be awarded if high speed internet is offered to low-income tenants for free.
Resource Area	8	The site is within the Highest Resource TCAC/HCD Area.
Conclusion	**A project located at this site would be eligible for the maximum Site Amenity Score (15 points) on a 9% CTCAC application.**	

Table 5-8: Site Amenity Self-Score (2025 9 Percent CTCAC Application) – Surf and Turf RV Park Site (Site 4) and Dirt Lot Site (Site 5)

Site Amenity	Points	Notes
Transit	4	The Valley Ave. & Highland Drive bus stop on the Breezer 308 bus line is within 1/3 miles from the site, but does not stop every 30 minutes during the core hours noted in the CTCAC application.
Public Park	2	Coast-to-Crest Trail is within 3/4 miles of the site. Additionally, Del Mar Beach is approximately 1.3 miles away.
Library	0	There are no libraries within 1 mile of the site. The San Diego County Library - Del Mar Branch is 1.4 miles from the site.
Grocery Store	5	There is a Whole Foods in the Flower Hill Promenade which is within 1/2 mile of the site. Additionally, the Valley Farm Market in Del Mar Plaza and Vons in Del Mar Heights are approximately 1.3 and 2.7 miles, respectively.
Schools	0	There are no public schools or community colleges within 1 mile of the site.
Senior Center	0	These points are for Senior Developments only. There are no Senior Centers within 3/4 miles from the site, so no points would be earned in this section. Del Mar Community Connections, a nonprofit partner with the City of Del Mar, is approximately 1.8 miles from the site, and Elderhelp Senior Center is approximately 1.6 miles from the site.
Specific Service Oriented Facility	0	These points are for Special Needs developments only. Hearts of Gold Care Homes in the Del Mar shopping Center is within 1 mile from the site (potentially 2 extra points).
Medical Facilities	3	The Sharp Rees-Stealy Del Mar medical clinic is within 1/2 mile of the site. Scripps Coastal Medical Center is approximately 1.2 miles from the site. The University of California, San Diego is approximately 6.9 miles from the site.
Pharmacy	0	There are no pharmacies located within one mile of the site. There are CVS Pharmacies at 683 Lomas Santa Fe Dr. and 2662 Del Mar Heights Rd. approximately 1.2 and 2.7 miles from the site, respectively.
High Speed Internet	0	Eligibility for points in this category depends on the development. 2 points would be awarded if high speed internet is offered to low-income tenants for free.
Resource Area	8	The site is within the Highest Resource TCAC/HCD Area.
Total	**A project located at these sites would be eligible for the maximum Site Amenity Score (15 points) on a 9% CTCAC application.**	

6 ADDITIONAL CONSIDERATIONS – COMPARATIVE SITE FEASIBILITY

This Analysis indicates that all five Potential Sites qualify for the maximum site amenity scores, including Highest Resource area designations. Furthermore, all Potential Sites feature 1 to 1.5 acres of developable land, indicating that each site has sufficient land area to accommodate the Family Housing and Senior Housing Prototypes used in the updated Analysis. Therefore, this Analysis was conducted with the assumption that all the Potential Sites are competitive for tax credit financing and capable of accommodating 61 units of lower-income housing.

However, several additional factors should be considered when evaluating the comparative feasibility of the Potential Sites.

Specifically, Harris' Housing Site Assessment Study analyzed the Potential Sites for feasibility using objective criteria per the ENRA to help decision-makers better understand each site's development feasibility, as summarized in **Table 6-1**. **As noted in Table 6-1, both sites in the City of San Diego (Sites 4 and 5) were deemed infeasible with respect to lease agreement timing.**[11]

[11] Per the ENRA, once a development site is mutually agreed upon by the City and District, the parties will enter into negotiations regarding a lease agreement in accordance with State law. This will involve discussions between the parties that require express approval by the District. The City's objective is to use such a lease agreement to solicit a developer to develop and operate an affordable housing development on the site in accordance with applicable laws. The ENRA period will expire April 15, 2027, according to the ENRA first amendment. The number of actions and agreements that would need to occur between the City of Del Mar, City of San Diego, and the District, and time constraints identified in the Housing Site Assessment Memorandum concluded that there is no basis to render the City of San Diego sites as feasible with respect to lease agreement timing.

Table 6-1: Housing Site Assessment Study Findings per ENRA Objective Criteria

	City of Del Mar			City of San Diego	
Objective Criteria	**Site 1**	**Site 2**	**Site 3**	**Site 4**	**Site 5**
Ability to Execute Lease Agreement within ENRA Negotiating Period	Yes	Yes	Yes	No	No
Potential to be Financially Feasible for Development of 61+ Lower Income Units	Yes	Yes	Yes	Yes	Yes
Potential to be Eligible for Tax Credit Financing	Yes	Yes	Yes	Yes	Yes
No Environmental Constraints (known at the time of Study) Rendering Site Infeasible for Development	Yes	Yes	Yes	Yes	Yes
Ability to be Implemented in Accordance with State and Local Requirements(1)	Yes	Yes	Yes	Yes	Yes
No Associated Conflicts with Fairgrounds Operations or Events	Yes	Yes	Yes	Yes	Yes
Ability to Protect the Public Health and Safety During Fairgrounds Operations and Events, and Provide Security for all On-Site Fairgrounds Development	Yes	Yes	Yes	Yes	Yes

(1) A general plan, zoning, and local coastal program amendment would be required to allow for residential development at Site 5.

Furthermore, it is important to note that the updated RLV calculations do not account for site-specific development costs attributable to demolition,[12] relocation costs, or mitigation of environmental constraints that may be necessary once a particular site is chosen for development. If needed, these additional steps in the site preparation process may increase total development costs on the selected site, thereby increasing the amount of gap financing required for development. As detailed in the previous Housing Site Assessment Study, while no environmental constraints on the Potential Sites are known at the time of this Analysis, Harris is analyzing additional environmental conditions of the Fairgrounds property in separate due diligence studies. During Harris' virtual meeting with affordable housing developer stakeholders active in San Diego County on November 4, 2025 (Developer Stakeholder Meeting), developers emphasized the importance of fully understanding the environmental conditions of each site before submitting a development proposal. Meeting minutes summarizing the Developer Stakeholder Meeting will be included in Harris' subsequent memorandum, which will provide tailored options/solutions for funding gaps (including public/private partnerships) to achieve financial feasibility.

[12] Building demolition costs currently range from approximately $5 to $20 per square foot, according to CoreLogic Marshall & Swift® Cost Approach data examined as of January 2026.

7 APPENDIX A – RESIDUAL LAND VALUE ANALYSIS CALCULATION BACKUP

Table 7-1 through **Table 7-4** illustrate backup calculations incorporated into this Analysis.

Table 7-1: Sources of Funds – Family Housing Prototypes – Tax Credit Scenarios

	FAMILY HOUSING			
Sources of Funds	**61-Unit Prototype**		**82-Unit Prototype**	
	4% Tax Credit	**9% Tax Credit**	**4% Tax Credit**	**9% Tax Credit**
Supportable Permanent Loan				
NOI	$348,722	$386,938	$469,658	$516,644
Interest Rate	10.00%	10.00%	10.00%	10.00%
Term (Years)	35	35	35	35
Debt Coverage Ratio	1.15	1.15	1.15	1.15
Annual Debt Service	$303,237	$336,468	$408,398	$449,256
Supportable Permanent Loan	$2,939,000	$3,262,000	$3,959,000	$4,355,000
Tax Credit Proceeds				
Maximum Eligible Basis	$31,683,455	$26,317,004	$40,326,762	$32,896,942
(Less) Voluntary Credit Adjustment	0% $0	35% ($9,211,000)	0% $0	35% ($11,514,000)
Total Requested Unadjusted Basis	**$31,683,455**	**$17,106,004**	**$40,326,762**	**$21,382,942**
Impacted Bonus Factor	130% $41,188,000	130% $22,238,000	130% $52,425,000	130% $27,798,000
Tax Credit Unqualified Units/Applicable Factors	100% $41,188,000	100% $22,238,000	100% $52,425,000	100% $27,798,000
Tax Credit Rate	4% $1,648,000	9% $2,001,000	4% $2,097,000	9% $2,502,000
Total Tax Credits @	10 $16,480,000	10 $20,010,000	10 $20,970,000	10 $25,020,000
Limited Partner Share	99.99% $16,478,000	99.99% $20,008,000	99.99% $20,968,000	99.99% $25,017,000
Tax Credit Equity Investment @	87.50% $14,418,000	87.50% $17,507,000	87.50% $18,347,000	87.50% $21,890,000
Other State Funding Sources				
Total Loan (MHP Assumed)	$9,098,893	$0	$11,187,163	$0
Total Grant (IIG Assumed)	$3,023,337	$0	$3,072,900	$0
Total - Other State Funding Sources	$12,122,230		$14,260,063	
Annual Debt Service from MHP Loan (.42%)	$38,215	$0	$46,986	$0
Developer Fee (per CTCAC Developer Fee Calculator)				
Type of Tax Credit	4%	9%	4%	9%
Minimum Deferred or Contributed Developer Fee	$721,315	$0	$1,566,265	$0
Total Developer Fee Limit	$3,221,315	$2,500,000	$4,066,265	$2,500,000

Table 7-2: Sources of Funds – Senior Housing Prototypes – Tax Credit Scenarios

	SENIOR HOUSING			
Sources of Funds	**62-Unit Prototype**		**128-Unit Prototype**	
	4% Tax Credit	**9% Tax Credit**	**4% Tax Credit**	**9% Tax Credit**
Supportable Permanent Loan				
NOI	$217,923	$264,909	$459,675	$506,661
Interest Rate	10.00%	10.00%	10.00%	10.00%
Term (Years)	35	35	35	35
Debt Coverage Ratio	1.15	1.15	1.15	1.15
Annual Debt Service	$189,498	$230,355	$399,717	$440,575
Supportable Permanent Loan	$1,837,000	$2,233,000	$3,875,000	$4,271,000
Tax Credit Proceeds				
Maximum Eligible Basis	$22,727,253	$18,884,949	$36,774,996	$30,044,814
(Less) Voluntary Credit Adjustment	0% $0	35% ($6,610,000)	0% $0	35% ($10,516,000)
Total Requested Unadjusted Basis	$22,727,253	$12,274,949	$36,774,996	$19,528,814
Impacted Bonus Factor	130% $29,545,000	130% $15,957,000	130% $47,807,000	130% $25,387,000
Tax Credit Unqualified Units/Applicable Factors	100% $29,545,000	100% $15,957,000	100% $47,807,000	100% $25,387,000
Tax Credit Rate	4% $1,182,000	9% $1,436,000	4% $1,912,000	9% $2,285,000
Total Tax Credits @	10 $11,820,000	10 $14,360,000	10 $19,120,000	10 $22,850,000
Limited Partner Share	99.99% $11,819,000	99.99% $14,359,000	99.99% $19,118,000	99.99% $22,848,000
Tax Credit Equity Investment @	87.50% $10,342,000	87.50% $12,564,000	87.50% $16,728,000	87.50% $19,992,000
Other State Funding Sources				
Total Loan (MHP Assumed)	$9,248,055	$0	$11,187,163	$0
Total Grant (IIG Assumed)	$3,072,900	$0	$3,244,720	
Total - Other State Funding Sources	$12,320,955	$0	$14,431,883	
Annual Debt Service from MHP Loan (.42%)	$46,986	$0	$46,986	$0
Developer Fee (per CTCAC Developer Fee Calculator)				
Type of Tax Credit	4%	9%	4%	9%
Minimum Deferred or Contributed Developer Fee	$0	$0	$1,279,763	$0
Total Developer Fee Limit	$2,340,014	$1,872,011	$3,779,763	$2,500,000

Table 7-3: Calculation of Permits and Fees

			Family Housing Prototypes		Senior Housing Prototypes	
Units			61	82	62	128
Gross Building Area (SF)			57,113	75,676	37,471	69,102
Estimate of Permits & Fees						
Building Permit Fee [1]	$82	Per SF	$4,683,266	$6,205,448	$3,072,622	$5,666,337
Construction License Tax [2]	$0.35	Per SF	$19,990	$26,487	$13,115	$24,186
RTCIP [2]	$3,048	Per Unit	$185,902	$249,901	$188,949	$390,089
SMIP Fee [3]	$0.10	Per 1000 SF	$5.71	$7.57	$3.75	$6.91
School District Fees [4]	$5.44	Per SF	$310,695	$411,679	$203,842	$375,913
Total Permits & Fees			**$5,199,858**	**$6,893,522**	**$3,478,532**	**$6,456,531**
Per Unit			**$85,244**	**$84,067**	**$56,105**	**$50,442**
Per SF GBA			**$91**	**$91**	**$93**	**$93**

(1) Reflects rate for Apartment Houses with Type V (Wood Frame).
https://www.delmar.ca.us/DocumentCenter/View/7130/Building---Permit-Plan-Check-Inspection-and-Fire-Review-Fees-PDF
(2) Regional Transportation Congestion Improvement Program (RTCIP) fees per City of Del Mar Fee Schedule effective July 1, 2025
https://www.delmar.ca.us/DocumentCenter/View/7663/Planning-Fee-Schedule-PDF?bidId=
(3) Strong Motion Instrumentation & Seismic Hazard Mapping (SMIP) Fee. Minimum fee of $0.50.
https://www.delmar.ca.us/DocumentCenter/View/7130/Building---Permit-Plan-Check-Inspection-and-Fire-Review-Fees-PDF
(4) $2.72 per square foot for the San Dieguito Union High School District. Del Mar Union School District Fees are currently estimated using the same fee amount per square foot (i.e. $5.44 total across both school districts). https://www.sduhsd.net/Our-District/Facilities/Developer-

Table 7-4: 2025 Multi-Family Utility Allowance Schedule, San Diego County

Utility	Studio	1-Bed	2-Bed	3-Bed
Heating - Electric	$18	$21	$27	$37
Cooking - Electric	$11	$13	$18	$24
Other Electric	$41	$48	$67	$86
Air Conditioning	$9	$11	$21	$27
Water Heating - Electric	$24	$28	$36	$50
Water	$99	$106	$157	$232
Sewer	$30	$30	$30	$30
Trash	$35	$35	$35	$35
Range	$5	$5	$5	$5
Refrigerator	$9	$9	$9	$9
Utility Allowances[1]	**$94**	**$110**	**$148**	**$197**

(1) Utility allowances per U.S. Department of Housing and Urban Development (HUD) Utility Allowance Schedule for Multi-Family Properties in San Diego County, effective 3/1/2025. In financial feasibility analysis, rental revenue derived from affordable units in is calculated as the base rent (calculated per California Health & Safety Code Section 50053) minus the utility allowance amounts noted in this table, which vary by unit size.

8 APPENDIX B – DATA SOURCES

Harris analyzed the following data sources:

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- City of Del Mar and 22nd District Agricultural Association. *First Amendment to Fairgrounds Affordable Housing Exclusive Negotiating Rights Agreement (ENRA).* December 31, 2024.
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Harris & Associates

CEQA CONSTRAINTS MEMORANDUM

To: Dustin Fuller, Supervising Environmental Planner, 22nd District Agricultural Association; Amanda Lee, Principal Planner, City of Del Mar
From: Janelle Firoozi, Senior Environmental Manager, Harris & Associates
Subject: **CEQA Constraints Memorandum for the HAP Grant Affordable Housing Project**
Date: February 13, 2026
Att: 1, Regional Location/Housing Sites Figures; 2, AB130 Infill Housing Exemption Worksheet; 3, Biological Resources Constraints Memorandum; 4, Cultural Resources Letter Report; 5, Transportation Analysis

1 Executive Summary

The 22nd District Agricultural Association (District) is undergoing a master site planning process to plan immediate, near-term projects and conceptual, long-term projects focusing on enhancing and improving the Del Mar Fairgrounds (Fairgrounds) facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property that the District may be willing to make available for affordable housing development. In the City's 6th Cycle Housing Element Update, the City identified and included a portion of the Fairgrounds in the Housing Element residential sites inventory as having the potential to be developed to accommodate affordable housing units. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds property. This study of potential California Environmental Quality Act (CEQA) constraints related to the proposed affordable housing on Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development Housing Acceleration Program (HAP) Cycle 2.

Five potential housing site locations have been selected through this mutual planning effort, with the goal of selecting one site to develop with housing (see Table 2 below). As a discretionary action being undertaken by a public agency that may cause a direct and indirect physical change in the environment, the potential housing development would be considered a "project" under CEQA, as defined by California Public Resources Code, Section 21065, and would be subject to CEQA review. This CEQA constraints memorandum explores CEQA document pathways, potential CEQA impacts that could occur through the development of the potential housing sites, the future studies required for CEQA compliance, preliminary mitigation measures, and the level of CEQA documentation that would likely need to be prepared based on those potential impacts for each of the five sites. In support of this memorandum, regional location and housing sites figures, an AB130 Infill Housing Exemption Worksheet, a biological resources constraints memorandum, a cultural resources letter report, and a transportation analysis were prepared and are attached (Attachments 1 through 5).

Due to the type of project as a new housing development, the project would not be eligible for Class 1 through Class 33 categorial exemptions (CEQA Guidelines Sections 15301-15333). Assembly Bill (AB) 130 Housing Exemption (Public Resources Code Section 21080.66) could potentially apply to the project. Future studies would be required to ensure that AB 130 is the appropriate CEQA pathway. If it is determined that AB 130 does not apply to the project, an Initial Study (IS) would be prepared to determine if the project would qualify for a Mitigated Negative Declaration (MND) (if all potential impacts are mitigated) or Environmental Impact Report (EIR) (if there are significant and unavoidable impacts).

Should the project not qualify for an exemption, it is anticipated that the following CEQA resource areas may have potential impacts, regardless of the site chosen: aesthetics, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, and tribal cultural resources.

As detailed in Table 1, this analysis concludes that for Sites 1 through 5, future studies that would be required to support the CEQA document include visual simulations, California Emissions Estimator Model (CalEEMod) modeling (and a health risk assessment [HRA] for Site 1), a geotechnical evaluation, a Phase I Environmental Site Assessment, a Hydrology and Water Quality Report, noise modeling, "will-serve" letters from fire, police/sheriff, and school district public service providers, Assembly Bill (AB) 52 tribal consultation, and a Water and Sanitary Sewer Utility Impact Study (which is currently underway at the time of this memorandum).

Table 1. Future Studies Required to Support CEQA

CEQA Resource Area	Future Studies Required
Aesthetics	Visual Simulations
Air Quality	California Emissions Estimator Model (CalEEMod) modeling (and a Health Risk Assessment [HRA] for Site 1)
Geology and Soils	Site-specific Geotechnical Evaluation
Hazards and hazardous materials	Site-specific Phase I Environmental Site Assessment
Hydrology and water quality	Site-specific Hydrology and Water Quality Report
Noise	Noise modeling
Public Services	"Will-Serve" letters from fire, police/sheriff, and school district public service providers
Tribal Cultural Resources	Assembly Bill (AB) 52 tribal consultation
Utilities and Service Systems	Water and Sanitary Sewer Utility Impact Study (currently underway)

At this time, it is anticipated that mitigation measures and/or design features would be required for the following CEQA resource areas, regardless of the site chosen: aesthetics, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, and tribal cultural resources. In particular, biological resources mitigation would include controlling construction timing to avoid raptor and bird breeding seasons and requiring best management practices to control stormwater (all sites); and transportation mitigation would include a Transportation Development Plan (for Sites 1 through 3) or participation in the City of San Diego's Complete Communities Mobility Choices Program (for Sites 4 and 5). The preliminary mitigation measures are anticipated to reduce impacts to a less than significant level for all resource areas with one exception. In a scenario where a mixed-income project is selected at Sites 4 or 5 (City of San Diego), even with implementation of mitigation measures, it is anticipated that the project would have a significant and unavoidable transportation vehicle miles traveled (VMT) impact, requiring an EIR CEQA document to be prepared. However, transportation VMT impacts are anticipated to be less than significant under all other scenarios studied including a 100 percent affordable housing project scenario (any site) or a mixed-income project on Sites 1 through 3 (City of Del Mar), and the project could proceed with an IS/MND CEQA document.

2 Project Description

Five potential housing site locations have been selected within the Fairgrounds, with the goal of selecting one site to develop with housing. Three sites are in the City of Del Mar (Sites 1 through 3), and two sites (Sites 4 and 5) are in the City of San Diego. For the purpose of this study, the assumption is that a prospective housing project would include at least 61 units of lower-income housing in a housing project ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022–2023). Scenarios for 100 percent multi-family lower-income affordable housing development or a mixed-income project were considered. Because the Fairgrounds property is within the Federal Emergency

Management Agency (FEMA) mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed with floodproofing measures, including a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface-level parking. None of the sites are located within FEMA's Regulatory Floodway.

Project Location and Setting

The Fairgrounds property is located in coastal North San Diego County, directly adjacent to the San Dieguito River and Lagoon, and is located roughly 0.5 mile from the Pacific Ocean (Attachment 1, Location/Housing Sites Figures; Figure 1, Regional Location).

Descriptions of the five potential housing site locations are detailed below and summarized in Table 2, Potential Housing Sites. The five sites are located in the eastern portion of the Fairgrounds along Jimmy Durante Boulevard and range from approximately 1 to 1.5 acres in size (Figure 2, Potential Housing Sites).

Table 2. Potential Housing Sites

Site Number	Site Name	APN	City	Acreage
Site 1	East Main Stable Gate Site	298-271-03-00	City of Del Mar	1.5
Site 2	South of Stable Gate Site	299-030-05-00 299-030-22-00	City of Del Mar	1.5
Site 3[1]	Adjacent to Fire Station Site	299-030-22-00	City of Del Mar	1.0
Site 4	Surf and Turf RV Park Site	299-042-03-00	City of San Diego	1.5
Site 5	Dirt Lot Site	299-042-03-00	City of San Diego	1.5

Notes:

[1] The 2023 Stephen Dalton Architects (SDA) Study identified two scenarios for Site 3: a 1-acre new housing site or a 1.5-acre new housing site that would also include redevelopment of the fire station. This report focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Site 1: East Main Stable Gate Site

The East Main Stable Gate Site (Site 1) is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to the existing horse stables, north of the Fairgrounds East Main Stable Gate access driveway. The 1.5-acre site is bounded by Via De La Valle to the north and Jimmy Durante Boulevard to the east (Figure 2).

Site 1 is characterized by developed land used as a parking lot with direct access to and from Jimmy Durante Boulevard. The parking area includes 100 parking spaces, 90 of which are used for parking, while the other 10 are used to store traffic control-related vehicles and equipment. The site includes paved and compacted dirt areas with fencing, gates, and ornamental vegetation. Surrounding land uses include the intersection of Jimmy Durante Boulevard and Via De La Valle to the northeast and horse barns to the south and west.

Site 2: South of Stable Gate Site

The South of Stable Gate Site (Site 2) is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to and south of the East Main Stable Gate and parking lot. The 1.5-acre site is bounded by Jimmy Durante Boulevard to the east and the Main Stable Gate parking lot to the north (Figure 2).

Site 2 is characterized by developed land used for equestrian-related access, staging, and supporting infrastructure associated with the Fairgrounds' stabling operations. Site 2 is occupied by compacted dirt areas and horse boarding stables for the Del Mar Racetrack. Surrounding land uses include Jimmy Durante Boulevard to the east, horse barns to the west and south, and the East Main Stable Gate access driveway and parking lot to the north.

Site 3: Adjacent to Fire Station Site

The Adjacent to Fire Station Site (Site 3) is in the southeastern corner of the Fairgrounds within the City of Del Mar. The 1-acre site is located between the existing O'Brien Hall and southeast Fairgrounds parking lot, directly north of the existing Del Mar Fire Department (DMFD) building (Figure 2).

Site 3 contains existing District office buildings, public restroom buildings, and maintained ornamental landscaping. The buildings encompass 14,250 square feet (including the boardroom, human resources offices, marketing offices, and bathrooms). The surrounding land uses are similarly developed, including Fairgrounds buildings to the north and west, the DMFD station to the south, and paved parking to the east.

Site 4: Surf and Turf RV Park Site

The Surf and Turf RV Park Site (Site 4) is in the northeastern corner of the Fairgrounds within the City of San Diego. The 1.5-acre gravel site is located south of the Hilton San Diego Del Mar Hotel and north of Turf Road, adjacent to Jimmy Durante Boulevard (Figure 2).

Site 4 is currently developed as a recreational vehicle (RV) park with 66 compacted gravel RV parking stalls, utility hookups, and ornamental landscaping. The site is surrounded by a mixture of public roadways (including Turf Road to the south and Jimmy Durante Boulevard to the west), recreational uses to the east (including the eastern portion of the RV park and tennis courts farther east), Fairgrounds horse stables to the west, and compacted dirt lots to the south.

Site 5: Dirt Lot Site

The Dirt Lot Site (Site 5) is in the northeastern corner of the Fairgrounds within the City of San Diego, located south of Turf Road and the San Diego County Fairgrounds Surf and Turf RV Park. The 1.5-acre site includes a portion of a larger, undeveloped dirt parking lot, bounded by Jimmy Durante Boulevard to the west (Figure 2).

Site 5 consists primarily of an undeveloped dirt lot with a flat, compacted dirt surface historically used for overflow parking and materials staging for the Fairgrounds. The site is largely devoid of vegetation. The site is surrounded by public roadways (including Turf Road to the north and Jimmy Durante Boulevard to the west), recreational uses to the north consisting of the existing RV park, compacted dirt lots to the east and south, and Fairgrounds horse stables to the west.

3 Potential CEQA Pathways

As a discretionary action being undertaken by a public agency that may cause a direct and indirect physical change in the environment, the potential housing development would be considered a “project” under CEQA, as defined by California Public Resources Code, Section 21065, and would be subject to CEQA review. CEQA review involves determining the level of CEQA documentation required, which could include a statutory or categorical exemption, an IS/MND, an EIR, or various other CEQA documents (e.g. Negative Declaration, Addendum).

Due to the type of project as a new housing development, the project would not be eligible for Class 1 through Class 33 categorial exemptions (CEQA Guidelines Sections 15301-15333). As for statutory exemptions, Assembly Bill (AB) 130 Housing Exemption (Public Resources Code Section 21080.66), signed into law in June 2025, expands the potential to statutorily exempt an infill housing project from CEQA that meets specific criteria related to site size and location requirements, project requirements, and environmental considerations. According to a preliminary review (Attachment 2, AB130 Infill Housing Exemption Worksheet), AB 130 could potentially apply to the project. However, Site 5 would require a general plan, zoning, and local coastal program amendment, as residential use is not allowed in the City of San Diego Zone OS-1-1 (see further details below in Section 3, Land Use and Planning), potentially creating a condition that would disqualify Site 5 from the AB 130 pathway. However, should there be only one condition potentially disqualifying the project from AB 130, Senate Bill (SB) 131 (Public Resources Code Section 210801) could apply, which establishes that when a housing development project would otherwise qualify for a statutory exemption “but for a single condition”, CEQA review is limited exclusively to the environmental effects caused by that disqualifying condition. Future studies would be required to ensure that AB 130 is the appropriate CEQA pathway, including completion of a Phase I Environmental Site Assessment and tribal consultation. Further analysis is required to identify if AB 130 would be a potential pathway for the project.

If it is determined that AB 130/SB 131 does not apply to the project, an Initial Study would be conducted to determine if the project would qualify for an MND (if all potential impacts are mitigated) or EIR (if there are

significant and unavoidable impacts). The following section details CEQA constraints and potential impacts associated with the project that would be required to be analyzed in a future CEQA document, should AB 130 not apply to the project.

4 CEQA Constraints

The following section discusses the CEQA constraints and potential impacts associated with the proposed affordable housing development on the five potential housing sites. The section discusses the resource areas listed in Appendix G of the CEQA Guidelines, which would be required to be analyzed in future CEQA documentation once the housing site is selected.

Aesthetics

All five potential housing sites are characterized as disturbed urban land, consisting of uses associated with District parking (Sites 1 and 5), horse stables (Site 2), District offices (Site 3), or recreational uses (Site 4). The project, regardless of the site chosen, would change the use and characteristics of the sites to a multi-story residential use, adding potentially new sources of light or glare. In addition, each of the sites is within approximately 0.5 mile of the Pacific Ocean and approximately 0.25 mile of the San Dieguito River and Lagoon, with Site 3 being the closest (approximately 230 feet from the San Dieguito River and Lagoon). While none of the sites are within a designated scenic vista by either the City of Del Mar or the City of San Diego, the proposed housing development would require approval of a coastal development permit by the California Coastal Commission, which will likely require visual simulations of the project due to the sites' proximity to the San Dieguito River and Lagoon. Once the housing site is selected, further analysis of aesthetic impacts will be necessary in the CEQA document. At this time, it is anticipated that potential aesthetic impacts would be less than significant either through the implementation of mitigation measures or through the design of the project itself, avoiding or minimizing aesthetic impacts, regardless of the site chosen.

Agriculture and Forestry Resources

Sites 1 through 3 are zoned Fairgrounds-Racetrack Zone (FR) by the City of Del Mar, Site 4 is zoned Agricultural-Residential (AR-1-1) by the City of San Diego, and Site 5 is zoned Open Space – Park (OP-1-1) by the City of San Diego (City of Del Mar 2026a; City of San Diego 2026a). None of the five potential housing sites is zoned solely for agricultural use, and there are no Williamson Act contracts for any of them (DOC 2022a). According to the California Department of Conservation's Important Farmland Finder, all five potential sites are classified as "Urban and Built-Up Land" or "Other Land," which do not contain agricultural uses or areas designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (DOC 2022b). Regardless of which potential housing site is chosen, the project would not convert farmland resources to non-agricultural uses or conflict with existing zoning for agricultural use or a Williamson Act contract. Agricultural and forestry resources will be analyzed in the CEQA document; no standalone agricultural and forestry resources technical reports would be required. It is anticipated that there would be no agricultural and forestry resources impacts, regardless of the site chosen.

Air Quality

The Fairgrounds is within the San Diego Air Basin, with air quality regulations administered by the San Diego County Air Pollution Control District (SDAPCD). The project, regardless of the site chosen, would be required to demonstrate consistency with the SDAPCD Regional Air Quality Strategy and State Implementation Plan. In addition, an analysis of the project would be required to run modeling (CalEEMod) to quantify construction and operational emissions and compare them to the SDAPCD thresholds. Due to the size and nature of the potential housing sites, regardless of the site chosen, the contemplated residential scenarios would not generate enough vehicle trips to potentially create a carbon monoxide (CO) hotspot.

Based on California Air Resources Board (CARB) siting recommendations within the Air Quality and Land Use Handbook: A Community Health Perspective (Air Quality and Land Use Handbook), a detailed health risk assessment (HRA) should be conducted for proposed sensitive receptors within 1,000 feet of a warehouse distribution center, 300 feet of a large gas station, 50 feet of a typical gas dispensing facility, or 300 feet of a dry-

cleaning facility that uses perchloroethylene (i.e., PCE), among other siting recommendations (CARB 2005). Housing would be considered a sensitive receptor susceptible to health risks, as CARB defines sensitive receptors as residences, schools, day care centers, playgrounds, and medical facilities. Additionally, CARB recommends that an HRA be prepared for any sensitive receptors proposed within 500 feet of a highway. Site 1 is within 300 feet of a large gas station, the Speedway Gas Station, approximately 260 feet northeast across the Jimmy Durante Boulevard/Via De La Valle intersection, and may require a more detailed HRA. As discussed in the following text, CEQA does not typically evaluate the impact of existing conditions on the project; however, issues related to siting and health risks may be considered a land use compatibility issue relevant to CEQA. No other potential housing sites are within the distances sited previously.

In addition, CARB's Air Quality and Land Use Handbook (CARB 2005) includes a list of the most common sources of odor complaints received by local air districts. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. All five sites would include residential land uses, which are not typical sources of nuisance odors. Due to proximity to the existing stables, odors from the stables may be discussed related to Site 1 and Site 2, but would not typically be considered a CEQA impact because CEQA typically does not consider the impact of existing conditions on the project.

Air quality will be analyzed in the CEQA document; no standalone technical reports would be required, with the potential exception of an HRA for Site 1 from existing gas station operation. CalEEMod modeling should be prepared and included as an attachment to the CEQA document. At this time, it is anticipated that potential air quality impacts, if any, would be less than significant through the implementation of mitigation measures, regardless of the site chosen.

Biological Resources

As detailed in the Biological Resources Constraints Memorandum (Attachment 3), Harris & Associates conducted a biological resources survey of the five potential project sites. The purpose of this survey was to identify existing vegetation and other sensitive resources within each prospective site area to assist with early planning and to identify potential biological constraints for developing each site. The memorandum concludes that no sensitive plant or wildlife species or critical habitat areas are within the survey area. All five potential project sites are anticipated to have minimal biological constraints. Any future project, regardless of the site chosen, should include the two mitigation measures recommended in the Biological Resources Constraints Memorandum to minimize potential impacts: controlling construction timing to avoid raptor and bird breeding seasons and requiring best management practices to control stormwater. At this time, it is anticipated that potential biological resources impacts would be less than significant through the implementation of mitigation measures, regardless of the site chosen.

Cultural Resources

As detailed in the Cultural Resources Letter Report (Attachment 4), a records search of the five potential housing sites and the surrounding area was conducted using the California Historic Resources Inventory System (CHRIS). In addition, the Native American Heritage Commission (NAHC) was contacted for a Sacred Lands File check to determine if sacred lands are present on any of the potential sites. A cultural resources survey of all five potential housing sites and a 100-foot buffer was conducted on November 10, 2025. The letter report concludes that no cultural resources were located as a result of this study, and all five potential project sites are not considered sensitive for the presence of archaeological resources due to their developed nature or historical disturbance. No further cultural analyses are recommended for any potential housing sites. At this time, it is anticipated that potential cultural resource impacts would be less than significant, and no mitigation measures would be required, regardless of the site chosen.

Energy

The project, regardless of the site chosen, would consume energy during project construction activities and during project operation through the use of passenger vehicles and residential heating, ventilation, and air conditioning; water heating; and lighting. The project would be required to meet the mandatory energy

standards of the California Green Building Standards Code (CALGreen) and the California Energy Code (24 CCR Part 6) in effect at the time of development. No development constraints related to energy would occur on any of the five potential sites. Energy will be analyzed in the CEQA document; however, no standalone technical reports would be required. At this time, it is anticipated that potential energy impacts would be less than significant, regardless of the site chosen.

Geology and Soils

According to the 2008 Del Mar Fairgrounds Master Plan EIR, the Fairgrounds property was built on extensive fill (District 2008). The Fairgrounds property is described as having a relatively shallow groundwater table, with corrosive soils due to the Fairgrounds' proximity to the ocean, a medium to high potential for liquefaction and settlement, and potential for expansive soils. As further detailed in the Biological Resources Constraints Memorandum (Attachment 3), a review of the U.S. Department of Agriculture Natural Resources Conservation Services Web Soil Survey (USDA 2019) identified four mapped soil units within the five project sites: Chino silt loam, saline (Sites 4 and 5); Huerhuero loam (Sites 4 and 5); Huerhuero-Urban Land Complex (in the area surrounding Sites 1 and 2); and Made Land, which consists of areas that have been filled or otherwise extensively modified by human activity (Sites 1 through 5).

Regional geologic mapping by the State of California shows that the closest active fault is the Rose Canyon Fault, approximately 1.2 miles west of the five potential housing sites (USGS 2025). None of the five potential housing sites are within a designated Alquist-Priolo Earthquake Fault Zone; however, ground shaking could occur due to earthquakes on nearby active faults.

The topography of each of the five potential housing sites is relatively flat. Elevation across the sites ranges from approximately 9 to 17 feet above mean sea level (AMSL) (Attachment 3). Specifically, Site 1 ranges from 9.4 to 17.1 feet AMSL, Site 2 ranges from 10.3 to 12.3 feet AMSL, Site 3 ranges from 9.9 to 11.7 feet AMSL, Site 4 ranges from 11.9 to 14.5 feet AMSL, and Site 5 ranges from 12.8 to 14.5 feet AMSL. Therefore, it is not anticipated that any of the potential housing sites would be impacted by landslides.

A site-specific geotechnical evaluation, including discussions of existing soil and geologic units, topography, active faults, seismicity, seismically induced hazards (liquefiable soils), soil constraints, erodibility, slope stability, and other potential geologic hazards, would be required to support the CEQA document, regardless of the site chosen. At this time, it is anticipated that potential geological impacts would be less than significant through implementation of mitigation measures and/or adherence to regulatory measures (such as the California Building Code), regardless of the site chosen.

Greenhouse Gas Emissions

The project, regardless of the site chosen, would result in temporary greenhouse gas (GHG) emissions from project construction and operational emissions from energy consumption, water and wastewater transport, and solid waste generation. The CalEEMod modeling necessary to estimate air emissions for the project would also estimate GHG emissions. The project would be required to demonstrate consistency with statewide emissions reduction goals. In the absence of an adopted qualified climate action plan, the 2022 Scoping Plan is the applicable plan for reducing GHG emissions. No unique constraints related to GHG emissions would occur on the five sites. GHG emissions will be analyzed in the CEQA document; no standalone technical reports would be required. At this time, it is anticipated that potential GHG impacts would be less than significant, regardless of the site chosen.

Hazards and Hazardous Materials

None of the potential project sites are within 0.25 mile of an existing or proposed school or within 2 miles of a public airport. A review of the California Department of Toxic Substances Control EnviroStor and State Water Resources Control Board GeoTracker databases did not identify any open cleanup sites or hazardous waste facilities on any of the five potential housing sites (DTSC 2026; SWRCB 2026). Additionally, there are no underground storage tanks on or near any of the potential housing sites (USEPA 2025).

The project would require demolition of existing uses at all potential housing sites except Site 5, which consists of an undeveloped dirt lot. Therefore, there is the potential to encounter hazardous materials (including asbestos-containing materials and/or lead-based paint) during demolition at Sites 1 through 4. Regardless of which site is chosen, construction of the project would require the use of materials typically associated with construction activities, including diesel fuels, hydraulic liquids, oils, solvents, and paints. However, the project would not result in a significant hazard to the public or environment because all storage, handling, transport, emission, and disposal of hazardous substances would be in full compliance with applicable regulations such as the Federal Resource Conservation and Recovery Act, U.S. Department of Transportation Hazardous Materials Regulations, and the local certified unified program agency regulations. It is anticipated that project operation would primarily not require the use of hazardous materials, except for the use of commercial landscaping chemicals, which would likely be limited and used on an as-needed basis.

A site-specific phase I environmental site assessment would be needed to support the CEQA document for the chosen housing site, which would provide an understanding of the historical use of the land (and potential for spills or other historical hazardous conditions), identify recognized environmental conditions, and analyze the potential for asbestos-containing materials and/or lead-based paint exposure. At this time, it is anticipated that potential hazardous materials impacts would be less than significant with either the implementation of mitigation measures and/or through compliance with regulations, regardless of the site chosen.

Hydrology and Water Quality

The Fairgrounds is in a low-lying area directly adjacent to the San Dieguito River and Lagoon and is roughly 0.5 mile from the Pacific Ocean. As a result, flood hazard varies considerably in different portions of the Fairgrounds property. According to the FEMA National Flood Insurance Program data and a Draft Hydrology and Hydraulics Report prepared as a separate due diligence study for the District (GHD 2025), the majority of the Fairgrounds property falls within a FEMA floodplain, known as the 1 percent annual chance flood hazard zone (or the 100-year floodplain), with areas of the Fairgrounds closer to the San Dieguito River and the southern and western portions of the Fairgrounds property within a FEMA Regulatory Floodway zone. Residential development is prohibited in the Regulatory Floodway zone; however, development within the floodway fringe (which are portions of the 1 percent annual chance flood hazard zone beyond the Regulatory Floodway) is permitted subject to compliance with FEMA and building code standards.

Sites 1 through 5 are all located within a developable area of the floodway fringe, meaning residential development is permitted at this location, as long as the development complies with applicable floodplain design standards and does not raise water surface elevations by more than 1 foot. Site 3 is the site located closest to the San Dieguito River (roughly 725 feet from the River and approximately 275 feet from the FEMA Regulatory Floodway boundary), and as stated above, residential development could be developed in this location in accordance with applicable regulations.

It is anticipated that the project would be designed with the first-floor level elevated above the Base Flood Elevation and floodproofed. Regardless of the site chosen, all five housing site locations would be designed with floodproofing measures, including a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface-level parking. A Sea-Level Rise Vulnerability Assessment Report, which is currently being prepared as a separate due diligence study at the time of this analysis, will identify potential additional adaptation strategies to reduce flooding at each of the five housing sites. Nevertheless, the project would be required to be designed in accordance with FEMA floodplain design standards and California Building Code standards. At this time, it is anticipated that potential flooding impacts would be less than significant through implementation of mitigation measures and/or adherence to regulatory measures, regardless of the site chosen.

The project would require demolition of existing development and construction of new residential development. Proposed development that alters the existing drainage pattern could result in erosion, siltation, increased surface runoff, and/or impairment of surface or groundwater quality, regardless of the site chosen. A site-specific Hydrology and Water Quality Report would be needed to support the CEQA document

for the chosen housing site. At this time, it is anticipated that potential hydrology and water quality impacts would be less than significant with either implementation of mitigation measures and/or through compliance with regulations (e.g., FEMA, National Pollutant Discharge Elimination System Permit, Stormwater Pollution Prevention Plan), regardless of the site chosen.

Land Use and Planning

All five potential housing sites are in an urbanized area on the eastern (Sites 1, 2, 4, and 5) or southern (Site 3) border of the Fairgrounds property. While redevelopment of the site would occur, the project, regardless of the site chosen, would not divide an established community. In addition, the project would not disrupt District operations and events, as all five potential housing sites are on the perimeter of the Fairgrounds property and were identified by District staff with the understanding that a buffer from Fairgrounds operations could be incorporated as part of the design of the project.

As a state special district, the District has jurisdictional authority over use and activities within the Fairgrounds and is generally not subject to general plan or regional plan provisions. However, once a housing site is chosen, the City and District would execute a lease agreement where (1) the District would lease the development site to the City, and (2) the City would develop and operate the affordable housing development on the site in accordance with California law and subject to the express approval of the District through the lease agreement. Therefore, the CEQA document would include a land use consistency analysis subject to local regulations.

Sites 1, 2, and 3 are within the City of Del Mar, and Sites 4 and 5 are within the City of San Diego. Sites 1 through 3 are zoned Fairgrounds-Racetrack Zone (FR) by the City of Del Mar, and allowable uses are regulated by the District (City of Del Mar 2026a; Del Mar Municipal Code, Chapter 30.27). Site 4 is zoned Agricultural-Residential (AR-1-1) by the City of San Diego, which accommodates a wide range of low-intensity agricultural uses while also permitting the development of single-dwelling unit homes at a very low density (City of San Diego 2026; San Diego Municipal Code, Section 131.0303). Site 5 is zoned Open Space – Park (OP-1-1) by the City of San Diego, which allows developed, active parks for the purpose of promoting recreation and facilitating the implementation of land use plans (City of San Diego 2026a, 2026b; San Diego Municipal Code, Section 131.0202). Residential use is not an allowed use in the OP-1-1 zone, which applies to Site 5. If Site 5 is selected, it is assumed a general plan, zoning, and local coastal program amendment would be proposed as part of the project to allow for residential development to occur at Site 5.

Once a housing site is chosen, the CEQA document will evaluate the project's consistency with applicable land use plans, policies, and regulations. For Sites 1 through 3, this would include, but is not limited to, a land use consistency analysis with the City of Del Mar Community Plan (General Plan), Del Mar Municipal Code, City of Del Mar Sea Level Rise Adaptation Plan, and City of Del Mar Local Coastal Program. For Sites 4 and 5, the land use consistency analysis would include but is not limited to the City of San Diego General Plan, City of San Diego Land Development Code, City of San Diego Local Coastal Program, and Torrey Pines Community Plan. Land use and planning will be analyzed in the CEQA document; no standalone technical reports would be required. It is anticipated that there would be no land use and planning impacts requiring mitigation measures, regardless of the site chosen.

Mineral Resources

The Fairgrounds property, including Sites 1 through 5, is in an urbanized area categorized as an MRZ-1 area by the California Department of Conservation, which is an area where available geologic information indicates that little likelihood exists for the presence of significant mineral resources (CGS 2017). No known commercially valuable mineral resources exist on or near the Fairgrounds property, including Sites 1 through 5. Mineral resources will be analyzed in the CEQA document; no standalone technical reports would be required. It is anticipated that there would be no mineral resources impacts, regardless of the site chosen.

Noise

The primary existing noise sources in the vicinity of the Fairgrounds property are vehicle traffic on Interstate 5, Jimmy Durante Boulevard, and Via De La Valle and railroad noise. An existing railroad track runs north–south along the western boundary of the Fairgrounds, approximately 150 feet from the property. The Amtrak, COASTER, and freight trains constantly use this track. Noise sensitive land uses are land uses that may be subject to stress or interference from excessive noise, such as places where people normally sleep or where a quiet environment is essential to daytime operation. These typically include schools, hospitals, rest homes, rehabilitation centers, mental care facilities, residences, churches, hotels and other visitor accommodations, and libraries. The closest existing sensitive receptors to Site 1 are the Winners Circle Resort, approximately 340 feet northwest, and the residences along Highland Drive approximately 620 feet north. The nearest sensitive receptor to Sites 2, 4, and 5 is the Hilton San Diego/Del Mar Hotel, directly east and north, respectively. The nearest sensitive receptors to Site 3 are the single-family residences on Heather Lane and Balboa Avenue, approximately 0.3 mile south of Site 3, south of San Dieguito Lagoon and east of Jimmy Durante Boulevard in the City of Del Mar.

The project, regardless of the site chosen, would be required to analyze potential exposure of existing sensitive receptors to noise levels in excess of the noise level limits outlined in the City of Del Mar Municipal Code Noise Regulations (Sites 1, 2, and 3) [1] or the City of San Diego Municipal Code Noise Regulations (Sites 4 and 5)[2]. This includes modeling future traffic noise using standard modeling equations from the Federal Highway Administration, which take into account traffic volumes, vehicle mix, and existing site topography. In addition, the project, regardless of the site chosen, would include housing and would have the potential for future on-site sensitive receptors to be exposed to excessive noise levels from surrounding existing land uses, including traffic noise on Interstate 5, railroad noise, and special events noise, which should be assessed against the applicable City noise compatibility standards. As described in the Air Quality section of this memorandum, CEQA does not typically evaluate the impact of existing conditions on the project; however, issues related to siting and noise exposure may be considered a land use compatibility issue relevant to CEQA. Similar to odors, potential exposure of new residences to event noise and other existing noise sources from District activities may be noted, but would typically not be considered a CEQA impact.

Impacts related to temporary increases in ambient noise levels from construction of the project should be assessed using estimates of sound levels from typical construction equipment provided by the Federal Highway Administration in the Roadway Construction Noise Model, regardless of the site chosen. The project would have the potential for construction groundborne vibration and would be required to be assessed based on the vibration impact criteria and typical vibration source levels provided by the FTA (2018). Construction noise and vibration impacts on sensitive biological resources should also be addressed for temporary

[1] Section 9.20.040 of the City of Del Mar Municipal Code establishes noise level limits. Hourly average sound level may not exceed the applicable noise level limit for the receiving land use and time of day beyond the property line where the sound in produced. For receiving residential uses, the sound level limit is 50 dBA Leq from 7:00 a.m. to 10:00 p.m., and 40 dBA Leq from 10:00 p.m. to 7:00 a.m. The noise level limits may be adjusted to account for the effects of time and duration on the impact of noise levels. For example, noise that is produced for no more than a cumulative period of 30 minutes in any hour may exceed the noise limit by three decibels. Section 9.20.090 also prohibits nuisance noise at any time. Nuisance noise is disturbing, excessive or offensive noise which causes discomfort or annoyance to any reasonable persons of normal sensitivity residing in the area. The City has also established exterior ambient noise levels of 65 dBA CNEL or below as normally compatible with residential land uses.

[2] Section 59.5.0401 of the City of San Diego Municipal code establishes noise level limits. As with the City of Del Mar, hourly average sound level may not exceed the applicable noise level limit for the receiving land use and time of day beyond the property line where the sound in produced. For receiving single-family residential uses, the sound level limit is 50 dBA Leq from 7:00 a.m. to 7:00 p.m., 45 dBA Leq from 7:00 p.m. to 10:00 p.m., and 40 dBA Leq from 10:00 p.m. to 7:00 a.m. For receiving multi-family residential uses, the sound level limit is 55 dBA Leq from 7:00 a.m. to 7:00 p.m., 50 dBA Leq from 7:00 p.m. to 10:00 p.m., and 45 dBA Leq from 10:00 p.m. to 7:00 a.m. Nuisance noise is also prohibited in Section 59.5.0501. The City has also established exterior ambient noise levels of 65 dBA CNEL or below as normally compatible with residential land uses.

construction impacts, particularly for Site 3. All 5 sites would be required to implement construction noise best management practices to limit construction noise and vibration.

No public airport or private airstrip is within 2 miles of any of the sites, and none of the sites are within a noise contour for any airport. Therefore, no further analysis regarding aircraft noise is required for any of the five sites.

Noise exposure will be analyzed in the CEQA document; no standalone technical reports would be required. Noise modeling worksheets should be prepared and included as an attachment to the CEQA document. At this time, it is anticipated that noise impacts, if any, would be less than significant through implementation of mitigation measures or design features of the project itself, regardless of the site chosen.

Population and Housing

No housing exists at any of the five potential housing sites. Therefore, the project would not displace a substantial number of existing people or housing.

The project would include a multi-family lower-income affordable housing development, ranging from 61 to 82 units of family housing or 61 to 128 units of senior housing. Sites 1, 2, and 3 are within the City of Del Mar, and Sites 4 and 5 are in the City of San Diego. According to the American Community Survey 2019–2023 5-year estimates, the City of Del Mar's average household size is 2.07 persons per household, and the City of San Diego's average household size is 2.55 persons (U.S. Census Bureau 2023). Assuming a conservative estimate of 128 units, the project could generate up to 265 (Sites 1 through 3) to 327 new residents (Sites 4 and 5), depending on site selection and proposed density and intensity of the development. The increase in residential units would help meet housing demand driven by projected population growth in the City and region as reflected in the respective State-certified Housing Elements for the City of Del Mar and City of San Diego. Potential population growth as a result of a future project will be analyzed in the CEQA document for that proposed project. No additional standalone technical reports would be required. At this time, it is anticipated that the project would have a less than significant impact on population and housing, and no mitigation measures would be required.

Public Services

All potential housing sites are served by the Del Mar Fire Department (DMFD), which provides fire protection services to the City of Del Mar, including the Fairgrounds. The nearest fire station to all five housing sites is the DMFD station located at 2200 Jimmy Durante Boulevard on the southern portion of the Fairgrounds property adjacent to Site 3. The DMFD responds to fire, medical, and all-risk service calls in the City of Del Mar and surrounding areas in Solana Beach, Encinitas, and portions of San Diego through automatic aid agreements. Under these agreements, the nearest fire companies respond to fire or medical emergencies regardless of jurisdictional boundaries.

Sites 1 through 3, in the City of Del Mar, are served by the San Diego County Sheriff's North Coastal Station in Encinitas. Sites 4 and 5, in the City of San Diego, are served by the San Diego Police Department Northwestern Division. In addition, the District provides security services on the Del Mar Fairgrounds property (City of Del Mar 2026c; City of San Diego 2022).

Regarding school services, Sites 2 through 5 would be served by Del Mar Union Elementary School District for grades K–6, and Site 1 would be served by Solana Beach Elementary School District for grades K–6. All potential housing sites would be served by the San Dieguito Union High School District for grades 7–12.

Sites 1 through 5 are already served by these fire, sheriff, and police services and service would continue regardless of site selection. There are no school age children currently on any of the sites, which means the addition of potentially up to 265 to 327 new residents is anticipated to increase demand for each of these public services compared to existing conditions. The CEQA document will analyze the capacity and capability of these public services to serve the project. Public services will be analyzed in the CEQA document. It is recommended for "will-serve" letters to be acquired from police/sheriff, fire, and school districts. "Will-serve" letters will allow

each of these agencies to confirm their capacity to serve the new housing project based on current capacity and growth forecasts. At this time, it is anticipated that the project would have a less than significant impact on public services, and no mitigation measures would be required.

Recreation

The project, regardless of the site chosen, would add new residents who would use nearby park facilities. The nearest parks are Del Mar Beach, including the segment of Dog Beach, adjacent to the Fairgrounds to the west, and the San Dieguito River Park and Open Space, approximately 0.57 mile east of the Fairgrounds. According to the City of Del Mar's Housing Element Update EIR, the City of Del Mar's park and recreation land supply exceeds demand by approximately 336 acres. Therefore, the addition of new residents is not anticipated to require the expansion of existing park facilities or deterioration of existing park facilities (City of Del Mar 2020). Recreation demand calculations for a future project will be analyzed in the CEQA document for the project. No standalone technical reports would be required. At this time, it is anticipated that the project would have a less than significant impact on recreation, and no mitigation measures would be required.

Transportation

The project would include at least 61 units of lower-income housing in a project ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing. Scenarios for 100 percent affordable housing development or mixed-income project development were considered. As detailed in the Transportation Analysis prepared by Linscott, Law & Greenspan, Engineers (LLG) (Attachment 5), affordable multi-family housing, market-rate multi-family housing, affordable senior housing, and market-rate senior housing use-types generate average daily trips at different rates. As detailed in the Transportation Analysis, a project development scenario with 100 percent affordable housing would be exempt from VMT analysis, regardless of the site chosen. Therefore, LLG's analysis assumes that the project will construct a mixed-income project with 61 units of affordable multi-family housing and 21 units of market-rate multi-family housing, as it is the most conservative scenario studied by generating the highest number of trips. This worst-case project scenario is calculated to generate 497 average daily trips, with 39 AM peak hour trips and 48 PM peak hour trips. Based on the intersection analysis, all study intersections were calculated to continue to operate at level of service D or better with the addition of the project, regardless of the site chosen.

It is anticipated that the project, regardless of the site chosen, would not substantially increase transportation hazards due to a transportation design feature, incompatible use, or emergency access, as the project would be required to comply with specified standards. This includes compliance with the California Fire Code, which requires compliance with emergency access design standards to provide sufficient access for emergency equipment; and compliance with the California Fire Code which sets minimum standards for driveway dimensions, building design, grades, and other fire safety features. Additionally, the California Building Code standards would also apply to the project regarding the construction and development of emergency access and building design.

In a development scenario that includes both affordable and market-rate units, the affordable units would be exempt from VMT analysis; however, market-rate units on any of the proposed Sites 1 through 5 would be expected to result in a significant transportation impact with mitigation required. Mitigation requirements would differ depending on whether the development site is within the City of Del Mar (Sites 1 through 3) or City of San Diego (Sites 4 and 5). For Sites 1 through 3 (City of Del Mar), mitigation would include implementation of a robust Transportation Development Plan. According to the City of Del Mar's 2020 Guidelines for Transportation Impact Analysis, Transportation Development Plan mitigation measures can reduce project VMT by at least 15 percent. Accordingly, a mixed-income scenario in the City of Del Mar (Sites 1 through 3) would result in a significant impact that could potentially be fully mitigated through the Transportation Development Plan mitigation measures. For Sites 4 and 5 (City of San Diego), mitigation would include the participation in the City of San Diego's Complete Communities Mobility Choices Program. However, for Sites 4 and 5, the market-rate units would result in a significant VMT transportation impact that could only be mitigated to the "extent feasible" by participation in the City of San Diego's Complete Communities

ordinance. Therefore, in a scenario where a mixed-income project scenario is selected at Sites 4 or 5 (City of San Diego), even with implementation of mitigation measures, it is anticipated that the project would have a significant and unavoidable transportation VMT impact, requiring an EIR CEQA document to be prepared. However, transportation VMT impacts are anticipated to be less than significant under all other scenarios studied including a 100 percent affordable housing project scenario (any site) or a mixed-income project on Sites 1 through 3 (City of Del Mar), and the project could proceed with an IS/MND CEQA document.

Tribal Cultural Resources

AB 52 requires lead agencies to provide notice to offer consultation to California Native American Tribes that are traditionally and culturally affiliated with the geographic area of a project if that Tribe has requested, in writing, to be kept informed of projects by the lead agency prior to the determination of if a Negative Declaration (ND), MND, or EIR will be prepared. As detailed in the Cultural Resources Letter Report (Attachment 4), the NAHC was contacted for a Sacred Lands File check to determine whether sacred lands are present on site. The NAHC response was negative and included a list of 13 Native American representatives who may have knowledge of the area. These Tribes will be contacted for any information they may have once the housing site has been selected. If a Tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the Tribe. AB 52 also specifies that mitigation measures may be considered to avoid or minimize impacts on tribal cultural resources. This typically involves implementation of standard protocols pre-construction and during construction of a project to ensure involvement of a Native American monitor through coordination of project monitoring, mitigating, and reporting activities. Therefore, pursuant to AB 52, tribal notification letters will be required to be sent to interested Tribes, regardless of the site chosen. At this time, it is anticipated that potential tribal cultural resources impacts, if any, would be less than significant through implementation of mitigation measures determined through tribal consultation, regardless of the site chosen.

Utilities and Service Systems

Sites 1 through 3 are within the City of Del Mar and are served by the City of Del Mar utility system, while Sites 4 and 5 are in the City of San Diego and served by the City of San Diego utility system. A Water and Sanitary Sewer Utility Impact Study is being prepared to assess the capacity of the Fairgrounds' existing water and sanitary sewer systems (which are fed by the City of San Diego and City of Del Mar utility systems) to serve the five potential housing sites. At the time of this memorandum, the water and sewer analysis is still underway. However, based on preliminary water and sewer modeling results, it is anticipated that no hydraulic or sanitary sewer system deficiencies would occur to serve the proposed housing development, and no new or expanded water or wastewater infrastructure would be needed to provide enough water or sewer capacity to implement the project, regardless of the site chosen. The Water and Sanitary Sewer Utility Impact Study will need to be finalized to confirm these results and support the CEQA documentation. At this time, it is anticipated that the project would have a less than significant impact on utilities and service systems, and no mitigation measures would be required.

Wildfire

Sites 1 through 5 are not within a designated Fire Hazard Severity Zone (FHSZ) (CAL FIRE 2025). Site 3 is approximately 0.16 mile north of a Moderate FHSZ but is separated by the San Dieguito Lagoon. The project, regardless of the site chosen, would be required to comply with the California Fire Code and the California Building Code. The most recent 2025 State Codes as locally adopted in the City of Del Mar and City of San Diego will ensure proposed development complies with all public safety requirements and emergency access design standards to provide sufficient access for emergency equipment, and comply with minimum standards for driveway dimensions, fire-safe building design, sufficient vehicle access grades, and other fire safety features. The project would be required to comply with applicable building and fire safety regulations required for the design of new housing and emergency access and regulations to maintain adequate availability of emergency services during an emergency response or emergency evacuation and to reduce fire risk. Wildfire will be analyzed in the CEQA document; no standalone technical reports would be required. At this time, it is anticipated that the project would have a less than significant impact regarding wildfire, and no mitigation measures would be required.

4 Conclusion

Once a housing site is determined, a CEQA document would be required to be prepared for the project. Due to the type of project as a new housing development, the project would not be eligible for Class 1 through Class 33 categorial exemptions (CEQA Guidelines Sections 15301-15333). AB 130 Housing Exemption (Public Resources Code Section 21080.66) could potentially apply to the project. Future studies would be required to ensure that AB 130 is the appropriate CEQA pathway. If it is determined that AB 130 does not apply to the project, an IS would be conducted to determine if the project would qualify for an MND (if all potential impacts are mitigated) or EIR (if there are significant and unavoidable impacts).

Should the project not qualify for an exemption, it is anticipated that the following CEQA resource areas may have potential impacts, regardless of the site chosen: aesthetics, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, and tribal cultural resources.

For Sites 1 through 5, future studies that would be required to support the CEQA document include visual simulations, CalEEMod modeling (and a HRA for Site 1), a geotechnical evaluation, a Phase I Environmental Site Assessment, a Hydrology and Water Quality Report, noise modeling, “will-serve” letters from fire, police/sheriff, and school district public service providers, AB 52 tribal consultation, and a Water and Sanitary Sewer Utility Impact Study (which is currently underway at the time of this memorandum).

At this time, it is anticipated that mitigation measures and/or design features would be required for the following CEQA resource areas: aesthetics, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, and tribal cultural resources. In particular, biological resources mitigation would include controlling construction timing to avoid raptor and bird breeding seasons and requiring best management practices to control stormwater (all sites); and transportation mitigation would include a Transportation Development Plan (for Sites 1 through 3) or participation in the City of San Diego’s Complete Communities Mobility Choices Program (for Sites 4 and 5). The preliminary mitigation measures are anticipated to reduce impacts to a less than significant level for all resource areas with one exception. In a scenario where a mixed-income project is selected for Sites 4 or 5 (City of San Diego), even with implementation of mitigation measures, it is anticipated that the project would have a significant and unavoidable transportation VMT impact, requiring an EIR CEQA document to be prepared. However, transportation VMT impacts are anticipated to be less than significant under all other scenarios studied including a 100 percent affordable housing project scenario (any site) or a mixed-income project on Sites 1 through 3 (City of Del Mar), and the project could proceed with an IS/MND CEQA document.

5 References

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Attachment 1. Location/Housing Sites Figures

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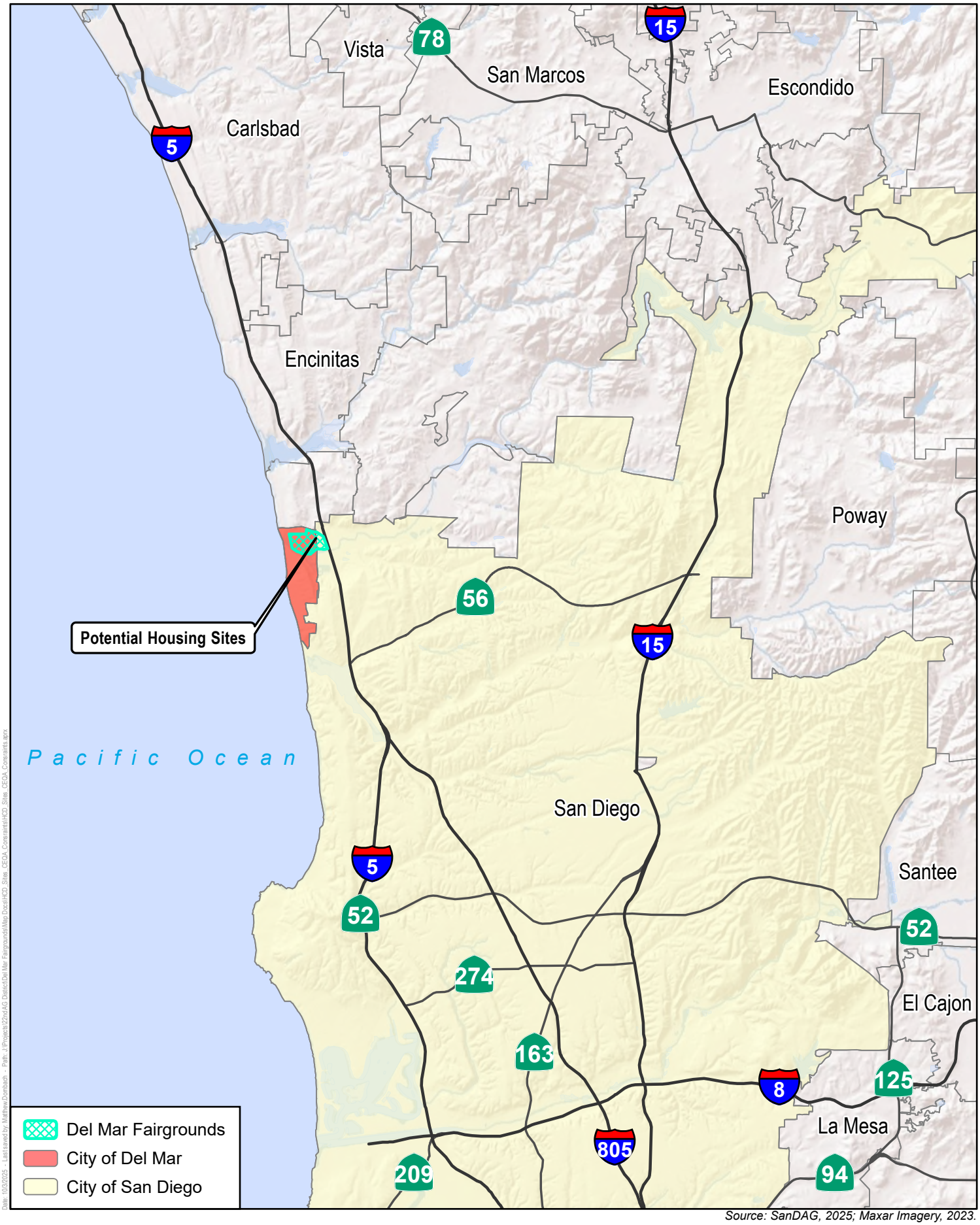

Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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Figure 1

Regional Location

HAP Grant CEQA Constraints Memo

Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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Figure 2

Potential Housing Sites

HAP Grant Housing Site Conditions and Constraints Analysis

Attachment 2. AB130 Infill Housing Exemption Worksheet

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AB 130 Infill Housing Exemption Worksheet

Decision-Assistance Tool for Determining Project Eligibility

Requirements	Applicability	Yes	No	Notes
Site Considerations				
Site Size: 20-acre maximum; 5-acre maximum for Builder's Remedy projects	Is the site 20 acres or less?	☒	☐	Site 1: 1.5 acres Site 2: 1.5 acres Site 3: 1 acre Site 4: 1.5 acres Site 5: 1.5 acres
	If the project is subject to Builder's Remedy, is the site 5 acres or less?	☐	☐	N/A
Urban Area Existing and Surrounding Uses	Is the project located within the boundaries of an incorporated municipality or in an "urban area" as defined by the U.S. Census Bureau? **Tip:** Check the U.S. Census website: www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html.	☒	☐	Sites 1-3: City of Del Mar Sites 4 and 5: City of San Diego
	Is the site currently developed or was it previously developed with an urban use?	☐	☒	Site 1: yes, currently developed with District parking Site 2: yes, currently developed with horse stables Site 3: yes, currently developed with District offices Site 4: yes, currently developed with RV lot Site 5: no, undeveloped dirt lot

Requirements	Applicability	Yes	No	Notes
	If not, does the site meet the following criteria? • At least 75% of the perimeter of the site adjoins parcels that are developed with urban uses. • At least 75% of the area within a 0.25-mile radius of the site is developed with urban uses. • For sites with four sides, at least three sides are developed with urban uses and at least two-thirds of the perimeter of the site adjoins parcels that are developed with urban uses.	☒	☐	Site 5: At least 75% of the area within a 0.25-mile radius of the site is developed with urban uses.
Consistency with General Plan and Zoning	Is the project consistent with the general plan and zoning?	☐	☒	Site 1: Yes Site 2: Yes Site 3: Yes Site 4: Yes Site 5: No. Residential use is not an allowed use in the OP-1-1 zone.
	If the site is not consistent with both, is it consistent with one or the other?	☐	☒	Site 5: A general plan, zoning, and LCP amendment would be required.
Coastal Zone	Is the project within an environmentally sensitive area in a coastal zone, as defined in Division 20 (commencing with Section 30000) of the Public Resources Code? **Tip:** Check Division 20 of the PRC: www.coastal.ca.gov/coastact.pdf.	☐	☒	All five sites are within the Coastal Zone; however, none are within environmentally sensitive areas.
Proximity to Freeways	Is the site within 500 feet of a freeway?	☐	☒	Site 1: No, 1,160 feet west of I-5 Site 2: No, 1,100 feet west of I-5 Site 3: No, 3,100 feet west of I-5 Site 4: No, 575 feet west of I-5 Site 5: No, 900 feet west of I-5
	If so, does the project include HVAC and air filter systems and avoid balconies facing the freeway?	☐	☐	N/A

Requirements	Applicability	Yes	No	Notes
Project Considerations				
Minimum Density	Is the project consistent with the following density deemed appropriate to accommodate lower-income households—at least half of the following: • 30 du/ac in metropolitan counties. • 20 du/ac in suburban jurisdictions. • 10–15 du/ac in non-metropolitan counties	☒	☐	Project is in a metropolitan county and therefore would need to provide at least 15 du/acre. Project would include at least 61 units of lower-income housing on either a 1-acre or 1.5 acre site.
Wage Requirements	Does the project comply with the following wage requirements? • N/A if the project is less than 100% affordable and shorter than 85 feet in height. • If the project is 100% affordable, prevailing wage must be paid. • If the project is above 85 feet tall, prevailing wage must be paid and "skilled and trained" workforce must be used.	☒	☐	The project is anticipated to be less than 85 feet in height. It is assumed at this time that the project would comply.
Hotel and Motel Projects	Is the project a hotel or motel? **Note:** Transient lodging uses are not eligible for the exemption unless their application was deemed complete by January 1, 2025.	☐	☒	
Environmental Considerations				
Phase I Environmental Assessment	Has a Phase I ESA or Preliminary Endangerment Assessment been completed? **Tip:** Search the Cortese List: calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/.	☐	☒	Phase I ESA would be required to be completed.
	If so, will remedial action address any concerns?	☐	☐	Phase I ESA would be required to be completed.
Tribal Consultation	Has Tribal consultation been initiated?	☐	☒	Tribal consultation would be required to be completed.
	Have Tribal concerns been addressed?	☐	☒	

Requirements	Applicability	Yes	No	Notes
Farmland	Does the site contain prime farmland or farmland of statewide importance, as defined pursuant to US Department of Agriculture land inventory and monitoring criteria? **Tip:** Check for Important Farmland: www.conservation.ca.gov/dlrp/fmmp.	☐	☒	
Wetlands	Does the project have any wetlands as defined in the US Fish and Wildlife Service Manual, Part 660 FW 2 (June 21, 1993)? **Tip:** Check the following resources for an initial screening: www.fws.gov/program/national-wetlands-inventory/wetlands-mapper, www.usgs.gov/national-hydrography/national-hydrography-dataset, and www.ecoatlas.org. Should suspected wetlands be present, a qualified wetland ecologist should visit the site to determine if wetlands are present.	☐	☒	No, per Biological Resources Constraints Memorandum
Fire Hazards	Is the project located in a Very High Fire Hazard Severity Zone, as determined by the California Department of Forestry and Fire Protection (CAL FIRE) pursuant to Section 51178, or in a high or Very High Fire Hazard Severity Zone as indicated on maps adopted by CAL FIRE pursuant to Section 4202 of the Public Resources Code? **Tip:** Check for fire hazard severity zones: osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/%20fire-hazard-severity-zones.	☐	☒	
Hazardous Wastes	Is the site a hazardous waste site that is listed pursuant to Section 65962.5 or a or a hazardous waste site designated by the Department of Toxic Substances Control pursuant to Section 25356 of the Health and Safety Code? **Tip:** Search the Cortese List: calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/.	☐	☒	

Requirements	Applicability	Yes	No	Notes
	If the site is listed, has the California Department of Toxic Substances Control cleared the site for residential or residential mixed use?	☐	☐	N/A
Earthquake Fault Zone	Is the site in a delineated earthquake fault zone as determined by the State Geologist on any official maps published by the State Geologist, unless the development complies with applicable seismic protection building code standards adopted by the California Building Standards Commission under the California Building Standards Law (Part 2.5 [commencing with Section 18901] of Division 13 of the Health and Safety Code), and by any local building department under Chapter 12.2 (commencing with Section 8875) of Division 1 of Title 2? **Tip:** Check the California Department of Conservation Alquist-Priolo Fault Hazard Zone Maps: maps-cnra-cadoc.opendata.arcgis.com/datasets/cadoc::cgs-seismic-hazards-program-alquist-priolo-fault-hazard-zones/about.	☐	☒	
Flood Zones	Is the project located in a 100-year flood zone or regulatory floodway as determined by the Federal Emergency Management Agency? **Tip:** Check flood zone maps: msc.fema.gov/portal/home#:~:text=About%20Flood%20Map%20Service%20%20Center,for%20better%20understanding%20flood%20risk.	☐	☒	Sites 1 through 5 are all located within a developable area of the floodway fringe, meaning residential development is permitted at this location, as long as the development complies with applicable floodplain design standards and does not raise water surface elevations by more than 1 foot.
Historical Resources	Does the site include historical structures listed on a national, state, or local historic register before the project's preliminary application was submitted that will be demolished or otherwise adversely affected? **Tip:** Consult local agency registers and check for listed historical resources: ohp.parks.ca.gov/ListedResources.	☐	☒	No, per Cultural Resources Letter Report

Requirements	Applicability	Yes	No	Notes
Conservation Lands	Does the site contain lands identified for conservation in an adopted natural community conservation plan pursuant to the Natural Community Conservation Planning Act (Chapter 10 [commencing with Section 2800] of Division 3 of the Fish and Game Code), habitat conservation plan pursuant to the federal Endangered Species Act of 1973 (16 USC Section 1531 et seq.), or other adopted natural resource protection plan?	☐	☒	No, per Biological Resources Constraints Memorandum
Habitat for Protected Species	Does the project site contain habitat for special-status species? **Tip:** Run a CNDDB search wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Should suspected habitat be present, a qualified biologist should visit the site to determine if habitat is present.	☐	☒	No, per Biological Resources Constraints Memorandum
Conservation Easements	Does the site contain land under a conservation easement?	☐	☒	

Attachment 3. Biological Resources Constraints Memorandum

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BIOLOGICAL RESOURCES CONSTRAINTS MEMORANDUM

To: Dustin Fuller, Supervising Environmental Planner, 22nd District Agricultural Association; Amanda Lee, Principal Planner, City of Del Mar
From: Erika Eidson, Biology Manager, Harris & Associates
Subject: HAP Grant Affordable Housing Project Biological Resources Constraints Memorandum
Date: November 26, 2025
CC: Janelle Firoozi, Senior Environmental Manager, Harris & Associates
Att: 1, Figures; 2, Regulatory Framework; 3, Observed Plant Species; 4, Observed Wildlife Species

Executive Summary

The 22nd District Agricultural Association (District) owns and operates the San Diego County Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts various uses, including the annual San Diego County Fair; two horse racing seasons; concerts and meetings in The Sound; and other events, activities, and celebrations, such as festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year.

The District is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving the Fairgrounds facilities. During this master site planning process, the District has worked with the City of Del Mar to identify portions of the Fairgrounds property that the District may be willing to make available for affordable housing development. In its 6th Cycle Housing Element Update, the City of Del Mar identified and included a portion of the property in the Housing Element residential sites inventory as having the potential to be developed to accommodate affordable housing units. The District and the City of Del Mar have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds property. This study of potential affordable housing on the Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development Housing Acceleration Program (HAP) Cycle 2.

As further detailed below, five potential housing site locations were selected for study through this mutual planning effort, with the goal of selecting one site to develop with housing. This Biological Resources Constraints Memorandum identifies the environmental setting, regulatory setting, data collected, findings, impact avoidance and minimization recommendations, and constraints analysis conclusion. This biological resources survey and research was completed to assess whether there are potential biological resource constraints for the development of housing on the five potential housing sites being studied.

On September 22 and 23, 2025, Harris & Associates conducted a biological resources survey of the five potential project sites (cumulatively totaling 7 acres) and a 100-foot buffer surrounding the sites (resulting in approximately 21.21 acres surveyed in total), herein referred to as the survey area. The purpose of this survey was to identify existing vegetation and other sensitive resources within each prospective site area to assist with early planning and to identify potential biological constraints for developing each site. In addition to the survey results, this memorandum identifies existing land uses, topography and soils, hydrology, and climate factors to aid in the

potential environmental impact evaluation of the HAP Grant Affordable Housing Project (project) on its current immediate and surrounding environment.

The analysis concludes that no sensitive plant or wildlife species or critical habitat areas are within the survey area. Because three of the potential project sites are in the City of Del Mar and two sites are in the City of San Diego, future environmental review and project permitting will need to be processed in accordance with the respective regulatory frameworks, permitting requirements, and biological resource policies of the jurisdiction where the development site is located, as further described below. All five potential project sites offer a high level of developable opportunity with minimal biological constraints anticipated. Any future project, regardless of site chosen, should include the two standard conditions of approval recommended in the Impact Avoidance and Minimization Recommendations section to minimize potential impacts by controlling construction timing to avoid raptor and bird breeding season and requiring best management practices to control stormwater.

Project Description

Five potential housing site locations have been selected within the Fairgrounds, with the goal of selecting one site to develop with housing. Three sites are in the City of Del Mar, and two sites are in the City of San Diego. For the purpose of this study, the assumption is that a prospective housing project would include at least 61 units of lower-income housing in a housing project that is a multi-family lower-income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022–2023). Because the Fairgrounds property is within the Federal Emergency Management Agency-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed with floodproofing measures, including a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface-level parking.

Regional Location and Setting

The Fairgrounds property is located within the San Dieguito River Valley in coastal North San Diego County, directly adjacent to the San Dieguito River and Lagoon, and is located roughly 0.5 mile from the Pacific Ocean (Attachment 1, Figures; Figure 1, Regional Location). This area represents the coastal terminus of the San Dieguito River Watershed, a major drainage system extending inland to the Volcan Mountains.

Regionally, the setting is characterized by coastal terraces and alluvial floodplains that transition into the foothills and inland mesas of the Peninsular Ranges Geomorphic Province. The San Dieguito Lagoon, located immediately south and east of the Fairgrounds, forms a broad coastal estuary that supports a diverse assemblage of wetland habitats and functions as an important tidal and fluvial interface between upland and marine environments. Elevations within the regional landscape range from sea level along the lagoon to several hundred feet above mean sea level (AMSL) in the surrounding mesas. The San Dieguito River Park and associated lagoon restoration area represent key components of the regional open space network, providing habitat connectivity and floodplain protection. The prospective project sites are within existing developed and previously developed areas that occur within this broader ecological context, where natural hydrologic processes, coastal influences, and regional conservation efforts collectively define the biological setting of northwestern San Diego County.

Project Location and Setting

Descriptions of the five potential housing site locations are detailed below and summarized in Table 1, Potential Housing Sites. The five sites are located in the eastern portion of the Fairgrounds along Jimmy Durante Boulevard and range from approximately 1 to 1.5 acres (Figure 2, Potential Housing Sites).

Table 1. Potential Housing Sites

Site Number	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	2982710300	City of Del Mar	1.5
2	South of Stable Gate Site	2990300500, 2990302200	City of Del Mar	1.5
3[1]	Adjacent to Fire Station Site	2990302200	City of Del Mar	1
4	Surf and Turf RV Park Site	2990420300	City of San Diego	1.5
5	Dirt Lot Site	2990420300	City of San Diego	1.5

Notes:

[1] The 2023 Stephan Dalton Architects (SDA) Study identified two scenarios for Site 3: a 1-acre new housing site or a 1.5-acre new housing site that would also include redevelopment of the fire station. This memorandum focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Site 1: East Main Stable Gate Site

Site 1 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to the existing horse stables. The 1.5-acre site is bounded by Via De La Valle to the north and Jimmy Durante Boulevard to the east (Figure 2).

Site 2: South of Stable Gate Site

Site 2 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to and south of the East Main Stable Gate and parking lot. The 1.5-acre site is bounded by Jimmy Durante Boulevard to the east and the Main Stable Gate parking lot to the north (Figure 2).

Site 3: Adjacent to Fire Station Site

Site 3 is in the southeastern corner of the Fairgrounds within the City of Del Mar. The 1-acre site is located between the existing O'Brien Hall and southeast Fairgrounds parking lot, directly north of the existing Del Mar Fire Department building (Figure 2).

Site 4: Surf and Turf RV Park Site

Site 4 is in the northeastern corner of the Fairgrounds within the City of San Diego. The 1.5-acre gravel site is located south of the Hilton San Diego Del Mar Hotel and north of Turf Road, adjacent to Jimmy Durante Boulevard (Figure 2).

Site 5: Dirt Lot Site

Site 5 is in the northeastern corner of the Fairgrounds within the City of San Diego, located south of Turf Road and the San Diego County Fairgrounds Surf and Turf RV Park. The 1.5-acre site includes a portion of a larger, undeveloped dirt parking lot, bounded by Jimmy Durante Boulevard to the west (Figure 2).

Environmental Setting

The environmental setting analysis includes consideration of the existing land uses, topography and soils, hydrology, and climate factors, as further described in the following sections.

Land Use

The survey area encompasses five distinct project sites located on the Fairgrounds property in the City of Del Mar and the City of San Diego: the East Main Stable Gate Site, South of Stable Gate Site, Adjacent to Fire Station Site, Surf and Turf RV Park Site, and the Dirt Lot Site. Each of these sites occurs in a highly developed portion of the Fairgrounds property regional entertainment venue, located within the San Dieguito River Valley, that hosts various uses associated with the San Diego County Fair, Del Mar Racetrack, and other events.

The East Main Stable Gate Site (Site 1) is north of the Fairgrounds East Main Stable Gate access driveway and is characterized by developed land used as a parking lot with direct access to and from Jimmy Durante Boulevard. The parking area includes 100 parking spaces, 90 of which are used for parking, while the other 10 are used to

store traffic control-related vehicles and equipment. The site includes paved and compacted dirt areas with fencing, gates, and ornamental vegetation. Surrounding land uses include the intersection of Jimmy Durante Boulevard and Via De La Valle to the northeast and horse barns to the south and west. No native vegetation communities occur on Site 1. The site is currently developed with a paved parking lot and compacted dirt areas and lacks sensitive biological resources. Site 1 offers a high level of developable opportunity with minimal biological constraints anticipated.

The South of Stable Gate Site (Site 2) is characterized by developed land used for equestrian-related access, staging, and supporting infrastructure associated with the Fairgrounds' stabling operations. Surrounding land uses include Jimmy Durante Boulevard to the east, horse barns to the west and south, and the East Main Stable Gate access driveway and parking lot to the north. Site 2 is occupied by compacted dirt areas and horse boarding stables for the Del Mar Racetrack. No native vegetation communities occur on Site 2. The site is currently developed with horse stable structures and lacks sensitive biological resources. Site 2 offers a high level of developable opportunity with minimal biological constraints anticipated.

The Adjacent to Fire Station Site (Site 3) is directly north of the existing Del Mar Fire Department station and contains existing District office buildings, public restroom buildings, and maintained ornamental landscaping. The buildings encompass 14,250 square feet (including the boardroom, human resources offices, marketing offices, and bathrooms). The surrounding land uses are similarly developed, including Fairgrounds buildings to the north and west, the Del Mar Fire Department station to the south, and paved parking to the east. No native vegetation communities occur on Site 3. The site is currently developed with structures and lacks sensitive biological resources. Site 3 offers a high level of developable opportunity with minimal biological constraints anticipated.

The Surf and Turf RV Park Site (Site 4) is currently developed as a recreational vehicle (RV) park with 66 compacted gravel RV parking stalls, utility hookups, and ornamental landscaping. The site is surrounded by a mixture of public roadways (including Turf Road to the south and Jimmy Durante Boulevard to the west), recreational uses to the east (including the eastern portion of the RV park and tennis courts farther east), Fairgrounds horse stables to the west, and compacted dirt lots to the south. No native vegetation communities occur on Site 3. The site is currently developed with no structures and lacks sensitive biological resources. Site 4 offers a high level of developable opportunity with minimal biological constraints anticipated.

The Dirt Lot Site (Site 5) consists primarily of an undeveloped dirt lot with a flat, compacted dirt surface historically used for overflow parking and materials staging for the Fairgrounds. The site is largely devoid of vegetation except for scattered non-native ruderal species along its periphery. The site is surrounded by public roadways (including Turf Road to the north and Jimmy Durante Boulevard to the west), recreational uses to the north consisting of the existing RV park, compacted dirt lots to the east and south, and Fairgrounds horse stables to the west. No native vegetation communities occur on Site 5. The site is currently developed with no structures and lacks sensitive biological resources. Site 5 offers a high level of developable opportunity with minimal biological constraints anticipated.

Topography and Soils

The topography of each of the five potential sites (the survey area) is relatively flat, reflecting the low-lying position of the Fairgrounds and adjacent developed lands within the lower San Dieguito River Valley. Elevation across the project sites ranges from approximately 9 to 17 feet AMSL (Figure 3, USGS Topographic Map). Specifically, Site 1 ranges from 9.4 to 17.1 feet AMSL, Site 2 ranges from 10.3 to 12.3 feet AMSL, Site 3 ranges from 9.9 to 11.7 feet AMSL, Site 4 ranges from 11.9 to 14.5 feet AMSL, and Site 5 ranges from 12.8 to 14.5 feet AMSL.

A review of the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey (USDA 2020) identified four mapped soil units within the project sites: Chino silt loam, saline; Huerhuero loam; Huerhuero-Urban land complex; and Made land. Descriptions of these soil series are provided below, and their occurrence in the survey area is illustrated on Figure 4, Soils:

- **Chino Silt Loam, Saline (in Site 4 and Site 5 and their respective survey buffers)** – The Chino series consists of very deep, poorly drained soils formed in alluvium derived from sedimentary rock sources. These soils are typically found on floodplains and alluvial fans and are subject to seasonal flooding or high water tables.

Permeability is slow, and runoff is very slow. The saline phase indicates the presence of soluble salts, common in coastal or low-lying basins influenced by marine sediments or tidal action (USDA 2020).

- **Huerhuero Loam (in Site 4 and Site 5 and their respective survey buffers)** – The Huerhuero series consists of moderately well-drained soils formed in material weathered from sedimentary rocks on marine terraces and alluvial fans. These soils occur on slopes ranging from 2 to 15 percent and exhibit moderate permeability. The surface layer is typically loam underlain by clay loam or sandy clay loam subsoil. Runoff is slow to medium (USDA 2020).
- **Huerhuero-Urban Land Complex (in the survey buffers of Site 1 and Site 2)** – This mapping unit represents areas where Huerhuero soils have been extensively altered by grading, compaction, and development. The soil profile has been modified through the addition of fill or removal of native material, resulting in variable surface textures and drainage characteristics. Such soils are common in developed portions of the Fairgrounds and adjacent facilities (USDA 2020).
- **Made Land (in Sites 1 Through 5 and their respective survey buffers)** – This unit consists of areas that have been filled or otherwise extensively modified by human activity. Material composition varies widely and may include imported soil, construction debris, or compacted fill. Drainage and permeability are variable and generally controlled by the degree of compaction and fill composition. This unit typically supports developed or disturbed land uses such as parking areas, storage yards, and structures (USDA 2020).

Soil type can potentially affect the occurrence of certain sensitive species. Overall, the soils on all five potential project sites reflect a long history of grading, fill placement, and surface disturbance associated with the construction and operation of the Fairgrounds and surrounding infrastructure. Native soil profiles are limited, and much of the area is mapped as modified or made land (Figure 4). Therefore, it is anticipated that soil type would not be a constraint for development related to biological resources on each of the five potential sites.

Hydrology

No vernal pools, marshes, drainages, or other aquatic resources were identified on the project sites. All runoff is routed to engineered drainage systems that ultimately discharge into the surrounding flood control and lagoon system. Therefore, no aquatic resources or jurisdictional features occur on any of the five potential project sites.

The survey area is located within the San Dieguito River Watershed, Hydrologic Unit 905.1 (Project Clean Water 2025). The San Dieguito River Watershed lies along the north-central coast of San Diego County and extends from the Pacific Ocean inland to the Volcan Mountains near Julian. The watershed drains approximately 346 square miles and includes a variety of coastal and inland hydrologic features such as the San Dieguito River, Lake Hodges, and numerous tributary drainages. The San Dieguito River flows westward through the Cities of Del Mar, Solana Beach, and San Diego before discharging into the Pacific Ocean via the San Dieguito Lagoon at the river mouth.

The five potential project sites (Sites 1 through 5) are situated within a highly developed portion of the lower San Dieguito River Valley adjacent to the Fairgrounds. The area is nearly level and heavily modified, consisting primarily of paved or compacted surfaces and developed facilities. Surface drainage within the project sites is conveyed through engineered storm drain systems, graded flow paths, and surrounding roadway infrastructure. No natural drainages, wetlands, or aquatic features were observed within the survey area.

Review of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and U.S. Geological Survey National Hydrography Dataset mapping indicates no jurisdictional aquatic resources within the five potential project sites and their associated survey buffers (USFWS 2025a; USGS 2025). However, both datasets show extensive aquatic resources within the adjacent San Dieguito Lagoon and San Dieguito River channel, including aquatic resources approximately 500 feet west of Site 1 and approximately 450 feet south of Site 3 (Figure 5, Hydrology). The lagoon complex includes estuarine and marine wetlands, freshwater emergent wetlands, freshwater forested/shrub wetlands, and riverine features associated with the tidal and freshwater inflows of the San Dieguito River. These features are part of the San Dieguito Lagoon State Marine Conservation Area, which provides important hydrologic connectivity to the Pacific Ocean. However, as previously detailed, no aquatic resources or jurisdictional features occur on any of the five potential project sites themselves.

Climate

On a regional level, San Diego County has a Mediterranean climate, which is characterized by wet winters and dry summers. This is largely because of a semi-permanent high-pressure zone that sits over the Pacific Ocean during much of the year and forms a fog belt (marine layer). Climate for the survey area can therefore be characterized as dry, subhumid mesothermal, with a main growing season in the wet months of the year (late winter to early spring). The rainy season in San Diego County typically lasts from October through March. Summer months include June, July, August, and September. Vegetation often goes dormant during the later summer months until the first rain in the fall.

According to historical data from the Del Mar weather station, located approximately 0.2 mile southwest of the survey area, the average maximum annual temperature for the area surrounding the project site is 70.3 degrees Fahrenheit (°F), and the average minimum temperature is 57.1°F. Average annual precipitation in the area is 7.45 inches. The total precipitation for the rainy season (October 2024 through March 2025) was 5.66 inches (National Weather Service 2025), which is approximately 1.79 inches below the typical average for this area.

Regulatory Setting

This section identifies potential environmental resources protection and regulatory requirements applicable to proposed development within the survey area. At a minimum, a proposed housing development on the Fairgrounds property will require approval of a Coastal Development Permit by the California Coastal Commission and compliance with applicable federal, state, and local resource protection requirements. Federal, state, regional, and local regulations, plans, and policies that provide protection and management of sensitive biological resources applicable to the project are listed below and described in Attachment 2, Regulatory Framework. Because three of the potential project sites are in the City of Del Mar and two sites are in the City of San Diego, future environmental review and project permitting will need to be processed in accordance with the respective regulatory frameworks, permitting requirements, and biological resource policies of the jurisdiction where the development site is located.

Federal

- Bald and Golden Eagle Protection Act (16 USC 668–668[d])
- Clean Water Act, Section 404 (33 CFR 328.3[a])
- Federal Endangered Species Act, Sections 4(d), 7, or 10(a) (16 USC 1531 et seq.; 50 CFR Part 402)
- Migratory Bird Treaty Act (MBTA) (16 USC 703–712; 50 CFR 10)
- Rapanos Guidance Key Points Summary

State

- California Coastal Act (California Public Resources Code, Section 30000)
- California Migratory Bird Protection Act (Assembly Bill 454)
- Birds of Prey Protection Provision (California Fish and Game Code, Section 3503.5)
- California Endangered Species Act (California Fish and Game Code, Section 2050 et seq.)
- California Fish and Game Code, Section 1602
- California Fish and Game Code, Section 3503
- California Environmental Quality Act, as amended (California Public Resources Code, Section 21000 et seq.)
- California Fully Protected Wildlife Species Provision (California Fish and Game Code, Sections 3511, 4700, 5050, and 5515)
- California Native Plant Protection Act (California Fish and Game Code, Sections 1900–1913)
- Regional Water Quality Control Board
- Streambed Alteration Agreement (California Fish and Game Code, Section 1600)
- Natural Community Conservation Planning Act, as amended (California Fish and Game Code, Sections 2800–2835)
- Porter-Cologne Water Quality Control Act

Local

- City of Del Mar Local Coastal Program
- City of San Diego Local Coastal Program

Data Collection

This biological resources analysis includes the results of a database review and a biological resources survey that document the existing biological conditions of the survey area. The results provide information on potential constraints to project construction due to the presence (or lack thereof) of sensitive biological resources. The methods for the database review and field survey are described below.

Database Review

A review of online databases including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2025a), CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2025b), USFWS NWI Wetlands Mapper (USFWS 2025a), USFWS Information for Planning and Consultation (USFWS 2025b), San Diego Geographic Information Source (SanGIS) SanBIOS database (SanGIS 2025), Consortium of California Herbaria database (CCH 2025), Calflora database (Calflora 2025), and California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2025) was conducted for all five potential project sites and a 1-mile radius of the survey area.

Field Reconnaissance Survey

A biological resources survey of the survey area was conducted by Harris & Associates biologists on September 22 and 23, 2025. A 100-foot buffer (where feasible) was used for the biological survey. The survey was conducted by walking meandering transects throughout the survey area and mapping vegetation communities, documenting plant and wildlife species, noting suitable habitat, and evaluating the potential for occurrence of sensitive, rare, threatened, and endangered plant and wildlife species (Attachment 3, Observed Plant Species, and Attachment 4, Observed Wildlife Species). Vegetation mapping was recorded in the field using the ArcGIS Collector application with an aerial image of the survey area. Wildlife species were identified visually with the aid of binoculars or by sign (e.g., burrows, scat, feathers) and aurally by listening for vocalizations. The potential for sensitive plant and wildlife species to occur in the survey area is presented in Table 3, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites), in the Results section.

The results of this analysis provide information on the potential constraints to project development due to the presence of special-status biological resources. No focused wildlife, plant, or other surveys were conducted as part of this analysis.

Survey Limitations

Plants and wildlife were identified by direct observation, vocalizations, or other observance, including tracks, scat, and other signs. Therefore, lists of observed species are not necessarily comprehensive because species can be nocturnal, secretive, or within the region and survey area seasonally (migration) and may not have been observed.

Findings

The results presented below are based on the information collected during the survey conducted in the survey area.

Vegetation Communities and Land Cover Types

All five potential project sites are classified as “urban/developed,” as shown on Figure 6, Land Cover. The sites are within the southwestern California region of the California Floristic Province (Jepson Flora Project 2025). Only one land cover type—urban/developed—was identified in the survey area (Oberbauer et al. 2008) (Figure 6).

Table 2, Land Cover Types in the Survey Area, presents the acreages of the land cover types that occur on each site.

Table 2. Land Cover Types in the Survey Area

Project Site	Land Cover Type	Project Site (acres)
Site 1 – East Main Stable Gate Site	Urban/Developed	1.50
Site 2 – South of Stable Gate Site	Urban/Developed	1.50
Site 3 – Adjacent to Fire Station Site	Urban/Developed	1.00
Site 4 – Surf and Turf RV Park Site	Urban/Developed	1.50
Site 5 – Dirt Lot Site	Urban/Developed	1.50
100-Foot Buffer	Urban/Developed	14.21
	Total	**21.21**

Notes: Acreages are approximate and based on ArcGIS Collector data. Values are rounded up to one-hundredth of an acre.

Disturbed/Developed

Urban/Developed (12000)

Urban/developed land includes areas that have been constructed on or otherwise physically altered to an extent that native vegetation is no longer supported. Urban/developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation.

Approximately 21.21 acres of urban/developed land occur within the survey area, with 7 acres occurring directly within the five potential project site boundaries (Figure 6). Urban/developed land is present on all five project sites and primarily consists of paved and compacted surfaces, including parking lots, access roads, and maintenance or staging areas. These areas also support buildings, horse stables, utility structures, and other permanent and semi-permanent facilities associated with the Fairgrounds and adjacent operations. The East Main Stable Gate Site (Site 1) and South of Stable Gate Site (Site 2) are largely composed of graded or compacted surfaces used for parking and equestrian-related access and operations. The Surf and Turf RV Park Site (Site 4) includes gravel RV pads, ornamental landscaping, and infrastructure for RV use, while the Adjacent to Fire Station Site (Site 3) is developed with District office buildings.

Although the Dirt Lot Site (Site 5) is devoid of vegetation, it has been completely graded and physically altered such that no natural landform or potential for native vegetation remains. Because the site lacks soil structure or vegetative cover and exhibits characteristics consistent with permanent alteration through prior development or fill placement, it is more appropriately categorized as Urban/Developed rather than Disturbed, which typically retains some potential for ruderal or non-native vegetation establishment.

Plant Species

Attachment 3 lists the vascular plant species observed in the survey area during the 2025 biological resources survey. In total, 26 plant species were identified in the survey area, 2 (8 percent) of which were native and 24 (92 percent) of which were non-native. No sensitive plant species were observed during the 2025 survey at any of the five potential project sites. The sensitive plant species with potential to occur in the survey area are discussed in the Sensitive Plant and Wildlife Species section.

Wildlife Species

Attachment 4 lists the wildlife species observed in the survey area during the 2025 biological resources survey. In total, 15 wildlife species were observed, 13 (87 percent) of which were native and 2 (13 percent) of which were non-native. Ornamental plantings observed within the survey area have the ability to provide refugia, foraging, and breeding opportunities for common species, including nesting birds. The sensitive wildlife species with potential to occur in the survey area are discussed in the Sensitive Plant and Wildlife Species section.

Sensitive Plant and Wildlife Species

This section includes sensitive plant and wildlife species, including nesting birds and critical habitat, as defined by the CDFW, CNPS, and USFWS (CDFW 2025a, 2025c, 2025d; CNPS 2025; USFWS 2025b). Sensitive species are those recognized by federal or state agencies as being potentially vulnerable to impacts because of rarity, local or regional reductions in population numbers, isolation/restricted genetic flow, or other factors. Sensitive plants include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW; those considered sensitive by the CDFW; and those species included in the California Rare Plant Rank inventory maintained by the CNPS. Sensitive wildlife species include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW or those considered sensitive by the CDFW.

As described in the Database Review section, distributions of historical sensitive species observations in the project vicinity were reviewed in preparation of this memorandum. For the purposes of this biological constraints analysis, those species that either are known to occur or have some potential to occur within the vicinity of each of the five potential project sites are addressed in this section. Figure 7, Historical Species with Potential to Occur, presents the CNDDB results for sensitive species with potential to occur on the five potential project sites and within a 1-mile radius. Database results (i.e., CNPS, Information for Planning and Consultation [IPaC]) that did not provide geographic information system mapping data are only listed in Table 3, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites), and are not shown on Figure 7. Table 3 provides the list of sensitive plant and wildlife species that are potentially occurring along with an assessment of their potential for occurrence on the project site. Listing status, habitat requirements, and observation or potential for occurrence information are also provided in Table 3.

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Plants				
Acmispon prostratus	Nuttall's acmispon	None/None/1B.1/ None	Blooms March–June (July). Occurs in coastal dunes and coastal scrub (sandy) from zero to 35 feet AMSL.	*Not Expected*. Suitable coastal dune or coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area (i.e., San Dieguito Lagoon California Least Tern Nesting Colony to the south). No known occurrences within the survey area (CNPS 2025).
Aphanisma blitoides	Aphanisma	None/None/1B.2/ List A	Blooms February–June. Occurs in coastal bluff scrub, coastal dunes, and coastal scrub, sometimes in gravelly or sandy soils from 5 to 1,000 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, coastal dunes, or coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Atriplex pacifica	South coast saltscale	None/None/1B.2/ List A	Blooms March–October. Occurs in coastal bluff scrub, coastal dunes, coastal scrub, and playas from zero to 460 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, coastal dunes, coastal scrub, or playa habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Ceanothus verrucosus	Wart-stemmed ceanothus	None/None/2B.2/ List B	Blooms December–May. Occurs in chaparral and coastal scrub from 5 to 1,245 feet AMSL.	*Not Expected*. Suitable chaparral and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Centromadia parryi ssp. *australis*	Southern tarplant	None/None/1B.1/ List A	Blooms May–November. Occurs in marshes and swamps (margins), valley and foothill grassland (vernally mesic), and vernal pools from zero to 1,575 feet AMSL.	*Not Expected*. Suitable marshes and swamps (margins), valley and foothill grassland (vernally mesic), and vernal pool habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None/None/1B.1/ List A	Blooms January–August. Occurs in coastal bluff scrub (sandy) and coastal dunes from zero to 330 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub (sandy) and coastal dune habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Chorizanthe orcuttiana	Orcutt's spineflower	FE/SE/1B.1/List A	Blooms March–May. Occurs in closed-cone coniferous forest, chaparral (maritime), and coastal scrub from 10 to 410 feet AMSL.	*Not Expected*. Suitable closed-cone coniferous forest, chaparral (maritime), and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Chorizanthe polygonoides var. *longispina*	Long-spined spineflower	None/None/1B.2/ List A	Blooms April–July. Occurs in chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools, often in clay soils from 10 to 410 feet AMSL.	*Not Expected*. Suitable chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pool habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Comarostaphylis diversifolia ssp. *diversifolia*	Summer holly	None/None/1B.2/ List A	Blooms April–June. Occurs in chaparral and cismontane woodland from 10 to 410 feet AMSL.	*Not Expected*. Suitable chaparral and cismontane woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Corethrogyne filaginifolia var. *incana*	San Diego sand aster	None/None/1B.1/ List A	Blooms June–September. Occurs in coastal bluff scrub, chaparral, and coastal scrub from 10 to 410 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, chaparral, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	None/None/1B.1/ List A	Blooms May–September. Occurs in sandy soils in coastal bluff scrub, chaparral (maritime, openings), and coastal scrub from 15 to 490 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, chaparral (maritime, openings), and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Erysimum ammophilum	Sand-loving wallflower	None/None/1B.2/ None	Blooms February–June (July–August). Occurs in openings and sandy soils in chaparral (maritime), coastal dunes, and coastal scrub from zero to 195 feet AMSL.	*Not Expected*. Suitable chaparral (maritime), coastal dunes, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Euphorbia misera	Cliff spurge	None/None/2B.2/ List B	Blooms February–June (July–August). Occurs in rocky soils in coastal bluff scrub, coastal scrub, and Mojavean desert scrub from 35 to 1,640 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, coastal scrub, and Mojavean desert scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Heterotheca sessiliflora ssp. *sessiliflora*	Beach goldenaster	None/None/1B.1/ None	Blooms March–December. Occurs in chaparral (coastal), coastal dunes, and coastal scrub from 35 to 1,640 feet AMSL.	*Not Expected*. Suitable chaparral (coastal), coastal dunes, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Iva hayesiana	San Diego marsh-elder	None/None/2B.2/ List B	Blooms April–October. Occurs in marshes, swamps, and playas from zero to 1,640 feet AMSL.	*Not Expected*. Suitable marshes, swamps, and playa habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/1B.1/ List A	Blooms February–June. Occurs in marshes and swamps (coastal salt), playas, and vernal pools from zero to 1,640 feet AMSL.	*Not Expected*. Suitable marshes and swamps (coastal salt), playas, and vernal pool habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Leptosyne maritima	Sea dahlia	None/None/2B.2/ None	Blooms March–May. Occurs in coastal bluff scrub and coastal scrub from 15 to 490 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Nemacaulis denudata var. *denudata*	Coast woolly-heads	None/None/1B.2/ List A	Blooms April–September. Occurs in coastal dunes from zero to 330 feet AMSL.	*Not Expected*. Suitable coastal dune habitat is not present within the survey area. Species known from within 1 mile of the survey area (i.e., San Dieguito Lagoon California Least Tern Nesting Colony to the south). No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Pinus torreyana ssp. *torreyana*	Torrey pine	None/None/1B.2/ List A	Perennial evergreen tree. Occurs in sandstone soils in closed-cone coniferous forest and chaparral from 100 to 525 feet AMSL.	*Not Expected*. Suitable closed-cone coniferous forest and chaparral habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Quercus dumosa	Nuttall's scrub oak	None/None/1B.1/ List A	Blooms February–April (May–August). Occurs in clay, loam, and sandy soils in closed-cone coniferous forest, chaparral, and coastal scrub from zero to 330 feet AMSL.	*Not Expected*. Suitable closed-cone coniferous forest, chaparral, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Senecio aphanactis	Chaparral ragwort	None/None/1B.2/ List B	Blooms January–April (May). Occurs in alkaline (sometimes) soils in chaparral, cismontane woodland, and coastal scrub from 50 to 2,625 feet AMSL.	*Not Expected*. Suitable chaparral, cismontane woodland, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Suaeda esteroa	Estuary seablite	None/None/1B.2/ List A	Blooms (January–May) July–October. Occurs in marshes and swamps (coastal salt) from 50 to 2,625 feet AMSL.	*Not Expected*. Suitable marshes and swamp habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Wildlife				
Invertebrates				
Danaus plexippus plexippus pop. 1	Monarch – California overwintering population	PT/None/—/List 2	Occurs in coastal areas, riparian corridors, and mixed scrub habitats containing groves of eucalyptus (*Eucalyptus* spp.), Monterey pine (*Pinus radiata*), or cypress (*Cupressus* spp.) that provide sheltered microclimates for overwintering. Requires milkweed species (*Asclepias* spp.) as host plants for larval development and depends on abundant nectar sources during the breeding season.	*Not Expected*. Eucalyptus trees are present within the survey area; however, eucalyptus trees within the survey area do not provide habitat capable of supporting this species. Furthermore, host plants and nectar sources for this species are not present. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Amphibians				
Spea hammondii	Western spadefoot toad	None/SSC/—/ None	Occurs primarily in grasslands or coastal sage scrub with vernal pools or similar shallow, temporary pools for breeding.	*Not Expected*. Suitable coastal sage scrub with vernal pools or similar shallow temporary pools are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Reptiles				
Anniella stebbinsi	Southern California legless lizard	None/SSC/—/ None	Occurs in coastal scrub, chaparral, grassland, and oak woodland habitats with loose, moist, sandy or loamy soils, often beneath leaf litter or duff. Spends most of its life underground or beneath surface debris and forages for small invertebrates such as beetle larvae and termites.	*Not Expected*. Suitable sandy areas in coastal scrub, chaparral, grassland, and oak woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Arizona elegans occidentalis	California glossy snake	None/SSC/—/ None	Occurs in arid and semi-arid regions including coastal sage scrub, chaparral, and grassland habitats with loose, sandy, or loamy soils. Primarily nocturnal, it shelters in rodent burrows or under surface objects during the day and forages at night for small mammals and lizards.	*Not Expected*. Suitable coastal sage scrub, chaparral, and grassland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Birds				
Charadrius nivosus nivosus	Western snowy plover	FT/SSC/—/MSCP	Occurs on coastal beaches, sand spits, dunes, and estuarine flats with sparse or low vegetation. Nests in shallow scrapes on open sandy or saline substrates above the high-tide line and forages along the intertidal zone for small invertebrates.	*Not Expected Foraging or Nesting*. Suitable coastal beaches, sand spits, dunes, and estuarine flat habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Elanus leucurus majusculus	White-tailed kite	None/FP/—/None	Occurs in open groves, river valleys, marshes, grasslands, but found in a wide variety of habitats including grassland, open oak woodland, desert grassland, and suburban areas with wood-lined canyons. Requires tall trees for perching and nesting.	*Not Expected Foraging or Nesting*. Suitable open groves, river valleys, marshes, grasslands, and oak woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Circus hudsonius	Northern harrier	None/SSC/—/ MSCP	Occurs in coastal salt marshes, freshwater marshes, and open grasslands. Nests on the ground in dense vegetation, typically near freshwater or brackish wetlands, and forages over open fields and marshes for small mammals, birds, and reptiles.	*Not Expected Foraging or Nesting*. Suitable coastal salt marshes, freshwater marshes, and open grassland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None/SE/—/ MSCP	Occurs in coastal salt marshes dominated by pickleweed (*Salicornia pacifica*) and other halophytic vegetation along the upper margins of tidal channels and estuaries. Nests in dense low vegetation above the high-tide line and forages in adjacent open mudflats and marsh plains.	*Not Expected Foraging or Nesting*. Suitable pickleweed and tidal habitats are not present within the survey area. Species known from within 1 mile of the survey area (i.e., to the south in the lagoon). No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC/—/MSCP	Occurs in coastal sage scrub and associated habitats dominated by California sagebrush (*Artemisia californica*) and other low, soft-leaved shrubs. Nests in dense stands of coastal sage scrub, typically below 1,500 feet AMSL, and forages for small insects among the shrub canopy.	*Not Expected Foraging or Nesting*. Suitable coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area (i.e., to the south in the lagoon). No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Rallus obsoletus levipes	Light-footed Ridgway's rail	FE/SE/—/MSCP	Occurs in coastal salt marshes dominated by cordgrass (*Spartina foliosa*) and pickleweed along tidal channels and estuarine margins. Nests in dense emergent vegetation slightly above mean high tide and forages in tidal creeks, mudflats, and adjacent marsh plains for invertebrates and small fish.	*Not Expected Foraging or Nesting*. Suitable coastal salt marsh and pickleweed habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Sternula antillarum browni	California least tern (nesting colony)	FE/SE, FP/—/ MSCP	Occurs along coastal beaches, estuaries, and lagoons with open sandy or gravelly substrates. Nests in colonies on sparsely vegetated sand flats, dredge-spoil islands, or river mouths near shallow marine and estuarine waters where small fish are abundant for foraging.	*Not Expected Foraging or Nesting*. Suitable coastal habitats with proper nesting substrates are not present within the survey area. Species known from within 1 mile of the survey area (i.e., to the south in the lagoon). No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Vireo bellii pusillus	Least Bell's vireo	FE/SE/—/MSCP	Occurs in riparian woodland and willow scrub habitats dominated by mule fat (*Baccharis salicifolia*), willow (*Salix* spp.), and cottonwood (*Populus fremontii*). Nests in dense understory vegetation near perennial or intermittent streams and forages for insects in adjacent riparian and upland scrub habitats.	*Not Expected Foraging or Nesting*. Suitable riparian habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Mammals				
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	None/SSC/—/ None	Prefers rocky habitat near shrubs but also in grassland and sage scrub that provide forage and essential escape cover from predators. Soil preference is loose and sandy soils, gravel, and mixed rock on moderate to steep slopes.	*Not Expected*. Suitable grassland and sage scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Eumops perotis californicus	Western mastiff bat	None/SSC/—/ None	Occurs in arid and semi-arid regions including desert scrub, chaparral, and open woodland. Roosts in rock crevices, cliff faces, and occasionally in buildings, typically in areas with nearby water and open space for foraging. Forages above open habitats, grasslands, and canyons for flying insects.	*Not Expected Foraging or Roosting*. Suitable desert scrub, chaparral, and open woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Nyctinomops femorosaccus	Pocketed free-tailed bat	None/SSC/—/ None	Occurs in arid and semi-arid regions including desert scrub, chaparral, and dry open woodlands. Roosts in crevices of rocky cliffs, canyon walls, and occasionally in tall buildings or bridges. Forages in open areas and along canyon slopes for flying insects, often at high altitudes.	*Not Expected Foraging or Roosting*. Suitable desert scrub, chaparral, and open woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Perognathus longimembris	Pacific pocket mouse	FE/SSC/—/None	Found in a range of habitats that have sandy soils and open vegetation structure in coastal Southern California (dunes, strands, mesas, drainages, canyons with mixed coastal scrub, grasses, and forbs). Only found in one location in Orange County, California, and on Marine Corps Base Camp Pendleton, in California.	*Not Expected*. Suitable dunes, strands, mesas, drainages, canyons and mixed coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Notes: AMSL = above mean sea level; CDFW = California Department of Fish and Wildlife; CRPR = California Rare Plant Rank; None = No status indicated for species; USFWS = U.S. Fish and Wildlife Service
CNPS Rare Plant Ranking: 1B = Rare, threatened, or endangered in California and elsewhere; 2B = Rare, threatened, or endangered in California but more common elsewhere; 4 = Watch list: plants of limited distribution; 0.1 = Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat); 0.2 = Moderately threatened in California (20–80 percent occurrences threatened/moderate degree and immediacy of threat)
Federal Status: FT = federally listed as threatened; FE = federally listed as endangered; PT = proposed threatened
State Status: SE = state listed as endangered; SSC = California Species of Special Concern; FP = fully protected; WL = watch list

Sensitive Plant Species

No sensitive plant species were observed during the September 2025 survey. Although a focused rare plant survey was not conducted during the biological reconnaissance survey, no sensitive species are expected to occur at any of the five potential project sites due to the absence of native habitats. No sensitive plant species were found to have a moderate or high potential to occur in the survey area.

Sensitive Wildlife Species

No sensitive wildlife species were observed in the survey area. No sensitive wildlife species were found to have a moderate or high potential to occur in the survey area.

Nesting Birds

Nesting birds are protected by the Migratory Bird Treaty Act (MBTA) and similar provisions of the California Fish and Game Code. Although the survey area does not contain native vegetation communities, ornamental plantings are used as nesting habitat by common species such as mourning dove (*Zenaida macroura*), bushtit (*Psaltriparus minimus*), California towhee (*Melozone crissalis*), and house finch (*Haemorhous mexicanus*). Eucalyptus trees are highly desirable for hummingbirds and raptors. Structures that have eaves, crevices, cracks, and other "cavities" may provide nesting opportunities for nesting birds, such as black phoebe (*Sayornis nigricans*), which attach their nests to the undersides of structures with mud. In addition, areas of bare ground provide suitable nesting opportunities for species such as killdeer (*Charadrius vociferus*). All five potential project sites include ornamental plantings or bare ground suitable for nesting opportunities by common urban-adapted species.

Roosting Bats

While no bats were observed using the survey area for roosting or foraging during the survey, no nighttime focused acoustic surveys were conducted.

Although several bat species may occasionally forage over open areas, water sources, or ornamental vegetation, there is a low potential for roosting bats to occur within the survey area due to the lack of suitable roosting habitat (e.g., natural crevices, palm trees with skirts, or undisturbed structures) and the high level of human disturbance associated with the adjacent Fairgrounds and racetrack. Common species such as the Mexican free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), and hoary bat (*Lasiurus cinereus*) may occasionally forage in the area but are unlikely to establish roosts within the disturbed site.

Critical Habitat

No critical habitat for sensitive plants or wildlife occurs within the five potential sites or in the survey buffers. Critical habitat for western snowy plover occurs outside the survey area, approximately 0.25 mile south of the Adjacent to Fire Station Site (Site 3) within San Dieguito Lagoon (Figure 7). Furthermore, none of the sites are situated within an environmentally sensitive habitat area.

Wildlife Corridors and Linkages

Review of the California Essential Habitat Connectivity dataset indicates that the five potential project sites are not within a designated essential habitat connectivity area (CDFW 2023e). The nearest identified linkage occurs approximately 0.75 mile southeast of the Fairgrounds. Overall, due to extensive development, lighting, and human disturbance, all five potential project sites provide low value for regional wildlife movement or corridor functions, although the adjacent San Dieguito River corridor remains an important regional linkage and bird migration route within the Pacific Flyway.

Wildlife movement corridors provide important routes for local movement and regional connectivity, often following linear topographic, vegetative, or hydrologic features. These corridors may consist of continuous habitat linkages or "stepping-stone" patches that provide resting and foraging opportunities for wildlife, including migratory bird species. Local movement routes allow daily access to essential resources such as food, water, and shelter, while regional linkages support broader dispersal, seasonal migrations, and gene flow between populations.

All five potential project sites are located within a highly developed area adjacent to the San Dieguito River Lagoon. The Fairgrounds and racetrack complex is largely developed and intensively maintained, with high levels of human activity, artificial lighting, and noise that substantially reduce habitat connectivity across the area. However, the adjacent San Dieguito River corridor and its associated riparian, estuarine, and upland habitats provide an important east–west regional movement corridor linking the coastal wetlands to inland open spaces. The survey area holds value for MBTA-protected migrating birds flying through to wintering or breeding grounds. The survey area is within the Pacific Flyway, along which millions of birds, especially waterfowl, migrate annually between Alaska and Canada, through California, to Mexico and South America. Coastal San Diego provides an important stopover area for a large variety of birds during their annual migration. The ornamental vegetation and structures throughout the survey area and along the San Dieguito River and Lagoon provide marginal habitat for certain species to stopover during migration. However, the absence of native vegetation, water, and refugia within the dense residential and commercial development of the survey area potentially limits migratory bird use of all five potential project sites. Wildlife species adapted to fragmented or disturbed environments—such as raccoon (*Procyon lotor*), coyote (*Canis latrans*), and various bird species—may use peripheral landscaped or ruderal areas of the Fairgrounds for limited foraging or transit between higher-quality habitats.

Impact Avoidance and Minimization Recommendations

The following impact avoidance recommendations are suggested for all five potential project sites to avoid potential impacts to biological resources, regardless of the site chosen. It is recommended that any future project include these two standard conditions of approval to minimize potential impacts by controlling construction timing to avoid raptor and bird breeding season and requiring best management practices to control stormwater. Once the design is complete, these recommendations may require modification, based on the extent and nature (temporary or permanent) of expected impacts.

BIO-1: Nesting Birds. No grubbing, trimming, or clearing of vegetation from the project site shall occur during the raptor and bird breeding season (January 15 through August 31). If grubbing, trimming, or clearing of vegetation cannot feasibly occur outside the general bird breeding season, a qualified biologist shall perform a pre-construction nesting bird survey no more than 72 hours prior to the start of vegetation grubbing, trimming, or clearing to determine if active bird nests are present in the affected areas. Should an active bird nest be located, the qualified biologist shall establish a buffer and direct vegetation clearing away from the nest until it has been determined that the young have fledged or the nest has failed. If no nesting birds (including nest building or other breeding or nesting behavior) are detected during the nesting bird survey, grubbing, trimming, or clearing shall proceed.

BIO-2: Stormwater Pollution Prevention Plan. Prior to notice to proceed with any construction, including clearing, grubbing, and/or grading, a Stormwater Pollution Prevention Plan shall be prepared, pursuant to National Pollution Discharge Elimination System General Construction Permit (Water Quality Order 99-08-DWQ). The Stormwater Pollution Prevention Plan shall address the potential sources and locations of stormwater contamination, characteristics and impacts of specific contaminants, and temporary and permanent erosion-control practices and shall include water sampling data, construction practices that minimize stormwater contamination, coordination of best management practices with planned construction activities, and compliance with local, state, and federal regulations. The Stormwater Pollution Prevention Plan shall include best management practices that shall be clearly stated on project plans and design documents. The implementation of the Stormwater Pollution Prevention Plan shall protect adjacent aquatic resources, habitats, and sensitive species during construction to the maximum extent practicable with the goal of providing multiple beneficial uses. Post-construction, the project shall incorporate water quality protection design standards that will reduce, capture, and treat runoff from the project site, with an emphasis on protecting the adjacent aquatic resources.

Constraints Analysis Conclusion

The land cover type occurring within the survey area, encompassing all five potential project sites, is urban/developed land. The survey area is developed or is highly altered and fragmented by roads, paved surfaces, and active human use. These factors substantially reduce the suitability of the area for sensitive wildlife to forage, nest, or seek refuge. No sensitive habitats or sensitive species were detected or have a high potential to occur within the survey area.

Vegetation patches along the site margins and within landscaped areas may offer nesting or perching opportunities for common native birds, particularly those tolerant of human activity. Overall, all five potential project sites support low habitat suitability for sensitive species, with ecological functions primarily limited to incidental foraging and movement along the edges of the adjacent San Dieguito River corridor.

Any future project should include the two standard conditions of approval recommended in the Impact Avoidance and Minimization Recommendations section to minimize potential impacts by controlling construction timing to avoid raptor and bird breeding season and requiring best management practices to control stormwater.

Preparers

Harris & Associates
Erika Eidson, Principal Biologist (Senior Review)
Chris Thomson, Senior Biologist (Author)

If you have any questions regarding this letter report, please contact me at (858) 276-9288 or Erika.Eidson@WeAreHarris.com.

Sincerely,

Erika Eidson
Principal Biologist

Attachments

1. Figures
2. Regulatory Framework
3. Observed Plant Species
4. Observed Wildlife Species

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Attachment 1. Figures

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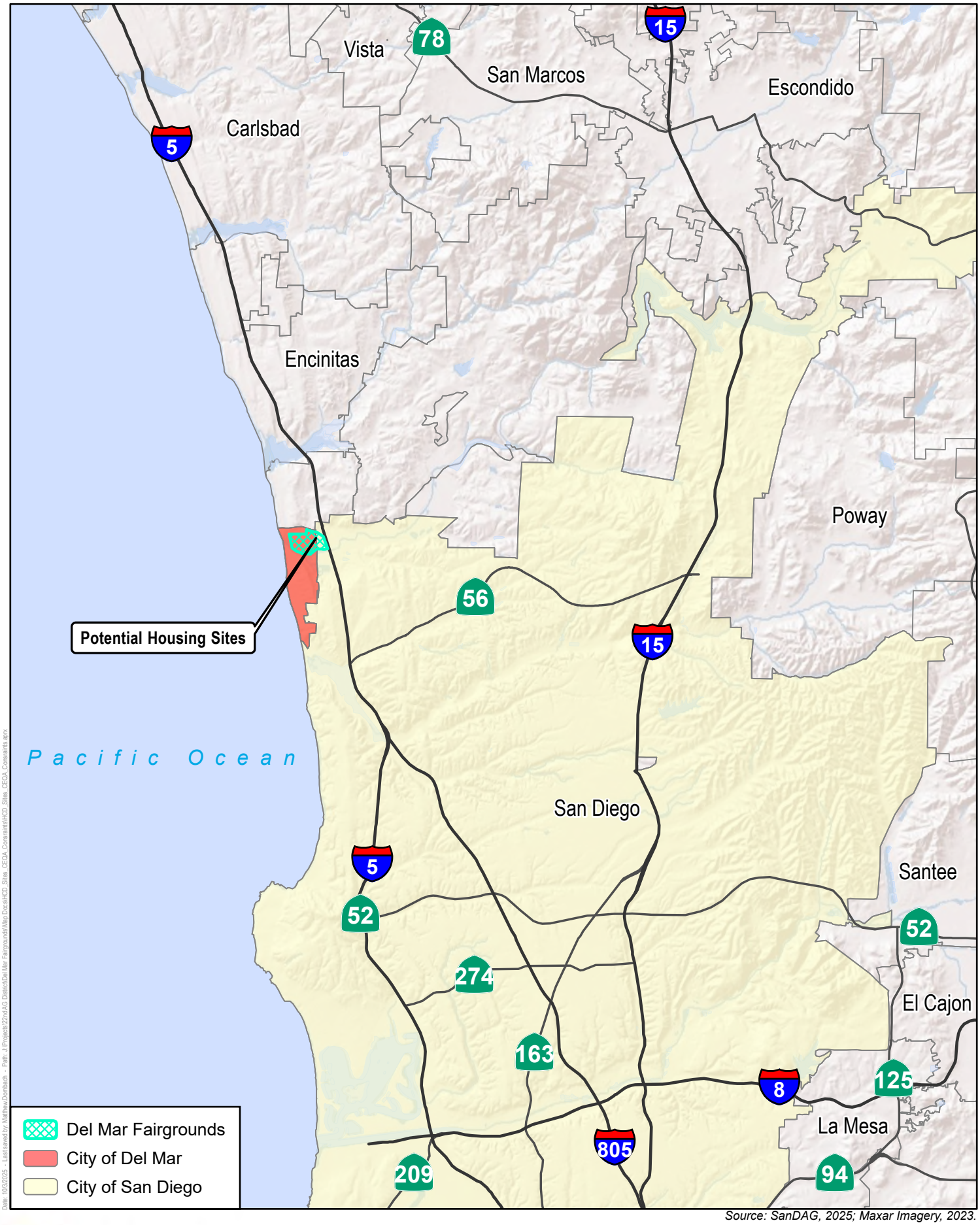

Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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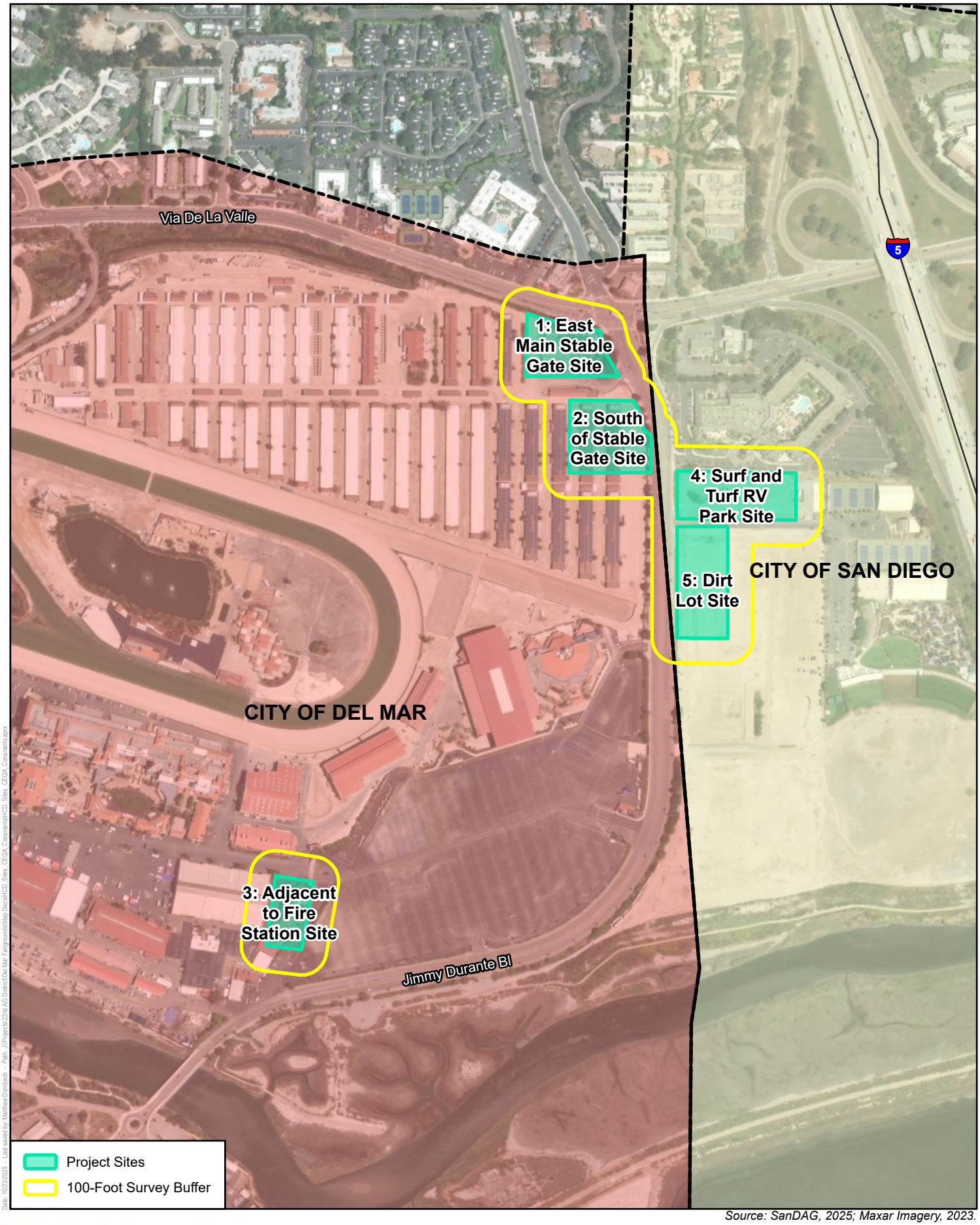
Miles

Figure 1

Regional Location

HAP Grant Affordable Housing Project



Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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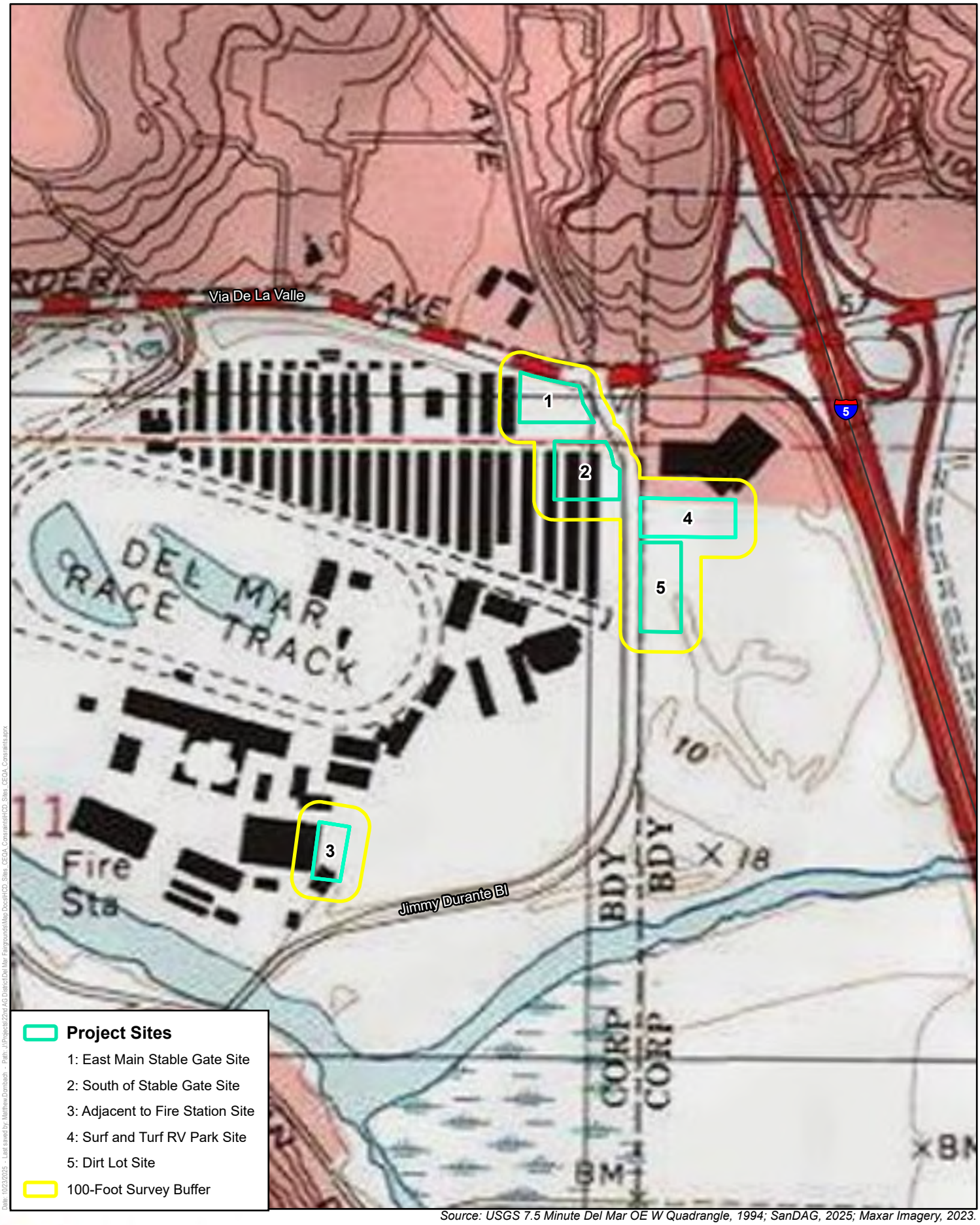
Feet

Figure 2

Potential Housing Sites

HAP Grant Affordable Housing Project



Source: USGS 7.5 Minute Del Mar OE W Quadrangle, 1994; SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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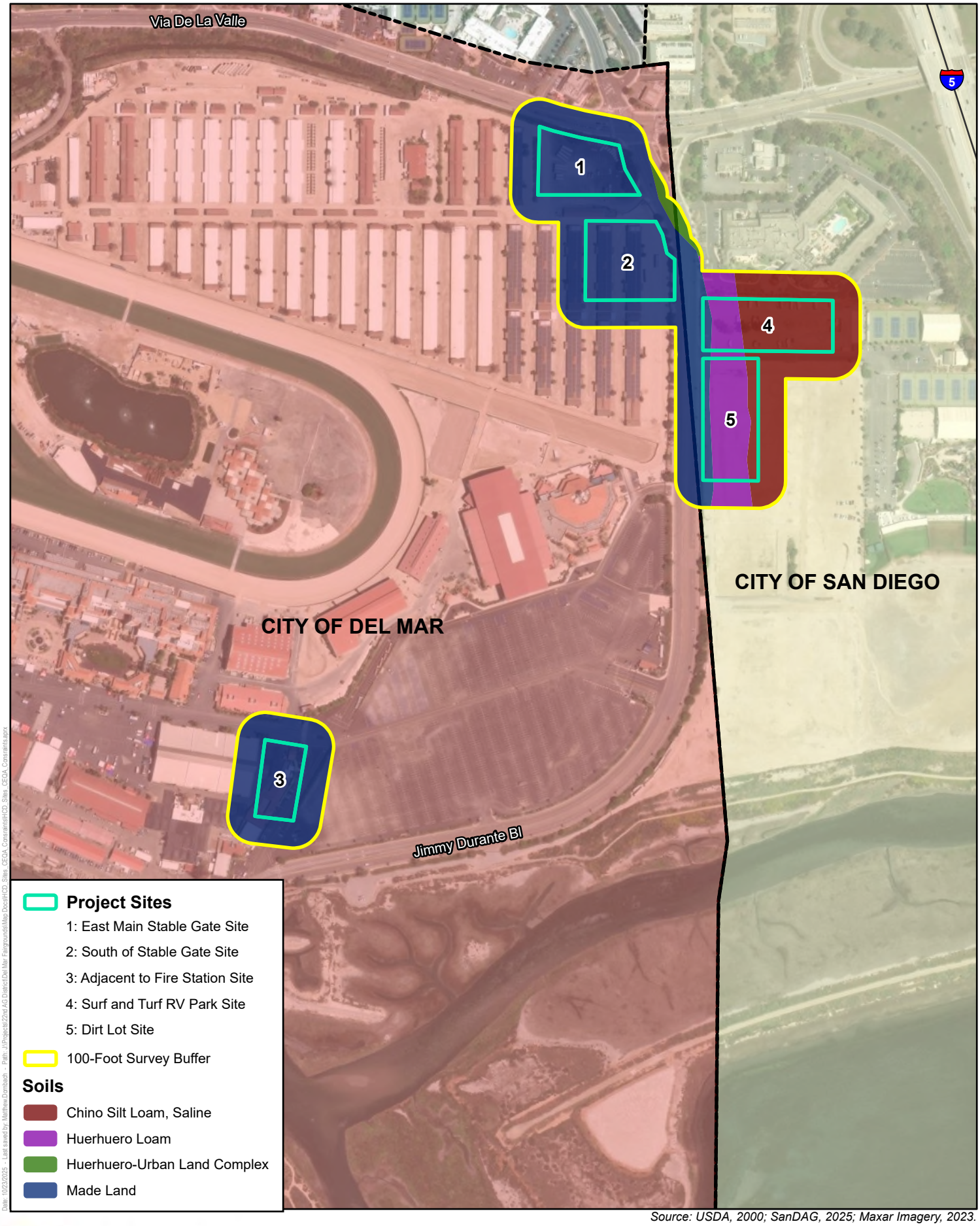
Figure 3

USGS Topographic Map

HAP Grant Affordable Housing Project



Source: USDA, 2000; SanDAG, 2025; Maxar Imagery, 2023.

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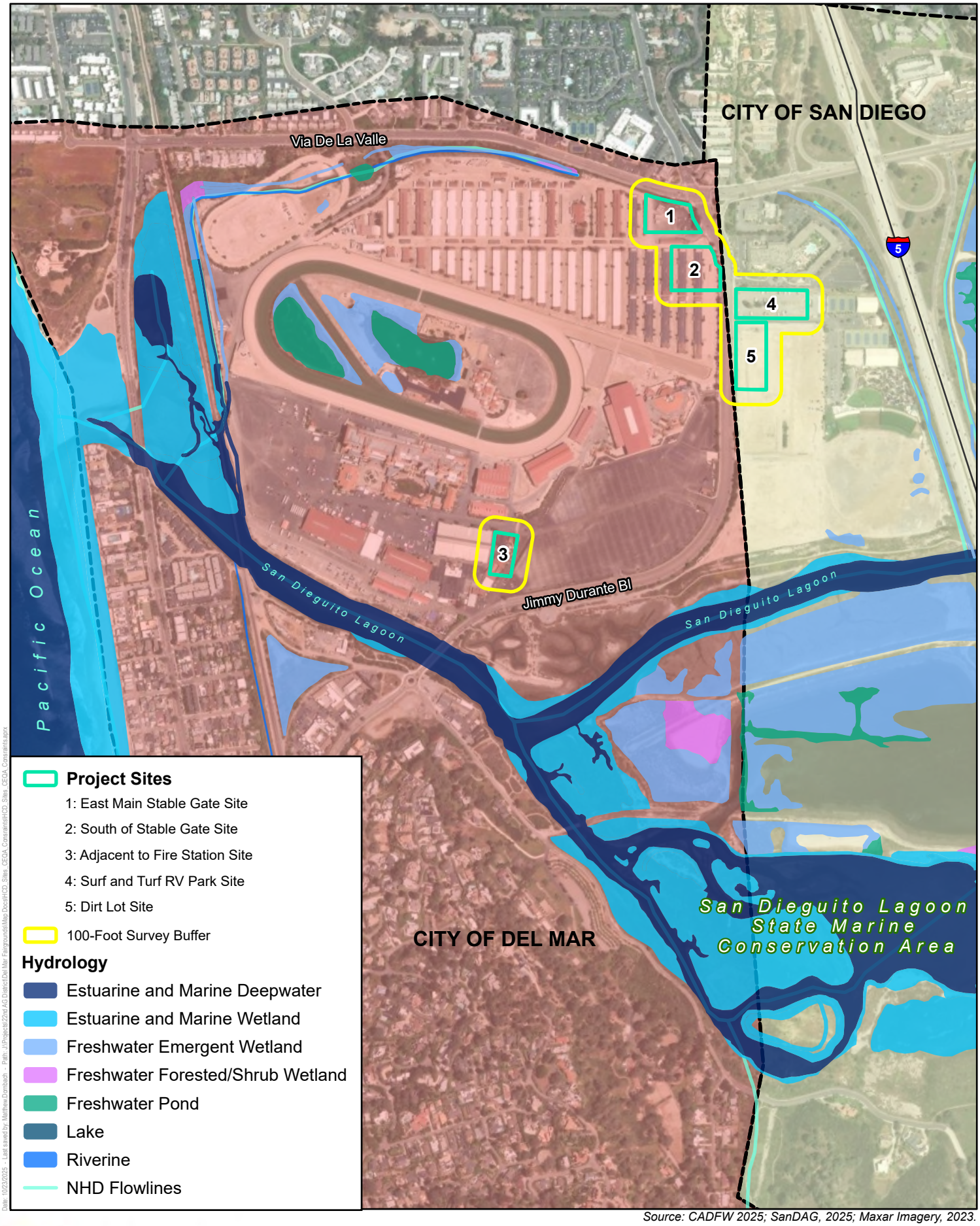
Figure 4

Soils

HAP Grant Affordable Housing Project



Source: CADFW 2025; SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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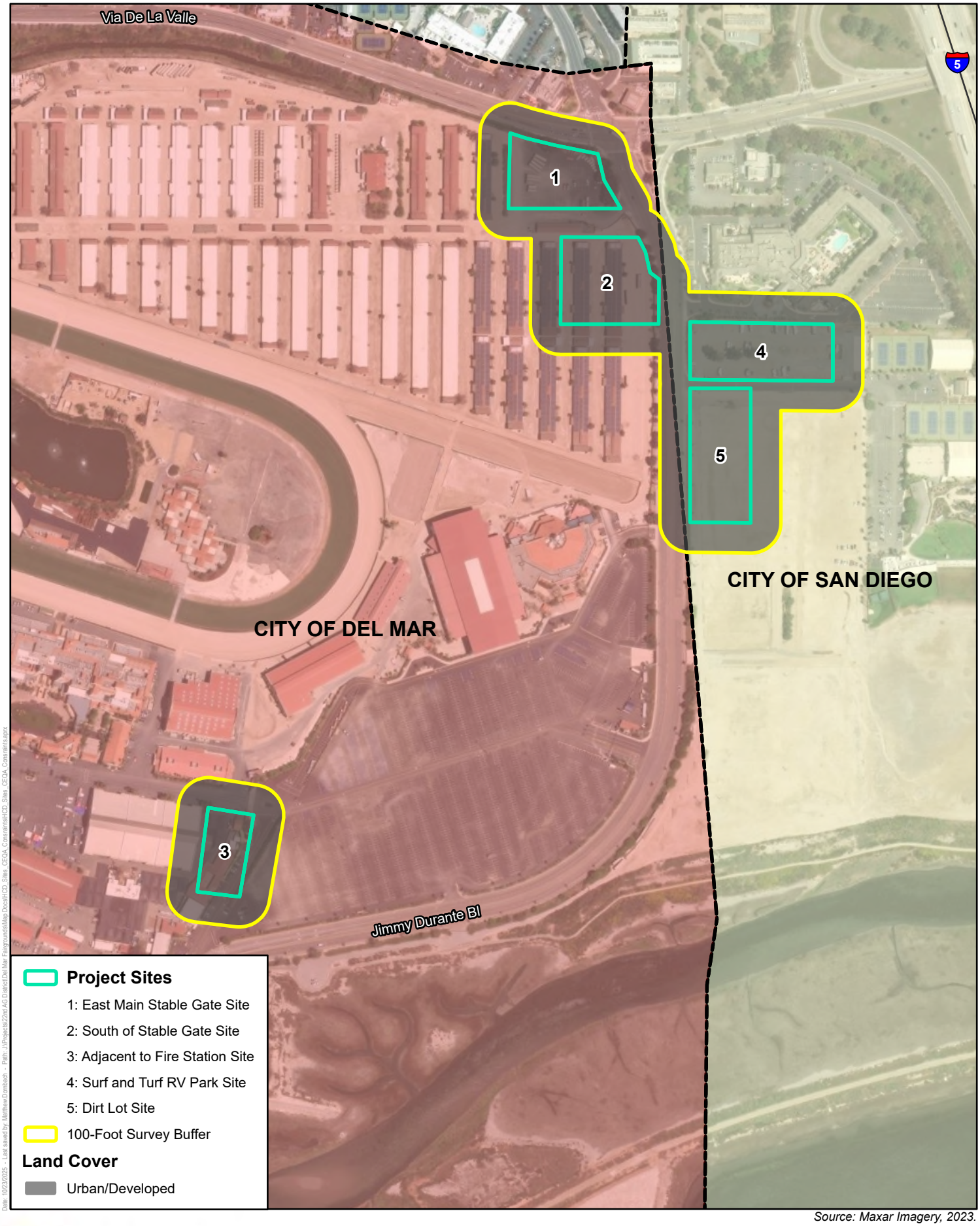
Figure 5

Hydrology

HAP Grant Affordable Housing Project



Source: Maxar Imagery, 2023.

Harris & Associates

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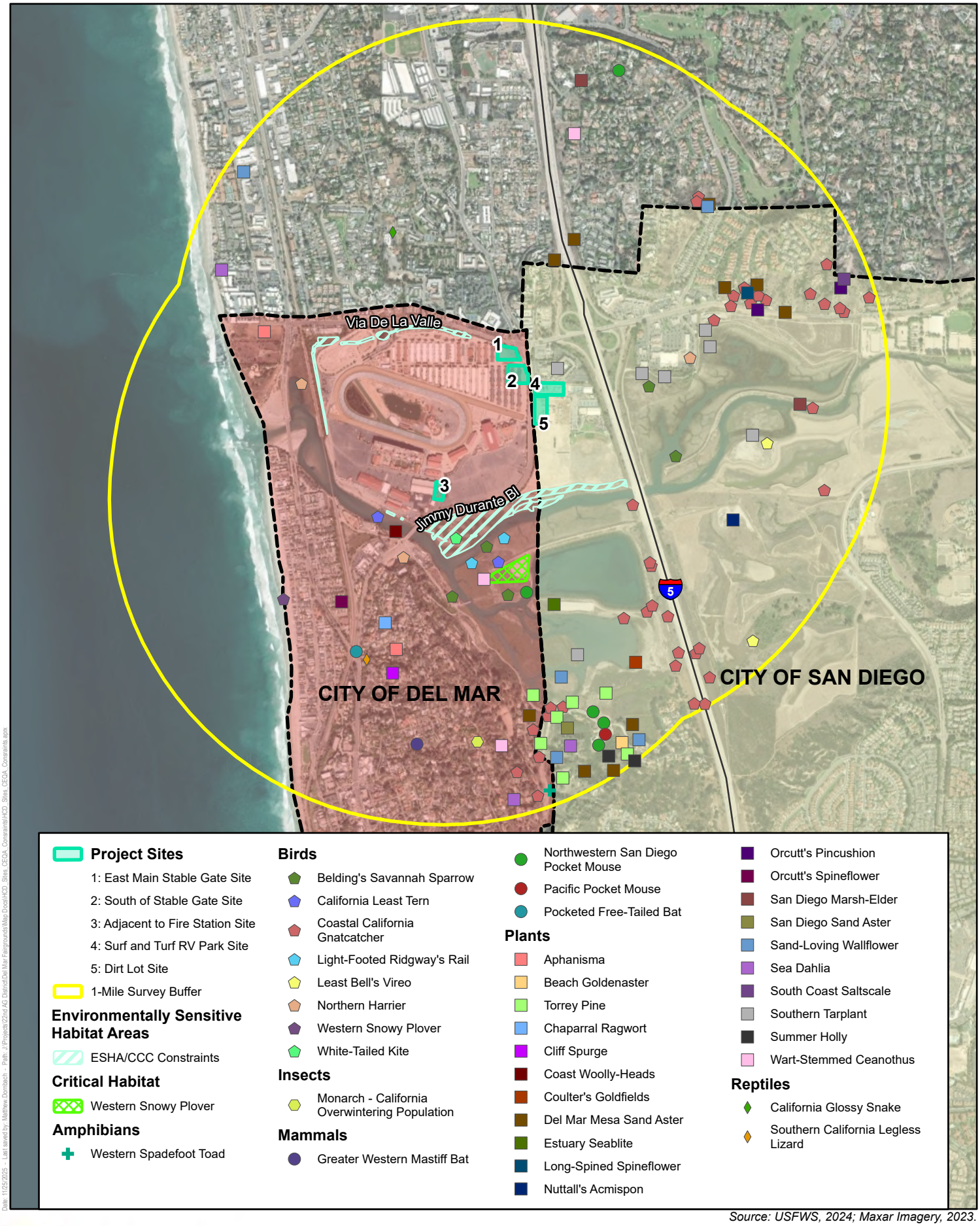
Figure 6

Land Cover

HAP Grant Affordable Housing Project



Source: USFWS, 2024; Maxar Imagery, 2023.

Harris & Associates

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Figure 7

Historical Species with Potential to Occur

HAP Grant Housing Site Conditions and Constraints Analysis

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Attachment 2. Regulatory Framework

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Regulatory Framework

Federal

Bald and Golden Eagle Protection Act (16 USC 668–668[d])

This act prohibits the possession, sale, or hunting of bald or golden eagles. This includes living eagles and their feathers, nests, eggs, or body parts.

Clean Water Act, Section 404 (33 CFR 328.3[a])

These provisions regulate the discharge of dredged or fill material in waters of the United States, including wetlands. Activities that discharge dredge or fill material into waters of the United States can be authorized by the U.S. Army Corps of Engineers (USACE).

On August 29, 2023, the U.S. Environmental Protection Agency (USEPA) and USACE issued a final rule to amend the final "Revised Definition of Waters of the U.S." The 2023 final rule became effective on September 8, 2023. Under the 2023 final rule:

(a) Waters of the U.S. are defined as:
   1. Waters which are:
      i. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
      ii. The territorial seas; or
      iii. Interstate waters;
   2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under (a)(5) of this section;
   3. Tributaries of waters identified in (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
   4. Wetlands adjacent to the following waters:
      i. Waters identified in (a)(1) of this section; or
      ii. Relatively permanent, standing or continuously flowing bodies of water identified in (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;
   5. Intrastate lakes and ponds not identified in (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in (a)(1) or (a)(3) of this section.

Federal Endangered Species Act, Sections 4(d), 7, or 10(a) (16 USC 1531 et seq.; 50 CFR Part 402)

This act prohibits the "take" (i.e., harming, harassing, or killing individuals or destroying associated habitat) of species federally listed as threatened or endangered. Take incidental to otherwise lawful activities can be authorized by the USFWS through a permit under the federal Endangered Species Act, Sections 4(d), 7, or 10(a).

Migratory Bird Treaty Act (16 USC 703–712; 50 CFR 10)

The Migratory Bird Treaty Act prohibits the direct or indirect take of migratory birds and their active nests unless permitted.

Rapanos Guidance Key Points Summary

The ACOE and USEPA will assert jurisdiction over the following waters:

TNWs [Traditional Navigable Waters]

Wetlands adjacent to TNWs
Non-navigable tributaries of TNWs that are relatively permanent (flowing 3 months or longer)
Wetlands that abut such tributaries

The ACOE and USEPA will decide jurisdiction over the following waters based on if they have a significant nexus with a TNW:

Non-navigable tributaries that are not relatively permanent
Wetlands adjacent to non-navigable tributaries that are not relatively permanent
Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

The ACOE and USEPA will not assert jurisdiction over the following waters:

Swales or erosional features (gullies, small washes characterized by low-volume, infrequent or short-duration flow)
Ditches (including roadside ditches) that are excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water

The Navigable Waters Protection Rule, published by the USEPA on April 21, 2020, was vacated during a federal court ruling in Arizona (Pascua Yaqui Tribe v. USEPA) on August 30, 2021. With this ruling, the regulatory agencies have halted implementation of the Navigable Waters Protection Rule and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime (i.e., Rapanos guidance).

State

California Coastal Act (Public Resources Code section 30000)

Preserving, protecting, and enhancing environmentally sensitive habitat areas (ESHA) is one of the primary objectives of the California Coastal Act. Section 30107.5 of the Coastal Act defines an "Environmentally sensitive area" as "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments."

California Migratory Bird Protection Act (Assembly Bill 454)

The California Migratory Bird Protection Act prohibits the take or possession of any migratory non-game bird, as well as their nests and eggs, protected under the federal Migratory Bird Treaty Act, unless authorized by regulation.

Birds of Prey Protection Provision (California Fish and Game Code, Section 3503.5)

This provision prohibits the taking of birds of prey (orders Falconiformes and Strigiformes), including their nests and eggs.

California Endangered Species Act (California Fish and Game Code, Section 2050 et seq.)

The California Endangered Species Act prohibits any activities that would jeopardize or take a species designated as threatened or endangered by the state.

California Fish and Game Code, Section 1602

Section 1602 regulates water resources in the State of California. Activities that divert or obstruct the natural flow of, or change or use material from, the bed, channel, or bank of any river, stream, or lake may be authorized by the California Department of Fish and Wildlife (CDFW). CDFW jurisdiction includes intermittent and perennial watercourses and extends to the top of the bank of a stream or lake if unvegetated or to the limit of the adjacent riparian vegetation, located contiguous to the watercourse, if the stream or lake is vegetated.

California Fish and Game Code, Section 3503

Section 3503 prohibits the take, possession, or needless destruction of the nests or eggs of any birds, except as otherwise provided by the code or any regulation made pursuant thereto.

California Environmental Quality Act, as Amended (California Public Resources Code, Section 21000 et seq.)

The goal of CEQA is to assist California public agencies in identifying potentially significant negative environmental impacts caused by their actions and avoiding or mitigating those impacts when feasible.

California Fully Protected Wildlife Species Provision (California Fish and Game Code, Sections 3511, 4700, 5050, and 5515)

These provisions prohibit the take of fully protected birds, mammals, amphibians, and fish.

California Native Plant Protection Act (California Fish and Game Code, Sections 1900–1913)

These provisions preserve, protect, and enhance endangered or rare native plants of the state.

Regional Water Quality Control Board

The Regional Water Quality Control Board (RWQCB) regulates impacts on water quality under Section 401 of the Clean Water Act (CWA). A project must comply with CWA Section 401 before the USACE can issue a Section 404 permit. The RWQCB will issue a Section 401 water quality certification or waiver of certification depending on the extent of impacts on waters of the United States. The RWQCB also regulates impacts on waters of the state (usually limited to "isolated" waters or swales that may not fall under USACE jurisdiction) under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

Streambed Alteration Agreement (California Fish and Game Code, Section 1600)

The California Fish and Game Code requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, or their tributaries, or use materials from a streambed to submit a notification for a streambed alteration agreement to the CDFW.

Natural Community Conservation Planning Act, as Amended (California Fish and Game Code, Sections 2800–2835)

The primary objective of the Natural Community Conservation Planning program is to conserve natural communities at the ecosystem level while accommodating compatible land use. The program seeks to anticipate and prevent the controversies and gridlock caused by species listing by focusing on the long-term suitability of wildlife and plant communities and including key interests in the process.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act is regulated by the RWQCB for impacts on waters of the state. The RWQCB is the regional agency responsible for protecting water quality in California. The jurisdiction of this agency includes waters of the state and waters of the United States as mandated by CWA Section 401 and the Porter-Cologne Act. Although water quality issues related to impacts on waterways are normally addressed during Section 401 water quality certification, should a water of the State of California be determined by the USACE to not have CWA jurisdiction, the Porter-Cologne Act would be addressed under a construction general permit, state general waste discharge order, or waste discharge requirements, depending on the level of impact and the properties of the waterway.

Local

Del Mar Local Coastal Program (LCP)

The California Coastal Act of 1976 requires all jurisdictions within the Coastal Zone to prepare a Local Coastal Program (LCP). The Del Mar LCP is a comprehensive plan that helps guide land use and development along the coast to ensure consistency with the California Coastal Act. The program objectives are to protect coastal resources, provide for public access, and manage development within the coastal zone.

San Diego Local Coastal Program (LCP)

The California Coastal Act of 1976 requires all jurisdictions within the Coastal Zone to prepare a Local Coastal Program (LCP). The San Diego LCP is required by the state of California to guide development, protect coastal resources, and ensure public access within the City of San Diego's and the County of San Diego's coastal zones.

Attachment 3. Observed Plant Species

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Attachment 3. Observed Plant Species

	Scientific Name	Common Name	Special Status
	GYMNOSPERMS		
	Cupressaceae - Cypress family		
*	*Platycladus orientalis*	Chinese arborvitae	
	Pinaceae - Pine family		
*	*Pinus pinea*	Italian stone pine	
	EUDICOTS		
	Musaceae - Banana family		
*	*Musa ornata*	Banana tree	
	Aizoaceae - Fig-marigold family		
*	*Carpobrotus edulis*	Hottentot fig	
	Anacardiaceae - Sumac Or Cashe		
*	*Schinus molle*	Peruvian pepper tree	
	Araliaceae - Ginseng family		
*	*Hedera helix*	English ivy	
	Asteraceae - Sunflower family		
	Ambrosia psilostachya	Western ragweed	
*	*Erigeron bonariensis*	Flax-leaved horseweed	
	Helianthus annuus	Annual sunflower	
*	*Sonchus asper ssp. asper*	Prickly sow thistle	
	Asparagaceae - Asparagus family		
*	*Dracaena draco*	Canary Island dragon tree	
*	*Dracaena reflexa*	Song of India	
	Cannaceae - Canna family		
*	*Canna indica*	Indian shot	
	Crassulaceae - Stonecrop family		
*	*Aeonium arboreum var. arboreum*	Canary Island Aeonium	
	Fabaceae - Legume family		
*	*Acacia cyclops*	Western coastal wattle	
*	*Medicago sativa*	Alfalfa	
	Moraceae - Mulberry family		
*	*Ficus carica*	Edible fig	
	Myrtaceae - Myrtle family		
*	*Callistemon viminalis*	Bottlebrush	
*	*Eucalyptus camaldulensis*	Red gum	

	Scientific Name	Common Name	Special Status
*	*Eucalyptus conferruminata*	Spider gum	
*	*Melaleuca quinquenervia*	Broad-leaved paperbark	
	Plumbaginaceae - Leadwort famil		
*	*Limonium perezii*	Perez's marsh rosemary	
	Portulacaceae - Purslane family		
*	*Portulacaria afra*	Dwarf jade plant	
	MONOCOTS		
	Arecaceae - Palm family		
*	*Chamaerops humilis*	European fan palm	
*	*Phoenix dactylifera*	Date palm	
*	*Washingtonia robusta*	Mexican fan palm	

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened

CRPR – California Rare Plant Rank
1A. Presumed extinct in California and elsewhere
1B. Rare or Endangered in California and elsewhere
2A. Presumed extinct in California, more common elsewhere
2B. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Attachment 4. Observed Wildlife Species

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Attachment 4. Observed Wildlife Species

	Scientific Name	Common Name	Special Status
	INVERTEBRATES		
	Moths, Skippers and Butterflies		
	Colias harfordii	Harford's Sulphur	
	VERTEBRATES		
	Reptiles		
	Sceloporus occidentalis longipes	Great Basin Fence Lizard	
	Birds		
	Buteo jamaicensis	Red-tailed Hawk	
	Larus occidentalis	Western Gull	
	Zenaida macroura	Mourning Dove	
	Calypte anna	Anna's Hummingbird	
	Sayornis nigricans	Black Phoebe	
	Tyrannus vociferans	Cassin's Kingbird	
	Corvus brachyrhynchos	American Crow	
	Psaltriparus minimus	Bushtit	
*	*Sturnus vulgaris*	European Starling	
	Melozone crissalis	California Towhee	
	Agelaius phoeniceus	Red-winged Blackbird	
	Haemorhous mexicanus	House Finch	
*	*Passer domesticus*	House Sparrow	

Legend

*= Non-native or invasive species

Special Status:

State:

CSC = California Species of Special Concern
CaFP = California Fully Protected Species

County:
SDC Group I = includes animal species that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met.
SDC Group II - includes animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

MSCP = Multiple Species Conservation Program Covered Species

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Attachment 4. Cultural Resources Letter Report

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Cultural Resources Letter Report – Negative Findings

HAP Grant Affordable Housing Project

December 2025

Prepared for:

22nd District Agricultural Association
Dustin Fuller, Supervising Environmental Planner
2260 Jimmy Durante Boulevard
Del Mar, California 92014

City of Del Mar
Amanda Lee, Principal Planner
1050 Camino Del Mar
Del Mar, California 92014

Prepared by:

Harris & Associates

2375 Northside Drive, Suite 125
San Diego, California 92108

National Archaeological Database Information

Authors:	Donna Beddow, Shahira Ashkar, and Rock Ciarmoli
Firm:	Harris & Associates 2375 Northside Drive, Suite 125 San Diego, California 92108 (619) 236-1778
Client:	22nd District Agricultural Association Mr. Dustin Fuller, Supervising Environmental Planner 2260 Jimmy Durante Boulevard Del Mar, California 92014
Report Date:	December 2025
Report Title:	Cultural Resources Letter Report – Negative Findings; HAP Grant Affordable Housing Project
Type of Study:	Intensive Pedestrian/Phase I
New Sites:	None
Updated Sites:	None
USGS Quad:	Del Mar OE W
Acreage:	7 acres
Key Words:	Kumeyaay Traditional Use Area, Del Mar, Del Mar Fair Grounds, No Resources

Harris & Associates

December 5, 2025

22nd District Agricultural Association
Mr. Dustin Fuller, Supervising Environmental Planner
2260 Jimmy Durante Boulevard
Del Mar, California 92014

RE: Cultural Resources Letter Report – Negative Findings; HAP Grant Affordable Housing Project

Mr. Fuller:

Please be advised that a survey has been conducted on the Housing Acceleration Program (HAP) Grant Affordable Housing Project (project). Archival research and the pedestrian inventory did not identify cultural resources on the five potential housing project sites. The project has been plotted on the attached U.S. Geological Survey (USGS) 7.5-minute topographic map for your information (Figure 1, USGS Topographic Map).

County: San Diego
USGS 7.5' Quad: Del Mar OE W; **Date:** 1967
Section: 11 and 12; **Township:** 14S **Range:** 04W; **Land Grant:**
Address: Jimmy Durante Boulevard
City: Del Mar and San Diego; **State:** California

Other Locational Data: From Interstate 5, take the Via De la Valle exit and turn west. At Jimmy Durante Boulevard, turn south (left) and the five potential housing sites are on the west and east sides (Figure 2, Potential Housing Sites).

Assessor Parcel Number(s): 298-271-03-00, 299-030-05-00, 299-030-22-00, 299-042-03-00

UTMs: 11S; −3648789 mN/476107 mE

Owner and Address:
22nd District Agricultural Association
2260 Jimmy Durante Boulevard
Del Mar, California 92014

Survey Type: Intensive Pedestrian/Phase I
Date of Survey: November 10, 2025
Field Crew: Rocky Ciarmoli

Executive Summary

The 22nd District Agricultural Association (District) owns and operates the San Diego County Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts various uses, including the annual San Diego County Fair; two horse racing seasons; concerts and meetings in The Sound; and other events, activities, and celebrations, such as festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year.

The District is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving the Fairgrounds facilities. During this master site planning process, the District has worked with the City of Del Mar to identify portions of the Fairgrounds property that the District may be willing to make available for affordable housing development. In its 6th Cycle Housing Element Update, the City of Del Mar identified and included a portion of the property in the Housing Element residential sites inventory as having the potential to be developed to accommodate affordable housing

units. The District and the City of Del Mar have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds property. This study of potential affordable housing on the Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development Housing Acceleration Program Cycle 2.

As detailed below, five potential housing site locations were selected for study through this mutual planning effort, with the goal of selecting one site to develop with housing. This Cultural Resources Letter Report identifies the cultural setting, regulatory setting, what known resources are present, survey methodology, and findings. This Cultural Resources Letter Report was completed to assess if there are potential cultural resource constraints for the development of housing on the five potential housing sites being studied.

Staff conducted a records search of the project and surrounding area using the California Historic Resources Inventory System (CHRIS) and contacted the Native American Heritage Commission (NAHC) for a Sacred Lands File check to determine if sacred lands are present on site. A cultural resources survey of all five potential housing sites and a 100-foot buffer was conducted on November 10, 2025. The analysis concludes that no cultural resources were located as a result of this study, and all five potential project sites are not considered sensitive for the presence of archaeological resources due to their developed nature or disturbance that has occurred historically.

Project Description

Five potential housing site locations have been selected within the Fairgrounds, with the goal of selecting one site to develop with housing. Three sites are in the City of Del Mar, and two sites are in the City of San Diego. For the purpose of this study, the assumption is that a prospective housing project would include at least 61 units of lower-income housing in a housing project that is a multi-family lower-income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing, consistent with prior feasibility studies completed (2022–2023). Because the Fairgrounds property is within the Federal Emergency Management Agency-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed with floodproofing measures, including a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface-level parking.

Project Location

Descriptions of the five potential housing site locations are detailed below and summarized in Table 1, Potential Housing Sites. The five sites are located in the eastern portion of the Fairgrounds along Jimmy Durante Boulevard and range from approximately 1 to 1.5 acres (Figure 2).

Table 1. Potential Housing Sites

Site Number	Site Name	APN	City	Acreage
Site 1	East Main Stable Gate Site	298-271-03-00	City of Del Mar	1.5
Site 2	South of Stable Gate Site	299-030-05-00 299-030-22-00	City of Del Mar	1.5
Site 3[1]	Adjacent to Fire Station Site	299-030-22-00	City of Del Mar	1
Site 4	Surf and Turf RV Park Site	299-042-03-00	City of San Diego	1.5
Site 5	Dirt Lot Site	299-042-03-00	City of San Diego	1.5

Notes:

[1] The 2023 Stephan Dalton Architects (SDA) Study identified two scenarios for Site 3: a 1-acre new housing site or a 1.5-acre new housing site that would also include redevelopment of the fire station. This report focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Site 1: East Main Stable Gate Site

Site 1 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to the existing horse stables. The 1.5-acre site is bounded by Via De La Valle to the north and Jimmy Durante Boulevard to the east (Figure 2).

Site 2: South of Stable Gate Site

Site 2 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to and south of the East Main Stable Gate and parking lot. The 1.5-acre site is bounded by Jimmy Durante Boulevard to the east and the Main Stable Gate parking lot to the north (Figure 2).

Site 3: Adjacent to Fire Station Site

Site 3 is in the southeastern corner of the Fairgrounds within the City of Del Mar. The 1-acre site is located between the existing O'Brien Hall and southeast Fairgrounds parking lot, directly north of the existing Del Mar Fire Department building (Figure 2).

Site 4: Surf and Turf RV Park Site

Site 4 is in the northeastern corner of the Fairgrounds within the City of San Diego. The 1.5-acre gravel site is located south of the Hilton San Diego Del Mar Hotel and north of Turf Road, adjacent to Jimmy Durante Boulevard (Figure 2).

Site 5: Dirt Lot Site

Site 5 is in the northeastern corner of the Fairgrounds within the City of San Diego, located south of Turf Road and the San Diego County Fairgrounds Surf and Turf RV Park. The 1.5-acre site includes a portion of a larger, undeveloped dirt parking lot, bounded by Jimmy Durante Boulevard to the west (Figure 2).

Setting

Cultural Setting

Prehistoric Period

Cultural resources are found throughout San Diego County and are reminders of the county's 10,000-year-old historical record. Cultural resources are the tangible or intangible remains or traces left by prehistoric or historical people who inhabited the San Diego region. They encompass both the built (post-1769) and the archaeological environments, as well as Traditional Cultural Properties. They are typically in protected areas near water sources and multiple ecoregions and can include Traditional Cultural Places, such as gathering areas, landmarks, and ethnographic locations.

The following provides a brief cultural background for San Diego County.

Paleoindian Period (Pre-5500 BC)

Several terms are used for the early occupation of the Riverside region and include Paleoindian period, Early Archaic period, Initial period, and Scraper Maker period (Moratto 1984). This period dates from 9000 to 5500 BC (Chartkoff and Chartkoff 1984; Moratto 1984; Rogers 1966; Taylor and Meighan 1978; Warren and True 1961). Early humans have been characterized as an early nomadic, hunting culture whose settlements were located on mesas and ridge tops and in deserts (Erlandson and Colton 1991; Rogers 1966; Wallace 1978; Warren et al. 1961). During this period, inhabitants relied on large game for subsistence (Rogers 1966; Warren et al. 1961) and produced "finely worked blades, spear points, choppers, and scrapers out of fine-grained volcanics" (Carrico 1977). In addition, leaf-shaped knives, foliate to ovoid bifaces, foliate to short-bladed shoulder points, crescents, engraving tools, core hammers, pebble hammers, and cores were part of the tool assemblage (Moratto 1984; Wahoff and Dolan 2000). Pottery and milling stones were missing from the assemblage, confirming the assumption that hunting was an economic focus for the culture (Moriarty 1967; Warren and True 1961). Because the tool assemblage was similar to desert cultures of the Mojave Desert, it is believed that this culture migrated west from the desert into California (Gallegos 1995; Rogers 1939). However, no single hypothesis is universally accepted. Other hypotheses identify the movement of people into California from the south and north down the coast (Taylor and Meighan 1978; Chartkoff and Chartkoff 1984).

Archaic (8000 BC–AD 500)

According to Hale et al. (2018), "the more than 1500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in the San Diego region." The Archaic period is also known as La Jollan, Millingstone Horizon, and Encinitas Tradition. This period is characterized by the presence of dart points, milling, equipment, scattered hearths, shell middens, and flexed burials (Carrico 1977). Subsistence strategies placed an emphasis on gathering, possibly as a result of environmental change (Wahoff and Dolan 2000; Wallace 1978). The assemblage was composed of milling implements and cobble/core-based tools. The flaked tools do not appear to be as refined as those of the Paleoindian period. Mortuary goods included shell beads and ornaments, projectile points, and milling implements. Wallace (1978) interpreted archaeological sites of this period as an indication of an increase in population and permanence. Site types included coastal shell habitation bases, quarries, resource exploitation, and milling (Gallegos 1995). The sites are typified by an abundance of shellfish remains and are situated near sloughs and lagoons and on the open coast (Carrico 1977; Masters and Gallegos 1997; Moratto 1984; Wallace 1978). An inland manifestation identified as the Pauma complex is known to have existed (True 1958). Unlike the coastal people, this complex occupied "transverse valleys and sheltered canyons of inland San Diego county, ha[d] an emphasis on hunting and gathering, had a greater diversity of tool types, and lacked shellfish remains" (Masters and Gallegos 1997:12).

Similar to the Paleoindian period, controversy surrounds the origins of the Archaic culture. Several hypotheses have been postulated. Kaldenberg (1976) and Moriarty (1967) proposed that the transition from the Paleoindian to the Archaic culture was an in situ adaptation. In contrast, Warren et al. (1961) viewed this transition as a migration from the desert to the coast due to the adverse environmental condition of the Altithermal. Taylor and Meighan (1978:36) did not take a single position regarding the transition to the Archaic culture but, rather, incorporated all of the hypotheses as identified below:

> The artifact inventory and cultural activities argue strongly that this stage began in the desert inland and spread toward the Pacific Coast, reaching it about 8500 years ago. There is no evidence to show whether the Milling Stone Stage involved movement of the people or a conquest of earlier residents; perhaps the early hunters simply adopted this way of life as game animals became scarce.

The population of this period focused on lagoonal resources and moved up and down the river valleys exploiting a variety of inland and coastal resources (Masters and Gallegos 1997).

Late Prehistoric (AD 500–1769)

The Late Prehistoric period is an antecedent to Spanish contact (AD 1000–1769). It was a "time of cultural transformations brought about by trait diffusion, immigration, and in situ adaptation to environmental changes" (Moratto 1984:153). Subsistence strategies involved a focus on terrestrial collection and hunting (Christenson 1992); however, shellfish and other maritime resources were also used. Settlement included large villages near permanent water sources, temporary campsites, quarries, and resource exploitation sites. Small triangular points, pottery, and Obsidian Butte obsidian are characteristic of this period (Christenson 1992; Masters and Gallegos 1997; True 1966, 1970). Cremations replaced flexed inhumations, and mortuary goods became more elaborate (Wallace 1955). Cremations are believed to have been introduced into the area during the Late Prehistoric period and are the result of Shoshonean intrusion (1500 BP) from the deserts (True 1966) into northern San Diego County. However, in the southern part of the county, this practice has been attributed to a "Colorado River origin that may have had an influence as far reaching as the Hohokam [current day Pima people and Tohono O'odham Nation] in southwestern Arizona" (True 1970:58). Kaldenberg (1976:67) had a different opinion on the origin and timing of the entrance of cremation practices into the region. He noted that the practice of cremation was introduced at the terminus of the Archaic culture (3000 BP) with the "migration of Yuman people into the San Diego coastal region." By 2000 BP, inhumations were replaced by cremations (Kaldenberg 1976).

Two complexes (San Luis Rey and Cuyamaca) are identified with the Late Prehistoric period. True (1966) believed that the San Luis Rey complex was a precursor to the ethnographic Luiseño. Similarly, he suggested that the Cuyamaca complex was the predecessor to the ethnographic Kumeyaay. Through the examination of both

geographic regions, True identified specific characteristics unique to each; he noted that, although geographically similar, these two cultures were distinctly different.

Ethnohistoric Period (post-AD 1769)

The Ethnohistoric period begins with the first permanent European settlements. Early Ethnohistoric accounts and mission documents have been used to reconstruct this period (Hale et al. 2018). Florence Shipek (1993) delineated the boundaries between the Luiseño and the Kumeyaay as follows:

> In 1769, the Kumeyaay national territory started at the coast about 100 miles south of the Mexican border (below Santo Tomas), thence north to the coast at the drainage divide south of the San Luis Rey River including its tributaries. Using the U.S. Geological Survey topographic maps, the boundary with the Luiseño then follows that divide inland. The boundary continues on the divide separating Valley Center from Escondido and then up along Bear Ridge to the 2240 contour line and then north across the divide between Valley Center and Woods Valley up to the 1880-foot peak, then curving around east along the divide above Woods Valley.

The Kumeyaay (also known as Ipai, Tipai, Diegueño, and Kamia) lived in small villages, or rancherias, and would inhabit multiple locations throughout the year. According to Cline (1984), the typical settlement included two or more seasonal villages with temporary camps farther away from the main central villages. Hunting and gathering were the main economic focus, consisting of small game, acorns, grass seeds, and other plant resources. Similar to the Prehistoric period, a wide range of tools (chipped and ground stone) that were made from locally available materials were used. Exotic materials, such as obsidian and chert, were imported from the deserts to the north and east. In addition to lithic tools, the Kumeyaay produced baskets and pottery.

Historical Period (post-AD 1542)

The Historical period can be divided into three phases (Spanish, Mexican, and American). Each phase is identified with a change in political power. Common goals in each phase included land gain, assimilation of the native population, and the attainment of wealth. However, these periods were dissimilar in the rationale behind these goals. Rationale included defense (Spain), independence and secularization (Mexico), and expansion and economics (United States). Assimilation of Native Californians was a desire of each government that came to power; however, the greatest misfortune of this period was the large decline in Native American populations (Phillips 1981).

Spanish Period (AD 1769–1821)

Although the first Spanish contact occurred in 1542, it was not until 1769 that the first permanent settlement was established. The Spanish period was a time of European expansionism and is typically identified with the mission system. In addition, presidios (military defense) and pueblos (city government) played an important role in the structuring of the community (Campbell 1977). The mission system was the institution designated for the assimilation and exploitation of native people (Campbell 1977; Cline 1979; Jackson and Castillo 1995; Phillips 1981). Jackson and Castillo (1995:6) identified this exploitation as an extension of the "sixteenth-century policy of congregacion/reduction." In contrast, Costo (1987) noted that the transference of the Spanish Inquisition (originally established in 1478) to the New World was the mechanism for this exploitation because the Inquisition contained economic and religious incentives. The Spanish stronghold in California declined with Spain's loss of the Napoleonic Wars (1803–1815), which eliminated funding to the mission.

Mexican Period (AD 1821–1859)

Mexican independence from Spain occurred in 1821, and in 1833, Mexico secularized the missions. After secularization, large tracts of land were granted to private citizens. "The secularization of the missions during the Mexican period is usually regarded as a watershed in California History because it resulted in the replacement of one Hispanic institution by another—the rancho for the mission" (Phillips 1981:33). Like the mission, the rancho became the institution of native exploitation. This period experienced an increase in cattle ranching and the hide and tallow trade (Gallegos 1995; Wahoff and Dolan 2000). The passage of the Treaty of Guadalupe Hidalgo that ended the Mexican–American War in 1848 was the final event that culminated the Mexican period in California.

American Period (Post-AD 1850)

The concept of a two-ocean economy and the California Gold Rush were the impetus that brought about the annexation of California (1850) to the United States. A large number of immigrants entered California with the discovery of gold and the availability of free land with the passage of the Homestead Act (1863). This population increase caused the displacement of Native Californians and brought about a deterioration in their rituals and traditions (Carrico 1986; Gallegos 1995). During this period, the ranchos experienced a decline primarily in response to their inability to validate land ownership as a result of the California Land Claims Act of 1851. "With the discovery of gold, the building of the transcontinental railroad, and the development of crops and cities, people in massive numbers from all parts of the world began to inhabit the region" (Phillips 1981: editors' introduction).

San Diego County Fairgrounds

This brief summary of the history of the San Diego County Fairgrounds is taken from the Fairgrounds Master Plan Environmental Impact Report (EIR) (LSA 2009).

The District was established in 1904, as a result of state legislation that establish District Agricultural Associations statewide to promote local agricultural production. The District organized fairs at various locations throughout the county before acquiring the Del Mar golf course and some adjacent land in 1935 and obtaining government funding from the Work Progress Administration.

Architects Joe and Sam Hammil and Herbert Louis Jackson designed the Fairgrounds, with buildings in a Spanish Colonial Revival Style. Each of the buildings was designed to represent one of the California missions and were made of native adobe, mixed and dried on site. The first buildings to be erected were "the main exhibit building and auditorium, a combination Grandstands and utility building, 10 livestock buildings, an equipment shed, a main entrance building, a bell tower, and stables to house 600 horses." A 1-mile harness racing track was also constructed. An 8-foot adobe wall enclosed the entire property and still stands today. The San Diego County Fair's opening day was October 8, 1936.

Shortly after the construction of the first buildings, the District entered into an agreement to host Thoroughbred Race Meets at the Fairgrounds. Backed by a local stockbroker and singer Bing Crosby, the Del Mar Turf Club was built. This led the Work Progress Administration to halt construction on the Fairgrounds as it had not intended to fund construction of a horseracing enterprise. Construction was completed with private funding, and the Del Mar Turf Club opened to the public on July 3, 1937.

During World War II, the Fairgrounds served as a training facility and temporary quarters for military personnel. It was also used as a location for the manufacture of parts for Douglas B-17 bomber planes. The fair was reopened to the public in 1946.

Architect Harry Hayden Whiteley designed a number of buildings within the Fairgrounds during the 1950s and 1960s. The Fairgrounds returned to their prewar success during the 1960s, frequented by celebrities. In 1970, the Del Mar Thoroughbred Club took over racing operations from the Del Mar Turf Club, and the Fairgrounds property has undergone many alterations since that time.

Environmental Setting of the Potential Housing Sites

The survey area encompasses five distinct project sites located on the Fairgrounds property in the City of Del Mar and the City of San Diego: the East Main Stable Gate Site, South of Stable Gate Site, Adjacent to Fire Station Site, Surf and Turf RV Park Site, and the Dirt Lot Site. Each of these sites occurs in a highly developed portion of the Fairgrounds property regional entertainment venue that hosts various uses associated with the San Diego County Fair, Del Mar Racetrack, and other events.

The East Main Stable Gate Site (Site 1) is north of the Fairgrounds East Main Stable Gate access driveway and is characterized by developed land used as a parking lot with direct access to and from Jimmy Durante Boulevard. The parking area was developed in the early 1990s, and includes 100 parking spaces, 90 of which are used for parking, while the other 10 are used to store traffic control-related vehicles and equipment. The site includes paved and compacted dirt areas with fencing, gates, and ornamental vegetation. Surrounding land uses include

the intersection of Jimmy Durante Boulevard and Via De La Valle to the northeast and horse barns to the south and west. The site is currently developed with a paved parking lot and compacted dirt areas.

The South of Stable Gate Site (Site 2) is characterized by developed land used for equestrian-related access, staging, and supporting infrastructure associated with the Fairgrounds' stabling operations. Surrounding land uses include Jimmy Durante Boulevard to the east, horse barns to the west and south, and the East Main Stable Gate access driveway and parking lot to the north. Site 2 is occupied by compacted dirt areas and horse boarding stables for the Del Mar Racetrack. The stables were constructed between 1984 and 1985.

The Adjacent to Fire Station Site (Site 3) is directly north of the existing Del Mar Fire Department station and contains existing District office buildings, public restroom buildings, and maintained ornamental landscaping. The office building was constructed in 1965, and the public restroom building was constructed between 1998 and 1999. The buildings encompass 14,250 square feet (including the boardroom, human resources offices, marketing offices, and bathrooms). The surrounding land uses are similarly developed, including Fairgrounds buildings to the north and west, the Del Mar Fire Department station to the south, and paved parking to the east.

The Surf and Turf RV Park Site (Site 4) is currently developed as a recreational vehicle (RV) park with 66 compacted gravel RV parking stalls, utility hookups, and ornamental landscaping. The site was initially developed in 1980 and has continued to be developed through the 1990s. The site is surrounded by a mixture of public roadways (including Turf Road to the south and Jimmy Durante Boulevard to the west), recreational uses to the east (including the eastern portion of the RV park and tennis courts farther east), Fairgrounds horse stables to the west, and compacted dirt lots to the south.

The Dirt Lot Site (Site 5) consists primarily of an undeveloped dirt lot with a flat, compacted dirt surface historically used for overflow parking and materials staging for the Fairgrounds. Site 5 was initially graded as a flat area in 1978, and has remained a dirt lot since the initial development. The site is surrounded by public roadways (including Turf Road to the north and Jimmy Durante Boulevard to the west), recreational uses to the north consisting of the existing RV park, compacted dirt lots to the east and south, and Fairgrounds horse stables to the west.

Regulatory Setting

This section identifies potential cultural resource regulations applicable to proposed development within the five potential project sites. State, regional, and local regulations, plans, and policies that provide protection and management of cultural resources applicable to the project are listed below and described in Attachment 1, Regulatory Framework. Because three of the potential project sites are in the City of Del Mar and two sites are in the City of San Diego, future environmental review will need to be processed in accordance with the respective regulatory frameworks and cultural resource policies of the jurisdiction where the development site is located.

State

- California Environmental Quality Act (CEQA)
- California Register of Historical Resources (California Public Resources Code, Section 5020 et seq.)
- California Health and Safety Code, Section 7050.5

Local

- City of Del Mar General Plan
- City of San Diego General Plan
- City of San Diego Municipal Code Historical Resources Guidelines
- City of San Diego Historical Resource Technical Report Guidelines and Requirements
- City of San Diego CEQA Significance Determination Thresholds for Historical Resources
- City of San Diego CEQA Significance Determination Thresholds for Tribal Cultural Resources

Methods and Results

Archival Research

Staff conducted a records search of the five potential project sites and 0.25-mile surrounding area using CHRIS (Confidential Attachment 3, CHRIS Background Data). Thirty-seven studies (Table 2, Previous Studies Within a 0.25-Mile Radius) have been conducted within a 0.25-mile radius. Nine sites (Table 3, Previously Recorded Cultural Resources Within a 0.25-Mile Radius) were previously recorded, and no historic addresses were identified. Of the previously recorded sites, three are prehistoric (CA-SDI-191/P-37-000191, CA-SDI-192/P-37-000192, and CA-SDI-10238/P-37-010238), and six are historic (P-37-035935, -035936, -036415, -036418, -036421, and -036422). Two previously recorded resources (P-37-035936 and P-37-036415) are located within the project footprint. P-37-035936 is located within Site 3, and P-37-036415 is located in Sites 3, 4, and 5, and within the 100-foot survey buffer area of Sites 1 and 2.

The Del Mar Thoroughbred Club Grandstand and Racetrack Complex (P-37-036936), within which three of the five housing sites are located (Sites 1, 2, and 3), has been evaluated for listing in state and federal registers as a historic district and recommended not eligible, and therefore, would not be a constraint for development related to cultural resources on these potential housing sites.

Two resources returned by the records search are within the project site, (P-37-035936 and P-37-036415). P-37-035936 is the Human Resources Building at the Del Mar Racetrack, located at potential housing Site 3 (Mello 2016). P-37-036415 is the Del Mar Transmission Line 666, passes through potential housing Sites 3, 4, and 5, and is within the 100-foot survey buffer of Sites 1 and 2 (Foglia and Spelts 2016a). Both of these resources have been evaluated and recommended not eligible for listing in the state and federal registers and, therefore, would not be a constraint for development related to cultural resources on each of the five potential sites.

The nearest off-site prehistoric resource is just north of potential housing Site 1 (CA-SDI-191/P-37-000191). This resource was recorded as a habitation site, likely before 1950. Site updates in 2016 and 2019 note shell fragments. Monitoring during construction of the Del Mar substation in 2021 noted approximately 25 marine shell fragments and some non-diagnostic construction debris. No artifacts or features were noted. The site was likely destroyed during the original substation construction, and, therefore, would not be a constraint for development related to cultural resources (Rogers n.d.; Treganza n.d.; Bull and Gross n.d.; Foglia and Spelts 2016b; Wolfe 2020; Tansey 2021).

Table 2. Previous Studies Within a 0.25-Mile Radius

Report ID	Title	Author	Year
SD-00672	**A Cultural Resource Overview for the San Dieguito River Valley San Diego, California.**	**Gallegos, Dennis, Roxana Phillips, and Andrew Pigniolo**	**1988**
SD-01441	A Report of an Archaeological Sampling Program at Site W-36 (SDi-10238), La Vida Del Mar Project, Solana Beach, California P-85-55 EAD Log #85-13-17.	Smith, Brian F.	1986
SD-01667	Archaeological Test Excavations at SDM-W-36 City of Solana Beach, California	Wade, Sue A.	1988
SD-02958	Negative Archaeological Survey Report 11-SD-5, P.M. R35.2, 189161	Caltrans	1994
SD-04177	**Archaeological Investigations for the San Dieguito Wetland Restoration Project EIR/EIS**	**Berryman, Judy, PhD, and Craig Woodman, MA**	**2000**
SD-04968	Draft EIR for the Mickellar Joseph Development	RECON	1982
SD-06440	**Draft Archaeological Investigations for the San Dieguito Wetland Restoration Project EIR/EIS**	**Berryman, Judy, PhD, and Craig Woodman, MA**	**1999**
SD-06444	Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the San Dieguito Wetlands Restoration Project	USFWS and San Dieguito River Park Joint Authority	2000

Table 2. Previous Studies Within a 0.25-Mile Radius

Report ID	Title	Author	Year
SD-06645	Negative Archaeological Survey Grand Avenue and Old Del Mar Airport	Rosen, Martin	1994
SD-07109	**Test Excavations at the Del Mar Site (SDI-191)**	**Warren, C.N.**	**1959**
SD-09391	**Cultural Resources Survey Report for TPM 20917, LOG 05-09-005 Brown's Rancho Minor Subdivision APN 189-030-38**	**Wright, Gail**	**2005**
SD-09516	The Cemeteries and Gravestones of San Diego County: An Archaeological Study	Caterino, David	2005
SD-10415	**Cultural Resources Assessment Del Mar Fairgrounds Project, Cities of Del Mar and San Diego, San Diego County, California**	**Fulton, Phil**	**2006**
SD-10885	Archaeological and Geospatial Investigations of Fire-Altered Rock Features at Torry Pines State Reserve, San Diego, California	Mattingly, Scott A.	2007
SD-11623	**San Dieguito River Valley Inventory of Archaeological Resources**	**Hector, Susan M., and Alice Brewster**	**2002**
SD-11761	Historic Property Survey Report, I-5 North Coast Widening Project	Dominici, Deb	2007
SD-12117	Results of Archaeological Monitoring Program for the San Dieguito Wetlands Restoration Project, San Diego County, California	Zepeda-Herman, Carmen, and Harry Price	2009
SD-12273	Cultural Resources Evaluation of the Riverpark Office Project, City of Del Mar, California	Gross, Timothy G.	2004
SD-12817	Cultural Resources Survey for 57 Wood to Steel Pole Undergrounding and Pole Replacements along TL667 and TL610 and Staging Yard Areas along Via De La Valle and El Camino Real, Del Mar Area of San Diego County, California	Bowden-Renna, Cheryl	2010
SD-13916	Interstate 5 North Coast Corridor Project Supplemental Draft Environmental Impact Report/Environmental Impact Statement	Caltrans	2012
SD-14086	Cultural and Historical Resources Constraints Report for the San Dieguito Bridge Replacement and Second Track Project; Del Mar Tunnel Alternatives Analysis	Pham, Angela N., and Sinead Ni Ghabhlain	2012
SD-14397	**Record Search Results for the Underground Utility District Via De La Valle Project**	**Pigniolo, Andrew R.**	**2010**
SD-14495	Interstate 5 North Coast Corridor Project Final Environmental Impact Report/Environmental Impact Statement and Section 4(f) Evaluation	Caltrans	2013
SD-14523	Letter Report: ETS 20354 – Cultural Resources Monitoring for Transmission Line Undergrounding and Pole Installation for Tie Line 610 and Tie Line 667 along Via De La Valle, City of Del Mar, San Diego County, California – IO 200410700	Bietz, Spencer	2013
SD-14615	Interstate 5 Corridor Project Historic Property Survey Report and Supplementals	Caltrans	2007
SD-16127	2007 Cultural Resources Treatment Plan North Coast Interstate 5 Corridor	Dominici, Deb, and Don Laylander	2008
SD-16131	Sixth Supplemental Historic Property Survey (HPSR): Revised Area of Potential Effects (APE) I-5 North Coast Corridor	Blake, Michelle	2013
SD-16381	Cultural Resources Assessment of the Del Mar Grandstands Project, Del Mar, San Diego County, California (BCR Consulting Project No. TRF 1517)	Brunzell, David, and Kara Brunzell	2015

Table 2. Previous Studies Within a 0.25-Mile Radius

Report ID	Title	Author	Year
SD-16877	Cultural Resources Records Search and Site Visit Results for Cellco Partnership and their Controlled Affiliates Doing Business as Verizon Wireless Candidate 'Jimmy Durante,' 2260 Jimmy Durante Boulevard, Del Mar, San Diego County, California	Wills, Carrie D. and Bonnie Bruce	2016
SD-17103	**Cultural Resources Survey Report for the Proposed San Diego Gas & Electric TL6744 Reconfiguration & TL666D Removal Project, San Diego County, California**	**Foglia, Shannon E., Theodore G. Cooley, Monica Mello, Brian Spells, Rachel Droessler, Tim Wolfe, and Earl Morales**	**2017**
SD-17550	Phase I Cultural Resources Survey for the Kelly Subdivision Project, City of Solana Beach	Garrison, Andrew J., and Brian F. Smith	2018
SD-17966	Cultural Resources Records Search and Site Visit Results for Cellco Partnership and their Controlled Affiliates Doing Business as Verizon Wireless Candidate 'Del Mar Race Track,' 2260 Jimmy Durante Boulevard, Del Mar, San Diego County, California	Wills, Carrie D. and Bonnie Bruce	2017
SD-18132	Letter Report: ETS 39170 – Cultural Resources Monitoring Report for the Anchor Replace, TL666, Z12313 Project, City of Del Mar, San Diego County, California – IO 7074265	Colley, Theodore G.	2019
SD-18133	Letter Report: ETS 41186 – Cultural Resources Monitoring Report for the Del Mar Potholing, City of Del Mar, San Diego County, California – IO 200452400	Wolfe, Tim	2019
SD-18615	Letter Report: ETS 25653.05 – Cultural Resources Monitoring Report for the Potholing, TL674 Del Mar Reconfiguration/TL666D Removal Project, City of Del Mar, San Diego County, California – IO 200452400	Wolfe, Tim	2020
SD-19938	Letter Report: ETS 5981501 – Cultural Resources Monitoring for TCMZ12313 Anchor and Down Guys, Solana Beach, San Diego County, California	Moradi, Leah	2023
SD-20126	Archaeological Monitoring for the SDG&E Del Mar Substation Grading Repair, San Diego County, California (SDG&E ETS #49844)	Noble, Michelle D., and Joshua A. Tansey	2021

Notes: SDG&E = San Diego Gas & Electric
Bold = study within project site

Table 3. Previously Recorded Cultural Resources Within a 0.25-Mile Radius

Primary Number	Trinomial	Chronological Placement	Site Type	Size
P-37-000191	CA-SDI-191	Prehistoric	Habitation Site	8 acres (estimate)
P-37-000192	CA-SDI-192	Prehistoric	Shells noted; site location now paved	Unknown
P-37-010238	CA-SDI-10238	Prehistoric	Shell midden	60 by 40 meters
P-37-035935	N/A	Historic	Del Mar Infield Pavilion, Del Mar Thoroughbred Club Grandstand and Racetrack Complex	N/A
P-37-035936	**N/A**	**Historic**	**Human Resources Building, Del Mar Thoroughbred Club Grandstand and Racetrack Complex**	**N/A**
P-37-036415	**N/A**	**Historic**	**Del Mar Transmission Line 666**	**N/A**

Table 3. Previously Recorded Cultural Resources Within a 0.25-Mile Radius

Primary Number	Trinomial	Chronological Placement	Site Type	Size
P-37-036418	N/A	Historic	Del Mar Substation	N/A
P-37-036421	N/A	Historic	Isolated artifact	N/A
P-37-036422	N/A	Historic	Del Mar Print/Del Mar Automotive (2201 San Dieguito Drive)	N/A

Notes: N/A = not available
Bold = resource within project site

Historic aerial maps from 1953 through 2022 were reviewed. The earliest aerial photos show all five potential housing sites except for Site 1 graded and the surrounding area developed. Potential housing Site 3 is part of the original Fairground development and structures were present in the 1953 aerial. Potential housing Site 1 appears to have been graded between 1978 and 1980 and has been used for parking since that time. Stables were constructed on potential housing Site 2 by 1985. Potential housing Site 4 appears to have been initially developed beginning in 1980, although it does not appear to have been paved. The earliest aerials show potential housing Site 5 as graded, but it remains unpaved to date (NETR Online 2025).

Native American Heritage Commission

The NAHC was contacted for a Sacred Lands File check to determine if sacred lands are present on site. The NAHC response was negative and included a list of 13 Native American representatives that may have knowledge of the area (Confidential Attachment 4, Sacred Lands File Check). These Tribes will be contacted for any information they may have once the housing site has been selected.

Field Survey

The goal of the survey was to identify cultural resources and sensitivity for cultural resources at proposed housing sites. Rocky Ciarmoli, a Harris & Associates archaeologist, conducted the survey on November 10, 2025. The survey area included all five potential housing sites and a 100-foot buffer. Continuous parallel transects (5-meter) were walked in a west-to-east direction for each potential housing site location. Non-developed and open ground areas where resources could be identified were intensely evaluated.

The survey area was photographed (Attachment 2, Photographs) to document the environmental setting.

No resources were identified within the five potential housing sites; therefore, the preparation of Department of Parks & Recreation forms was not required.

Findings

No cultural resources were located as a result of this study, and the five potential project sites are not considered sensitive for the presence of archaeological resources due to their developed nature or disturbance that has occurred historically. No further cultural analyses are recommended; however, should any potential resources be identified during construction, ground-disturbing activities should be temporarily directed away from the area of discovery, and the District should be notified.

If you have any questions, please contact me at (619) 236-1778.

Sincerely,

Donna Beddow, RPA
Senior Archaeologist

Attachments

Figure 1. USGS Topographic Map
Figure 2. Potential Housing Sites

Attachment 1. Regulatory Framework
Attachment 2. Photographs

Confidential Attachments – Under Separate Cover

Attachment 3. CHRIS Background Data
Attachment 4. Sacred Lands File Check

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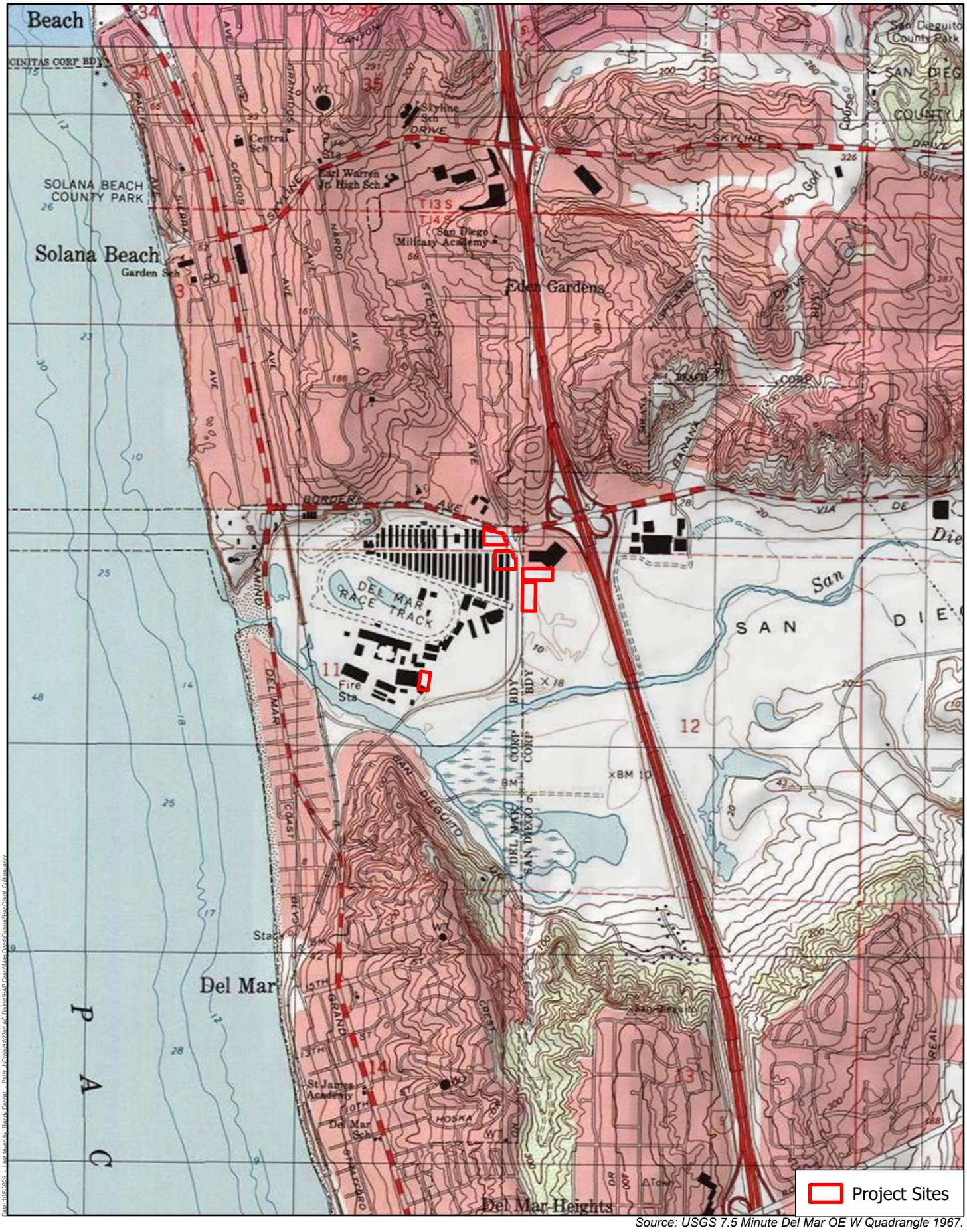

Source: USGS 7.5 Minute Del Mar OE W Quadrangle 1967.

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Figure 1

USGS Topographic Map

HAP Grant Affordable Housing Project

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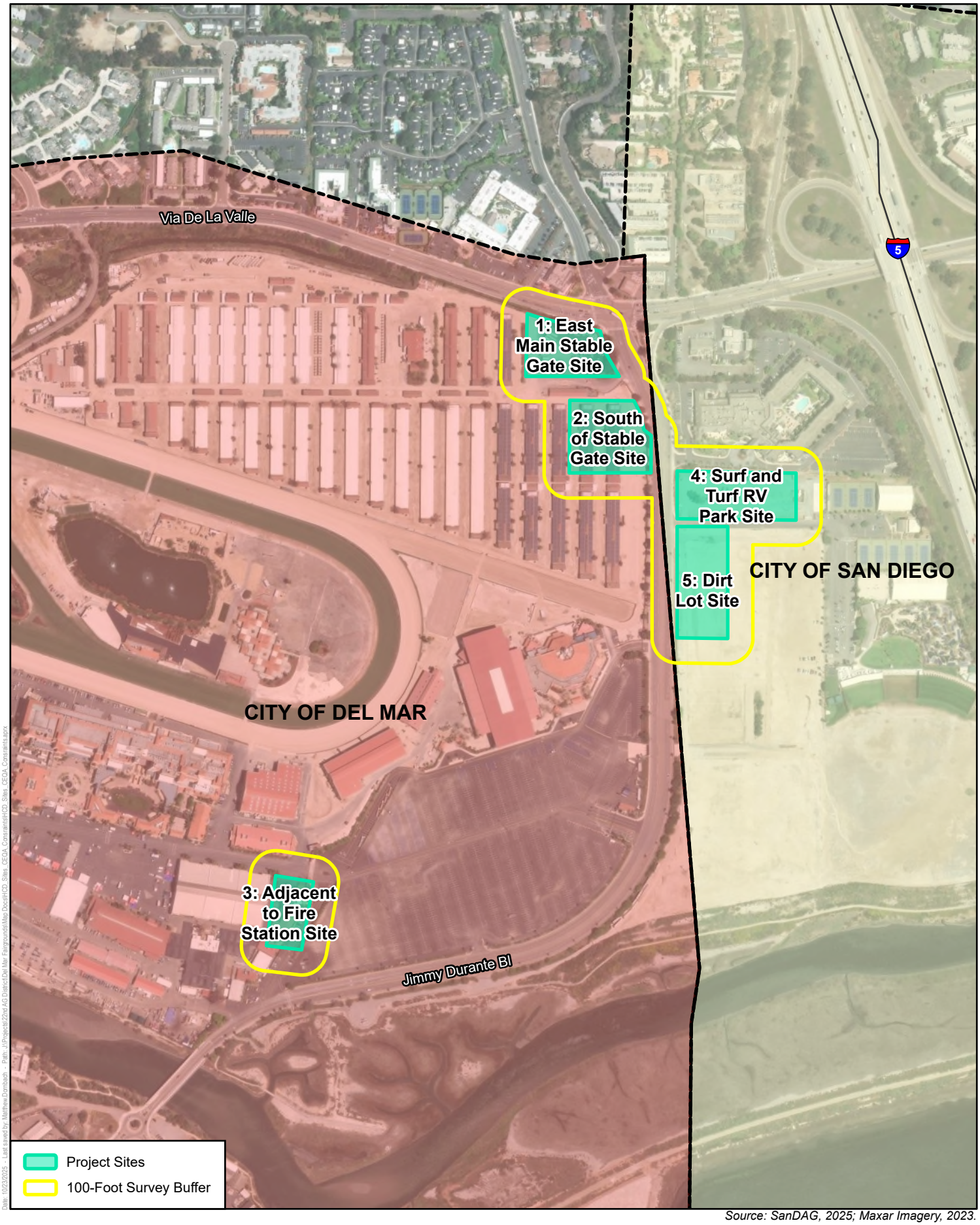

Source: SanDAG, 2025; Maxar Imagery, 2023.

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Figure 2

Potential Housing Sites

HAP Grant Affordable Housing Project

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Attachment 1. Regulatory Framework

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State Level Regulations

California Environmental Quality Act

According to the California Environmental Quality Act (CEQA), a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (CRHR) (California Public Resources Code, Section 5024.1; 14 CCR 4852) including the following:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed in or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Section 5020.1[k] of the California Public Resources Code), or not identified in a historical resources survey (meeting the criteria in Section 5024.1[g] of the CEQA Guidelines) does not preclude a lead agency from determining that the resource may be a historical resource as defined in California Public Resources Code, Section 5020.1(j) or 5024.1.

California Register of Historical Resources (California Public Resources Code, Section 5020 et seq.)

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code, Section 5020.1[j]). In 1992, the California Legislature established the CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code, Section 5024.1[a]). A resource is eligible for listing in the CRHR if the State Historical Resources Commission determines that it is a significant resource and that it meets any of the following National Register of Historic Places (NRHP) criteria (California Public Resources Code, Section 5024.1[c]):

1. Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

Resources less than 50 years old are not considered for listing in the CRHR but may be considered if it can be demonstrated that sufficient time has passed to understand the historical importance of the resources (refer to 14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historical resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing on the NRHP are automatically listed on the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under

local ordinances or identified through local historical resource surveys. The State Historic Preservation Officer maintains the CRHR.

California Health and Safety Code, Section 7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code, Section 7050.5, requires that, if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the county coroner has examined the remains (Section 7050.5b). If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (Section 7050.5c). The NAHC will notify the most likely descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. The inspection must be completed within 24 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

City of Del Mar

Community Plan (aka General Plan)

The City's Community Plan, also known as a General Plan, is comprised of multiple elements that provide a comprehensive slate of citywide, and location-based, policies for growth and development. Below are goals and policies related to cultural resources (City of Del Mar 1985).

Goal 1. Establish without delay a comprehensive program to preserve and acquire permanent open space sufficient to meet the long-range needs of the community, preserve and enhance natural resources, and protect areas and people susceptible to seismic and flooding hazards.

K. Require development in areas of archaeological significance to be reviewed by the City of Del Mar to insure that such uses do not result in permanent destruction of any archeological sites or cultural information.

City of San Diego

General Plan

The Historic Preservation Element of the 2024 City of San Diego General Plan (2024 General Plan) includes the following cultural resources goals (City of San Diego 2024a):

<u>Identification and Preservation of Historical Resources</u>

HP-A.1 Strengthen historic preservation planning.

a. Maintain Certified Local Government (CLG) status ensuring San Diego's direct participation in federal and state historic preservation programs.
b. Utilize benefits of the CLG program including grant funding available from the California Office of Historic Preservation.
c. Update the Comprehensive Historic Preservation Plan. The plan is intended to guide, with specificity, historic preservation efforts in future years, including implementation measures, inventories, incentives, education and regulations.
d. Participate in regional efforts to strengthen historic preservation planning.

HP-A.2 Fully integrate the consideration of historical and cultural resources in the larger land use planning process.

a. Promote early conflict resolution between the preservation of historical resources and alternative land uses.
b. Encourage the consideration of historical and cultural resources early in the development review process by promoting the preliminary review process and early consultation with property owners, community and historic preservation groups, land developers, Native Americans, and the building industry.
c. Include historic preservation concepts and identification of historic buildings, structures, objects, sites, neighborhoods, and non-residential historical resources in the community plan update process.
d. Conservation areas that are identified at the community plan level, based on historical resources surveys, may be used as an urban design tool to complement community character (see also Urban Design Element, Policy UD-A.7).
e. Make the results of historical and cultural resources planning efforts available to planning agencies, the public and other interested parties to the extent legally permissible.

HP-A.3 Foster government-to-government relationships with the Kumeyaay/Diegueño tribes of San Diego.

a. Regularly meet with local Tribal governments to discuss issues of mutual concern.
b. Formally consult with identified California Native American tribes prior to the adoption or amendment of the General Plan or specific plan or the designation of open space.
c. Maintain confidentiality concerning locations of traditional cultural places that are identified through the consultation process and otherwise.
d. Support Tribal governments holding conservation easements over land voluntarily set aside for the protection of cultural places.

HP-A.4 Actively pursue a program to identify, document and evaluate the historical and cultural resources in the City of San Diego.

a. Develop context statements specific to areas being surveyed.
b. Complete and regularly update a comprehensive citywide inventory of historical and cultural resources in conformance with state standards and procedures. Include community, neighborhood, cultural, and historic preservation groups, property owners, land developers, and the building industry in planning and implementing historic surveys.
c. Require that archaeological investigations be guided by appropriate research designs and analytical approaches to allow recovery of important prehistoric and historic information.
d. Require the permanent curation of archaeological artifact collections and associated research materials, including collections held by the City. Support the permanent archiving of primary historical records and documents now in public institutions.
e. Include Native American monitors during all phases of the investigation of archaeological resources including survey, testing, evaluation, data recovery, and construction monitoring.
f. Treat with respect and dignity any human remains discovered during implementation of public and private projects within the City and fully comply with the California Native American Graves Protection and Repatriation Act and other appropriate laws.

HP-A.5 Designate and preserve significant historical and cultural resources for current and future generations.

a. Due to their importance, designate historical resources using the City's adopted designation criteria, State Register criteria, and National Register criteria.

b. Establish historical districts where concentrations of buildings, structures, sites, landscapes, and objects are identified. Adopt guidelines when necessary to guide preservation and rehabilitation of the overall district character and significance and apply the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties for review of alterations and new construction in designated historical districts.
c. Protect and preserve historic sidewalk stamps, street signs, lampposts, street trees, and other hardscape and cultural landscape elements, in addition to designated historical buildings, structures, and sites that contribute to the historic character of a neighborhood.
d. Enforce the Historical Resources Regulations and Guidelines of the Land Development Code that are aimed at identifying and preserving historical resources. Update these regulations and guidelines as needed to maintain adequate protection of historical resources.
e. Encourage continued use and adaptive reuse of designated historical resources through application of the U.S. Secretary of the Interior's Standards and Guidelines for rehabilitation, reconstruction, and restoration.
f. Require that all City-owned designated historical resources be maintained in a manner that is consistent with the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties.

Historic Preservation, Education, Benefits, and Incentives

HP-B.1 Foster greater public participation and education in historical and cultural resources.

a. Encourage public attendance at monthly Historical Resources Board meetings through increased notification of agenda items on the City's website.
b. Encourage the participation of the City's rich diversity of ethnic groups in efforts to preserve historical and cultural resources through outreach to historical societies, interviews to document oral histories, and inclusion of ethnic resources on the City's Register of Designated Historical Resources.
c. Engage the public when creating "context statements" by adopting an oral history component of historical survey work.
d. Participate in National Historic Preservation Week and California Archaeology Month. Each year in May recognize those individuals, groups or businesses that have made a significant contribution to the preservation, protection or restoration of historical or cultural resources.
e. Foster educational opportunities using designated historical and cultural resources, including placement of plaques as a way to identify important historical resources throughout the City.
f. Encourage the involvement of educational institutions in preservation programs and activities.
g. Encourage the use of local history themes in some public art projects.
h. Encourage active community involvement in preservation efforts through resource sponsorship programs.

HP-B.2 Promote the maintenance, restoration, and rehabilitation of historical resources through a variety of financial and development incentives. Continue to use existing programs and develop new approaches as needed. Encourage continued private ownership and utilization of historic structures through a variety of incentives.

a. Encourage owners of historical resources to utilize federal incentives including Federal Rehabilitation Tax Credits, façade and conservation easements and others.

b. Encourage preservation, maintenance, rehabilitation, and restoration of designated historical resources through use of available incentives offered by the state of California for achieving this goal. These incentives include the Mills Act, the California Cultural and Historical Endowment, and others.
c. Create incentives to encourage the protection and preservation of designated historical buildings, structures, and objects and important archaeological sites.
d. Use the flexibility provided in the California State Historical Building Code Title 24 in meeting code requirements for historically-designated buildings.
e. Encourage the use of Transfer of Development Rights to preserve historical and cultural resources in situ, particularly in areas zoned for high-density development.
f. Take advantage of the Conditional Use Permit (CUP) process for historical resources, to gain flexibility in the application of some development regulations.
g. Foster preservation and adaptive reuse of designated historical buildings and structures by allowing retention of non-conforming setbacks without requiring a variance or hardship finding. Allow the use of a Neighborhood Development Permit with a finding that the proposed reuse does not adversely affect the community plan or General Plan because it would be beneficial in this regard.
h. Provide architectural assistance service to help owners design rehabilitation and/or adaptive reuse plans, or feasibility studies for historically-designated buildings, structures, and objects. Maintain the City's current façade improvement program for historic commercial properties.
i. Continue to provide design assistance for owners of historical resources through the Historical Resources Board.

HP-B.3 Develop a historic preservation sponsorship program.

a. Create a historic preservation fund that provides a monetary source for local preservation incentives such as an architectural assistance program and archaeological site protection plan. The fund may be supported through grants, private or public donations, or other sources.
b. Create a "receiver site" program that provides relocation sites for historical resources (buildings, structures, or objects) that cannot be preserved on site. Receiver sites should be located within the community in which the resource was originally located and should maintain a context and setting comparable to the original location. This method of preservation should be limited and used when other on-site preservation techniques are found not to be feasible.
c. Establish an "adopt a resource" program that encourages the public and local businesses to become involved in the protection and preservation of historical and cultural resources by sponsoring preservation of individual properties, which may include archaeological sites to the extent legally permissible.
d. Create a sponsorship program to encourage the public and local businesses to become involved in curation of existing archaeological artifact collections that have no current funding mechanism.

HP-B.4 Increase opportunities for cultural heritage tourism. Additional discussion and policies can be found in the Economic Prosperity Element, Section 1.

a. Collaborate with other public, private, and non-profit entities to create a sustainable cultural heritage tourism program within the overall travel industry.
b. Promote the history of San Diego and the many designated historical buildings, structures, districts, and landscapes to attract cultural heritage travelers.
c. Focus the development of cultural heritage programs on quality and authenticity.

City of San Diego Municipal Code Historical Resources Guidelines

The purpose and intent of the San Diego Municipal Code (SDMC) Historical Resources Guidelines (Chapter 14, Division 3, Article 2) are to protect, preserve, and, where damaged, restore the City's historical resources. The regulations apply to all proposed development in the City when historical resources are present on the premises regardless of the requirement to obtain a Neighborhood Development Permit or Site Development Permit. When any portion of a premises contains historical resources, as defined in SDMC Chapter 11, Article 3, Division 1, the regulations apply to the entire premises (City of San Diego 2024b).

City of San Diego Municipal Code Restoration of Decorative Surfaces

According to the SDMC (Chapter 6, Article 2, Division 12, Section 62.1203), decorative surfaces are any non-standard surface within the public right-of-way and include ceramic tile, concrete pavers, stamped concrete, painting, or other surface using a unique treatment. The municipal code (Section 62.1219) requires compliance with requirements related to the restoration of decorative surfaces such as notification to the City Engineer when work will disturb resources. Specifications are required as to how the excavator will minimize destruction and ensure restoration (City of San Diego 2023).

Historical Resource Technical Report Guidelines and Requirements

The City's Historical Resource Technical Report Guidelines and Requirements is the guiding document for the management of historical resources in the City. The intent of the guidelines is to ensure consistency in the management of the City's historical resources, including identification, evaluation, preservation/mitigation, and development. In addition, the guidelines also provide an overview of the development review process and requirements for the preparation of cultural resources technical studies (City of San Diego 2012).

CEQA Significance Determination Thresholds for Historical Resources

Historical resources significance determination, pursuant to the City's CEQA Significance Determination Thresholds, consists of determining the sensitivity or significance of identified historical resources and then determining direct and indirect impacts that would result from project implementation. The City's CEQA Significance Determination Thresholds define a significant historical resource as one that qualifies for the CRHR, is listed in a local historic register, or deemed significant in a historical resource survey, as provided under California Public Resources Code, Section 5024.1(g); however, even a resource that does not fulfill any of those qualifications may be historically significant for the purposes of CEQA. The SDMC Historical Resources Guidelines state that the significance of a resource may be determined based on the potential for the resource to address important research questions as documented in a site-specific technical report prepared as part of the environmental review process. In addition, Blueprint SD that updated the City's 2024 General Plan and the Uptown Community Plan Focused Amendment provides policies that require compliance for historical and cultural resources.

Based on the City's CEQA Significance Determination Thresholds, a significant impact regarding historical resources could occur if implementation of a project would result in a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5, including the adverse physical or aesthetic effects or the destruction of a prehistoric or historic building (including an architecturally significant building), structure, object, or site.

As a baseline, the City has established the following criteria to be used in the determination of significance for an archaeological resource under CEQA:

> An archaeological site must consist of at least three associated artifacts/ecofacts (within a 40 square meter area) or a single feature and must be at least 45 years of age. Archaeological sites containing only a surface component are generally considered not significant, unless

demonstrated otherwise. Such site types may include isolated finds, bedrock milling stations, sparse lithic scatters, and shellfish processing stations. All other archaeological sites are considered potentially significant. The determination of significance is based on a number of factors specific to a particular site including site size, type, and integrity; presence or absence of a subsurface deposit, soil stratigraphy, features, diagnostics, and datable material; artifact and ecofact density; assemblage complexity; cultural affiliation; association with an important person or event; and ethnic importance.

The determination of significance for historic buildings, structures, objects and landscapes is based on age, location, context, association with an important person or event, uniqueness, and integrity.

A site will be considered to possess ethnic significance if it is associated with a burial or cemetery; religious, social or traditional activities of a discrete ethnic population; an important person or event as defined by a discrete ethnic population; or the mythology of a discrete ethnic population.

Based on the City's CEQA Significance Determination Thresholds (City of San Diego 2022), a significant impact regarding archaeological resources could occur if implementation of a project would result in a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 or the disturbance of any human remains, including those interred outside formal cemeteries.

City of San Diego CEQA Significance Determination Thresholds for Tribal Cultural Resources

CEQA was amended in 2014 through AB 52, which created a category of "Tribal Cultural Resources" that must be considered under CEQA and applies to all projects that file a Notice of Preparation or Notice of Intent to Adopt a Negative Declaration or Mitigated Negative Declaration on or after July 1, 2015. AB 52 requires lead agencies to provide notice to and begin consultation with California Native American Tribes that are traditionally and culturally affiliated with the geographic area of a project if that Tribe has requested, in writing, to be kept informed of projects by the lead agency prior to the determination of if a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report will be prepared. If a Tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the Tribe. AB 52 also specifies mitigation measures that may be considered to avoid or minimize impacts on Tribal Cultural Resources. Specifically, California Public Resources Code, Section 21074, provides the following guidance:

(a) "Tribal Cultural Resources" are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:
    A. Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    B. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe.

(b) A cultural landscape that meets the criteria of subdivision (a) is a Tribal Cultural Resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a Tribal Cultural Resource if it conforms with the criteria of subdivision (a).

Native American Traditional Cultural Properties

Native American Heritage Values

Federal and state laws mandate that consideration be given to the concerns of contemporary Native Americans with regard to potentially ancestral human remains, associated funerary objects, and items of cultural patrimony. Consequently, an important element in assessing the significance of the study site has been to evaluate the likelihood that these classes of items are present in areas that would be affected by the project.

Also, potentially relevant to prehistoric archaeological sites is the category termed Traditional Cultural Properties in discussions of cultural resources management performed under federal auspices. According to Patricia L. Parker and Thomas F. King (1998), "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include the following:

1. A location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
2. A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
3. An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
4. A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
5. A location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity.

A Traditional Cultural Property, then, can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community.

Attachment 2. Photographs

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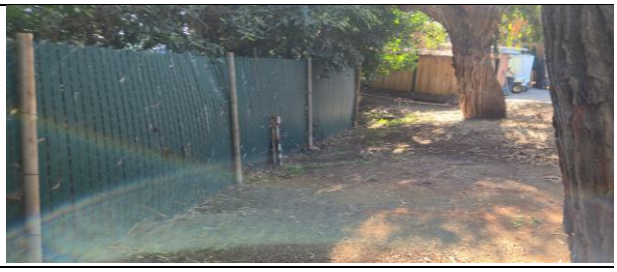
Photograph 1: Site 1 – East Main Stable Gate Site, northeastern area, photo from the south.

Photograph 2: Site 1 – East Main Stable Gate Site, northwestern area, photo from the south.

Photograph 3: Site 1 – East Main Stable Gate Site, northwestern area, photo from the west.

Photograph 4: Site 1 – East Main Stable Gate Site, northern area, photo from the south.

Photograph 5: Site 1 – East Main Stable Gate Site, northern area, photo from the south.



Photograph 6: Site 1 - East Main Stable Gate Site, southern area, photo from the north.

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Photograph 8: Site 2 – South of Stable Gate Site, western area, photo from the east.

Photograph 9: Site 2 – South of Stable Gate Site, northern area, photo from the south.

Photograph 10: Site 2 – South of Stable Gate Site, southern area, photo from the north.

Photograph 11: Site 2 – South of Stable Gate Site, southwestern area, photo from the northeast.

Photograph 12: Site 3 – Adjacent to Fire Station Site, east elevation, photo from the west.

Photograph 13: Site 3 – Adjacent to Fire Station Site, landscape area, east elevation, photo from the east.

Photograph 14: Site 3 – Adjacent to Fire Station Site, western area, photo from the east.

Photograph 15: Site 3 – Adjacent to Fire Station Site, southwestern area, photo from the northeast.

Photograph 16: Site 4 – Surf and Turf RV Park Site, western area, photo from the east.

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Photograph 18: Site 4 – Surf and Turf RV Park Site, northwestern area, photo from the southeast.

Photograph 19: Site 5 – Dirt Lot Site, southern area, photo from the north.

Photograph 20: Site 5 – Dirt Lot Site, southeastern area, photo from the west.

Photograph 21: Site 5 – Dirt Lot Site, northern area, photo from the south.

Attachment 5. Transportation Analysis

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Irvine
San Diego

TRANSPORTATION ANALYSIS

DEL MAR AFFORDABLE HOUSING

Del Mar, California
January 7, 2026

LLG Ref. 3-25-4115

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TRANSPORTATION IMPACT ANALYSIS

DEL MAR AFFORDABLE HOUSING

Del Mar, California
January 7, 2026

1.0 INTRODUCTION

The 22nd District Agricultural Association (District) owns and operates the Del Mar Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts a variety of uses, including the annual San Diego County Fair, two horse racing seasons, and other events, activities, and celebrations such as concerts and festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year.

The District is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. The District and the City of Del Mar have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. Five potential housing site locations have been selected through this mutual planning effort. Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego.

This Transportation Impact Analysis (TIA) assesses the five potential sites where the housing could be built and determines the potential impacts/constraints of each.

Various intersections within the study area were analyzed to determine potential project-related transportation effects, as set forth in the following sections in this document.

- Project Description
- Existing Conditions Description
- CEQA VMT Discussion
- Project Study Area, Analysis Approach and Methodology
- Substantial Effect Criteria
- Analysis of Existing Conditions
- Project Trip Generation, Distribution and Assignment
- Analysis of Existing + Project Conditions
- Opening Day Conditions
- Analysis of Opening Day Conditions
- Access Assessment
- Conclusion

2.0 PROJECT DESCRIPTION

2.1 Potential Project Locations

Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego. The five potential locations are as follows:

- **Site 1: East Main Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Via De La Valle, north of the East Main Stable Gate driveway. Located at the existing "East Main Stable Gate" horse boarding stables.
- **Site 2: South of Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast quadrant of the intersection of Jimmy Durante Boulevard & Via De La Valle, approximately 500 feet south of Via De La Valle, south of the East Main Stable Gate driveway. Located south of the existing "East Main Stable Gate" horse boarding stables.
- **Site 3: Adjacent to Fire Station Site –** Within the City of Del Mar on Fairgrounds Property. Located adjacent to the existing "Del Mar Fire Department" fire station.
- **Site 4: Surf and Turf RV Park Site –** Within the City of San Diego. Located on the northeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing Del Mar Fairgrounds Surf & Turf RV Park, north of Turf Road.
- **Site 5: Dirt Lot Site –** Within the City of San Diego. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing "Del Mar Horsepark" dirt parking lot.

The five (5) potential housing sites vary in size. ***Table 2-1*** summarizes the location and acreage of the sites.

TABLE 2–1
POTENTIAL HOUSING SITES ACREAGE

Site Number	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	2982710300	City of Del Mar	1.5
2	South of Stable Gate Site	2990300500, 2990302200	City of Del Mar	1.5
3	Adjacent to Fire Station Site	2990302200	City of Del Mar	1.0
4	Surf and Turf RV Park Site	2990420300	City of San Diego	1.5
5	Dirt Lot Site	2990420300	City of San Diego	1.5

Notes:

1. The 2023 Stephen Dalton Architects (SDA) Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5 acre new housing site that would also include redevelopment of the fire station. This study focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Figure 2-1 depicts the Project vicinity, and ***Figure 2-2*** depicts the Project area. ***Figure 2-3*** depicts the potential Project site locations.

2.2 Project Description

The 22nd District Agricultural Association (District) is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property (Property) which the District would be willing to make available for the development of affordable housing.

In its 6th Cycle Housing Element Update, the City identified and included a portion of the Property in the Housing Element residential sites inventory as having potential to be developed to accommodate affordable housing units. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. This study of potential affordable housing on Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development (HCD) HAP Cycle 2.

Five potential housing site locations have been selected through this mutual planning effort. All five sites are approximately 1 to 1.5-acres in size. For the purpose of this study, the assumption is that a prospective housing project would include *at least* 61 units of lower income housing in a housing project that is a 100% multi-family lower income affordable housing development OR a mixed income project, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022-2023).

Due to the Fairgrounds property location within the FEMA-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed accordingly with floodproofing measures and include a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface level parking.

Since there are several alternatives for the proposed housing project, LLG calculated the trip generation for each of the four (4) alternatives. The trip generation calculation summary is included in ***Table 2-2***.

TABLE 2–2
DEL MAR HAP TRIP GENERATION COMPARISON TABLE

Alternative	ADT	AM Total	PM Total	Total Peak Hour Trips
82 DU of Multi-Family Affordable Housing (100% Affordable)	445	34	45	79
61 DU of Multi-Family Affordable Housing 21 DU of Multi-Family Housing (Mixed Income)	497	39	48	87
128 DU of Senior Affordable Housing (100% Affordable)	474	42	22	64
61 DU of Senior Affordable Housing 67 DU of Senior Multi-Family Housing (Mixed Income)	444	33	27	60

Notes:

2. Rates are based on the ITE Trip Generation Manual, 12th Edition
3. ADT = Average Daily Traffic
4. DU = Dwelling Units

Affordable multi-family housing, market rate multi-family housing, affordable senior housing, and market rate senior housing use-types generate trips at different rates. Therefore, the analysis included in this report assumes the Project development would be the alternative calculated to generate the highest number of trips, which provides a conservative analysis. Therefore, this report assumes the Project will construct 61 units of affordable multi-family housing and 21 units of market-rate multi-family housing.

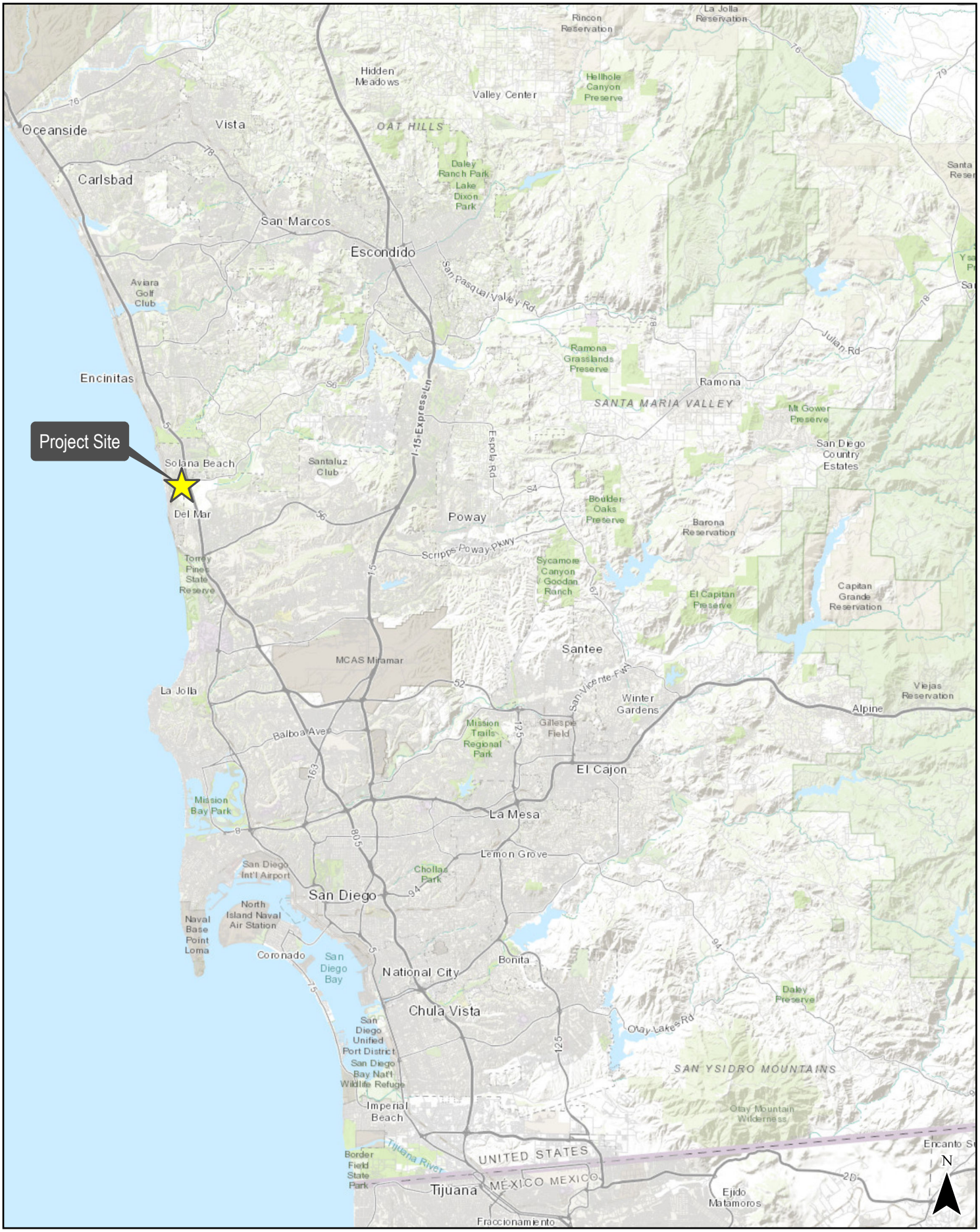
2.3 Project Access

Site 1 and Site 2 – Access for Site 1 and Site 2 would be provided by the East Main Stable Gate driveway, which connects to Jimmy Durante Boulevard.

Since only right-in / right-out turns are permitted at the East Main Stable Gate driveway, outbound residents heading north of the site are expected to make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and inbound residents coming from south of the site are expected to make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

Site 3 – Access to Site 3 would be provided via Jimmy Durante Way, which connects to Jimmy Durante Boulevard.

Site 4 and Site 5 – Access for Site 4 and Site 5 would be provided via Turf Road, which connects to Jimmy Durante Boulevard.



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Date: 10/23/2025

SanGIS, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

Figure 2-1
Vicinity Map

LLG

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Date: 10/22/25

Figure 2-2

Project Area Map

DEL MAR FAIRGROUNDS / AFFORDABLE HOUSING

Harris & A

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Figure 2-3

Potential Housing Site Locations

3.0 EXISTING CONDITIONS

Effective evaluation of the traffic effects associated with the proposed Project requires an understanding of the existing transportation system within the project area. ***Figure 3–1*** shows an existing conditions diagram, including signalized intersections and lane configurations.

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Highway 101

Highway 101 is currently constructed as a four-lane divided roadway north of Via De La Valle. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit ranges from 35 mph to 40 mph.

Camino Del Mar

Camino Del Mar is currently constructed as a two-lane divided roadway south of Via De La Valle. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is generally permitted on both sides of the roadway in the Project vicinity. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 40 mph.

Via De La Valle

Via De La Valle is currently constructed as a two-lane undivided roadway with a two-way left-turn lane. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

Valley Avenue

Valley Avenue north of Via de la Valle is currently constructed as a two-lane undivided roadway with a two-way left-turn lane. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted intermittently along the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 35 mph.

Jimmy Durante Boulevard

Jimmy Durante Boulevard is currently constructed as a four-lane undivided roadway with a two-way left-turn lane between Via De La Valle and Jimmy Durante Way. Jimmy Durante Boulevard transitions into a two-lane divided roadway south of San Dieguito Drive. Contiguous sidewalks are provided on the west side of the roadway. Curbside parking is prohibited on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

3.2 Mobility Network

The project area is centrally located just south of Via de la Valle, which provides direct west-east access to Interstate 5, with north-south access provided via Highway 101 (Hwy 101). Via de la Valle and Hwy 101 provide multiple lanes of vehicle travel, sidewalks for pedestrian movement, and on-street bicycle lanes. See ***Figure 3-3***.

The project area is located approximately 2.5 miles (from the furthest proposed site) from the Solana Beach Amtrak/Coaster Station (Solana station). Pedestrian and bicycle access to the Solana station is available via the Coastal Rail Trail – a separated ped/bike trail adjacent to Highway 101 (Hwy 101) that begins at the Hwy 101/Via de la Valle intersection and extends north through Solana Beach. See ***Figure 3-2***.

3.2.1 *Bicycle Network*

Currently, Class II bike lanes are provided along Highway 101, Camino Del Mar, Lomas Santa Fe, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard.

3.2.2 *Pedestrian Conditions*

Contiguous sidewalks are provided along both sides of Highway 101, Camino Del Mar, Lomas Santa Fe, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard.

3.2.3 *Existing Transit Conditions*

Existing Bus Services

Bus service is provided by the North County Transit District (NCTD). The bus routes serving the immediate Project area include NTCD routes 101 and 308. A description of each route is provided below. ***Appendix A*** includes the timetable of these bus routes.

Route 101 runs between Oceanside and VA/UCSD/UTC. The route runs along Highway 101 and Camino Del Mar. Weekday service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM. Weekend service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM.

Route 308 runs between Solana Beach and Escondido. The route runs along Lomas Santa Fe and Valley Avenue. Weekday service begins at 5:00 AM with 60-minute headways and ends at 9:10 PM. Weekend service begins at 7:00 AM with 60-minute headways and ends at 9:00 PM.

Future Bus Services

As part of SANDAG's adopted 2021 Regional Plan for the North County corridor, Next Generation Rapid bus service (Rapid bus) identified as Rapid 473 is planned to connect Oceanside to Solana Beach to UTC/UC San Diego via Highway 101 Coastal Communities with a build-out year of 2035.

Rail Service

Fixed rail service is provided by the North County Transit District (NCTD). The COASTER serves in the immediate Project area. The nearest coaster stop is at the Solana Beach Station, as shown in *Figure 3-2*.

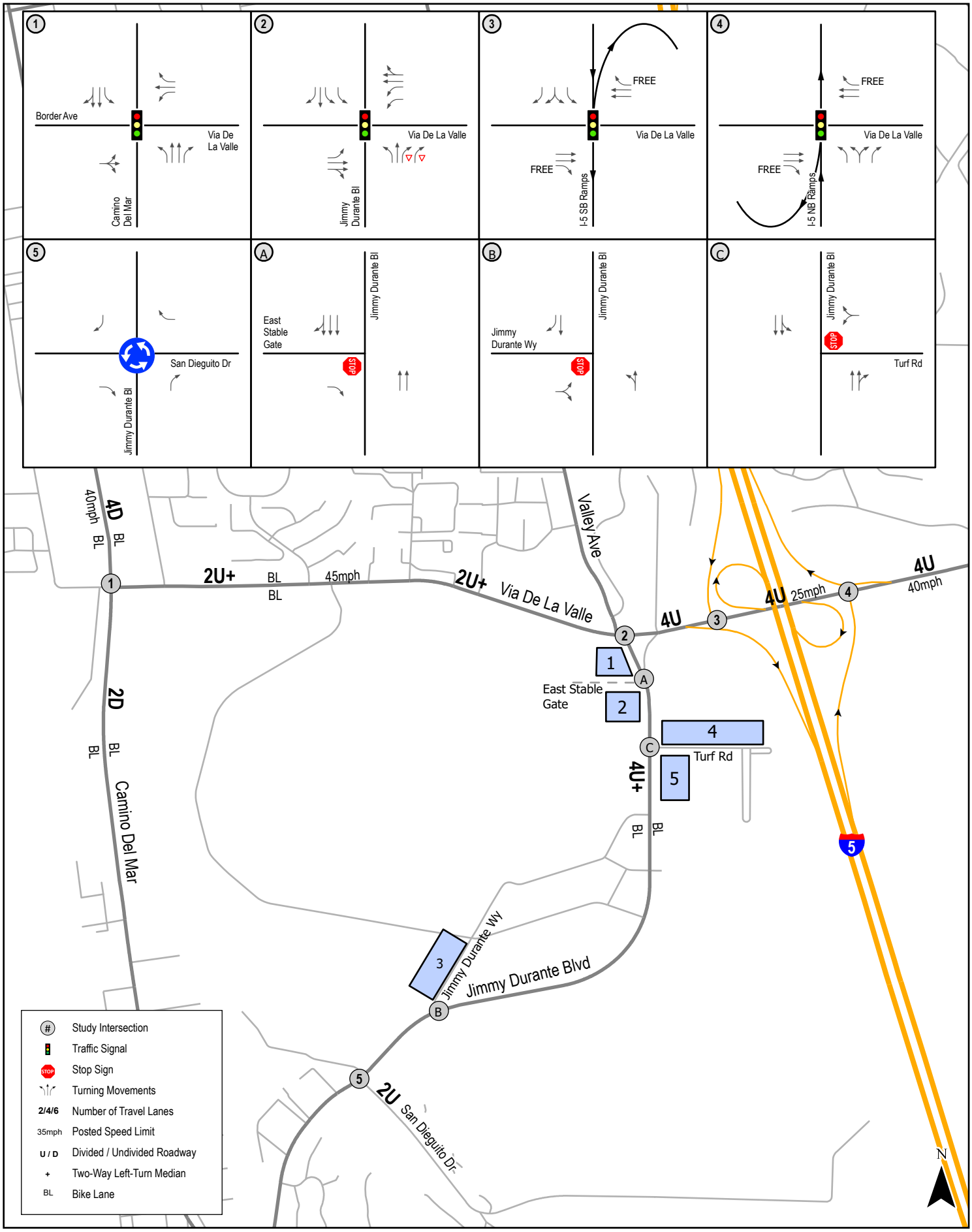
The COASTER runs between San Diego Santa Fe Depot and Oceanside with 40-minue headways. There is a total of eight (8) stops along this route. COASTER service provides thirty (30) daily trips on the weekdays with an additional two (2) trips on Fridays. It also provides twenty (20) daily weekend trips.

Appendix A includes the timetable of this train service.

3.3 Existing Traffic Volumes

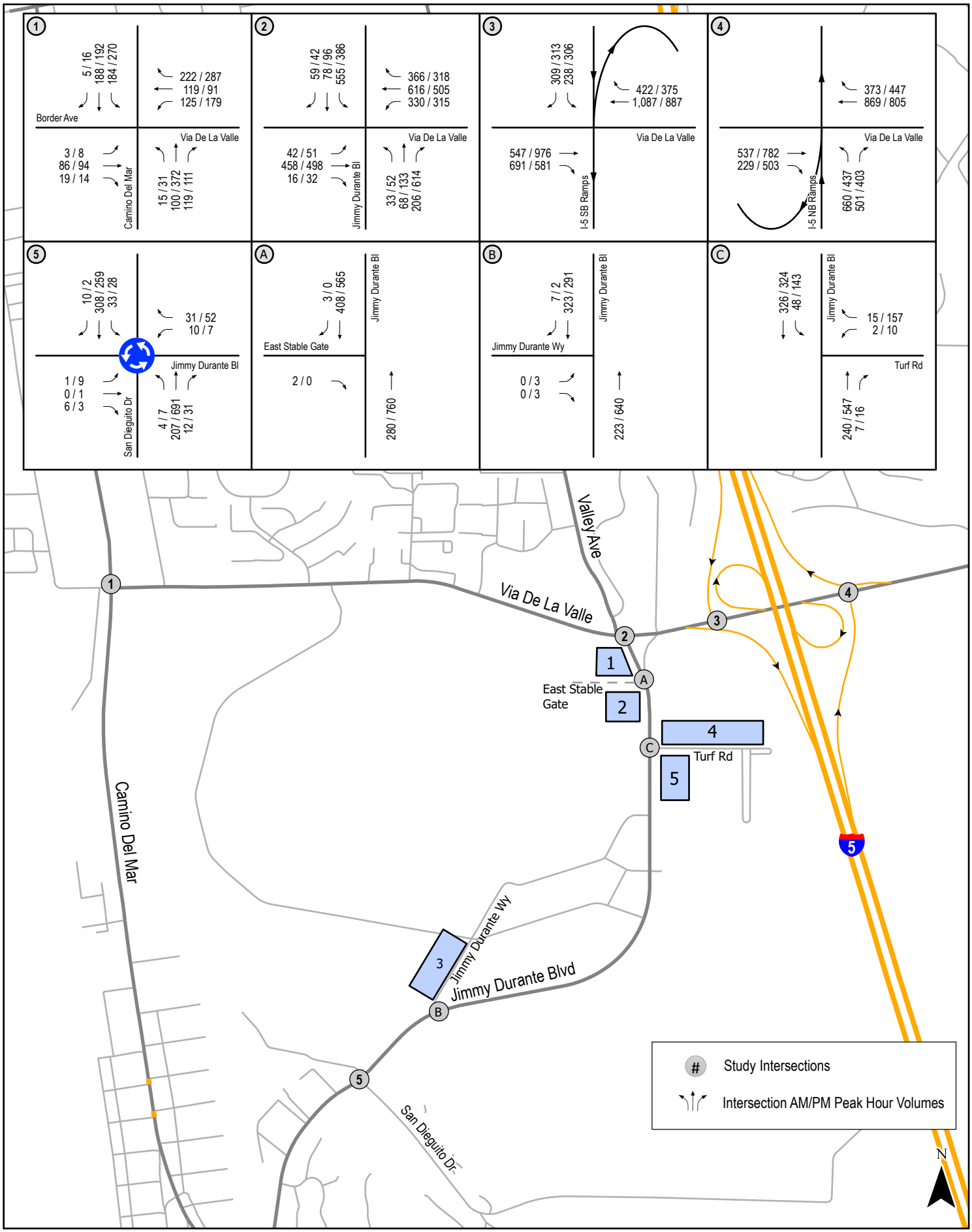
Peak hour counts at the study area intersections were conducted on Tuesday, September 16, 2025, when area schools were in session. Peak hour counts at the study area project access driveways were conducted on Wednesday, October 1, 2025, when area schools were in session.

Figure 3–2 shows the Existing Traffic Volumes. ***Appendix B*** contains the manual count sheets.



N:\4115\Figure
Date: 10/24/2025

Figure 3-1
Existing Conditions Diagram



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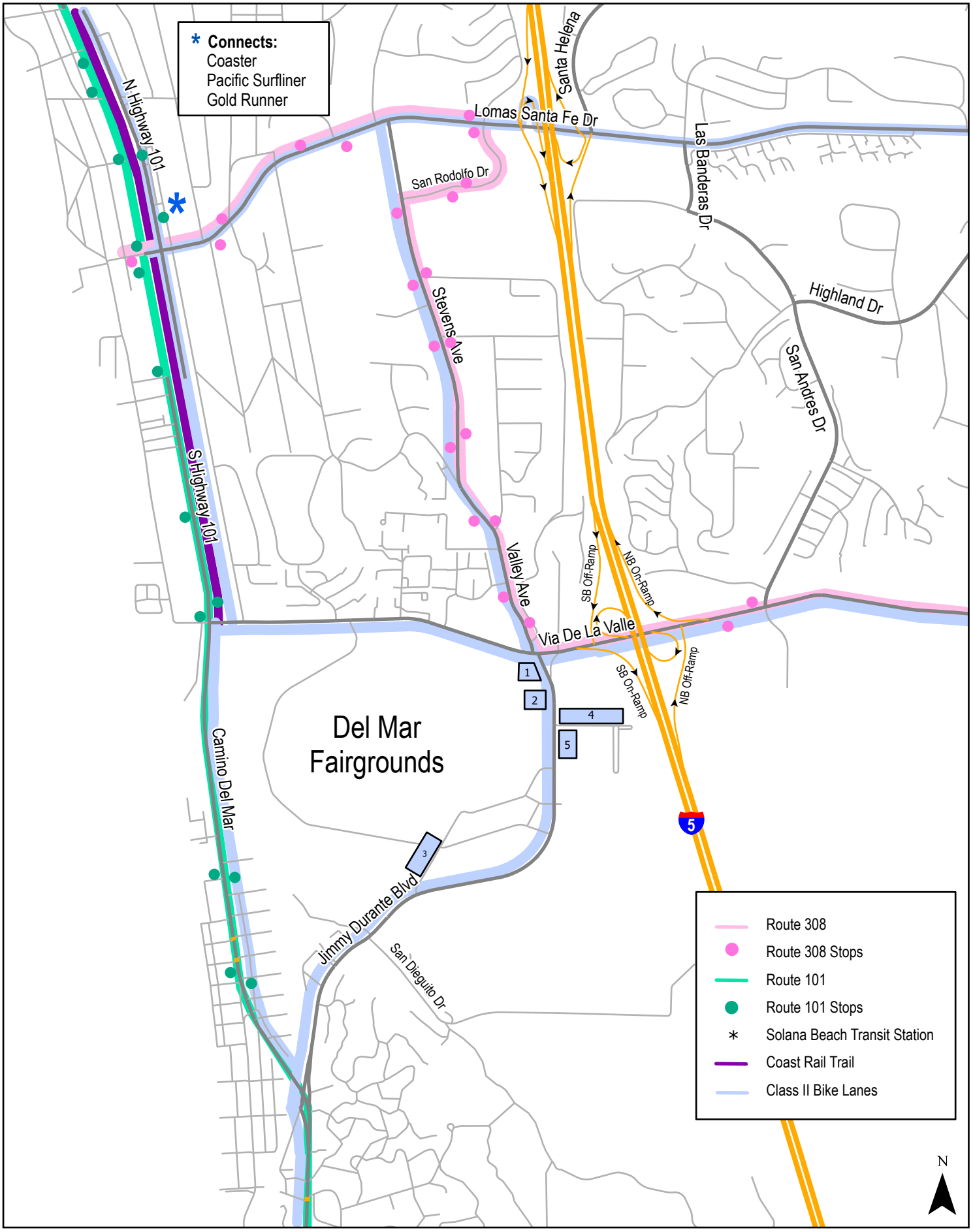
Date: 1/7/2026

Figure 3-2
Existing Traffic Volumes



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Date: 12/23/2025

Figure 3-3
Transit Mobility Network

4.0 CEQA VMT ANALYSIS

An assessment was conducted to determine the Project's potential Vehicle Miles Traveled (VMT) impact. This assessment utilizes methodologies presented within the Governor's Office of Planning and Research (OPR) Technical Advisory developed to assist with implementation of Senate Bill 743 (SB 743), which resulted in a shift in the measure of effectiveness for determining transportation impacts from Level of Service (LOS) and vehicular delay to VMT. VMT analyses are required in all California Environmental Quality Act (CEQA) documents as of July 1, 2020.

The City of Del Mar *CEQA Guidelines*, June 1, 2020, and the City of San Diego's *Traffic Study Manual*, September 2022, provide guidance on the preparation of VMT studies including significance thresholds, screening criteria, and analysis methodology for a variety of land uses.

4.1 Project Screening

Per the City of Del Mar *CEQA Guidelines*, June 1, 2020, the requirement to prepare a detailed transportation Vehicle Miles Traveled (VMT) analysis applies to all land development projects except for those that meet at least one of the provided screening criteria. A project that meets at least one of the screening criteria listed below would be considered to have a less significant impact due to the project or location characteristics.

1. Projects that generate less than 110 trips per day
2. Projects of 18 apartments or less
3. Projects of 11 single dwelling units or less
4. Projects of 2,750 square feet or less of commercial retail
5. Projects of local serving retail that are less than 10,000 square feet and that would offer a new retail option in Del Mar that is currently only offered outside of the City
6. Projects within .5 miles of a high-quality transit stop with fixed route bus service that has bus intervals no longer than 15 minutes during the weekday commute hours (State PRC 2115)
7. Projects with 100 percent affordable units
8. Transit, bicycle, and pedestrian projects
9. Roadway and mobility projects included in the Del Mar Community Plan
10. Amendments to a Land Use Plan or Zoning Ordinance that provide for mixed use zoning that allows up to 20 dwelling units per acre

As noted in *Section 2.2*, the Project (regardless of site location) would include at least 61 units of lower income housing (either multi-family or senior), either in a development that is a 100% affordable OR as part of a mixed income project.

4.1.1 *100% Affordable Housing Scenarios*

Any of the proposed development scenarios that assume 100% affordable housing are considered "screened out" from any further VMT analysis based on screening criteria #7 listed above (projects with 100 percent affordable units). Therefore any of the proposed development scenarios that assume 100% affordable housing are presumed to cause a less than significant impact, and are exempt from any further VMT analysis.

4.1.2 *Mixed Income Housing Scenarios*

In development scenarios that include both affordable and market rate units, the affordable units would continue to be screened out as noted above. Market rate units would likely not be screened out (unless fewer than 18 DU are proposed, in which case screening criteria #2 would apply). Since the market rate component would not be screened out, further VMT analysis is required.

4.2 VMT Assessment – Market Rate Units

In development scenarios that include both affordable and market rate units, the market rate units would not be screened out from VMT analysis as noted above. The Project is considered a "Residential" land use and therefore, the SANDAG Series 14 ABM 2+, Base Year 2016, VMT per resident data was reviewed as applicable to the City of Del Mar and City of San Diego's CEQA Guidelines. The Cities of Del Mar and San Diego measure VMT impacts against different metrics: the average Del Mar VMT per resident of 22.6 VMT for project's located within the City of Del Mar and the average Regional VMT per resident of 18.9 VMT for project's located within the City of San Diego. Therefore, the VMT analysis for Sites 1, 2, and 3, located within the City of Del Mar, and for Sites 4 and 5, located within the City of San Diego (as shown on *Figure 2-3)* were analyzed based on the applicable City guidelines as outlined below.

4.2.1 *Sites 1, 2, and 3 (City of Del Mar)*

Sites 1, 2, and 3 are located within the City of Del Mar. The Project falls under the "Residential" land use type and therefore, per City of Del Mar guidelines, the Project's VMT per resident is considered the same as the VMT per resident of the census tract in which it is located. The site's VMT per resident is then compared to the existing City of Del Mar VMT/resident of 22.6 VMT per City resident as noted in the City's June 1, 2020, *Item 14 Resolution – Update to CEQA Guidelines*, included as ***Appendix L***. A significant VMT impact would be identified if a project or plan/policy would result in VMT that is not at least 15 percent below the existing baseline VMT for Del Mar.

Sites 1, 2, and 3 are located within Census Tract 172. Per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the VMT per resident for Census Tract 172 is 24.2 and the existing City of Del Mar VMT/resident is 22.6. Therefore, the Project site is approximately 107.1 % of the City average. Based on this analysis, a significant VMT impact would be identified for Sites 1, 2, and 3.

Mitigation would be required to reduce Project VMT to 15 percent below the existing baseline, consistent with the Del Mar Climate Action Plan.

If the Project is not able to provide the 15% VMT reduction, the environmental document shall disclose an unmitigated significant transportation impact. Implementation of local Transportation Demand Management (TDM) strategies and mitigation through payment of an in-lieu fee may be required for development on Sites 1, 2, or 3.

4.2.2 *Sites 4 and 5 (City San Diego)*

Sites 4 and 5 are located within the City of San Diego. The Project falls under the "Residential" land use type and is calculated to generate less than 2,400 daily unadjusted driveway trips and therefore, per City of San Diego guidelines, the Project's VMT per resident is considered the same as the VMT per resident of the census tract in which it is located. The site's VMT per resident is then compared to the regional average VMT/resident of 18.9 VMT per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map. A significant VMT impact would be identified if a project would result in VMT that is not at least 15 percent below the regional average VMT/resident.

Sites 4 and 5 are located within Census Tract 83.24. Per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the VMT per resident for Census Tract 83.24 is 24.0 and the regional average VMT/resident is 18.9. Therefore, the Project site is approximately 126.5% % of the regional average. Based on this analysis, a significant VMT impact would be identified for Sites 4 and 5. Mitigation would be required to reduce the project's VMT impact to the greatest extent feasible.

Development of Sites 4 and 5 could choose to participate in the City of San Diego's Complete Communities Mobility Choices Program to mitigate the significant transportation impact to the extent feasible by relying on the Findings and Statement of Overriding Considerations (SOC) from the Complete Communities: Housing Solutions and Mobility Choices Program Final Program Environmental Impact Report (PEIR; May 2020)(SCH No. 2019060003).

4.3 Conclusions

Any of the proposed development scenarios on any of the proposed sites that assume 100% affordable housing can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis.

In development scenarios that include both affordable and market rate units, the affordable units can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis. Market rate units on any of the proposed Sites 1-5 would be expected to result in a significant transportation impact with mitigation required. Mitigation could include implementation of a robust TDM plan or participation in the City of San Diego's Complete Communities Mobility Choices Program, depending on whether the development site is located within the City of Del Mar or the City of San Diego.

5.0 PROJECT STUDY AREA, ANALYSIS APPROACH AND METHODOLOGY

5.1 Project Study Area

The study area includes all intersections in the Project vicinity that are likely to be potentially affected by the Project traffic. The Project study area includes the following intersections:

Intersections

1. Hwy 101 (Camino Del Mar) / Via de la Valle (Border Avenue)
2. Jimmy Durante Boulevard (Valley Ave) / Via de la Valle
3. I-5 SB Ramps / Via de la Valle
4. I-5 NB Ramps / Via de la Valle
5. Jimmy Durante Boulevard / San Dieguito Road

Access Driveways

A. Jimmy Durante Blvd / East Stable Gate (Driveway for Site 1 and 2)
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for Site 3)
C. Jimmy Durante Blvd / Turf Road (Driveway for Site 4 and 5)

5.2 Analysis Scenarios

This study includes analysis of the following scenarios:

- Existing
- Existing + Project (Site 1 and Site 2)
- Existing + Project (Site 3)
- Existing + Project (Site 4 and Site 5)
- Opening Day (Year 2028) Without Project
- Opening Day (Year 2028) + Project (Site 1 and Site 2)
- Opening Day (Year 2028) + Project (Site 3)
- Opening Day (Year 2028) + Project (Site 4 and Site 5)

5.3 Analysis Approach and Methodology

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized intersections, unsignalized intersections and roadway segments.

In the Highway Capacity Manual (HCM) 7th Edition, LOS for signalized intersections is defined in terms of delay. The LOS analysis provides results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. ***Table 5–1*** summarizes the signalized intersections levels of service descriptions.

5.3.1 *Signalized Intersections*

Table 5–2 depicts the criteria, which are based on the average control delay for any particular minor movement (unsignalized intersections) and overall intersection (signalized intersections).

For signalized intersections, LOS criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

LOS A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay in the range 10.1 seconds and 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of Average delay.

LOS C describes operations with delay in the range 20.1 seconds and 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

LOS D describes operations with delay in the range 35.1 seconds and 55.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or higher v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are frequent.

LOS E describes operations with delay in the range of 55.1 seconds to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of over 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

5.3.2 *Unsignalized Intersections*

For unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor movement. For All-Way-Stop-controlled (AWSC) intersections, the overall intersection delay is reported. For two-way-stop-controlled (TWSC) intersections, LOS is not defined for the intersection as a whole, but the worst-case movement (typically the minor street left-turn) delay and LOS are reported.

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This LOS is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits.

LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

TABLE 5–1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

LOS	Description
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation i.e. when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

TABLE 5–2
INTERSECTION LEVEL OF SERVICE (LOS) & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	**Unsignalized Intersections**
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: Highway Capacity Manual 6.

6.0 SUBSTANTIAL EFFECT CRITERIA

The City of Del Mar has published Transportation Impact Guidelines within its *City of Del Mar CEQA Guidelines* (dated June 1, 2020). Consistent with CEQA, these guidelines address VMT since LOS is no longer a standard that can be used to measure significant effects on the environment for CEQA. The City of Del Mar does not have transportation impact guidelines that provide guidelines for a capacity (Level of Service) analysis. Therefore, the San Diego Traffic Engineers' Council (SANTEC) regional guidelines were used to evaluate potential operational effects to traffic that could result from the project.

A project is considered to have a substantial effect if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds shown in ***Table 6–1*** below for freeway segments, roadway segments, and intersections are based on published SANTEC/ITE guidelines with the exception that LOS D is considered acceptable per the City of Del Mar General Plan. If the project exceeds the thresholds in *Table 6–1*, then the project may be considered to have a substantial project effect. A feasible improvement will need to be identified to return the effects within the thresholds (pre-project + allowable increase).

If project traffic causes the location to degrade from an acceptable LOS D or better to LOS E or LOS F, or exceeds the allowable thresholds as shown in *Table 6–1* below for currently LOS E or F operating locations, a substantial effect occurs.

TABLE 6–1
TRAFFIC EFFECTS SIGNIFICANCE THRESHOLDS

Level of Service with Project [a]	Allowable Increase Due to Project Effects [b]				
	Freeways		Roadway Segments		Intersections
	V/C	Speed (mph)	V/C [c]	Speed (mph)	Delay (sec.)
E & F	0.01	1.0	0.02	1.0	2.0

Footnotes:

a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using *Table 3–3* or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D".

b. If a proposed project's traffic causes the values shown in the table to be exceeded, the effects are deemed to be substantial. These effects may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible improvements (within the Transportation Analysis that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a substantial amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating substantial effects.

c. The V/C ratio threshold of 0.02 is based on the fact that such a small change is virtually unnoticeable for the average motorists. For example: for a four-lane roadway (two lane each direction) with a capacity of 40,000 vehicles, the peak hour directional volumes are about 2,800. Two percent of that is 56 vehicles per hour which translate to less than one vehicle per lane in every two minutes for that approach. Such a small change is hardly noticeable to motorists. Therefore, a V/C ratio of 0.02 is a very conservative threshold.

General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections.
4. LOS = Level of Service

7.0 ANALYSIS OF EXISTING CONDITIONS

Table 7-1 summarizes the existing study area peak hour intersection operations. As shown in *Table 7-1*, all the study area intersections are calculated to currently operate at LOS D or better.

Appendix C includes the Existing peak hour intersection analysis worksheets.

TABLE 7–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Delay [a]	LOS [b]
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B
		PM	19.1	B
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D
		PM	37.2	D
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B
		PM	13.9	B
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C
		PM	19.0	B
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A
		PM	8.9	A
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [c]	AM	10.4	B
		PM	0.0	A
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A
		PM	14.4	B
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A
		PM	12.8	B

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. MSSC – Minor Street Stop Controlled intersection. worst delay is reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

8.1 Trip Generation

The Project proposes five potential housing site locations. All five sites are approximately 1 to 1.5-acres in size and would include a multi-family lower income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing.

Trip generation rates for the Project were derived from the Institute of *Transportation Engineers (ITE) Trip Generation Manual, 12th Edition*. The ITE manual was selected over SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates (2002)* because ITE provides a more current (updated in 2025) and comprehensive dataset.

ITE database includes a wider range of land use types, such as low-income affordable and senior housing. Additionally, many local jurisdictions, including the County of San Diego, have begun transitioning from the use of SANDAG rates to ITE rates. Therefore, trip generation rates were taken from the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 12th Edition*. Trip generation rates for the following land uses were reviewed:

- Affordable Housing - Income Limits (ITE land use code 223)
- Multifamily Housing (Low-Rise; Not Close to Rail Transit) (ITE land use code 220)
- Affordable Housing - Senior (ITE land use code 223)
- Senior Adult Housing - Multi-Family (ITE land use code 252)

The land uses listed above generate trips at different rates. As described in *Section 2*.2, due to the different alternatives for the proposed housing project and different trip rates, LLG calculated the trip generation for four (4) alternatives. The trip generation calculation summary is included in *Table 2-1*.

The alternative with the highest trip generation was assumed for the analysis. Therefore, all technical reports prepared by LLG assume the Project development is 61 units of affordable multi-family housing and 21 units of market rate multi-family housing, providing a conservative analysis.

Table 8–1 summarizes the traffic generation assuming the Project development is 61 units of affordable multi-family housing and 21 units of market rate multi-family housing. The project is calculated to generate 497 ADT with 39 AM peak hour trips (11 inbound and 28outbound) and 48 PM peak hour trips (29 inbound / 19 outbound).

8.2 Trip Distribution/Assignment

The distribution of project trips was based on the location of likely destinations for the residential project traffic in this area, including shopping opportunities, schools and employment. The proximity of the project to I-5 was also taken into account. While family housing and senior housing would not have identical trip distributions, the distributions would be similar and since family

housing was found to be the highest trip generator, this land use type was used as the basis for the trip distribution.

Figure 8-1 shows the trip distribution. This figure shows that 70% of peak commuter trips are estimated to be oriented to / from I-5 with 13% into Solana Beach and 7% towards Del Mar. The remaining 10% are oriented to Via De La Valle east of I-5.

It is important to note that the Regional Project Traffic Distribution for all five potential sites is the same. However, the Project Traffic Distribution at the driveways/access points varies depending on the site location.

The assumed access driveway for Site #1 and Site #2 is the existing East Stable Gate driveway. Therefore, the Project traffic assignment for Site #1 and Site #2 is the same. The East Main Stable Gate driveway is a right-in / right-out access point. Therefore, 95% of outbound residents will make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and 5% of inbound residents will make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

The proposed access driveway of Site #3 is the existing Jimmy Durante Way roadway.

The proposed access driveway for Site #4 and Site #5 is the existing Turf Road roadway. Therefore, the Project traffic assignment for Site #4 and Site #5 is the same.

Figure 8-1 depicts the Project traffic distribution. ***Figure 8-2a*** depicts the Project traffic volumes (Site 1 and Site 2). ***Figure 8-2b*** depicts the Project traffic volumes (Site 3). ***Figure 8-2c*** depicts the Project traffic volumes (Site 4 and Site 5). ***Figure 8-3a*** depicts the Existing + Project traffic volumes (Site 1 and Site 2). ***Figure 8-3b*** depicts the Existing + Project traffic volumes (Site 3). ***Figure 8-3c*** depicts the Existing + Project traffic volumes (Site 3).

TABLE 8–1
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)[a]		AM Peak Hour					PM Peak Hour				
		Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Affordable Housing – Income Limits (223)	61 DU	[b]	367	[c]	29:71	9	21	30	[d]	59:41	22	15	37
Multifamily Housing – Low-Rise; Not Close to Transit (220)	21 DU	6.21 /DU	130	0.41/ DU[e]	24:76	2	7	9	0.52/ DU[e]	62:38	7	4	11
Total	**82 DU**		**497**			**11**	**28**	**39**			**29**	**19**	**48**

Footnotes:

a. ADT = Average Daily Traffic
b. Fitted curve equation: T = 3.73(X) + 139.35
c. Fitted curve equation: T = 0.21(X) + 17.21
d. Fitted curve equation: Ln(T) = 0.72 Ln(X) + 0.64
e. Due to the small number of units proposed, ITE's fitted curve equation for this use type results in an overly conservative trip rate of approximately 11 ADT per DU. ITE's average rate of 6.21 ADT/DU is a more realistic assumption and is in line with SANDAG and City of San Diego rates of 6 ADT / DU for the same use type.

General Notes:

1. DU = Dwelling Units
2. Rates are based on ITE Trip Generation Manual, 12th Edition.
3. (###) = ITE Land Use Code

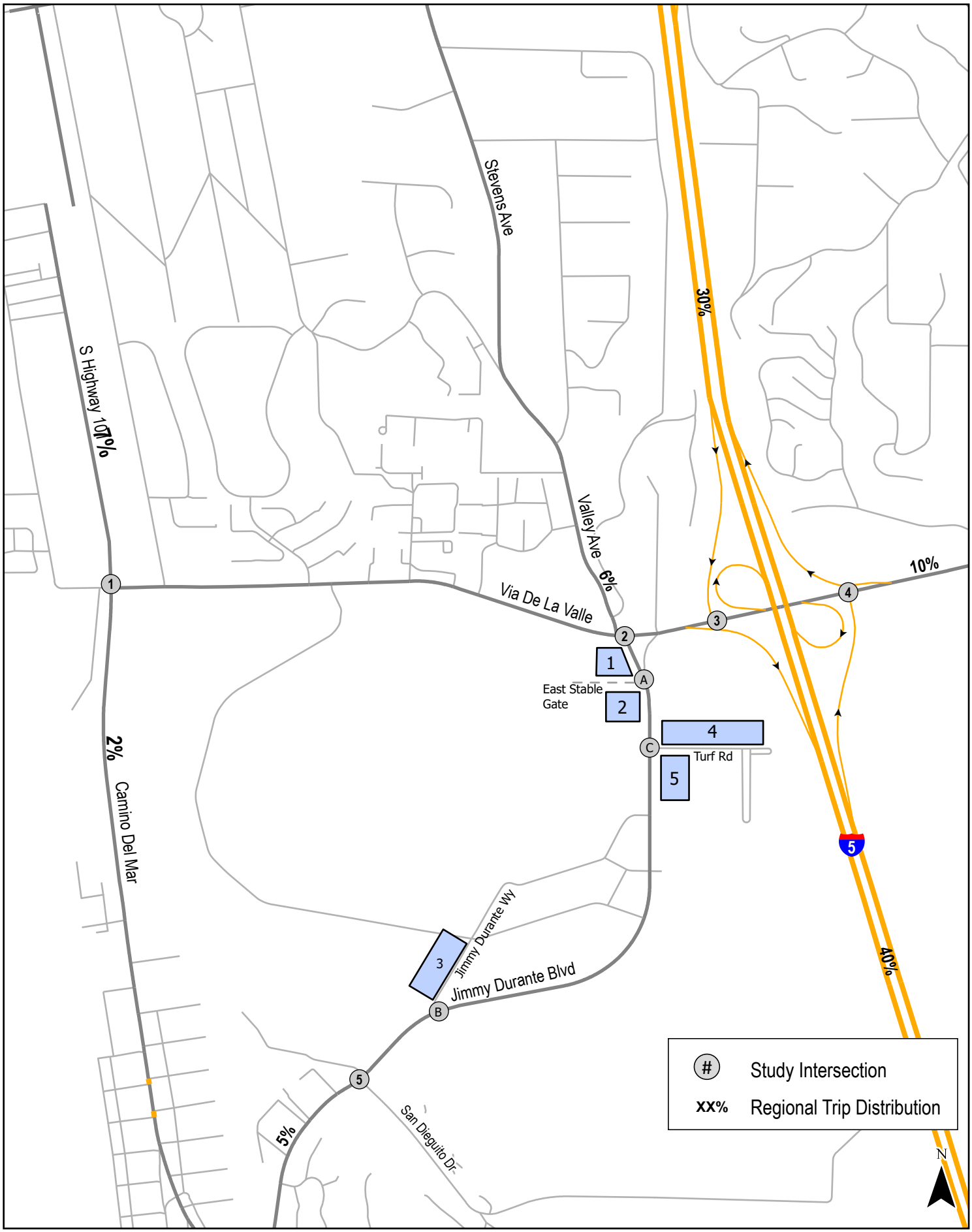

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Figure 8-1
Project Traffic Distribution

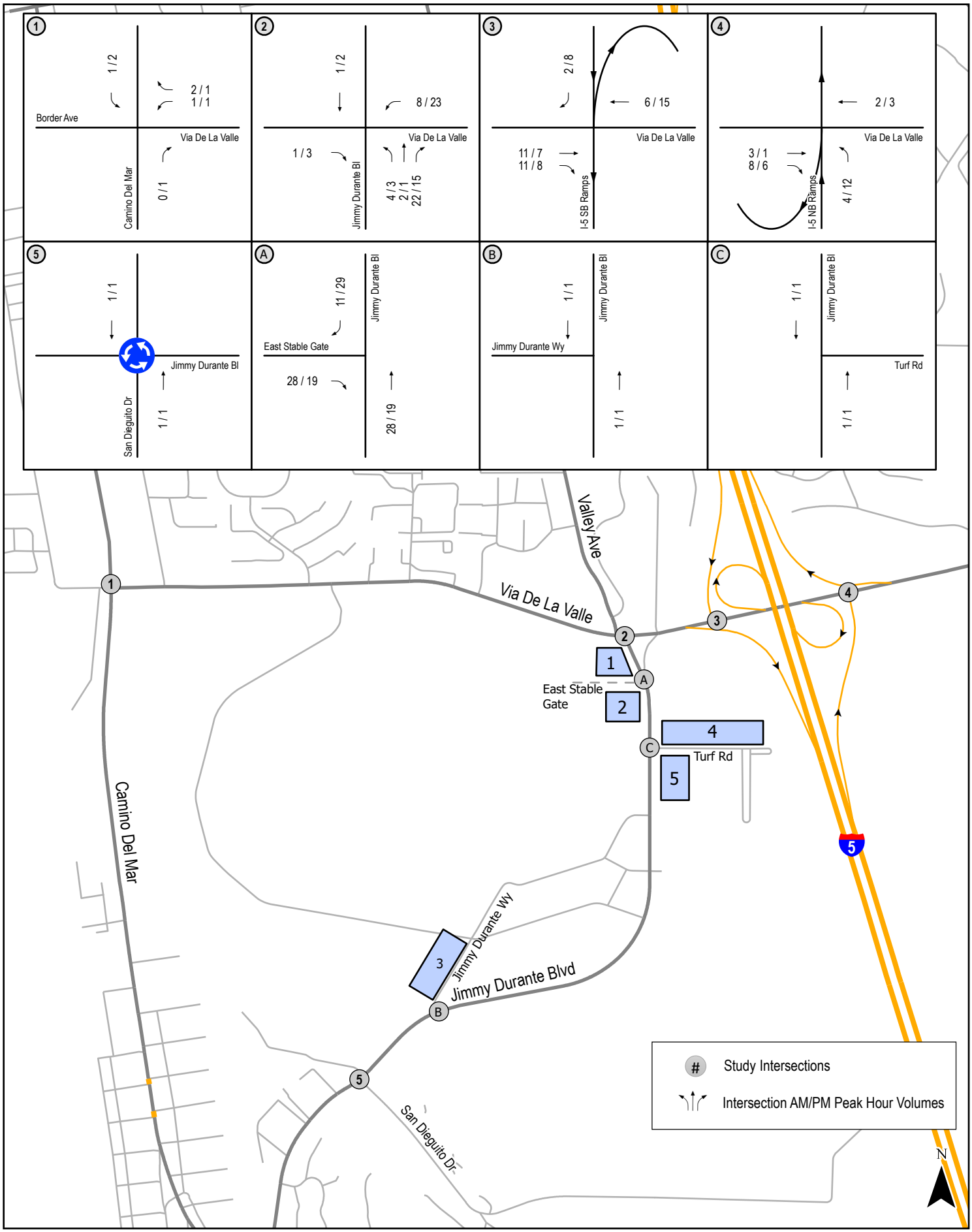

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Figure 8-2A
Site 1 or 2 Project Traffic Volumes

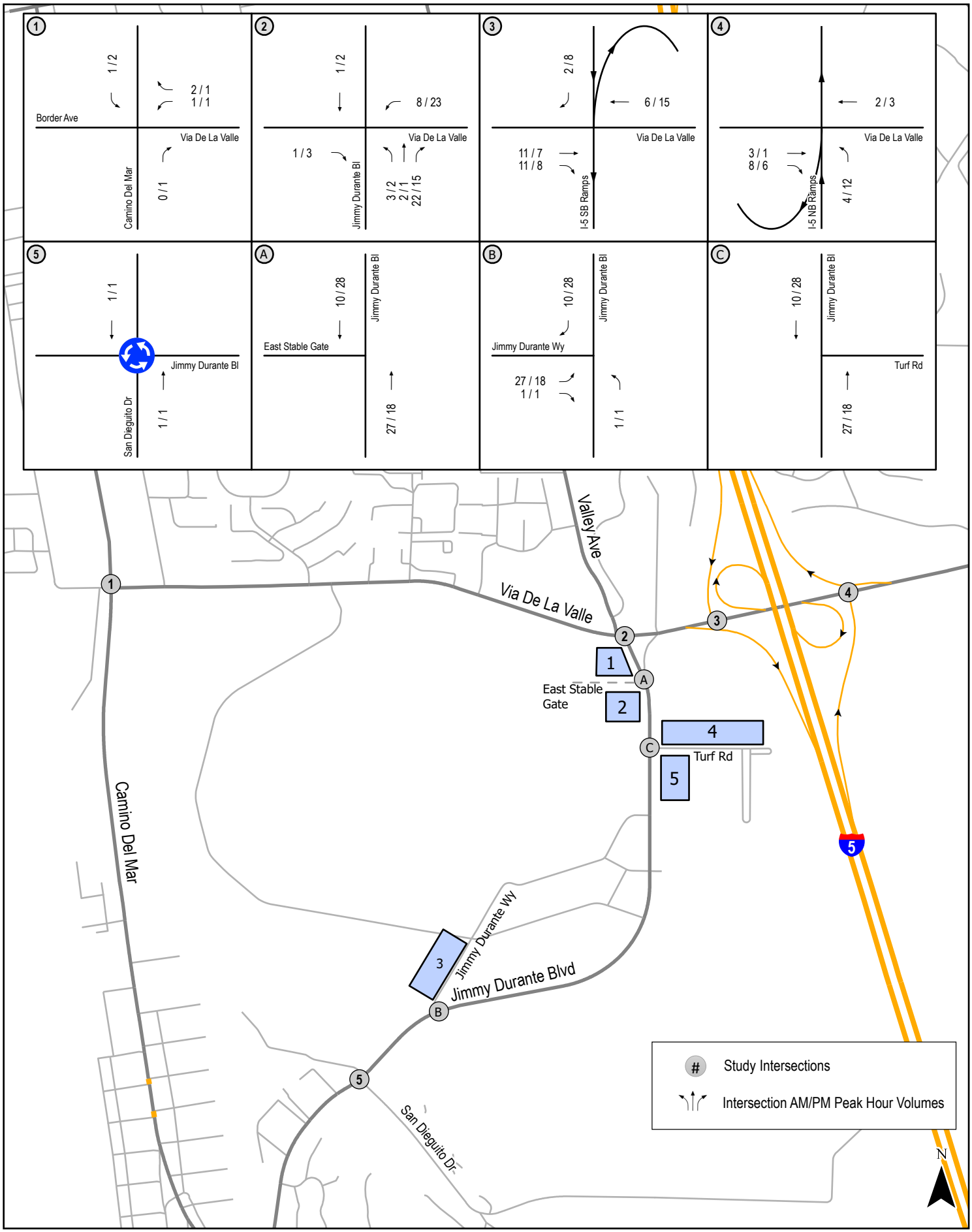

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Figure 8-2B
Site 3 Project Traffic Volumes

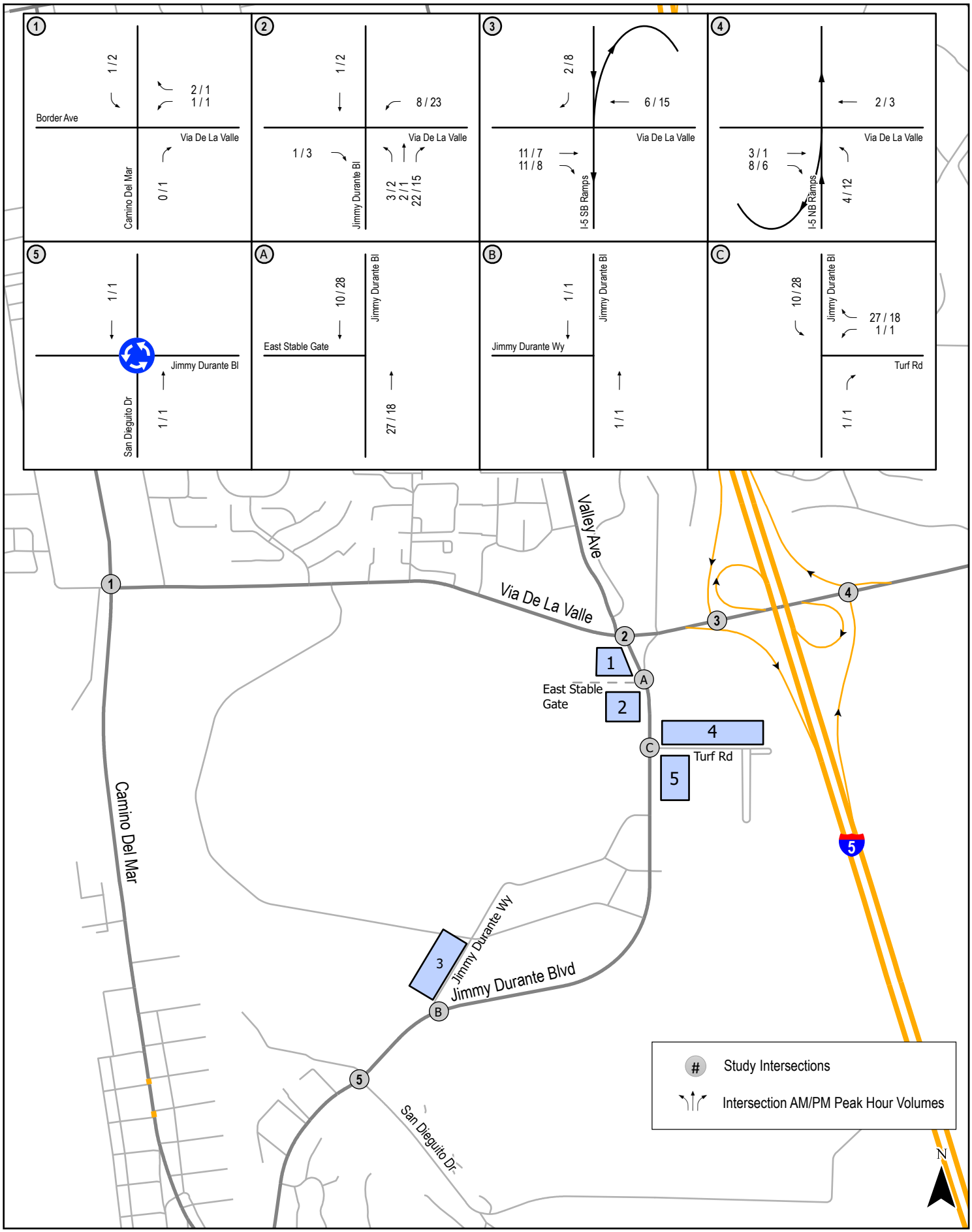

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Figure 8-2C
Site 4 or 5 Project Traffic Volumes

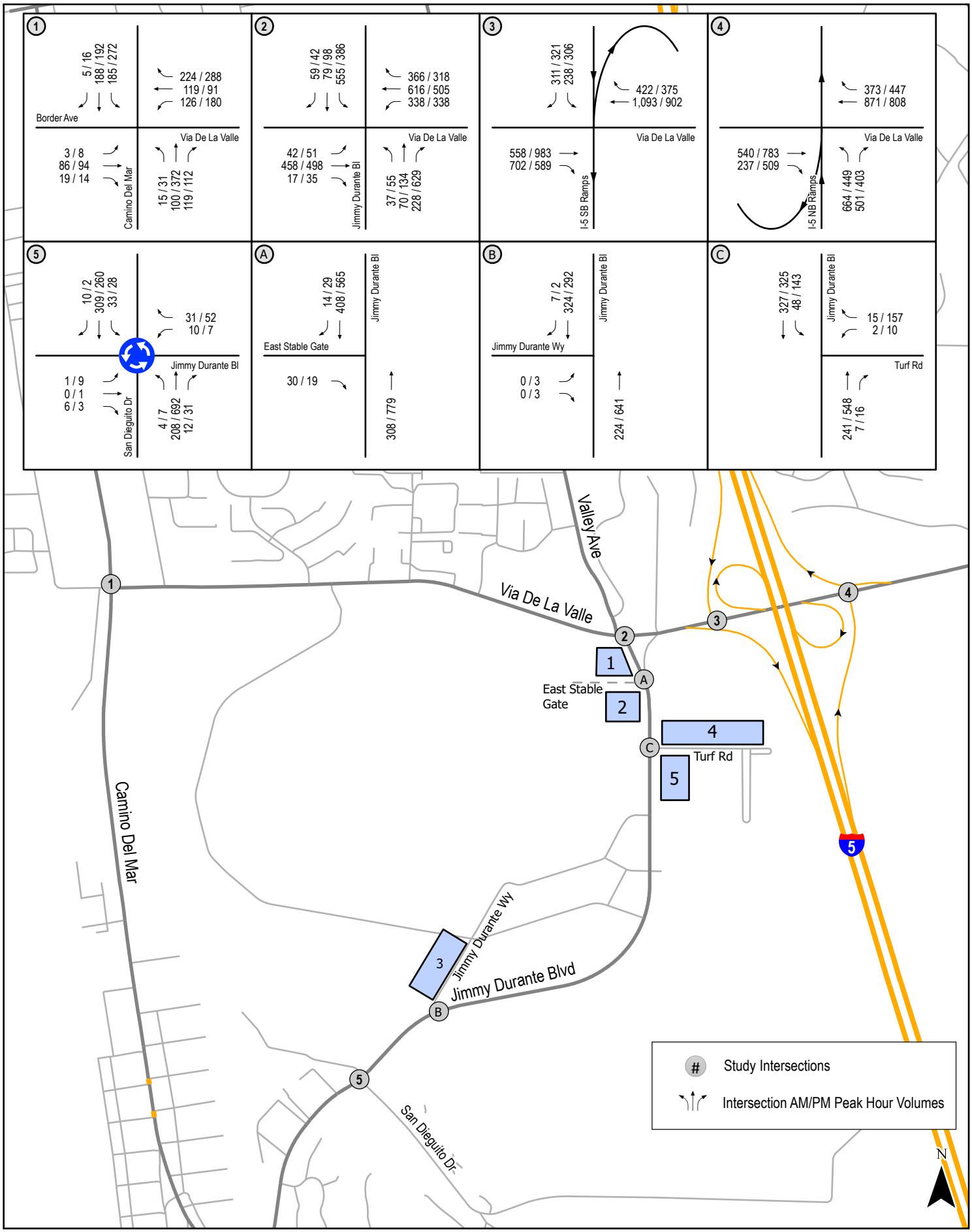

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Figure 8-3A
Existing + Site 1 or 2 Project Traffic Volumes

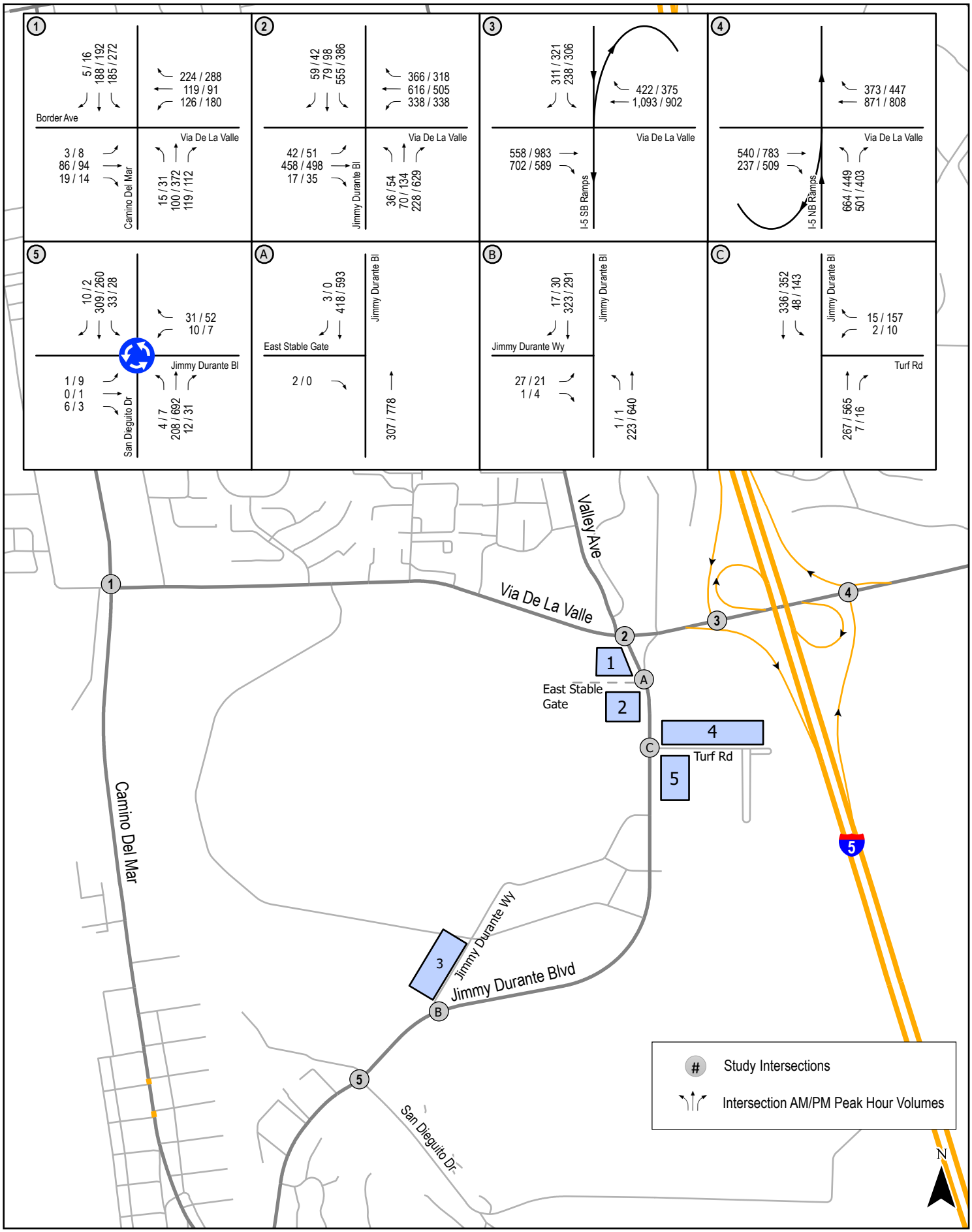

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Figure 8-3B
Existing + Site 3 Project Traffic Volumes

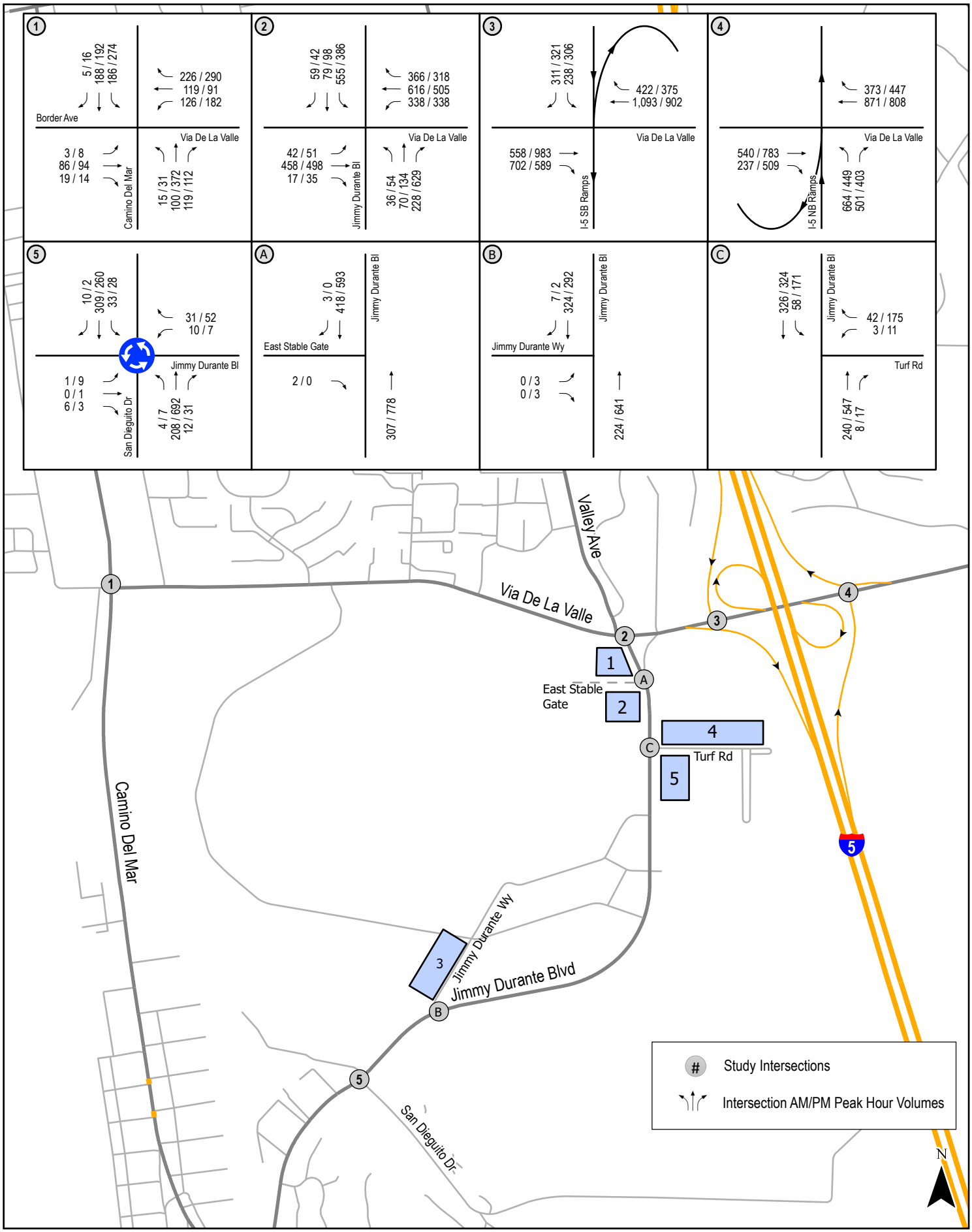

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Figure 8-3C
Existing + Site 4 or 5 Project Traffic Volumes

9.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 1 AND SITE 2

Existing + Project is defined as the Existing day traffic plus the traffic generated by the Project Site #1 or Project Site #2.

9.1 Existing without Project – Site 1 and Site 2

Table 9-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 9-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

9.2 Existing with Project – Site 1 and Site 2

Table 9-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 9-1*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix D includes the Existing with Project (Site 1 and 2) peak hour intersection analysis worksheets.

TABLE 9–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	074	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.4	B	10.8	B	0.4	No
		PM	0.0	A	11.5	B	11.5	No

Continued on the Next Page

TABLE 9–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.4	B	14.5	B	0.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	12.8	B	12.8	B	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

10.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 3

Existing + Project is defined as the Existing day traffic plus the traffic generated the Project Site #3.

10.1 Existing without Project – Site 3

Table 10-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 10-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

10.2 Existing with Project – Site 3

Table 10-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 10-0*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix E includes the Existing with Project (Site 3) peak hour intersection analysis worksheets.

TABLE 10–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	0.7	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.4	B	10.5	B	0.1	No
		PM	0.0	A	0.0	A	0.0	No

Continued on the Next Page

TABLE 10–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	13.2	B	13.2	No
		PM	14.4	B	18.5	C	4.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.6	A	0.1	No
		PM	12.8	B	13.0	B	0.2	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

11.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 4 AND SITE 5

Existing + Project is defined as the Existing day traffic plus the traffic generated by the Project Site #4 or Project Site #5.

11.1 Existing without Project – Site 4 and Site 5

Table 11-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 11-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

11.2 Existing with Project – Site 4 and Site 5

Table 11-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 11-1*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix F includes the Existing with Project (Site 4 and 5) peak hour intersection analysis worksheets.

TABLE 11–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	0.7	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.4	B	10.5	B	0.1	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 11–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.4	B	14.5	B	0.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	12.8	B	13.3	B	0.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

12.0 OPENING DAY (YEAR 2028) CONDITIONS

This section describes the Opening Day (Year 2028) roadway network and traffic volume conditions.

12.1 Network Conditions

The existing street system network illustrated in *Figure 3–1* is used for Opening Day (Year 2028) conditions with no assumed improvements within the study area.

Figure 12–1 shows the Opening Day (Year 2028) without Project traffic volumes. ***Figure 12–2a*** shows the Opening Day (Year 2028) with Project (Site 1 and Site 2) traffic volumes. ***Figure 12–2b*** shows the Opening Day (Year 2028) with Project (Site 3) traffic volumes. ***Figure 12–2c*** shows the Opening Day (Year 2028) with Project(Site 4 and Site 5) traffic volumes.

12.2 Opening Day (Year 2028) Traffic Volumes

To forecast future traffic volumes for Opening Day (Year 2028) conditions, the SANDAG ABM2+ model was first utilized to determine Year 20250 volumes. Year 2028 traffic volumes were then developed based on a calculated ambient growth factor between Existing Year 2025 and future Year 2050 traffic volumes.

A comparison between SANDAG Year 2050 traffic volumes and existing Year 2025 traffic volumes shows an average growth of 0.45% per year. To be conservative, LLG utilized an ambient growth rate of 1% per year for 3 years to calculate Year 2028 traffic volumes.

The growth factor calculations are included in ***Appendix G.***

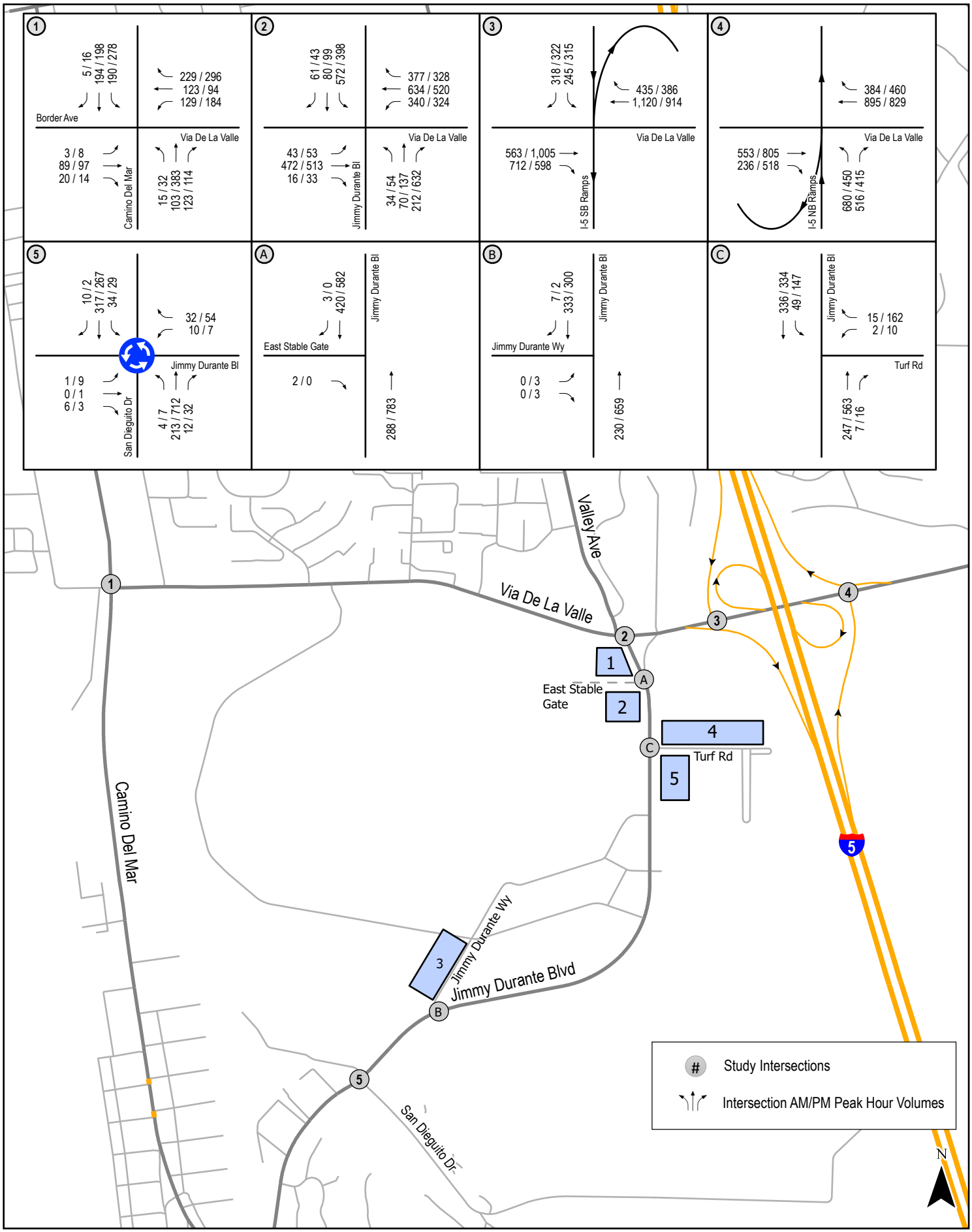

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Figure 12-1
Near-Term (Year 2028) without Project Traffic Volumes

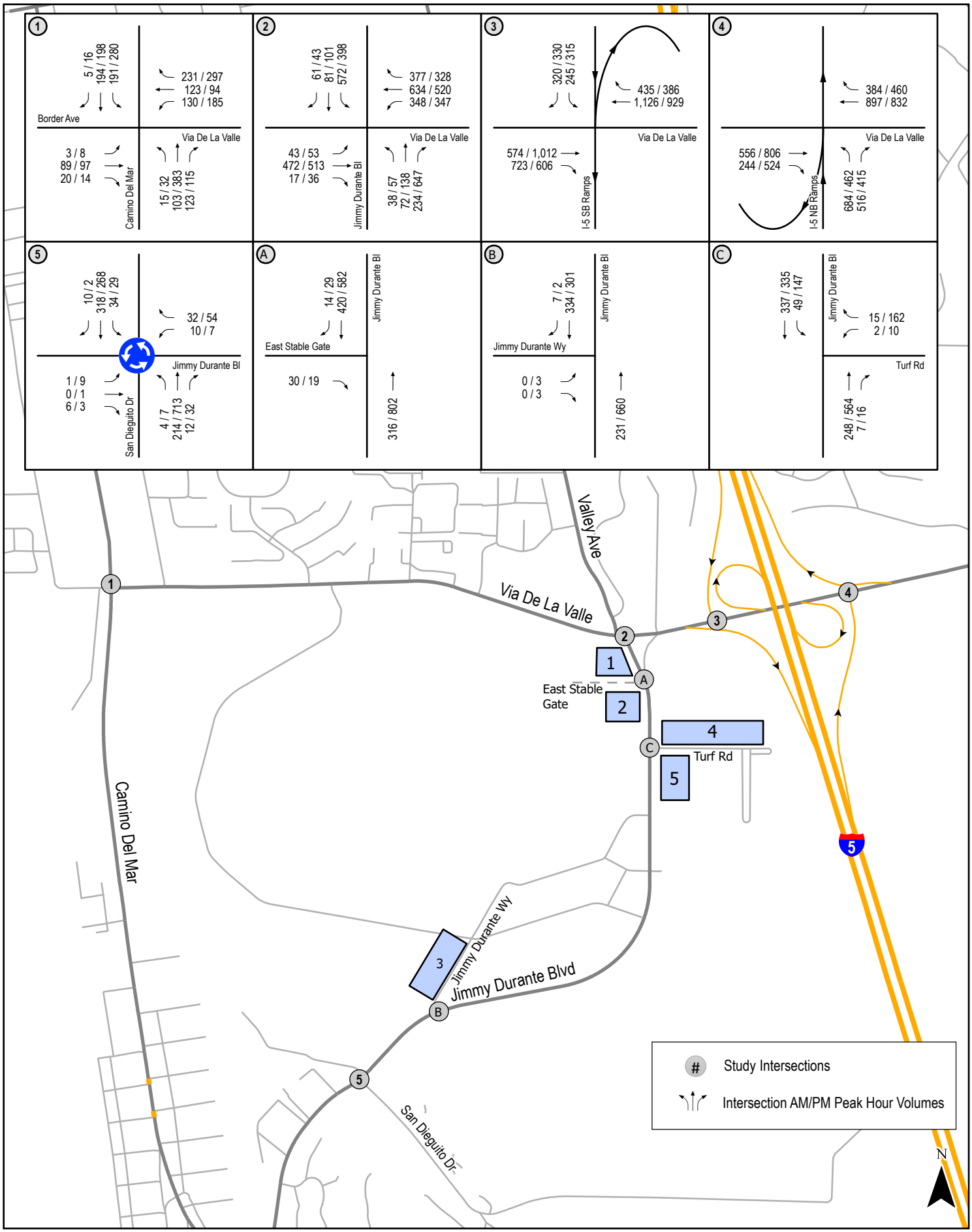

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Figure 12-2A
Near-Term (Year 2028) without Project Sites 1 or 2 Traffic Volumes

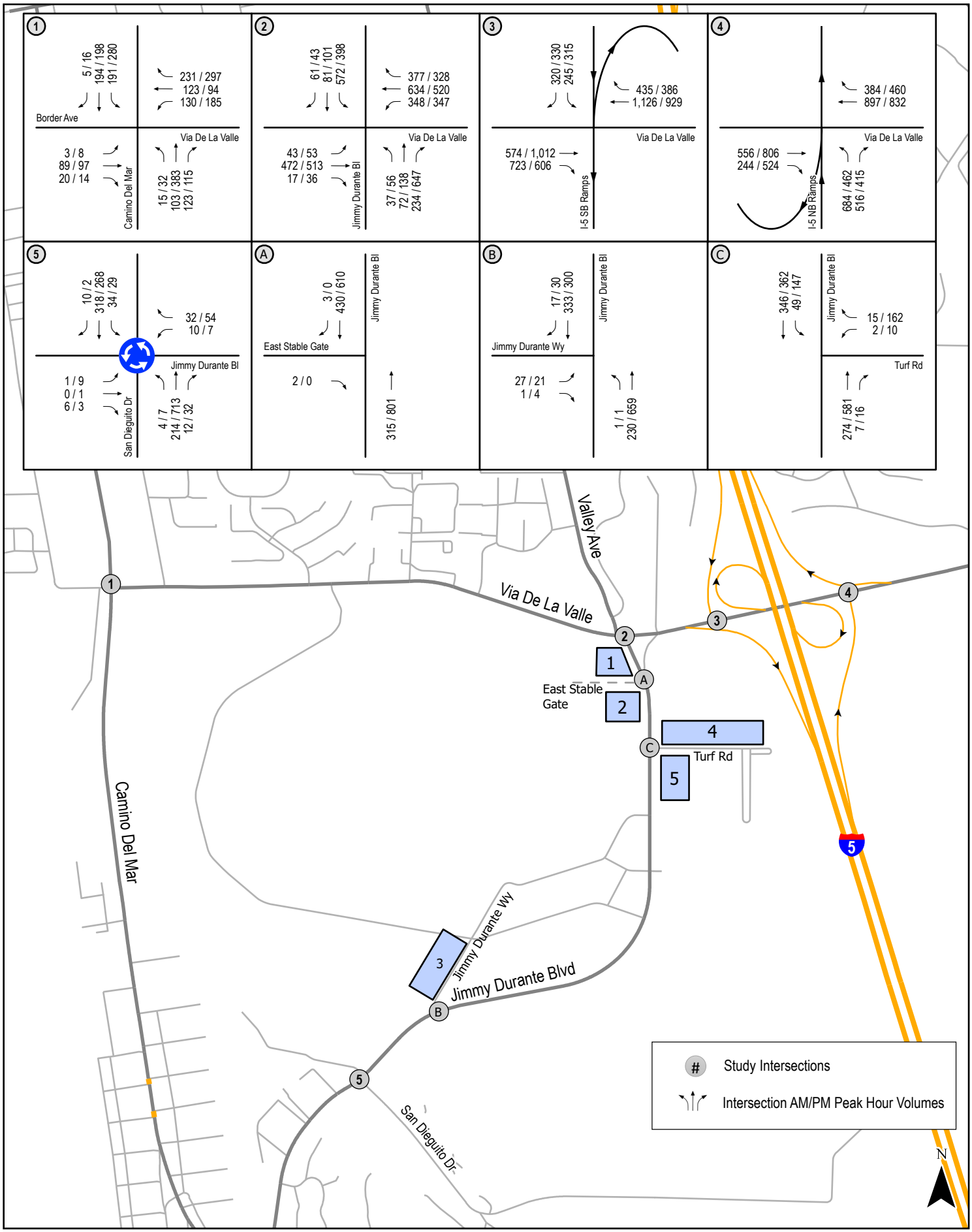

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Figure 12-2B
Near-Term (Year 2028) + Project Site 3 Project Traffic Volumes

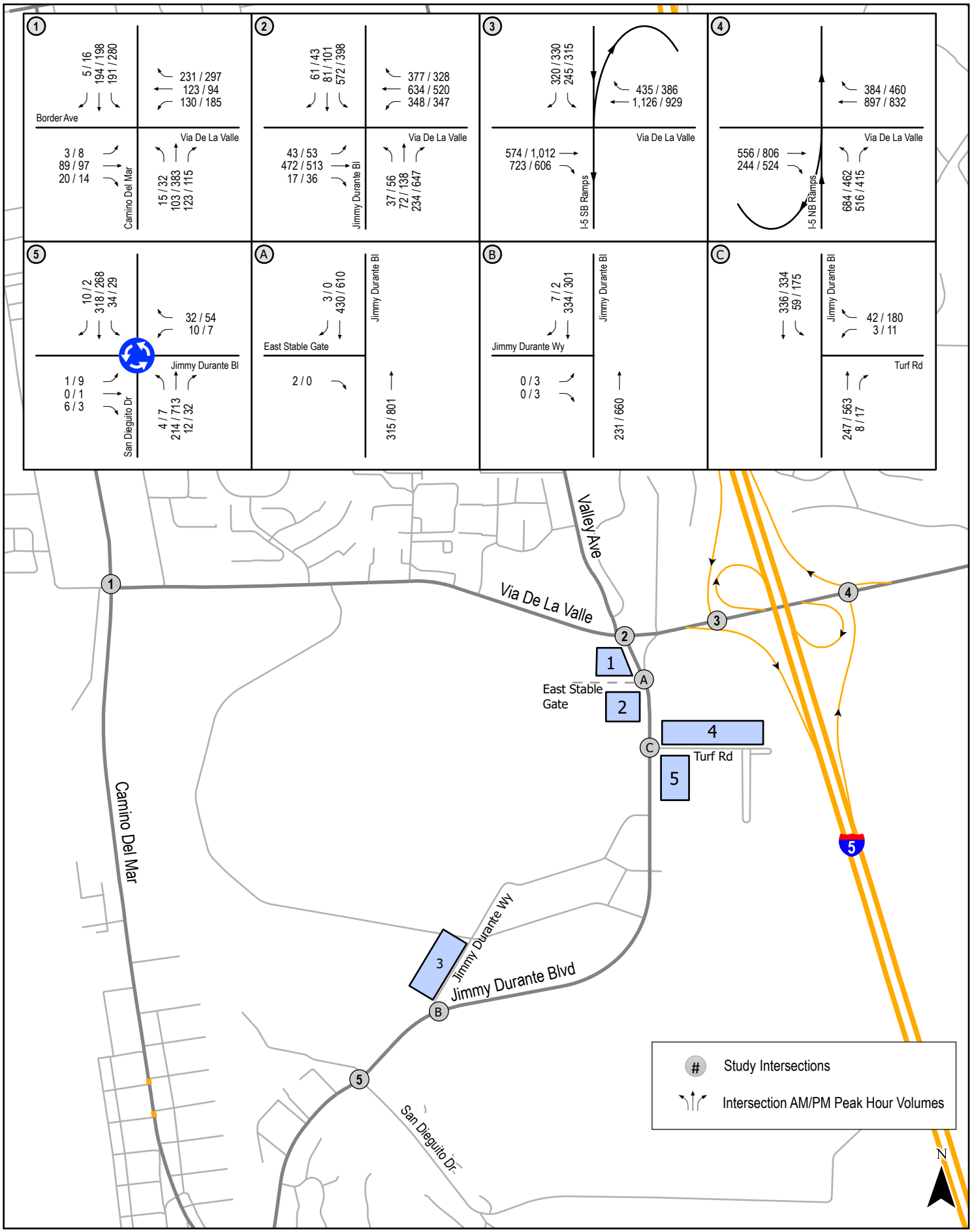

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Figure 12-2C
Near-Term (Year 2028) + Project Site 4 or 5 Project Traffic Volumes

13.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 1 AND SITE 2

The Opening day (Year) for this Project is 2028.

13.1 Opening Day (Year 2028) without Project – Site 1 and Site 2

Table 13-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 13-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

13.2 Opening Day (Year 2028) with Project – Site 1 and Site 2

Table 13-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 13-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix I includes the Opening Day (Year 2028) with Project (Site 1 and 2) peak hour intersection analysis worksheets.

TABLE 13–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	0.6	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.0	No
		PM	19.2	B	19.3	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.5	B	10.8	B	0.3	No
		PM	0.0	A	11.6	B	11.6	No

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TABLE 13–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.8	B	14.8	B	0.0	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.1	B	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

14.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 3

The Opening day (Year) for this Project is 2028.

14.1 Opening Day (Year 2028) without Project – Site 3

Table 14-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 14-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

14.2 Opening Day (Year 2028) with Project – Site 3

Table 14-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 14-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix J includes the Opening Day (Year 2028) with Project (Site 3) peak hour intersection analysis worksheets.

TABLE 14–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	1.3	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.3	No
		PM	19.2	B	19.3	B	0.3	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.5	B	10.5	B	0.0	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 14–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	13.4	B	13.4	No
		PM	14.8	B	19.1	C	4.3	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.2	B	0.1	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

15.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 4 AND SITE 5

The Opening day (Year) for this Project is 2028.

15.1 Opening Day (Year 2028) without Project – Site 4 and Site 5

Table 15-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 15-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

15.2 Opening Day (Year 2028) with Project – Site 4 and Site 5

Table 15-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 15-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix K includes the Opening Day (Year 2028) with Project (Site 4 and 5) peak hour intersection analysis worksheets.

TABLE 15–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	0.6	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.0	No
		PM	19.2	B	19.3	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.5	B	10.5	B	0.0	No
		PM	0.0	A	0.0	A	0.0	No

Continued on the Next Page

TABLE 15–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.8	B	14.8	B	0.0	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.6	B	0.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table -1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

16.0 PROJECT ACCESS ASSESSMENT

Site 1 and Site 2
Access for Site 1 and Site 2 would be provided by the East Main Stable Gate driveway, which connects to Jimmy Durante Boulevard. The East Main Stable Gate driveway is a right-in / right-out access point.

Since only right-in / right-out turns are permitted at the East Main Stable Gate driveway, outbound residents heading north of the site are expected to make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and inbound residents coming from south of the site are expected to make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

As seen in *Table 9-1* and *Table 13-1*, the Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2) intersection will continue to operate acceptably at LOS B or better with the addition of Project traffic.

Site 3
Access to Site 3 would be provided via Jimmy Durante Way, which connects to Jimmy Durante Boulevard. The Jimmy Durante Boulevard / Jimmy Durante Way driveway is a full-access, minor street stop-controlled intersection. As seen in *Table 10-1* and *Table 14-1*, the Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3) intersection will continue to operate acceptably at LOS C or better with the addition of Project traffic.

Site 4 and Site 5 – Access for Site 4 and Site 5 would be provided via Turf Road, which connects to Jimmy Durante Boulevard. The Jimmy Durante Boulevard / Turf Road driveway is a full-access, minor street stop-controlled intersection. As seen in *Table 11-1* and *Table 15-1*, the Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5) intersection will continue to operate acceptably at LOS D or better with the addition of Project traffic.

17.0 CONCLUSIONS

17.1 Operations Analysis

Based on the intersection analysis, all study intersections are calculated to continue to operate at LOS D or better with the addition of the Project located at all five (5) proposed sites. Therefore, no improvements are necessary from an operations perspective.

17.2 VMT

Any of the proposed development scenarios on any of the proposed sites that assume 100% affordable housing can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis.

In development scenarios that include both affordable and market rate units, the affordable units can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis. Market rate units on any of the proposed Sites 1-5 would be expected to result in a significant transportation impact with mitigation required. Mitigation could include implementation of a robust TDM plan or participation in the City of San Diego's Complete Communities Mobility Choices Program, depending on whether the development site is located within the City of Del Mar or the City of San Diego.

BIOLOGICAL RESOURCES CONSTRAINTS MEMORANDUM

To: Dustin Fuller, Supervising Environmental Planner, 22nd District Agricultural Association; Amanda Lee, Principal Planner, City of Del Mar
From: Erika Eidson, Biology Manager, Harris & Associates
Subject: HAP Grant Affordable Housing Project Biological Resources Constraints Memorandum
Date: November 26, 2025
CC: Janelle Firoozi, Senior Environmental Manager, Harris & Associates
Att: 1, Figures; 2, Regulatory Framework; 3, Observed Plant Species; 4, Observed Wildlife Species

Executive Summary

The 22nd District Agricultural Association (District) owns and operates the San Diego County Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts various uses, including the annual San Diego County Fair; two horse racing seasons; concerts and meetings in The Sound; and other events, activities, and celebrations, such as festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year.

The District is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving the Fairgrounds facilities. During this master site planning process, the District has worked with the City of Del Mar to identify portions of the Fairgrounds property that the District may be willing to make available for affordable housing development. In its 6th Cycle Housing Element Update, the City of Del Mar identified and included a portion of the property in the Housing Element residential sites inventory as having the potential to be developed to accommodate affordable housing units. The District and the City of Del Mar have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds property. This study of potential affordable housing on the Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development Housing Acceleration Program (HAP) Cycle 2.

As further detailed below, five potential housing site locations were selected for study through this mutual planning effort, with the goal of selecting one site to develop with housing. This Biological Resources Constraints Memorandum identifies the environmental setting, regulatory setting, data collected, findings, impact avoidance and minimization recommendations, and constraints analysis conclusion. This biological resources survey and research was completed to assess whether there are potential biological resource constraints for the development of housing on the five potential housing sites being studied.

On September 22 and 23, 2025, Harris & Associates conducted a biological resources survey of the five potential project sites (cumulatively totaling 7 acres) and a 100-foot buffer surrounding the sites (resulting in approximately 21.21 acres surveyed in total), herein referred to as the survey area. The purpose of this survey was to identify existing vegetation and other sensitive resources within each prospective site area to assist with early planning and to identify potential biological constraints for developing each site. In addition to the survey results, this memorandum identifies existing land uses, topography and soils, hydrology, and climate factors to aid in the

potential environmental impact evaluation of the HAP Grant Affordable Housing Project (project) on its current immediate and surrounding environment.

The analysis concludes that no sensitive plant or wildlife species or critical habitat areas are within the survey area. Because three of the potential project sites are in the City of Del Mar and two sites are in the City of San Diego, future environmental review and project permitting will need to be processed in accordance with the respective regulatory frameworks, permitting requirements, and biological resource policies of the jurisdiction where the development site is located, as further described below. All five potential project sites offer a high level of developable opportunity with minimal biological constraints anticipated. Any future project, regardless of site chosen, should include the two standard conditions of approval recommended in the Impact Avoidance and Minimization Recommendations section to minimize potential impacts by controlling construction timing to avoid raptor and bird breeding season and requiring best management practices to control stormwater.

Project Description

Five potential housing site locations have been selected within the Fairgrounds, with the goal of selecting one site to develop with housing. Three sites are in the City of Del Mar, and two sites are in the City of San Diego. For the purpose of this study, the assumption is that a prospective housing project would include at least 61 units of lower-income housing in a housing project that is a multi-family lower-income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022–2023). Because the Fairgrounds property is within the Federal Emergency Management Agency-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed with floodproofing measures, including a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface-level parking.

Regional Location and Setting

The Fairgrounds property is located within the San Dieguito River Valley in coastal North San Diego County, directly adjacent to the San Dieguito River and Lagoon, and is located roughly 0.5 mile from the Pacific Ocean (Attachment 1, Figures; Figure 1, Regional Location). This area represents the coastal terminus of the San Dieguito River Watershed, a major drainage system extending inland to the Volcan Mountains.

Regionally, the setting is characterized by coastal terraces and alluvial floodplains that transition into the foothills and inland mesas of the Peninsular Ranges Geomorphic Province. The San Dieguito Lagoon, located immediately south and east of the Fairgrounds, forms a broad coastal estuary that supports a diverse assemblage of wetland habitats and functions as an important tidal and fluvial interface between upland and marine environments. Elevations within the regional landscape range from sea level along the lagoon to several hundred feet above mean sea level (AMSL) in the surrounding mesas. The San Dieguito River Park and associated lagoon restoration area represent key components of the regional open space network, providing habitat connectivity and floodplain protection. The prospective project sites are within existing developed and previously developed areas that occur within this broader ecological context, where natural hydrologic processes, coastal influences, and regional conservation efforts collectively define the biological setting of northwestern San Diego County.

Project Location and Setting

Descriptions of the five potential housing site locations are detailed below and summarized in Table 1, Potential Housing Sites. The five sites are located in the eastern portion of the Fairgrounds along Jimmy Durante Boulevard and range from approximately 1 to 1.5 acres (Figure 2, Potential Housing Sites).

Table 1. Potential Housing Sites

Site Number	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	2982710300	City of Del Mar	1.5
2	South of Stable Gate Site	2990300500, 2990302200	City of Del Mar	1.5
3[1]	Adjacent to Fire Station Site	2990302200	City of Del Mar	1
4	Surf and Turf RV Park Site	2990420300	City of San Diego	1.5
5	Dirt Lot Site	2990420300	City of San Diego	1.5

Notes:

[1] The 2023 Stephan Dalton Architects (SDA) Study identified two scenarios for Site 3: a 1-acre new housing site or a 1.5-acre new housing site that would also include redevelopment of the fire station. This memorandum focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Site 1: East Main Stable Gate Site

Site 1 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to the existing horse stables. The 1.5-acre site is bounded by Via De La Valle to the north and Jimmy Durante Boulevard to the east (Figure 2).

Site 2: South of Stable Gate Site

Site 2 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to and south of the East Main Stable Gate and parking lot. The 1.5-acre site is bounded by Jimmy Durante Boulevard to the east and the Main Stable Gate parking lot to the north (Figure 2).

Site 3: Adjacent to Fire Station Site

Site 3 is in the southeastern corner of the Fairgrounds within the City of Del Mar. The 1-acre site is located between the existing O'Brien Hall and southeast Fairgrounds parking lot, directly north of the existing Del Mar Fire Department building (Figure 2).

Site 4: Surf and Turf RV Park Site

Site 4 is in the northeastern corner of the Fairgrounds within the City of San Diego. The 1.5-acre gravel site is located south of the Hilton San Diego Del Mar Hotel and north of Turf Road, adjacent to Jimmy Durante Boulevard (Figure 2).

Site 5: Dirt Lot Site

Site 5 is in the northeastern corner of the Fairgrounds within the City of San Diego, located south of Turf Road and the San Diego County Fairgrounds Surf and Turf RV Park. The 1.5-acre site includes a portion of a larger, undeveloped dirt parking lot, bounded by Jimmy Durante Boulevard to the west (Figure 2).

Environmental Setting

The environmental setting analysis includes consideration of the existing land uses, topography and soils, hydrology, and climate factors, as further described in the following sections.

Land Use

The survey area encompasses five distinct project sites located on the Fairgrounds property in the City of Del Mar and the City of San Diego: the East Main Stable Gate Site, South of Stable Gate Site, Adjacent to Fire Station Site, Surf and Turf RV Park Site, and the Dirt Lot Site. Each of these sites occurs in a highly developed portion of the Fairgrounds property regional entertainment venue, located within the San Dieguito River Valley, that hosts various uses associated with the San Diego County Fair, Del Mar Racetrack, and other events.

The East Main Stable Gate Site (Site 1) is north of the Fairgrounds East Main Stable Gate access driveway and is characterized by developed land used as a parking lot with direct access to and from Jimmy Durante Boulevard. The parking area includes 100 parking spaces, 90 of which are used for parking, while the other 10 are used to

store traffic control-related vehicles and equipment. The site includes paved and compacted dirt areas with fencing, gates, and ornamental vegetation. Surrounding land uses include the intersection of Jimmy Durante Boulevard and Via De La Valle to the northeast and horse barns to the south and west. No native vegetation communities occur on Site 1. The site is currently developed with a paved parking lot and compacted dirt areas and lacks sensitive biological resources. Site 1 offers a high level of developable opportunity with minimal biological constraints anticipated.

The South of Stable Gate Site (Site 2) is characterized by developed land used for equestrian-related access, staging, and supporting infrastructure associated with the Fairgrounds' stabling operations. Surrounding land uses include Jimmy Durante Boulevard to the east, horse barns to the west and south, and the East Main Stable Gate access driveway and parking lot to the north. Site 2 is occupied by compacted dirt areas and horse boarding stables for the Del Mar Racetrack. No native vegetation communities occur on Site 2. The site is currently developed with horse stable structures and lacks sensitive biological resources. Site 2 offers a high level of developable opportunity with minimal biological constraints anticipated.

The Adjacent to Fire Station Site (Site 3) is directly north of the existing Del Mar Fire Department station and contains existing District office buildings, public restroom buildings, and maintained ornamental landscaping. The buildings encompass 14,250 square feet (including the boardroom, human resources offices, marketing offices, and bathrooms). The surrounding land uses are similarly developed, including Fairgrounds buildings to the north and west, the Del Mar Fire Department station to the south, and paved parking to the east. No native vegetation communities occur on Site 3. The site is currently developed with structures and lacks sensitive biological resources. Site 3 offers a high level of developable opportunity with minimal biological constraints anticipated.

The Surf and Turf RV Park Site (Site 4) is currently developed as a recreational vehicle (RV) park with 66 compacted gravel RV parking stalls, utility hookups, and ornamental landscaping. The site is surrounded by a mixture of public roadways (including Turf Road to the south and Jimmy Durante Boulevard to the west), recreational uses to the east (including the eastern portion of the RV park and tennis courts farther east), Fairgrounds horse stables to the west, and compacted dirt lots to the south. No native vegetation communities occur on Site 3. The site is currently developed with no structures and lacks sensitive biological resources. Site 4 offers a high level of developable opportunity with minimal biological constraints anticipated.

The Dirt Lot Site (Site 5) consists primarily of an undeveloped dirt lot with a flat, compacted dirt surface historically used for overflow parking and materials staging for the Fairgrounds. The site is largely devoid of vegetation except for scattered non-native ruderal species along its periphery. The site is surrounded by public roadways (including Turf Road to the north and Jimmy Durante Boulevard to the west), recreational uses to the north consisting of the existing RV park, compacted dirt lots to the east and south, and Fairgrounds horse stables to the west. No native vegetation communities occur on Site 5. The site is currently developed with no structures and lacks sensitive biological resources. Site 5 offers a high level of developable opportunity with minimal biological constraints anticipated.

Topography and Soils

The topography of each of the five potential sites (the survey area) is relatively flat, reflecting the low-lying position of the Fairgrounds and adjacent developed lands within the lower San Dieguito River Valley. Elevation across the project sites ranges from approximately 9 to 17 feet AMSL (Figure 3, USGS Topographic Map). Specifically, Site 1 ranges from 9.4 to 17.1 feet AMSL, Site 2 ranges from 10.3 to 12.3 feet AMSL, Site 3 ranges from 9.9 to 11.7 feet AMSL, Site 4 ranges from 11.9 to 14.5 feet AMSL, and Site 5 ranges from 12.8 to 14.5 feet AMSL.

A review of the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey (USDA 2020) identified four mapped soil units within the project sites: Chino silt loam, saline; Huerhuero loam; Huerhuero-Urban land complex; and Made land. Descriptions of these soil series are provided below, and their occurrence in the survey area is illustrated on Figure 4, Soils:

- **Chino Silt Loam, Saline (in Site 4 and Site 5 and their respective survey buffers)** – The Chino series consists of very deep, poorly drained soils formed in alluvium derived from sedimentary rock sources. These soils are typically found on floodplains and alluvial fans and are subject to seasonal flooding or high water tables.

Permeability is slow, and runoff is very slow. The saline phase indicates the presence of soluble salts, common in coastal or low-lying basins influenced by marine sediments or tidal action (USDA 2020).

- **Huerhuero Loam (in Site 4 and Site 5 and their respective survey buffers)** – The Huerhuero series consists of moderately well-drained soils formed in material weathered from sedimentary rocks on marine terraces and alluvial fans. These soils occur on slopes ranging from 2 to 15 percent and exhibit moderate permeability. The surface layer is typically loam underlain by clay loam or sandy clay loam subsoil. Runoff is slow to medium (USDA 2020).
- **Huerhuero-Urban Land Complex (in the survey buffers of Site 1 and Site 2)** – This mapping unit represents areas where Huerhuero soils have been extensively altered by grading, compaction, and development. The soil profile has been modified through the addition of fill or removal of native material, resulting in variable surface textures and drainage characteristics. Such soils are common in developed portions of the Fairgrounds and adjacent facilities (USDA 2020).
- **Made Land (in Sites 1 Through 5 and their respective survey buffers)** – This unit consists of areas that have been filled or otherwise extensively modified by human activity. Material composition varies widely and may include imported soil, construction debris, or compacted fill. Drainage and permeability are variable and generally controlled by the degree of compaction and fill composition. This unit typically supports developed or disturbed land uses such as parking areas, storage yards, and structures (USDA 2020).

Soil type can potentially affect the occurrence of certain sensitive species. Overall, the soils on all five potential project sites reflect a long history of grading, fill placement, and surface disturbance associated with the construction and operation of the Fairgrounds and surrounding infrastructure. Native soil profiles are limited, and much of the area is mapped as modified or made land (Figure 4). Therefore, it is anticipated that soil type would not be a constraint for development related to biological resources on each of the five potential sites.

Hydrology

No vernal pools, marshes, drainages, or other aquatic resources were identified on the project sites. All runoff is routed to engineered drainage systems that ultimately discharge into the surrounding flood control and lagoon system. Therefore, no aquatic resources or jurisdictional features occur on any of the five potential project sites.

The survey area is located within the San Dieguito River Watershed, Hydrologic Unit 905.1 (Project Clean Water 2025). The San Dieguito River Watershed lies along the north-central coast of San Diego County and extends from the Pacific Ocean inland to the Volcan Mountains near Julian. The watershed drains approximately 346 square miles and includes a variety of coastal and inland hydrologic features such as the San Dieguito River, Lake Hodges, and numerous tributary drainages. The San Dieguito River flows westward through the Cities of Del Mar, Solana Beach, and San Diego before discharging into the Pacific Ocean via the San Dieguito Lagoon at the river mouth.

The five potential project sites (Sites 1 through 5) are situated within a highly developed portion of the lower San Dieguito River Valley adjacent to the Fairgrounds. The area is nearly level and heavily modified, consisting primarily of paved or compacted surfaces and developed facilities. Surface drainage within the project sites is conveyed through engineered storm drain systems, graded flow paths, and surrounding roadway infrastructure. No natural drainages, wetlands, or aquatic features were observed within the survey area.

Review of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and U.S. Geological Survey National Hydrography Dataset mapping indicates no jurisdictional aquatic resources within the five potential project sites and their associated survey buffers (USFWS 2025a; USGS 2025). However, both datasets show extensive aquatic resources within the adjacent San Dieguito Lagoon and San Dieguito River channel, including aquatic resources approximately 500 feet west of Site 1 and approximately 450 feet south of Site 3 (Figure 5, Hydrology). The lagoon complex includes estuarine and marine wetlands, freshwater emergent wetlands, freshwater forested/shrub wetlands, and riverine features associated with the tidal and freshwater inflows of the San Dieguito River. These features are part of the San Dieguito Lagoon State Marine Conservation Area, which provides important hydrologic connectivity to the Pacific Ocean. However, as previously detailed, no aquatic resources or jurisdictional features occur on any of the five potential project sites themselves.

Climate

On a regional level, San Diego County has a Mediterranean climate, which is characterized by wet winters and dry summers. This is largely because of a semi-permanent high-pressure zone that sits over the Pacific Ocean during much of the year and forms a fog belt (marine layer). Climate for the survey area can therefore be characterized as dry, subhumid mesothermal, with a main growing season in the wet months of the year (late winter to early spring). The rainy season in San Diego County typically lasts from October through March. Summer months include June, July, August, and September. Vegetation often goes dormant during the later summer months until the first rain in the fall.

According to historical data from the Del Mar weather station, located approximately 0.2 mile southwest of the survey area, the average maximum annual temperature for the area surrounding the project site is 70.3 degrees Fahrenheit (°F), and the average minimum temperature is 57.1°F. Average annual precipitation in the area is 7.45 inches. The total precipitation for the rainy season (October 2024 through March 2025) was 5.66 inches (National Weather Service 2025), which is approximately 1.79 inches below the typical average for this area.

Regulatory Setting

This section identifies potential environmental resources protection and regulatory requirements applicable to proposed development within the survey area. At a minimum, a proposed housing development on the Fairgrounds property will require approval of a Coastal Development Permit by the California Coastal Commission and compliance with applicable federal, state, and local resource protection requirements. Federal, state, regional, and local regulations, plans, and policies that provide protection and management of sensitive biological resources applicable to the project are listed below and described in Attachment 2, Regulatory Framework. Because three of the potential project sites are in the City of Del Mar and two sites are in the City of San Diego, future environmental review and project permitting will need to be processed in accordance with the respective regulatory frameworks, permitting requirements, and biological resource policies of the jurisdiction where the development site is located.

Federal

- Bald and Golden Eagle Protection Act (16 USC 668–668[d])
- Clean Water Act, Section 404 (33 CFR 328.3[a])
- Federal Endangered Species Act, Sections 4(d), 7, or 10(a) (16 USC 1531 et seq.; 50 CFR Part 402)
- Migratory Bird Treaty Act (MBTA) (16 USC 703–712; 50 CFR 10)
- Rapanos Guidance Key Points Summary

State

- California Coastal Act (California Public Resources Code, Section 30000)
- California Migratory Bird Protection Act (Assembly Bill 454)
- Birds of Prey Protection Provision (California Fish and Game Code, Section 3503.5)
- California Endangered Species Act (California Fish and Game Code, Section 2050 et seq.)
- California Fish and Game Code, Section 1602
- California Fish and Game Code, Section 3503
- California Environmental Quality Act, as amended (California Public Resources Code, Section 21000 et seq.)
- California Fully Protected Wildlife Species Provision (California Fish and Game Code, Sections 3511, 4700, 5050, and 5515)
- California Native Plant Protection Act (California Fish and Game Code, Sections 1900–1913)
- Regional Water Quality Control Board
- Streambed Alteration Agreement (California Fish and Game Code, Section 1600)
- Natural Community Conservation Planning Act, as amended (California Fish and Game Code, Sections 2800–2835)
- Porter-Cologne Water Quality Control Act

Local

- City of Del Mar Local Coastal Program
- City of San Diego Local Coastal Program

Data Collection

This biological resources analysis includes the results of a database review and a biological resources survey that document the existing biological conditions of the survey area. The results provide information on potential constraints to project construction due to the presence (or lack thereof) of sensitive biological resources. The methods for the database review and field survey are described below.

Database Review

A review of online databases including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2025a), CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2025b), USFWS NWI Wetlands Mapper (USFWS 2025a), USFWS Information for Planning and Consultation (USFWS 2025b), San Diego Geographic Information Source (SanGIS) SanBIOS database (SanGIS 2025), Consortium of California Herbaria database (CCH 2025), Calflora database (Calflora 2025), and California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2025) was conducted for all five potential project sites and a 1-mile radius of the survey area.

Field Reconnaissance Survey

A biological resources survey of the survey area was conducted by Harris & Associates biologists on September 22 and 23, 2025. A 100-foot buffer (where feasible) was used for the biological survey. The survey was conducted by walking meandering transects throughout the survey area and mapping vegetation communities, documenting plant and wildlife species, noting suitable habitat, and evaluating the potential for occurrence of sensitive, rare, threatened, and endangered plant and wildlife species (Attachment 3, Observed Plant Species, and Attachment 4, Observed Wildlife Species). Vegetation mapping was recorded in the field using the ArcGIS Collector application with an aerial image of the survey area. Wildlife species were identified visually with the aid of binoculars or by sign (e.g., burrows, scat, feathers) and aurally by listening for vocalizations. The potential for sensitive plant and wildlife species to occur in the survey area is presented in Table 3, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites), in the Results section.

The results of this analysis provide information on the potential constraints to project development due to the presence of special-status biological resources. No focused wildlife, plant, or other surveys were conducted as part of this analysis.

Survey Limitations

Plants and wildlife were identified by direct observation, vocalizations, or other observance, including tracks, scat, and other signs. Therefore, lists of observed species are not necessarily comprehensive because species can be nocturnal, secretive, or within the region and survey area seasonally (migration) and may not have been observed.

Findings

The results presented below are based on the information collected during the survey conducted in the survey area.

Vegetation Communities and Land Cover Types

All five potential project sites are classified as “urban/developed,” as shown on Figure 6, Land Cover. The sites are within the southwestern California region of the California Floristic Province (Jepson Flora Project 2025). Only one land cover type—urban/developed—was identified in the survey area (Oberbauer et al. 2008) (Figure 6).

Table 2, Land Cover Types in the Survey Area, presents the acreages of the land cover types that occur on each site.

Table 2. Land Cover Types in the Survey Area

Project Site	Land Cover Type	Project Site (acres)
Site 1 – East Main Stable Gate Site	Urban/Developed	1.50
Site 2 – South of Stable Gate Site	Urban/Developed	1.50
Site 3 – Adjacent to Fire Station Site	Urban/Developed	1.00
Site 4 – Surf and Turf RV Park Site	Urban/Developed	1.50
Site 5 – Dirt Lot Site	Urban/Developed	1.50
100-Foot Buffer	Urban/Developed	14.21
	Total	**21.21**

Notes: Acreages are approximate and based on ArcGIS Collector data. Values are rounded up to one-hundredth of an acre.

Disturbed/Developed

Urban/Developed (12000)

Urban/developed land includes areas that have been constructed on or otherwise physically altered to an extent that native vegetation is no longer supported. Urban/developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation.

Approximately 21.21 acres of urban/developed land occur within the survey area, with 7 acres occurring directly within the five potential project site boundaries (Figure 6). Urban/developed land is present on all five project sites and primarily consists of paved and compacted surfaces, including parking lots, access roads, and maintenance or staging areas. These areas also support buildings, horse stables, utility structures, and other permanent and semi-permanent facilities associated with the Fairgrounds and adjacent operations. The East Main Stable Gate Site (Site 1) and South of Stable Gate Site (Site 2) are largely composed of graded or compacted surfaces used for parking and equestrian-related access and operations. The Surf and Turf RV Park Site (Site 4) includes gravel RV pads, ornamental landscaping, and infrastructure for RV use, while the Adjacent to Fire Station Site (Site 3) is developed with District office buildings.

Although the Dirt Lot Site (Site 5) is devoid of vegetation, it has been completely graded and physically altered such that no natural landform or potential for native vegetation remains. Because the site lacks soil structure or vegetative cover and exhibits characteristics consistent with permanent alteration through prior development or fill placement, it is more appropriately categorized as Urban/Developed rather than Disturbed, which typically retains some potential for ruderal or non-native vegetation establishment.

Plant Species

Attachment 3 lists the vascular plant species observed in the survey area during the 2025 biological resources survey. In total, 26 plant species were identified in the survey area, 2 (8 percent) of which were native and 24 (92 percent) of which were non-native. No sensitive plant species were observed during the 2025 survey at any of the five potential project sites. The sensitive plant species with potential to occur in the survey area are discussed in the Sensitive Plant and Wildlife Species section.

Wildlife Species

Attachment 4 lists the wildlife species observed in the survey area during the 2025 biological resources survey. In total, 15 wildlife species were observed, 13 (87 percent) of which were native and 2 (13 percent) of which were non-native. Ornamental plantings observed within the survey area have the ability to provide refugia, foraging, and breeding opportunities for common species, including nesting birds. The sensitive wildlife species with potential to occur in the survey area are discussed in the Sensitive Plant and Wildlife Species section.

Sensitive Plant and Wildlife Species

This section includes sensitive plant and wildlife species, including nesting birds and critical habitat, as defined by the CDFW, CNPS, and USFWS (CDFW 2025a, 2025c, 2025d; CNPS 2025; USFWS 2025b). Sensitive species are those recognized by federal or state agencies as being potentially vulnerable to impacts because of rarity, local or regional reductions in population numbers, isolation/restricted genetic flow, or other factors. Sensitive plants include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW; those considered sensitive by the CDFW; and those species included in the California Rare Plant Rank inventory maintained by the CNPS. Sensitive wildlife species include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW or those considered sensitive by the CDFW.

As described in the Database Review section, distributions of historical sensitive species observations in the project vicinity were reviewed in preparation of this memorandum. For the purposes of this biological constraints analysis, those species that either are known to occur or have some potential to occur within the vicinity of each of the five potential project sites are addressed in this section. Figure 7, Historical Species with Potential to Occur, presents the CNDDB results for sensitive species with potential to occur on the five potential project sites and within a 1-mile radius. Database results (i.e., CNPS, Information for Planning and Consultation [IPaC]) that did not provide geographic information system mapping data are only listed in Table 3, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites), and are not shown on Figure 7. Table 3 provides the list of sensitive plant and wildlife species that are potentially occurring along with an assessment of their potential for occurrence on the project site. Listing status, habitat requirements, and observation or potential for occurrence information are also provided in Table 3.

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Plants				
Acmispon prostratus	Nuttall's acmispon	None/None/1B.1/ None	Blooms March–June (July). Occurs in coastal dunes and coastal scrub (sandy) from zero to 35 feet AMSL.	*Not Expected*. Suitable coastal dune or coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area (i.e., San Dieguito Lagoon California Least Tern Nesting Colony to the south). No known occurrences within the survey area (CNPS 2025).
Aphanisma blitoides	Aphanisma	None/None/1B.2/ List A	Blooms February–June. Occurs in coastal bluff scrub, coastal dunes, and coastal scrub, sometimes in gravelly or sandy soils from 5 to 1,000 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, coastal dunes, or coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Atriplex pacifica	South coast saltscale	None/None/1B.2/ List A	Blooms March–October. Occurs in coastal bluff scrub, coastal dunes, coastal scrub, and playas from zero to 460 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, coastal dunes, coastal scrub, or playa habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Ceanothus verrucosus	Wart-stemmed ceanothus	None/None/2B.2/ List B	Blooms December–May. Occurs in chaparral and coastal scrub from 5 to 1,245 feet AMSL.	*Not Expected*. Suitable chaparral and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Centromadia parryi ssp. *australis*	Southern tarplant	None/None/1B.1/ List A	Blooms May–November. Occurs in marshes and swamps (margins), valley and foothill grassland (vernally mesic), and vernal pools from zero to 1,575 feet AMSL.	*Not Expected*. Suitable marshes and swamps (margins), valley and foothill grassland (vernally mesic), and vernal pool habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	None/None/1B.1/ List A	Blooms January–August. Occurs in coastal bluff scrub (sandy) and coastal dunes from zero to 330 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub (sandy) and coastal dune habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Chorizanthe orcuttiana	Orcutt's spineflower	FE/SE/1B.1/List A	Blooms March–May. Occurs in closed-cone coniferous forest, chaparral (maritime), and coastal scrub from 10 to 410 feet AMSL.	*Not Expected*. Suitable closed-cone coniferous forest, chaparral (maritime), and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Chorizanthe polygonoides var. *longispina*	Long-spined spineflower	None/None/1B.2/ List A	Blooms April–July. Occurs in chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools, often in clay soils from 10 to 410 feet AMSL.	*Not Expected*. Suitable chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pool habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Comarostaphylis diversifolia ssp. *diversifolia*	Summer holly	None/None/1B.2/ List A	Blooms April–June. Occurs in chaparral and cismontane woodland from 10 to 410 feet AMSL.	*Not Expected*. Suitable chaparral and cismontane woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Corethrogyne filaginifolia var. *incana*	San Diego sand aster	None/None/1B.1/ List A	Blooms June–September. Occurs in coastal bluff scrub, chaparral, and coastal scrub from 10 to 410 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, chaparral, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	None/None/1B.1/ List A	Blooms May–September. Occurs in sandy soils in coastal bluff scrub, chaparral (maritime, openings), and coastal scrub from 15 to 490 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, chaparral (maritime, openings), and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Erysimum ammophilum	Sand-loving wallflower	None/None/1B.2/ None	Blooms February–June (July–August). Occurs in openings and sandy soils in chaparral (maritime), coastal dunes, and coastal scrub from zero to 195 feet AMSL.	*Not Expected*. Suitable chaparral (maritime), coastal dunes, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Euphorbia misera	Cliff spurge	None/None/2B.2/ List B	Blooms February–June (July–August). Occurs in rocky soils in coastal bluff scrub, coastal scrub, and Mojavean desert scrub from 35 to 1,640 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub, coastal scrub, and Mojavean desert scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Heterotheca sessiliflora ssp. *sessiliflora*	Beach goldenaster	None/None/1B.1/ None	Blooms March–December. Occurs in chaparral (coastal), coastal dunes, and coastal scrub from 35 to 1,640 feet AMSL.	*Not Expected*. Suitable chaparral (coastal), coastal dunes, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Iva hayesiana	San Diego marsh-elder	None/None/2B.2/ List B	Blooms April–October. Occurs in marshes, swamps, and playas from zero to 1,640 feet AMSL.	*Not Expected*. Suitable marshes, swamps, and playa habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/1B.1/ List A	Blooms February–June. Occurs in marshes and swamps (coastal salt), playas, and vernal pools from zero to 1,640 feet AMSL.	*Not Expected*. Suitable marshes and swamps (coastal salt), playas, and vernal pool habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Leptosyne maritima	Sea dahlia	None/None/2B.2/ None	Blooms March–May. Occurs in coastal bluff scrub and coastal scrub from 15 to 490 feet AMSL.	*Not Expected*. Suitable coastal bluff scrub and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Nemacaulis denudata var. *denudata*	Coast woolly-heads	None/None/1B.2/ List A	Blooms April–September. Occurs in coastal dunes from zero to 330 feet AMSL.	*Not Expected*. Suitable coastal dune habitat is not present within the survey area. Species known from within 1 mile of the survey area (i.e., San Dieguito Lagoon California Least Tern Nesting Colony to the south). No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Pinus torreyana ssp. *torreyana*	Torrey pine	None/None/1B.2/ List A	Perennial evergreen tree. Occurs in sandstone soils in closed-cone coniferous forest and chaparral from 100 to 525 feet AMSL.	*Not Expected*. Suitable closed-cone coniferous forest and chaparral habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Quercus dumosa	Nuttall's scrub oak	None/None/1B.1/ List A	Blooms February–April (May–August). Occurs in clay, loam, and sandy soils in closed-cone coniferous forest, chaparral, and coastal scrub from zero to 330 feet AMSL.	*Not Expected*. Suitable closed-cone coniferous forest, chaparral, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Senecio aphanactis	Chaparral ragwort	None/None/1B.2/ List B	Blooms January–April (May). Occurs in alkaline (sometimes) soils in chaparral, cismontane woodland, and coastal scrub from 50 to 2,625 feet AMSL.	*Not Expected*. Suitable chaparral, cismontane woodland, and coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).
Suaeda esteroa	Estuary seablite	None/None/1B.2/ List A	Blooms (January–May) July–October. Occurs in marshes and swamps (coastal salt) from 50 to 2,625 feet AMSL.	*Not Expected*. Suitable marshes and swamp habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CNPS 2025).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Wildlife				
Invertebrates				
Danaus plexippus plexippus pop. 1	Monarch – California overwintering population	PT/None/—/List 2	Occurs in coastal areas, riparian corridors, and mixed scrub habitats containing groves of eucalyptus (*Eucalyptus* spp.), Monterey pine (*Pinus radiata*), or cypress (*Cupressus* spp.) that provide sheltered microclimates for overwintering. Requires milkweed species (*Asclepias* spp.) as host plants for larval development and depends on abundant nectar sources during the breeding season.	*Not Expected*. Eucalyptus trees are present within the survey area; however, eucalyptus trees within the survey area do not provide habitat capable of supporting this species. Furthermore, host plants and nectar sources for this species are not present. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Amphibians				
Spea hammondii	Western spadefoot toad	None/SSC/—/ None	Occurs primarily in grasslands or coastal sage scrub with vernal pools or similar shallow, temporary pools for breeding.	*Not Expected*. Suitable coastal sage scrub with vernal pools or similar shallow temporary pools are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Reptiles				
Anniella stebbinsi	Southern California legless lizard	None/SSC/—/ None	Occurs in coastal scrub, chaparral, grassland, and oak woodland habitats with loose, moist, sandy or loamy soils, often beneath leaf litter or duff. Spends most of its life underground or beneath surface debris and forages for small invertebrates such as beetle larvae and termites.	*Not Expected*. Suitable sandy areas in coastal scrub, chaparral, grassland, and oak woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Arizona elegans occidentalis	California glossy snake	None/SSC/—/ None	Occurs in arid and semi-arid regions including coastal sage scrub, chaparral, and grassland habitats with loose, sandy, or loamy soils. Primarily nocturnal, it shelters in rodent burrows or under surface objects during the day and forages at night for small mammals and lizards.	*Not Expected*. Suitable coastal sage scrub, chaparral, and grassland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Birds				
Charadrius nivosus nivosus	Western snowy plover	FT/SSC/—/MSCP	Occurs on coastal beaches, sand spits, dunes, and estuarine flats with sparse or low vegetation. Nests in shallow scrapes on open sandy or saline substrates above the high-tide line and forages along the intertidal zone for small invertebrates.	*Not Expected Foraging or Nesting*. Suitable coastal beaches, sand spits, dunes, and estuarine flat habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Elanus leucurus majusculus	White-tailed kite	None/FP/—/None	Occurs in open groves, river valleys, marshes, grasslands, but found in a wide variety of habitats including grassland, open oak woodland, desert grassland, and suburban areas with wood-lined canyons. Requires tall trees for perching and nesting.	*Not Expected Foraging or Nesting*. Suitable open groves, river valleys, marshes, grasslands, and oak woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Circus hudsonius	Northern harrier	None/SSC/—/ MSCP	Occurs in coastal salt marshes, freshwater marshes, and open grasslands. Nests on the ground in dense vegetation, typically near freshwater or brackish wetlands, and forages over open fields and marshes for small mammals, birds, and reptiles.	*Not Expected Foraging or Nesting*. Suitable coastal salt marshes, freshwater marshes, and open grassland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None/SE/—/ MSCP	Occurs in coastal salt marshes dominated by pickleweed (*Salicornia pacifica*) and other halophytic vegetation along the upper margins of tidal channels and estuaries. Nests in dense low vegetation above the high-tide line and forages in adjacent open mudflats and marsh plains.	*Not Expected Foraging or Nesting*. Suitable pickleweed and tidal habitats are not present within the survey area. Species known from within 1 mile of the survey area (i.e., to the south in the lagoon). No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC/—/MSCP	Occurs in coastal sage scrub and associated habitats dominated by California sagebrush (*Artemisia californica*) and other low, soft-leaved shrubs. Nests in dense stands of coastal sage scrub, typically below 1,500 feet AMSL, and forages for small insects among the shrub canopy.	*Not Expected Foraging or Nesting*. Suitable coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area (i.e., to the south in the lagoon). No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Rallus obsoletus levipes	Light-footed Ridgway's rail	FE/SE/—/MSCP	Occurs in coastal salt marshes dominated by cordgrass (*Spartina foliosa*) and pickleweed along tidal channels and estuarine margins. Nests in dense emergent vegetation slightly above mean high tide and forages in tidal creeks, mudflats, and adjacent marsh plains for invertebrates and small fish.	*Not Expected Foraging or Nesting*. Suitable coastal salt marsh and pickleweed habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Sternula antillarum browni	California least tern (nesting colony)	FE/SE, FP/—/ MSCP	Occurs along coastal beaches, estuaries, and lagoons with open sandy or gravelly substrates. Nests in colonies on sparsely vegetated sand flats, dredge-spoil islands, or river mouths near shallow marine and estuarine waters where small fish are abundant for foraging.	*Not Expected Foraging or Nesting*. Suitable coastal habitats with proper nesting substrates are not present within the survey area. Species known from within 1 mile of the survey area (i.e., to the south in the lagoon). No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).
Vireo bellii pusillus	Least Bell's vireo	FE/SE/—/MSCP	Occurs in riparian woodland and willow scrub habitats dominated by mule fat (*Baccharis salicifolia*), willow (*Salix* spp.), and cottonwood (*Populus fremontii*). Nests in dense understory vegetation near perennial or intermittent streams and forages for insects in adjacent riparian and upland scrub habitats.	*Not Expected Foraging or Nesting*. Suitable riparian habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a; USFWS 2025b).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Mammals				
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	None/SSC/—/ None	Prefers rocky habitat near shrubs but also in grassland and sage scrub that provide forage and essential escape cover from predators. Soil preference is loose and sandy soils, gravel, and mixed rock on moderate to steep slopes.	*Not Expected*. Suitable grassland and sage scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Eumops perotis californicus	Western mastiff bat	None/SSC/—/ None	Occurs in arid and semi-arid regions including desert scrub, chaparral, and open woodland. Roosts in rock crevices, cliff faces, and occasionally in buildings, typically in areas with nearby water and open space for foraging. Forages above open habitats, grasslands, and canyons for flying insects.	*Not Expected Foraging or Roosting*. Suitable desert scrub, chaparral, and open woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).
Nyctinomops femorosaccus	Pocketed free-tailed bat	None/SSC/—/ None	Occurs in arid and semi-arid regions including desert scrub, chaparral, and dry open woodlands. Roosts in crevices of rocky cliffs, canyon walls, and occasionally in tall buildings or bridges. Forages in open areas and along canyon slopes for flying insects, often at high altitudes.	*Not Expected Foraging or Roosting*. Suitable desert scrub, chaparral, and open woodland habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Table 3. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area (Across All Five Potential Project Sites)

Scientific Name	Common Name	Status Federal/State/ CRPR/County	Habitat	Potential to Occur
Perognathus longimembris	Pacific pocket mouse	FE/SSC/—/None	Found in a range of habitats that have sandy soils and open vegetation structure in coastal Southern California (dunes, strands, mesas, drainages, canyons with mixed coastal scrub, grasses, and forbs). Only found in one location in Orange County, California, and on Marine Corps Base Camp Pendleton, in California.	*Not Expected*. Suitable dunes, strands, mesas, drainages, canyons and mixed coastal scrub habitats are not present within the survey area. Species known from within 1 mile of the survey area. No known occurrences within the survey area (CDFW 2025a).

Notes: AMSL = above mean sea level; CDFW = California Department of Fish and Wildlife; CRPR = California Rare Plant Rank; None = No status indicated for species; USFWS = U.S. Fish and Wildlife Service
CNPS Rare Plant Ranking: 1B = Rare, threatened, or endangered in California and elsewhere; 2B = Rare, threatened, or endangered in California but more common elsewhere; 4 = Watch list: plants of limited distribution; 0.1 = Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat); 0.2 = Moderately threatened in California (20–80 percent occurrences threatened/moderate degree and immediacy of threat)
Federal Status: FT = federally listed as threatened; FE = federally listed as endangered; PT = proposed threatened
State Status: SE = state listed as endangered; SSC = California Species of Special Concern; FP = fully protected; WL = watch list

Sensitive Plant Species

No sensitive plant species were observed during the September 2025 survey. Although a focused rare plant survey was not conducted during the biological reconnaissance survey, no sensitive species are expected to occur at any of the five potential project sites due to the absence of native habitats. No sensitive plant species were found to have a moderate or high potential to occur in the survey area.

Sensitive Wildlife Species

No sensitive wildlife species were observed in the survey area. No sensitive wildlife species were found to have a moderate or high potential to occur in the survey area.

Nesting Birds

Nesting birds are protected by the Migratory Bird Treaty Act (MBTA) and similar provisions of the California Fish and Game Code. Although the survey area does not contain native vegetation communities, ornamental plantings are used as nesting habitat by common species such as mourning dove (*Zenaida macroura*), bushtit (*Psaltriparus minimus*), California towhee (*Melozone crissalis*), and house finch (*Haemorhous mexicanus*). Eucalyptus trees are highly desirable for hummingbirds and raptors. Structures that have eaves, crevices, cracks, and other "cavities" may provide nesting opportunities for nesting birds, such as black phoebe (*Sayornis nigricans*), which attach their nests to the undersides of structures with mud. In addition, areas of bare ground provide suitable nesting opportunities for species such as killdeer (*Charadrius vociferus*). All five potential project sites include ornamental plantings or bare ground suitable for nesting opportunities by common urban-adapted species.

Roosting Bats

While no bats were observed using the survey area for roosting or foraging during the survey, no nighttime focused acoustic surveys were conducted.

Although several bat species may occasionally forage over open areas, water sources, or ornamental vegetation, there is a low potential for roosting bats to occur within the survey area due to the lack of suitable roosting habitat (e.g., natural crevices, palm trees with skirts, or undisturbed structures) and the high level of human disturbance associated with the adjacent Fairgrounds and racetrack. Common species such as the Mexican free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), and hoary bat (*Lasiurus cinereus*) may occasionally forage in the area but are unlikely to establish roosts within the disturbed site.

Critical Habitat

No critical habitat for sensitive plants or wildlife occurs within the five potential sites or in the survey buffers. Critical habitat for western snowy plover occurs outside the survey area, approximately 0.25 mile south of the Adjacent to Fire Station Site (Site 3) within San Dieguito Lagoon (Figure 7). Furthermore, none of the sites are situated within an environmentally sensitive habitat area.

Wildlife Corridors and Linkages

Review of the California Essential Habitat Connectivity dataset indicates that the five potential project sites are not within a designated essential habitat connectivity area (CDFW 2023e). The nearest identified linkage occurs approximately 0.75 mile southeast of the Fairgrounds. Overall, due to extensive development, lighting, and human disturbance, all five potential project sites provide low value for regional wildlife movement or corridor functions, although the adjacent San Dieguito River corridor remains an important regional linkage and bird migration route within the Pacific Flyway.

Wildlife movement corridors provide important routes for local movement and regional connectivity, often following linear topographic, vegetative, or hydrologic features. These corridors may consist of continuous habitat linkages or "stepping-stone" patches that provide resting and foraging opportunities for wildlife, including migratory bird species. Local movement routes allow daily access to essential resources such as food, water, and shelter, while regional linkages support broader dispersal, seasonal migrations, and gene flow between populations.

All five potential project sites are located within a highly developed area adjacent to the San Dieguito River Lagoon. The Fairgrounds and racetrack complex is largely developed and intensively maintained, with high levels of human activity, artificial lighting, and noise that substantially reduce habitat connectivity across the area. However, the adjacent San Dieguito River corridor and its associated riparian, estuarine, and upland habitats provide an important east–west regional movement corridor linking the coastal wetlands to inland open spaces. The survey area holds value for MBTA-protected migrating birds flying through to wintering or breeding grounds. The survey area is within the Pacific Flyway, along which millions of birds, especially waterfowl, migrate annually between Alaska and Canada, through California, to Mexico and South America. Coastal San Diego provides an important stopover area for a large variety of birds during their annual migration. The ornamental vegetation and structures throughout the survey area and along the San Dieguito River and Lagoon provide marginal habitat for certain species to stopover during migration. However, the absence of native vegetation, water, and refugia within the dense residential and commercial development of the survey area potentially limits migratory bird use of all five potential project sites. Wildlife species adapted to fragmented or disturbed environments—such as raccoon (*Procyon lotor*), coyote (*Canis latrans*), and various bird species—may use peripheral landscaped or ruderal areas of the Fairgrounds for limited foraging or transit between higher-quality habitats.

Impact Avoidance and Minimization Recommendations

The following impact avoidance recommendations are suggested for all five potential project sites to avoid potential impacts to biological resources, regardless of the site chosen. It is recommended that any future project include these two standard conditions of approval to minimize potential impacts by controlling construction timing to avoid raptor and bird breeding season and requiring best management practices to control stormwater. Once the design is complete, these recommendations may require modification, based on the extent and nature (temporary or permanent) of expected impacts.

BIO-1: Nesting Birds. No grubbing, trimming, or clearing of vegetation from the project site shall occur during the raptor and bird breeding season (January 15 through August 31). If grubbing, trimming, or clearing of vegetation cannot feasibly occur outside the general bird breeding season, a qualified biologist shall perform a pre-construction nesting bird survey no more than 72 hours prior to the start of vegetation grubbing, trimming, or clearing to determine if active bird nests are present in the affected areas. Should an active bird nest be located, the qualified biologist shall establish a buffer and direct vegetation clearing away from the nest until it has been determined that the young have fledged or the nest has failed. If no nesting birds (including nest building or other breeding or nesting behavior) are detected during the nesting bird survey, grubbing, trimming, or clearing shall proceed.

BIO-2: Stormwater Pollution Prevention Plan. Prior to notice to proceed with any construction, including clearing, grubbing, and/or grading, a Stormwater Pollution Prevention Plan shall be prepared, pursuant to National Pollution Discharge Elimination System General Construction Permit (Water Quality Order 99-08-DWQ). The Stormwater Pollution Prevention Plan shall address the potential sources and locations of stormwater contamination, characteristics and impacts of specific contaminants, and temporary and permanent erosion-control practices and shall include water sampling data, construction practices that minimize stormwater contamination, coordination of best management practices with planned construction activities, and compliance with local, state, and federal regulations. The Stormwater Pollution Prevention Plan shall include best management practices that shall be clearly stated on project plans and design documents. The implementation of the Stormwater Pollution Prevention Plan shall protect adjacent aquatic resources, habitats, and sensitive species during construction to the maximum extent practicable with the goal of providing multiple beneficial uses. Post-construction, the project shall incorporate water quality protection design standards that will reduce, capture, and treat runoff from the project site, with an emphasis on protecting the adjacent aquatic resources.

Constraints Analysis Conclusion

The land cover type occurring within the survey area, encompassing all five potential project sites, is urban/developed land. The survey area is developed or is highly altered and fragmented by roads, paved surfaces, and active human use. These factors substantially reduce the suitability of the area for sensitive wildlife to forage, nest, or seek refuge. No sensitive habitats or sensitive species were detected or have a high potential to occur within the survey area.

Vegetation patches along the site margins and within landscaped areas may offer nesting or perching opportunities for common native birds, particularly those tolerant of human activity. Overall, all five potential project sites support low habitat suitability for sensitive species, with ecological functions primarily limited to incidental foraging and movement along the edges of the adjacent San Dieguito River corridor.

Any future project should include the two standard conditions of approval recommended in the Impact Avoidance and Minimization Recommendations section to minimize potential impacts by controlling construction timing to avoid raptor and bird breeding season and requiring best management practices to control stormwater.

Preparers

Harris & Associates
Erika Eidson, Principal Biologist (Senior Review)
Chris Thomson, Senior Biologist (Author)

If you have any questions regarding this letter report, please contact me at (858) 276-9288 or Erika.Eidson@WeAreHarris.com.

Sincerely,

Erika Eidson
Principal Biologist

Attachments

1. Figures
2. Regulatory Framework
3. Observed Plant Species
4. Observed Wildlife Species

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Attachment 1. Figures

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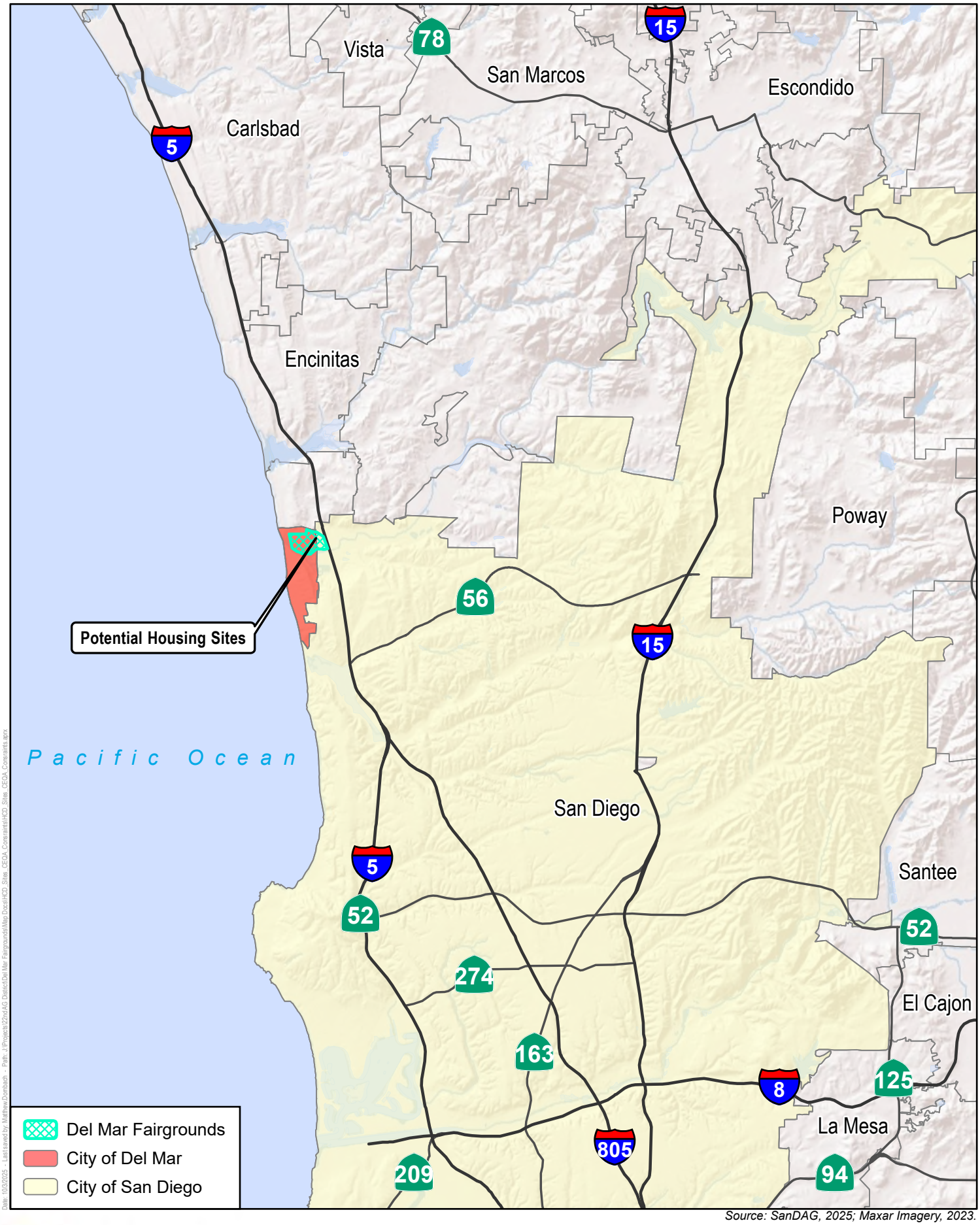

Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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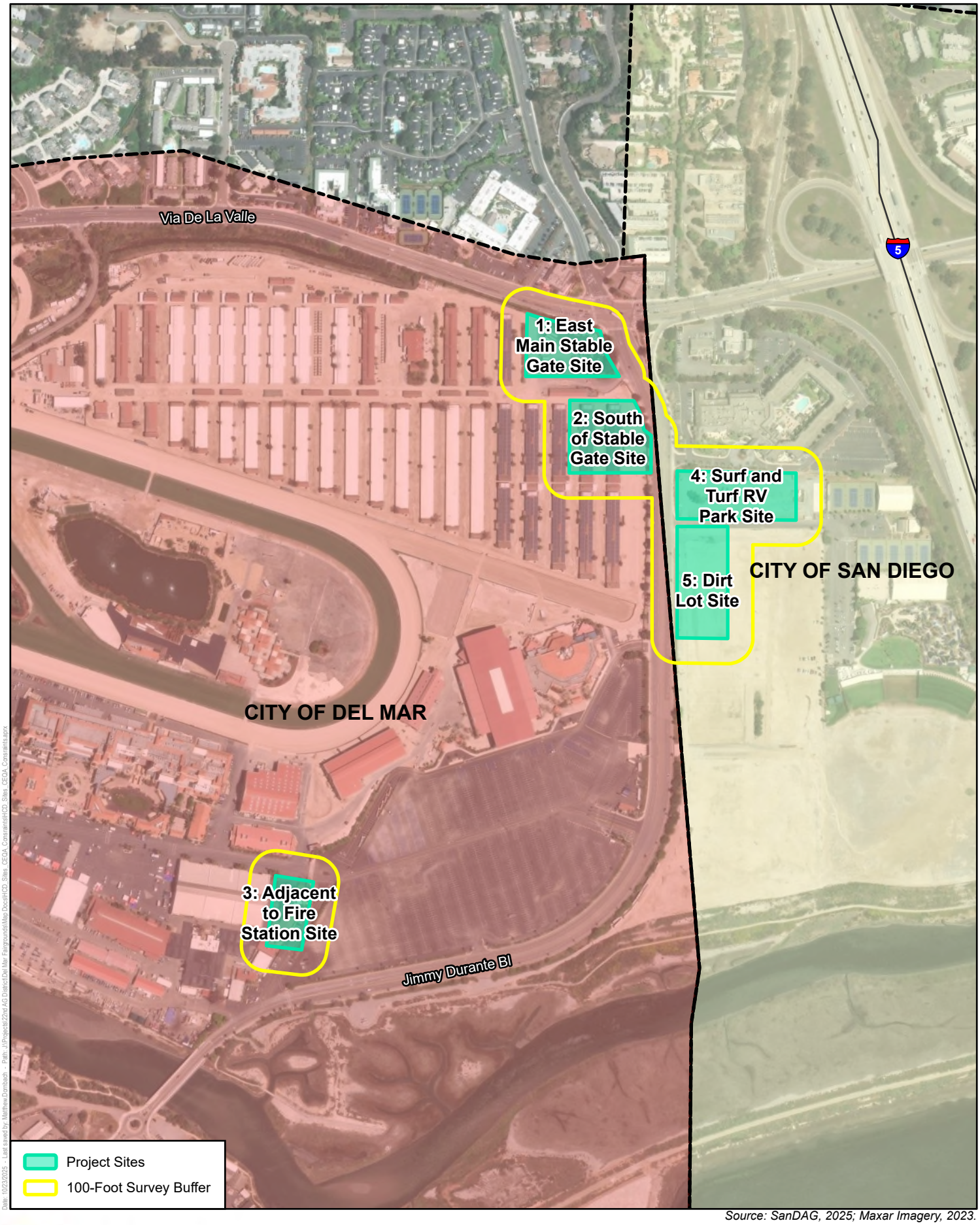
Figure 1

Regional Location

HAP Grant Affordable Housing Project



Source: SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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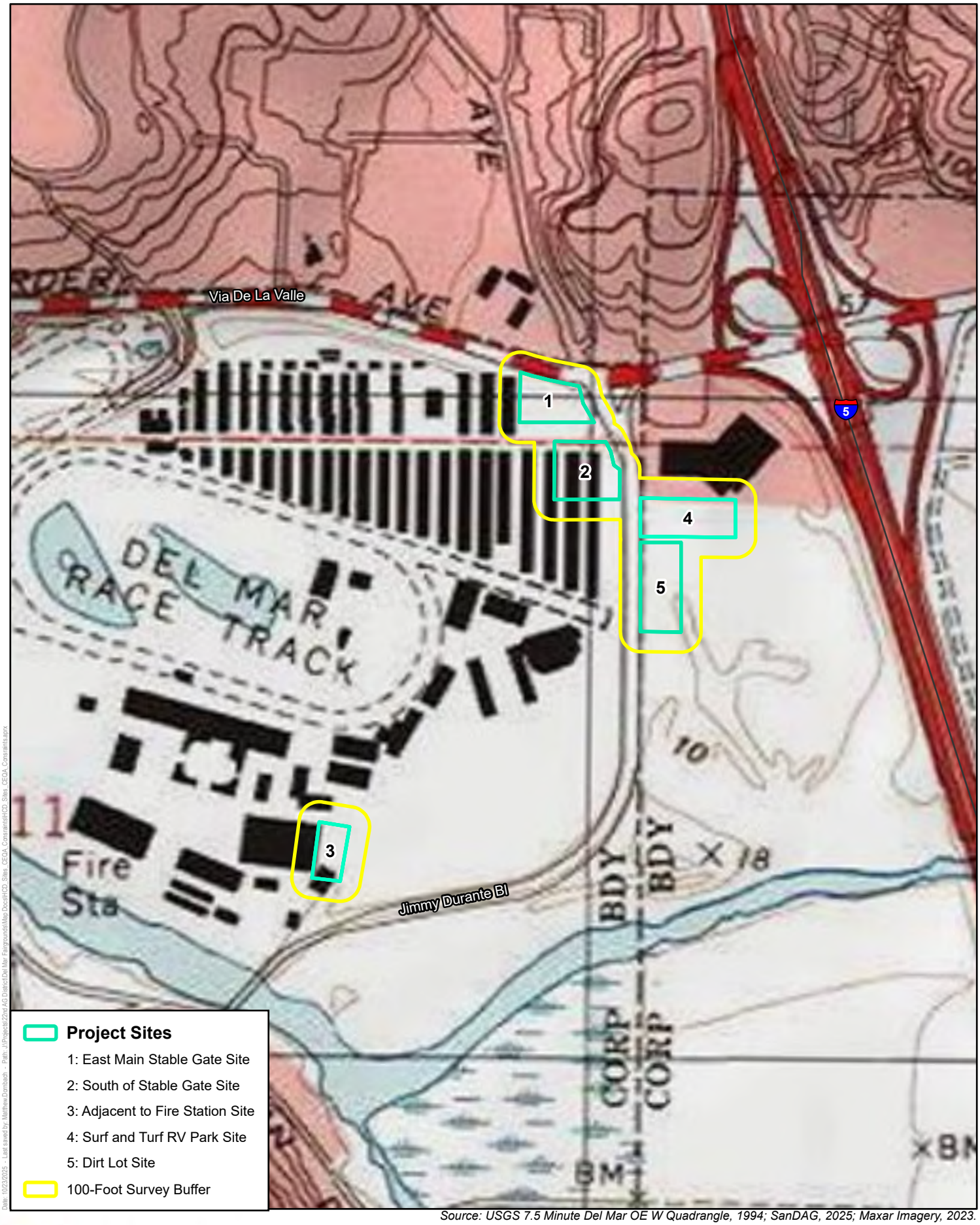
Figure 2

Potential Housing Sites

HAP Grant Affordable Housing Project



Source: USGS 7.5 Minute Del Mar OE W Quadrangle, 1994; SanDAG, 2025; Maxar Imagery, 2023.

Harris & Associates

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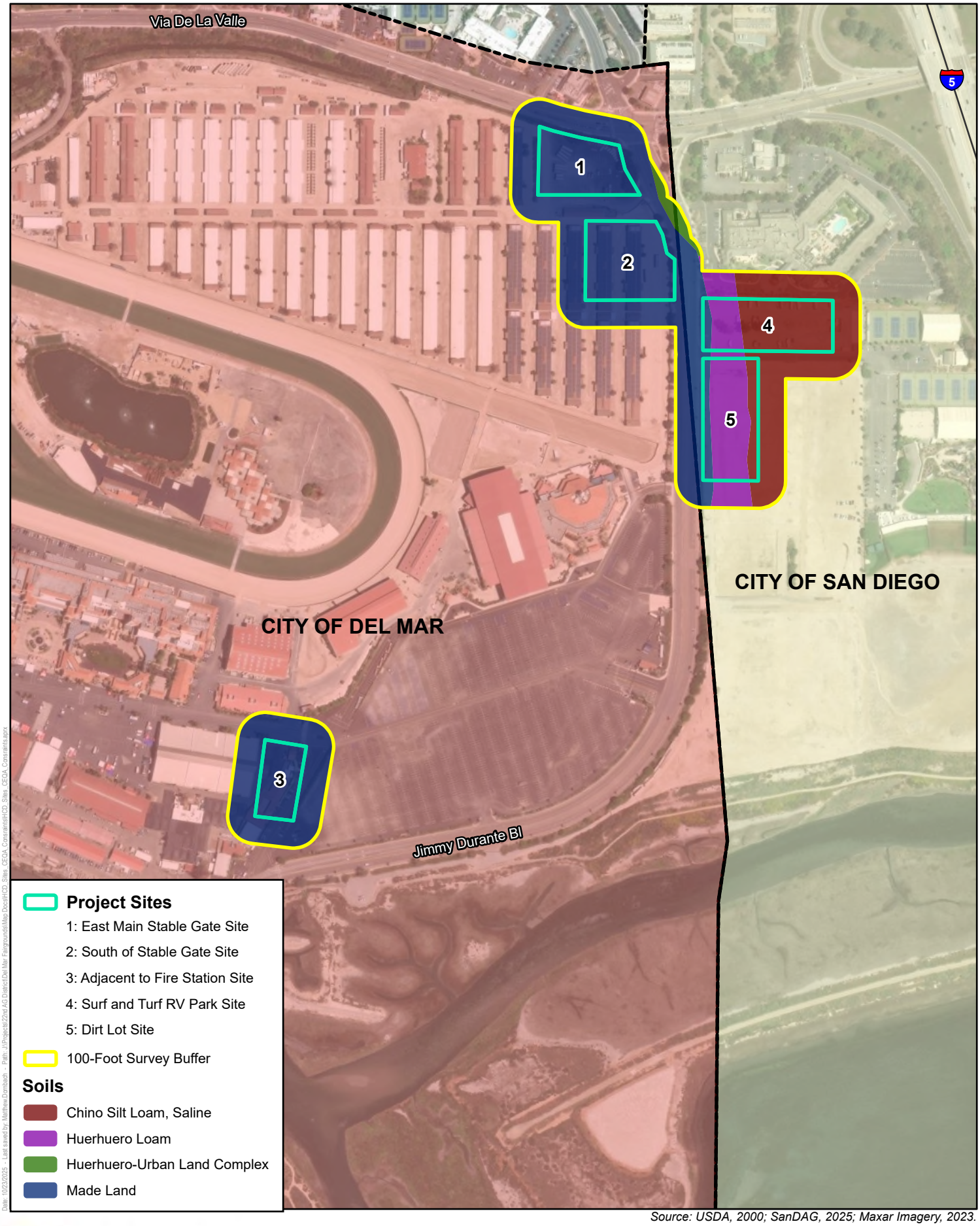
Figure 3

USGS Topographic Map

HAP Grant Affordable Housing Project



Source: USDA, 2000; SanDAG, 2025; Maxar Imagery, 2023.

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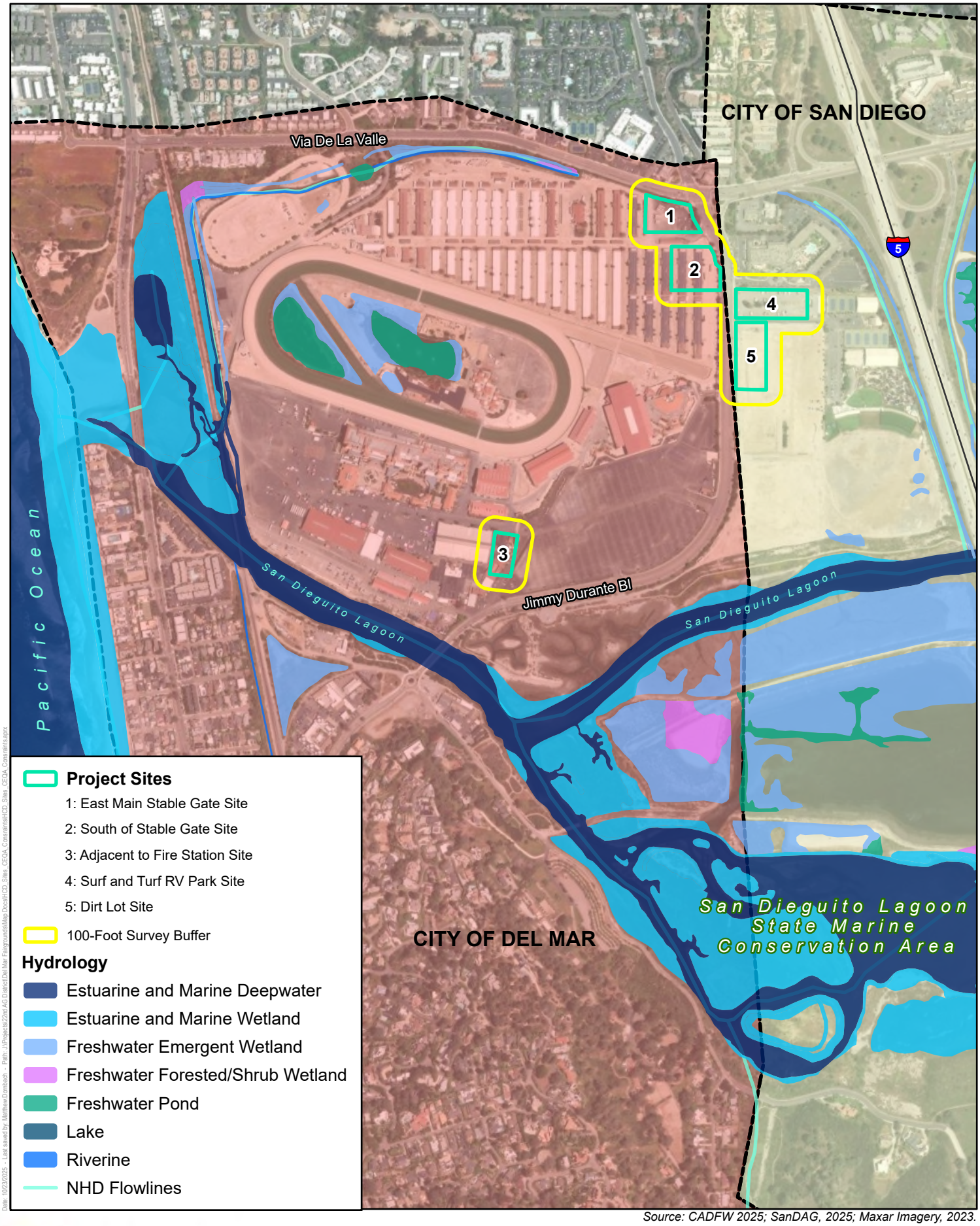
Figure 4

Soils

HAP Grant Affordable Housing Project



Source: CADFW 2025; SanDAG, 2025; Maxar Imagery, 2023.

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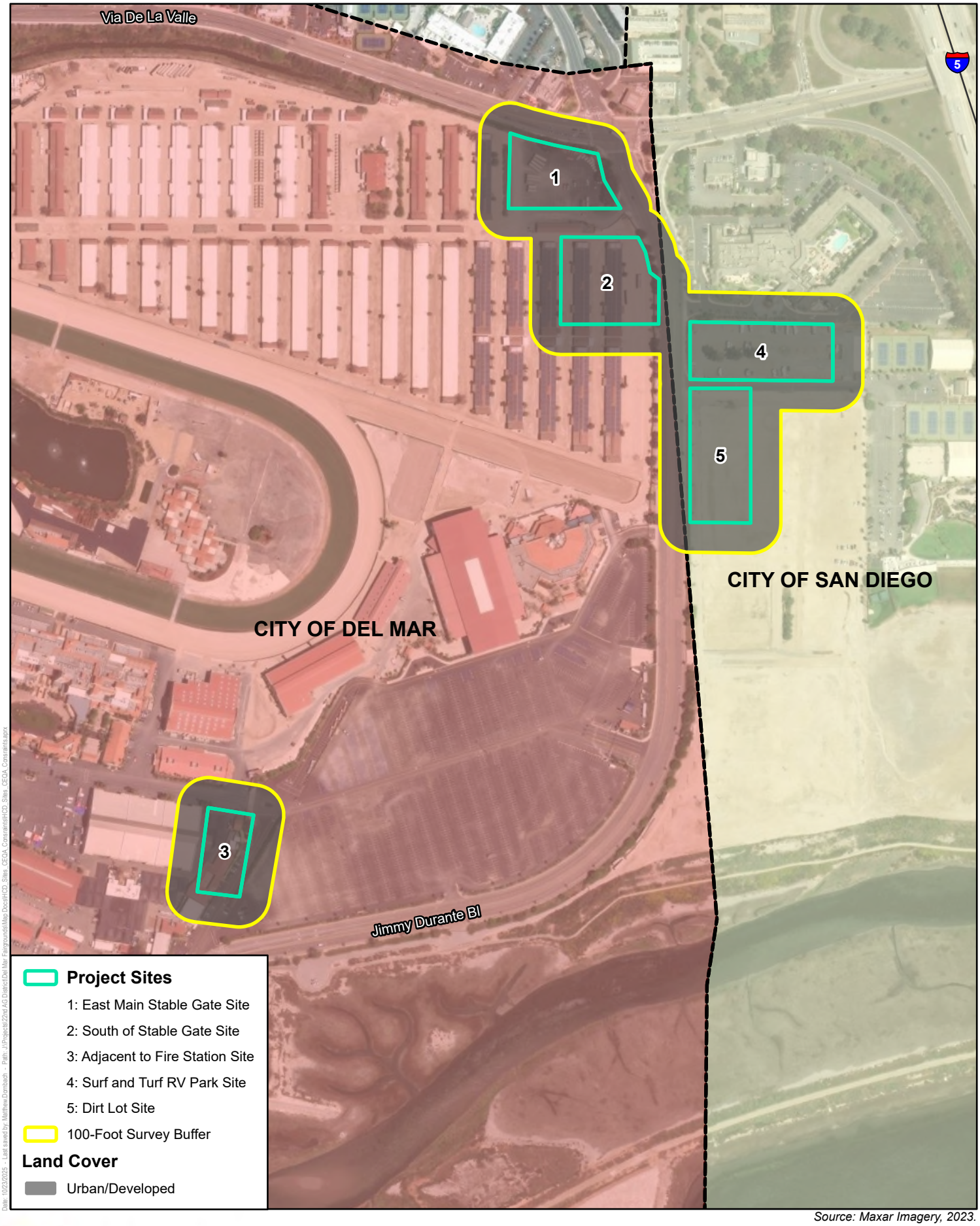
Figure 5

Hydrology

HAP Grant Affordable Housing Project



Source: Maxar Imagery, 2023.

Harris & Associates

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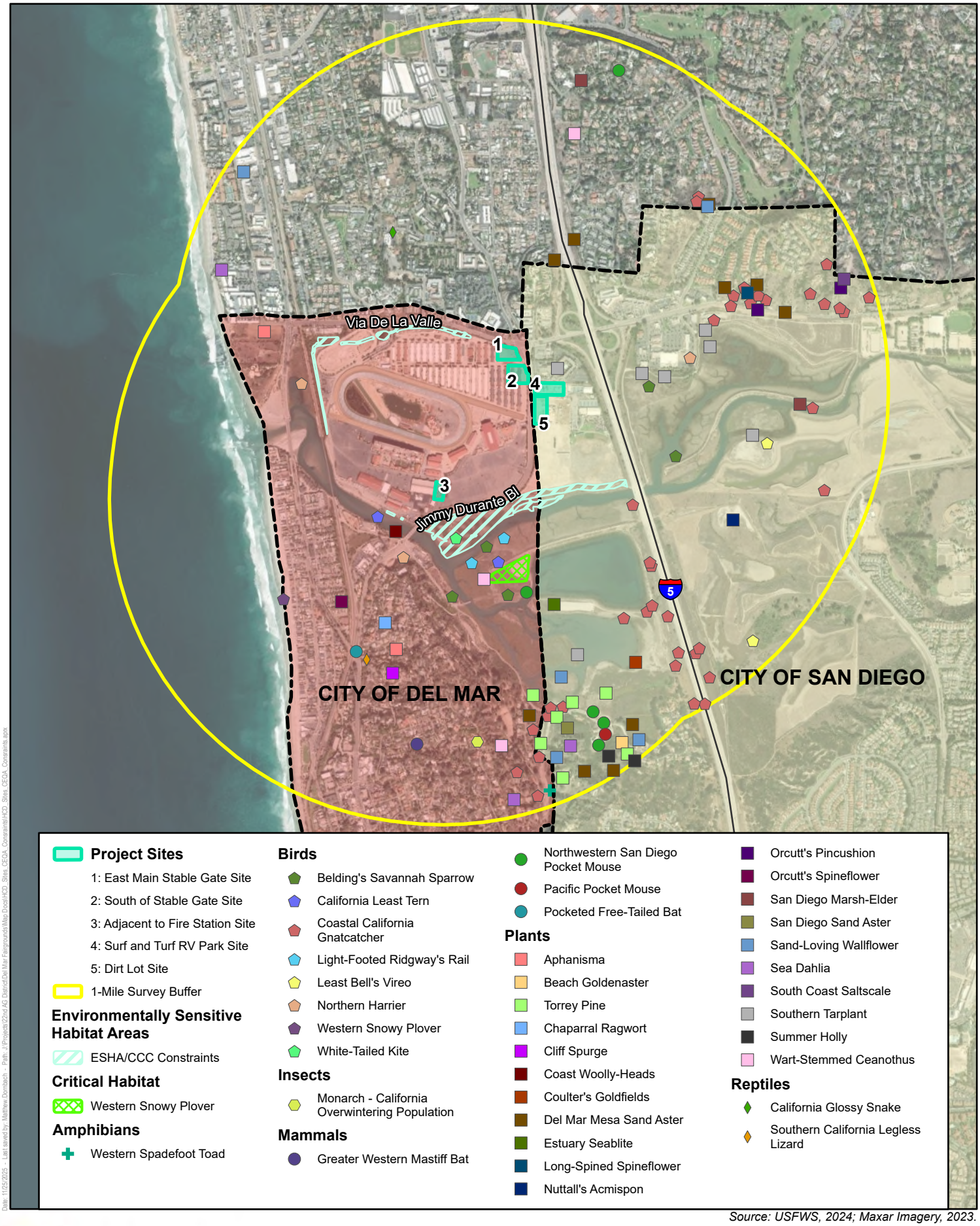
Figure 6

Land Cover

HAP Grant Affordable Housing Project



Source: USFWS, 2024; Maxar Imagery, 2023.

Harris & Associates

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Figure 7

Historical Species with Potential to Occur

HAP Grant Housing Site Conditions and Constraints Analysis

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Attachment 2. Regulatory Framework

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Regulatory Framework

Federal

Bald and Golden Eagle Protection Act (16 USC 668–668[d])

This act prohibits the possession, sale, or hunting of bald or golden eagles. This includes living eagles and their feathers, nests, eggs, or body parts.

Clean Water Act, Section 404 (33 CFR 328.3[a])

These provisions regulate the discharge of dredged or fill material in waters of the United States, including wetlands. Activities that discharge dredge or fill material into waters of the United States can be authorized by the U.S. Army Corps of Engineers (USACE).

On August 29, 2023, the U.S. Environmental Protection Agency (USEPA) and USACE issued a final rule to amend the final "Revised Definition of Waters of the U.S." The 2023 final rule became effective on September 8, 2023. Under the 2023 final rule:

(a) Waters of the U.S. are defined as:
   1. Waters which are:
      i. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
      ii. The territorial seas; or
      iii. Interstate waters;
   2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under (a)(5) of this section;
   3. Tributaries of waters identified in (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
   4. Wetlands adjacent to the following waters:
      i. Waters identified in (a)(1) of this section; or
      ii. Relatively permanent, standing or continuously flowing bodies of water identified in (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;
   5. Intrastate lakes and ponds not identified in (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in (a)(1) or (a)(3) of this section.

Federal Endangered Species Act, Sections 4(d), 7, or 10(a) (16 USC 1531 et seq.; 50 CFR Part 402)

This act prohibits the "take" (i.e., harming, harassing, or killing individuals or destroying associated habitat) of species federally listed as threatened or endangered. Take incidental to otherwise lawful activities can be authorized by the USFWS through a permit under the federal Endangered Species Act, Sections 4(d), 7, or 10(a).

Migratory Bird Treaty Act (16 USC 703–712; 50 CFR 10)

The Migratory Bird Treaty Act prohibits the direct or indirect take of migratory birds and their active nests unless permitted.

Rapanos Guidance Key Points Summary

The ACOE and USEPA will assert jurisdiction over the following waters:

TNWs [Traditional Navigable Waters]

Wetlands adjacent to TNWs
Non-navigable tributaries of TNWs that are relatively permanent (flowing 3 months or longer)
Wetlands that abut such tributaries

The ACOE and USEPA will decide jurisdiction over the following waters based on if they have a significant nexus with a TNW:

Non-navigable tributaries that are not relatively permanent
Wetlands adjacent to non-navigable tributaries that are not relatively permanent
Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

The ACOE and USEPA will not assert jurisdiction over the following waters:

Swales or erosional features (gullies, small washes characterized by low-volume, infrequent or short-duration flow)
Ditches (including roadside ditches) that are excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water

The Navigable Waters Protection Rule, published by the USEPA on April 21, 2020, was vacated during a federal court ruling in Arizona (Pascua Yaqui Tribe v. USEPA) on August 30, 2021. With this ruling, the regulatory agencies have halted implementation of the Navigable Waters Protection Rule and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime (i.e., Rapanos guidance).

State

California Coastal Act (Public Resources Code section 30000)

Preserving, protecting, and enhancing environmentally sensitive habitat areas (ESHA) is one of the primary objectives of the California Coastal Act. Section 30107.5 of the Coastal Act defines an "Environmentally sensitive area" as "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments."

California Migratory Bird Protection Act (Assembly Bill 454)

The California Migratory Bird Protection Act prohibits the take or possession of any migratory non-game bird, as well as their nests and eggs, protected under the federal Migratory Bird Treaty Act, unless authorized by regulation.

Birds of Prey Protection Provision (California Fish and Game Code, Section 3503.5)

This provision prohibits the taking of birds of prey (orders Falconiformes and Strigiformes), including their nests and eggs.

California Endangered Species Act (California Fish and Game Code, Section 2050 et seq.)

The California Endangered Species Act prohibits any activities that would jeopardize or take a species designated as threatened or endangered by the state.

California Fish and Game Code, Section 1602

Section 1602 regulates water resources in the State of California. Activities that divert or obstruct the natural flow of, or change or use material from, the bed, channel, or bank of any river, stream, or lake may be authorized by the California Department of Fish and Wildlife (CDFW). CDFW jurisdiction includes intermittent and perennial watercourses and extends to the top of the bank of a stream or lake if unvegetated or to the limit of the adjacent riparian vegetation, located contiguous to the watercourse, if the stream or lake is vegetated.

California Fish and Game Code, Section 3503

Section 3503 prohibits the take, possession, or needless destruction of the nests or eggs of any birds, except as otherwise provided by the code or any regulation made pursuant thereto.

California Environmental Quality Act, as Amended (California Public Resources Code, Section 21000 et seq.)

The goal of CEQA is to assist California public agencies in identifying potentially significant negative environmental impacts caused by their actions and avoiding or mitigating those impacts when feasible.

California Fully Protected Wildlife Species Provision (California Fish and Game Code, Sections 3511, 4700, 5050, and 5515)

These provisions prohibit the take of fully protected birds, mammals, amphibians, and fish.

California Native Plant Protection Act (California Fish and Game Code, Sections 1900–1913)

These provisions preserve, protect, and enhance endangered or rare native plants of the state.

Regional Water Quality Control Board

The Regional Water Quality Control Board (RWQCB) regulates impacts on water quality under Section 401 of the Clean Water Act (CWA). A project must comply with CWA Section 401 before the USACE can issue a Section 404 permit. The RWQCB will issue a Section 401 water quality certification or waiver of certification depending on the extent of impacts on waters of the United States. The RWQCB also regulates impacts on waters of the state (usually limited to "isolated" waters or swales that may not fall under USACE jurisdiction) under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

Streambed Alteration Agreement (California Fish and Game Code, Section 1600)

The California Fish and Game Code requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, or their tributaries, or use materials from a streambed to submit a notification for a streambed alteration agreement to the CDFW.

Natural Community Conservation Planning Act, as Amended (California Fish and Game Code, Sections 2800–2835)

The primary objective of the Natural Community Conservation Planning program is to conserve natural communities at the ecosystem level while accommodating compatible land use. The program seeks to anticipate and prevent the controversies and gridlock caused by species listing by focusing on the long-term suitability of wildlife and plant communities and including key interests in the process.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act is regulated by the RWQCB for impacts on waters of the state. The RWQCB is the regional agency responsible for protecting water quality in California. The jurisdiction of this agency includes waters of the state and waters of the United States as mandated by CWA Section 401 and the Porter-Cologne Act. Although water quality issues related to impacts on waterways are normally addressed during Section 401 water quality certification, should a water of the State of California be determined by the USACE to not have CWA jurisdiction, the Porter-Cologne Act would be addressed under a construction general permit, state general waste discharge order, or waste discharge requirements, depending on the level of impact and the properties of the waterway.

Local

Del Mar Local Coastal Program (LCP)

The California Coastal Act of 1976 requires all jurisdictions within the Coastal Zone to prepare a Local Coastal Program (LCP). The Del Mar LCP is a comprehensive plan that helps guide land use and development along the coast to ensure consistency with the California Coastal Act. The program objectives are to protect coastal resources, provide for public access, and manage development within the coastal zone.

San Diego Local Coastal Program (LCP)

The California Coastal Act of 1976 requires all jurisdictions within the Coastal Zone to prepare a Local Coastal Program (LCP). The San Diego LCP is required by the state of California to guide development, protect coastal resources, and ensure public access within the City of San Diego's and the County of San Diego's coastal zones.

Attachment 3. Observed Plant Species

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Attachment 3. Observed Plant Species

	Scientific Name	Common Name	Special Status
	GYMNOSPERMS		
	Cupressaceae - Cypress family		
*	*Platycladus orientalis*	Chinese arborvitae	
	Pinaceae - Pine family		
*	*Pinus pinea*	Italian stone pine	
	EUDICOTS		
	Musaceae - Banana family		
*	*Musa ornata*	Banana tree	
	Aizoaceae - Fig-marigold family		
*	*Carpobrotus edulis*	Hottentot fig	
	Anacardiaceae - Sumac Or Cashe		
*	*Schinus molle*	Peruvian pepper tree	
	Araliaceae - Ginseng family		
*	*Hedera helix*	English ivy	
	Asteraceae - Sunflower family		
	Ambrosia psilostachya	Western ragweed	
*	*Erigeron bonariensis*	Flax-leaved horseweed	
	Helianthus annuus	Annual sunflower	
*	*Sonchus asper ssp. asper*	Prickly sow thistle	
	Asparagaceae - Asparagus family		
*	*Dracaena draco*	Canary Island dragon tree	
*	*Dracaena reflexa*	Song of India	
	Cannaceae - Canna family		
*	*Canna indica*	Indian shot	
	Crassulaceae - Stonecrop family		
*	*Aeonium arboreum var. arboreum*	Canary Island Aeonium	
	Fabaceae - Legume family		
*	*Acacia cyclops*	Western coastal wattle	
*	*Medicago sativa*	Alfalfa	
	Moraceae - Mulberry family		
*	*Ficus carica*	Edible fig	
	Myrtaceae - Myrtle family		
*	*Callistemon viminalis*	Bottlebrush	
*	*Eucalyptus camaldulensis*	Red gum	

	Scientific Name	Common Name	Special Status
*	*Eucalyptus conferruminata*	Spider gum	
*	*Melaleuca quinquenervia*	Broad-leaved paperbark	
	Plumbaginaceae - Leadwort famil		
*	*Limonium perezii*	Perez's marsh rosemary	
	Portulacaceae - Purslane family		
*	*Portulacaria afra*	Dwarf jade plant	
	MONOCOTS		
	Arecaceae - Palm family		
*	*Chamaerops humilis*	European fan palm	
*	*Phoenix dactylifera*	Date palm	
*	*Washingtonia robusta*	Mexican fan palm	

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened

CRPR – California Rare Plant Rank
1A. Presumed extinct in California and elsewhere
1B. Rare or Endangered in California and elsewhere
2A. Presumed extinct in California, more common elsewhere
2B. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Attachment 4. Observed Wildlife Species

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Attachment 4. Observed Wildlife Species

	Scientific Name	Common Name	Special Status
	INVERTEBRATES		
	Moths, Skippers and Butterflies		
	Colias harfordii	Harford's Sulphur	
	VERTEBRATES		
	Reptiles		
	Sceloporus occidentalis longipes	Great Basin Fence Lizard	
	Birds		
	Buteo jamaicensis	Red-tailed Hawk	
	Larus occidentalis	Western Gull	
	Zenaida macroura	Mourning Dove	
	Calypte anna	Anna's Hummingbird	
	Sayornis nigricans	Black Phoebe	
	Tyrannus vociferans	Cassin's Kingbird	
	Corvus brachyrhynchos	American Crow	
	Psaltriparus minimus	Bushtit	
*	*Sturnus vulgaris*	European Starling	
	Melozone crissalis	California Towhee	
	Agelaius phoeniceus	Red-winged Blackbird	
	Haemorhous mexicanus	House Finch	
*	*Passer domesticus*	House Sparrow	

Legend

*= Non-native or invasive species

Special Status:

State:

CSC = California Species of Special Concern
CaFP = California Fully Protected Species

County:
SDC Group I = includes animal species that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met.
SDC Group II - includes animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

MSCP = Multiple Species Conservation Program Covered Species

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Cultural Resources Letter Report – Negative Findings

HAP Grant Affordable Housing Project

December 2025

Prepared for:

22nd District Agricultural Association
Dustin Fuller, Supervising Environmental Planner
2260 Jimmy Durante Boulevard
Del Mar, California 92014

City of Del Mar
Amanda Lee, Principal Planner
1050 Camino Del Mar
Del Mar, California 92014

Prepared by:

Harris & Associates

2375 Northside Drive, Suite 125
San Diego, California 92108

National Archaeological Database Information

Authors:	Donna Beddow, Shahira Ashkar, and Rock Ciarmoli
Firm:	Harris & Associates 2375 Northside Drive, Suite 125 San Diego, California 92108 (619) 236-1778
Client:	22nd District Agricultural Association Mr. Dustin Fuller, Supervising Environmental Planner 2260 Jimmy Durante Boulevard Del Mar, California 92014
Report Date:	December 2025
Report Title:	Cultural Resources Letter Report – Negative Findings; HAP Grant Affordable Housing Project
Type of Study:	Intensive Pedestrian/Phase I
New Sites:	None
Updated Sites:	None
USGS Quad:	Del Mar OE W
Acreage:	7 acres
Key Words:	Kumeyaay Traditional Use Area, Del Mar, Del Mar Fair Grounds, No Resources

Harris & Associates

December 5, 2025

22nd District Agricultural Association
Mr. Dustin Fuller, Supervising Environmental Planner
2260 Jimmy Durante Boulevard
Del Mar, California 92014

RE: Cultural Resources Letter Report – Negative Findings; HAP Grant Affordable Housing Project

Mr. Fuller:

Please be advised that a survey has been conducted on the Housing Acceleration Program (HAP) Grant Affordable Housing Project (project). Archival research and the pedestrian inventory did not identify cultural resources on the five potential housing project sites. The project has been plotted on the attached U.S. Geological Survey (USGS) 7.5-minute topographic map for your information (Figure 1, USGS Topographic Map).

County: San Diego
USGS 7.5' Quad: Del Mar OE W; **Date:** 1967
Section: 11 and 12; **Township:** 14S **Range:** 04W; **Land Grant:**
Address: Jimmy Durante Boulevard
City: Del Mar and San Diego; **State:** California

Other Locational Data: From Interstate 5, take the Via De la Valle exit and turn west. At Jimmy Durante Boulevard, turn south (left) and the five potential housing sites are on the west and east sides (Figure 2, Potential Housing Sites).

Assessor Parcel Number(s): 298-271-03-00, 299-030-05-00, 299-030-22-00, 299-042-03-00

UTMs: 11S; −3648789 mN/476107 mE

Owner and Address:
22nd District Agricultural Association
2260 Jimmy Durante Boulevard
Del Mar, California 92014

Survey Type: Intensive Pedestrian/Phase I
Date of Survey: November 10, 2025
Field Crew: Rocky Ciarmoli

Executive Summary

The 22nd District Agricultural Association (District) owns and operates the San Diego County Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts various uses, including the annual San Diego County Fair; two horse racing seasons; concerts and meetings in The Sound; and other events, activities, and celebrations, such as festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year.

The District is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving the Fairgrounds facilities. During this master site planning process, the District has worked with the City of Del Mar to identify portions of the Fairgrounds property that the District may be willing to make available for affordable housing development. In its 6th Cycle Housing Element Update, the City of Del Mar identified and included a portion of the property in the Housing Element residential sites inventory as having the potential to be developed to accommodate affordable housing

units. The District and the City of Del Mar have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds property. This study of potential affordable housing on the Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development Housing Acceleration Program Cycle 2.

As detailed below, five potential housing site locations were selected for study through this mutual planning effort, with the goal of selecting one site to develop with housing. This Cultural Resources Letter Report identifies the cultural setting, regulatory setting, what known resources are present, survey methodology, and findings. This Cultural Resources Letter Report was completed to assess if there are potential cultural resource constraints for the development of housing on the five potential housing sites being studied.

Staff conducted a records search of the project and surrounding area using the California Historic Resources Inventory System (CHRIS) and contacted the Native American Heritage Commission (NAHC) for a Sacred Lands File check to determine if sacred lands are present on site. A cultural resources survey of all five potential housing sites and a 100-foot buffer was conducted on November 10, 2025. The analysis concludes that no cultural resources were located as a result of this study, and all five potential project sites are not considered sensitive for the presence of archaeological resources due to their developed nature or disturbance that has occurred historically.

Project Description

Five potential housing site locations have been selected within the Fairgrounds, with the goal of selecting one site to develop with housing. Three sites are in the City of Del Mar, and two sites are in the City of San Diego. For the purpose of this study, the assumption is that a prospective housing project would include at least 61 units of lower-income housing in a housing project that is a multi-family lower-income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing, consistent with prior feasibility studies completed (2022–2023). Because the Fairgrounds property is within the Federal Emergency Management Agency-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed with floodproofing measures, including a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface-level parking.

Project Location

Descriptions of the five potential housing site locations are detailed below and summarized in Table 1, Potential Housing Sites. The five sites are located in the eastern portion of the Fairgrounds along Jimmy Durante Boulevard and range from approximately 1 to 1.5 acres (Figure 2).

Table 1. Potential Housing Sites

Site Number	Site Name	APN	City	Acreage
Site 1	East Main Stable Gate Site	298-271-03-00	City of Del Mar	1.5
Site 2	South of Stable Gate Site	299-030-05-00 299-030-22-00	City of Del Mar	1.5
Site 3[1]	Adjacent to Fire Station Site	299-030-22-00	City of Del Mar	1
Site 4	Surf and Turf RV Park Site	299-042-03-00	City of San Diego	1.5
Site 5	Dirt Lot Site	299-042-03-00	City of San Diego	1.5

Notes:

[1] The 2023 Stephan Dalton Architects (SDA) Study identified two scenarios for Site 3: a 1-acre new housing site or a 1.5-acre new housing site that would also include redevelopment of the fire station. This report focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Site 1: East Main Stable Gate Site

Site 1 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to the existing horse stables. The 1.5-acre site is bounded by Via De La Valle to the north and Jimmy Durante Boulevard to the east (Figure 2).

Site 2: South of Stable Gate Site

Site 2 is in the northeastern corner of the Fairgrounds within the City of Del Mar, located adjacent to and south of the East Main Stable Gate and parking lot. The 1.5-acre site is bounded by Jimmy Durante Boulevard to the east and the Main Stable Gate parking lot to the north (Figure 2).

Site 3: Adjacent to Fire Station Site

Site 3 is in the southeastern corner of the Fairgrounds within the City of Del Mar. The 1-acre site is located between the existing O'Brien Hall and southeast Fairgrounds parking lot, directly north of the existing Del Mar Fire Department building (Figure 2).

Site 4: Surf and Turf RV Park Site

Site 4 is in the northeastern corner of the Fairgrounds within the City of San Diego. The 1.5-acre gravel site is located south of the Hilton San Diego Del Mar Hotel and north of Turf Road, adjacent to Jimmy Durante Boulevard (Figure 2).

Site 5: Dirt Lot Site

Site 5 is in the northeastern corner of the Fairgrounds within the City of San Diego, located south of Turf Road and the San Diego County Fairgrounds Surf and Turf RV Park. The 1.5-acre site includes a portion of a larger, undeveloped dirt parking lot, bounded by Jimmy Durante Boulevard to the west (Figure 2).

Setting

Cultural Setting

Prehistoric Period

Cultural resources are found throughout San Diego County and are reminders of the county's 10,000-year-old historical record. Cultural resources are the tangible or intangible remains or traces left by prehistoric or historical people who inhabited the San Diego region. They encompass both the built (post-1769) and the archaeological environments, as well as Traditional Cultural Properties. They are typically in protected areas near water sources and multiple ecoregions and can include Traditional Cultural Places, such as gathering areas, landmarks, and ethnographic locations.

The following provides a brief cultural background for San Diego County.

Paleoindian Period (Pre-5500 BC)

Several terms are used for the early occupation of the Riverside region and include Paleoindian period, Early Archaic period, Initial period, and Scraper Maker period (Moratto 1984). This period dates from 9000 to 5500 BC (Chartkoff and Chartkoff 1984; Moratto 1984; Rogers 1966; Taylor and Meighan 1978; Warren and True 1961). Early humans have been characterized as an early nomadic, hunting culture whose settlements were located on mesas and ridge tops and in deserts (Erlandson and Colton 1991; Rogers 1966; Wallace 1978; Warren et al. 1961). During this period, inhabitants relied on large game for subsistence (Rogers 1966; Warren et al. 1961) and produced "finely worked blades, spear points, choppers, and scrapers out of fine-grained volcanics" (Carrico 1977). In addition, leaf-shaped knives, foliate to ovoid bifaces, foliate to short-bladed shoulder points, crescents, engraving tools, core hammers, pebble hammers, and cores were part of the tool assemblage (Moratto 1984; Wahoff and Dolan 2000). Pottery and milling stones were missing from the assemblage, confirming the assumption that hunting was an economic focus for the culture (Moriarty 1967; Warren and True 1961). Because the tool assemblage was similar to desert cultures of the Mojave Desert, it is believed that this culture migrated west from the desert into California (Gallegos 1995; Rogers 1939). However, no single hypothesis is universally accepted. Other hypotheses identify the movement of people into California from the south and north down the coast (Taylor and Meighan 1978; Chartkoff and Chartkoff 1984).

Archaic (8000 BC–AD 500)

According to Hale et al. (2018), "the more than 1500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in the San Diego region." The Archaic period is also known as La Jollan, Millingstone Horizon, and Encinitas Tradition. This period is characterized by the presence of dart points, milling, equipment, scattered hearths, shell middens, and flexed burials (Carrico 1977). Subsistence strategies placed an emphasis on gathering, possibly as a result of environmental change (Wahoff and Dolan 2000; Wallace 1978). The assemblage was composed of milling implements and cobble/core-based tools. The flaked tools do not appear to be as refined as those of the Paleoindian period. Mortuary goods included shell beads and ornaments, projectile points, and milling implements. Wallace (1978) interpreted archaeological sites of this period as an indication of an increase in population and permanence. Site types included coastal shell habitation bases, quarries, resource exploitation, and milling (Gallegos 1995). The sites are typified by an abundance of shellfish remains and are situated near sloughs and lagoons and on the open coast (Carrico 1977; Masters and Gallegos 1997; Moratto 1984; Wallace 1978). An inland manifestation identified as the Pauma complex is known to have existed (True 1958). Unlike the coastal people, this complex occupied "transverse valleys and sheltered canyons of inland San Diego county, ha[d] an emphasis on hunting and gathering, had a greater diversity of tool types, and lacked shellfish remains" (Masters and Gallegos 1997:12).

Similar to the Paleoindian period, controversy surrounds the origins of the Archaic culture. Several hypotheses have been postulated. Kaldenberg (1976) and Moriarty (1967) proposed that the transition from the Paleoindian to the Archaic culture was an in situ adaptation. In contrast, Warren et al. (1961) viewed this transition as a migration from the desert to the coast due to the adverse environmental condition of the Altithermal. Taylor and Meighan (1978:36) did not take a single position regarding the transition to the Archaic culture but, rather, incorporated all of the hypotheses as identified below:

> The artifact inventory and cultural activities argue strongly that this stage began in the desert inland and spread toward the Pacific Coast, reaching it about 8500 years ago. There is no evidence to show whether the Milling Stone Stage involved movement of the people or a conquest of earlier residents; perhaps the early hunters simply adopted this way of life as game animals became scarce.

The population of this period focused on lagoonal resources and moved up and down the river valleys exploiting a variety of inland and coastal resources (Masters and Gallegos 1997).

Late Prehistoric (AD 500–1769)

The Late Prehistoric period is an antecedent to Spanish contact (AD 1000–1769). It was a "time of cultural transformations brought about by trait diffusion, immigration, and in situ adaptation to environmental changes" (Moratto 1984:153). Subsistence strategies involved a focus on terrestrial collection and hunting (Christenson 1992); however, shellfish and other maritime resources were also used. Settlement included large villages near permanent water sources, temporary campsites, quarries, and resource exploitation sites. Small triangular points, pottery, and Obsidian Butte obsidian are characteristic of this period (Christenson 1992; Masters and Gallegos 1997; True 1966, 1970). Cremations replaced flexed inhumations, and mortuary goods became more elaborate (Wallace 1955). Cremations are believed to have been introduced into the area during the Late Prehistoric period and are the result of Shoshonean intrusion (1500 BP) from the deserts (True 1966) into northern San Diego County. However, in the southern part of the county, this practice has been attributed to a "Colorado River origin that may have had an influence as far reaching as the Hohokam [current day Pima people and Tohono O'odham Nation] in southwestern Arizona" (True 1970:58). Kaldenberg (1976:67) had a different opinion on the origin and timing of the entrance of cremation practices into the region. He noted that the practice of cremation was introduced at the terminus of the Archaic culture (3000 BP) with the "migration of Yuman people into the San Diego coastal region." By 2000 BP, inhumations were replaced by cremations (Kaldenberg 1976).

Two complexes (San Luis Rey and Cuyamaca) are identified with the Late Prehistoric period. True (1966) believed that the San Luis Rey complex was a precursor to the ethnographic Luiseño. Similarly, he suggested that the Cuyamaca complex was the predecessor to the ethnographic Kumeyaay. Through the examination of both

geographic regions, True identified specific characteristics unique to each; he noted that, although geographically similar, these two cultures were distinctly different.

Ethnohistoric Period (post-AD 1769)

The Ethnohistoric period begins with the first permanent European settlements. Early Ethnohistoric accounts and mission documents have been used to reconstruct this period (Hale et al. 2018). Florence Shipek (1993) delineated the boundaries between the Luiseño and the Kumeyaay as follows:

> In 1769, the Kumeyaay national territory started at the coast about 100 miles south of the Mexican border (below Santo Tomas), thence north to the coast at the drainage divide south of the San Luis Rey River including its tributaries. Using the U.S. Geological Survey topographic maps, the boundary with the Luiseño then follows that divide inland. The boundary continues on the divide separating Valley Center from Escondido and then up along Bear Ridge to the 2240 contour line and then north across the divide between Valley Center and Woods Valley up to the 1880-foot peak, then curving around east along the divide above Woods Valley.

The Kumeyaay (also known as Ipai, Tipai, Diegueño, and Kamia) lived in small villages, or rancherias, and would inhabit multiple locations throughout the year. According to Cline (1984), the typical settlement included two or more seasonal villages with temporary camps farther away from the main central villages. Hunting and gathering were the main economic focus, consisting of small game, acorns, grass seeds, and other plant resources. Similar to the Prehistoric period, a wide range of tools (chipped and ground stone) that were made from locally available materials were used. Exotic materials, such as obsidian and chert, were imported from the deserts to the north and east. In addition to lithic tools, the Kumeyaay produced baskets and pottery.

Historical Period (post-AD 1542)

The Historical period can be divided into three phases (Spanish, Mexican, and American). Each phase is identified with a change in political power. Common goals in each phase included land gain, assimilation of the native population, and the attainment of wealth. However, these periods were dissimilar in the rationale behind these goals. Rationale included defense (Spain), independence and secularization (Mexico), and expansion and economics (United States). Assimilation of Native Californians was a desire of each government that came to power; however, the greatest misfortune of this period was the large decline in Native American populations (Phillips 1981).

Spanish Period (AD 1769–1821)

Although the first Spanish contact occurred in 1542, it was not until 1769 that the first permanent settlement was established. The Spanish period was a time of European expansionism and is typically identified with the mission system. In addition, presidios (military defense) and pueblos (city government) played an important role in the structuring of the community (Campbell 1977). The mission system was the institution designated for the assimilation and exploitation of native people (Campbell 1977; Cline 1979; Jackson and Castillo 1995; Phillips 1981). Jackson and Castillo (1995:6) identified this exploitation as an extension of the "sixteenth-century policy of congregacion/reduction." In contrast, Costo (1987) noted that the transference of the Spanish Inquisition (originally established in 1478) to the New World was the mechanism for this exploitation because the Inquisition contained economic and religious incentives. The Spanish stronghold in California declined with Spain's loss of the Napoleonic Wars (1803–1815), which eliminated funding to the mission.

Mexican Period (AD 1821–1859)

Mexican independence from Spain occurred in 1821, and in 1833, Mexico secularized the missions. After secularization, large tracts of land were granted to private citizens. "The secularization of the missions during the Mexican period is usually regarded as a watershed in California History because it resulted in the replacement of one Hispanic institution by another—the rancho for the mission" (Phillips 1981:33). Like the mission, the rancho became the institution of native exploitation. This period experienced an increase in cattle ranching and the hide and tallow trade (Gallegos 1995; Wahoff and Dolan 2000). The passage of the Treaty of Guadalupe Hidalgo that ended the Mexican–American War in 1848 was the final event that culminated the Mexican period in California.

American Period (Post-AD 1850)

The concept of a two-ocean economy and the California Gold Rush were the impetus that brought about the annexation of California (1850) to the United States. A large number of immigrants entered California with the discovery of gold and the availability of free land with the passage of the Homestead Act (1863). This population increase caused the displacement of Native Californians and brought about a deterioration in their rituals and traditions (Carrico 1986; Gallegos 1995). During this period, the ranchos experienced a decline primarily in response to their inability to validate land ownership as a result of the California Land Claims Act of 1851. "With the discovery of gold, the building of the transcontinental railroad, and the development of crops and cities, people in massive numbers from all parts of the world began to inhabit the region" (Phillips 1981: editors' introduction).

San Diego County Fairgrounds

This brief summary of the history of the San Diego County Fairgrounds is taken from the Fairgrounds Master Plan Environmental Impact Report (EIR) (LSA 2009).

The District was established in 1904, as a result of state legislation that establish District Agricultural Associations statewide to promote local agricultural production. The District organized fairs at various locations throughout the county before acquiring the Del Mar golf course and some adjacent land in 1935 and obtaining government funding from the Work Progress Administration.

Architects Joe and Sam Hammil and Herbert Louis Jackson designed the Fairgrounds, with buildings in a Spanish Colonial Revival Style. Each of the buildings was designed to represent one of the California missions and were made of native adobe, mixed and dried on site. The first buildings to be erected were "the main exhibit building and auditorium, a combination Grandstands and utility building, 10 livestock buildings, an equipment shed, a main entrance building, a bell tower, and stables to house 600 horses." A 1-mile harness racing track was also constructed. An 8-foot adobe wall enclosed the entire property and still stands today. The San Diego County Fair's opening day was October 8, 1936.

Shortly after the construction of the first buildings, the District entered into an agreement to host Thoroughbred Race Meets at the Fairgrounds. Backed by a local stockbroker and singer Bing Crosby, the Del Mar Turf Club was built. This led the Work Progress Administration to halt construction on the Fairgrounds as it had not intended to fund construction of a horseracing enterprise. Construction was completed with private funding, and the Del Mar Turf Club opened to the public on July 3, 1937.

During World War II, the Fairgrounds served as a training facility and temporary quarters for military personnel. It was also used as a location for the manufacture of parts for Douglas B-17 bomber planes. The fair was reopened to the public in 1946.

Architect Harry Hayden Whiteley designed a number of buildings within the Fairgrounds during the 1950s and 1960s. The Fairgrounds returned to their prewar success during the 1960s, frequented by celebrities. In 1970, the Del Mar Thoroughbred Club took over racing operations from the Del Mar Turf Club, and the Fairgrounds property has undergone many alterations since that time.

Environmental Setting of the Potential Housing Sites

The survey area encompasses five distinct project sites located on the Fairgrounds property in the City of Del Mar and the City of San Diego: the East Main Stable Gate Site, South of Stable Gate Site, Adjacent to Fire Station Site, Surf and Turf RV Park Site, and the Dirt Lot Site. Each of these sites occurs in a highly developed portion of the Fairgrounds property regional entertainment venue that hosts various uses associated with the San Diego County Fair, Del Mar Racetrack, and other events.

The East Main Stable Gate Site (Site 1) is north of the Fairgrounds East Main Stable Gate access driveway and is characterized by developed land used as a parking lot with direct access to and from Jimmy Durante Boulevard. The parking area was developed in the early 1990s, and includes 100 parking spaces, 90 of which are used for parking, while the other 10 are used to store traffic control-related vehicles and equipment. The site includes paved and compacted dirt areas with fencing, gates, and ornamental vegetation. Surrounding land uses include

the intersection of Jimmy Durante Boulevard and Via De La Valle to the northeast and horse barns to the south and west. The site is currently developed with a paved parking lot and compacted dirt areas.

The South of Stable Gate Site (Site 2) is characterized by developed land used for equestrian-related access, staging, and supporting infrastructure associated with the Fairgrounds' stabling operations. Surrounding land uses include Jimmy Durante Boulevard to the east, horse barns to the west and south, and the East Main Stable Gate access driveway and parking lot to the north. Site 2 is occupied by compacted dirt areas and horse boarding stables for the Del Mar Racetrack. The stables were constructed between 1984 and 1985.

The Adjacent to Fire Station Site (Site 3) is directly north of the existing Del Mar Fire Department station and contains existing District office buildings, public restroom buildings, and maintained ornamental landscaping. The office building was constructed in 1965, and the public restroom building was constructed between 1998 and 1999. The buildings encompass 14,250 square feet (including the boardroom, human resources offices, marketing offices, and bathrooms). The surrounding land uses are similarly developed, including Fairgrounds buildings to the north and west, the Del Mar Fire Department station to the south, and paved parking to the east.

The Surf and Turf RV Park Site (Site 4) is currently developed as a recreational vehicle (RV) park with 66 compacted gravel RV parking stalls, utility hookups, and ornamental landscaping. The site was initially developed in 1980 and has continued to be developed through the 1990s. The site is surrounded by a mixture of public roadways (including Turf Road to the south and Jimmy Durante Boulevard to the west), recreational uses to the east (including the eastern portion of the RV park and tennis courts farther east), Fairgrounds horse stables to the west, and compacted dirt lots to the south.

The Dirt Lot Site (Site 5) consists primarily of an undeveloped dirt lot with a flat, compacted dirt surface historically used for overflow parking and materials staging for the Fairgrounds. Site 5 was initially graded as a flat area in 1978, and has remained a dirt lot since the initial development. The site is surrounded by public roadways (including Turf Road to the north and Jimmy Durante Boulevard to the west), recreational uses to the north consisting of the existing RV park, compacted dirt lots to the east and south, and Fairgrounds horse stables to the west.

Regulatory Setting

This section identifies potential cultural resource regulations applicable to proposed development within the five potential project sites. State, regional, and local regulations, plans, and policies that provide protection and management of cultural resources applicable to the project are listed below and described in Attachment 1, Regulatory Framework. Because three of the potential project sites are in the City of Del Mar and two sites are in the City of San Diego, future environmental review will need to be processed in accordance with the respective regulatory frameworks and cultural resource policies of the jurisdiction where the development site is located.

State

- California Environmental Quality Act (CEQA)
- California Register of Historical Resources (California Public Resources Code, Section 5020 et seq.)
- California Health and Safety Code, Section 7050.5

Local

- City of Del Mar General Plan
- City of San Diego General Plan
- City of San Diego Municipal Code Historical Resources Guidelines
- City of San Diego Historical Resource Technical Report Guidelines and Requirements
- City of San Diego CEQA Significance Determination Thresholds for Historical Resources
- City of San Diego CEQA Significance Determination Thresholds for Tribal Cultural Resources

Methods and Results

Archival Research

Staff conducted a records search of the five potential project sites and 0.25-mile surrounding area using CHRIS (Confidential Attachment 3, CHRIS Background Data). Thirty-seven studies (Table 2, Previous Studies Within a 0.25-Mile Radius) have been conducted within a 0.25-mile radius. Nine sites (Table 3, Previously Recorded Cultural Resources Within a 0.25-Mile Radius) were previously recorded, and no historic addresses were identified. Of the previously recorded sites, three are prehistoric (CA-SDI-191/P-37-000191, CA-SDI-192/P-37-000192, and CA-SDI-10238/P-37-010238), and six are historic (P-37-035935, -035936, -036415, -036418, -036421, and -036422). Two previously recorded resources (P-37-035936 and P-37-036415) are located within the project footprint. P-37-035936 is located within Site 3, and P-37-036415 is located in Sites 3, 4, and 5, and within the 100-foot survey buffer area of Sites 1 and 2.

The Del Mar Thoroughbred Club Grandstand and Racetrack Complex (P-37-036936), within which three of the five housing sites are located (Sites 1, 2, and 3), has been evaluated for listing in state and federal registers as a historic district and recommended not eligible, and therefore, would not be a constraint for development related to cultural resources on these potential housing sites.

Two resources returned by the records search are within the project site, (P-37-035936 and P-37-036415). P-37-035936 is the Human Resources Building at the Del Mar Racetrack, located at potential housing Site 3 (Mello 2016). P-37-036415 is the Del Mar Transmission Line 666, passes through potential housing Sites 3, 4, and 5, and is within the 100-foot survey buffer of Sites 1 and 2 (Foglia and Spelts 2016a). Both of these resources have been evaluated and recommended not eligible for listing in the state and federal registers and, therefore, would not be a constraint for development related to cultural resources on each of the five potential sites.

The nearest off-site prehistoric resource is just north of potential housing Site 1 (CA-SDI-191/P-37-000191). This resource was recorded as a habitation site, likely before 1950. Site updates in 2016 and 2019 note shell fragments. Monitoring during construction of the Del Mar substation in 2021 noted approximately 25 marine shell fragments and some non-diagnostic construction debris. No artifacts or features were noted. The site was likely destroyed during the original substation construction, and, therefore, would not be a constraint for development related to cultural resources (Rogers n.d.; Treganza n.d.; Bull and Gross n.d.; Foglia and Spelts 2016b; Wolfe 2020; Tansey 2021).

Table 2. Previous Studies Within a 0.25-Mile Radius

Report ID	Title	Author	Year
SD-00672	**A Cultural Resource Overview for the San Dieguito River Valley San Diego, California.**	**Gallegos, Dennis, Roxana Phillips, and Andrew Pigniolo**	**1988**
SD-01441	A Report of an Archaeological Sampling Program at Site W-36 (SDi-10238), La Vida Del Mar Project, Solana Beach, California P-85-55 EAD Log #85-13-17.	Smith, Brian F.	1986
SD-01667	Archaeological Test Excavations at SDM-W-36 City of Solana Beach, California	Wade, Sue A.	1988
SD-02958	Negative Archaeological Survey Report 11-SD-5, P.M. R35.2, 189161	Caltrans	1994
SD-04177	**Archaeological Investigations for the San Dieguito Wetland Restoration Project EIR/EIS**	**Berryman, Judy, PhD, and Craig Woodman, MA**	**2000**
SD-04968	Draft EIR for the Mickellar Joseph Development	RECON	1982
SD-06440	**Draft Archaeological Investigations for the San Dieguito Wetland Restoration Project EIR/EIS**	**Berryman, Judy, PhD, and Craig Woodman, MA**	**1999**
SD-06444	Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the San Dieguito Wetlands Restoration Project	USFWS and San Dieguito River Park Joint Authority	2000

Table 2. Previous Studies Within a 0.25-Mile Radius

Report ID	Title	Author	Year
SD-06645	Negative Archaeological Survey Grand Avenue and Old Del Mar Airport	Rosen, Martin	1994
SD-07109	**Test Excavations at the Del Mar Site (SDI-191)**	**Warren, C.N.**	**1959**
SD-09391	**Cultural Resources Survey Report for TPM 20917, LOG 05-09-005 Brown's Rancho Minor Subdivision APN 189-030-38**	**Wright, Gail**	**2005**
SD-09516	The Cemeteries and Gravestones of San Diego County: An Archaeological Study	Caterino, David	2005
SD-10415	**Cultural Resources Assessment Del Mar Fairgrounds Project, Cities of Del Mar and San Diego, San Diego County, California**	**Fulton, Phil**	**2006**
SD-10885	Archaeological and Geospatial Investigations of Fire-Altered Rock Features at Torry Pines State Reserve, San Diego, California	Mattingly, Scott A.	2007
SD-11623	**San Dieguito River Valley Inventory of Archaeological Resources**	**Hector, Susan M., and Alice Brewster**	**2002**
SD-11761	Historic Property Survey Report, I-5 North Coast Widening Project	Dominici, Deb	2007
SD-12117	Results of Archaeological Monitoring Program for the San Dieguito Wetlands Restoration Project, San Diego County, California	Zepeda-Herman, Carmen, and Harry Price	2009
SD-12273	Cultural Resources Evaluation of the Riverpark Office Project, City of Del Mar, California	Gross, Timothy G.	2004
SD-12817	Cultural Resources Survey for 57 Wood to Steel Pole Undergrounding and Pole Replacements along TL667 and TL610 and Staging Yard Areas along Via De La Valle and El Camino Real, Del Mar Area of San Diego County, California	Bowden-Renna, Cheryl	2010
SD-13916	Interstate 5 North Coast Corridor Project Supplemental Draft Environmental Impact Report/Environmental Impact Statement	Caltrans	2012
SD-14086	Cultural and Historical Resources Constraints Report for the San Dieguito Bridge Replacement and Second Track Project; Del Mar Tunnel Alternatives Analysis	Pham, Angela N., and Sinead Ni Ghabhlain	2012
SD-14397	**Record Search Results for the Underground Utility District Via De La Valle Project**	**Pigniolo, Andrew R.**	**2010**
SD-14495	Interstate 5 North Coast Corridor Project Final Environmental Impact Report/Environmental Impact Statement and Section 4(f) Evaluation	Caltrans	2013
SD-14523	Letter Report: ETS 20354 – Cultural Resources Monitoring for Transmission Line Undergrounding and Pole Installation for Tie Line 610 and Tie Line 667 along Via De La Valle, City of Del Mar, San Diego County, California – IO 200410700	Bietz, Spencer	2013
SD-14615	Interstate 5 Corridor Project Historic Property Survey Report and Supplementals	Caltrans	2007
SD-16127	2007 Cultural Resources Treatment Plan North Coast Interstate 5 Corridor	Dominici, Deb, and Don Laylander	2008
SD-16131	Sixth Supplemental Historic Property Survey (HPSR): Revised Area of Potential Effects (APE) I-5 North Coast Corridor	Blake, Michelle	2013
SD-16381	Cultural Resources Assessment of the Del Mar Grandstands Project, Del Mar, San Diego County, California (BCR Consulting Project No. TRF 1517)	Brunzell, David, and Kara Brunzell	2015

Table 2. Previous Studies Within a 0.25-Mile Radius

Report ID	Title	Author	Year
SD-16877	Cultural Resources Records Search and Site Visit Results for Cellco Partnership and their Controlled Affiliates Doing Business as Verizon Wireless Candidate 'Jimmy Durante,' 2260 Jimmy Durante Boulevard, Del Mar, San Diego County, California	Wills, Carrie D. and Bonnie Bruce	2016
SD-17103	**Cultural Resources Survey Report for the Proposed San Diego Gas & Electric TL6744 Reconfiguration & TL666D Removal Project, San Diego County, California**	**Foglia, Shannon E., Theodore G. Cooley, Monica Mello, Brian Spells, Rachel Droessler, Tim Wolfe, and Earl Morales**	**2017**
SD-17550	Phase I Cultural Resources Survey for the Kelly Subdivision Project, City of Solana Beach	Garrison, Andrew J., and Brian F. Smith	2018
SD-17966	Cultural Resources Records Search and Site Visit Results for Cellco Partnership and their Controlled Affiliates Doing Business as Verizon Wireless Candidate 'Del Mar Race Track,' 2260 Jimmy Durante Boulevard, Del Mar, San Diego County, California	Wills, Carrie D. and Bonnie Bruce	2017
SD-18132	Letter Report: ETS 39170 – Cultural Resources Monitoring Report for the Anchor Replace, TL666, Z12313 Project, City of Del Mar, San Diego County, California – IO 7074265	Colley, Theodore G.	2019
SD-18133	Letter Report: ETS 41186 – Cultural Resources Monitoring Report for the Del Mar Potholing, City of Del Mar, San Diego County, California – IO 200452400	Wolfe, Tim	2019
SD-18615	Letter Report: ETS 25653.05 – Cultural Resources Monitoring Report for the Potholing, TL674 Del Mar Reconfiguration/TL666D Removal Project, City of Del Mar, San Diego County, California – IO 200452400	Wolfe, Tim	2020
SD-19938	Letter Report: ETS 5981501 – Cultural Resources Monitoring for TCMZ12313 Anchor and Down Guys, Solana Beach, San Diego County, California	Moradi, Leah	2023
SD-20126	Archaeological Monitoring for the SDG&E Del Mar Substation Grading Repair, San Diego County, California (SDG&E ETS #49844)	Noble, Michelle D., and Joshua A. Tansey	2021

Notes: SDG&E = San Diego Gas & Electric
Bold = study within project site

Table 3. Previously Recorded Cultural Resources Within a 0.25-Mile Radius

Primary Number	Trinomial	Chronological Placement	Site Type	Size
P-37-000191	CA-SDI-191	Prehistoric	Habitation Site	8 acres (estimate)
P-37-000192	CA-SDI-192	Prehistoric	Shells noted; site location now paved	Unknown
P-37-010238	CA-SDI-10238	Prehistoric	Shell midden	60 by 40 meters
P-37-035935	N/A	Historic	Del Mar Infield Pavilion, Del Mar Thoroughbred Club Grandstand and Racetrack Complex	N/A
P-37-035936	**N/A**	**Historic**	**Human Resources Building, Del Mar Thoroughbred Club Grandstand and Racetrack Complex**	**N/A**
P-37-036415	**N/A**	**Historic**	**Del Mar Transmission Line 666**	**N/A**

Table 3. Previously Recorded Cultural Resources Within a 0.25-Mile Radius

Primary Number	Trinomial	Chronological Placement	Site Type	Size
P-37-036418	N/A	Historic	Del Mar Substation	N/A
P-37-036421	N/A	Historic	Isolated artifact	N/A
P-37-036422	N/A	Historic	Del Mar Print/Del Mar Automotive (2201 San Dieguito Drive)	N/A

Notes: N/A = not available
Bold = resource within project site

Historic aerial maps from 1953 through 2022 were reviewed. The earliest aerial photos show all five potential housing sites except for Site 1 graded and the surrounding area developed. Potential housing Site 3 is part of the original Fairground development and structures were present in the 1953 aerial. Potential housing Site 1 appears to have been graded between 1978 and 1980 and has been used for parking since that time. Stables were constructed on potential housing Site 2 by 1985. Potential housing Site 4 appears to have been initially developed beginning in 1980, although it does not appear to have been paved. The earliest aerials show potential housing Site 5 as graded, but it remains unpaved to date (NETR Online 2025).

Native American Heritage Commission

The NAHC was contacted for a Sacred Lands File check to determine if sacred lands are present on site. The NAHC response was negative and included a list of 13 Native American representatives that may have knowledge of the area (Confidential Attachment 4, Sacred Lands File Check). These Tribes will be contacted for any information they may have once the housing site has been selected.

Field Survey

The goal of the survey was to identify cultural resources and sensitivity for cultural resources at proposed housing sites. Rocky Ciarmoli, a Harris & Associates archaeologist, conducted the survey on November 10, 2025. The survey area included all five potential housing sites and a 100-foot buffer. Continuous parallel transects (5-meter) were walked in a west-to-east direction for each potential housing site location. Non-developed and open ground areas where resources could be identified were intensely evaluated.

The survey area was photographed (Attachment 2, Photographs) to document the environmental setting.

No resources were identified within the five potential housing sites; therefore, the preparation of Department of Parks & Recreation forms was not required.

Findings

No cultural resources were located as a result of this study, and the five potential project sites are not considered sensitive for the presence of archaeological resources due to their developed nature or disturbance that has occurred historically. No further cultural analyses are recommended; however, should any potential resources be identified during construction, ground-disturbing activities should be temporarily directed away from the area of discovery, and the District should be notified.

If you have any questions, please contact me at (619) 236-1778.

Sincerely,

Donna Beddow, RPA
Senior Archaeologist

Attachments

Figure 1. USGS Topographic Map
Figure 2. Potential Housing Sites

Attachment 1. Regulatory Framework
Attachment 2. Photographs

Confidential Attachments – Under Separate Cover

Attachment 3. CHRIS Background Data
Attachment 4. Sacred Lands File Check

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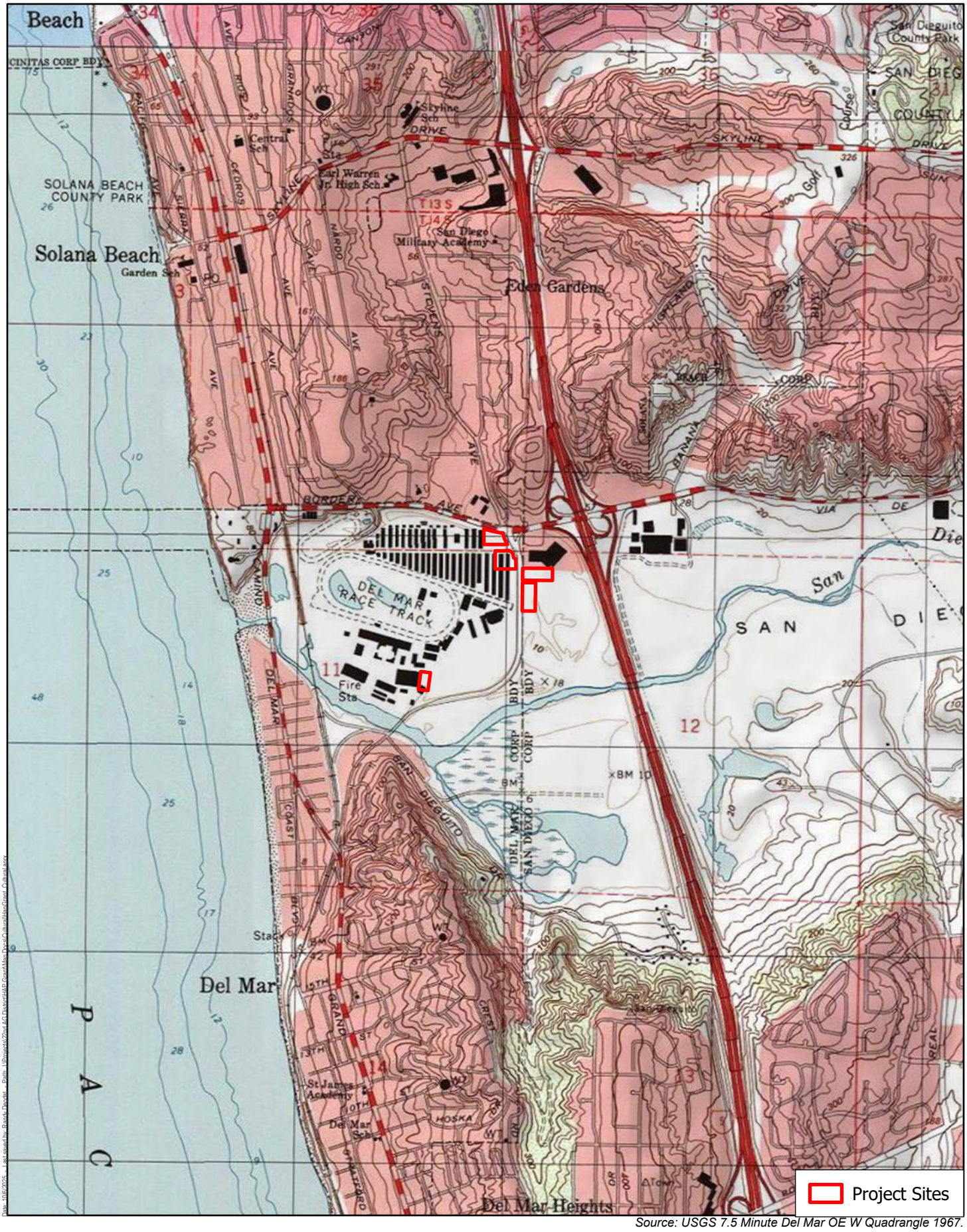

Source: USGS 7.5 Minute Del Mar OE W Quadrangle 1967.

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Figure 1

USGS Topographic Map

HAP Grant Affordable Housing Project

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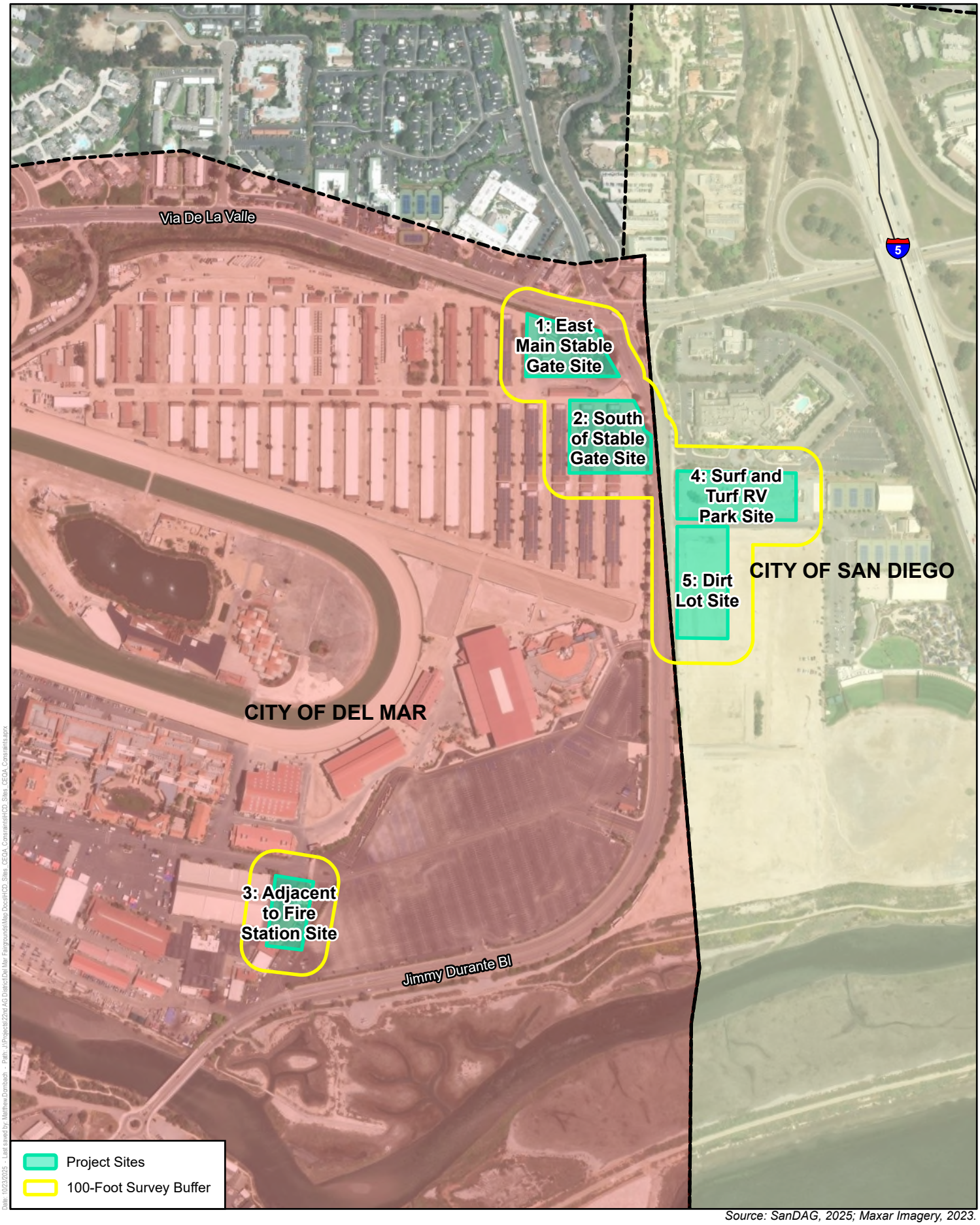

Source: SanDAG, 2025; Maxar Imagery, 2023.

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Figure 2

Potential Housing Sites

HAP Grant Affordable Housing Project

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Attachment 1. Regulatory Framework

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State Level Regulations

California Environmental Quality Act

According to the California Environmental Quality Act (CEQA), a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (CRHR) (California Public Resources Code, Section 5024.1; 14 CCR 4852) including the following:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed in or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Section 5020.1[k] of the California Public Resources Code), or not identified in a historical resources survey (meeting the criteria in Section 5024.1[g] of the CEQA Guidelines) does not preclude a lead agency from determining that the resource may be a historical resource as defined in California Public Resources Code, Section 5020.1(j) or 5024.1.

California Register of Historical Resources (California Public Resources Code, Section 5020 et seq.)

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code, Section 5020.1[j]). In 1992, the California Legislature established the CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code, Section 5024.1[a]). A resource is eligible for listing in the CRHR if the State Historical Resources Commission determines that it is a significant resource and that it meets any of the following National Register of Historic Places (NRHP) criteria (California Public Resources Code, Section 5024.1[c]):

1. Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

Resources less than 50 years old are not considered for listing in the CRHR but may be considered if it can be demonstrated that sufficient time has passed to understand the historical importance of the resources (refer to 14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historical resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing on the NRHP are automatically listed on the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under

local ordinances or identified through local historical resource surveys. The State Historic Preservation Officer maintains the CRHR.

California Health and Safety Code, Section 7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code, Section 7050.5, requires that, if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the county coroner has examined the remains (Section 7050.5b). If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (Section 7050.5c). The NAHC will notify the most likely descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. The inspection must be completed within 24 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

City of Del Mar

Community Plan (aka General Plan)

The City's Community Plan, also known as a General Plan, is comprised of multiple elements that provide a comprehensive slate of citywide, and location-based, policies for growth and development. Below are goals and policies related to cultural resources (City of Del Mar 1985).

Goal 1. Establish without delay a comprehensive program to preserve and acquire permanent open space sufficient to meet the long-range needs of the community, preserve and enhance natural resources, and protect areas and people susceptible to seismic and flooding hazards.

K. Require development in areas of archaeological significance to be reviewed by the City of Del Mar to insure that such uses do not result in permanent destruction of any archeological sites or cultural information.

City of San Diego

General Plan

The Historic Preservation Element of the 2024 City of San Diego General Plan (2024 General Plan) includes the following cultural resources goals (City of San Diego 2024a):

<u>Identification and Preservation of Historical Resources</u>

HP-A.1 Strengthen historic preservation planning.

a. Maintain Certified Local Government (CLG) status ensuring San Diego's direct participation in federal and state historic preservation programs.
b. Utilize benefits of the CLG program including grant funding available from the California Office of Historic Preservation.
c. Update the Comprehensive Historic Preservation Plan. The plan is intended to guide, with specificity, historic preservation efforts in future years, including implementation measures, inventories, incentives, education and regulations.
d. Participate in regional efforts to strengthen historic preservation planning.

HP-A.2 Fully integrate the consideration of historical and cultural resources in the larger land use planning process.

a. Promote early conflict resolution between the preservation of historical resources and alternative land uses.
b. Encourage the consideration of historical and cultural resources early in the development review process by promoting the preliminary review process and early consultation with property owners, community and historic preservation groups, land developers, Native Americans, and the building industry.
c. Include historic preservation concepts and identification of historic buildings, structures, objects, sites, neighborhoods, and non-residential historical resources in the community plan update process.
d. Conservation areas that are identified at the community plan level, based on historical resources surveys, may be used as an urban design tool to complement community character (see also Urban Design Element, Policy UD-A.7).
e. Make the results of historical and cultural resources planning efforts available to planning agencies, the public and other interested parties to the extent legally permissible.

HP-A.3 Foster government-to-government relationships with the Kumeyaay/Diegueño tribes of San Diego.

a. Regularly meet with local Tribal governments to discuss issues of mutual concern.
b. Formally consult with identified California Native American tribes prior to the adoption or amendment of the General Plan or specific plan or the designation of open space.
c. Maintain confidentiality concerning locations of traditional cultural places that are identified through the consultation process and otherwise.
d. Support Tribal governments holding conservation easements over land voluntarily set aside for the protection of cultural places.

HP-A.4 Actively pursue a program to identify, document and evaluate the historical and cultural resources in the City of San Diego.

a. Develop context statements specific to areas being surveyed.
b. Complete and regularly update a comprehensive citywide inventory of historical and cultural resources in conformance with state standards and procedures. Include community, neighborhood, cultural, and historic preservation groups, property owners, land developers, and the building industry in planning and implementing historic surveys.
c. Require that archaeological investigations be guided by appropriate research designs and analytical approaches to allow recovery of important prehistoric and historic information.
d. Require the permanent curation of archaeological artifact collections and associated research materials, including collections held by the City. Support the permanent archiving of primary historical records and documents now in public institutions.
e. Include Native American monitors during all phases of the investigation of archaeological resources including survey, testing, evaluation, data recovery, and construction monitoring.
f. Treat with respect and dignity any human remains discovered during implementation of public and private projects within the City and fully comply with the California Native American Graves Protection and Repatriation Act and other appropriate laws.

HP-A.5 Designate and preserve significant historical and cultural resources for current and future generations.

a. Due to their importance, designate historical resources using the City's adopted designation criteria, State Register criteria, and National Register criteria.

b. Establish historical districts where concentrations of buildings, structures, sites, landscapes, and objects are identified. Adopt guidelines when necessary to guide preservation and rehabilitation of the overall district character and significance and apply the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties for review of alterations and new construction in designated historical districts.
c. Protect and preserve historic sidewalk stamps, street signs, lampposts, street trees, and other hardscape and cultural landscape elements, in addition to designated historical buildings, structures, and sites that contribute to the historic character of a neighborhood.
d. Enforce the Historical Resources Regulations and Guidelines of the Land Development Code that are aimed at identifying and preserving historical resources. Update these regulations and guidelines as needed to maintain adequate protection of historical resources.
e. Encourage continued use and adaptive reuse of designated historical resources through application of the U.S. Secretary of the Interior's Standards and Guidelines for rehabilitation, reconstruction, and restoration.
f. Require that all City-owned designated historical resources be maintained in a manner that is consistent with the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties.

Historic Preservation, Education, Benefits, and Incentives

HP-B.1 Foster greater public participation and education in historical and cultural resources.

a. Encourage public attendance at monthly Historical Resources Board meetings through increased notification of agenda items on the City's website.
b. Encourage the participation of the City's rich diversity of ethnic groups in efforts to preserve historical and cultural resources through outreach to historical societies, interviews to document oral histories, and inclusion of ethnic resources on the City's Register of Designated Historical Resources.
c. Engage the public when creating "context statements" by adopting an oral history component of historical survey work.
d. Participate in National Historic Preservation Week and California Archaeology Month. Each year in May recognize those individuals, groups or businesses that have made a significant contribution to the preservation, protection or restoration of historical or cultural resources.
e. Foster educational opportunities using designated historical and cultural resources, including placement of plaques as a way to identify important historical resources throughout the City.
f. Encourage the involvement of educational institutions in preservation programs and activities.
g. Encourage the use of local history themes in some public art projects.
h. Encourage active community involvement in preservation efforts through resource sponsorship programs.

HP-B.2 Promote the maintenance, restoration, and rehabilitation of historical resources through a variety of financial and development incentives. Continue to use existing programs and develop new approaches as needed. Encourage continued private ownership and utilization of historic structures through a variety of incentives.

a. Encourage owners of historical resources to utilize federal incentives including Federal Rehabilitation Tax Credits, façade and conservation easements and others.

b. Encourage preservation, maintenance, rehabilitation, and restoration of designated historical resources through use of available incentives offered by the state of California for achieving this goal. These incentives include the Mills Act, the California Cultural and Historical Endowment, and others.
c. Create incentives to encourage the protection and preservation of designated historical buildings, structures, and objects and important archaeological sites.
d. Use the flexibility provided in the California State Historical Building Code Title 24 in meeting code requirements for historically-designated buildings.
e. Encourage the use of Transfer of Development Rights to preserve historical and cultural resources in situ, particularly in areas zoned for high-density development.
f. Take advantage of the Conditional Use Permit (CUP) process for historical resources, to gain flexibility in the application of some development regulations.
g. Foster preservation and adaptive reuse of designated historical buildings and structures by allowing retention of non-conforming setbacks without requiring a variance or hardship finding. Allow the use of a Neighborhood Development Permit with a finding that the proposed reuse does not adversely affect the community plan or General Plan because it would be beneficial in this regard.
h. Provide architectural assistance service to help owners design rehabilitation and/or adaptive reuse plans, or feasibility studies for historically-designated buildings, structures, and objects. Maintain the City's current façade improvement program for historic commercial properties.
i. Continue to provide design assistance for owners of historical resources through the Historical Resources Board.

HP-B.3 Develop a historic preservation sponsorship program.

a. Create a historic preservation fund that provides a monetary source for local preservation incentives such as an architectural assistance program and archaeological site protection plan. The fund may be supported through grants, private or public donations, or other sources.
b. Create a "receiver site" program that provides relocation sites for historical resources (buildings, structures, or objects) that cannot be preserved on site. Receiver sites should be located within the community in which the resource was originally located and should maintain a context and setting comparable to the original location. This method of preservation should be limited and used when other on-site preservation techniques are found not to be feasible.
c. Establish an "adopt a resource" program that encourages the public and local businesses to become involved in the protection and preservation of historical and cultural resources by sponsoring preservation of individual properties, which may include archaeological sites to the extent legally permissible.
d. Create a sponsorship program to encourage the public and local businesses to become involved in curation of existing archaeological artifact collections that have no current funding mechanism.

HP-B.4 Increase opportunities for cultural heritage tourism. Additional discussion and policies can be found in the Economic Prosperity Element, Section 1.

a. Collaborate with other public, private, and non-profit entities to create a sustainable cultural heritage tourism program within the overall travel industry.
b. Promote the history of San Diego and the many designated historical buildings, structures, districts, and landscapes to attract cultural heritage travelers.
c. Focus the development of cultural heritage programs on quality and authenticity.

City of San Diego Municipal Code Historical Resources Guidelines

The purpose and intent of the San Diego Municipal Code (SDMC) Historical Resources Guidelines (Chapter 14, Division 3, Article 2) are to protect, preserve, and, where damaged, restore the City's historical resources. The regulations apply to all proposed development in the City when historical resources are present on the premises regardless of the requirement to obtain a Neighborhood Development Permit or Site Development Permit. When any portion of a premises contains historical resources, as defined in SDMC Chapter 11, Article 3, Division 1, the regulations apply to the entire premises (City of San Diego 2024b).

City of San Diego Municipal Code Restoration of Decorative Surfaces

According to the SDMC (Chapter 6, Article 2, Division 12, Section 62.1203), decorative surfaces are any non-standard surface within the public right-of-way and include ceramic tile, concrete pavers, stamped concrete, painting, or other surface using a unique treatment. The municipal code (Section 62.1219) requires compliance with requirements related to the restoration of decorative surfaces such as notification to the City Engineer when work will disturb resources. Specifications are required as to how the excavator will minimize destruction and ensure restoration (City of San Diego 2023).

Historical Resource Technical Report Guidelines and Requirements

The City's Historical Resource Technical Report Guidelines and Requirements is the guiding document for the management of historical resources in the City. The intent of the guidelines is to ensure consistency in the management of the City's historical resources, including identification, evaluation, preservation/mitigation, and development. In addition, the guidelines also provide an overview of the development review process and requirements for the preparation of cultural resources technical studies (City of San Diego 2012).

CEQA Significance Determination Thresholds for Historical Resources

Historical resources significance determination, pursuant to the City's CEQA Significance Determination Thresholds, consists of determining the sensitivity or significance of identified historical resources and then determining direct and indirect impacts that would result from project implementation. The City's CEQA Significance Determination Thresholds define a significant historical resource as one that qualifies for the CRHR, is listed in a local historic register, or deemed significant in a historical resource survey, as provided under California Public Resources Code, Section 5024.1(g); however, even a resource that does not fulfill any of those qualifications may be historically significant for the purposes of CEQA. The SDMC Historical Resources Guidelines state that the significance of a resource may be determined based on the potential for the resource to address important research questions as documented in a site-specific technical report prepared as part of the environmental review process. In addition, Blueprint SD that updated the City's 2024 General Plan and the Uptown Community Plan Focused Amendment provides policies that require compliance for historical and cultural resources.

Based on the City's CEQA Significance Determination Thresholds, a significant impact regarding historical resources could occur if implementation of a project would result in a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5, including the adverse physical or aesthetic effects or the destruction of a prehistoric or historic building (including an architecturally significant building), structure, object, or site.

As a baseline, the City has established the following criteria to be used in the determination of significance for an archaeological resource under CEQA:

> An archaeological site must consist of at least three associated artifacts/ecofacts (within a 40 square meter area) or a single feature and must be at least 45 years of age. Archaeological sites containing only a surface component are generally considered not significant, unless

demonstrated otherwise. Such site types may include isolated finds, bedrock milling stations, sparse lithic scatters, and shellfish processing stations. All other archaeological sites are considered potentially significant. The determination of significance is based on a number of factors specific to a particular site including site size, type, and integrity; presence or absence of a subsurface deposit, soil stratigraphy, features, diagnostics, and datable material; artifact and ecofact density; assemblage complexity; cultural affiliation; association with an important person or event; and ethnic importance.

The determination of significance for historic buildings, structures, objects and landscapes is based on age, location, context, association with an important person or event, uniqueness, and integrity.

A site will be considered to possess ethnic significance if it is associated with a burial or cemetery; religious, social or traditional activities of a discrete ethnic population; an important person or event as defined by a discrete ethnic population; or the mythology of a discrete ethnic population.

Based on the City's CEQA Significance Determination Thresholds (City of San Diego 2022), a significant impact regarding archaeological resources could occur if implementation of a project would result in a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 or the disturbance of any human remains, including those interred outside formal cemeteries.

City of San Diego CEQA Significance Determination Thresholds for Tribal Cultural Resources

CEQA was amended in 2014 through AB 52, which created a category of "Tribal Cultural Resources" that must be considered under CEQA and applies to all projects that file a Notice of Preparation or Notice of Intent to Adopt a Negative Declaration or Mitigated Negative Declaration on or after July 1, 2015. AB 52 requires lead agencies to provide notice to and begin consultation with California Native American Tribes that are traditionally and culturally affiliated with the geographic area of a project if that Tribe has requested, in writing, to be kept informed of projects by the lead agency prior to the determination of if a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report will be prepared. If a Tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the Tribe. AB 52 also specifies mitigation measures that may be considered to avoid or minimize impacts on Tribal Cultural Resources. Specifically, California Public Resources Code, Section 21074, provides the following guidance:

(a) "Tribal Cultural Resources" are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:
    A. Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    B. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe.

(b) A cultural landscape that meets the criteria of subdivision (a) is a Tribal Cultural Resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a Tribal Cultural Resource if it conforms with the criteria of subdivision (a).

Native American Traditional Cultural Properties

Native American Heritage Values

Federal and state laws mandate that consideration be given to the concerns of contemporary Native Americans with regard to potentially ancestral human remains, associated funerary objects, and items of cultural patrimony. Consequently, an important element in assessing the significance of the study site has been to evaluate the likelihood that these classes of items are present in areas that would be affected by the project.

Also, potentially relevant to prehistoric archaeological sites is the category termed Traditional Cultural Properties in discussions of cultural resources management performed under federal auspices. According to Patricia L. Parker and Thomas F. King (1998), "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include the following:

1. A location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
2. A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
3. An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
4. A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
5. A location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity.

A Traditional Cultural Property, then, can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community.

Attachment 2. Photographs

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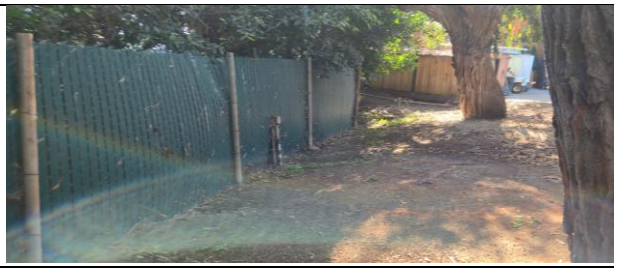
Photograph 1: Site 1 – East Main Stable Gate Site, northeastern area, photo from the south.

Photograph 2: Site 1 – East Main Stable Gate Site, northwestern area, photo from the south.

Photograph 3: Site 1 – East Main Stable Gate Site, northwestern area, photo from the west.

Photograph 4: Site 1 – East Main Stable Gate Site, northern area, photo from the south.

Photograph 5: Site 1 – East Main Stable Gate Site, northern area, photo from the south.



Photograph 6: Site 1 - East Main Stable Gate Site, southern area, photo from the north.

Photograph 7: Site 2 – South of Stable Gate Site, eastern area, photo from the west.	**Photograph 8:** Site 2 – South of Stable Gate Site, western area, photo from the east.
Photograph 9: Site 2 – South of Stable Gate Site, northern area, photo from the south.	**Photograph 10:** Site 2 – South of Stable Gate Site, southern area, photo from the north.
Photograph 11: Site 2 – South of Stable Gate Site, southwestern area, photo from the northeast.	**Photograph 12:** Site 3 – Adjacent to Fire Station Site, east elevation, photo from the west.

Photograph 13: Site 3 – Adjacent to Fire Station Site, landscape area, east elevation, photo from the east.	**Photograph 14:** Site 3 – Adjacent to Fire Station Site, western area, photo from the east.
Photograph 15: Site 3 – Adjacent to Fire Station Site, southwestern area, photo from the northeast.	**Photograph 16:** Site 4 – Surf and Turf RV Park Site, western area, photo from the east.
Photograph 17: Site 4 – Surf and Turf RV Park Site, eastern area, photo from the west.	**Photograph 18:** Site 4 – Surf and Turf RV Park Site, northwestern area, photo from the southeast.

Photograph 19: Site 5 – Dirt Lot Site, southern area, photo from the north.

Photograph 20: Site 5 – Dirt Lot Site, southeastern area, photo from the west.

Photograph 21: Site 5 – Dirt Lot Site, northern area, photo from the south.

Flooding and Sea-Level Rise Vulnerability Assessment Summary Report

March 2026

CITY OF DEL MAR
CALIFORNIA

DEL MAR Fairgrounds
HOME OF THE SAN DIEGO COUNTY FAIR

Acknowledgments

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Executive Summary

The 22nd District Agricultural Association's (District's) Del Mar Fairgrounds (Fairgrounds) property is within a Federal Emergency Management Agency (FEMA) designated floodway and floodplain and has historically been vulnerable to flooding. These flood hazards are expected to worsen with accelerating sea-level rise (SLR) projections. To support future land uses and operations on the Fairgrounds property, including potential affordable housing development, and to guide future adaptation to flood risks, this Flooding and Sea-Level Rise Vulnerability Assessment Report presents potential risks to the Fairgrounds property from simulated flood hazards under various tidal, fluvial, rain, SLR, and combination scenarios. This report evaluates the flood risks from each of these scenarios on the Fairgrounds property in general and on five potential affordable housing sites in particular.

This report incorporates information and modeling results from the Sea-Level Rise Vulnerability Assessment prepared by GHD for the District and City of Del Mar (City), dated February 2026 (SLR Vulnerability Assessment). Based on the results of the SLR Vulnerability Assessment, this Flooding and Sea-Level Rise Vulnerability Assessment Report identifies flooding vulnerabilities across the Fairgrounds property and on potential affordable housing sites and provides conceptual adaptation strategies that can be implemented to reduce flood risks.

None of the potential affordable housing sites would be exposed to the 10-year fluvial event. All five potential affordable housing sites would be exposed to the 50-year and 100-year fluvial events. However, only Adjacent to Fire Station Site (Site 3) is exposed to the 10-year fluvial event when combined with SLR projected by 2100. **Overall, the results of the flooding modeling suggest that SLR and flood vulnerabilities at the five housing sites would be ranked as follows (from least to most vulnerable):**

- **Site 5: Dirt Lot Site**
- **Site 4: Surf and Turf RV Park Site**
- **Site 2: South of Stable Gate Site**
- **Site 1: East Main Stable Gate Site**
- **Site 3: Adjacent to Fire Station Site**

Three high-level conceptual adaptation strategies were developed to represent a range of possible actions to reduce flood risks:

- Strategy 1: Targeted Ecotone Features
- Strategy 2: Perimeter Berm Protection
- Strategy 3: Site-Wide Floodable Frontage

Exploring potential adaptation strategies offers a perspective of tradeoffs between current land use operations and existing vulnerabilities. Strategies 1 and 2 represent approaches to mitigate flood risks for the 10-year and 50-year fluvial events, respectively, with increasing levels of impact on the District's land uses. The strategies include an elevated berm and a naturalized transitional zone using a tier approach that supports ecosystem benefits. Alternatively, Strategy 3 includes major land use modifications across the Fairgrounds property to raise the northern portion of the site's elevations above the flood hazard zone.

Ultimately, adaptation to flood and SLR risks should be considered an ongoing process. The selection of a preferred approach to support existing and future resilience of the site will require iterative discussions and investigations that will depend on future plans for the Fairgrounds property.

Photo by GHD

Study Area

This report focuses on the District's Fairgrounds property in coastal North San Diego County adjacent to the Cities of Del Mar (to the south and west), Solana Beach (to the north), and San Diego (to the east). The 298-acre Fairgrounds property is directly adjacent to and north of the San Dieguito River and Lagoon, approximately 1,000 feet upstream of its outlet to the Pacific Ocean. The southern boundary of the property follows the San Dieguito River. North and west of the property is Stevens Creek, an urbanized drainage channel. Refer to Figure 1, Del Mar Fairgrounds Property and Facilities, and Table 1 for more detail on the existing facilities on the Fairgrounds property.

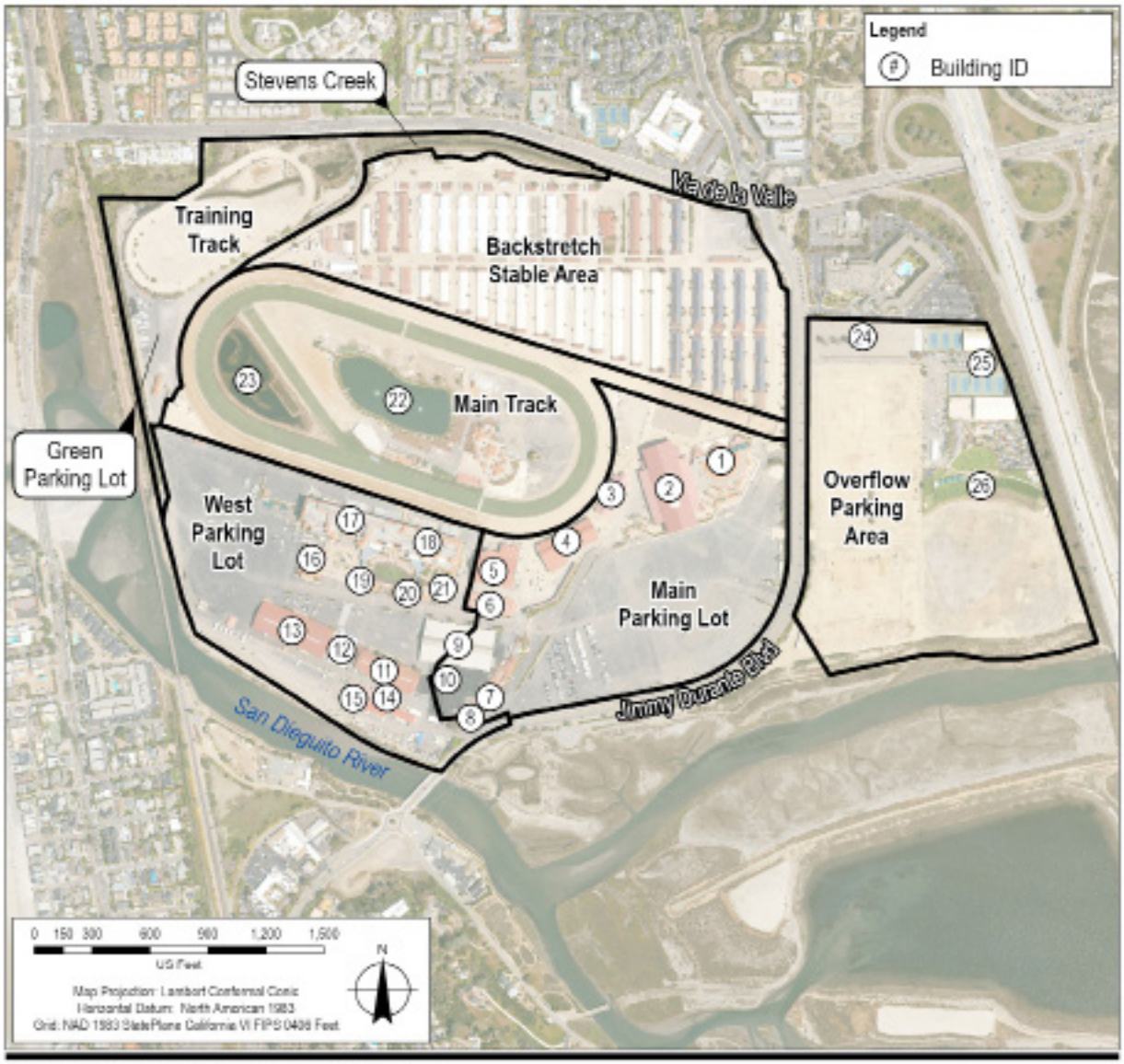


Figure 1. Del Mar Fairgrounds Property and Facilities

Table 1. Del Mar Fairgrounds Facilities

ID	Name	ID	Name
1	The Sound/Surfside Center	14	Warehouse (1)
2	Del Mar Arena	15	Warehouse (2)
3	Livestock East	16	Mission Tower
4	Livestock West	17	Grandstand
5	Wyland Center	18	Club House
6	Activity Center	19	22nd DAA Administration Office
7	22nd DAA Operations Office	20	Del Mar Thoroughbred Club Administration
8	Del Mar Fire Station	21	Caballo Hall
9	O'Brien Hall	22	Receiving Pond
10	Annex Office	23	Infield Wetland
11	Bing Crosby Hall	24	Surf and Turf RV Parks
12	Seaside Pavilion	25	Surf and Turf Tennis Courts
13	Exhibit Hall	26	Del Mar Golf Center

Notes: RV = recreational vehicle

Site assessments prepared for the District and the City identified five potential housing site locations on the Fairgrounds property (Table 2, Potential Housing Sites). Three sites are in the City of Del Mar (Sites 1 through 3), and two sites (Sites 4 and 5) are in the City of San Diego. The five sites are in the eastern portion of the Fairgrounds along Jimmy Durante Boulevard and range from approximately 1 to 1.5 acres in size (Figure 2, Potential Affordable Housing Sites on the Del Mar Fairgrounds Property).

Table 2. Potential Housing Sites

Site No.	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	298-271-03-00	Del Mar	1.5
2	South of Stable Gate Site	299-030-05-00 299-030-22-00	Del Mar	1.5
3[1]	Adjacent to Fire Station Site	299-030-22-00	Del Mar	1
4	Surf and Turf RV Park Site	299-042-03-00	San Diego	1.5
5	Dirt Lot Site	299-042-03-00	San Diego	1.5

Notes: APN = Assessor's Parcel Number

[1] Site 3 could include a 1-acre new housing site or a 1.5-acre new housing site that would also include redevelopment of the fire station. This report focuses on the 1-acre new housing site.

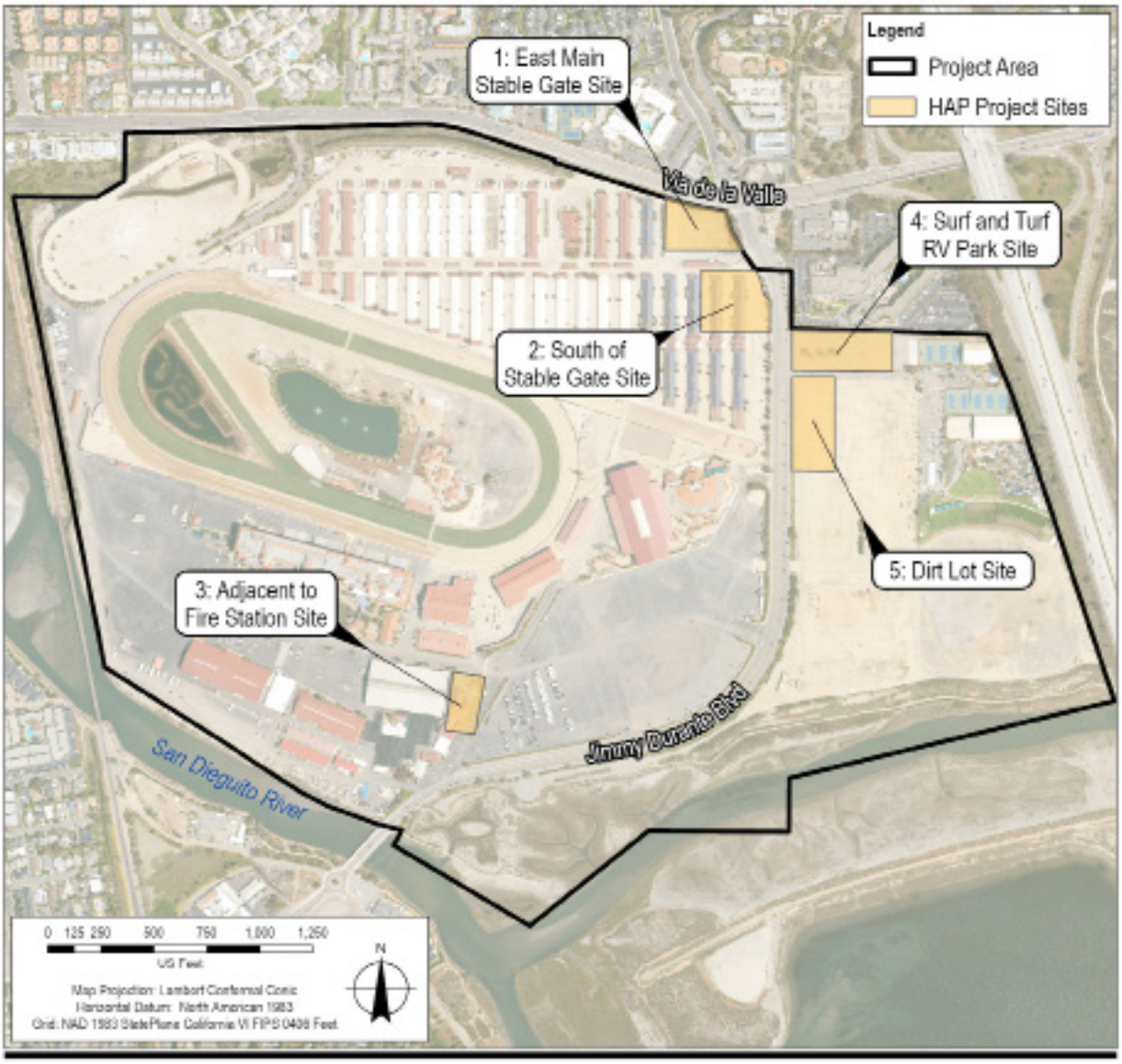


Figure 2. Potential Affordable Housing Sites on the Del Mar Fairgrounds Property

Site 1: East Main Stable Gate Site

The East Main Stable Gate Site (Site 1) is in the northeastern corner of the Fairgrounds within the City of Del Mar, adjacent to the existing horse stables, north of the Fairgrounds East Main Stable Gate access driveway. The 1.5-acre site is bounded by Via De La Valle to the north and Jimmy Durante Boulevard to the east (Figure 3).

Site 1 is characterized by developed land used as a parking lot with direct access to and from Jimmy Durante Boulevard. The parking area includes 100 parking spaces, 90 of which are used for parking, while the other 10 are used to store traffic control-related vehicles and equipment. The site includes paved and compacted dirt areas with fencing, gates, and ornamental vegetation. Surrounding land uses include the intersection of Jimmy Durante Boulevard and Via De La Valle to the northeast and horse barns to the south and west.

Figure 3. Site 1 - East Main Stable Gate Site

Site 2: South of Stable Gate Site

The South of Stable Gate Site (Site 2) is in the northeastern corner of the Fairgrounds within the City of Del Mar, adjacent to and south of the East Main Stable Gate and parking lot. The 1.5-acre site is bounded by Jimmy Durante Boulevard to the east and the Main Stable Gate parking lot to the north (Figure 4).

Site 2 is characterized by developed land used for equestrian-related access, staging, and supporting infrastructure associated with the Fairgrounds stabling operations. Site 2 is occupied by compacted dirt areas and horse boarding stables for the Del Mar Racetrack. Surrounding land uses include Jimmy Durante Boulevard to the east, horse barns to the west and south, and the East Main Stable Gate access driveway and parking lot to the north.

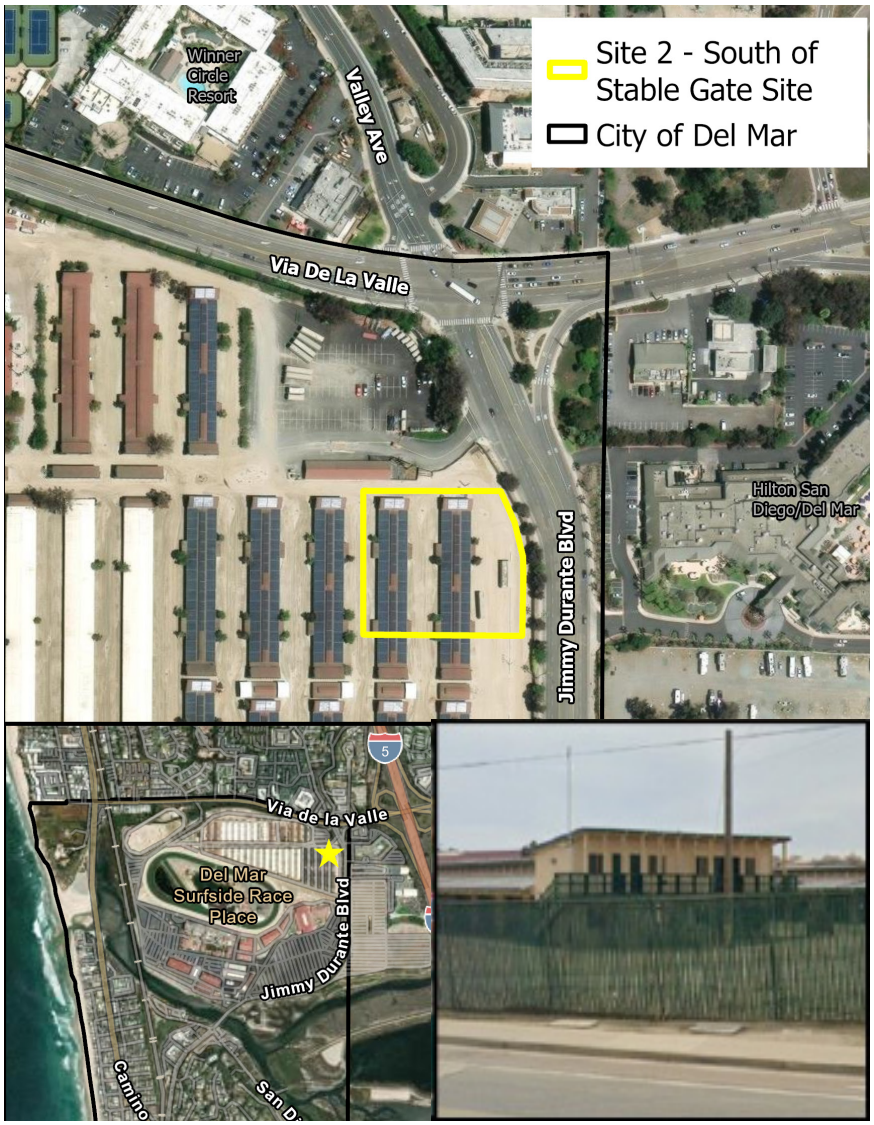


Figure 4. Site 2 - South of Stable Gate Site

Site 3: Adjacent to Fire Station Site

The Adjacent to Fire Station Site (Site 3) is in the southern portion of the Fairgrounds within the City of Del Mar. The 1-acre site is between the existing O'Brien Hall and southeastern Fairgrounds parking lot, directly north of the existing Del Mar Fire Department building (Figure 5).

Site 3 contains existing District office buildings, public restroom buildings, and maintained ornamental landscaping. The buildings encompass 14,250 square feet (including the boardroom, human resources offices, marketing offices, and bathrooms). The surrounding land uses are similarly developed, including Fairgrounds buildings to the north and west, the Del Mar Fire Department station to the south, and paved parking to the east.

Figure 5. Site 3 - Adjacent to Fire Station Site

Site 4: Surf and Turf RV Park Site

The Surf and Turf RV Park Site (Site 4) is in the northeastern corner of the Fairgrounds within the City of San Diego. The 1.5-acre gravel site is south of the Hilton San Diego Del Mar Hotel and north of Turf Road, adjacent to Jimmy Durante Boulevard (Figure 6).

Site 4 is currently developed as a recreational vehicle (RV) park with 66 compacted gravel RV parking stalls, utility hookups, and ornamental landscaping. The site is surrounded by a mixture of public roadways to the south and west (including Turf Road to the south and Jimmy Durante Boulevard to the west), recreational uses to the east (including the eastern portion of the RV park and tennis courts farther east), Fairgrounds horse stables to the west, and compacted dirt lots to the south.

Figure 6. Site 4 - Surf and Turf RV Park Site

Site 5: Dirt Lot Site

The Dirt Lot Site (Site 5) is in the northeastern corner of the Fairgrounds within the City of San Diego, south of Turf Road and the Surf and Turf RV Park. The 1.5-acre site includes a portion of a larger, undeveloped dirt parking lot bounded by Jimmy Durante Boulevard to the west (Figure 7).

Site 5 consists primarily of an undeveloped dirt lot with a flat, compacted dirt surface historically used for overflow parking and materials staging at the Fairgrounds. The site is largely devoid of vegetation and is surrounded by public roadways to the north and west (including Turf Road to the north and Jimmy Durante Boulevard to the west), recreational uses to the north consisting of the existing RV park, compacted dirt lots to the east and south, and Fairgrounds horse stables to the west.

Figure 7. Site 5 - Dirt Lot Site

History of Flooding at the Fairgrounds

Historically, extreme precipitation events have resulted in widespread flooding and damages to the Fairgrounds operations and property (Figure81, Riverine Flood of 1980 and Figure 2, January 2010 Storm Event).

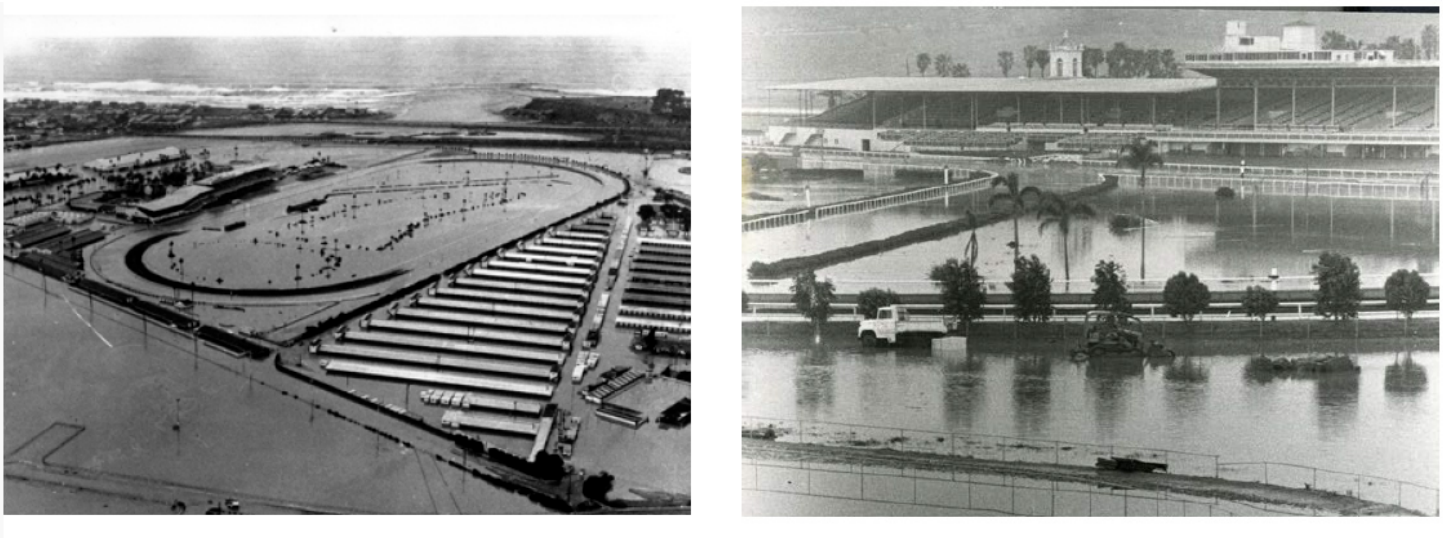


Figure 8. Riverine Flood of 1980

Figure 9. January 2010 Storm Event[1]

1 City of Del Mar. 2018. City of Del Mar Sea-Level Rise Adaptation Plan. Accessed March 2026. https://www.delmar.ca.us/DocumentCenter/View/3580/Revised-Adaptation-Plan-?bidId=.

Existing Hydrology Conditions

The District's Fairgrounds property is along the northern bank of the San Dieguito River, downstream of the Hodges Reservoir and near the outlet to the Pacific Ocean. The majority of the Fairgrounds property is within the Federal Emergency Management Agency (FEMA) mapped regulatory floodplain, known as the 1 percent annual chance flood hazard zone (or the 100-year floodplain). This low-lying area is expected to be at a higher risk of flooding due to the significant reduction in the Lake Hodges Dam's flood control capacity from sediment accumulation, the existing condition of the dam, the timeline of ongoing repair work, releases of water as a dam safety measure, and the anticipated increase in significant precipitation events and sea-level rise (SLR).

The southern and western portions of the Fairgrounds property are within a FEMA Regulatory Floodway zone (Figure 10, FEMA Flood Hazard Zones on the Fairgrounds Property). Uses in the floodway are generally limited to open spaces, parks, and trails to minimize impediments to the flow of floodwaters. Residential development is prohibited in the Regulatory Floodway zone; however, development within the floodway fringe (i.e., portions of the 1 percent annual chance flood hazard zone outside the Regulatory Floodway) is permitted subject to compliance with FEMA and building code standards. None of the potential affordable housing sites are within the Regulatory Floodway. Sites 1 through 5 are within a developable area of the floodway fringe, meaning residential development is permitted at these locations as long as the development complies with applicable floodplain design standards and does not raise water surface elevations by more than 1 foot. Site 3 is the site closest to the San Dieguito River (roughly 725 feet from the river and approximately 275 feet from the FEMA Regulatory Floodway boundary).

Further information regarding existing conditions on the Fairgrounds property related to other resource areas (e.g., geological conditions, hazardous materials, noise sources) is included in the Housing Site Conditions and Constraints Assessment and California Environmental Quality Act Constraints Memorandum prepared for the District and City as part of the HAP grant effort.

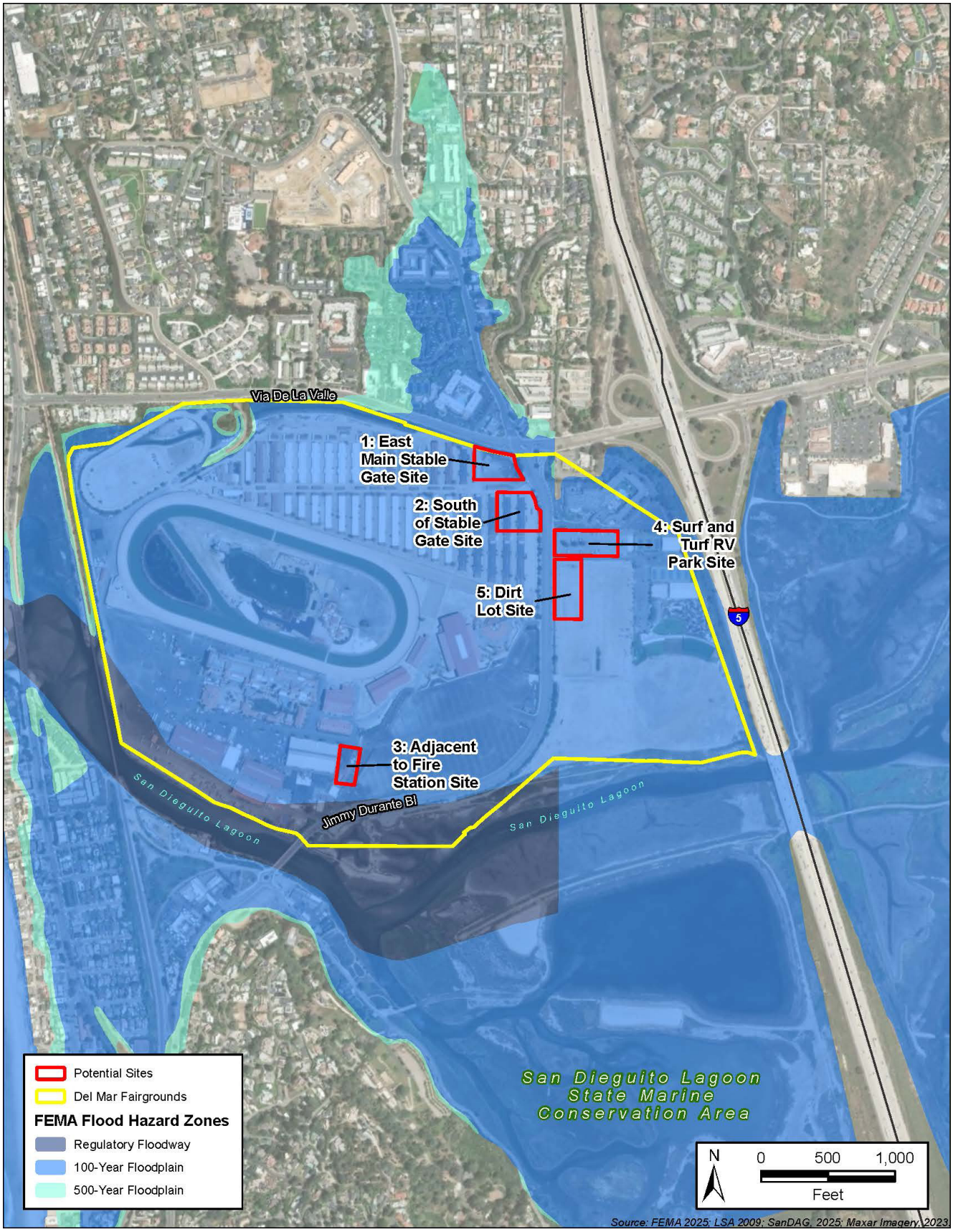


Figure 10. FEMA Flood Hazard Zones on the Fairgrounds Property

Planned Improvements

Two major flood control-related projects are planned for near-term implementation on the District's Fairgrounds property:

- San Dieguito Double Track and Special Events Platform Project
- San Dieguito Lagoon Shoreline Protection Project (Del Mar Living Levee Project)

SANDAG's and the North County Transit District's San Dieguito Double Track and Special Events Platform Project is intended to replace the existing San Dieguito Rail Bridge, originally built in 1916.[2] The existing bridge is nearing the end of its service life and requires frequent, costly maintenance. In addition to double-track improvements, a new bridge and special events platform will be constructed to replace the more-than-100-year-old wooden trestle bridge and to provide a direct transit option for people attending events at the Fairgrounds. To meet federal flood safety requirements, the new bridge will be elevated above the 100-year storm flood level, reducing risks from severe storms, high river flows, and SLR. The project will be located entirely within the North County Transit District-owned railroad right-of-way. Construction of this project is expected to begin in 2027 and be completed by 2031.

Additionally, the City of Del Mar is pursuing the development of living levees along the San Dieguito River to reduce flood risk,[3, 4] consistent with the City's 2018 Sea-Level Rise Adaptation Plan. The Del Mar Living Levee Project would focus on improvements to flood control, public access, and habitat within a 100-foot wide easement along the river and the southern end of the District's Fairgrounds property, between the San Dieguito Rail Bridge and Jimmy Durante Boulevard Bridge (Figure 11, City of Del Mar's Northern Riverbank Living Levee Concept Design). The design concept for this project uses the entire 100-foot easement and occupies a portion of the Fairgrounds property. In this location, an approximately 50-foot-wide berm would be constructed along the back edge of the easement. A new trail would be installed on top of this elevated berm to offer additional access along the river shoreline. The berm would feature a transitional slope that extends approximately 25 feet toward the river, then change to a very gentle slope until reaching the shoreline toe along the river.

Another component of the Del Mar Living Levee Project is realignment of the City's existing Public Works Facility to move this asset out of the Regulatory Floodway and implementation of a floodwall on the southeastern riverbank of the San Dieguito River, to protect the facility and parking lot (refer to Figure 7, City of Del Mar's Southeastern Riverbank Concept Design). Directly in front of the existing trail, a gradual transitional slope would extend downslope with an enhanced revetment. The eastern side of the southern riverbank would be excavated to cut a front transitional slope across a 40-foot-wide area. South of the existing trail, an approximately 40-foot-wide berm would be established with a 10-foot-wide crest to support an improved public access trail.

2 SANDAG (San Diego Association of Governments). 2024. "San Dieguito Double Track Fact Sheet." Accessed March 2026. https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/featured-projects/lossan-rail-improvements-del-mar-bluffs/double-tracking-projects/san-dieguito-double-track-fact-sheet.pdf.

3 Moffatt & Nichol. 2024. Living Levee Preliminary Conceptual Design. Prepared for City of Del Mar.

4 City of Del Mar. 2018. City of Del Mar Sea-Level Rise Adaptation Plan. Accessed March 2026. https://www.delmar.ca.us/DocumentCenter/View/3580/Revised-Adaptation-Plan-?bidId=.

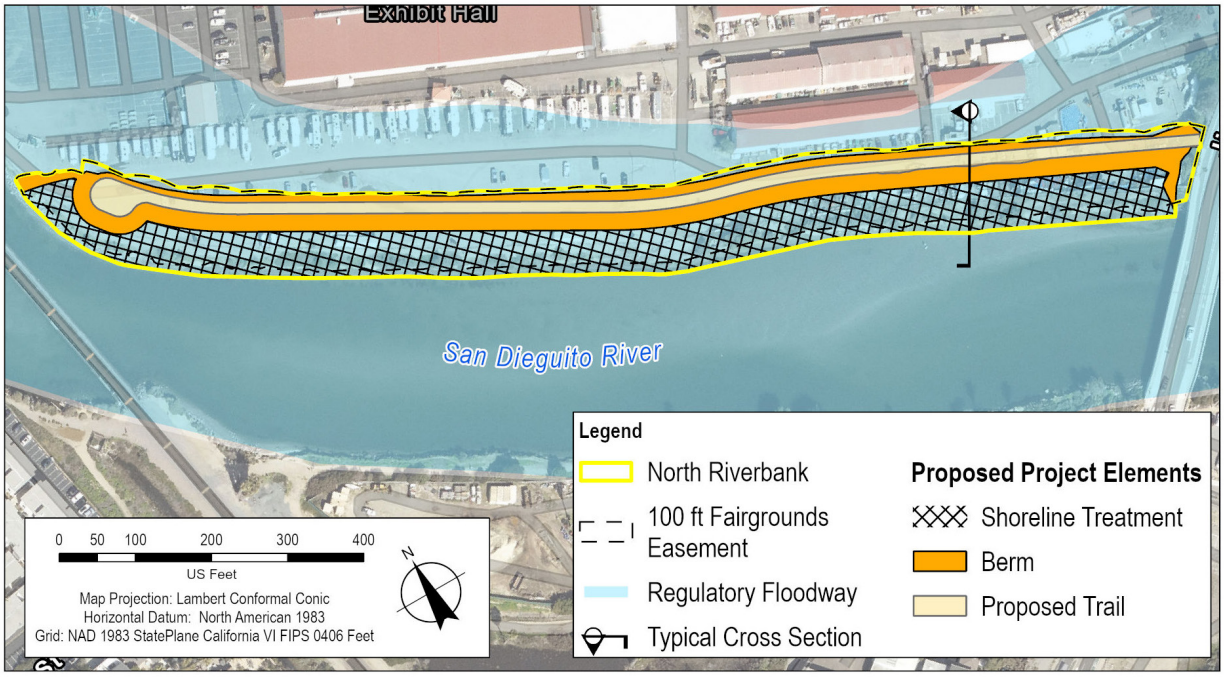


Figure 11. City of Del Mar's Northern Riverbank Living Levee Concept Design

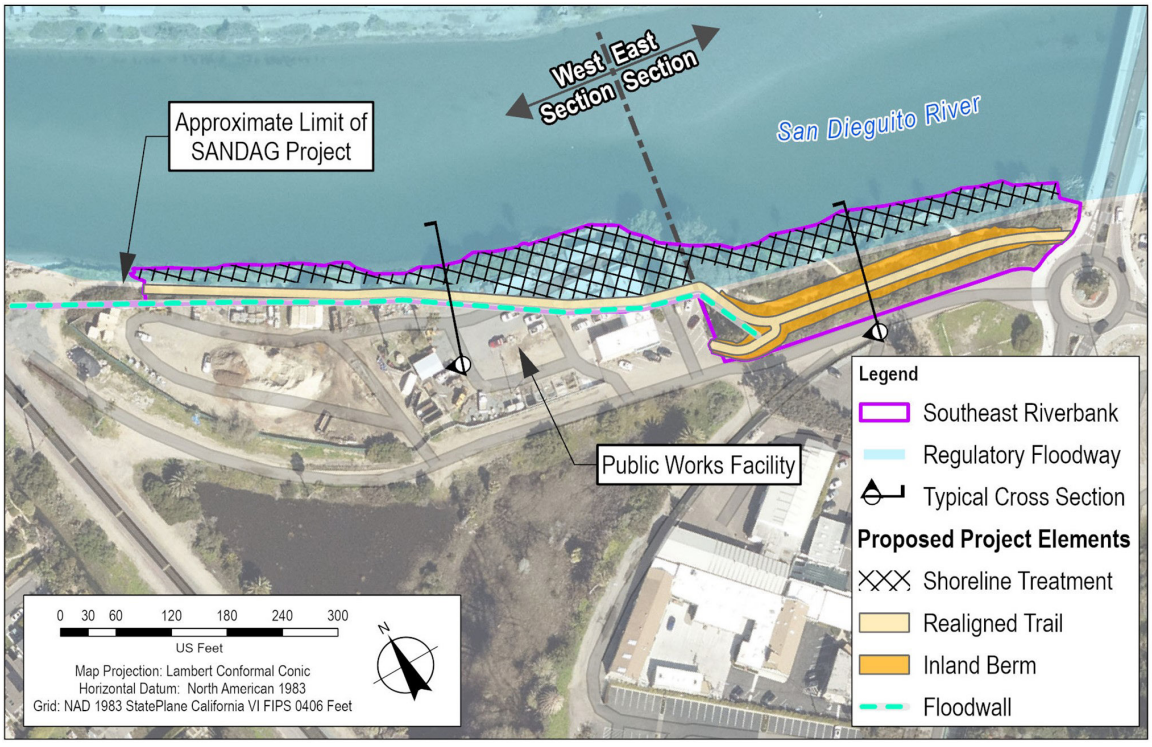


Figure 12. City of Del Mar's Southeastern Riverbank Concept Design

Sea-Level Rise and Flood Scenarios

The SLR Vulnerability Assessment includes modeling for a range of SLR and flood scenarios to evaluate flood risk and identify flood pathways on the Fairgrounds property in general and on the five potential affordable housing sites. The SLR Vulnerability Assessment considered the following:

- Flood risk from tidal events (SLR and coastal flooding)
- Fluvial events (riverine flooding)
- Pluvial events (flooding from extreme rainfall)

The SLR and flood science scenarios used to evaluate flood vulnerabilities are described in the following sections. Additional information detailing the methodology and assumptions under this model can be found in the SLR Vulnerability Assessment.

Sea-Level Rise Projections

For California, SLR projections are established by the Ocean Protection Council (OPC). The OPC recently adopted the State of California Sea-Level Rise Guidance: 2024 Science and Policy Update (OPC 2024 SLR Guidance), which updated the previous guidance from 2018. These projections are recommended by the California Coastal Commission for planning, permitting, and other coastal management decisions. The OPC 2024 SLR Guidance includes five scenarios (Figure 13, Ocean Protection Council Sea-Level Rise Projections at the La Jolla Tide Gauge):

- Low
- Intermediate-Low
- Intermediate
- Intermediate-High
- High

The OPC 2024 SLR Guidance recommends including the Intermediate-High scenario in technical analyses for development with medium-high risk aversion (i.e., development that would experience greater consequences and/or have a lower ability to adapt, such as most residential and commercial structures).

Therefore, the SLR Vulnerability Assessment used the Intermediate-High SLR projections for the La Jolla tide gauge because the Fairgrounds property contains commercial structures that have a lower ability to adapt to SLR and flooding. The SLR projections associated with the time horizons of 2050, 2070, and 2100 were used to evaluate potential hazards (Table 3, Intermediate-High Sea-Level Rise Projections for La Jolla Tide Gauge).

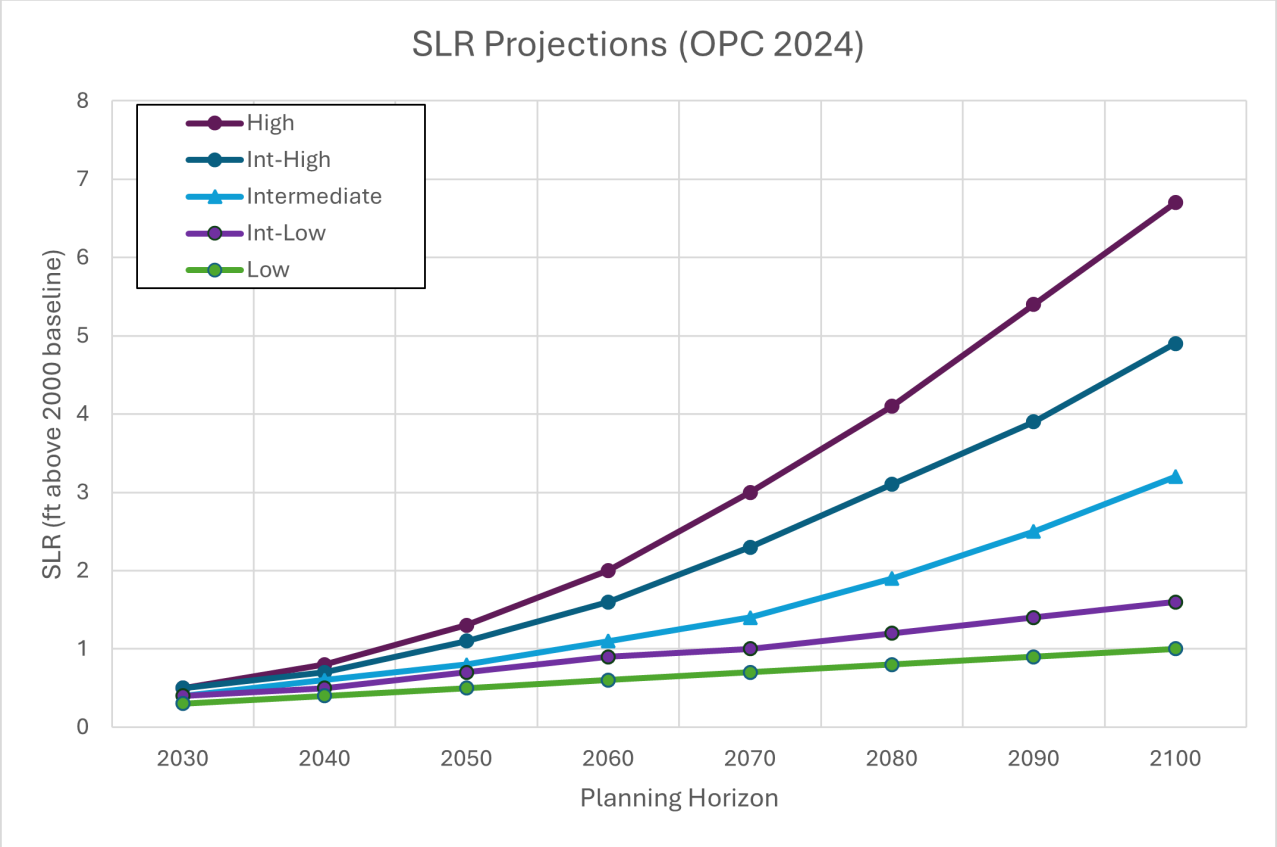


Figure 13. Ocean Protection Council Sea-Level Rise Projections at the La Jolla Tide Gauge

Table 3. Intermediate-High Sea-Level Rise Projections for La Jolla Tide Gauge[5]

Time Horizon	SLR (in feet)
2050	1
2070	2.3
2100	4.8

Note: SLR = sea-level rise

5 OPC (California Ocean Protection Council). 2024. State of California Sea Level Rise Guidance: 2024 Science and Policy Update. June. Accessed March 2026. https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf.

Tidal Scenarios

To determine the potential impacts of tidal events on the District's Fairgrounds property, the SLR Vulnerability Assessment assessed four scenarios related to tidal events and SLR. For instance, because sea-level anomalies may occur that increase water levels above predicted tides,[6] the SLR Vulnerability Assessment considered extreme water levels and included a 10-year Extreme Water Level (7.43 feet) scenario to assess this vulnerability at the Fairgrounds. The extreme water levels at the La Jolla tide gauge represent extreme still-water levels at the Fairgrounds (Scenario 1).

Additionally, the SLR Vulnerability Assessment considered three scenarios—Scenarios 2, 3, and 4—that assess flood vulnerability from a large fluvial event combined with a tidal event. Given that National Oceanographic and Atmospheric Administration defines the mean higher high water (MHHW) as the best possible approximation of the threshold at which inundation can begin to occur, the MHHW elevation from the La Jolla tide gauge is used as the value to evaluate downstream fluvial conditions during storm events. The tidal events used in these scenarios include the 2050, 2070, and 2100 Intermediate-High SLR projections for the La Jolla tide gauge. Therefore, the three tidal and fluvial scenarios were developed by adding the MHHW condition to the selected SLR projections (Table 4, Tidal Scenarios).

Table 4. Tidal Scenarios

	Scenario	Fluvial Event (San Dieguito River)	On-Site Rainfall	Tidal Scenario (NAVD88)
Tidal Events	1	N/A	N/A	10-Year Extreme Water Level (7.34 feet)
	2	N/A	N/A	2050 Intermediate-High SLR + MHHW (6.13 feet)
	3	N/A	N/A	2070 Intermediate-High SLR + MHHW (7.43 feet)
	4	N/A	N/A	2100 Intermediate-High SLR + MHHW (9.93 feet)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

6 Sea-level anomalies can occur during low atmospheric pressure, abnormally warm water temperatures, and meteorological conditions that can lead to storm surge (i.e., piling up of water along a coastline).

Fluvial Scenarios

To gain an understanding of projected flood hazards originating from the San Dieguito River that would inundate the Fairgrounds property, several fluvial scenarios were evaluated in the SLR Vulnerability Assessment:

- 10-year storm event (Scenario 5)
- 50-year storm event (Scenario 6)
- 100-year storm event (Scenario 7)

In addition to these fluvial scenarios, which do not consider the effects of SLR, the SLR Vulnerability Assessment evaluated flood risk from a fluvial event combined with SLR (Scenarios 8, 9, and 10). The 10-year fluvial event was selected for the combined fluvial and SLR scenarios to more clearly show the impact of flooding on site from SLR conditions. The SLR scenarios include the 2050, 2070, and 2100 Intermediate-High SLR projections for the La Jolla tide gauge. Therefore, the three combined fluvial and SLR scenarios were developed by adding the 10-year fluvial event condition to the selected SLR projections (Table 5, Fluvial Scenarios).

Table 5. Fluvial Scenarios

	Scenario	Fluvial Event (San Dieguito River)	On-Site Rainfall	Tidal Scenario (NAVD88)
Fluvial Events	5	10-Year Storm Event	N/A	MHHW (5.13 feet)
	6	50-Year Storm Event	N/A	MHHW (5.13 feet)
	7	100-Year Storm Event	N/A	MHHW (5.13 feet)
Fluvial Events + SLR	8	10-Year Storm Event	N/A	2050 Intermediate-High SLR + MHHW (6.13 feet)
	9	10-Year Storm Event	N/A	2070 Intermediate-High SLR + MHHW (7.43 feet)
	10	10-Year Storm Event	N/A	2100 Intermediate-High SLR + MHHW (9.93 feet)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Pluvial Scenarios

Given the extent of historical flooding on the Fairgrounds property from extreme precipitation events, the SLR Vulnerability Assessment evaluated flood vulnerabilities from on-site rainfall alone and in combination with fluvial events and SLR. The 10-year and 100-year rainfall events were evaluated without a fluvial event to determine the risks of on-site flooding from a local storm event (Scenarios 11 and 12). To evaluate the flood risks from rainfall plus a fluvial event, the 10-year rainfall event was combined with a 10-year fluvial event (Scenario 13). In addition, on-site rainfall was combined with the 2050, 2070, and 2100 Intermediate-High SLR projections for the La Jolla tide gauge to assess the flood risks from rainfall plus SLR (Scenarios 14, 15, and 16) (Table 6, Pluvial Scenarios).

Table 6. Pluvial Scenarios

	Scenario	Fluvial Event (San Dieguito River)	On-Site Rainfall	Tidal Scenario (NAVD88)
On-Site Rainfall Events	11	N/A	10-Year	MHHW (5.13 feet)
	12	N/A	100-Year	MHHW (5.13 feet)
Fluvial + On-Site Rainfall	13	10-Year Storm Event	10-Year	MHHW (5.13 feet)
On-Site Rainfall + SLR	14	N/A	10-Year	2050 Intermediate-High SLR + MHHW (6.13 feet)
	15	N/A	10-Year	2070 Intermediate-High SLR + MHHW (7.43 feet)
	16	N/A	10-Year	2100 Intermediate-High SLR + MHHW (9.93 feet)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Summary of Sea-Level Rise and Flood Scenarios

The analysis of flood vulnerabilities on the Fairgrounds property considered flood risk from tidal events (SLR and coastal flooding), fluvial events (riverine flooding), and pluvial events (flooding from extreme rainfall). The 16 flood scenarios evaluated are summarized in Table 7, Summary of Sea-Level Rise and Flood Scenarios.

Table 7. Summary of Sea-Level Rise and Flood Scenarios

	Scenario	Fluvial Event (San Dieguito River)	On-Site Rainfall	Tidal Scenario (NAVD88)
Tidal Events	1	N/A	N/A	10-Year Extreme Water Level (7.34 feet)
	2	N/A	N/A	2050 Intermediate-High SLR + MHHW (6.13 feet)
	3	N/A	N/A	2070 Intermediate-High SLR + MHHW (7.43 feet)
	4	N/A	N/A	2100 Intermediate-High SLR + MHHW (9.93 feet)
Fluvial Events	5	10-Year	N/A	MHHW (5.13 feet)
	6	50-Year	N/A	MHHW (5.13 feet)
	7	100-Year	N/A	MHHW (5.13 feet)
Fluvial Events + SLR	8	10-Year	N/A	2050 Intermediate-High SLR + MHHW (6.13 feet)
	9	10-Year	N/A	2070 Intermediate-High SLR + MHHW (7.43 feet)
	10	10-Year	N/A	2100 Intermediate-High SLR + MHHW (9.93 feet)
On-Site Rainfall Events	11	N/A	10-Year	MHHW (5.13 feet)
	12	N/A	100-Year	MHHW (5.13 feet)
Fluvial + On-Site Rainfall	13	10-Year	10-Year	MHHW (5.13 feet)
On-Site Rainfall + SLR	14	N/A	10-Year	2050 Intermediate-High SLR + MHHW (6.13 feet)
	15	N/A	10-Year	2070 Intermediate-High SLR + MHHW (7.43 feet)
	16	N/A	10-Year	2100 Intermediate-High SLR + MHHW (9.93 feet)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Sea-Level Rise and Flood Vulnerabilities

The flood risk information in this report is based on the results of the 2018 SLR Vulnerability Assessment, which included modeling to evaluate SLR and flood vulnerabilities on the Fairgrounds property, particularly on the five potential affordable housing sites. The following section illustrates and summarizes flooding vulnerabilities expected to occur on the Fairgrounds property and on the five potential affordable housing sites under the 16 selected SLR and flood scenarios.

Fairgrounds Property

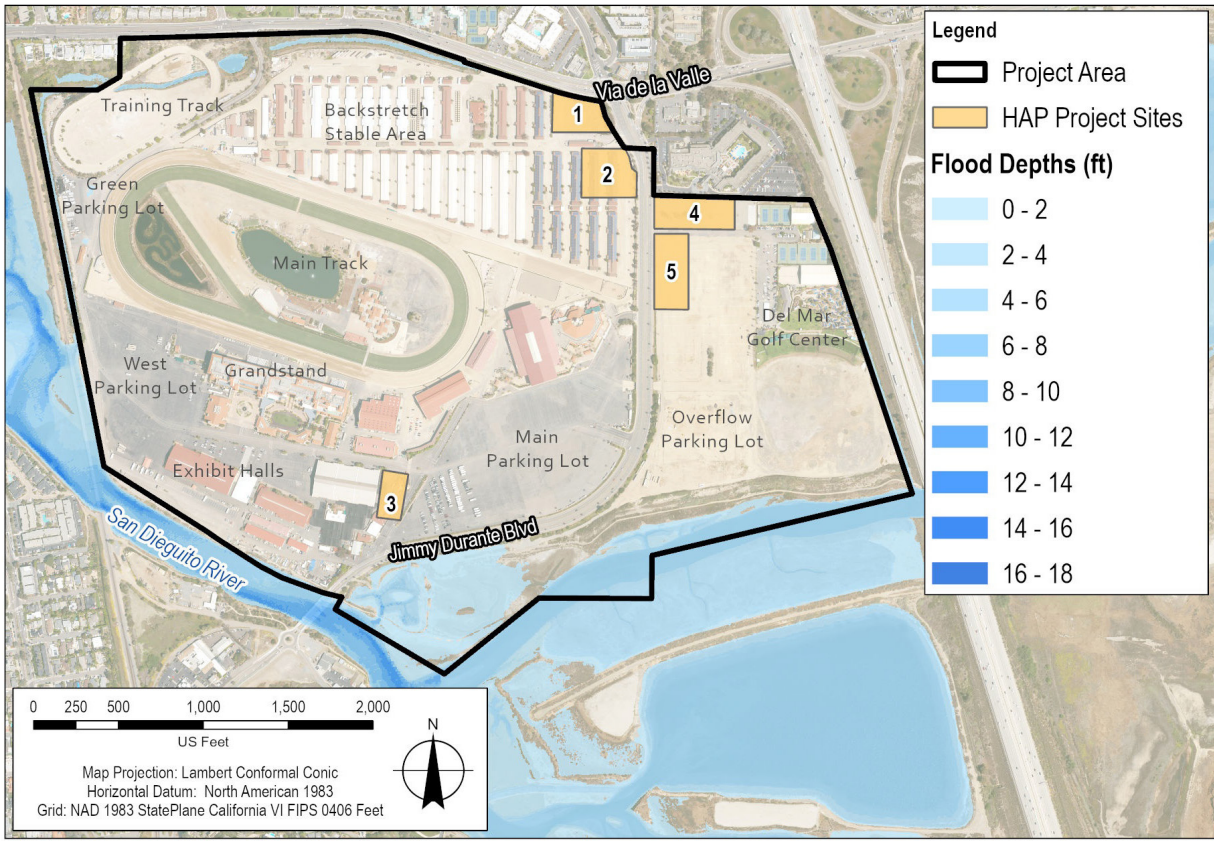


Figure 14. Scenario 1: 10-Year Extreme Tidal Event

- This scenario primarily affects the northwestern portion of the Fairgrounds
- Minor flooding of the Green Parking Lot due to backflow from extreme tides flowing in through storm drain outfalls
- **The rest of the Fairgrounds property, including the five housing sites, remain dry under this scenario**

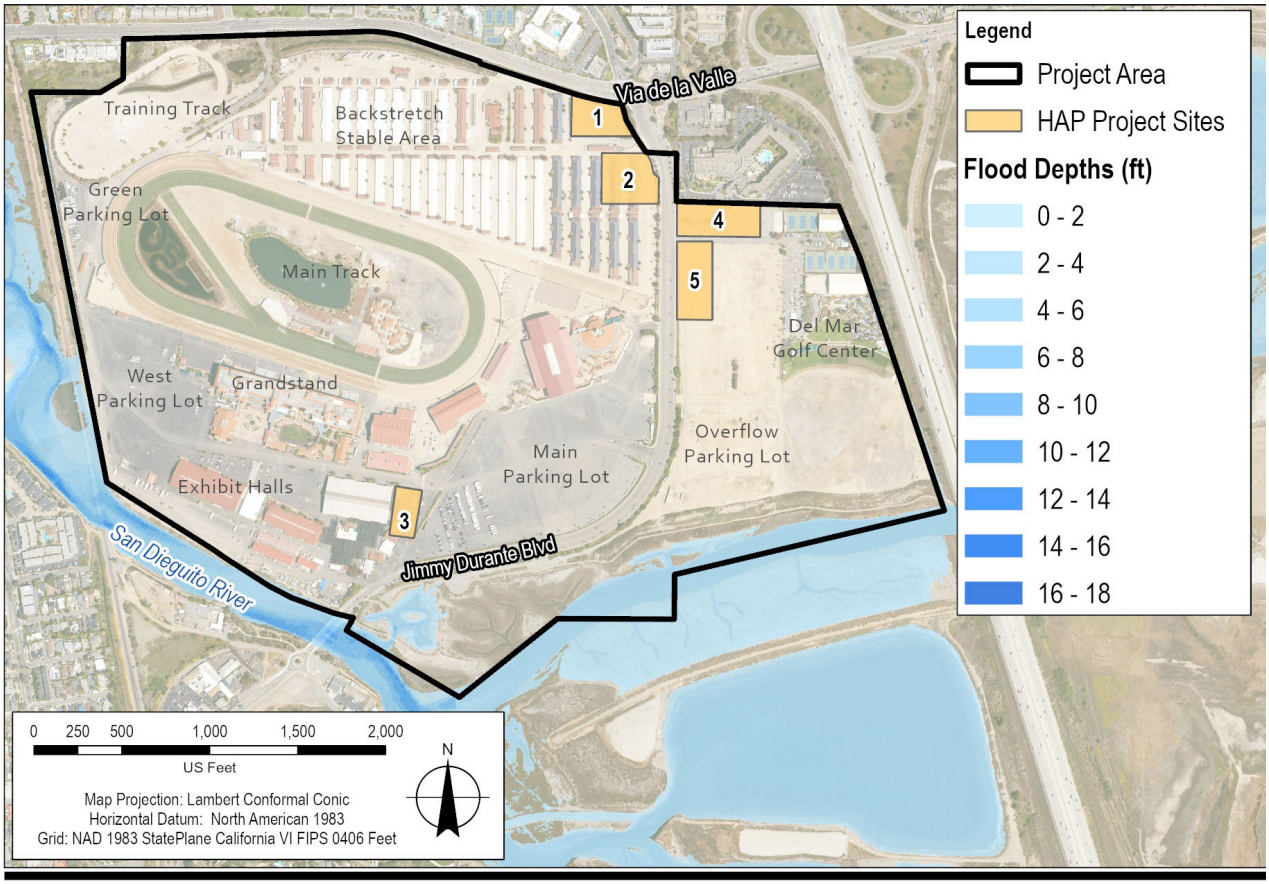


Figure 15. Scenario 2: 2050 Intermediate-High Sea-Level Rise + Mean Higher High Water

- Little flooding on the Fairgrounds property under this scenario
- Flooding primarily within the FEMA Regulatory Floodway south of Jimmy Durante Boulevard, which would not affect current facilities or operations
- **None of the five housing sites are affected by flooding under this scenario**

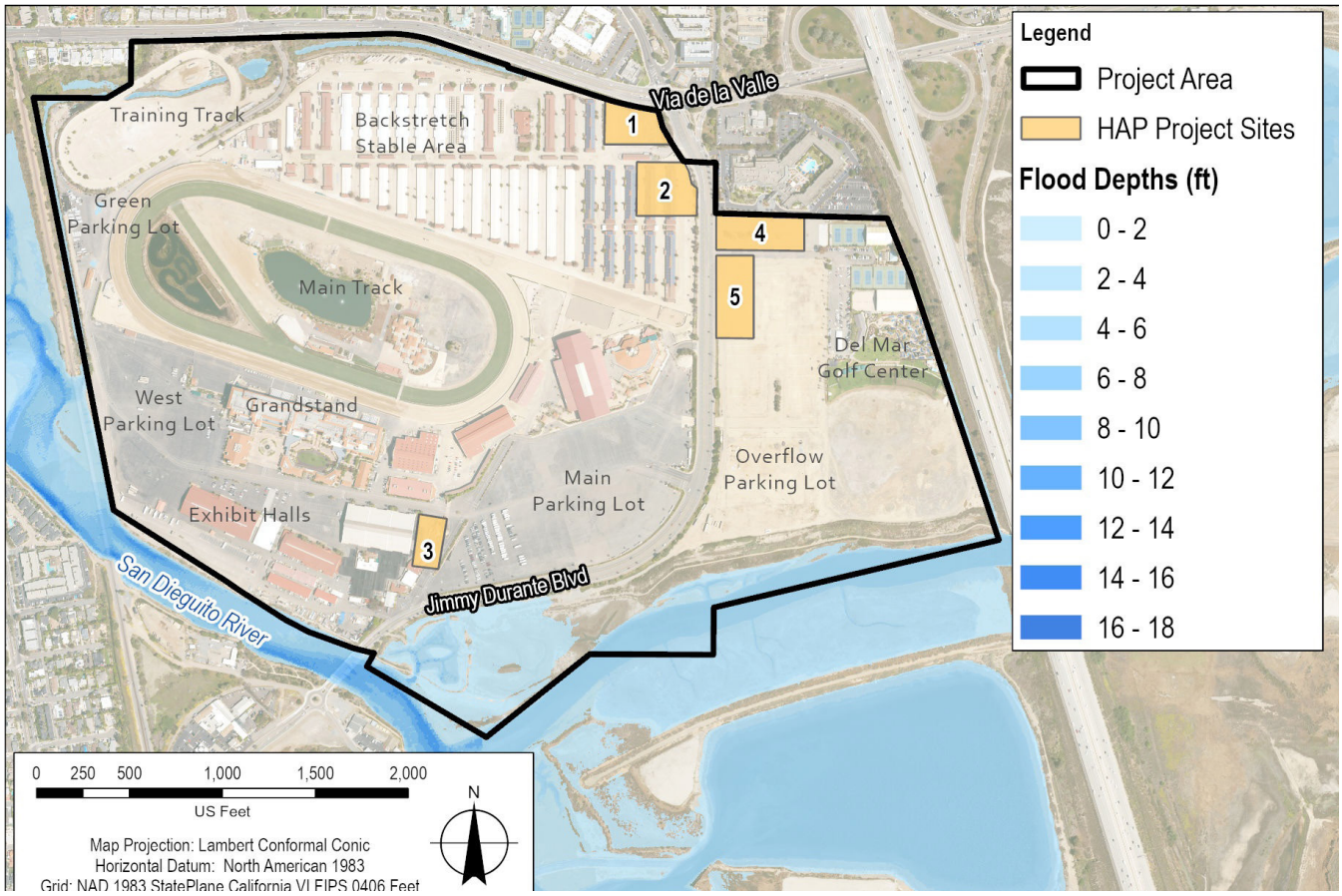


Figure 16. Scenario 3: 2070 Intermediate-High Sea-Level Rise + Mean Higher High Water

- Little flooding on the Fairgrounds property under this scenario
- Flooding primarily within the FEMA regulatory flooding south of Jimmy Durante Boulevard, which would not affect current facilities or operations
- Very minor flooding within Stevens Creek through the Training Track
- **None of the five housing sites are affected by flooding under this scenario**

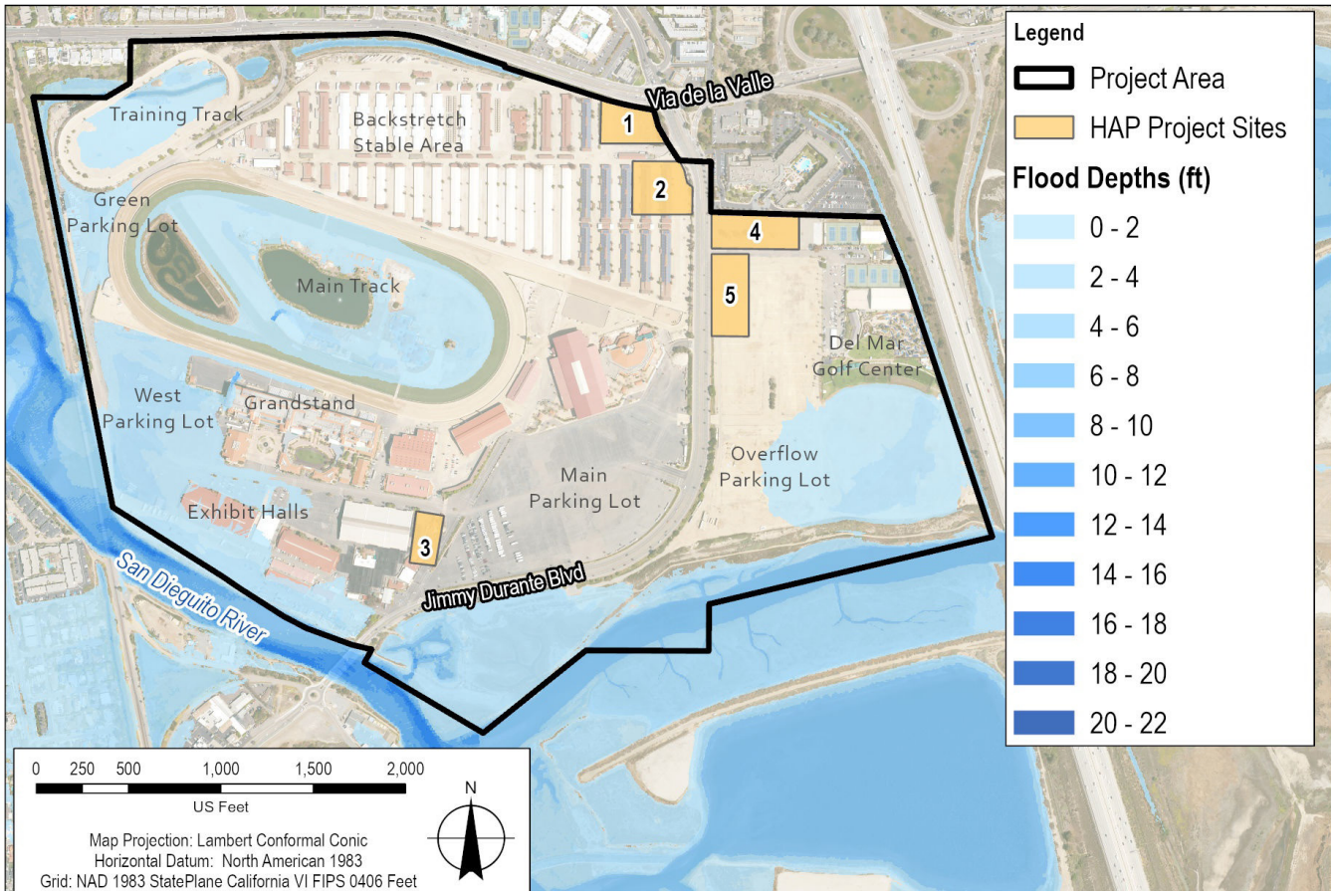


Figure 17. Scenario 4: 2100 Intermediate-High Sea-Level Rise + Mean Higher High Water

- Flooding from overtopping of the north riverbank and backwater flow through storm drains in the Green Parking Lot
- Flood depths of up to 11.6 feet near the infield tunnel and up to 4.4 feet in the southwestern corner of the West Parking lot
- **Although much of the Fairgrounds property is inundated under this scenario, none of the five housing sites are affected**

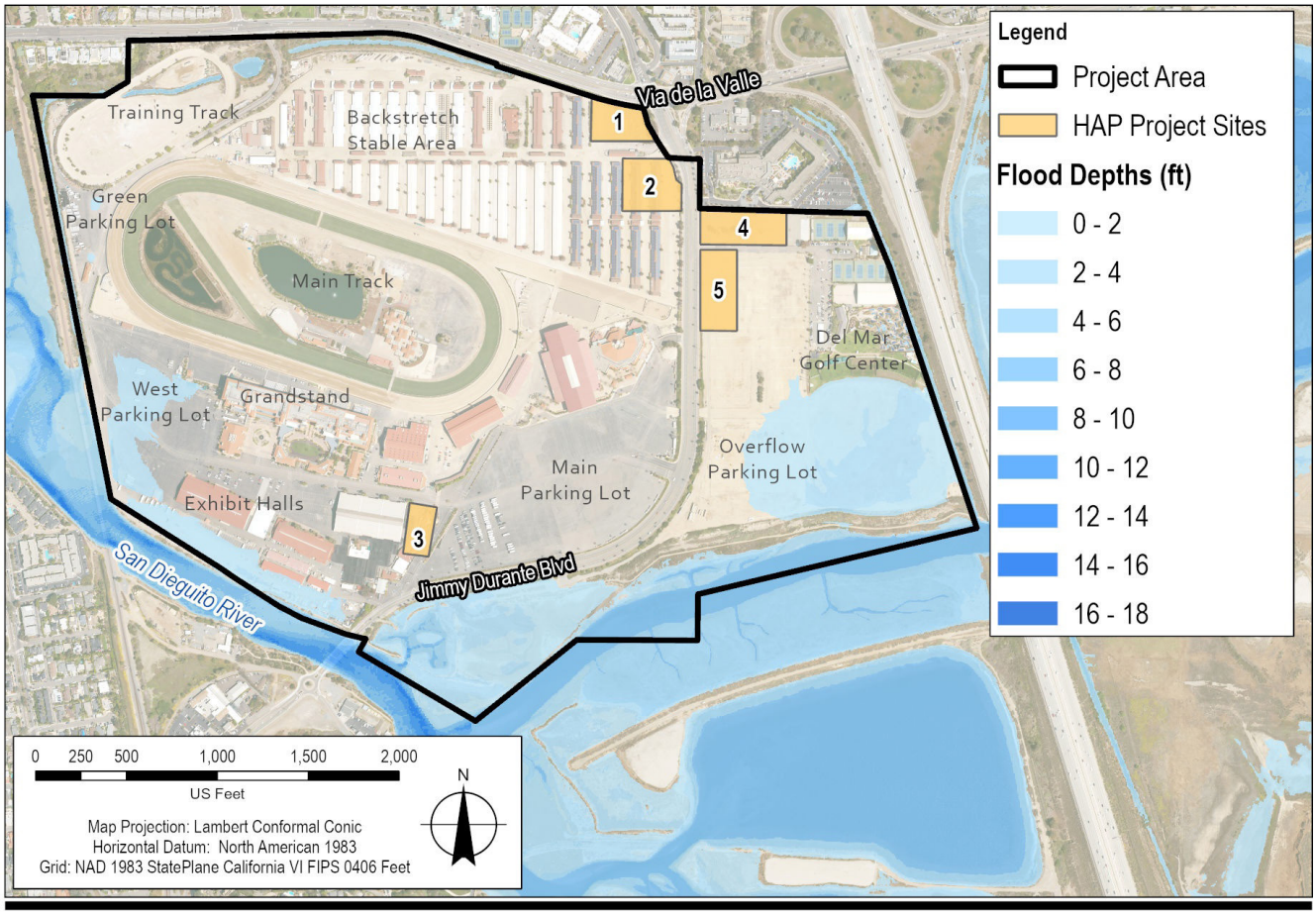


Figure 18. Scenario 5: 10-Year Fluvial Event

- Breakout flow over the northern bank of the San Dieguito River
- Up to approximately 3.3 feet within the West Parking Lot and up to 2.5 feet along the southern boundary of the Fairgrounds
- Flooding on the Del Mar Golf Center driving range and auxiliary parking lot from river floodwaters entering the drainage ditch west of the Interstate (I-) 5 highway and flowing into the driving range
- Minor flooding in the Green Parking Lot from backflow
- **None of the five housing sites are affected by flooding under this scenario**

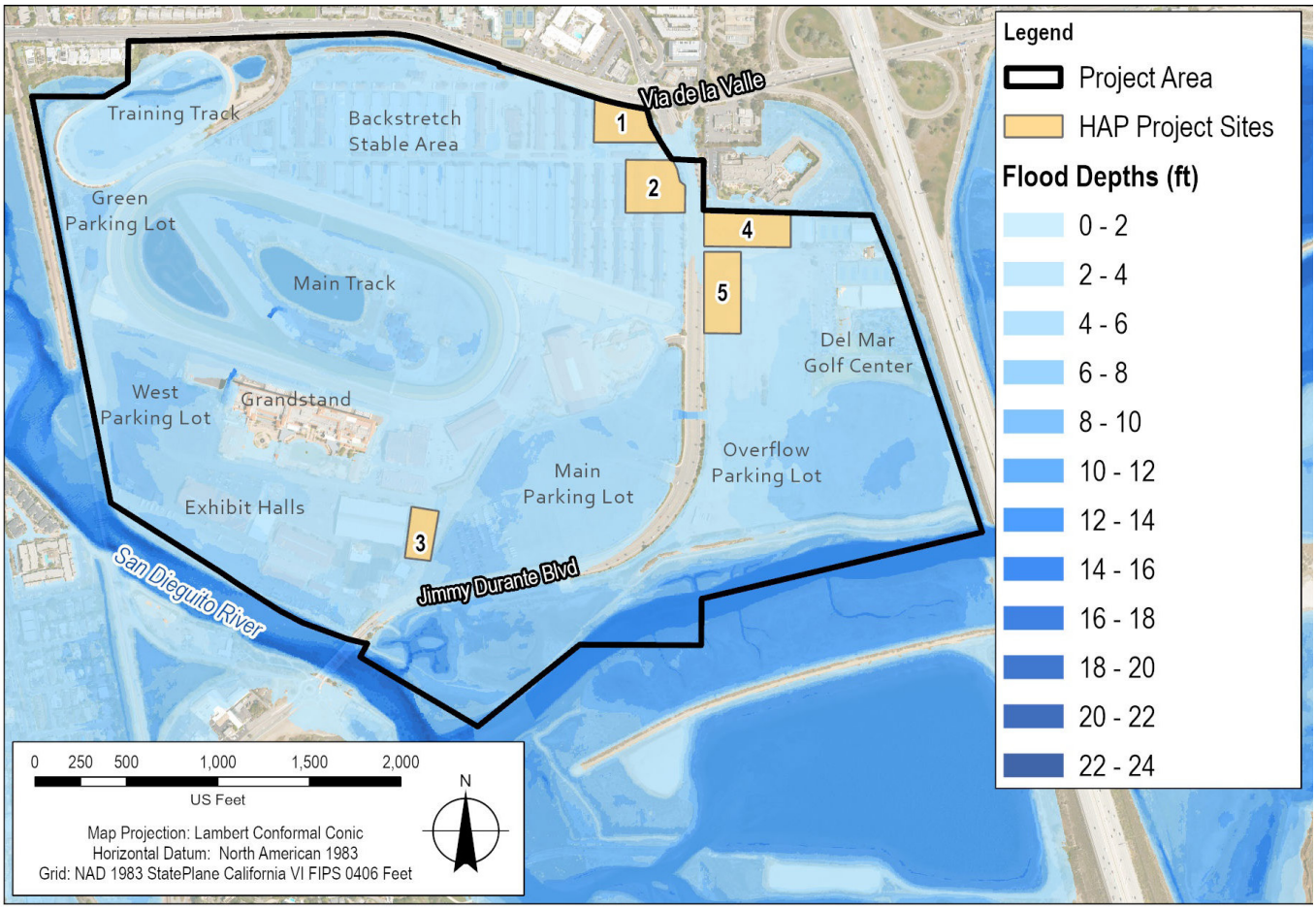


Figure 19. Scenario 6: 50-Year Fluvial Event

- Flow overtopping Jimmy Durante Boulevard onto the property causes flooding across nearly the entire Fairgrounds property
- Up to 8 feet in the West Parking Lot and between 2 and 6.5 feet in the stables in the northern portion of the property
- **All five housing sites are affected by flooding under this scenario**

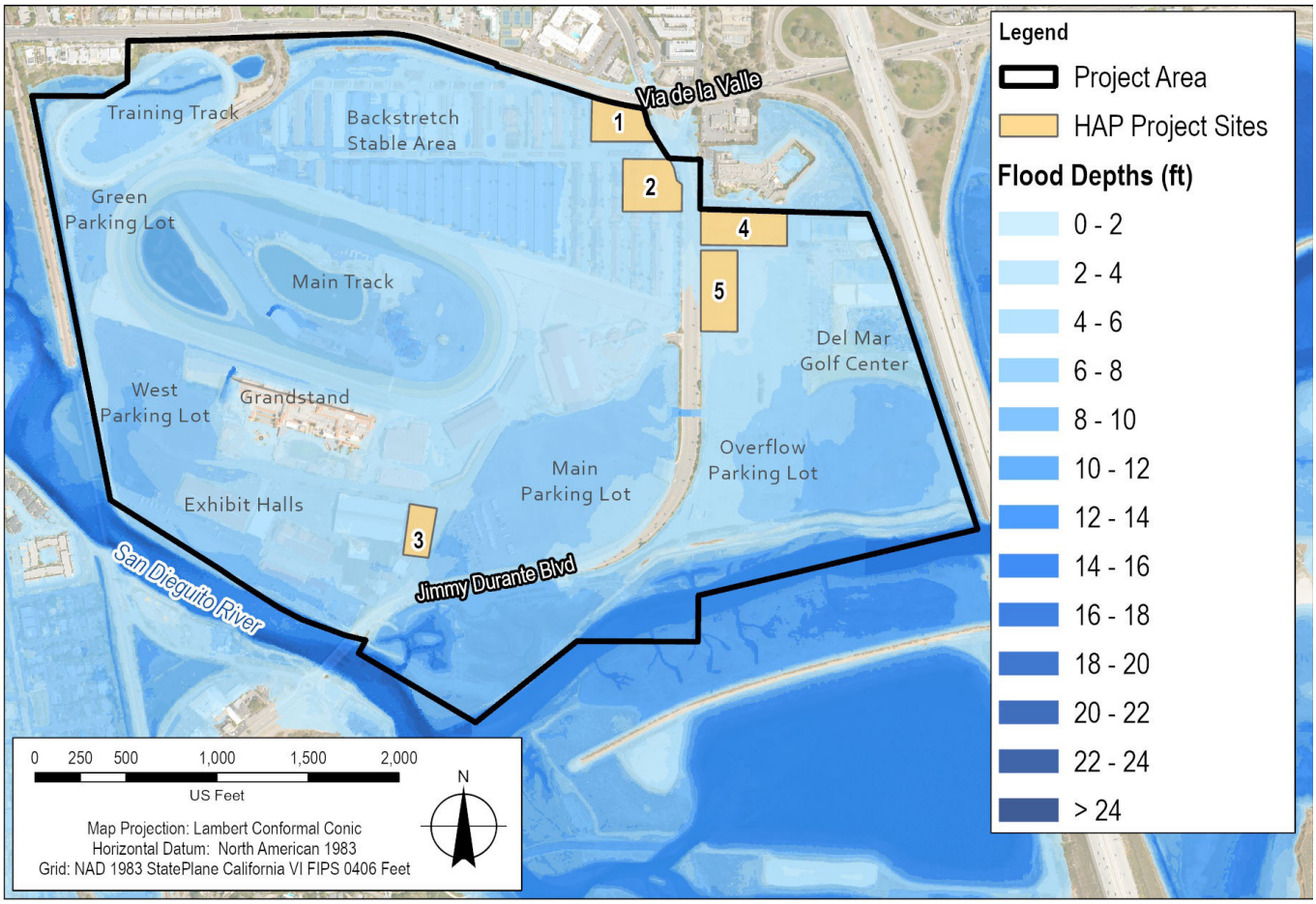


Figure 20. Scenario 7: 100-Year Fluvial Event

- Flow overtopping Jimmy Durante Boulevard onto the property causes flooding across nearly the entire Fairgrounds property
- Up to 9.5 feet in the West Parking Lot and between 3.5 and 7 feet in the stables in the northern portion of the property
- **All five housing sites are affected by flooding under this scenario**

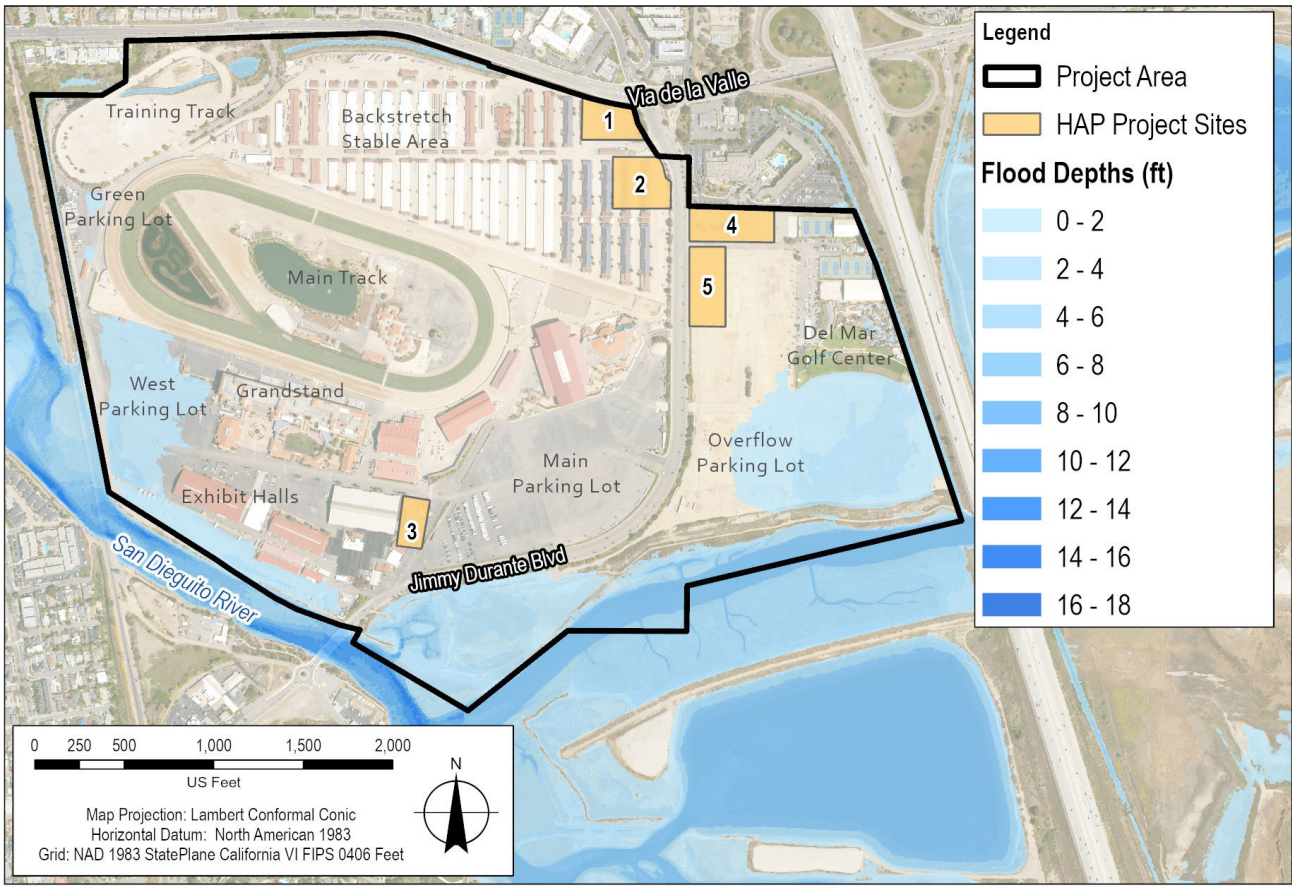


Figure 21. Scenario 8: 10-Year Fluvial Event + 2050 Intermediate-High Sea-Level Rise

- Moderate flooding of the West Parking Lot, with flood depths of up to 3.2 feet
- Breakout flow over the northern bank of the San Dieguito River causes flooding on the West Parking Lot and along the southern boundary of the Fairgrounds property
- Minor flooding on the Green Parking Lot from backflow
- Flooding near but outside of the Adjacent to Fire Station Site (Site 3) in the southern portion of the Fairgrounds property
- **None of the five housing sites are affected by flooding under this scenario**

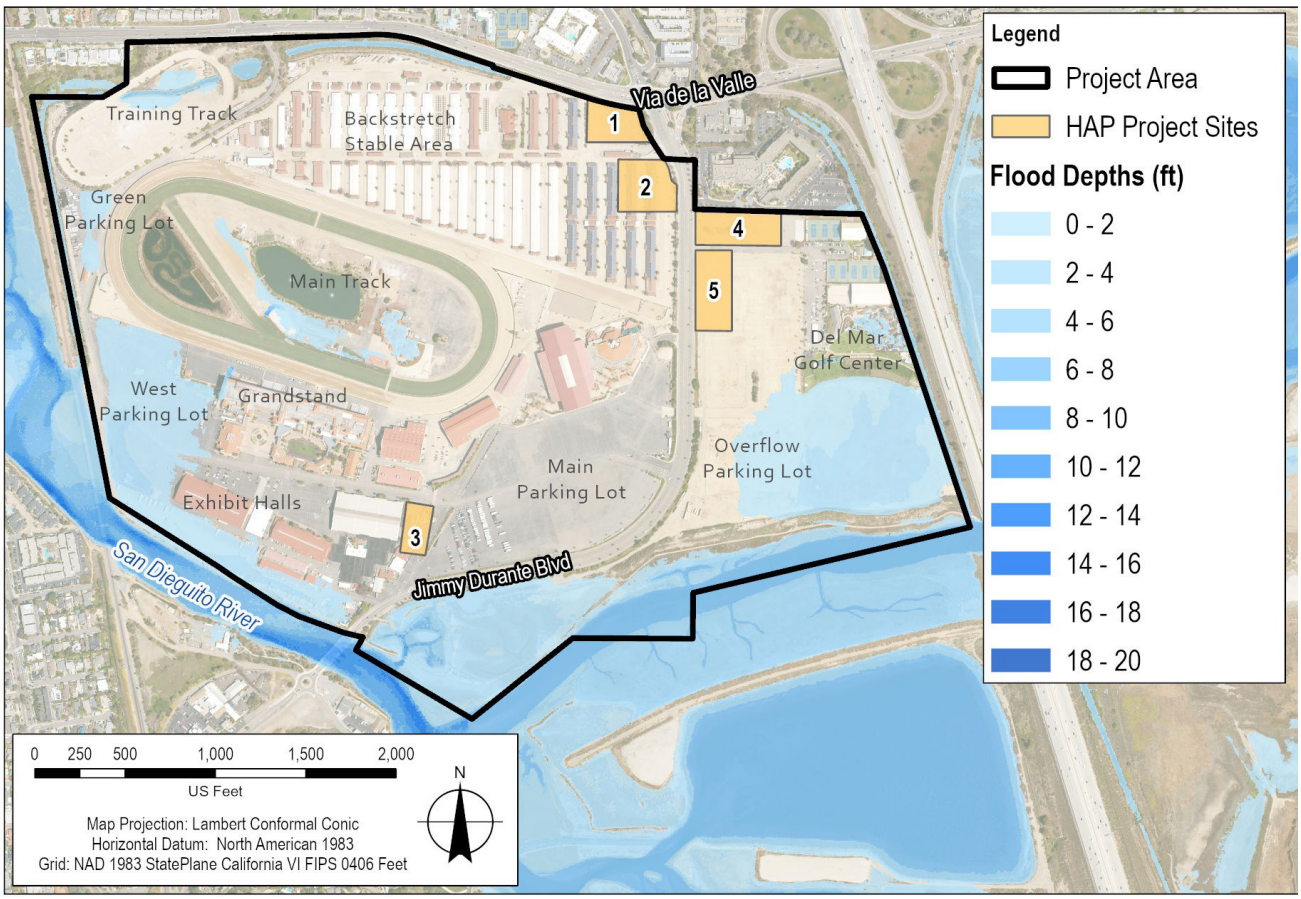


Figure 22. Scenario 9: 10-Year Fluvial Event + 2070 Intermediate-High Sea-Level Rise

- Moderate flooding of the West Parking Lot with flood depths of up to 3.6 feet and flooding of the Exhibit Halls and Grandstand
- Flooding of the Training Track from overtopping of Stevens Creek
- Flooding of the Main Track from flow through the infield tunnel - the infield storm drain networks and pumps eventually drain this flooding into the receiving pond and wetland
- Flooding near but outside of the Adjacent to Fire Station Site (Site 3) in the southern portion of the Fairgrounds property
- **None of the five housing sites are affected by flooding under this scenario**

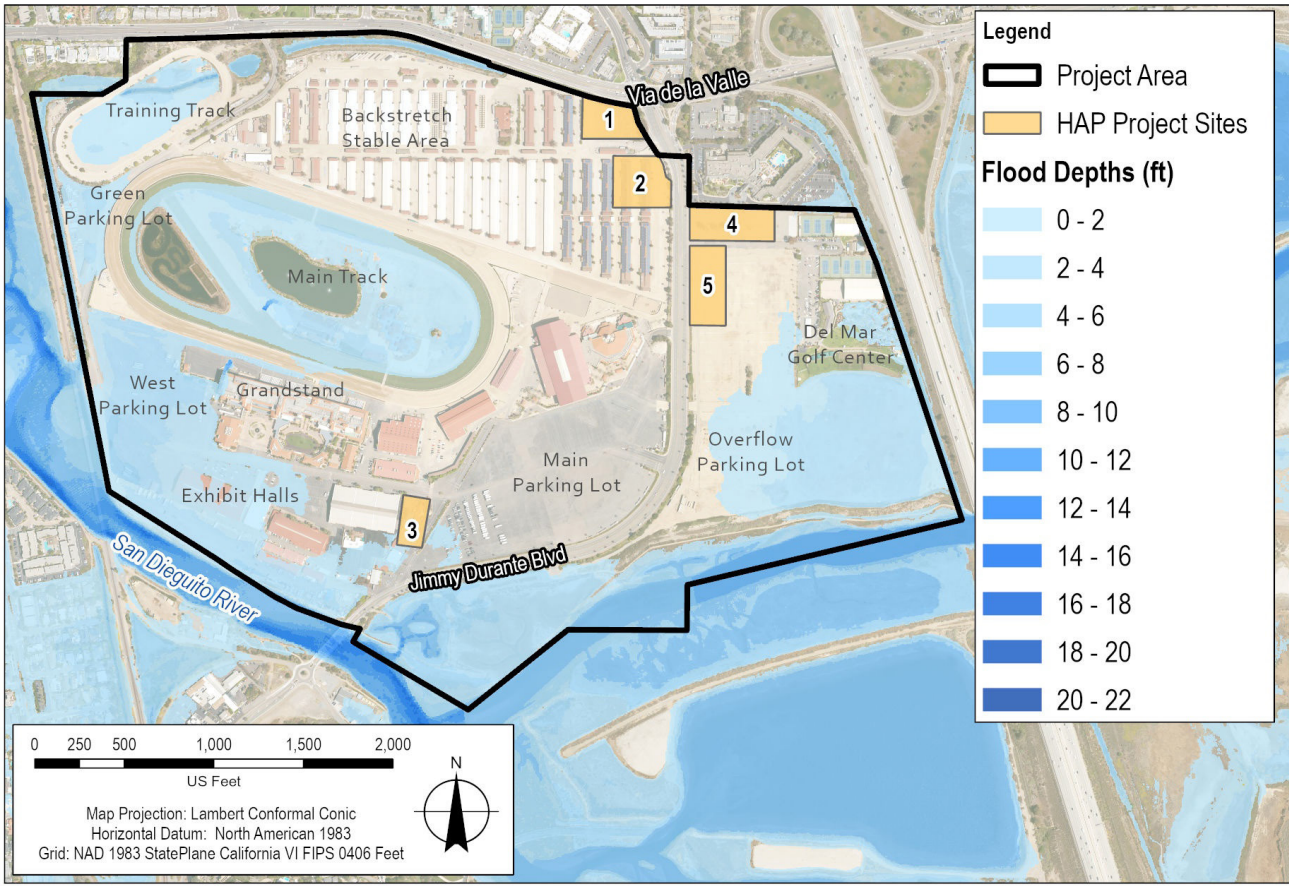


Figure 23. Scenario 10: 10-Year Fluvial Event + 2100 Intermediate-High Sea-Level Rise

- Significant tidal flooding from overtopping at the northern bank of the San Dieguito River
- Up to 11.6 feet on either side of the infield tunnel and up to 4.4 feet in the southwestern corner of the West Parking Lot
- Flooding in the Overflow Parking Area from the drainage ditch west of I-5
- Flooding in the Green Parking Lot from backflow through the storm drains
- **Flooding within a portion of the Adjacent to Fire Station Site (Site 3) – the other four housing sites are not affected by flooding under this scenario**

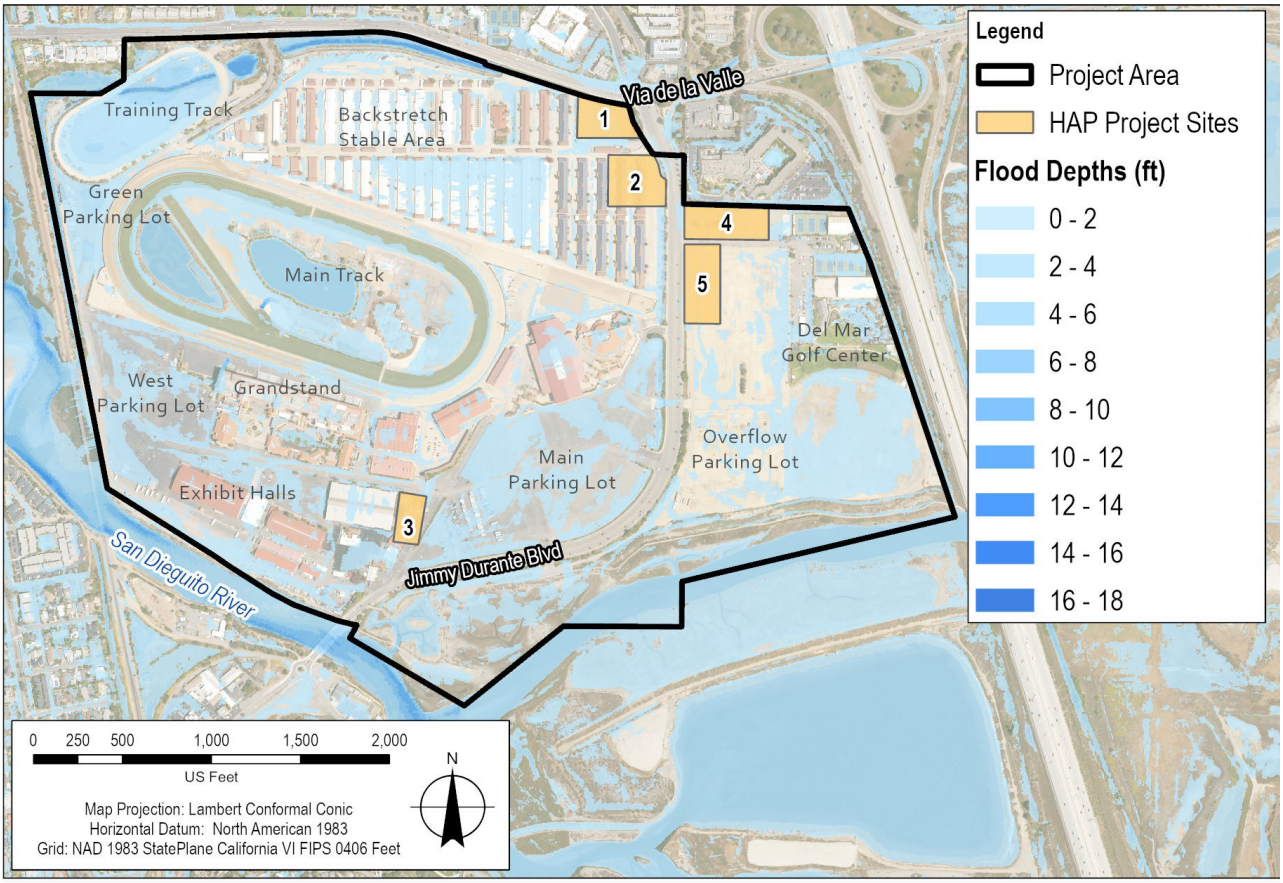


Figure 24. Scenario 11: 10-Year Rainfall Event

- Shallow ponding across the Fairgrounds property, with some areas of deeper ponding
- Typically, less than 1 foot of water accumulates in the stables area, with some localized areas of up to 3 feet
- Up to 1.6 feet of flooding in the southwestern corner of the West Parking Lot
- Deepest flood depths (up to 10 feet) on the Training Track from water flowing through culverts on the eastern side and flooding the infield
- **All five housing sites are affected by shallow ponding under this scenario**

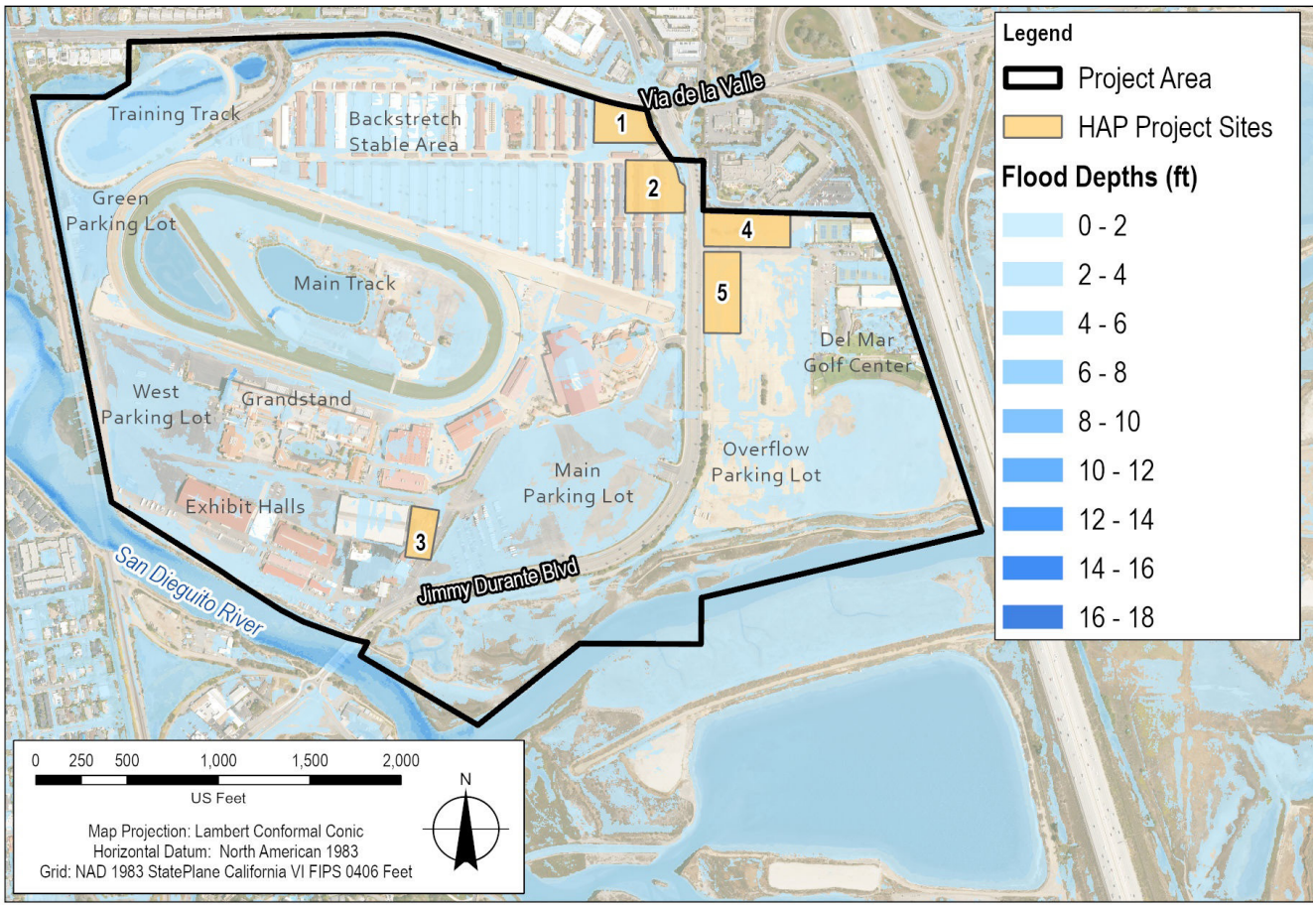


Figure 25. Scenario 12: 100-Year Rainfall Event

- Shallow ponding across the Fairgrounds property, with some areas of deeper ponding
- Typically, less than 1 foot of water across the Fairgrounds property, except for on the Training Track and the West Parking Lot
- Infield basins on the Main Track do not overflow
- Flood depths up to 2.5 feet in the southwestern corner of the West Parking Lot
- **All five housing sites are affected by shallow ponding under this scenario**

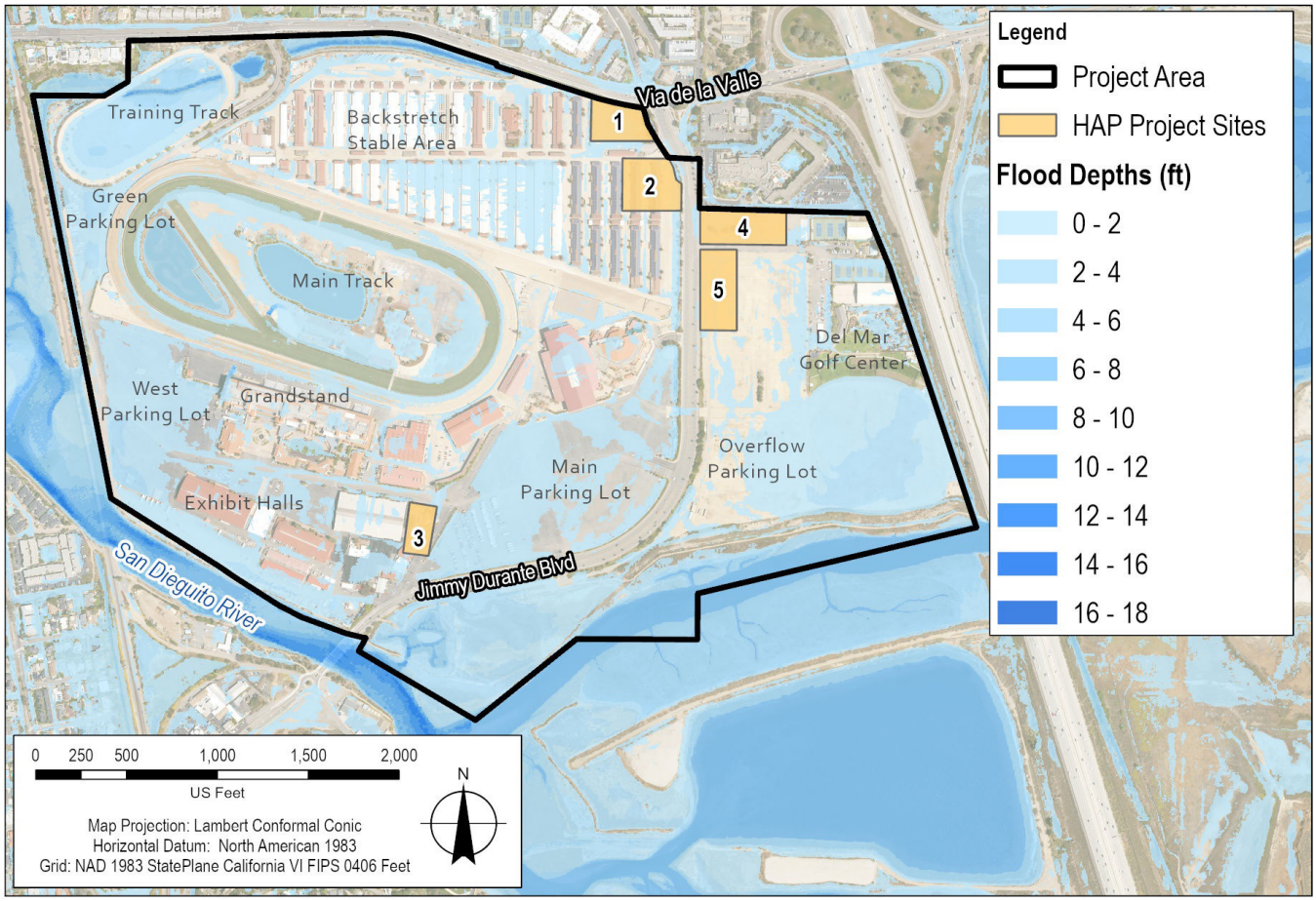


Figure 26. Scenario 13: 10-Year Fluvial Event + 10-Year Rainfall Event

- Shallow ponding across the Fairgrounds property, with deeper ponding in the infield ponds and Training Track
- Up to 3 feet of flooding on the West Parking Lot from flow overtopping the San Dieguito River along the southwestern property boundary
- Up to 2 feet of flooding on the Main Parking Lot
- **All five housing sites are affected by shallow ponding under this scenario**

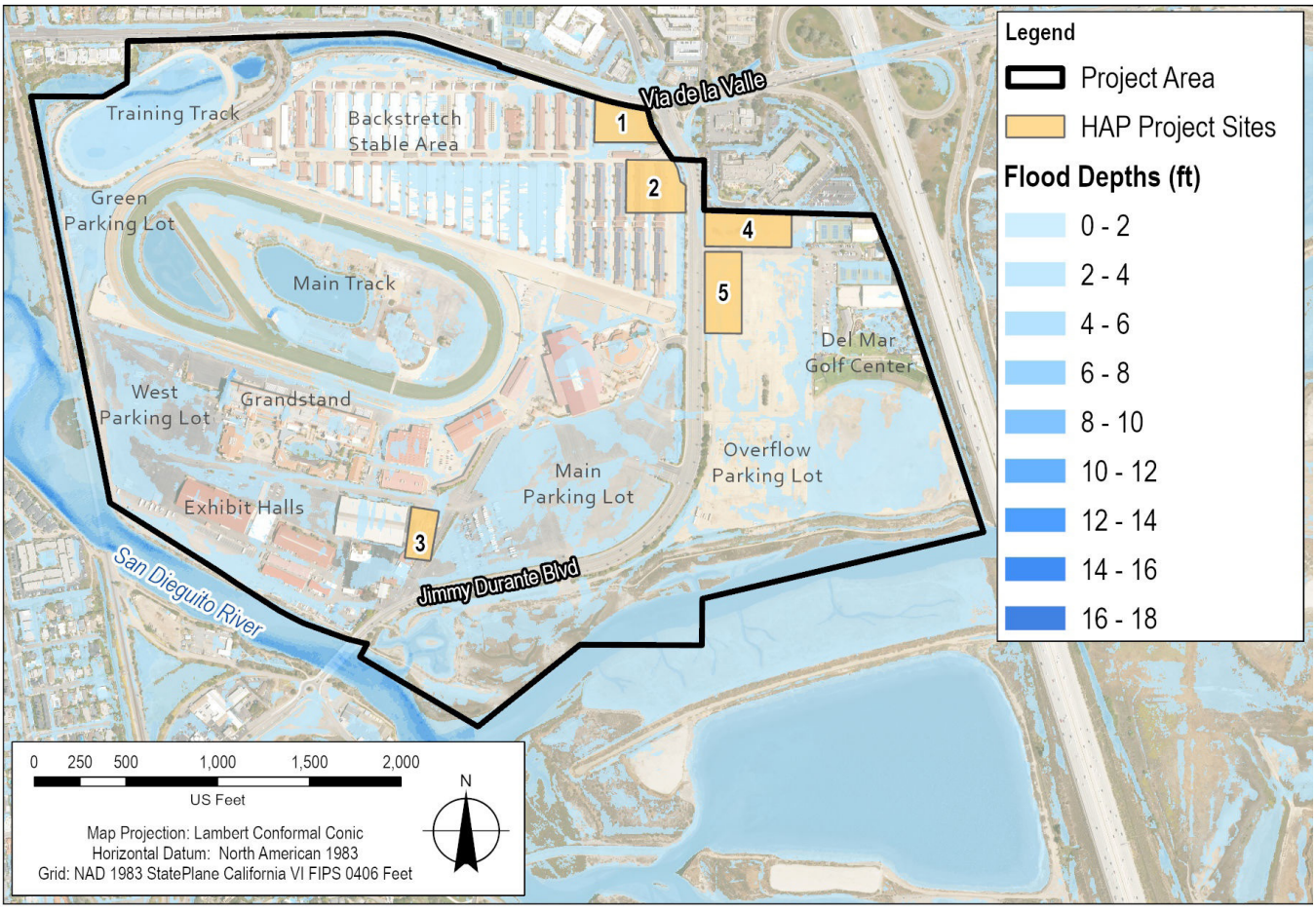


Figure 27. Scenario 14: 10-Year On-Site Rainfall Event + 2050 Intermediate-High Sea-Level Rise

- Typically, less than 2 feet of flooding across the Fairgrounds property, except for on the Training Track and the infield basins of the Main Track
- Complete inundation of the Training Track from overtopping of Stevens Creek
- **All five housing sites are affected by shallow ponding under this scenario**

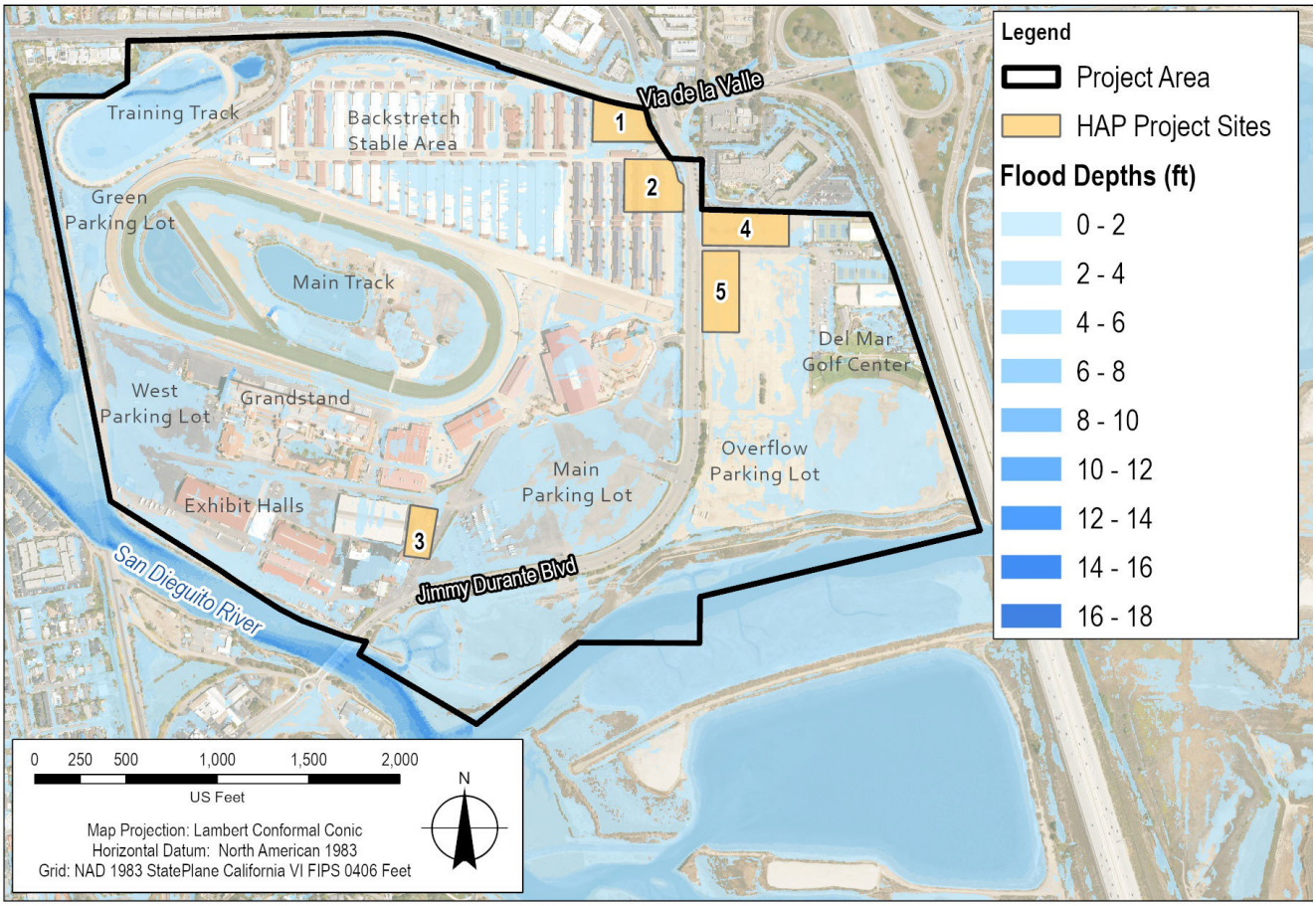


Figure 28. Scenario 15: 10-Year On-Site Rainfall Event + 2070 Intermediate-High Sea-Level Rise

- Typically, less than 2 feet of flooding across the Fairgrounds property, except for on the Training Track and the infield basins of the Main Track
- Complete inundation of the Training Track from overtopping of Stevens Creek
- **All five housing sites are affected by shallow ponding under this scenario**

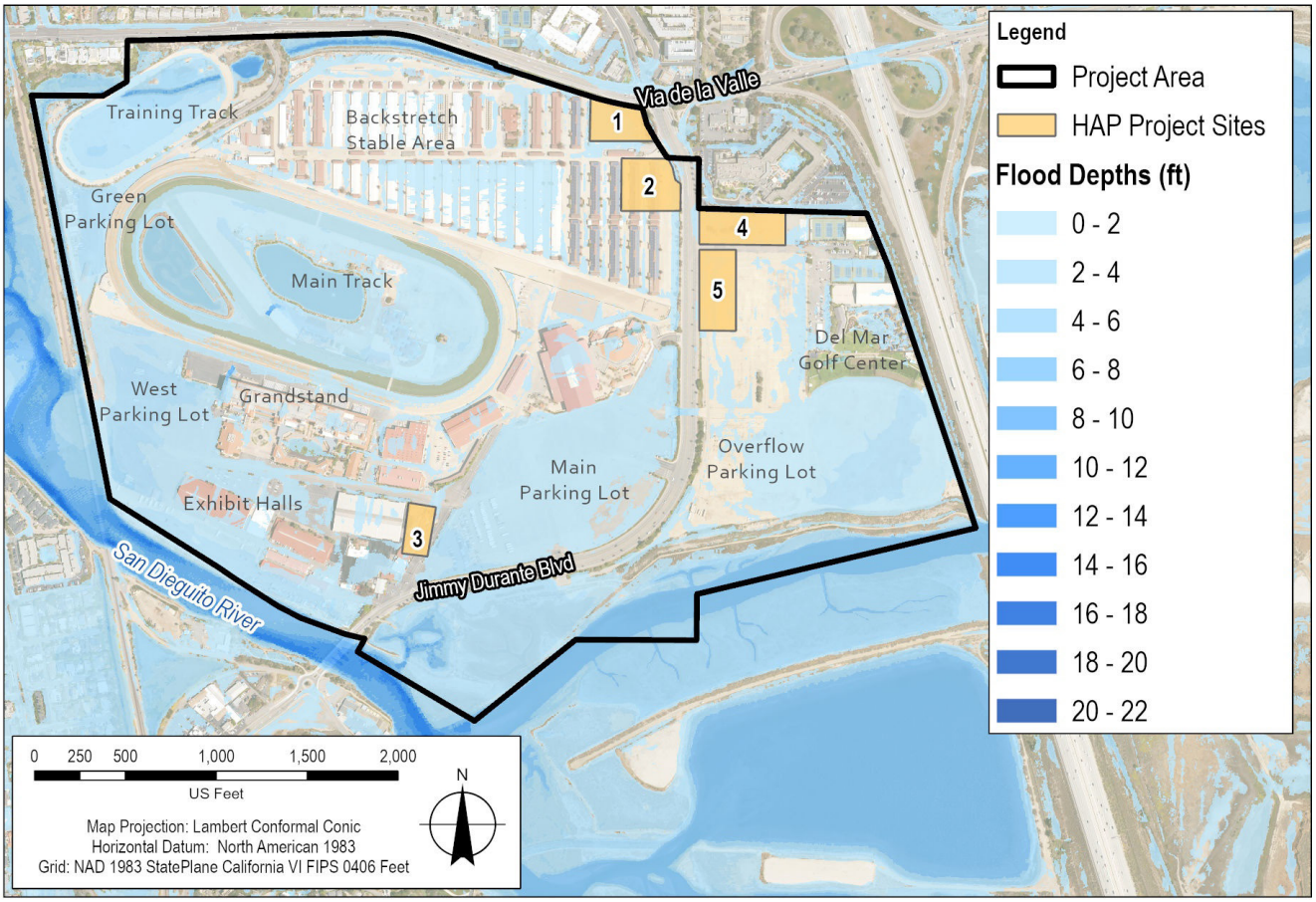


Figure 29. Scenario 16: 10-Year On-Site Rainfall Event + 2100 Intermediate-High Sea-Level Rise

- On-site flooding during this scenario covers more area across the Fairgrounds property but does not significantly increase flood depths
- Complete inundation of the Training Track, Green Parking Lot, Main Track, West Parking Lot, and Main Parking Lot
- Major flooding in the Backstretch Stable Area and Overflood Parking Area
- **Shallow ponding at all five potential affordable housing sites under this scenario**

Flooding at Site 1

- Site 1 remains dry during tidal events and the 10-year fluvial event, even when combined with the 2050, 2070, and 2100 Intermediate-High SLR projections
- During the 50-year and 100-year fluvial events, flooding occurs across nearly the entire Fairgrounds property, and Site 1 experiences up to 5.4 feet and 6.8 feet of flooding, respectively
- Minor flooding on Site 1 (up to 1.5 feet) during the 10-year rainfall event, even when combined with the 10-year fluvial event or the 2050, 2070, and 2100 Intermediate-High SLR projections
- Up to 1.9 feet of flooding during the 100-year rainfall event

Figure 30. Site 1 Location

Table 8. Site 1 Sea-Level Rise and Flood Vulnerability

	Scenario	Model Scenario	Average (and range) of Peak Flood Depths (In feet)
Tidal Events	1	10-Year Extreme Water Level	0
	2	2050 Intermediate-High SLR + MHHW	0
	3	2070 Intermediate-High SLR + MHHW	0
	4	2100 Intermediate-High SLR + MHHW	0
Fluvial Events	5	10-Year Fluvial Event	0
	6	50-Year Fluvial Event	3.6 (0 to 5.4)
	7	100-Year Fluvial Event	5.0 (0 to 6.8)
Fluvial Events + SLR	8	10-Year Fluvial Event + 2050 Intermediate-High SLR	0
	9	10-Year Fluvial Event + 2070 Intermediate-High SLR	0
	10	10-Year Fluvial Event + 2100 Intermediate-High SLR	0
On-Site Rainfall Events	11	10-Year Rainfall Event	0.3 (0 to 1.5)
	12	100-Year Rainfall Event	0.5 (0 to 1.9)
Fluvial + On-Site Rainfall	13	10-Year Rainfall Event + 10-Year Fluvial Event	0.3 (0 to 1.5)
On-Site Rainfall + SLR	14	10-Year Rainfall Event + 2050 Intermediate-High SLR	0.3 (0 to 1.5)
	15	10-Year Rainfall Event + 2070 Intermediate-High SLR	0.3 (0 to 1.5)
	16	10-Year Rainfall Event + 2100 Intermediate-High SLR	0.3 (0 to 1.5)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Flooding at Site 2

- Site 2 remains dry during tidal events and the 10-year fluvial event, even when combined with the 2050, 2070, and 2100 Intermediate-High SLR projections
- During the 50-year and 100-year fluvial events, flooding occurs across nearly the entire Fairgrounds property, and Site 2 experiences up to 4.4 feet and 5.8 feet of flooding, respectively
- Shallow flooding on Site 2 (up to 1.9 feet) during the 10-year rainfall event, even when combined with the 10-year fluvial event or the 2050, 2070, and 2100 Intermediate-High SLR projections
- Up to 2.1 feet of flooding during the 100-year rainfall event

Figure 31. Site 2 Location

Table 9. Site 2 Sea-Level Rise and Flood Vulnerability

	Scenario	Model Scenario	Average (and range) of Peak Flood Depths (in feet)
Tidal Events	2	2050 Intermediate-High SLR + MHHW	0
	3	2070 Intermediate-High SLR + MHHW	0
	4	2100 Intermediate-High SLR + MHHW	0
Fluvial Events	5	10-Year Fluvial Event	0
	6	50-Year Fluvial Event	2.7 (0.9 to 4.4)
	7	100-Year Fluvial Event	4.1 (2.2 to 5.8)
Fluvial Events + SLR	8	10-Year Fluvial Event + 2050 Intermediate-High SLR	0
	9	10-Year Fluvial Event + 2070 Intermediate-High SLR	0
	10	10-Year Fluvial Event + 2100 Intermediate-High SLR	0
On-Site Rainfall Events	11	10-Year Rainfall Event	0.1 (0 to 1.9)
	12	100-Year Rainfall Event	0.2 (0 to 2.1)
Fluvial + On-Site Rainfall	13	10-Year Rainfall Event + 10-Year Fluvial Event	0.1 (0 to 1.9)
On-Site Rainfall + SLR	14	10-Year Rainfall Event + 2050 Intermediate-High SLR	0.1 (0 to 1.9)
	15	10-Year Rainfall Event + 2070 Intermediate-High SLR	0.1 (0 to 1.9)
	16	10-Year Rainfall Event + 2100 Intermediate-High SLR	0.1 (0 to 1.9)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Flooding at Site 3

- Site 3 remains dry during tidal events and the 10-year fluvial event, even when combined with the 2050 and 2070 Intermediate-High SLR projections
- Site 3 is the only one that is flooded during the 10-year fluvial event when combined with the 2100 Intermediate-High SLR projection (up to 0.7 foot)
- During the 50-year and 100-year fluvial events, flooding occurs across nearly the entire Fairgrounds property, and Site 3 experiences up to 4.7 feet and 6 feet of flooding, respectively
- Lowest flood depths of any site (up to 0.6 foot) during the 10-year rainfall event, even when combined with the 10-year fluvial event or the 2050, 2070, and 2100 Intermediate-High SLR projections
- Lowest flood depths of any site (up to 0.7 foot) during the 100-year rainfall event

Figure 32. Site 3 Location

Table 10. Site 3 Sea-Level Rise and Flood Vulnerability

	Scenario	Model Scenario	Average (and range) of Peak Flood Depths (in feet)
Tidal Events	1	10-Year Extreme Water Level	0
	2	2050 Intermediate-High SLR + MHHW	0
	3	2070 Intermediate-High SLR + MHHW	0
	4	2100 Intermediate-High SLR + MHHW	0
Fluvial Events	5	10-Year Fluvial Event	0
	6	50-Year Fluvial Event	3.8 (2.3 to 4.7)
	7	100-Year Fluvial Event	5.1 (3.5 to 6.0)
Fluvial Events + Sea-Level Rise	8	10-Year Fluvial Event + 2050 Intermediate-High SLR	0
	9	10-Year Fluvial Event + 2070 Intermediate-High SLR	0
	10	10-Year Fluvial Event + 2100 Intermediate-High SLR	0.1 (0 to 0.7)
On-Site Rainfall Events	11	10-Year Rainfall Event	0.03 (0 to 0.5)
	12	100-Year Rainfall Event	0.03 (0 to 0.7)
Fluvial + On-Site Rainfall	13	10-Year Rainfall Event + 10-Year Fluvial Event	0.03 (0 to 0.5)
On-Site Rainfall + Sea-Level Rise	14	10-Year Rainfall Event + 2050 Intermediate-High SLR	0.03 (0 to 0.5)
	15	10-Year Rainfall Event + 2070 Intermediate-High SLR	0.03 (0 to 0.5)
	16	10-Year Rainfall Event + 2100 Intermediate-High SLR	0.03 (0 to 0.6)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Flooding at Site 4

- Site 4 remains dry during tidal events and the 10-year fluvial event, even when combined with the 2050, 2070, and 2100 Intermediate-High SLR projections
- During the 50-year and 100-year fluvial events, flooding occurs across nearly the entire Fairgrounds property, and Site 4 experiences up to 3.9 feet and 5.1 feet of flooding, respectively
- Minor flooding on Site 4 (up to 0.7 feet) during the 10-year rainfall event, even when combined with the 10-year fluvial event or the 2050, 2070, and 2100 Intermediate-High SLR projections
- Minor flooding on Site 4 (up to 0.8 feet) during the 100-year rainfall event

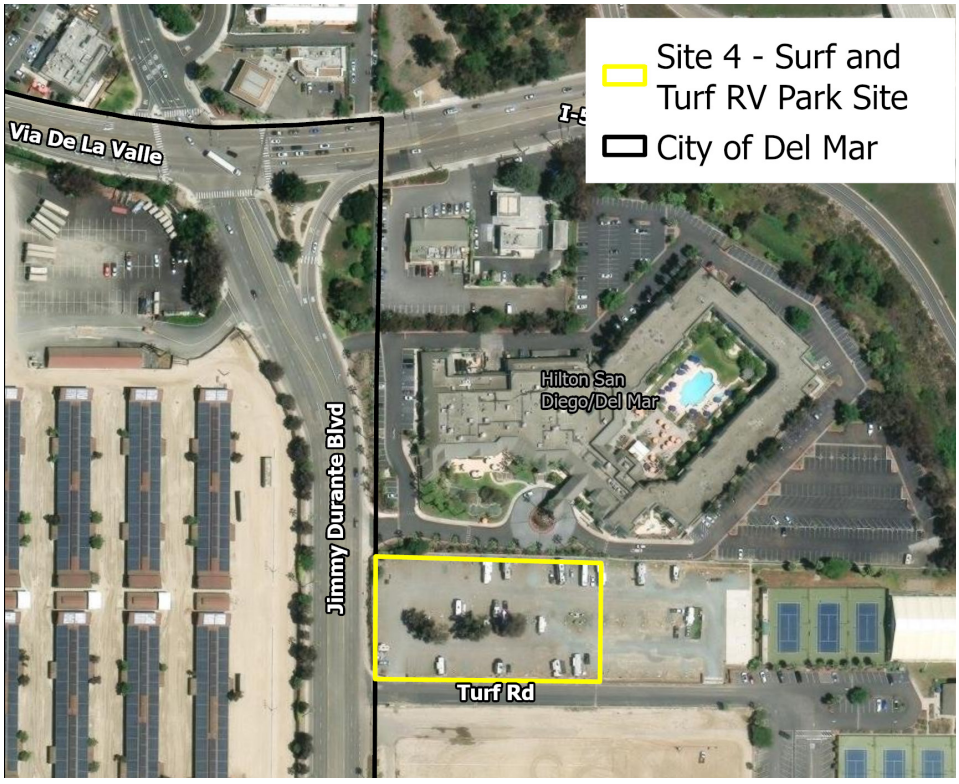


Figure 33. Site 4 Location

Table 11. Site 4 Sea-Level Rise and Flood Vulnerability

	Scenario	Model Scenario	Average (and range) of Peak Flood Depths (in feet)
Tidal Events	1	10-Year Extreme Water Level	0
	2	2050 Intermediate-High SLR + MHHW	0
	3	2070 Intermediate-High SLR + MHHW	0
	4	2100 Intermediate-High SLR + MHHW	0
Fluvial Events	5	10-Year Fluvial Event	0
	6	50-Year Fluvial Event	2.3 (0.7 to 3.9)
	7	100-Year Fluvial Event	3.4 (1.0 to 5.1)
Fluvial Events + SLR	8	10-Year Fluvial Event + 2050 Intermediate-High SLR	0
	9	10-Year Fluvial Event + 2070 Intermediate-High SLR	0
	10	10-Year Fluvial Event + 2100 Intermediate-High SLR	0
On-Site Rainfall Events	11	10-Year Rainfall Event	0.02 (0 to 0.7)
	12	100-Year Rainfall Event	0.02 (0 to 0.8)
Fluvial + On-Site Rainfall	13	10-Year Rainfall Event + 10-Year Fluvial Event	0.02 (0 to 0.8)
On-Site Rainfall + SLR	14	10-Year Rainfall Event + 2050 Intermediate-High SLR	0.02 (0 to 0.8)
	15	10-Year Rainfall Event + 2070 Intermediate-High SLR	0.02 (0 to 0.8)
	16	10-Year Rainfall Event + 2100 Intermediate-High SLR	0.02 (0 to 0.8)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Flooding at Site 5

- Site 5 remains dry during tidal events and the 10-year fluvial event, even when combined with the 2050, 2070, and 2100 Intermediate-High SLR projections
- During the 50-year and 100-year fluvial events, flooding occurs across nearly the entire Fairgrounds property, and Site 5 experiences up to 3.1 feet and 4.3 feet of flooding, respectively
- Minor flooding on Site 5 (up to 1.6 feet) during the 10-year rainfall event, even when combined with the 10-year fluvial event or the 2050, 2070, and 2100 Intermediate-High SLR projections
- Up to 1.9 feet of flooding during the 100-year rainfall event

Figure 34. Site 5 Location

Table 12. Site 5 Sea-Level Rise and Flood Vulnerability

	Scenario	Model Scenario	Average (and range) of Peak Flood Depths (in feet)
Tidal Events	1	10-Year Extreme Water Level	0
	2	2050 Intermediate-High SLR + MHHW	0
	3	2070 Intermediate-High SLR + MHHW	0
	4	2100 Intermediate-High SLR + MHHW	0
Fluvial Events	5	10-Year Fluvial Event	0
	6	50-Year Fluvial Event	2.2 (0.5 to 3.1)
	7	100-Year Fluvial Event	3.3 (1.5 to 4.3)
Fluvial Events + SLR	8	10-Year Fluvial Event + 2050 Intermediate-High SLR	0
	9	10-Year Fluvial Event + 2070 Intermediate-High SLR	0
	10	10-Year Fluvial Event + 2100 Intermediate-High SLR	0
On-Site Rainfall Events	11	10-Year Rainfall Event	0.07 (0 to 1.6)
	12	100-Year Rainfall Event	0.07 (0 to 1.9)
Fluvial + On-Site Rainfall	13	10-Year Rainfall Event + 10-Year Fluvial Event	0.07 (0 to 1.6)
On-Site Rainfall + SLR	14	10-Year Rainfall Event + 2050 Intermediate-High SLR	0.07 (0 to 1.6)
	15	10-Year Rainfall Event + 2070 Intermediate-High SLR	0
	16	10-Year Rainfall Event + 2100 Intermediate-High SLR	0

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Summary of Sea-Level Rise and Flood Vulnerabilities

The results of the flood modeling indicate which housing sites are most vulnerable to tidal, fluvial, and rainfall-driven events, as well as to SLR.

- All five potential affordable housing sites remain dry during the selected tidal and SLR scenarios as well as the 10-year fluvial event.
- All five potential affordable housing sites remain dry during the 10-year fluvial event paired with SLR, other than Site 3, adjacent to the fire station. Site 3 becomes vulnerable to flooding during the 10-year fluvial event with the 2100 Intermediate-High SLR projection (4.8 feet of SLR).
- All five sites experience several feet of flooding during the 50-year and 100-year fluvial events. Site 3 would experience the highest average flood depths, and Site 1 would have the second largest average flood depths. Site 5 would generally experience the lowest average flood depths.
- During rainfall-only, as well as combination rainfall and fluvial events, Site 1 would experience the largest average flood depths, which indicates greater exposure to hazards from rainfall.

In addition to flood depths, peak flow rates during the fluvial events indicate that Site 3 would experience significantly higher peak flows than the other four housing sites, while Sites 1 and 5 would experience the lowest peak flows.

Overall, the results of the flooding modeling suggest that SLR and flood vulnerabilities at the five housing sites would be ranked as follows (from least to most vulnerable):

- Site 5: Dirt Lot Site
- Site 4: Surf and Turf RV Park Site
- Site 2: South of Stable Gate Site
- Site 1: East Main Stable Gate Site
- Site 3: Adjacent to Fire Station Site

Refer to Table 13, Summary of Peak Flood Depths for All Sea-Level Rise and Flood Scenarios on All Housing Sites (in feet).

Table 13. Summary of Peak Flood Depths for All Sea-Level Rise and Flood Scenarios on All Housing Sites (in feet)

	Model Scenario	Average (and Range) of Peak Flood Depths at the Housing Sites (in feet)				
		1: East Main Stable Gate Site	2: South of Stable Gate Site	3: Adjacent to Fire Station Site	4: Surf and Turf RV Park Site	5: Dirt Lot Site
Tidal Events	10-Year Extreme Water Level	0	0	0	0	0
	2050 Intermediate-High SLR + MHHW	0	0	0	0	0
	2070 Intermediate-High SLR + MHHW	0	0	0	0	0
	2100 Intermediate-High SLR + MHHW	0	0	0	0	0
Fluvial Events	10-Year Fluvial Event	0	0	0	0	0
	50-Year Fluvial Event	3.6 (0 to 5.4)	2.7 (0.9 to 4.4)	3.8 (2.3 to 4.7)	2.3 (0.7 to 3.9)	2.2 (0.5 to 3.1)
	100-Year Fluvial Event	5.0 (0 to 6.8)	4.1 (2.2 to 5.8)	5.1 (3.5 to 6.0)	3.4 (1.0 to 5.1)	3.3 (1.5 to 4.3)
Fluvial Events + SLR	10-Year Fluvial Event + 2050 Intermediate-High SLR	0	0	0	0	0
	10-Year Fluvial Event + 2070 Intermediate-High SLR	0	0	0	0	0
	10-Year Fluvial Event + 2100 Intermediate-High SLR	0	0	0.1 (0 to 0.7)	0	0
On-Site Rainfall Events	10-Year Rainfall Event	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.7)	0.07 (0 to 1.6)
	100-Year Rainfall Event	0.5 (0 to 1.9)	0.2 (0 to 2.1)	0.03 (0 to 0.7)	0.02 (0 to 0.8)	0.07 (0 to 1.9)
Fluvial + On-Site Rainfall	10-Year Rainfall Event + 10-Year Fluvial Event	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.8)	0.07 (0 to 1.6)
On-Site Rainfall + SLR	10-Year Rainfall Event + 2050 Intermediate-High SLR	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.8)	0.07 (0 to 1.6)
	10-Year Rainfall Event + 2070 Intermediate-High SLR	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.8)	0.07 (0 to 1.6)
	10-Year Rainfall Event + 2100 Intermediate-High SLR	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.6)	0.02 (0 to 0.8)	0.07 (0 to 1.6)

Notes: MHHW = mean higher high water; NAVD88 = North American Vertical Datum of 1988; SLR = sea-level rise

Adaptation Strategies

Due to the exposure of the entire property to flood hazards and its location within the FEMA regulatory floodplain, no single adaptation strategy is expected to achieve complete flood protection across the entire Fairgrounds property. Therefore, the SLR Vulnerability Assessment explores three potential additional adaptation strategies to reduce flooding on the Fairgrounds property:

- **Strategy 1:** Targeted Ecotone Features
- **Strategy 2:** Perimeter Berm Protection
- **Strategy 3:** Site-Wide Floodable Frontage

Typically, flood-based adaptation strategies fall into three main categories or involve multiple strategies incorporated into a hybrid approach (Figure 35. Main Categories of Adaptation Strategies):

- **Protect –** Defending existing assets through barriers, levees, seawalls, and tide gates.
- **Accommodate –** Modifying infrastructure to function under flood conditions (e.g., elevating buildings, installing pump stations).
- **Retreat –** Relocating assets away from identified flood-prone areas.

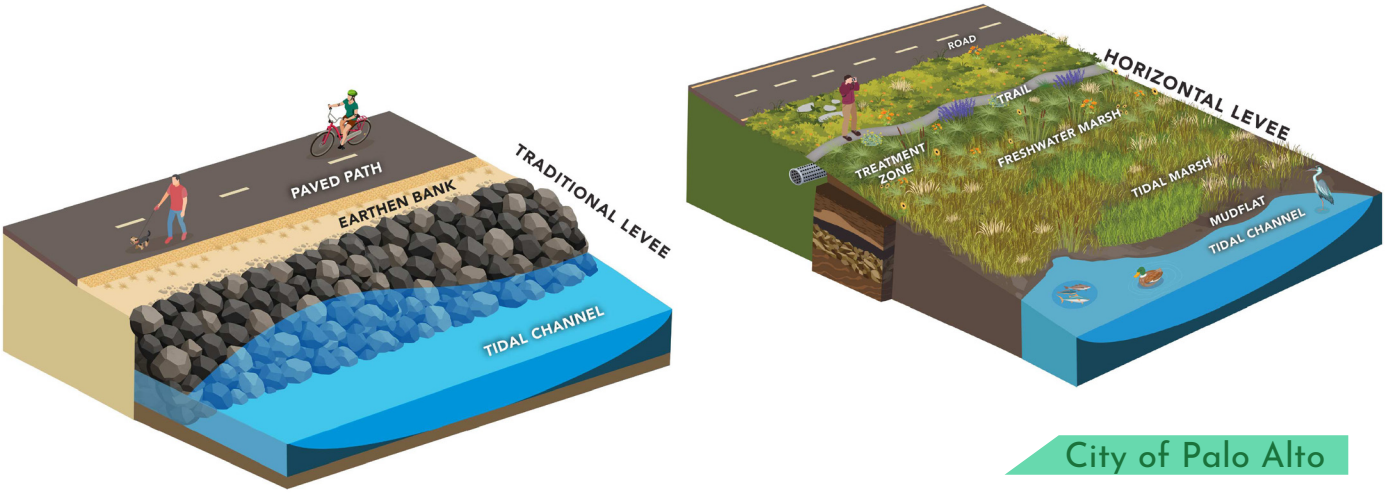
In consideration of the projected flood hazards and the opportunities for land use changes across the Fairgrounds property based on current master site planning efforts, the conceptual adaptation strategies presented herein are designed to directly prevent or mitigate the flood pathways and impacts of flood exposure. These are intended to be high-level representative strategies ranging from minimal operations changes to major land use modifications. Therefore, these strategies represent a starting point for identifying potential adaptation options with opportunities for the District, City, and other stakeholders to further refine. Further assessment will be needed to determine if the concept-level designs meet FEMA, state, and City requirements.

Because the entire Fairgrounds property is within the FEMA regulatory floodplain, which is vulnerable to flooding from the San Dieguito River, the selected housing site, regardless of its location on the Fairgrounds property, would be designed with floodproofing measures and would require design in accordance with FEMA regulatory floodplain design standards, California Building Code standards, and Del Mar Municipal Code and certified Local Coastal Program implementing regulations (Del Mar Municipal Code, Chapter 30.56, Floodplain Overlay Zone).

Strategy 1: Targeted Ecotone Features

Strategy 1 is a conceptual adaptation strategy that would require minimal changes to the existing Fairgrounds property and operations. This would include implementation of an elevated berm along the southern border of the Fairgrounds (extending and expanding upon the Del Mar Living Levee Project) and a second berm on the eastern side of the Del Mar Golf Center driving range. These features are intended to block primary flood pathways identified during smaller to moderate storm events. Additional upgrades, such as flap gates or similar devices on storm drain outfalls, would reduce backflow flooding during high river or tidal conditions. This strategy is designed to provide flood protection during frequent and moderate events, including the 10 year fluvial event and sea-level rise conditions projected through approximately 2070. It does not prevent flooding during larger fluvial events, such as the 50 year or 100 year storms, nor does it provide protection under end of century sea-level rise conditions. The design emphasizes gently sloping, naturalized features that can support habitat expansion and public access.

Overall, Strategy 1 represents a near term, incremental approach that focuses on addressing specific vulnerabilities while maintaining existing land uses. This strategy offers a limited level of protection over longer time horizons. Regulatory considerations would still apply, including coordination with FEMA floodplain requirements and potential permitting related to work within the floodplain.



City of Palo Alto

Horizontal or “living” levees are gradual slopes built with earth and landscapes with plants to create and support coastal ecosystems. This graphic provides an example of a living levee such as the proposed Del Mar Living Levee project, which is incorporated into Strategy 1: Targeted Ecotone Features below.

Strategy 1 Key Features:

- Elevated berms along select portions of property borders
- Possible ecotone slopes for habitat enhancement
- Minimal changes to the Fairgrounds property and District's operations

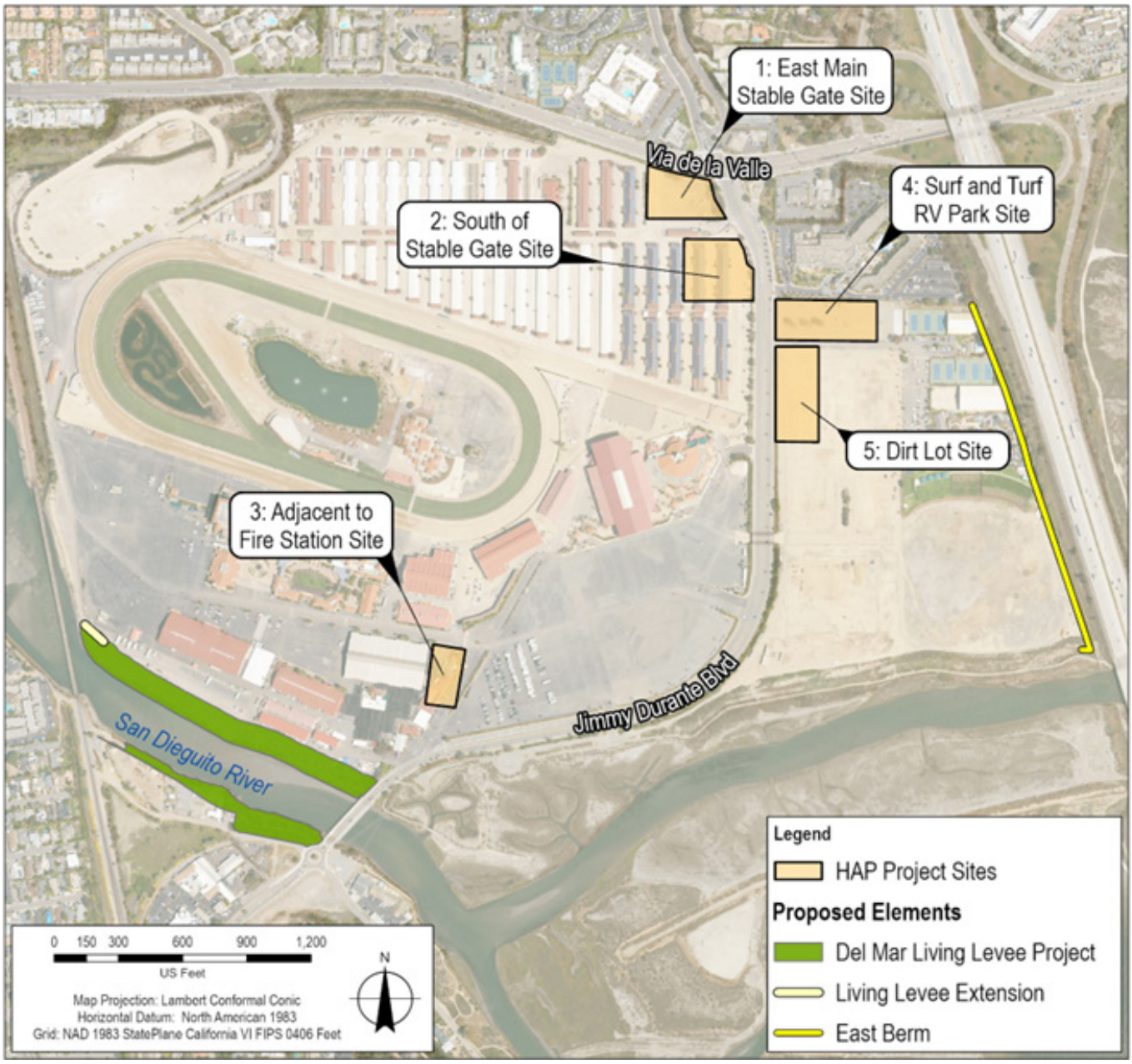


Figure 35. Strategy 1: Site-Specific Ecotone Features Concept

Strategy 1 Post-Adaptation Modeling Results:

- Protects against the 10-year extreme tidal event, 10-year fluvial event, and both the 2050 and 2070 Intermediate-High SLR scenarios
- Does not protect the Fairgrounds property from flooding during the 50-year and 100-year fluvial events
- Does not protect the Fairgrounds property from flooding during the 10-year fluvial events when sea levels reach the 2100 Intermediate-High SLR projections

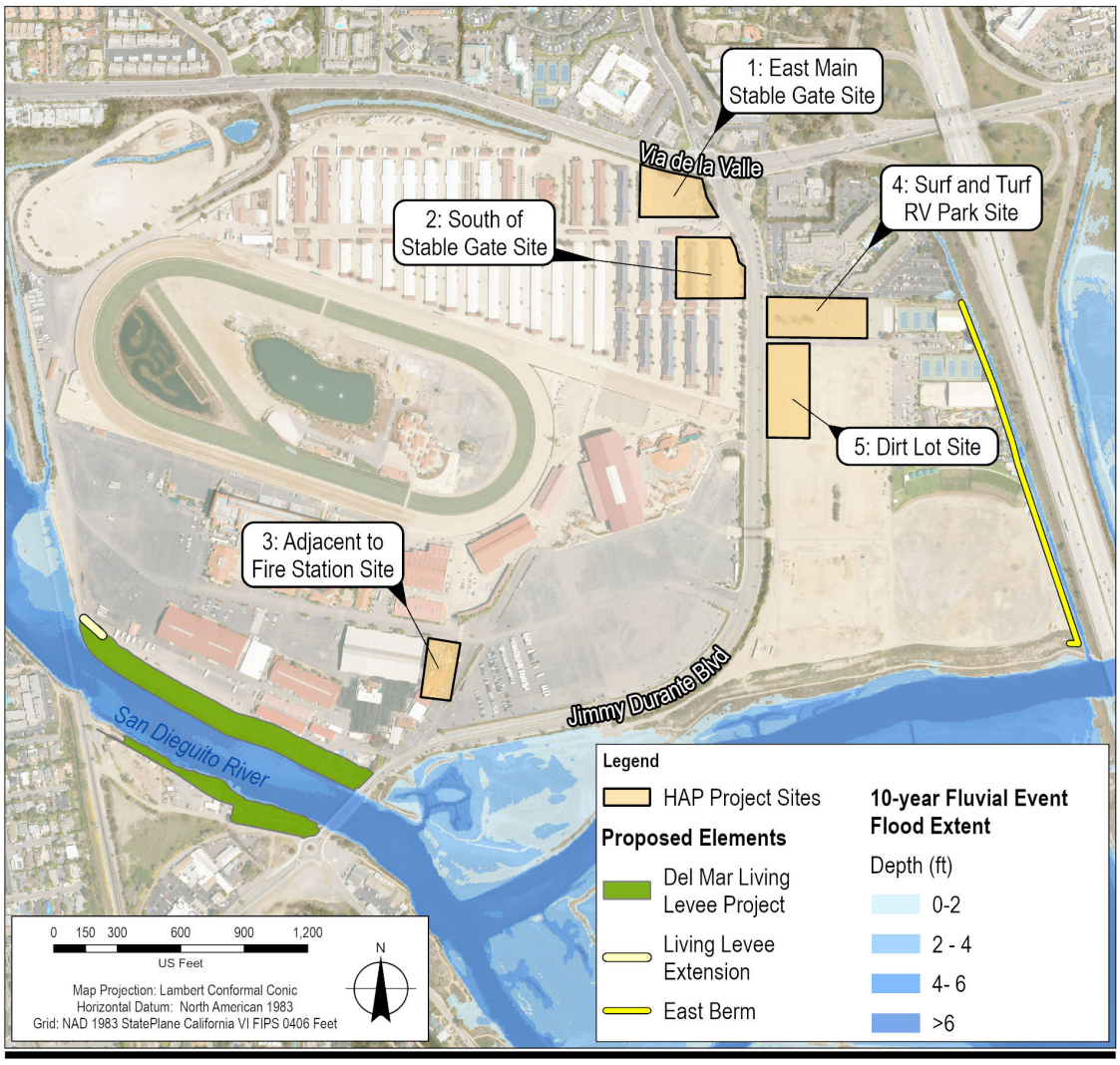
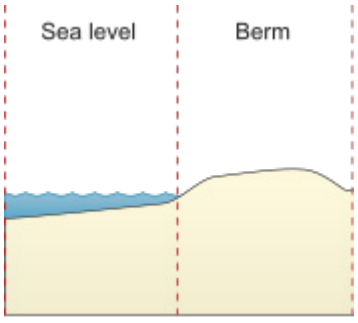


Figure 36. Strategy 1: 10-Year Fluvial Event Flood Protection

Strategy 2: Perimeter Berm Protection

Strategy 2 includes extensive modifications to the southern side of the Fairgrounds property to ensure that the assets on the northern side are protected from moderate flood event hazards. This concept includes the construction of a continuous berm or floodwall extending east to west across the Fairgrounds property to separate lower lying, flood prone areas near the San Dieguito River from higher value facilities to the north. The berm would be designed to protect against a 50 year fluvial flood event, with associated drainage infrastructure such as box culverts, tide gates, and stormwater system upgrades to manage floodwaters and reduce backflow. While the strategy effectively protects much of the site during moderate events, it does not prevent flooding in the 100-year fluvial event, when the berm is overtopped. To offset the loss of floodplain storage and comply with drainage and floodway requirements, portions of the property south of the berm would be lowered to create floodable areas, including tiered pads and a channel to convey floodwaters during major storm events. This approach would significantly reduce flooding across much of the Fairgrounds during moderate storms; however, infrastructure located within the lowered areas of the property would remain exposed to flooding and would require flood resilient design or operational adjustments.

Strategy 2 reflects a medium to long term approach that balances increased flood protection with substantial changes to site grading, operations, and infrastructure. This strategy offers a higher level of protection than Strategy 1 for mid range storm events but still does not prevent flooding during the 100 year fluvial event. Hydraulic modeling indicates minimal offsite impacts, though further refinement and regulatory review would be required, including potential FEMA No Rise Certification.



Example of an elevated berm such as the ones included in Strategy 1: Targeted Ecotone Features, and Strategy 2: Perimeter Berm Protection.

Strategy 2 Key Features:

- Floodable areas focused on the southern portion to protect the northern portion of the Fairgrounds
- Lower elevation on the southern portion near the San Dieguito River shoreline
- Perimeter berm between the southern and northern portions of the Fairgrounds
- Modest changes to the Fairgrounds property and District's operations, with changes focused along the southern portion

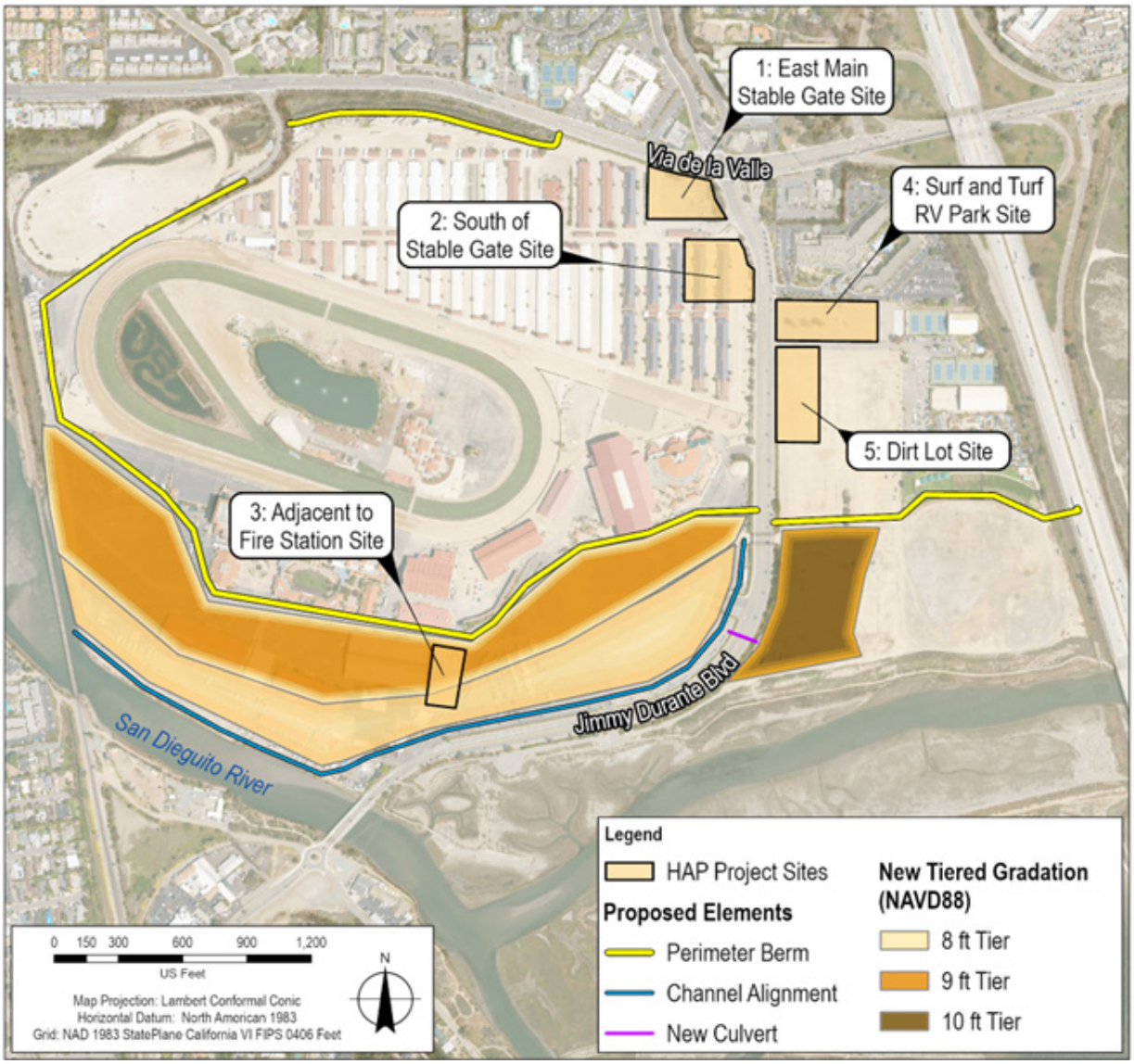


Figure 37. Strategy 2: Perimeter Berm Protection Concept

Strategy 2 Post-Adaptation Modeling Results:

- Protects areas behind the perimeter berm (in the northern portion of the property) from all modeled scenarios except the 100-year fluvial event
- Flooding on select areas of the Fairgrounds property during the tidal and SLR scenarios, although the potential affordable housing sites would remain dry
- The Fairgrounds property would experience deep flood depths during the 100-year fluvial event
- Facilities along the southern portion of the property must still consider exposure to flooding and potential changes to their operations

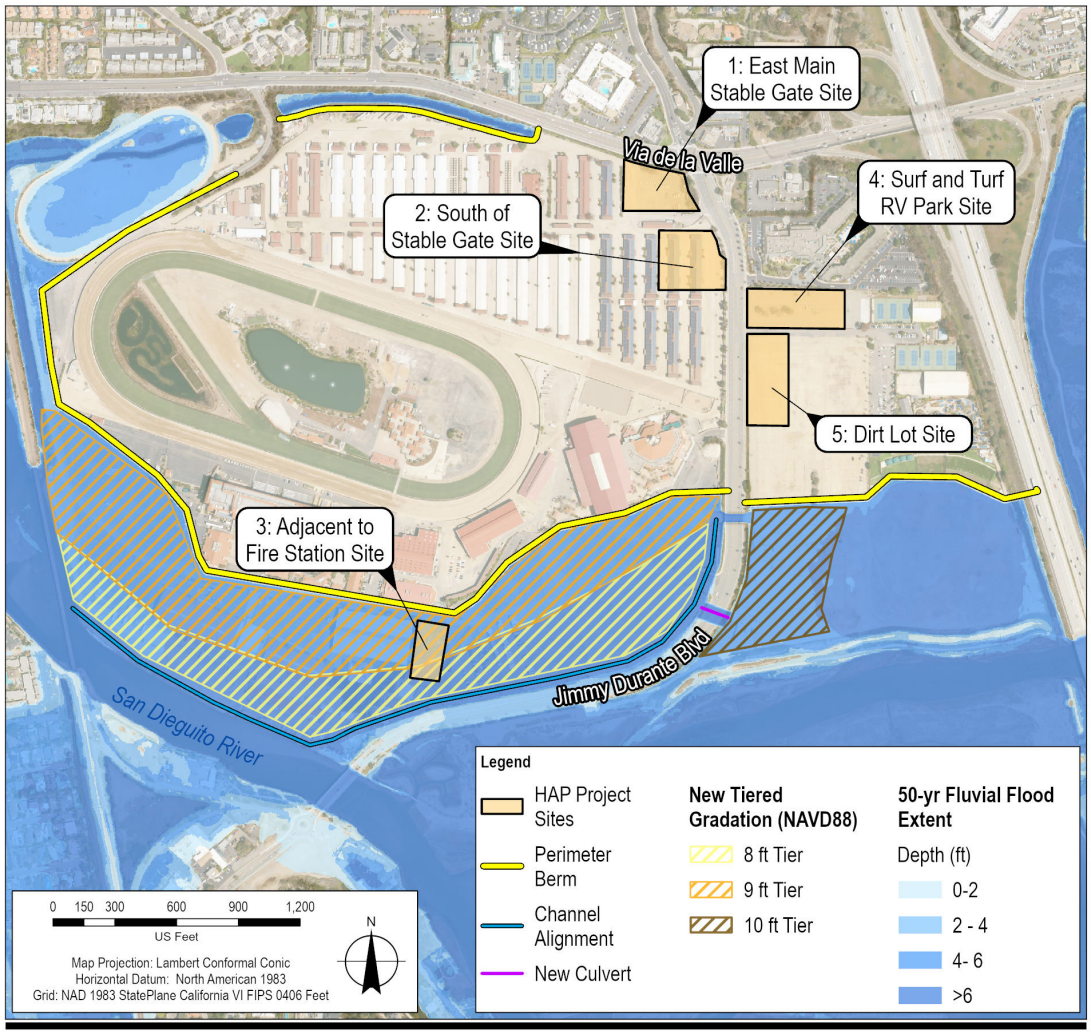


Figure 38. Strategy 2: 50-Year Fluvial Event Flood Protection

Strategy 3: Site-Wide Floodable Frontage

Strategy 3 represents a comprehensive regrading approach that significantly alters elevations across the Fairgrounds property to reduce flood exposure. Under this strategy, large portions of the northern Fairgrounds property would be raised above the 50 year fluvial flood level using imported fill, while the southern portion of the site near the San Dieguito River would be lowered to create a broad, floodable frontage with tiered elevations and conveyance channels. Strategy 3 is intended to ensure that a portion of the property remains dry during a 50 year fluvial event and flood depths are substantially reduced during larger events compared to existing conditions. However, this strategy would require major changes to the Fairgrounds land use, circulation, and infrastructure, effectively creating a "blank slate" for redevelopment. Existing facilities in lower lying areas would need to be relocated, removed, or designed to accommodate periodic flooding.

While Strategy 3 provides the greatest reduction in flood risk among the three strategies, it still does not fully protect the site from the 100 year fluvial event or remove the property from the FEMA regulatory floodplain. Achieving full FEMA compliance would require raising site elevations even higher, with additional off-site implications. This strategy is presented to illustrate the level of flood resilience achievable through large scale transformation and highlights the tradeoffs between long term protection, cost, regulatory complexity, and operational feasibility.

Strategy 3 Key Features:

- Elevation changes across entire Fairgrounds property
- Lower elevation on the southern portion near the San Dieguito River shoreline
- Higher elevations in the center portion of the Fairgrounds property
- Major overhaul of the entire Fairgrounds property and District's operations

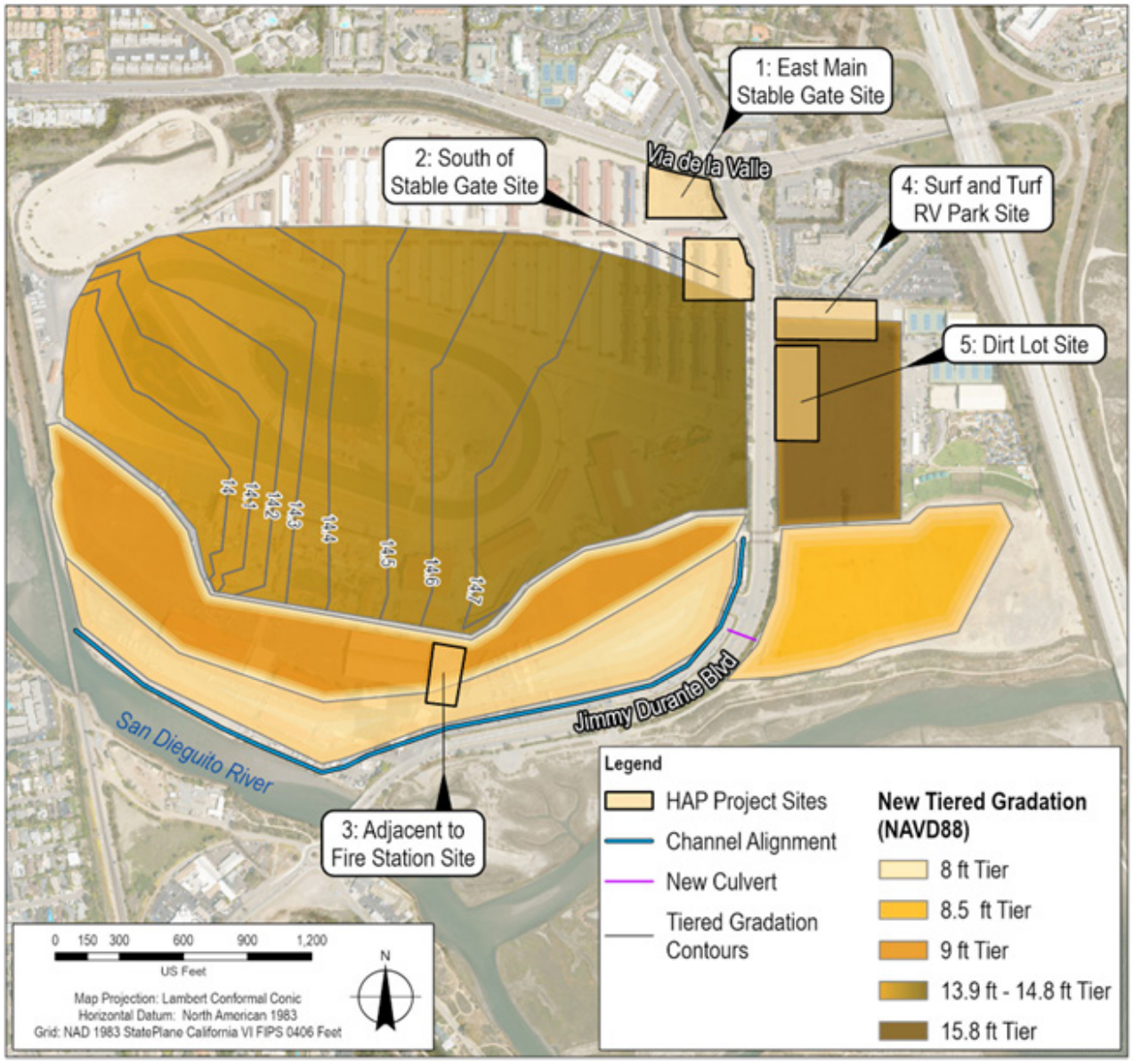


Figure 39. Strategy 3: Floodable Frontage Concept

Strategy 3 Post-Adaptation Modeling Results:

- Protects areas on the higher elevation pads (13.8 feet to 15.8 feet) from all modeled scenarios except the 100-year fluvial event
- Lower tiered pads would be more prone to flooding under all scenarios
- During the 50-year fluvial event, lower tiered pads would flood up to 7 feet deep, and the Del Mar Golf Center driving range would flood up to 8.4 feet deep
- Most of the Fairgrounds property would flood during the 100-year fluvial event

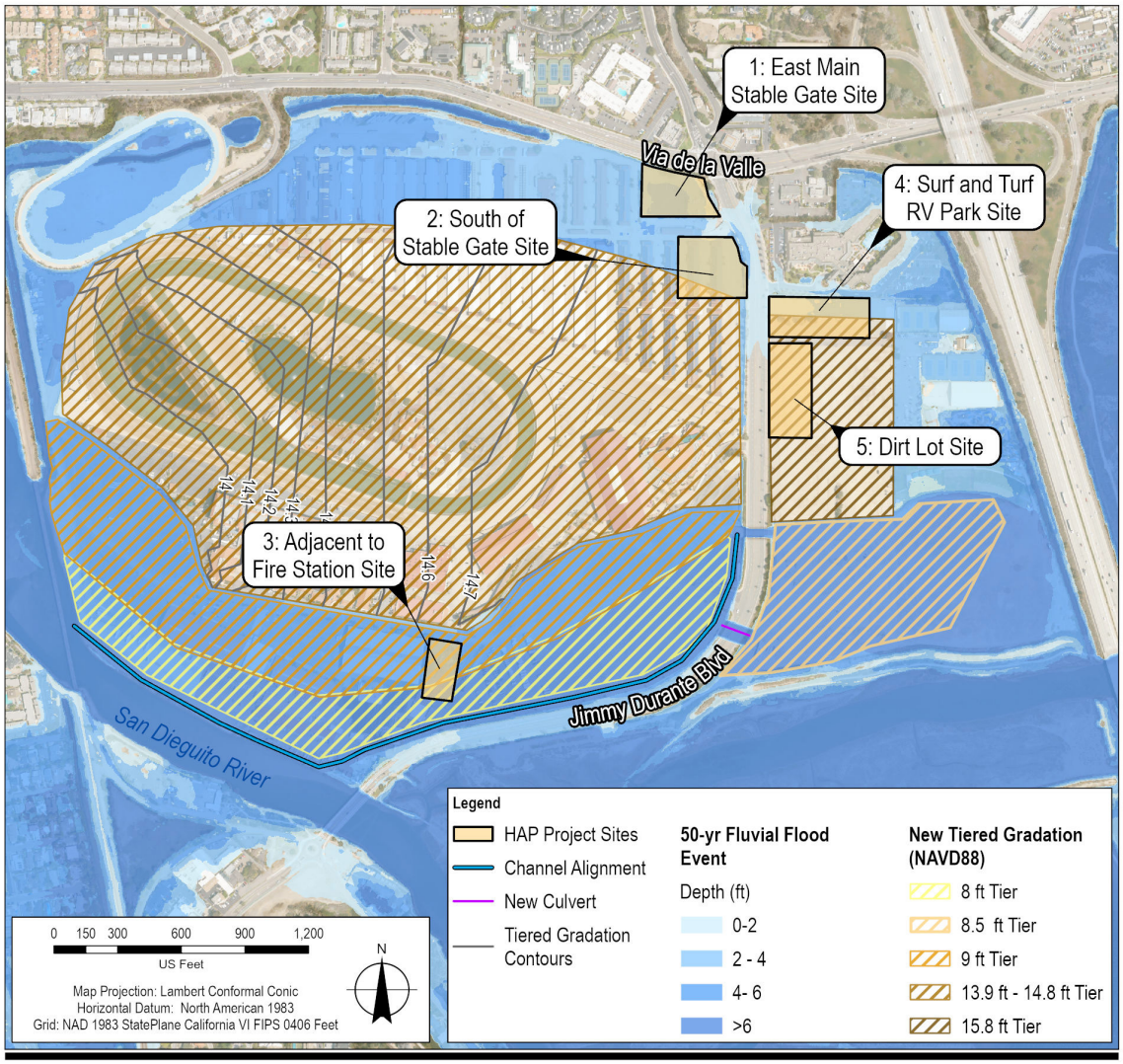


Figure 40. Strategy 3: 50-Year Fluvial Event Flood Protection

Conclusion and Next Steps

This report includes an analysis of flood hazards across a range of scenarios for the Fairgrounds property and on the five potential housing sites, as well as concept level designs for three different adaptation strategies to respond to flood hazards. While the flood risks and potential adaptation strategies presented in this report are based on the best available science and current information, there is always uncertainty in future climate and SLR conditions.

Vulnerability Ranking

The results of the flooding modeling suggest that SLR and flood vulnerabilities at the five housing sites would be ranked as follows (from least to most vulnerable):

- Site 5: Dirt Lot Site
- Site 4: Surf and Turf RV Park Site
- Site 2: South of Stable Gate Site
- Site 1: East Main Stable Gate Site
- Site 3: Adjacent to Fire Station Site

Adaptation Strategies

Three high-level conceptual adaptation strategies were developed to represent a range of possible actions to address flood risks. These strategies are presented in order of increasing levels of impact on the District's land uses:

- **Strategy 1:** Targeted Ecotone Features
- **Strategy 2:** Perimeter Berm Protection
- **Strategy 3:** Site-Wide Floodable Frontage

Use of Vulnerability and Adaptation Strategy Information

The District will use the information in this report to do the following:

- Develop the property-wide site plan that reimagines land uses and operations across the Fairgrounds property (Fairgrounds 2050 Master Site Plan).

- Help the District's Board of Directors select a housing site that minimizes flood risk and responds to other site constraints.
- Consider future adaptation strategies that minimize the effects of SLR and flooding at the Fairgrounds' critical facilities.

The City of Del Mar will use the information in this report to do the following:

- Select a housing site that minimizes flood risk and responds to other site constraints (e.g., water, sewer, and transportation infrastructure).
- Plan for housing developments on the Fairgrounds property that will help the City of Del Mar meet their Regional Housing Needs Assessment.

Photo by GHD

DEL MAR
Fairgrounds
HOME OF THE SAN DIEGO COUNTY FAIR

CITY OF DEL MAR
CALIFORNIA

Sea Level Rise Vulnerability Assessment

22nd District Agricultural Association

Harris & Associates, Inc

5 March 2026

→ The Power of Commitment

Executive summary

The 22nd District Agricultural Association property (District's Property), colloquially known as the Del Mar Fairgrounds or Racetrack, is pursuing a Sea Level Rise (SLR) Vulnerability Assessment to inform future planning at the District's Property, including the District's Master Plan and potential opportunities for affordable housing development. The District has a history of flooding and is presently located within a FEMA Special Flood Hazard Area (SFHA), characterized as being vulnerable to 100-year flood event. A site-wide SLR vulnerability assessment was conducted to identify the primary drivers and pathways of flooding and how flooding will change due to SLR.

The assessment included the creation of a GIS catalogue of District Property assets and the development of a 2D hydraulic model to understand hazards and flood pathways under a suite of scenarios, including SLR projections. The District's Property was found to not be at risk from flooding during extreme tidal events until the 2100 SLR projection. The primary flood hazard comes from riverine (fluvial) overtopping of the San Dieguito River during the 50-year and 100-year events. Additionally, SLR is expected to increase the flood extents and depths associated with the 10-year fluvial event. The assessment indicated that the five potential affordable housing sites exhibited a range of exposure to flooding, with sites located closest to the San Dieguito River being at greater risk.

There are several adaptation strategies that can be pursued at the District's Property to promote resilience and protect existing and future developments. Three high-level concepts are outlined to represent a spectrum of possible actions that can provide guidance for discussions on what potential strategies can be refined into projects to be pursued. The strategies evaluated range from addressing more frequent extreme events with minimal footprints, to significant, site-wide terrain modifications to protect against more rare events to illustrate the breadth of approaches to achieve varying levels of protection and long-term resilience.

Planning adaptation strategies and developments in a SFHA must consider and adhere to relevant federal, state, and city regulations. While the concepts were developed with these regulations in mind, further investigations will be needed to assess their adherence with these regulations. Additionally, developments may also be subject to building and California Drainage Law regulations. Ultimately, adaptation should be considered an ongoing process and identifying a preferred strategy to support existing and future resilience of the site will require further discussions and investigations dependent on the future plans for the District Property.

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1. Introduction

The 22nd District Agricultural Association property (District's Property), colloquially known as the Del Mar Fairgrounds or Racetrack, is located on the north bank of the San Dieguito River (River) in Del Mar, California. The District's Property is vulnerable to flooding originating from the River, which is tidally influenced. Harris & Associates and the District are pursuing a Sea Level Rise (SLR) Vulnerability Assessment to inform future planning at the District's Property, including the District's Master Plan upgrades and potential opportunities for affordable housing development. The District has entered into an Exclusive Negotiations Rights Agreement with the City of Del Mar (City) to evaluate the feasibility of affordable housing on the District's Property. The City's initial affordable housing feasibility studies were completed in 2022 which identified and provided conceptual designs for two sites within the District's Property. However, supplemental environmental assessment work is necessary to support further Pre-Development Studies/Due Diligence that was included as part of the City's Cycle 2 Housing Acceleration Program (HAP) Grant it received from San Diego Association of Governments (SANDAG) in 2024.

GHD has been retained by Harris & Associates to complete hydraulic modeling and a SLR vulnerability assessment. The assessment is intended to support the City's HAP Grant by evaluating potential risks to the District's Property and to inform the conceptual redevelopment designs and potential housing development sites. Hydraulic modeling of the existing conditions was completed to assess potential onsite flooding from a range of hazards including tidal events, SLR scenarios, fluvial events within the River, and onsite rainfall events. This SLR Vulnerability Assessment combines the hydraulic modeling results (Appendix C) with additional SLR hazard analyses to provide a comprehensive overview of potential vulnerabilities for the District's Property, including the sites identified for proposed affordable housing development (Appendix A). The assessment also evaluated three conceptual adaptation strategies, which were modeled to estimate their effectiveness in mitigating flooding impacts across the District's Property (Appendix B).

1.1 Report Purpose

The purpose of the SLR Vulnerability Assessment is to describe potential risks to the District's Property, including the possible affordable housing sites, from SLR-related hazards under various flooding and inundation scenarios. The assessment summarizes the events that have a higher probability of occurring in the next 25 to 50 years, including flood pathways and potential impacts to existing assets. These findings were subsequently utilized to identify a suite of conceptual adaptation strategies that may be included in the District's Master Plan process to inform potential development actions and land use changes.

1.2 Study Area

The study area for this SLR Vulnerability Assessment is the District's Fairground property located north of the River, approximately 1,000 ft upstream of its outlet to the Pacific Ocean (Figure 1). The area is approximately 298 acres. The southern boundary of the property follows the River. To the north and west of the site is Stevens Creek (Creek), an urbanized drainage channel.

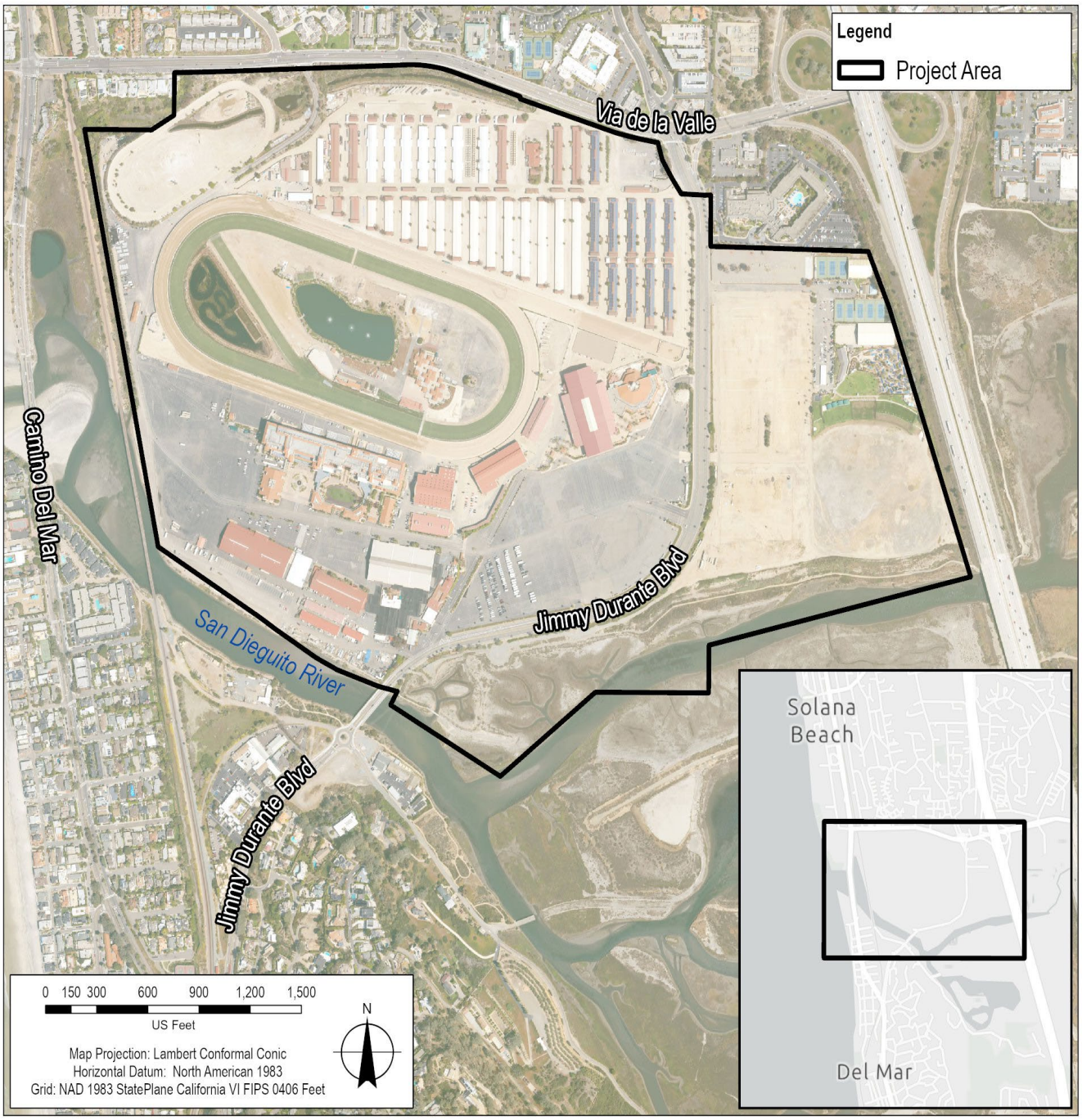

Figure 1. Study Area

2. Existing Conditions

The District's Property is located on the downstream end of the River along the northern bank within the jurisdictions of both the City of Del Mar and City of San Diego. This property is located within the FEMA 100-year floodplain, downstream of the Hodges Reservoir and about 1,400 ft east of the San Dieguito Inlet. The flow of water in the River became regulated after the construction of the Lake Hodges Dam in 1919, thereby reducing the unmanaged drainage area in the lower River. However, this low-lying area is expected to be at a higher risk to flooding due to the significant reduction in the dam's flood control capacity from sediment accumulation; the dam's existing condition, repair timeline, and releases of water as a dam safety measure; and the anticipated increase in significant precipitation and SLR.

For the purposes of this assessment, the District's Property is categorized into the following six planning areas based on similar site conditions, exposure to flooding hazards, existing drainage basins, and land use considerations (Figure 2). The existing conditions for each of these planning areas, including a catalogue of District property assets (Figure 3) and relevant drainage infrastructure (Figure 4), are briefly described below. Additional details on the District's Property's drainage infrastructure are available in Appendix C.

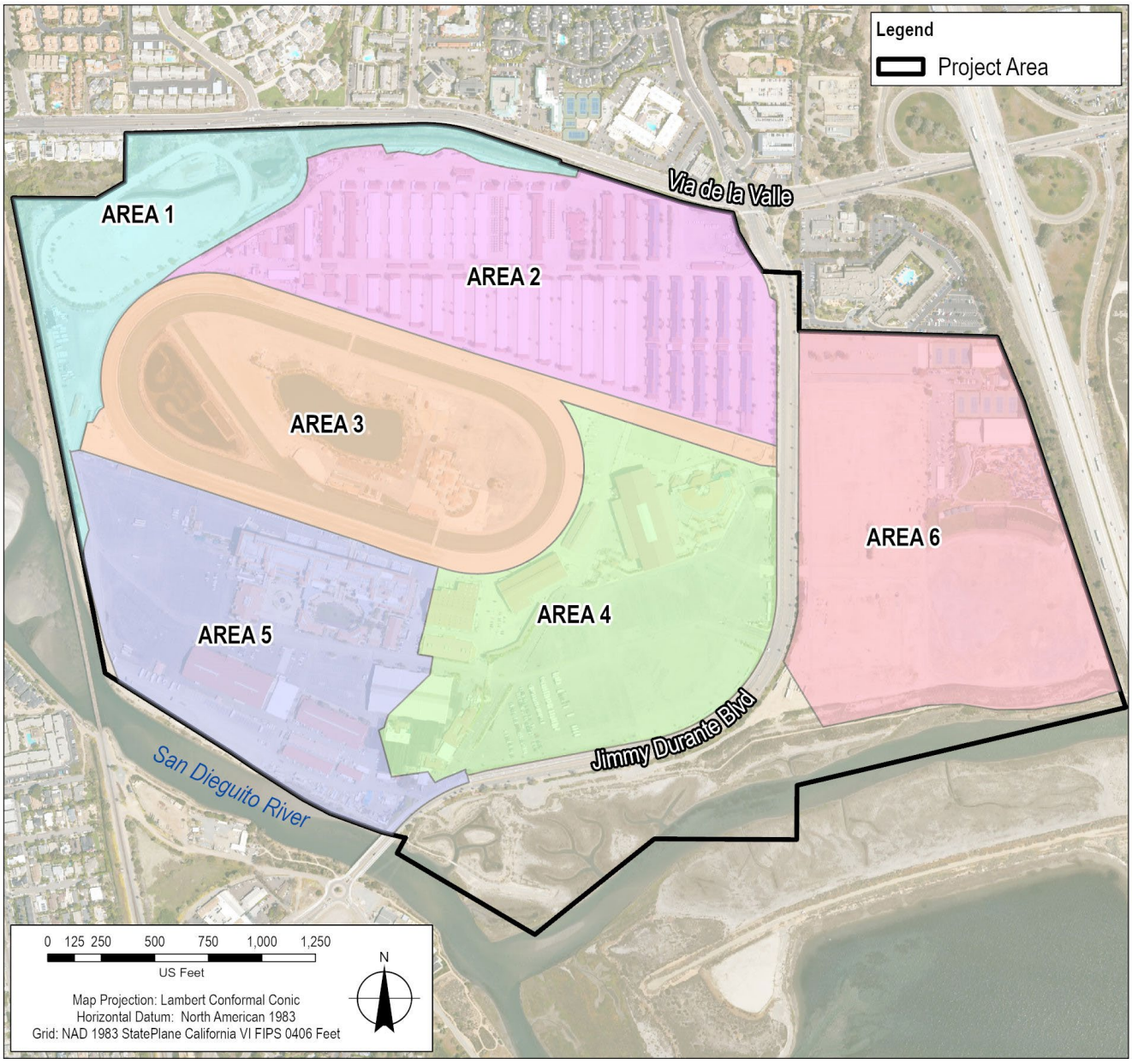

Figure 2. SLR Planning Areas

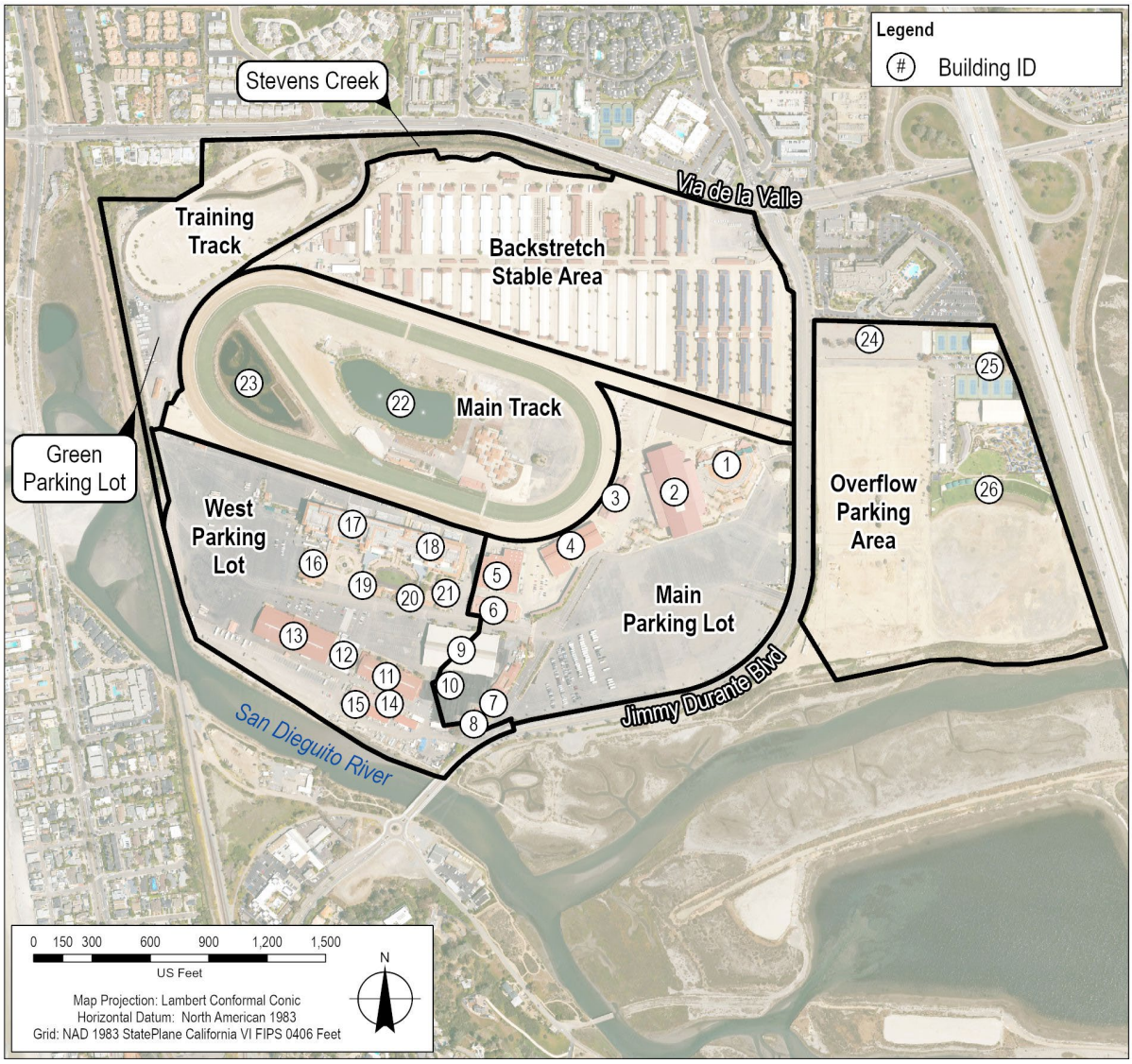

Figure 3. Relevant District's Property Assets

Table 1. Relevant District's Property Assets

ID	Name	ID	Name
1	The Sound / Surfside Center	14	Warehouse (1)
2	Del Mar Arena	15	Warehouse (2)
3	Livestock East	16	Mission Tower
4	Livestock West	17	Grandstand
5	Wyland Center	18	Club House
6	Activity Center	19	22nd DAA Administration Office
7	22nd DAA Operations Office	20	Del Mar Thoroughbred Club Administration
8	Del Mar Fire Station	21	Caballo Hall
9	O'Brien Hall	22	Receiving Pond
10	Annex Office	23	Infield Wetland
11	Bing Crosby Hall	24	Surf and Turf RV Parks
12	Seaside Pavilion	25	Surf and Turf Tennis Courts
13	Exhibit Hall	26	Del Mar Golf Center

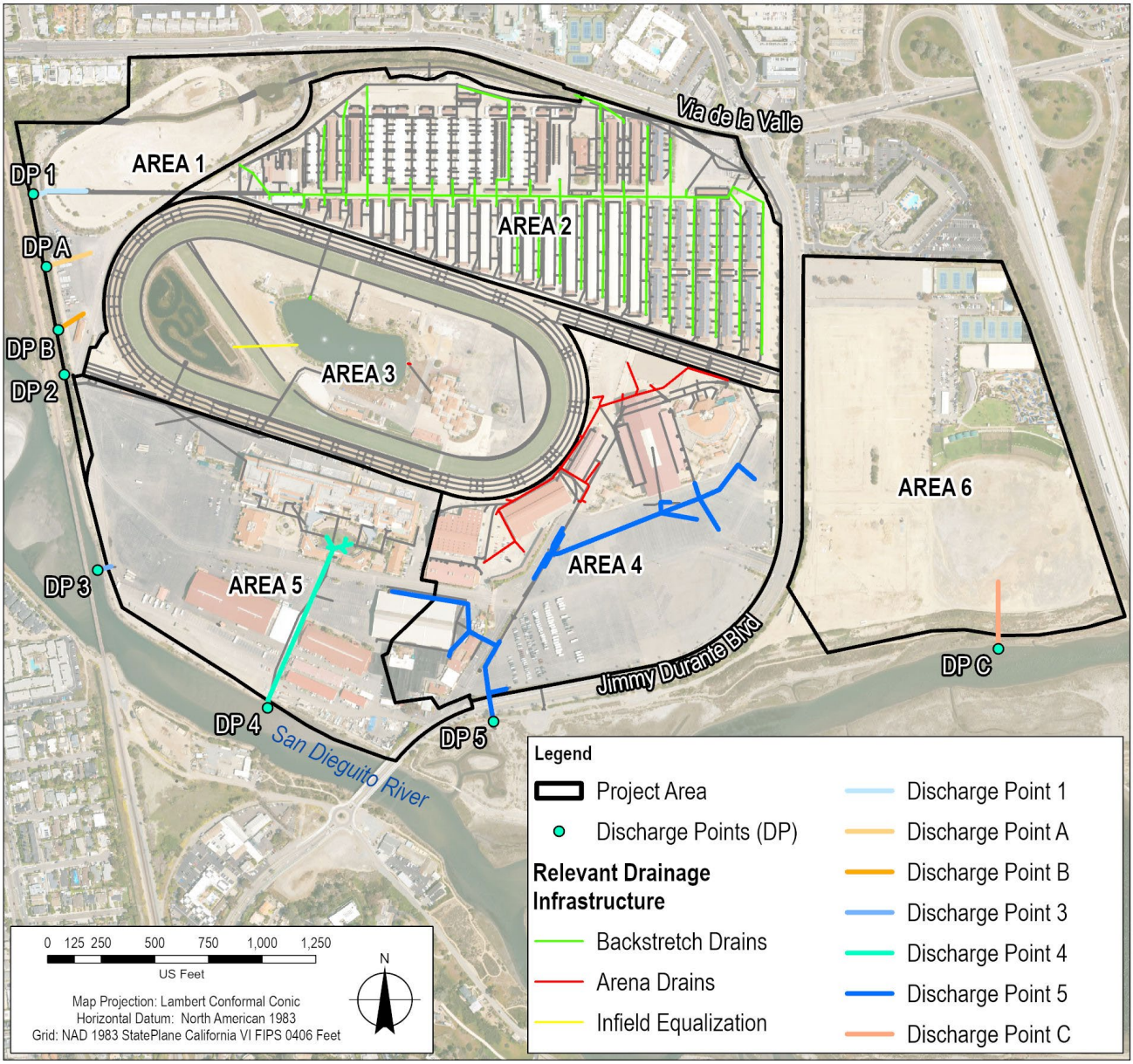

Figure 4. Primary Drainage Infrastructure and Storm Drain Outfalls on the District's Property

Area 1 in the northwest corner of the District's Property contains Stevens Creek. Existing drainage infrastructure conveys onsite runoff to this urbanized drainage channel that leads through the Training Track and alongside the Green Parking Lot out to the River outlet. The Training Track lies on a dirt surface that typically contains temporary equipment for the District's operations. This track also contains a pump for discharge at Discharge Point (DP) 1 into the Creek. The southeasternmost side of Area 1 contains the asphalt-paved Green Parking Lot ranging from approximately 7 ft to 11 ft (NAVD88). There are two storm drain outfalls (DP A and DP B) leading from this parking area out to the Creek with no gate valves on the outboard side.

Area 2 contains the backstretch stable area with a dirt surface and is intended to temporarily shelter animals brought into the District's Property. This is a relatively flat area, generally ranging in elevation from 9 ft to 11 ft (NAVD88). A berm with a crest elevation of about 15 ft to 17 ft (NAVD88) lies along the north side of the stables along the Creek to reduce overtopping of the Creek onto the District's Property. However, the Creek channel receives outflow from double box culverts north of the stables. The stable buildings themselves contain roof drains that convey runoff while grates along the floor allow for surface drainage that flow to the sewer in summer or dry seasons, and flow to the infield ponds in the rainy season. The primary access points to these stables are a gated parking lot to the northeast from Jimmy Durante Boulevard and a gated paved road to the northwest from Via De La Valle.

Area 3 contains the main racing track, primarily consisting of a dirt and grass surface. In the center of the track lies an asphalt lot with the Pavilion facility on the east side at an elevation of about 8 ft to 9 ft (NAVD88), that can be accessed from an underground infield tunnel. Additionally, a receiving pond within the main track receives runoff from the backstretch Stable Area, Main Track, Arena Area, and a section of the West Parking Lot. This runoff is then transferred to the infield wetlands pond that connects to a treatment plant. Following treatment, the water is either discharged through DP 2 or recirculated back to the ponds.

Area 4 consists of the Main Parking Lot and Arena Area, which includes the Surfside Center (The Sound), Arena, Barn W, Expo Center, Wyland Center, Activity Center Facility, O'Brien Hall, and District Operations Office. These facilities host a variety of activities, such as providing a music venue, staging animals for events, or displaying exhibits. They all primarily lie upon an asphalt or other hard surface, ranging in elevation from 8 ft to 13 ft (NAVD88). Roof drains from the structures and runoff from the Main Parking Lot and O'Brien Hall primarily lead to DP 5 and discharge out to the San Dieguito Lagoon. Runoff from other areas, such as the Arena, Barn W, and warm up rings, that host large numbers of animals are directed toward the receiving pond within the main track inside Area 3.

Area 5 contains additional facilities including a City Fire Station, Bing Crosby Hall, Exhibit Hall, two warehouses, Mission Tower, Grandstand, the District Administration Office, Club House, and Caballo Hall. These structures lie entirely upon an asphalt surface that ranges in elevations from about 9 ft to 12 ft (NAVD88). Area 5 also includes the West Parking Lot, which lies slightly lower at approximately 7 ft to 8 ft (NAVD88). The parking lot surface runoff discharges through DP 3 to the River. The southernmost edge of the District's Property directly adjacent to the River lies at approximately 7 ft to 8 ft (NAVD88). Drainage from the Grandstands and Club House passes underneath this area and discharges through DP 4 along the River.

Area 6 is distinctly separated from the main District's Property by Jimmy Durante Boulevard with only an underpass providing a direct connection between the Main Parking Lot and dirt overflow parking area. The overflow parking area ranges in elevations from 9 ft to 14 ft (NAVD88). Additional facilities include the Surf and Turf RV Park and Tennis Courts, as well as the Del Mar Golf Center. These facilities' surface elevations range from approximately 11 ft to 15 ft (NAVD88). However, the Del Mar Golf Center driving range itself lies lower than the surrounding areas at an elevation of about 7 ft to 9 ft (NAVD88). A single inlet and pipe drain from this golf area out to the River through DP C.

2.1 Existing FEMA Flood Zones and Regulations

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) are used to designate hazard zones to support the National Flood Insurance Program (NFIP) and to guide flood mitigation efforts. FEMA maps define base flood elevations (BFE), flood zones, and the floodway/floodplain throughout the City of Del Mar, including the District's Property. Special Flood Hazard Areas (SFHA) are defined as areas that will be inundated by a 100-year flood event (i.e., an event that has 1% chance of occurring in a given year). The 1% annual chance of flooding corresponds to a 26% chance of flooding over 30 years.

FEMA flood hazard maps for the District Property are shown in Figure 5, highlighting that nearly the entire area is located within SFHA Zone AE (exposed to 1% annual fluvial flood event), with BFE ranging from 14 to 20.6 feet. Proposed developments within SFHA floodplain zones are subject to additional regulatory restrictions and are allowed such that it does not raise water surface elevations by more than 1.0 ft. Additionally, the southern extent of District Property is located within a FEMA regulatory floodway. A FEMA regulatory floodway indicates the extent of the river and adjacent areas that are needed to discharge the base flood without increasing the water surface elevations within the river by more than 1 ft. Proposed developments within regulatory floodways must demonstrate that they will not increase water surface elevations within the River, referred to as a no-rise certification (see CFR § 60.3 (d)(3)). Uses in the floodway are generally limited to open spaces, parks, and trails to minimize impediments to the flow of floodwaters.

City properties located within the 100-year floodplain (SFHA zones) are subject to regulations outlined in the Del Mar Municipal Code (DMMC) and certified Local Coastal Program implementing regulations (DMMC Chapter 30.56 – Floodplain Overlay Zone) as well as state and federal regulations. This includes permit requirements and development regulations to help avoid or reduce projected flood impacts. Floodplain Development Permits are required for new construction or substantial improvement to an existing structure in the floodplain. The permit review and decision processes involves analysis of the extent to which a watercourse will be altered as a result of

the proposed development, demonstration that hazards will not increase, and demonstration that residential structures in AE Zones will have the lowest floor elevated at or above the BFE. Additionally, California Drainage Law principles should also be considered for new developments, which are not specific to floodplain or floodway zones. Drainage law principles prevent significant flood impacts to adjacent landowners.

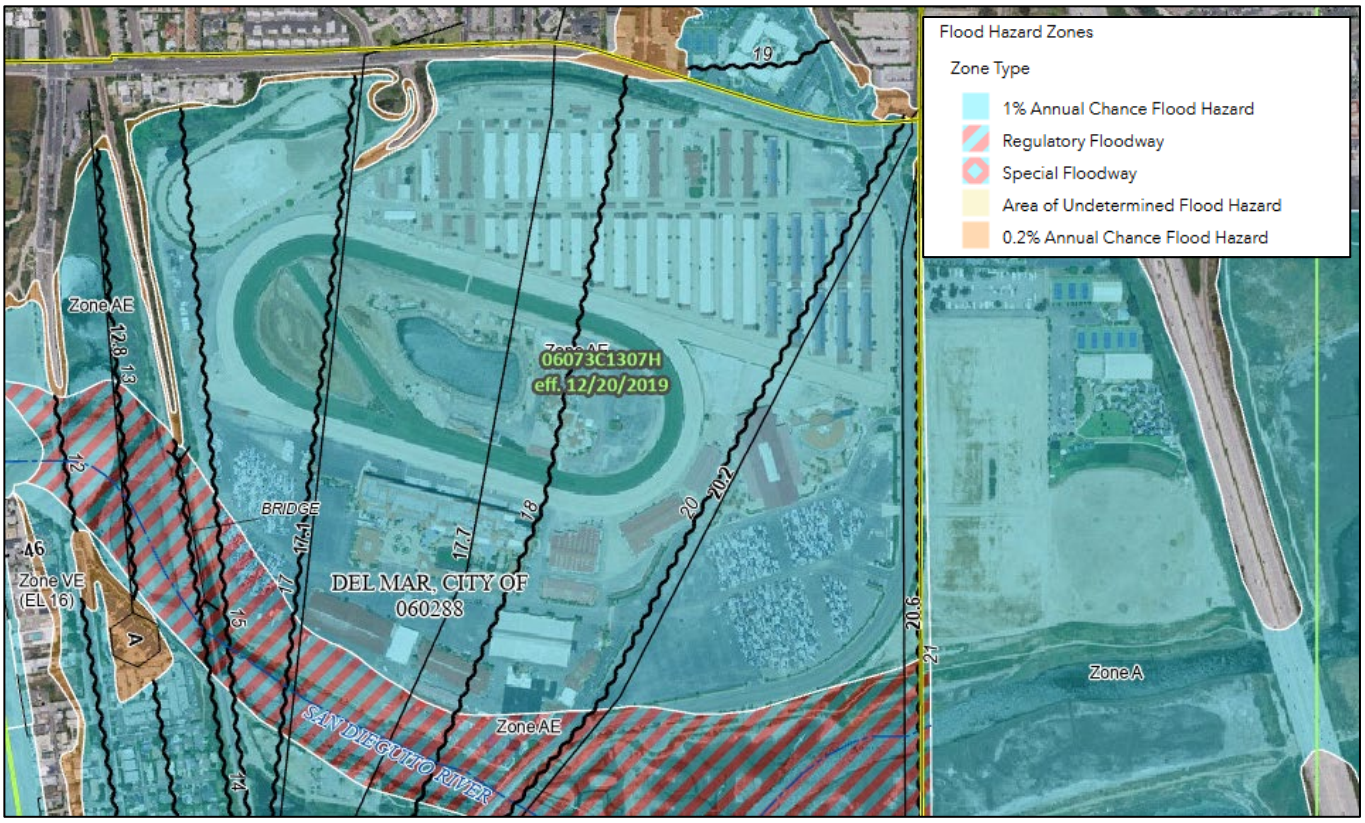

Figure 5. FEMA flood hazard zones, floodplain, and floodway within the District's Property

2.2 Anticipated Improvements

Two major modifications to the District's Property are expected to be implemented in the near term. One of these is SANDAG's and the North Coast Transit District's (NCTD's) San Dieguito Double Track and Special Events Platform Project, which is intended to replace the existing San Dieguito Rail Bridge, originally built in 1916 (SANDAG 2024). The existing bridge is nearing the end of its service life and requires frequent, costly maintenance. To meet federal flood safety requirements, the new bridge will be elevated above the 100-year fluvial flood level, reducing risks from severe storms, high river flows, and SLR. As part of this project, a new special events platform will be constructed on the west end of the District's Property to provide improved transit options for special event attendees and help reduce traffic congestion. Both project elements will be located entirely within the NCTD-owned railroad right-of-way. Construction of this project is expected to begin in 2027 and be completed by 2031.

Additionally, the City and San Dieguito River Park Joint Powers Authority (JPA) are pursuing a project that includes the development of habitat, trails, and living levees along the River as an adaptation measure to reduce flood risk (Moffatt & Nichol 2024, GHD 2026b), consistent with the City's SLR Adaptation Plan (2018). Along the south end of the District's Property, between the San Dieguito Rail Bridge and Jimmy Durante Boulevard Bridge, a 100-ft-wide easement along the River is designated for nature-based improvements to provide public access and habitat enhancement. As part of this effort, a design concept was prepared that utilizes the entire 100-ft easement and occupies a portion of the existing District's Property (Figure 6) (GHD 2026b). In this location, an approximately 50-ft-wide berm would be constructed along the back edge of the easement with a crest elevation of 10 ft (NAVD88). In coordination with State Parks grant agreements executed respectively by the San Dieguito River Park JPA and the City, a new trail would be installed on top of this elevated berm to offer additional access along the River shoreline. The berm will have a transitional slope that extends approximately 25 ft toward the River, then changes to a very gentle foreshore slope until reaching the shoreline toe along the River at 5.13 ft (NAVD88).

Another component of this Project is the implementation of a floodwall with a crest elevation of 14 ft (NAVD88) along the City's existing Public Works Facility and parking lot to provide protection along the west side of the southeast riverbank (Figure 7). Directly in front of the trail, a gradual transitional slope with a varying slope extended downslope for about 30 ft until it reaches the foreshore along the River at about 5.13 ft (NAVD88) with an enhanced revetment. The east side of the south riverbank would be excavated to cut a front transitional slope across a 40 ft wide area from about 8 ft to 5.13 ft (NAVD88). South of the existing trail, an approximately 40 ft wide berm would be established with a crest elevation of 14 ft (NAVD88). The crest of this berm would be about 10 ft wide to support an improved public access trail.

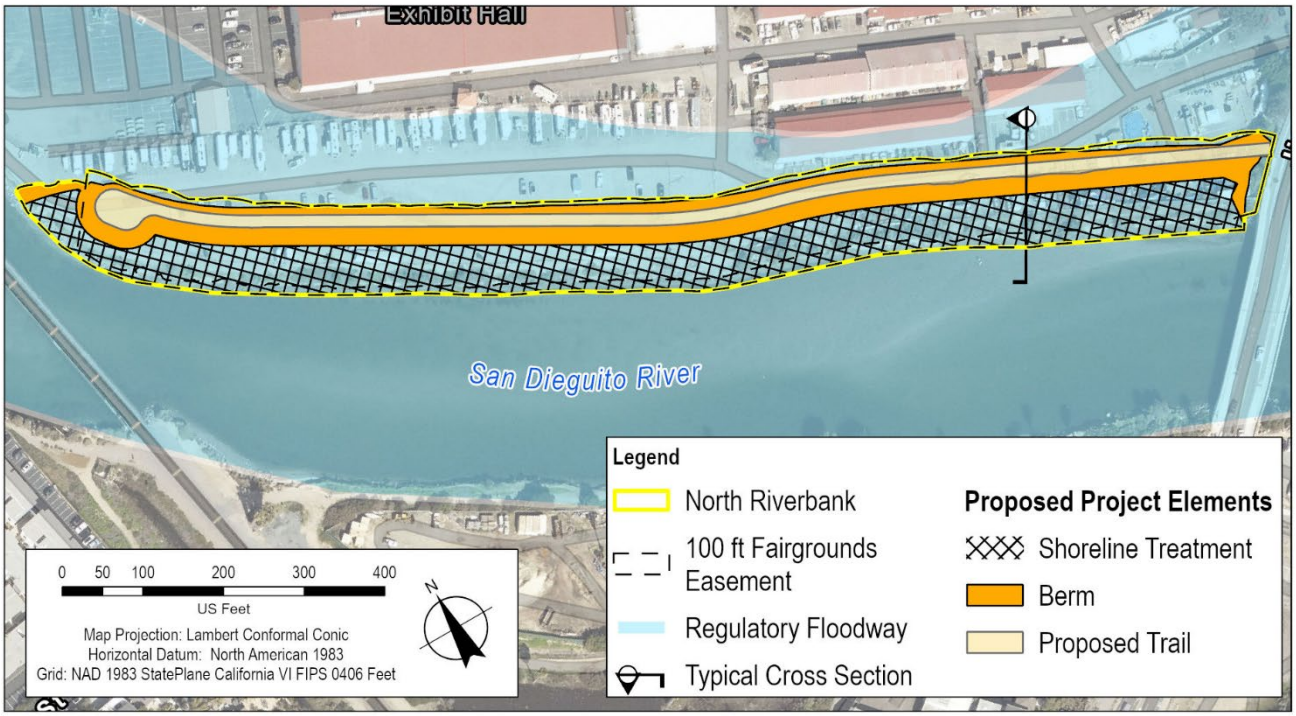

Figure 6. Plan View of North Riverbank Concept Design (GHD 2026b)

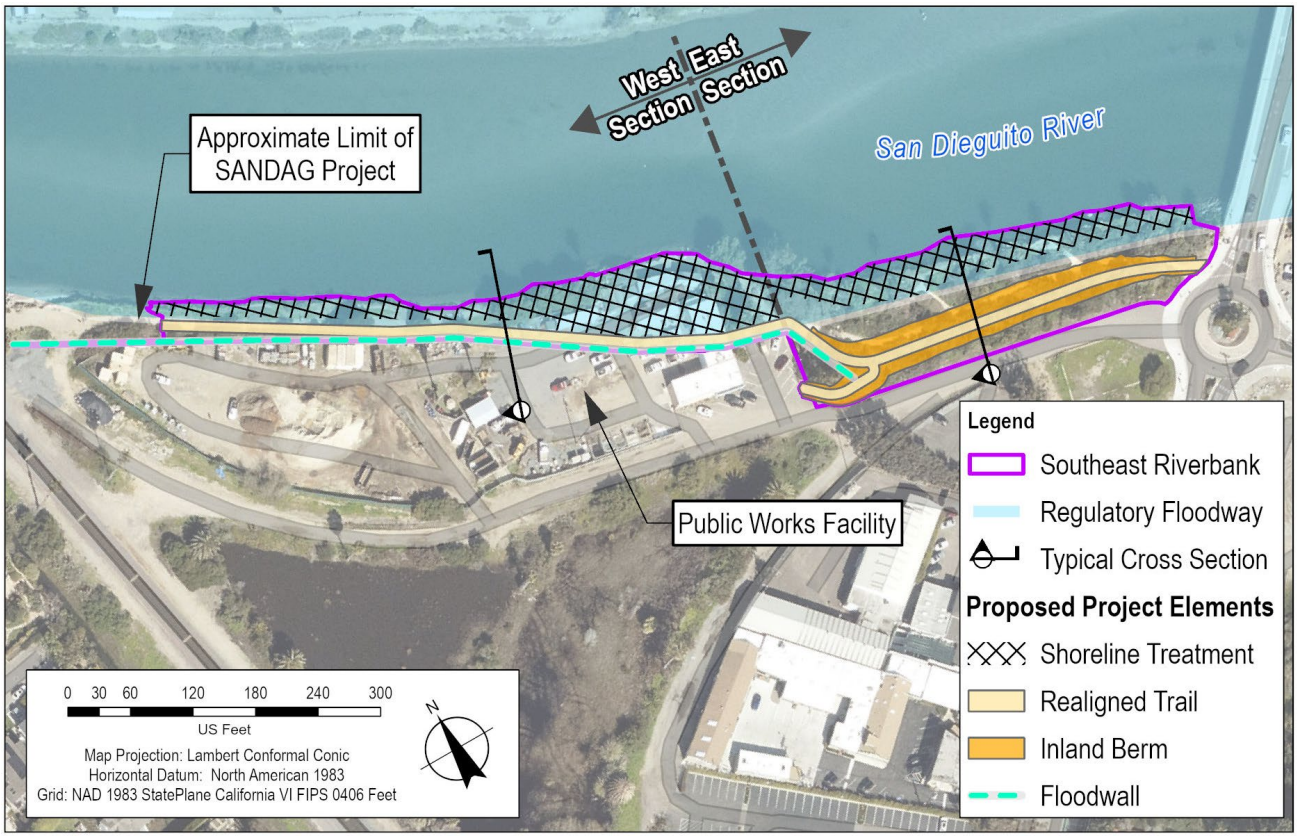

Figure 7. Plan View of Southeast Riverbank Concept Design (GHD 2026b)

3. Flood Hazards

Heavy precipitation events and rising sea levels are the primary drivers of flooding risks to the District's Property. The following describes the relevant data used in this assessment to evaluate the probability and timing of future flooding on the property, including flood pathways, geographic extent, and water depth. Sixteen scenarios were identified and these were evaluated using a two-dimensional (2D) hydrologic/hydraulic model created using the US Army Corps of Engineers (USACE) HEC RAS v6.7 beta 5 software. More details on the model and the results can be found in Appendix C: Hydrology and Hydraulics Report (GHD 2026a).

3.1 Sea Level Rise

The Ocean Protection Council's (OPC) recently adopted California Sea Level Rise Guidance: 2024 Science and Policy Update as the "best available science" on SLR projections in California. These projections are recommended by the California Coastal Commission (CCC) for planning, permitting, and other coastal management decisions (CCC 2024).

The 2024 OPC SLR guidance provides SLR projections for 14 active tide gauges along the coast of California. The new 2024 OPC SLR guidance uses five scenarios (Low, Intermediate-Low, Intermediate, Intermediate-High, and High) that span the plausible range of future SLR in consideration of emissions and global development futures and eliminate the need to select single emission futures for sea level planning (OPC 2024). This is a new framework that differs from the previous OPC (2018) guidance that provided probabilistic projections corresponding with risk aversion scenarios.

It is important to consider risk tolerance, risk aversion, and design life when selecting SLR scenarios for evaluating the potential hazards to property assets and services. The OPC (2024) guidance recommends a precautionary approach for evaluating risks to infrastructure, when feasible, through an evaluation of the Intermediate,

Intermediate-High, and High scenarios to inform appropriate SLR planning and project decisions. These scenarios are defined below:

> **Intermediate Scenario:** The Intermediate scenario should be included in technical analyses for development with low risk aversion, i.e., development that would have limited consequences or a higher ability to adapt, such as some ancillary development or public access amenities. This scenario represents a reasonable estimate for the upper bound of the most likely SLR in 2100 (OPC 2024).
>
> **Intermediate-High Scenario:** The Intermediate-High scenario should be included in technical analyses for development with medium-high risk aversion, i.e., development that would experience greater consequences and/or have a lower ability to adapt, such as most residential and commercial structures. This scenario is representative of a world where rapid ice sheet loss processes contribute to SLR, associated with intermediate to high future emissions, and high warming (OPC 2024). This corresponds to scientific estimates for plausible high-end SLR projections by 2100.
>
> **High Scenario:** The High scenario should be included in technical analyses for development with extreme risk aversion, i.e., development with little to no adaptive capacity that would be irreversibly destroyed or significantly costly to repair, and/or would have considerable public health, public safety, or environmental impacts should that level of SLR occur, such as most critical infrastructure. This scenario is representative of rapid ice sheet loss processes due to high future emissions and high warming and should be utilized with careful caution and consideration (OPC 2024). The large uncertainties and ambiguity associated with this scenario reflect a worst case toward 2100 and beyond. The likelihood of this occurrence is not possible to state, but it is based on a combination of high emissions and low confidence processes.

The Intermediate-High SLR planning scenario was selected for this assessment of SLR vulnerabilities to the District's Property. This scenario was chosen because the property contains commercial structures that have a lower ability to adapt. The SLR projections associated with the time horizons of 2050, 2070, and 2100 were used to evaluate potential hazards as presented in Table 2 below.

Table 2. Intermediate-High Sea Level Rise Projections for La Jolla (OPC 2024)

Time Horizon	SLR (in feet)
2050	**1.0**
2070	**2.3**
2100	**4.8**

These scenarios are consistent with the City of Del Mar's 2018 SLR Vulnerability Assessment that evaluated exposure of both the City and the District's Property to SLR, coastal flooding, erosion, and River flooding. The 2018 study incorporated projected SLR and climate-driven changes in precipitation and found that surrounding roads and bridges—including Camino Del Mar and Jimmy Durante Boulevard—would face significant flooding with 5.7 ft of SLR. The assessment also identified the Fire Station on the District's Property as potentially vulnerable to flooding impacts with 1.6 ft of SLR.

3.2 Coastal Flooding

Coastal flood hazards can be caused by elevated ocean water levels or large waves, or a combination of the two. While flooding due to large waves is a risk for the shoreline areas adjacent to the coast, large wave events are considered a negligible driver of flooding at the District's Property. Sea and swell waves typically break and dissipate at the River mouth and would not propagate inland beyond the railroad bridge. Historical flood events at the District's Property were primarily due to overtopping of the River, while there was no evidence found that flooding occurred during extreme wave events that impacted the region. Therefore, the primary concern of coastal flooding for the District's Property is from high tides and SLR interacting with fluvial or pluvial hazards.

Local Tides

The tides in southern California are mixed semi-diurnal, meaning there are two unequal low and high tides each lunar day, which is approximately 25 hours. The National Oceanic and Atmospheric Administration (NOAA)

operates tide stations globally and the nearest station to the Project site is at the end of the Scripps Pier in La Jolla, approximately 7.5 miles south of the Project site. This station has a data repository as far back as 1924 and is representative of high-water levels downstream of the Project site. The tidal datums for the La Jolla station relative to NAVD88 are shown in Table 3.

Table 3. Tidal Datums for La Jolla (NOAA Station 9410230)

Datum	Elevation (ft, NAVD88)
Highest Observed Tide (11/25/2015)	7.62
Highest Astronomical Tide (HAT)	7.01
Mean Higher High Water (MHHW)	5.13
Mean High Water (MHW)	4.41
Mean Sea Level (MSL)	2.54
NAVD88	0.00
Mean Low Water (MLW)	0.71
Mean Lower Low Water (MLLW)	-0.19
Lowest Astronomical Tide (LAT)	-2.20
Lowest Observed Tide (12/17/1933)	-3.06

To determine the potential impacts of tidal events on the District's Property, the Mean Higher High Water (MHHW) elevation from the La Jolla station was used as a downstream boundary condition for evaluating various storm events. Additional tidal scenarios to project SLR were developed by adding the selected SLR projections to the MHHW condition.

Extreme Water Levels

Sea level anomalies may occur that increase water levels above predicted tides. These anomalies can occur during low atmospheric pressure, abnormally warm water temperatures, and meteorological conditions that can lead to storm surge (piling up of water along a coastline). Extreme water levels are provided by NOAA for annual occurrence probabilities of 1%, 10%, 50%, and 99% for tidal stations with adequate data records. These probabilities correspond to an annual return period of 100 years, 10 years, 2 years, and 1 year, respectively. The extreme water levels at the La Jolla station are shown in Table 4 and are representative of extreme still water levels (ESWLs) for the Project site.

Table 4. Extreme Still Water Levels for La Jolla (NOAA Station 9410230)

Annual Exceedance Probability	Return Period (years)	Elevation (ft, NAVD88)
1%	100	7.64
10%	10	7.34
50%	2	7.04
99%	1	6.64

Coastal Flooding Scenarios

The coastal flooding scenarios are shown below in Table 5, including a 10-year Extreme Water Level and MHHW with three SLR scenarios.

Table 5. HEC-RAS 2D Model Tidal Scenarios (GHD 2026a)

	Scenario No.	Fluvial Event (San Dieguito River)	On-site Rainfall	Tidal Scenario (NAVD88)
Tidal Events	1	N/A	N/A	10-year Extreme Water Level (7.34 ft)
	2	N/A	N/A	2050 Intermediate-High SLR + MHHW (6.13 ft)
	3	N/A	N/A	2070 Intermediate-High SLR + MHHW (7.43 ft)
	4	N/A	N/A	2100 Intermediate-High SLR + MHHW (9.93 ft)

Although this assessment did not evaluate such processes, it is noted that additional coastal dynamics may influence future flooding on the District's Property. Wave-driven sediment transport can cause sand to accumulate within the River mouth, reducing channel capacity or obstructing the inlet and thereby impeding outflow. Southern California Edison currently conducts periodic dredging to maintain tidal exchange; however, no formal requirements regarding allowable sediment elevations are presently established.

3.3 Fluvial Hazards

To gain an understanding of projected flood hazards originating from the River overtopping into the District's Property, several fluvial scenarios were also evaluated using the 2D hydrologic/hydraulic model. These included the 10-year, 50-year, and 100-year storm events without SLR. The effects of three SLR scenarios on 10-year fluvial flooding were studied next. The 10-year fluvial event was selected for this analysis as the severity of flooding onsite during this event is likely to be more impacted by SLR than the larger events in which the site is expected to be flooded with the current MHHW as the downstream boundary.

Table 6 lists the model scenarios from this evaluation. Additional information detailing the methodology for the model development and the assumptions under this model can be found in Appendix C.

Table 6. HEC-RAS 2D Model Fluvial Scenarios (GHD 2026a)

	Scenario No.	Fluvial Event (San Dieguito River)	On-site Rainfall	Tidal Scenario (NAVD88)
Fluvial Events	5	10-year Storm Event	N/A	MHHW (5.13 ft)
	6	50-year Storm Event	N/A	MHHW (5.13 ft)
	7	100-year Storm Event	N/A	MHHW (5.13 ft)
Fluvial Events + Sea Level Rise	8	10-year Storm Event	N/A	2050 Intermediate-High SLR + MHHW (6.13 ft)
	9	10-year Storm Event	N/A	2070 Intermediate-High SLR + MHHW (7.43 ft)
	10	10-year Storm Event	N/A	2100 Intermediate-High SLR + MHHW (9.93 ft)

3.4 Pluvial-Fluvial Hazards

Onsite rainfall was also studied to understand its potential contribution to flooding on the District's Property. Historically, extreme precipitation events are known to have resulted in flooding damages to the District's Property. Table 7 describes these past events.

Table 7. Historic Flooding Events at the District's Property (City of Del Mar 2018)

Event	Precipitation	Result
Riverine Flood of 1978	0.55 in/hr rainfall peak at Ramona station on March 6, 1978.	Overtopping of Lake Hodges dam. Flooding of District's Property from the River.
Riverine Flood of 1980 (35-year return event for river flows)	0.9 in/hr rainfall peak on February 20, 1980. Max 6-hour rainfall was 0.45 in/hr corresponding to a 42-year rainfall event.	Overtopping of Lake Hodges Dam, Flooding of District's Property from the River.
Storm, Jan 21, 2010	0.37 in over 6 hours. 0.74 in over 24 hours.	Widespread precipitation flooding of the District's Property

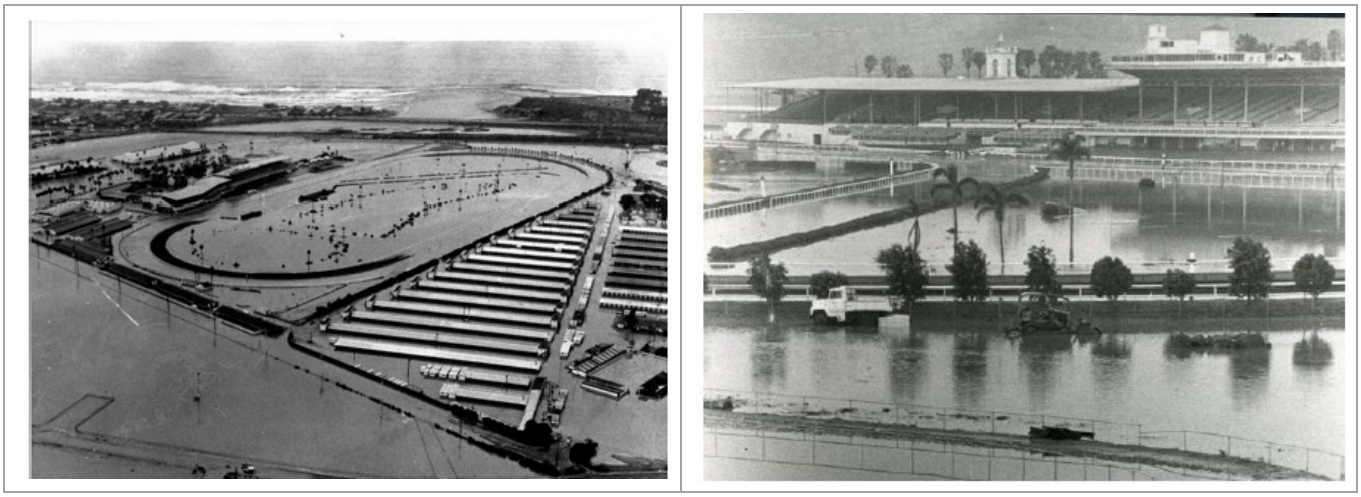

Figure 8. Riverine Flood of 1980 (City of Del Mar 2018)

Figure 9. January 2010 Storm Event (District)

For this study, 100-year and 10-year rainfall events onsite were evaluated without a fluvial event to determine the risks of onsite flooding from a local storm event. The 10-year rainfall event was then combined with a 10-year fluvial event. Finally, onsite rainfall with three SLR scenarios was studied. Table 8 lists the model scenarios from

this evaluation. Additional information detailing the methodology for the model development and the assumptions under this model can be found in Appendix C.

Table 8. HEC-RAS 2D Model Pluvial Scenarios (GHD 2026a)

	Scenario No.	Fluvial Event (San Dieguito River)	On-site Rainfall	Tidal Scenario (NAVD88)
Onsite Rainfall Events	11	N/A	10-year	MHHW (5.13 ft)
	12	N/A	100-year	MHHW (5.13 ft)
Fluvial + Onsite Rainfall	13	10-year Storm Event	10-year	MHHW (5.13 ft)
Onsite Rainfall + SLR	14	N/A	10-year	2050 Intermediate-High SLR + MHHW (6.13 ft)
	15	N/A	10-year	2070 Intermediate-High SLR + MHHW (7.43 ft)
	16	N/A	10-year	2100 Intermediate-High SLR + MHHW (9.93 ft)

3.5 Groundwater Flooding

If groundwater tables are shallow on the District's Property, rainfall or high tides may raise groundwater levels sufficiently for them to emerge at the surface and contribute to flooding. This assessment did not specifically evaluate groundwater-related flooding, with or without SLR. However, a 2016 groundwater study by Ninyo & Moore for the Del Mar Fairgrounds Backstretch Improvements Phase II project found groundwater depths ranging from 5 to 10 ft below ground surface. The study also identified tidal influence on groundwater, with the infield lakes exhibiting saline conditions. Additional surveys may be warranted to further evaluate groundwater flooding potential in other areas of the property.

4. Vulnerability Assessment

Modeling methods described in Section 3 were used to evaluate flooding and identify flood pathways on the District's Property in general, as well as the potential effects on the proposed affordable housing sites. The following section summarizes flood hazards and exposure that are predicted to occur on the District's Property across a range of scenarios, highlighting the most hazardous conditions. Appendix A provides a complete catalogue of flood maps for each of the scenarios modeled.

4.1 Vulnerabilities with no SLR

The following scenarios resulted in moderate to severe flood hazard exposure to the District's Property. Not shown is the 10-year extreme tidal scenario that resulted in minor flooding of the Green Parking Lot (Area 1) due to backflow through two storm drain outfalls in this area.

Scenario: 10-year fluvial event.

Risk: Flood depths of up to approximately 3.3 ft within the West Parking Lot and up to 2.5 ft along the southern boundary (Area 5). There is also expected flooding of the golf driving range and auxiliary parking lot (Area 6), and minor flooding in the Green Parking Lot.

Flood pathway: The Area 5 flooding is the result of approximately 24 cfs of breakout flow over the northern bank of the River. The Area 6 flooding results from River floodwaters entering the drainage ditch west of the I-5 Highway and flowing into the driving range.

Figure 10. Maximum Flood Depths During the 10-year Fluvial Event

Scenario: 50-year fluvial event.

Risk: Virtually all the Property is flooded. Flood depths of up to approximately 8 ft in the West Parking Lot (Area 5) and 2-6.5 ft in the stables (Area 2).

Flood pathway: This flooding is the result of approximately over 15,000 cfs of flow overtopping Jimmy Durante Blvd as well as some breakout flow over the north riverbank.

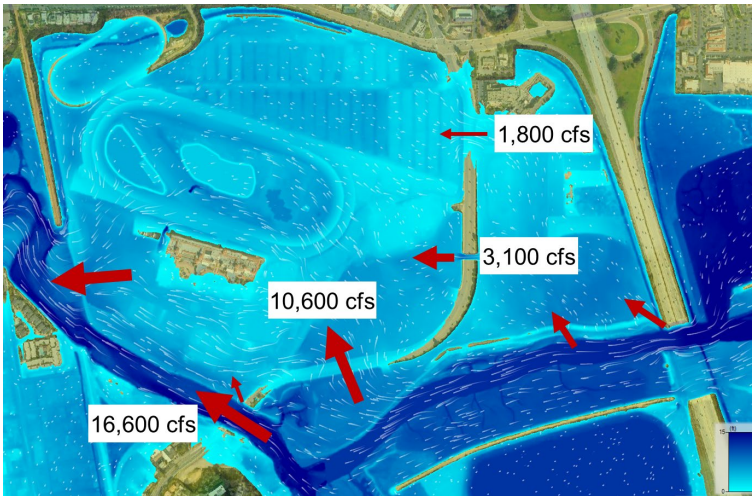

Figure 11. Maximum Flood Depths and Flows During a 50-year Fluvial Event

Scenario: 100-year fluvial event.

Risk: Similar to the 50-year fluvial event, the Property is almost entirely flooded. Flood depths are greater with up to 9.5 ft in the West Parking Lot (Area 5) and 4 to over 7.5 ft in the stables (Area 2).

Flood pathway: This flooding is the result of over 25,000 cfs overtopping Jimmy Durante Blvd and entering the site.

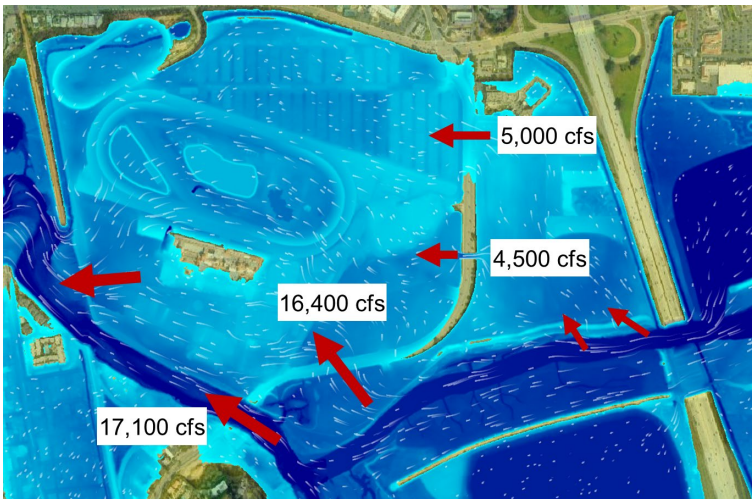

Figure 12. Maximum Flood Depths and Flows During a 100-year Fluvial Event

Scenario: 10-year rainfall event.

Risk: This scenario results in shallow ponding across the site and areas of deeper ponding. Water accumulating in the stables area is typically less than 1 ft, with some localized areas up to 3 ft. Up to 10 ft of water inundates the infield access tunnel and flooding in the southwest corner of the West Parking Lot reaches 1.6 ft of depth.

Flood pathway: Water flowing into the Training Track through the eastern culverts floods the infield and overtops the Training Track at the southeastern straightaway (peak overflow of 3 cfs). Note that a different color scale is used to better highlight shallow flooding from rainfall compared to fluvial only events.

Figure 13. Maximum Flood Depths During the 10-year Rainfall Event

Scenario: 100-year rainfall event.

Risk: Onsite rainfall results are similar to the 10-year event. Flood depths are typically less than 1 ft except for the Training Track and the West Parking Lot. Flood depths reach approximately 2.5 ft within the southwestern corner of the West Parking Lot.

Flood pathway: The Training Track is inundated from overtopping for the Creek (150 cfs) but does not overflow the infield basins. Note that a different color scale is used to better highlight shallow flooding from rainfall compared to only fluvial events.

Figure 14. Maximum Flood Depths During the 100-year Rainfall Event

Scenario: Combined 10-year fluvial and rainfall event.

Risk: The combined 10-year fluvial and rainfall event had similar flood extents as the 10-year rainfall event in the northern half of the site, with similar flood depths in the Training Track, infield basins, and stables. Flood depths reached 3 ft in the West Parking Lot and up to 2 ft in the Main Parking lot due to increased fluvial flows and overtopping of the River. Note that a different color scale is used to better highlight shallow flooding from rainfall compared to fluvial only events.

Flood pathway: Similar to the 10-year rainfall event, shallow ponding occurs across the site, with water accumulating in the infield ponds and Training Track. Overtopping of the River occurs at Discharge Point 4 at the southwestern boundary of the District Property.

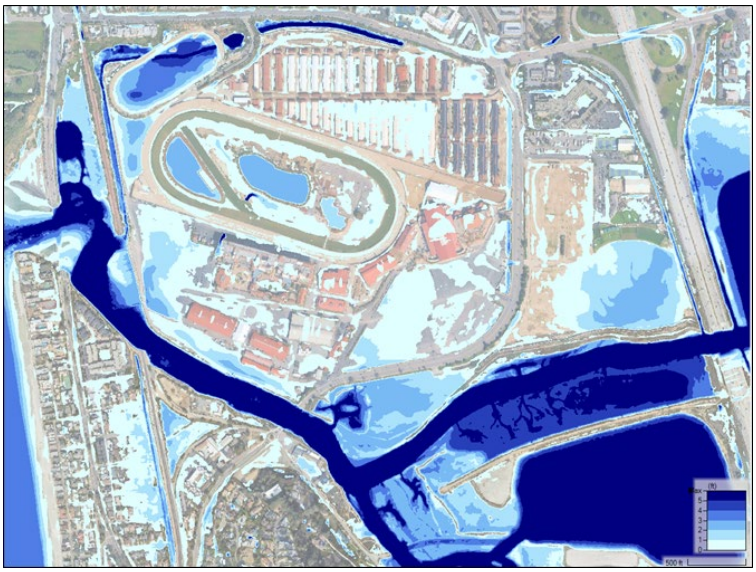

Figure 15. Maximum Flood Depths and Flows During a 10-year Rainfall and Fluvial Event

4.2 Vulnerabilities with SLR

Modeling results indicate that MHHW and SLR projections do not result in significant flooding impacts to the District Property until SLR reaches 4.8 ft. In contrast, scenarios that combine SLR with fluvial events produced moderate to severe flooding hazards, even under lower SLR conditions and smaller fluvial return-period events. Rising sea levels increase downstream water elevations and generate backwater effects that propagate upstream within the River. These effects raise water levels in the River, leading to greater overtopping flows and exacerbating flooding hazards across the site.

The scenarios presented below represent conditions associated with moderate to severe flooding impacts. Flood maps depicting mean higher high water (MHHW) tides with 1.0 ft and 2.3 ft of SLR are not included, as these scenarios showed minimal flooding impacts. Additionally, flood extents from rainfall events combined with SLR are not shown because modeling results demonstrated little to no increase in flooding relative to rainfall-only events. (All SLR scenario flood maps are provided in Appendix A).

As noted above, these scenarios and results are generally consistent with the City of Del Mar's 2018 SLR Vulnerability Assessment, which identified the site as vulnerable to SLR. That study found that surrounding roads and bridges—including Camino Del Mar and Jimmy Durante Boulevard—would face significant flooding with 5.7 ft of SLR (this SLR magnitude was not considered here). The 2018 assessment also identified the Fire Station located on the District's Property as potentially vulnerable to flooding impacts with 1.6 ft of SLR.

Scenario: MHHW with 4.8 ft of SLR by 2100.

Risk: The largest flood depths of 11.6 ft occur near the infield tunnel and at the southwest corner of the West Parking lot with depths up to 4.4 ft.

Flood Pathway: Flooding is the result of overtopping of the north riverbank and backwater flow through storm drains in the Green Parking Lot.

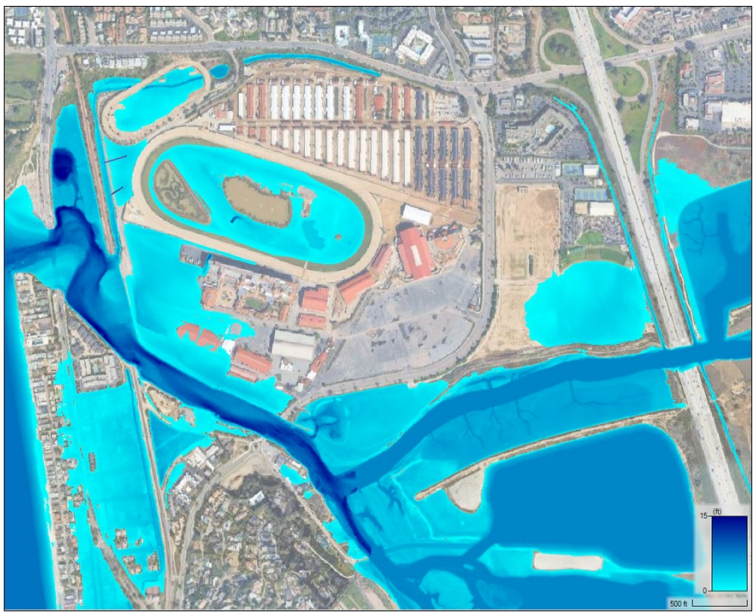

Figure 16. Maximum Flood Depths from 2100 SLR + MHHW (9.3 ft)

Scenario: 10-year fluvial event with 1 ft of SLR by 2050.

Risk: Moderate flooding of the West Parking Lot with flood depths of up to 3.2 ft compared to 2.3 ft without SLR.

Flood pathway: Most of the flooding is the result of approximately 42 cfs of breakout flow over the north bank of the River. Green Parking Lot flooding is due to backwater through the storm drains.

Figure 17. Maximum Flood Depths During a 10-year Fluvial Event with 2050 SLR + MHHW (6.13 ft)

Scenario: 10-year fluvial event with 2.7 ft of SLR by 2070.

Risk: Moderate flooding of the West Parking Lot with flood depths of up to 3.6 ft. Flooding of the Exhibit Halls, Grandstand, Training Track and Main Track.

Flood pathway: Main Track flooding is caused by flows through the infield tunnel leading to flooding adjacent to the CAFO receiving pond. The infield storm drain networks and pumps would eventually drain this flooding into the receiving pond and wetland; however, these features were not included in the HEC-RAS model. The West Parking Lot flooding is the result of approximately 85 cfs of overtopping flow from the north bank of the River.

Figure 18. Maximum Flood Depths During a 10-year Fluvial Event with 2070 SLR + MHHW (7.43 ft)

Scenario: 10-year fluvial with 4.8 ft of SLR by 2100.

Risk: Significant tidal flooding with the largest flood depth on either side of the infield tunnel (up to 11.6 ft) and at the southwest corner of the West Parking Lot (up to 4.4 ft).

Flood Pathway: This flooding is the result of overtopping of the north bank of the River. Flooding within the Green Parking Lot is the result of backwater from the two modeled storm drains without gate valves.

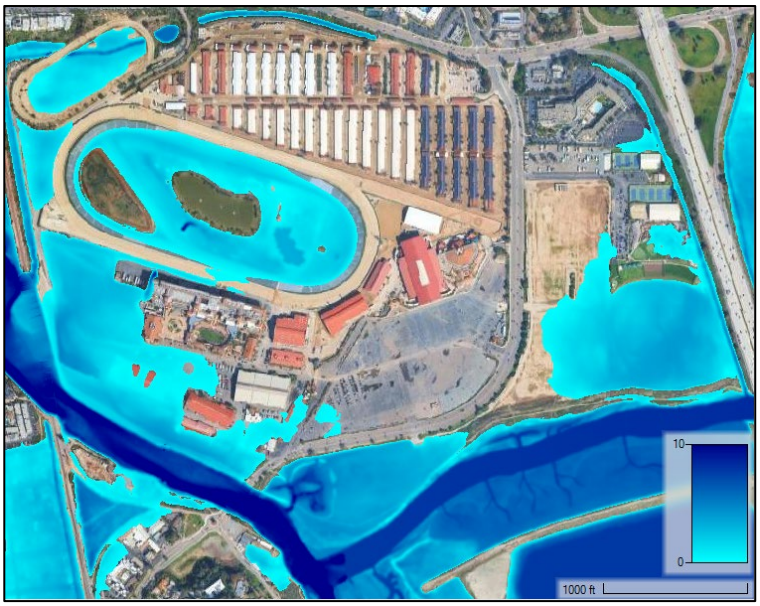

Figure 19. Maximum Flood Depths During a 10-year Fluvial Event with 2100 SLR + MHHW (9.3 ft)

4.3 Potential Affordable Housing Sites and Vulnerability

The HEC-RAS 2D models and scenarios were also used to evaluate flood hazards at five potential affordable housing sites. The potential affordable housing sites are shown in Figure 20. The potential affordable housing sites are:

- Site 1: East Main Stable Gate
- Site 2: South of Stable Gate
- Site 3: Adjacent to Fire Station
- Site 4: Surf and Turf RV Park
- Site 5: Dirt Lot

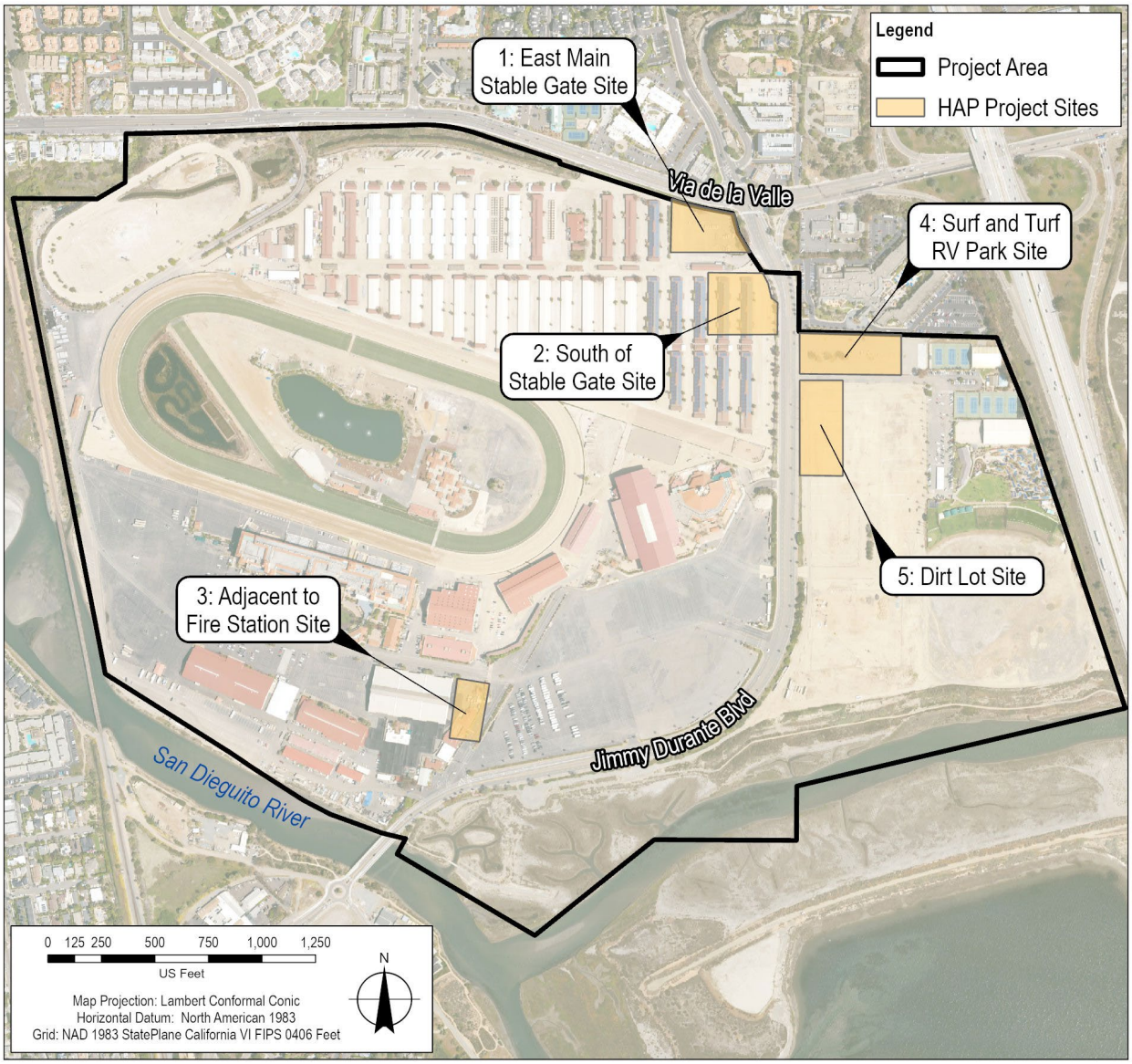

Figure 20. Potential HAP Project Sites

Table 9 summarizes peak flood depths at the potential affordable housing sites based on the various modelled scenarios. The results indicate which housing sites are most vulnerable to tidal, fluvial, and rainfall-driven events, as well as to SLR. The following summarizes the results:

- All sites remain dry under the tidal and SLR scenarios as well as during the 10-year fluvial event.
- All sites also remain dry during the 10-year fluvial event paired with SLR, other than Site 3 adjacent to the Fire Station. Site 3 becomes vulnerable to flooding during the 10-year fluvial event with 4.8 ft of SLR (2100 projection).
- Flooding occurs across all five sites during the 50-year fluvial event, with maximum flood depths ranging from 3.1-5.4 ft
- Flooding occurs across all five sites during the 100-year fluvial event, with maximum flood depths ranging from 4.3-6.8 ft.
- During the 50-year and 100-year fluvial events, Site 3 experiences the highest average flood depths and Site 1 has the second largest average flood depths. Site 5 generally experiences the lowest average flood depths. Sites 2 and 4 have slightly higher average flood depths than Site 5.
- During rainfall and combination rainfall and fluvial events, Site 1 experiences the largest average flood depths which indicate greater exposure to hazards from rainfall. Overall, average flood depths are low and flooding from rainfall events are not affected by SLR.

In addition to flood depths, peak flow rates during the fluvial events were investigated to further understand the vulnerability at each of the potential housing sites. Table 10 summarizes the peak flow rates across the housing sites during the 50-year and 100-year fluvial events. These results indicate that Site 3, adjacent to the Fire Station, experiences significantly higher peak flows than the other four housing sites, while Sites 1 and 5 experience the lowest peak flows.

Overall, the hazard assessment of potential affordable housing sites suggests that Site 3 is the most vulnerable to flooding, while Site 5, and Sites 2 and 4 to a lesser extent, are least vulnerable to flooding.

Table 9. Average and Range of Peak Flood Depths at the Potential Affordable Housing Sites During the Modelled Scenarios in feet

	Model Scenario	1: East Main Stable Gate Site	2: South of Stable Gate Site	3: Adjacent to Fire Station Site	4: Surf and Turf RV Park Site	5: Dirt Lot Site
Tidal Events	10-year Extreme Water Level (7.34 ft)	0	0	0	0	0
	2050 Intermediate-High SLR + MHHW (6.13 ft)	0	0	0	0	0
	2070 Intermediate-High SLR + MHHW (7.43 ft)	0	0	0	0	0
	2100 Intermediate-High SLR + MHHW (9.93 ft)	0	0	0	0	0
Fluvial Events	10-year fluvial event	0	0	0	0	0
	50-year fluvial event	3.6 (0 to 5.4)	2.7 (0.9 to 4.4)	3.8 (2.3 to 4.7)	2.3 (0.7 to 3.9)	2.2 (0.5 to 3.1)
	100-year fluvial event	5.0 (0 to 6.8)	4.1 (2.2 to 5.8)	5.1 (3.5 to 6.0)	3.4 (1.0 to 5.1)	3.3 (1.5 to 4.3)
Fluvial Events + SLR	10-year fluvial event + 2050 SLR	0	0	0	0	0
	10-year fluvial event + 2070 SLR	0	0	0	0	0
	10-year fluvial event + 2100 SLR	0	0	0.1 (0 to 0.7)	0	0
Onsite Rainfall Events	10-year onsite rainfall event	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.7)	0.07 (0 to 1.6)
	100-year onsite rainfall event	0.5 (0 to 1.9)	0.2 (0 to 2.1)	0.03 (0 to 0.7)	0.02 (0 to 0.8)	0.07 (0 to 1.9)
Fluvial + Onsite Rainfall	10-year onsite rainfall event + 10-year fluvial event	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.8)	0.07 (0 to 1.6)
Onsite Rainfall + SLR	10-year onsite rainfall event + 2050 SLR	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.8)	0.07 (0 to 1.6)
	10-year onsite rainfall event + 2070 SLR	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.5)	0.02 (0 to 0.8)	0.07 (0 to 1.6)
	10-year onsite rainfall event + 2100 SLR	0.3 (0 to 1.5)	0.1 (0 to 1.9)	0.03 (0 to 0.6)	0.02 (0 to 0.8)	0.07 (0 to 1.6)

Table 10. Peak Flow Rates Across the Potential Housing Sites During the Fluvial Events in cubic feet per second (cfs)

Model Scenario	1: East Main Stable Gate Site	2: South of Stable Gate Site	3: Adjacent to Fire Station Site	4: Surf and Turf RV Park Site	5: Dirt Lot Site
50-year fluvial event	500	1,000	2,800	1,000	400
100-year fluvial event	1,200	2,000	4,100	2,400	1,110

5. Conceptual Adaptation Strategies

Adaptation strategies are proactive measures taken to manage risk by reducing exposure and vulnerability of people and assets to flood hazards. While there is a diverse range of strategies available to address short-term and long-term needs, it is necessary to be guided by a strong understanding of present risks and how they may evolve over time. Furthermore, adaptation should be thought of as an ongoing process. Rather than a single fixed solution, long-term resilience is best achieved through a phased approach, utilizing a combination of strategies, offering flexibility to respond to changing risks and uncertainty. Ultimately, the best strategy depends on site specific risks, hazard pathways, and resource goals.

Adaptation strategies generally fall into three main categories: protect, accommodate, and retreat, or involve multiple strategies incorporated into a hybrid approach (Figure 21). Protection strategies seek to protect development (or other resources) in its current location using engineered structures. Engineered structures can consist of “hard” or “soft” elements, or a hybrid combination. “Hard” elements refer to rigid, man-made structures, which offer confidence in structural stability (also be referred to as “grey” infrastructure) but provide limited, or even adverse, environmental benefits. “Soft” elements employ natural elements with an emphasis on working in cooperation with natural processes, typically can support multiple co-benefits, but structural performance isn’t as well understood, especially under extreme conditions (also referred to as “green” infrastructure). Accommodation strategies involve methods that reduce the impact of hazards. There are several types of accommodation strategies, but they typically fall into structural or non-structural measures. Structural accommodation strategies can include the modification of existing developments or the design of new developments to reduce hazards (e.g., retrofitting structures to be flood resilient or increasing ground or building elevations). Non-structural accommodation strategies can include raising awareness through early warning systems, hazard mapping, or other behavior measures. Accommodation strategies can also be employed on a community-scale, through the use of land use designations, zoning ordinances, etc. Retreat strategies involve the relocation of existing development out of hazard areas or land use policies that limit future construction in vulnerable areas.

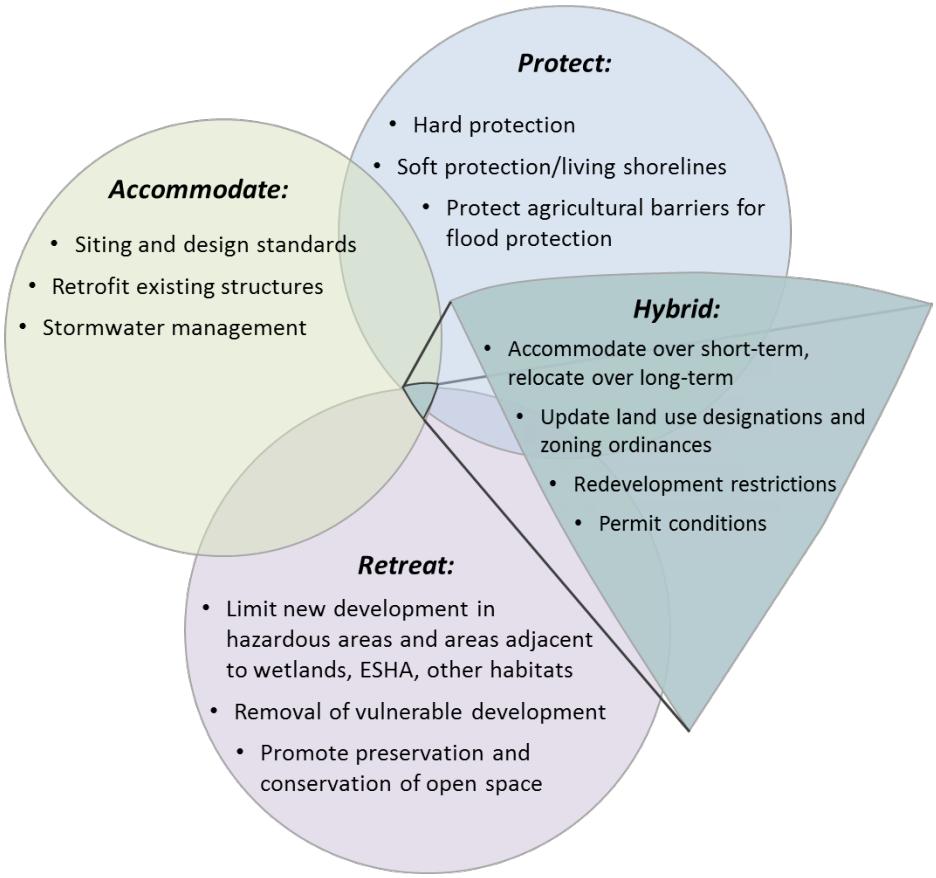

Figure 21. Examples of general adaptation strategies (source California Coastal Commission, 2024)

Due to the unique location of the District's Property and its exposure to flood hazards, including being within the FEMA regulatory floodplain (Appendix C), no single approach is expected to achieve robust flood protection across all of the District's Property. This assessment further assumes that the existing onsite operations are subject to change in the future and, therefore, the preservation of current land uses across the entire site was not considered an objective for the purpose of developing high-level, conceptual adaptation strategies.

The evaluated conceptual strategies represent a starting point for identifying potential adaptation options and opportunities to consider for further refinement. Additionally, these options do not represent an exhaustive list of strategies but rather represent a spectrum of concepts that can help inform site-wide planning efforts. These conceptual adaptation strategies are not recommendations and should not be interpreted as proposed projects for the District. The goal of presenting possible strategies is to help offer a perspective of tradeoffs between current land use operations, existing vulnerabilities, and potential actions that could alleviate and mitigate flood hazards.

Based on the projected near- and long-term hazards, a combination of adaptation strategies (protect, accommodate, retreat) are recommended to be evaluated to mitigate and manage the relevant flood impacts identified for that timeline. For instance, in the near-term, modeling results indicated that fluvial and onsite rain events present a greater risk of flood exposure than tidal and SLR scenarios. Therefore, immediate strategies to consider include the implementation of flood protection infrastructure, modernizing stormwater infrastructure and management, and updating the District's infrastructure asset inventory to resolve data gaps needed to support the initiation of long-term planning across the District's Property. Strategies pursued by the District must adhere to existing federal, state, county, and city regulations which dictate development and flood control infrastructure constructed in the regulatory floodplain or floodway. Additional site-wide planning for the District's Property is recommended including evaluating appropriate flood adaptation options such as targeting the realignment of critical assets and prioritizing drainage infrastructure.

The following sections present three site-wide conceptual adaptation strategies designed to directly address the modeled flood pathways and prevent or mitigate their potential impacts (Table 11). These strategies focus on physical improvements to the District's Property and not specific land use changes. These are intended to be high-level conceptual strategies ranging from minimal operation changes to major land use modifications. The modeled

performance of each of these strategies and their potential for mitigating future flooding hazards are summarized to inform the District's Master Planning efforts. Additional modeling results can be found in Appendix B.

It is important to consider that strategies that involve design elements in a floodway will require a FEMA No-rise Certification. While these strategies were designed at a conceptual level to not cause an increase in flood levels in the River by increasing conveyance along the riverbank, further assessment is needed based on the FEMA effective models to determine if the design meets the 100-year floodway requirements.

Table 11. Overview of conceptual adaptation strategies

Adaptation Strategy	Description	Designed Level of Modeled Flood Protection
Strategy 1: Targeted Ecotone Features	- Inclusion and extension of the City of Del Mar proposed San Dieguito Lagoon Shoreline Protection Planning Project living levee - Elevated berm along the eastern border of the site. - Installation of flap valves or check valves to prevent backflow	10-year Fluvial Event + 2070 SLR
Strategy 2: Perimeter Berm Protection	- Perimeter berm from the I-5 Highway, along the northern edge of the Main and West Parking Lot, to the west side of the Main Track - Create floodable channels and frontage for conveyance and add additional culverts - Installation of flap valves or check valves to prevent backflow	50-year Fluvial Event
Strategy 3: Site-wide Floodable Frontage	- Regrade and raise current racetrack, stables, and arena areas - Create floodable channels and frontage for conveyance - Relocate, realign, and/or remove existing facilities as needed - Upgrade and realign stormwater infrastructure with new gradations and tide gate installations	50- year Fluvial Event Reduces flood hazards during the 100-year event

5.1 Strategy 1: Targeted Ecotone Features

Strategy 1(Figure 22) consists of the targeted implementation of an elevated berm along the southern border of the site to directly address flood pathways identified under the 10-year fluvial event. Strategy 1 aligns with and expands upon the proposed San Dieguito Lagoon Shoreline Protection Project (Del Mar Living Levee Project) to develop a living levee type strategy along the River, which consists of a 50-ft-wide berm constructed within the District's Property with a crest elevation of 10 ft (NAVD88). This strategy could provide flood protection up to a 13-year fluvial event under both existing sea levels and with 3.1 ft SLR (GHD 2026b). Also, its foreshore slope is expected to support marsh habitat establishment, increasing its habitat benefits today as well as providing resilience to those habitat zones under future SLR. An additional benefit from this strategy is the inclusion of a new public access trail along the top of the elevated ecotone slope, integrating with existing trails and access goals of the San Dieguito River Park JPA.

Strategy 1 combines the proposed Del Mar Living Levee Project improvements with an additional berm or floodwall on the eastern edge of the Fairgrounds site. Along the eastern edge of the District's site is a drainage channel adjacent to the I-5 Highway. This drainage channel backwaters during high flow events within the San Dieguito River and allows flow to enter the driving range. Strategy 1 includes a second berm or floodwall on the east edge of the driving range adjacent to the drainage channel at an elevation of approximately 12.5 ft. This berm extends from the River to the northern edge of the District's property by the Surf and Turf Center, running parallel to the I-5 Highway. The western end of the Del Mar Living Levee Project is located at a low point in the terrain near the proposed SANDAG Double Track Special Events Platform. Strategy 1 includes an extension of the living levee to remove this low point in the terrain and increase the crest elevation to a minimum of 9.5 ft along the western edge of the District's site.

Strategy 1 also includes installing flap gates onto all gravity drain outlets to help prevent flooding onto the site caused by backflow through these storm drains. Without flap gates, water can backflow through the gravity storm drains into the site during high tides or large fluvial events. The conceptual improvements evaluated in Strategy 1 would directly impact the functionality of two discharge points, DP 3 and DP 4 (Figure 4). Both of these Discharge Points would require relocation and reinstallation due to the cut and fill proposed by the Del Mar Living Levee Project. Additionally, the living levee area will overtop during large fluvial (>13 year) events and the 2100 SLR tidal event. Increasing the capacity of storm drains and inlets in this area is recommended to drain the site following these large events.

This strategy is intended to allow the District to maintain their current operations with minimal changes to existing amenities. By establishing these ecotone features with a relatively small footprint at specific locations around the site, the impacts to existing land uses are minimized while still providing flood protection benefits. Further integration and consideration of changed grades, slopes, and drainage as a result of the SANDAG Special Events Platform should be considered.

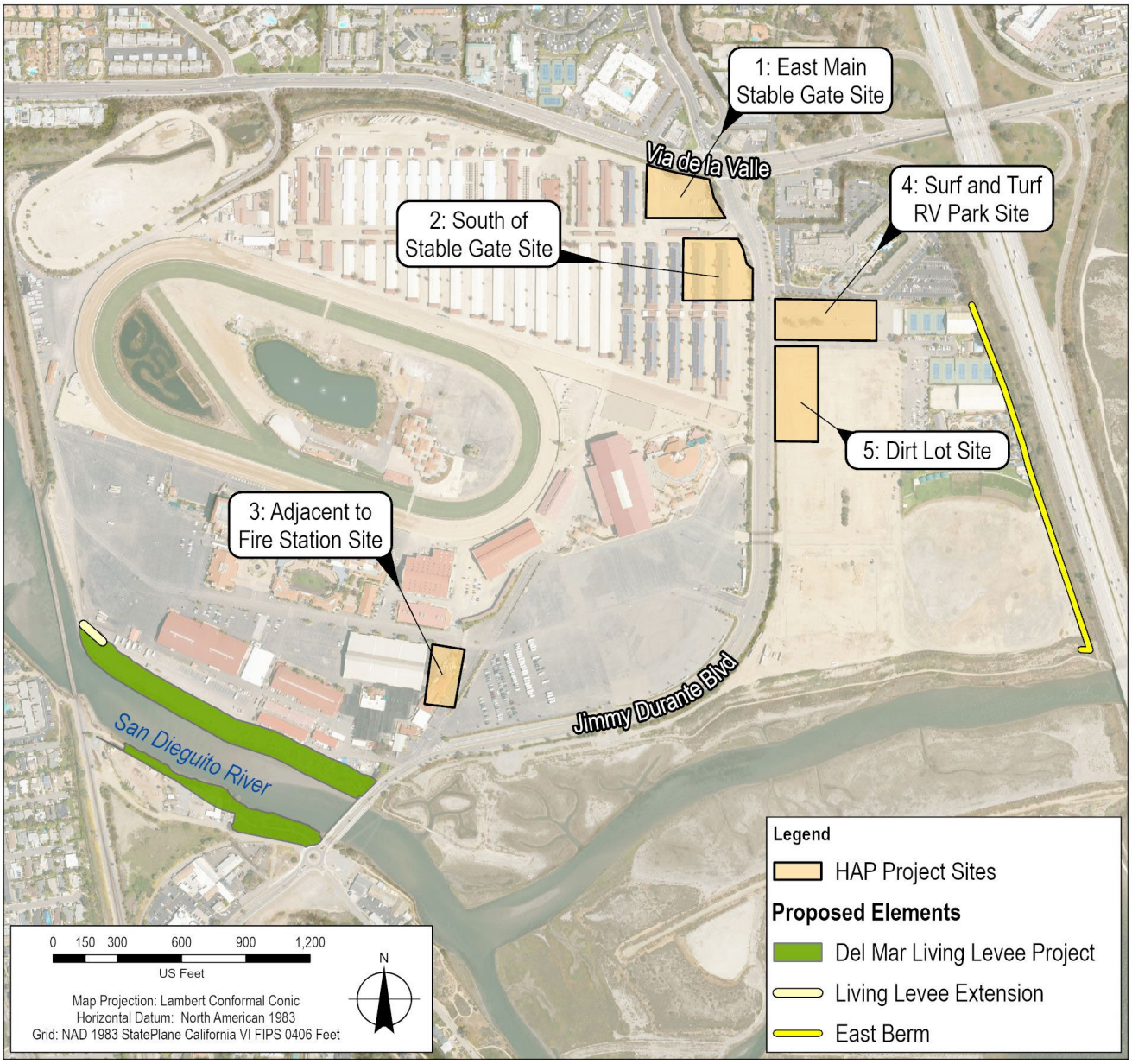

Figure 22. Strategy 1: Targeted Ecotone Features Concept

5.1.1 Modeling Results for Strategy 1

The modeling results indicate that Strategy 1 would protect the site from flooding during the 10-year fluvial event and against SLR up to the 2070 SLR + 10-year fluvial event scenario. Strategy 1 would not protect the site from flooding during the 50-year or 100-year fluvial events. It would also not prevent flooding during 10-year fluvial events when sea levels reach the projected 2100. Select depth result maps are included in the sections below and the remainder can be found in Appendix B.

5.1.1.1 Tidal Events

The results from the tidal events with the implemented Strategy 1 are shown in Appendix B and below in Figure 23. Strategy 1 fully protects the site during the 10-year EWL, 2050 SLR tidal event, and 2070 SLR tidal event . During the 2100 SLR tidal event, the site is protected east of Jimmy Durante Blvd by the east berm, but flooding is noted in the West Parking Lot near the living levee (see Figure 23). The flooding in the West Parking Lot is attributed to water overtopping existing ground to the northwest of the living levee, where the ground elevation ranges from 9.5 ft to 10 ft.

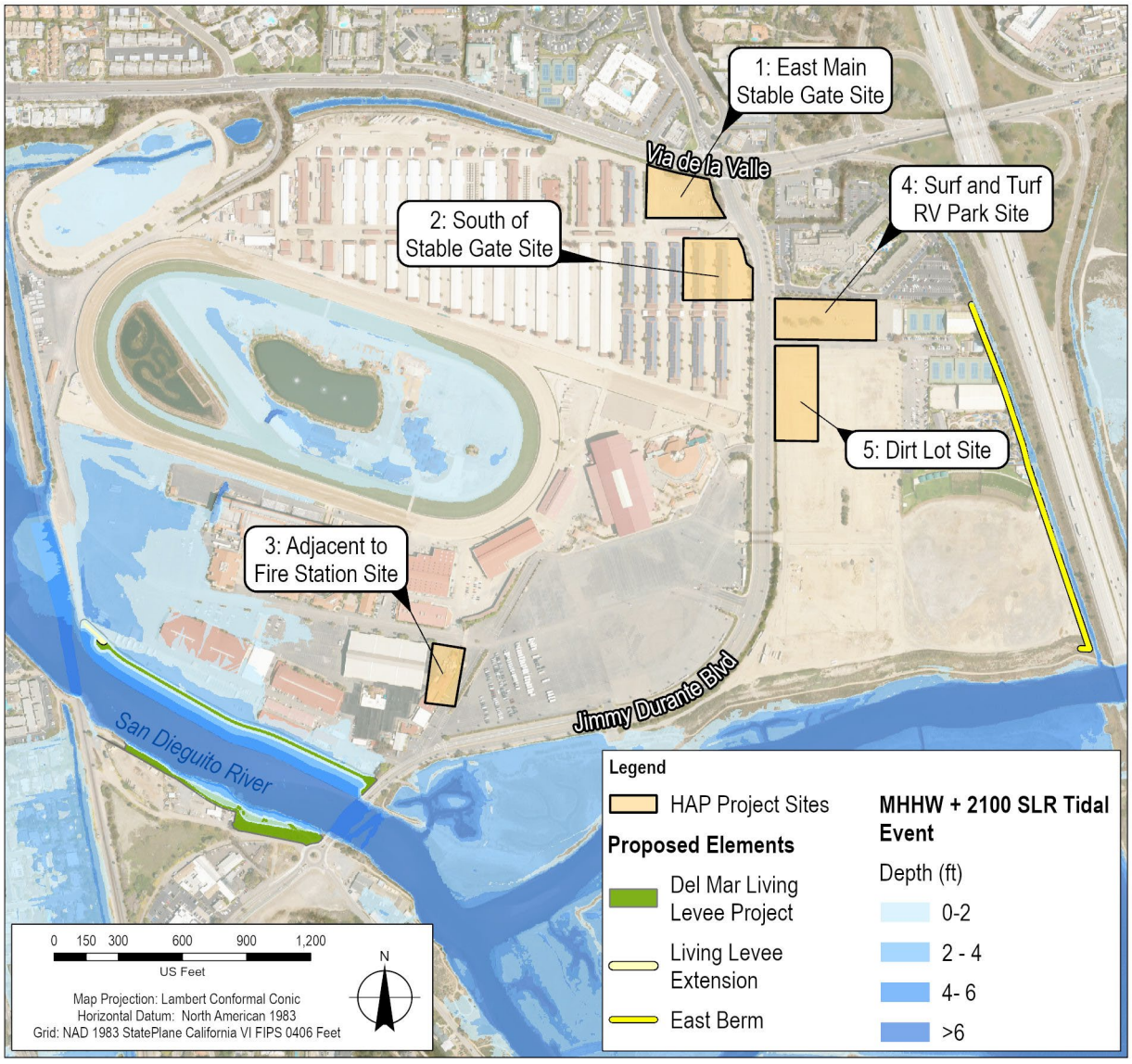

Figure 23. Strategy 1 depth results during the MHHW + 2100 SLR event.

5.1.1.2 Fluvial Events

Strategy 1 effectively prevents flooding during the 10-year fluvial event (Figure 24). Under existing conditions, inundation occurs in the driving range and West Parking Lot. Under the conceptual Strategy 1, the berm elevations

are higher than the 10-year water surface elevation, protecting the site from flooding. During the 50-year and 100-year fluvial events, the berms overtop, leading to flooding on the District's property. As a result, Strategy 1 does not improve onsite flood depths during these large fluvial events, and the entire site remains susceptible to flooding. Appendix B Figures 6 and 7 show the resulting inundation for both the 50-year and 100-year fluvial scenarios.

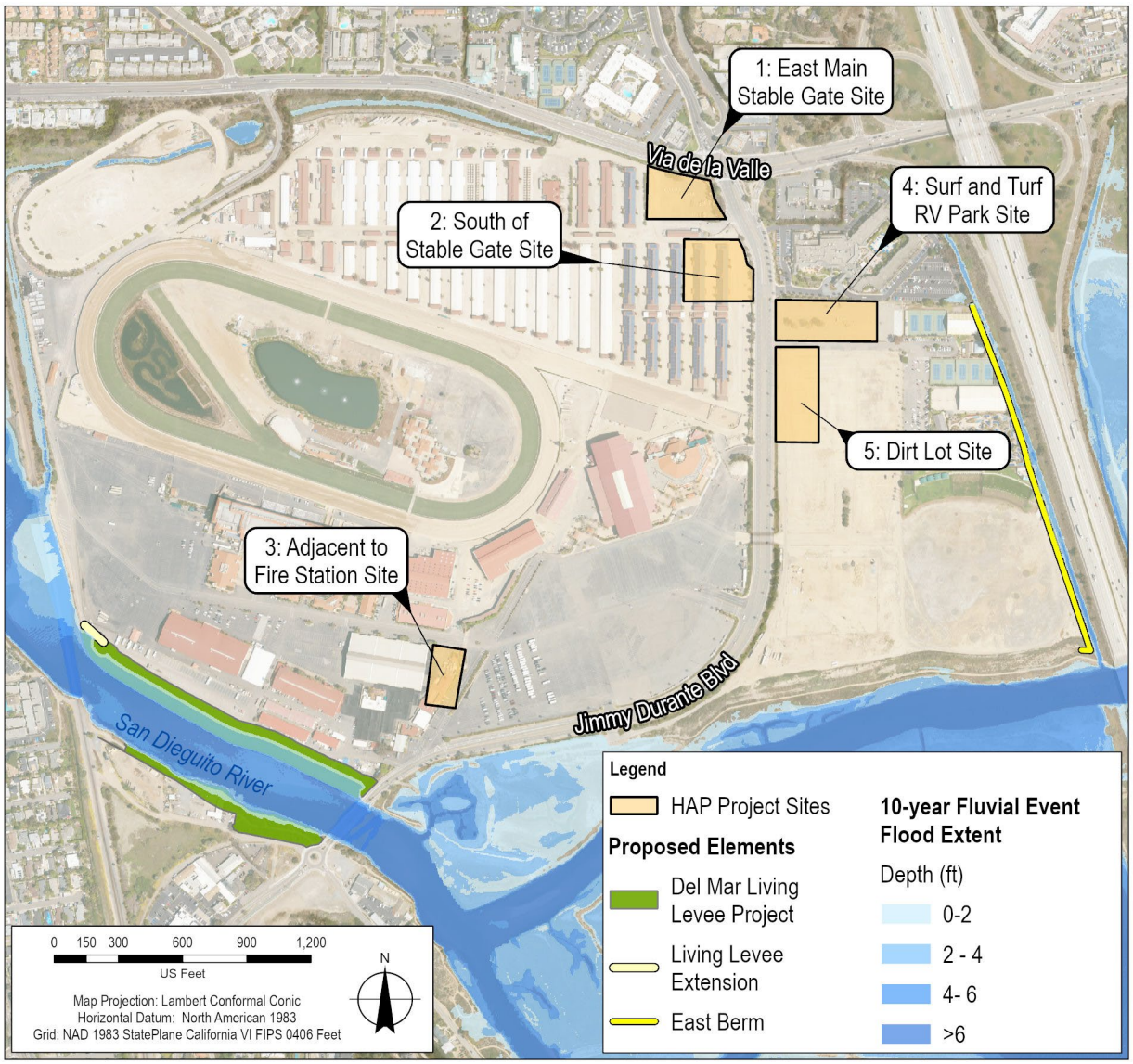

Figure 24. Strategy 1 depth results during the 10-year fluvial event

5.1.1.3 Fluvial Events with Sea Level Rise

The results from the 10-year fluvial event combined with 2050 SLR and combined with 2070 SLR are shown in Appendix B Figures 8 and 9, and indicate that Strategy 1 protects the site in these scenarios. Compared to the existing conditions, Strategy 1 removes flooding from the driving range, West Parking Lot, and Green Parking Lot.

Strategy 1 is not able to protect the site from flooding in the 10-year fluvial storm event with 2100 SLR (Figure 25). In this event, flow within the San Dieguito River overtops the living levees, resulting in flooding onsite. The flooding is limited to the western half of the site, where water is able to flow over the living levee into the West Parking Lot and through the infield tunnel to the Infield. On the eastern side of the site, a berm protects the driving range from flooding. The addition of flap gates on Discharge Points A and B eliminates flooding in Green Parking Lot.

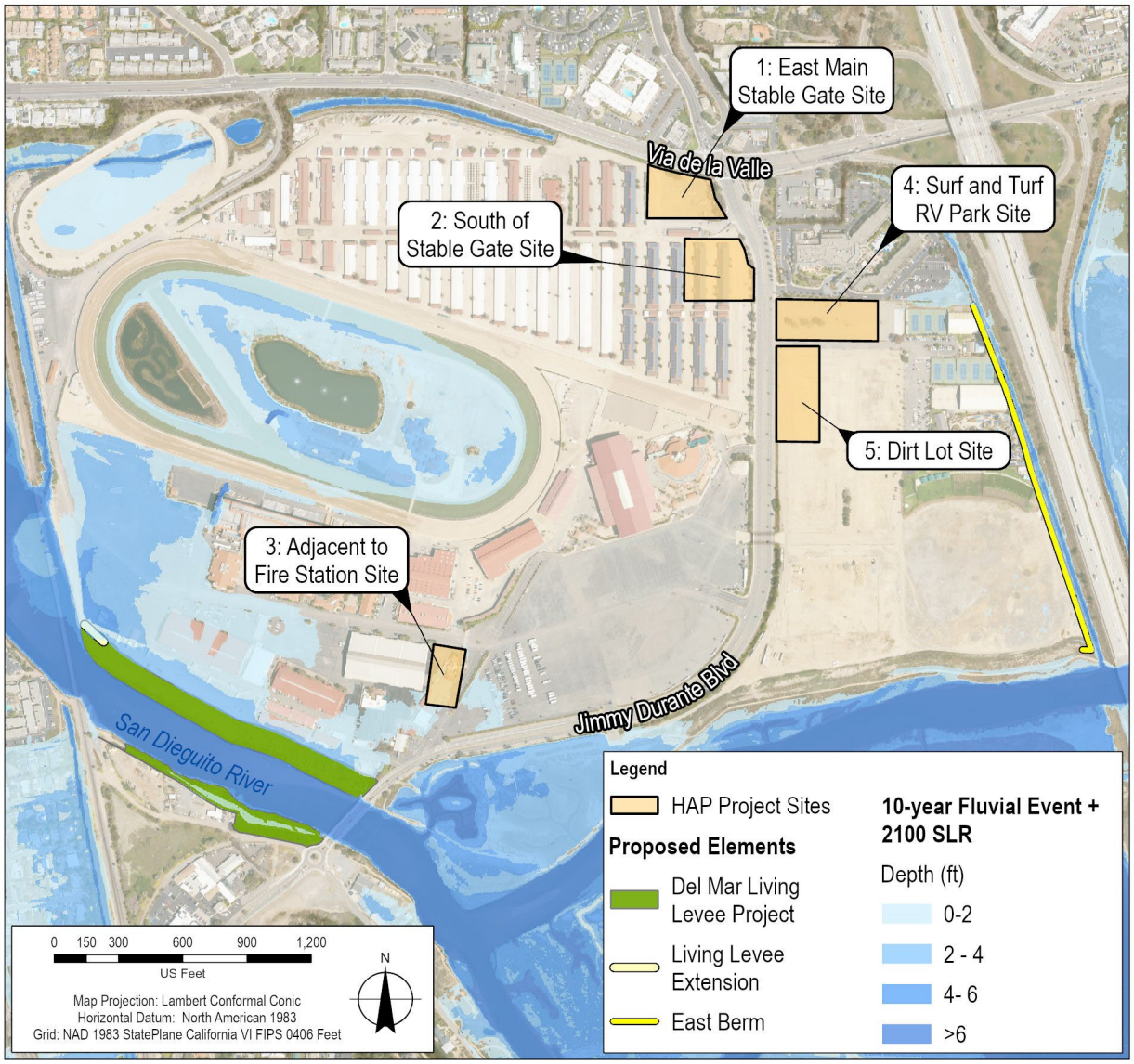

Figure 25. Strategy 1 depth results during the 10-year fluvial event + 2100 SLR

5.1.1.4 Hydraulic Impacts

Strategy 1 is anticipated to have minimal offsite impacts since the crest elevations of the berms do not prevent flow from following effective flow paths during the 50-year and 100-year fluvial events. Additionally, the living levee is designed to avoid creating a change in conveyance by balancing the additional fill from the levee with a cut in the frontage along the riverbank. Water surface elevation change as a result of the strategy is negligible, and it is therefore expected to meet California Drainage Law. See Appendix C for more details and comparison of the 100-year peak water surface elevations in Strategy 1 and in the existing conditions.

Strategy 1 includes the living levee and living levee extension, which are constructed in a floodway. Development within a floodway requires a no-rise certification. A no-rise certification has been completed for the Del Mar Living Levee Project, which verified that the proposed living levee does not lead to increases in floodplain or floodway water surface elevations (GHD, 2025). The no-rise analysis would need to be updated to include the living levee extension, to ensure that it does not lead to a rise in water surface elevations. Analysis performed in Appendix C shows that Strategy 1 has limited offsite impacts and is therefore expected to meet the no-rise criteria with the addition of this extension.

5.2 Strategy 2: Perimeter Berm Protection

Strategy 2 (Figure 26) was developed to provide flood protection to the north area of the District's property during the 50-year fluvial flood event. This concept includes a berm or floodwall that runs from the I-5 Highway, along the northern edge of the Main and West Parking Lots, along the western edge of the Green Parking lot, and between the Main Track and Training Track. The crest elevation would vary from approximately 16 ft to approximately 13.8 ft to provide flood protection during a 50-year fluvial event with minimal freeboard. The height of the berm varies from 0 ft to 6.6 ft above the existing grade. This strategy includes lowering areas south of the berm to accommodate for the reduction in floodplain area caused by the berm. As shown in Figure 26, the concept includes three tiered pads, ranging from 8 ft to 10 ft in elevation as well as a channel along the north of Jimmy Durante Blvd and the north bank of the San Dieguito River. This strategy also includes a set of large box culverts beneath Jimmy Durante Blvd. The box culverts and the channel provide conveyance to offset the hydraulic impacts associated with cutting off flow paths north of the berm or floodwall. The lowered tiered areas also increase conveyance capacity south of the berm, reducing offsite hydraulic impacts associated with this strategy. Infrastructure within these lowered tiered areas would be more vulnerable to flooding than the interior of the berm or floodwall. One of the potential constraints for this berm structure is that its eastern extent along the I-5 Highway likely lies within the Caltrans right-of-way and would require additional coordination for implementation. Additionally, to prevent closing off the existing tidal channel between the District's Property and the I-5 Highway, a culvert with a tide gate, or similar structure, would need to be installed into the berm to allow for drainage under normal conditions while preventing backflow into the channel when River water levels are high.

Due to the substantial site modifications associated with this strategy, significant modifications to the local drainage infrastructure would likely be necessary. To accompany this strategy, any storm drain outfalls would need to be equipped with flap gates or duckbill valves to prevent backflow into the site during high tides or large fluvial events. Additionally, this strategy does not provide flood protection during the 100-year fluvial event, which results in the berm overtopping and large flood depths within the site. Local drainage infrastructure such as culverts, pumps, and pipes would need to be designed to drain the area following a large (>50-year) storm event.

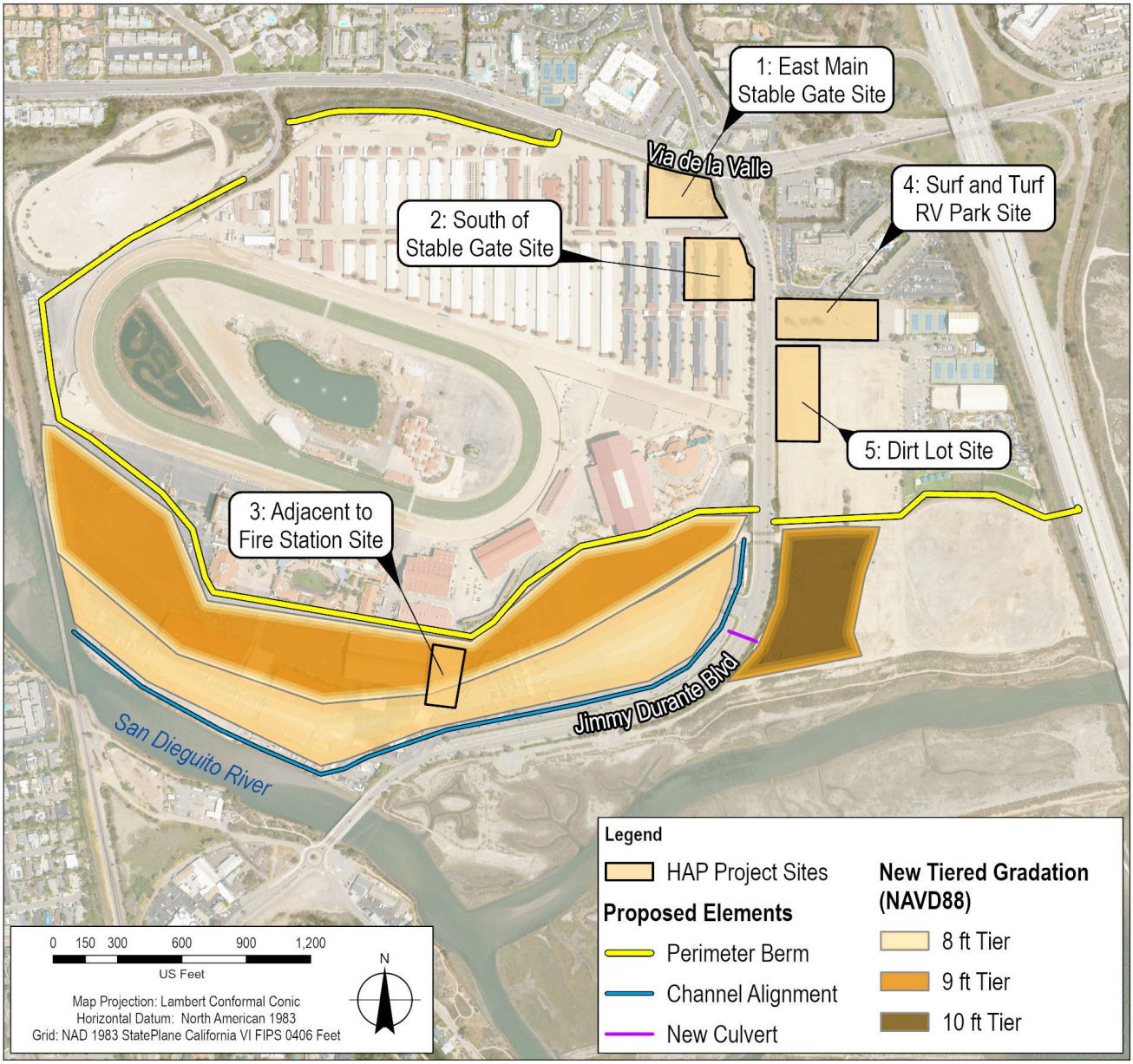

Figure 26. Strategy 2: Perimeter Berm Protection Concept

5.2.1 Modeling Results for Strategy 2

Model results for Strategy 2 show that the improvements provide flood protection for much of the site during the 50-year fluvial event. The tiered pads along the southern extent of the property experience more frequent flooding, including during the 2100 SLR event and during the 10-year fluvial event. The District's property experiences deep flood depths during the 100-year fluvial event. Select depth result maps are included in the sections below and the remainder can be found in Appendix B.

5.2.1.1 Tidal Events

Appendix B Figures 11, 12, and, 13 display the peak flood depths in Strategy 2 for the 10-year EWL, 2050 SLR tidal, and 2070 SLR tidal scenarios, respectively. Figure 27 below displays the peak flood depths for 2100 SLR. The results indicate a small amount of flooding at the downstream end of the channel in the 2050 SLR scenario. In the 10-year EWL and 2070 SLR scenarios, the results show flooding within the channel, but the remainder of the District's property stays dry. In the 2100 SLR scenario (Figure 27), the channel, the tiered paths south of the perimeter protection, and the driving range are flooded, however the main areas remain protected. The southern

tiered pad experiences approximately 1.9 ft of flooding, while the tiered pad just south of the perimeter protection experiences approximately 0.9 ft of flooding. The driving range experiences up to 2.6 ft of flooding.

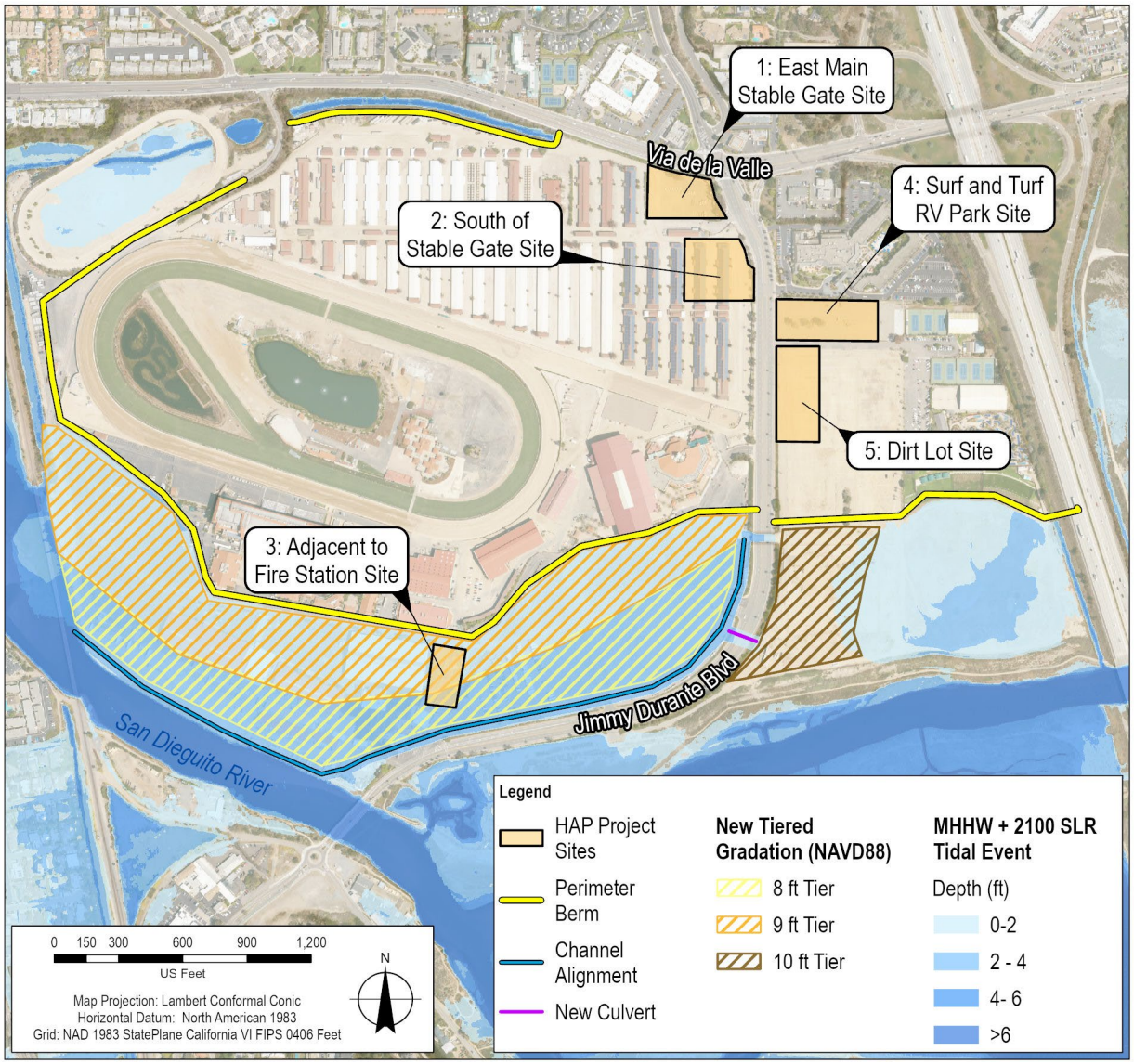

Figure 27. Strategy 2 depth results during the 2100 SLR event

5.2.1.2 Fluvial Events

The results of the fluvial event indicate that in Strategy 2, the area inside of the berm is protected from the 50-year flood event, whereas the tiered pads are more prone to flooding.

Figure 28 shows the peak flood depths during the 10-year fluvial event for Strategy 2. In this event, the channel, the southern tiered pad west of Jimmy Durante Blvd, the tiered pad east of Jimmy Durante Blvd, and the driving range experience flooding. The remainder of the site is protected from the 10-year fluvial flood hazards. Flood depths within the tiered paths are relatively shallow (below 0.6 ft), while the driving range experiences flood depths of up to 2.9 ft.

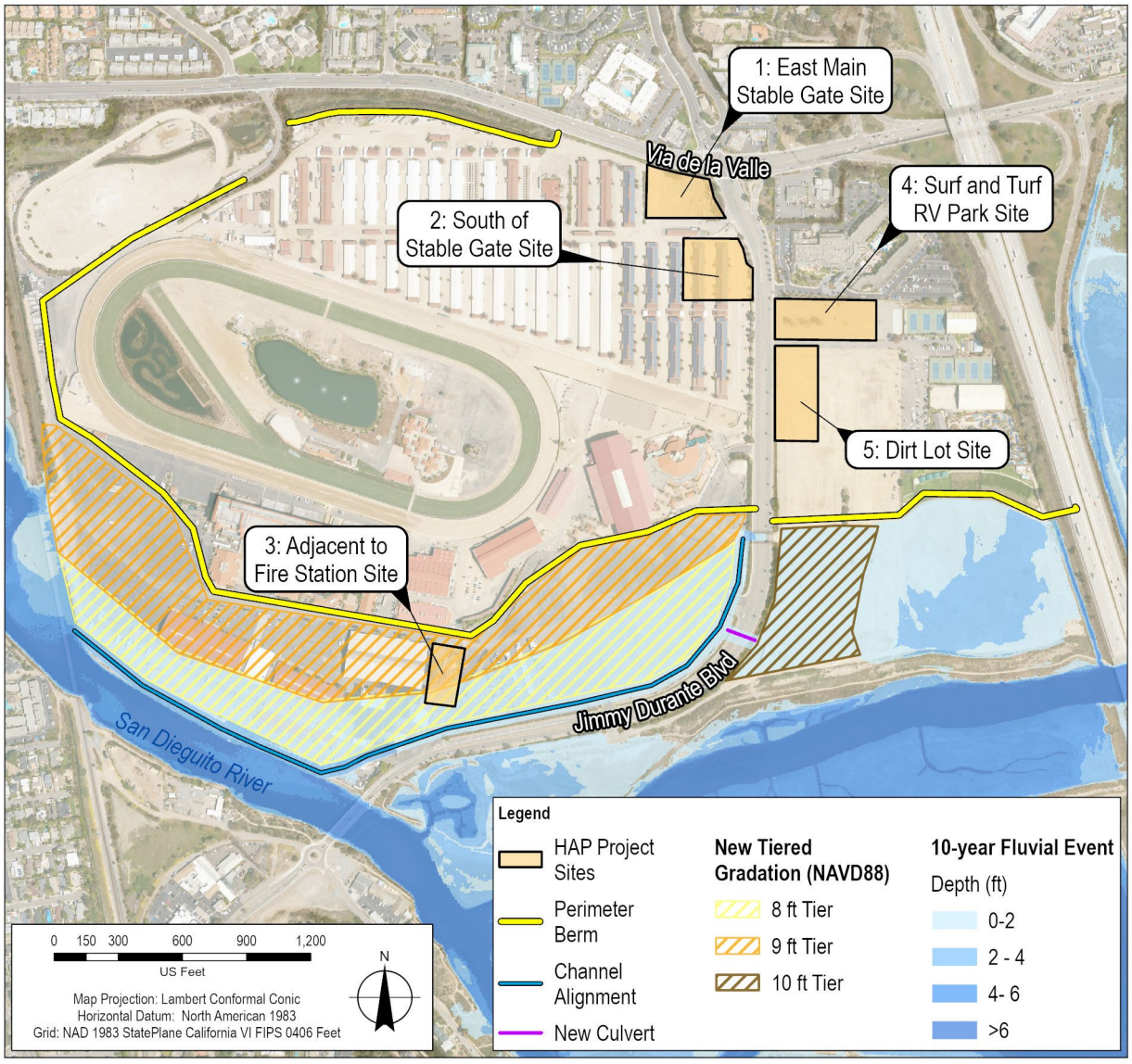

Figure 28. Strategy 2 depth results during the 10-year fluvial event

The 50-year fluvial flood depths for Strategy 2 are shown in Figure 29. These results indicate that much of the site is protected by the berm, however, the tiered pads and driving range are inundated. Flood depths within the tiered pads are significantly deeper than the 10-year event (up to 6.8 ft). The driving range experiences flood depths of up to 8.6 ft.

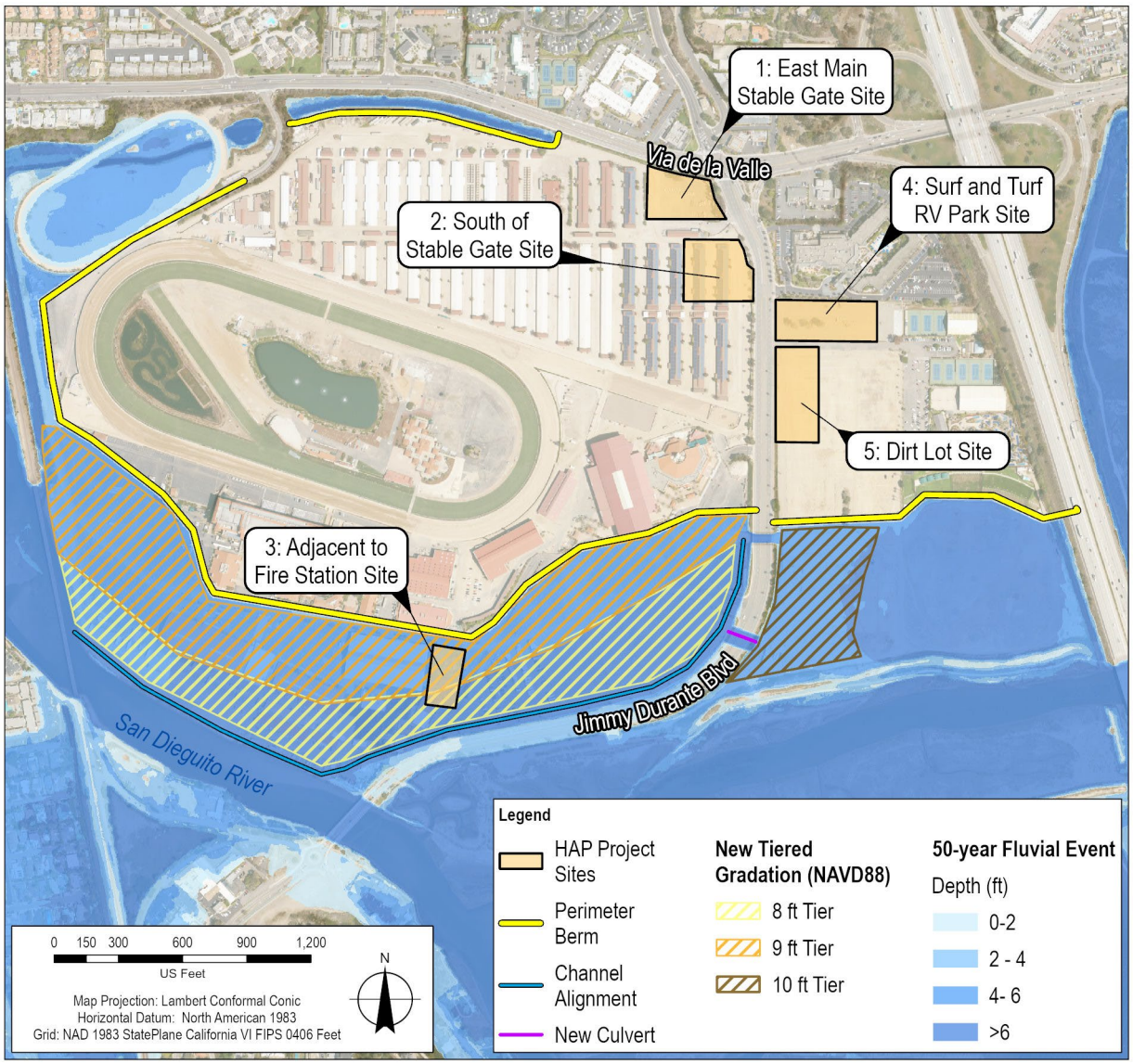

Figure 29. Strategy 2 depth results during the 50-year fluvial event

The peak flood depths during the 100-year fluvial event for Strategy 2 are shown in Figure 30. These results show substantial flooding within the District's property, as the perimeter berm is overtopped. Results show deep flood depths which exceed 7 ft in some areas.

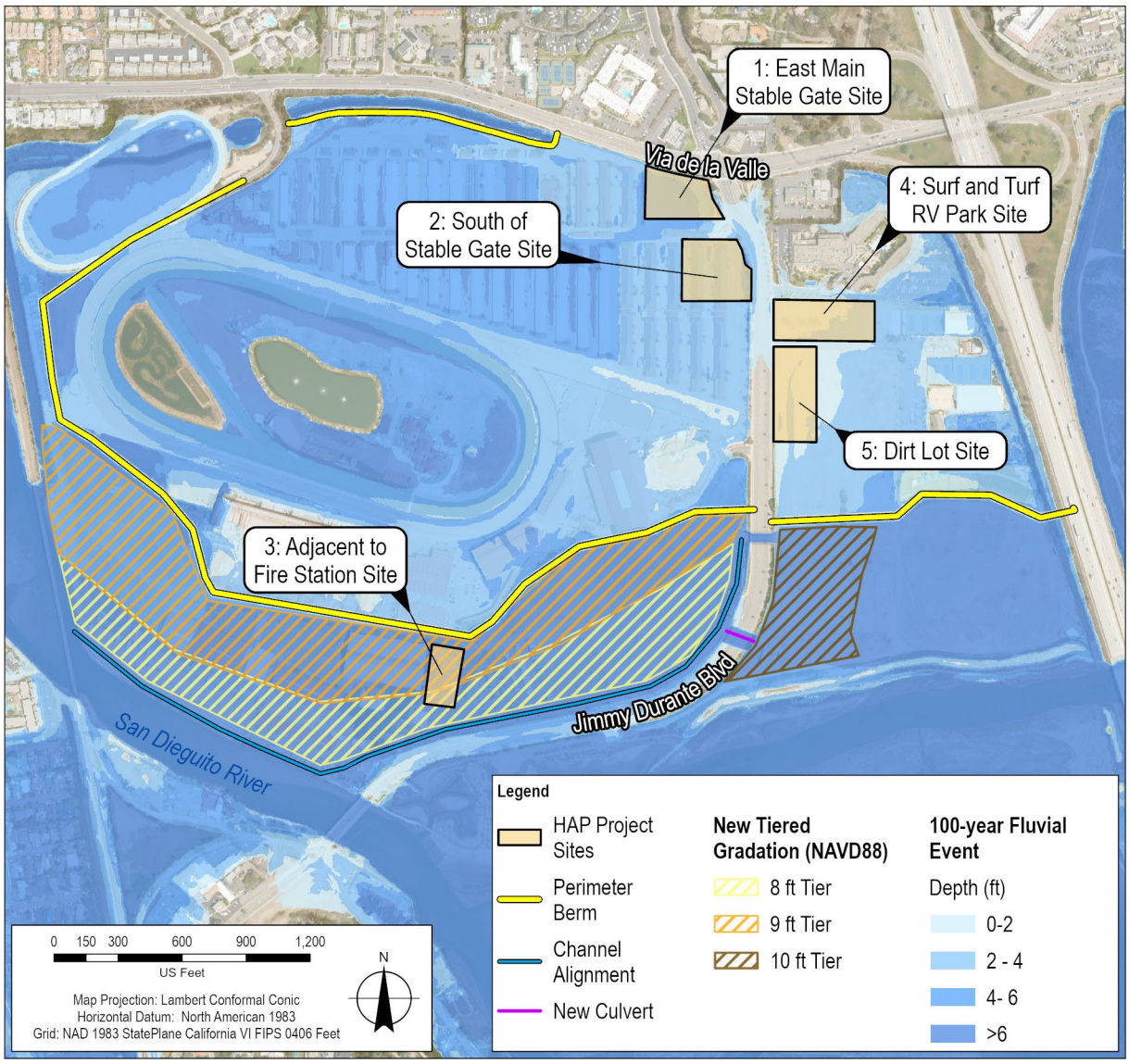

Figure 30. Strategy 2 depth results during the 100-year fluvial event

5.2.1.3 Fluvial Events with Sea Level Rise

Peak flood depths for Strategy 2 during the 10-year fluvial event with 2050 SLR and 2070 SLR, are shown in Appendix B Figures 18 and 19, respectively. The results of the 10-year fluvial event with 2050 SLR show that the southern tiered pad west of Jimmy Durante Blvd is flooded with shallow flood depths of up to 0.7 ft. The tiered pad east of Jimmy Durante Blvd and the driving range also experience inundation. Flood inundation is similar in the 10-year fluvial event with 2070 SLR, but shallow flooding (< 1 inch) is noted on the higher tiered pad west of Jimmy Durante Blvd. In the 10-year event with 2100 SLR (Figure 31), the higher tiered pad experiences flood depths of up to 1.4 ft with the central portion of the site behind the perimeter berm staying protected.

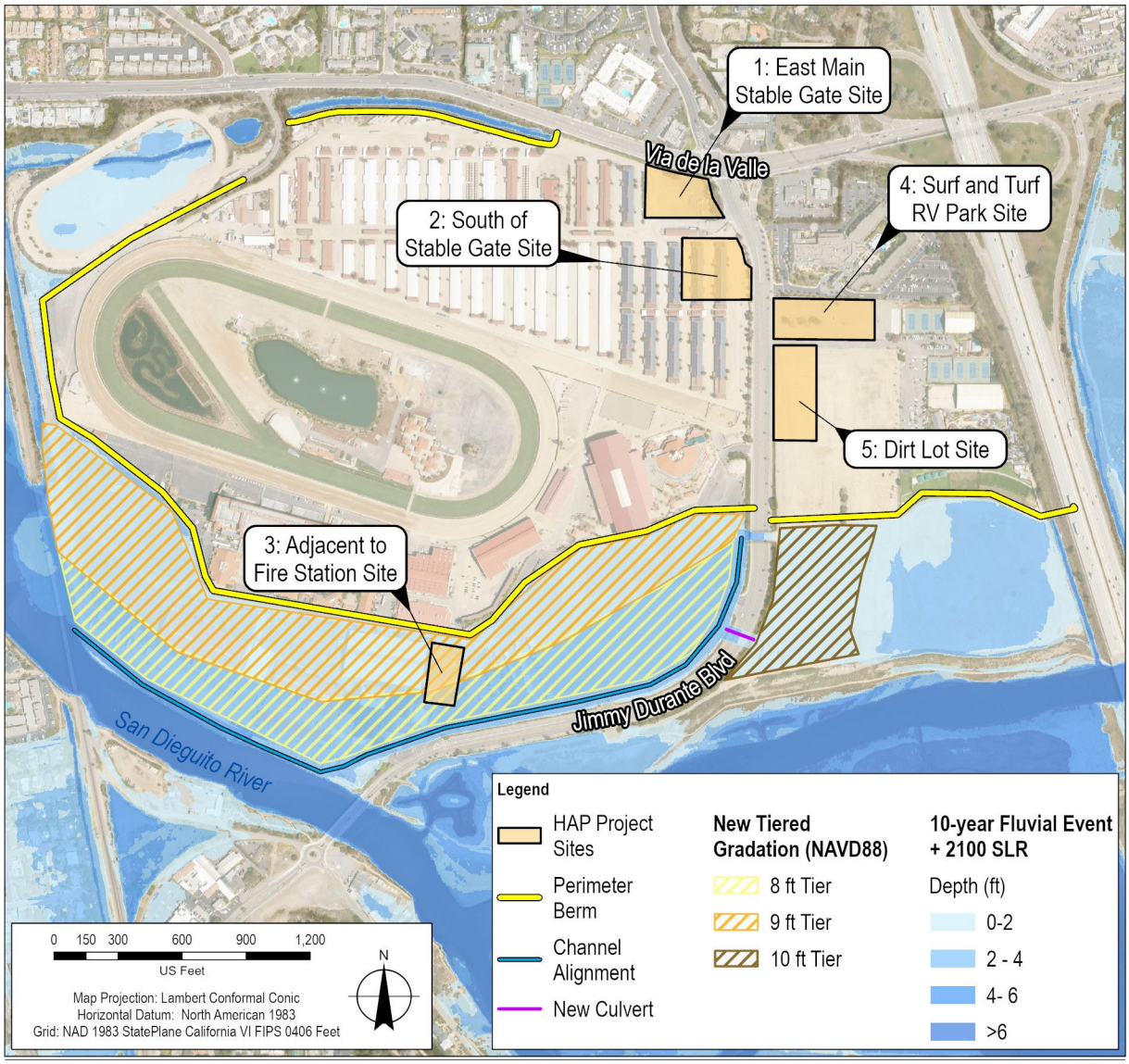

Figure 31. Strategy 2 depth results during the 10-year Fluvial Event + 2100 SLR

5.2.1.4 Hydraulic Impacts

Strategy 2 was developed to minimize offsite impacts. The culverts beneath Jimmy Durante Blvd, channel, and frontage tiered pads provide additional conveyance to offset the reduction in conveyance caused by the perimeter berm. The maximum increase in water surface elevation is approximately 0.2 ft, which occurs on the District's property east of Jimmy Durante Blvd. Offsite, the maximum increase in water surface elevations in conditions is approximately 0.14 ft, which occurs within the San Dieguito River channel, just downstream of the freeway. Decreases in water surface elevations are noted in the San Dieguito River west of Jimmy Durante Blvd. Since Strategy 2 does not significantly increase flood hazards offsite, it is expected to meet California Drainage Law, however, it could be further refined to reduce offsite impacts. Analysis performed in Appendix C compares the 100-year peak water surface elevations in Strategy 2 and existing conditions.

Strategy 2 includes tiered pads and a channel which are located in a regulatory floodway, requiring a no-rise certification. The no-rise certification would involve refining the FEMA effective HEC-RAS 1D model to develop a corrected effective/existing conditions HEC-RAS model. Next, the improvements within the floodway would be added to the model to determine the 100-year water surface elevations as well as the floodway water surface elevations. These floodplain and floodway water surface elevations would need to be at or lower than in the existing conditions. Strategy 2 was developed to increase conveyance within the southern area of the District's property, so it is expected to meet this no-rise condition. However, further study would be required to confirm that

the Strategy meets the no-rise criteria, and refinements to the tiered pads and/or channel geometry may be required.

5.3 Strategy 3: Site-wide Floodable Frontage

Strategy 3 (Figure 32) is similar to Strategy 2 in that it was developed to provide flood protection to a portion of the District's property during the 50-year fluvial event. Strategy 3, however, includes fill to raise an area of the site above the adjacent 50-year water surface elevations, helping reduce impacts from large scale fluvial events. East of Jimmy Durante Blvd, the pad would be raised to approximately 15.8 ft. West of Jimmy Durante Blvd, pad elevations vary with the 50-year water surface elevations, ranging from 13.9 ft to 14.8 ft. Similar to Strategy 3, these elevations were selected to provide flood protection during the 50-year event with minimal freeboard. Raising the pad would require a substantial amount of fill, with over 5 ft of fill on much of the site.

Similar to Strategy 2, Strategy 3 also includes tiered pads, a channel along Jimmy Durante Blvd and the north riverbank and box culverts beneath Jimmy Durante Blvd. In this strategy, the tiered path east of Jimmy Durante Blvd is larger and lower than Strategy 2, with a 9 ft elevation, to offset the fill. The tiered pads and channel west of Jimmy Durante Blvd are the same as Strategy 2. Finally, in Strategy 3, the north half of the stables were left at existing grade and the existing berm along the south bank of Stevens Creek was removed.

Compared to Strategy 2, Strategy 3 provides increased flood mitigation during large flood events (> 50 year), since it lowers flood depths within the fill area during these large events compared with existing conditions. However, the area protected during the 50-year event is smaller than Strategy 2, as the north half of the stables remain at existing grade. This strategy involves substantial grading across the site. Accordingly, significant modifications to the onsite storm drain networks would be required.

Strategy 3 represents a planning scenario where major land use modifications are implemented that entirely alter the grades and elevations across the District’s Property and its existing operations. This concept would result in major topographic changes across the entire site, essentially assuming a blank slate approach to addressing flood hazards. While not necessarily a recommendation, this strategy represents an exercise to demonstrate the level of flood resilience that can be achieved with significant modifications across the site.

Strategy 3 assumes that major land use changes are occurring across the District’s Property such as those involving replacing, realigning, or removing the primary facilities onsite. This includes raising the elevation of the existing facilities, which is anticipated to be a considerable effort. Following the creation of this elevated area, facilities could be established with a lower flood risk. As a result of these significant site modifications, a full overhaul of the District’s stormwater infrastructure would be necessary to re-establish the appropriate surface water flow drainage. This would involve realignment or replacement of existing infrastructure to accommodate the new gradation changes, alongside the installation of tide gates or duck bills along the stormwater outlets.

This strategy provides a high-level concept that explores extreme modifications to the District’s Property to achieve substantial flood resilience (i.e., 50-year fluvial flood, and long-term SLR). However, even this scale of alternation would not remove the elevated portion of the District’s Property fully out of the 100-year fluvial event or FEMA regulatory floodplain. To fully remove the District’s Property out of the floodplain, elevations would have to be raised above the FEMA BFE, which ranges from 17.2 to 20.6 across the site. This is a considerable increase in elevation compared to the 50-year flood elevations and could result in significant alterations in drainage and flow paths affecting areas outside of the District’s Property. To achieve compliance with regulations for developing in floodplains, structures may need their lowest floor above the FEMA BFE. While Strategy 3 would establish enhanced flood protection for the District’s Property, existing facilities and operations would need to be significantly transformed. Other goals of the District, such as revenue generating uses, operational costs, potential affordable housing, continuation of existing uses, etc., should also be considered when pursuing strategies that greatly transform the District’s Property.

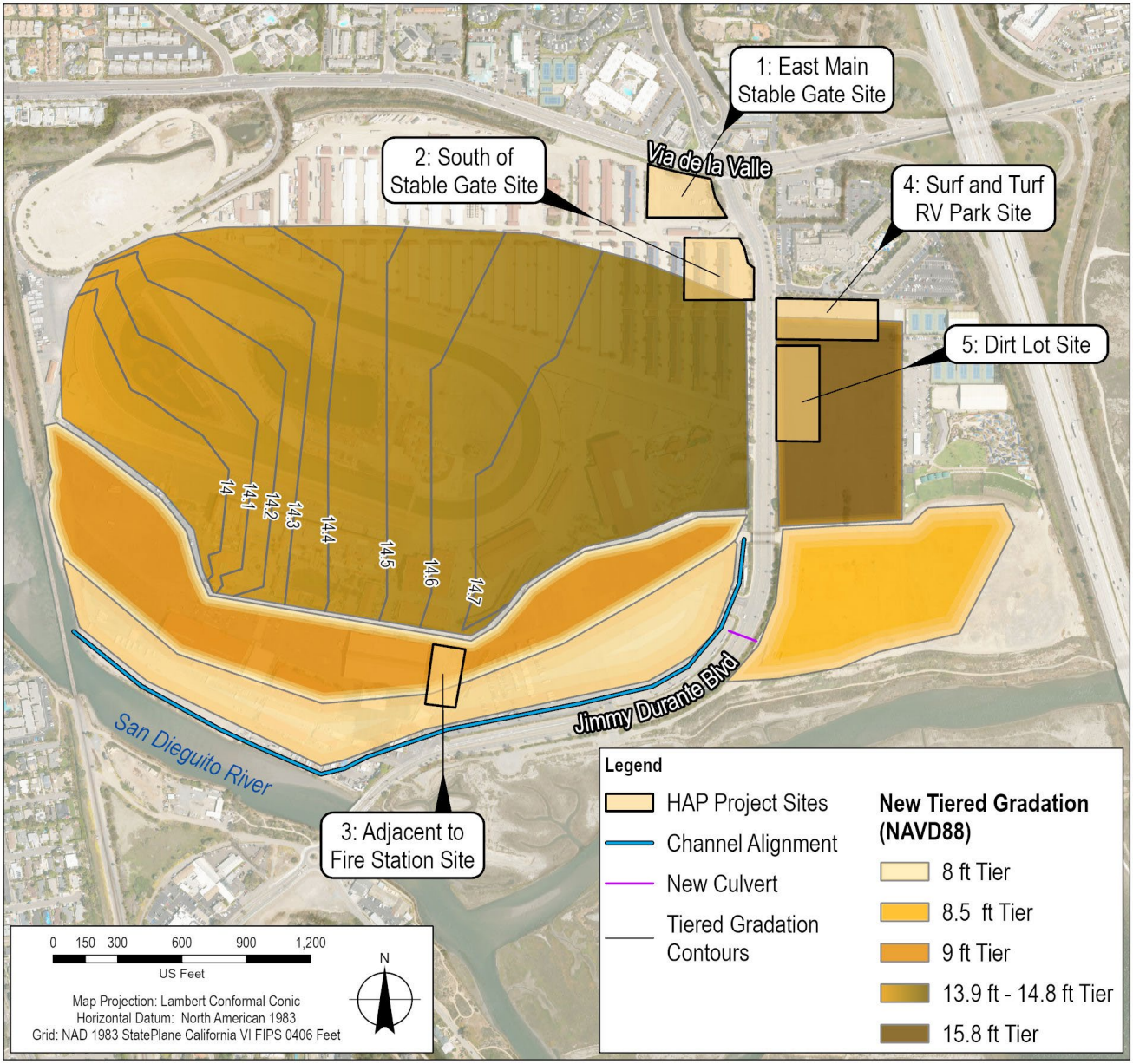

Figure 32. Strategy 3: Site-wide Floodable Frontage Concept

5.3.1 Modeling Results for Strategy 3

Model results for Strategy 3 show that the improvements provide flood protection for much of the site during the 50-year fluvial event, other than the northern half of the stables and the tiered pads along the San Dieguito River. These tiered pads experience more frequent flooding, including during the 2100 SLR event and during the 10-year fluvial event. While the site experiences flooding during the 100-year fluvial event, flood depths within much of the site are significantly lower than in the existing conditions. Select depth result maps are included in the section below and the remainder can be found in Appendix B.

5.3.1.1 Tidal Events

Appendix B Figures 21, 22, and 23 display the peak flood depths in Strategy 3 for the 10-year EWL, 2050 SLR tidal, and 2070 SLR tidal scenarios, respectively. Figure 33 below displays the peak flood depths for the 2100 SLR tidal scenario. These results are similar to Strategy 2 and show that the District's property remains dry during the 10-year EWL, 2050 SLR tidal, and 2070 SLR tidal events, other than the channel. In the 2100 SLR tidal scenario, the lower tiered pads (8 ft, 8.5 ft, and 9 ft tiers) as well as the driving range are flooded (Figure 33). Flood depths

are similar to Strategy 2, including 1.9 ft of flooding on the 8 ft tier, 0.9 ft of flooding on the 9 ft tier, and up to 2.6 ft of flooding within the driving range. The 8.5 ft tier experiences 1.4 ft of flooding on the 8.5 ft tier.

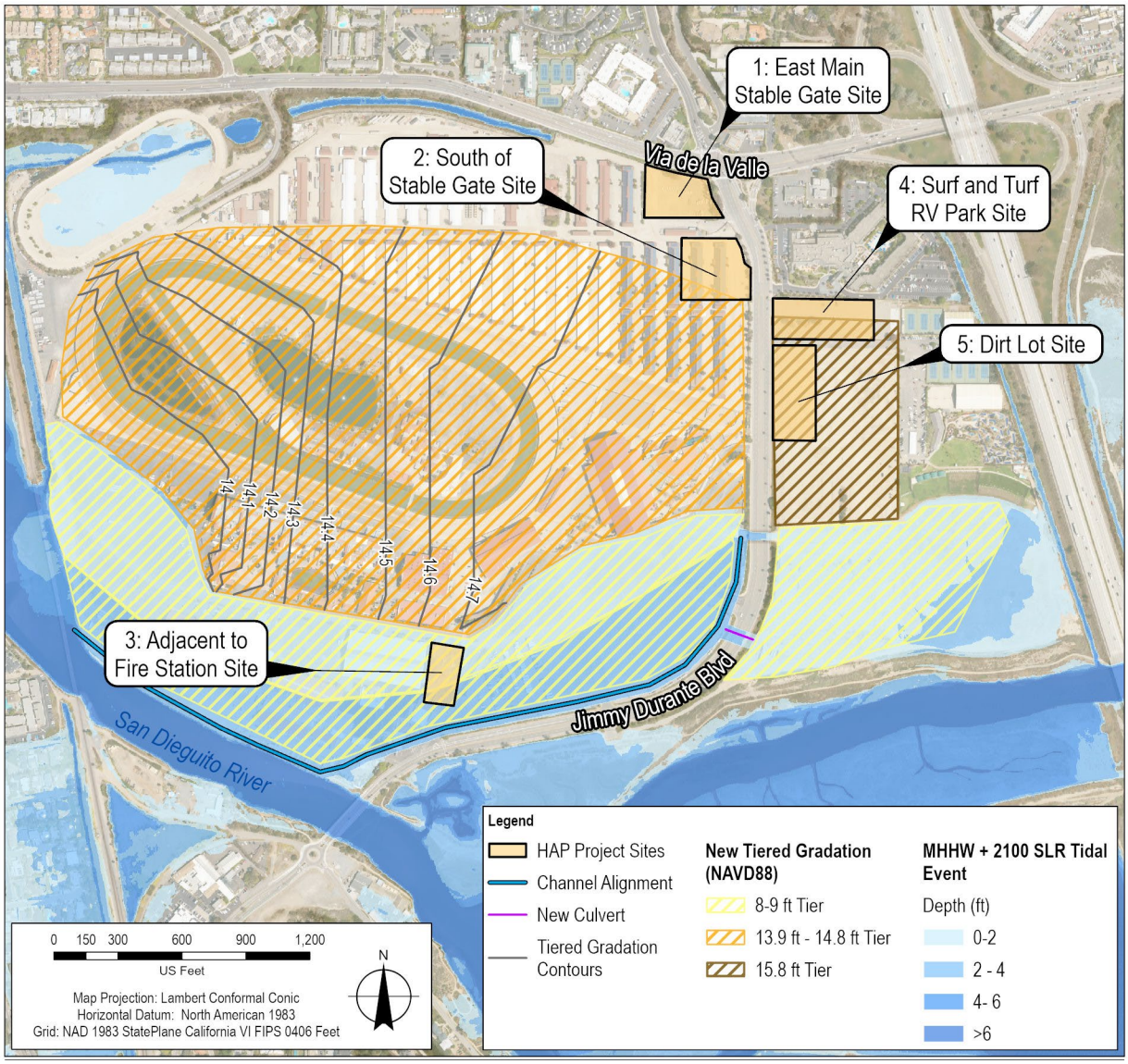

Figure 33. Strategy 3 depth results during the 2100 SLR tidal event

5.3.1.2 Fluvial Events

The results of the fluvial events indicate that the higher pads (13.8 ft to 15.8 ft) are protected from the 50-year fluvial event, whereas the lower tiered pads are more prone to flooding.

Figure 34 shows the peak flood depths during the 10-year fluvial event for Strategy 3. In this event, the 8 ft tier, 8.5 ft tier, and the golf course driving range are flooded, while the remaining onsite areas are dry. Flood depths within the tiered pads are less than 0.7 ft, while the driving range experiences flood depths of up to 2 ft.

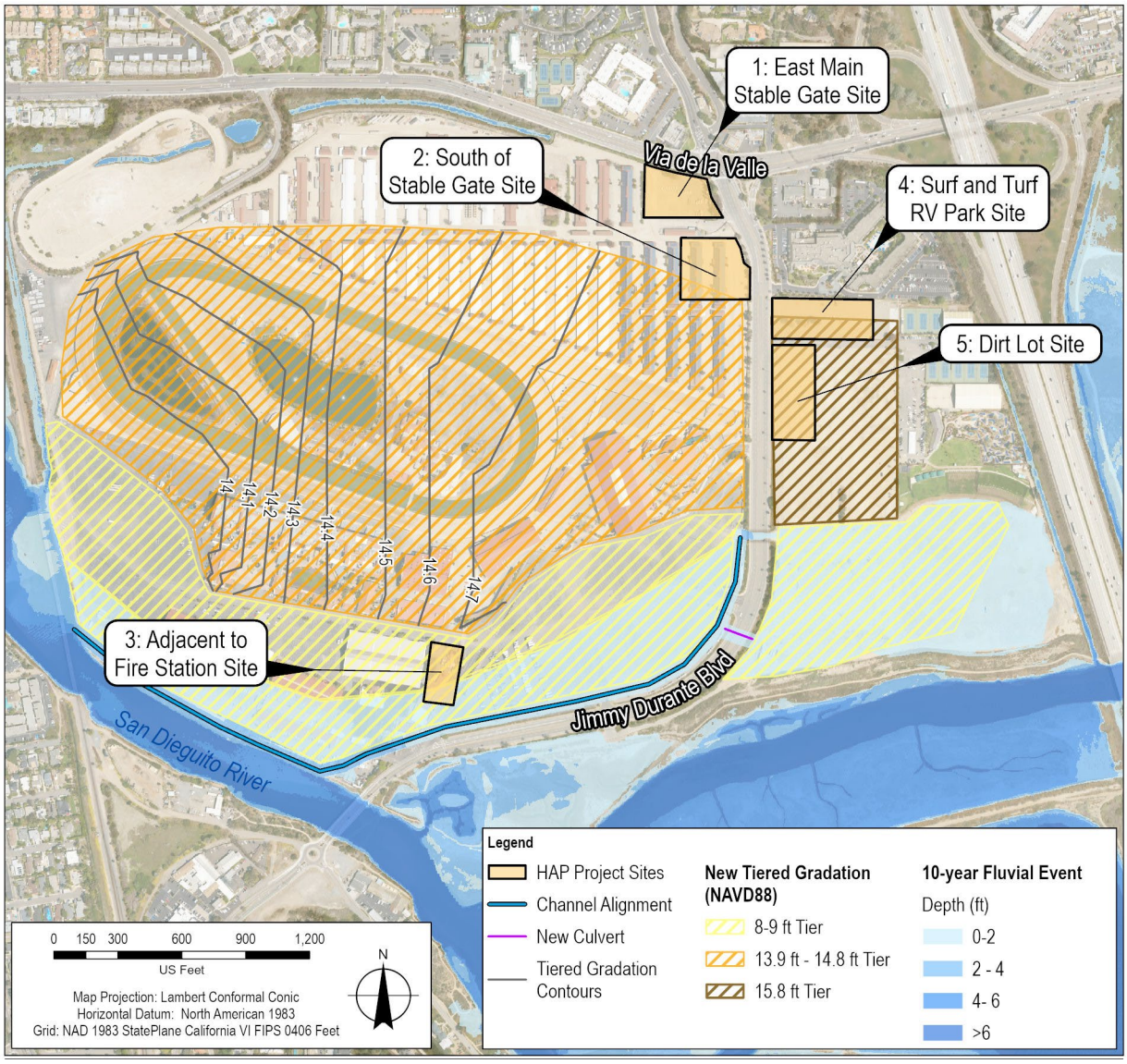

Figure 34. Strategy 3 depth results during the 10-year fluvial event

The 50-year fluvial flood depths for Strategy 3 are shown in Figure 35. Much of the site is protected from flooding in this event due to fill, including the 15.8 ft pad and the 13.9 ft to 14.8 ft pad. The lower (8 ft, 8.5 ft, and 9 ft) tiered pads, the driving range, and the northern half of the stables are flooded during this event, with significantly deeper flood depths than the 10-year event. These lower tiered pads experience flood depths of up to 7 ft and the driving range experiences flood depths of up to 8.4 ft.

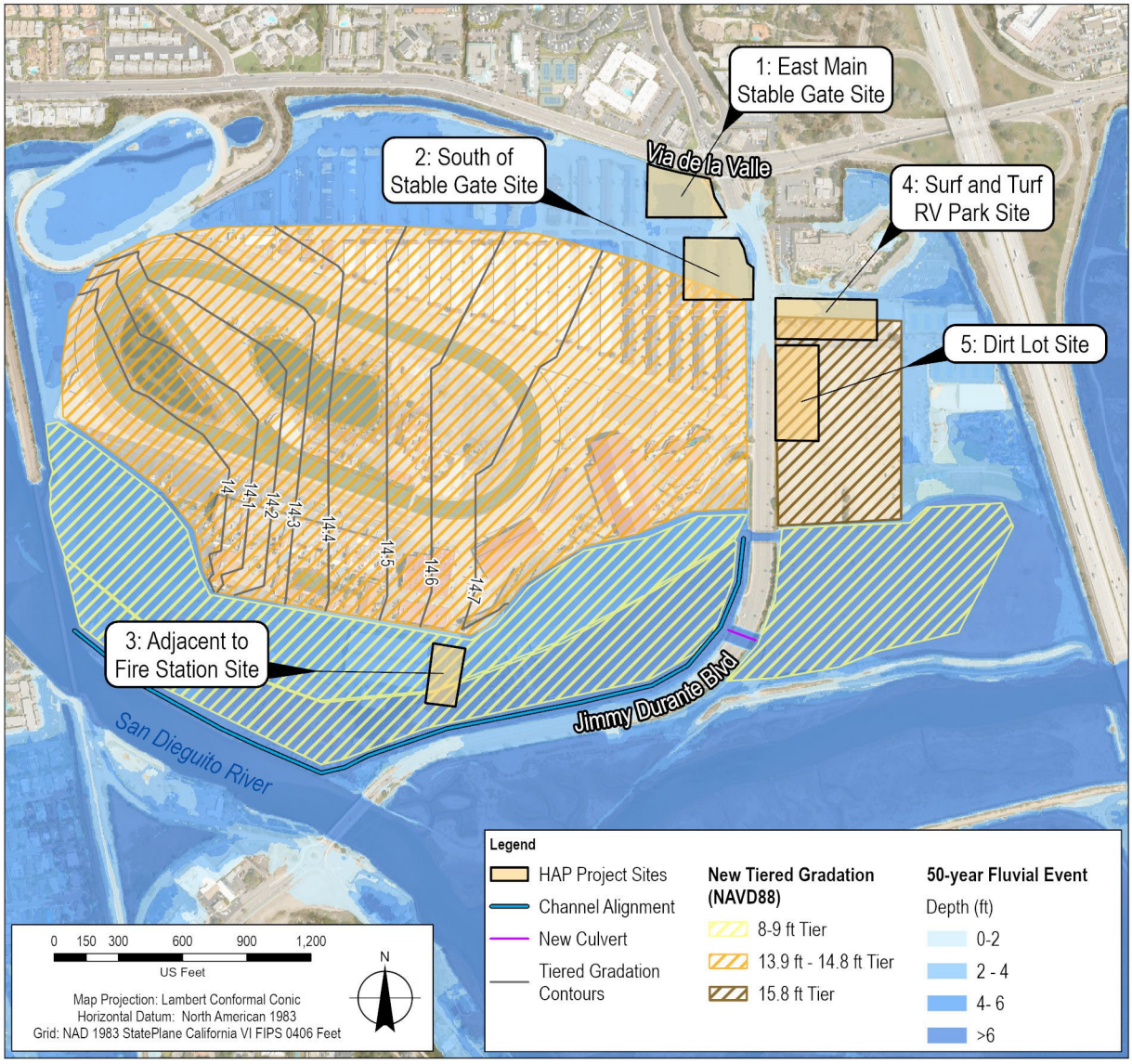

Figure 35. Strategy 3 depth results during the 50-year fluvial event

The peak flood depths during the 100-year fluvial event for Strategy 3 are shown in Figure 36. These results show that most of the District's property is subject to flooding in this event. Within the higher tiered pads, however, flood depths are significantly lower than the existing conditions or the other strategies investigated, ranging only from 0.3 ft to 1.4 ft.

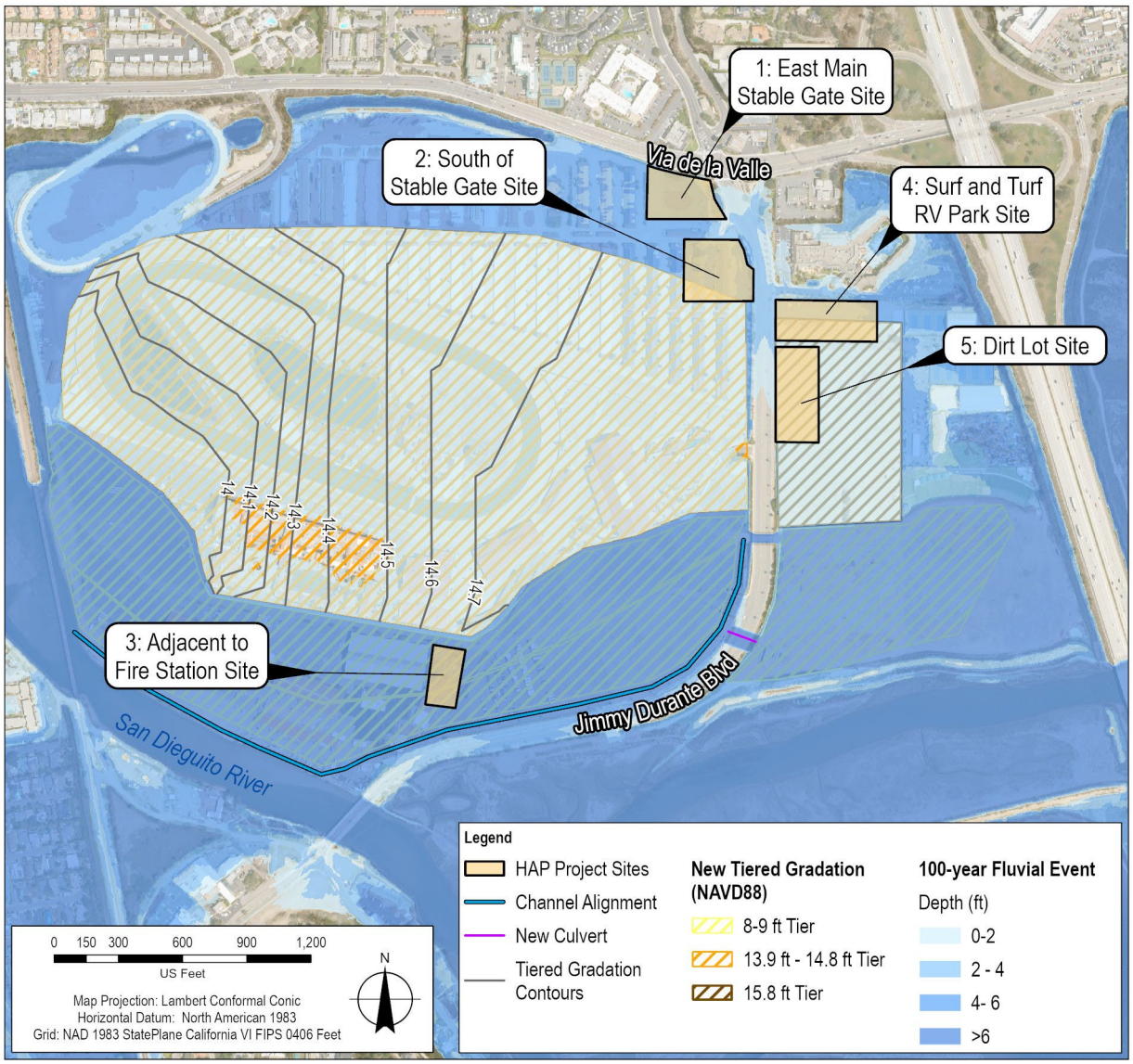

Figure 36. Strategy 3 depth results during the 100-year fluvial event

5.3.1.3 Fluvial Events with Sea Level Rise

Model results of fluvial events with SLR for Strategy 3 are similar to Strategy 2. In the 10-year event with 2050 SLR, the 8 ft tiered pad and the 8.5 ft tiered pad experience flood depths of up to 0.8 ft, and the driving range experiences up to 2 ft of flooding. Similar flooding is noted in the 10-year fluvial event with 2070 SLR, but the 9 ft tier experiences very shallow flooding (< 1 inch). In the 10-year event with 2100 SLR, the 9 ft tiered pad experiences flood depths of up to 1.4 ft with the central portion of the site remaining protected (Figure 30). Peak flood depths for Strategy 3 during the 10-year fluvial event with 2050 SLR and 2070 SLR are shown in Appendix B Figures 18 and 19, respectively.

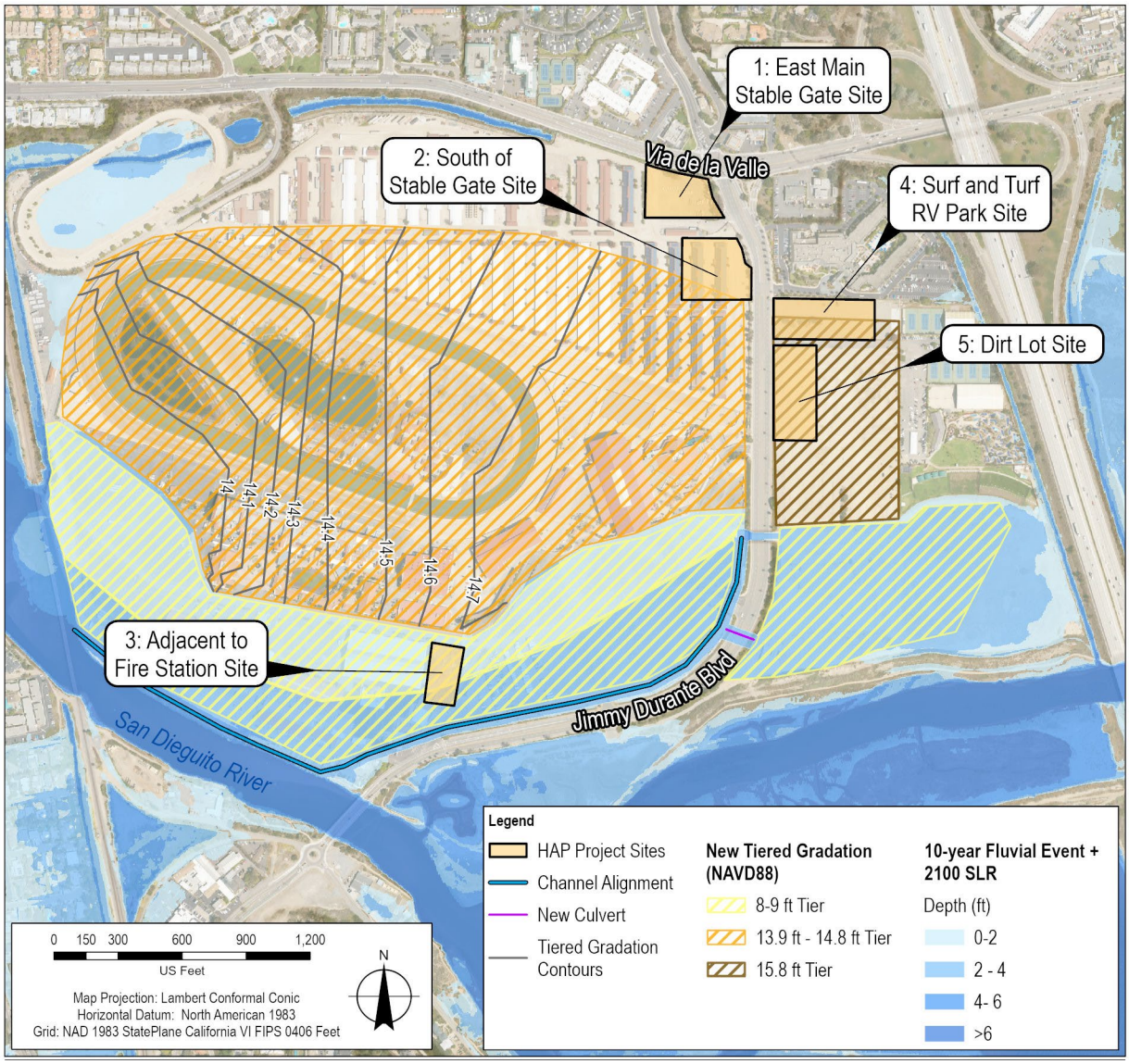

Figure 37. Strategy 3 depth results during the 10-year Fluvial Event + 2100 SLR

5.3.1.4 Hydraulic Impacts

Analysis performed in Appendix C shows the difference between water surface elevations in Strategy 3 compared with the existing conditions. The conditions increase water surface elevations by up to 0.25 ft within the channel. Outside of the District's Property, water surface elevations increase by up to 0.14 ft. These differences are primarily noted within the San Dieguito River and San Dieguito Lagoon between the I-5 Highway and Jimmy Durante Blvd. Since this Strategy leads to small differences in water surface elevations compared to the existing conditions, this Strategy is expected to meet California Drainage Law requirements. Refinements to the site grading could further reduce these offsite impacts if desired. Additionally, more refined topography data within the San Dieguito River could increase the conveyance capacity of the river and decrease offsite impacts. Similar to Strategy 2, this Strategy involves grading within the FEMA floodway. The goal of these improvements is to

increase capacity along the north bank of the San Dieguito River, so they are not expected to lead to a rise in base flood elevations. A no-rise certification would be required demonstrating that the development does not lead to increases in BFEs, and refinements to the channel and tiered pads may be required to meet the requirement.

6. Conclusion

The District's Property is currently located in a FEMA designated floodway and floodplain and has historically been vulnerable to flooding. These flood hazards are expected to worsen with accelerating SLR projections. To support future land use and guide flood mitigation strategies, this vulnerability assessment describes potential risks to the District's Property from simulated flood hazards under various tidal, fluvial, rain, SLR, and combination scenarios across multiple planning horizons. A two-dimensional HEC-RAS hydraulic model, was developed and used to evaluate existing and future flood hazards at the 22nd District Agricultural Association site in support of the 22nd District Agricultural Association's HAP Grant effort (Appendix C).

Results from the existing conditions modeling indicate that fluvial flooding from the San Dieguito River presents the dominant flood hazard to the District's property, with widespread inundation occurring during both the 50-year and 100-year fluvial events (Appendix A). The District's Property was shown to not be threatened by extreme tidal events, even in combination with the 2100 Intermediate-High SLR projection (4.8 ft). Rather, the primary driver of flooding was found to be high fluvial (riverine) flows during extreme events, which is aligned with previous extreme flooding events experienced at the site. The District Property adjacent to the River becomes exposed during the 10-year fluvial event, and nearly the entire site is exposed under the 50-year and 100-year fluvial events. Furthermore, the flood hazards during a 10-year fluvial event increased when SLR projects were combined. The primary flood pathways include overtopping of the riverbank and overtopping along Jimmy Durante Boulevard, but backflow through drain outfalls that do not have outfall valves can be a source of flooding as well.

A primary goal of the vulnerability assessment was to investigate flood risks at five potential affordable housing sites. While all housing sites are exposed to the 50-year and 100-year fluvial event, only Site 3 is exposed to the 10-year event in combination with SLR projected by 2100. Overall, Site 5, and Sites 2 and 4 to a lesser degree, are the least exposed to flood hazards.

Three high-level conceptual adaptation strategies were developed representing a spectrum of possible actions to investigate to mitigate flood risks. The adaptation strategies include:

- Strategy 1: Targeted Ecotone Features
- Strategy 2: Perimeter Berm Protection
- Strategy 3: Site-wide Floodable Frontage

Exploring potential adaptation strategies offers a perspective of tradeoffs between current land use operations and existing vulnerabilities. Strategies 1 and 2 represent approaches to mitigate flood risks for the 10-year and 50-year fluvial events respectively, with increasing levels of impact on existing land uses. The strategies include an elevated berm and a naturalized transitional zone using a tier approach. Alternatively, Strategy 3 includes assumptions of major land use modification to increase part of the site's elevations above the flood hazard zone. Strategy 1 (Targeted Ecotone Features) provides protection during the 10-year fluvial event with SLR through 2070, while Strategies 2 (Perimeter Berm Protection) and 3 (Site-wide Floodable Frontage) provide higher levels of protection during the 50-year fluvial event (Appendix B). Strategy 3 also reduces flood depths within areas of fill during larger events. All conceptual adaptation strategies were developed with consideration of California Drainage Law and FEMA floodway requirements, and preliminary results indicate that the strategies can be refined to meet no-rise certification criteria. Immediate or short-term actions to manage flood impacts, such as modernizing stormwater infrastructure and management were considered and should be included in future land use and infrastructure planning on site.

Planning adaptation strategies and developments in a flood hazard zone must consider and adhere to relevant federal, state, and city regulations. Further investigations may be required to assess the impact of potential adaptation strategies to the watercourse and local hazards, including a no-rise certification. Additionally, developments may also be subject to building regulations and California Drainage Law requirements. While this vulnerability assessment is based on the best science and information available today, there is uncertainty in

future climate and SLR conditions. Ultimately, adaptation should be considered an ongoing process and identifying a preferred approach to support existing and future resilience of the site will require iterative discussions and investigations depending on future plans for District Property.

As planning advances, additional data collection and model refinement—particularly related to river bathymetry, onsite drainage infrastructure, and operational assumptions—would improve confidence in the modeled results and support assessment of strategies. Importantly, the presented strategies need to be refined through additional input by the District and aligned with future planning objectives across the site to identify specific resilience goals. Future investigations and feasibility studies are needed to refine potential adaptation strategies and evaluate tradeoffs they have related to a variety of criteria such as cost, changes in land use, flood protection benefits, etc. For example, strategies could be refined to provide additional flood protection (i.e. 100-year flood protection) to key areas, but this additional flood protection would need to be balanced with additional floodable areas to prevent significant increases in flood hazards offsite. Overall, this study provides a framework to inform future decision-making related to flood risk management, site planning, and long-term resilience under changing climate conditions.

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Appendix A

Catalogue of Flood Hazard Maps

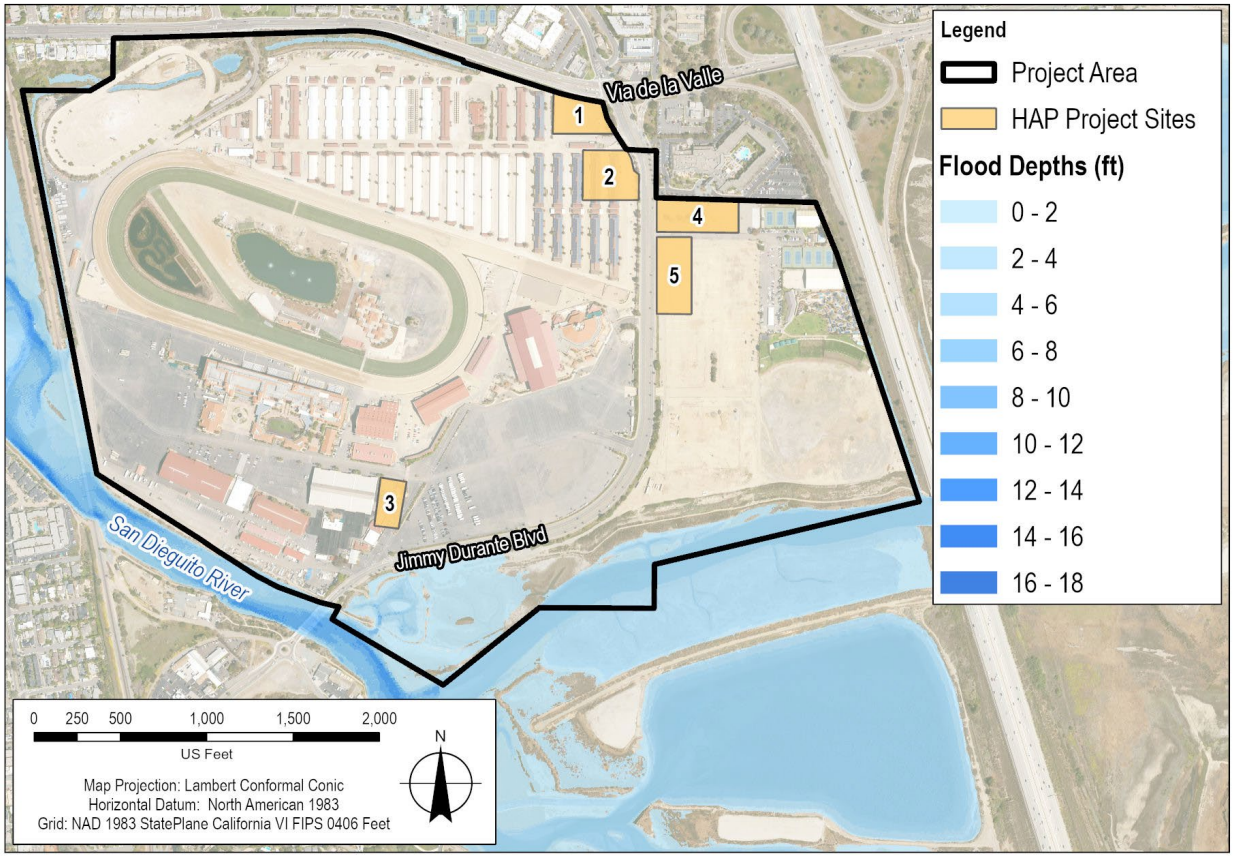


Figure 1. Scenario 1: 10-year EWL (7.44 ft) Tidal Event

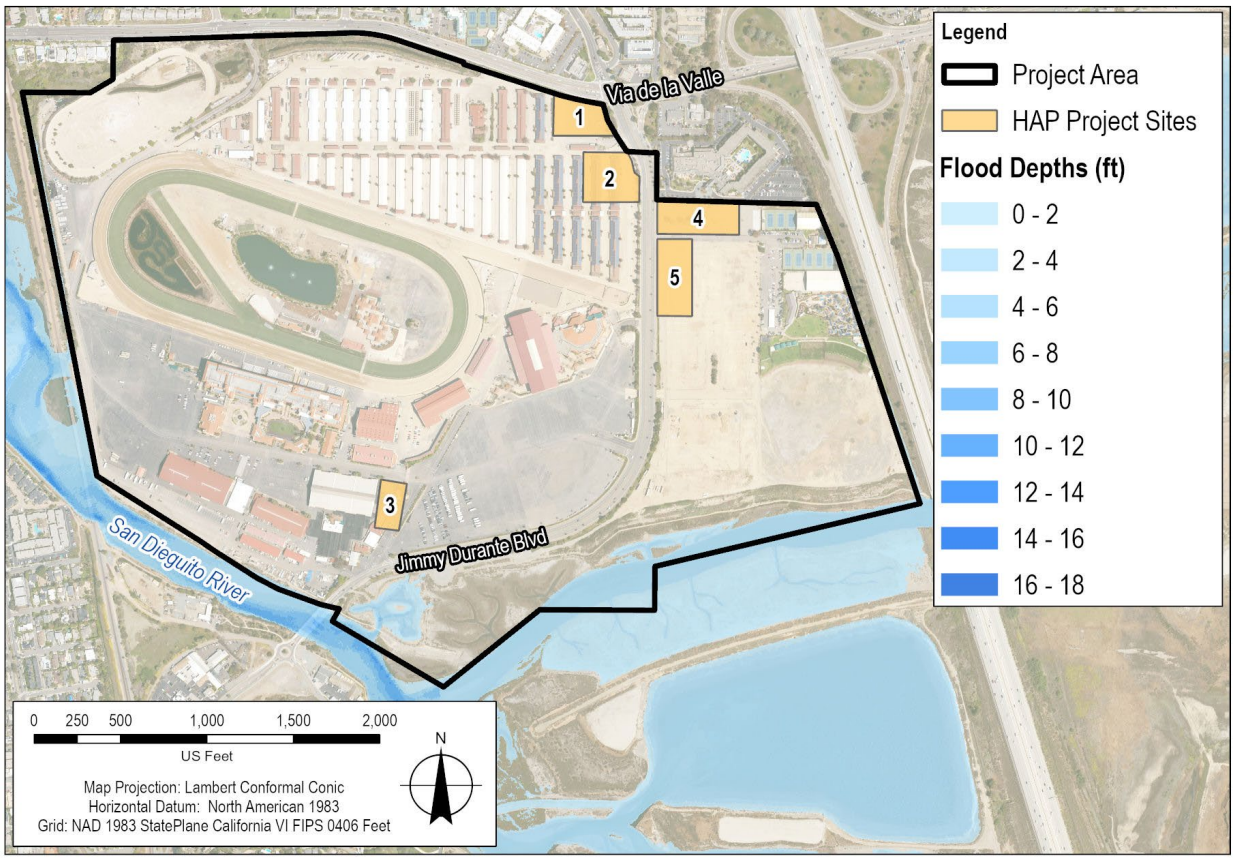


Figure 2. Scenario 2: MHHW + 2050 SLR (6.13 ft) Tidal Event

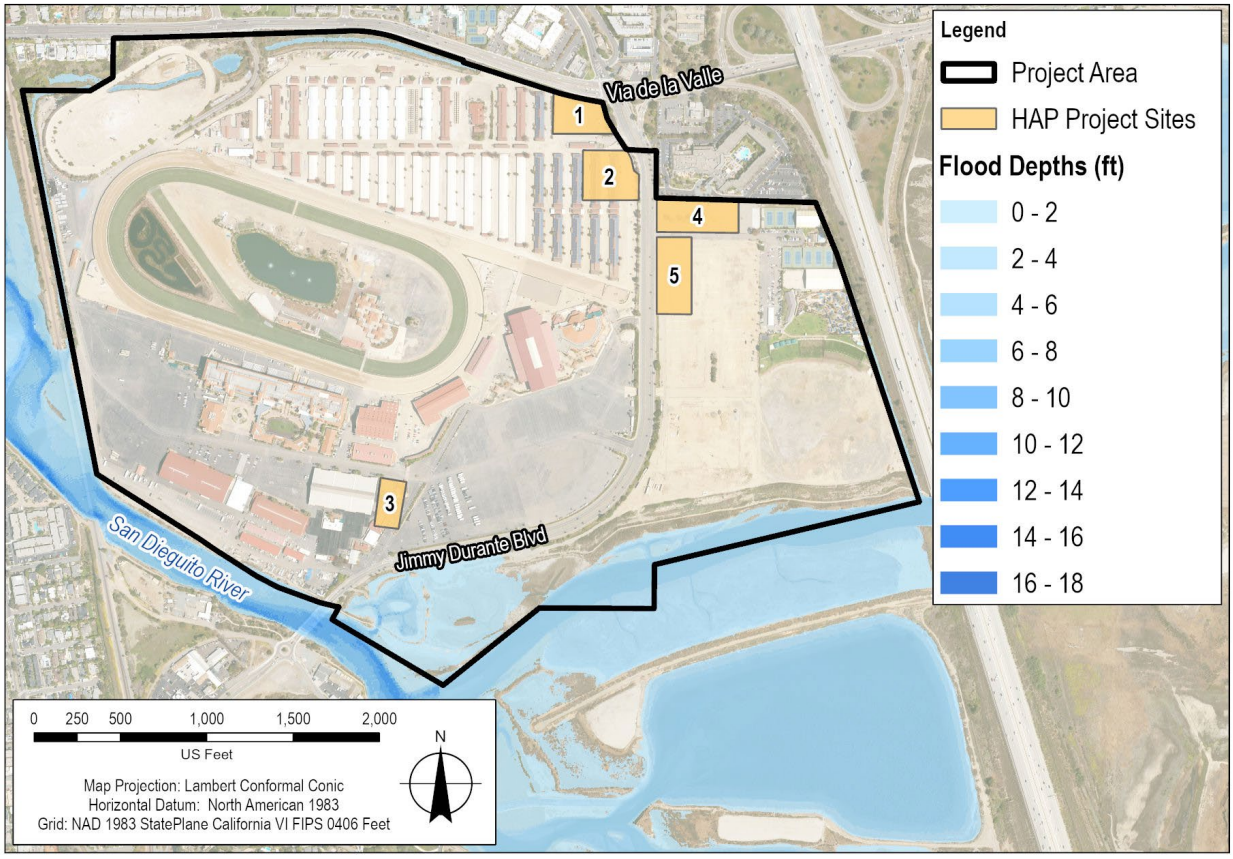


Figure 3. Scenario 3: MHHW + 2075 SLR (7.43 ft) Tidal Event

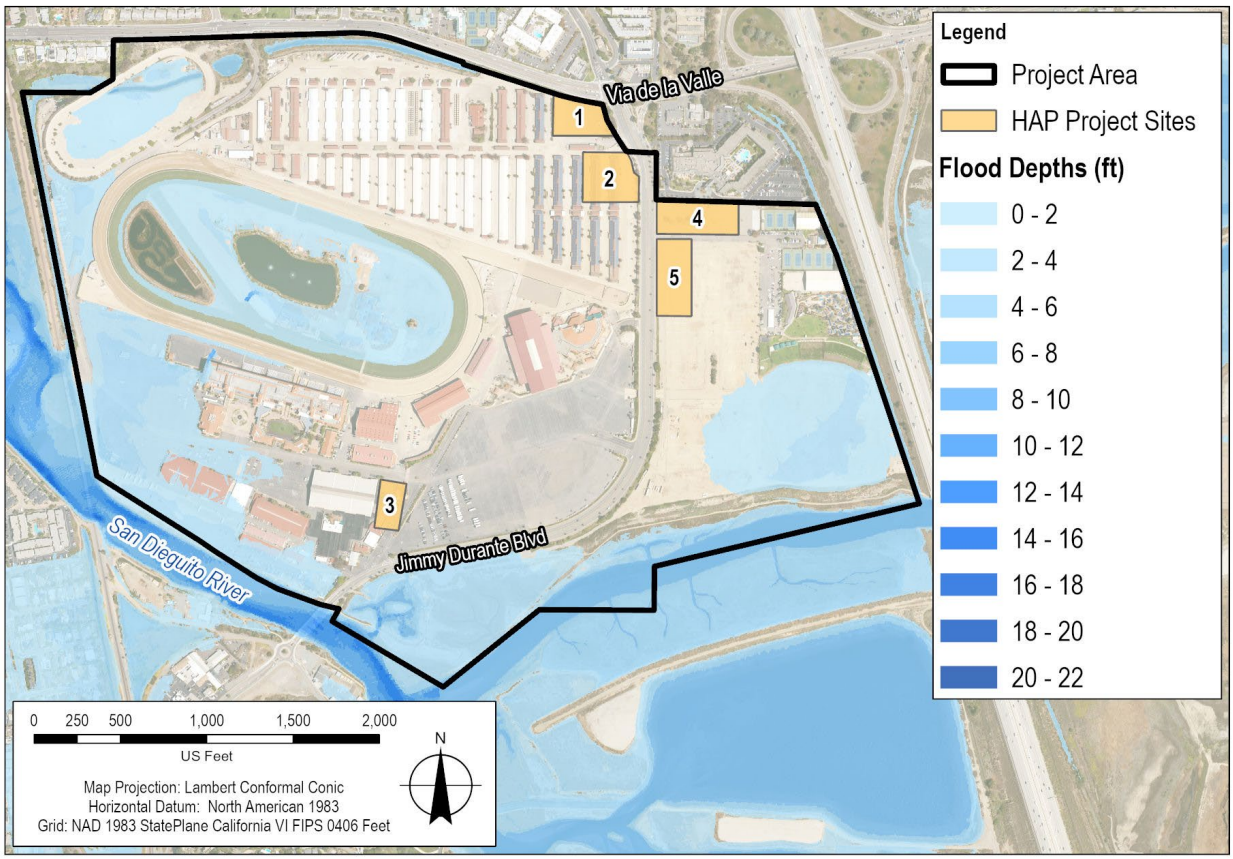


Figure 4. Scenario 4: MHHW + 2100 SLR (9.93 ft) Tidal Event

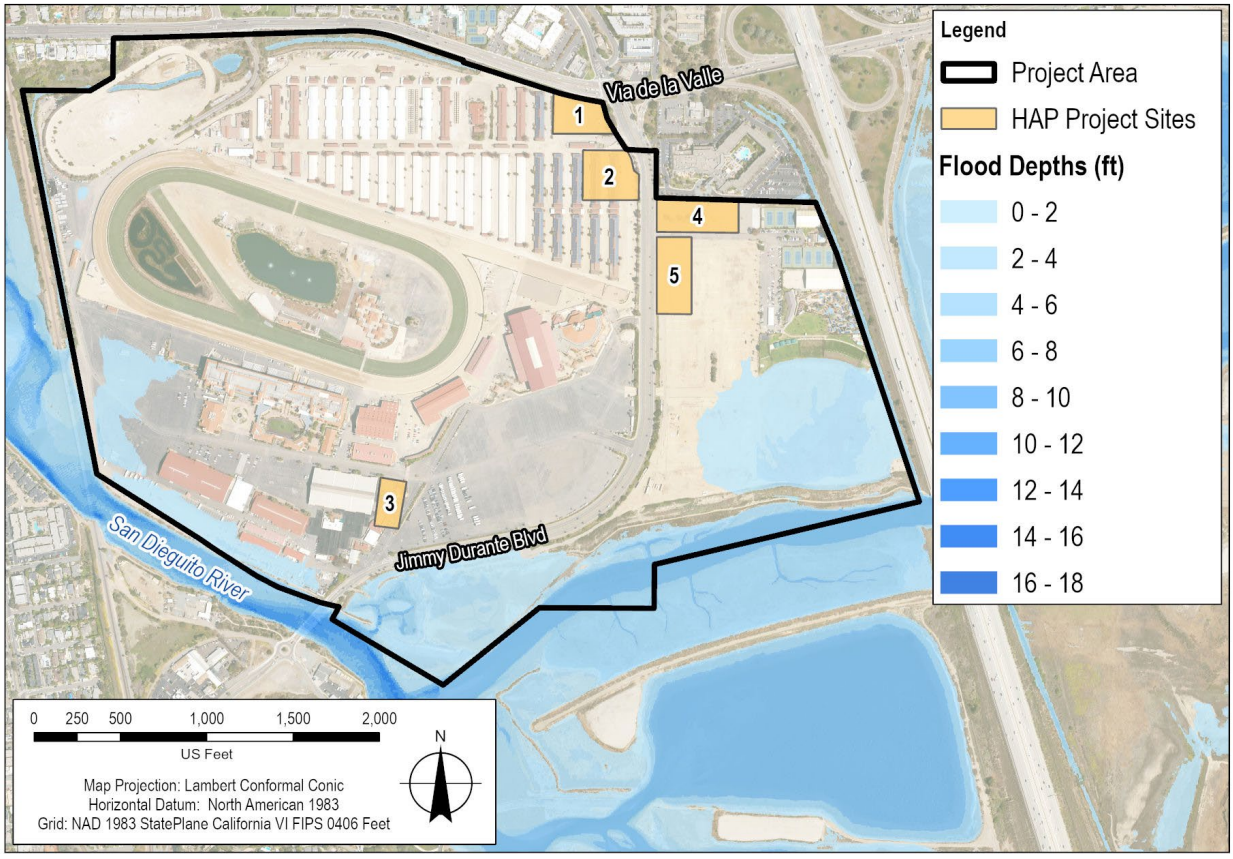


Figure 5. Scenario 5: 10-year Fluvial Event

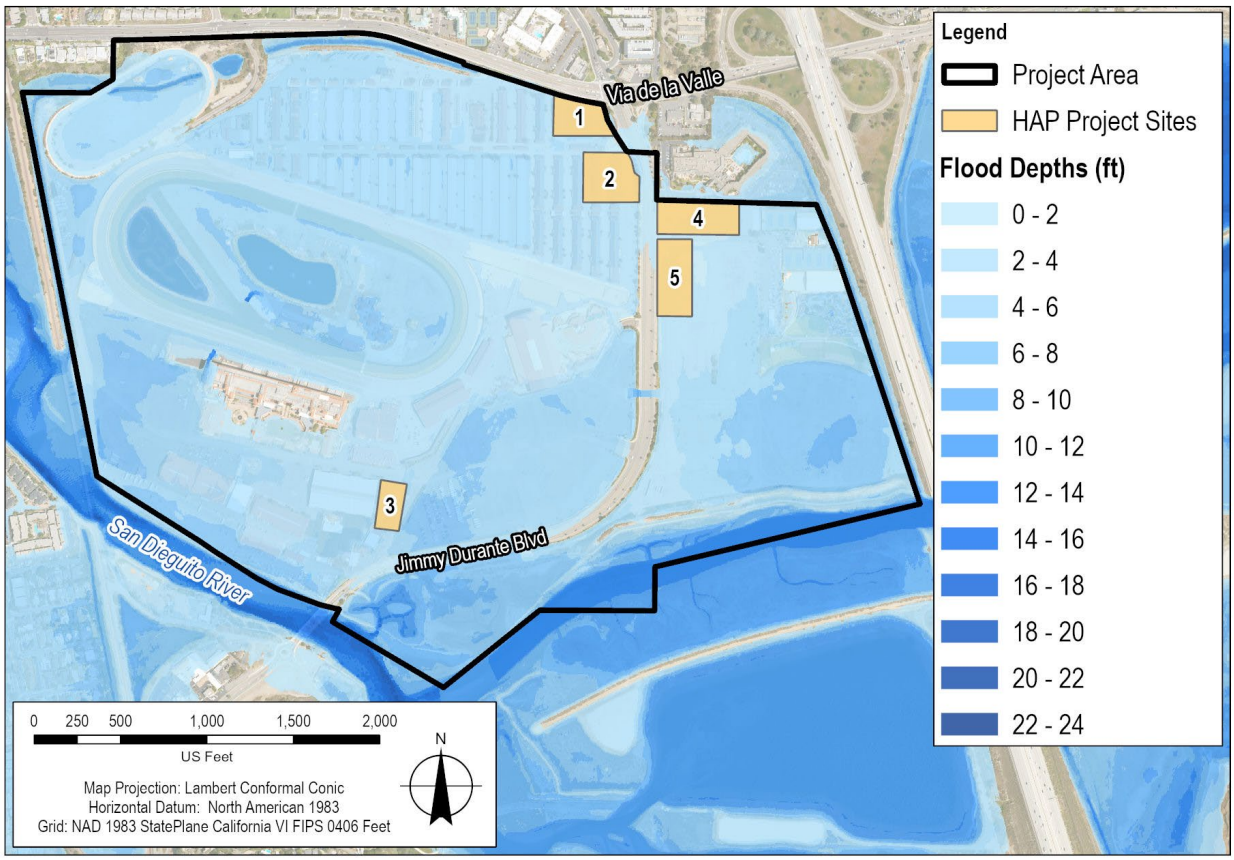


Figure 6. Scenario 6: 50-year Fluvial Event

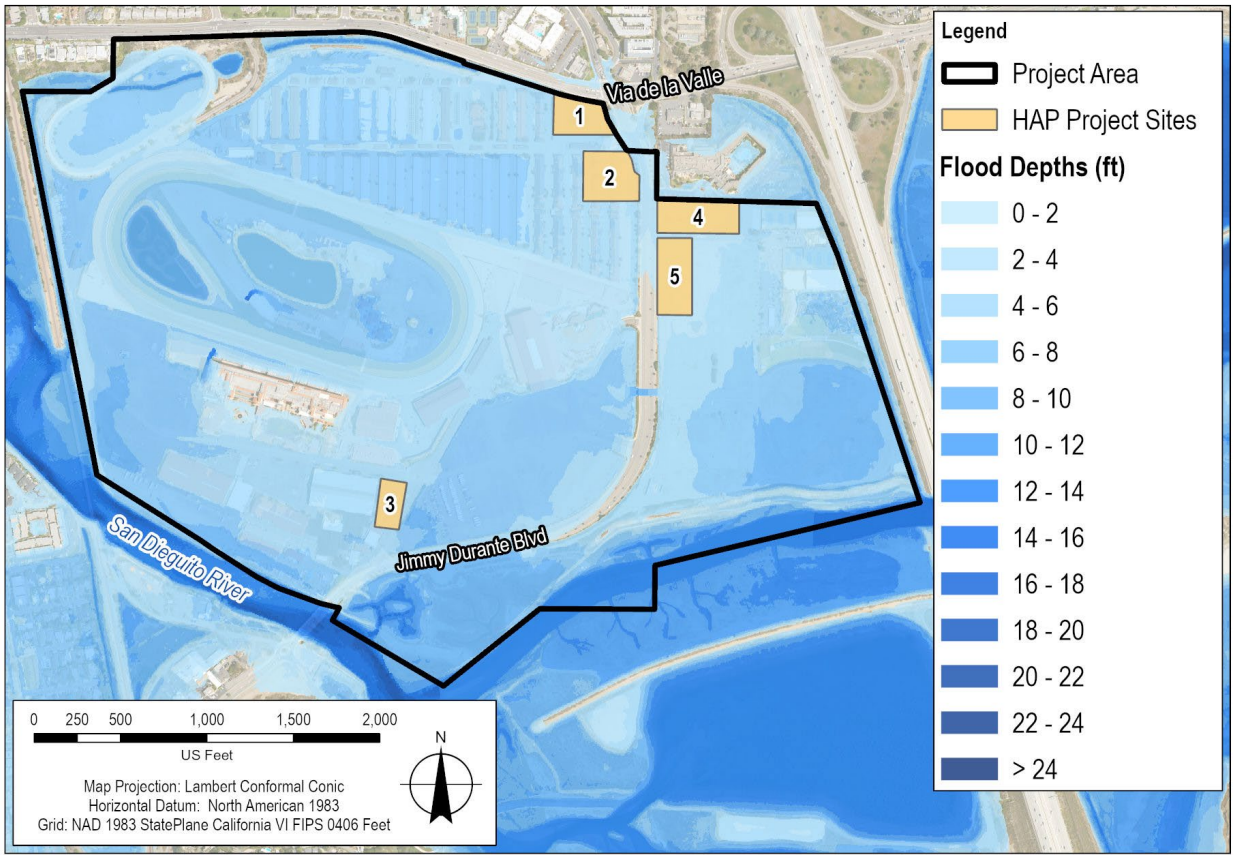


Figure 7. Scenario 7: 100-year Fluvial Event

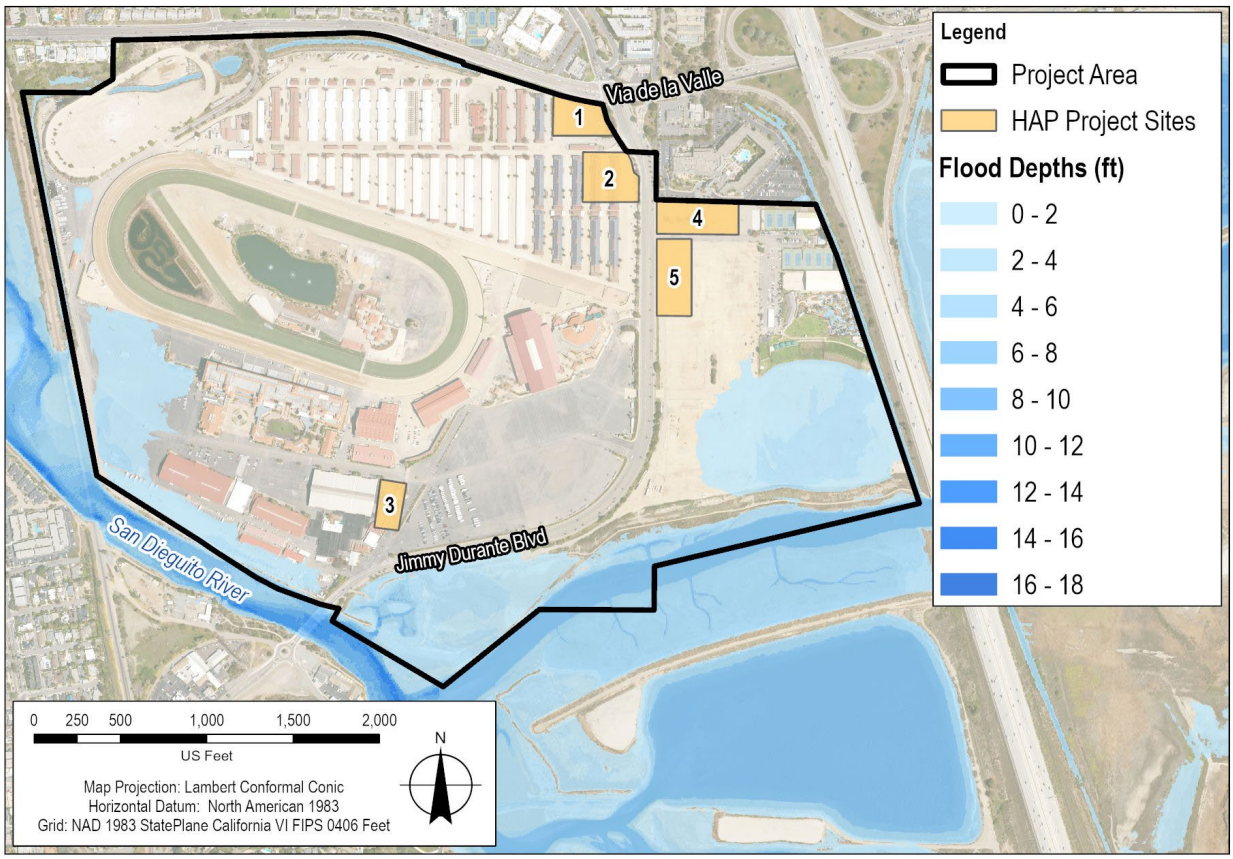


Figure 8. Scenario 8: 10-year Fluvial Event + 2050 SLR (6.13 ft)

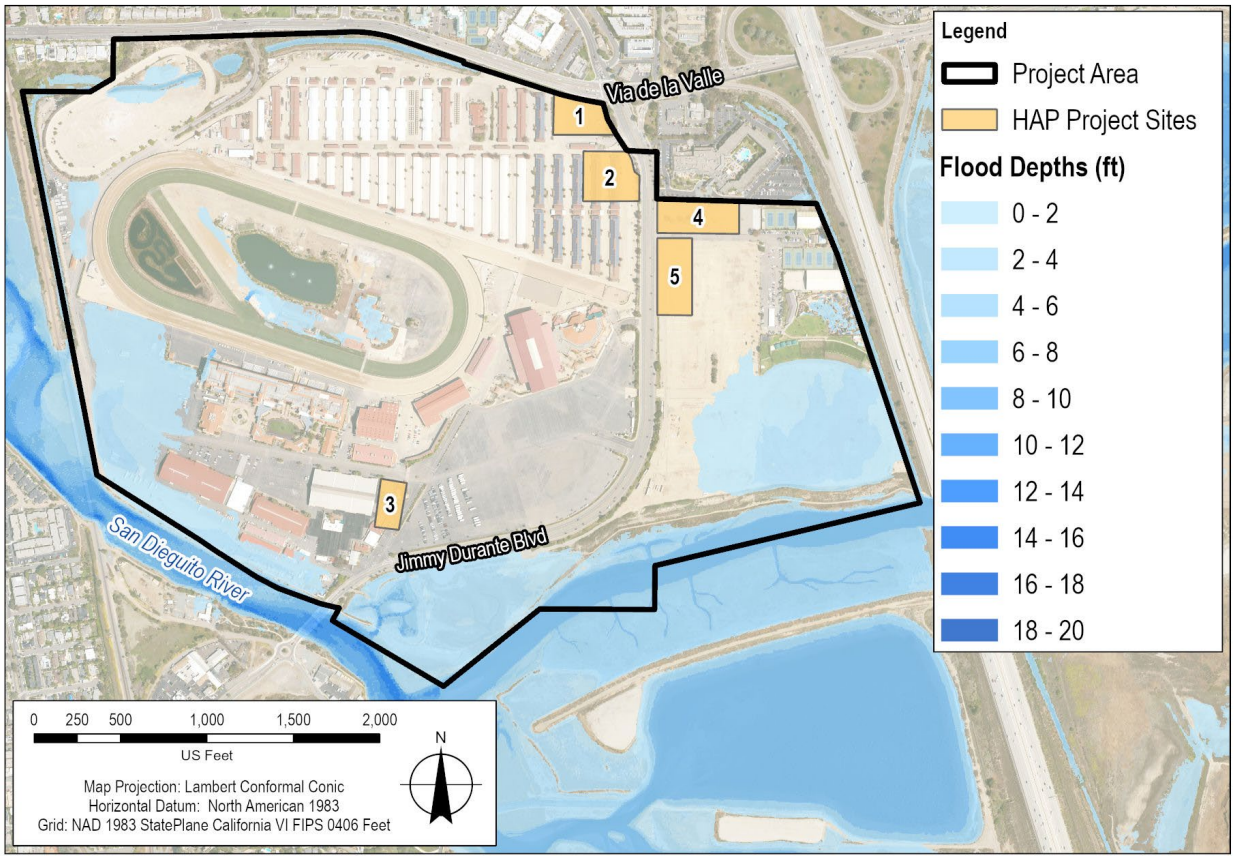


Figure 9. Scenario 9: 10-year Fluvial Event + 2075 SLR (7.43 ft)

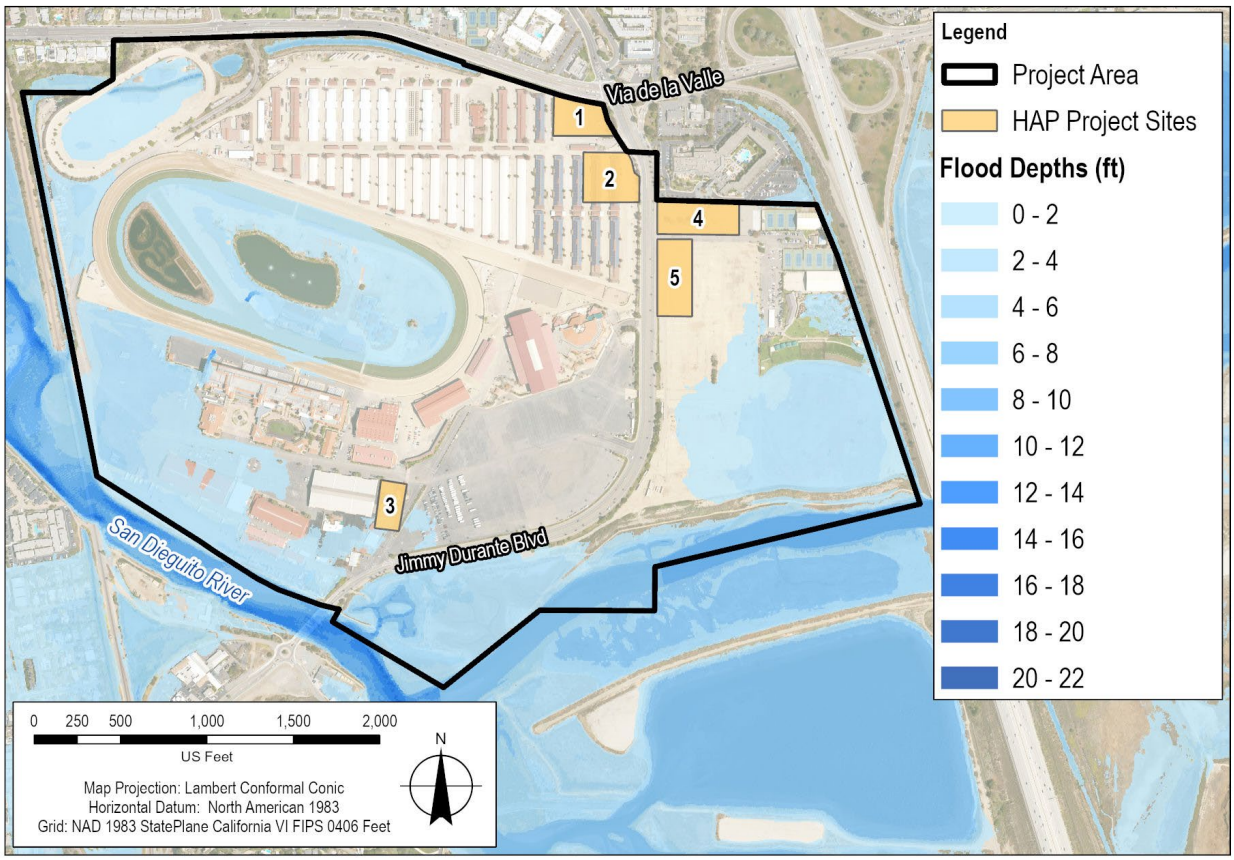


Figure 10. Scenario 10: 10-year Storm Event + 2100 SLR (9.93 ft)

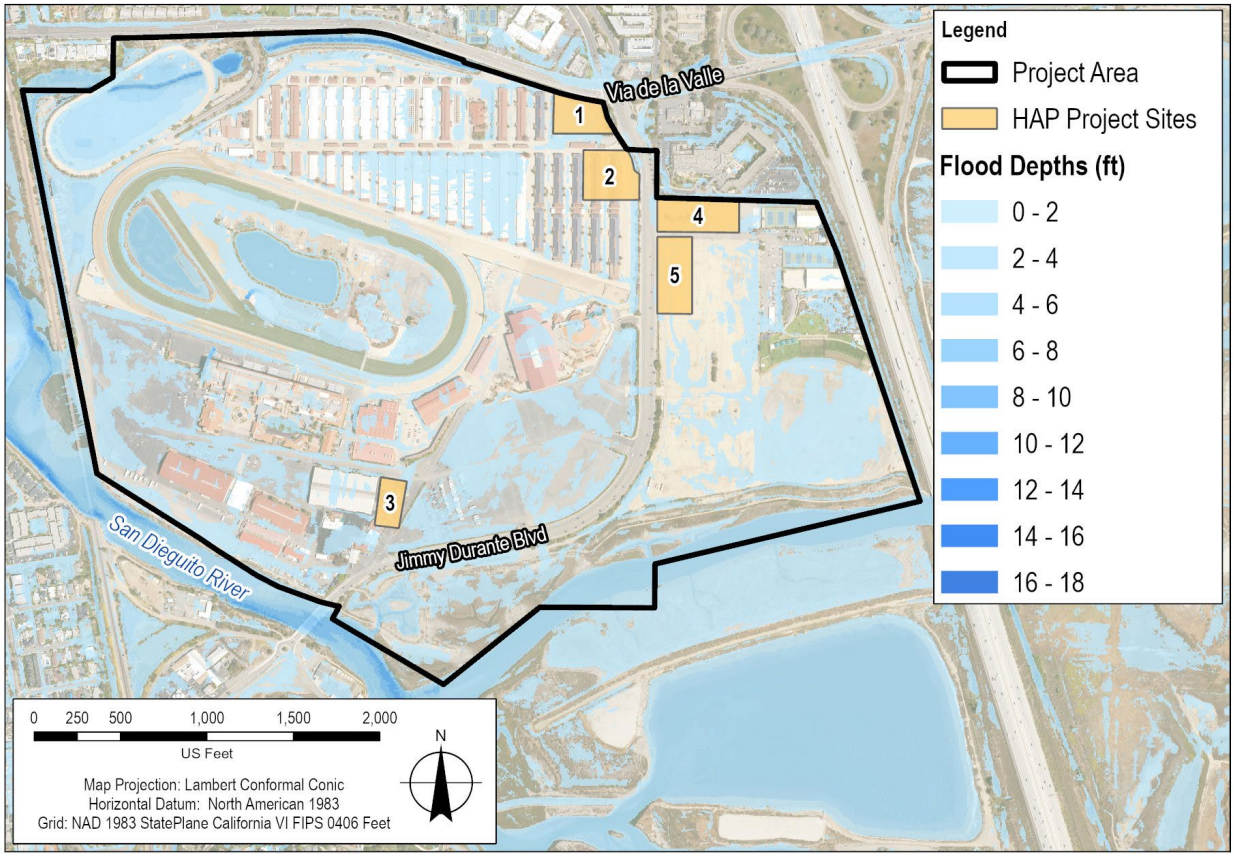


Figure 11. Scenario 11: 10-year Onsite Rainfall Event

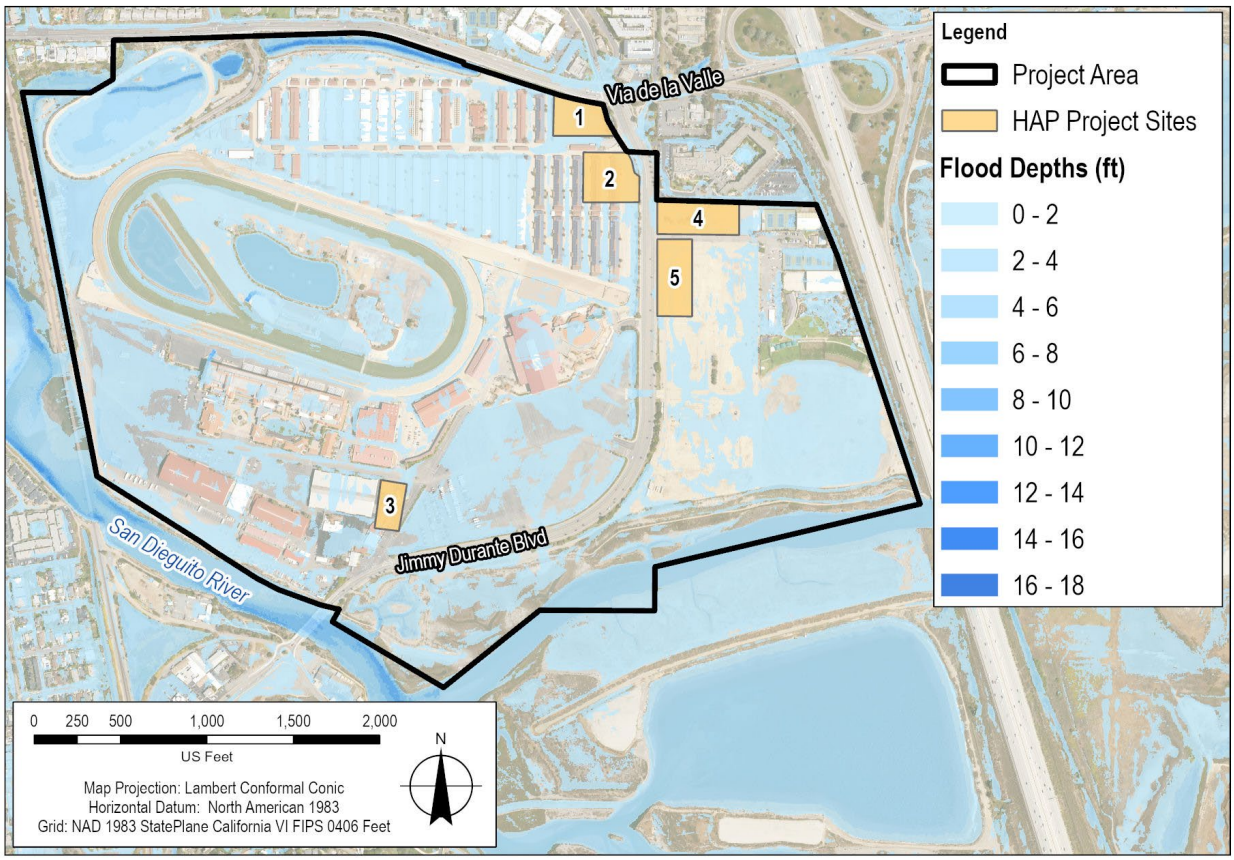


Figure 12. Scenario 12: 100-year Onsite Rainfall Event

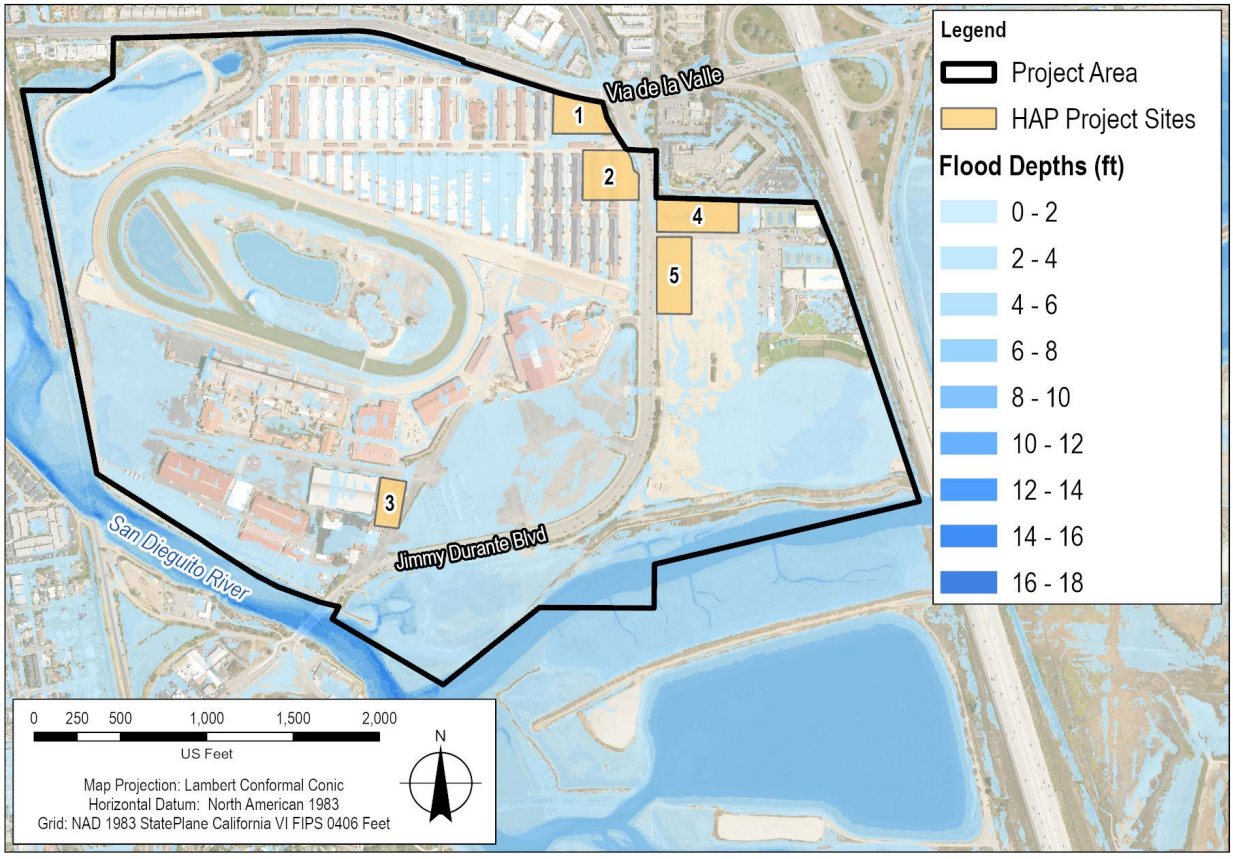


Figure 13. Scenario 13: 10-year Onsite Rainfall Event + 10-year Fluvial event

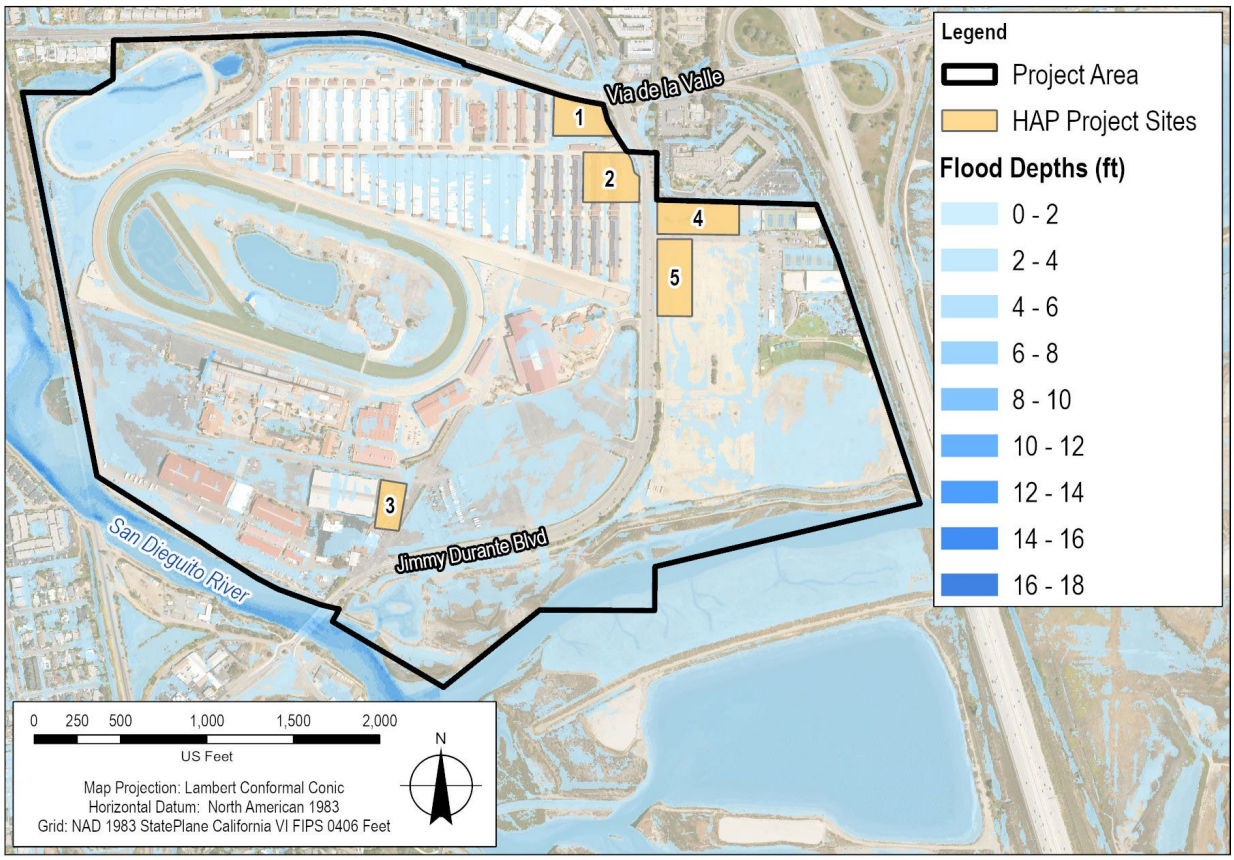


Figure 14. Scenario 14: 10-year Onsite Rainfall Event + 2050 SLR (6.13 ft)

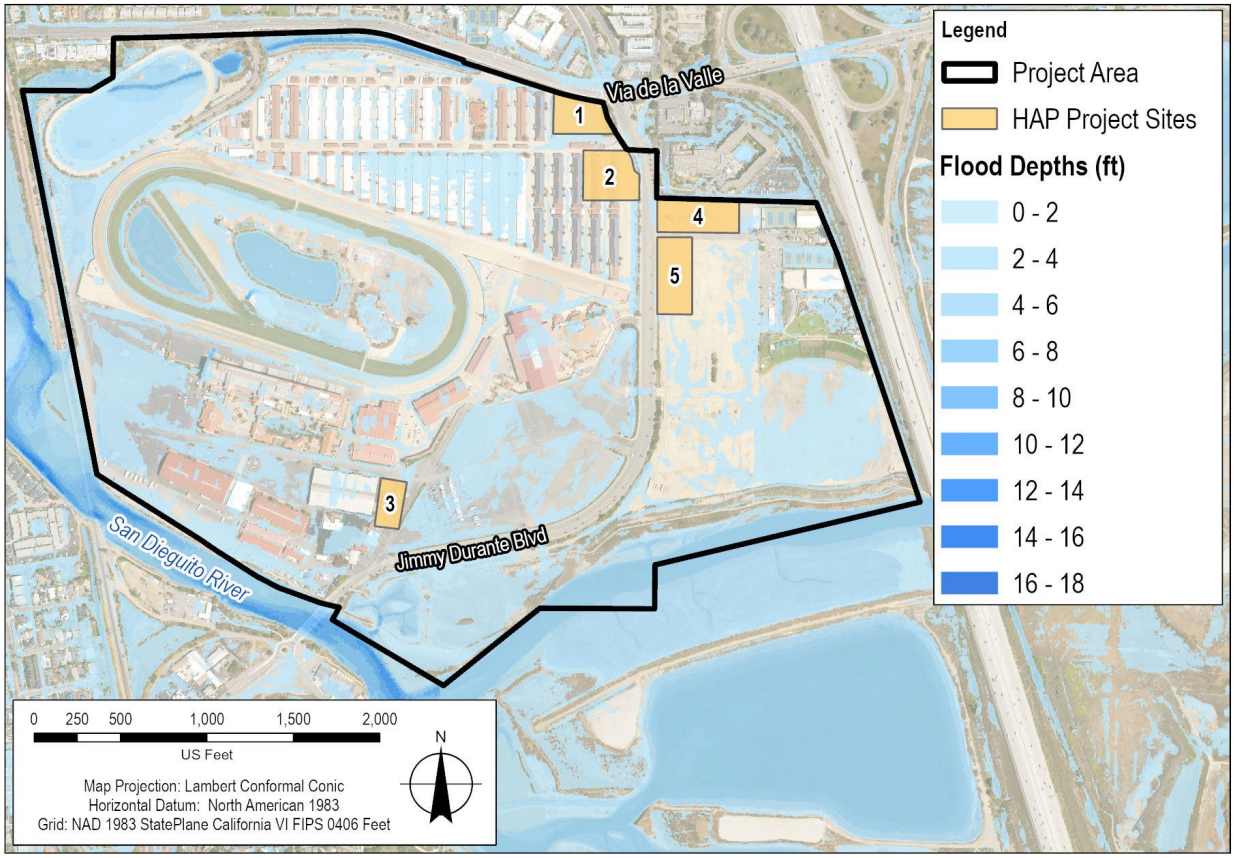


Figure 15. Scenario 15: 10-year Onsite Rainfall Event + 2075 SLR (7.43 ft)

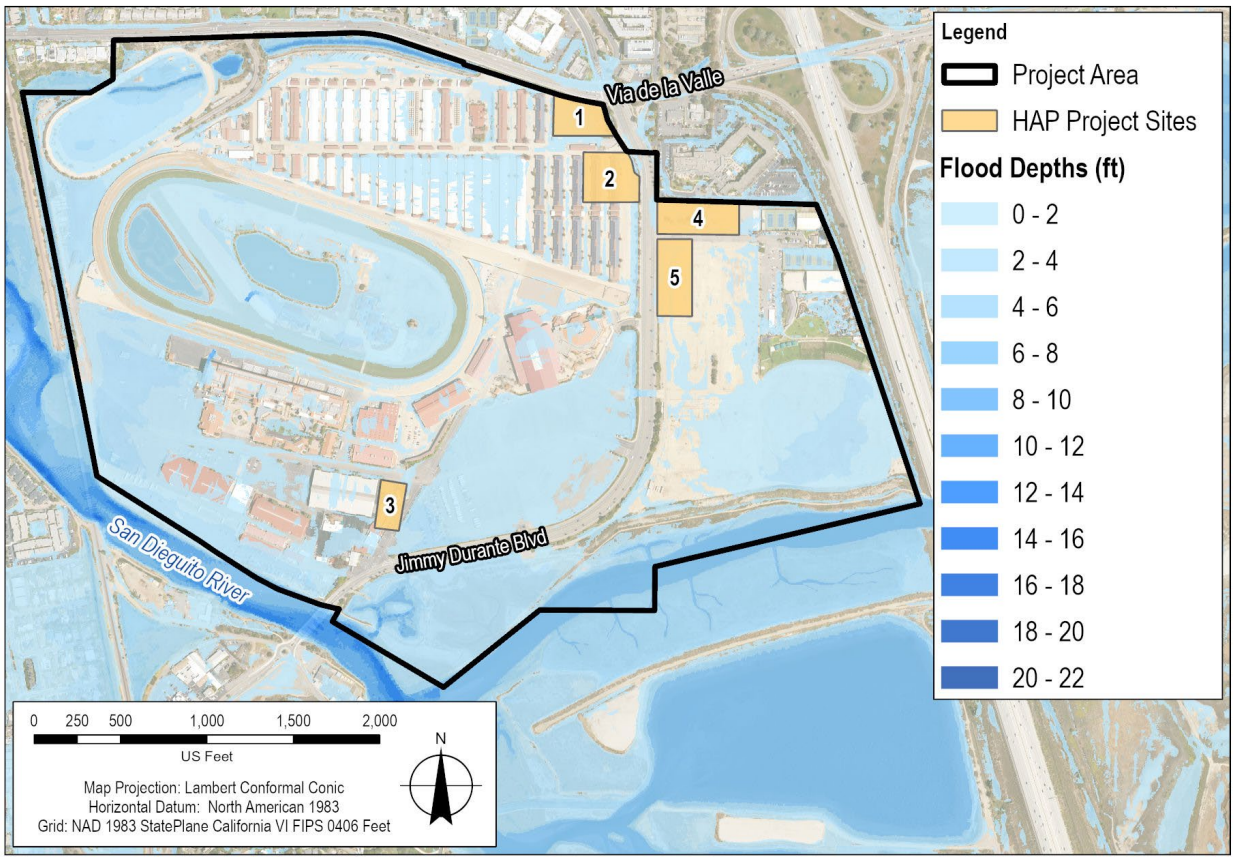


Figure 16. Scenario 16: 10-year Onsite Rainfall Event + 2100 SLR (9.93 ft)

Appendix B

Catalogue of Adaptation Strategy Flood Modeling Maps

Strategy 1: Targeted Ecotone Features

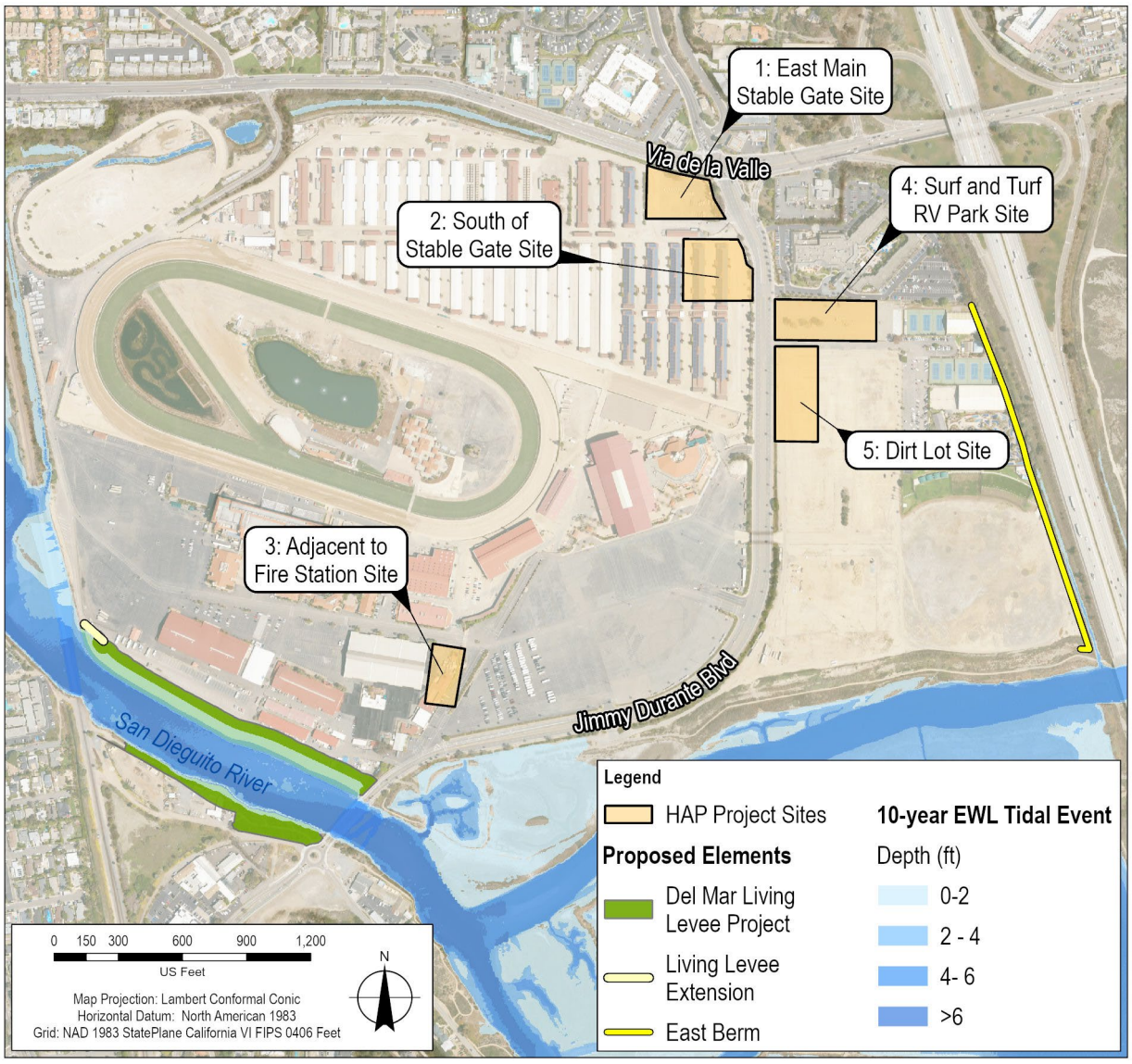


Figure 1. Scenario 1: 10-year EWL Tidal Event

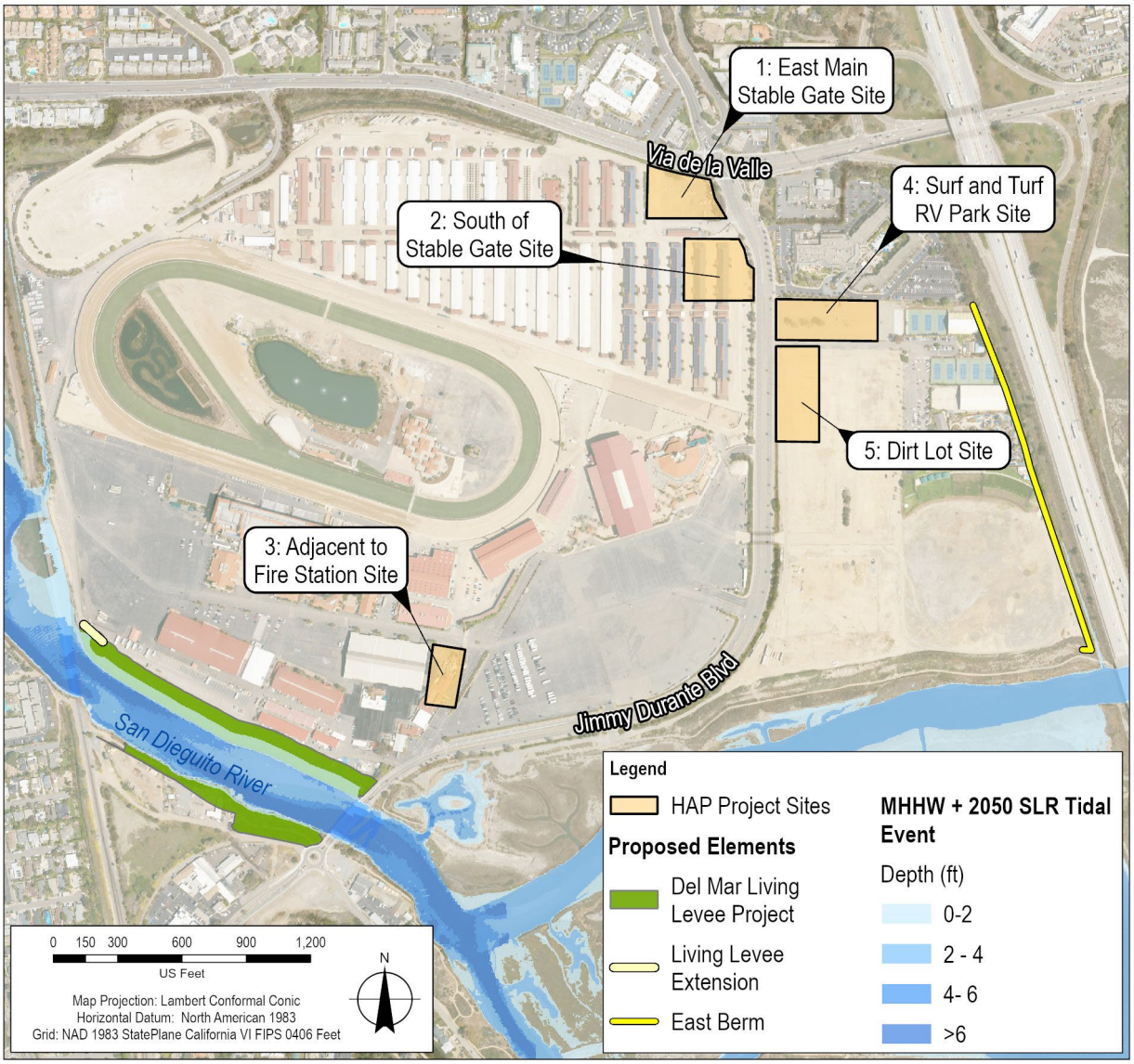


Figure 2. Scenario 1: MHHW + 2050 SLR Tidal Event

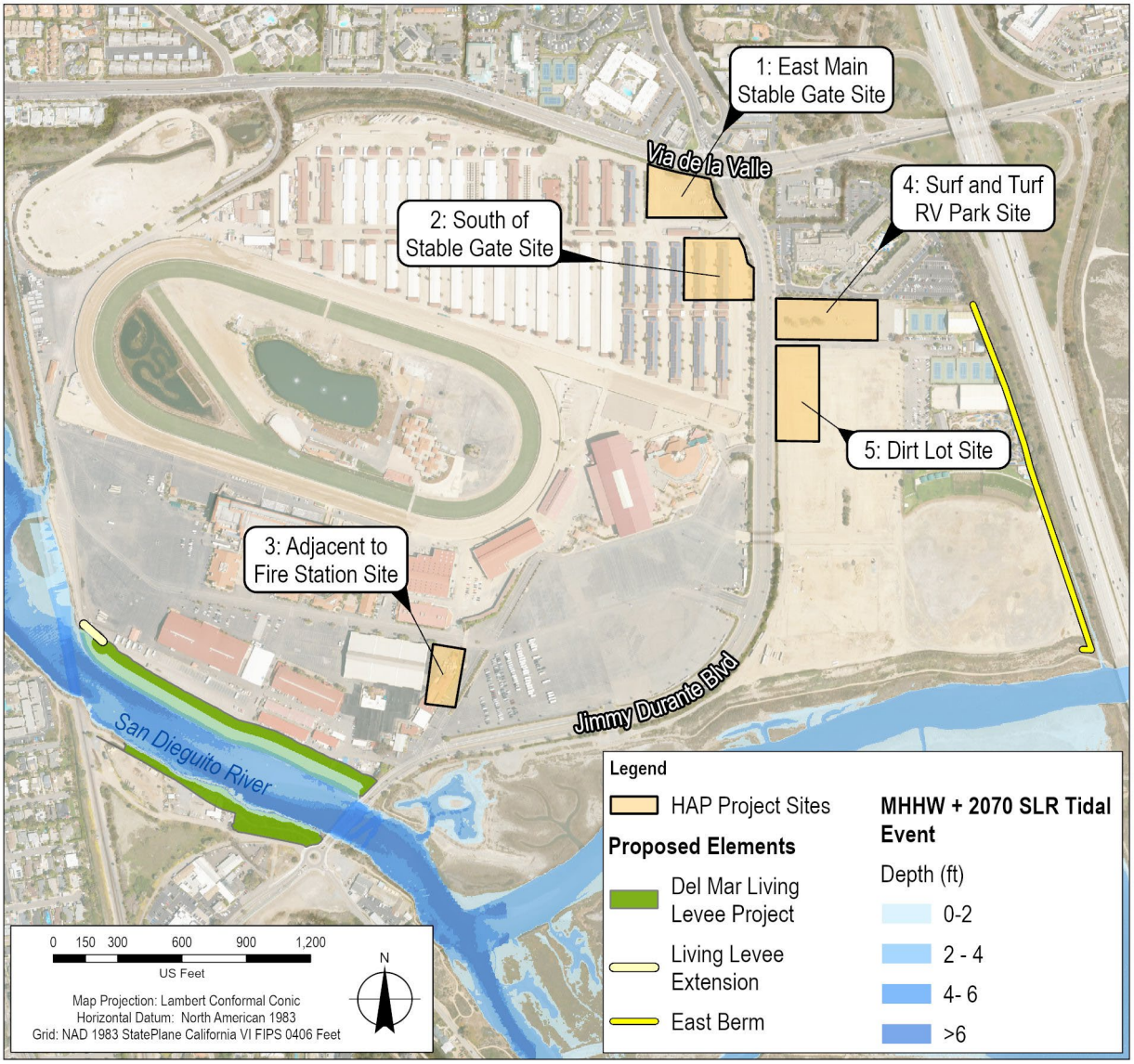


Figure 3. Scenario 1: MHHW + 2070 SLR Tidal Event

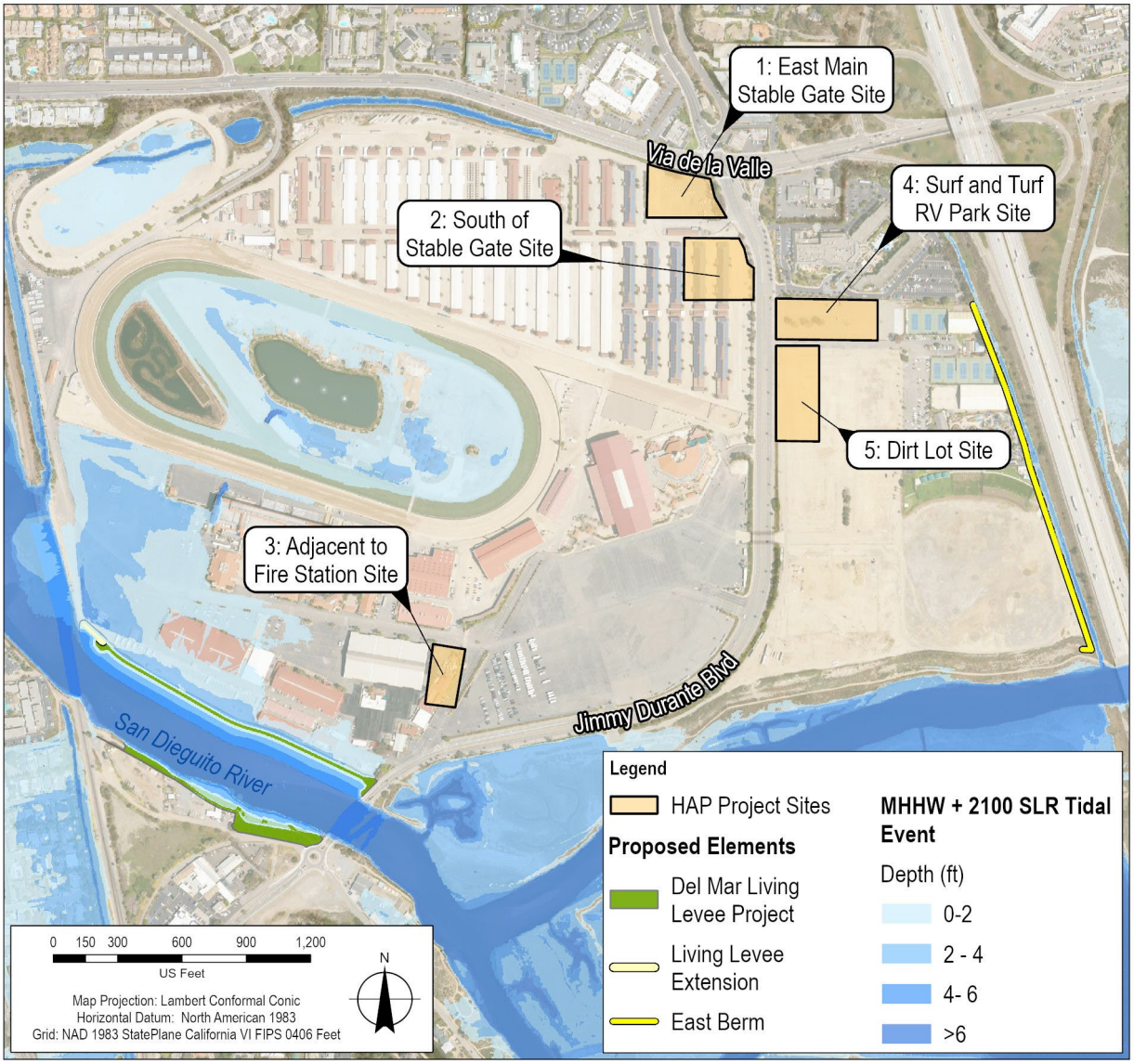


Figure 4. Scenario 1: MHHW + 2100 SLR Tidal Event

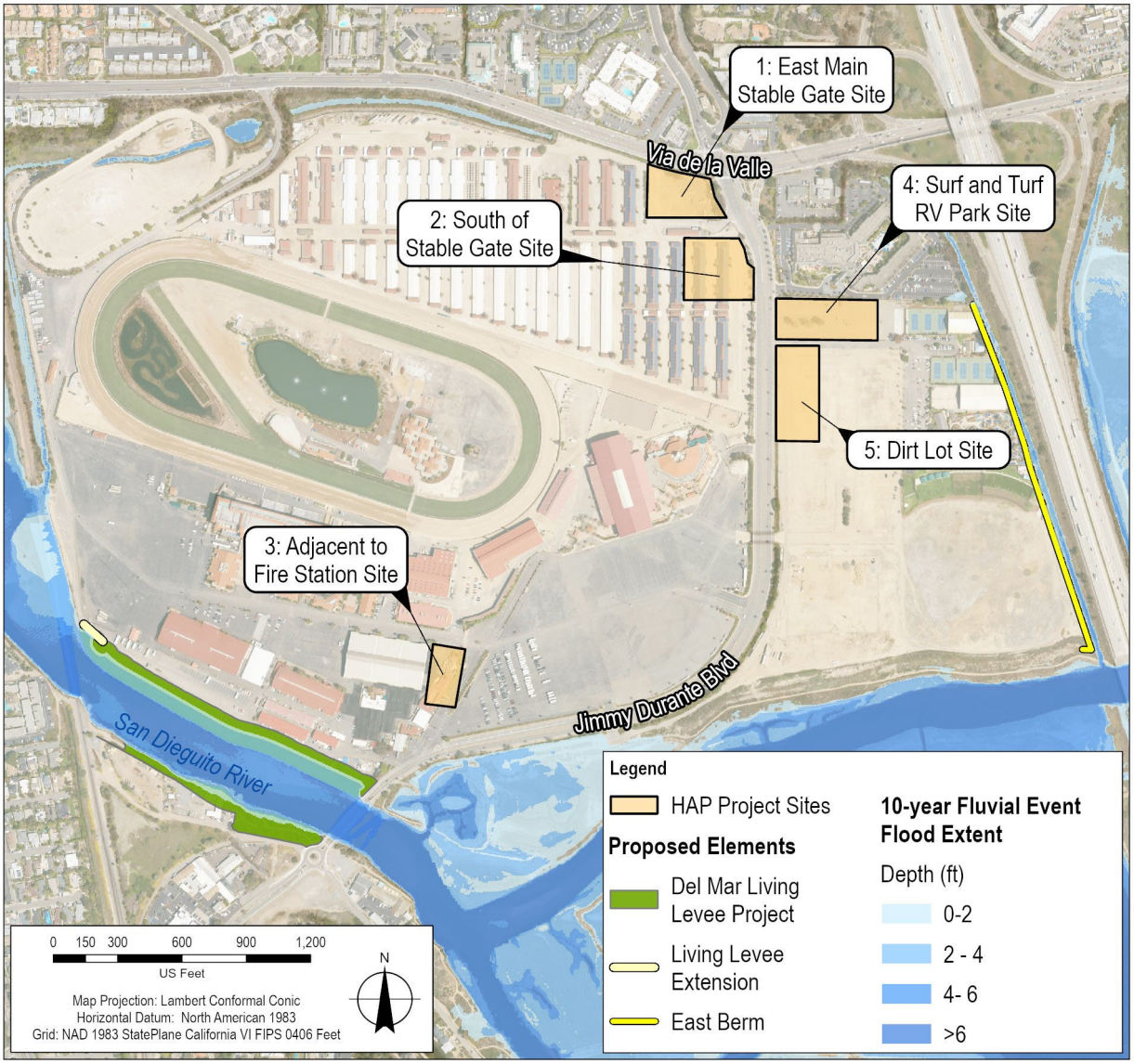


Figure 5. Scenario 1: 10-year Fluvial Event

Figure 6. Scenario 1: 50-year Fluvial Event

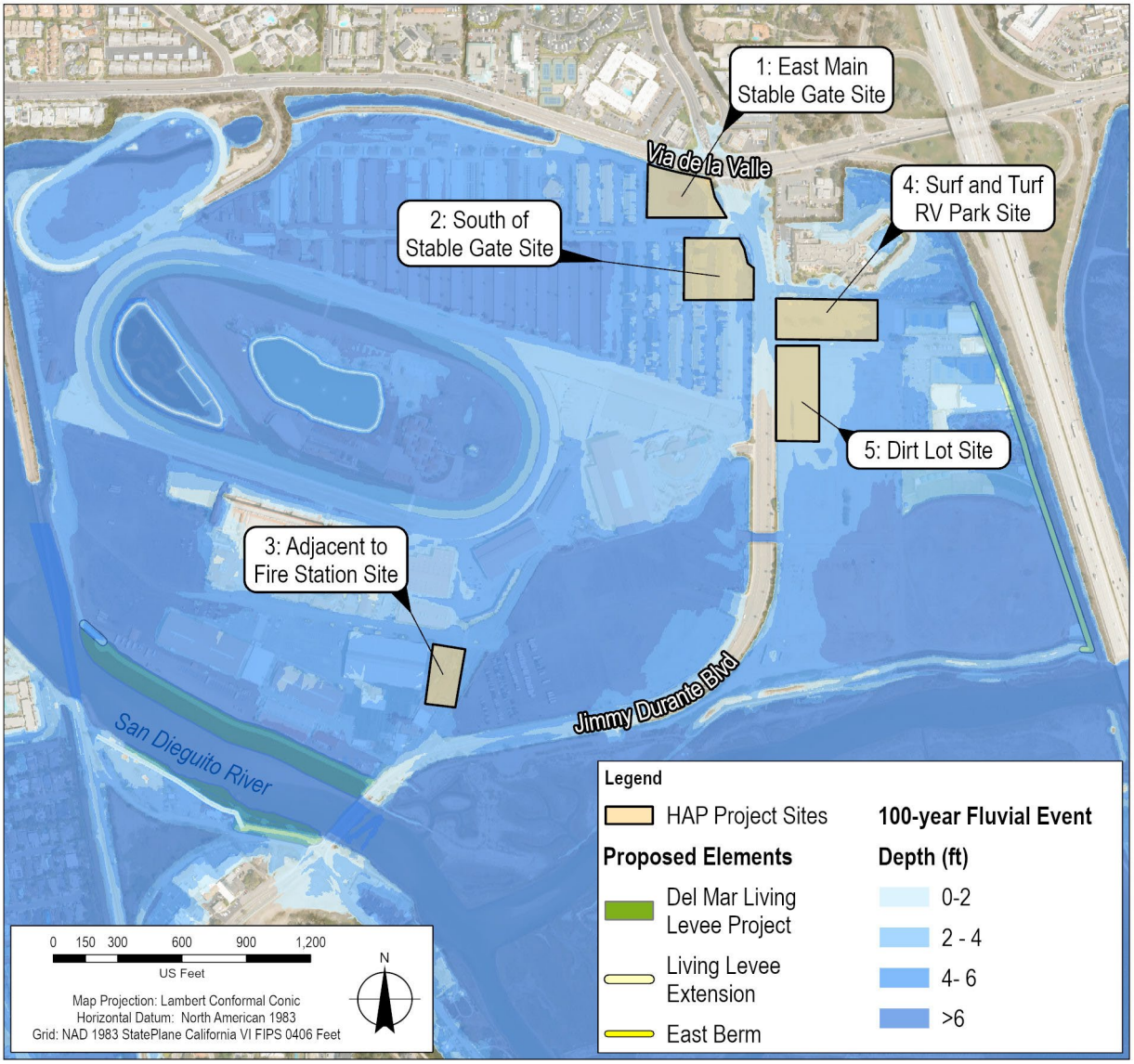


Figure 7. Scenario 1: 100-year Fluvial Event

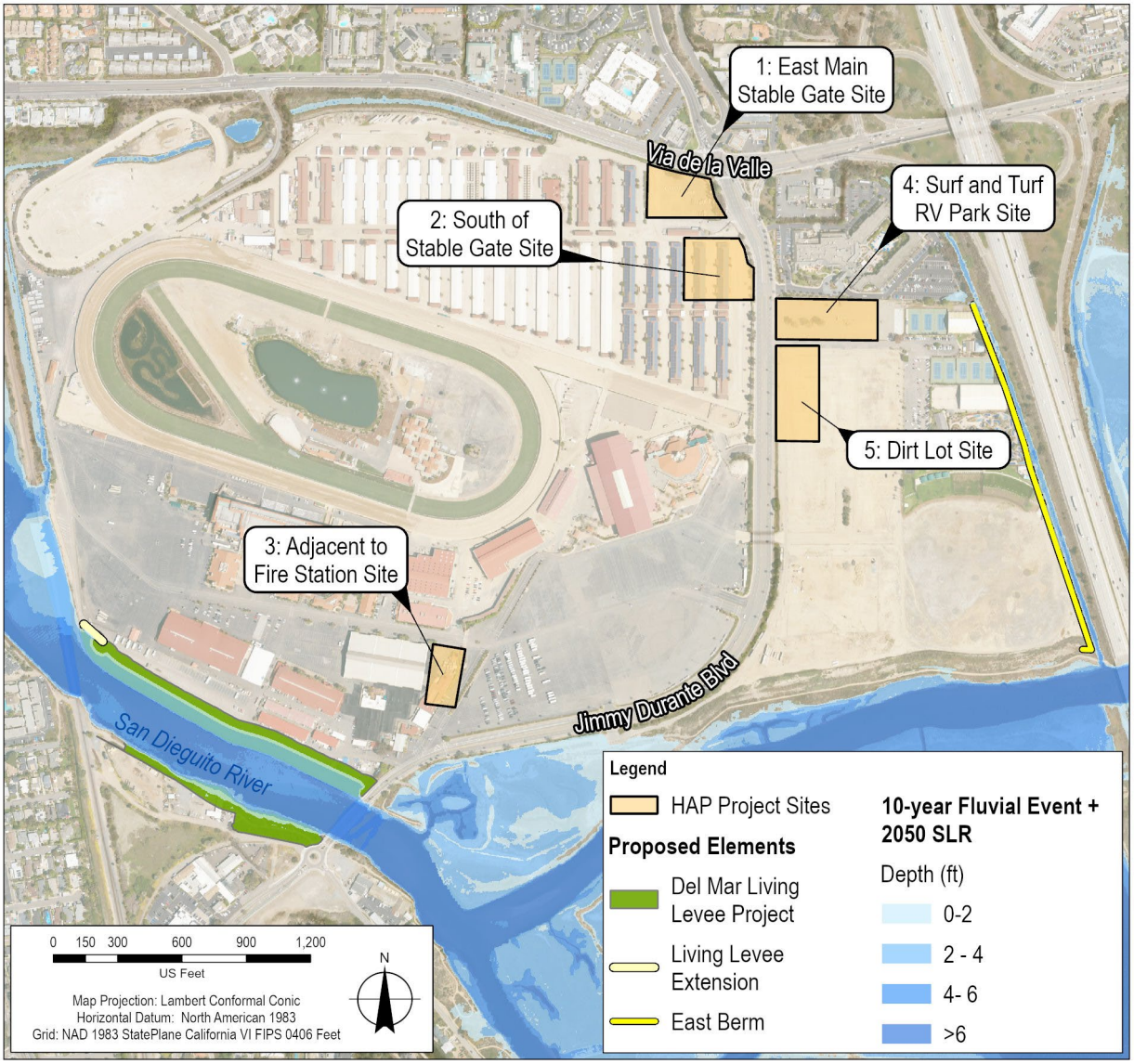


Figure 8. Scenario 1: 10-year Fluvial Event + 2050 SLR

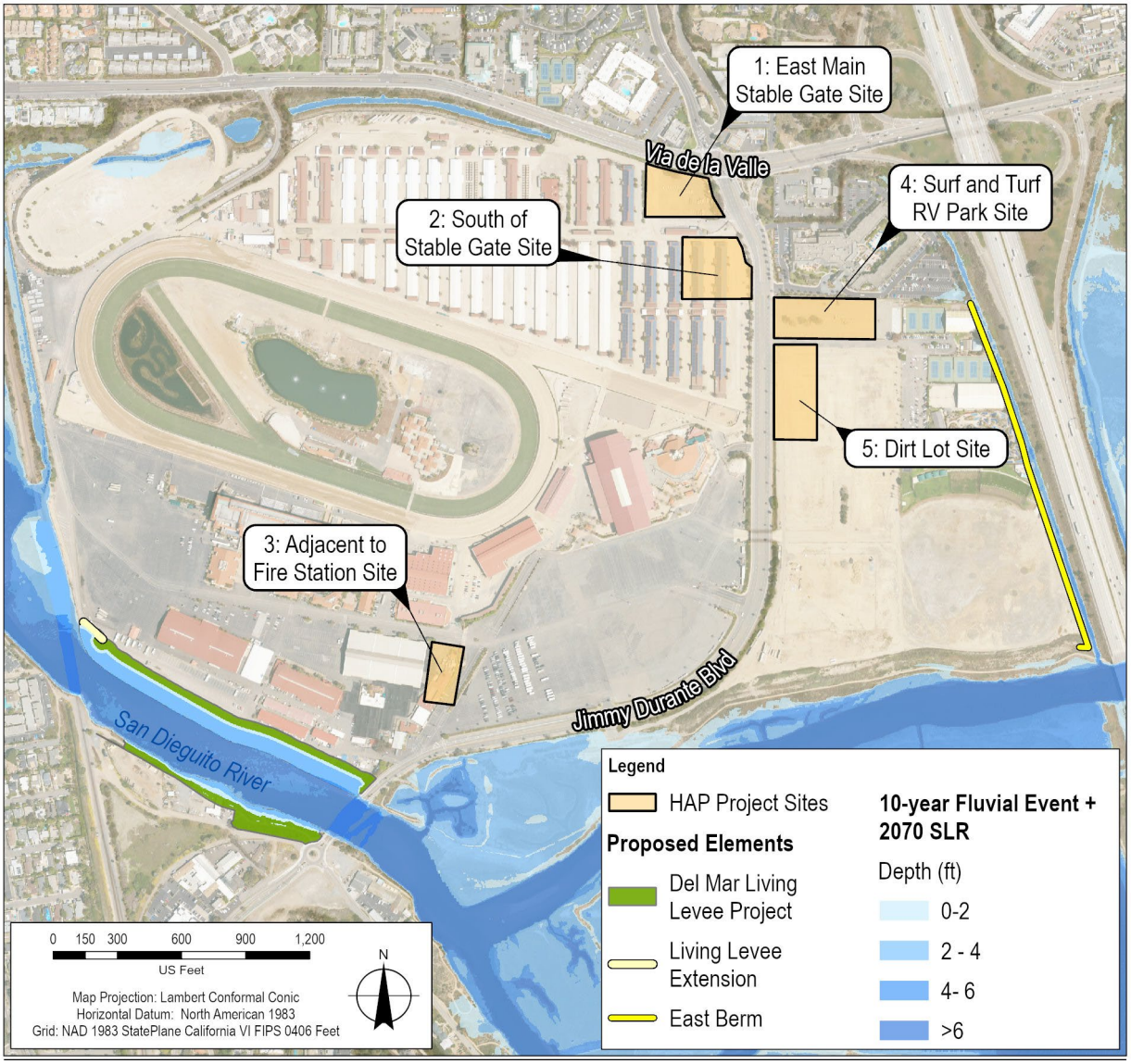


Figure 9. Scenario 1: 10-year Fluvial Event + 2070 SLR

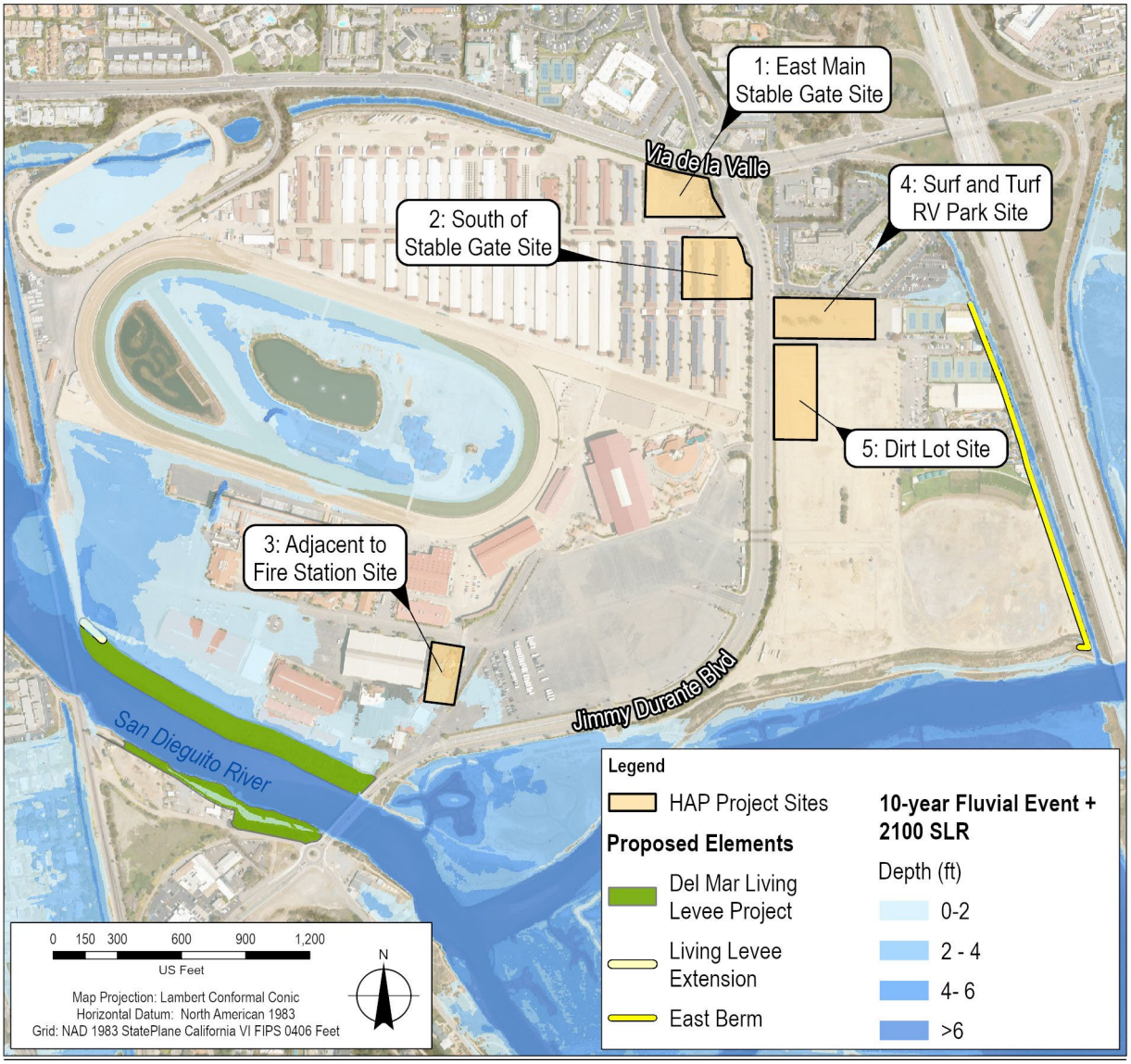


Figure 10. Scenario 1: 10-year Fluvial Event + 2100 SLR

Strategy 2: Perimeter Berm Protection

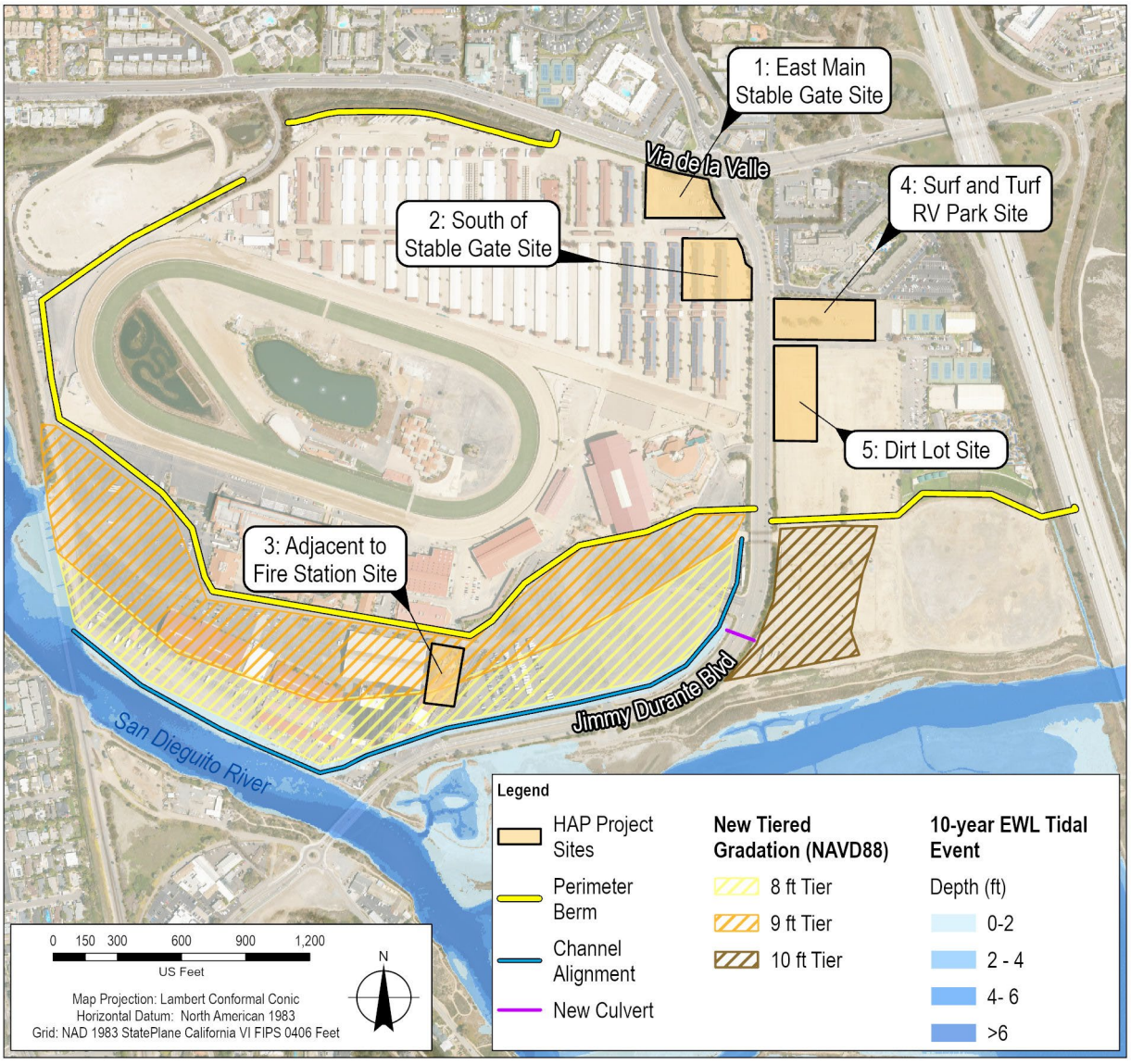


Figure 11. Scenario 2: 10-year EWL Tidal Event

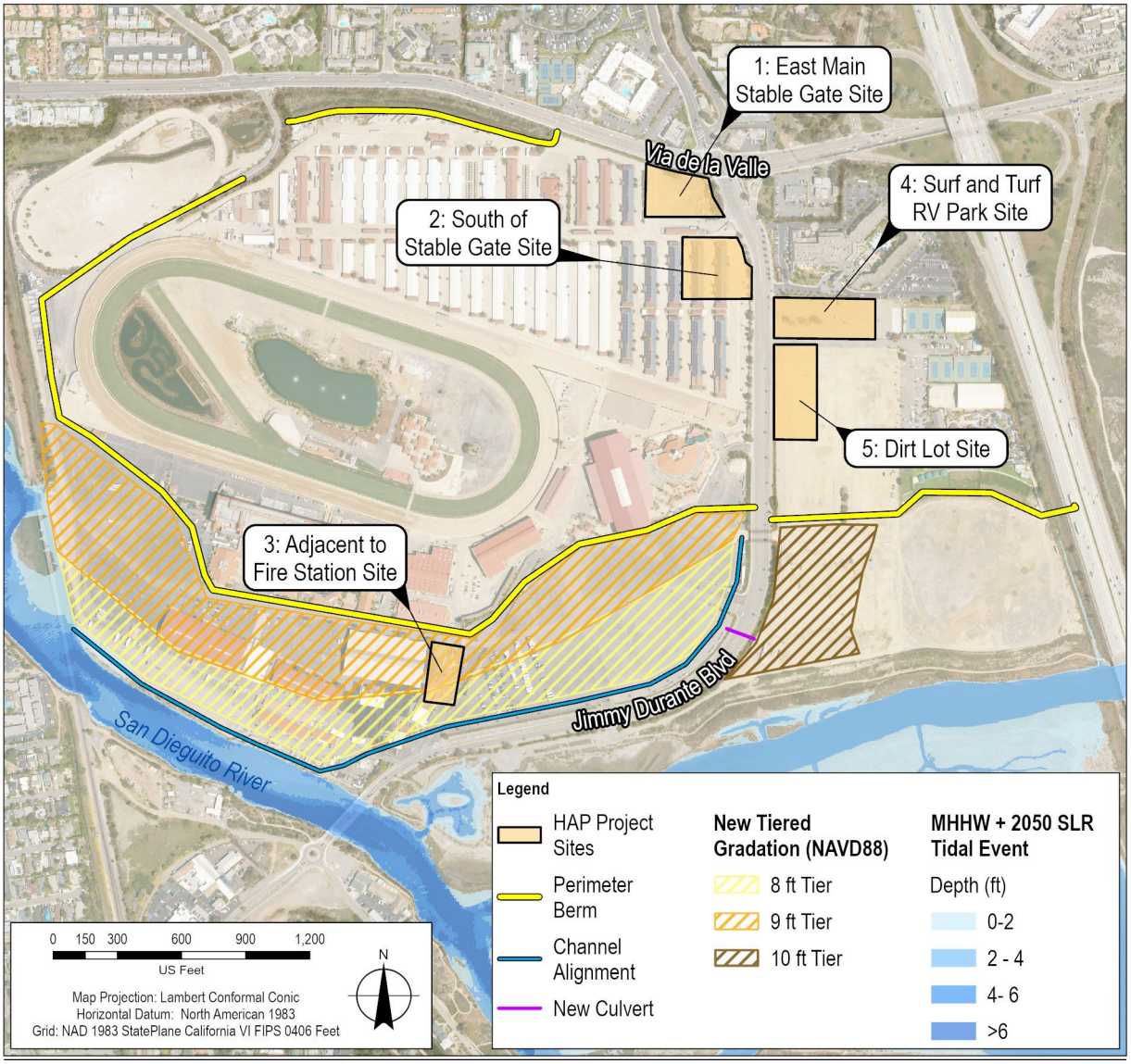


Figure 12. Scenario 2: MHHW + 2050 SLR Tidal Event

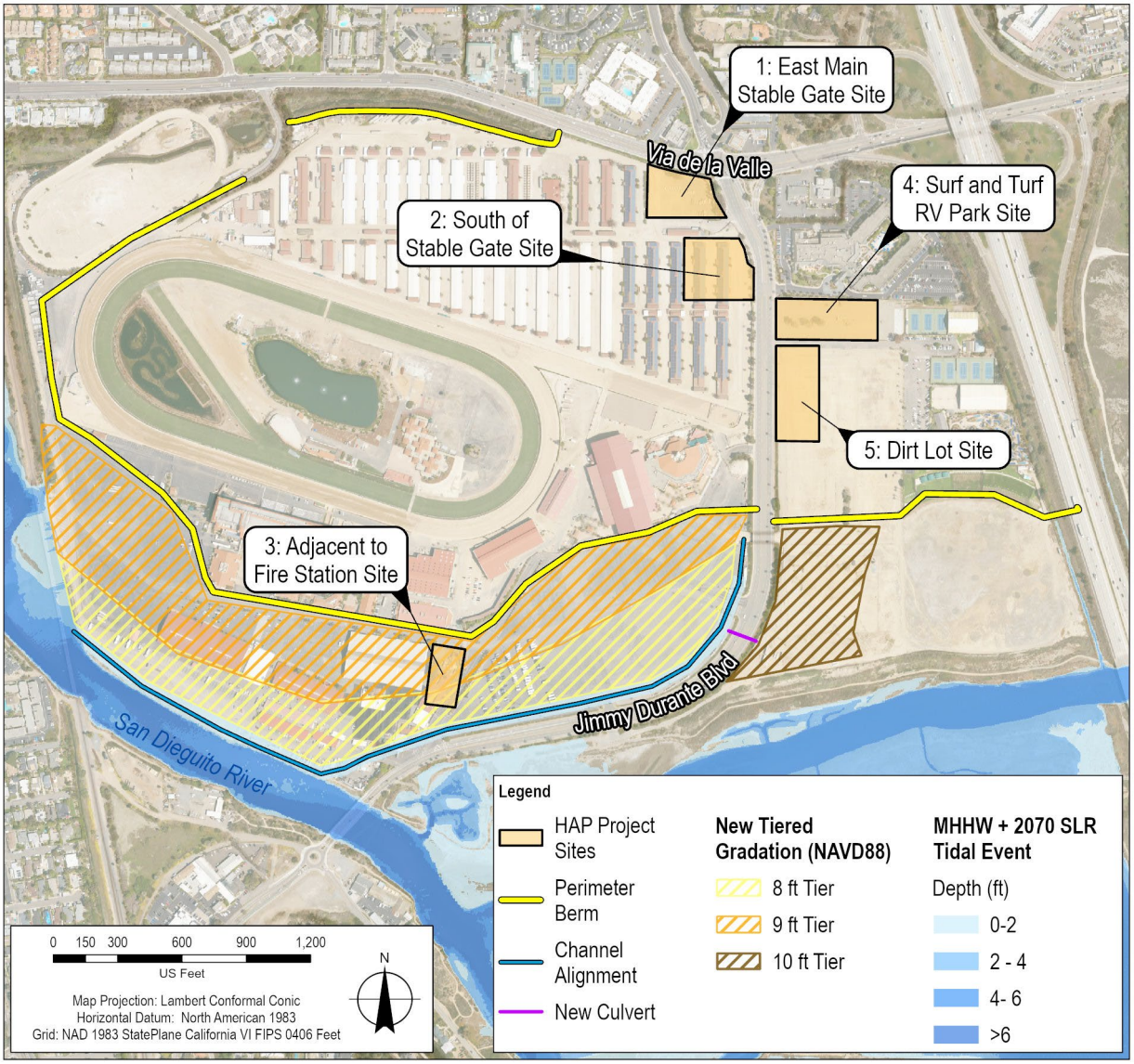


Figure 13. Scenario 2: MHHW + 2070 SLR Tidal Event

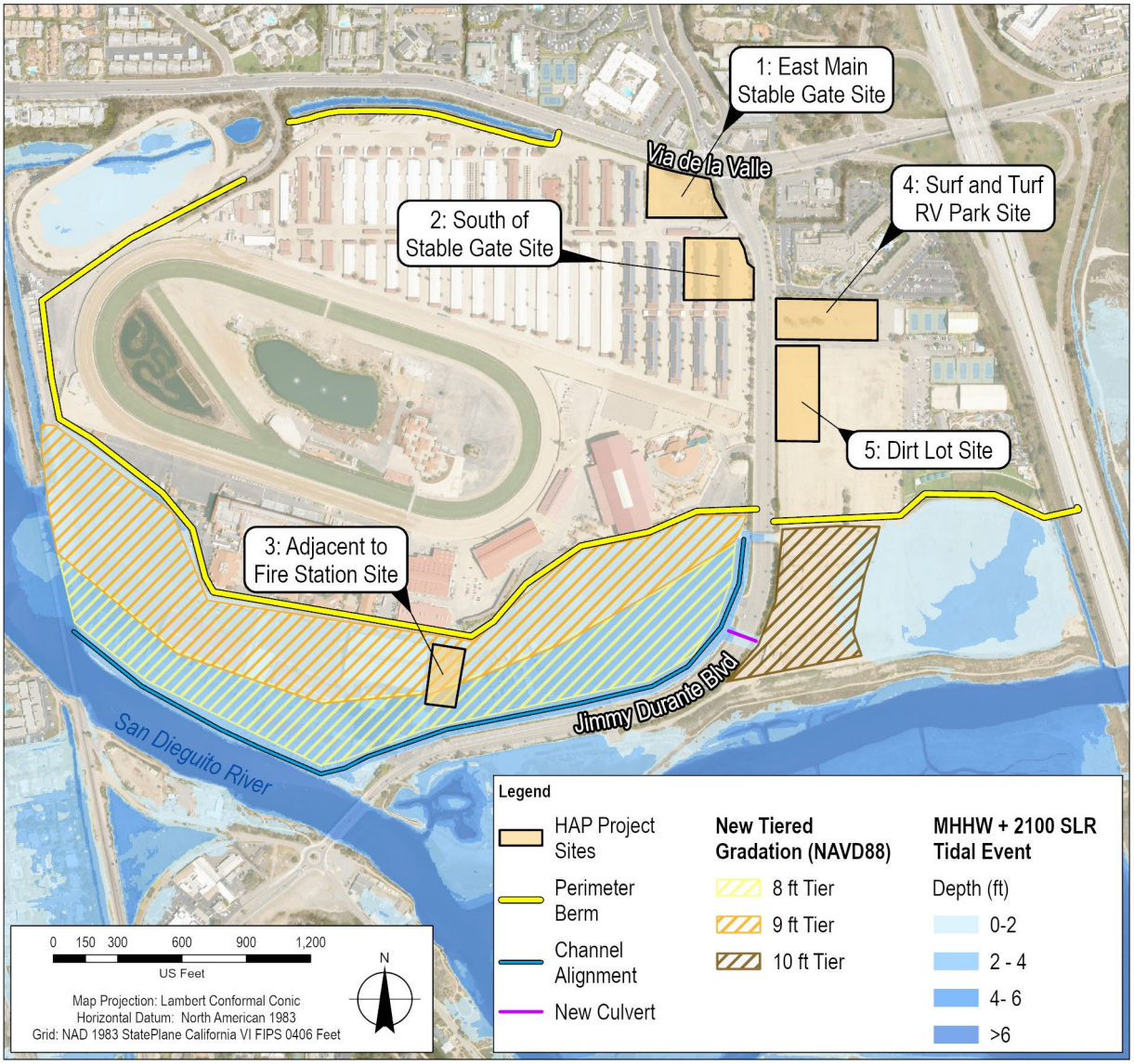


Figure 14. Scenario 2: MHHW + 2100 SLR Tidal Event

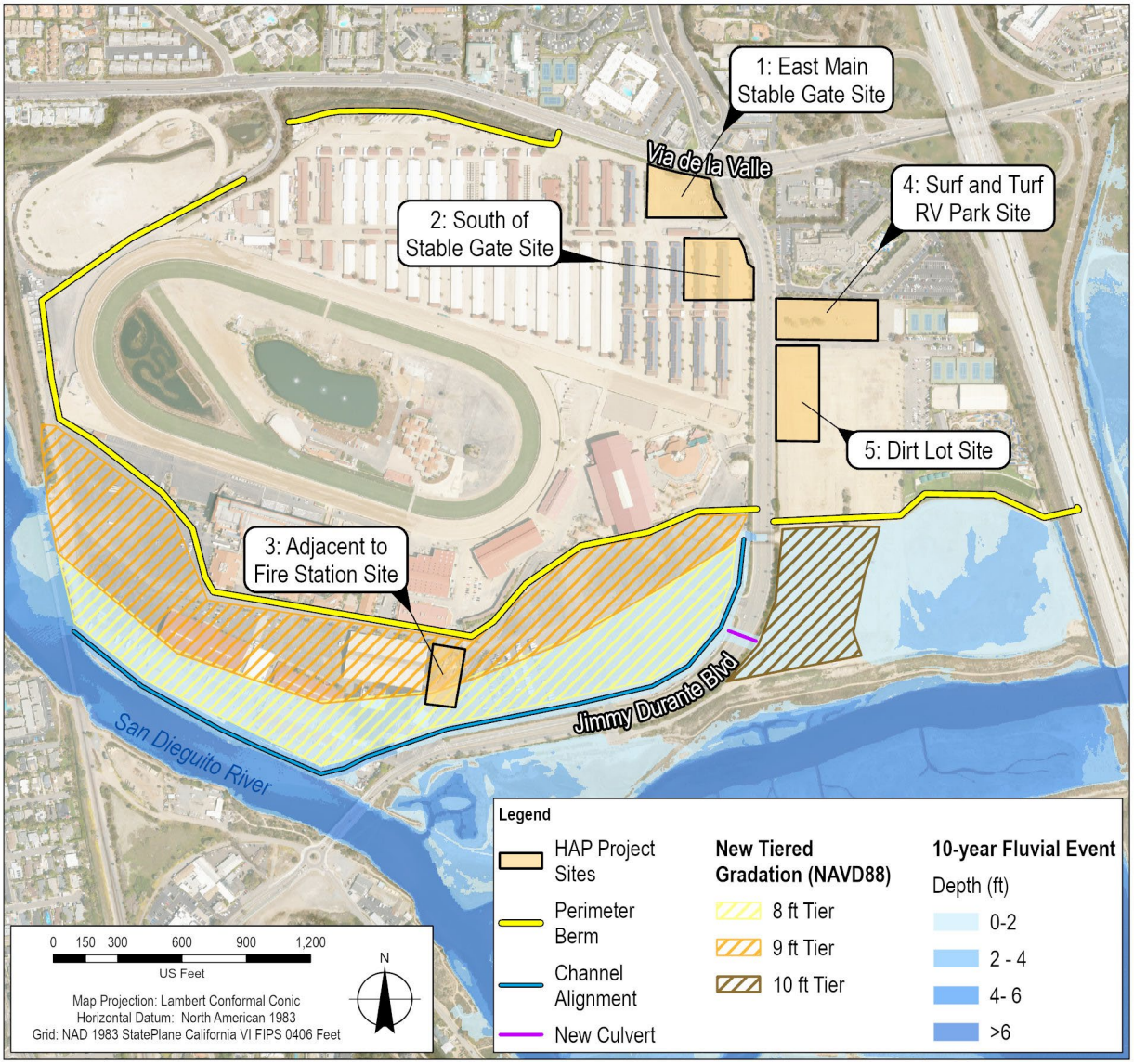


Figure 15. Scenario 2: 10-year Fluvial Event

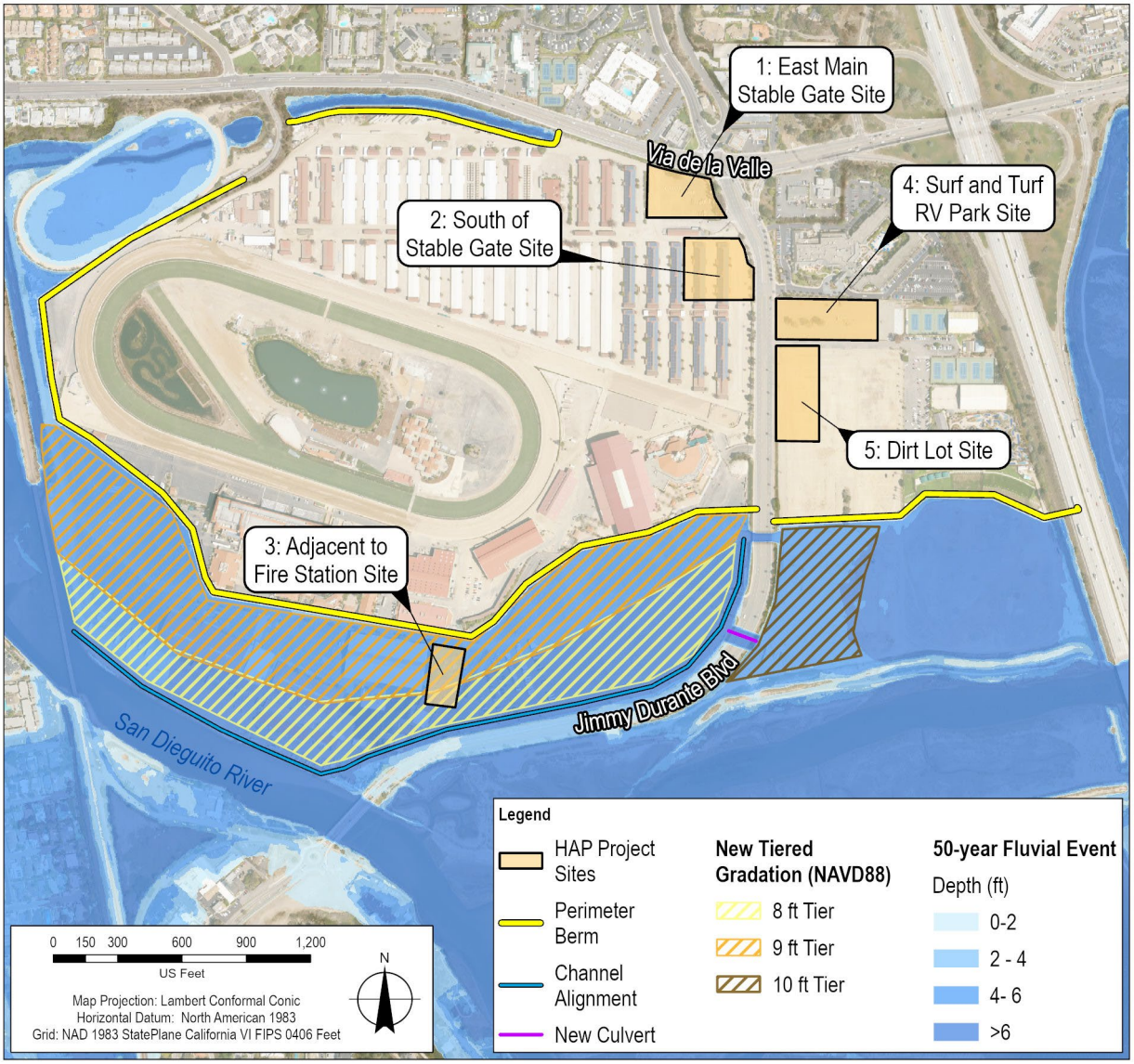


Figure 16. Scenario 2: 50-year Fluvial Event

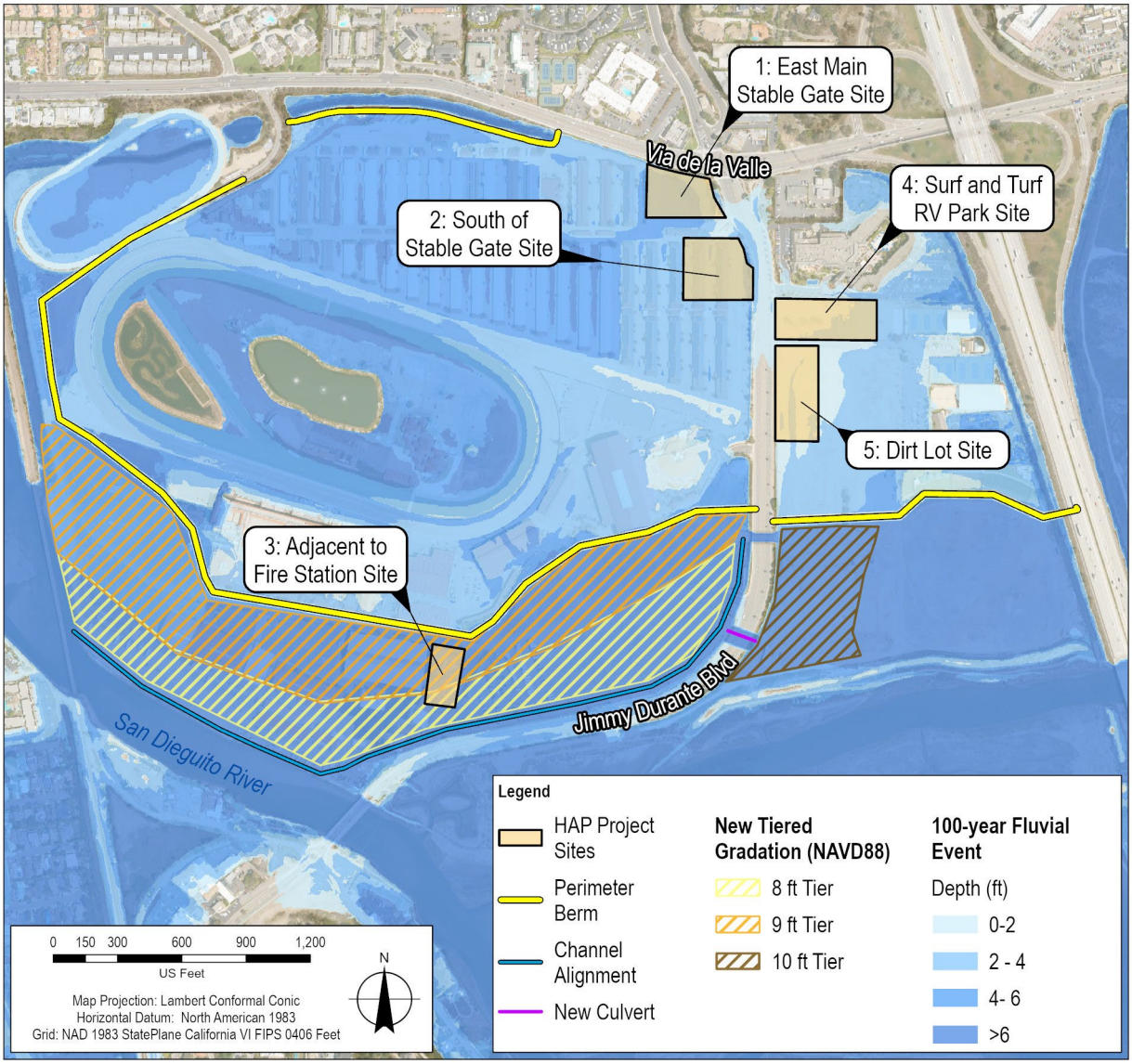


Figure 17. Scenario 2: 100-year Fluvial Event

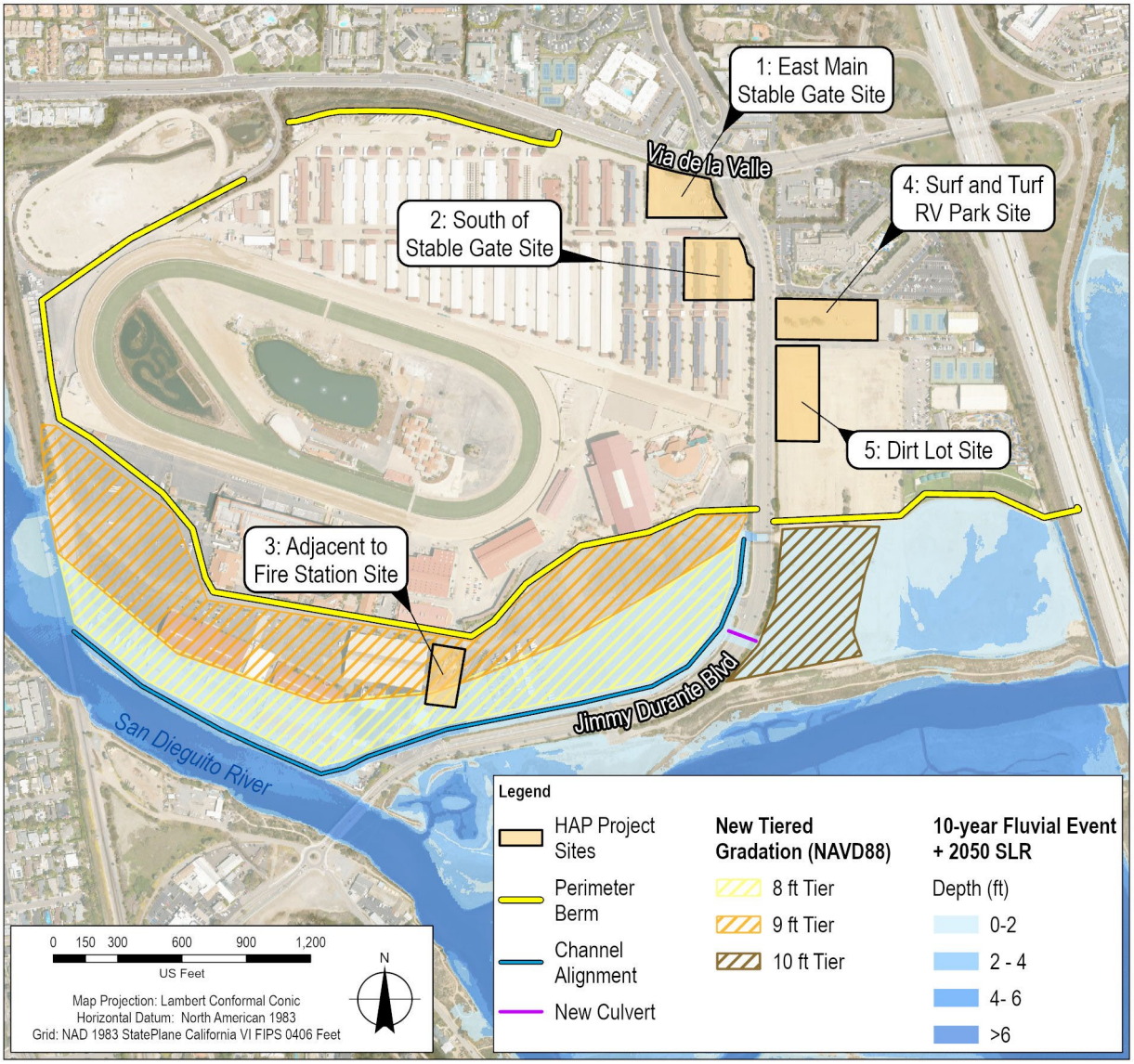


Figure 18. Scenario 2: 10-year Fluvial Event + 2050 SLR

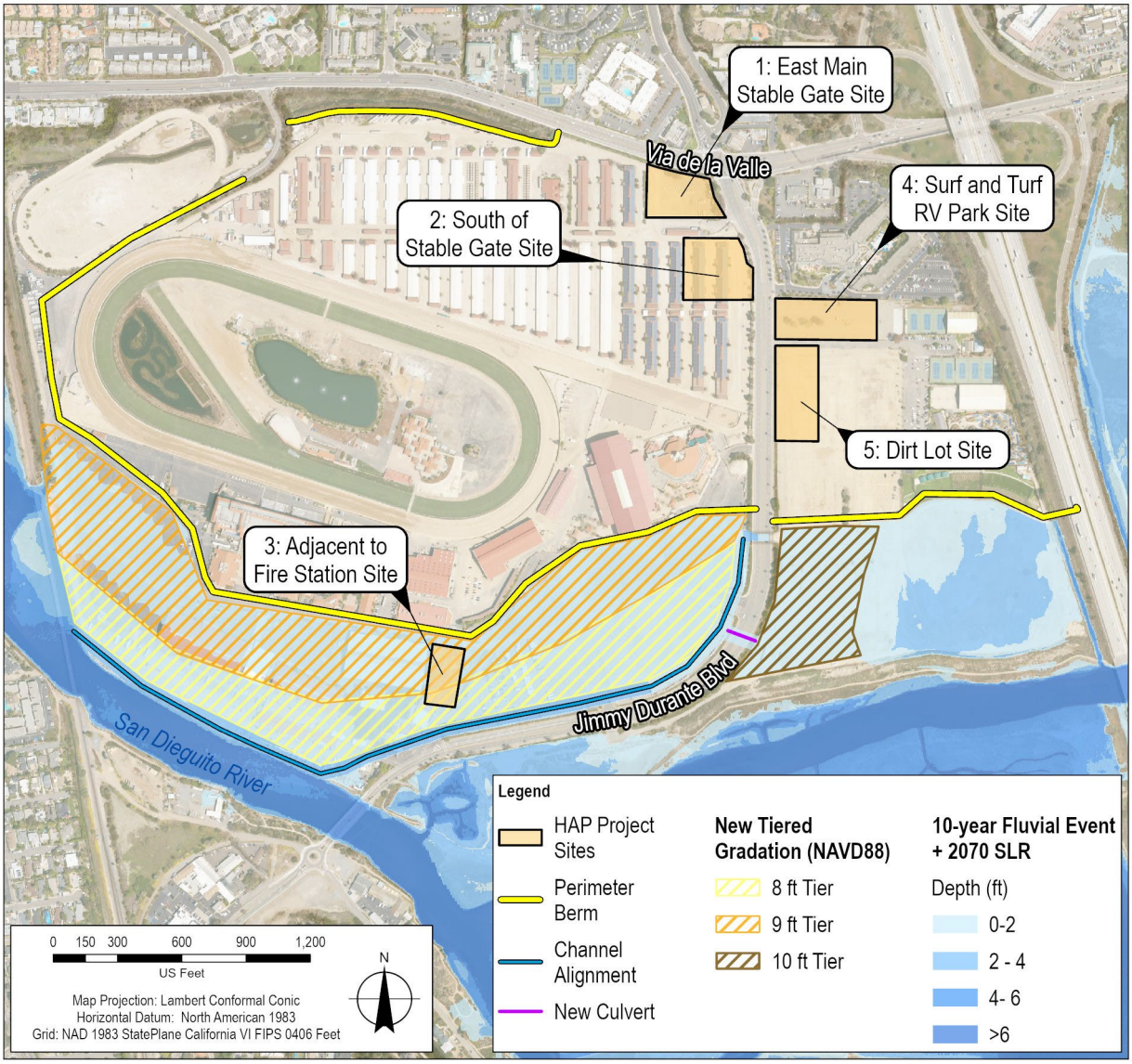


Figure 19. Scenario 2: 10-year Fluvial Event + 2070 SLR

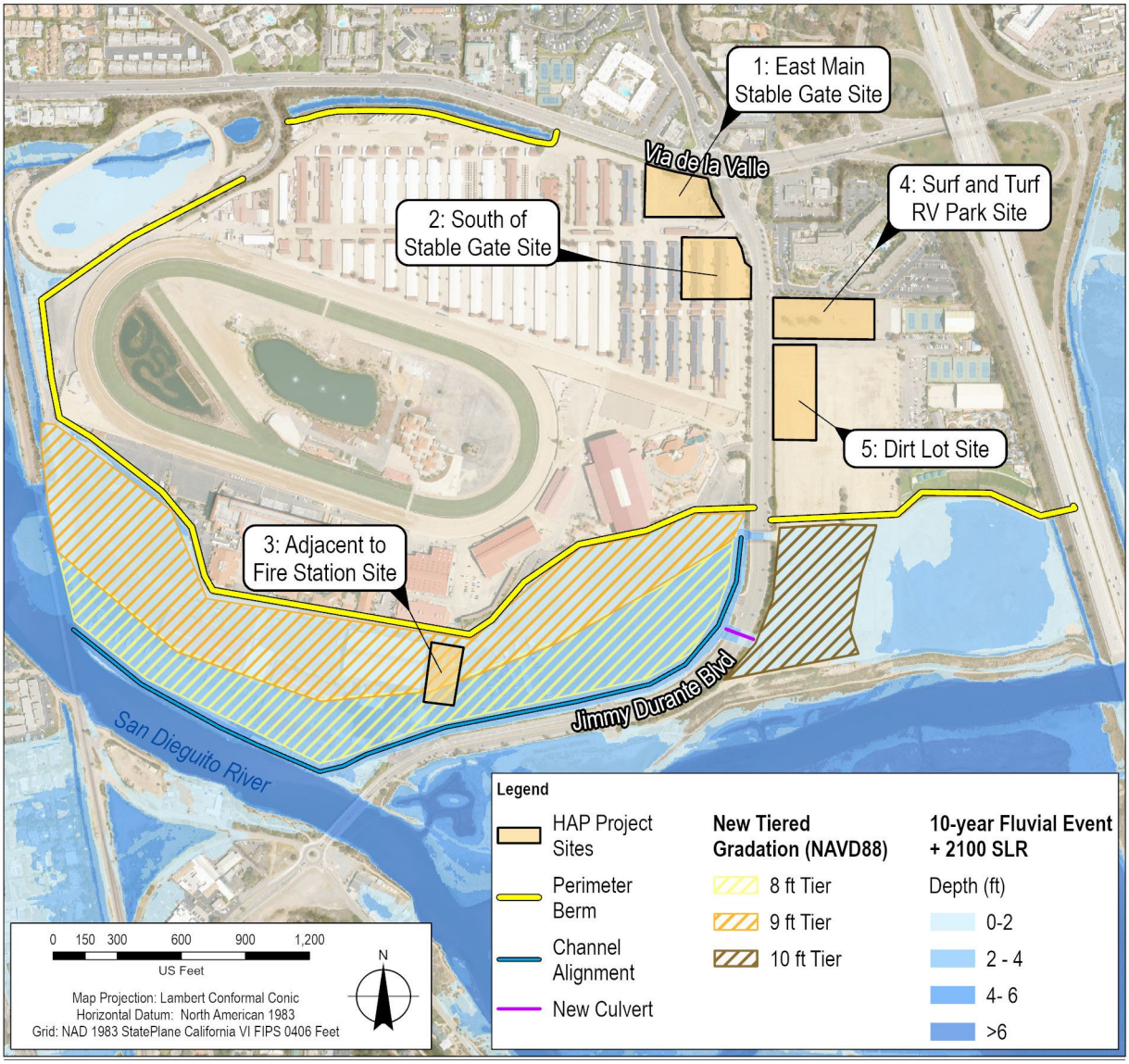


Figure 20. Scenario 2: 10-year Fluvial Event + 2100 SLR

Strategy 3: Site-wide Floodable Frontage

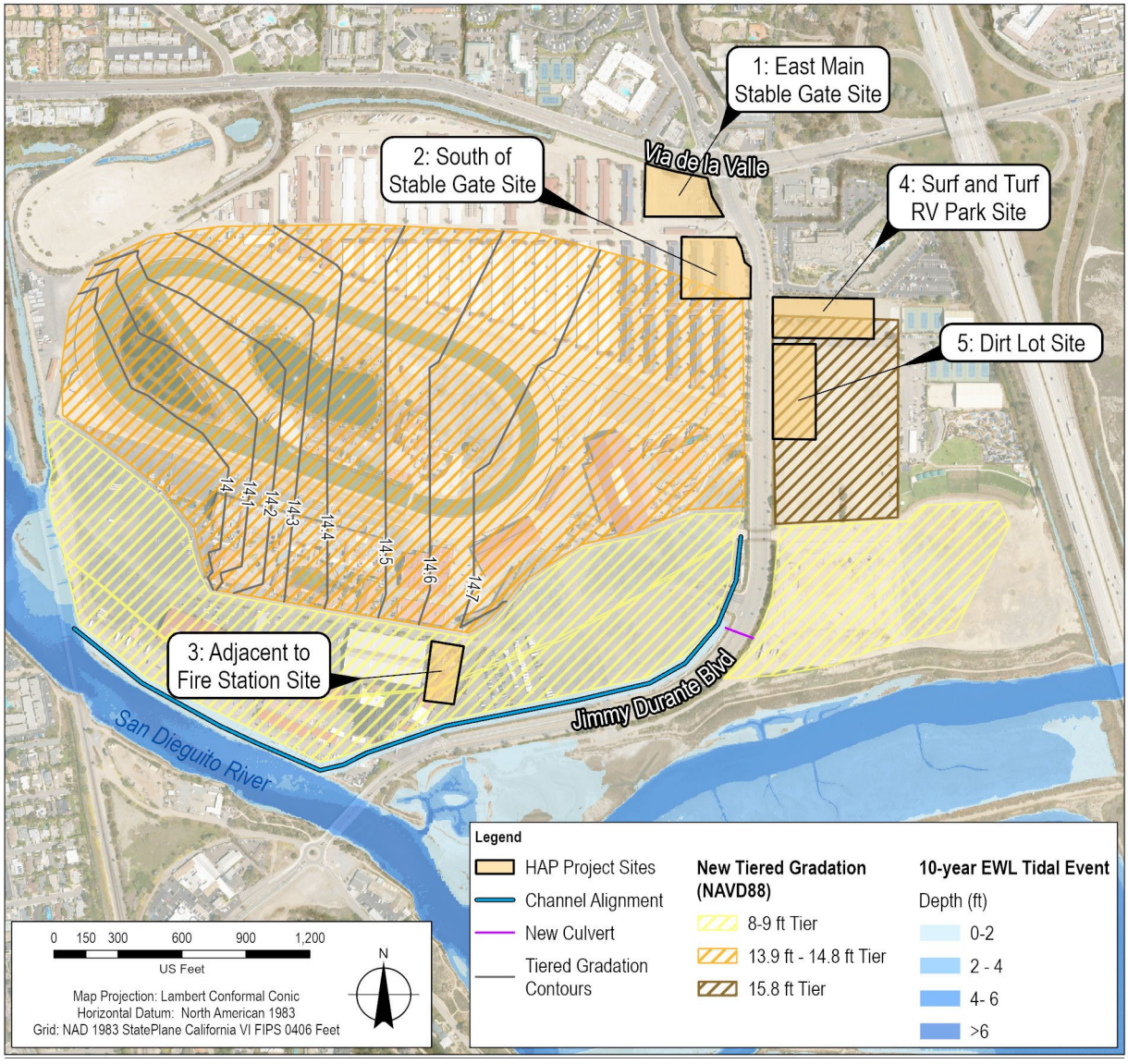


Figure 21. Scenario 3: 10-year EWL Tidal Event

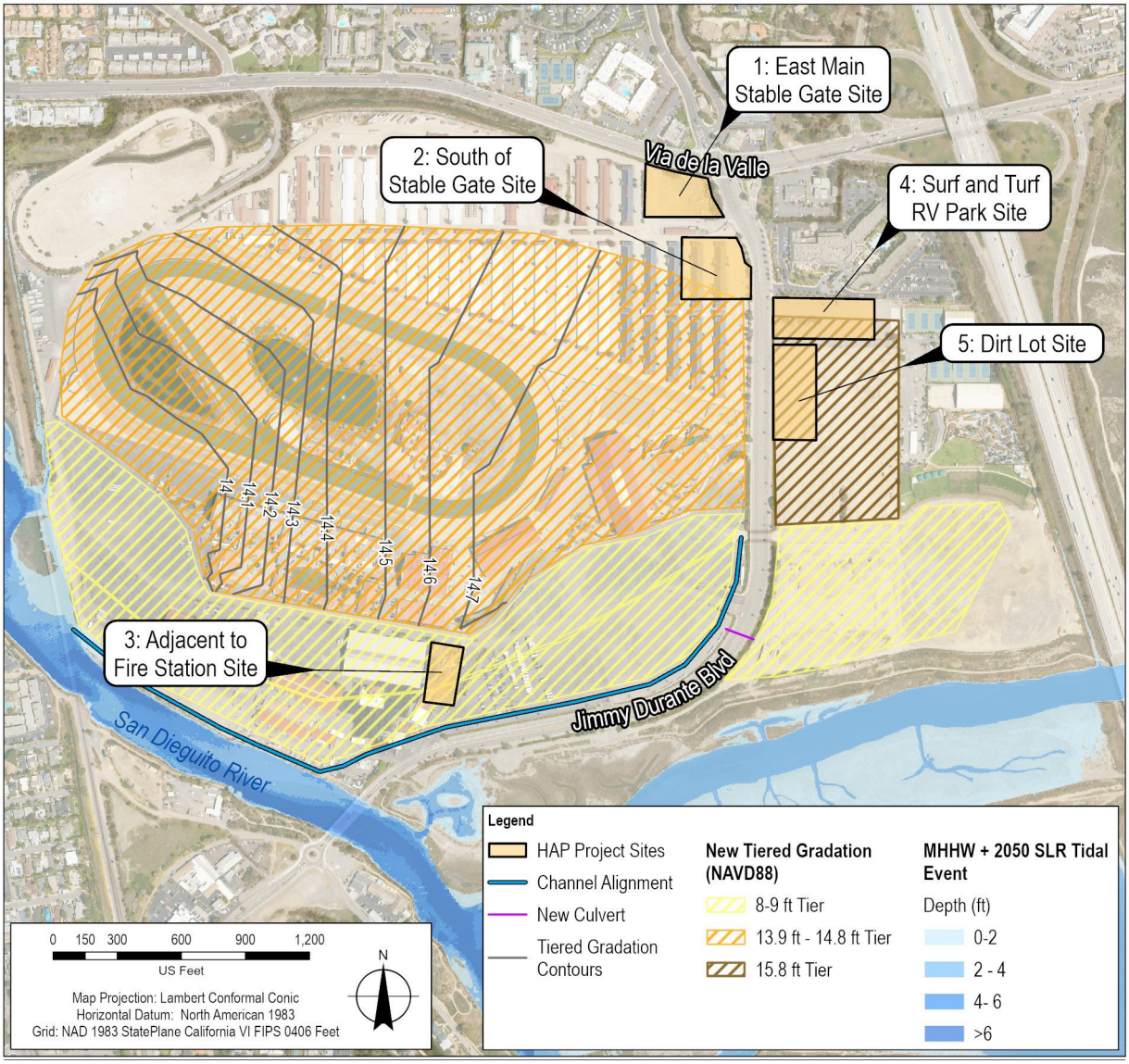


Figure 22. Scenario 3: MHHW + 2050 SLR Tidal Event

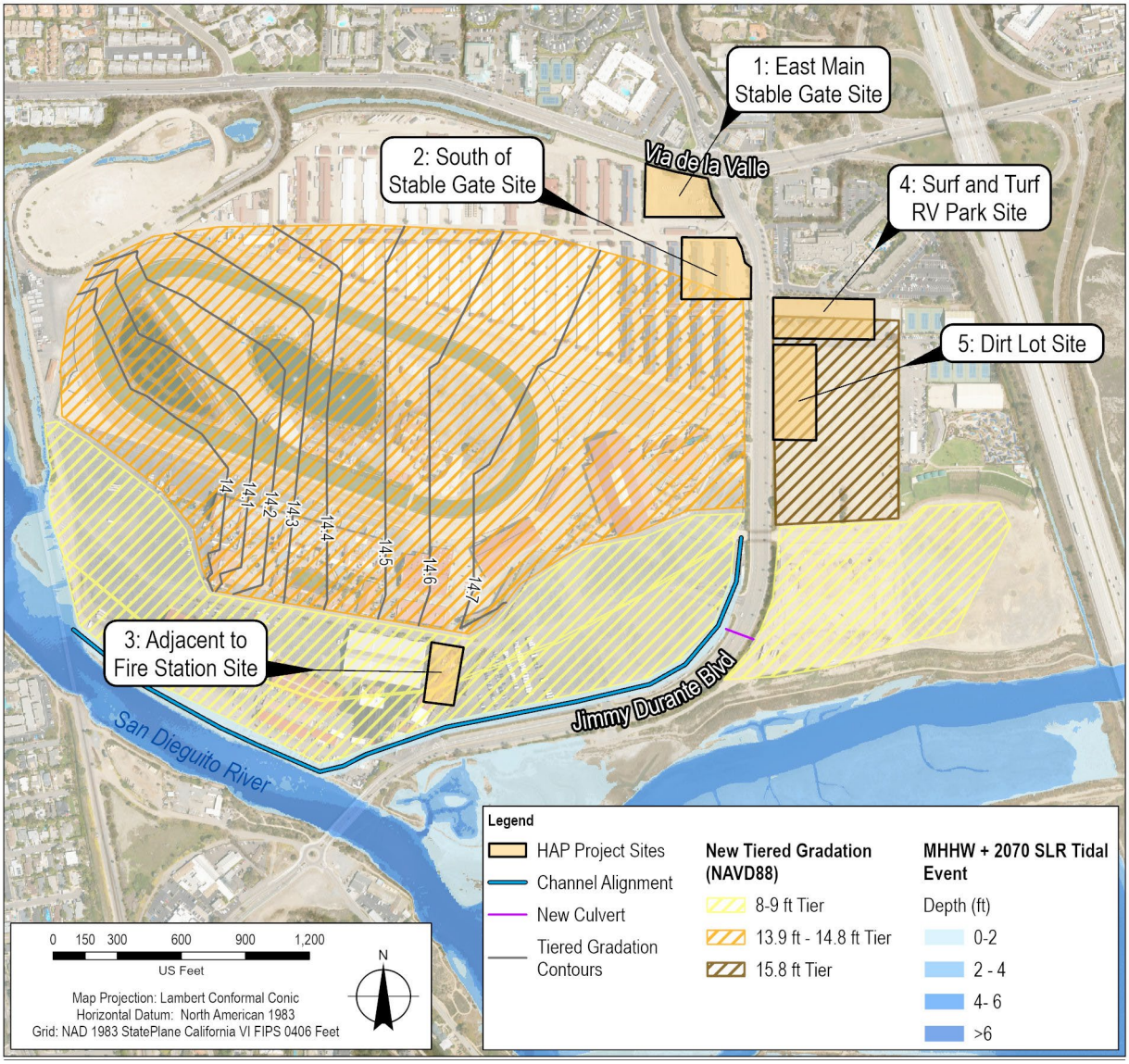


Figure 23. Scenario 3: MHHW + 2070 SLR Tidal Event

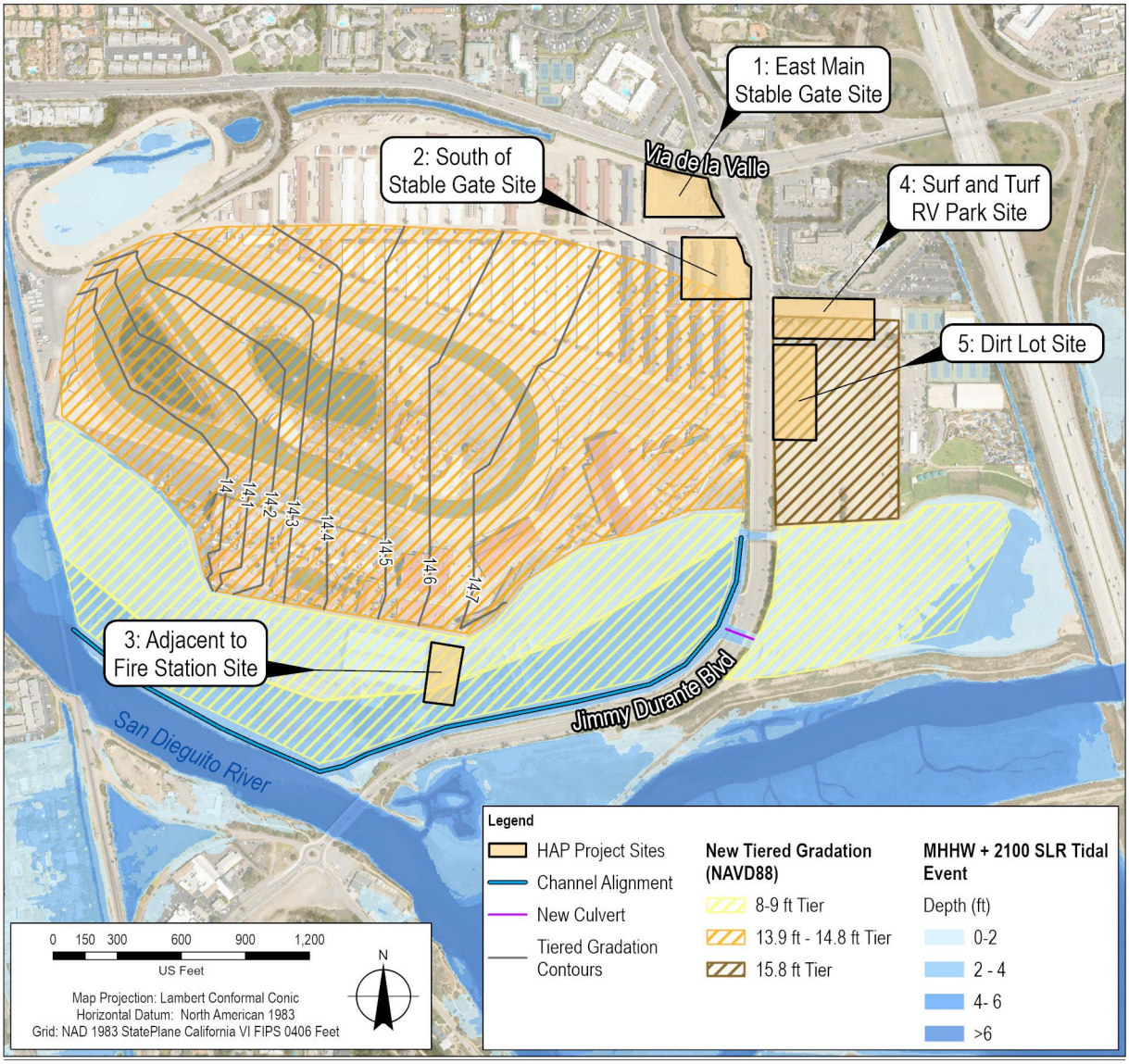


Figure 24. Scenario 3: MHHW + 2100 SLR Tidal Event

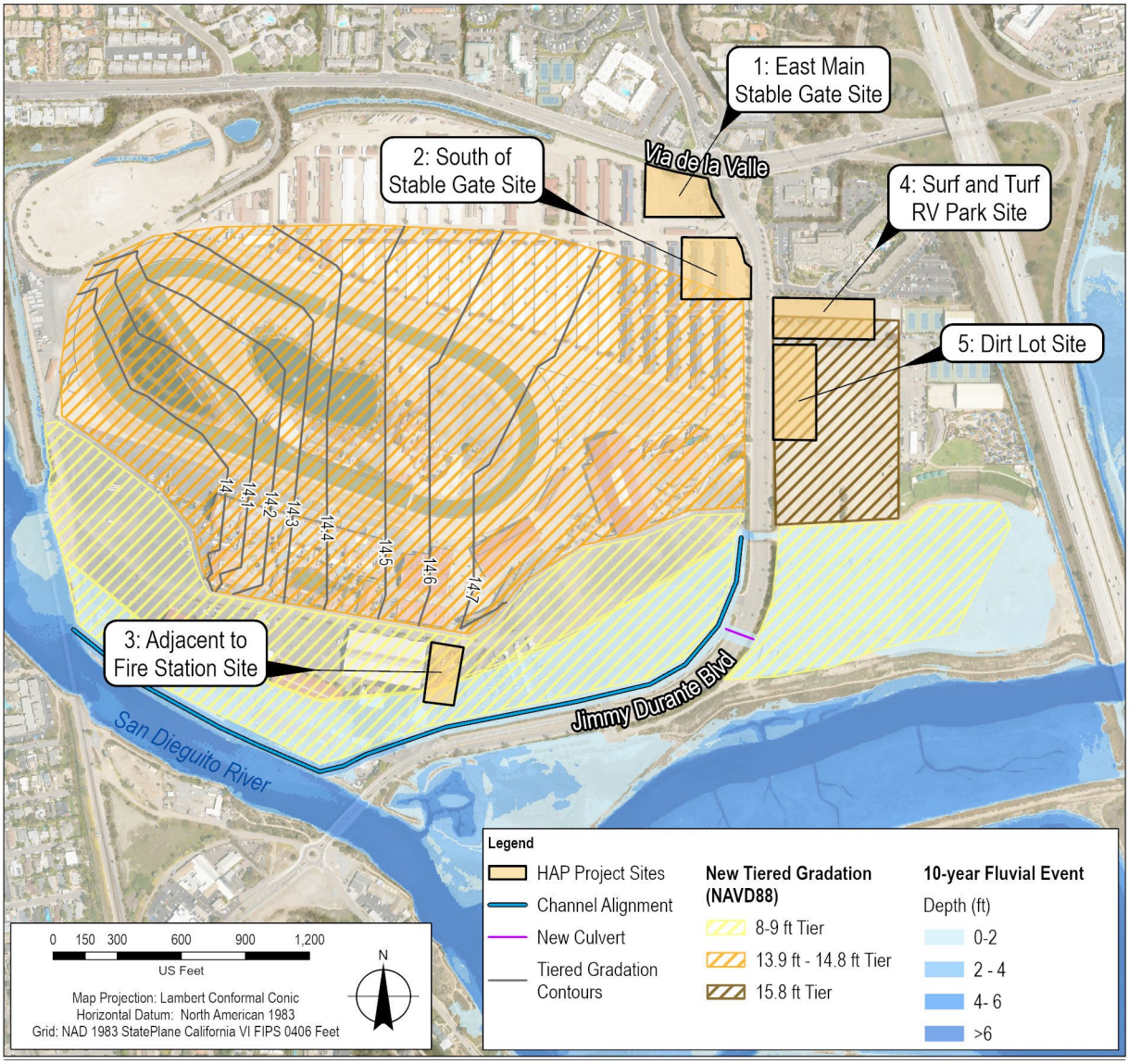


Figure 25. Scenario 3: 10-year Fluvial Event

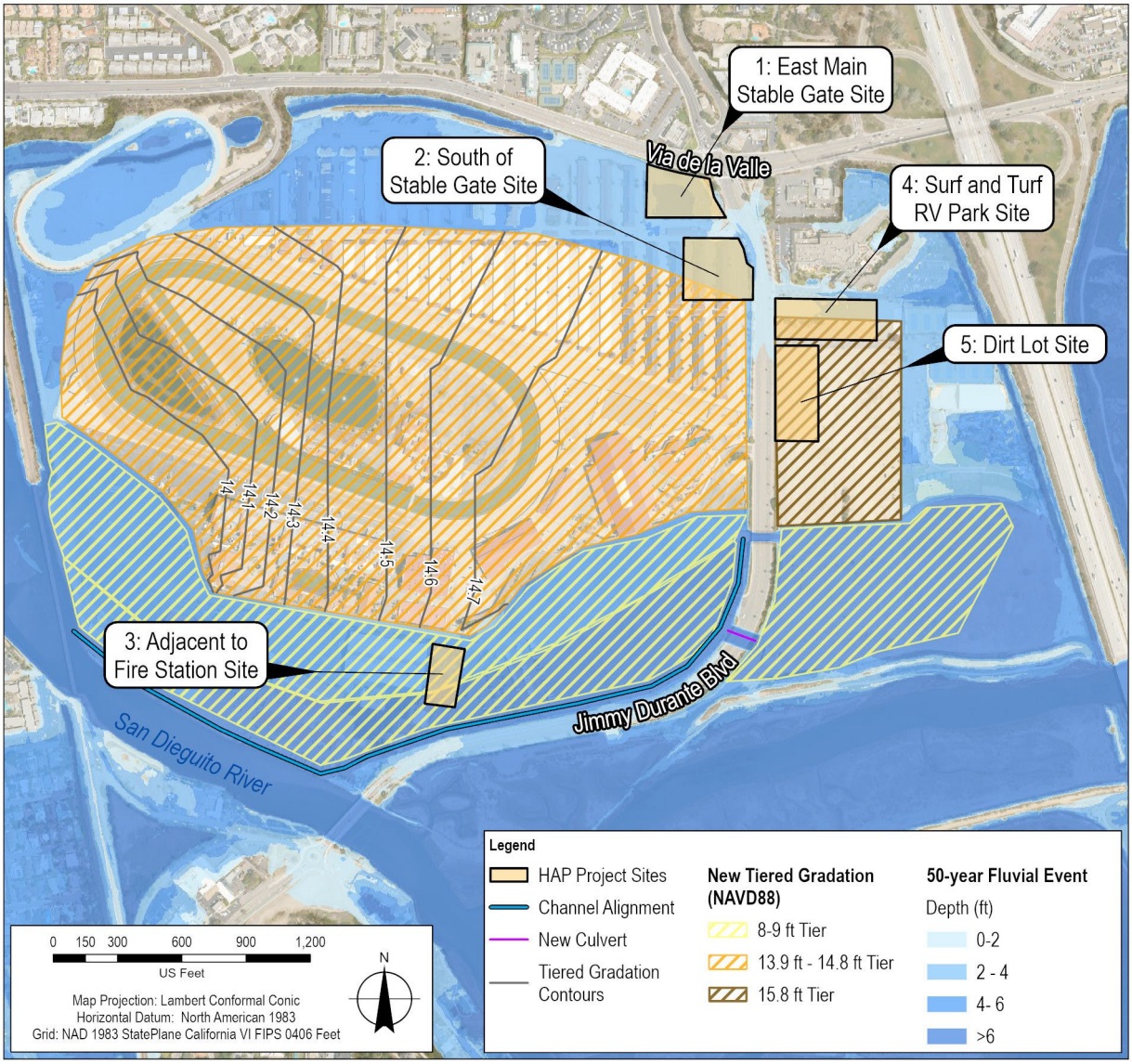


Figure 26. Scenario 3: 50-year Fluvial Event

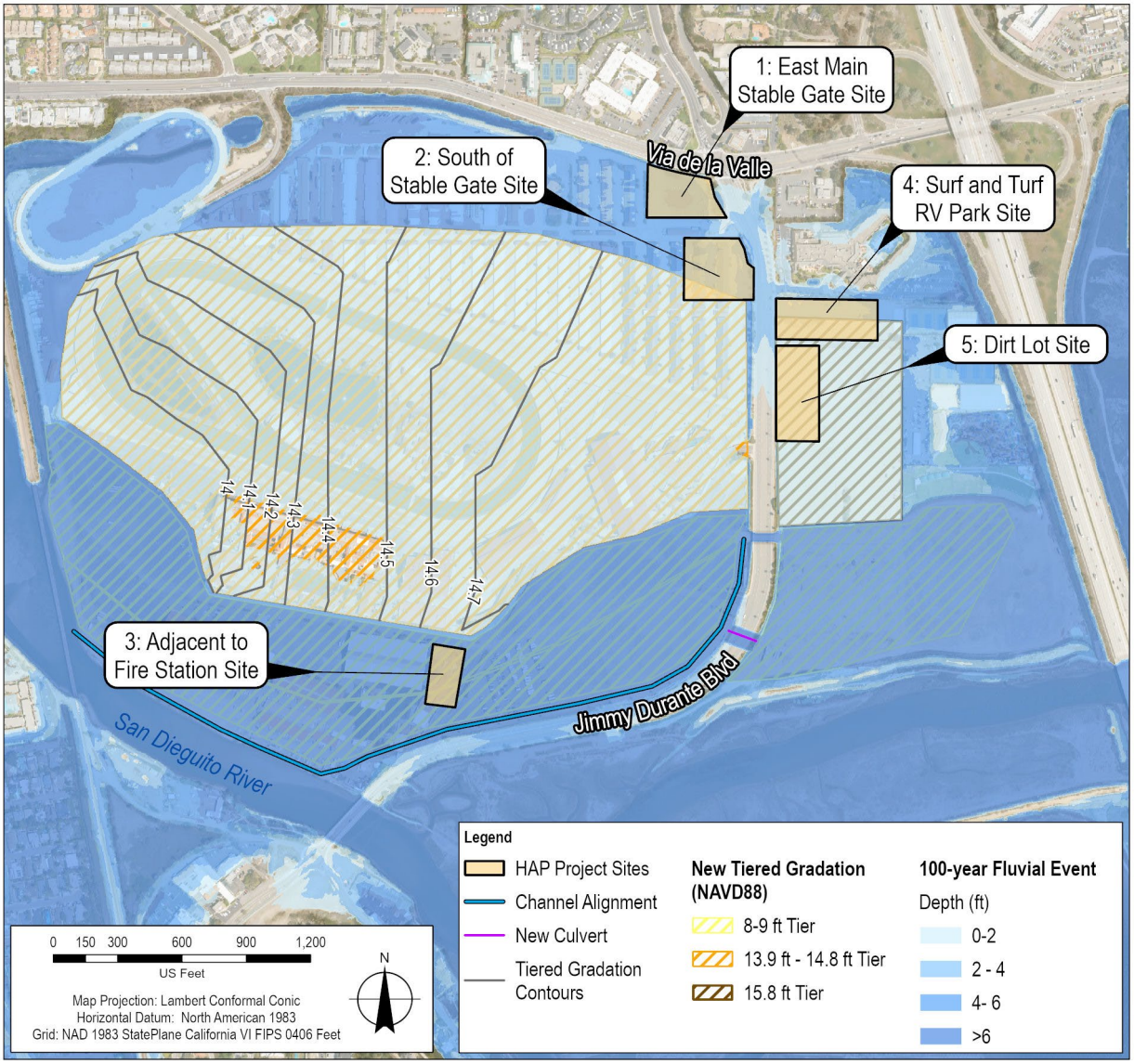


Figure 27. Scenario 3: 100-year Fluvial Event

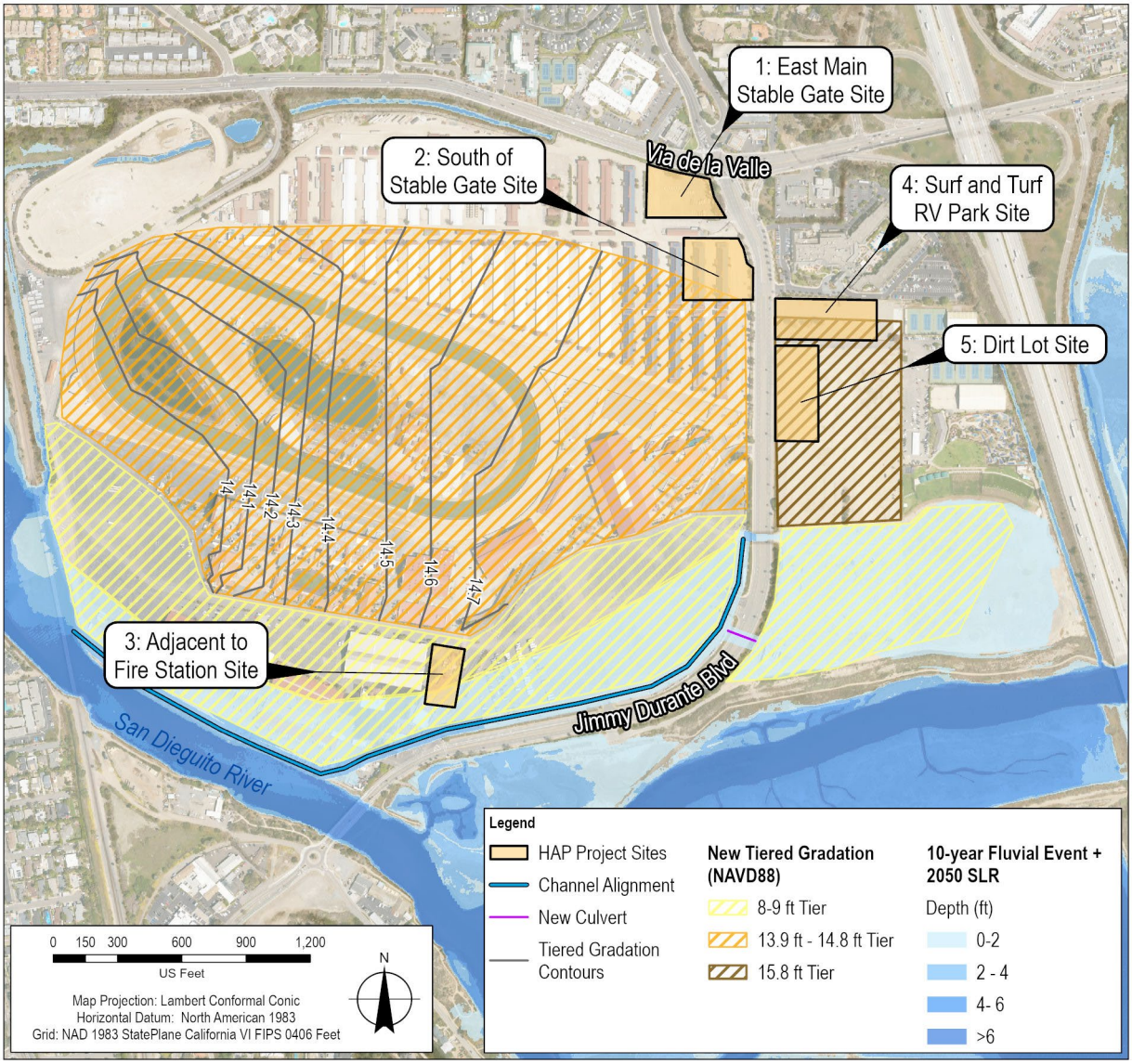


Figure 28. Scenario 3: 10-year Fluvial Event + 2050 SLR

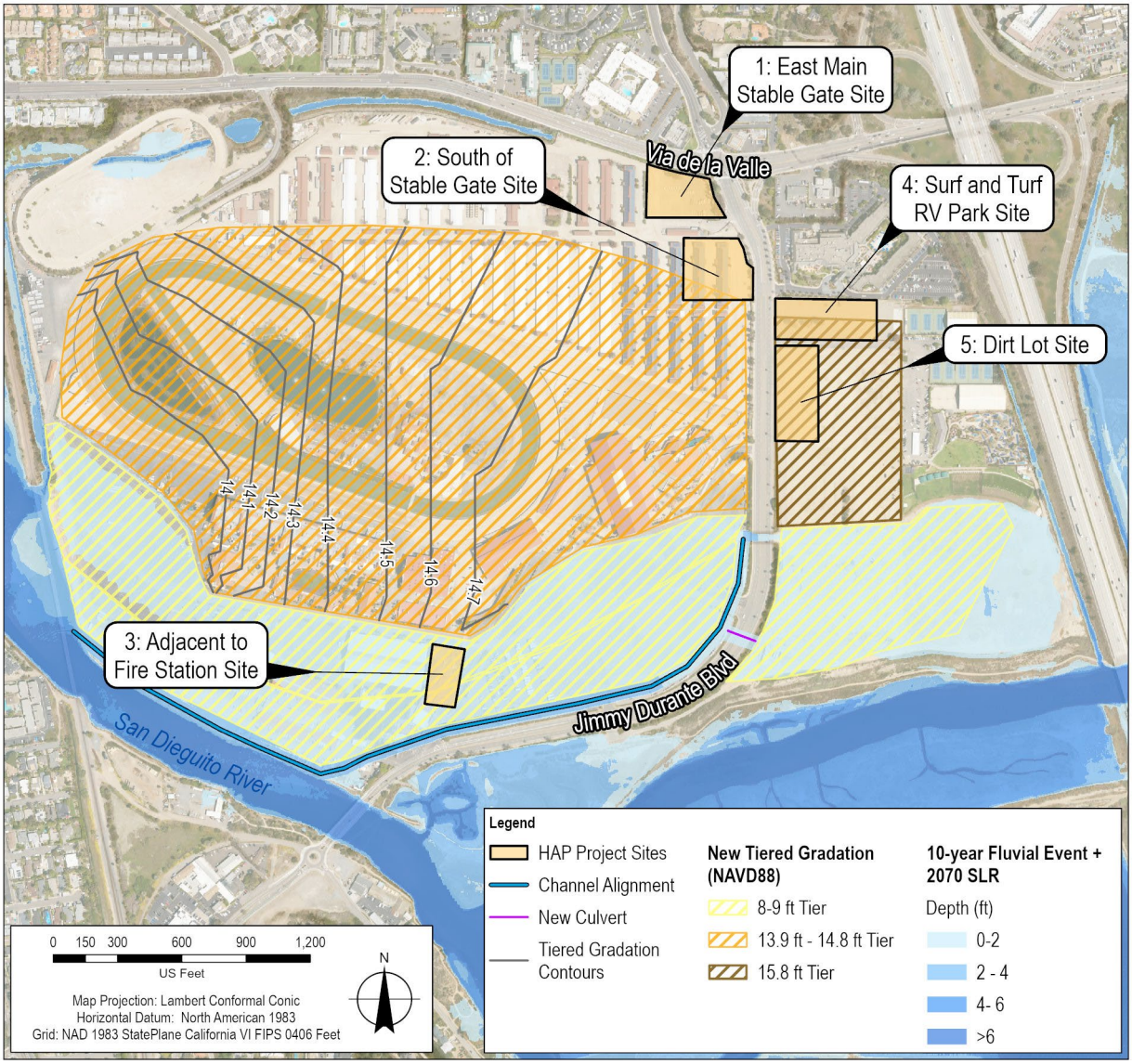


Figure 29. Scenario 3: 10-year Fluvial Event + 2070 SLR Event

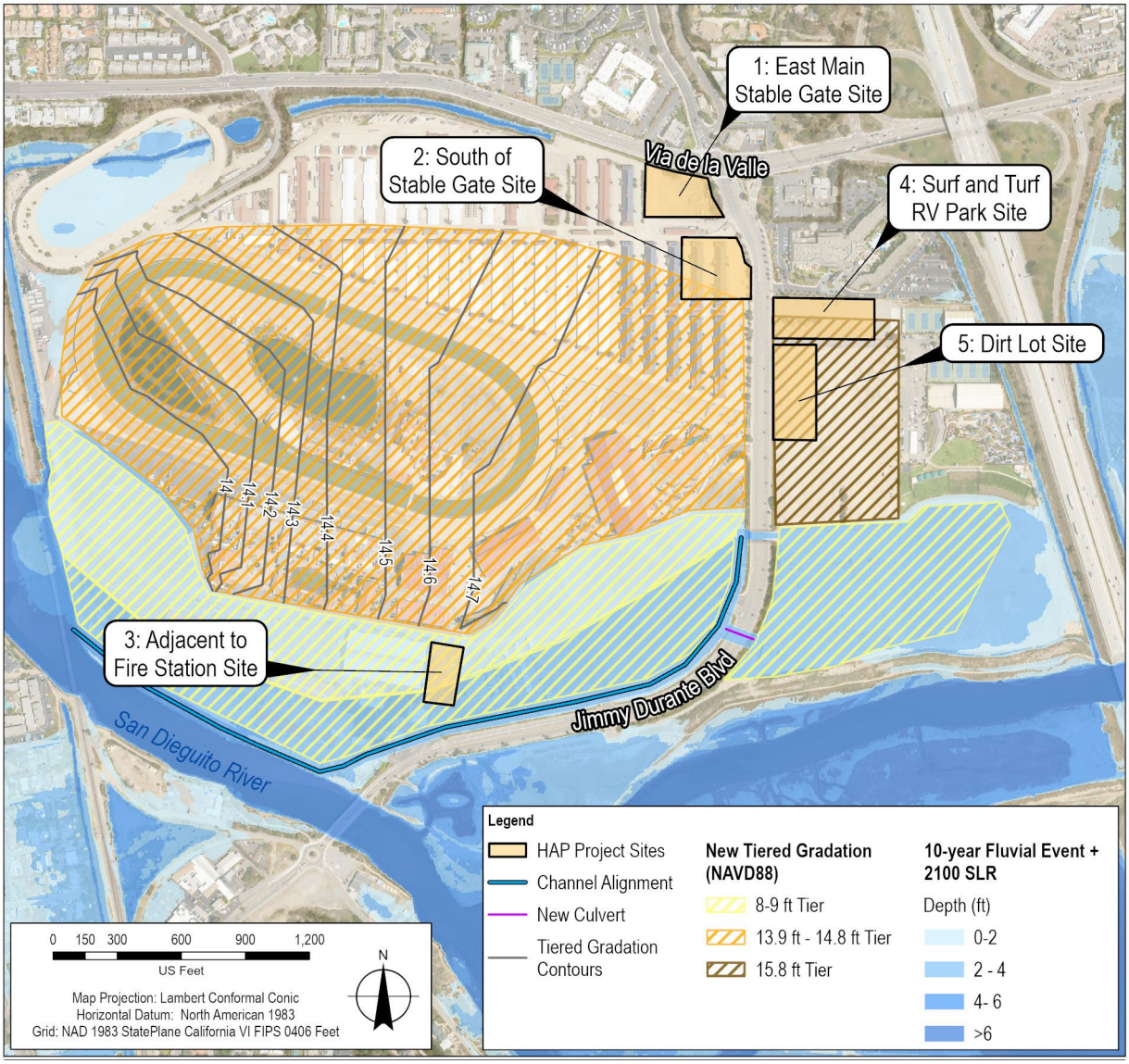


Figure 30. Scenario 3: 10-year Fluvial Event + 2100 SLR

Appendix C

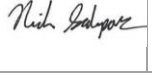
Hydrology and Hydraulics Report (GHD 2026a)

Hydrology and Hydraulics Report

AG 22nd District HAP Grant Support

Harris & Associates, Inc

March 03, 2026

Project name		AG 22nd District HAP Grant Support					
Document title		Hydrology and Hydraulics Report | AG 22nd District HAP Grant Support					
Project number		12660347					
File name		12660347-GHD-RPT-Hydrology and Hydraulics Report Final.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	Madeline Howell Molly Foster	Greg Garrison		Nick Sadrpour		12/19/2025
S4	0	Madeline Howell Molly Foster	Greg Garrison		Nick Sadrpour		3/2/2026

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1. Introduction

The 22nd District Agricultural Association District's (District's) property, colloquially known as the Del Mar Fairgrounds or Racetrack, is located on the north bank of the San Dieguito River in Del Mar, California. This property is vulnerable to flooding originating from the San Dieguito River, which is tidally influenced. Harris & Associates and the District are pursuing a Sea Level Rise (SLR) Vulnerability Assessment for this property to inform future planning, including the District's Master Plan upgrades and evaluate opportunities for affordable housing development on the District's property. The District has entered into an Exclusive Negotiations Rights Agreement with the City of Del Mar (City) to evaluate the feasibility of affordable housing on the District's property. The City's initial affordable housing feasibility studies were completed in 2022 and identified and provided conceptual designs for two sites within the District's property. However, supplemental environmental assessment work is necessary to support further Pre-Development Studies/Due Diligence which was included as part of the City's Cycle 2 Housing Acceleration Program (HAP) Grant it received from the San Diego Association of Governments (SANDAG) in 2024.

GHD has been retained by Harris & Associates to complete hydraulic modeling and SLR vulnerability assessment to support the City's HAP Grant effort to analyze conceptual designs and identified sites for the housing development within the District's property. The first step of this effort includes hydraulic modeling of the existing conditions considering various flooding scenarios. A two-dimensional hydrologic/hydraulic model has been developed to assess onsite flooding as a result of different tidal events, SLR scenarios, fluvial events within the San Dieguito River, and onsite rainfall events. The model build and results are described in this report. The results of these hydraulic models can be used to assess potential sites for the proposed affordable housing development.

The model results were used to determine potential mitigation measures to address onsite flooding which are discussed in this report along with model results. Three conceptual adaptation strategies are described in this report, including (1) targeted ecotone features, (2) perimeter berm protection, and (3) site-wide grading with a floodable frontage. These mitigation measures were developed at a high level to address fluvial and sea level rise flood hazards, as existing modeling indicated that the site is more vulnerable to fluvial flood hazards than onsite rainfall. Strategy 1 provides flood protection during the 10-year fluvial event with 2070 sea level rise, while Strategy 2 and Strategy 3 provide flood mitigation and protection during the 50-year fluvial event. These strategies were designed to minimize offsite hydraulic impacts.

1.1 Purpose of this report

The purpose of this report is to describe the hydrologic/hydraulic modeling in support of the HAP Grant effort. The report documents the existing conditions two-dimensional hydrologic/hydraulic model build, which was used to evaluate the flood hazards on the District's property during various tidal events, SLR scenarios, fluvial events within the San Dieguito River, and onsite rainfall events. This report also summarizes the model assumptions and preliminary model results. Finally, the report discusses three mitigation strategies to address fluvial and sea level rise flood hazards, including the hydrologic/hydraulic modeling of these scenarios.

1.2 Scope and limitations

This report has been prepared by GHD for Harris & Associates, Inc and may only be used and relied on by Harris & Associates, Inc and the 22nd District Agricultural Association District for the purpose agreed between GHD and Harris & Associates, Inc as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Harris & Associates, Inc and the 22nd District Agricultural Association District arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 3.9 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared the HEC-RAS 2D Models ("Models") for, and for the benefit and sole use of, Harris & Associates, Inc and the 22nd District Agricultural Association District to support the City's HAP Grant effort and must not be used for any other purpose or by any other person.

The Model is a representation only and does not reflect reality in every aspect. The Model contains simplified assumptions to derive a modeled outcome. The actual variables will inevitably be different to those used to prepare the Model. Accordingly, the outputs of the Model cannot be relied upon to represent actual conditions without due consideration of the inherent and expected inaccuracies. Such considerations are beyond GHD's scope.

The information, data and assumptions ("Inputs") used as inputs into the Model are from publicly available sources or provided by or on behalf of the Harris & Associates, Inc including by Fuscoe Engineering, Inc. GHD has not independently verified or checked Inputs beyond its agreed scope of work. GHD's scope of work does not include review or update of the Model as further Inputs becomes available.

The Model is limited by the mathematical rules and assumptions that are set out in the Report or included in the Model and by the software environment in which the Model is developed.

The Model is a customized model and not intended to be amended in any form or extracted to other software for amending. Any change made to the Model, other than by GHD, is undertaken on the express understanding that GHD is not responsible, and has no liability, for the changed Model including any outputs.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

2. Del Mar Fairgrounds Site Overview

2.1 Summary of Flood Hazards

Del Mar Fairgrounds is located north of the San Dieguito River, approximately 1,000 ft upstream of its outlet the Pacific Ocean. The site is located in a low-lying area with ground elevations ranging from approximately 5 ft to 14 ft NAVD88. A large portion of the site is impervious, including parking lots and roofs. Large pervious areas include the Main Track, Training Track, Backstretch Area, Arena Area, and the overflow parking areas.

The District's Fairgrounds site is subject to fluvial flood hazards originating from the San Dieguito River, tidal flood hazards, and flooding from onsite rainfall. The site is mapped within FEMA Special Flood Hazard Area (SFHA) Zone AE, which indicates a 1% annual chance of flooding with established Base Flood Elevations (BFEs). The southern extent of the project site is mapped within a FEMA regulatory floodway, meaning that any proposed development within this floodway must be demonstrated to lead to no rise in water surface elevations within the San Dieguito River. The remainder of the site is located within the FEMA floodplain, in which development is allowed such that it does not raise water surface elevations by more than 1.0 ft. A map of the FEMA floodplain and floodway at the Del Mar Fairgrounds is included in Figure 1.

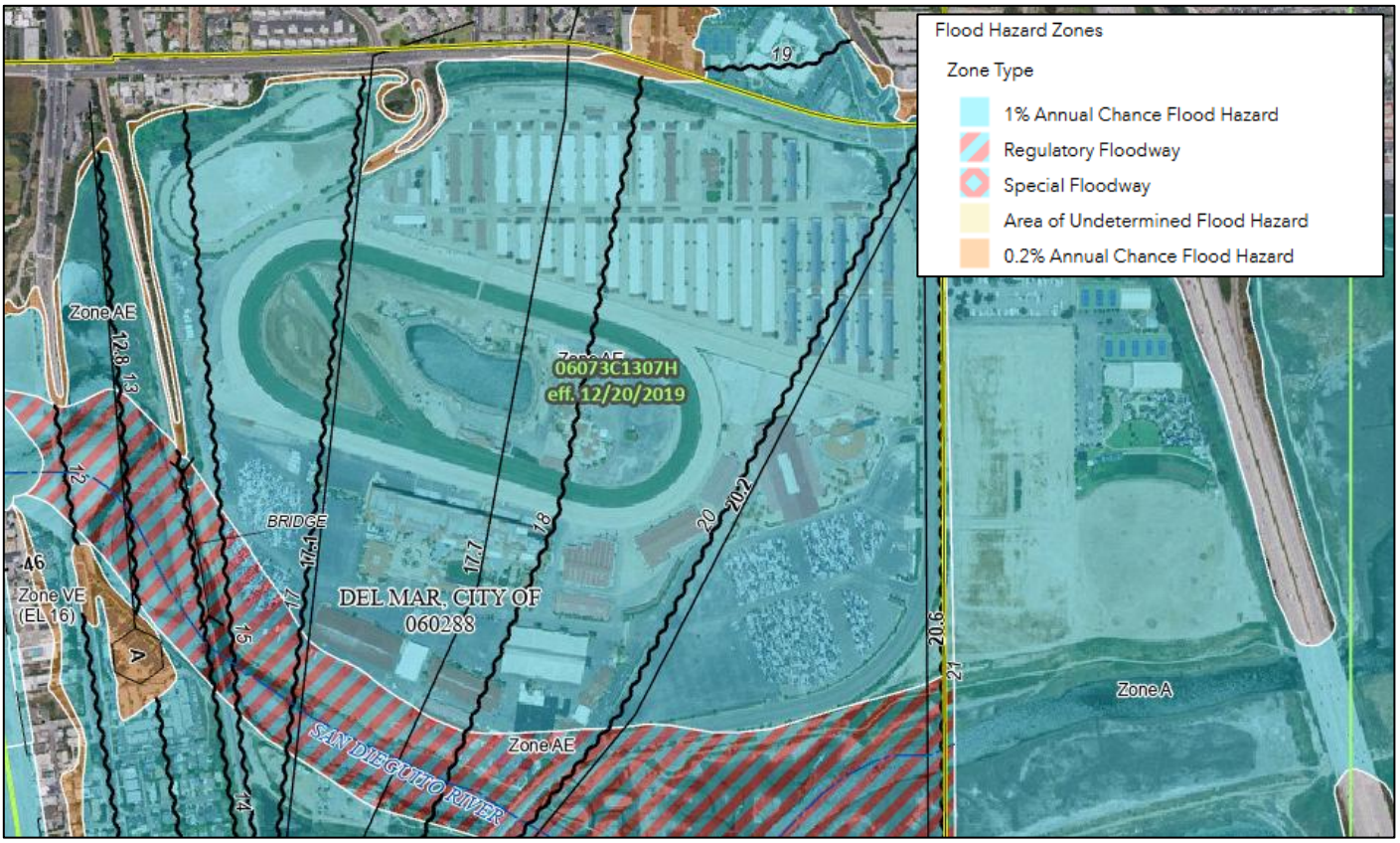

Figure 1 *FEMA floodplain and floodway at the Del Mar Fairgrounds site*

Due to its proximity to the Pacific Ocean, the Del Mar Fairgrounds site is subject to flooding during large tidal events and is therefore vulnerable to SLR. Additionally, flooding within the San Dieguito River is tidally influenced, so SLR could increase the site's vulnerability to flooding during fluvial events within the river.

To the north and west of the site is Stevens Creek, an urbanized drainage channel. The channel receives outflow from double box culverts north of the stables, flows west and south through three culverts, and outlets into the San Dieguito River near the railway crossing. The largest source of channel inflow is the double box culverts, which receive flow from a large portion of the City of Solana Beach. The creek also receives flow from the Fairgrounds site. Stevens Creek has been reported to overtop during large storm events (Chang Consultants, May 2014). In 2015, a berm was constructed along the south bank of the creek, north of the stables, to reduce breakout flow onto the Fairgrounds site.

2.2 Existing Infrastructure

The existing flood infrastructure on the Fairgrounds site includes storm drain networks, pump stations, stormwater treatment, and berms. Storm drain infrastructure includes roof drains and grates that convey onsite runoff to Stevens Creek and the San Dieguito River. Since 2015, the flood infrastructure has been upgraded twice to improve resiliency and to improve the quality of stormwater discharge. An overview of the existing site is shown in Figure 2. Appendix A contains more detailed maps showing the existing storm drain infrastructure.

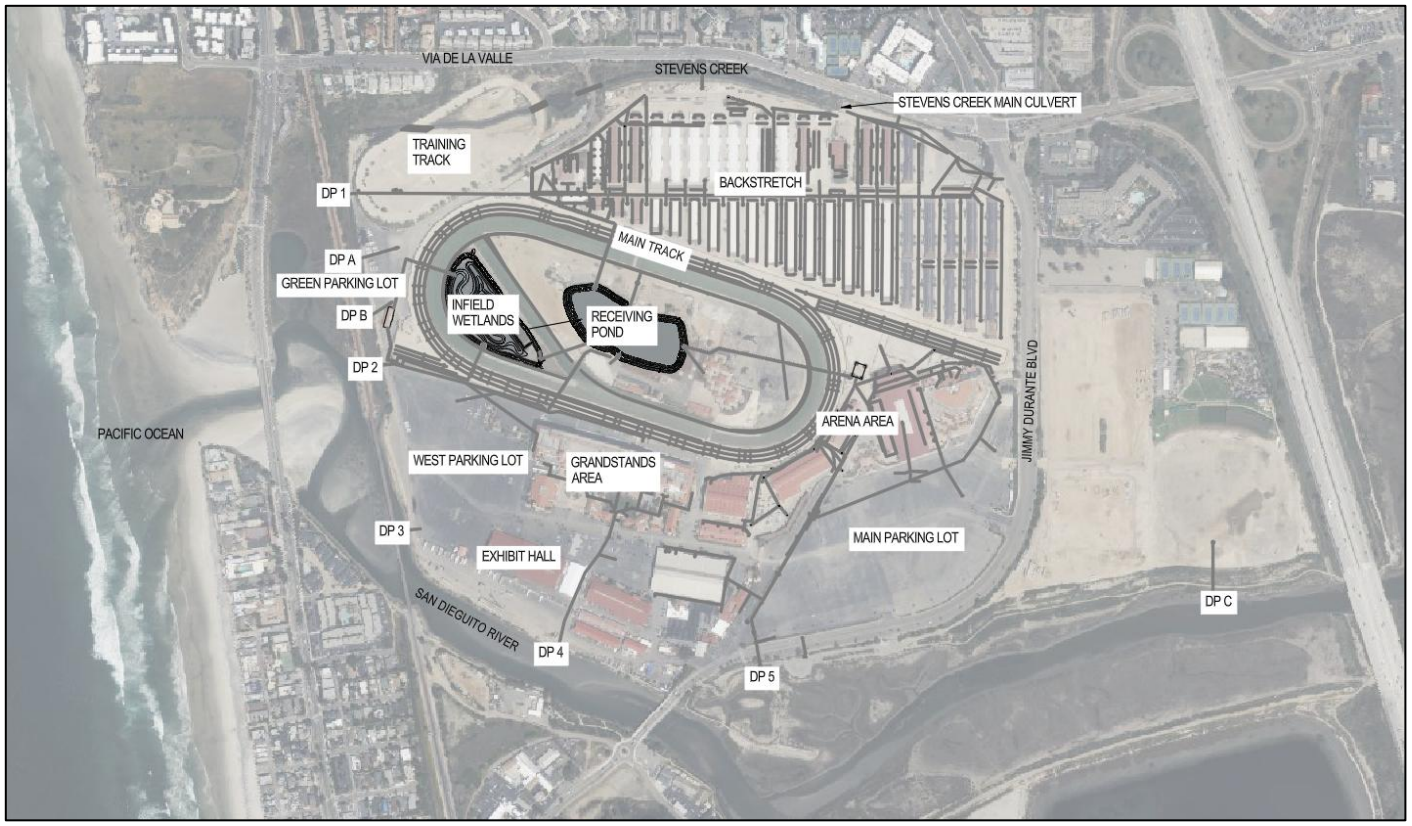

Figure 2 Overview of existing storm drain infrastructure at Del Mar Fairgrounds

2.2.1 Phase I Backstretch Improvements

In 2015, improvements were made in the Backstretch to improve roof and surface drainage. Roof drains were upgraded to convey runoff from the 25-year storm event and grates were added to improve surface drainage. Flow in the pipes was directed to the Training Track Pump for discharge at Discharge Point (DP) 1 into Stevens Creek (see Figure 2). A berm was also constructed alongside Stevens Creek to raise the terrain elevation to 17.16 ft NAVD88 (Fuscoe Engineering, Inc, 2015).

2.2.2 Phase II Storm Drain Improvements

Storm drain infrastructure was upgraded again in 2021 to provide treatment to runoff from areas of the site that qualify as Large Concentrated Animal Feeding Operations (CAFOs). Areas of the site that host large numbers of animals throughout the year such as the stables, racetrack, and Arena Area qualify as CAFOs under National Pollutant Discharge Elimination System (NPDES) Permit Regulations and Effluent Limitation Guidelines and Standards for CAFOs (D-Max Engineering, Inc, 2015). Upgrades were made to the site to increase drainage to retention ponds inside of the racetrack infield and the ponds were upgraded to aid in stormwater retention and treatment. Flow from these ponds is routed through a treatment plant and eventually discharged at Discharge Point 3. The new CAFO treatment system was designed to retain and treat runoff from the 25-year storm event (D-Max Engineering, Inc, 2015).

2.2.2.1 CAFO Treatment System

The CAFO Treatment System is designed to fully retain and treat stormwater runoff from the 25-year storm event. The receiving pond receives runoff from the Backstretch, Main Track and infield, Arena Area (Wyland Center, Expo Center,

Barn W, Arena), and a section of the West Parking Lot. The receiving pond is connected to the wetlands pond by a 24” pipe. An intake in the wetlands pond takes water at a maximum of 450 gpm (1 cfs) to the treatment plant. Following treatment, water can be discharged to Stevens Creek at Discharge Point 2 or recirculated back to the ponds.

2.2.2.2 Non-CAFO Drainage Systems

Runoff from the non-CAFO areas drain to the remaining seven discharge points, which are described below and shown in Figure 2. Appendix A contains more detailed maps showing these discharge points and the extents of the non-CAFO areas.

- **Discharge Point 1:** The Backstretch roof drains and three grates that drain non-CAFO surfaces drain to this discharge point through the Training Track Pump. No known gate valve exists on this pipe.
- **Discharge Points A and B:** Single inlets and pipes drain the adjacent parking lots to Stevens Creek. No known gate valves exist on these pipes.
- **Discharge Point 3:** Single inlet and pipe draining the adjacent parking lot to the San Dieguito River. There is a manual gate valve at this location. Management of this gate valve is unknown.
- **Drainage Point 4:** Drainage from the Grandstand is discharged at this point. There is a manual gate valve at this location. Management of this gate valve is unknown.
- **Discharge Point 5:** Drainage from the Main Parking Lot, O’Brien Hall, and roof drains from the Wyland Center, Activity Center, Expo Center, Barn W, and Surfside Race Place. There is a manual gate valve at this location. Management of this gate valve is unknown.
- **Discharge Point C:** Single inlet and pipe draining the adjacent golf area to the San Dieguito River. No gate valve is located on this pipe.

3. Existing Conditions HEC-RAS Model Development

The San Dieguito River was modeled using an unsteady two-dimensional (2D) hydrologic/hydraulic model created using the US Army Corps of Engineers HEC RAS v6.7 beta 5 software. This model was run using the diffusion wave equation set to increase model stability and reduce run times. The following section describes the model scenarios analyzed as part of the study and the development of these hydrologic/hydraulic models.

3.1 Model Scenarios

The HEC-RAS 2D model was used to evaluate flooding originating from the San Dieguito River, tidal events in the Pacific Ocean, SLR, and onsite rainfall. 1 lists the model scenarios for this study.

First, tidal events were studied on their own (no fluvial flow) to determine their resulting flood hazards on the Del Mar Fairgrounds. Next, various storm events were studied within the San Dieguito River, using the mean higher high water (5.13 ft) as a downstream boundary condition. This boundary condition was selected as it occurs regularly.

The effects of SLR on 10-year fluvial flooding were studied next. The 10-year fluvial event was selected for this analysis as the severity of flooding onsite during this event is likely to be more impacted by SLR than the larger events. In larger events, such as the 50-year and 100-year events, almost the entire site is inundated with significant flood depths, making it more difficult to assess the effects of SLR on flooding on the site.

Onsite rainfall was also studied. Onsite rainfall focuses on evaluating a local storm impacting the District's property directly, while fluvial scenarios evaluate San Dieguito River flows associated with rainfall across its watershed. The 100-year and 10-year rainfall events onsite were studied without a fluvial event to determine the risks of onsite flooding from a local storm event. Onsite rainfall was also paired with a 10-year fluvial event. The 10-year fluvial event was selected as it can provide a better understanding of flood hazards from onsite rainfall compared with a larger fluvial event that would flood the site. Finally, 10-year onsite rainfall with SLR was studied.

Three SLR scenarios were selected and included in the model scenarios described above. SLR scenarios were selected using the State of California Sea Level Rise Guidance document (OPC, 2024). The Intermediate-High scenario across three time horizons (2050 – 1 ft, 2070 – 2.3 ft, 2100 – 4.8 ft) were used.

Table 1 Model scenarios

	Scenario No.	Fluvial Event (San Dieguito River)	On-site Rainfall	Tidal Scenario
Tidal Events	1	N/A	N/A	10-year Extreme Water Level (7.34 ft)
	2	N/A	N/A	2050 Intermediate-High SLR + MHHW (6.13 ft)
	3	N/A	N/A	2070 Intermediate-High SLR + MHHW (7.43 ft)
	4	N/A	N/A	2100 Intermediate-High SLR + MHHW (9.93 ft)
Fluvial Events	5	10-year Storm Event	N/A	MHHW (5.13 ft)
	6	50-year Storm Event	N/A	MHHW (5.13 ft)
	7	100-year Storm Event	N/A	MHHW (5.13 ft)
Fluvial Events + Sea Level Rise	8	10-year Storm Event	N/A	2050 Intermediate-High SLR + MHHW (6.13 ft)
	9	10-year Storm Event	N/A	2070 Intermediate-High SLR + MHHW (7.43 ft)
	10	10-year Storm Event	N/A	2100 Intermediate-High SLR + MHHW (9.93 ft)
Onsite Rainfall Events	11	N/A	10-year	MHHW (5.13 ft)
	12	N/A	100-year	MHHW (5.13 ft)
Fluvial + Onsite Rainfall	13	10-yr	10-year	MHHW (5.13 ft)
Onsite Rainfall + Sea Level Rise	14	N/A	10-year	2050 Intermediate-High SLR + MHHW (6.13 ft)
	15	N/A	10-year	2070 Intermediate-High SLR + MHHW (7.43 ft)
	16	N/A	10-year	2100 Intermediate-High SLR + MHHW (9.93 ft)

3.2 Terrain

The model terrain was created primarily using 2014 U.S. Geological Survey (USGS) LiDAR data. To improve resolution in the San Dieguito River, 2014 USACE National Coastal Mapping Program (NCMP) topobathymetric LiDAR data for California was used to refine the terrain within the river channel. This bathymetric data extends from

approximately 930 ft upstream of Jimmy Durante Blvd Bridge to the Pacific Ocean. Bathymetric data was not available upstream of the 2014 USACE NCMP LiDAR extents, so the channel invert is not well-resolved in the model terrain.

In 2021, the infield ponds were re-graded as part of the District's Phase II Stormwater Improvement Project (see Section 2.2.2). CAD files with the improvements were provided by Fuscoe Engineering, Inc. The updated basin grading was incorporated into the model terrain. The bottom elevation of the basins was raised to the normal water level provided in the Stormwater Improvement Project Plans to reflect normal operating conditions.

Additional LiDAR was not available in Stevens Creek, so the channel invert is not well-resolved in the model. The channel terrain at the culvert inlets and outlets was lowered to match the culvert invert elevations. In general, the invert of the creek in the LiDAR data was within 1 ft of the culvert invert elevations. The berm constructed in 2015 along the south bank of Stevens Creek from Solana Gate to the upstream end of the creek was added to the model using the chain link fence as a reference for the alignment and data from the Backstretch Improvements Phase 1 as-built set.

The grading changes made in 2016 for the Del Mar Fairgrounds Tidal Marsh Restoration project immediately upstream of Jimmy Durante Blvd were excluded from the model terrain.

3.3 Model Grid

The mesh features 50 ft by 50 ft rectangular grid cells and encompasses the San Dieguito River, the Del Mar Fairgrounds site, and surrounding terrain. The perimeter extends from the Pacific Ocean eastward to 0.25 miles downstream of the El Camino Real crossing. The southern perimeter is located at the high points in the terrain to ensure flow containment. The northern perimeter is located approximately 200 ft north of Via De La Valle. Break lines are placed along the river and creek channels to orient flow perpendicular to the mesh. Break lines are also placed along levees and higher elevation features such as roads to improve model resolution in those locations. Cell sizes along breaklines range from 5 ft to 50 ft. The extents of the model grid and the model terrain are shown in Figure 3.

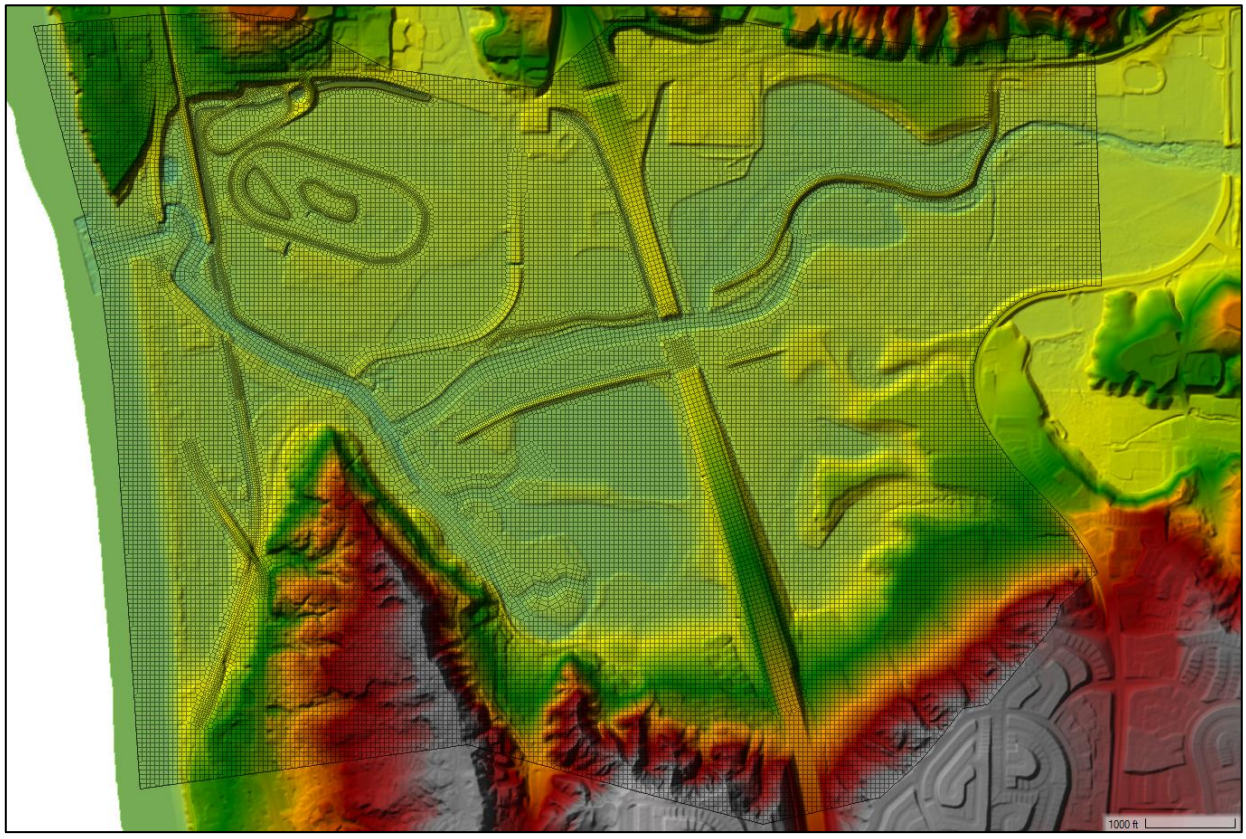

Figure 3 HEC-RAS 2D model grid

3.4 Model Inflows

Inflow hydrographs were used to model the flow in the San Dieguito River for the fluvial events. Additionally, for the onsite rainfall events, inflow hydrographs were applied to Stevens Creek and to model excess flow from the stable roofs beyond the capacity of the roof drains.

3.4.1 San Dieguito River Inflow Hydrograph

The San Dieguito River fluvial events were modeled using hydrographs for the 10-, 50-, and 100-year storm events, which provide flow rates for the river in 1-hr increments during the storm event. The hydrographs were extracted from the 2014 Chang Consultants *Hydrology & Hydraulics Studies for the San Dieguito Double Track* report (Chang Consultants, May 2014). The hydrographs include attenuation effects from upstream Hodges Dam, which can retain smaller storm events and allows flow over the spillway in larger events. Digital files of the hydrographs were unavailable, so points on these hydrographs were extracted from a PDF copy of the report. Please refer to Figure 4 for the 10-, 50-, and 100-year San Dieguito River inflow hydrographs.

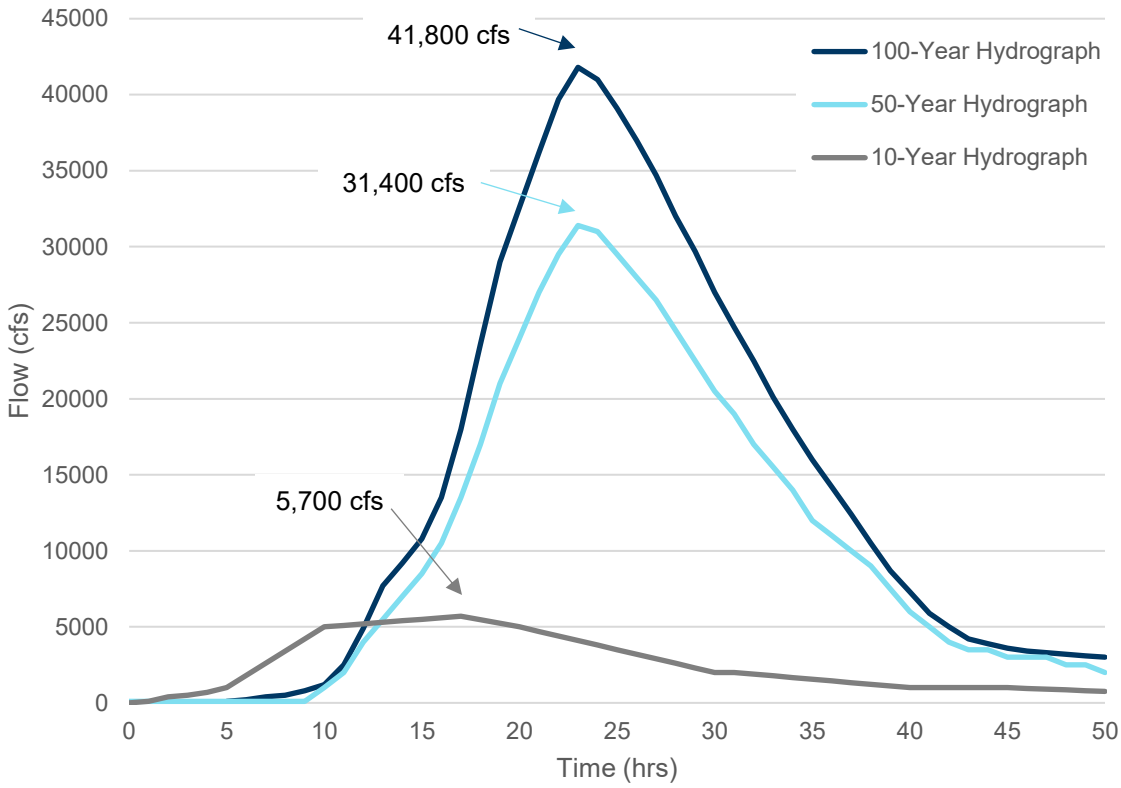

Figure 4 ***San Dieguito River hydrographs, extracted from 2014 report (Chang Consultants, May 2014)***

For the tidal and rainfall only scenarios, the San Dieguito River was modeled with a constant inflow of 100 cfs, reflecting the minimum flow in the 10-year hydrograph.

3.4.2 Onsite Rainfall

Onsite rainfall events were simulated using rain-on-grid boundary conditions. 10-year and 100-year rainfall was applied to the model grid. The HEC-RAS model simulates infiltration/losses to determine excess rainfall within each grid cell. This section describes the development of the hyetographs and loss parameters used in the model.

3.4.2.1 Hyetographs

10-year and 100-year hyetographs were developed following methods outlined in the San Diego County Hydrology Manual (County of San Diego Department of Public Works Flood Control Section, June 2003). This method relied on 10-year and 100-year National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rainfall depths for a variety of durations ranging from 5 minutes to 24 hours. These rainfall depths were used to create nested rainfall distributions with 5-minute increments. NOAA Atlas 14 precipitation depths are contained in Appendix B and calculations are included in Appendix C. Please refer to Figure in Appendix C for the 10-year and 100-year rainfall hyetographs.

3.4.2.2 Infiltration

HEC-RAS calculates the rainfall losses at each time step within each grid cell based on user-input infiltration data. Soil Conservation Service (SCS) Curve Numbers (CN) were used in this study to calculate rainfall losses. Curve numbers were assigned based on soil type and land use. Land uses were assigned based on 2021 NOAA Coastal Change Analysis Program (CCAP) regional land use data. Soil types were obtained from United States Geological Survey (USGS) Web Soil Survey. Once the land use and soil type was defined, spatially varied CN were assigned using recommended CN values within the San Diego County Hydrology Manual. Please refer to Appendix D for a list of land use data and curve numbers used in the model. Much of the site features hard packed dirt and pavement with soil type D. These areas were modeled with high CN values of 89 and 98, respectively. The initial abstraction ratio was set to 0.2 for all land uses.

The inflow from the stable roofs was input separately (see Section 3.4.4), so the stable buildings were set with a high infiltration rate (CN=1, Ia=1) to avoid double-counting flow.

3.4.3 Stevens Creek Inflow Hydrograph

Stevens Creek is a flood control channel located to the north and west of the fairgrounds site, which receives urban runoff from a large portion of the City of Solana Beach. Inflow at the upstream end of this channel was included in the rain-on-grid scenarios, as the water surface elevations within the Creek affect the hydraulics within the onsite storm drain systems. Inflow to the Creek was excluded from all other (fluvial/tidal only) models. Inflow for any other outfalls into the channel were excluded from this model.

Inflow hydrographs for Stevens Creek were estimated based on the capacity of the double 12 ft x 6 ft reinforced concrete boxes (RCB) at the upstream end of the channel, following the process described below. Please refer to Appendix E for calculations and see Figure 5 for hydrographs.

1) The peak 100-year flow rate was approximated as the capacity of the double 12 ft x 6 ft RCBs when flowing full. This approach is consistent with the San Diego County Hydraulic Manual, which states that culverts should be designed to pass the 100-year peak flow (County of San Diego Department of Public Works Flood Control Section, 2014). The slope of the culvert was not available, so it was estimated as 0.0007 ft/ft, matching the slope of the Solana Gate culvert, immediately downstream.
2) The peak 10-year flow rate was approximated by scaling the 100-year peak flow rate by the ratio of the 10-year 24-hour rainfall depth to the 100-year 24-hour rainfall depth obtained from NOAA Atlas 14 (see Appendix B).
3) The SCS unit hydrograph was used to generate hydrographs for the 100-year and 10-year storm events, assuming a peak time of 16 hours. This peak time was selected for a conservative analysis, as it aligns with the peak of the hyetographs discussed in Section 3.4.2.1.

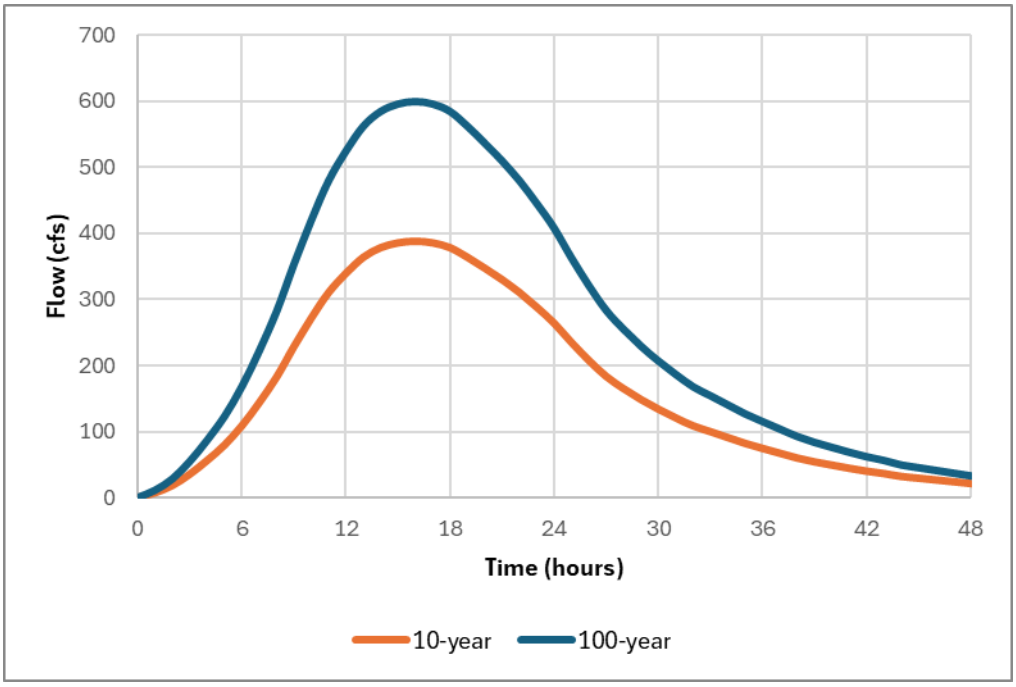

Figure 5 Stevens Creek inflow hydrographs

3.4.4 Roof Drains

Several buildings within the Fairgrounds site feature roof drain systems. The roof drain systems implemented in the Phase I and Phase II improvements were designed to capture the 25-year storm event rainfall and discharge stormwater to Stevens Creek or San Dieguito River (see Section 2.2). Within the CAFO areas, roof drains separate non-CAFO regulated roof water from surface runoff and reduce the volume of water routed to the infield ponds. The roof drains in the Backstretch were modeled using a representative hydrograph as described below. The roof drains in the vicinity of the Arena and Barn W were excluded from preliminary modeling due to lack of data. Additionally, the hydramatic pump downstream of these roof drains was assumed to limit the capacity of the system, resulting in minimal flow through these roof drains.

The Backstretch roof drains cover approximately 16.7 acres of roofs in the Backstretch Area (see Figure 2 in Section 2.2). These roof drains were not included in the onsite model, so inflow hydrographs were introduced in the stables area to simulate excess flow beyond the capacity of the roof drains that would spill onto the ground. Since the roof drains were designed to capture flow during the 25-year storm event, no additional runoff from the roofs was introduced in the 10-year onsite rainfall event. For the 100-year onsite rainfall event, hydrographs representing excess flow from the roof drains were created by taking the difference between 25-year and 100-year hydrographs. These hydrographs were generated by multiplying the 25-year and 100-year hyetographs and the roof area. This approach assumes no rainfall losses, since the roofs are entirely impervious. Additionally, no lag time was introduced due to the small size of the roofs. The 100-year inflow (excess flow) hydrograph for the stable roof drains is shown in Figure C-2 in Appendix C alongside the 100-year and 25-year hydrographs.

3.5 Tidal Conditions

Tidal conditions were used as the downstream boundary of the HEC-RAS model. The parameters for these conditions were assembled from the nearest NOAA tide station, approximately 7.6 miles south at La Jolla. This station has a data repository as far back as 1924 and is representative of high-water levels downstream of the Del Mar Fairgrounds site. Also, due to the long data record for this station, extreme water levels (EWL) are provided by NOAA's Center for Oceanographic Products (NOAA CO-OPS) for annual exceedance probabilities of 1%, 10%, 50%, and 99%. These

probabilities correspond to an annual return period of 100-years, 10-years, 2-years, and 1-year, respectively. In consideration of this tidal information, two still water level conditions were selected for this analysis.

- The Mean Higher-High Water (MHHW) condition was selected to be representative of a monthly high tide condition. This is considered to be a highly recurrent event that would be observed under normal tidal conditions. The MHHW was modeled as 5.13 ft NAVD88.
- The 10-year EWL was selected to be representative of a historic king tide condition. This is considered to be an infrequent event with only a 10% annual occurrence probability and would likely be observed under conditions related to coastal storm surge. The 10-year EWL is 7.34 ft NAVD88.

Additionally, in order to evaluate the effects of SLR on these tidal conditions, three SLR scenarios were selected based on the Ocean Protection Council's California Sea Level Rise Guidance: 2024 Science and Policy Update. This guidance is considered as the "best available science" for SLR projections in California. Based on the recommended precautionary approach, the Intermediate-High SLR planning scenarios for 2050, 2070, and 2100 were selected for this analysis. In order to establish these projected water levels, the projected SLR was added to the MHHW conditions. The result downstream boundary elevations were 6.13 ft, 7.43 ft, and 9.93 ft, for the 2050, 2070, and 2100 SLR scenarios, respectively.

3.6 Manning's Roughness

Manning's roughness values were assigned using 2021 NOAA CCAP land use data. Roughness values were assigned based on land use using HEC-RAS 2D User Manual Guidance (U.S. Army Corps of Engineers, n.d.). Values were selected from the middle of the range for each land use. Manning's roughness values were refined within the river and in the vicinity of the project site using classification polygons. Please refer to Appendix D Table D-1 for a list of Manning's roughness values based on land use and Appendix D Figure D-1 for a depiction of Manning's roughness in the model.

3.7 SA/2D Connections

The HEC-RAS 2D model includes four bridges over the San Dieguito River which are modeled as SA/2D connections. These bridges are listed below along with their data sources. Pedestrian bridges and overlooks were excluded from the model, as data was not available for these features and they are estimated to have minimal effects on the model results.

1. I-5 Bridge over the San Dieguito Lagoon, which was modeled based on Caltrans as-built records. Elevations were converted from NGVD29 to NAVD88 using a datum shift of 2.16 ft, based on NOAA's NGS Coordinate Conversion and Transformation Tool (NCAT).
2. Jimmy Durante Blvd Bridge, which was modeled based on geometry in the City of Del Mar Engineering San Dieguito Lagoon Shoreline Protection no rise model (GHD, 2025). Geometry for this no rise model was obtained record drawings received from the City of Del Mar.
3. San Dieguito River Railway Bridge, which was modeled based on a previous HEC-RAS model developed by Chang-Consultants (Chang Consultants, 2020), as as-built records were not available for this bridge.
4. Camino Del Mar Bridge, which was modeled based on geometry in the City of Del Mar Engineering San Dieguito Lagoon Shoreline Protection no rise model (GHD, 2025). Geometry for this no rise model was obtained record drawings received from the City of Del Mar.

In addition to the four bridges over the San Dieguito River, the model includes three crossings with culverts within Stevens Creek. Fuscoe Engineering, Inc. (Fuscoe) provided inverts for the culverts at Solana Gate and the first Training Track crossing. Only the upstream invert was provided for the second Training Track crossing, and the downstream invert was assumed based on the slope of the surrounding channel and upstream crossings. The sizes of the culverts were taken from the *Stevens Creek Widening Report* (Fuscoe Engineering and LSA Associates, Inc., 2008). Lengths were measured from the provided CAD files.

Within the Fairgrounds property there is a tunnel that allows access to the racetrack infield. The infield access tunnel was modeled as a SA/2D connection with a culvert, to provide flow connectivity through the tunnel. Dimensions for the culvert were taken from the Tunnel Under Racetrack to Infield Plaza plan set provided by Fuscoe Engineering, Inc (James A. Hutchinson & Associates, 1984). Invert elevations were set equal to the minimum terrain elevation at the openings.

3.8 Pipe Network

The existing onsite storm drain network was modeled in all of the onsite rainfall scenarios. In these scenarios, all manual gate valves were assumed to be open, all drains were assumed to be uncovered, and no sewer connections were modeled. Model inputs and assumptions are discussed in detail in this section.

A simplified version of the pipe network was included in the tidal and fluvial models under the assumption that all manual gate valves are closed during those events. The tidal and fluvial model scenarios only include the two Green Parking Lot drains (Discharge Points A and B) without manual gate valves that drain to Stevens Creek.

3.8.1 Data Sources

Pipe sizes, invert elevations, and alignments as well as inlet locations and sizes were obtained from the following data sources. Elevations were converted from NGVD29 to NAVD88 using a factor of +2.156 ft.

- Survey data in CAD provided by Fuscoe
- 2018 Phase II Storm Water Improvement Plans (Fuscoe Engineering, Inc, 2018)
- Backstretch Improvement Phase 1 Plans (Fuscoe Engineering, Inc, 2015)
- Industrial Activities Storm Water Pollution Prevention Plan for Del Mar Fairgrounds, Updated 2022 (D-Max Engineering, Inc, 2015)
- Program Effectiveness Assessment and Improvement Plan (Fuscoe Engineering, Inc, 2024)
- San Diego Regional Standard Drawings (Regional Standards Committee, 2022)

Field data collection was used to verify operational status and location of grates in the parking lots. Global Positioning System (GPS) points were taken with EOS Gold Global Navigation Satellite System (GNSS) for location reference. Field measurements were taken where possible to determine the sizes of pipes, inlets, and depth to invert of inlets (used to estimate pipe invert elevations based on the terrain surface elevations). Pipe sizes for inaccessible outfalls were visually approximated and photographed as reference. Inlets with pipes not clearly defined in the available data or missing from available data were located when possible and the direction of connected pipes was noted if accessible.

Note that despite referencing these several data sources, several data gaps exist, requiring assumptions. These assumptions are described throughout this section and summarized in Section 3.9.

3.8.2 Storm Drain Systems

As described in Section 2, storm drains within the Fairgrounds site drain to Stevens Creek, the San Dieguito River, or the infield retention ponds. In the initial storm drain model, drains were modeled leading to discharge points A, B, 3, 4, and 5. Storm drains leading to the infield ponds were modeled from the Backstretch and the Arena Areas. Drainage to Discharge Point 1 was replaced by the roof drain hydrograph (see Section 3.4.4). Flow from Discharge Point 2 (DP2) was considered negligible due to discharge capacity limitations from the treatment plant and was therefore excluded from the model. Discharge Point C, east of Jimmy Durante Blvd was also excluded (see Figure 2 in Section 2.2) due to limited information on this gravity pipe. Figure 6 shows the resultant storm drain systems included in the model with colored lines and the excluded systems in black. Details on the storm drain systems included are provided below.

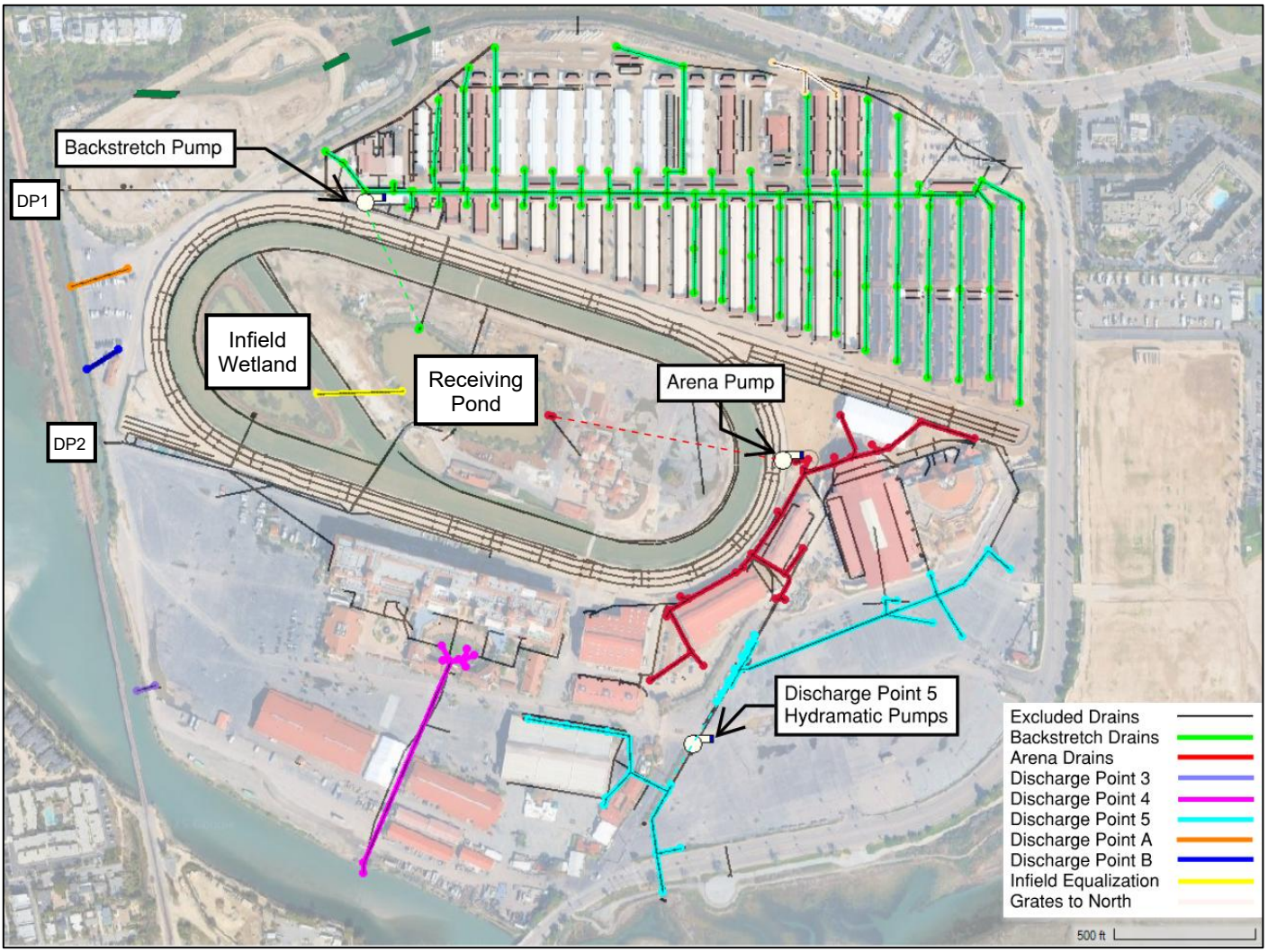

Figure 6 ***Storm drain systems shown in color were modeled in HEC-RAS and storm drains shown in black were excluded from the model.***

The following storm drain systems were included in the model:

- **Backstretch Wash Drains and Pump Station:** Backstretch Pump Station conveys flow from the Wash Drains to the receiving pond.
- **Arena Pump Station and Drainage:** Arena Pump discharges flow from the Arena Drains to the Receiving Pond. Upstream of the Arena Pump, a Detention Unit provides 8,100 ft^3 of flood storage, which was modeled as a node with a large base area.
- **Discharge Point 3:** Parking lot drain with a manual gate valve.
- **Discharge Point 4:** Gravity storm drain network per CAD survey data with a manual gate valve.
- **Discharge Point 5:** Grates located in the Main Parking Lot drain to a hydramatic pump. These grates were located in the field. Flow is then conveyed through a 30-in gravity drain with a gate valve to the discharge point in the San Dieguito River.
- **Discharge Points A and B:** Parking lot gravity drains that outlet to Stevens Creek with no known gate valves.
- **Infield Equalization Pipe:** 24” pipe connecting the infield wetland and receiving pond per Phase II Storm Drain Improvements Plan.

- **Grates to North:** Field-identified pipes that discharge flow collected from grates in the stables area to the Stevens Creek culvert.

3.8.2.1 Excluded Storm Drain Systems

The following storm drain systems and elements were not included in the model.

- Main Track and recirculation to the receiving pond, including connections for infield access tunnel sumps and parking lot grates to the west of the grandstand
- Outfall from the CAFO treatment system (Discharge Point 2)
- Roof drains
- Turf Track drainage
- Infield pavilion drainage
- Infield gravity drain
- Grates discharging to Discharge Point 1
- Any storm drain to sewer connections
- Connections to offsite storm drains along Jimmy Durante Blvd
- 12-in pipe connecting to Discharge Point C, east of Jimmy Durante Bvld

3.8.3 Conduit Model Inputs

The model inputs for conduits (pipes) are described below.

- **Pipe shape:** All pipes were modeled as circular.
- **Pipe diameters:** Diameters were obtained from data sources described in Section 3.8.1 or assumed based on the diameter of surrounding pipes in the system.
- **Pipe inverts:** Pipe invert elevations were set to the invert elevations of the connected nodes, with no elevation offsets.
- **Pipe modeling approach:** Pipe modeling approach was set to hydraulic apart from short inlet pipes on the Discharge Point 4 system, which were set to instantaneous to improve computational efficiency.
- **Mesh cell length**: The mesh cell length for all pipes was set to 10 ft.
- **Entrance and Exit Losses:** Assumed 0.5 for entrance, exit, and backflow losses.
- **Manning's n:** The roughness of the pipes was characterized by Manning's n values selected based on pipe material as described in Table 2.

Table 2 Manning's roughness based on pipe material

Pipe Material	Manning's n
PVC	0.012
RCP/HDPE	0.013
CMP	0.024

3.8.4 Node Model Inputs

The HEC-RAS 2D model includes nodes to model inlets, manholes, junctions, and outlets. Model inputs for these nodes are described below.

- **Invert Elevation:** The node invert was set to the elevations provided in the sources described in Section 3.8.1 or calculated based on the slope of surrounding pipes. Outfall invert elevations were set equal to the terrain elevation at the outfall.
- **Base Area:** The base area was assigned to nodes based on the inlet type and dimensions in the San Diego County Standard Drawings, field measurements, or CAD labels.
- **Top/Side Inlet Elevation:** The inlet elevation was set equal to the LiDAR terrain elevation at the node.
- **Inlet Types:** Only grates and manholes were assigned inlet types and cleanouts and filters were excluded.
- **Weir Length and Coefficient:** The weir length was calculated from San Diego County Standard Drawings or assumed based on CAD data. The weir coefficient was set at 3 for all inlet types.
- **Orifice Area and Coefficient:** The orifice area was calculated from San Diego County Standard Drawings or assumed based on CAD data. The orifice coefficient was set at 0.67 for all inlet types.
- **Surcharge Only:** Only the manhole node type was set to allow surcharge only, meaning that manholes do not accept flow from the model grid.

3.8.5 Pump Stations

Three pump stations were included in the model: the Arena Pump Station, the Backstretch Pump Station, and the Hydramatic Pump Station leading to Discharge Point 5. The Arena Pump Station and the Backstretch Pump Station were both modeled with duplex Grundfos pumps per plan specs. The pumps were connected in HEC-RAS to a node to represent the pump station on the upstream end and the outfall structure downstream of the pump.

3.8.5.1 Pump Curves

The pump curves for the arena and Backstretch pumps were approximated from manufacturer curves. Adjusted pump curves were calculated to reflect system losses along the force main. The losses in the force main leading to the discharge point were calculated considering both the minor and major losses. The friction losses were subtracted from the manufacturer pump curve to create an efficiency curve. The highest elevation along the pump lines was noted as the elevation of the force main leaving the pump station. Pump curves and calculations can be found in Appendix F.

The pump curve for the pump leading to Discharge Point 5 was assumed to have a constant discharge of 3 cfs, as more detailed data was not available. No losses were calculated along this pump line.

3.8.5.2 On/Off Points

The on and off points of the lead and lag pumps within the arena and Backstretch pump stations were not available. These set points were assumed to be at elevations described below.

- **Off point:** 1 ft above invert of pump station
- **Lead pump on point:** invert elevation of the influent pipe to the pump station.
- **Lag pump on point:** approximately 75% of the distance between the influent pipe invert and the force main invert.

3.8.5.3 Pump Outfall Structures

Both outfall structures into the receiving basin were modeled based on available information in the Phase II Storm Drain Improvements Plan. The outfall apron was modeled as a 4-ft diameter pipe, consistent with the apron width. The invert elevation was modeled at the receiving basin's high-water level 11.66 ft NAVD88 for a conservative analysis.

3.9 Summary of Assumptions

A summary of the data limitations and model assumptions is provided below, along with some discussion of the potential implications of these limitations and assumptions.

Terrain and model geometry limitations:

- USACE topobathymetric data does not cover the entire model, resulting in poor resolution for the San Dieguito River invert between the upstream model boundary and approximately 930 ft upstream of Jimmy Durante Blvd. Improving the resolution of the model terrain within the San Dieguito River, for example with survey data, would improve the accuracy of the model results for the fluvial scenarios and may lead to reduced onsite flooding.
- Wetland grading in the southern portion of the property from the DMF Tidal Marsh Restoration Project is not reflected in the model terrain.
- The USGS 2014 LiDAR may not resolve the invert of Stevens Creek. Some of the invert elevations of the storm drain outfalls into Stevens Creek were approximated based on the LiDAR data, which could be impacted by the lack of terrain resolution within the creek. Improved resolution of the terrain within Stevens Creek may reduce the water surface elevations within the creek and onsite in the onsite rainfall simulations.
- The 2015 Stevens Creek berm alignment was approximated using Google aerial imagery.
- The top of the receiving basin was edited to elevation 13.66 ft NAVD88 based on the Phase II Storm Drain Improvements plan set. The top elevation in the CAD file was 13.16 ft NAVD88.
- The tunnel/box culverts beneath Jimmy Durante Blvd north of the river were excluded from the model. The model terrain includes an opening in this area, allowing flow beneath Jimmy Durante Blvd. Adding the culvert as a SA/2D connection may increase head loss at this location, which may impact flow paths in the 50-year and 100-year fluvial scenarios.

Inflow assumptions and limitations:

- The San Dieguito River inflow hydrographs were not available digitally, so they were estimated based on PDF hydrographs (Chang Consultants, May 2014).
- Stevens Creek inflow hydrograph (used in the onsite rainfall event) is assumed to be governed by the capacity of the culvert at the upstream end of the channel with the assumptions outlined in Section 3.4.3. No inflow is introduced in Stevens Creek apart from the main culvert and site discharge points.
- Stevens Creek inflow is excluded from the fluvial model simulations, assuming that the flow within the San Dieguito River governs the onsite flood hazards in these scenarios.
- In the Backstretch, the runoff from the stable roof drains is approximated by the difference in rainfall for the 100-year and 25-year storm events (for the onsite rainfall events). The roofs were modeled with high infiltration rates to avoid double counting flow from these roofs. Flow from the roof drain system into Stevens Creek is excluded from the model. As a result, the modeled flood depths in Green Parking Lot adjacent to the Training Track may be lower than reality, since the missing flow in Stevens Creek near Discharge Points A and B may affect the hydraulics within these outfalls.
- San Dieguito River was assumed to carry a 100 cfs base flow in the tidal and onsite rainfall events (without a fluvial event).

Onsite pipes and pump assumptions:

- Flow out of the infield CAFO treatment system at Discharge Point 2 is assumed to be negligible due to the 450 gpm flowrate into the treatment facility.
- The three grates located on the Backstretch roof drain system, including the grate in the Training Track infield, were excluded from the model due to lack of data on the Training Track Pump Station.
- Roof drain systems for buildings outside of the Backstretch were not included in the model.
- Any system draining to the infield ponds was excluded except the networks connected to the Arena Pump and the Backstretch Pump. This includes drainage from the Main Track, Infield Pavilion, Access Tunnel Sumps, West Parking Lot, Recirculation, and other infield drainage. Excluding these networks from the model may result in the model predicting deeper flood depths within the infield than reality, and lower flood depths within the infield basins.
- The grate inlets in the parking lot south of the racetrack were excluded from the modeling, since the location of the connecting pipes was unknown.
- The pump on the Discharge Point 5 system was set to a constant flow rate of 3 cfs, since is pump curve was not available.
- Data on the connection of grates in the Backstretch to Stevens Creek was limited. Two grates with pipes leading north were noted during fieldwork and it was assumed that these pipes connect to the Stevens Creek culvert.
- Due to data gaps, some pipe diameters, pipe material, invert elevations, and inlet sizes were assumed.
- Inlet elevations for certain pipes were estimated by the depth of the pipe and the model terrain surface.
- Available data indicates adverse slopes on a few pipes, which seems unlikely. These pipes are generally located in areas with backwater conditions and slow velocities, so the adverse slope is not expected to have a major impact on model results.
- Entrance losses, exit losses, and backflow losses of 0.5 were assumed for all pipes.

Operational assumptions:

- The infield basins are assumed to have a starting water level of 9.156 ft NAVD88 in the wetland and 11.156 ft in the receiving pond based on the design normal water level.
- The on/off points for the arena and Backstretch pumps were not available. These set points were assumed.
- The manual gate valves on Discharge Points 3, 4, and 5 are assumed to be opened during onsite rainfall events and closed during fluvial and tidal events. Operation of these gate valves is unknown. If these gate valves are closed during onsite rainfall events, more ponding may occur onsite as local runoff would not be able to drain. If these gate vales are open during fluvial and tidal events, additional flooding may occur within the District's property due to backflow through these storm drains.

4. Existing Conditions HEC-RAS Model Results

4.1 Tidal Events

Flood depth results for the tidal only events are illustrated in Appendix G (Figure G-1 to Figure G-3) and below in Figure 7. These figures also display the two storm drains in purple that were included in this model, as they do not have known outfall valves to prevent backflow. The results of the 10-year extreme water level (EWL) tidal scenario

indicates that the Fairgrounds site remains almost entirely dry during the event, with very minor ponding at the upstream end of the one of the storm drain outfalls within the Green Parking Lot (Appendix G Figure G-1). In the 2050 SLR scenario applied to the MHHW, the site remains dry (Appendix G Figure G-2). The results of the 2070 SLR scenario applied to the MHHW are very similar to the 10-year EWL scenario results (Appendix G Figure G-3). Minimal ponding occurs upstream of the two modeled storm drains, and the remainder of the Fairgrounds site is dry.

Finally, the 2100 SLR scenario (Figure 7) shows flooding on the Fairgrounds site as well as upstream of the site, immediately downstream of the I-5. Some of the largest flood depths occur on either site of the infield tunnel (up to 11.6 ft) and at the southwest corner of the West Parking Lot (up to 4.4 ft). This flooding is the result of overtopping of the north bank of the San Dieguito River. Flooding within the Green Parking Lot is the result of backwater from the two modeled storm drains without gate valves.

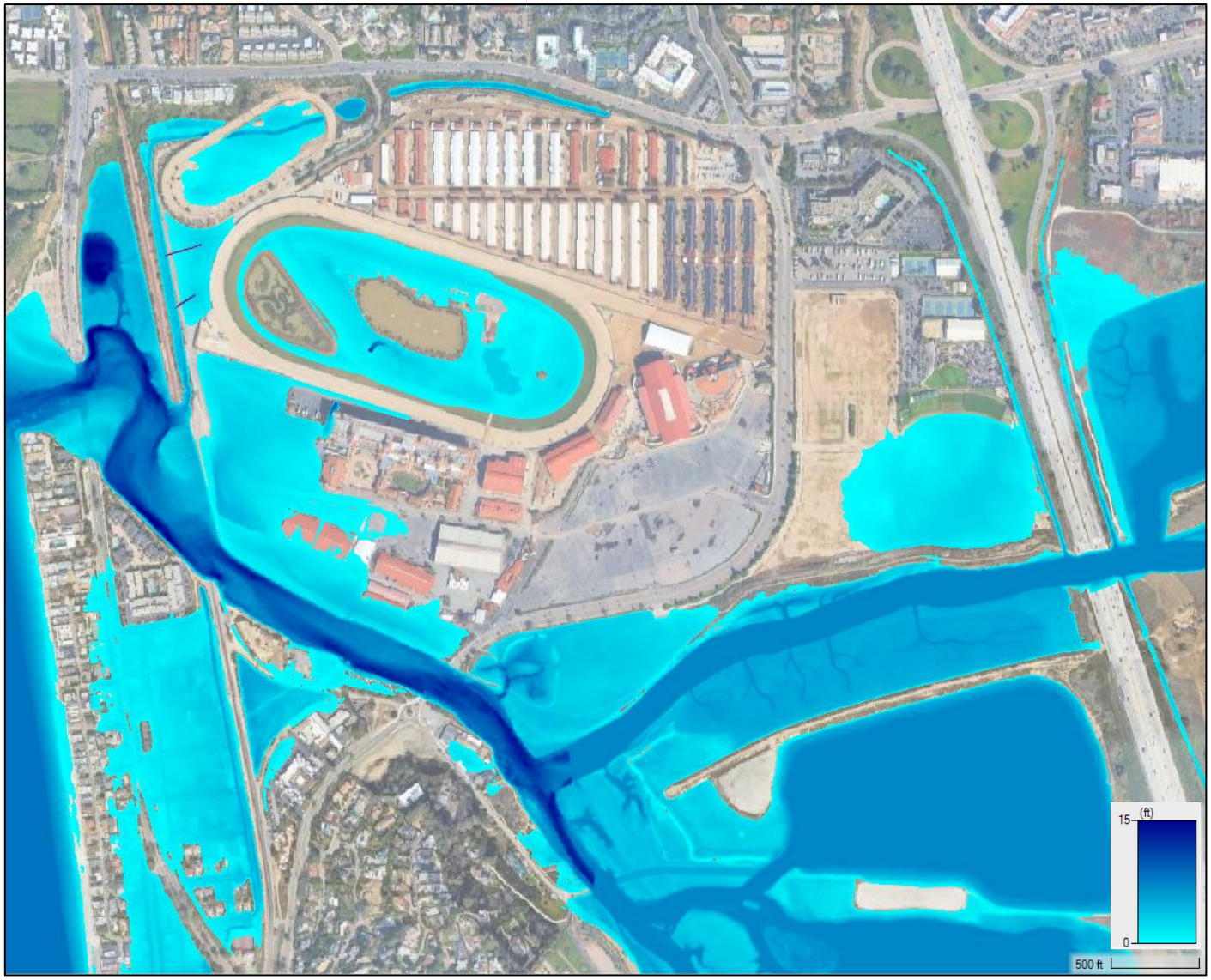

Figure 7 Flood depths resulting from 2100 Intermediate-High SLR + MHHW (9.93 ft)

4.2 Fluvial Events

The flood depth results for the 10-year, 50-year, and 100-year fluvial events within the San Dieguito River are shown in Figure 8, Figure 9, and Figure 10, respectively. These results show the flooding with a MHHW tidal boundary

condition. The result of the 10-year fluvial event shows some flooding within the Fairgrounds site, though most of the site remains dry. Model results indicate flood depths of up to approximately 2.3 ft within the West Parking Lot and along the southern boundary of the Fairgrounds site. This flooding is the result of approximately 24 cfs of breakout flow over the north bank of the San Dieguito River.

Figure 8 Maximum flood depths during the 10-year fluvial event

The flood depth results for the 50-year fluvial event are shown in Figure 9. This storm event results in significantly more flooding within the Fairgrounds site than the 10-year event, with almost the entire site inundated. Flood depths vary throughout the site, with the West Parking Lot experiencing flood depths of up to approximately 8 ft. In the stables area, flood depths range from approximately 2 ft to 6.5 ft. The results indicate approximately 15,300 cfs flows across the Fairgrounds site in this storm event. Most of the site inflow is from flow overtopping Jimmy Durante Blvd.

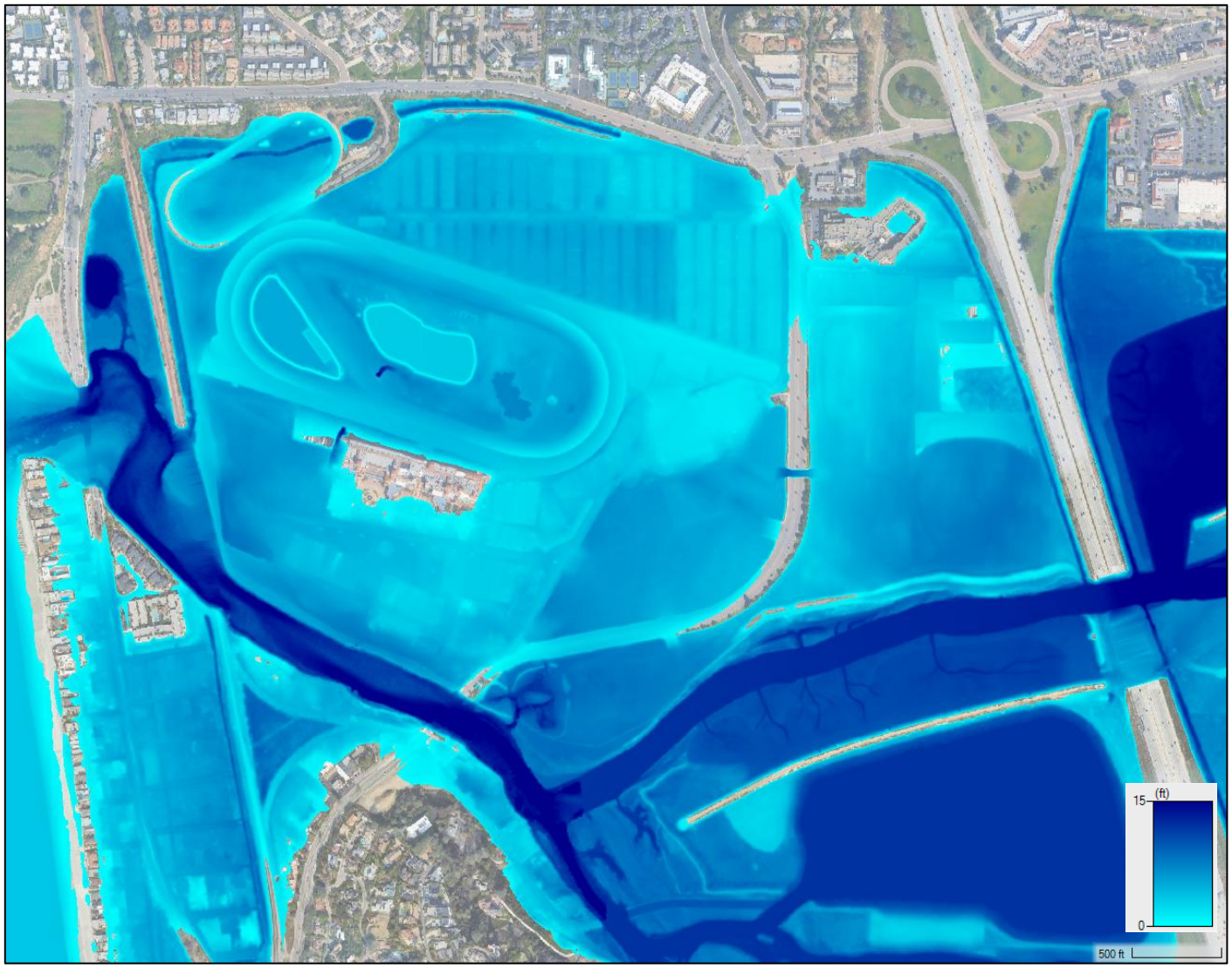

Figure 9 *Maximum flood depths during the 50-year fluvial event*

Similar to the 50-year fluvial results, the results of the 100-year fluvial event show almost the entire Fairgrounds site inundated. Flood depths are greater than in the 50-year event, with maximum depths of up to 9.5 ft in West Parking Lot. Within the stables area, flood depths range from approximately 4 ft to over 7.5 ft. Approximately 25,800 cfs flows across the Fairgrounds site. Similarly to the 50-year event, most site inflow is from overtopping of Jimmy Durante Blvd.

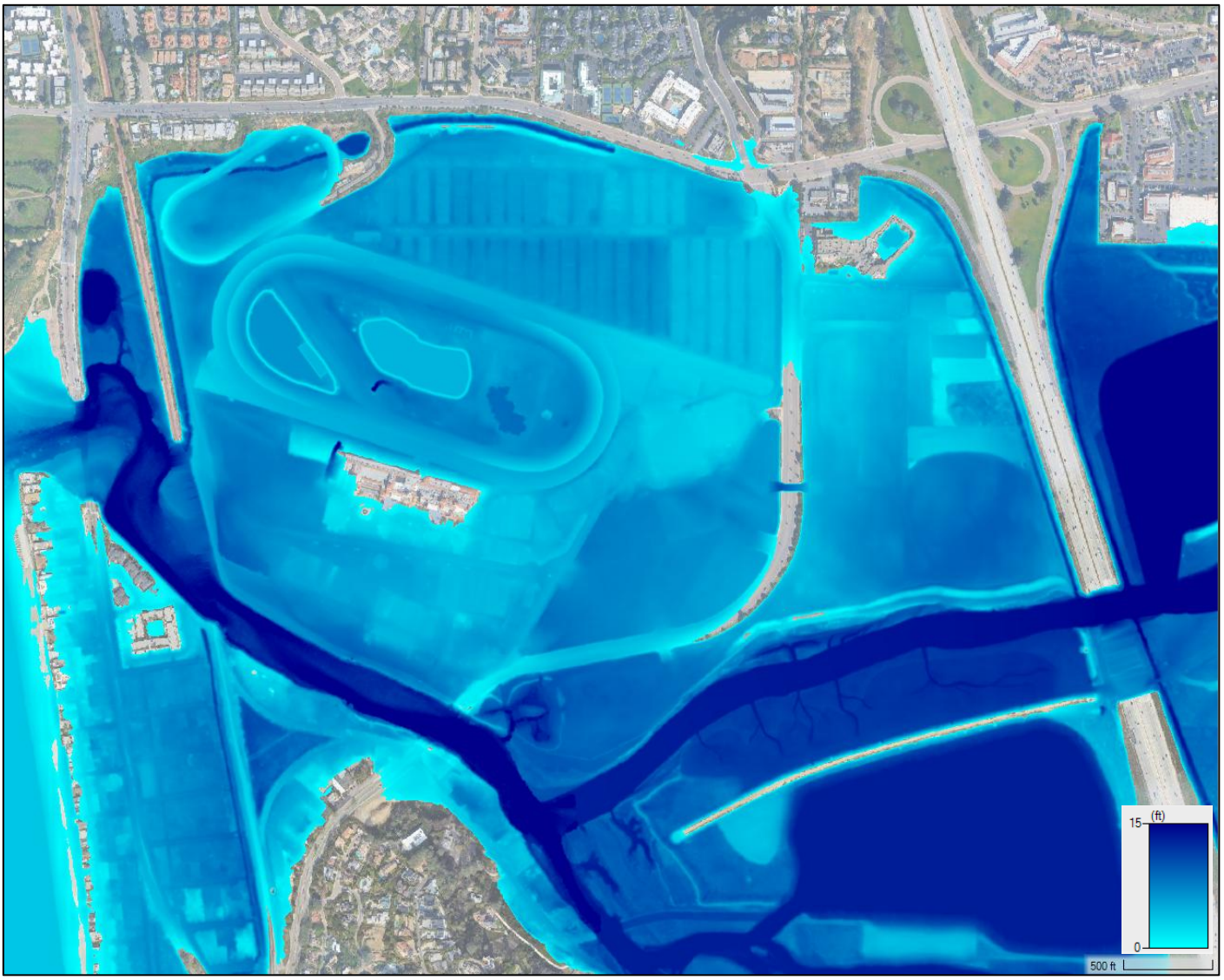

Figure 10 Maximum flood depths during the 100-year fluvial event

4.3 Fluvial Events Combined with Sea Level Rise

Since the site is almost entirely inundated during the 50-year and 100-year fluvial events, the effects of SLR on the 10-year fluvial event were studied. Figure 11, Figure 12, and Figure 13, show the maximum flood depths for the 10-year event for the 2050, 2070, and 2100 SLR scenarios, respectively. These scenarios use the Intermediate-High SLR for each time horizon applied to the MHHW. The results indicate that flooding extents and depths during 10-year fluvial events are sensitive to SLR.

The maximum flood depths in 10-year fluvial event combined with 2050 SLR are shown in Figure 11. The inundation extents are slightly larger than the 10-year fluvial event without SLR. Flood depths are also greater than the 10-year event without SLR, with flood depths of up to 3.2 ft in the West Parking Lot compared to 2.3 ft without SLR. This inundation is the result of 42 cfs of breakout flow over the north bank of the San Dieguito River.

Figure 11 Maximum flood depths during the 10-year fluvial event with 2050 Intermediate-High SLR applied to the MHHW

The results of the 10-year fluvial event with 2070 Intermediate-High SLR are shown in Figure 12 and show incrementally more onsite flooding than the 2050 SLR scenario. The results show flow through the infield tunnel leading to flooding adjacent to the CAFO receiving pond, which was dry in the 2050 SLR scenario. Note that the infield storm drain networks and pumps would eventually drain this flooding into the receiving pond and wetland, however, these features are not included in this model. The 2070 SLR scenario shows maximum flood depths of up to 3.6 ft at the West Parking Lot, compared with 2.3 ft without SLR. This flooding is the result of approximately 85 cfs of breakout flow over the north bank of the river. Some flooding is also noted in the Green Parking Lot due to backwater through the storm drains.

Figure 12 Maximum flood depths during the 10-year fluvial event with 2070 Intermediate-High SLR applied to the MHHW

The results of the 10-year fluvial event with the 2100 Intermediate-High SLR are shown in Figure 13 and show considerably larger inundation extents than the other 10-year fluvial scenarios. In this scenario, the infields and the area within the Training Track are entirely inundated. Note that this model excludes the infields and the infield tunnels storm drain networks, which would eventually drain the infields as flow is pumped to the CAFO receiving basin. The model results also show that the Green Parking lot is inundated. The West Parking Lot also experiences significant inundation in this scenario. Maximum flood depths in the West Parking Lot are approximately 4.9 ft compared to 2.3 ft without SLR. Significant flooding is also noted in the Green Parking lot due to flow within Stevens Creek entering the site through the storm drains.

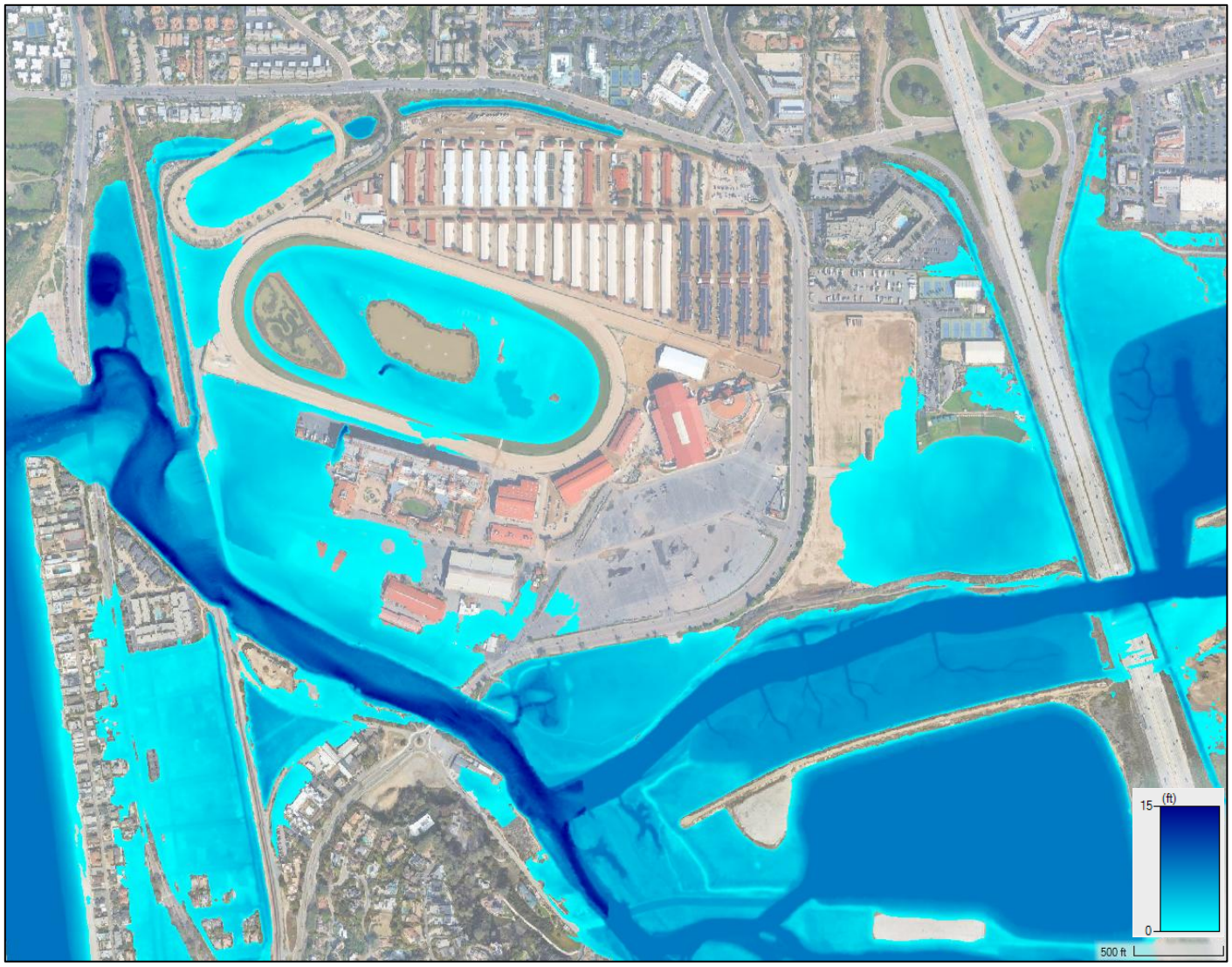

Figure 13 Maximum flood depths during the 10-year fluvial event with 2100 Intermediate-High SLR applied to the MHHW

4.4 Onsite Rainfall Events

The HEC-RAS 2D model results of the onsite rainfall events are preliminary; as the model will be updated as additional data becomes available, including information on the pump station set points. The preliminary flood depth results for the 10-year and 100-year onsite rainfall events are included in Figure 14 and Figure 15, respectively. A different color scale for flood depths is used to illustrate these rain-on-grid results, to help differentiate areas with shallow ponding. In general, rain-on-grid modeling shows large areas with shallow flood depths as rainfall is applied to each cell and runs off toward the drainage systems.

The results of the 10-year onsite rainfall events show shallow ponding across the site with water accumulating in the infield ponds and the infield of the Training Track (Figure 14). Water flowing into the Training Track through the eastern culverts floods the infield and overtops the Training Track at the southeastern straightaway (peak overflow of 3 cfs). The depth in the Training Track infield is 4.5 ft at the low point at the southwest side of the infield. Water ponding in the stables area is mostly less than 1 ft deep, with some localized areas with up to 3 ft of flooding. The CAFO receiving basin and wetland do not overtop in this simulation and the Arena and Backstretch pumps do not operate at full capacity. Up to 10 ft of water inundates the infield access tunnel and flooding in the southwest corner of the West Parking Lot reaches 1.6 ft of depth.

Figure 14 *Maximum flood depths during the 10-year onsite rainfall events.*

The 100-year onsite rainfall event results show flow in Stevens Creek inundating the infield of the Training Track and overtopping southeastern straightaway (150 cfs). Flow also breaks out of the creek just north of the western culverts (35 cfs). This flow travels across the Green Parking Lot and reenters Stevens Creek. Onsite rainfall did not overflow the infield basins during the simulation run time. The Backstretch Pump ran at full capacity for most of the storm event, while the Arena Pump only ran at full capacity during the peak of the storm event. Flood depths reached 2.5 ft in the southwestern corner of the West Parking Lot.

Figure 15 Maximum flood depths during the 100-year onsite rainfall event

4.5 Onsite Rainfall Combined with Fluvial Events

The 10-year onsite rainfall event was run with the 10-year fluvial event. Onsite flooding remained similar to the 10-year rainfall only event within the northern half of the site, with the same depth of flooding in the Training Track infield, infield basins, and stables (see Figure 16). Flooding depths increased by 1.5 ft in the West Parking Lot and by 1 ft in the Main Parking Lot due to the fluvial event. This results in flood depths of 3 ft in the West Parking Lot and up to 2 ft in the Main Parking Lot. Breakout flow from the river entered the site near Discharge Point 4.

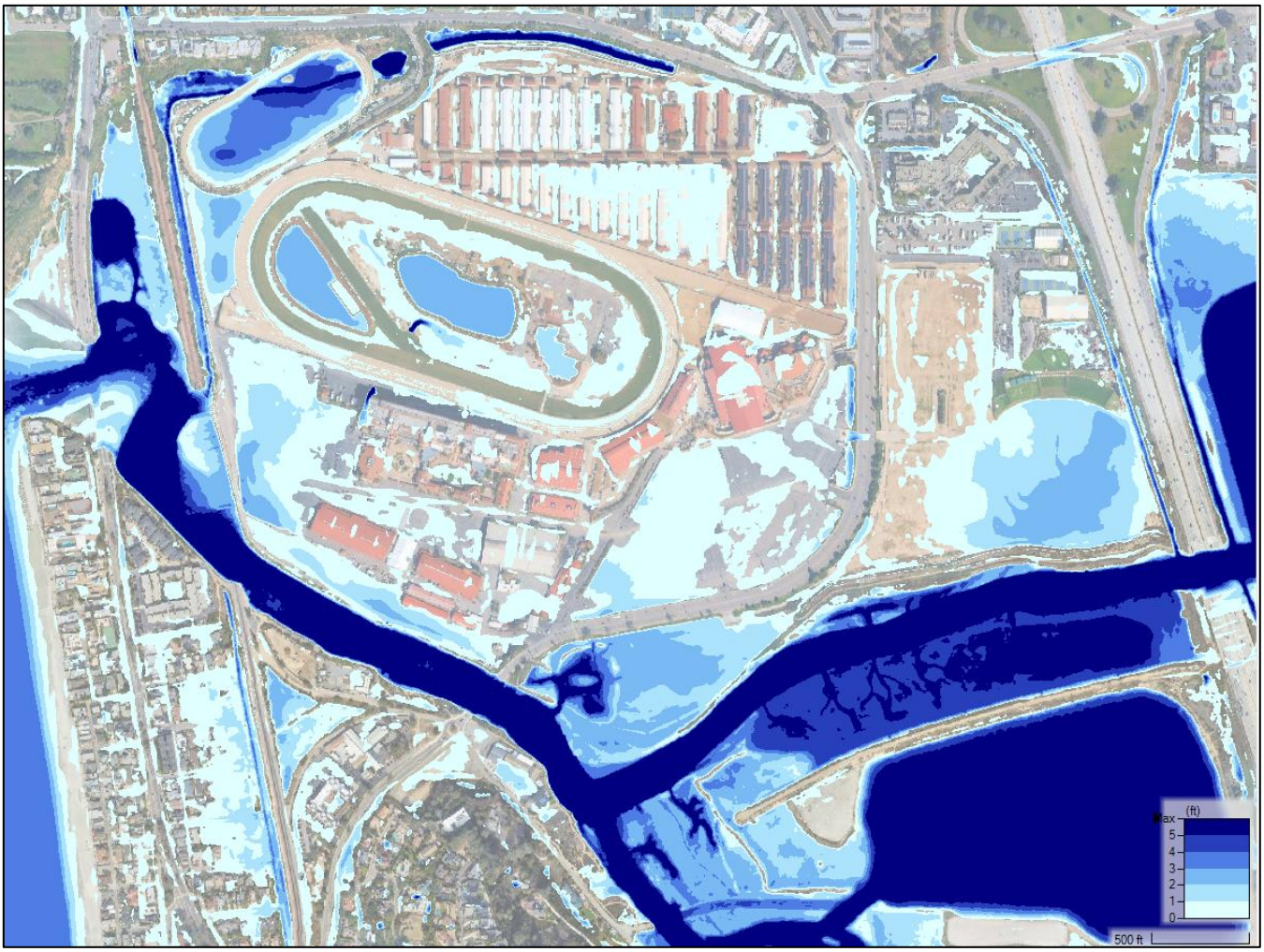

Figure 16 Maximum flood depths during the 10-year onsite rainfall event combined with the 10-year fluvial event

4.6 Onsite Rainfall Combined with Sea Level Rise

The 10-year onsite rainfall was run with the 2050, 2070, and 2100 SLR scenarios. The results for the 2050 SLR scenario with onsite rainfall were very similar to the onsite rainfall results without SLR (Appendix G Figure G-4). Maximum flood depths are the same in both scenarios for most of the Fairgrounds site, with the exception of the southwestern corner of the West Parking Lot, in which flood depths increased by 0.25 ft. Breakout flow from Stevens Creek is similar to the onsite rainfall only scenario.

The results of the 2070 SLR scenario with 10-year onsite rainfall are similar to the rainfall only scenario and the 2050 SLR with rainfall (Appendix G Figure G-5). Compared with the onsite rainfall only scenario, there is a 0.8-ft increase in depth of flooding in the West Parking Lot and 0.1-ft increase in flooding in the Green Parking Lot. The parking area near Discharge Point 4 and the southwest corner of the Main Parking Lot experienced 0.3-ft and 0.2-ft increases in flood depths, respectively. Breakout flow from Stevens Creek is similar to the onsite rainfall only scenario, with a peak flow of approximately 3 cfs.

Figure 17 shows the results of the 10-year onsite rainfall event combined with the 2100 SLR scenario. The results indicate considerably larger flood depths onsite compared to the onsite event without SLR. In the West Parking Lot, the flood depths are up to 4.5 ft compared to 1.6 ft without SLR. This flooding is caused by backwater in the storm drains and overtopping of the north bank of the river. Breakout flow traveling south over the Training Track and originating from Stevns Creek is approximately 9 cfs, compared with 3 cfs without SLR. The infield basins do not

overtop in this model scenario, with a peak water surface elevation of 13.37 ft within the receiving pond compared with the crest elevation of 13.66 ft. However, infield drainage systems that outlet to the receiving pond were excluded from this model. If these drainage systems were modeled, it is likely that the model results would indicate overtopping of the receiving basin. Considerably more inundation is noted in this scenario compared to the 2100 tidal scenario without onsite flooding, since all of the manual tide gates were assumed to be open in this model run and closed in the tidal only scenario. These results indicate that the Fairgrounds site is vulnerable to SLR, particularly when the tide gates are left open.

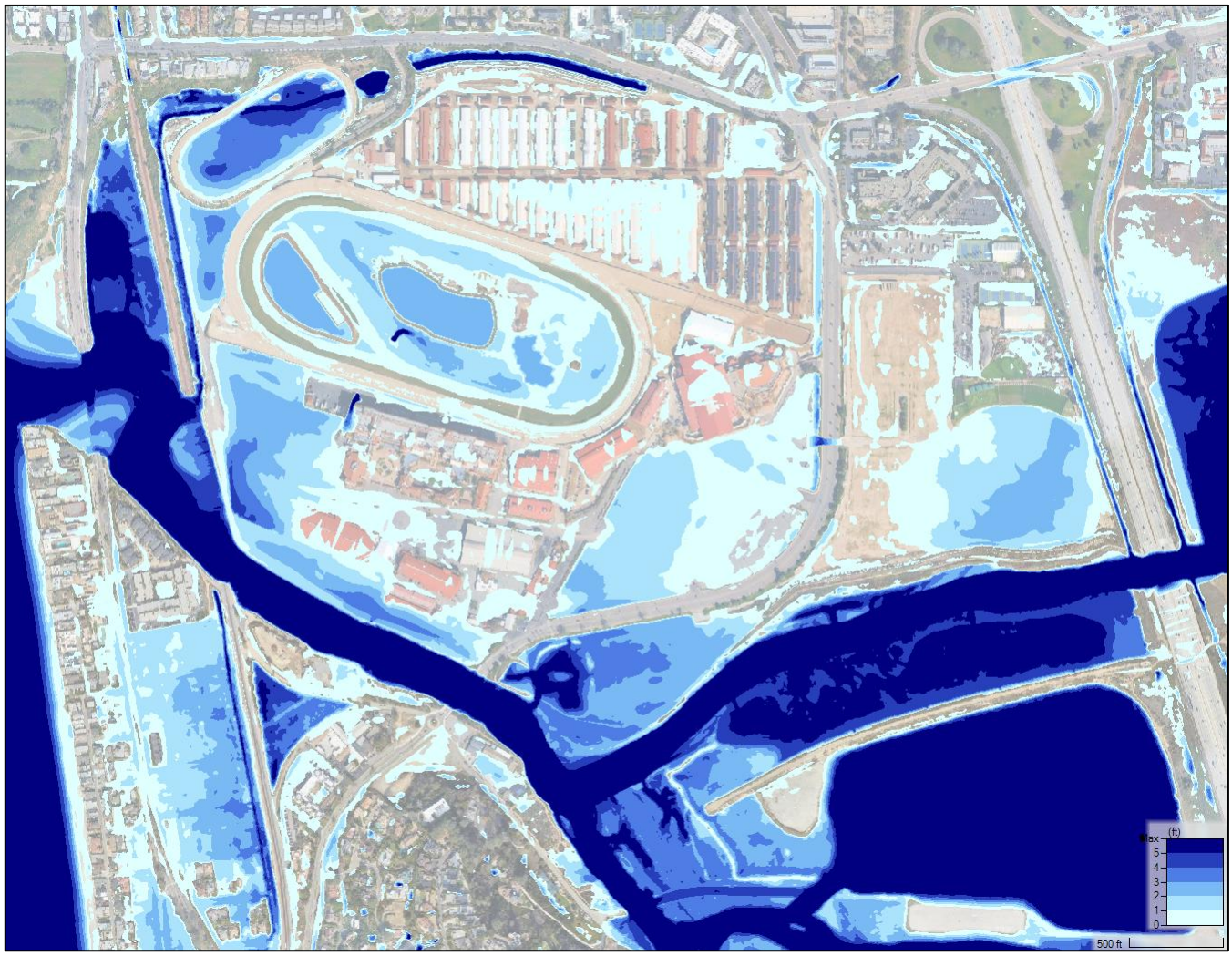

Figure 17 Maximum flood depths during the onsite rainfall event with 2100 SLR

4.7 Results Summary

Maximum flood depths were extracted from the various model simulations at four sample points within the Del Mar Fairgrounds site (see Figure 18). These flood depths are provided in Table 3 to help demonstrate the difference in flood hazards across the Fairgrounds site for the different storm events and SLR scenarios. The results indicate that large fluvial events within the San Dieguito River present the highest flood risks, with large flood depths noted across all four points in both the 50-year and 100-year fluvial events. The studied onsite rainfall events show widespread flooding across the four locations, but lower flood depths. The results in Table 3 also demonstrate the impacts of SLR on the flood risks at the Fairgrounds site. Onsite flood depths increase with SLR, particularly in the 2100 time horizon. The 2100 SLR scenario applied to the MHHW leads to onsite flooding, which is only exacerbated when combined with fluvial and/or onsite rainfall events.

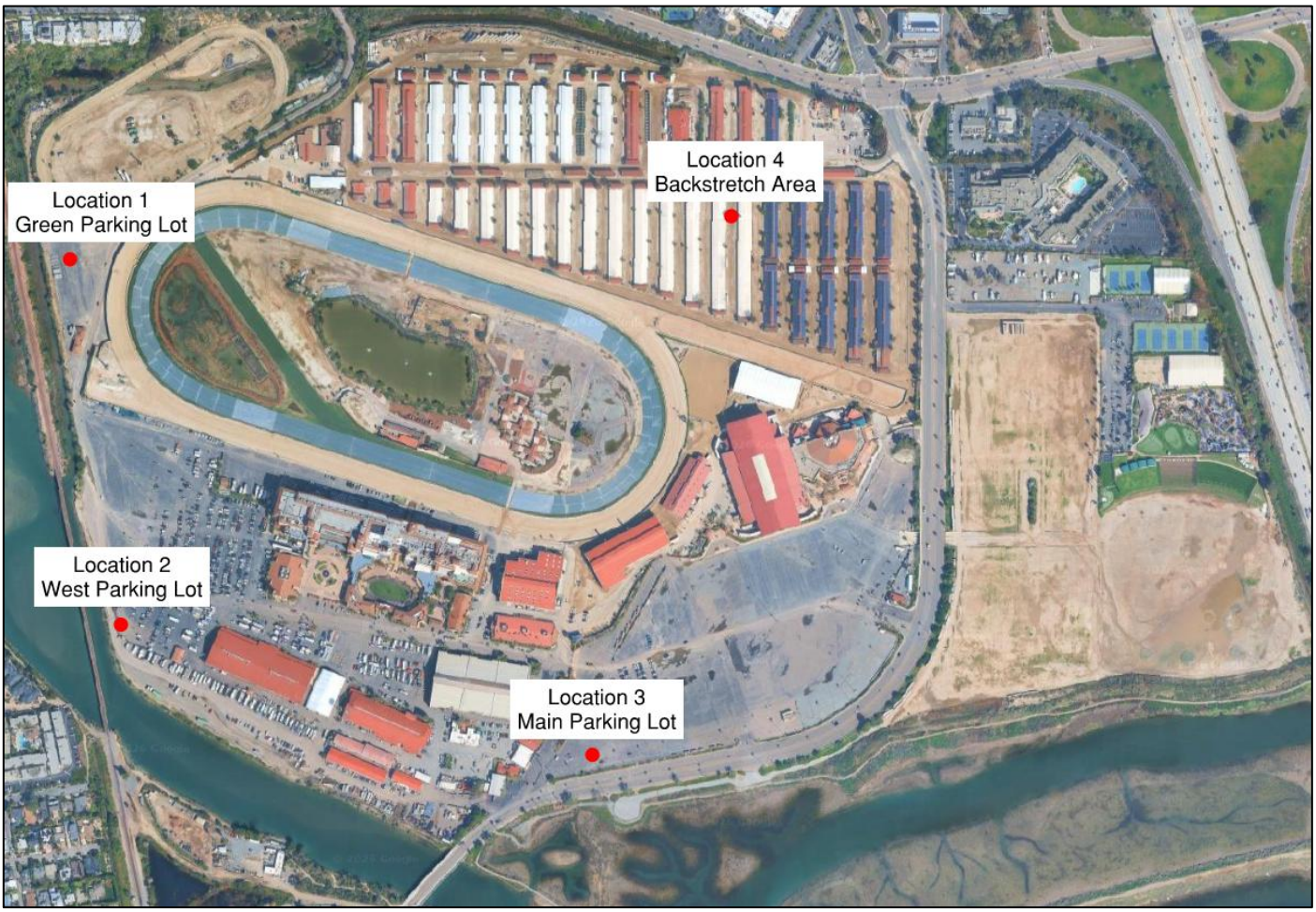

Figure 18 *Depth result locations*

Table 3 *Summary of maximum flood depths (ft) at sample points for the modeled scenarios*

Scenario No.	Event Description	Max. Depth (ft)			
		Location 1: Green Parking Lot	Location 2: West Parking Lot	Location 3: Main Parking Lot	Location 4: Backstretch Area
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	0.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	0.8	4.4	0.0	0.0
5	10-year Fluvial Event	0.0	2.3	0.0	0.0
6	50-year Fluvial Event	4.8	8.0	6.1	5.7

Scenario No.	Event Description	Max. Depth (ft)			
		Location 1: Green Parking Lot	Location 2: West Parking Lot	Location 3: Main Parking Lot	Location 4: Backstretch Area
7	100-year Fluvial Event	6.2	9.5	7.4	7.1
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	0.0	3.2	0.0	0.0
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	0.0	3.6	0.0	0.0
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	0.9	4.9	0.0	0.0
11	10-year Onsite Rainfall Event	1.0	1.6	0.0	0.8
12	100-year Onsite Rainfall Event	2.0	2.5	0.3	1.1
13	10-year Onsite Rainfall Event + 10-year Fluvial Event	1.1	3.0	0.7	0.8
14	10-year Onsite Rainfall Event + 2050 SLR (6.13 ft)	1.0	2.3	0.0	0.8
15	10-year Onsite Rainfall Event + 2070 SLR (7.43 ft)	1.1	2.6	0.1	0.8
16	10-year Onsite Rainfall Event + 2100 SLR (9.93 ft)	1.6	4.6	1.5	0.8

5. Conceptual Adaptation Strategies Hydraulic Modeling

Three conceptual adaptation strategies were developed in coordination with the District to evaluate a spectrum of opportunities to mitigate flooding on District property. The conceptual strategies were modeled to determine the flood risk during the tidal, fluvial, and fluvial/tidal scenarios. The concepts were not analyzed for the onsite rainfall scenarios, since the local drainage infrastructure (storm drains, pumps, etc.) would need to be modified as a part of design and implementation of these conceptual strategies. Additionally, the decadal fluvial events were determined to present the highest flood risk to the District property and are the focus of evaluating these mitigation measures. The models of conceptual strategies build on the existing conditions models discussed in Section 3 and are discussed in further detail in the following section.

The results of the hydraulic models were used to assess compliance with California Drainage Law. California Drainage Law governs the management and flow of surface water across properties, aiming to balance the rights and responsibilities of landowners. Generally, California follows the "reasonable use" doctrine, which allows landowners to alter drainage on their property as long as it does not unreasonably harm neighboring properties. In general, the strategies were developed to avoid significant offsite flood hazards so that they are expected to meet California Drainage Law. Additionally, since the southern extent of the District's property is within a FEMA regulatory floodway, no-rise certifications would be required for any development within this floodway. The concepts were developed so that any potential improvements within the floodway are not anticipated lead to a rise in base flood elevations.

5.1 Summary of Modeled Conceptual Adaptation Strategies

The three strategies were developed to provide varying levels of flood protection to help inform future discussions and planning across time horizons and varying levels of changes to the site. Table 4 provides a brief overview of each conceptual strategy as well as the modeled level of flood protection.

Table 4 Overview of conceptual adaptation strategies and level of flood protection

Adaptation Strategy	Description	Maximum Level of Modeled Flood Protection
Strategy 1: Targeted Ecotone Features	Implementation and extension of the City of Del Mar proposed San Dieguito Lagoon Shoreline Protection Planning Project living levee and addition of a second elevated berm along the eastern border of the site. Installation of flap valves or check valves to prevent backflow through gravity storm drain networks during high tide.	10-year Fluvial Event + 2070 SLR
Strategy 2: Perimeter Berm Protection	Implementation of a perimeter berm from the I-5 highway, along the northern edge of the Main and West Parking Lot, to the west side of the Main Track. Create floodable channels and frontage for conveyance and add additional culverts Installation of flap valves or check valves on gravity storm drain outfalls to prevent backflow through storm drain networks during high tides or large fluvial events.	50-year Fluvial Event
Strategy 3: Site-wide Floodable Frontage	Regrade and raise current racetrack, stables, and arena areas Create floodable channels and frontage for conveyance. Relocate, realign, and/or remove existing facilities as needed. Upgrade and realign stormwater infrastructure with new gradations and tide gate installations.	50- year Fluvial Event Reduces flood hazards during the 100-year event

5.2 Strategy 1: Targeted Ecotone Features

5.2.1 Description

Adaptation Strategy 1 is designed to protect the site from the 10-year fluvial event by expanding upon the proposed San Dieguito Lagoon Shoreline Protection Project (Del Mar Living Levee Project). Strategy 1 combines the proposed Del Mar Living Levee Project improvements with an additional berm or floodwall on the eastern edge of the Fairgrounds site.

The Del Mar Living Levee Project is a nature-based flood adaptation and public trail project that seeks to minimize the effects of river flooding along the San Dieguito River within the City of Del Mar along both the District and the City's Public Works Facility (GHD, 2026). The plan for the Del Mar Living Levee Project includes elements on both the north and south side of the River (Figure 19).

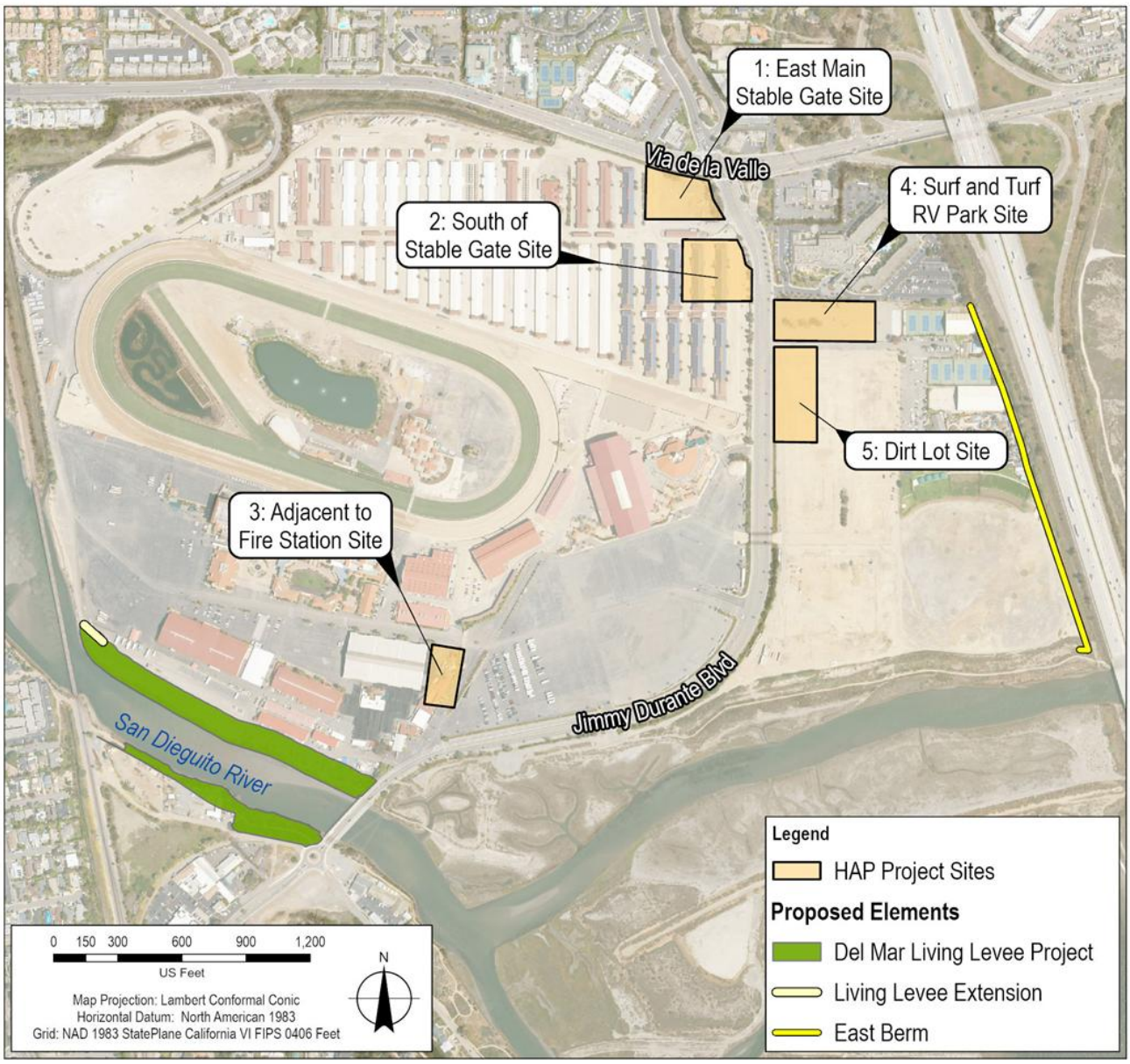

Figure 19 Strategy 1: Site-Specific Ecotone Features Concept

Along the District's shoreline, the proposed improvements would be located on the 100 ft buffer along the southern border of the District's site, where existing shoreline crest elevations range from 7 ft to 9 ft. The proposed improvements include raising the existing terrain with an elevated ecotone slope (living levee)to a height of 10 ft and cutting terrain between the living levee and the river at a 2% grade (see Figure 20). The other improvements of the Del Mar Living Levee Project are located off of the District's site. The southeast segment of the Del Mar Living Levee was

included in the model due to its proximity to the project site across the River channel. The southwest segment of the Del Mar Living Levee was not included given its location inland of the shoreline.

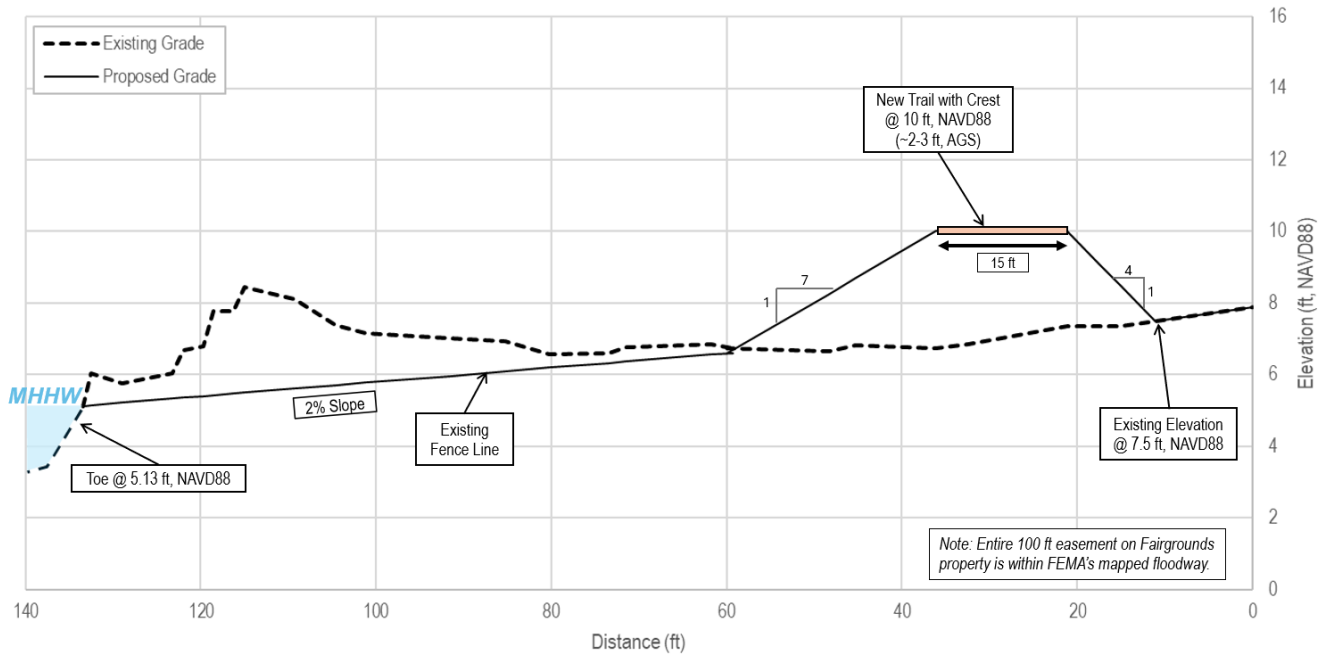

Figure 20 ***Cross section for North Riverbank conceptual Living Levee (GHD, 2025).***

The western end of the Del Mar Living Levee Project is located at a low point in the terrain near the proposed SANDAG Double Track Special Events Platform. Strategy 1 includes an extension of the living levee to remove this low point in the terrain and increase the crest elevation to a minimum of 9.5 ft along the western edge of the District's site.

Along the eastern edge of the District's site is a drainage channel adjacent to I-5 Highway. This drainage channel backwaters during high flow events within the San Dieguito River and allows flow to enter the driving range. Strategy 1 includes a second berm or floodwall on the east edge of the driving range adjacent to the drainage channel at an elevation of approximately 12.5 ft. This berm extends from the River to the northern edge of the District's property by the Surf and Turf Center, running parallel to the I-5 Highway.

Strategy 1 also includes installing flap gates onto all gravity drain outlets to help prevent flooding onto the site caused by backflow through these storm drains. Without flap gates, water can backflow through the gravity storm drains into the site during high tides or large fluvial events.

The conceptual improvements evaluated in Strategy 1 would directly impact the functionality of two discharge points, DP 3 and DP 4 (Figure 2). Both of these Discharge Points would require relocation and reinstallation due to the cut and fill proposed by the Del Mar Living Levee Project. Additionally, the living levee area will overtop during large fluvial (>13 year) events and the 2100 SLR tidal event. Increasing the capacity of storm drains and inlets in this area is recommended to drain the site following these large events.

5.2.2 Model Development

The existing model was used as the base of the Strategy 1 model. Modifications to the existing model are listed below.

- Del Mar Living Levee Project: The Del Mar Living Levee Project design was incorporated in the model by merging the conceptual design surface with the existing model terrain. The conceptual design has an ecotone slope with a crest elevation of 10 ft, top width of 15 ft, and side slopes of 7:1 (H:V). Between the living levee and the river is a 2% transitional slope (see Figure 20). Both the north riverbank and south

riverbank features were included in the terrain. The floodwalls on the southeast segment along the City's Public Works Facility (not on the District's property) were modeled as steep-sided levees with a top elevation of 14 ft, top width of 20 ft, and a side slope of 1:1 (H:V).

- Living Levee Extension: The western end of the North Riverbank Living Levee was extended to existing high ground with a terrain modification. This extension was modeled as the same height (10 ft) as the living levee. The top width was set to 15 ft and the side slope to 4:1. The mesh was modified with breaklines on the top of the new features. This extension would connect the elevated living levee with the SANDAG Double Track Special Events Platform anticipated grade.
- East Berm: The eastern berm was added to the model terrain as a terrain modification. The elevation of the berm was set to 12 ft with a top width of 15 ft and a side slope of 2:1. The mesh was modified with breaklines on the top of new features.

Note that the Strategy 1 model does not include any onsite storm drain infrastructure, such as pipes and pumps. It is assumed that flap gates would be installed on all gravity storm drain outlets.

The Manning's roughness value on the living levee was increased to 0.05 to reflect the increase in vegetation. The Manning's roughness was not changed anywhere else on the site.

5.2.3 Model Results

The conceptual Strategy 1 protects the site from inundation during the 10-year fluvial event and against SLR up to the 2070 SLR + 10-year fluvial event scenario. Select depth result maps are included in the section below and the remainder can be found in Appendix H.

5.2.3.1 Tidal Events

The results from the tidal events with the implemented Strategy 1 are shown in Appendix H and below in Figure 21. Strategy 1 fully protects the site during the 10-yr EWL, 2050 SLR, and 2070 SLR scenarios (Appendix H Figure H-1, Figure H-2, Figure H-3). During the 2100 SLR tidal event, the site is protected east of Jimmy Durante Blvd by the east berm, but flooding is noted in the West Parking Lot near the living levee (see Figure 21). The flooding in the West Parking Lot is attributed to water overtopping existing ground to the northwest of the living levee, where the ground elevation ranges from 9.5 ft to 10 ft.

Figure 21 Strategy 1 depth results during the MHHW + 2100 SLR event.

5.2.3.2 Fluvial Events

Strategy 1 effectively prevents flooding during the 10-year fluvial event (Figure 22). Under existing conditions, inundation occurs in the driving range and West Parking Lot. Under the conceptual Strategy 1, the berm elevations are higher than the 10-year water surface elevation, protecting the site from flooding. During the 50-year and 100-year fluvial events, the berms overtop, leading to flooding on the District's property. As a result, Strategy 1 does not improve onsite flood depths during these large fluvial events, and the entire site remains susceptible to flooding. Figure H-4 and Figure H-5 show the resulting inundation for both the 50-year and 100-year fluvial scenarios.

Figure 22 Strategy 1 depth results during the 10-year fluvial event

5.2.3.3 Fluvial Events with Sea Level Rise

The results from the 10-year fluvial event combined with 2050 SLR and combined with 2070 SLR are shown in Appendix H Figure H-6 and Figure H-7 and indicate that Strategy 1 protects the site in these scenarios. Compared to the existing conditions, Strategy 1 removes flooding from the driving range, West Parking Lot, and Green Parking Lot.

Strategy 1 is not able to protect the site from flooding in the 10-year fluvial storm event with 2100 SLR (Figure 23). In this event, flow within the San Dieguito River overtops the living levees, resulting in flooding onsite. The flooding is limited to the western half of the site, where water is able to flow over the living levee into the West Parking Lot and through the infield tunnel to the Infield. On the eastern side of the site, a berm protects the driving range from flooding. The addition of flap gates on Discharge Points A and B eliminates flooding in Green Parking Lot.

Figure 23 Strategy 1 depth results during the 10-year fluvial event + 2100 SLR

5.2.3.4 Hydraulic Impacts

Strategy 1 is anticipated to have minimal offsite impacts since the crest elevations of the berms do not prevent flow from following effective flow paths during the 50-year and 100-year fluvial events. Additionally, the living levee is designed to avoid creating a change in conveyance by balancing the additional fill from the levee with a cut in the frontage along the riverbank. Water surface elevation change as a result of the strategy is negligible, and it is therefore expected to meet California Drainage Law. See Figure I-1 in Appendix I for a visual comparison of the 100-year peak water surface elevations in Strategy 1 and in the existing conditions.

Strategy 1 includes the living levee and living levee extension, which are constructed in a floodway. Development within a floodway requires a no-rise certification. A no-rise certification has been completed for the Del Mar Living Levee Project, which verified that the proposed living levee does not lead to increases in floodplain or floodway water surface elevations (GHD, 2025). The no-rise analysis would need to be updated to include the living levee extension, to ensure that it does not lead to a rise in water surface elevations. Figure I- shows that Strategy 1 has limited offsite impacts and is therefore expected to meet the no-rise criteria with the addition of this extension.

5.3 Strategy 2: Perimeter Berm Protection

5.3.1 Description

Strategy 2 was developed to provide flood protection to the north area of the District's property during the 50-year fluvial flood event. This concept includes a berm or floodwall that runs from the I-5 Highway, along the northern edge of the Main and West Parking Lots, along the western edge of the Green Parking lot, and between the Main Track and Training Track (see Figure 24). The crest elevation would vary from approximately 16 ft to approximately 13.8 ft to provide flood protection during a 50-year fluvial event with minimal freeboard. The height of the berm varies from 0 ft to 6.6 ft above the existing grade. This strategy includes lowering areas south of the berm to accommodate for the reduction in floodplain area caused by the berm. As shown in Figure 24, the concept includes three tiered pads, ranging from 8 ft to 10 ft in elevation as well as a channel along the north of Jimmy Durante Blvd and the north bank of the San Dieguito River. This strategy also includes a set of large box culverts beneath Jimmy Durante Blvd. The box culverts and the channel provide conveyance to offset the hydraulic impacts associated with cutting off flow paths north of the berm or floodwall. The lowered tiered areas also increase conveyance capacity south of the berm, reducing offsite hydraulic impacts associated with this strategy. Infrastructure within these lowered tiered areas would be more vulnerable to flooding than the interior of the berm or floodwall.

Due to the substantial site modifications associated with this strategy, significant modifications to the local drainage infrastructure would likely be necessary. To accompany this strategy, any storm drain outfalls would need to be equipped with flap gates or duckbill valves to prevent backflow into the site during high tides or large fluvial events. Additionally, this strategy does not provide flood protection during the 100-year fluvial event, which results in the berm overtopping and large flood depths within the site. Local drainage infrastructure such as culverts, pumps, and pipes would need to be designed to drain the area following a large (>50-year) storm event.

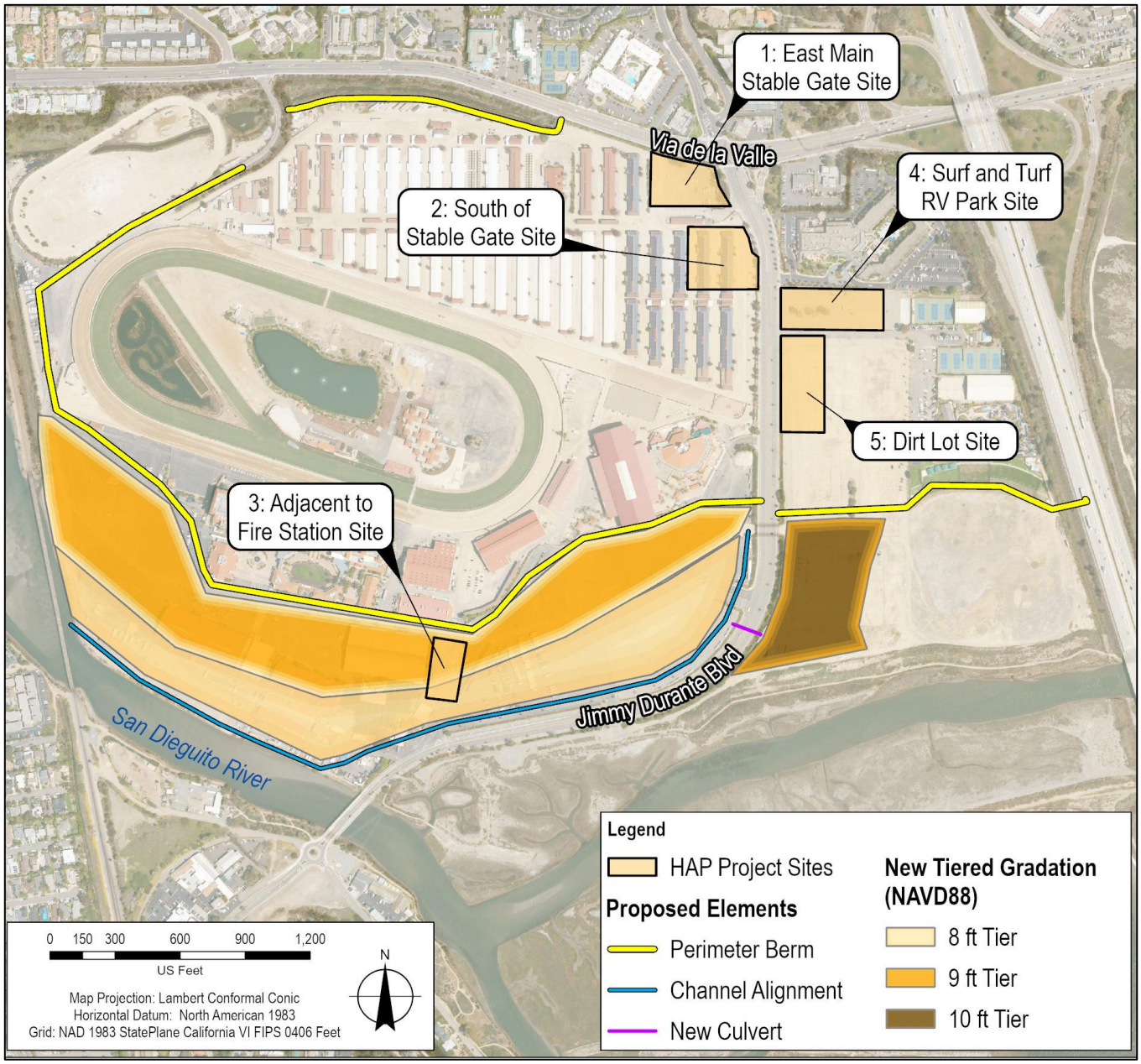

Figure 24 ***Strategy 2: Perimeter Berm Protection Concept***

5.3.2 Model Development

The existing conditions model discussed in Section 3 was modified to simulate Strategy 2. Modifications are listed below.

- Tiered Pads: Terrain modifications were used to assign elevations within the tiered pads (see Figure 24). The 10 ft tier was implemented so that the elevations within the pad were set to 10 ft or the existing elevation, whichever is lower. The 8 ft and 9 ft tiers were modelled to override the existing terrain elevations.
- Perimeter Berm: Terrain modifications were also used to incorporate the berm into the terrain. The berm was modelled with a top width of 40 ft and 2:1 side slopes. East of Jimmy Durante Blvd, the berm crest elevation was set to 16 ft. West of Jimmy Durante Blvd, the crest elevation of the berm varies from 14.9 ft at the upstream end to 13.8 ft at the downstream end. Note that while the model results are sensitive to the crest

elevation of the berm, they are not expected to be as sensitive to the berm top width or side slopes. Breaklines were used to refine the grid along this perimeter berm.

- Channel: A channel was modelled with a 60-ft bottom width and 2:1 side slopes. The channel invert elevation slopes from 7.5 ft from the upstream end to 6 ft at the downstream end. The channel was incorporated into the model terrain using terrain modification, and a breakline was used to refine grid cells within the channel.
- Culverts: The culverts were modelled using SA/2D connections. The SA/2D connection includes four 16 ft x 8 ft reinforced concrete boxes with upstream invert elevations of 9.6 ft, downstream invert elevations of 7.5 ft, and an entrance loss coefficient of 0.4. The crest elevation of Jimmy Durante Blvd was set approximately equal to the existing road elevation.

Note that the model does not include any onsite storm drain infrastructure, such as pipes or pumps, as the storm existing onsite storm drain network would require modifications in this strategy. As part of this strategy, all storm drain outfalls should be equipped with flap valves or duckbill valves to prevent backflow during high tides and large fluvial events. Thus, onsite storm drain infrastructure would have minimal impact on flood hazards during the modelled fluvial and tidal scenarios.

The model development did not include any modifications to the existing Manning's roughness within the project site, assuming that the land use within this strategy is similar to existing.

5.3.3 Model Results

Model results for Strategy 2 show that the improvements provide flood protection for much of the site during the 50-year fluvial event. The tiered pads along the southern extent of the property experience more frequent flooding, including during the 2100 SLR event and during the 10-year fluvial event. The District's property experiences deep flood depths during the 100-year fluvial event.

5.3.3.1 Tidal Events

Figure H-8, Figure H-9, and Figure H-10 in Appendix H display the peak flood depths in Strategy 2 for the 10-year EWL, 2050 SLR, and 2070 SLR, respectively. Figure 25 below displays the peak flood depths for 2100 SLR. The results indicate a small amount of flooding at the downstream end of the channel in the 2050 SLR scenario. In the 10-year EWL and 2070 SLR scenarios, the results show flooding within the channel, but the remainder of the District's property stays dry. In the 2100 SLR scenario, the channel, the tiered paths south of the perimeter protection, and the driving range are flooded. The southern tiered pad experiences approximately 1.9 ft of flooding, while the tiered pad just south of the perimeter protection experiences approximately 0.9 ft of flooding. The driving range experiences up to 2.6 ft of flooding.

Figure 25 Strategy 2 depth results during the 2100 SLR event

5.3.3.2 Fluvial Events

The results of the fluvial event indicate that in Strategy 2, the area inside of the berm is protected from the 50-year flood event, whereas the tiered pads are more prone to flooding.

Figure 26 shows the peak flood depths during the 10-year fluvial event for Strategy 2. In this event, the channel, the southern tiered pad west of Jimmy Durante Blvd, the tiered pad east of Jimmy Durante Blvd, and the driving range experience flooding. The remainder of the site is protected from the 10-year fluvial flood hazards. Flood depths within the tiered paths are relatively shallow (below 0.6 ft), while the driving range experiences flood depths of up to 2.9 ft.

Figure 26 Strategy 2 flood depths during the 10-year fluvial event

The 50-year fluvial flood depths for Strategy 2 are shown in Figure 27. These results indicate that much of the site is protected from the berm, however, the tiered pads and driving range are inundated. Flood depths within the tiered pads are significantly deeper than the 10-year event (up to 6.8 ft). The driving range experiences flood depths of up to 8.6 ft.

Figure 27 Strategy 2 flood depths during the 50-year fluvial event

The peak flood depths during the 100-year fluvial event for Strategy 2 are shown in Figure 28. These results show substantial flooding within the District's property, as the perimeter berm is overtopped. Results show deep flood depths which exceed 7 ft in some areas.

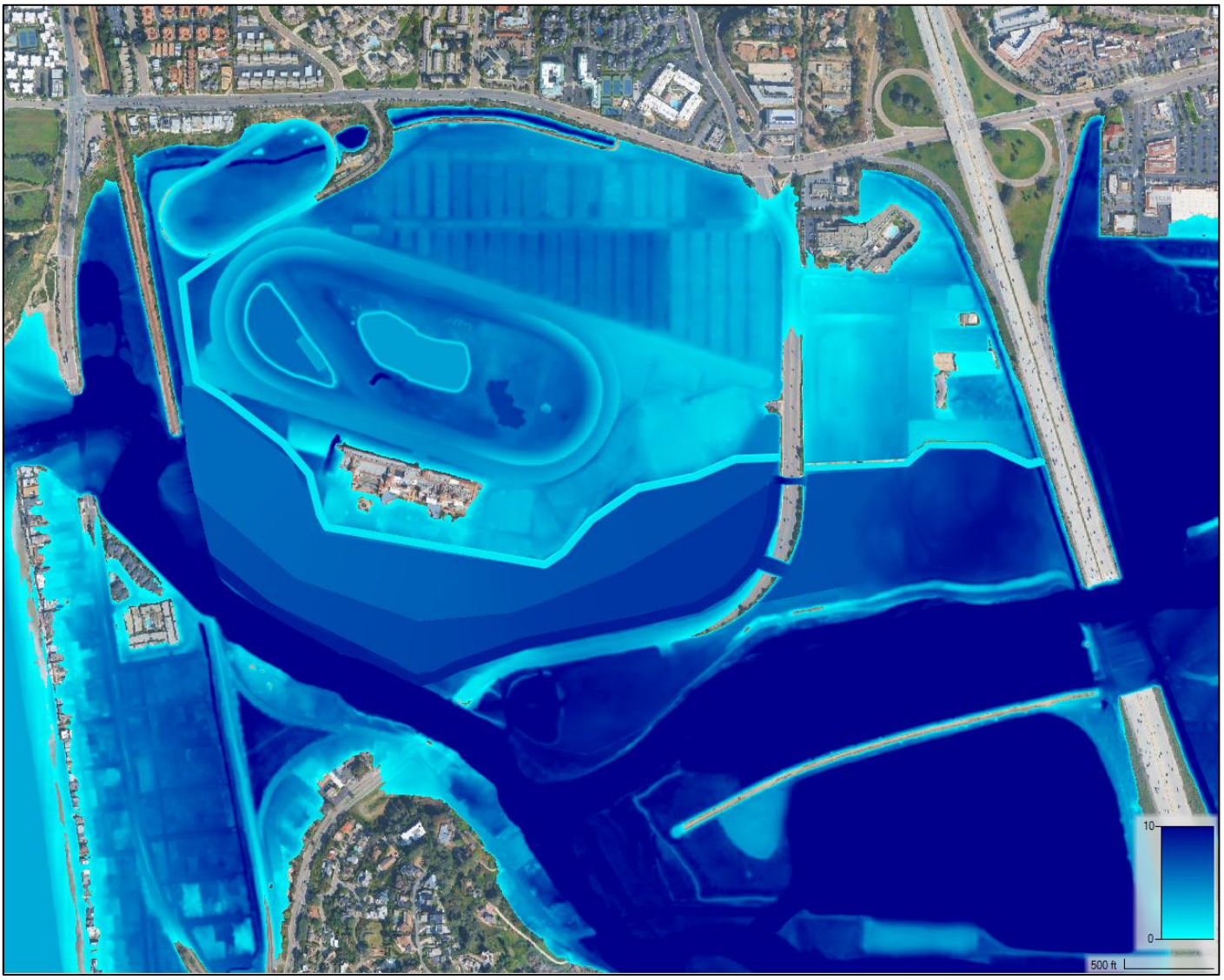

Figure 28 Strategy 2 flood depths during the 100-year fluvial event

5.3.3.3 Fluvial Events with Sea Level Rise

Peak flood depths for Strategy 2 during the 10-year fluvial event with 2050 SLR, 2070 SLR, and 2100 SLR are shown in Figure H-11, Figure H-12, and Figure H-13, respectively (see Appendix H). The results of the 10-year fluvial event with 2050 SLR show that the southern tiered pad west of Jimmy Durante Blvd is flooded with shallow flood depths of up to 0.7 ft. The tiered pad east of Jimmy Durante Blvd and the driving range also experience inundation. Flood inundation is similar in the 10-year fluvial event with 2070 SLR, but shallow flooding (< 1 inch) is noted on the higher tiered pad west of Jimmy Durante Blvd. In the 10-year event with 2100 SLR, the higher tiered pad experiences flood depths of up to 1.4 ft.

5.3.3.4 Hydraulic Impacts

Strategy 2 was developed to minimize offsite impacts. The culverts beneath Jimmy Durante Blvd, channel, and frontage tiered pads provide additional conveyance to offset the reduction in conveyance caused by the perimeter berm. The maximum increase in water surface elevation is approximately 0.2 ft, which occurs on the District's property east of Jimmy Durante Blvd. Offsite, the maximum increase in water surface elevations in conditions is approximately 0.14 ft, which occurs within the San Dieguito River channel, just downstream of the freeway. Decreases in water

surface elevations are noted in the San Dieguito River west of Jimmy Durante Blvd. Since Strategy 2 does not significantly increase flood hazards offsite, it is expected to meet California Drainage Law, however, it could be further refined to reduce offsite impacts. Figure I-2 in Appendix I compares the 100-year peak water surface elevations in Strategy 2 and existing conditions.

Strategy 2 includes tiered pads and a channel which are located in a regulatory floodway, requiring a no-rise certification. The no-rise certification would involve refining the FEMA effective HEC-RAS 1D model to develop a corrected effective/existing conditions HEC-RAS model. Next, the improvements within the floodway would be added to the model to determine the 100-year water surface elevations as well as the floodway water surface elevations. These floodplain and floodway water surface elevations would need to be at or lower than in the existing conditions. Strategy 2 was developed to increase conveyance within the southern area of the District's property, so it is expected to meet this no-rise condition. However, further study would be required to confirm that the Strategy meets the no-rise criteria, and refinements to the tiered pads and/or channel geometry may be required.

5.4 Strategy 3: Site-wide Floodable Frontage

5.4.1 Description

Strategy 3 is similar to Strategy 2 in that it was developed to provide flood protection to a portion of the District's property during the 50-year fluvial event. Strategy 3, however, includes fill to raise an area of the site above the adjacent 50-year water surface elevations (see Figure 29). East of Jimmy Durante Blvd, the pad would be raised to approximately 15.8 ft. West of Jimmy Durante Blvd, pad elevations vary with the 50-year water surface elevations, ranging from 13.9 ft to 14.8 ft. Similar to Strategy 3, these elevations were selected to provide flood protection during the 50-year event with minimal freeboard. Raising the pad would require a substantial amount of fill, with over 5 ft of fill on much of the site.

Similar to Strategy 2, this strategy also includes tiered pads, a channel along Jimmy Durante Blvd and the north riverbank and box culverts beneath Jimmy Durante Blvd. In this strategy, the tiered path east of Jimmy Durante Blvd is larger and lower than Strategy 2, with a 9 ft elevation, to offset the fill. The tiered pads and channel west of Jimmy Durante Blvd are the same as Strategy 2. Finally, in this strategy, the north half of the stables were left at existing grade and the existing berm along the south bank of Stevens Creek was removed.

Compared to Strategy 2, this strategy provides increased flood mitigation during large flood events (> 50 year), since it lowers flood depths within the fill area during these large events compared with existing conditions. However, the area protected during the 50-year event is smaller than Strategy 2, as the north half of the stables remain at existing grade.

This strategy involves substantial grading across the site. Accordingly, significant modifications to the onsite storm drain networks would be required.

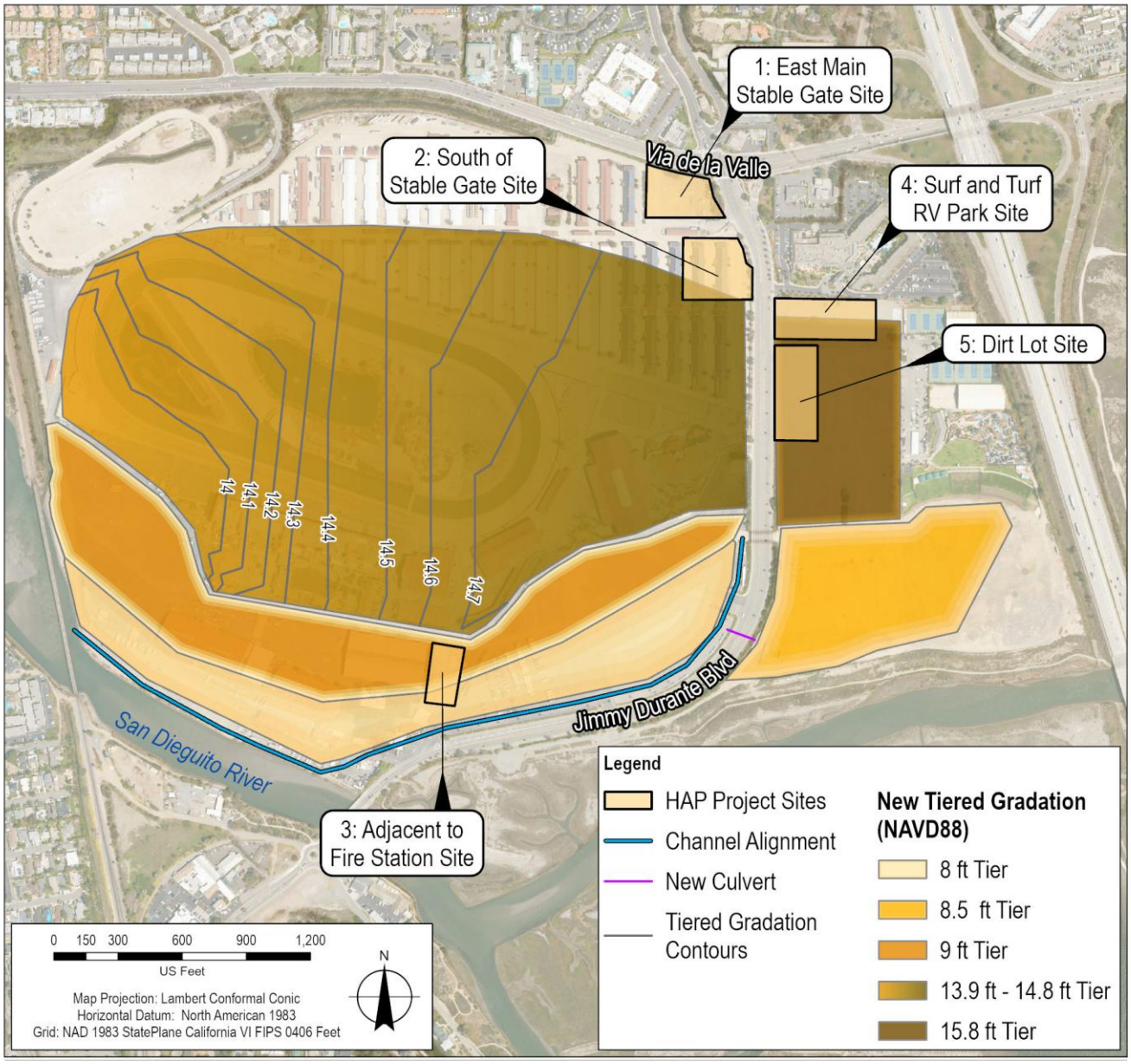

Figure 29 *Strategy 3: Floodable Frontage Concept*

5.4.2 Model Development

The existing conditions model discussed in Section 3 was modified to simulate Strategy 3. Modifications are similar to Strategy 2 and are listed below.

- Tiered Pads: Terrain modifications were used to assign elevations within the tiered pads (see Figure 29). The 8.5 ft tier was implemented so that the elevations within the pad were set to 10 ft or the existing elevation, whichever is lower. The 8 ft and 9 ft tiers were modelled to override the existing terrain elevations. East of Jimmy Durante Blvd, the pad elevation was set to a constant elevation of 15.8 ft. West of Jimmy Durante Blvd, control points were used to assign varying elevations across the site, sloping from 14.8 ft at the upstream end of the site to 13.9 ft at the downstream end of the site.
- Channel: The channel in Strategy 3 is the same as Strategy 2. The channel was modelled with a 60-ft bottom width and 2:1 side slopes. The channel invert elevation slopes from 7.5 ft from the upstream end to 6 ft at the

downstream end. The channel was incorporated into the model terrain using terrain modification, and a breakline was used to refine grid cells within the channel.

- Culverts: Like Strategy 2, the culverts were modelled using SA/2D connections. The SA/2D connection includes four 16 ft x 8 ft reinforced concrete boxes with upstream invert elevations of 8.5 ft, downstream invert elevations of 7.5 ft, and an entrance loss coefficient of 0.4. The crest elevation of Jimmy Durante Blvd was set approximately equal to the existing road elevation.

Note that the model does not include any onsite storm drain infrastructure, such as pipes or pumps, as the storm existing onsite storm drain network would require modifications in this strategy due to the substantial grading. Including the modified storm drain network in the model would not be expected to significantly impact results in the modelled scenarios.

The model development did not include any modifications to the existing Manning's roughness within the project site, assuming that the land use in this strategy is similar to existing.

5.4.3 Model Results

Model results for Strategy 3 show that the improvements provide flood protection for much of the site during the 50-year fluvial event, other than the northern half of the stables and the tiered pads along the San Dieguito River. These tiered pads experience more frequent flooding, including during the 2100 SLR event and during the 10-year fluvial event. While the site experiences flooding during the 100-year fluvial event, flood depths within much of the site are significantly lower than in the existing conditions.

5.4.3.1 Tidal Events

Figure H-14, Figure H-15, and Figure H-16 display the peak flood depths in Strategy 3 for the 10-year EWL, 2050 SLR, and 2070 SLR, respectively (see Appendix H). Figure 30 below displays the peak flood depths for the 2100 SLR. These results are similar to Strategy 2 and show that the District's property remains dry during the 10-year EWL, 2050 SLR, and 2070 SLR tidal events, other than the channel. In the 2100 SLR scenario, the lower tiered pads (8 ft, 8.5 ft, and 9 ft tiers) as well as the driving range are flooded. Flood depths are similar to Strategy 2, including 1.9 ft of flooding on the 8 ft tier, 0.9 ft of flooding on the 9 ft tier, and up to 2.6 ft of flooding within the driving range. The 8.5 ft tier experiences 1.4 ft of flooding on the 8.5 ft tier.

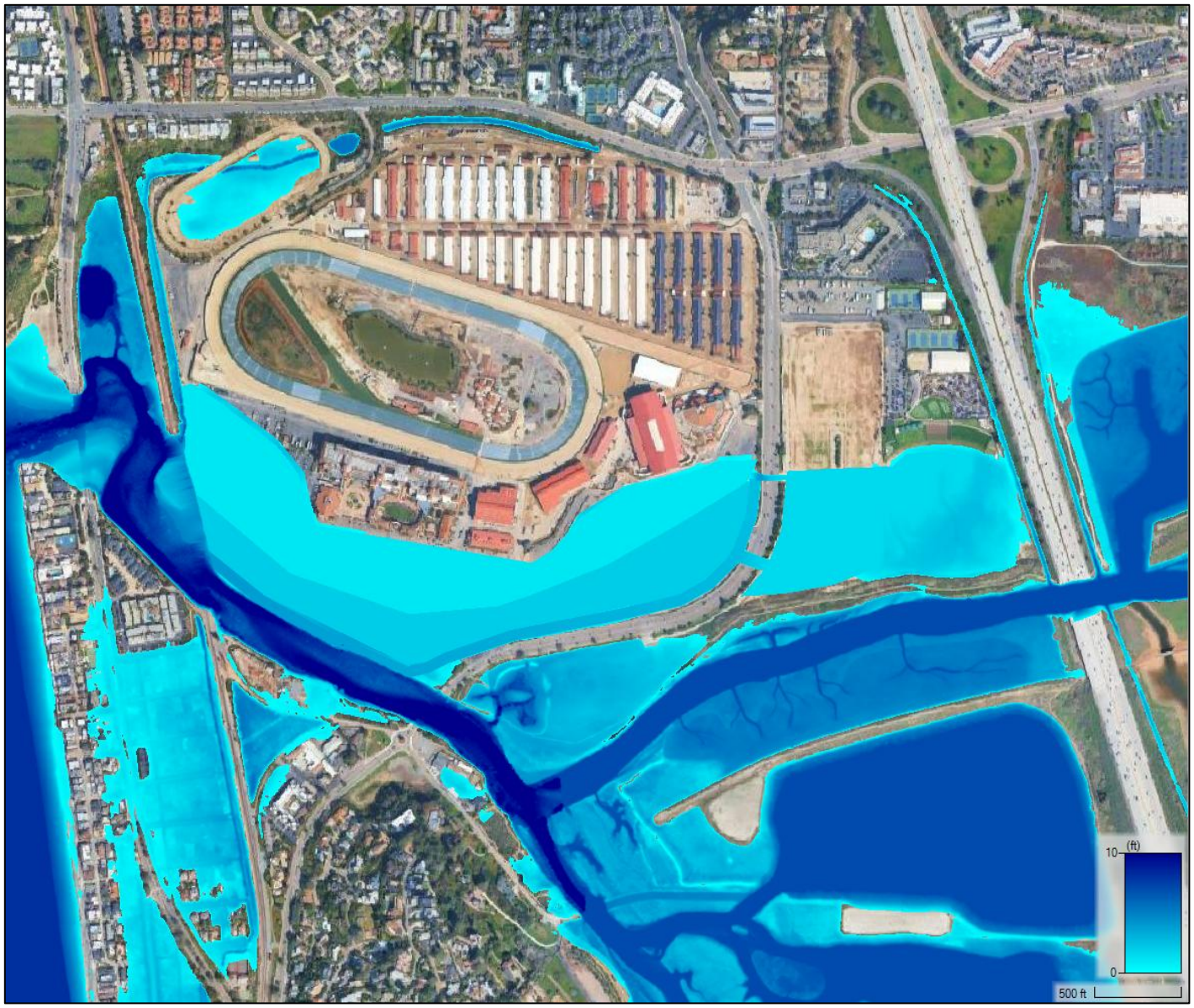

Figure 30 Strategy 3 depth results during the 2100 SLR tidal event

5.4.3.2 Fluvial Events

The results of the fluvial events indicate that the higher pads (13.8 ft to 15.8 ft) are protected from the 50-year fluvial event, whereas the lower tiered pads are more prone to flooding.

Figure 31 shows the peak flood depths during the 10-year fluvial event for Strategy 3. In this event, the 8 ft tier, 8.5 ft tier, and the golf course driving range are flooded, while the remaining onsite areas are dry. Flood depths within the tiered pads are less than 0.7 ft, while the driving range experiences flood depths of up to 2 ft.

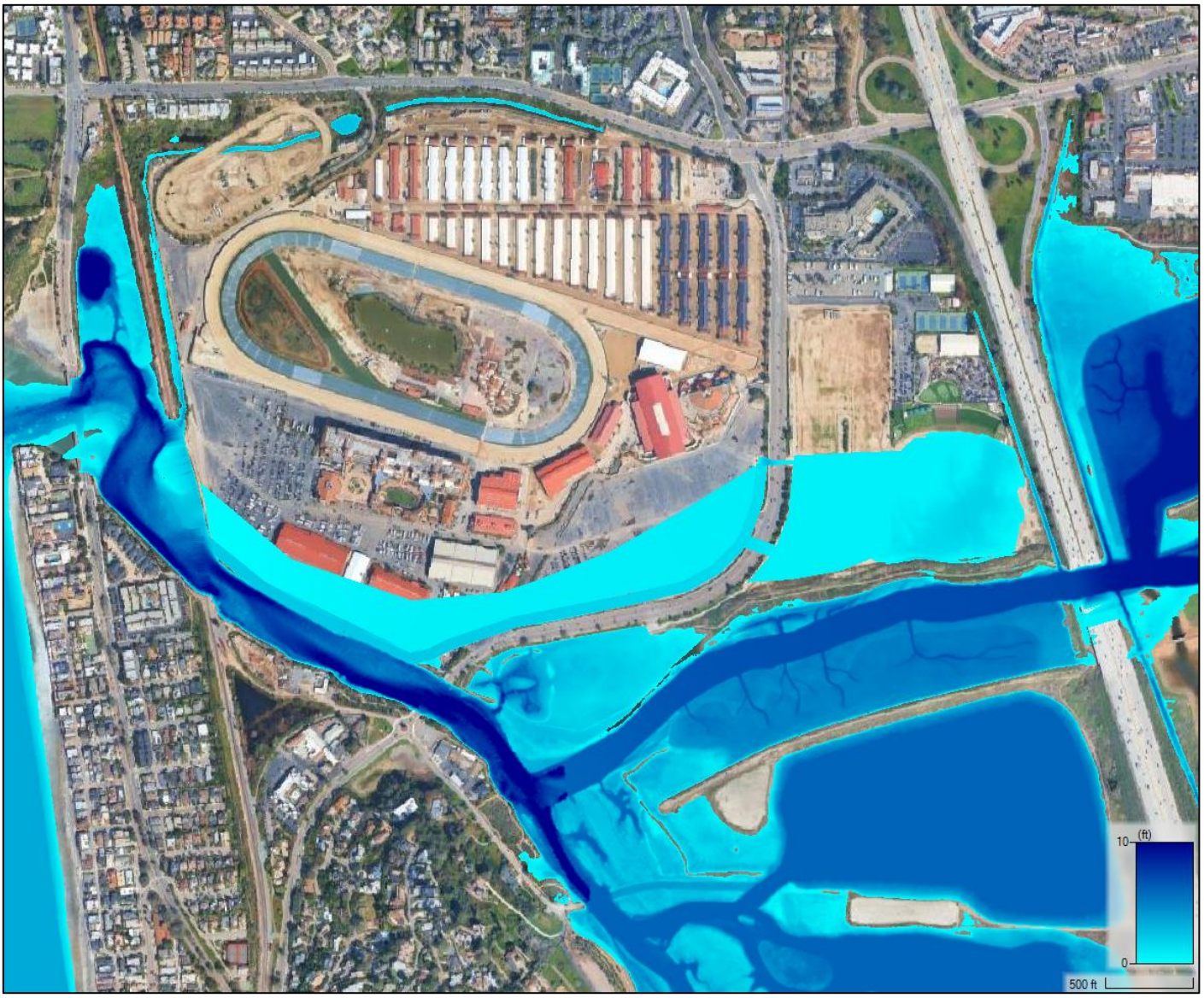

Figure 31 Strategy 3 flood depths during the 10-year fluvial event

The 50-year fluvial flood depths for Strategy 3 are shown in Figure 32. Much of the site is protected from flooding in this event due to fill, including the 15.8 ft pad and the 13.9 ft to 14.8 ft pad. The lower (8 ft, 8.5 ft, and 9 ft) tiered pads, the driving range, and the northern half of the stables are flooded during this event, with significantly deeper flood depths than the 10-year event. These lower tiered pads experience flood depths of up to 7 ft and the driving range experiences flood depths of up to 8.4 ft.

Figure 32 Strategy 3 flood depths during the 50-year fluvial event

The peak flood depths during the 100-year fluvial event for Strategy 3 are shown in Figure 33. These results show that most of the District's property is subject to flooding in this event. Within the higher tiered pads, however, flood depths are significantly lower than the existing conditions or the other strategies, ranging from 0.3 ft to 1.4 ft.

Figure 33 Strategy 3 flood depths during the 100-year fluvial event

5.4.3.3 Fluvial Events with Sea Level Rise

Peak flood depths for Strategy 3 during the 10-year fluvial event with 2050 SLR, 2070 SLR, and 2100 SLR are shown in Figure H-17, Figure H-18, and Figure H-19, respectively (see Appendix H). Model results are similar to Strategy 2. In the 10-year event with 2050 SLR, the 8 ft tiered pad and the 8.5 ft tiered pad experience flood depths of up to 0.8 ft, and the driving range experiences up to 2 ft of flooding. Similar flooding is noted in the 10-year fluvial event with 2070 SLR, but the 9 ft tier experiences very shallow flooding (< 1 inch). In the 10-year event with 2100 SLR, the 9 ft tiered pad experiences flood depths of up to 1.4 ft.

5.4.3.4 Hydraulic Impacts

Figure I-3 in Appendix I shows the difference between water surface elevations in Strategy 3 compared with the existing conditions. The conditions increase water surface elevations by up to 0.25 ft within the channel. Outside of the District's property, water surface elevations increase by up to 0.14 ft. These differences are primarily noted within the San Dieguito River and San Dieguito Lagoon between Highway 5 and Jimmy Durante Blvd.

Since this Strategy leads to small differences in water surface elevations compared to the existing conditions, this Strategy is expected to meet California Drainage Law requirements. Refinements to the site grading could further reduce these offsite impacts if desired. Additionally, more refined topography data within the San Dieguito River could increase the conveyance capacity of the river and decrease offsite impacts.

Similar to Strategy 2, this Strategy involves grading within the FEMA floodway. The goal of these improvements is to increase capacity along the north bank of the San Dieguito River, so they are not expected to lead to a rise in base flood elevations. A no-rise certification would be required demonstrating that the development does not lead to increases in BFEs, and refinements to the channel and tiered pads may be required to meet the requirement.

5.5 Conceptual Adaptation Strategies Model Results Summary

The following three tables provide a summary of the flood depths during the 10 modeled tidal/fluvial scenarios for the existing conditions and the modeled strategies. The flood depths were sampled at the locations shown in Figure 34.

Figure 34 Sampling locations for flood depths from concept strategy models.

Table 5 compares the flood depths at Location 1 (West Parking Lot) for existing conditions and conceptual strategies. The results show that all three of the conceptual strategies protect this area from flooding during the 10-year fluvial event with up to, and including, 2070 SLR. For the 2100 SLR tidal event, 10-year fluvial event with 2100 SLR, 50-year fluvial event, and 100-year fluvial event, all of the conceptual strategies show some flooding at Location 1 (West Parking Lot). This flooding is a result of the living levee overtopping in Strategy 1. In Strategy 2 and Strategy 3, this location is situated on a floodable tiered pad. The flood depths for Strategy 1 are very similar to existing conditions across these scenarios. Strategies 2 and 3 lower flood depths at this location by up to 2.1 ft, primarily due to fill in this area.

Table 5 Maximum flood depths (ft) at Location 1, in the West Parking Lot

Scenario No.	Event Description	Maximum Flood Depths (ft) at Location 1			
		Existing	Strategy 1	Strategy 2	Strategy 3
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	0.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	2.5	2.5	0.9	0.9
5	10-year Fluvial Event	0.4	0.0	0.0	0.0
6	50-year Fluvial Event	6.4	6.3	4.8	4.7
7	100-year Fluvial Event	7.9	7.9	5.8	6.2
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	1.2	0.0	0.0	0.0
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	1.6	0.0	0.0	0.0
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	2.9	2.9	1.3	1.3

Table 6 compares the flood depths at Location 2, in the Backstretch. This location is within the Strategy 2 berm and within the elevated pad in Strategy 3. Accordingly, in Strategies 2 and 3, this location is protected from flooding in the 50-year fluvial event. In the existing conditions and Strategy 1, this location experiences over 5 ft of flooding in the 50-year fluvial event. The results indicate that Strategy 3 greatly reduces 100-year flood depths in the Backstretch compared with the existing conditions.

Table 6 Maximum flood depths (ft) at Location 2, in the Backstretch

Scenario No.	Event Description	Maximum Flood Depths (ft) at Location 2			
		Existing	Strategy 1	Strategy 2	Strategy 3
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	0.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	0.0	0.0	0.0	0.0
5	10-year Fluvial Event	0.0	0.0	0.0	0.0
6	50-year Fluvial Event	5.7	5.7	0.0	0.0
7	100-year Fluvial Event	7.1	7.1	6.3	1.1
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	0.0	0.0	0.0	0.0
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	0.0	0.0	0.0	0.0
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	0.0	0.0	0.0	0.0

Modeled flood depths for existing conditions and conceptual strategies in the driving range are compared in Table 7. Strategy 1 protects this area from the evaluated tidal events, 10-year fluvial event, and 10-year fluvial event with SLR, whereas Strategy 2 and 3 show flooding in the 2100 tidal event, the 10-year fluvial event, and the 10-year fluvial events with SLR. Strategy 2 results in similar flood depths to the existing conditions in these scenarios. Strategy 3 reduces flood depths compared with the existing conditions in the 10-year fluvial event and the 10-year fluvial events with SLR. All three strategies result in similar flooding to the existing conditions in the 50-year and 100-year fluvial events.

Table 7 Maximum flood depths (ft) at Location 3, in the Driving Range.

Scenario No.	Event Description	Maximum Flood Depth (ft) at Location 3			
		Existing	Strategy 1	Strategy 2	Strategy 3
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	2.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	2.7	0.0	2.7	2.7
5	10-year Fluvial Event	3.0	0.0	3.0	1.8
6	50-year Fluvial Event	8.3	8.3	8.4	8.2
7	100-year Fluvial Event	9.5	9.5	9.6	9.6
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	3.1	0.0	3.0	1.8
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	3.2	0.0	3.1	1.9
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	4.0	0.0	3.5	3.2

6. Recommendations

6.1 Model Refinements

The accuracy of the model results presented in this report are subject to the confidence in model inputs and available data. Improving some of the model inputs would be beneficial as further evaluation and planning of potential flood mitigation measures progresses.

There are several data gaps regarding the onsite drainage network, including pump station on/off points, operation of the valves, training track pump station capacity and on/off points, pump curve for the pump station upstream of discharge point 5, and infield drainage system (see Section 3.9). Prior to using the HEC-RAS 2D model to design any onsite drainage system upgrades, these data gaps should be filled, and the model should be updated to improve accuracy of results. The accuracy of model results for the onsite rainfall scenarios could also be improved by refining the terrain within Stevens Creek based on survey data, since the LiDAR does not resolve the channel invert.

The fluvial and tidal scenario results are expected to be more accurate than the onsite rainfall scenarios. The largest uncertainty within the fluvial model inputs is the topography of the San Dieguito River. As discussed in Section 3.2, model terrain is based on publicly available LiDAR data, and bathymetric data was not available for the entire reach of the river within the model. Survey data within the San Dieguito River would improve accuracy of the model results, including the offsite impacts of the strategies. This survey data may decrease flooding onsite and reduce modelled offsite impacts of potential flood mitigation measures. Proceeding on strategy refinements without survey data is expected to lead to a more conservative design.

As the design of potential mitigation measures progresses, particularly if elements of Strategy 2 or 3 are including in future design development, adding the tunnel beneath Jimmy Durante Blvd to the model as a SA/2D connection is recommended, as it may impact modeled flow paths and hydraulic impact results of potential mitigation measures.

Finally, the Manning's roughness within the HEC-RAS 2D models should be refined to reflect any changes to land use.

6.2 No-Rise Certification

All three of the conceptual strategies investigated include development within the regulatory floodway. Accordingly, no-rise certifications would be required prior to development. A no-rise certification has been completed for the Del Mar Living Levee Project which is a component within Strategy 1: Targeted Ecotone Features, and the design of this strategy ensured a net cut condition (GHD, 2025). At minimum, the no-rise analysis for the Del Mar Living Levee would need to be updated to include the extension of the living levee if this Strategy 1 moves forward as a potential action to be pursued and refined further. If elements of Strategy 2 or 3 are included in future development and refinement of adaptation strategies, a no-rise certification would also be required. As discussed in Section 5.3.3.4 and Section 5.4.3.4, the potential improvements within the floodway are expected to meet this no rise criteria, as the goal of these improvements is to increase conveyance along the north bank of the San Dieguito River. However, a no-rise analysis would be required based on the FEMA effective HEC-RAS 1D model, and refinements to the improvements within the floodway may be required. As a part of this no-rise analysis, it is also recommended that a cut/fill analysis be completed to ensure that there is more cut than fill within the floodway.

7. Conclusion

This report documents the development and results of a two-dimensional HEC-RAS hydraulic model, which was used to evaluate existing and future flood hazards at the 22nd District Agricultural Association (Del Mar Fairgrounds) site in support of the 22nd District Agricultural Association's HAP Grant effort. The modeling framework evaluated flooding from tidal conditions, fluvial events in the San Dieguito River, onsite rainfall, and projected SLR across multiple planning horizons.

Results from the existing conditions modeling indicate that fluvial flooding from the San Dieguito River presents the dominant flood hazard to the District's property, with widespread inundation occurring during both the 50-year and 100-year fluvial events. While tidal flooding alone does not result in significant onsite impacts under most scenarios, higher SLR conditions—particularly the 2100 intermediate-high scenario—lead to onsite flooding through overtopping of the north overbank and backflow through storm drains. Onsite rainfall events generally result in shallower but widespread flooding and are influenced by assumptions used to fill data gaps regarding the existing storm drain network, pump operations, and gate valve operation.

Three conceptual flood mitigation strategies were developed to span a range of potential approaches for reducing flood hazards, reflecting varying levels of effort and corresponding flood risk reduction. These conceptual strategies were evaluated to reduce flood risks associated with fluvial and SLR hazards. Strategy 1 (Targeted Ecotone Features) provides protection during the 10-year fluvial event with SLR through 2070, while Strategies 2 (Perimeter Berm Protection) and 3 (Site-wide Floodable Frontage) provide higher levels of protection during the 50-year fluvial event. Strategy 3 also reduces flood depths within areas of fill during larger events. All conceptual adaptation strategies were developed with consideration of California Drainage Law and FEMA floodway requirements, and preliminary results indicate that the strategies can be refined to meet no-rise certification criteria.

The results presented in this report are intended to support early-stage planning and evaluation of conceptual flood adaptation strategies along the District's property. As planning advances, additional data collection and model refinement—particularly related to river bathymetry, onsite drainage infrastructure, and operational assumptions—would improve confidence in the modeled results and support final design. Importantly, the presented strategies need

to be refined through additional input by the District and aligned with future planning objectives across the site to identify specific resilience goals. For example, strategies could be refined to provide additional flood protection (i.e. 100-year flood protection) to key areas, but this additional flood protection would need to be balanced with additional floodable areas to prevent significant increases in flood hazards offsite. Overall, this study provides a hydraulic framework to inform future decision-making related to flood risk management, site planning, and long-term resilience under changing climate conditions.

8. References

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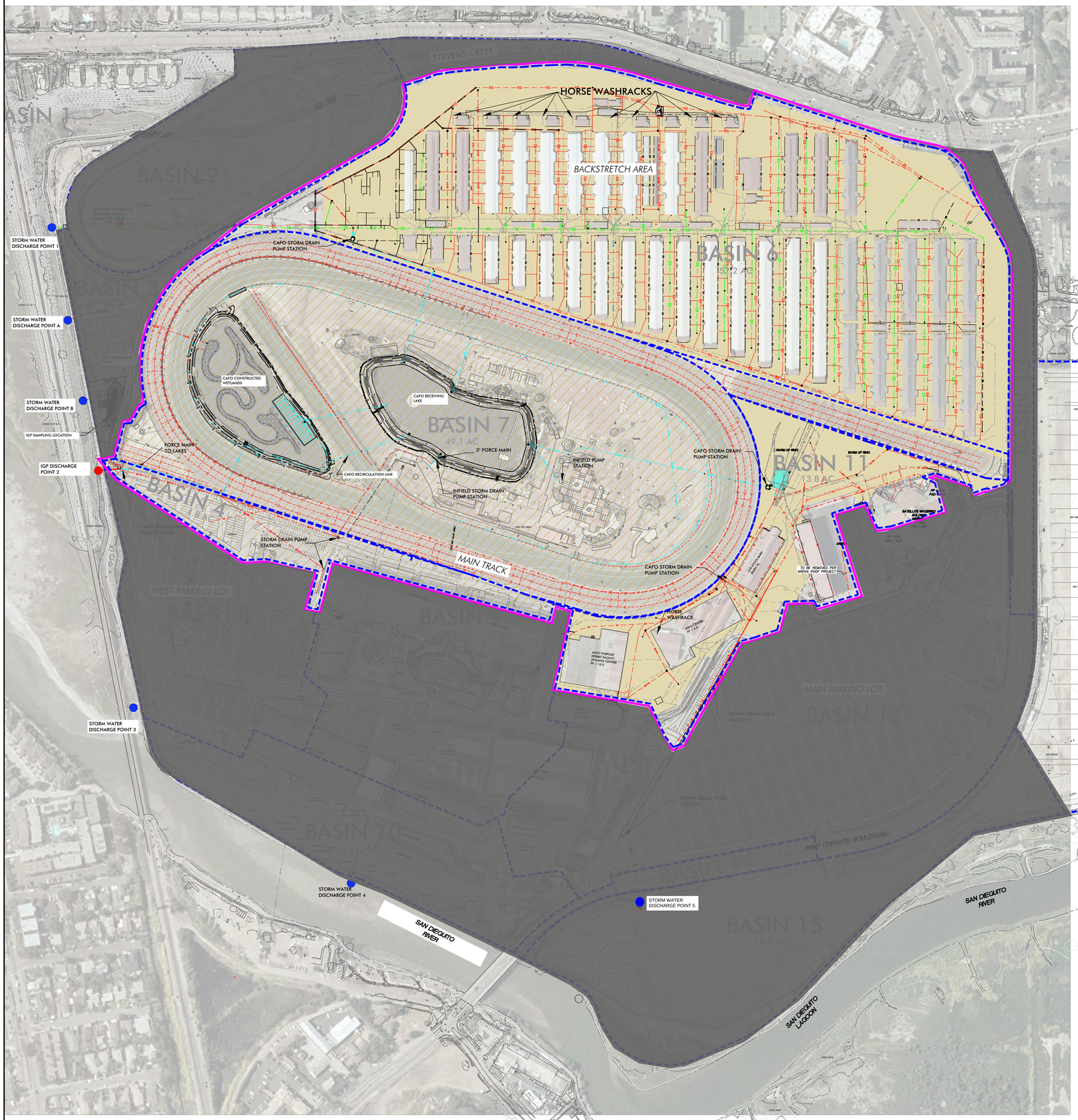
Appendices

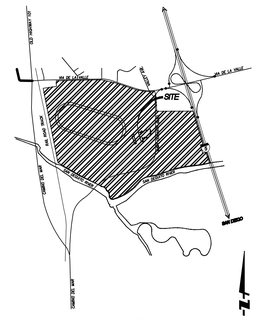
Appendix A

Detailed Storm Drain Maps



LEGEND

- EXIST. STORM DRAIN — SD
- EXIST. STORM DRAIN FORCE MAIN — SD/FM
- INFIELD STORM DRAIN — SD
- INFIELD STORM DRAIN FORCE MAIN — SD/FM
- BACKSTRETCH STORM DRAIN — SD
- EXIST. ROOF DRAIN — RD
- EXIST. PERF. STORM DRAIN
- CAFO SURFACE AREA TO INFIELD PROJECT
- NON-CAFO DRAINAGE AREA TO INFIELD LAKE
- EXIST. MANHOLE
- EXIST. PUMP STATION
- EXIST. CATCH BASIN
- MS4 DISCHARGE POINT
- IGP DISCHARGE POINT
- BASIN DRAINAGE BOUNDARY
- INFIELD LAKE DRAINAGE BOUNDARY (CAFO / IGP DRAINAGE BOUNDARY)



VICINITY MAP
NOT TO SCALE

SCALE: 1" = 150'

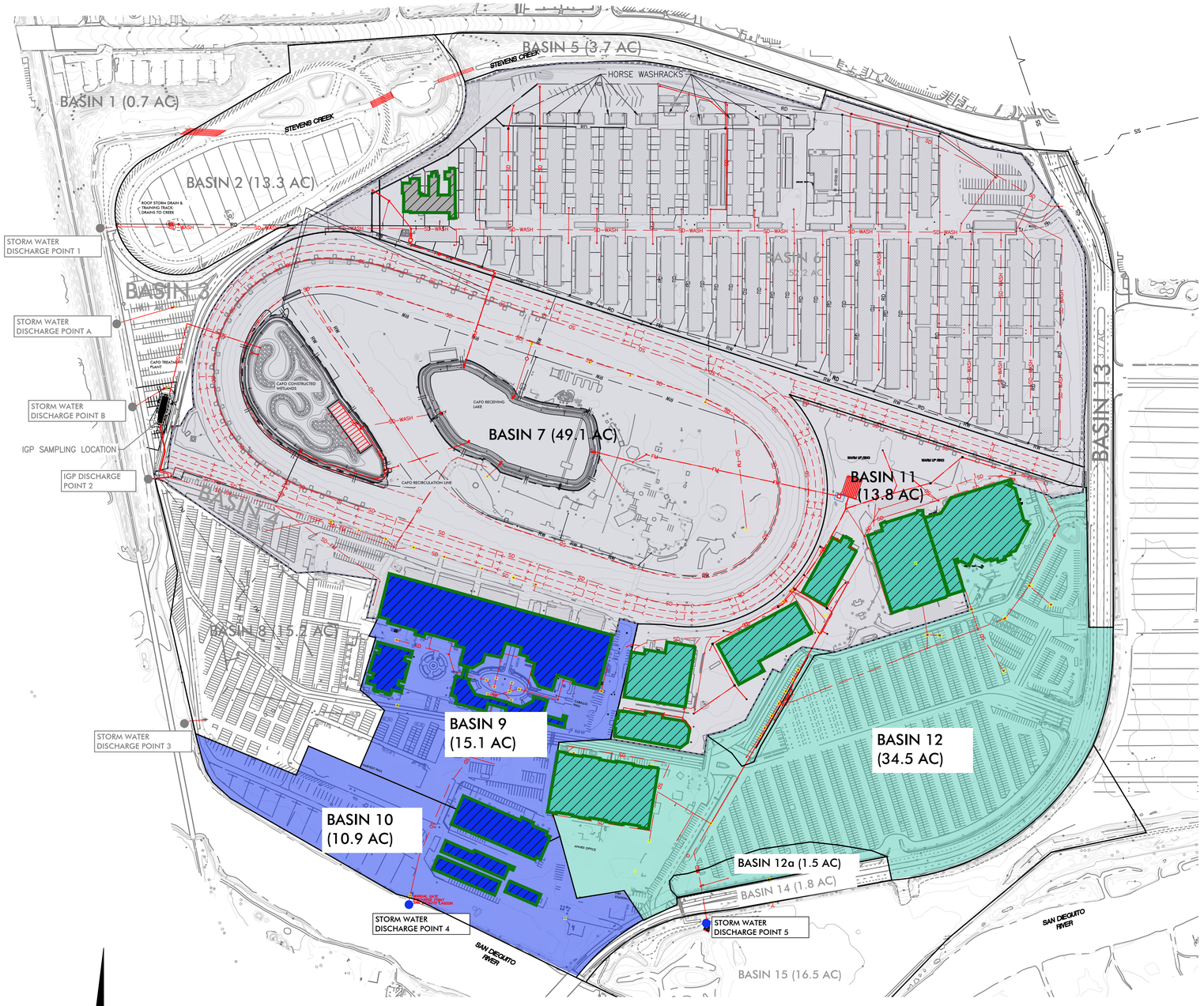
150 75 0 150 300 450
GRAPHIC SCALE IN FEET

DEL MAR FAIRGROUNDS
IGP / CAFO DRAINAGE EXHIBIT

DEL MAR FAIRGROUNDS
DEL MAR, CA
PROJECT NUMBER: 654-005
SCALE: 1"=80'
DATE: 02/09/2022
SHEET 1 OF 1

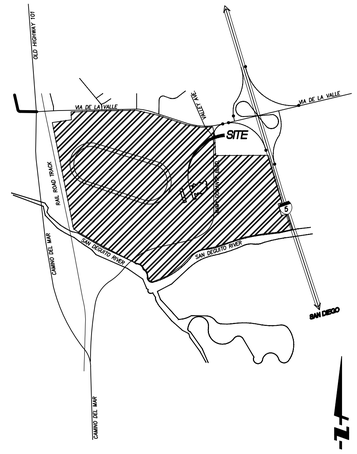
FUSCOE ENGINEERING
6390 Greenwich Drive, Suite 170
San Diego, California 92122
tel 858.554.1500 ▫ fax 858.597.0335
www.fuscoe.com

P:\PROJECTS\654-005_SUPPORT FILES\REPORTS\IMAP\654-005-SL1_IMAP_MAP-BASIN DATA\654-005-SL1_IMAP_MAP-BASIN DATA.DWG——LAYOUT: OVERALL BASIN



LEGEND

- EXIST. STORM DRAIN
- PRIORITY LAND USE (PLU) FACILITY AREA DRAINS TO MS4 STORM DRAIN (FULL CAPTURE SYSTEM REQUIRED)
- DESIGNATED PLU AREA (ROOF AREA) DRAINS TO DP4
- PRIORITY LAND USE DRAINAGE AREA TO DP4
- DESIGNATED PLU AREA (ROOF AREA) DRAINS TO DP5
- PRIORITY LAND USE DRAINAGE AREA TO DP5
- PLU AREA TO INFIELD LAKE (FCS COMPLIANT)
- CAFO & NON-CAFO SURFACE AREA TO INFIELD PROJECT
- EXIST. MANHOLE
- EXIST. PUMP STATION
- EXIST. CATCH BASIN
- MS4 DISCHARGE POINT
- IGP DISCHARGE POINT NOT SUBJECT TO TRASH FULL CAPTURE TREATMENT REQUIREMENTS
- INFIELD LAKE DRAINAGE BOUNDARY



VICINITY MAP
NOT TO SCALE

200' 0' 100' 200' 400'
SCALE: 1" = 200'

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San Diego, Ca 92122
858.554.1500 fuscoe.com

DEL MAR FAIRGROUNDS

PRIORITY LAND USE DRAINAGE EXHIBIT FOR
FULL TRASH CAPTURE COMPLIANCE
DEL MAR, CA
DATE: 9/10/2024 SHEET 1 OF 3

F:\Projects\0541\005\Exhibits\0541-005xh - Trash PLU Exhibit.dwg (9/10/2024 1:20 PM) Plotted by: Emma Smith

Appendix B

NOAA Atlas 14 Precipitation Depths

NOAA Atlas 14, Volume 6, Version 2
Location name: Del Mar, California, USA*
Latitude: 32.9761°, Longitude: -117.2634°
Elevation: 7 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.097 (0.081-0.117)	0.122 (0.103-0.147)	0.156 (0.131-0.189)	0.185 (0.153-0.225)	0.223 (0.179-0.282)	0.254 (0.199-0.328)	0.285 (0.218-0.378)	0.318 (0.235-0.434)	0.363 (0.257-0.518)	0.398 (0.272-0.589)
10-min	0.139 (0.117-0.167)	0.176 (0.147-0.211)	0.224 (0.188-0.271)	0.265 (0.219-0.322)	0.320 (0.256-0.404)	0.364 (0.285-0.470)	0.409 (0.312-0.542)	0.456 (0.337-0.622)	0.520 (0.369-0.742)	0.571 (0.390-0.844)
15-min	0.168 (0.141-0.202)	0.212 (0.178-0.256)	0.271 (0.227-0.328)	0.320 (0.265-0.390)	0.387 (0.310-0.489)	0.440 (0.344-0.568)	0.494 (0.377-0.655)	0.551 (0.408-0.752)	0.629 (0.446-0.897)	0.691 (0.472-1.02)
30-min	0.236 (0.198-0.283)	0.297 (0.250-0.358)	0.380 (0.318-0.459)	0.448 (0.372-0.546)	0.543 (0.434-0.685)	0.617 (0.483-0.796)	0.693 (0.528-0.918)	0.772 (0.572-1.05)	0.882 (0.625-1.26)	0.968 (0.661-1.43)
60-min	0.333 (0.280-0.401)	0.421 (0.353-0.506)	0.537 (0.449-0.649)	0.634 (0.525-0.772)	0.767 (0.614-0.969)	0.872 (0.682-1.12)	0.980 (0.747-1.30)	1.09 (0.808-1.49)	1.25 (0.883-1.78)	1.37 (0.935-2.02)
2-hr	0.461 (0.387-0.555)	0.583 (0.489-0.702)	0.741 (0.619-0.895)	0.869 (0.720-1.06)	1.04 (0.834-1.32)	1.18 (0.920-1.52)	1.31 (0.998-1.73)	1.45 (1.07-1.97)	1.63 (1.16-2.33)	1.77 (1.21-2.62)
3-hr	0.555 (0.466-0.667)	0.701 (0.588-0.844)	0.890 (0.745-1.08)	1.04 (0.865-1.27)	1.25 (0.998-1.57)	1.40 (1.10-1.81)	1.56 (1.19-2.06)	1.72 (1.27-2.34)	1.93 (1.37-2.75)	2.09 (1.43-3.09)
6-hr	0.748 (0.628-0.900)	0.948 (0.795-1.14)	1.20 (1.01-1.45)	1.41 (1.17-1.72)	1.68 (1.35-2.12)	1.89 (1.48-2.44)	2.09 (1.60-2.77)	2.30 (1.70-3.14)	2.58 (1.82-3.67)	2.78 (1.90-4.12)
12-hr	0.991 (0.833-1.19)	1.26 (1.06-1.52)	1.61 (1.34-1.94)	1.88 (1.56-2.29)	2.25 (1.80-2.84)	2.53 (1.98-3.26)	2.80 (2.14-3.72)	3.08 (2.28-4.21)	3.45 (2.45-4.92)	3.73 (2.55-5.52)
24-hr	1.24 (1.10-1.44)	1.59 (1.40-1.84)	2.04 (1.78-2.37)	2.39 (2.08-2.81)	2.87 (2.42-3.47)	3.24 (2.68-3.99)	3.60 (2.91-4.54)	3.97 (3.13-5.14)	4.46 (3.38-6.00)	4.83 (3.55-6.72)
2-day	1.50 (1.32-1.74)	1.93 (1.69-2.24)	2.48 (2.18-2.89)	2.93 (2.55-3.44)	3.54 (2.98-4.28)	4.00 (3.31-4.93)	4.47 (3.62-5.64)	4.95 (3.90-6.40)	5.59 (4.24-7.52)	6.08 (4.47-8.46)
3-day	1.68 (1.48-1.94)	2.16 (1.90-2.50)	2.79 (2.45-3.25)	3.31 (2.88-3.88)	4.01 (3.38-4.84)	4.54 (3.76-5.60)	5.09 (4.12-6.42)	5.65 (4.46-7.32)	6.42 (4.86-8.64)	7.01 (5.14-9.74)
4-day	1.83 (1.61-2.12)	2.36 (2.07-2.74)	3.06 (2.68-3.56)	3.64 (3.16-4.26)	4.42 (3.73-5.35)	5.03 (4.16-6.20)	5.65 (4.57-7.12)	6.29 (4.96-8.14)	7.16 (5.43-9.64)	7.84 (5.76-10.9)
7-day	2.17 (1.91-2.52)	2.82 (2.48-3.27)	3.67 (3.22-4.28)	4.38 (3.82-5.14)	5.37 (4.53-6.49)	6.14 (5.08-7.57)	6.94 (5.61-8.75)	7.77 (6.12-10.1)	8.91 (6.76-12.0)	9.81 (7.20-13.6)
10-day	2.42 (2.13-2.80)	3.14 (2.76-3.64)	4.12 (3.61-4.79)	4.93 (4.29-5.78)	6.07 (5.12-7.34)	6.96 (5.76-8.59)	7.89 (6.38-9.96)	8.87 (6.99-11.5)	10.2 (7.75-13.8)	11.3 (8.30-15.7)
20-day	2.89 (2.54-3.35)	3.81 (3.35-4.42)	5.05 (4.43-5.88)	6.10 (5.31-7.15)	7.57 (6.39-9.15)	8.74 (7.23-10.8)	9.95 (8.05-12.6)	11.2 (8.86-14.6)	13.0 (9.88-17.5)	14.5 (10.6-20.1)
30-day	3.43 (3.02-3.98)	4.56 (4.01-5.30)	6.10 (5.35-7.10)	7.39 (6.44-8.67)	9.21 (7.77-11.1)	10.7 (8.82-13.1)	12.2 (9.84-15.3)	13.7 (10.8-17.8)	16.0 (12.1-21.5)	17.7 (13.0-24.6)
45-day	4.01 (3.53-4.64)	5.37 (4.72-6.23)	7.22 (6.33-8.40)	8.77 (7.63-10.3)	11.0 (9.24-13.2)	12.7 (10.5-15.6)	14.5 (11.7-18.3)	16.4 (12.9-21.2)	19.0 (14.4-25.5)	21.0 (15.5-29.3)
60-day	4.63 (4.08-5.37)	6.23 (5.47-7.23)	8.38 (7.35-9.76)	10.2 (8.87-12.0)	12.7 (10.7-15.4)	14.7 (12.2-18.2)	16.8 (13.6-21.2)	19.0 (15.0-24.6)	22.0 (16.7-29.6)	24.3 (17.9-33.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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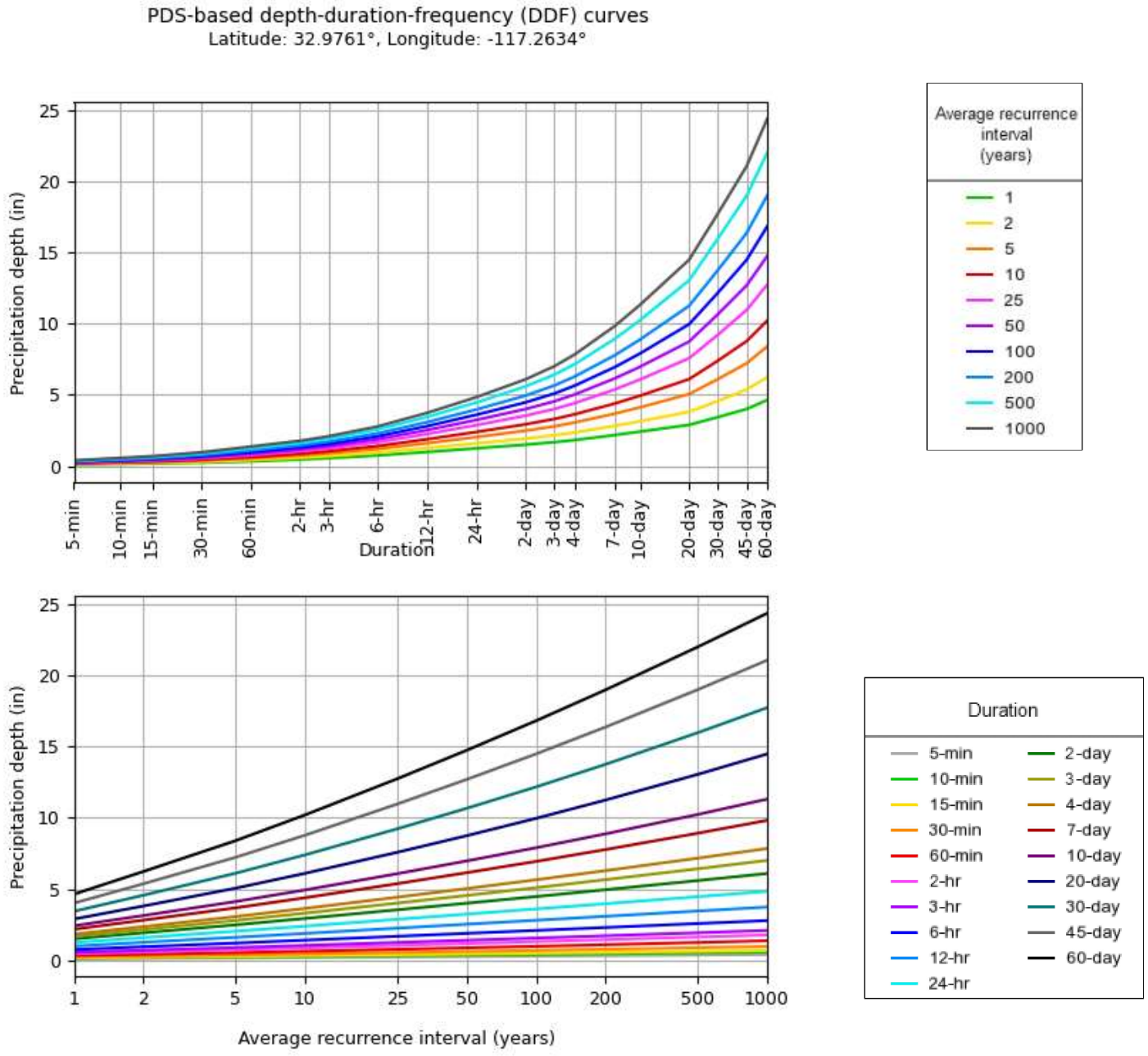
PF graphical



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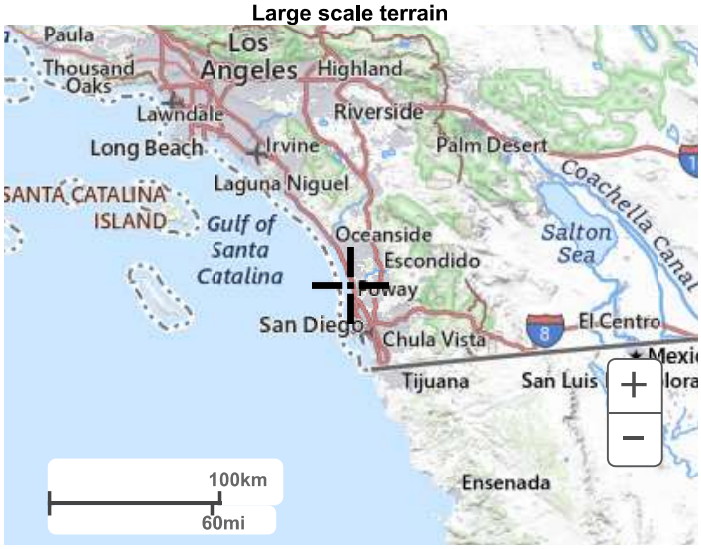
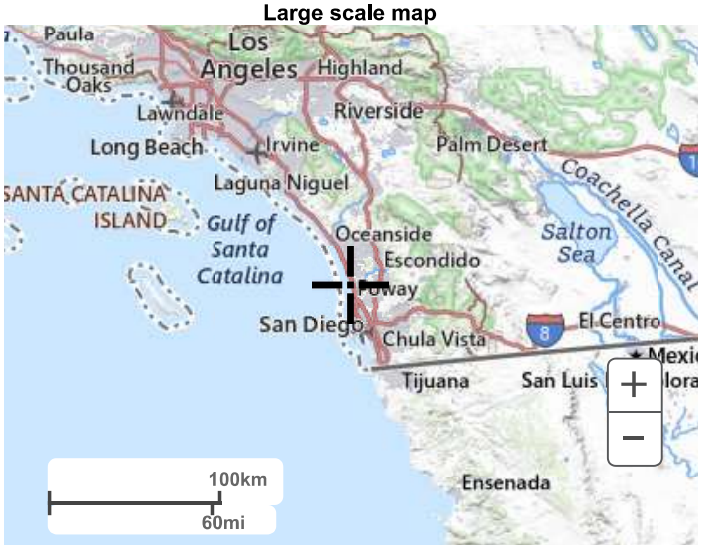
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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Appendix C

Rainfall Hyetograph Calculations

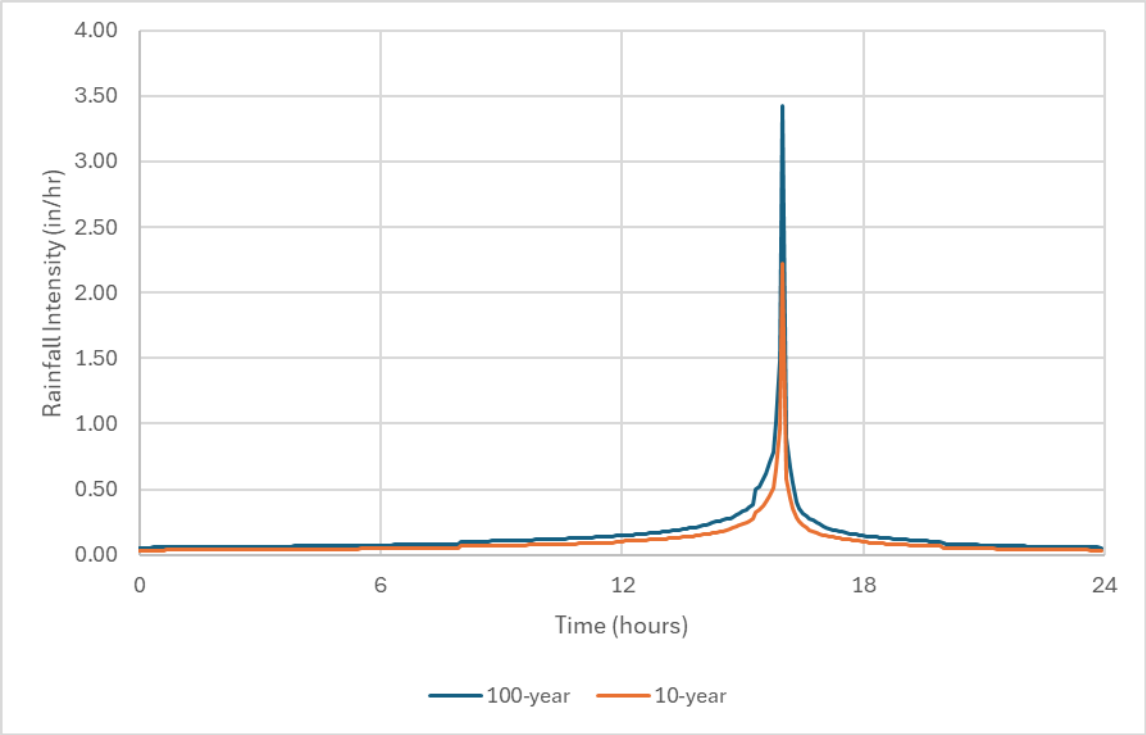


Figure C-1 *10-year and 100-year hyetographs*

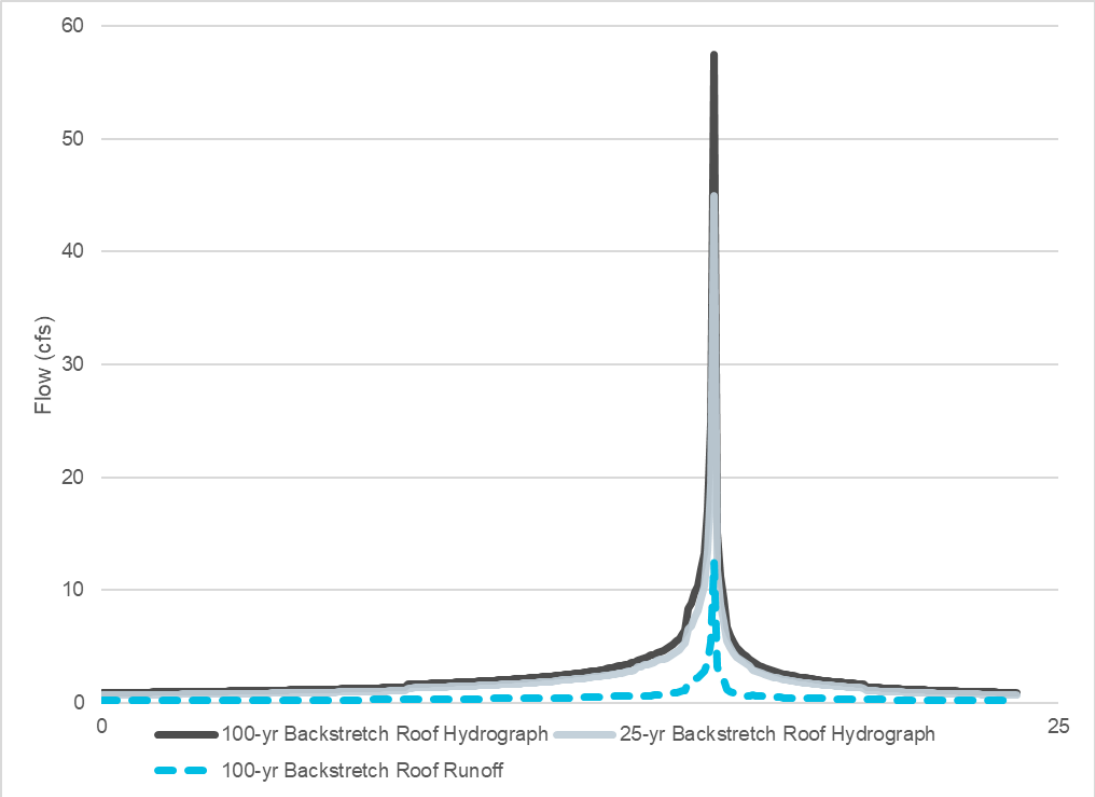


Figure C-2 *100-year and 25-year hydrographs for the Backstretch roof drain system and the resulting runoff to surface during the 100-year event.*

Nested Rainfall Hydrograph Spreadsheet

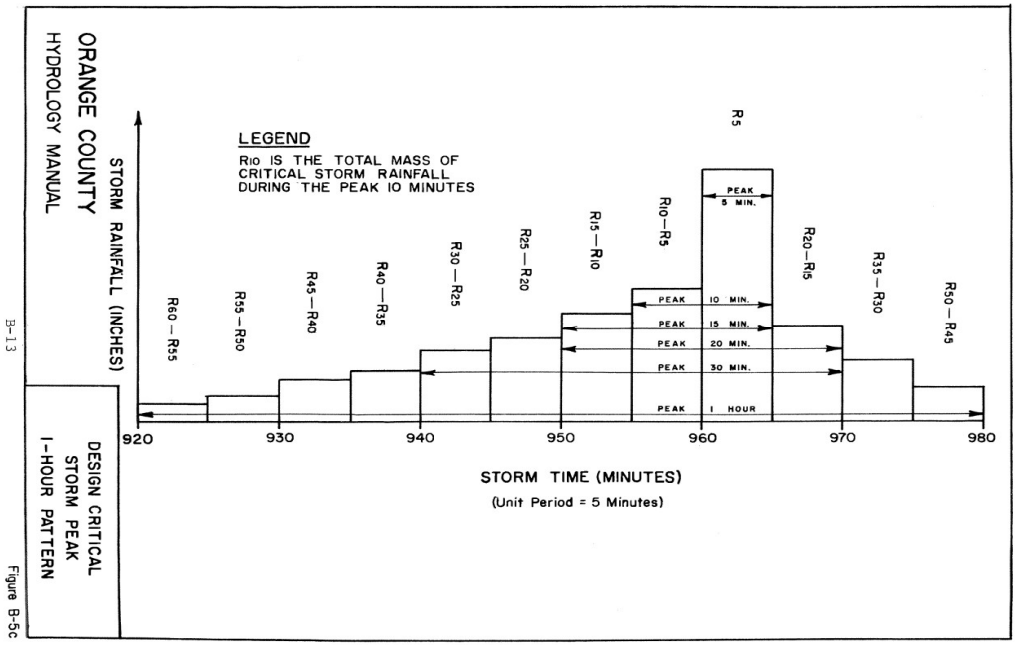
This spreadsheet was created by Madeline Howell with formatting help from Molly Foster on 9/2025.
The purpose of this spreadsheet is to generate a 24-hour hyetograph for a nested storm pattern given rainfall depths for various durations
The "Interpolated_Rainfall" tab uses log-log interpolation to generate rainfall depths for each 5 minutes of a 24-hour storm
The "Hyetograph" tab uses these interpolated rainfall depths to generate a 24-hour hyetograph following methods in the San Diego County and Orange County Hydrology Manuals.

Project Number: 12660347
Project Name: Del Mar Fairgrounds
Last Edited: 9/2/2025
Last Edited By: Molly Foster

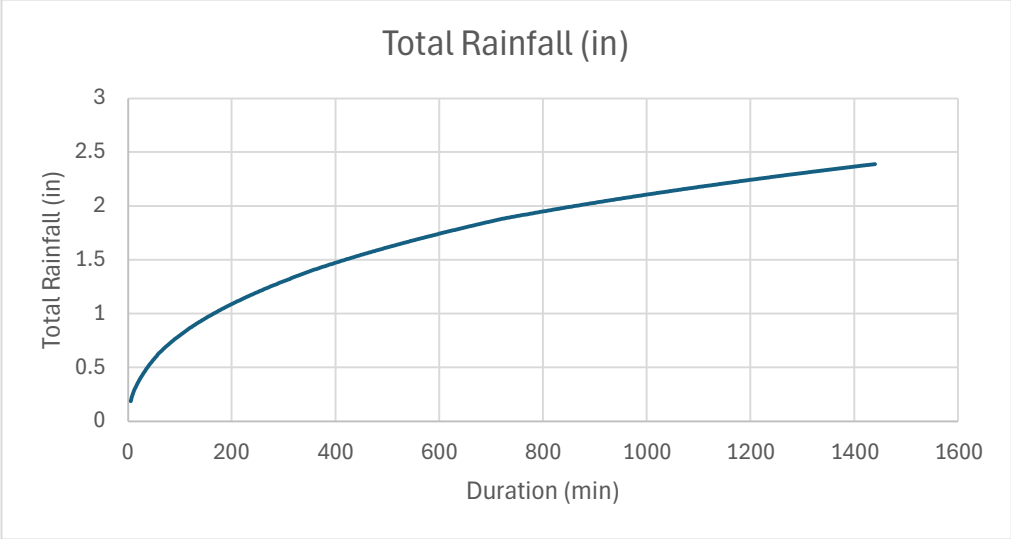
Inputs are in green

Duration	Duration (min)	Log(Duration)	Rainfall (in)	Log(Rainfall)
5-min	5	0.70	0.185	-0.733
10-min	10	1.00	0.265	-0.577
15-min	15	1.18	0.32	-0.495
30-min	30	1.48	0.448	-0.349
60-min	60	1.78	0.634	-0.198
2-hr	120	2.08	0.869	-0.061
3-hr	180	2.26	1.04	0.017
6-hr	360	2.56	1.41	0.149
12-hr	720	2.86	1.88	0.274
24-hr	1440	3.16	2.39	0.378

Rainfall inputs from NOAA Atlas 14



cells highlighted blue contain rainfall data from NOAA, white cells contain interpolated data intervals



Rainfall Interpolation to 5 min Interval					
Increment No.	Duration (min)	Log(Duration)	Log(Rain)	Total Rainfall (in)	Incremental Rainfall (in)
1	5	0.70	-0.733	0.185	0.185
2	10	1.00	-0.577	0.27	0.080
3	15	1.18	-0.495	0.32	0.055
4	20	1.30	-0.434	0.37	0.048
5	25	1.40	-0.387	0.41	0.042
6	30	1.48	-0.349	0.45	0.038
7	35	1.54	-0.315	0.48	0.036
8	40	1.60	-0.286	0.52	0.033
9	45	1.65	-0.261	0.55	0.031
10	50	1.70	-0.238	0.58	0.030
11	55	1.74	-0.217	0.61	0.028
12	60	1.78	-0.198	0.63	0.027
13	65	1.81	-0.182	0.66	0.024
14	70	1.85	-0.167	0.68	0.023
15	75	1.88	-0.154	0.70	0.022
16	80	1.90	-0.141	0.72	0.021
17	85	1.93	-0.129	0.74	0.020
18	90	1.95	-0.118	0.76	0.020
19	95	1.98	-0.107	0.78	0.019
20	100	2.00	-0.097	0.80	0.018
21	105	2.02	-0.087	0.82	0.018
22	110	2.04	-0.078	0.84	0.017
23	115	2.06	-0.069	0.85	0.017
24	120	2.08	-0.061	0.87	0.017
25	125	2.10	-0.053	0.88	0.016
26	130	2.11	-0.046	0.90	0.016
27	135	2.13	-0.038	0.92	0.015
28	140	2.15	-0.031	0.93	0.015
29	145	2.16	-0.025	0.94	0.015
30	150	2.18	-0.018	0.96	0.014
31	155	2.19	-0.012	0.97	0.014
32	160	2.20	-0.006	0.99	0.014
33	165	2.22	0.000	1.00	0.014
34	170	2.23	0.006	1.01	0.013
35	175	2.24	0.012	1.03	0.013
36	180	2.26	0.017	1.04	0.013
37	185	2.27	0.022	1.05	0.013
38	190	2.28	0.027	1.06	0.012
39	195	2.29	0.032	1.08	0.012
40	200	2.30	0.037	1.09	0.012
41	205	2.31	0.042	1.10	0.012
42	210	2.32	0.046	1.11	0.012
43	215	2.33	0.051	1.12	0.012
44	220	2.34	0.055	1.14	0.011
45	225	2.35	0.060	1.15	0.011
46	230	2.36	0.064	1.16	0.011
47	235	2.37	0.068	1.17	0.011
48	240	2.38	0.072	1.18	0.011
49	245	2.39	0.076	1.19	0.011
50	250	2.40	0.080	1.20	0.011
51	255	2.41	0.083	1.21	0.010
52	260	2.41	0.087	1.22	0.010

53	265	2.42	0.091	1.23	0.010
54	270	2.43	0.094	1.24	0.010
55	275	2.44	0.098	1.25	0.010
56	280	2.45	0.101	1.26	0.010
57	285	2.45	0.105	1.27	0.010
58	290	2.46	0.108	1.28	0.010
59	295	2.47	0.111	1.29	0.010
60	300	2.48	0.114	1.30	0.010
61	305	2.48	0.118	1.31	0.009
62	310	2.49	0.121	1.32	0.009
63	315	2.50	0.124	1.33	0.009
64	320	2.51	0.127	1.34	0.009
65	325	2.51	0.130	1.35	0.009
66	330	2.52	0.133	1.36	0.009
67	335	2.53	0.135	1.37	0.009
68	340	2.53	0.138	1.38	0.009
69	345	2.54	0.141	1.38	0.009
70	350	2.54	0.144	1.39	0.009
71	355	2.55	0.147	1.40	0.009
72	360	2.56	0.149	1.41	0.009
73	365	2.56	0.152	1.42	0.008
74	370	2.57	0.154	1.43	0.008
75	375	2.57	0.157	1.43	0.008
76	380	2.58	0.159	1.44	0.008
77	385	2.59	0.161	1.45	0.008
78	390	2.59	0.164	1.46	0.008
79	395	2.60	0.166	1.47	0.008
80	400	2.60	0.168	1.47	0.008
81	405	2.61	0.170	1.48	0.008
82	410	2.61	0.173	1.49	0.008
83	415	2.62	0.175	1.50	0.008
84	420	2.62	0.177	1.50	0.007
85	425	2.63	0.179	1.51	0.007
86	430	2.63	0.181	1.52	0.007
87	435	2.64	0.183	1.53	0.007
88	440	2.64	0.185	1.53	0.007
89	445	2.65	0.187	1.54	0.007
90	450	2.65	0.189	1.55	0.007
91	455	2.66	0.191	1.55	0.007
92	460	2.66	0.193	1.56	0.007
93	465	2.67	0.195	1.57	0.007
94	470	2.67	0.197	1.57	0.007
95	475	2.68	0.199	1.58	0.007
96	480	2.68	0.201	1.59	0.007
97	485	2.69	0.203	1.60	0.007
98	490	2.69	0.205	1.60	0.007
99	495	2.69	0.207	1.61	0.007
100	500	2.70	0.208	1.62	0.007
101	505	2.70	0.210	1.62	0.007
102	510	2.71	0.212	1.63	0.007
103	515	2.71	0.214	1.64	0.007
104	520	2.72	0.216	1.64	0.007
105	525	2.72	0.217	1.65	0.007
106	530	2.72	0.219	1.66	0.007
107	535	2.73	0.221	1.66	0.006

108	540	2.73	0.222	1.67	0.006
109	545	2.74	0.224	1.67	0.006
110	550	2.74	0.226	1.68	0.006
111	555	2.74	0.227	1.69	0.006
112	560	2.75	0.229	1.69	0.006
113	565	2.75	0.230	1.70	0.006
114	570	2.76	0.232	1.71	0.006
115	575	2.76	0.234	1.71	0.006
116	580	2.76	0.235	1.72	0.006
117	585	2.77	0.237	1.72	0.006
118	590	2.77	0.238	1.73	0.006
119	595	2.77	0.240	1.74	0.006
120	600	2.78	0.241	1.74	0.006
121	605	2.78	0.243	1.75	0.006
122	610	2.79	0.244	1.75	0.006
123	615	2.79	0.246	1.76	0.006
124	620	2.79	0.247	1.77	0.006
125	625	2.80	0.249	1.77	0.006
126	630	2.80	0.250	1.78	0.006
127	635	2.80	0.252	1.78	0.006
128	640	2.81	0.253	1.79	0.006
129	645	2.81	0.254	1.80	0.006
130	650	2.81	0.256	1.80	0.006
131	655	2.82	0.257	1.81	0.006
132	660	2.82	0.258	1.81	0.006
133	665	2.82	0.260	1.82	0.006
134	670	2.83	0.261	1.82	0.006
135	675	2.83	0.263	1.83	0.006
136	680	2.83	0.264	1.84	0.006
137	685	2.84	0.265	1.84	0.006
138	690	2.84	0.266	1.85	0.006
139	695	2.84	0.268	1.85	0.006
140	700	2.85	0.269	1.86	0.006
141	705	2.85	0.270	1.86	0.005
142	710	2.85	0.272	1.87	0.005
143	715	2.85	0.273	1.87	0.005
144	720	2.86	0.274	1.88	0.005
145	725	2.86	0.275	1.88	0.005
146	730	2.86	0.276	1.89	0.004
147	735	2.87	0.277	1.89	0.004
148	740	2.87	0.278	1.90	0.004
149	745	2.87	0.279	1.90	0.004
150	750	2.88	0.280	1.91	0.004
151	755	2.88	0.281	1.91	0.004
152	760	2.88	0.282	1.92	0.004
153	765	2.88	0.283	1.92	0.004
154	770	2.89	0.284	1.92	0.004
155	775	2.89	0.285	1.93	0.004
156	780	2.89	0.286	1.93	0.004
157	785	2.89	0.287	1.94	0.004
158	790	2.90	0.288	1.94	0.004
159	795	2.90	0.289	1.95	0.004
160	800	2.90	0.290	1.95	0.004
161	805	2.91	0.291	1.95	0.004
162	810	2.91	0.292	1.96	0.004

163	815	2.91	0.293	1.96	0.004
164	820	2.91	0.294	1.97	0.004
165	825	2.92	0.295	1.97	0.004
166	830	2.92	0.296	1.97	0.004
167	835	2.92	0.296	1.98	0.004
168	840	2.92	0.297	1.98	0.004
169	845	2.93	0.298	1.99	0.004
170	850	2.93	0.299	1.99	0.004
171	855	2.93	0.300	2.00	0.004
172	860	2.93	0.301	2.00	0.004
173	865	2.94	0.302	2.00	0.004
174	870	2.94	0.303	2.01	0.004
175	875	2.94	0.303	2.01	0.004
176	880	2.94	0.304	2.02	0.004
177	885	2.95	0.305	2.02	0.004
178	890	2.95	0.306	2.02	0.004
179	895	2.95	0.307	2.03	0.004
180	900	2.95	0.308	2.03	0.004
181	905	2.96	0.309	2.03	0.004
182	910	2.96	0.309	2.04	0.004
183	915	2.96	0.310	2.04	0.004
184	920	2.96	0.311	2.05	0.004
185	925	2.97	0.312	2.05	0.004
186	930	2.97	0.313	2.05	0.004
187	935	2.97	0.313	2.06	0.004
188	940	2.97	0.314	2.06	0.004
189	945	2.98	0.315	2.07	0.004
190	950	2.98	0.316	2.07	0.004
191	955	2.98	0.317	2.07	0.004
192	960	2.98	0.317	2.08	0.004
193	965	2.98	0.318	2.08	0.004
194	970	2.99	0.319	2.08	0.004
195	975	2.99	0.320	2.09	0.004
196	980	2.99	0.321	2.09	0.004
197	985	2.99	0.321	2.10	0.004
198	990	3.00	0.322	2.10	0.004
199	995	3.00	0.323	2.10	0.004
200	1000	3.00	0.324	2.11	0.004
201	1005	3.00	0.324	2.11	0.004
202	1010	3.00	0.325	2.11	0.004
203	1015	3.01	0.326	2.12	0.004
204	1020	3.01	0.327	2.12	0.004
205	1025	3.01	0.327	2.12	0.004
206	1030	3.01	0.328	2.13	0.004
207	1035	3.01	0.329	2.13	0.004
208	1040	3.02	0.329	2.14	0.004
209	1045	3.02	0.330	2.14	0.004
210	1050	3.02	0.331	2.14	0.004
211	1055	3.02	0.332	2.15	0.004
212	1060	3.03	0.332	2.15	0.004
213	1065	3.03	0.333	2.15	0.004
214	1070	3.03	0.334	2.16	0.003
215	1075	3.03	0.334	2.16	0.003
216	1080	3.03	0.335	2.16	0.003
217	1085	3.04	0.336	2.17	0.003

218	1090	3.04	0.337	2.17	0.003
219	1095	3.04	0.337	2.17	0.003
220	1100	3.04	0.338	2.18	0.003
221	1105	3.04	0.339	2.18	0.003
222	1110	3.05	0.339	2.18	0.003
223	1115	3.05	0.340	2.19	0.003
224	1120	3.05	0.341	2.19	0.003
225	1125	3.05	0.341	2.19	0.003
226	1130	3.05	0.342	2.20	0.003
227	1135	3.05	0.343	2.20	0.003
228	1140	3.06	0.343	2.20	0.003
229	1145	3.06	0.344	2.21	0.003
230	1150	3.06	0.345	2.21	0.003
231	1155	3.06	0.345	2.21	0.003
232	1160	3.06	0.346	2.22	0.003
233	1165	3.07	0.347	2.22	0.003
234	1170	3.07	0.347	2.22	0.003
235	1175	3.07	0.348	2.23	0.003
236	1180	3.07	0.348	2.23	0.003
237	1185	3.07	0.349	2.23	0.003
238	1190	3.08	0.350	2.24	0.003
239	1195	3.08	0.350	2.24	0.003
240	1200	3.08	0.351	2.24	0.003
241	1205	3.08	0.352	2.25	0.003
242	1210	3.08	0.352	2.25	0.003
243	1215	3.08	0.353	2.25	0.003
244	1220	3.09	0.353	2.26	0.003
245	1225	3.09	0.354	2.26	0.003
246	1230	3.09	0.355	2.26	0.003
247	1235	3.09	0.355	2.27	0.003
248	1240	3.09	0.356	2.27	0.003
249	1245	3.10	0.357	2.27	0.003
250	1250	3.10	0.357	2.28	0.003
251	1255	3.10	0.358	2.28	0.003
252	1260	3.10	0.358	2.28	0.003
253	1265	3.10	0.359	2.29	0.003
254	1270	3.10	0.360	2.29	0.003
255	1275	3.11	0.360	2.29	0.003
256	1280	3.11	0.361	2.29	0.003
257	1285	3.11	0.361	2.30	0.003
258	1290	3.11	0.362	2.30	0.003
259	1295	3.11	0.362	2.30	0.003
260	1300	3.11	0.363	2.31	0.003
261	1305	3.12	0.364	2.31	0.003
262	1310	3.12	0.364	2.31	0.003
263	1315	3.12	0.365	2.32	0.003
264	1320	3.12	0.365	2.32	0.003
265	1325	3.12	0.366	2.32	0.003
266	1330	3.12	0.366	2.33	0.003
267	1335	3.13	0.367	2.33	0.003
268	1340	3.13	0.368	2.33	0.003
269	1345	3.13	0.368	2.33	0.003
270	1350	3.13	0.369	2.34	0.003
271	1355	3.13	0.369	2.34	0.003
272	1360	3.13	0.370	2.34	0.003

273	1365	3.14	0.370	2.35	0.003
274	1370	3.14	0.371	2.35	0.003
275	1375	3.14	0.371	2.35	0.003
276	1380	3.14	0.372	2.36	0.003
277	1385	3.14	0.373	2.36	0.003
278	1390	3.14	0.373	2.36	0.003
279	1395	3.14	0.374	2.36	0.003
280	1400	3.15	0.374	2.37	0.003
281	1405	3.15	0.375	2.37	0.003
282	1410	3.15	0.375	2.37	0.003
283	1415	3.15	0.376	2.38	0.003
284	1420	3.15	0.376	2.38	0.003
285	1425	3.15	0.377	2.38	0.003
286	1430	3.16	0.377	2.38	0.003
287	1435	3.16	0.378	2.39	0.003
288	1440	3.16	0.378	2.39	0.003

24-hr 10-yr Rainfall Hyetograph

Time (min)	Time (hrs)	Interpolated Increment No.	Increment Rainfall (in)
0	0.00	288	0.003
5	0.08	287	0.003
10	0.17	285	0.003
15	0.25	284	0.003
20	0.33	282	0.003
25	0.42	281	0.003
30	0.50	279	0.003
35	0.58	278	0.003
40	0.67	276	0.003
45	0.75	275	0.003
50	0.83	273	0.003
55	0.92	272	0.003
60	1.00	270	0.003
65	1.08	269	0.003
70	1.17	267	0.003
75	1.25	266	0.003
80	1.33	264	0.003
85	1.42	263	0.003
90	1.50	261	0.003
95	1.58	260	0.003
100	1.67	258	0.003
105	1.75	257	0.003
110	1.83	255	0.003
115	1.92	254	0.003
120	2.00	252	0.003
125	2.08	251	0.003
130	2.17	249	0.003
135	2.25	248	0.003
140	2.33	246	0.003
145	2.42	245	0.003
150	2.50	243	0.003
155	2.58	242	0.003
160	2.67	240	0.003
165	2.75	239	0.003
170	2.83	237	0.003
175	2.92	236	0.003
180	3.00	234	0.003
185	3.08	233	0.003
190	3.17	231	0.003
195	3.25	230	0.003
200	3.33	228	0.003
205	3.42	227	0.003
210	3.50	225	0.003
215	3.58	224	0.003
220	3.67	222	0.003
225	3.75	221	0.003
230	3.83	219	0.003
235	3.92	218	0.003
240	4.00	216	0.003
245	4.08	215	0.003
250	4.17	213	0.004
255	4.25	212	0.004
260	4.33	210	0.004

265	4.42	209	0.004
270	4.50	207	0.004
275	4.58	206	0.004
280	4.67	204	0.004
285	4.75	203	0.004
290	4.83	201	0.004
295	4.92	200	0.004
300	5.00	198	0.004
305	5.08	197	0.004
310	5.17	195	0.004
315	5.25	194	0.004
320	5.33	192	0.004
325	5.42	191	0.004
330	5.50	189	0.004
335	5.58	188	0.004
340	5.67	186	0.004
345	5.75	185	0.004
350	5.83	183	0.004
355	5.92	182	0.004
360	6.00	180	0.004
365	6.08	179	0.004
370	6.17	177	0.004
375	6.25	176	0.004
380	6.33	174	0.004
385	6.42	173	0.004
390	6.50	171	0.004
395	6.58	170	0.004
400	6.67	168	0.004
405	6.75	167	0.004
410	6.83	165	0.004
415	6.92	164	0.004
420	7.00	162	0.004
425	7.08	161	0.004
430	7.17	159	0.004
435	7.25	158	0.004
440	7.33	156	0.004
445	7.42	155	0.004
450	7.50	153	0.004
455	7.58	152	0.004
460	7.67	150	0.004
465	7.75	149	0.004
470	7.83	147	0.004
475	7.92	146	0.004
480	8.00	144	0.005
485	8.08	143	0.005
490	8.17	141	0.005
495	8.25	140	0.006
500	8.33	138	0.006
505	8.42	137	0.006
510	8.50	135	0.006
515	8.58	134	0.006
520	8.67	132	0.006
525	8.75	131	0.006
530	8.83	129	0.006
535	8.92	128	0.006

540	9.00	126	0.006
545	9.08	125	0.006
550	9.17	123	0.006
555	9.25	122	0.006
560	9.33	120	0.006
565	9.42	119	0.006
570	9.50	117	0.006
575	9.58	116	0.006
580	9.67	114	0.006
585	9.75	113	0.006
590	9.83	111	0.006
595	9.92	110	0.006
600	10.00	108	0.006
605	10.08	107	0.006
610	10.17	105	0.007
615	10.25	104	0.007
620	10.33	102	0.007
625	10.42	101	0.007
630	10.50	99	0.007
635	10.58	98	0.007
640	10.67	96	0.007
645	10.75	95	0.007
650	10.83	93	0.007
655	10.92	92	0.007
660	11.00	90	0.007
665	11.08	89	0.007
670	11.17	87	0.007
675	11.25	86	0.007
680	11.33	84	0.007
685	11.42	83	0.008
690	11.50	81	0.008
695	11.58	80	0.008
700	11.67	78	0.008
705	11.75	77	0.008
710	11.83	75	0.008
715	11.92	74	0.008
720	12.00	72	0.009
725	12.08	71	0.009
730	12.17	69	0.009
735	12.25	68	0.009
740	12.33	66	0.009
745	12.42	65	0.009
750	12.50	63	0.009
755	12.58	62	0.009
760	12.67	60	0.010
765	12.75	59	0.010
770	12.83	57	0.010
775	12.92	56	0.010
780	13.00	54	0.010
785	13.08	53	0.010
790	13.17	51	0.010
795	13.25	50	0.011
800	13.33	48	0.011
805	13.42	47	0.011
810	13.50	45	0.011

815	13.58	44	0.011
820	13.67	42	0.012
825	13.75	41	0.012
830	13.83	39	0.012
835	13.92	38	0.012
840	14.00	36	0.013
845	14.08	35	0.013
850	14.17	33	0.014
855	14.25	32	0.014
860	14.33	30	0.014
865	14.42	29	0.015
870	14.50	27	0.015
875	14.58	26	0.016
880	14.67	24	0.017
885	14.75	23	0.017
890	14.83	21	0.018
895	14.92	20	0.018
900	15.00	18	0.020
905	15.08	17	0.020
910	15.17	15	0.022
915	15.25	14	0.023
920	15.33	12	0.027
925	15.42	11	0.028
930	15.50	9	0.031
935	15.58	8	0.033
940	15.67	6	0.038
945	15.75	5	0.042
950	15.83	3	0.055
955	15.92	2	0.080
960	16.00	1	0.185
965	16.08	4	0.048
970	16.17	7	0.036
975	16.25	10	0.030
980	16.33	13	0.024
985	16.42	16	0.021
990	16.50	19	0.019
995	16.58	22	0.017
1000	16.67	25	0.016
1005	16.75	28	0.015
1010	16.83	31	0.014
1015	16.92	34	0.013
1020	17.00	37	0.013
1025	17.08	40	0.012
1030	17.17	43	0.012
1035	17.25	46	0.011
1040	17.33	49	0.011
1045	17.42	52	0.010
1050	17.50	55	0.010
1055	17.58	58	0.010
1060	17.67	61	0.009
1065	17.75	64	0.009
1070	17.83	67	0.009
1075	17.92	70	0.009
1080	18.00	73	0.008
1085	18.08	76	0.008

1090	18.17	79	0.008
1095	18.25	82	0.008
1100	18.33	85	0.007
1105	18.42	88	0.007
1110	18.50	91	0.007
1115	18.58	94	0.007
1120	18.67	97	0.007
1125	18.75	100	0.007
1130	18.83	103	0.007
1135	18.92	106	0.007
1140	19.00	109	0.006
1145	19.08	112	0.006
1150	19.17	115	0.006
1155	19.25	118	0.006
1160	19.33	121	0.006
1165	19.42	124	0.006
1170	19.50	127	0.006
1175	19.58	130	0.006
1180	19.67	133	0.006
1185	19.75	136	0.006
1190	19.83	139	0.006
1195	19.92	142	0.005
1200	20.00	145	0.005
1205	20.08	148	0.004
1210	20.17	151	0.004
1215	20.25	154	0.004
1220	20.33	157	0.004
1225	20.42	160	0.004
1230	20.50	163	0.004
1235	20.58	166	0.004
1240	20.67	169	0.004
1245	20.75	172	0.004
1250	20.83	175	0.004
1255	20.92	178	0.004
1260	21.00	181	0.004
1265	21.08	184	0.004
1270	21.17	187	0.004
1275	21.25	190	0.004
1280	21.33	193	0.004
1285	21.42	196	0.004
1290	21.50	199	0.004
1295	21.58	202	0.004
1300	21.67	205	0.004
1305	21.75	208	0.004
1310	21.83	211	0.004
1315	21.92	214	0.003
1320	22.00	217	0.003
1325	22.08	220	0.003
1330	22.17	223	0.003
1335	22.25	226	0.003
1340	22.33	229	0.003
1345	22.42	232	0.003
1350	22.50	235	0.003
1355	22.58	238	0.003
1360	22.67	241	0.003

1365	22.75	244	0.003
1370	22.83	247	0.003
1375	22.92	250	0.003
1380	23.00	253	0.003
1385	23.08	256	0.003
1390	23.17	259	0.003
1395	23.25	262	0.003
1400	23.33	265	0.003
1405	23.42	268	0.003
1410	23.50	271	0.003
1415	23.58	274	0.003
1420	23.67	277	0.003
1425	23.75	280	0.003
1430	23.83	283	0.003
1435	23.92	286	0.003

Nested Rainfall Hydrograph Spreadsheet

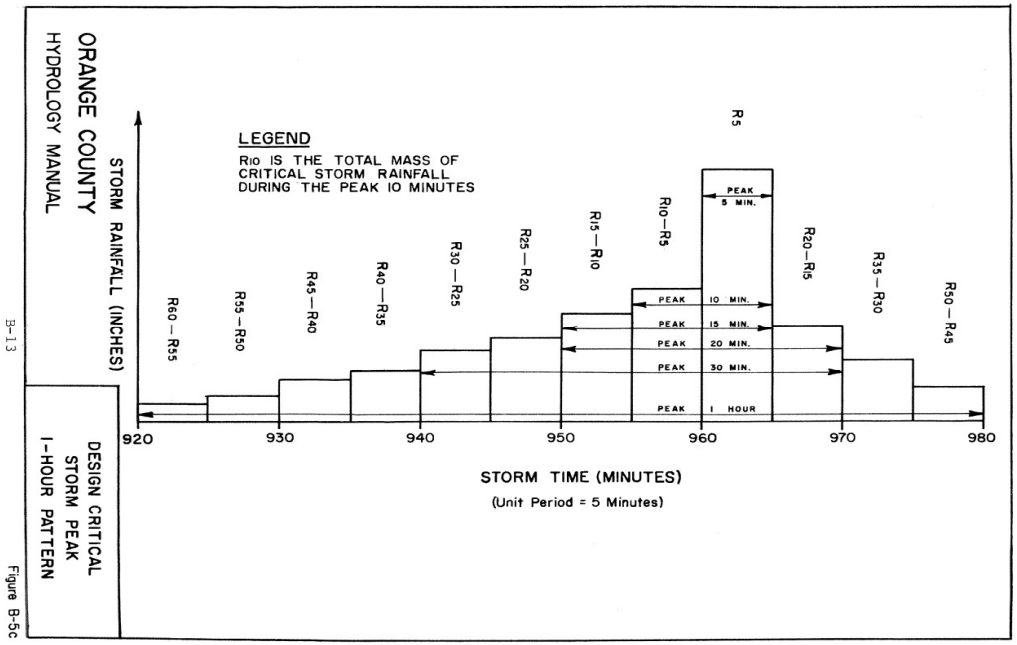
This spreadsheet was created by Madeline Howell with formatting help from Molly Foster on 9/2025.
The purpose of this spreadsheet is to generate a 24-hour hyetograph for a nested storm pattern given rainfall depths for various durations
The "Interpolated_Rainfall" tab uses log-log interpolation to generate rainfall depths for each 5 minutes of a 24-hour storm
The "Hyetograph" tab uses these interpolated rainfall depths to generate a 24-hour hyetograph following methods in the San Diego County and Orange County Hydrology Manuals.

Project Number: 12660347
Project Name: Del Mar Fairgrounds
Last Edited: 9/2/2025
Last Edited By: Molly Foster

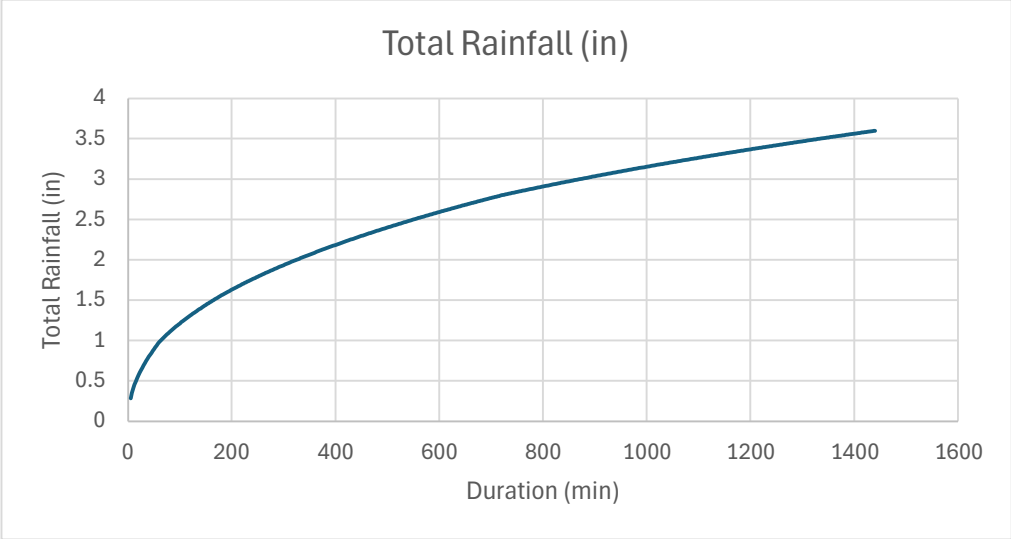
Inputs are in green

Duration	Duration (min)	Log(Duration)	Rainfall (in)	Log(Rainfall)
5-min	5	0.70	0.285	-0.545
10-min	10	1.00	0.409	-0.388
15-min	15	1.18	0.494	-0.306
30-min	30	1.48	0.693	-0.159
60-min	60	1.78	0.98	-0.009
2-hr	120	2.08	1.31	0.117
3-hr	180	2.26	1.56	0.193
6-hr	360	2.56	2.09	0.320
12-hr	720	2.86	2.8	0.447
24-hr	1440	3.16	3.6	0.556

Rainfall inputs from NOAA Atlas 14



cells highlighted blue contain rainfall data from NOAA, white cells contain interpolated data intervals



Rainfall Interpolation to 5 min Interval					
Increment No.	Duration (min)	Log(Duration)	Log(Rain)	Total Rainfall (in)	Incremental Rainfall (in)
1	5	0.70	-0.545	0.285	0.285
2	10	1.00	-0.388	0.41	0.124
3	15	1.18	-0.306	0.49	0.085
4	20	1.30	-0.245	0.57	0.075
5	25	1.40	-0.198	0.63	0.065
6	30	1.48	-0.159	0.69	0.059
7	35	1.54	-0.126	0.75	0.056
8	40	1.60	-0.097	0.80	0.052
9	45	1.65	-0.071	0.85	0.049
10	50	1.70	-0.048	0.89	0.046
11	55	1.74	-0.028	0.94	0.044
12	60	1.78	-0.009	0.98	0.042
13	65	1.81	0.006	1.01	0.033
14	70	1.85	0.019	1.05	0.032
15	75	1.88	0.032	1.08	0.031
16	80	1.90	0.044	1.11	0.029
17	85	1.93	0.055	1.13	0.028
18	90	1.95	0.065	1.16	0.027
19	95	1.98	0.075	1.19	0.027
20	100	2.00	0.084	1.21	0.026
21	105	2.02	0.093	1.24	0.025
22	110	2.04	0.101	1.26	0.024
23	115	2.06	0.110	1.29	0.024
24	120	2.08	0.117	1.31	0.023
25	125	2.10	0.125	1.33	0.023
26	130	2.11	0.132	1.36	0.023
27	135	2.13	0.139	1.38	0.022
28	140	2.15	0.146	1.40	0.022
29	145	2.16	0.153	1.42	0.021
30	150	2.18	0.159	1.44	0.021
31	155	2.19	0.165	1.46	0.021
32	160	2.20	0.171	1.48	0.020
33	165	2.22	0.177	1.50	0.020
34	170	2.23	0.182	1.52	0.019
35	175	2.24	0.188	1.54	0.019
36	180	2.26	0.193	1.56	0.019
37	185	2.27	0.198	1.58	0.018
38	190	2.28	0.203	1.60	0.018
39	195	2.29	0.208	1.61	0.018
40	200	2.30	0.212	1.63	0.017
41	205	2.31	0.217	1.65	0.017
42	210	2.32	0.221	1.66	0.017
43	215	2.33	0.226	1.68	0.017
44	220	2.34	0.230	1.70	0.016
45	225	2.35	0.234	1.71	0.016
46	230	2.36	0.238	1.73	0.016
47	235	2.37	0.242	1.75	0.016
48	240	2.38	0.246	1.76	0.016
49	245	2.39	0.250	1.78	0.015
50	250	2.40	0.253	1.79	0.015
51	255	2.41	0.257	1.81	0.015
52	260	2.41	0.261	1.82	0.015

53	265	2.42	0.264	1.84	0.015
54	270	2.43	0.267	1.85	0.015
55	275	2.44	0.271	1.87	0.014
56	280	2.45	0.274	1.88	0.014
57	285	2.45	0.277	1.89	0.014
58	290	2.46	0.281	1.91	0.014
59	295	2.47	0.284	1.92	0.014
60	300	2.48	0.287	1.94	0.014
61	305	2.48	0.290	1.95	0.014
62	310	2.49	0.293	1.96	0.013
63	315	2.50	0.296	1.98	0.013
64	320	2.51	0.299	1.99	0.013
65	325	2.51	0.301	2.00	0.013
66	330	2.52	0.304	2.01	0.013
67	335	2.53	0.307	2.03	0.013
68	340	2.53	0.310	2.04	0.013
69	345	2.54	0.312	2.05	0.013
70	350	2.54	0.315	2.07	0.013
71	355	2.55	0.318	2.08	0.012
72	360	2.56	0.320	2.09	0.012
73	365	2.56	0.323	2.10	0.012
74	370	2.57	0.325	2.11	0.012
75	375	2.57	0.328	2.13	0.012
76	380	2.58	0.330	2.14	0.012
77	385	2.59	0.332	2.15	0.012
78	390	2.59	0.335	2.16	0.012
79	395	2.60	0.337	2.17	0.012
80	400	2.60	0.339	2.19	0.012
81	405	2.61	0.342	2.20	0.011
82	410	2.61	0.344	2.21	0.011
83	415	2.62	0.346	2.22	0.011
84	420	2.62	0.348	2.23	0.011
85	425	2.63	0.351	2.24	0.011
86	430	2.63	0.353	2.25	0.011
87	435	2.64	0.355	2.26	0.011
88	440	2.64	0.357	2.27	0.011
89	445	2.65	0.359	2.29	0.011
90	450	2.65	0.361	2.30	0.011
91	455	2.66	0.363	2.31	0.011
92	460	2.66	0.365	2.32	0.011
93	465	2.67	0.367	2.33	0.011
94	470	2.67	0.369	2.34	0.011
95	475	2.68	0.371	2.35	0.010
96	480	2.68	0.373	2.36	0.010
97	485	2.69	0.375	2.37	0.010
98	490	2.69	0.377	2.38	0.010
99	495	2.69	0.378	2.39	0.010
100	500	2.70	0.380	2.40	0.010
101	505	2.70	0.382	2.41	0.010
102	510	2.71	0.384	2.42	0.010
103	515	2.71	0.386	2.43	0.010
104	520	2.72	0.388	2.44	0.010
105	525	2.72	0.389	2.45	0.010
106	530	2.72	0.391	2.46	0.010
107	535	2.73	0.393	2.47	0.010

108	540	2.73	0.394	2.48	0.010
109	545	2.74	0.396	2.49	0.010
110	550	2.74	0.398	2.50	0.010
111	555	2.74	0.399	2.51	0.010
112	560	2.75	0.401	2.52	0.010
113	565	2.75	0.403	2.53	0.009
114	570	2.76	0.404	2.54	0.009
115	575	2.76	0.406	2.55	0.009
116	580	2.76	0.408	2.56	0.009
117	585	2.77	0.409	2.57	0.009
118	590	2.77	0.411	2.57	0.009
119	595	2.77	0.412	2.58	0.009
120	600	2.78	0.414	2.59	0.009
121	605	2.78	0.415	2.60	0.009
122	610	2.79	0.417	2.61	0.009
123	615	2.79	0.418	2.62	0.009
124	620	2.79	0.420	2.63	0.009
125	625	2.80	0.421	2.64	0.009
126	630	2.80	0.423	2.65	0.009
127	635	2.80	0.424	2.66	0.009
128	640	2.81	0.426	2.66	0.009
129	645	2.81	0.427	2.67	0.009
130	650	2.81	0.428	2.68	0.009
131	655	2.82	0.430	2.69	0.009
132	660	2.82	0.431	2.70	0.009
133	665	2.82	0.433	2.71	0.009
134	670	2.83	0.434	2.72	0.009
135	675	2.83	0.435	2.72	0.009
136	680	2.83	0.437	2.73	0.008
137	685	2.84	0.438	2.74	0.008
138	690	2.84	0.439	2.75	0.008
139	695	2.84	0.441	2.76	0.008
140	700	2.85	0.442	2.77	0.008
141	705	2.85	0.443	2.78	0.008
142	710	2.85	0.445	2.78	0.008
143	715	2.85	0.446	2.79	0.008
144	720	2.86	0.447	2.80	0.008
145	725	2.86	0.448	2.81	0.007
146	730	2.86	0.449	2.81	0.007
147	735	2.87	0.450	2.82	0.007
148	740	2.87	0.451	2.83	0.007
149	745	2.87	0.453	2.83	0.007
150	750	2.88	0.454	2.84	0.007
151	755	2.88	0.455	2.85	0.007
152	760	2.88	0.456	2.86	0.007
153	765	2.88	0.457	2.86	0.007
154	770	2.89	0.458	2.87	0.007
155	775	2.89	0.459	2.88	0.007
156	780	2.89	0.460	2.88	0.007
157	785	2.89	0.461	2.89	0.007
158	790	2.90	0.462	2.90	0.007
159	795	2.90	0.463	2.90	0.007
160	800	2.90	0.464	2.91	0.007
161	805	2.91	0.465	2.92	0.007
162	810	2.91	0.466	2.92	0.007

163	815	2.91	0.467	2.93	0.007
164	820	2.91	0.468	2.94	0.007
165	825	2.92	0.469	2.94	0.006
166	830	2.92	0.470	2.95	0.006
167	835	2.92	0.470	2.95	0.006
168	840	2.92	0.471	2.96	0.006
169	845	2.93	0.472	2.97	0.006
170	850	2.93	0.473	2.97	0.006
171	855	2.93	0.474	2.98	0.006
172	860	2.93	0.475	2.99	0.006
173	865	2.94	0.476	2.99	0.006
174	870	2.94	0.477	3.00	0.006
175	875	2.94	0.478	3.01	0.006
176	880	2.94	0.479	3.01	0.006
177	885	2.95	0.480	3.02	0.006
178	890	2.95	0.481	3.02	0.006
179	895	2.95	0.481	3.03	0.006
180	900	2.95	0.482	3.04	0.006
181	905	2.96	0.483	3.04	0.006
182	910	2.96	0.484	3.05	0.006
183	915	2.96	0.485	3.05	0.006
184	920	2.96	0.486	3.06	0.006
185	925	2.97	0.487	3.07	0.006
186	930	2.97	0.487	3.07	0.006
187	935	2.97	0.488	3.08	0.006
188	940	2.97	0.489	3.08	0.006
189	945	2.98	0.490	3.09	0.006
190	950	2.98	0.491	3.10	0.006
191	955	2.98	0.492	3.10	0.006
192	960	2.98	0.492	3.11	0.006
193	965	2.98	0.493	3.11	0.006
194	970	2.99	0.494	3.12	0.006
195	975	2.99	0.495	3.13	0.006
196	980	2.99	0.496	3.13	0.006
197	985	2.99	0.497	3.14	0.006
198	990	3.00	0.497	3.14	0.006
199	995	3.00	0.498	3.15	0.006
200	1000	3.00	0.499	3.15	0.006
201	1005	3.00	0.500	3.16	0.006
202	1010	3.00	0.500	3.17	0.006
203	1015	3.01	0.501	3.17	0.006
204	1020	3.01	0.502	3.18	0.006
205	1025	3.01	0.503	3.18	0.006
206	1030	3.01	0.504	3.19	0.006
207	1035	3.01	0.504	3.19	0.006
208	1040	3.02	0.505	3.20	0.006
209	1045	3.02	0.506	3.20	0.006
210	1050	3.02	0.507	3.21	0.006
211	1055	3.02	0.507	3.22	0.006
212	1060	3.03	0.508	3.22	0.006
213	1065	3.03	0.509	3.23	0.006
214	1070	3.03	0.510	3.23	0.005
215	1075	3.03	0.510	3.24	0.005
216	1080	3.03	0.511	3.24	0.005
217	1085	3.04	0.512	3.25	0.005

218	1090	3.04	0.512	3.25	0.005
219	1095	3.04	0.513	3.26	0.005
220	1100	3.04	0.514	3.27	0.005
221	1105	3.04	0.515	3.27	0.005
222	1110	3.05	0.515	3.28	0.005
223	1115	3.05	0.516	3.28	0.005
224	1120	3.05	0.517	3.29	0.005
225	1125	3.05	0.517	3.29	0.005
226	1130	3.05	0.518	3.30	0.005
227	1135	3.05	0.519	3.30	0.005
228	1140	3.06	0.520	3.31	0.005
229	1145	3.06	0.520	3.31	0.005
230	1150	3.06	0.521	3.32	0.005
231	1155	3.06	0.522	3.32	0.005
232	1160	3.06	0.522	3.33	0.005
233	1165	3.07	0.523	3.33	0.005
234	1170	3.07	0.524	3.34	0.005
235	1175	3.07	0.524	3.34	0.005
236	1180	3.07	0.525	3.35	0.005
237	1185	3.07	0.526	3.35	0.005
238	1190	3.08	0.526	3.36	0.005
239	1195	3.08	0.527	3.36	0.005
240	1200	3.08	0.528	3.37	0.005
241	1205	3.08	0.528	3.37	0.005
242	1210	3.08	0.529	3.38	0.005
243	1215	3.08	0.530	3.38	0.005
244	1220	3.09	0.530	3.39	0.005
245	1225	3.09	0.531	3.40	0.005
246	1230	3.09	0.531	3.40	0.005
247	1235	3.09	0.532	3.41	0.005
248	1240	3.09	0.533	3.41	0.005
249	1245	3.10	0.533	3.41	0.005
250	1250	3.10	0.534	3.42	0.005
251	1255	3.10	0.535	3.42	0.005
252	1260	3.10	0.535	3.43	0.005
253	1265	3.10	0.536	3.43	0.005
254	1270	3.10	0.537	3.44	0.005
255	1275	3.11	0.537	3.44	0.005
256	1280	3.11	0.538	3.45	0.005
257	1285	3.11	0.538	3.45	0.005
258	1290	3.11	0.539	3.46	0.005
259	1295	3.11	0.540	3.46	0.005
260	1300	3.11	0.540	3.47	0.005
261	1305	3.12	0.541	3.47	0.005
262	1310	3.12	0.541	3.48	0.005
263	1315	3.12	0.542	3.48	0.005
264	1320	3.12	0.543	3.49	0.005
265	1325	3.12	0.543	3.49	0.005
266	1330	3.12	0.544	3.50	0.005
267	1335	3.13	0.544	3.50	0.005
268	1340	3.13	0.545	3.51	0.005
269	1345	3.13	0.546	3.51	0.005
270	1350	3.13	0.546	3.52	0.005
271	1355	3.13	0.547	3.52	0.005
272	1360	3.13	0.547	3.53	0.005

273	1365	3.14	0.548	3.53	0.005
274	1370	3.14	0.548	3.54	0.005
275	1375	3.14	0.549	3.54	0.005
276	1380	3.14	0.550	3.54	0.005
277	1385	3.14	0.550	3.55	0.005
278	1390	3.14	0.551	3.55	0.005
279	1395	3.14	0.551	3.56	0.005
280	1400	3.15	0.552	3.56	0.005
281	1405	3.15	0.552	3.57	0.005
282	1410	3.15	0.553	3.57	0.005
283	1415	3.15	0.554	3.58	0.005
284	1420	3.15	0.554	3.58	0.005
285	1425	3.15	0.555	3.59	0.005
286	1430	3.16	0.555	3.59	0.005
287	1435	3.16	0.556	3.60	0.005
288	1440	3.16	0.556	3.60	0.005

24-hr 100-yr Rainfall Hyetograph

Time (min)	Time (hrs)	Interpolated Increment No.	Increment Rainfall (in)
0	0.00	288	0.005
5	0.08	287	0.005
10	0.17	285	0.005
15	0.25	284	0.005
20	0.33	282	0.005
25	0.42	281	0.005
30	0.50	279	0.005
35	0.58	278	0.005
40	0.67	276	0.005
45	0.75	275	0.005
50	0.83	273	0.005
55	0.92	272	0.005
60	1.00	270	0.005
65	1.08	269	0.005
70	1.17	267	0.005
75	1.25	266	0.005
80	1.33	264	0.005
85	1.42	263	0.005
90	1.50	261	0.005
95	1.58	260	0.005
100	1.67	258	0.005
105	1.75	257	0.005
110	1.83	255	0.005
115	1.92	254	0.005
120	2.00	252	0.005
125	2.08	251	0.005
130	2.17	249	0.005
135	2.25	248	0.005
140	2.33	246	0.005
145	2.42	245	0.005
150	2.50	243	0.005
155	2.58	242	0.005
160	2.67	240	0.005
165	2.75	239	0.005
170	2.83	237	0.005
175	2.92	236	0.005
180	3.00	234	0.005
185	3.08	233	0.005
190	3.17	231	0.005
195	3.25	230	0.005
200	3.33	228	0.005
205	3.42	227	0.005
210	3.50	225	0.005
215	3.58	224	0.005
220	3.67	222	0.005
225	3.75	221	0.005
230	3.83	219	0.005
235	3.92	218	0.005
240	4.00	216	0.005
245	4.08	215	0.005
250	4.17	213	0.006
255	4.25	212	0.006
260	4.33	210	0.006

265	4.42	209	0.006
270	4.50	207	0.006
275	4.58	206	0.006
280	4.67	204	0.006
285	4.75	203	0.006
290	4.83	201	0.006
295	4.92	200	0.006
300	5.00	198	0.006
305	5.08	197	0.006
310	5.17	195	0.006
315	5.25	194	0.006
320	5.33	192	0.006
325	5.42	191	0.006
330	5.50	189	0.006
335	5.58	188	0.006
340	5.67	186	0.006
345	5.75	185	0.006
350	5.83	183	0.006
355	5.92	182	0.006
360	6.00	180	0.006
365	6.08	179	0.006
370	6.17	177	0.006
375	6.25	176	0.006
380	6.33	174	0.006
385	6.42	173	0.006
390	6.50	171	0.006
395	6.58	170	0.006
400	6.67	168	0.006
405	6.75	167	0.006
410	6.83	165	0.006
415	6.92	164	0.007
420	7.00	162	0.007
425	7.08	161	0.007
430	7.17	159	0.007
435	7.25	158	0.007
440	7.33	156	0.007
445	7.42	155	0.007
450	7.50	153	0.007
455	7.58	152	0.007
460	7.67	150	0.007
465	7.75	149	0.007
470	7.83	147	0.007
475	7.92	146	0.007
480	8.00	144	0.008
485	8.08	143	0.008
490	8.17	141	0.008
495	8.25	140	0.008
500	8.33	138	0.008
505	8.42	137	0.008
510	8.50	135	0.009
515	8.58	134	0.009
520	8.67	132	0.009
525	8.75	131	0.009
530	8.83	129	0.009
535	8.92	128	0.009

540	9.00	126	0.009
545	9.08	125	0.009
550	9.17	123	0.009
555	9.25	122	0.009
560	9.33	120	0.009
565	9.42	119	0.009
570	9.50	117	0.009
575	9.58	116	0.009
580	9.67	114	0.009
585	9.75	113	0.009
590	9.83	111	0.010
595	9.92	110	0.010
600	10.00	108	0.010
605	10.08	107	0.010
610	10.17	105	0.010
615	10.25	104	0.010
620	10.33	102	0.010
625	10.42	101	0.010
630	10.50	99	0.010
635	10.58	98	0.010
640	10.67	96	0.010
645	10.75	95	0.010
650	10.83	93	0.011
655	10.92	92	0.011
660	11.00	90	0.011
665	11.08	89	0.011
670	11.17	87	0.011
675	11.25	86	0.011
680	11.33	84	0.011
685	11.42	83	0.011
690	11.50	81	0.011
695	11.58	80	0.012
700	11.67	78	0.012
705	11.75	77	0.012
710	11.83	75	0.012
715	11.92	74	0.012
720	12.00	72	0.012
725	12.08	71	0.012
730	12.17	69	0.013
735	12.25	68	0.013
740	12.33	66	0.013
745	12.42	65	0.013
750	12.50	63	0.013
755	12.58	62	0.013
760	12.67	60	0.014
765	12.75	59	0.014
770	12.83	57	0.014
775	12.92	56	0.014
780	13.00	54	0.015
785	13.08	53	0.015
790	13.17	51	0.015
795	13.25	50	0.015
800	13.33	48	0.016
805	13.42	47	0.016
810	13.50	45	0.016

815	13.58	44	0.016
820	13.67	42	0.017
825	13.75	41	0.017
830	13.83	39	0.018
835	13.92	38	0.018
840	14.00	36	0.019
845	14.08	35	0.019
850	14.17	33	0.020
855	14.25	32	0.020
860	14.33	30	0.021
865	14.42	29	0.021
870	14.50	27	0.022
875	14.58	26	0.023
880	14.67	24	0.023
885	14.75	23	0.024
890	14.83	21	0.025
895	14.92	20	0.026
900	15.00	18	0.027
905	15.08	17	0.028
910	15.17	15	0.031
915	15.25	14	0.032
920	15.33	12	0.042
925	15.42	11	0.044
930	15.50	9	0.049
935	15.58	8	0.052
940	15.67	6	0.059
945	15.75	5	0.065
950	15.83	3	0.085
955	15.92	2	0.124
960	16.00	1	0.285
965	16.08	4	0.075
970	16.17	7	0.056
975	16.25	10	0.046
980	16.33	13	0.033
985	16.42	16	0.029
990	16.50	19	0.027
995	16.58	22	0.024
1000	16.67	25	0.023
1005	16.75	28	0.022
1010	16.83	31	0.021
1015	16.92	34	0.019
1020	17.00	37	0.018
1025	17.08	40	0.017
1030	17.17	43	0.017
1035	17.25	46	0.016
1040	17.33	49	0.015
1045	17.42	52	0.015
1050	17.50	55	0.014
1055	17.58	58	0.014
1060	17.67	61	0.014
1065	17.75	64	0.013
1070	17.83	67	0.013
1075	17.92	70	0.013
1080	18.00	73	0.012
1085	18.08	76	0.012

1090	18.17	79	0.012
1095	18.25	82	0.011
1100	18.33	85	0.011
1105	18.42	88	0.011
1110	18.50	91	0.011
1115	18.58	94	0.011
1120	18.67	97	0.010
1125	18.75	100	0.010
1130	18.83	103	0.010
1135	18.92	106	0.010
1140	19.00	109	0.010
1145	19.08	112	0.010
1150	19.17	115	0.009
1155	19.25	118	0.009
1160	19.33	121	0.009
1165	19.42	124	0.009
1170	19.50	127	0.009
1175	19.58	130	0.009
1180	19.67	133	0.009
1185	19.75	136	0.008
1190	19.83	139	0.008
1195	19.92	142	0.008
1200	20.00	145	0.007
1205	20.08	148	0.007
1210	20.17	151	0.007
1215	20.25	154	0.007
1220	20.33	157	0.007
1225	20.42	160	0.007
1230	20.50	163	0.007
1235	20.58	166	0.006
1240	20.67	169	0.006
1245	20.75	172	0.006
1250	20.83	175	0.006
1255	20.92	178	0.006
1260	21.00	181	0.006
1265	21.08	184	0.006
1270	21.17	187	0.006
1275	21.25	190	0.006
1280	21.33	193	0.006
1285	21.42	196	0.006
1290	21.50	199	0.006
1295	21.58	202	0.006
1300	21.67	205	0.006
1305	21.75	208	0.006
1310	21.83	211	0.006
1315	21.92	214	0.005
1320	22.00	217	0.005
1325	22.08	220	0.005
1330	22.17	223	0.005
1335	22.25	226	0.005
1340	22.33	229	0.005
1345	22.42	232	0.005
1350	22.50	235	0.005
1355	22.58	238	0.005
1360	22.67	241	0.005

1365	22.75	244	0.005
1370	22.83	247	0.005
1375	22.92	250	0.005
1380	23.00	253	0.005
1385	23.08	256	0.005
1390	23.17	259	0.005
1395	23.25	262	0.005
1400	23.33	265	0.005
1405	23.42	268	0.005
1410	23.50	271	0.005
1415	23.58	274	0.005
1420	23.67	277	0.005
1425	23.75	280	0.005
1430	23.83	283	0.005
1435	23.92	286	0.005

Appendix D

Land Use Data, Curve Numbers, and Manning's N Values

Table D-1 Manning's n values based on land use

Land Use	Manning's n
Pavement (Roads, Parking Lots)	0.020
Unconsolidated Shore	0.023
Hard Packed Dirt (Horse Tracks)/ Barren Land	0.025
Open Water (including San Dieguito River)/ Cultivated Crops	0.035
Grassland-Herbaceous/ Pasture-Hay	0.037
Developed - Open Space	0.040
Palustrine Forested Wetland	0.045
Estuarine Aquatic Bed	0.050
Developed - Low Intensity/ Palustrine Scrub-Shrub Wetland/ Estuarine Scrub-Shrub Wetland	0.070
Estuarine Emergent Wetland	0.073
Palustrine Emergent Wetland	0.085
Developed- Low Intensity	0.090
Estuarine Forested Wetland	0.100
Scrub-Shrub/ Evergreen Forest/ Developed - Medium Intensity/ Fairgrounds Buildings	0.120
Mixed Forest	0.140
Developed - High Intensity/ Deciduous Forest	0.150

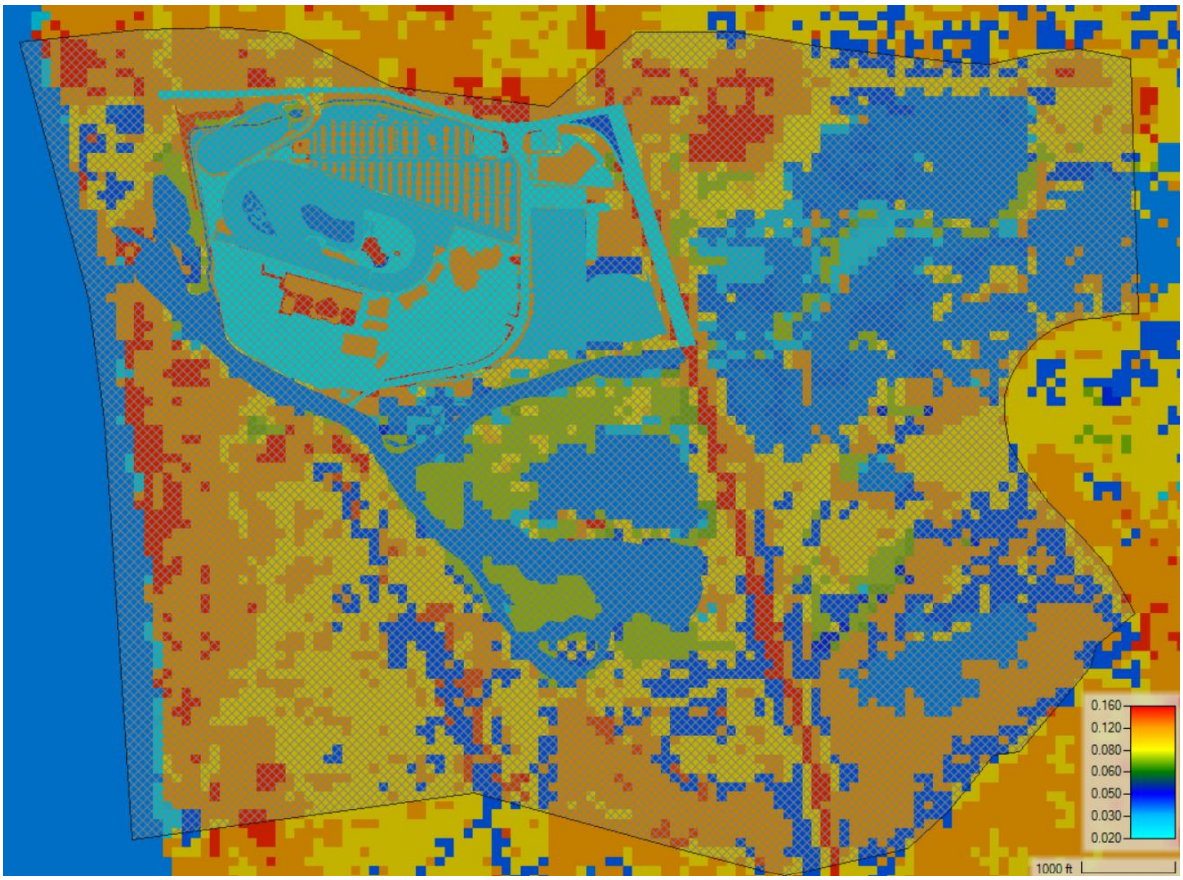


Figure D-1 Manning's n values within HEC-RAS 2D model domain

LandUse	SD LandType	SoilType	SoilClass	CurveNumber
NoData	residential districts, 1 acre	NoData	D	84
NoData	residential districts, 1 acre	A	A	51
NoData	residential districts, 1 acre	B	B	68
NoData	residential districts, 1 acre	C	C	79
NoData	residential districts, 1 acre	D	D	84
Estuarine Aquatic Bed	water surfaces	NoData	D	99
Estuarine Aquatic Bed	water surfaces	A	A	97
Estuarine Aquatic Bed	water surfaces	B	B	98
Estuarine Aquatic Bed	water surfaces	C	C	99
Estuarine Aquatic Bed	water surfaces	D	D	99
Open Water	water surfaces	NoData	D	99
Open Water	water surfaces	A	A	97
Open Water	water surfaces	B	B	98
Open Water	water surfaces	C	C	99
Open Water	water surfaces	D	D	99
Developed - Medium Intensity	residential districts, 1/8 acre	NoData	D	92
Developed - Medium Intensity	residential districts, 1/8 acre	A	A	77
Developed - Medium Intensity	residential districts, 1/8 acre	B	B	85
Developed - Medium Intensity	residential districts, 1/8 acre	C	C	90
Developed - Medium Intensity	residential districts, 1/8 acre	D	D	92
Developed - Low Intensity	residential districts, 1 acre	NoData	D	84
Developed - Low Intensity	residential districts, 1 acre	A	A	51
Developed - Low Intensity	residential districts, 1 acre	B	B	68
Developed - Low Intensity	residential districts, 1 acre	C	C	79
Developed - Low Intensity	residential districts, 1 acre	D	D	84
Grassland-Herbaceous	annual grass, fair	NoData	D	84
Grassland-Herbaceous	annual grass, fair	A	A	50
Grassland-Herbaceous	annual grass, fair	B	B	69
Grassland-Herbaceous	annual grass, fair	C	C	79
Grassland-Herbaceous	annual grass, fair	D	D	84
Developed - High Intensity	urban districts, commercial and business	NoData	D	95
Developed - High Intensity	urban districts, commercial and business	A	A	89
Developed - High Intensity	urban districts, commercial and business	B	B	92
Developed - High Intensity	urban districts, commercial and business	C	C	94
Developed - High Intensity	urban districts, commercial and business	D	D	95
Developed - Open Space	open space, grass cover 50% to 75%	NoData	D	84
Developed - Open Space	open space, grass cover 50% to 75%	A	A	49
Developed - Open Space	open space, grass cover 50% to 75%	B	B	69
Developed - Open Space	open space, grass cover 50% to 75%	C	C	79
Developed - Open Space	open space, grass cover 50% to 75%	D	D	84
Mixed Forest	woods, fair	NoData	D	79
Mixed Forest	woods, fair	A	A	36
Mixed Forest	woods, fair	B	B	60
Mixed Forest	woods, fair	C	C	73
Mixed Forest	woods, fair	D	D	79
Scrub-Shrub	open brush, fair	NoData	D	83
Scrub-Shrub	open brush, fair	A	A	46
Scrub-Shrub	open brush, fair	B	B	66
Scrub-Shrub	open brush, fair	C	C	77
Scrub-Shrub	open brush, fair	D	D	83

Evergreen Forest	woods, fair	NoData	D	79
Evergreen Forest	woods, fair	A	A	36
Evergreen Forest	woods, fair	B	B	60
Evergreen Forest	woods, fair	C	C	73
Evergreen Forest	woods, fair	D	D	79
Deciduous Forest	woods, poor	NoData	D	83
Deciduous Forest	woods, poor	A	A	45
Deciduous Forest	woods, poor	B	B	66
Deciduous Forest	woods, poor	C	C	77
Deciduous Forest	woods, poor	D	D	83
Palustrine Emergent Wetland	meadow, poor	NoData	D	88
Palustrine Emergent Wetland	meadow, poor	A	A	63
Palustrine Emergent Wetland	meadow, poor	B	B	77
Palustrine Emergent Wetland	meadow, poor	C	C	85
Palustrine Emergent Wetland	meadow, poor	D	D	88
Unconsolidated Shore	barren	NoData	D	93
Unconsolidated Shore	barren	A	A	78
Unconsolidated Shore	barren	B	B	86
Unconsolidated Shore	barren	C	C	91
Unconsolidated Shore	barren	D	D	93
Palustrine Scrub-Shrub Wetland	open brush, poor	NoData	D	88
Palustrine Scrub-Shrub Wetland	open brush, poor	A	A	62
Palustrine Scrub-Shrub Wetland	open brush, poor	B	B	76
Palustrine Scrub-Shrub Wetland	open brush, poor	C	C	84
Palustrine Scrub-Shrub Wetland	open brush, poor	D	D	88
Barren Land	barren	NoData	D	93
Barren Land	barren	A	A	78
Barren Land	barren	B	B	86
Barren Land	barren	C	C	91
Barren Land	barren	D	D	93
Palustrine Forested Wetland	woodland-grass combination, poor	NoData	D	86
Palustrine Forested Wetland	woodland-grass combination, poor	A	A	57
Palustrine Forested Wetland	woodland-grass combination, poor	B	B	73
Palustrine Forested Wetland	woodland-grass combination, poor	C	C	82
Palustrine Forested Wetland	woodland-grass combination, poor	D	D	86
Cultivated Crops	cultivated land, without conservation treatment	NoData	D	91
Cultivated Crops	cultivated land, without conservation treatment	A	A	72
Cultivated Crops	cultivated land, without conservation treatment	B	B	81
Cultivated Crops	cultivated land, without conservation treatment	C	C	88
Cultivated Crops	cultivated land, without conservation treatment	D	D	91
Estuarine Scrub-Shrub Wetland	open brush, poor	NoData	D	88
Estuarine Scrub-Shrub Wetland	open brush, poor	A	A	62
Estuarine Scrub-Shrub Wetland	open brush, poor	B	B	76
Estuarine Scrub-Shrub Wetland	open brush, poor	C	C	84
Estuarine Scrub-Shrub Wetland	open brush, poor	D	D	88
Estuarine Forested Wetland	woodland-grass combination, poor	NoData	D	86
Estuarine Forested Wetland	woodland-grass combination, poor	A	A	57
Estuarine Forested Wetland	woodland-grass combination, poor	B	B	73
Estuarine Forested Wetland	woodland-grass combination, poor	C	C	82
Estuarine Forested Wetland	woodland-grass combination, poor	D	D	86
Estuarine Emergent Wetland	meadow, poor	NoData	D	88

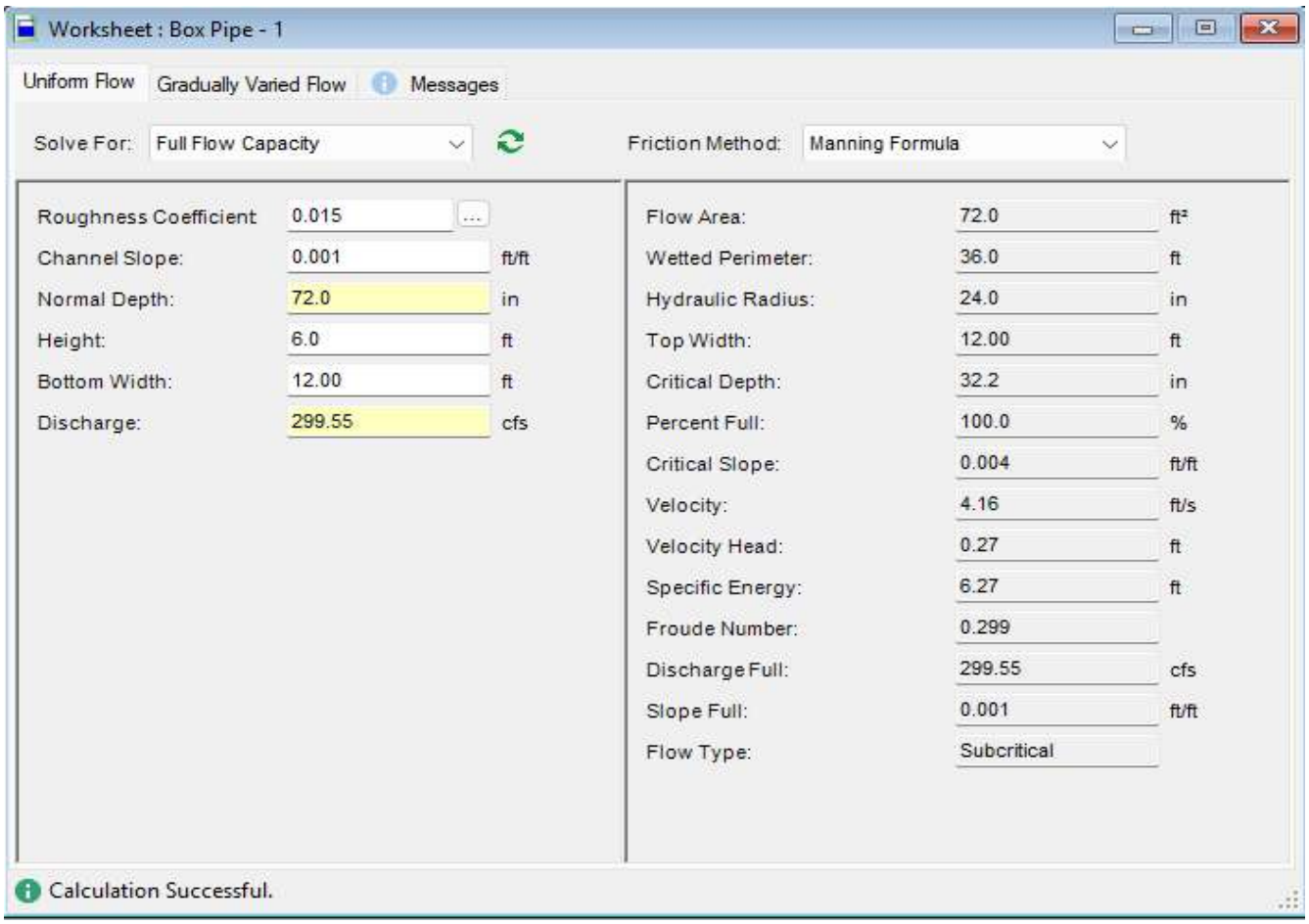
Estuarine Emergent Wetland	meadow, poor	A	A	63
Estuarine Emergent Wetland	meadow, poor	B	B	77
Estuarine Emergent Wetland	meadow, poor	C	C	85
Estuarine Emergent Wetland	meadow, poor	D	D	88
Pasture-Hay	pasture or range land, fair	NoData	D	84
Pasture-Hay	pasture or range land, fair	A	A	49
Pasture-Hay	pasture or range land, fair	B	B	69
Pasture-Hay	pasture or range land, fair	C	C	79
Pasture-Hay	pasture or range land, fair	D	D	84
Pavement	impervious areas	NoData	D	98
Pavement	impervious areas	A	A	98
Pavement	impervious areas	B	B	98
Pavement	impervious areas	C	C	98
Pavement	impervious areas	D	D	98
Hard packed dirt	Dirt	NoData	D	89
Hard packed dirt	Dirt	A	A	72
Hard packed dirt	Dirt	B	B	82
Hard packed dirt	Dirt	C	C	87
Hard packed dirt	Dirt	D	D	89
Roof	impervious areas	NoData	D	98
Roof	impervious areas	A	A	98
Roof	impervious areas	B	B	98
Roof	impervious areas	C	C	98
Roof	impervious areas	D	D	98

Appendix E

Stevens Creek Inflow Hydrographs

Ratio of the 10-year rainfall depth to the 100-year rainfall depth:		
10 yr peak	0.185	in/5-min
100 yr peak	0.285	in/5-min
10yr/100yr =	65%	

Double box culvert
100 year peak flow = 599.1 cfs **From FlowMaster Calculation



Stevens Creek Inflow Hydrograph

Based on SCS dimensionless unit hydrograph

100 year peak flow	599.1	cfs
10 year peak flow	388.8	cfs
Peak time*	16	hrs

*Conservative assumption that inflow peaks with rainfall.

SCS dimensionless unit hydrograph:

Time Ratios	Discharge Ratios	Mass Curve
0	0	0
0.1	0.03	0.001
0.2	0.1	0.006
0.3	0.19	0.012
0.4	0.31	0.035
0.5	0.47	0.065
0.6	0.66	0.107
0.7	0.82	0.163
0.8	0.93	0.228
0.9	0.99	0.3
1	1	0.375
1.1	0.99	0.45
1.2	0.93	0.522
1.3	0.86	0.589
1.4	0.78	0.65
1.5	0.68	0.7
1.6	0.56	0.751
1.7	0.46	0.79
1.8	0.39	0.822
1.9	0.33	0.849
2	0.28	0.871
2.2	0.207	0.908
2.4	0.147	0.934
2.6	0.107	0.953
2.8	0.077	0.967
3	0.055	0.977
3.2	0.04	0.984
3.4	0.029	0.989
3.6	0.021	0.993
3.8	0.015	0.995
4	0.011	0.997
4.5	0.005	0.999
5	0	1

Stevens Creek Hydrographs

Time (hrs)	100-year Flow (cfs)	10-year Flow (cfs)
0	0.000	0.000
1.6	17.973	11.664
3.2	59.910	38.882
4.8	113.829	73.875
6.4	185.721	120.533
8	281.577	182.743
9.6	395.406	256.618
11.2	491.262	318.829
12.8	557.163	361.599
14.4	593.109	384.928
16	599.100	388.816
17.6	593.109	384.928
19.2	557.163	361.599
20.8	515.226	334.382
22.4	467.298	303.276
24	407.388	264.395
25.6	335.496	217.737
27.2	275.586	178.855
28.8	233.649	151.638
30.4	197.703	128.309
32	167.748	108.868
35.2	124.014	80.485
38.4	88.068	57.156
41.6	64.104	41.603
44.8	46.131	29.939
48	32.951	21.385
51.2	23.964	15.553
54.4	17.374	11.276
57.6	12.581	8.165
60.8	8.987	5.832
64	6.590	4.277
72	2.996	1.944
80	0.000	0.000

UH from this site: https://www.nohrsc.noaa.gov/technology/gis/uhg_manual.html

Appendix F

Arena and Backstretch Pump Curves

Del Mar Arena Storm Drain Pump Station System Curve Calculations

Updated: 12/11/2025
By: MF

Input Parameters for Pipe Segment #1 (pump to tee)

Total Pipe Lenth:	2	ft
Pipe Inside Diameter:	8	in
Pipe Roughness Coefficient (C):	140	

Input Parameters for Pipe Segment #2 (tee to enlargement)

Total Pipe Lenth:	2.5	ft
Pipe Inside Diameter:	8	in
Pipe Roughness Coefficient (C):	140	

Input Parameters for Pipe Segment #3 (enlargement to node)

Total Pipe Lenth:	879.95	ft
Pipe Inside Diameter:	10	in
Pipe Roughness Coefficient (C):	140	

Minor Losses for Pipe Segment #1

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	0	0.00
90° Expansion		0	0.00
45° Bend		0	0.00
90° Bend	0.42	1	0.42
Tee (Branch)	1.26	1	1.26
Gate Valve		0	0.00
Check Valve	0.70	0	0.00
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	1.68

Minor Losses for Pipe Segment #2

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	1	0.63
90° Expansion	0.42	1	0.42
45° Bend		0	0.00
90° Bend	0.42	0	0.00
Tee (Branch)	1.26	0	0.00
Gate Valve		0	0.00
Check Valve	1.40	1	1.40
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	2.45

Minor Losses for Pipe Segment #3

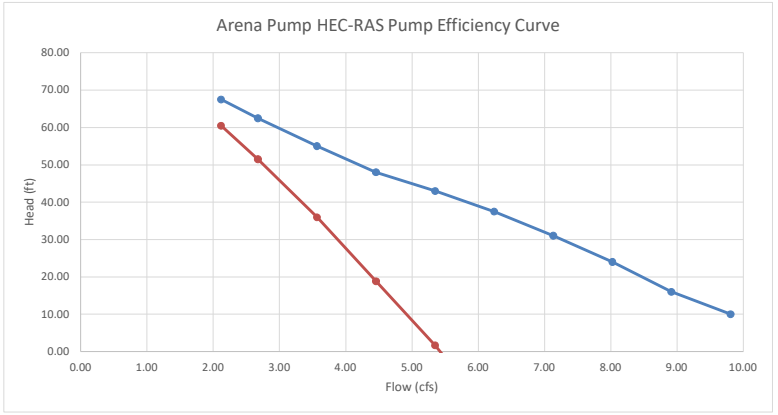
Fitting Type	k	Number	Total k
11.25° Bend		0	0.00
22.5° Bend		0	0.00
45° Bend	0.22	2	0.44
90° Bend	0.42	0	0.00
Tee (Thru)		0	0.00
Tee (Branch)		0	0.00
Check Valve		0	0.00
Ball Valve		0	0.00
Exit	1.00	1	1.00
		Sum k:	1.44

Total Dynamic Head Calculations

		Pipe Segment #1								Pipe Segment #2				Pipe Segment #3				TDH (ft)	
		1 Pump On		Headloss (ft)		2 Pumps On		Headloss (ft)				Headloss (ft)				Headloss (ft)			
Flow (cfs)	Flow (gpm)	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	1 Pump On	2 Pumps On
2.12	949.94	6.06	0.03	0.96	0.99	3.03	0.01	0.24	0.25	6.06	0.04	1.40	1.43	3.88	4.28	0.34	4.62	7.04	6.30
2.67	1199.92	7.66	0.04	1.53	1.57	3.83	0.01	0.38	0.39	7.66	0.06	2.23	2.29	4.90	6.60	0.54	7.13	11.00	9.82
3.56	1599.89	10.21	0.08	2.72	2.80	5.11	0.02	0.68	0.70	10.21	0.09	3.97	4.06	6.54	11.23	0.96	12.19	19.04	16.95
4.46	1999.87	12.77	0.11	4.25	4.37	6.38	0.03	1.06	1.09	12.77	0.14	6.20	6.34	8.17	16.97	1.49	18.46	29.17	25.90
5.35	2399.84	15.32	0.16	6.12	6.28	7.66	0.04	1.53	1.57	15.32	0.20	8.93	9.13	9.80	23.78	2.15	25.93	41.34	36.63
6.24	2799.81	17.87	0.21	8.33	8.55	8.94	0.06	2.08	2.14	17.87	0.27	12.15	12.42	11.44	31.62	2.93	34.55	55.51	49.11
7.13	3199.79	20.42	0.27	10.88	11.16	10.21	0.08	2.72	2.80	20.42	0.34	15.87	16.21	13.07	40.49	3.82	44.31	71.67	63.31
8.02	3599.76	22.98	0.34	13.77	14.11	11.49	0.09	3.44	3.54	22.98	0.42	20.09	20.51	14.71	50.34	4.84	55.18	89.80	79.23
8.91	3999.73	25.53	0.41	17.00	17.42	12.77	0.11	4.25	4.37	25.53	0.52	24.80	25.31	16.34	61.18	5.97	67.15	109.88	96.82
9.80	4399.71	28.08	0.49	20.58	21.07	14.04	0.14	5.14	5.28	28.08	0.61	30.01	30.62	17.97	72.97	7.22	80.20	131.88	116.10

Pump Duplex Grundfos s2.40.a80.420.4.58l.s.227.g.ex.d 60 hz "97660718"

Manufacturer Pump Curve		System Energy Loss Curve		Adjusted Pump Curve	
Head (ft)	Flow (cfs)	Head (ft)	Flow (cfs)	**Head (ft)**	**Flow (cfs)**
67.50	2.12	7.04	2.12	**60.46**	**2.12**
62.50	2.67	11.00	2.67	**51.50**	**2.67**
55.00	3.56	19.04	3.56	**35.96**	**3.56**
48.00	4.46	29.17	4.46	**18.83**	**4.46**
43.00	5.35	41.34	5.35	**1.66**	**5.35**
37.50	6.24	55.51	6.24	**-18.01**	**6.24**
31.00	7.13	71.67	7.13	**-40.67**	**7.13**
24.00	8.02	89.80	8.02	**-65.80**	**8.02**
16.00	8.91	109.88	8.91	**-93.88**	**8.91**
10.00	9.80	131.88	9.80	**-121.88**	**9.80**



Del Mar Arena Storm Drain Pump Station System Curve Calculations

Updated: 12/11/2025
By: MF

Input Parameters for Pipe Segment #1 (pump to tee)

Total Pipe Lenth:	2 ft
Pipe Inside Diameter:	8 in
Pipe Roughness Coefficient (C):	140

Input Parameters for Pipe Segment #2 (tee to enlargement)

Total Pipe Lenth:	3.5 ft
Pipe Inside Diameter:	8 in
Pipe Roughness Coefficient (C):	140

Input Parameters for Pipe Segment #3 (enlargement to node)

Total Pipe Lenth:	660.117 ft
Pipe Inside Diameter:	14 in
Pipe Roughness Coefficient (C):	140

Minor Losses for Pipe Segment #1

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	0	0.00
90° Expansion		0	0.00
45° Bend		0	0.00
90° Bend	0.42	1	0.42
Tee (Branch)	1.26	1	1.26
Gate Valve		0	0.00
Check Valve	0.70	0	0.00
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	1.68

Minor Losses for Pipe Segment #2

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	1	0.63
90° Expansion	0.42	1	0.42
45° Bend		0	0.00
90° Bend	0.42	0	0.00
Tee (Branch)	1.26	0	0.00
Gate Valve		0	0.00
Check Valve	1.40	1	1.40
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	2.45

Minor Losses for Pipe Segment #3

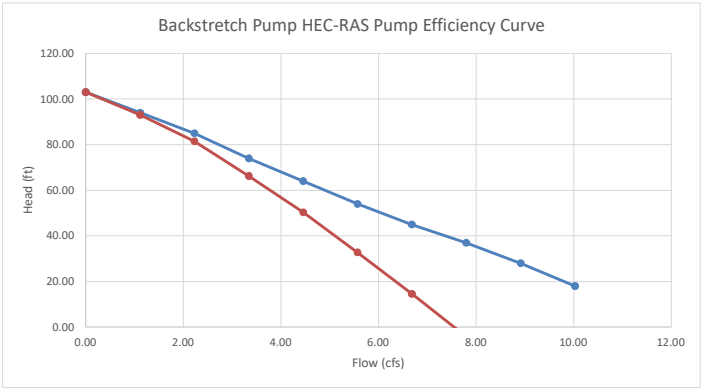
Fitting Type	k	Number	Total k
11.25° Bend		0	0.00
22.5° Bend		0	0.00
45° Bend	0.21	3	0.63
90° Bend		0	0.00
Tee (Thru)		0	0.00
Tee (Branch)		0	0.00
Check Valve		0	0.00
Ball Valve		0	0.00
Exit	1.00	1	1.00
		Sum k:	1.63

Total Dynamic Head Calculations

		Pipe Segment #1								Pipe Segment #2				Pipe Segment #3				TDH (ft)	
		1 Pump On		Headloss (ft)		2 Pumps On		Headloss (ft)				Headloss (ft)				Headloss (ft)			
Flow (cfs)	Flow (gpm)	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	1 Pump On	2 Pumps On
0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11	499.9665798	3.19	0.01	0.27	0.27	1.60	0.00	0.07	0.07	3.19	0.02	0.39	0.40	1.04	0.19	0.03	0.22	0.90	0.69
2.23	999.9331595	6.38	0.03	1.06	1.09	3.19	0.01	0.27	0.27	6.38	0.06	1.55	1.61	2.08	0.69	0.11	0.80	3.50	2.68
3.34	1499.899739	9.57	0.07	2.39	2.46	4.79	0.02	0.60	0.62	9.57	0.12	3.49	3.60	3.13	1.45	0.25	1.70	7.76	5.92
4.46	1999.866319	12.77	0.11	4.25	4.37	6.38	0.03	1.06	1.09	12.77	0.20	6.20	6.40	4.17	2.47	0.44	2.91	13.68	10.41
5.57	2499.832899	15.96	0.17	6.64	6.82	7.98	0.05	1.66	1.71	15.96	0.30	9.69	9.99	5.21	3.74	0.69	4.42	21.23	16.12
6.68	2999.799479	19.15	0.24	9.57	9.81	9.57	0.07	2.39	2.46	19.15	0.42	13.95	14.37	6.25	5.24	0.99	6.23	30.40	23.06
7.80	3499.766058	22.34	0.32	13.02	13.34	11.17	0.09	3.25	3.34	22.34	0.56	18.99	19.55	7.29	6.96	1.35	8.31	41.20	31.20
8.91	3999.732638	25.53	0.41	17.00	17.42	12.77	0.11	4.25	4.37	25.53	0.72	24.80	25.52	8.34	8.91	1.76	10.67	53.61	40.56
10.03	4499.699218	28.72	0.51	21.52	22.03	14.36	0.14	5.38	5.52	28.72	0.90	31.39	32.28	9.38	11.08	2.23	13.31	67.63	51.12

Pump Duplex Grundfos s2.40.a80.540.4.62l.s.245.g.ex.d "97660740"

Manufacturer Pump Curve		System Energy Loss Curve		Adjusted Pump Curve	
Head (ft)	Flow (cfs)	Head (ft)	Flow (cfs)	**Head (ft)**	**Flow (cfs)**
103.00	0.00	0.00	0.00	**103.00**	**0.00**
94.00	1.11	0.90	1.11	**93.10**	**1.11**
85.00	2.23	3.50	2.23	**81.50**	**2.23**
74.00	3.34	7.76	3.34	**66.24**	**3.34**
64.00	4.46	13.68	4.46	**50.32**	**4.46**
54.00	5.57	21.23	5.57	**32.77**	**5.57**
45.00	6.68	30.40	6.68	**14.60**	**6.68**
37.00	7.80	41.20	7.80	**-4.20**	**7.80**
28.00	8.91	53.61	8.91	**-25.61**	**8.91**
18.00	10.03	67.63	10.03	**-49.63**	**10.03**



Appendix G

Existing Depth Result Maps

Figure G-1 Flood depths resulting from the 10-year extreme water level (7.34 ft)

Figure G-2 Flood depths resulting from 2050 Intermediate-High SLR + MHHW (6.13 ft)

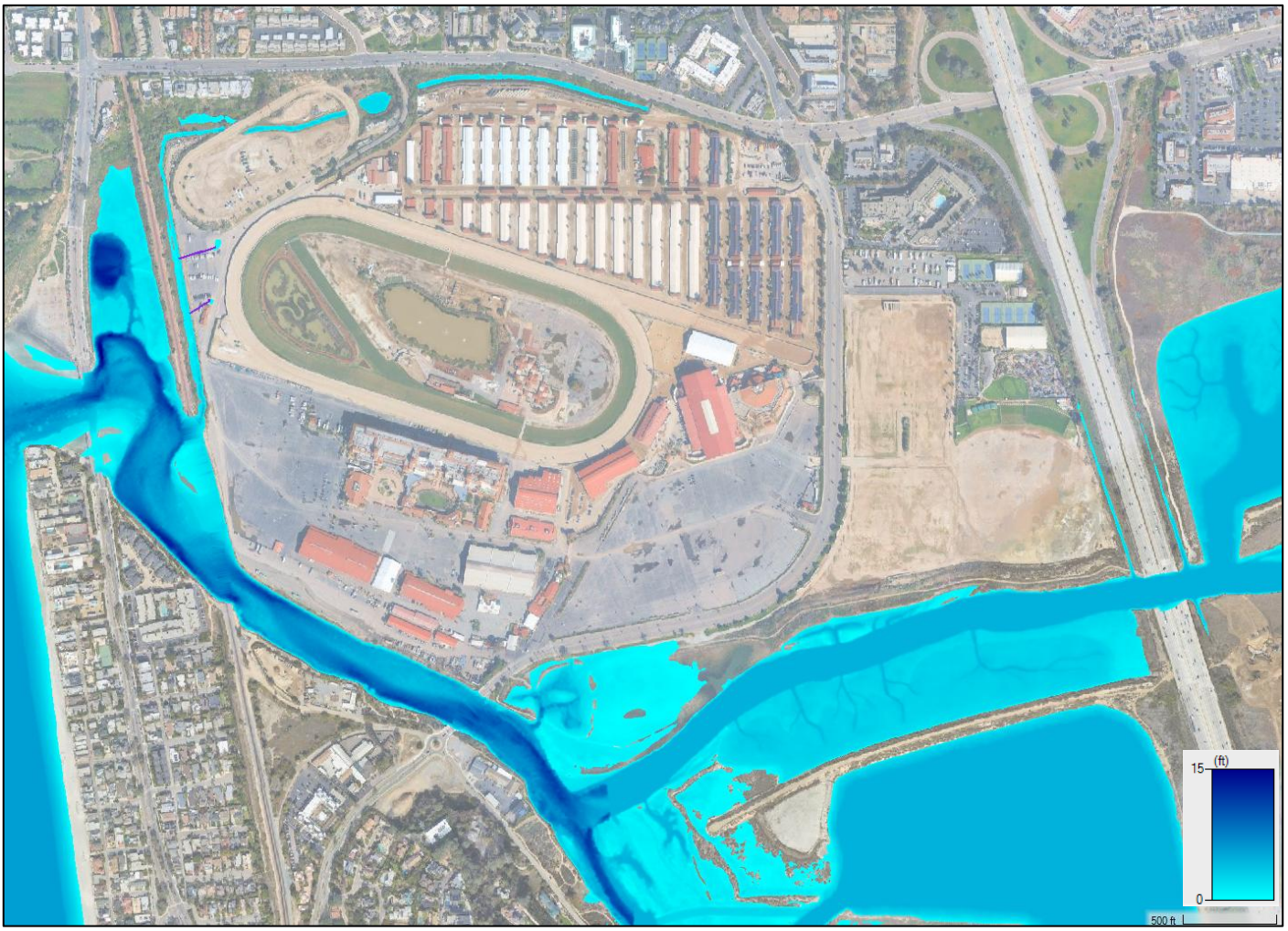


Figure G-3 Flood depths resulting from 2070 Intermediate-High SLR + MHHW (7.43 ft)

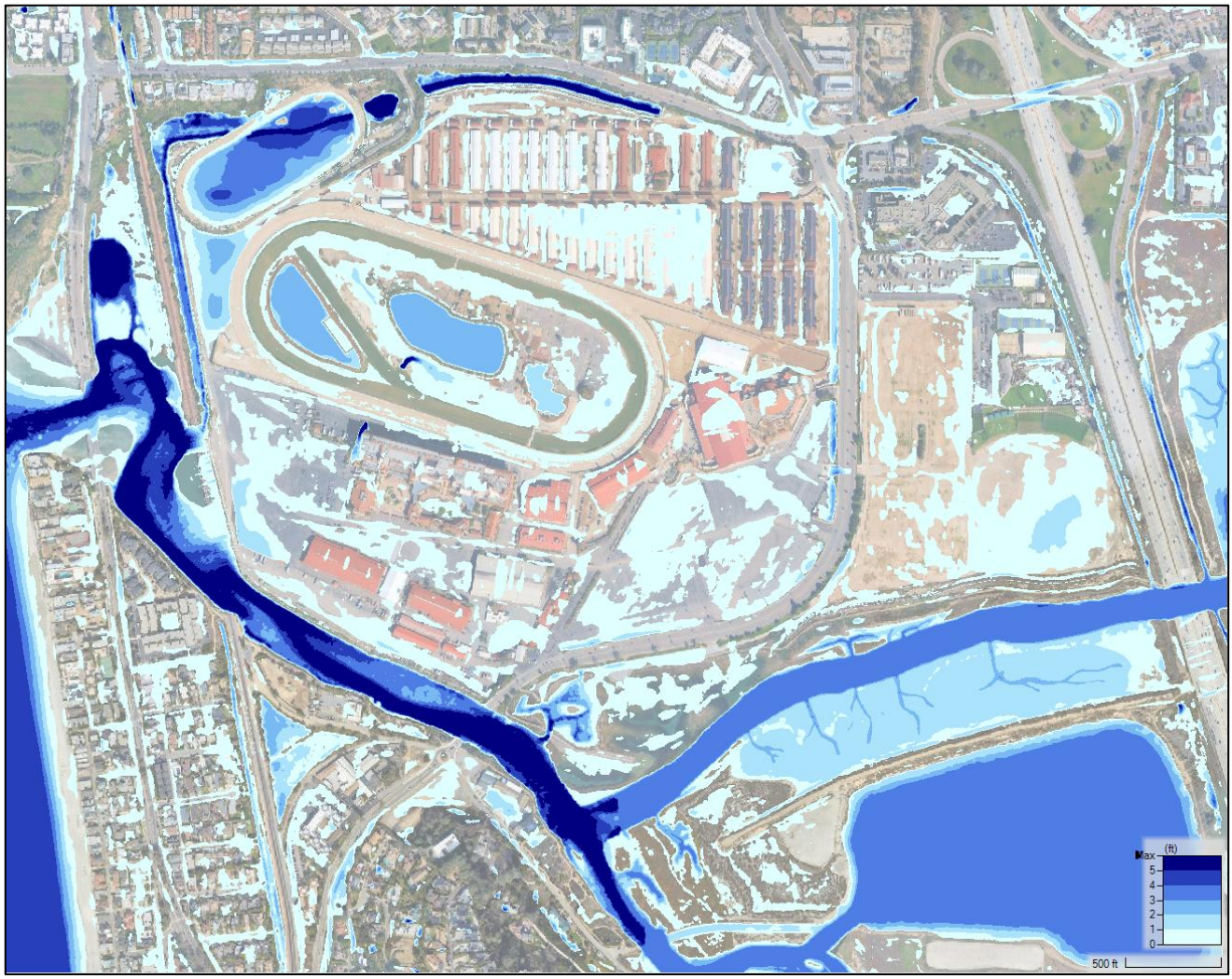


Figure G-4 Maximum flood depths during the 10-year onsite rainfall event with 2050 SLR

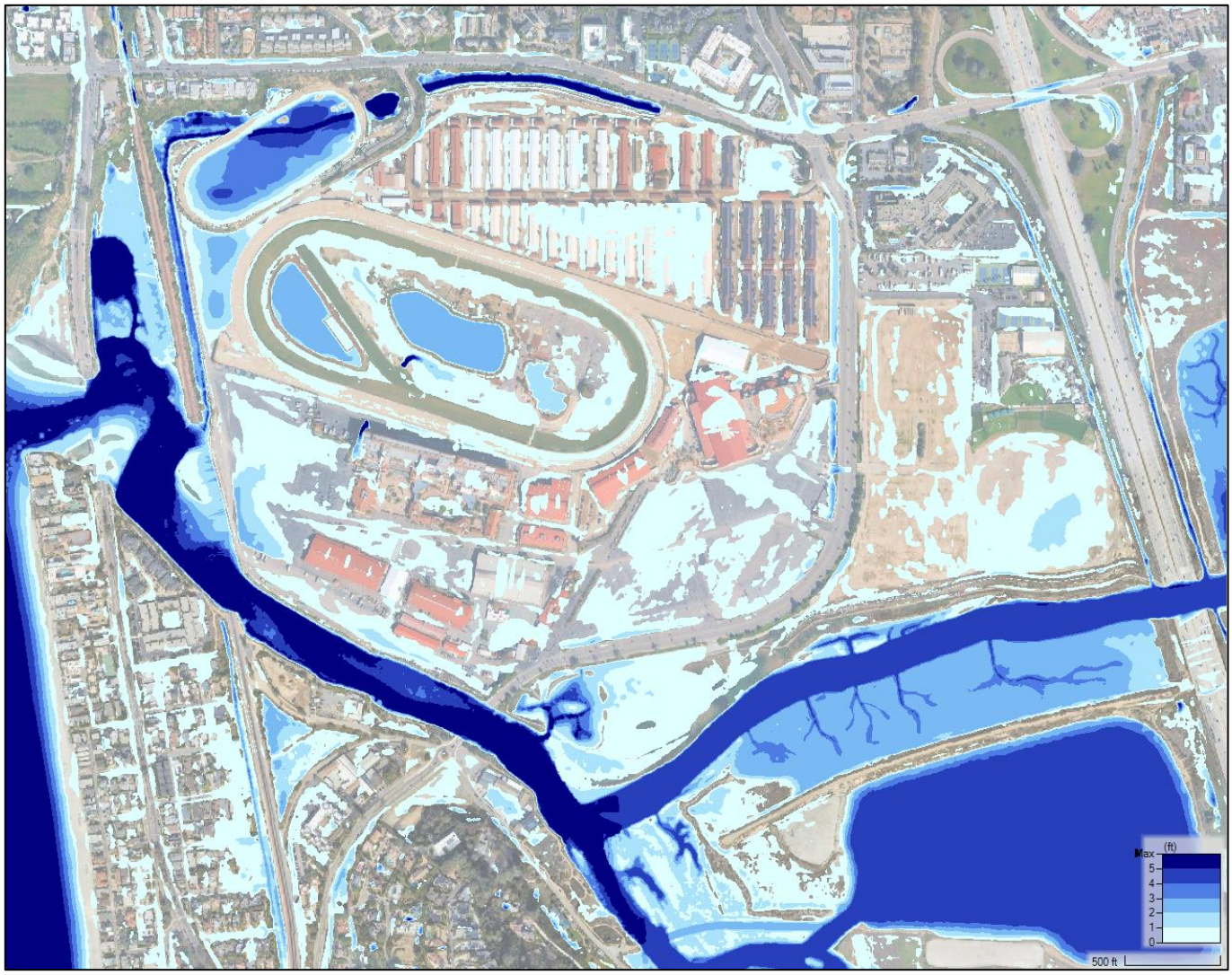


Figure G-5 Maximum flood depths during the onsite rainfall event with 2070 SLR

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Conceptual Adaptation Strategies Depth Result Maps

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Figure H-2 Strategy 1 depth results during the MHHW +2050 SLR tidal event.

Figure H-3 Strategy 1 depth results during the MHHW +2070 SLR event

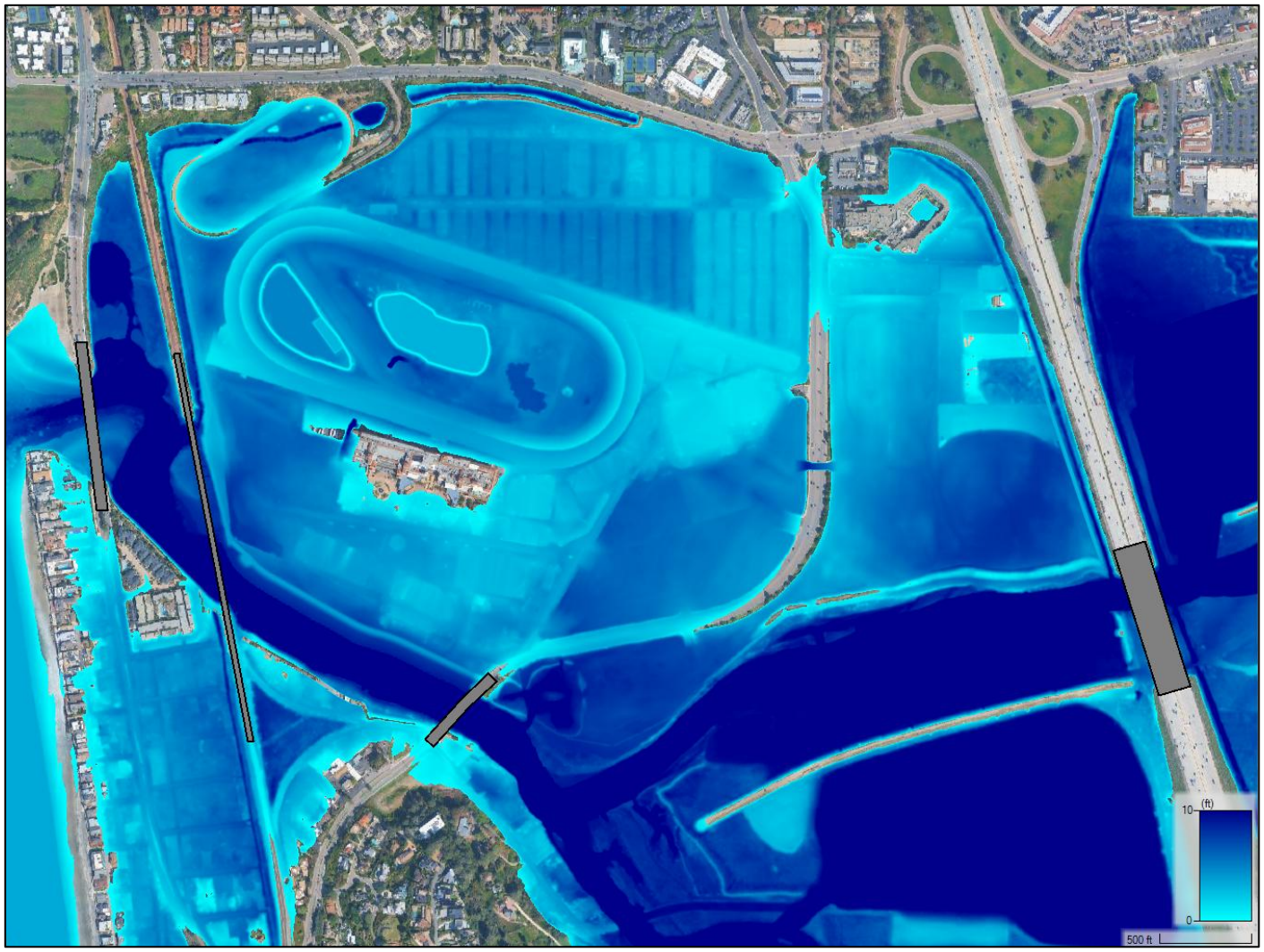

Figure H-4 Strategy 1 depth results during the 50-year fluvial event

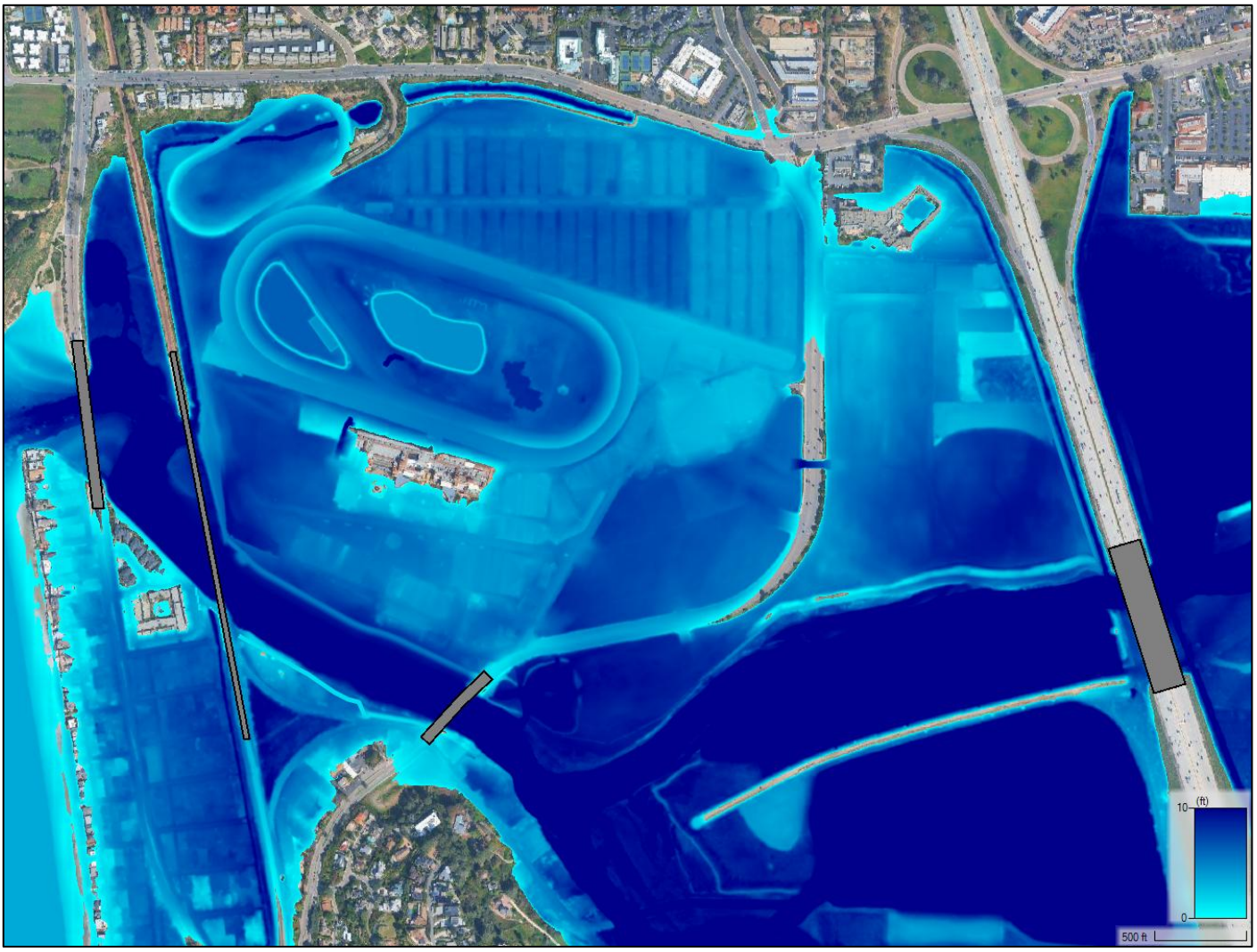

Figure H-5 Strategy 1 depth results during the 100-year fluvial event

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Figure H-10 Strategy 2 depth results during the 2070 SLR tidal event

Figure H-11 Strategy 2 flood depths during the 10-year fluvial event with 2050 SLR

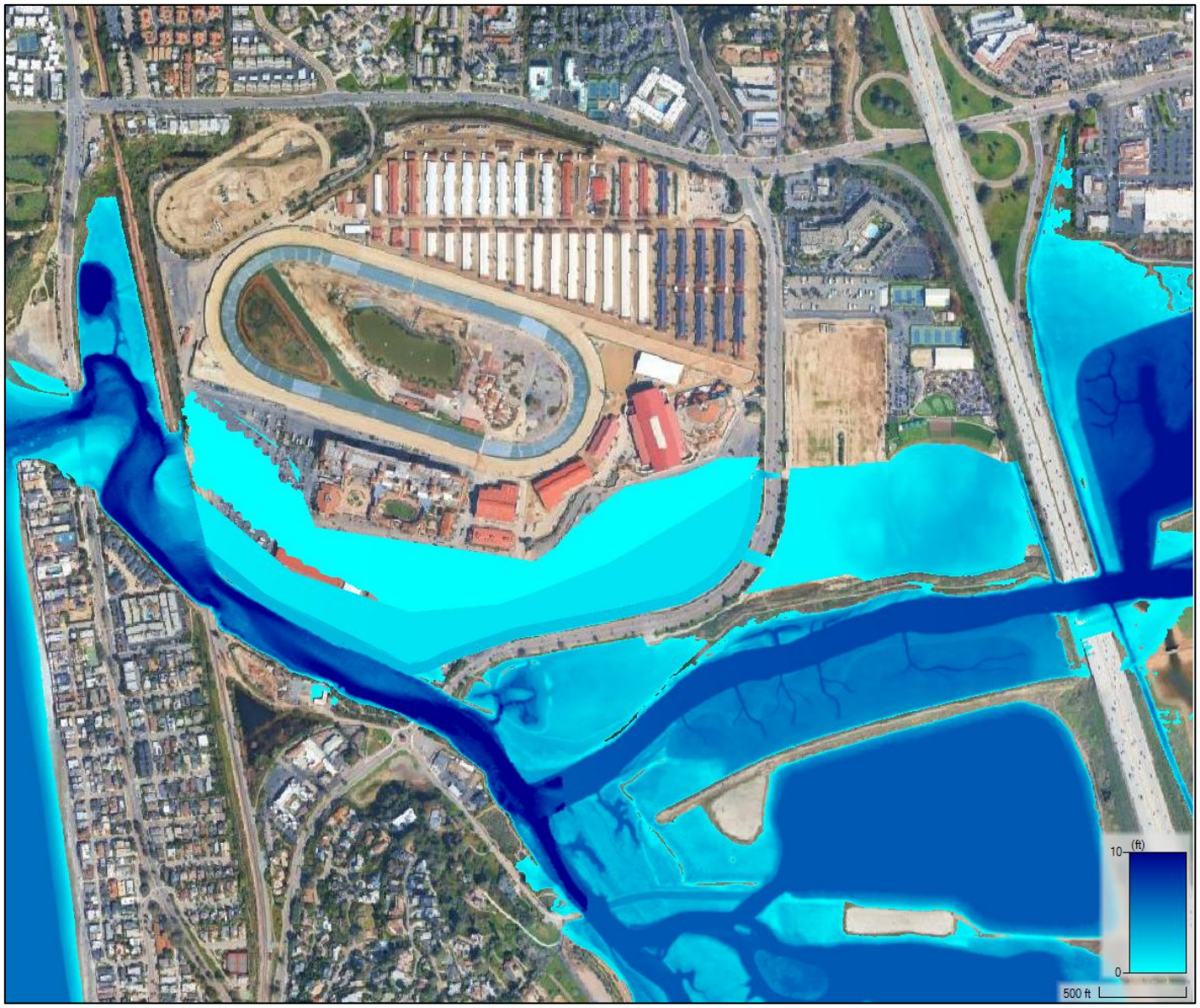


Figure H-12 Strategy 2 flood depths during the 10-year fluvial event with 2070 SLR

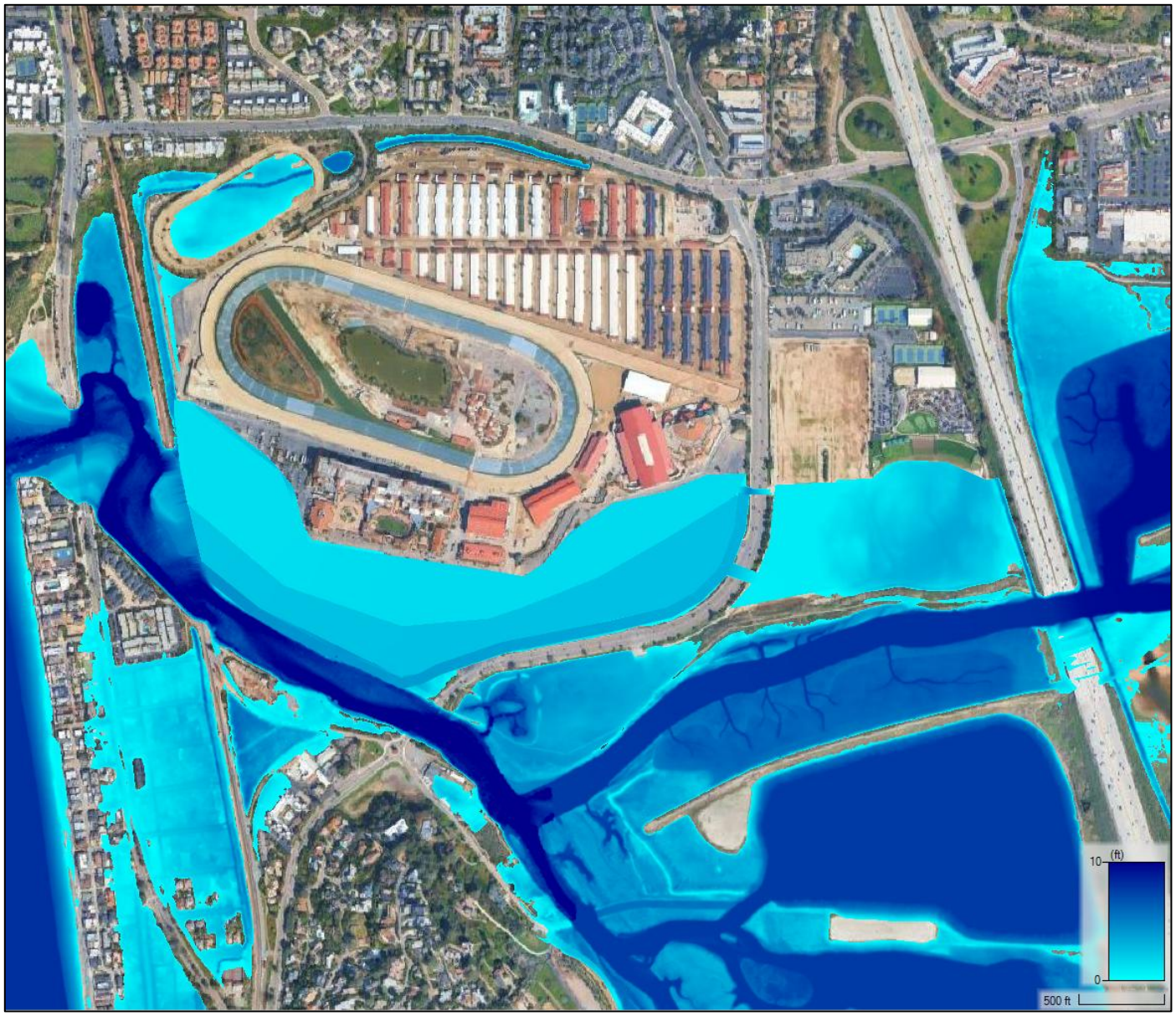


Figure H-13 Strategy 2 flood depths during the 10-year fluvial event with 2100 SLR

Figure H-14 Strategy 3 depth results during the 10-year EWL tidal event

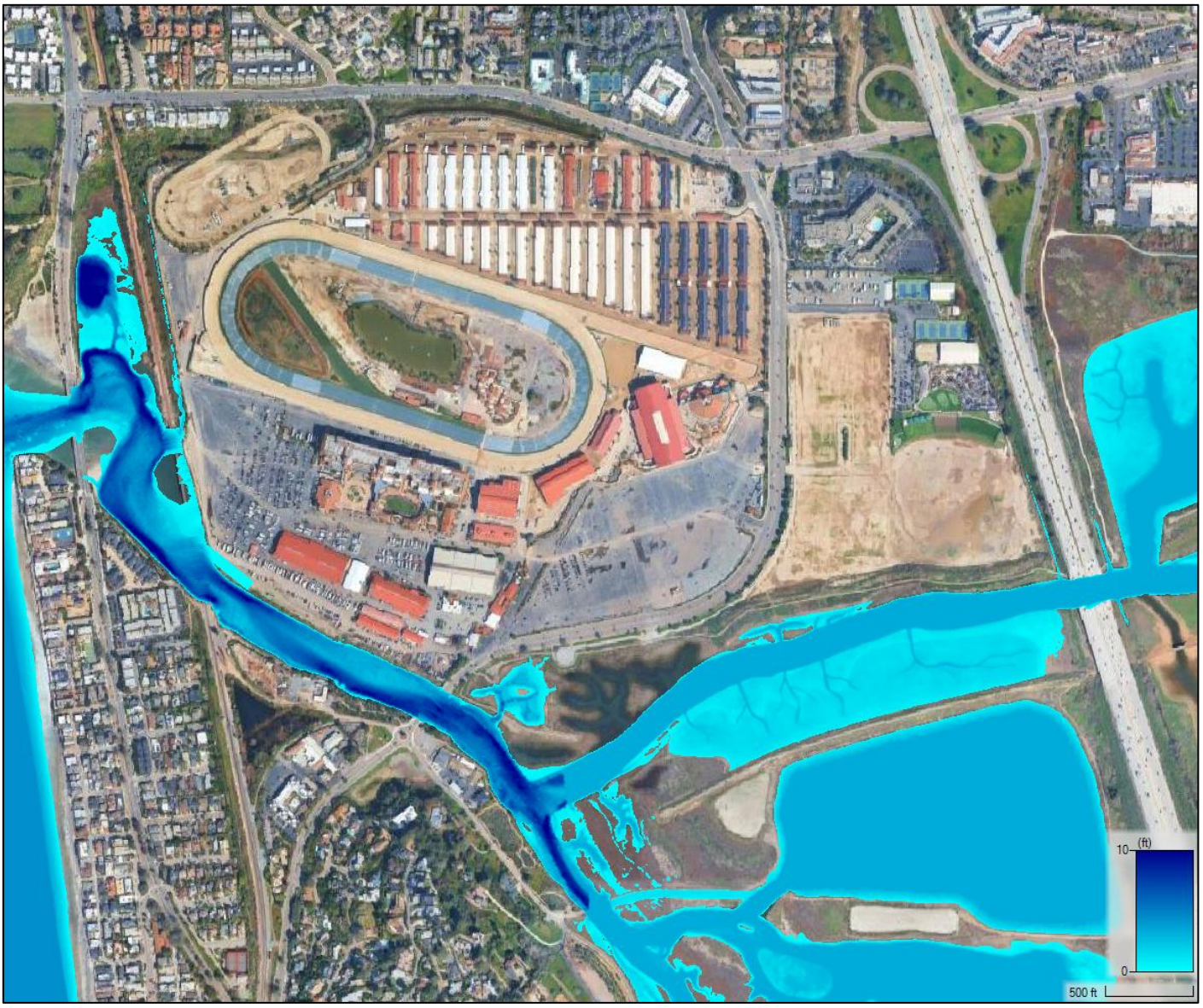


Figure H-15 Strategy 3 depth results during the 2050 SLR tidal event

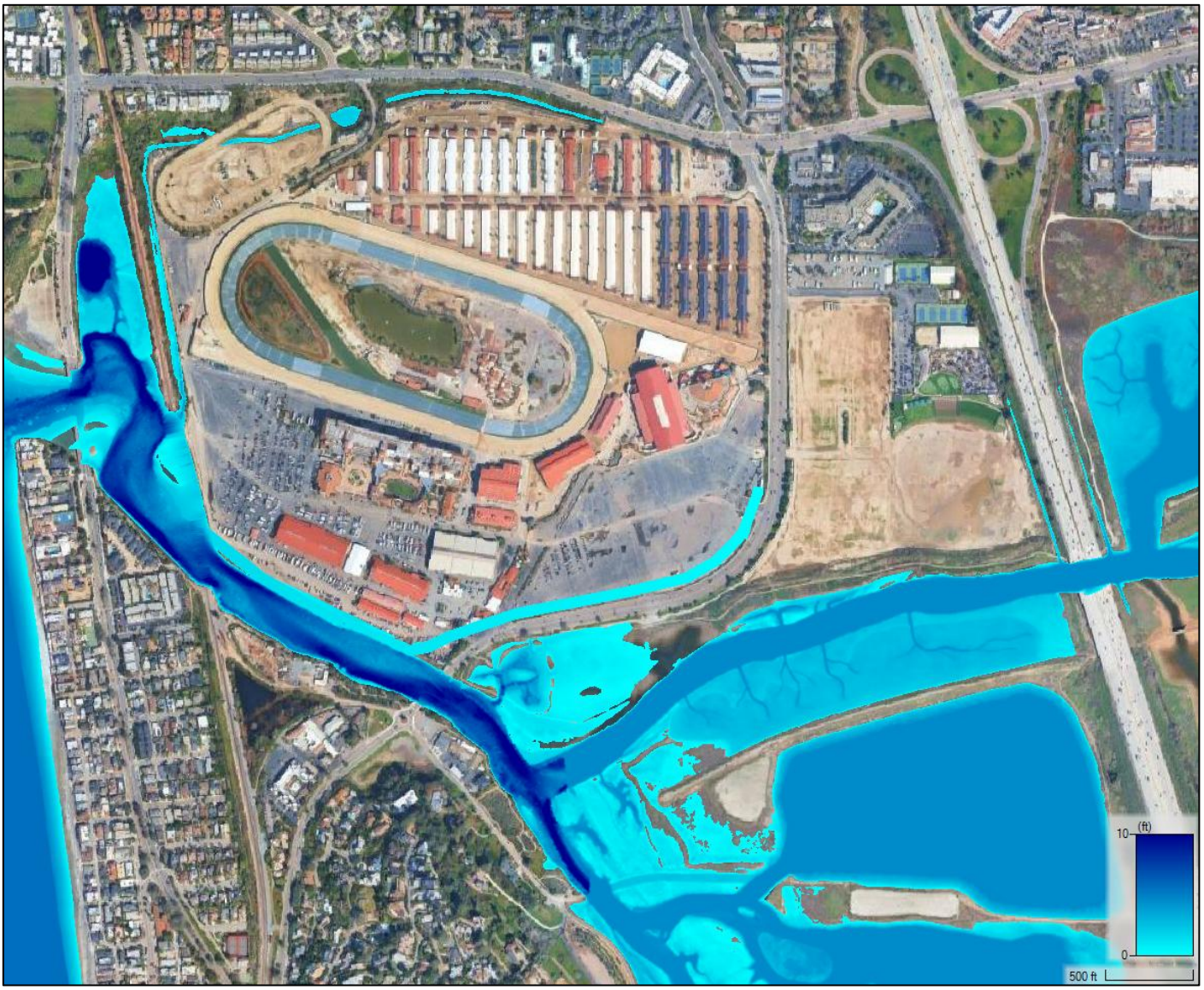


Figure H-16 Strategy 3 depth results during the 2070 SLR tidal event

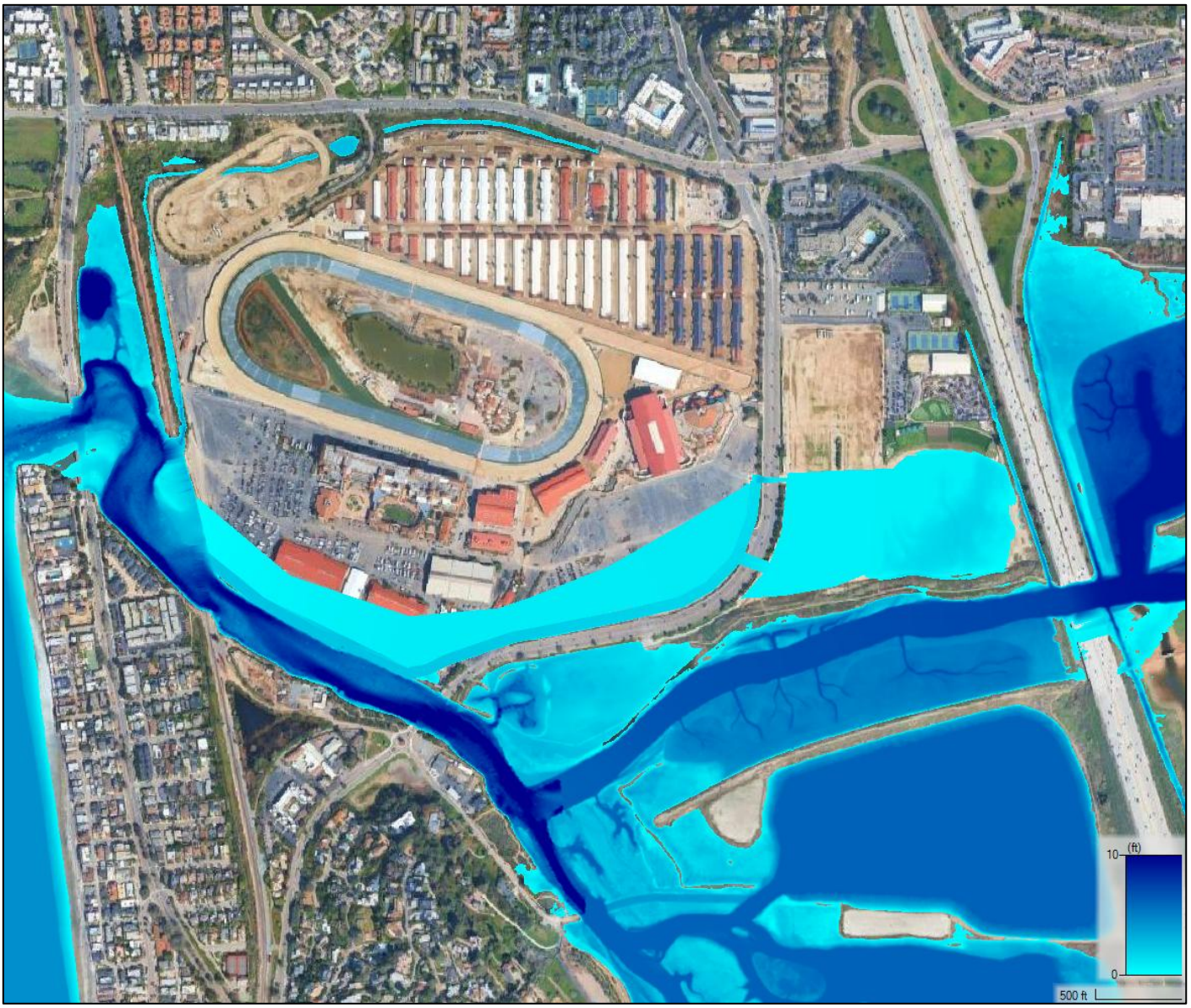
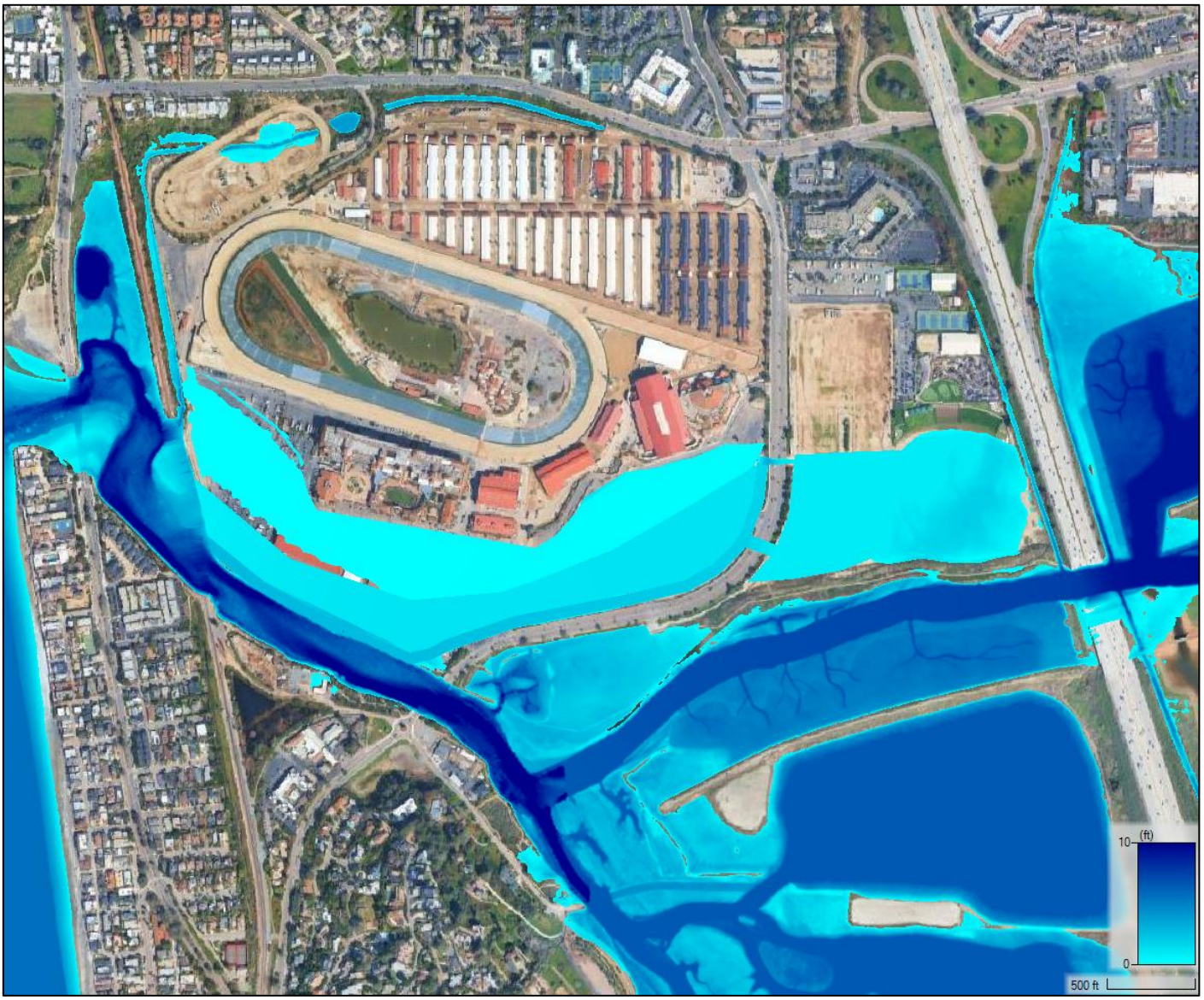


Figure H-17 Strategy 3 flood depths during the 10-year fluvial event with 2050 SLR



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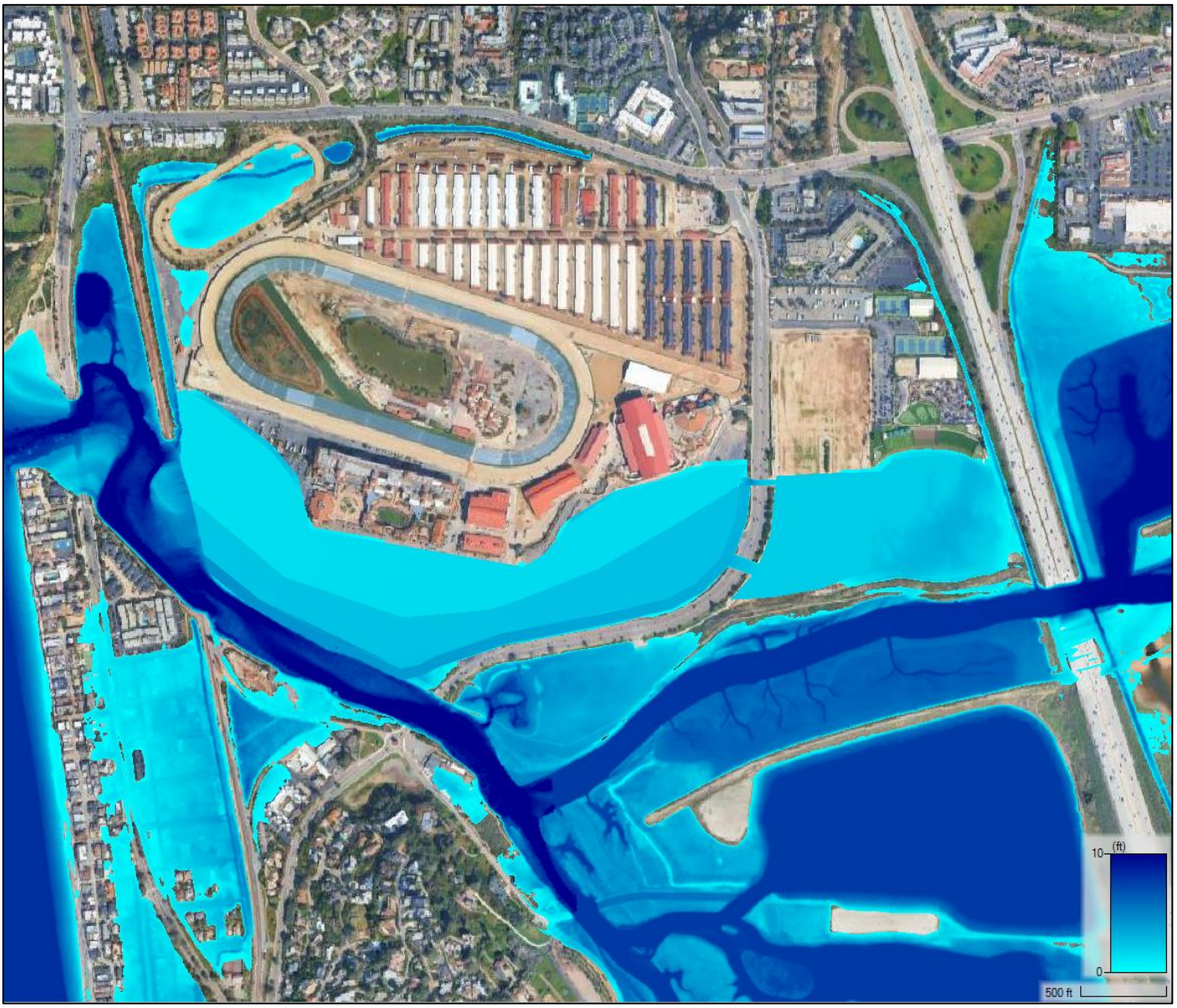

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Appendix I

Conceptual Adaptation Strategies Hydraulic Impact Maps

Figure I-1 Comparison of Strategy 1 results with existing water surface elevations during the 100-year fluvial event

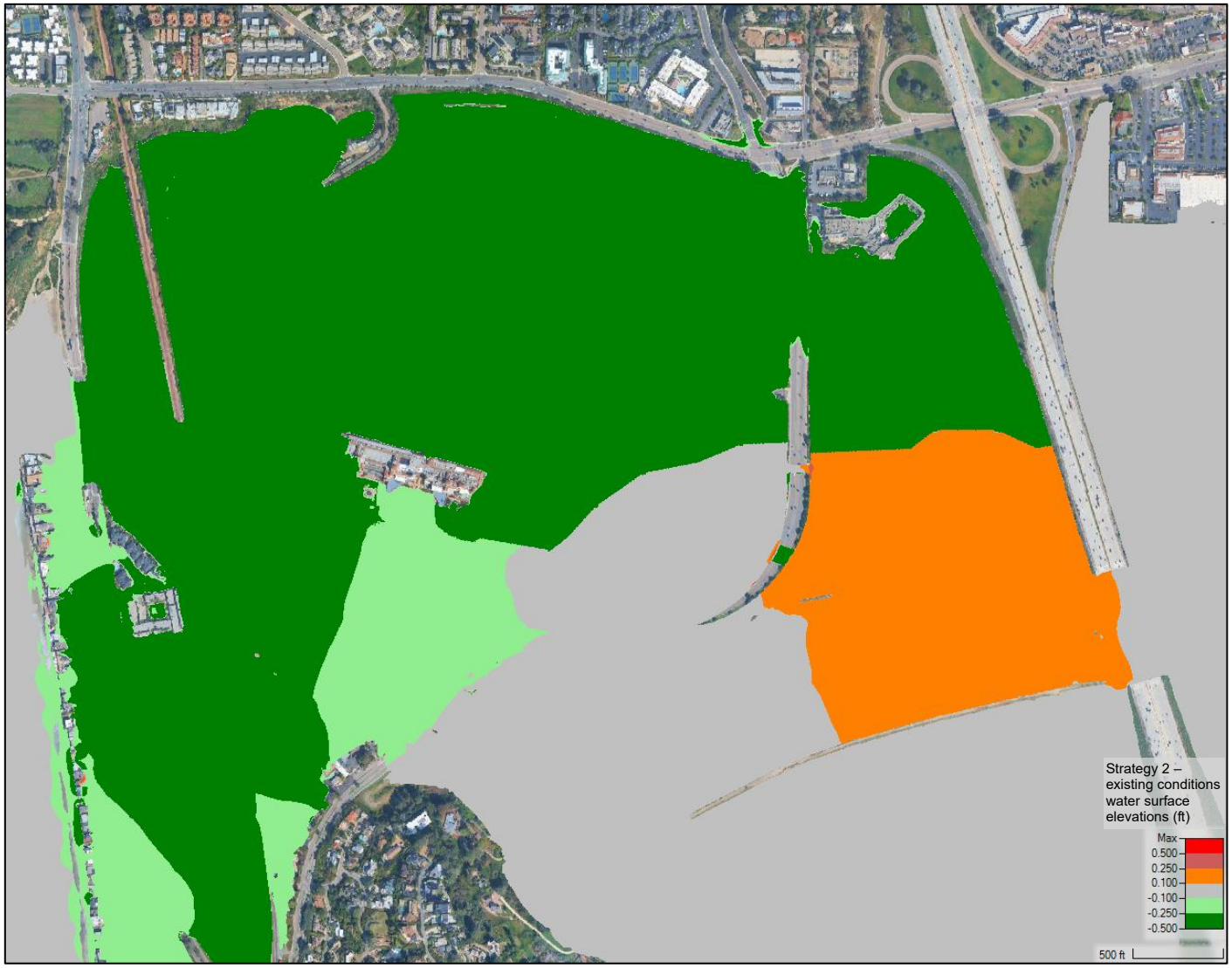

Figure I-2 Comparison of Strategy 2 to existing conditions water surface elevations in the 100-year fluvial event

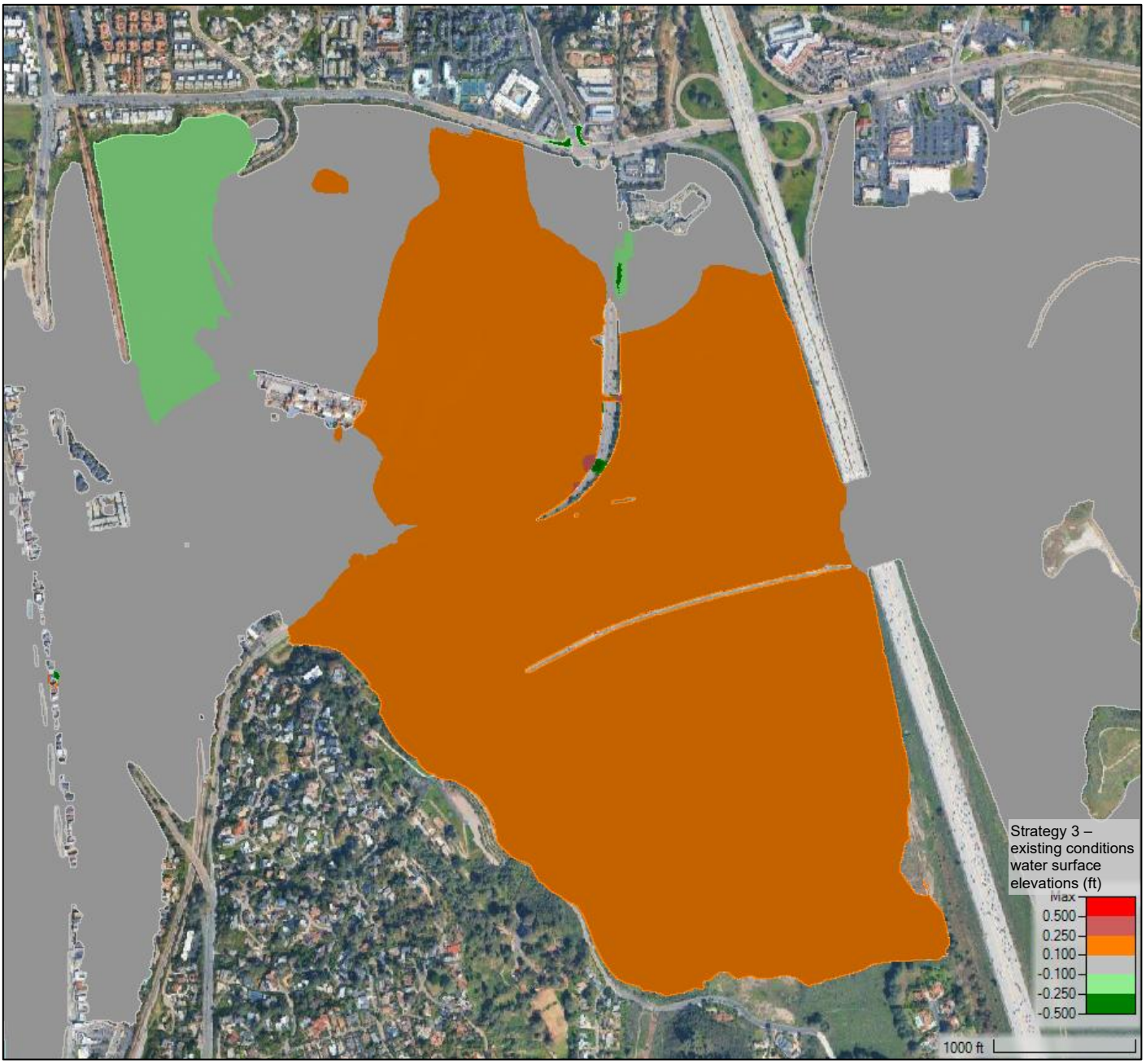

Figure I-3 *Comparison of Strategy 3 to existing conditions water surface elevations in the 100-year fluvial event*

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Hydrology and Hydraulics Report

AG 22nd District HAP Grant Support

Harris & Associates, Inc

March 03, 2026

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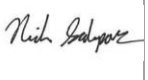
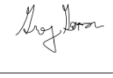
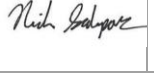
S3	A	Madeline Howell Molly Foster	Greg Garrison		Nick Sadrpour		12/19/2025
S4	0	Madeline Howell Molly Foster	Greg Garrison		Nick Sadrpour		3/2/2026

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1. Introduction

The 22nd District Agricultural Association District's (District's) property, colloquially known as the Del Mar Fairgrounds or Racetrack, is located on the north bank of the San Dieguito River in Del Mar, California. This property is vulnerable to flooding originating from the San Dieguito River, which is tidally influenced. Harris & Associates and the District are pursuing a Sea Level Rise (SLR) Vulnerability Assessment for this property to inform future planning, including the District's Master Plan upgrades and evaluate opportunities for affordable housing development on the District's property. The District has entered into an Exclusive Negotiations Rights Agreement with the City of Del Mar (City) to evaluate the feasibility of affordable housing on the District's property. The City's initial affordable housing feasibility studies were completed in 2022 and identified and provided conceptual designs for two sites within the District's property. However, supplemental environmental assessment work is necessary to support further Pre-Development Studies/Due Diligence which was included as part of the City's Cycle 2 Housing Acceleration Program (HAP) Grant it received from the San Diego Association of Governments (SANDAG) in 2024.

GHD has been retained by Harris & Associates to complete hydraulic modeling and SLR vulnerability assessment to support the City's HAP Grant effort to analyze conceptual designs and identified sites for the housing development within the District's property. The first step of this effort includes hydraulic modeling of the existing conditions considering various flooding scenarios. A two-dimensional hydrologic/hydraulic model has been developed to assess onsite flooding as a result of different tidal events, SLR scenarios, fluvial events within the San Dieguito River, and onsite rainfall events. The model build and results are described in this report. The results of these hydraulic models can be used to assess potential sites for the proposed affordable housing development.

The model results were used to determine potential mitigation measures to address onsite flooding which are discussed in this report along with model results. Three conceptual adaptation strategies are described in this report, including (1) targeted ecotone features, (2) perimeter berm protection, and (3) site-wide grading with a floodable frontage. These mitigation measures were developed at a high level to address fluvial and sea level rise flood hazards, as existing modeling indicated that the site is more vulnerable to fluvial flood hazards than onsite rainfall. Strategy 1 provides flood protection during the 10-year fluvial event with 2070 sea level rise, while Strategy 2 and Strategy 3 provide flood mitigation and protection during the 50-year fluvial event. These strategies were designed to minimize offsite hydraulic impacts.

1.1 Purpose of this report

The purpose of this report is to describe the hydrologic/hydraulic modeling in support of the HAP Grant effort. The report documents the existing conditions two-dimensional hydrologic/hydraulic model build, which was used to evaluate the flood hazards on the District's property during various tidal events, SLR scenarios, fluvial events within the San Dieguito River, and onsite rainfall events. This report also summarizes the model assumptions and preliminary model results. Finally, the report discusses three mitigation strategies to address fluvial and sea level rise flood hazards, including the hydrologic/hydraulic modeling of these scenarios.

1.2 Scope and limitations

This report has been prepared by GHD for Harris & Associates, Inc and may only be used and relied on by Harris & Associates, Inc and the 22nd District Agricultural Association District for the purpose agreed between GHD and Harris & Associates, Inc as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Harris & Associates, Inc and the 22nd District Agricultural Association District arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 3.9 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared the HEC-RAS 2D Models ("Models") for, and for the benefit and sole use of, Harris & Associates, Inc and the 22nd District Agricultural Association District to support the City's HAP Grant effort and must not be used for any other purpose or by any other person.

The Model is a representation only and does not reflect reality in every aspect. The Model contains simplified assumptions to derive a modeled outcome. The actual variables will inevitably be different to those used to prepare the Model. Accordingly, the outputs of the Model cannot be relied upon to represent actual conditions without due consideration of the inherent and expected inaccuracies. Such considerations are beyond GHD's scope.

The information, data and assumptions ("Inputs") used as inputs into the Model are from publicly available sources or provided by or on behalf of the Harris & Associates, Inc including by Fuscoe Engineering, Inc. GHD has not independently verified or checked Inputs beyond its agreed scope of work. GHD's scope of work does not include review or update of the Model as further Inputs becomes available.

The Model is limited by the mathematical rules and assumptions that are set out in the Report or included in the Model and by the software environment in which the Model is developed.

The Model is a customized model and not intended to be amended in any form or extracted to other software for amending. Any change made to the Model, other than by GHD, is undertaken on the express understanding that GHD is not responsible, and has no liability, for the changed Model including any outputs.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

2. Del Mar Fairgrounds Site Overview

2.1 Summary of Flood Hazards

Del Mar Fairgrounds is located north of the San Dieguito River, approximately 1,000 ft upstream of its outlet the Pacific Ocean. The site is located in a low-lying area with ground elevations ranging from approximately 5 ft to 14 ft NAVD88. A large portion of the site is impervious, including parking lots and roofs. Large pervious areas include the Main Track, Training Track, Backstretch Area, Arena Area, and the overflow parking areas.

The District's Fairgrounds site is subject to fluvial flood hazards originating from the San Dieguito River, tidal flood hazards, and flooding from onsite rainfall. The site is mapped within FEMA Special Flood Hazard Area (SFHA) Zone AE, which indicates a 1% annual chance of flooding with established Base Flood Elevations (BFEs). The southern extent of the project site is mapped within a FEMA regulatory floodway, meaning that any proposed development within this floodway must be demonstrated to lead to no rise in water surface elevations within the San Dieguito River. The remainder of the site is located within the FEMA floodplain, in which development is allowed such that it does not raise water surface elevations by more than 1.0 ft. A map of the FEMA floodplain and floodway at the Del Mar Fairgrounds is included in Figure 1.

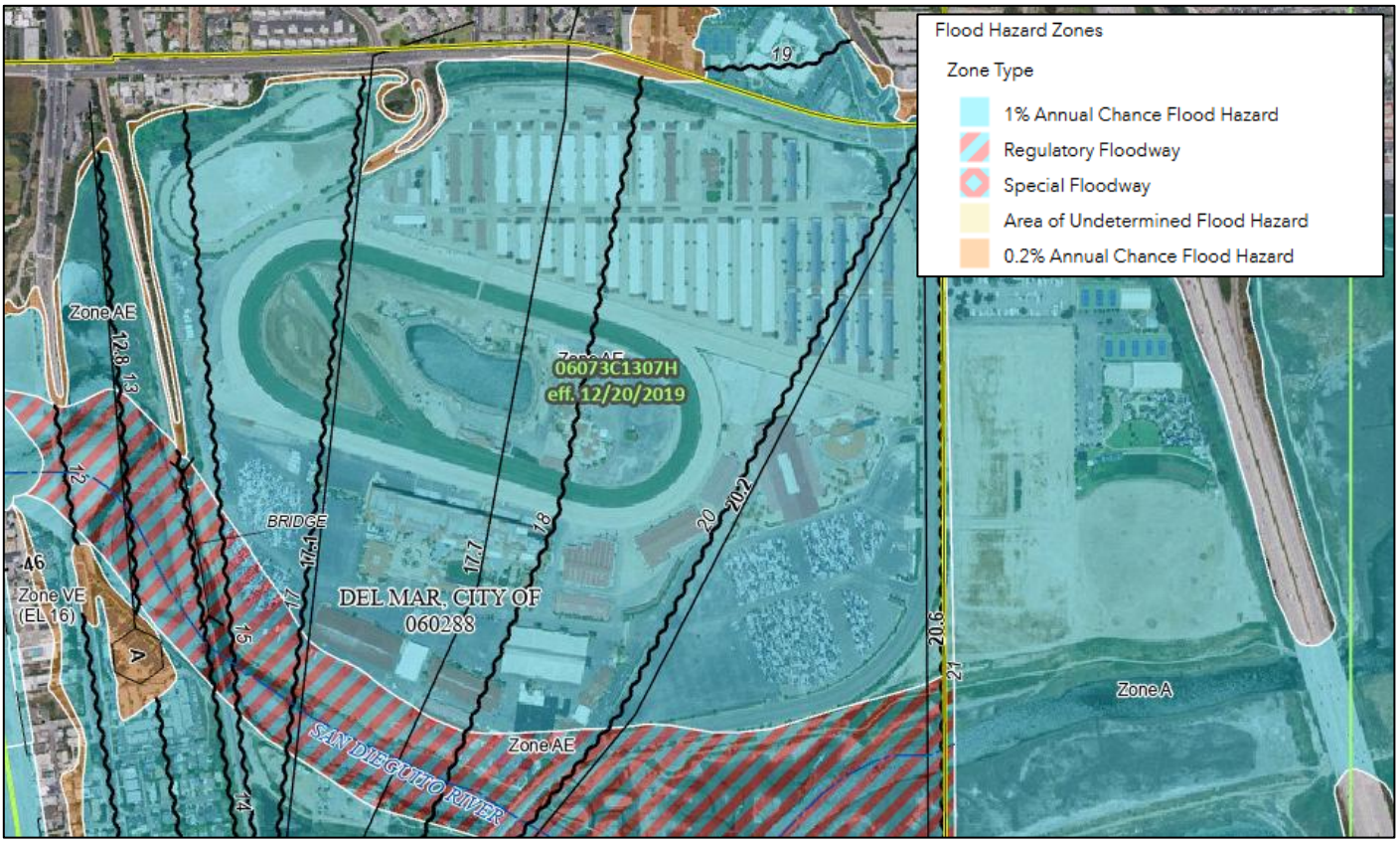

Figure 1 *FEMA floodplain and floodway at the Del Mar Fairgrounds site*

Due to its proximity to the Pacific Ocean, the Del Mar Fairgrounds site is subject to flooding during large tidal events and is therefore vulnerable to SLR. Additionally, flooding within the San Dieguito River is tidally influenced, so SLR could increase the site's vulnerability to flooding during fluvial events within the river.

To the north and west of the site is Stevens Creek, an urbanized drainage channel. The channel receives outflow from double box culverts north of the stables, flows west and south through three culverts, and outlets into the San Dieguito River near the railway crossing. The largest source of channel inflow is the double box culverts, which receive flow from a large portion of the City of Solana Beach. The creek also receives flow from the Fairgrounds site. Stevens Creek has been reported to overtop during large storm events (Chang Consultants, May 2014). In 2015, a berm was constructed along the south bank of the creek, north of the stables, to reduce breakout flow onto the Fairgrounds site.

2.2 Existing Infrastructure

The existing flood infrastructure on the Fairgrounds site includes storm drain networks, pump stations, stormwater treatment, and berms. Storm drain infrastructure includes roof drains and grates that convey onsite runoff to Stevens Creek and the San Dieguito River. Since 2015, the flood infrastructure has been upgraded twice to improve resiliency and to improve the quality of stormwater discharge. An overview of the existing site is shown in Figure 2. Appendix A contains more detailed maps showing the existing storm drain infrastructure.

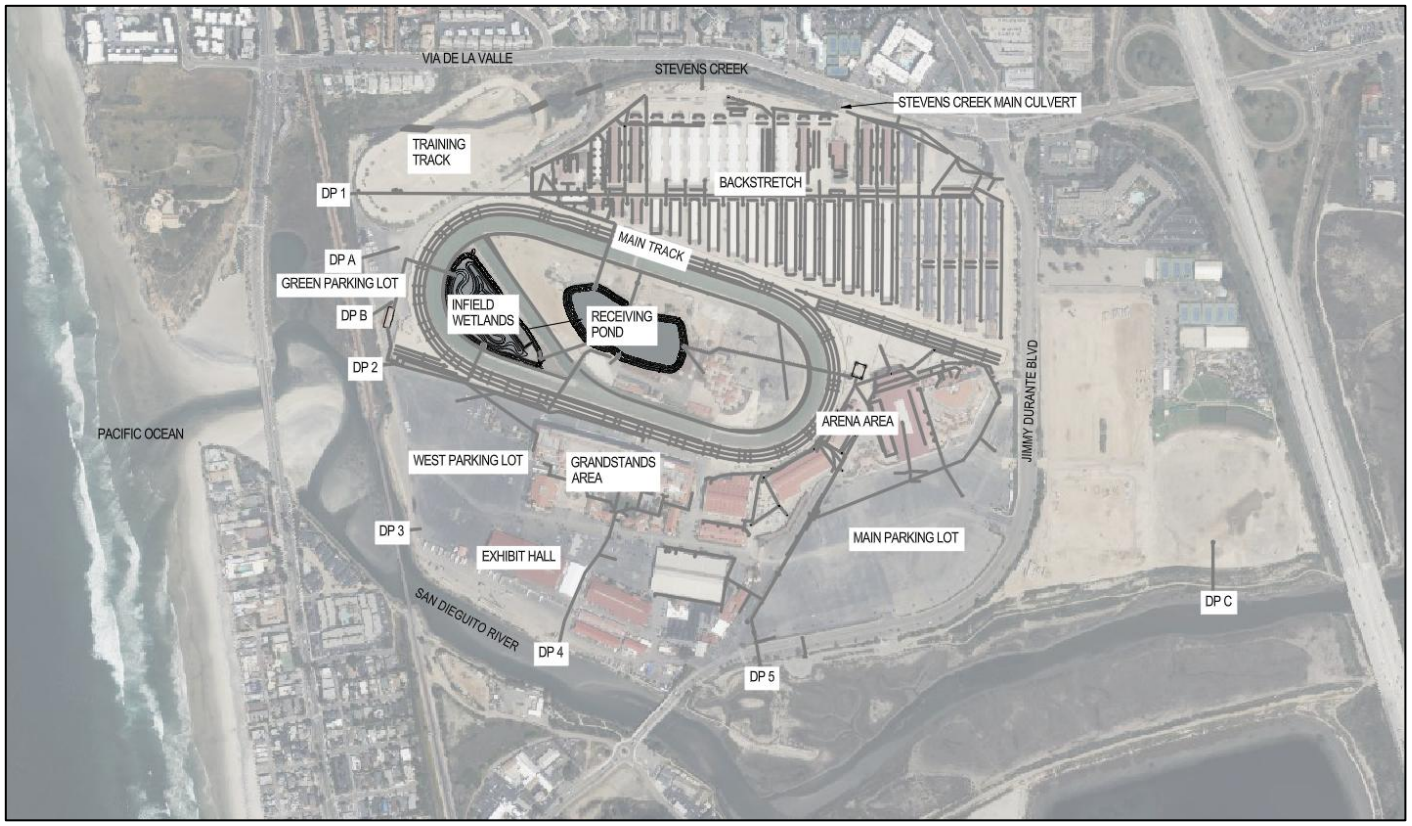

Figure 2 ***Overview of existing storm drain infrastructure at Del Mar Fairgrounds***

2.2.1 Phase I Backstretch Improvements

In 2015, improvements were made in the Backstretch to improve roof and surface drainage. Roof drains were upgraded to convey runoff from the 25-year storm event and grates were added to improve surface drainage. Flow in the pipes was directed to the Training Track Pump for discharge at Discharge Point (DP) 1 into Stevens Creek (see Figure 2). A berm was also constructed alongside Stevens Creek to raise the terrain elevation to 17.16 ft NAVD88 (Fuscoe Engineering, Inc, 2015).

2.2.2 Phase II Storm Drain Improvements

Storm drain infrastructure was upgraded again in 2021 to provide treatment to runoff from areas of the site that qualify as Large Concentrated Animal Feeding Operations (CAFOs). Areas of the site that host large numbers of animals throughout the year such as the stables, racetrack, and Arena Area qualify as CAFOs under National Pollutant Discharge Elimination System (NPDES) Permit Regulations and Effluent Limitation Guidelines and Standards for CAFOs (D-Max Engineering, Inc, 2015). Upgrades were made to the site to increase drainage to retention ponds inside of the racetrack infield and the ponds were upgraded to aid in stormwater retention and treatment. Flow from these ponds is routed through a treatment plant and eventually discharged at Discharge Point 3. The new CAFO treatment system was designed to retain and treat runoff from the 25-year storm event (D-Max Engineering, Inc, 2015).

2.2.2.1 CAFO Treatment System

The CAFO Treatment System is designed to fully retain and treat stormwater runoff from the 25-year storm event. The receiving pond receives runoff from the Backstretch, Main Track and infield, Arena Area (Wyland Center, Expo Center,

Barn W, Arena), and a section of the West Parking Lot. The receiving pond is connected to the wetlands pond by a 24” pipe. An intake in the wetlands pond takes water at a maximum of 450 gpm (1 cfs) to the treatment plant. Following treatment, water can be discharged to Stevens Creek at Discharge Point 2 or recirculated back to the ponds.

2.2.2.2 Non-CAFO Drainage Systems

Runoff from the non-CAFO areas drain to the remaining seven discharge points, which are described below and shown in Figure 2. Appendix A contains more detailed maps showing these discharge points and the extents of the non-CAFO areas.

- **Discharge Point 1:** The Backstretch roof drains and three grates that drain non-CAFO surfaces drain to this discharge point through the Training Track Pump. No known gate valve exists on this pipe.
- **Discharge Points A and B:** Single inlets and pipes drain the adjacent parking lots to Stevens Creek. No known gate valves exist on these pipes.
- **Discharge Point 3:** Single inlet and pipe draining the adjacent parking lot to the San Dieguito River. There is a manual gate valve at this location. Management of this gate valve is unknown.
- **Drainage Point 4:** Drainage from the Grandstand is discharged at this point. There is a manual gate valve at this location. Management of this gate valve is unknown.
- **Discharge Point 5:** Drainage from the Main Parking Lot, O’Brien Hall, and roof drains from the Wyland Center, Activity Center, Expo Center, Barn W, and Surfside Race Place. There is a manual gate valve at this location. Management of this gate valve is unknown.
- **Discharge Point C:** Single inlet and pipe draining the adjacent golf area to the San Dieguito River. No gate valve is located on this pipe.

3. Existing Conditions HEC-RAS Model Development

The San Dieguito River was modeled using an unsteady two-dimensional (2D) hydrologic/hydraulic model created using the US Army Corps of Engineers HEC RAS v6.7 beta 5 software. This model was run using the diffusion wave equation set to increase model stability and reduce run times. The following section describes the model scenarios analyzed as part of the study and the development of these hydrologic/hydraulic models.

3.1 Model Scenarios

The HEC-RAS 2D model was used to evaluate flooding originating from the San Dieguito River, tidal events in the Pacific Ocean, SLR, and onsite rainfall. 1 lists the model scenarios for this study.

First, tidal events were studied on their own (no fluvial flow) to determine their resulting flood hazards on the Del Mar Fairgrounds. Next, various storm events were studied within the San Dieguito River, using the mean higher high water (5.13 ft) as a downstream boundary condition. This boundary condition was selected as it occurs regularly.

The effects of SLR on 10-year fluvial flooding were studied next. The 10-year fluvial event was selected for this analysis as the severity of flooding onsite during this event is likely to be more impacted by SLR than the larger events. In larger events, such as the 50-year and 100-year events, almost the entire site is inundated with significant flood depths, making it more difficult to assess the effects of SLR on flooding on the site.

Onsite rainfall was also studied. Onsite rainfall focuses on evaluating a local storm impacting the District's property directly, while fluvial scenarios evaluate San Dieguito River flows associated with rainfall across its watershed. The 100-year and 10-year rainfall events onsite were studied without a fluvial event to determine the risks of onsite flooding from a local storm event. Onsite rainfall was also paired with a 10-year fluvial event. The 10-year fluvial event was selected as it can provide a better understanding of flood hazards from onsite rainfall compared with a larger fluvial event that would flood the site. Finally, 10-year onsite rainfall with SLR was studied.

Three SLR scenarios were selected and included in the model scenarios described above. SLR scenarios were selected using the State of California Sea Level Rise Guidance document (OPC, 2024). The Intermediate-High scenario across three time horizons (2050 – 1 ft, 2070 – 2.3 ft, 2100 – 4.8 ft) were used.

Table 1 Model scenarios

	Scenario No.	Fluvial Event (San Dieguito River)	On-site Rainfall	Tidal Scenario
Tidal Events	1	N/A	N/A	10-year Extreme Water Level (7.34 ft)
	2	N/A	N/A	2050 Intermediate-High SLR + MHHW (6.13 ft)
	3	N/A	N/A	2070 Intermediate-High SLR + MHHW (7.43 ft)
	4	N/A	N/A	2100 Intermediate-High SLR + MHHW (9.93 ft)
Fluvial Events	5	10-year Storm Event	N/A	MHHW (5.13 ft)
	6	50-year Storm Event	N/A	MHHW (5.13 ft)
	7	100-year Storm Event	N/A	MHHW (5.13 ft)
Fluvial Events + Sea Level Rise	8	10-year Storm Event	N/A	2050 Intermediate-High SLR + MHHW (6.13 ft)
	9	10-year Storm Event	N/A	2070 Intermediate-High SLR + MHHW (7.43 ft)
	10	10-year Storm Event	N/A	2100 Intermediate-High SLR + MHHW (9.93 ft)
Onsite Rainfall Events	11	N/A	10-year	MHHW (5.13 ft)
	12	N/A	100-year	MHHW (5.13 ft)
Fluvial + Onsite Rainfall	13	10-yr	10-year	MHHW (5.13 ft)
Onsite Rainfall + Sea Level Rise	14	N/A	10-year	2050 Intermediate-High SLR + MHHW (6.13 ft)
	15	N/A	10-year	2070 Intermediate-High SLR + MHHW (7.43 ft)
	16	N/A	10-year	2100 Intermediate-High SLR + MHHW (9.93 ft)

3.2 Terrain

The model terrain was created primarily using 2014 U.S. Geological Survey (USGS) LiDAR data. To improve resolution in the San Dieguito River, 2014 USACE National Coastal Mapping Program (NCMP) topobathymetric LiDAR data for California was used to refine the terrain within the river channel. This bathymetric data extends from

approximately 930 ft upstream of Jimmy Durante Blvd Bridge to the Pacific Ocean. Bathymetric data was not available upstream of the 2014 USACE NCMP LiDAR extents, so the channel invert is not well-resolved in the model terrain.

In 2021, the infield ponds were re-graded as part of the District's Phase II Stormwater Improvement Project (see Section 2.2.2). CAD files with the improvements were provided by Fuscoe Engineering, Inc. The updated basin grading was incorporated into the model terrain. The bottom elevation of the basins was raised to the normal water level provided in the Stormwater Improvement Project Plans to reflect normal operating conditions.

Additional LiDAR was not available in Stevens Creek, so the channel invert is not well-resolved in the model. The channel terrain at the culvert inlets and outlets was lowered to match the culvert invert elevations. In general, the invert of the creek in the LiDAR data was within 1 ft of the culvert invert elevations. The berm constructed in 2015 along the south bank of Stevens Creek from Solana Gate to the upstream end of the creek was added to the model using the chain link fence as a reference for the alignment and data from the Backstretch Improvements Phase 1 as-built set.

The grading changes made in 2016 for the Del Mar Fairgrounds Tidal Marsh Restoration project immediately upstream of Jimmy Durante Blvd were excluded from the model terrain.

3.3 Model Grid

The mesh features 50 ft by 50 ft rectangular grid cells and encompasses the San Dieguito River, the Del Mar Fairgrounds site, and surrounding terrain. The perimeter extends from the Pacific Ocean eastward to 0.25 miles downstream of the El Camino Real crossing. The southern perimeter is located at the high points in the terrain to ensure flow containment. The northern perimeter is located approximately 200 ft north of Via De La Valle. Break lines are placed along the river and creek channels to orient flow perpendicular to the mesh. Break lines are also placed along levees and higher elevation features such as roads to improve model resolution in those locations. Cell sizes along breaklines range from 5 ft to 50 ft. The extents of the model grid and the model terrain are shown in Figure 3.

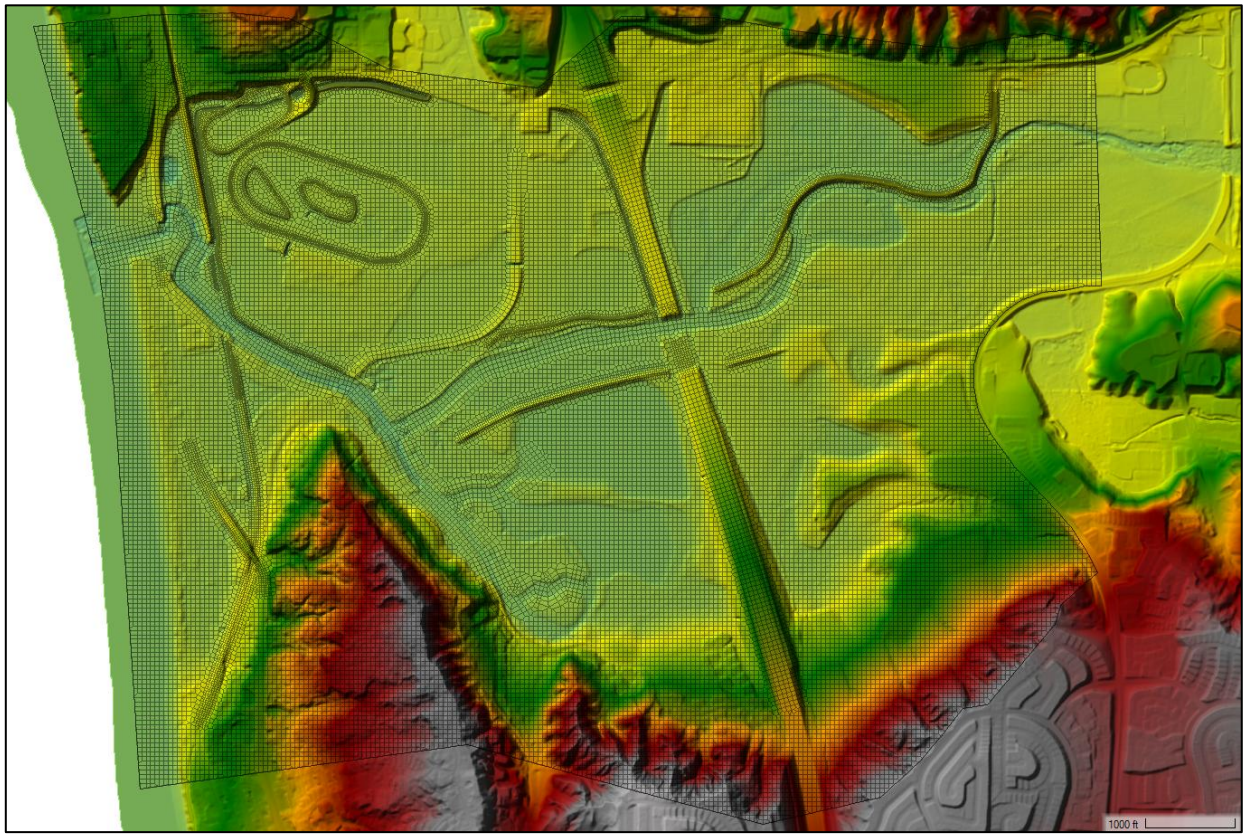

Figure 3 HEC-RAS 2D model grid

3.4 Model Inflows

Inflow hydrographs were used to model the flow in the San Dieguito River for the fluvial events. Additionally, for the onsite rainfall events, inflow hydrographs were applied to Stevens Creek and to model excess flow from the stable roofs beyond the capacity of the roof drains.

3.4.1 San Dieguito River Inflow Hydrograph

The San Dieguito River fluvial events were modeled using hydrographs for the 10-, 50-, and 100-year storm events, which provide flow rates for the river in 1-hr increments during the storm event. The hydrographs were extracted from the 2014 Chang Consultants *Hydrology & Hydraulics Studies for the San Dieguito Double Track* report (Chang Consultants, May 2014). The hydrographs include attenuation effects from upstream Hodges Dam, which can retain smaller storm events and allows flow over the spillway in larger events. Digital files of the hydrographs were unavailable, so points on these hydrographs were extracted from a PDF copy of the report. Please refer to Figure 4 for the 10-, 50-, and 100-year San Dieguito River inflow hydrographs.

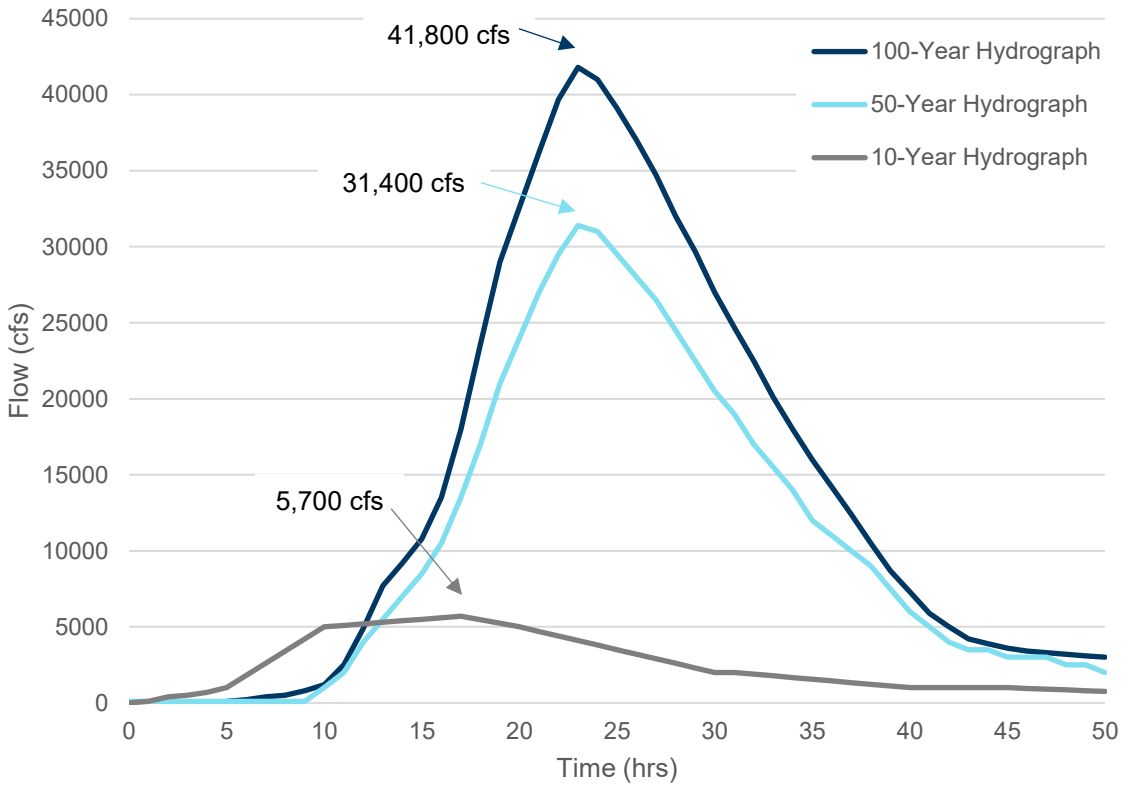

Figure 4 ***San Dieguito River hydrographs, extracted from 2014 report (Chang Consultants, May 2014)***

For the tidal and rainfall only scenarios, the San Dieguito River was modeled with a constant inflow of 100 cfs, reflecting the minimum flow in the 10-year hydrograph.

3.4.2 Onsite Rainfall

Onsite rainfall events were simulated using rain-on-grid boundary conditions. 10-year and 100-year rainfall was applied to the model grid. The HEC-RAS model simulates infiltration/losses to determine excess rainfall within each grid cell. This section describes the development of the hyetographs and loss parameters used in the model.

3.4.2.1 Hyetographs

10-year and 100-year hyetographs were developed following methods outlined in the San Diego County Hydrology Manual (County of San Diego Department of Public Works Flood Control Section, June 2003). This method relied on 10-year and 100-year National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rainfall depths for a variety of durations ranging from 5 minutes to 24 hours. These rainfall depths were used to create nested rainfall distributions with 5-minute increments. NOAA Atlas 14 precipitation depths are contained in Appendix B and calculations are included in Appendix C. Please refer to Figure in Appendix C for the 10-year and 100-year rainfall hyetographs.

3.4.2.2 Infiltration

HEC-RAS calculates the rainfall losses at each time step within each grid cell based on user-input infiltration data. Soil Conservation Service (SCS) Curve Numbers (CN) were used in this study to calculate rainfall losses. Curve numbers were assigned based on soil type and land use. Land uses were assigned based on 2021 NOAA Coastal Change Analysis Program (CCAP) regional land use data. Soil types were obtained from United States Geological Survey (USGS) Web Soil Survey. Once the land use and soil type was defined, spatially varied CN were assigned using recommended CN values within the San Diego County Hydrology Manual. Please refer to Appendix D for a list of land use data and curve numbers used in the model. Much of the site features hard packed dirt and pavement with soil type D. These areas were modeled with high CN values of 89 and 98, respectively. The initial abstraction ratio was set to 0.2 for all land uses.

The inflow from the stable roofs was input separately (see Section 3.4.4), so the stable buildings were set with a high infiltration rate (CN=1, Ia=1) to avoid double-counting flow.

3.4.3 Stevens Creek Inflow Hydrograph

Stevens Creek is a flood control channel located to the north and west of the fairgrounds site, which receives urban runoff from a large portion of the City of Solana Beach. Inflow at the upstream end of this channel was included in the rain-on-grid scenarios, as the water surface elevations within the Creek affect the hydraulics within the onsite storm drain systems. Inflow to the Creek was excluded from all other (fluvial/tidal only) models. Inflow for any other outfalls into the channel were excluded from this model.

Inflow hydrographs for Stevens Creek were estimated based on the capacity of the double 12 ft x 6 ft reinforced concrete boxes (RCB) at the upstream end of the channel, following the process described below. Please refer to Appendix E for calculations and see Figure 5 for hydrographs.

1) The peak 100-year flow rate was approximated as the capacity of the double 12 ft x 6 ft RCBs when flowing full. This approach is consistent with the San Diego County Hydraulic Manual, which states that culverts should be designed to pass the 100-year peak flow (County of San Diego Department of Public Works Flood Control Section, 2014). The slope of the culvert was not available, so it was estimated as 0.0007 ft/ft, matching the slope of the Solana Gate culvert, immediately downstream.
2) The peak 10-year flow rate was approximated by scaling the 100-year peak flow rate by the ratio of the 10-year 24-hour rainfall depth to the 100-year 24-hour rainfall depth obtained from NOAA Atlas 14 (see Appendix B).
3) The SCS unit hydrograph was used to generate hydrographs for the 100-year and 10-year storm events, assuming a peak time of 16 hours. This peak time was selected for a conservative analysis, as it aligns with the peak of the hyetographs discussed in Section 3.4.2.1.

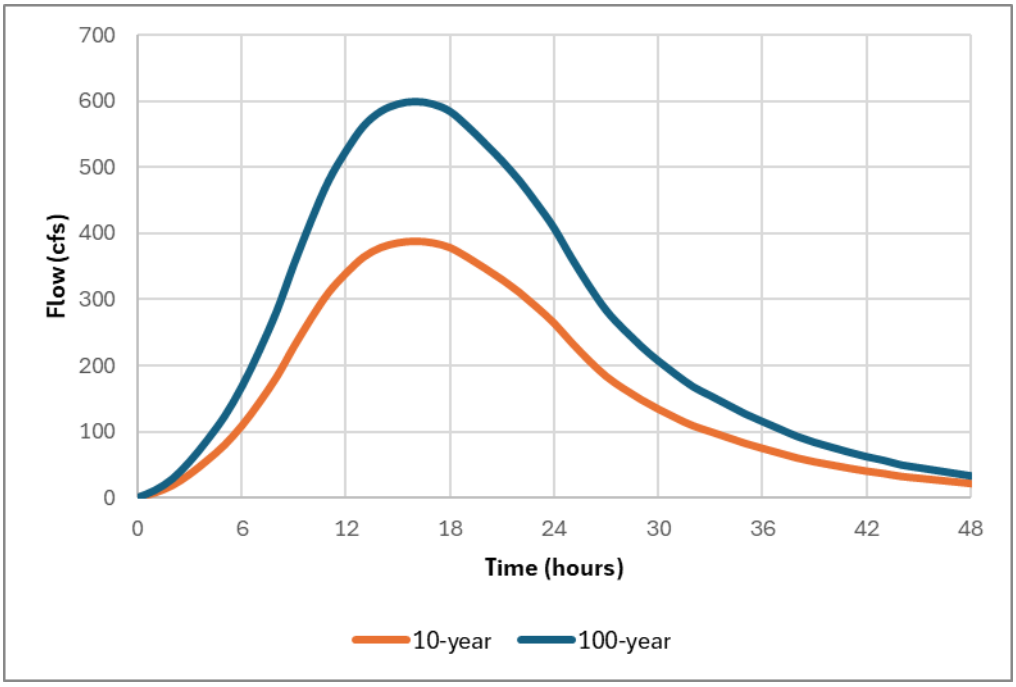

Figure 5 Stevens Creek inflow hydrographs

3.4.4 Roof Drains

Several buildings within the Fairgrounds site feature roof drain systems. The roof drain systems implemented in the Phase I and Phase II improvements were designed to capture the 25-year storm event rainfall and discharge stormwater to Stevens Creek or San Dieguito River (see Section 2.2). Within the CAFO areas, roof drains separate non-CAFO regulated roof water from surface runoff and reduce the volume of water routed to the infield ponds. The roof drains in the Backstretch were modeled using a representative hydrograph as described below. The roof drains in the vicinity of the Arena and Barn W were excluded from preliminary modeling due to lack of data. Additionally, the hydramatic pump downstream of these roof drains was assumed to limit the capacity of the system, resulting in minimal flow through these roof drains.

The Backstretch roof drains cover approximately 16.7 acres of roofs in the Backstretch Area (see Figure 2 in Section 2.2). These roof drains were not included in the onsite model, so inflow hydrographs were introduced in the stables area to simulate excess flow beyond the capacity of the roof drains that would spill onto the ground. Since the roof drains were designed to capture flow during the 25-year storm event, no additional runoff from the roofs was introduced in the 10-year onsite rainfall event. For the 100-year onsite rainfall event, hydrographs representing excess flow from the roof drains were created by taking the difference between 25-year and 100-year hydrographs. These hydrographs were generated by multiplying the 25-year and 100-year hyetographs and the roof area. This approach assumes no rainfall losses, since the roofs are entirely impervious. Additionally, no lag time was introduced due to the small size of the roofs. The 100-year inflow (excess flow) hydrograph for the stable roof drains is shown in Figure C-2 in Appendix C alongside the 100-year and 25-year hydrographs.

3.5 Tidal Conditions

Tidal conditions were used as the downstream boundary of the HEC-RAS model. The parameters for these conditions were assembled from the nearest NOAA tide station, approximately 7.6 miles south at La Jolla. This station has a data repository as far back as 1924 and is representative of high-water levels downstream of the Del Mar Fairgrounds site. Also, due to the long data record for this station, extreme water levels (EWL) are provided by NOAA's Center for Oceanographic Products (NOAA CO-OPS) for annual exceedance probabilities of 1%, 10%, 50%, and 99%. These

probabilities correspond to an annual return period of 100-years, 10-years, 2-years, and 1-year, respectively. In consideration of this tidal information, two still water level conditions were selected for this analysis.

- The Mean Higher-High Water (MHHW) condition was selected to be representative of a monthly high tide condition. This is considered to be a highly recurrent event that would be observed under normal tidal conditions. The MHHW was modeled as 5.13 ft NAVD88.
- The 10-year EWL was selected to be representative of a historic king tide condition. This is considered to be an infrequent event with only a 10% annual occurrence probability and would likely be observed under conditions related to coastal storm surge. The 10-year EWL is 7.34 ft NAVD88.

Additionally, in order to evaluate the effects of SLR on these tidal conditions, three SLR scenarios were selected based on the Ocean Protection Council's California Sea Level Rise Guidance: 2024 Science and Policy Update. This guidance is considered as the "best available science" for SLR projections in California. Based on the recommended precautionary approach, the Intermediate-High SLR planning scenarios for 2050, 2070, and 2100 were selected for this analysis. In order to establish these projected water levels, the projected SLR was added to the MHHW conditions. The result downstream boundary elevations were 6.13 ft, 7.43 ft, and 9.93 ft, for the 2050, 2070, and 2100 SLR scenarios, respectively.

3.6 Manning's Roughness

Manning's roughness values were assigned using 2021 NOAA CCAP land use data. Roughness values were assigned based on land use using HEC-RAS 2D User Manual Guidance (U.S. Army Corps of Engineers, n.d.). Values were selected from the middle of the range for each land use. Manning's roughness values were refined within the river and in the vicinity of the project site using classification polygons. Please refer to Appendix D Table D-1 for a list of Manning's roughness values based on land use and Appendix D Figure D-1 for a depiction of Manning's roughness in the model.

3.7 SA/2D Connections

The HEC-RAS 2D model includes four bridges over the San Dieguito River which are modeled as SA/2D connections. These bridges are listed below along with their data sources. Pedestrian bridges and overlooks were excluded from the model, as data was not available for these features and they are estimated to have minimal effects on the model results.

1. I-5 Bridge over the San Dieguito Lagoon, which was modeled based on Caltrans as-built records. Elevations were converted from NGVD29 to NAVD88 using a datum shift of 2.16 ft, based on NOAA's NGS Coordinate Conversion and Transformation Tool (NCAT).
2. Jimmy Durante Blvd Bridge, which was modeled based on geometry in the City of Del Mar Engineering San Dieguito Lagoon Shoreline Protection no rise model (GHD, 2025). Geometry for this no rise model was obtained record drawings received from the City of Del Mar.
3. San Dieguito River Railway Bridge, which was modeled based on a previous HEC-RAS model developed by Chang-Consultants (Chang Consultants, 2020), as as-built records were not available for this bridge.
4. Camino Del Mar Bridge, which was modeled based on geometry in the City of Del Mar Engineering San Dieguito Lagoon Shoreline Protection no rise model (GHD, 2025). Geometry for this no rise model was obtained record drawings received from the City of Del Mar.

In addition to the four bridges over the San Dieguito River, the model includes three crossings with culverts within Stevens Creek. Fuscoe Engineering, Inc. (Fuscoe) provided inverts for the culverts at Solana Gate and the first Training Track crossing. Only the upstream invert was provided for the second Training Track crossing, and the downstream invert was assumed based on the slope of the surrounding channel and upstream crossings. The sizes of the culverts were taken from the *Stevens Creek Widening Report* (Fuscoe Engineering and LSA Associates, Inc., 2008). Lengths were measured from the provided CAD files.

Within the Fairgrounds property there is a tunnel that allows access to the racetrack infield. The infield access tunnel was modeled as a SA/2D connection with a culvert, to provide flow connectivity through the tunnel. Dimensions for the culvert were taken from the Tunnel Under Racetrack to Infield Plaza plan set provided by Fuscoe Engineering, Inc (James A. Hutchinson & Associates, 1984). Invert elevations were set equal to the minimum terrain elevation at the openings.

3.8 Pipe Network

The existing onsite storm drain network was modeled in all of the onsite rainfall scenarios. In these scenarios, all manual gate valves were assumed to be open, all drains were assumed to be uncovered, and no sewer connections were modeled. Model inputs and assumptions are discussed in detail in this section.

A simplified version of the pipe network was included in the tidal and fluvial models under the assumption that all manual gate valves are closed during those events. The tidal and fluvial model scenarios only include the two Green Parking Lot drains (Discharge Points A and B) without manual gate valves that drain to Stevens Creek.

3.8.1 Data Sources

Pipe sizes, invert elevations, and alignments as well as inlet locations and sizes were obtained from the following data sources. Elevations were converted from NGVD29 to NAVD88 using a factor of +2.156 ft.

- Survey data in CAD provided by Fuscoe
- 2018 Phase II Storm Water Improvement Plans (Fuscoe Engineering, Inc, 2018)
- Backstretch Improvement Phase 1 Plans (Fuscoe Engineering, Inc, 2015)
- Industrial Activities Storm Water Pollution Prevention Plan for Del Mar Fairgrounds, Updated 2022 (D-Max Engineering, Inc, 2015)
- Program Effectiveness Assessment and Improvement Plan (Fuscoe Engineering, Inc, 2024)
- San Diego Regional Standard Drawings (Regional Standards Committee, 2022)

Field data collection was used to verify operational status and location of grates in the parking lots. Global Positioning System (GPS) points were taken with EOS Gold Global Navigation Satellite System (GNSS) for location reference. Field measurements were taken where possible to determine the sizes of pipes, inlets, and depth to invert of inlets (used to estimate pipe invert elevations based on the terrain surface elevations). Pipe sizes for inaccessible outfalls were visually approximated and photographed as reference. Inlets with pipes not clearly defined in the available data or missing from available data were located when possible and the direction of connected pipes was noted if accessible.

Note that despite referencing these several data sources, several data gaps exist, requiring assumptions. These assumptions are described throughout this section and summarized in Section 3.9.

3.8.2 Storm Drain Systems

As described in Section 2, storm drains within the Fairgrounds site drain to Stevens Creek, the San Dieguito River, or the infield retention ponds. In the initial storm drain model, drains were modeled leading to discharge points A, B, 3, 4, and 5. Storm drains leading to the infield ponds were modeled from the Backstretch and the Arena Areas. Drainage to Discharge Point 1 was replaced by the roof drain hydrograph (see Section 3.4.4). Flow from Discharge Point 2 (DP2) was considered negligible due to discharge capacity limitations from the treatment plant and was therefore excluded from the model. Discharge Point C, east of Jimmy Durante Blvd was also excluded (see Figure 2 in Section 2.2) due to limited information on this gravity pipe. Figure 6 shows the resultant storm drain systems included in the model with colored lines and the excluded systems in black. Details on the storm drain systems included are provided below.

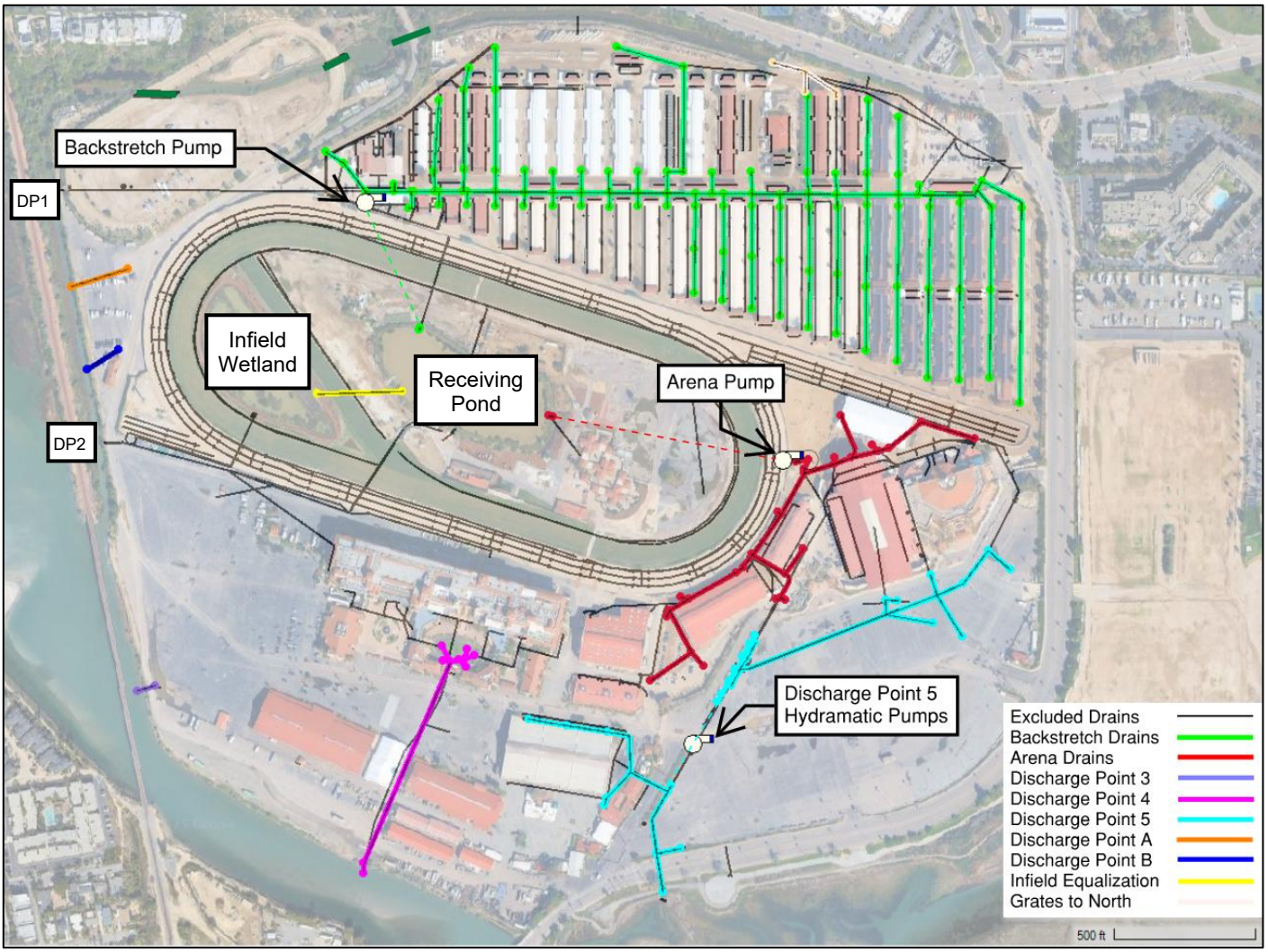

Figure 6 ***Storm drain systems shown in color were modeled in HEC-RAS and storm drains shown in black were excluded from the model.***

The following storm drain systems were included in the model:

- **Backstretch Wash Drains and Pump Station:** Backstretch Pump Station conveys flow from the Wash Drains to the receiving pond.
- **Arena Pump Station and Drainage:** Arena Pump discharges flow from the Arena Drains to the Receiving Pond. Upstream of the Arena Pump, a Detention Unit provides 8,100 ft^3 of flood storage, which was modeled as a node with a large base area.
- **Discharge Point 3:** Parking lot drain with a manual gate valve.
- **Discharge Point 4:** Gravity storm drain network per CAD survey data with a manual gate valve.
- **Discharge Point 5:** Grates located in the Main Parking Lot drain to a hydramatic pump. These grates were located in the field. Flow is then conveyed through a 30-in gravity drain with a gate valve to the discharge point in the San Dieguito River.
- **Discharge Points A and B:** Parking lot gravity drains that outlet to Stevens Creek with no known gate valves.
- **Infield Equalization Pipe:** 24” pipe connecting the infield wetland and receiving pond per Phase II Storm Drain Improvements Plan.

- **Grates to North:** Field-identified pipes that discharge flow collected from grates in the stables area to the Stevens Creek culvert.

3.8.2.1 Excluded Storm Drain Systems

The following storm drain systems and elements were not included in the model.

- Main Track and recirculation to the receiving pond, including connections for infield access tunnel sumps and parking lot grates to the west of the grandstand
- Outfall from the CAFO treatment system (Discharge Point 2)
- Roof drains
- Turf Track drainage
- Infield pavilion drainage
- Infield gravity drain
- Grates discharging to Discharge Point 1
- Any storm drain to sewer connections
- Connections to offsite storm drains along Jimmy Durante Blvd
- 12-in pipe connecting to Discharge Point C, east of Jimmy Durante Bvld

3.8.3 Conduit Model Inputs

The model inputs for conduits (pipes) are described below.

- **Pipe shape:** All pipes were modeled as circular.
- **Pipe diameters:** Diameters were obtained from data sources described in Section 3.8.1 or assumed based on the diameter of surrounding pipes in the system.
- **Pipe inverts:** Pipe invert elevations were set to the invert elevations of the connected nodes, with no elevation offsets.
- **Pipe modeling approach:** Pipe modeling approach was set to hydraulic apart from short inlet pipes on the Discharge Point 4 system, which were set to instantaneous to improve computational efficiency.
- **Mesh cell length**: The mesh cell length for all pipes was set to 10 ft.
- **Entrance and Exit Losses:** Assumed 0.5 for entrance, exit, and backflow losses.
- **Manning's n:** The roughness of the pipes was characterized by Manning's n values selected based on pipe material as described in Table 2.

Table 2 Manning's roughness based on pipe material

Pipe Material	Manning's n
PVC	0.012
RCP/HDPE	0.013
CMP	0.024

3.8.4 Node Model Inputs

The HEC-RAS 2D model includes nodes to model inlets, manholes, junctions, and outlets. Model inputs for these nodes are described below.

- **Invert Elevation:** The node invert was set to the elevations provided in the sources described in Section 3.8.1 or calculated based on the slope of surrounding pipes. Outfall invert elevations were set equal to the terrain elevation at the outfall.
- **Base Area:** The base area was assigned to nodes based on the inlet type and dimensions in the San Diego County Standard Drawings, field measurements, or CAD labels.
- **Top/Side Inlet Elevation:** The inlet elevation was set equal to the LiDAR terrain elevation at the node.
- **Inlet Types:** Only grates and manholes were assigned inlet types and cleanouts and filters were excluded.
- **Weir Length and Coefficient:** The weir length was calculated from San Diego County Standard Drawings or assumed based on CAD data. The weir coefficient was set at 3 for all inlet types.
- **Orifice Area and Coefficient:** The orifice area was calculated from San Diego County Standard Drawings or assumed based on CAD data. The orifice coefficient was set at 0.67 for all inlet types.
- **Surcharge Only:** Only the manhole node type was set to allow surcharge only, meaning that manholes do not accept flow from the model grid.

3.8.5 Pump Stations

Three pump stations were included in the model: the Arena Pump Station, the Backstretch Pump Station, and the Hydramatic Pump Station leading to Discharge Point 5. The Arena Pump Station and the Backstretch Pump Station were both modeled with duplex Grundfos pumps per plan specs. The pumps were connected in HEC-RAS to a node to represent the pump station on the upstream end and the outfall structure downstream of the pump.

3.8.5.1 Pump Curves

The pump curves for the arena and Backstretch pumps were approximated from manufacturer curves. Adjusted pump curves were calculated to reflect system losses along the force main. The losses in the force main leading to the discharge point were calculated considering both the minor and major losses. The friction losses were subtracted from the manufacturer pump curve to create an efficiency curve. The highest elevation along the pump lines was noted as the elevation of the force main leaving the pump station. Pump curves and calculations can be found in Appendix F.

The pump curve for the pump leading to Discharge Point 5 was assumed to have a constant discharge of 3 cfs, as more detailed data was not available. No losses were calculated along this pump line.

3.8.5.2 On/Off Points

The on and off points of the lead and lag pumps within the arena and Backstretch pump stations were not available. These set points were assumed to be at elevations described below.

- **Off point:** 1 ft above invert of pump station
- **Lead pump on point:** invert elevation of the influent pipe to the pump station.
- **Lag pump on point:** approximately 75% of the distance between the influent pipe invert and the force main invert.

3.8.5.3 Pump Outfall Structures

Both outfall structures into the receiving basin were modeled based on available information in the Phase II Storm Drain Improvements Plan. The outfall apron was modeled as a 4-ft diameter pipe, consistent with the apron width. The invert elevation was modeled at the receiving basin's high-water level 11.66 ft NAVD88 for a conservative analysis.

3.9 Summary of Assumptions

A summary of the data limitations and model assumptions is provided below, along with some discussion of the potential implications of these limitations and assumptions.

Terrain and model geometry limitations:

- USACE topobathymetric data does not cover the entire model, resulting in poor resolution for the San Dieguito River invert between the upstream model boundary and approximately 930 ft upstream of Jimmy Durante Blvd. Improving the resolution of the model terrain within the San Dieguito River, for example with survey data, would improve the accuracy of the model results for the fluvial scenarios and may lead to reduced onsite flooding.
- Wetland grading in the southern portion of the property from the DMF Tidal Marsh Restoration Project is not reflected in the model terrain.
- The USGS 2014 LiDAR may not resolve the invert of Stevens Creek. Some of the invert elevations of the storm drain outfalls into Stevens Creek were approximated based on the LiDAR data, which could be impacted by the lack of terrain resolution within the creek. Improved resolution of the terrain within Stevens Creek may reduce the water surface elevations within the creek and onsite in the onsite rainfall simulations.
- The 2015 Stevens Creek berm alignment was approximated using Google aerial imagery.
- The top of the receiving basin was edited to elevation 13.66 ft NAVD88 based on the Phase II Storm Drain Improvements plan set. The top elevation in the CAD file was 13.16 ft NAVD88.
- The tunnel/box culverts beneath Jimmy Durante Blvd north of the river were excluded from the model. The model terrain includes an opening in this area, allowing flow beneath Jimmy Durante Blvd. Adding the culvert as a SA/2D connection may increase head loss at this location, which may impact flow paths in the 50-year and 100-year fluvial scenarios.

Inflow assumptions and limitations:

- The San Dieguito River inflow hydrographs were not available digitally, so they were estimated based on PDF hydrographs (Chang Consultants, May 2014).
- Stevens Creek inflow hydrograph (used in the onsite rainfall event) is assumed to be governed by the capacity of the culvert at the upstream end of the channel with the assumptions outlined in Section 3.4.3. No inflow is introduced in Stevens Creek apart from the main culvert and site discharge points.
- Stevens Creek inflow is excluded from the fluvial model simulations, assuming that the flow within the San Dieguito River governs the onsite flood hazards in these scenarios.
- In the Backstretch, the runoff from the stable roof drains is approximated by the difference in rainfall for the 100-year and 25-year storm events (for the onsite rainfall events). The roofs were modeled with high infiltration rates to avoid double counting flow from these roofs. Flow from the roof drain system into Stevens Creek is excluded from the model. As a result, the modeled flood depths in Green Parking Lot adjacent to the Training Track may be lower than reality, since the missing flow in Stevens Creek near Discharge Points A and B may affect the hydraulics within these outfalls.
- San Dieguito River was assumed to carry a 100 cfs base flow in the tidal and onsite rainfall events (without a fluvial event).

Onsite pipes and pump assumptions:

- Flow out of the infield CAFO treatment system at Discharge Point 2 is assumed to be negligible due to the 450 gpm flowrate into the treatment facility.
- The three grates located on the Backstretch roof drain system, including the grate in the Training Track infield, were excluded from the model due to lack of data on the Training Track Pump Station.
- Roof drain systems for buildings outside of the Backstretch were not included in the model.
- Any system draining to the infield ponds was excluded except the networks connected to the Arena Pump and the Backstretch Pump. This includes drainage from the Main Track, Infield Pavilion, Access Tunnel Sumps, West Parking Lot, Recirculation, and other infield drainage. Excluding these networks from the model may result in the model predicting deeper flood depths within the infield than reality, and lower flood depths within the infield basins.
- The grate inlets in the parking lot south of the racetrack were excluded from the modeling, since the location of the connecting pipes was unknown.
- The pump on the Discharge Point 5 system was set to a constant flow rate of 3 cfs, since is pump curve was not available.
- Data on the connection of grates in the Backstretch to Stevens Creek was limited. Two grates with pipes leading north were noted during fieldwork and it was assumed that these pipes connect to the Stevens Creek culvert.
- Due to data gaps, some pipe diameters, pipe material, invert elevations, and inlet sizes were assumed.
- Inlet elevations for certain pipes were estimated by the depth of the pipe and the model terrain surface.
- Available data indicates adverse slopes on a few pipes, which seems unlikely. These pipes are generally located in areas with backwater conditions and slow velocities, so the adverse slope is not expected to have a major impact on model results.
- Entrance losses, exit losses, and backflow losses of 0.5 were assumed for all pipes.

Operational assumptions:

- The infield basins are assumed to have a starting water level of 9.156 ft NAVD88 in the wetland and 11.156 ft in the receiving pond based on the design normal water level.
- The on/off points for the arena and Backstretch pumps were not available. These set points were assumed.
- The manual gate valves on Discharge Points 3, 4, and 5 are assumed to be opened during onsite rainfall events and closed during fluvial and tidal events. Operation of these gate valves is unknown. If these gate valves are closed during onsite rainfall events, more ponding may occur onsite as local runoff would not be able to drain. If these gate vales are open during fluvial and tidal events, additional flooding may occur within the District's property due to backflow through these storm drains.

4. Existing Conditions HEC-RAS Model Results

4.1 Tidal Events

Flood depth results for the tidal only events are illustrated in Appendix G (Figure G-1 to Figure G-3) and below in Figure 7. These figures also display the two storm drains in purple that were included in this model, as they do not have known outfall valves to prevent backflow. The results of the 10-year extreme water level (EWL) tidal scenario

indicates that the Fairgrounds site remains almost entirely dry during the event, with very minor ponding at the upstream end of the one of the storm drain outfalls within the Green Parking Lot (Appendix G Figure G-1). In the 2050 SLR scenario applied to the MHHW, the site remains dry (Appendix G Figure G-2). The results of the 2070 SLR scenario applied to the MHHW are very similar to the 10-year EWL scenario results (Appendix G Figure G-3). Minimal ponding occurs upstream of the two modeled storm drains, and the remainder of the Fairgrounds site is dry.

Finally, the 2100 SLR scenario (Figure 7) shows flooding on the Fairgrounds site as well as upstream of the site, immediately downstream of the I-5. Some of the largest flood depths occur on either site of the infield tunnel (up to 11.6 ft) and at the southwest corner of the West Parking Lot (up to 4.4 ft). This flooding is the result of overtopping of the north bank of the San Dieguito River. Flooding within the Green Parking Lot is the result of backwater from the two modeled storm drains without gate valves.

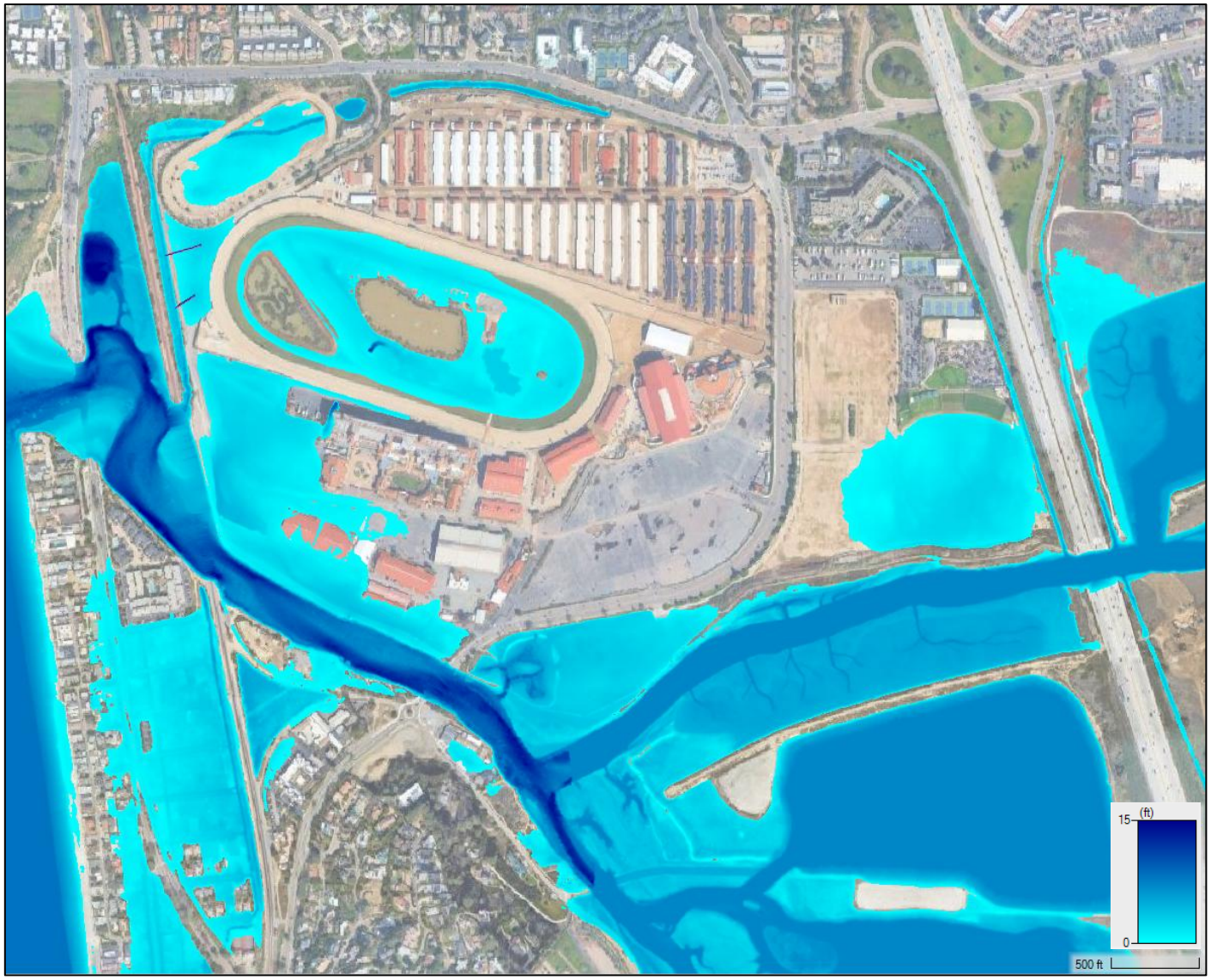

Figure 7 Flood depths resulting from 2100 Intermediate-High SLR + MHHW (9.93 ft)

4.2 Fluvial Events

The flood depth results for the 10-year, 50-year, and 100-year fluvial events within the San Dieguito River are shown in Figure 8, Figure 9, and Figure 10, respectively. These results show the flooding with a MHHW tidal boundary

condition. The result of the 10-year fluvial event shows some flooding within the Fairgrounds site, though most of the site remains dry. Model results indicate flood depths of up to approximately 2.3 ft within the West Parking Lot and along the southern boundary of the Fairgrounds site. This flooding is the result of approximately 24 cfs of breakout flow over the north bank of the San Dieguito River.

Figure 8 Maximum flood depths during the 10-year fluvial event

The flood depth results for the 50-year fluvial event are shown in Figure 9. This storm event results in significantly more flooding within the Fairgrounds site than the 10-year event, with almost the entire site inundated. Flood depths vary throughout the site, with the West Parking Lot experiencing flood depths of up to approximately 8 ft. In the stables area, flood depths range from approximately 2 ft to 6.5 ft. The results indicate approximately 15,300 cfs flows across the Fairgrounds site in this storm event. Most of the site inflow is from flow overtopping Jimmy Durante Blvd.

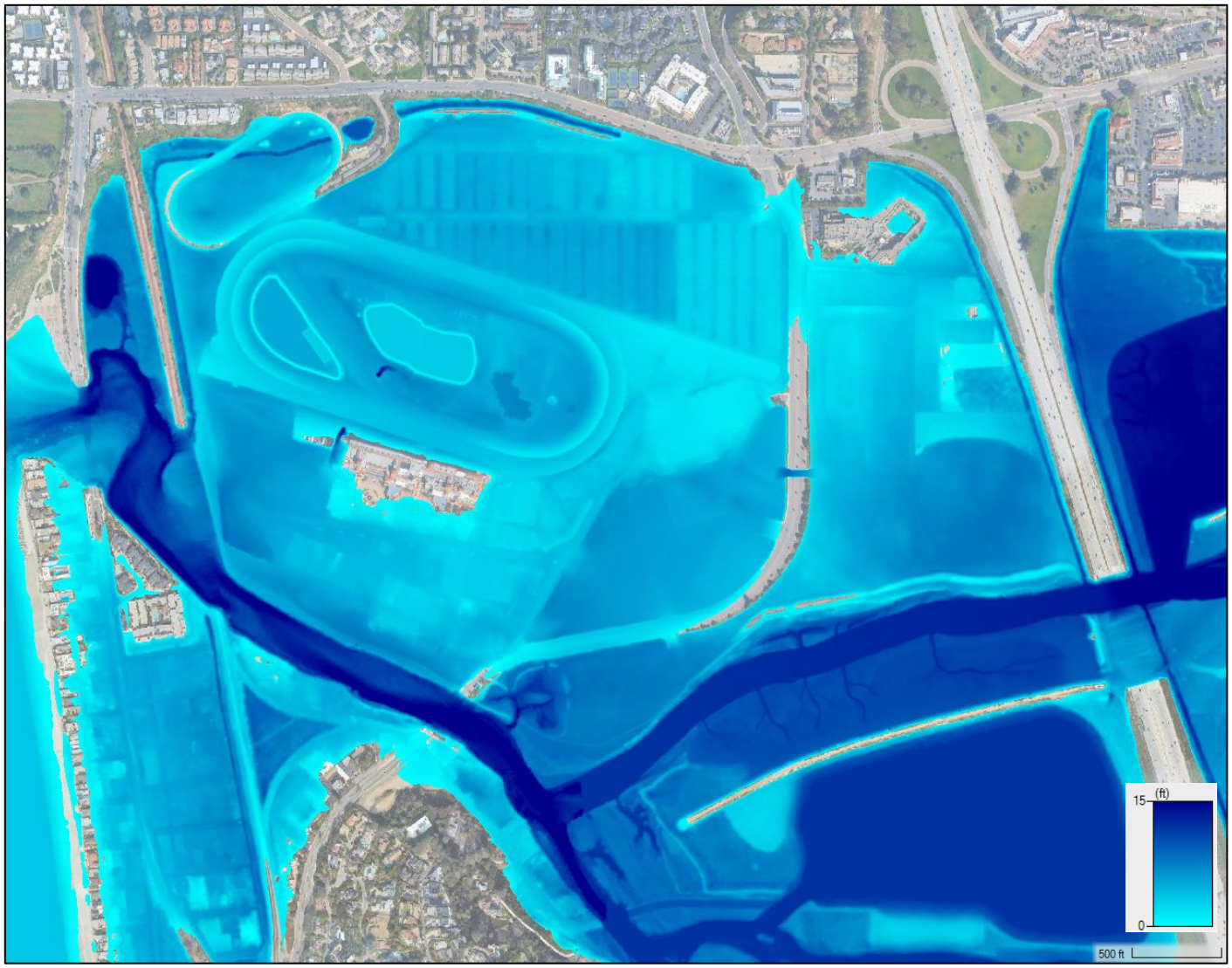

Figure 9 *Maximum flood depths during the 50-year fluvial event*

Similar to the 50-year fluvial results, the results of the 100-year fluvial event show almost the entire Fairgrounds site inundated. Flood depths are greater than in the 50-year event, with maximum depths of up to 9.5 ft in West Parking Lot. Within the stables area, flood depths range from approximately 4 ft to over 7.5 ft. Approximately 25,800 cfs flows across the Fairgrounds site. Similarly to the 50-year event, most site inflow is from overtopping of Jimmy Durante Blvd.

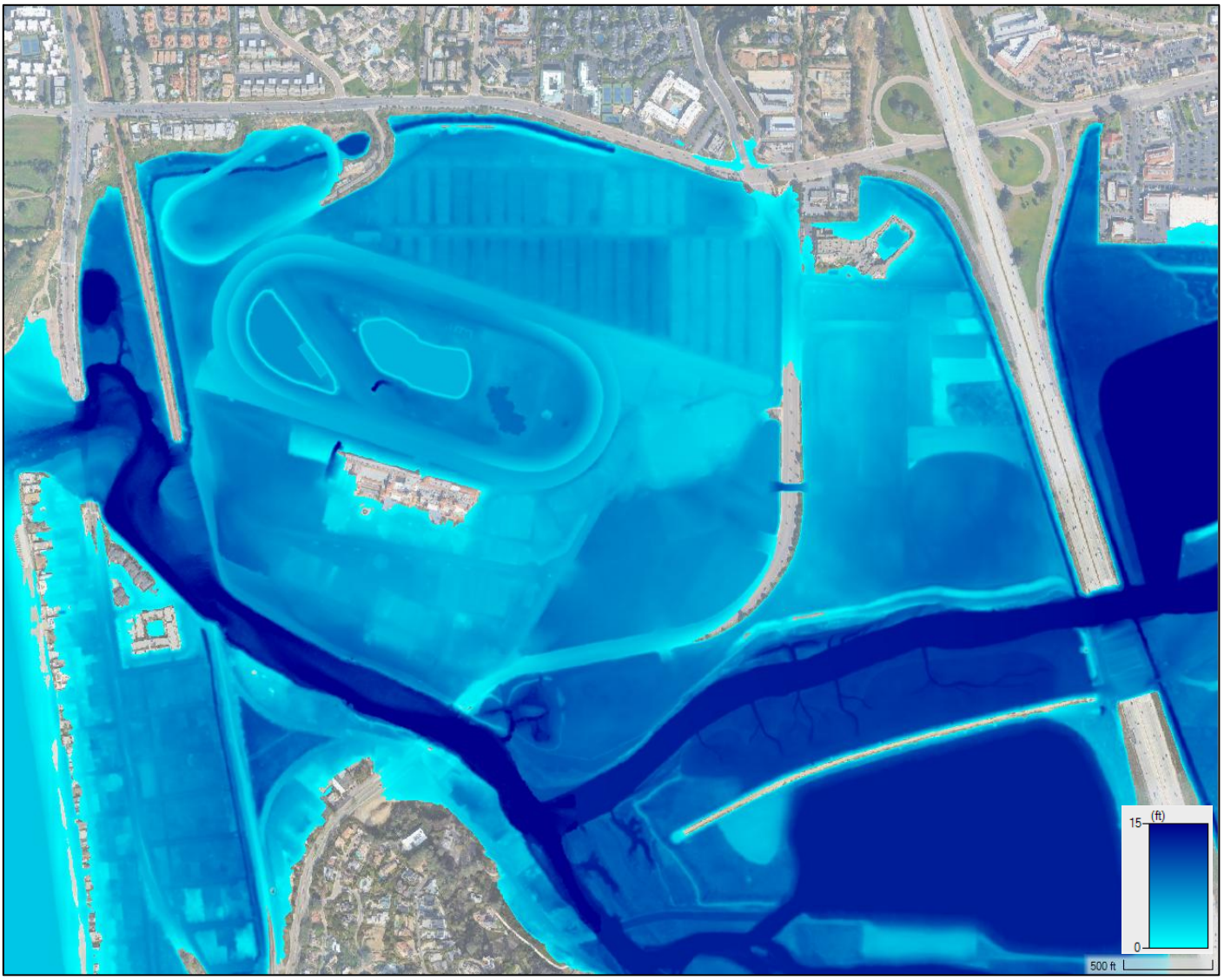

Figure 10 Maximum flood depths during the 100-year fluvial event

4.3 Fluvial Events Combined with Sea Level Rise

Since the site is almost entirely inundated during the 50-year and 100-year fluvial events, the effects of SLR on the 10-year fluvial event were studied. Figure 11, Figure 12, and Figure 13, show the maximum flood depths for the 10-year event for the 2050, 2070, and 2100 SLR scenarios, respectively. These scenarios use the Intermediate-High SLR for each time horizon applied to the MHHW. The results indicate that flooding extents and depths during 10-year fluvial events are sensitive to SLR.

The maximum flood depths in 10-year fluvial event combined with 2050 SLR are shown in Figure 11. The inundation extents are slightly larger than the 10-year fluvial event without SLR. Flood depths are also greater than the 10-year event without SLR, with flood depths of up to 3.2 ft in the West Parking Lot compared to 2.3 ft without SLR. This inundation is the result of 42 cfs of breakout flow over the north bank of the San Dieguito River.

Figure 11 Maximum flood depths during the 10-year fluvial event with 2050 Intermediate-High SLR applied to the MHHW

The results of the 10-year fluvial event with 2070 Intermediate-High SLR are shown in Figure 12 and show incrementally more onsite flooding than the 2050 SLR scenario. The results show flow through the infield tunnel leading to flooding adjacent to the CAFO receiving pond, which was dry in the 2050 SLR scenario. Note that the infield storm drain networks and pumps would eventually drain this flooding into the receiving pond and wetland, however, these features are not included in this model. The 2070 SLR scenario shows maximum flood depths of up to 3.6 ft at the West Parking Lot, compared with 2.3 ft without SLR. This flooding is the result of approximately 85 cfs of breakout flow over the north bank of the river. Some flooding is also noted in the Green Parking Lot due to backwater through the storm drains.

Figure 12 Maximum flood depths during the 10-year fluvial event with 2070 Intermediate-High SLR applied to the MHHW

The results of the 10-year fluvial event with the 2100 Intermediate-High SLR are shown in Figure 13 and show considerably larger inundation extents than the other 10-year fluvial scenarios. In this scenario, the infields and the area within the Training Track are entirely inundated. Note that this model excludes the infields and the infield tunnels storm drain networks, which would eventually drain the infields as flow is pumped to the CAFO receiving basin. The model results also show that the Green Parking lot is inundated. The West Parking Lot also experiences significant inundation in this scenario. Maximum flood depths in the West Parking Lot are approximately 4.9 ft compared to 2.3 ft without SLR. Significant flooding is also noted in the Green Parking lot due to flow within Stevens Creek entering the site through the storm drains.

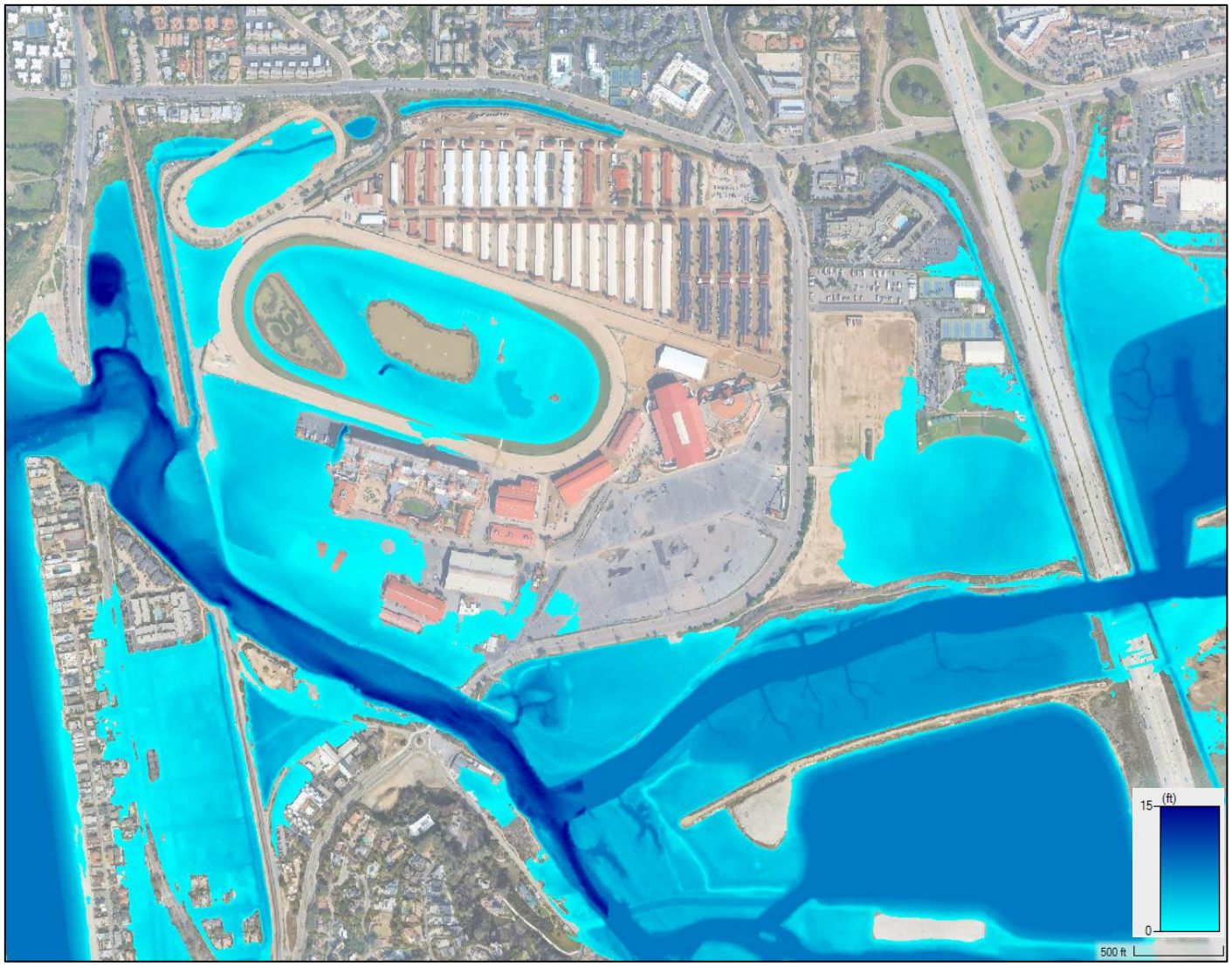

Figure 13 Maximum flood depths during the 10-year fluvial event with 2100 Intermediate-High SLR applied to the MHHW

4.4 Onsite Rainfall Events

The HEC-RAS 2D model results of the onsite rainfall events are preliminary; as the model will be updated as additional data becomes available, including information on the pump station set points. The preliminary flood depth results for the 10-year and 100-year onsite rainfall events are included in Figure 14 and Figure 15, respectively. A different color scale for flood depths is used to illustrate these rain-on-grid results, to help differentiate areas with shallow ponding. In general, rain-on-grid modeling shows large areas with shallow flood depths as rainfall is applied to each cell and runs off toward the drainage systems.

The results of the 10-year onsite rainfall events show shallow ponding across the site with water accumulating in the infield ponds and the infield of the Training Track (Figure 14). Water flowing into the Training Track through the eastern culverts floods the infield and overtops the Training Track at the southeastern straightaway (peak overflow of 3 cfs). The depth in the Training Track infield is 4.5 ft at the low point at the southwest side of the infield. Water ponding in the stables area is mostly less than 1 ft deep, with some localized areas with up to 3 ft of flooding. The CAFO receiving basin and wetland do not overtop in this simulation and the Arena and Backstretch pumps do not operate at full capacity. Up to 10 ft of water inundates the infield access tunnel and flooding in the southwest corner of the West Parking Lot reaches 1.6 ft of depth.

Figure 14 *Maximum flood depths during the 10-year onsite rainfall events.*

The 100-year onsite rainfall event results show flow in Stevens Creek inundating the infield of the Training Track and overtopping southeastern straightaway (150 cfs). Flow also breaks out of the creek just north of the western culverts (35 cfs). This flow travels across the Green Parking Lot and reenters Stevens Creek. Onsite rainfall did not overflow the infield basins during the simulation run time. The Backstretch Pump ran at full capacity for most of the storm event, while the Arena Pump only ran at full capacity during the peak of the storm event. Flood depths reached 2.5 ft in the southwestern corner of the West Parking Lot.

Figure 15 Maximum flood depths during the 100-year onsite rainfall event

4.5 Onsite Rainfall Combined with Fluvial Events

The 10-year onsite rainfall event was run with the 10-year fluvial event. Onsite flooding remained similar to the 10-year rainfall only event within the northern half of the site, with the same depth of flooding in the Training Track infield, infield basins, and stables (see Figure 16). Flooding depths increased by 1.5 ft in the West Parking Lot and by 1 ft in the Main Parking Lot due to the fluvial event. This results in flood depths of 3 ft in the West Parking Lot and up to 2 ft in the Main Parking Lot. Breakout flow from the river entered the site near Discharge Point 4.

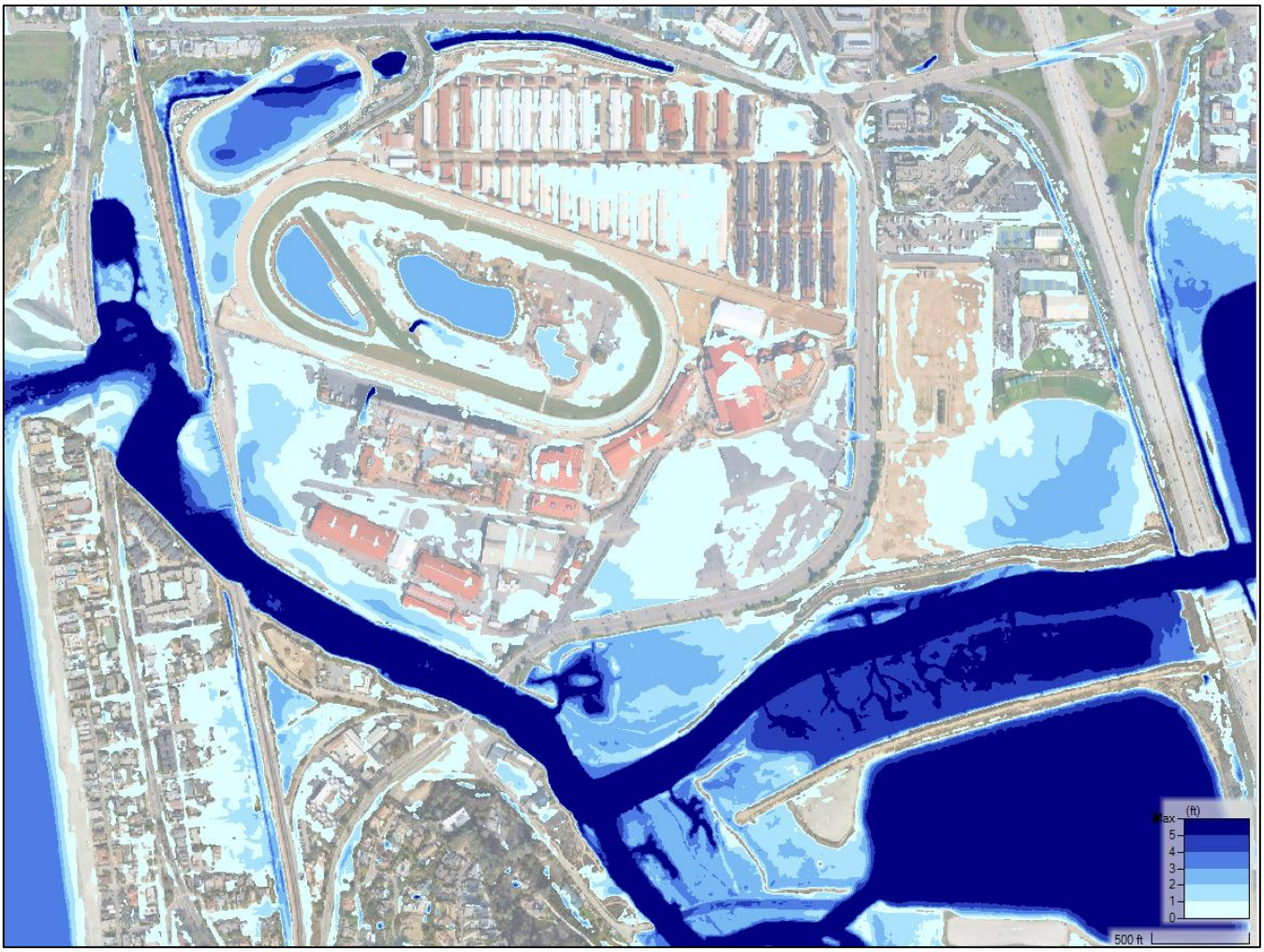

Figure 16 Maximum flood depths during the 10-year onsite rainfall event combined with the 10-year fluvial event

4.6 Onsite Rainfall Combined with Sea Level Rise

The 10-year onsite rainfall was run with the 2050, 2070, and 2100 SLR scenarios. The results for the 2050 SLR scenario with onsite rainfall were very similar to the onsite rainfall results without SLR (Appendix G Figure G-4). Maximum flood depths are the same in both scenarios for most of the Fairgrounds site, with the exception of the southwestern corner of the West Parking Lot, in which flood depths increased by 0.25 ft. Breakout flow from Stevens Creek is similar to the onsite rainfall only scenario.

The results of the 2070 SLR scenario with 10-year onsite rainfall are similar to the rainfall only scenario and the 2050 SLR with rainfall (Appendix G Figure G-5). Compared with the onsite rainfall only scenario, there is a 0.8-ft increase in depth of flooding in the West Parking Lot and 0.1-ft increase in flooding in the Green Parking Lot. The parking area near Discharge Point 4 and the southwest corner of the Main Parking Lot experienced 0.3-ft and 0.2-ft increases in flood depths, respectively. Breakout flow from Stevens Creek is similar to the onsite rainfall only scenario, with a peak flow of approximately 3 cfs.

Figure 17 shows the results of the 10-year onsite rainfall event combined with the 2100 SLR scenario. The results indicate considerably larger flood depths onsite compared to the onsite event without SLR. In the West Parking Lot, the flood depths are up to 4.5 ft compared to 1.6 ft without SLR. This flooding is caused by backwater in the storm drains and overtopping of the north bank of the river. Breakout flow traveling south over the Training Track and originating from Stevns Creek is approximately 9 cfs, compared with 3 cfs without SLR. The infield basins do not

overtop in this model scenario, with a peak water surface elevation of 13.37 ft within the receiving pond compared with the crest elevation of 13.66 ft. However, infield drainage systems that outlet to the receiving pond were excluded from this model. If these drainage systems were modeled, it is likely that the model results would indicate overtopping of the receiving basin. Considerably more inundation is noted in this scenario compared to the 2100 tidal scenario without onsite flooding, since all of the manual tide gates were assumed to be open in this model run and closed in the tidal only scenario. These results indicate that the Fairgrounds site is vulnerable to SLR, particularly when the tide gates are left open.

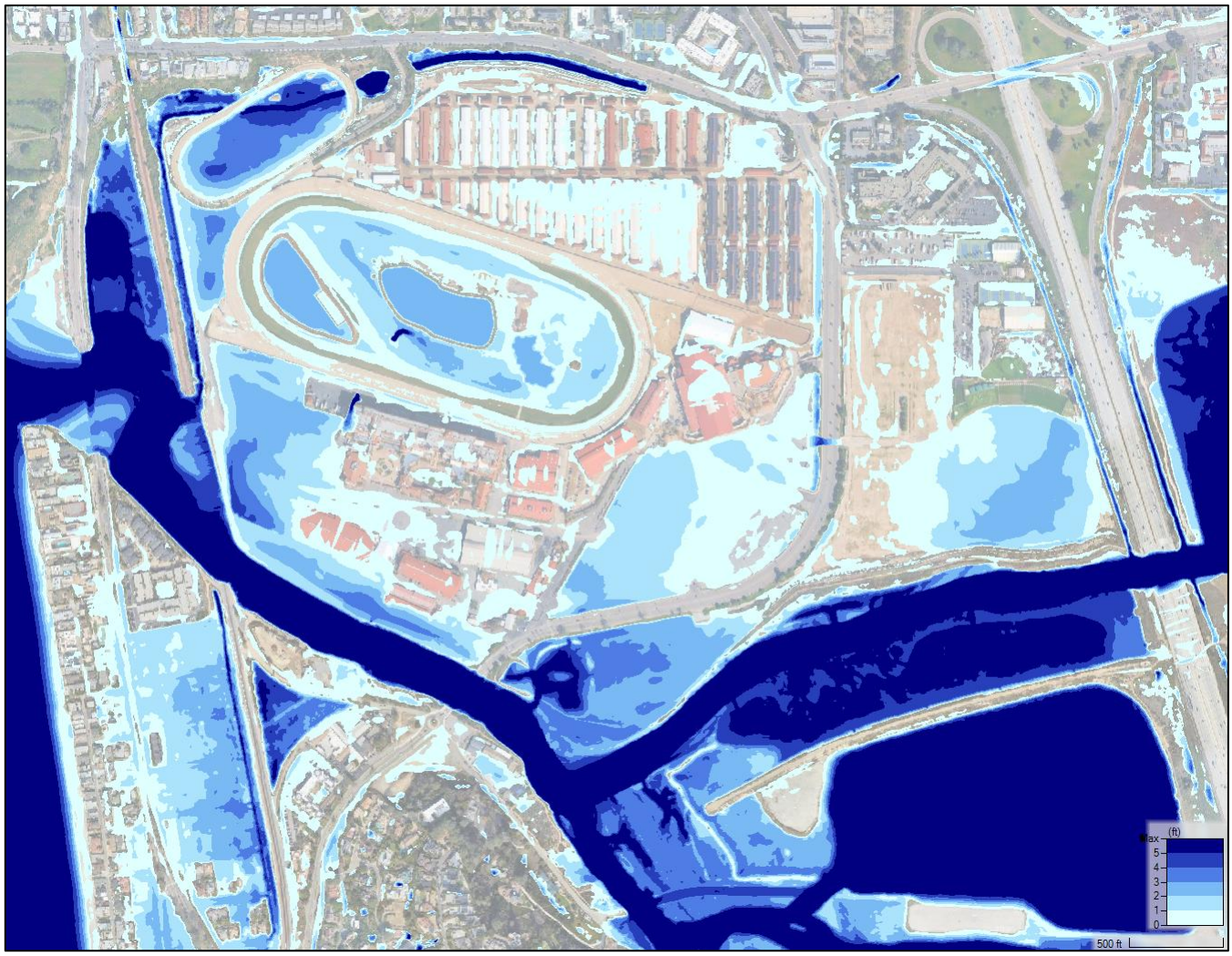

Figure 17 Maximum flood depths during the onsite rainfall event with 2100 SLR

4.7 Results Summary

Maximum flood depths were extracted from the various model simulations at four sample points within the Del Mar Fairgrounds site (see Figure 18). These flood depths are provided in Table 3 to help demonstrate the difference in flood hazards across the Fairgrounds site for the different storm events and SLR scenarios. The results indicate that large fluvial events within the San Dieguito River present the highest flood risks, with large flood depths noted across all four points in both the 50-year and 100-year fluvial events. The studied onsite rainfall events show widespread flooding across the four locations, but lower flood depths. The results in Table 3 also demonstrate the impacts of SLR on the flood risks at the Fairgrounds site. Onsite flood depths increase with SLR, particularly in the 2100 time horizon. The 2100 SLR scenario applied to the MHHW leads to onsite flooding, which is only exacerbated when combined with fluvial and/or onsite rainfall events.

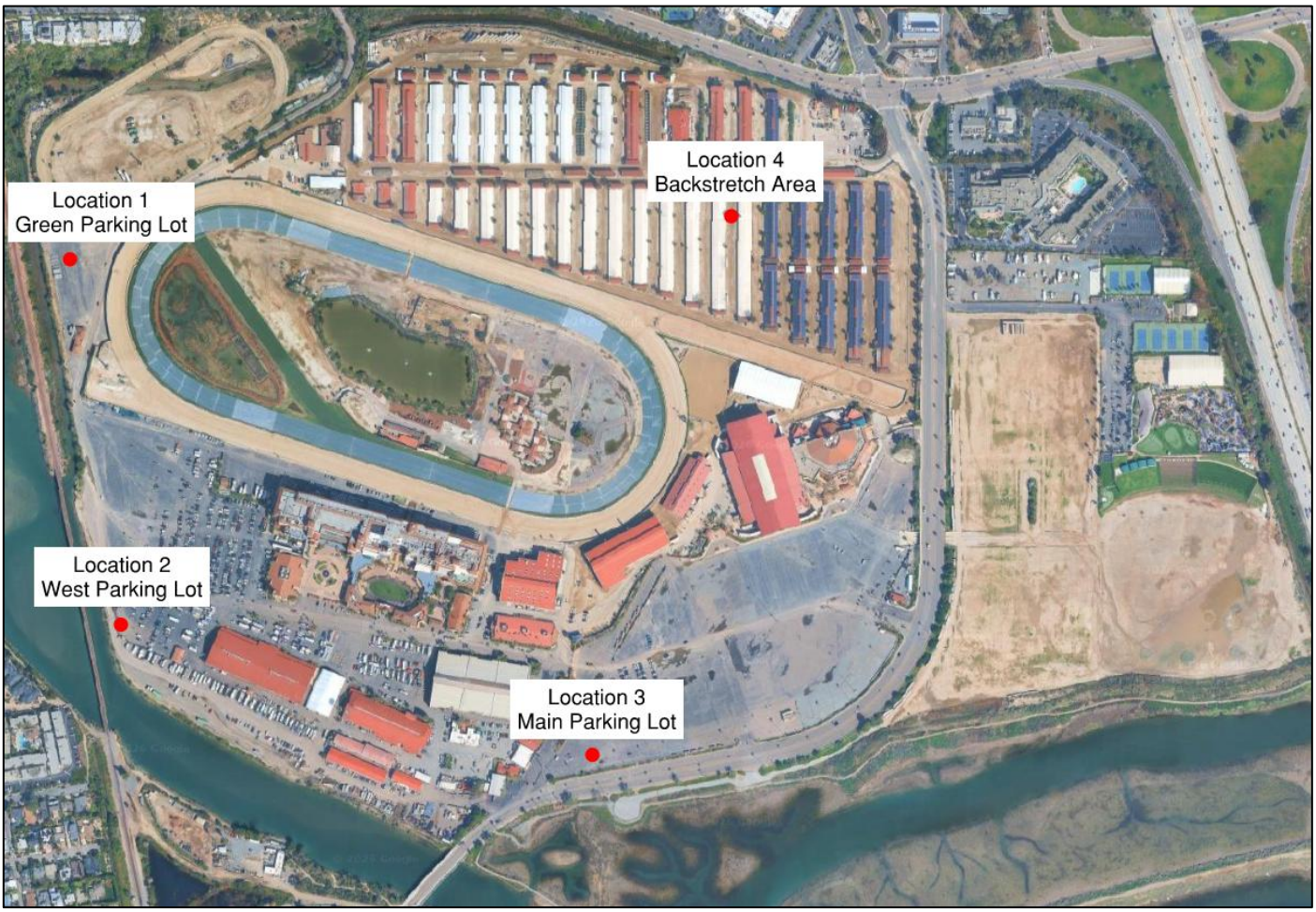

Figure 18 *Depth result locations*

Table 3 *Summary of maximum flood depths (ft) at sample points for the modeled scenarios*

Scenario No.	Event Description	Max. Depth (ft)			
		Location 1: Green Parking Lot	Location 2: West Parking Lot	Location 3: Main Parking Lot	Location 4: Backstretch Area
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	0.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	0.8	4.4	0.0	0.0
5	10-year Fluvial Event	0.0	2.3	0.0	0.0
6	50-year Fluvial Event	4.8	8.0	6.1	5.7

Scenario No.	Event Description	Max. Depth (ft)			
		Location 1: Green Parking Lot	Location 2: West Parking Lot	Location 3: Main Parking Lot	Location 4: Backstretch Area
7	100-year Fluvial Event	6.2	9.5	7.4	7.1
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	0.0	3.2	0.0	0.0
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	0.0	3.6	0.0	0.0
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	0.9	4.9	0.0	0.0
11	10-year Onsite Rainfall Event	1.0	1.6	0.0	0.8
12	100-year Onsite Rainfall Event	2.0	2.5	0.3	1.1
13	10-year Onsite Rainfall Event + 10-year Fluvial Event	1.1	3.0	0.7	0.8
14	10-year Onsite Rainfall Event + 2050 SLR (6.13 ft)	1.0	2.3	0.0	0.8
15	10-year Onsite Rainfall Event + 2070 SLR (7.43 ft)	1.1	2.6	0.1	0.8
16	10-year Onsite Rainfall Event + 2100 SLR (9.93 ft)	1.6	4.6	1.5	0.8

5. Conceptual Adaptation Strategies Hydraulic Modeling

Three conceptual adaptation strategies were developed in coordination with the District to evaluate a spectrum of opportunities to mitigate flooding on District property. The conceptual strategies were modeled to determine the flood risk during the tidal, fluvial, and fluvial/tidal scenarios. The concepts were not analyzed for the onsite rainfall scenarios, since the local drainage infrastructure (storm drains, pumps, etc.) would need to be modified as a part of design and implementation of these conceptual strategies. Additionally, the decadal fluvial events were determined to present the highest flood risk to the District property and are the focus of evaluating these mitigation measures. The models of conceptual strategies build on the existing conditions models discussed in Section 3 and are discussed in further detail in the following section.

The results of the hydraulic models were used to assess compliance with California Drainage Law. California Drainage Law governs the management and flow of surface water across properties, aiming to balance the rights and responsibilities of landowners. Generally, California follows the "reasonable use" doctrine, which allows landowners to alter drainage on their property as long as it does not unreasonably harm neighboring properties. In general, the strategies were developed to avoid significant offsite flood hazards so that they are expected to meet California Drainage Law. Additionally, since the southern extent of the District's property is within a FEMA regulatory floodway, no-rise certifications would be required for any development within this floodway. The concepts were developed so that any potential improvements within the floodway are not anticipated lead to a rise in base flood elevations.

5.1 Summary of Modeled Conceptual Adaptation Strategies

The three strategies were developed to provide varying levels of flood protection to help inform future discussions and planning across time horizons and varying levels of changes to the site. Table 4 provides a brief overview of each conceptual strategy as well as the modeled level of flood protection.

Table 4 Overview of conceptual adaptation strategies and level of flood protection

Adaptation Strategy	Description	Maximum Level of Modeled Flood Protection
Strategy 1: Targeted Ecotone Features	Implementation and extension of the City of Del Mar proposed San Dieguito Lagoon Shoreline Protection Planning Project living levee and addition of a second elevated berm along the eastern border of the site. Installation of flap valves or check valves to prevent backflow through gravity storm drain networks during high tide.	10-year Fluvial Event + 2070 SLR
Strategy 2: Perimeter Berm Protection	Implementation of a perimeter berm from the I-5 highway, along the northern edge of the Main and West Parking Lot, to the west side of the Main Track. Create floodable channels and frontage for conveyance and add additional culverts Installation of flap valves or check valves on gravity storm drain outfalls to prevent backflow through storm drain networks during high tides or large fluvial events.	50-year Fluvial Event
Strategy 3: Site-wide Floodable Frontage	Regrade and raise current racetrack, stables, and arena areas Create floodable channels and frontage for conveyance. Relocate, realign, and/or remove existing facilities as needed. Upgrade and realign stormwater infrastructure with new gradations and tide gate installations.	50- year Fluvial Event Reduces flood hazards during the 100-year event

5.2 Strategy 1: Targeted Ecotone Features

5.2.1 Description

Adaptation Strategy 1 is designed to protect the site from the 10-year fluvial event by expanding upon the proposed San Dieguito Lagoon Shoreline Protection Project (Del Mar Living Levee Project). Strategy 1 combines the proposed Del Mar Living Levee Project improvements with an additional berm or floodwall on the eastern edge of the Fairgrounds site.

The Del Mar Living Levee Project is a nature-based flood adaptation and public trail project that seeks to minimize the effects of river flooding along the San Dieguito River within the City of Del Mar along both the District and the City's Public Works Facility (GHD, 2026). The plan for the Del Mar Living Levee Project includes elements on both the north and south side of the River (Figure 19).

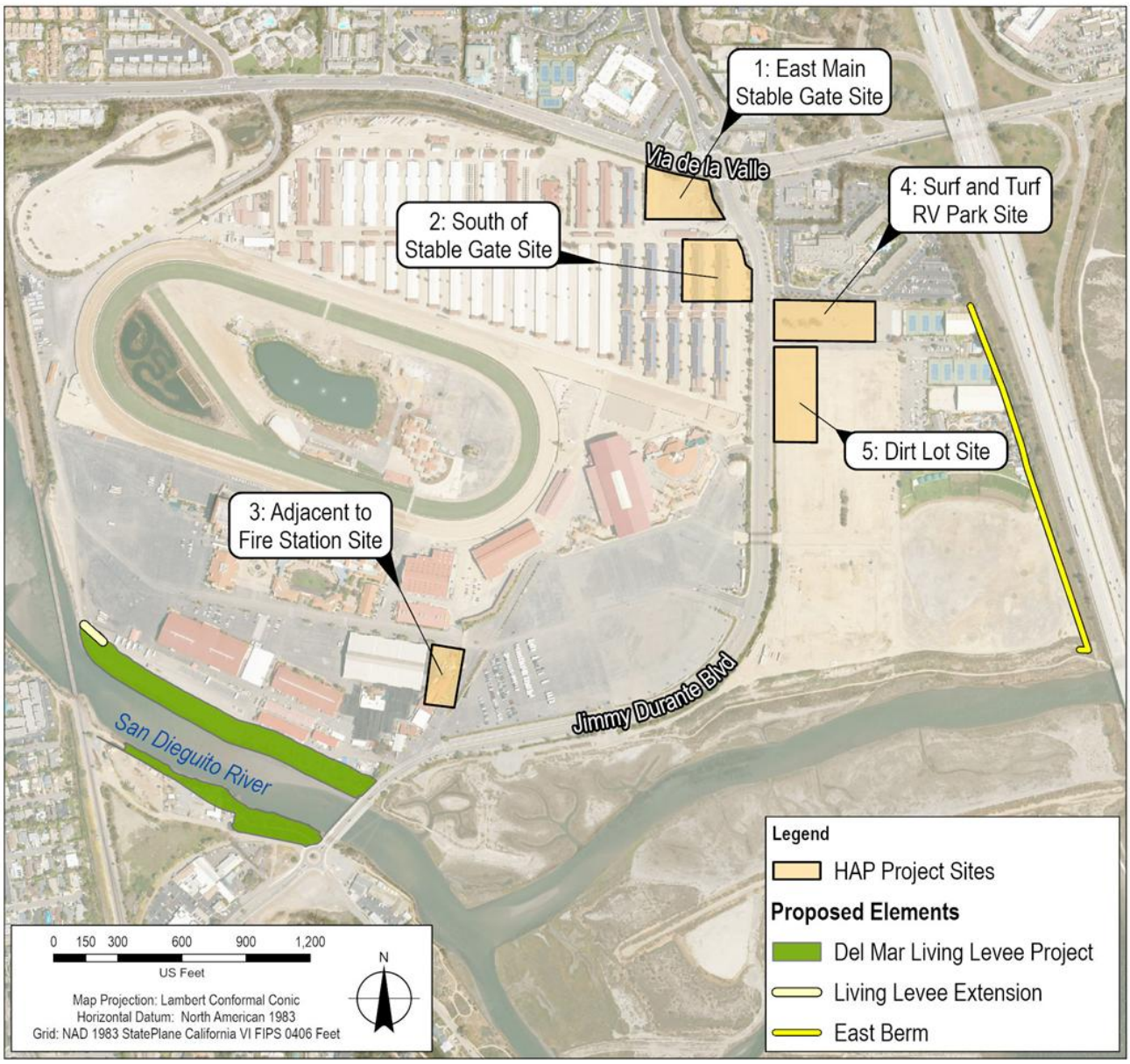

Figure 19 Strategy 1: Site-Specific Ecotone Features Concept

Along the District's shoreline, the proposed improvements would be located on the 100 ft buffer along the southern border of the District's site, where existing shoreline crest elevations range from 7 ft to 9 ft. The proposed improvements include raising the existing terrain with an elevated ecotone slope (living levee)to a height of 10 ft and cutting terrain between the living levee and the river at a 2% grade (see Figure 20). The other improvements of the Del Mar Living Levee Project are located off of the District's site. The southeast segment of the Del Mar Living Levee was

included in the model due to its proximity to the project site across the River channel. The southwest segment of the Del Mar Living Levee was not included given its location inland of the shoreline.

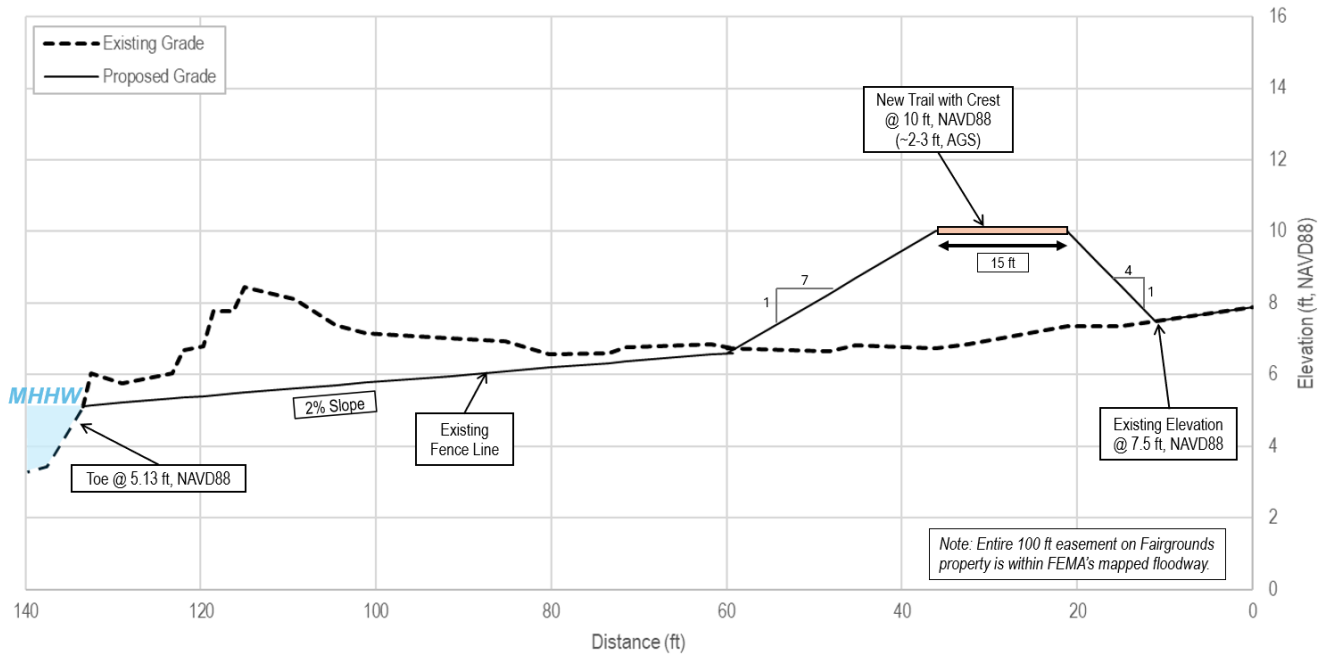

Figure 20 Cross section for North Riverbank conceptual Living Levee (GHD, 2025).

The western end of the Del Mar Living Levee Project is located at a low point in the terrain near the proposed SANDAG Double Track Special Events Platform. Strategy 1 includes an extension of the living levee to remove this low point in the terrain and increase the crest elevation to a minimum of 9.5 ft along the western edge of the District's site.

Along the eastern edge of the District's site is a drainage channel adjacent to I-5 Highway. This drainage channel backwaters during high flow events within the San Dieguito River and allows flow to enter the driving range. Strategy 1 includes a second berm or floodwall on the east edge of the driving range adjacent to the drainage channel at an elevation of approximately 12.5 ft. This berm extends from the River to the northern edge of the District's property by the Surf and Turf Center, running parallel to the I-5 Highway.

Strategy 1 also includes installing flap gates onto all gravity drain outlets to help prevent flooding onto the site caused by backflow through these storm drains. Without flap gates, water can backflow through the gravity storm drains into the site during high tides or large fluvial events.

The conceptual improvements evaluated in Strategy 1 would directly impact the functionality of two discharge points, DP 3 and DP 4 (Figure 2). Both of these Discharge Points would require relocation and reinstallation due to the cut and fill proposed by the Del Mar Living Levee Project. Additionally, the living levee area will overtop during large fluvial (>13 year) events and the 2100 SLR tidal event. Increasing the capacity of storm drains and inlets in this area is recommended to drain the site following these large events.

5.2.2 Model Development

The existing model was used as the base of the Strategy 1 model. Modifications to the existing model are listed below.

- Del Mar Living Levee Project: The Del Mar Living Levee Project design was incorporated in the model by merging the conceptual design surface with the existing model terrain. The conceptual design has an ecotone slope with a crest elevation of 10 ft, top width of 15 ft, and side slopes of 7:1 (H:V). Between the living levee and the river is a 2% transitional slope (see Figure 20). Both the north riverbank and south

riverbank features were included in the terrain. The floodwalls on the southeast segment along the City's Public Works Facility (not on the District's property) were modeled as steep-sided levees with a top elevation of 14 ft, top width of 20 ft, and a side slope of 1:1 (H:V).

- Living Levee Extension: The western end of the North Riverbank Living Levee was extended to existing high ground with a terrain modification. This extension was modeled as the same height (10 ft) as the living levee. The top width was set to 15 ft and the side slope to 4:1. The mesh was modified with breaklines on the top of the new features. This extension would connect the elevated living levee with the SANDAG Double Track Special Events Platform anticipated grade.
- East Berm: The eastern berm was added to the model terrain as a terrain modification. The elevation of the berm was set to 12 ft with a top width of 15 ft and a side slope of 2:1. The mesh was modified with breaklines on the top of new features.

Note that the Strategy 1 model does not include any onsite storm drain infrastructure, such as pipes and pumps. It is assumed that flap gates would be installed on all gravity storm drain outlets.

The Manning's roughness value on the living levee was increased to 0.05 to reflect the increase in vegetation. The Manning's roughness was not changed anywhere else on the site.

5.2.3 Model Results

The conceptual Strategy 1 protects the site from inundation during the 10-year fluvial event and against SLR up to the 2070 SLR + 10-year fluvial event scenario. Select depth result maps are included in the section below and the remainder can be found in Appendix H.

5.2.3.1 Tidal Events

The results from the tidal events with the implemented Strategy 1 are shown in Appendix H and below in Figure 21. Strategy 1 fully protects the site during the 10-yr EWL, 2050 SLR, and 2070 SLR scenarios (Appendix H Figure H-1, Figure H-2, Figure H-3). During the 2100 SLR tidal event, the site is protected east of Jimmy Durante Blvd by the east berm, but flooding is noted in the West Parking Lot near the living levee (see Figure 21). The flooding in the West Parking Lot is attributed to water overtopping existing ground to the northwest of the living levee, where the ground elevation ranges from 9.5 ft to 10 ft.

Figure 21 Strategy 1 depth results during the MHHW + 2100 SLR event.

5.2.3.2 Fluvial Events

Strategy 1 effectively prevents flooding during the 10-year fluvial event (Figure 22). Under existing conditions, inundation occurs in the driving range and West Parking Lot. Under the conceptual Strategy 1, the berm elevations are higher than the 10-year water surface elevation, protecting the site from flooding. During the 50-year and 100-year fluvial events, the berms overtop, leading to flooding on the District's property. As a result, Strategy 1 does not improve onsite flood depths during these large fluvial events, and the entire site remains susceptible to flooding. Figure H-4 and Figure H-5 show the resulting inundation for both the 50-year and 100-year fluvial scenarios.

Figure 22 Strategy 1 depth results during the 10-year fluvial event

5.2.3.3 Fluvial Events with Sea Level Rise

The results from the 10-year fluvial event combined with 2050 SLR and combined with 2070 SLR are shown in Appendix H Figure H-6 and Figure H-7 and indicate that Strategy 1 protects the site in these scenarios. Compared to the existing conditions, Strategy 1 removes flooding from the driving range, West Parking Lot, and Green Parking Lot.

Strategy 1 is not able to protect the site from flooding in the 10-year fluvial storm event with 2100 SLR (Figure 23). In this event, flow within the San Dieguito River overtops the living levees, resulting in flooding onsite. The flooding is limited to the western half of the site, where water is able to flow over the living levee into the West Parking Lot and through the infield tunnel to the Infield. On the eastern side of the site, a berm protects the driving range from flooding. The addition of flap gates on Discharge Points A and B eliminates flooding in Green Parking Lot.

Figure 23 Strategy 1 depth results during the 10-year fluvial event + 2100 SLR

5.2.3.4 Hydraulic Impacts

Strategy 1 is anticipated to have minimal offsite impacts since the crest elevations of the berms do not prevent flow from following effective flow paths during the 50-year and 100-year fluvial events. Additionally, the living levee is designed to avoid creating a change in conveyance by balancing the additional fill from the levee with a cut in the frontage along the riverbank. Water surface elevation change as a result of the strategy is negligible, and it is therefore expected to meet California Drainage Law. See Figure I-1 in Appendix I for a visual comparison of the 100-year peak water surface elevations in Strategy 1 and in the existing conditions.

Strategy 1 includes the living levee and living levee extension, which are constructed in a floodway. Development within a floodway requires a no-rise certification. A no-rise certification has been completed for the Del Mar Living Levee Project, which verified that the proposed living levee does not lead to increases in floodplain or floodway water surface elevations (GHD, 2025). The no-rise analysis would need to be updated to include the living levee extension, to ensure that it does not lead to a rise in water surface elevations. Figure I- shows that Strategy 1 has limited offsite impacts and is therefore expected to meet the no-rise criteria with the addition of this extension.

5.3 Strategy 2: Perimeter Berm Protection

5.3.1 Description

Strategy 2 was developed to provide flood protection to the north area of the District's property during the 50-year fluvial flood event. This concept includes a berm or floodwall that runs from the I-5 Highway, along the northern edge of the Main and West Parking Lots, along the western edge of the Green Parking lot, and between the Main Track and Training Track (see Figure 24). The crest elevation would vary from approximately 16 ft to approximately 13.8 ft to provide flood protection during a 50-year fluvial event with minimal freeboard. The height of the berm varies from 0 ft to 6.6 ft above the existing grade. This strategy includes lowering areas south of the berm to accommodate for the reduction in floodplain area caused by the berm. As shown in Figure 24, the concept includes three tiered pads, ranging from 8 ft to 10 ft in elevation as well as a channel along the north of Jimmy Durante Blvd and the north bank of the San Dieguito River. This strategy also includes a set of large box culverts beneath Jimmy Durante Blvd. The box culverts and the channel provide conveyance to offset the hydraulic impacts associated with cutting off flow paths north of the berm or floodwall. The lowered tiered areas also increase conveyance capacity south of the berm, reducing offsite hydraulic impacts associated with this strategy. Infrastructure within these lowered tiered areas would be more vulnerable to flooding than the interior of the berm or floodwall.

Due to the substantial site modifications associated with this strategy, significant modifications to the local drainage infrastructure would likely be necessary. To accompany this strategy, any storm drain outfalls would need to be equipped with flap gates or duckbill valves to prevent backflow into the site during high tides or large fluvial events. Additionally, this strategy does not provide flood protection during the 100-year fluvial event, which results in the berm overtopping and large flood depths within the site. Local drainage infrastructure such as culverts, pumps, and pipes would need to be designed to drain the area following a large (>50-year) storm event.

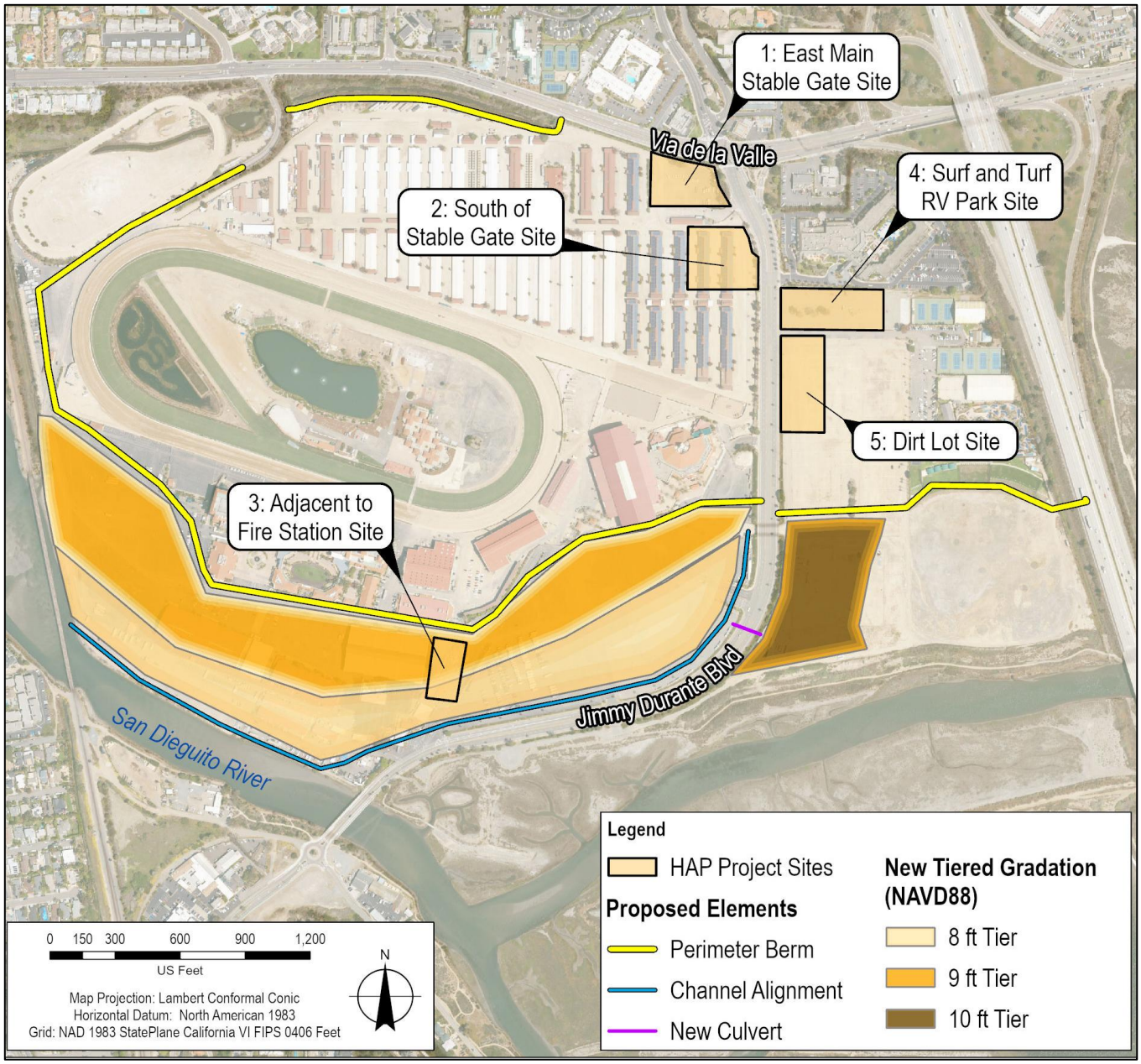

Figure 24 ***Strategy 2: Perimeter Berm Protection Concept***

5.3.2 Model Development

The existing conditions model discussed in Section 3 was modified to simulate Strategy 2. Modifications are listed below.

- Tiered Pads: Terrain modifications were used to assign elevations within the tiered pads (see Figure 24). The 10 ft tier was implemented so that the elevations within the pad were set to 10 ft or the existing elevation, whichever is lower. The 8 ft and 9 ft tiers were modelled to override the existing terrain elevations.
- Perimeter Berm: Terrain modifications were also used to incorporate the berm into the terrain. The berm was modelled with a top width of 40 ft and 2:1 side slopes. East of Jimmy Durante Blvd, the berm crest elevation was set to 16 ft. West of Jimmy Durante Blvd, the crest elevation of the berm varies from 14.9 ft at the upstream end to 13.8 ft at the downstream end. Note that while the model results are sensitive to the crest

elevation of the berm, they are not expected to be as sensitive to the berm top width or side slopes. Breaklines were used to refine the grid along this perimeter berm.

- Channel: A channel was modelled with a 60-ft bottom width and 2:1 side slopes. The channel invert elevation slopes from 7.5 ft from the upstream end to 6 ft at the downstream end. The channel was incorporated into the model terrain using terrain modification, and a breakline was used to refine grid cells within the channel.
- Culverts: The culverts were modelled using SA/2D connections. The SA/2D connection includes four 16 ft x 8 ft reinforced concrete boxes with upstream invert elevations of 9.6 ft, downstream invert elevations of 7.5 ft, and an entrance loss coefficient of 0.4. The crest elevation of Jimmy Durante Blvd was set approximately equal to the existing road elevation.

Note that the model does not include any onsite storm drain infrastructure, such as pipes or pumps, as the storm existing onsite storm drain network would require modifications in this strategy. As part of this strategy, all storm drain outfalls should be equipped with flap valves or duckbill valves to prevent backflow during high tides and large fluvial events. Thus, onsite storm drain infrastructure would have minimal impact on flood hazards during the modelled fluvial and tidal scenarios.

The model development did not include any modifications to the existing Manning's roughness within the project site, assuming that the land use within this strategy is similar to existing.

5.3.3 Model Results

Model results for Strategy 2 show that the improvements provide flood protection for much of the site during the 50-year fluvial event. The tiered pads along the southern extent of the property experience more frequent flooding, including during the 2100 SLR event and during the 10-year fluvial event. The District's property experiences deep flood depths during the 100-year fluvial event.

5.3.3.1 Tidal Events

Figure H-8, Figure H-9, and Figure H-10 in Appendix H display the peak flood depths in Strategy 2 for the 10-year EWL, 2050 SLR, and 2070 SLR, respectively. Figure 25 below displays the peak flood depths for 2100 SLR. The results indicate a small amount of flooding at the downstream end of the channel in the 2050 SLR scenario. In the 10-year EWL and 2070 SLR scenarios, the results show flooding within the channel, but the remainder of the District's property stays dry. In the 2100 SLR scenario, the channel, the tiered paths south of the perimeter protection, and the driving range are flooded. The southern tiered pad experiences approximately 1.9 ft of flooding, while the tiered pad just south of the perimeter protection experiences approximately 0.9 ft of flooding. The driving range experiences up to 2.6 ft of flooding.

Figure 25 Strategy 2 depth results during the 2100 SLR event

5.3.3.2 Fluvial Events

The results of the fluvial event indicate that in Strategy 2, the area inside of the berm is protected from the 50-year flood event, whereas the tiered pads are more prone to flooding.

Figure 26 shows the peak flood depths during the 10-year fluvial event for Strategy 2. In this event, the channel, the southern tiered pad west of Jimmy Durante Blvd, the tiered pad east of Jimmy Durante Blvd, and the driving range experience flooding. The remainder of the site is protected from the 10-year fluvial flood hazards. Flood depths within the tiered paths are relatively shallow (below 0.6 ft), while the driving range experiences flood depths of up to 2.9 ft.

Figure 26 Strategy 2 flood depths during the 10-year fluvial event

The 50-year fluvial flood depths for Strategy 2 are shown in Figure 27. These results indicate that much of the site is protected from the berm, however, the tiered pads and driving range are inundated. Flood depths within the tiered pads are significantly deeper than the 10-year event (up to 6.8 ft). The driving range experiences flood depths of up to 8.6 ft.

Figure 27 Strategy 2 flood depths during the 50-year fluvial event

The peak flood depths during the 100-year fluvial event for Strategy 2 are shown in Figure 28. These results show substantial flooding within the District's property, as the perimeter berm is overtopped. Results show deep flood depths which exceed 7 ft in some areas.

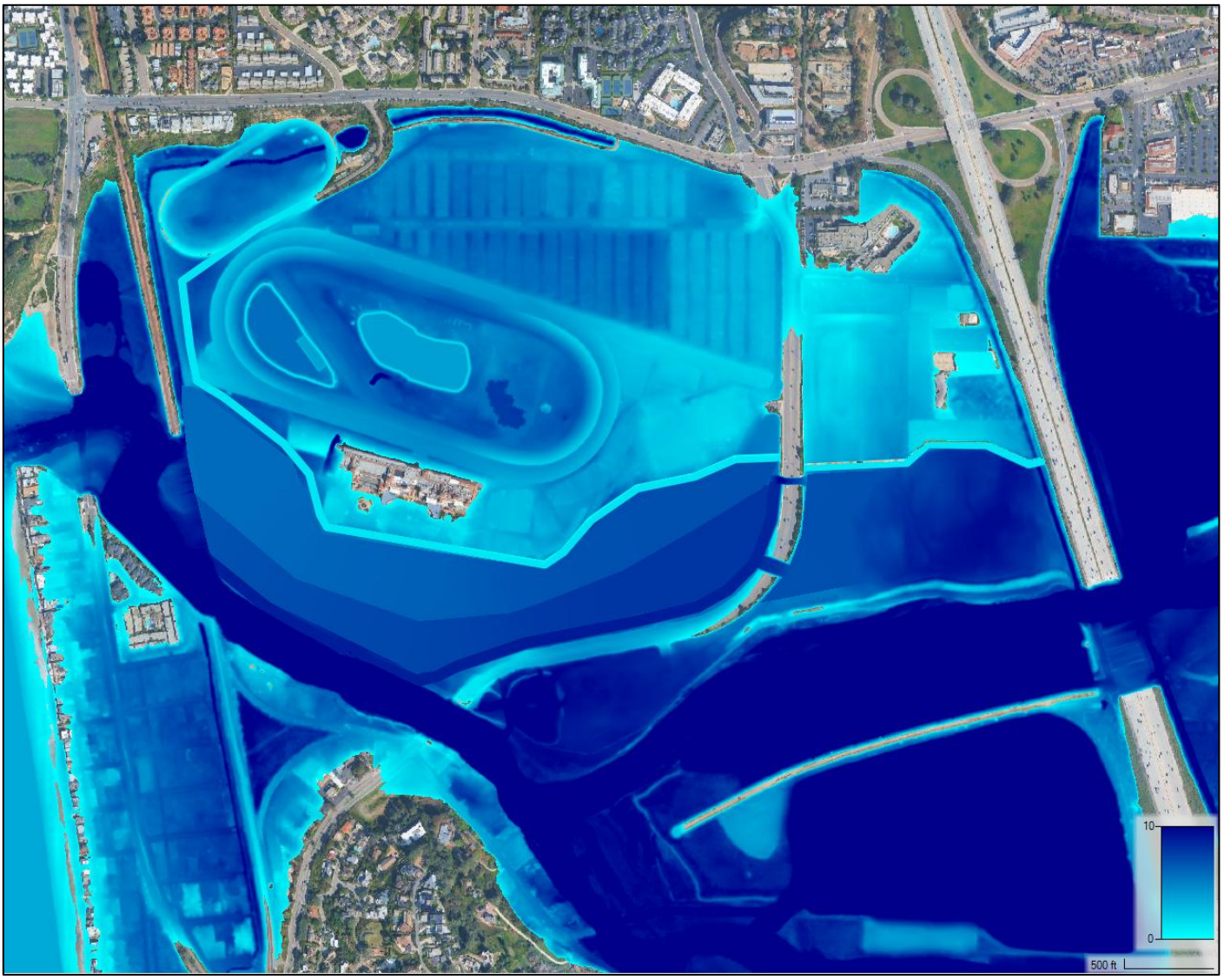

Figure 28 Strategy 2 flood depths during the 100-year fluvial event

5.3.3.3 Fluvial Events with Sea Level Rise

Peak flood depths for Strategy 2 during the 10-year fluvial event with 2050 SLR, 2070 SLR, and 2100 SLR are shown in Figure H-11, Figure H-12, and Figure H-13, respectively (see Appendix H). The results of the 10-year fluvial event with 2050 SLR show that the southern tiered pad west of Jimmy Durante Blvd is flooded with shallow flood depths of up to 0.7 ft. The tiered pad east of Jimmy Durante Blvd and the driving range also experience inundation. Flood inundation is similar in the 10-year fluvial event with 2070 SLR, but shallow flooding (< 1 inch) is noted on the higher tiered pad west of Jimmy Durante Blvd. In the 10-year event with 2100 SLR, the higher tiered pad experiences flood depths of up to 1.4 ft.

5.3.3.4 Hydraulic Impacts

Strategy 2 was developed to minimize offsite impacts. The culverts beneath Jimmy Durante Blvd, channel, and frontage tiered pads provide additional conveyance to offset the reduction in conveyance caused by the perimeter berm. The maximum increase in water surface elevation is approximately 0.2 ft, which occurs on the District's property east of Jimmy Durante Blvd. Offsite, the maximum increase in water surface elevations in conditions is approximately 0.14 ft, which occurs within the San Dieguito River channel, just downstream of the freeway. Decreases in water

surface elevations are noted in the San Dieguito River west of Jimmy Durante Blvd. Since Strategy 2 does not significantly increase flood hazards offsite, it is expected to meet California Drainage Law, however, it could be further refined to reduce offsite impacts. Figure I-2 in Appendix I compares the 100-year peak water surface elevations in Strategy 2 and existing conditions.

Strategy 2 includes tiered pads and a channel which are located in a regulatory floodway, requiring a no-rise certification. The no-rise certification would involve refining the FEMA effective HEC-RAS 1D model to develop a corrected effective/existing conditions HEC-RAS model. Next, the improvements within the floodway would be added to the model to determine the 100-year water surface elevations as well as the floodway water surface elevations. These floodplain and floodway water surface elevations would need to be at or lower than in the existing conditions. Strategy 2 was developed to increase conveyance within the southern area of the District's property, so it is expected to meet this no-rise condition. However, further study would be required to confirm that the Strategy meets the no-rise criteria, and refinements to the tiered pads and/or channel geometry may be required.

5.4 Strategy 3: Site-wide Floodable Frontage

5.4.1 Description

Strategy 3 is similar to Strategy 2 in that it was developed to provide flood protection to a portion of the District's property during the 50-year fluvial event. Strategy 2, however, includes fill to raise an area of the site above the adjacent 50-year water surface elevations (see Figure 29). East of Jimmy Durante Blvd, the pad would be raised to approximately 15.8 ft. West of Jimmy Durante Blvd, pad elevations vary with the 50-year water surface elevations, ranging from 13.9 ft to 14.8 ft. Similar to Strategy 3, these elevations were selected to provide flood protection during the 50-year event with minimal freeboard. Raising the pad would require a substantial amount of fill, with over 5 ft of fill on much of the site.

Similar to Strategy 2, this strategy also includes tiered pads, a channel along Jimmy Durante Blvd and the north riverbank and box culverts beneath Jimmy Durante Blvd. In this strategy, the tiered path east of Jimmy Durante Blvd is larger and lower than Strategy 2, with a 9 ft elevation, to offset the fill. The tiered pads and channel west of Jimmy Durante Blvd are the same as Strategy 2. Finally, in this strategy, the north half of the stables were left at existing grade and the existing berm along the south bank of Stevens Creek was removed.

Compared to Strategy 2, this strategy provides increased flood mitigation during large flood events (> 50 year), since it lowers flood depths within the fill area during these large events compared with existing conditions. However, the area protected during the 50-year event is smaller than Strategy 2, as the north half of the stables remain at existing grade.

This strategy involves substantial grading across the site. Accordingly, significant modifications to the onsite storm drain networks would be required.

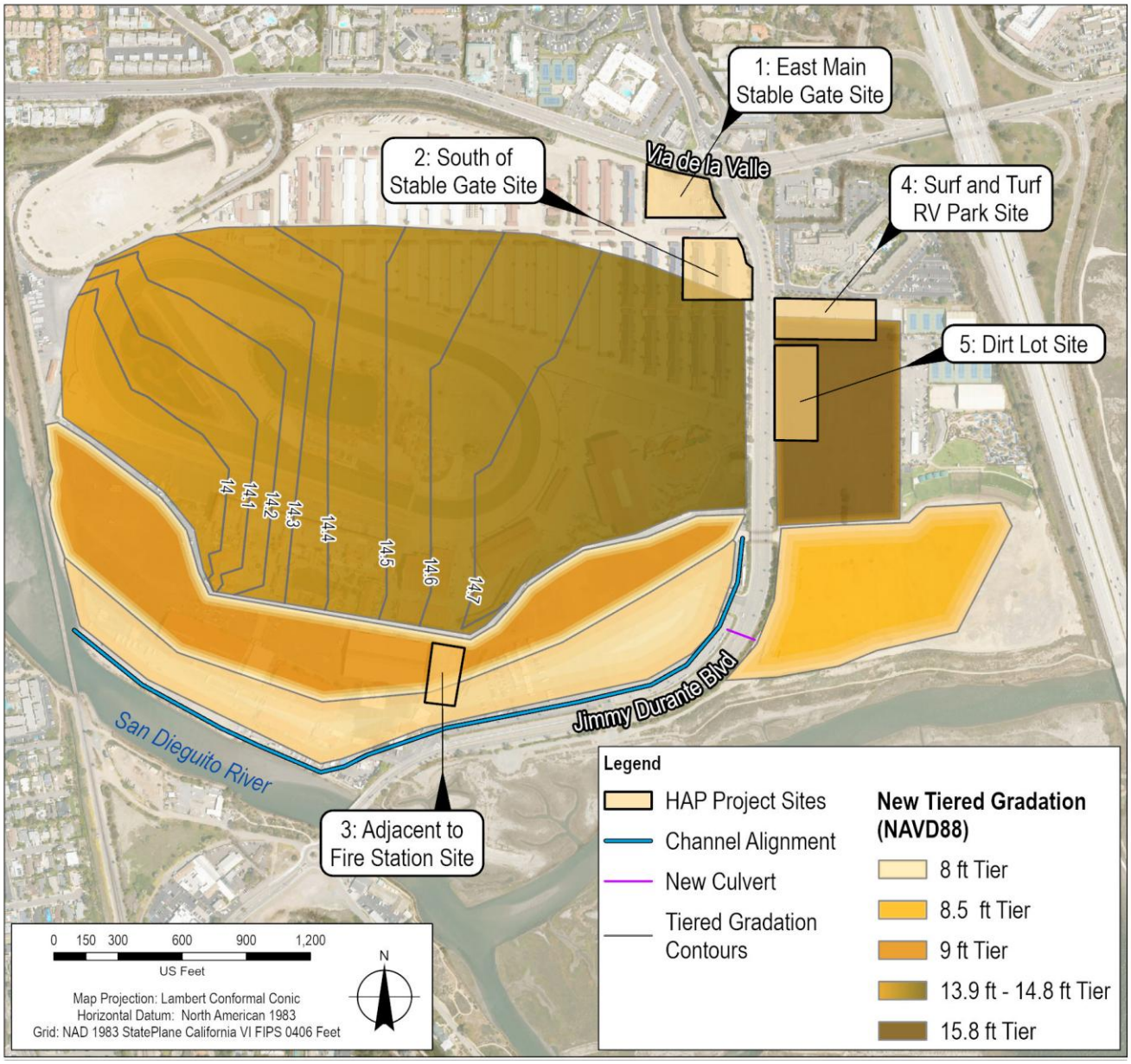

Figure 29 *Strategy 3: Floodable Frontage Concept*

5.4.2 Model Development

The existing conditions model discussed in Section 3 was modified to simulate Strategy 3. Modifications are similar to Strategy 2 and are listed below.

- Tiered Pads: Terrain modifications were used to assign elevations within the tiered pads (see Figure 29). The 8.5 ft tier was implemented so that the elevations within the pad were set to 10 ft or the existing elevation, whichever is lower. The 8 ft and 9 ft tiers were modelled to override the existing terrain elevations. East of Jimmy Durante Blvd, the pad elevation was set to a constant elevation of 15.8 ft. West of Jimmy Durante Blvd, control points were used to assign varying elevations across the site, sloping from 14.8 ft at the upstream end of the site to 13.9 ft at the downstream end of the site.
- Channel: The channel in Strategy 3 is the same as Strategy 2. The channel was modelled with a 60-ft bottom width and 2:1 side slopes. The channel invert elevation slopes from 7.5 ft from the upstream end to 6 ft at the

downstream end. The channel was incorporated into the model terrain using terrain modification, and a breakline was used to refine grid cells within the channel.

- Culverts: Like Strategy 2, the culverts were modelled using SA/2D connections. The SA/2D connection includes four 16 ft x 8 ft reinforced concrete boxes with upstream invert elevations of 8.5 ft, downstream invert elevations of 7.5 ft, and an entrance loss coefficient of 0.4. The crest elevation of Jimmy Durante Blvd was set approximately equal to the existing road elevation.

Note that the model does not include any onsite storm drain infrastructure, such as pipes or pumps, as the storm existing onsite storm drain network would require modifications in this strategy due to the substantial grading. Including the modified storm drain network in the model would not be expected to significantly impact results in the modelled scenarios.

The model development did not include any modifications to the existing Manning's roughness within the project site, assuming that the land use in this strategy is similar to existing.

5.4.3 Model Results

Model results for Strategy 3 show that the improvements provide flood protection for much of the site during the 50-year fluvial event, other than the northern half of the stables and the tiered pads along the San Dieguito River. These tiered pads experience more frequent flooding, including during the 2100 SLR event and during the 10-year fluvial event. While the site experiences flooding during the 100-year fluvial event, flood depths within much of the site are significantly lower than in the existing conditions.

5.4.3.1 Tidal Events

Figure H-14, Figure H-15, and Figure H-16 display the peak flood depths in Strategy 3 for the 10-year EWL, 2050 SLR, and 2070 SLR, respectively (see Appendix H). Figure 30 below displays the peak flood depths for the 2100 SLR. These results are similar to Strategy 2 and show that the District's property remains dry during the 10-year EWL, 2050 SLR, and 2070 SLR tidal events, other than the channel. In the 2100 SLR scenario, the lower tiered pads (8 ft, 8.5 ft, and 9 ft tiers) as well as the driving range are flooded. Flood depths are similar to Strategy 2, including 1.9 ft of flooding on the 8 ft tier, 0.9 ft of flooding on the 9 ft tier, and up to 2.6 ft of flooding within the driving range. The 8.5 ft tier experiences 1.4 ft of flooding on the 8.5 ft tier.

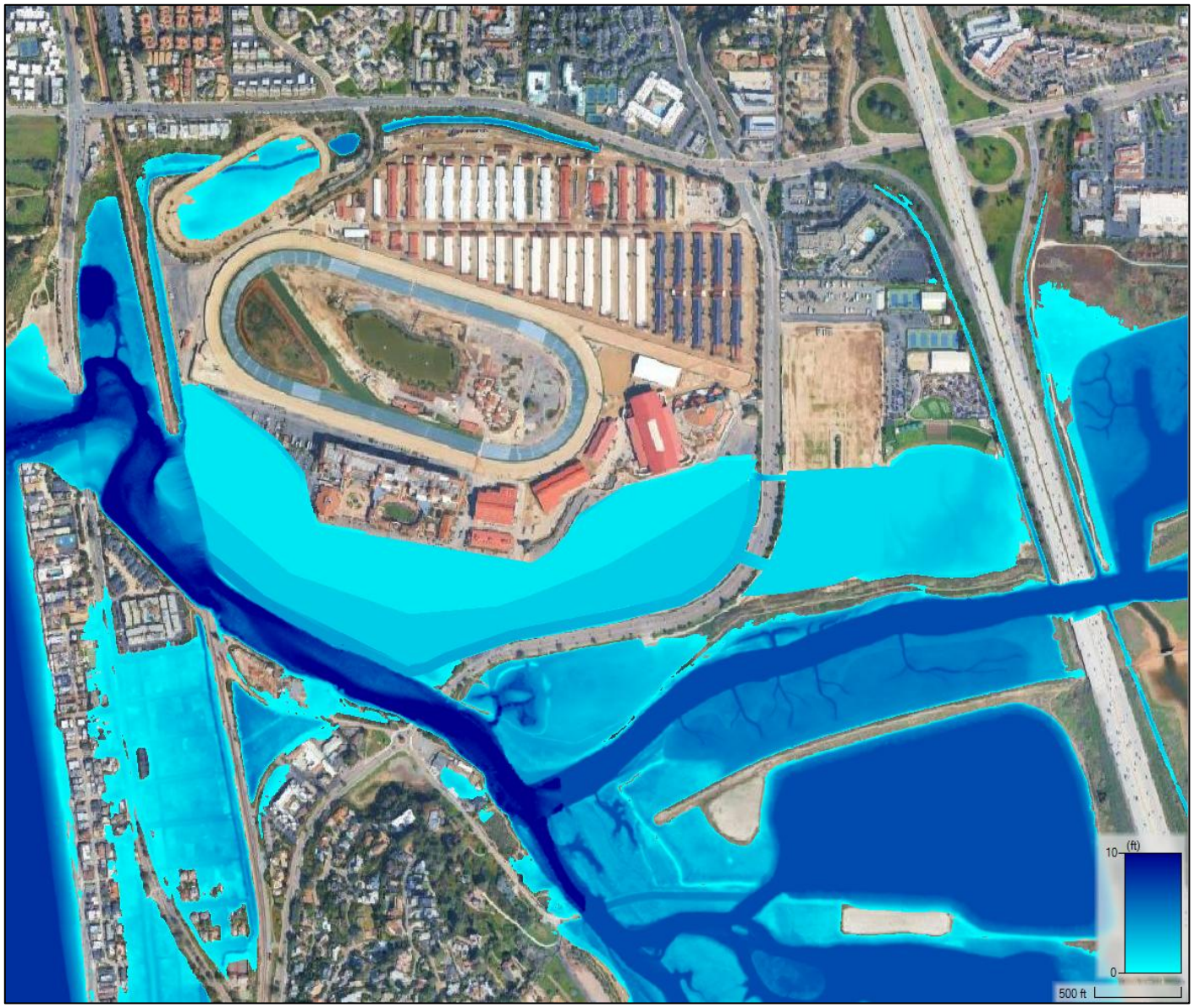

Figure 30 Strategy 3 depth results during the 2100 SLR tidal event

5.4.3.2 Fluvial Events

The results of the fluvial events indicate that the higher pads (13.8 ft to 15.8 ft) are protected from the 50-year fluvial event, whereas the lower tiered pads are more prone to flooding.

Figure 31 shows the peak flood depths during the 10-year fluvial event for Strategy 3. In this event, the 8 ft tier, 8.5 ft tier, and the golf course driving range are flooded, while the remaining onsite areas are dry. Flood depths within the tiered pads are less than 0.7 ft, while the driving range experiences flood depths of up to 2 ft.

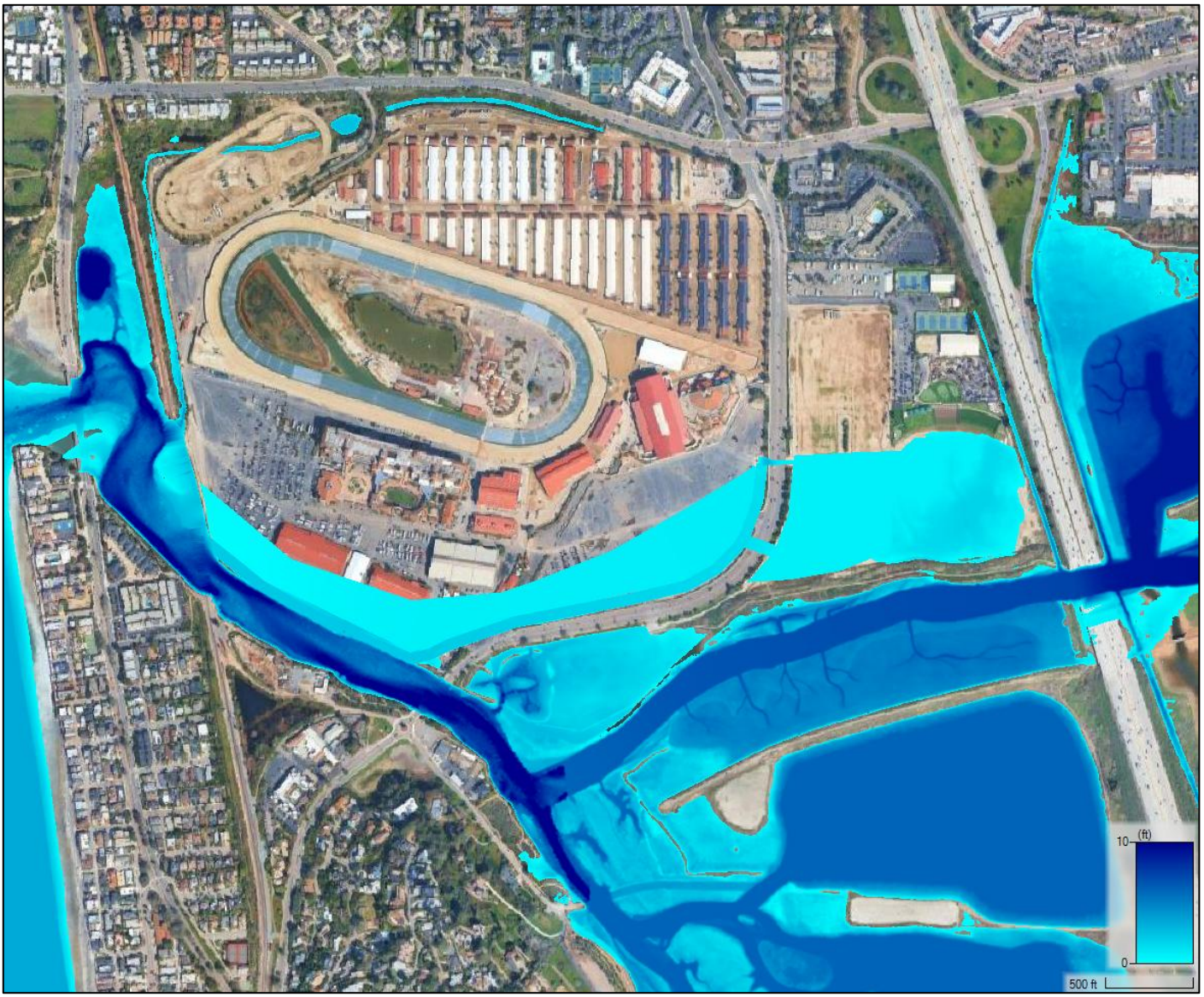

Figure 31 Strategy 3 flood depths during the 10-year fluvial event

The 50-year fluvial flood depths for Strategy 3 are shown in Figure 32. Much of the site is protected from flooding in this event due to fill, including the 15.8 ft pad and the 13.9 ft to 14.8 ft pad. The lower (8 ft, 8.5 ft, and 9 ft) tiered pads, the driving range, and the northern half of the stables are flooded during this event, with significantly deeper flood depths than the 10-year event. These lower tiered pads experience flood depths of up to 7 ft and the driving range experiences flood depths of up to 8.4 ft.

Figure 32 Strategy 3 flood depths during the 50-year fluvial event

The peak flood depths during the 100-year fluvial event for Strategy 3 are shown in Figure 33. These results show that most of the District's property is subject to flooding in this event. Within the higher tiered pads, however, flood depths are significantly lower than the existing conditions or the other strategies, ranging from 0.3 ft to 1.4 ft.

Figure 33 Strategy 3 flood depths during the 100-year fluvial event

5.4.3.3 Fluvial Events with Sea Level Rise

Peak flood depths for Strategy 3 during the 10-year fluvial event with 2050 SLR, 2070 SLR, and 2100 SLR are shown in Figure H-17, Figure H-18, and Figure H-19, respectively (see Appendix H). Model results are similar to Strategy 2. In the 10-year event with 2050 SLR, the 8 ft tiered pad and the 8.5 ft tiered pad experience flood depths of up to 0.8 ft, and the driving range experiences up to 2 ft of flooding. Similar flooding is noted in the 10-year fluvial event with 2070 SLR, but the 9 ft tier experiences very shallow flooding (< 1 inch). In the 10-year event with 2100 SLR, the 9 ft tiered pad experiences flood depths of up to 1.4 ft.

5.4.3.4 Hydraulic Impacts

Figure I-3 in Appendix I shows the difference between water surface elevations in Strategy 3 compared with the existing conditions. The conditions increase water surface elevations by up to 0.25 ft within the channel. Outside of the District's property, water surface elevations increase by up to 0.14 ft. These differences are primarily noted within the San Dieguito River and San Dieguito Lagoon between Highway 5 and Jimmy Durante Blvd.

Since this Strategy leads to small differences in water surface elevations compared to the existing conditions, this Strategy is expected to meet California Drainage Law requirements. Refinements to the site grading could further reduce these offsite impacts if desired. Additionally, more refined topography data within the San Dieguito River could increase the conveyance capacity of the river and decrease offsite impacts.

Similar to Strategy 2, this Strategy involves grading within the FEMA floodway. The goal of these improvements is to increase capacity along the north bank of the San Dieguito River, so they are not expected to lead to a rise in base flood elevations. A no-rise certification would be required demonstrating that the development does not lead to increases in BFEs, and refinements to the channel and tiered pads may be required to meet the requirement.

5.5 Conceptual Adaptation Strategies Model Results Summary

The following three tables provide a summary of the flood depths during the 10 modeled tidal/fluvial scenarios for the existing conditions and the modeled strategies. The flood depths were sampled at the locations shown in Figure 34.

Figure 34 Sampling locations for flood depths from concept strategy models.

Table 5 compares the flood depths at Location 1 (West Parking Lot) for existing conditions and conceptual strategies. The results show that all three of the conceptual strategies protect this area from flooding during the 10-year fluvial event with up to, and including, 2070 SLR. For the 2100 SLR tidal event, 10-year fluvial event with 2100 SLR, 50-year fluvial event, and 100-year fluvial event, all of the conceptual strategies show some flooding at Location 1 (West Parking Lot). This flooding is a result of the living levee overtopping in Strategy 1. In Strategy 2 and Strategy 3, this location is situated on a floodable tiered pad. The flood depths for Strategy 1 are very similar to existing conditions across these scenarios. Strategies 2 and 3 lower flood depths at this location by up to 2.1 ft, primarily due to fill in this area.

Table 5 Maximum flood depths (ft) at Location 1, in the West Parking Lot

Scenario No.	Event Description	Maximum Flood Depths (ft) at Location 1			
		Existing	Strategy 1	Strategy 2	Strategy 3
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	0.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	2.5	2.5	0.9	0.9
5	10-year Fluvial Event	0.4	0.0	0.0	0.0
6	50-year Fluvial Event	6.4	6.3	4.8	4.7
7	100-year Fluvial Event	7.9	7.9	5.8	6.2
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	1.2	0.0	0.0	0.0
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	1.6	0.0	0.0	0.0
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	2.9	2.9	1.3	1.3

Table 6 compares the flood depths at Location 2, in the Backstretch. This location is within the Strategy 2 berm and within the elevated pad in Strategy 3. Accordingly, in Strategies 2 and 3, this location is protected from flooding in the 50-year fluvial event. In the existing conditions and Strategy 1, this location experiences over 5 ft of flooding in the 50-year fluvial event. The results indicate that Strategy 3 greatly reduces 100-year flood depths in the Backstretch compared with the existing conditions.

Table 6 Maximum flood depths (ft) at Location 2, in the Backstretch

Scenario No.	Event Description	Maximum Flood Depths (ft) at Location 2			
		Existing	Strategy 1	Strategy 2	Strategy 3
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	0.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	0.0	0.0	0.0	0.0
5	10-year Fluvial Event	0.0	0.0	0.0	0.0
6	50-year Fluvial Event	5.7	5.7	0.0	0.0
7	100-year Fluvial Event	7.1	7.1	6.3	1.1
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	0.0	0.0	0.0	0.0
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	0.0	0.0	0.0	0.0
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	0.0	0.0	0.0	0.0

Modeled flood depths for existing conditions and conceptual strategies in the driving range are compared in Table 7. Strategy 1 protects this area from the evaluated tidal events, 10-year fluvial event, and 10-year fluvial event with SLR, whereas Strategy 2 and 3 show flooding in the 2100 tidal event, the 10-year fluvial event, and the 10-year fluvial events with SLR. Strategy 2 results in similar flood depths to the existing conditions in these scenarios. Strategy 3 reduces flood depths compared with the existing conditions in the 10-year fluvial event and the 10-year fluvial events with SLR. All three strategies result in similar flooding to the existing conditions in the 50-year and 100-year fluvial events.

Table 7 Maximum flood depths (ft) at Location 3, in the Driving Range.

Scenario No.	Event Description	Maximum Flood Depth (ft) at Location 3			
		Existing	Strategy 1	Strategy 2	Strategy 3
1	10-year EWL (7.34 ft) Tidal Event	0.0	0.0	0.0	0.0
2	MHHW + 2050 SLR (6.13 ft) Tidal Event	0.0	0.0	0.0	0.0
3	MHHW + 2070 SLR (7.43 ft) Tidal Event	0.0	0.0	0.0	2.0
4	MHHW + 2100 SLR (9.93 ft) Tidal Event	2.7	0.0	2.7	2.7
5	10-year Fluvial Event	3.0	0.0	3.0	1.8
6	50-year Fluvial Event	8.3	8.3	8.4	8.2
7	100-year Fluvial Event	9.5	9.5	9.6	9.6
8	10-year Fluvial Event + 2050 SLR (6.13 ft)	3.1	0.0	3.0	1.8
9	10-year Fluvial Event + 2070 SLR (7.43 ft)	3.2	0.0	3.1	1.9
10	10-year Fluvial Event + 2100 SLR (9.93 ft)	4.0	0.0	3.5	3.2

6. Recommendations

6.1 Model Refinements

The accuracy of the model results presented in this report are subject to the confidence in model inputs and available data. Improving some of the model inputs would be beneficial as further evaluation and planning of potential flood mitigation measures progresses.

There are several data gaps regarding the onsite drainage network, including pump station on/off points, operation of the valves, training track pump station capacity and on/off points, pump curve for the pump station upstream of discharge point 5, and infield drainage system (see Section 3.9). Prior to using the HEC-RAS 2D model to design any onsite drainage system upgrades, these data gaps should be filled, and the model should be updated to improve accuracy of results. The accuracy of model results for the onsite rainfall scenarios could also be improved by refining the terrain within Stevens Creek based on survey data, since the LiDAR does not resolve the channel invert.

The fluvial and tidal scenario results are expected to be more accurate than the onsite rainfall scenarios. The largest uncertainty within the fluvial model inputs is the topography of the San Dieguito River. As discussed in Section 3.2, model terrain is based on publicly available LiDAR data, and bathymetric data was not available for the entire reach of the river within the model. Survey data within the San Dieguito River would improve accuracy of the model results, including the offsite impacts of the strategies. This survey data may decrease flooding onsite and reduce modelled offsite impacts of potential flood mitigation measures. Proceeding on strategy refinements without survey data is expected to lead to a more conservative design.

As the design of potential mitigation measures progresses, particularly if elements of Strategy 2 or 3 are including in future design development, adding the tunnel beneath Jimmy Durante Blvd to the model as a SA/2D connection is recommended, as it may impact modeled flow paths and hydraulic impact results of potential mitigation measures.

Finally, the Manning's roughness within the HEC-RAS 2D models should be refined to reflect any changes to land use.

6.2 No-Rise Certification

All three of the conceptual strategies investigated include development within the regulatory floodway. Accordingly, no-rise certifications would be required prior to development. A no-rise certification has been completed for the Del Mar Living Levee Project which is a component within Strategy 1: Targeted Ecotone Features, and the design of this strategy ensured a net cut condition (GHD, 2025). At minimum, the no-rise analysis for the Del Mar Living Levee would need to be updated to include the extension of the living levee if this Strategy 1 moves forward as a potential action to be pursued and refined further. If elements of Strategy 2 or 3 are included in future development and refinement of adaptation strategies, a no-rise certification would also be required. As discussed in Section 5.3.3.4 and Section 5.4.3.4, the potential improvements within the floodway are expected to meet this no rise criteria, as the goal of these improvements is to increase conveyance along the north bank of the San Dieguito River. However, a no-rise analysis would be required based on the FEMA effective HEC-RAS 1D model, and refinements to the improvements within the floodway may be required. As a part of this no-rise analysis, it is also recommended that a cut/fill analysis be completed to ensure that there is more cut than fill within the floodway.

7. Conclusion

This report documents the development and results of a two-dimensional HEC-RAS hydraulic model, which was used to evaluate existing and future flood hazards at the 22nd District Agricultural Association (Del Mar Fairgrounds) site in support of the 22nd District Agricultural Association's HAP Grant effort. The modeling framework evaluated flooding from tidal conditions, fluvial events in the San Dieguito River, onsite rainfall, and projected SLR across multiple planning horizons.

Results from the existing conditions modeling indicate that fluvial flooding from the San Dieguito River presents the dominant flood hazard to the District's property, with widespread inundation occurring during both the 50-year and 100-year fluvial events. While tidal flooding alone does not result in significant onsite impacts under most scenarios, higher SLR conditions—particularly the 2100 intermediate-high scenario—lead to onsite flooding through overtopping of the north overbank and backflow through storm drains. Onsite rainfall events generally result in shallower but widespread flooding and are influenced by assumptions used to fill data gaps regarding the existing storm drain network, pump operations, and gate valve operation.

Three conceptual flood mitigation strategies were developed to span a range of potential approaches for reducing flood hazards, reflecting varying levels of effort and corresponding flood risk reduction. These conceptual strategies were evaluated to reduce flood risks associated with fluvial and SLR hazards. Strategy 1 (Targeted Ecotone Features) provides protection during the 10-year fluvial event with SLR through 2070, while Strategies 2 (Perimeter Berm Protection) and 3 (Site-wide Floodable Frontage) provide higher levels of protection during the 50-year fluvial event. Strategy 3 also reduces flood depths within areas of fill during larger events. All conceptual adaptation strategies were developed with consideration of California Drainage Law and FEMA floodway requirements, and preliminary results indicate that the strategies can be refined to meet no-rise certification criteria.

The results presented in this report are intended to support early-stage planning and evaluation of conceptual flood adaptation strategies along the District's property. As planning advances, additional data collection and model refinement—particularly related to river bathymetry, onsite drainage infrastructure, and operational assumptions—would improve confidence in the modeled results and support final design. Importantly, the presented strategies need

to be refined through additional input by the District and aligned with future planning objectives across the site to identify specific resilience goals. For example, strategies could be refined to provide additional flood protection (i.e. 100-year flood protection) to key areas, but this additional flood protection would need to be balanced with additional floodable areas to prevent significant increases in flood hazards offsite. Overall, this study provides a hydraulic framework to inform future decision-making related to flood risk management, site planning, and long-term resilience under changing climate conditions.

8. References

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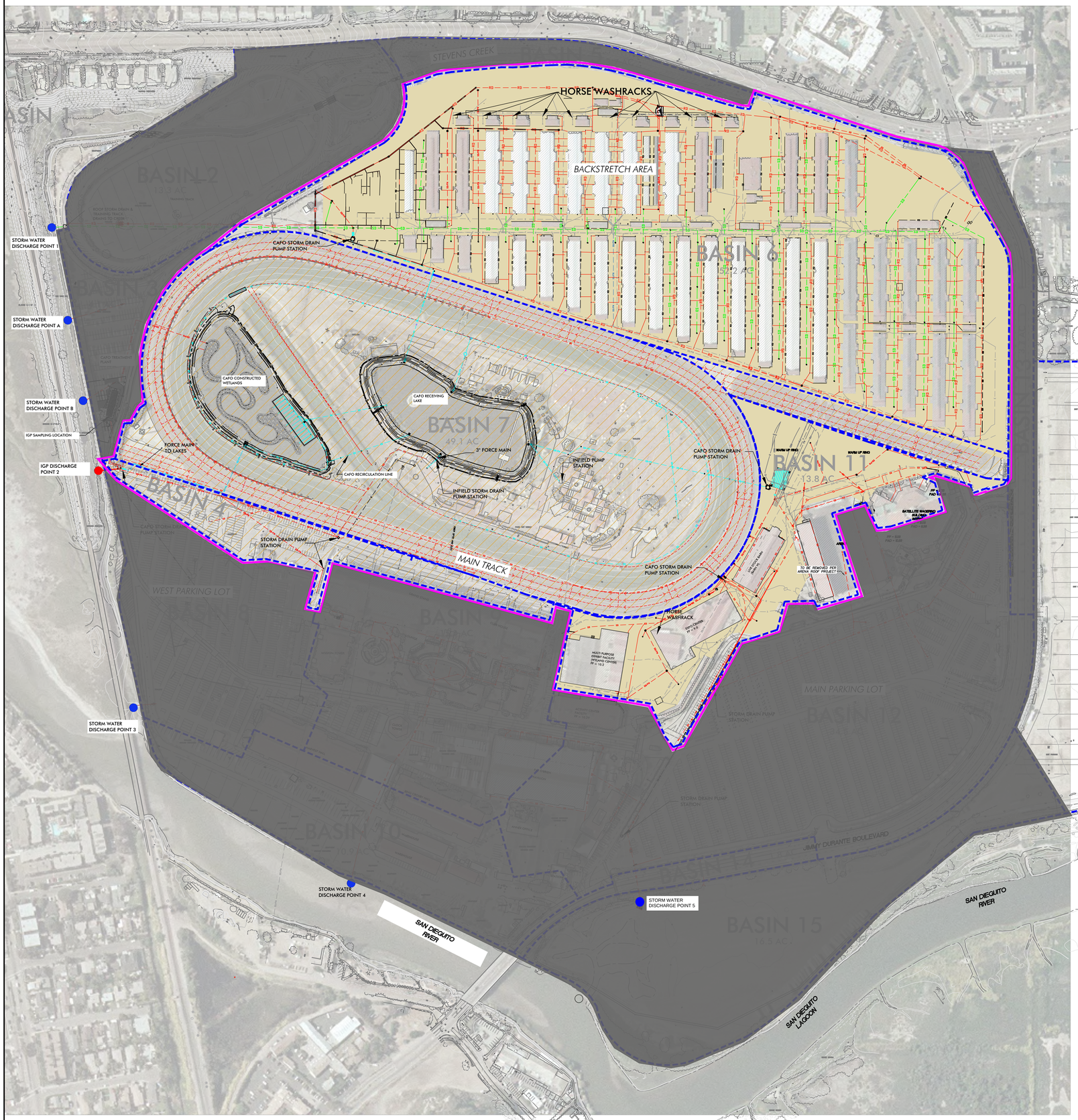
Appendices

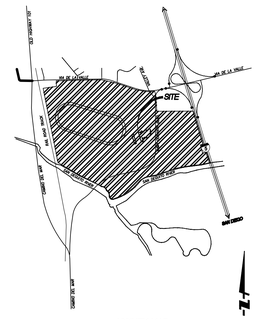
Appendix A

Detailed Storm Drain Maps



LEGEND

- EXIST. STORM DRAIN — SD
- EXIST. STORM DRAIN FORCE MAIN — SD/FM
- INFIELD STORM DRAIN — SD
- INFIELD STORM DRAIN FORCE MAIN — SD/FM
- BACKSTRETCH STORM DRAIN — SD
- EXIST. ROOF DRAIN — RD
- EXIST. PERF. STORM DRAIN
- CAFO SURFACE AREA TO INFIELD PROJECT
- NON-CAFO DRAINAGE AREA TO INFIELD LAKE
- EXIST. MANHOLE
- EXIST. PUMP STATION
- EXIST. CATCH BASIN
- MS4 DISCHARGE POINT
- IGP DISCHARGE POINT
- BASIN DRAINAGE BOUNDARY
- INFIELD LAKE DRAINAGE BOUNDARY (CAFO / IGP DRAINAGE BOUNDARY)



VICINITY MAP
NOT TO SCALE

SCALE: 1" = 150'

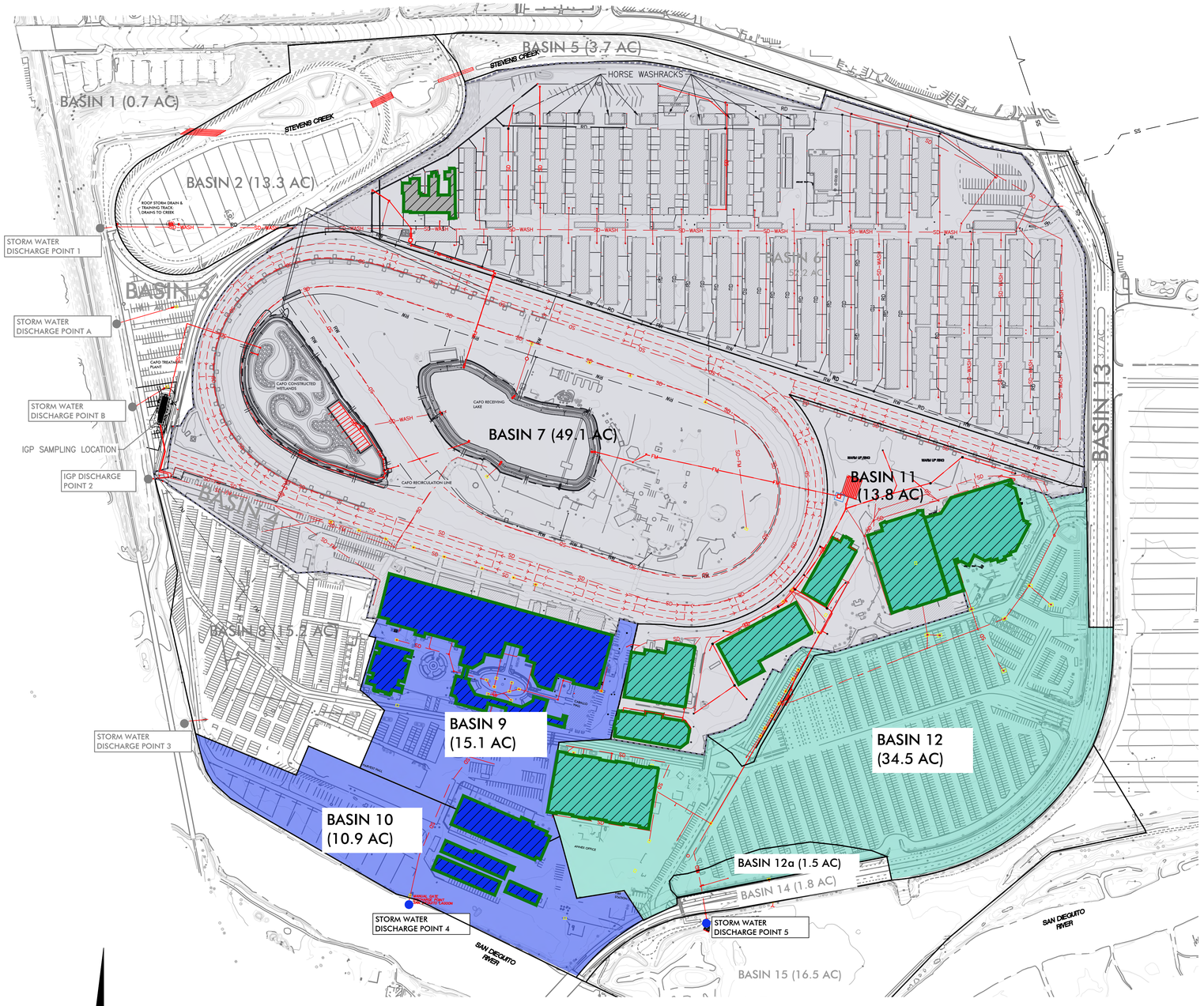
150 75 0 150 300 450
GRAPHIC SCALE IN FEET

DEL MAR FAIRGROUNDS
IGP / CAFO DRAINAGE EXHIBIT

DEL MAR FAIRGROUNDS
DEL MAR, CA
PROJECT NUMBER: 654-005
SCALE: 1"=80'
DATE: 02/09/2022
SHEET 1 OF 1

FUSCOE ENGINEERING
6390 Greenwich Drive, Suite 170
San Diego, California 92122
tel 858.554.1500 ▫ fax 858.597.0335
www.fuscoe.com

P:\PROJECTS\654-005_SUPPORT FILES\EXHIBITS\SWMP\654-005-SL1_SWMP_MAP_EXHIBIT_11x17.DWG — 11x17 — EXHIBIT MAP BY: KATO — LAYOUT: OVERALL

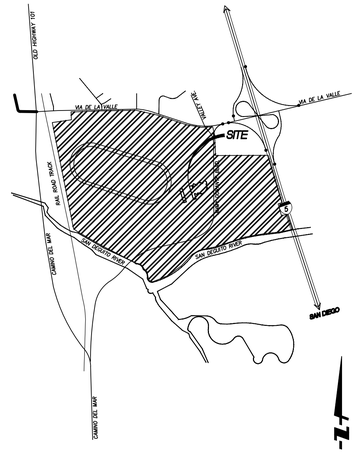


200' 0' 100' 200' 400'

SCALE: 1" = 200'

LEGEND

- EXIST. STORM DRAIN
- PRIORITY LAND USE (PLU) FACILITY AREA DRAINS TO MS4 STORM DRAIN (FULL CAPTURE SYSTEM REQUIRED)
- DESIGNATED PLU AREA (ROOF AREA) DRAINS TO DP4
- PRIORITY LAND USE DRAINAGE AREA TO DP4
- DESIGNATED PLU AREA (ROOF AREA) DRAINS TO DP5
- PRIORITY LAND USE DRAINAGE AREA TO DP5
- PLU AREA TO INFIELD LAKE (FCS COMPLIANT)
- CAFO & NON-CAFO SURFACE AREA TO INFIELD PROJECT
- EXIST. MANHOLE
- EXIST. PUMP STATION
- EXIST. CATCH BASIN
- MS4 DISCHARGE POINT
- IGP DISCHARGE POINT NOT SUBJECT TO TRASH FULL CAPTURE TREATMENT REQUIREMENTS
- INFIELD LAKE DRAINAGE BOUNDARY



VICINITY MAP
NOT TO SCALE

DEL MAR FAIRGROUNDS

PRIORITY LAND USE DRAINAGE EXHIBIT FOR
FULL TRASH CAPTURE COMPLIANCE
DEL MAR, CA
DATE: 9/10/2024 SHEET 1 OF 3

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F:\Projects\0541\005\Exhibits\0541-005xh - Trash PLU Exhibit.dwg (9/10/2024 1:20 PM) Plotted by: Emma Smith

Appendix B

NOAA Atlas 14 Precipitation Depths

NOAA Atlas 14, Volume 6, Version 2
Location name: Del Mar, California, USA*
Latitude: 32.9761°, Longitude: -117.2634°
Elevation: 7 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.097 (0.081-0.117)	0.122 (0.103-0.147)	0.156 (0.131-0.189)	0.185 (0.153-0.225)	0.223 (0.179-0.282)	0.254 (0.199-0.328)	0.285 (0.218-0.378)	0.318 (0.235-0.434)	0.363 (0.257-0.518)	0.398 (0.272-0.589)
10-min	0.139 (0.117-0.167)	0.176 (0.147-0.211)	0.224 (0.188-0.271)	0.265 (0.219-0.322)	0.320 (0.256-0.404)	0.364 (0.285-0.470)	0.409 (0.312-0.542)	0.456 (0.337-0.622)	0.520 (0.369-0.742)	0.571 (0.390-0.844)
15-min	0.168 (0.141-0.202)	0.212 (0.178-0.256)	0.271 (0.227-0.328)	0.320 (0.265-0.390)	0.387 (0.310-0.489)	0.440 (0.344-0.568)	0.494 (0.377-0.655)	0.551 (0.408-0.752)	0.629 (0.446-0.897)	0.691 (0.472-1.02)
30-min	0.236 (0.198-0.283)	0.297 (0.250-0.358)	0.380 (0.318-0.459)	0.448 (0.372-0.546)	0.543 (0.434-0.685)	0.617 (0.483-0.796)	0.693 (0.528-0.918)	0.772 (0.572-1.05)	0.882 (0.625-1.26)	0.968 (0.661-1.43)
60-min	0.333 (0.280-0.401)	0.421 (0.353-0.506)	0.537 (0.449-0.649)	0.634 (0.525-0.772)	0.767 (0.614-0.969)	0.872 (0.682-1.12)	0.980 (0.747-1.30)	1.09 (0.808-1.49)	1.25 (0.883-1.78)	1.37 (0.935-2.02)
2-hr	0.461 (0.387-0.555)	0.583 (0.489-0.702)	0.741 (0.619-0.895)	0.869 (0.720-1.06)	1.04 (0.834-1.32)	1.18 (0.920-1.52)	1.31 (0.998-1.73)	1.45 (1.07-1.97)	1.63 (1.16-2.33)	1.77 (1.21-2.62)
3-hr	0.555 (0.466-0.667)	0.701 (0.588-0.844)	0.890 (0.745-1.08)	1.04 (0.865-1.27)	1.25 (0.998-1.57)	1.40 (1.10-1.81)	1.56 (1.19-2.06)	1.72 (1.27-2.34)	1.93 (1.37-2.75)	2.09 (1.43-3.09)
6-hr	0.748 (0.628-0.900)	0.948 (0.795-1.14)	1.20 (1.01-1.45)	1.41 (1.17-1.72)	1.68 (1.35-2.12)	1.89 (1.48-2.44)	2.09 (1.60-2.77)	2.30 (1.70-3.14)	2.58 (1.82-3.67)	2.78 (1.90-4.12)
12-hr	0.991 (0.833-1.19)	1.26 (1.06-1.52)	1.61 (1.34-1.94)	1.88 (1.56-2.29)	2.25 (1.80-2.84)	2.53 (1.98-3.26)	2.80 (2.14-3.72)	3.08 (2.28-4.21)	3.45 (2.45-4.92)	3.73 (2.55-5.52)
24-hr	1.24 (1.10-1.44)	1.59 (1.40-1.84)	2.04 (1.78-2.37)	2.39 (2.08-2.81)	2.87 (2.42-3.47)	3.24 (2.68-3.99)	3.60 (2.91-4.54)	3.97 (3.13-5.14)	4.46 (3.38-6.00)	4.83 (3.55-6.72)
2-day	1.50 (1.32-1.74)	1.93 (1.69-2.24)	2.48 (2.18-2.89)	2.93 (2.55-3.44)	3.54 (2.98-4.28)	4.00 (3.31-4.93)	4.47 (3.62-5.64)	4.95 (3.90-6.40)	5.59 (4.24-7.52)	6.08 (4.47-8.46)
3-day	1.68 (1.48-1.94)	2.16 (1.90-2.50)	2.79 (2.45-3.25)	3.31 (2.88-3.88)	4.01 (3.38-4.84)	4.54 (3.76-5.60)	5.09 (4.12-6.42)	5.65 (4.46-7.32)	6.42 (4.86-8.64)	7.01 (5.14-9.74)
4-day	1.83 (1.61-2.12)	2.36 (2.07-2.74)	3.06 (2.68-3.56)	3.64 (3.16-4.26)	4.42 (3.73-5.35)	5.03 (4.16-6.20)	5.65 (4.57-7.12)	6.29 (4.96-8.14)	7.16 (5.43-9.64)	7.84 (5.76-10.9)
7-day	2.17 (1.91-2.52)	2.82 (2.48-3.27)	3.67 (3.22-4.28)	4.38 (3.82-5.14)	5.37 (4.53-6.49)	6.14 (5.08-7.57)	6.94 (5.61-8.75)	7.77 (6.12-10.1)	8.91 (6.76-12.0)	9.81 (7.20-13.6)
10-day	2.42 (2.13-2.80)	3.14 (2.76-3.64)	4.12 (3.61-4.79)	4.93 (4.29-5.78)	6.07 (5.12-7.34)	6.96 (5.76-8.59)	7.89 (6.38-9.96)	8.87 (6.99-11.5)	10.2 (7.75-13.8)	11.3 (8.30-15.7)
20-day	2.89 (2.54-3.35)	3.81 (3.35-4.42)	5.05 (4.43-5.88)	6.10 (5.31-7.15)	7.57 (6.39-9.15)	8.74 (7.23-10.8)	9.95 (8.05-12.6)	11.2 (8.86-14.6)	13.0 (9.88-17.5)	14.5 (10.6-20.1)
30-day	3.43 (3.02-3.98)	4.56 (4.01-5.30)	6.10 (5.35-7.10)	7.39 (6.44-8.67)	9.21 (7.77-11.1)	10.7 (8.82-13.1)	12.2 (9.84-15.3)	13.7 (10.8-17.8)	16.0 (12.1-21.5)	17.7 (13.0-24.6)
45-day	4.01 (3.53-4.64)	5.37 (4.72-6.23)	7.22 (6.33-8.40)	8.77 (7.63-10.3)	11.0 (9.24-13.2)	12.7 (10.5-15.6)	14.5 (11.7-18.3)	16.4 (12.9-21.2)	19.0 (14.4-25.5)	21.0 (15.5-29.3)
60-day	4.63 (4.08-5.37)	6.23 (5.47-7.23)	8.38 (7.35-9.76)	10.2 (8.87-12.0)	12.7 (10.7-15.4)	14.7 (12.2-18.2)	16.8 (13.6-21.2)	19.0 (15.0-24.6)	22.0 (16.7-29.6)	24.3 (17.9-33.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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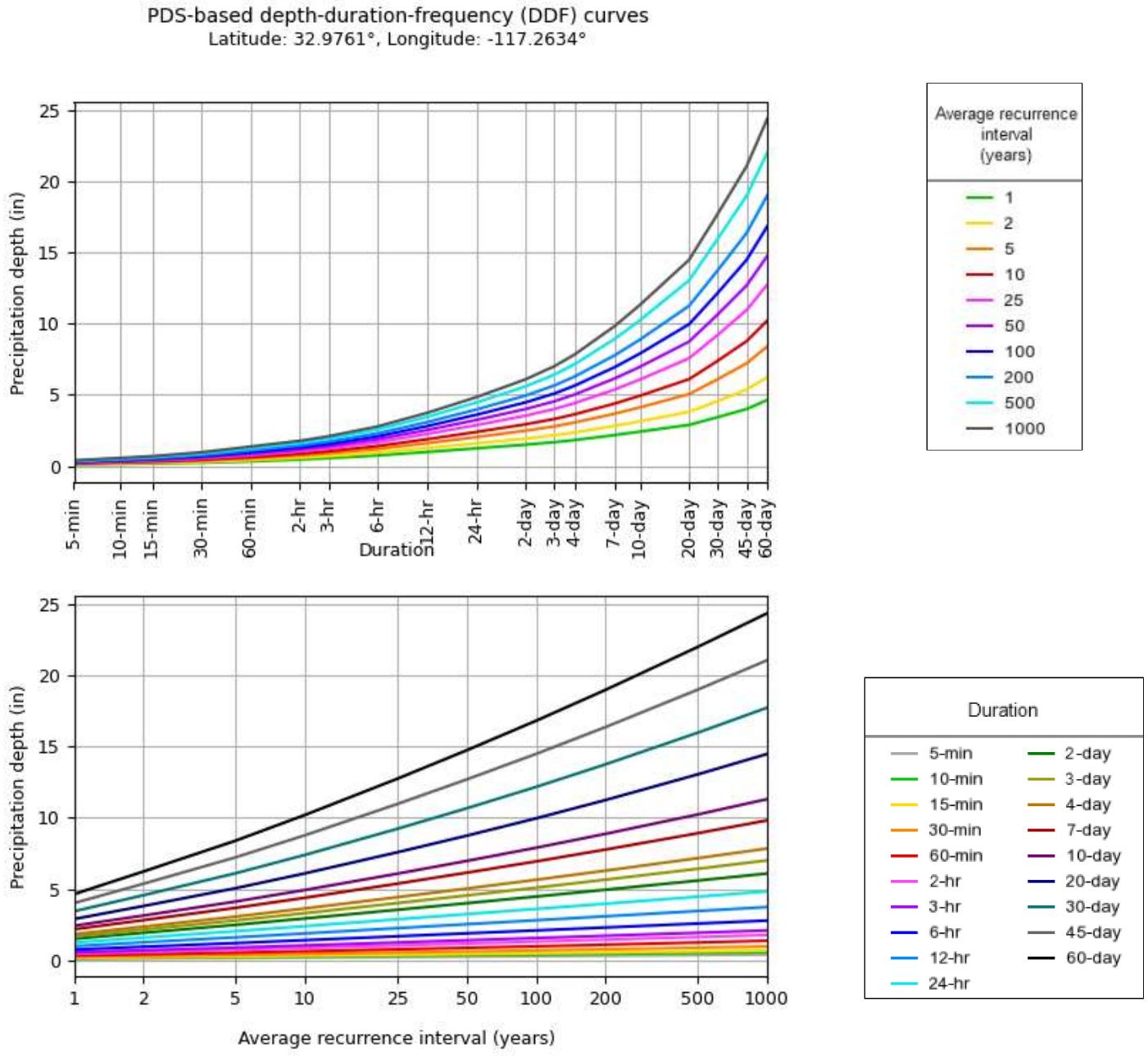
PF graphical



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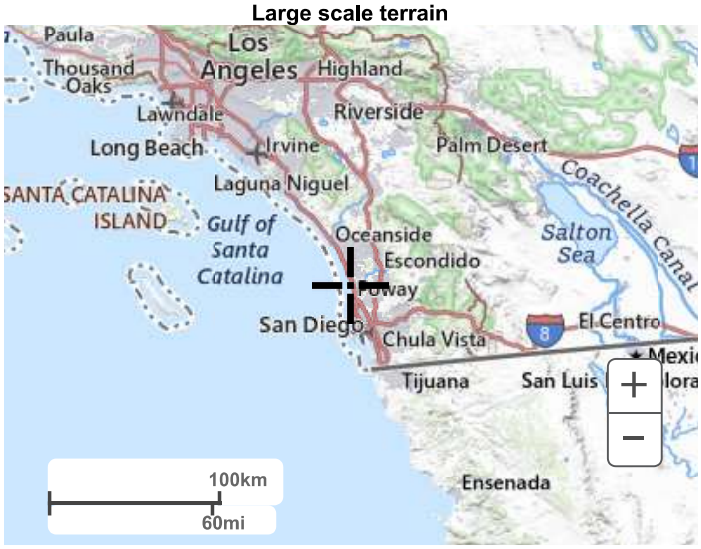
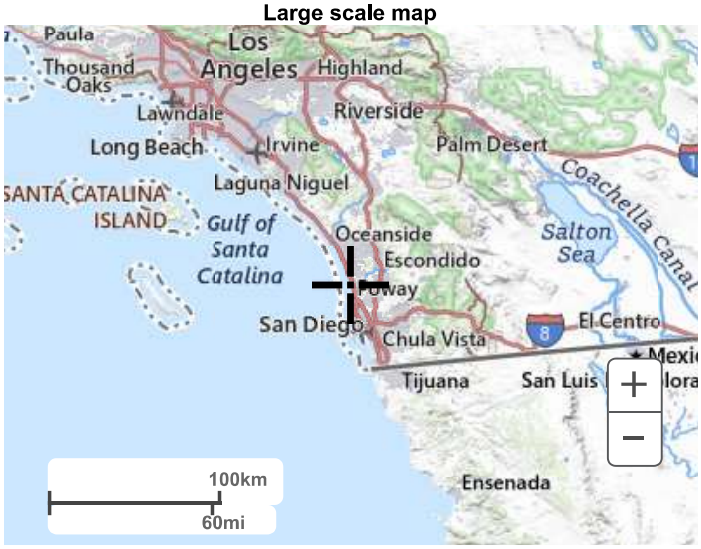
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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Appendix C

Rainfall Hyetograph Calculations

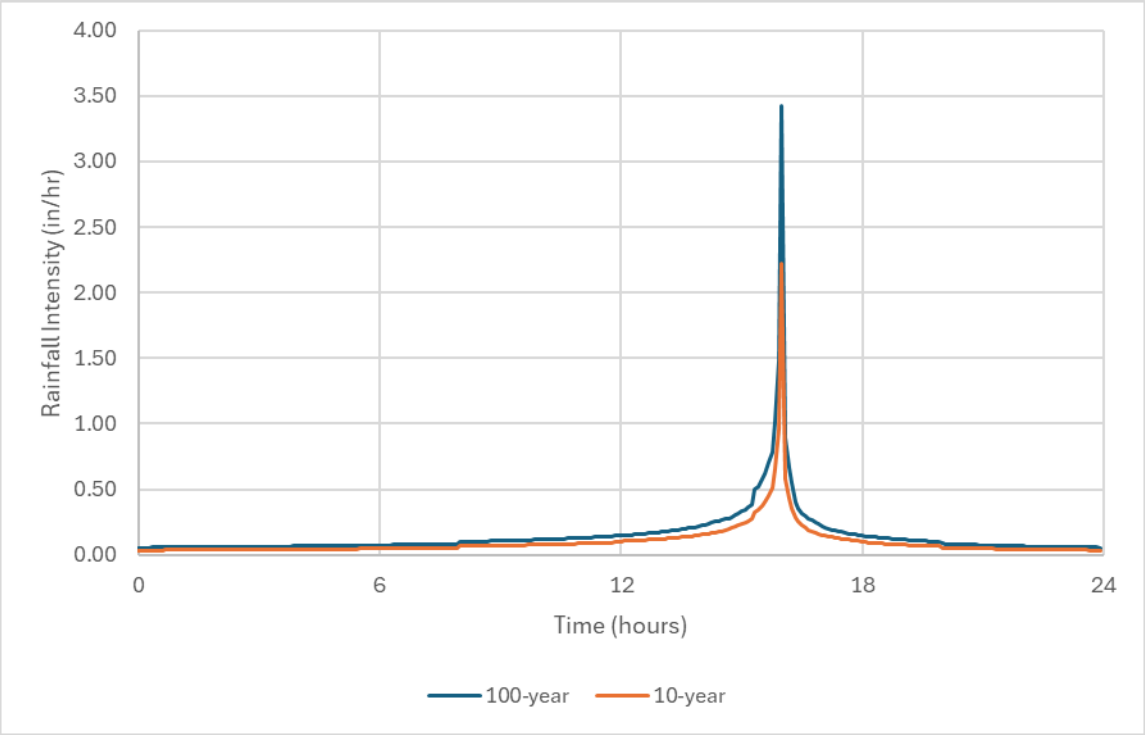


Figure C-1 *10-year and 100-year hyetographs*

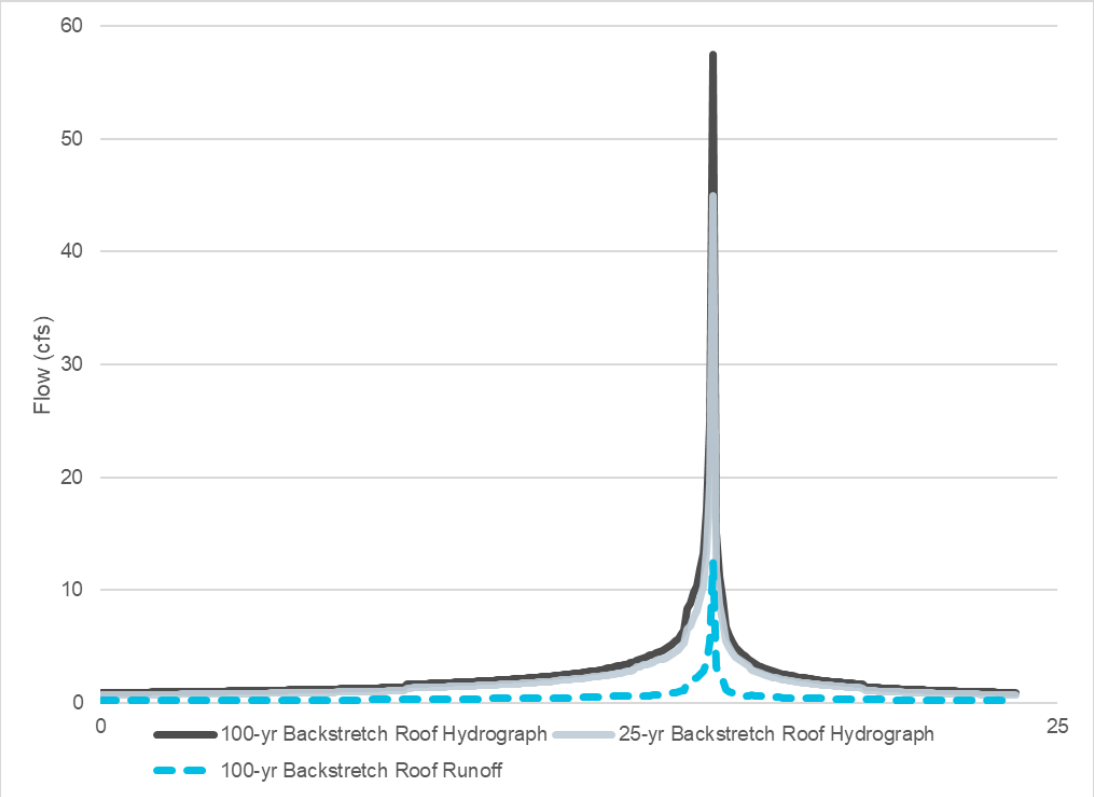


Figure C-2 *100-year and 25-year hydrographs for the Backstretch roof drain system and the resulting runoff to surface during the 100-year event.*

Nested Rainfall Hydrograph Spreadsheet

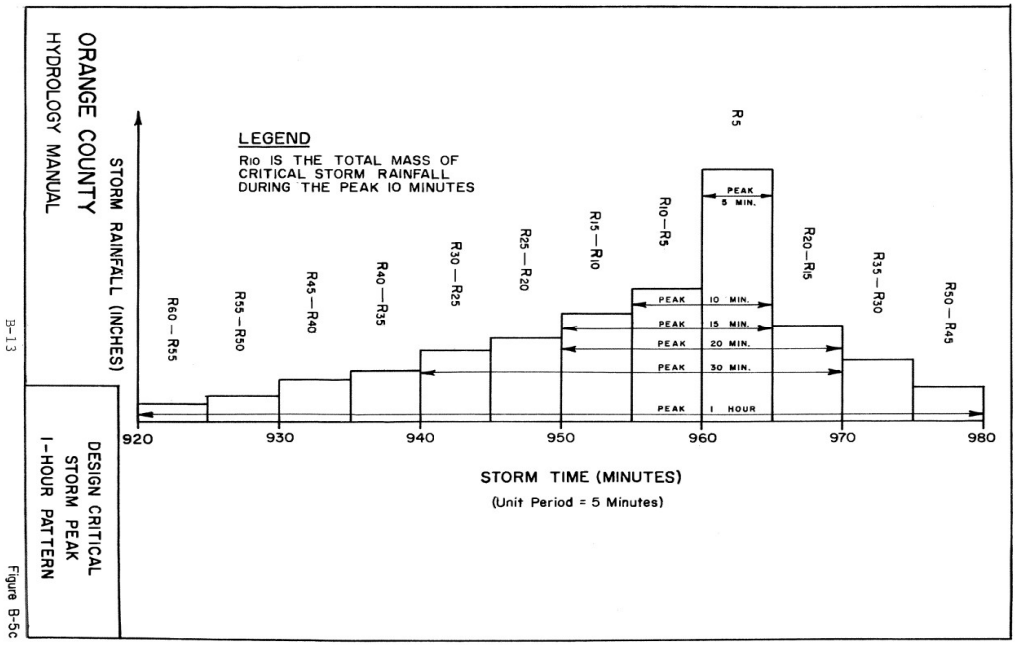
This spreadsheet was created by Madeline Howell with formatting help from Molly Foster on 9/2025.
The purpose of this spreadsheet is to generate a 24-hour hyetograph for a nested storm pattern given rainfall depths for various durations
The "Interpolated_Rainfall" tab uses log-log interpolation to generate rainfall depths for each 5 minutes of a 24-hour storm
The "Hyetograph" tab uses these interpolated rainfall depths to generate a 24-hour hyetograph following methods in the San Diego County and Orange County Hydrology Manuals.

Project Number: 12660347
Project Name: Del Mar Fairgrounds
Last Edited: 9/2/2025
Last Edited By: Molly Foster

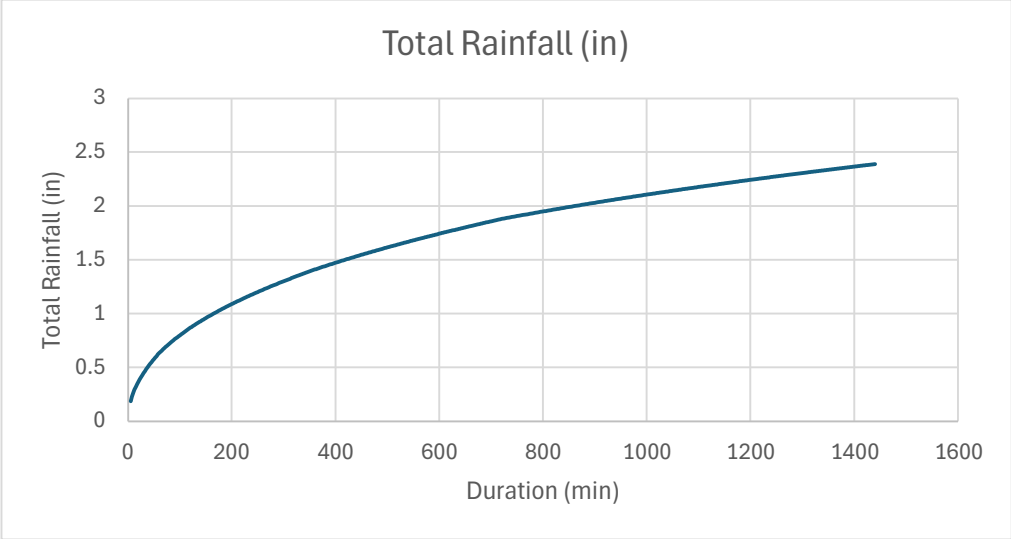
Inputs are in green

Duration	Duration (min)	Log(Duration)	Rainfall (in)	Log(Rainfall)
5-min	5	0.70	0.185	-0.733
10-min	10	1.00	0.265	-0.577
15-min	15	1.18	0.32	-0.495
30-min	30	1.48	0.448	-0.349
60-min	60	1.78	0.634	-0.198
2-hr	120	2.08	0.869	-0.061
3-hr	180	2.26	1.04	0.017
6-hr	360	2.56	1.41	0.149
12-hr	720	2.86	1.88	0.274
24-hr	1440	3.16	2.39	0.378

Rainfall inputs from NOAA Atlas 14



cells highlighted blue contain rainfall data from NOAA, white cells contain interpolated data intervals



Rainfall Interpolation to 5 min Interval					
Increment No.	Duration (min)	Log(Duration)	Log(Rain)	Total Rainfall (in)	Incremental Rainfall (in)
1	5	0.70	-0.733	0.185	0.185
2	10	1.00	-0.577	0.27	0.080
3	15	1.18	-0.495	0.32	0.055
4	20	1.30	-0.434	0.37	0.048
5	25	1.40	-0.387	0.41	0.042
6	30	1.48	-0.349	0.45	0.038
7	35	1.54	-0.315	0.48	0.036
8	40	1.60	-0.286	0.52	0.033
9	45	1.65	-0.261	0.55	0.031
10	50	1.70	-0.238	0.58	0.030
11	55	1.74	-0.217	0.61	0.028
12	60	1.78	-0.198	0.63	0.027
13	65	1.81	-0.182	0.66	0.024
14	70	1.85	-0.167	0.68	0.023
15	75	1.88	-0.154	0.70	0.022
16	80	1.90	-0.141	0.72	0.021
17	85	1.93	-0.129	0.74	0.020
18	90	1.95	-0.118	0.76	0.020
19	95	1.98	-0.107	0.78	0.019
20	100	2.00	-0.097	0.80	0.018
21	105	2.02	-0.087	0.82	0.018
22	110	2.04	-0.078	0.84	0.017
23	115	2.06	-0.069	0.85	0.017
24	120	2.08	-0.061	0.87	0.017
25	125	2.10	-0.053	0.88	0.016
26	130	2.11	-0.046	0.90	0.016
27	135	2.13	-0.038	0.92	0.015
28	140	2.15	-0.031	0.93	0.015
29	145	2.16	-0.025	0.94	0.015
30	150	2.18	-0.018	0.96	0.014
31	155	2.19	-0.012	0.97	0.014
32	160	2.20	-0.006	0.99	0.014
33	165	2.22	0.000	1.00	0.014
34	170	2.23	0.006	1.01	0.013
35	175	2.24	0.012	1.03	0.013
36	180	2.26	0.017	1.04	0.013
37	185	2.27	0.022	1.05	0.013
38	190	2.28	0.027	1.06	0.012
39	195	2.29	0.032	1.08	0.012
40	200	2.30	0.037	1.09	0.012
41	205	2.31	0.042	1.10	0.012
42	210	2.32	0.046	1.11	0.012
43	215	2.33	0.051	1.12	0.012
44	220	2.34	0.055	1.14	0.011
45	225	2.35	0.060	1.15	0.011
46	230	2.36	0.064	1.16	0.011
47	235	2.37	0.068	1.17	0.011
48	240	2.38	0.072	1.18	0.011
49	245	2.39	0.076	1.19	0.011
50	250	2.40	0.080	1.20	0.011
51	255	2.41	0.083	1.21	0.010
52	260	2.41	0.087	1.22	0.010

53	265	2.42	0.091	1.23	0.010
54	270	2.43	0.094	1.24	0.010
55	275	2.44	0.098	1.25	0.010
56	280	2.45	0.101	1.26	0.010
57	285	2.45	0.105	1.27	0.010
58	290	2.46	0.108	1.28	0.010
59	295	2.47	0.111	1.29	0.010
60	300	2.48	0.114	1.30	0.010
61	305	2.48	0.118	1.31	0.009
62	310	2.49	0.121	1.32	0.009
63	315	2.50	0.124	1.33	0.009
64	320	2.51	0.127	1.34	0.009
65	325	2.51	0.130	1.35	0.009
66	330	2.52	0.133	1.36	0.009
67	335	2.53	0.135	1.37	0.009
68	340	2.53	0.138	1.38	0.009
69	345	2.54	0.141	1.38	0.009
70	350	2.54	0.144	1.39	0.009
71	355	2.55	0.147	1.40	0.009
72	360	2.56	0.149	1.41	0.009
73	365	2.56	0.152	1.42	0.008
74	370	2.57	0.154	1.43	0.008
75	375	2.57	0.157	1.43	0.008
76	380	2.58	0.159	1.44	0.008
77	385	2.59	0.161	1.45	0.008
78	390	2.59	0.164	1.46	0.008
79	395	2.60	0.166	1.47	0.008
80	400	2.60	0.168	1.47	0.008
81	405	2.61	0.170	1.48	0.008
82	410	2.61	0.173	1.49	0.008
83	415	2.62	0.175	1.50	0.008
84	420	2.62	0.177	1.50	0.007
85	425	2.63	0.179	1.51	0.007
86	430	2.63	0.181	1.52	0.007
87	435	2.64	0.183	1.53	0.007
88	440	2.64	0.185	1.53	0.007
89	445	2.65	0.187	1.54	0.007
90	450	2.65	0.189	1.55	0.007
91	455	2.66	0.191	1.55	0.007
92	460	2.66	0.193	1.56	0.007
93	465	2.67	0.195	1.57	0.007
94	470	2.67	0.197	1.57	0.007
95	475	2.68	0.199	1.58	0.007
96	480	2.68	0.201	1.59	0.007
97	485	2.69	0.203	1.60	0.007
98	490	2.69	0.205	1.60	0.007
99	495	2.69	0.207	1.61	0.007
100	500	2.70	0.208	1.62	0.007
101	505	2.70	0.210	1.62	0.007
102	510	2.71	0.212	1.63	0.007
103	515	2.71	0.214	1.64	0.007
104	520	2.72	0.216	1.64	0.007
105	525	2.72	0.217	1.65	0.007
106	530	2.72	0.219	1.66	0.007
107	535	2.73	0.221	1.66	0.006

108	540	2.73	0.222	1.67	0.006
109	545	2.74	0.224	1.67	0.006
110	550	2.74	0.226	1.68	0.006
111	555	2.74	0.227	1.69	0.006
112	560	2.75	0.229	1.69	0.006
113	565	2.75	0.230	1.70	0.006
114	570	2.76	0.232	1.71	0.006
115	575	2.76	0.234	1.71	0.006
116	580	2.76	0.235	1.72	0.006
117	585	2.77	0.237	1.72	0.006
118	590	2.77	0.238	1.73	0.006
119	595	2.77	0.240	1.74	0.006
120	600	2.78	0.241	1.74	0.006
121	605	2.78	0.243	1.75	0.006
122	610	2.79	0.244	1.75	0.006
123	615	2.79	0.246	1.76	0.006
124	620	2.79	0.247	1.77	0.006
125	625	2.80	0.249	1.77	0.006
126	630	2.80	0.250	1.78	0.006
127	635	2.80	0.252	1.78	0.006
128	640	2.81	0.253	1.79	0.006
129	645	2.81	0.254	1.80	0.006
130	650	2.81	0.256	1.80	0.006
131	655	2.82	0.257	1.81	0.006
132	660	2.82	0.258	1.81	0.006
133	665	2.82	0.260	1.82	0.006
134	670	2.83	0.261	1.82	0.006
135	675	2.83	0.263	1.83	0.006
136	680	2.83	0.264	1.84	0.006
137	685	2.84	0.265	1.84	0.006
138	690	2.84	0.266	1.85	0.006
139	695	2.84	0.268	1.85	0.006
140	700	2.85	0.269	1.86	0.006
141	705	2.85	0.270	1.86	0.005
142	710	2.85	0.272	1.87	0.005
143	715	2.85	0.273	1.87	0.005
144	720	2.86	0.274	1.88	0.005
145	725	2.86	0.275	1.88	0.005
146	730	2.86	0.276	1.89	0.004
147	735	2.87	0.277	1.89	0.004
148	740	2.87	0.278	1.90	0.004
149	745	2.87	0.279	1.90	0.004
150	750	2.88	0.280	1.91	0.004
151	755	2.88	0.281	1.91	0.004
152	760	2.88	0.282	1.92	0.004
153	765	2.88	0.283	1.92	0.004
154	770	2.89	0.284	1.92	0.004
155	775	2.89	0.285	1.93	0.004
156	780	2.89	0.286	1.93	0.004
157	785	2.89	0.287	1.94	0.004
158	790	2.90	0.288	1.94	0.004
159	795	2.90	0.289	1.95	0.004
160	800	2.90	0.290	1.95	0.004
161	805	2.91	0.291	1.95	0.004
162	810	2.91	0.292	1.96	0.004

163	815	2.91	0.293	1.96	0.004
164	820	2.91	0.294	1.97	0.004
165	825	2.92	0.295	1.97	0.004
166	830	2.92	0.296	1.97	0.004
167	835	2.92	0.296	1.98	0.004
168	840	2.92	0.297	1.98	0.004
169	845	2.93	0.298	1.99	0.004
170	850	2.93	0.299	1.99	0.004
171	855	2.93	0.300	2.00	0.004
172	860	2.93	0.301	2.00	0.004
173	865	2.94	0.302	2.00	0.004
174	870	2.94	0.303	2.01	0.004
175	875	2.94	0.303	2.01	0.004
176	880	2.94	0.304	2.02	0.004
177	885	2.95	0.305	2.02	0.004
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182	910	2.96	0.309	2.04	0.004
183	915	2.96	0.310	2.04	0.004
184	920	2.96	0.311	2.05	0.004
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187	935	2.97	0.313	2.06	0.004
188	940	2.97	0.314	2.06	0.004
189	945	2.98	0.315	2.07	0.004
190	950	2.98	0.316	2.07	0.004
191	955	2.98	0.317	2.07	0.004
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194	970	2.99	0.319	2.08	0.004
195	975	2.99	0.320	2.09	0.004
196	980	2.99	0.321	2.09	0.004
197	985	2.99	0.321	2.10	0.004
198	990	3.00	0.322	2.10	0.004
199	995	3.00	0.323	2.10	0.004
200	1000	3.00	0.324	2.11	0.004
201	1005	3.00	0.324	2.11	0.004
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203	1015	3.01	0.326	2.12	0.004
204	1020	3.01	0.327	2.12	0.004
205	1025	3.01	0.327	2.12	0.004
206	1030	3.01	0.328	2.13	0.004
207	1035	3.01	0.329	2.13	0.004
208	1040	3.02	0.329	2.14	0.004
209	1045	3.02	0.330	2.14	0.004
210	1050	3.02	0.331	2.14	0.004
211	1055	3.02	0.332	2.15	0.004
212	1060	3.03	0.332	2.15	0.004
213	1065	3.03	0.333	2.15	0.004
214	1070	3.03	0.334	2.16	0.003
215	1075	3.03	0.334	2.16	0.003
216	1080	3.03	0.335	2.16	0.003
217	1085	3.04	0.336	2.17	0.003

218	1090	3.04	0.337	2.17	0.003
219	1095	3.04	0.337	2.17	0.003
220	1100	3.04	0.338	2.18	0.003
221	1105	3.04	0.339	2.18	0.003
222	1110	3.05	0.339	2.18	0.003
223	1115	3.05	0.340	2.19	0.003
224	1120	3.05	0.341	2.19	0.003
225	1125	3.05	0.341	2.19	0.003
226	1130	3.05	0.342	2.20	0.003
227	1135	3.05	0.343	2.20	0.003
228	1140	3.06	0.343	2.20	0.003
229	1145	3.06	0.344	2.21	0.003
230	1150	3.06	0.345	2.21	0.003
231	1155	3.06	0.345	2.21	0.003
232	1160	3.06	0.346	2.22	0.003
233	1165	3.07	0.347	2.22	0.003
234	1170	3.07	0.347	2.22	0.003
235	1175	3.07	0.348	2.23	0.003
236	1180	3.07	0.348	2.23	0.003
237	1185	3.07	0.349	2.23	0.003
238	1190	3.08	0.350	2.24	0.003
239	1195	3.08	0.350	2.24	0.003
240	1200	3.08	0.351	2.24	0.003
241	1205	3.08	0.352	2.25	0.003
242	1210	3.08	0.352	2.25	0.003
243	1215	3.08	0.353	2.25	0.003
244	1220	3.09	0.353	2.26	0.003
245	1225	3.09	0.354	2.26	0.003
246	1230	3.09	0.355	2.26	0.003
247	1235	3.09	0.355	2.27	0.003
248	1240	3.09	0.356	2.27	0.003
249	1245	3.10	0.357	2.27	0.003
250	1250	3.10	0.357	2.28	0.003
251	1255	3.10	0.358	2.28	0.003
252	1260	3.10	0.358	2.28	0.003
253	1265	3.10	0.359	2.29	0.003
254	1270	3.10	0.360	2.29	0.003
255	1275	3.11	0.360	2.29	0.003
256	1280	3.11	0.361	2.29	0.003
257	1285	3.11	0.361	2.30	0.003
258	1290	3.11	0.362	2.30	0.003
259	1295	3.11	0.362	2.30	0.003
260	1300	3.11	0.363	2.31	0.003
261	1305	3.12	0.364	2.31	0.003
262	1310	3.12	0.364	2.31	0.003
263	1315	3.12	0.365	2.32	0.003
264	1320	3.12	0.365	2.32	0.003
265	1325	3.12	0.366	2.32	0.003
266	1330	3.12	0.366	2.33	0.003
267	1335	3.13	0.367	2.33	0.003
268	1340	3.13	0.368	2.33	0.003
269	1345	3.13	0.368	2.33	0.003
270	1350	3.13	0.369	2.34	0.003
271	1355	3.13	0.369	2.34	0.003
272	1360	3.13	0.370	2.34	0.003

273	1365	3.14	0.370	2.35	0.003
274	1370	3.14	0.371	2.35	0.003
275	1375	3.14	0.371	2.35	0.003
276	1380	3.14	0.372	2.36	0.003
277	1385	3.14	0.373	2.36	0.003
278	1390	3.14	0.373	2.36	0.003
279	1395	3.14	0.374	2.36	0.003
280	1400	3.15	0.374	2.37	0.003
281	1405	3.15	0.375	2.37	0.003
282	1410	3.15	0.375	2.37	0.003
283	1415	3.15	0.376	2.38	0.003
284	1420	3.15	0.376	2.38	0.003
285	1425	3.15	0.377	2.38	0.003
286	1430	3.16	0.377	2.38	0.003
287	1435	3.16	0.378	2.39	0.003
288	1440	3.16	0.378	2.39	0.003

24-hr 10-yr Rainfall Hyetograph

Time (min)	Time (hrs)	Interpolated Increment No.	Increment Rainfall (in)
0	0.00	288	0.003
5	0.08	287	0.003
10	0.17	285	0.003
15	0.25	284	0.003
20	0.33	282	0.003
25	0.42	281	0.003
30	0.50	279	0.003
35	0.58	278	0.003
40	0.67	276	0.003
45	0.75	275	0.003
50	0.83	273	0.003
55	0.92	272	0.003
60	1.00	270	0.003
65	1.08	269	0.003
70	1.17	267	0.003
75	1.25	266	0.003
80	1.33	264	0.003
85	1.42	263	0.003
90	1.50	261	0.003
95	1.58	260	0.003
100	1.67	258	0.003
105	1.75	257	0.003
110	1.83	255	0.003
115	1.92	254	0.003
120	2.00	252	0.003
125	2.08	251	0.003
130	2.17	249	0.003
135	2.25	248	0.003
140	2.33	246	0.003
145	2.42	245	0.003
150	2.50	243	0.003
155	2.58	242	0.003
160	2.67	240	0.003
165	2.75	239	0.003
170	2.83	237	0.003
175	2.92	236	0.003
180	3.00	234	0.003
185	3.08	233	0.003
190	3.17	231	0.003
195	3.25	230	0.003
200	3.33	228	0.003
205	3.42	227	0.003
210	3.50	225	0.003
215	3.58	224	0.003
220	3.67	222	0.003
225	3.75	221	0.003
230	3.83	219	0.003
235	3.92	218	0.003
240	4.00	216	0.003
245	4.08	215	0.003
250	4.17	213	0.004
255	4.25	212	0.004
260	4.33	210	0.004

265	4.42	209	0.004
270	4.50	207	0.004
275	4.58	206	0.004
280	4.67	204	0.004
285	4.75	203	0.004
290	4.83	201	0.004
295	4.92	200	0.004
300	5.00	198	0.004
305	5.08	197	0.004
310	5.17	195	0.004
315	5.25	194	0.004
320	5.33	192	0.004
325	5.42	191	0.004
330	5.50	189	0.004
335	5.58	188	0.004
340	5.67	186	0.004
345	5.75	185	0.004
350	5.83	183	0.004
355	5.92	182	0.004
360	6.00	180	0.004
365	6.08	179	0.004
370	6.17	177	0.004
375	6.25	176	0.004
380	6.33	174	0.004
385	6.42	173	0.004
390	6.50	171	0.004
395	6.58	170	0.004
400	6.67	168	0.004
405	6.75	167	0.004
410	6.83	165	0.004
415	6.92	164	0.004
420	7.00	162	0.004
425	7.08	161	0.004
430	7.17	159	0.004
435	7.25	158	0.004
440	7.33	156	0.004
445	7.42	155	0.004
450	7.50	153	0.004
455	7.58	152	0.004
460	7.67	150	0.004
465	7.75	149	0.004
470	7.83	147	0.004
475	7.92	146	0.004
480	8.00	144	0.005
485	8.08	143	0.005
490	8.17	141	0.005
495	8.25	140	0.006
500	8.33	138	0.006
505	8.42	137	0.006
510	8.50	135	0.006
515	8.58	134	0.006
520	8.67	132	0.006
525	8.75	131	0.006
530	8.83	129	0.006
535	8.92	128	0.006

540	9.00	126	0.006
545	9.08	125	0.006
550	9.17	123	0.006
555	9.25	122	0.006
560	9.33	120	0.006
565	9.42	119	0.006
570	9.50	117	0.006
575	9.58	116	0.006
580	9.67	114	0.006
585	9.75	113	0.006
590	9.83	111	0.006
595	9.92	110	0.006
600	10.00	108	0.006
605	10.08	107	0.006
610	10.17	105	0.007
615	10.25	104	0.007
620	10.33	102	0.007
625	10.42	101	0.007
630	10.50	99	0.007
635	10.58	98	0.007
640	10.67	96	0.007
645	10.75	95	0.007
650	10.83	93	0.007
655	10.92	92	0.007
660	11.00	90	0.007
665	11.08	89	0.007
670	11.17	87	0.007
675	11.25	86	0.007
680	11.33	84	0.007
685	11.42	83	0.008
690	11.50	81	0.008
695	11.58	80	0.008
700	11.67	78	0.008
705	11.75	77	0.008
710	11.83	75	0.008
715	11.92	74	0.008
720	12.00	72	0.009
725	12.08	71	0.009
730	12.17	69	0.009
735	12.25	68	0.009
740	12.33	66	0.009
745	12.42	65	0.009
750	12.50	63	0.009
755	12.58	62	0.009
760	12.67	60	0.010
765	12.75	59	0.010
770	12.83	57	0.010
775	12.92	56	0.010
780	13.00	54	0.010
785	13.08	53	0.010
790	13.17	51	0.010
795	13.25	50	0.011
800	13.33	48	0.011
805	13.42	47	0.011
810	13.50	45	0.011

815	13.58	44	0.011
820	13.67	42	0.012
825	13.75	41	0.012
830	13.83	39	0.012
835	13.92	38	0.012
840	14.00	36	0.013
845	14.08	35	0.013
850	14.17	33	0.014
855	14.25	32	0.014
860	14.33	30	0.014
865	14.42	29	0.015
870	14.50	27	0.015
875	14.58	26	0.016
880	14.67	24	0.017
885	14.75	23	0.017
890	14.83	21	0.018
895	14.92	20	0.018
900	15.00	18	0.020
905	15.08	17	0.020
910	15.17	15	0.022
915	15.25	14	0.023
920	15.33	12	0.027
925	15.42	11	0.028
930	15.50	9	0.031
935	15.58	8	0.033
940	15.67	6	0.038
945	15.75	5	0.042
950	15.83	3	0.055
955	15.92	2	0.080
960	16.00	1	0.185
965	16.08	4	0.048
970	16.17	7	0.036
975	16.25	10	0.030
980	16.33	13	0.024
985	16.42	16	0.021
990	16.50	19	0.019
995	16.58	22	0.017
1000	16.67	25	0.016
1005	16.75	28	0.015
1010	16.83	31	0.014
1015	16.92	34	0.013
1020	17.00	37	0.013
1025	17.08	40	0.012
1030	17.17	43	0.012
1035	17.25	46	0.011
1040	17.33	49	0.011
1045	17.42	52	0.010
1050	17.50	55	0.010
1055	17.58	58	0.010
1060	17.67	61	0.009
1065	17.75	64	0.009
1070	17.83	67	0.009
1075	17.92	70	0.009
1080	18.00	73	0.008
1085	18.08	76	0.008

1090	18.17	79	0.008
1095	18.25	82	0.008
1100	18.33	85	0.007
1105	18.42	88	0.007
1110	18.50	91	0.007
1115	18.58	94	0.007
1120	18.67	97	0.007
1125	18.75	100	0.007
1130	18.83	103	0.007
1135	18.92	106	0.007
1140	19.00	109	0.006
1145	19.08	112	0.006
1150	19.17	115	0.006
1155	19.25	118	0.006
1160	19.33	121	0.006
1165	19.42	124	0.006
1170	19.50	127	0.006
1175	19.58	130	0.006
1180	19.67	133	0.006
1185	19.75	136	0.006
1190	19.83	139	0.006
1195	19.92	142	0.005
1200	20.00	145	0.005
1205	20.08	148	0.004
1210	20.17	151	0.004
1215	20.25	154	0.004
1220	20.33	157	0.004
1225	20.42	160	0.004
1230	20.50	163	0.004
1235	20.58	166	0.004
1240	20.67	169	0.004
1245	20.75	172	0.004
1250	20.83	175	0.004
1255	20.92	178	0.004
1260	21.00	181	0.004
1265	21.08	184	0.004
1270	21.17	187	0.004
1275	21.25	190	0.004
1280	21.33	193	0.004
1285	21.42	196	0.004
1290	21.50	199	0.004
1295	21.58	202	0.004
1300	21.67	205	0.004
1305	21.75	208	0.004
1310	21.83	211	0.004
1315	21.92	214	0.003
1320	22.00	217	0.003
1325	22.08	220	0.003
1330	22.17	223	0.003
1335	22.25	226	0.003
1340	22.33	229	0.003
1345	22.42	232	0.003
1350	22.50	235	0.003
1355	22.58	238	0.003
1360	22.67	241	0.003

1365	22.75	244	0.003
1370	22.83	247	0.003
1375	22.92	250	0.003
1380	23.00	253	0.003
1385	23.08	256	0.003
1390	23.17	259	0.003
1395	23.25	262	0.003
1400	23.33	265	0.003
1405	23.42	268	0.003
1410	23.50	271	0.003
1415	23.58	274	0.003
1420	23.67	277	0.003
1425	23.75	280	0.003
1430	23.83	283	0.003
1435	23.92	286	0.003

Nested Rainfall Hydrograph Spreadsheet

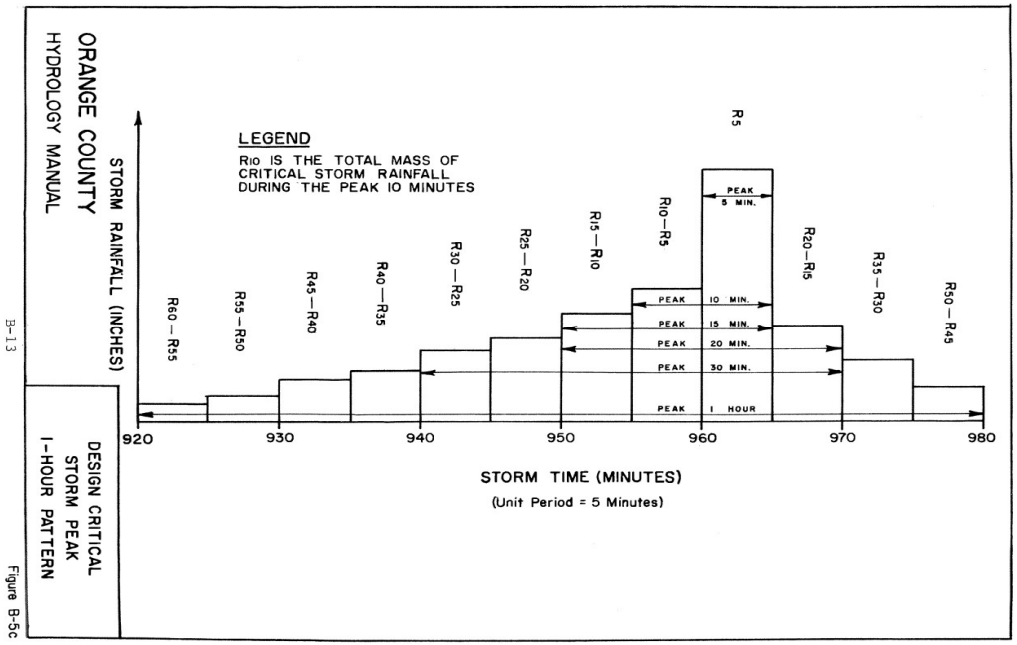
This spreadsheet was created by Madeline Howell with formatting help from Molly Foster on 9/2025.
The purpose of this spreadsheet is to generate a 24-hour hyetograph for a nested storm pattern given rainfall depths for various durations
The "Interpolated_Rainfall" tab uses log-log interpolation to generate rainfall depths for each 5 minutes of a 24-hour storm
The "Hyetograph" tab uses these interpolated rainfall depths to generate a 24-hour hyetograph following methods in the San Diego County and Orange County Hydrology Manuals.

Project Number: 12660347
Project Name: Del Mar Fairgrounds
Last Edited: 9/2/2025
Last Edited By: Molly Foster

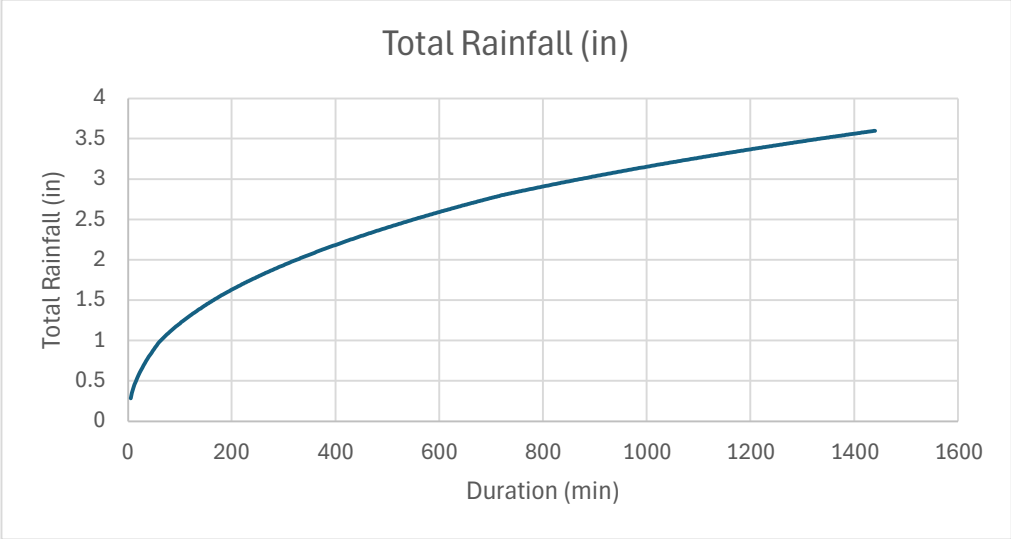
Inputs are in green

Duration	Duration (min)	Log(Duration)	Rainfall (in)	Log(Rainfall)
5-min	5	0.70	0.285	-0.545
10-min	10	1.00	0.409	-0.388
15-min	15	1.18	0.494	-0.306
30-min	30	1.48	0.693	-0.159
60-min	60	1.78	0.98	-0.009
2-hr	120	2.08	1.31	0.117
3-hr	180	2.26	1.56	0.193
6-hr	360	2.56	2.09	0.320
12-hr	720	2.86	2.8	0.447
24-hr	1440	3.16	3.6	0.556

Rainfall inputs from NOAA Atlas 14



cells highlighted blue contain rainfall data from NOAA, white cells contain interpolated data intervals



Rainfall Interpolation to 5 min Interval					
Increment No.	Duration (min)	Log(Duration)	Log(Rain)	Total Rainfall (in)	Incremental Rainfall (in)
1	5	0.70	-0.545	0.285	0.285
2	10	1.00	-0.388	0.41	0.124
3	15	1.18	-0.306	0.49	0.085
4	20	1.30	-0.245	0.57	0.075
5	25	1.40	-0.198	0.63	0.065
6	30	1.48	-0.159	0.69	0.059
7	35	1.54	-0.126	0.75	0.056
8	40	1.60	-0.097	0.80	0.052
9	45	1.65	-0.071	0.85	0.049
10	50	1.70	-0.048	0.89	0.046
11	55	1.74	-0.028	0.94	0.044
12	60	1.78	-0.009	0.98	0.042
13	65	1.81	0.006	1.01	0.033
14	70	1.85	0.019	1.05	0.032
15	75	1.88	0.032	1.08	0.031
16	80	1.90	0.044	1.11	0.029
17	85	1.93	0.055	1.13	0.028
18	90	1.95	0.065	1.16	0.027
19	95	1.98	0.075	1.19	0.027
20	100	2.00	0.084	1.21	0.026
21	105	2.02	0.093	1.24	0.025
22	110	2.04	0.101	1.26	0.024
23	115	2.06	0.110	1.29	0.024
24	120	2.08	0.117	1.31	0.023
25	125	2.10	0.125	1.33	0.023
26	130	2.11	0.132	1.36	0.023
27	135	2.13	0.139	1.38	0.022
28	140	2.15	0.146	1.40	0.022
29	145	2.16	0.153	1.42	0.021
30	150	2.18	0.159	1.44	0.021
31	155	2.19	0.165	1.46	0.021
32	160	2.20	0.171	1.48	0.020
33	165	2.22	0.177	1.50	0.020
34	170	2.23	0.182	1.52	0.019
35	175	2.24	0.188	1.54	0.019
36	180	2.26	0.193	1.56	0.019
37	185	2.27	0.198	1.58	0.018
38	190	2.28	0.203	1.60	0.018
39	195	2.29	0.208	1.61	0.018
40	200	2.30	0.212	1.63	0.017
41	205	2.31	0.217	1.65	0.017
42	210	2.32	0.221	1.66	0.017
43	215	2.33	0.226	1.68	0.017
44	220	2.34	0.230	1.70	0.016
45	225	2.35	0.234	1.71	0.016
46	230	2.36	0.238	1.73	0.016
47	235	2.37	0.242	1.75	0.016
48	240	2.38	0.246	1.76	0.016
49	245	2.39	0.250	1.78	0.015
50	250	2.40	0.253	1.79	0.015
51	255	2.41	0.257	1.81	0.015
52	260	2.41	0.261	1.82	0.015

53	265	2.42	0.264	1.84	0.015
54	270	2.43	0.267	1.85	0.015
55	275	2.44	0.271	1.87	0.014
56	280	2.45	0.274	1.88	0.014
57	285	2.45	0.277	1.89	0.014
58	290	2.46	0.281	1.91	0.014
59	295	2.47	0.284	1.92	0.014
60	300	2.48	0.287	1.94	0.014
61	305	2.48	0.290	1.95	0.014
62	310	2.49	0.293	1.96	0.013
63	315	2.50	0.296	1.98	0.013
64	320	2.51	0.299	1.99	0.013
65	325	2.51	0.301	2.00	0.013
66	330	2.52	0.304	2.01	0.013
67	335	2.53	0.307	2.03	0.013
68	340	2.53	0.310	2.04	0.013
69	345	2.54	0.312	2.05	0.013
70	350	2.54	0.315	2.07	0.013
71	355	2.55	0.318	2.08	0.012
72	360	2.56	0.320	2.09	0.012
73	365	2.56	0.323	2.10	0.012
74	370	2.57	0.325	2.11	0.012
75	375	2.57	0.328	2.13	0.012
76	380	2.58	0.330	2.14	0.012
77	385	2.59	0.332	2.15	0.012
78	390	2.59	0.335	2.16	0.012
79	395	2.60	0.337	2.17	0.012
80	400	2.60	0.339	2.19	0.012
81	405	2.61	0.342	2.20	0.011
82	410	2.61	0.344	2.21	0.011
83	415	2.62	0.346	2.22	0.011
84	420	2.62	0.348	2.23	0.011
85	425	2.63	0.351	2.24	0.011
86	430	2.63	0.353	2.25	0.011
87	435	2.64	0.355	2.26	0.011
88	440	2.64	0.357	2.27	0.011
89	445	2.65	0.359	2.29	0.011
90	450	2.65	0.361	2.30	0.011
91	455	2.66	0.363	2.31	0.011
92	460	2.66	0.365	2.32	0.011
93	465	2.67	0.367	2.33	0.011
94	470	2.67	0.369	2.34	0.011
95	475	2.68	0.371	2.35	0.010
96	480	2.68	0.373	2.36	0.010
97	485	2.69	0.375	2.37	0.010
98	490	2.69	0.377	2.38	0.010
99	495	2.69	0.378	2.39	0.010
100	500	2.70	0.380	2.40	0.010
101	505	2.70	0.382	2.41	0.010
102	510	2.71	0.384	2.42	0.010
103	515	2.71	0.386	2.43	0.010
104	520	2.72	0.388	2.44	0.010
105	525	2.72	0.389	2.45	0.010
106	530	2.72	0.391	2.46	0.010
107	535	2.73	0.393	2.47	0.010

108	540	2.73	0.394	2.48	0.010
109	545	2.74	0.396	2.49	0.010
110	550	2.74	0.398	2.50	0.010
111	555	2.74	0.399	2.51	0.010
112	560	2.75	0.401	2.52	0.010
113	565	2.75	0.403	2.53	0.009
114	570	2.76	0.404	2.54	0.009
115	575	2.76	0.406	2.55	0.009
116	580	2.76	0.408	2.56	0.009
117	585	2.77	0.409	2.57	0.009
118	590	2.77	0.411	2.57	0.009
119	595	2.77	0.412	2.58	0.009
120	600	2.78	0.414	2.59	0.009
121	605	2.78	0.415	2.60	0.009
122	610	2.79	0.417	2.61	0.009
123	615	2.79	0.418	2.62	0.009
124	620	2.79	0.420	2.63	0.009
125	625	2.80	0.421	2.64	0.009
126	630	2.80	0.423	2.65	0.009
127	635	2.80	0.424	2.66	0.009
128	640	2.81	0.426	2.66	0.009
129	645	2.81	0.427	2.67	0.009
130	650	2.81	0.428	2.68	0.009
131	655	2.82	0.430	2.69	0.009
132	660	2.82	0.431	2.70	0.009
133	665	2.82	0.433	2.71	0.009
134	670	2.83	0.434	2.72	0.009
135	675	2.83	0.435	2.72	0.009
136	680	2.83	0.437	2.73	0.008
137	685	2.84	0.438	2.74	0.008
138	690	2.84	0.439	2.75	0.008
139	695	2.84	0.441	2.76	0.008
140	700	2.85	0.442	2.77	0.008
141	705	2.85	0.443	2.78	0.008
142	710	2.85	0.445	2.78	0.008
143	715	2.85	0.446	2.79	0.008
144	720	2.86	0.447	2.80	0.008
145	725	2.86	0.448	2.81	0.007
146	730	2.86	0.449	2.81	0.007
147	735	2.87	0.450	2.82	0.007
148	740	2.87	0.451	2.83	0.007
149	745	2.87	0.453	2.83	0.007
150	750	2.88	0.454	2.84	0.007
151	755	2.88	0.455	2.85	0.007
152	760	2.88	0.456	2.86	0.007
153	765	2.88	0.457	2.86	0.007
154	770	2.89	0.458	2.87	0.007
155	775	2.89	0.459	2.88	0.007
156	780	2.89	0.460	2.88	0.007
157	785	2.89	0.461	2.89	0.007
158	790	2.90	0.462	2.90	0.007
159	795	2.90	0.463	2.90	0.007
160	800	2.90	0.464	2.91	0.007
161	805	2.91	0.465	2.92	0.007
162	810	2.91	0.466	2.92	0.007

163	815	2.91	0.467	2.93	0.007
164	820	2.91	0.468	2.94	0.007
165	825	2.92	0.469	2.94	0.006
166	830	2.92	0.470	2.95	0.006
167	835	2.92	0.470	2.95	0.006
168	840	2.92	0.471	2.96	0.006
169	845	2.93	0.472	2.97	0.006
170	850	2.93	0.473	2.97	0.006
171	855	2.93	0.474	2.98	0.006
172	860	2.93	0.475	2.99	0.006
173	865	2.94	0.476	2.99	0.006
174	870	2.94	0.477	3.00	0.006
175	875	2.94	0.478	3.01	0.006
176	880	2.94	0.479	3.01	0.006
177	885	2.95	0.480	3.02	0.006
178	890	2.95	0.481	3.02	0.006
179	895	2.95	0.481	3.03	0.006
180	900	2.95	0.482	3.04	0.006
181	905	2.96	0.483	3.04	0.006
182	910	2.96	0.484	3.05	0.006
183	915	2.96	0.485	3.05	0.006
184	920	2.96	0.486	3.06	0.006
185	925	2.97	0.487	3.07	0.006
186	930	2.97	0.487	3.07	0.006
187	935	2.97	0.488	3.08	0.006
188	940	2.97	0.489	3.08	0.006
189	945	2.98	0.490	3.09	0.006
190	950	2.98	0.491	3.10	0.006
191	955	2.98	0.492	3.10	0.006
192	960	2.98	0.492	3.11	0.006
193	965	2.98	0.493	3.11	0.006
194	970	2.99	0.494	3.12	0.006
195	975	2.99	0.495	3.13	0.006
196	980	2.99	0.496	3.13	0.006
197	985	2.99	0.497	3.14	0.006
198	990	3.00	0.497	3.14	0.006
199	995	3.00	0.498	3.15	0.006
200	1000	3.00	0.499	3.15	0.006
201	1005	3.00	0.500	3.16	0.006
202	1010	3.00	0.500	3.17	0.006
203	1015	3.01	0.501	3.17	0.006
204	1020	3.01	0.502	3.18	0.006
205	1025	3.01	0.503	3.18	0.006
206	1030	3.01	0.504	3.19	0.006
207	1035	3.01	0.504	3.19	0.006
208	1040	3.02	0.505	3.20	0.006
209	1045	3.02	0.506	3.20	0.006
210	1050	3.02	0.507	3.21	0.006
211	1055	3.02	0.507	3.22	0.006
212	1060	3.03	0.508	3.22	0.006
213	1065	3.03	0.509	3.23	0.006
214	1070	3.03	0.510	3.23	0.005
215	1075	3.03	0.510	3.24	0.005
216	1080	3.03	0.511	3.24	0.005
217	1085	3.04	0.512	3.25	0.005

218	1090	3.04	0.512	3.25	0.005
219	1095	3.04	0.513	3.26	0.005
220	1100	3.04	0.514	3.27	0.005
221	1105	3.04	0.515	3.27	0.005
222	1110	3.05	0.515	3.28	0.005
223	1115	3.05	0.516	3.28	0.005
224	1120	3.05	0.517	3.29	0.005
225	1125	3.05	0.517	3.29	0.005
226	1130	3.05	0.518	3.30	0.005
227	1135	3.05	0.519	3.30	0.005
228	1140	3.06	0.520	3.31	0.005
229	1145	3.06	0.520	3.31	0.005
230	1150	3.06	0.521	3.32	0.005
231	1155	3.06	0.522	3.32	0.005
232	1160	3.06	0.522	3.33	0.005
233	1165	3.07	0.523	3.33	0.005
234	1170	3.07	0.524	3.34	0.005
235	1175	3.07	0.524	3.34	0.005
236	1180	3.07	0.525	3.35	0.005
237	1185	3.07	0.526	3.35	0.005
238	1190	3.08	0.526	3.36	0.005
239	1195	3.08	0.527	3.36	0.005
240	1200	3.08	0.528	3.37	0.005
241	1205	3.08	0.528	3.37	0.005
242	1210	3.08	0.529	3.38	0.005
243	1215	3.08	0.530	3.38	0.005
244	1220	3.09	0.530	3.39	0.005
245	1225	3.09	0.531	3.40	0.005
246	1230	3.09	0.531	3.40	0.005
247	1235	3.09	0.532	3.41	0.005
248	1240	3.09	0.533	3.41	0.005
249	1245	3.10	0.533	3.41	0.005
250	1250	3.10	0.534	3.42	0.005
251	1255	3.10	0.535	3.42	0.005
252	1260	3.10	0.535	3.43	0.005
253	1265	3.10	0.536	3.43	0.005
254	1270	3.10	0.537	3.44	0.005
255	1275	3.11	0.537	3.44	0.005
256	1280	3.11	0.538	3.45	0.005
257	1285	3.11	0.538	3.45	0.005
258	1290	3.11	0.539	3.46	0.005
259	1295	3.11	0.540	3.46	0.005
260	1300	3.11	0.540	3.47	0.005
261	1305	3.12	0.541	3.47	0.005
262	1310	3.12	0.541	3.48	0.005
263	1315	3.12	0.542	3.48	0.005
264	1320	3.12	0.543	3.49	0.005
265	1325	3.12	0.543	3.49	0.005
266	1330	3.12	0.544	3.50	0.005
267	1335	3.13	0.544	3.50	0.005
268	1340	3.13	0.545	3.51	0.005
269	1345	3.13	0.546	3.51	0.005
270	1350	3.13	0.546	3.52	0.005
271	1355	3.13	0.547	3.52	0.005
272	1360	3.13	0.547	3.53	0.005

273	1365	3.14	0.548	3.53	0.005
274	1370	3.14	0.548	3.54	0.005
275	1375	3.14	0.549	3.54	0.005
276	1380	3.14	0.550	3.54	0.005
277	1385	3.14	0.550	3.55	0.005
278	1390	3.14	0.551	3.55	0.005
279	1395	3.14	0.551	3.56	0.005
280	1400	3.15	0.552	3.56	0.005
281	1405	3.15	0.552	3.57	0.005
282	1410	3.15	0.553	3.57	0.005
283	1415	3.15	0.554	3.58	0.005
284	1420	3.15	0.554	3.58	0.005
285	1425	3.15	0.555	3.59	0.005
286	1430	3.16	0.555	3.59	0.005
287	1435	3.16	0.556	3.60	0.005
288	1440	3.16	0.556	3.60	0.005

24-hr 100-yr Rainfall Hyetograph

Time (min)	Time (hrs)	Interpolated Increment No.	Increment Rainfall (in)
0	0.00	288	0.005
5	0.08	287	0.005
10	0.17	285	0.005
15	0.25	284	0.005
20	0.33	282	0.005
25	0.42	281	0.005
30	0.50	279	0.005
35	0.58	278	0.005
40	0.67	276	0.005
45	0.75	275	0.005
50	0.83	273	0.005
55	0.92	272	0.005
60	1.00	270	0.005
65	1.08	269	0.005
70	1.17	267	0.005
75	1.25	266	0.005
80	1.33	264	0.005
85	1.42	263	0.005
90	1.50	261	0.005
95	1.58	260	0.005
100	1.67	258	0.005
105	1.75	257	0.005
110	1.83	255	0.005
115	1.92	254	0.005
120	2.00	252	0.005
125	2.08	251	0.005
130	2.17	249	0.005
135	2.25	248	0.005
140	2.33	246	0.005
145	2.42	245	0.005
150	2.50	243	0.005
155	2.58	242	0.005
160	2.67	240	0.005
165	2.75	239	0.005
170	2.83	237	0.005
175	2.92	236	0.005
180	3.00	234	0.005
185	3.08	233	0.005
190	3.17	231	0.005
195	3.25	230	0.005
200	3.33	228	0.005
205	3.42	227	0.005
210	3.50	225	0.005
215	3.58	224	0.005
220	3.67	222	0.005
225	3.75	221	0.005
230	3.83	219	0.005
235	3.92	218	0.005
240	4.00	216	0.005
245	4.08	215	0.005
250	4.17	213	0.006
255	4.25	212	0.006
260	4.33	210	0.006

265	4.42	209	0.006
270	4.50	207	0.006
275	4.58	206	0.006
280	4.67	204	0.006
285	4.75	203	0.006
290	4.83	201	0.006
295	4.92	200	0.006
300	5.00	198	0.006
305	5.08	197	0.006
310	5.17	195	0.006
315	5.25	194	0.006
320	5.33	192	0.006
325	5.42	191	0.006
330	5.50	189	0.006
335	5.58	188	0.006
340	5.67	186	0.006
345	5.75	185	0.006
350	5.83	183	0.006
355	5.92	182	0.006
360	6.00	180	0.006
365	6.08	179	0.006
370	6.17	177	0.006
375	6.25	176	0.006
380	6.33	174	0.006
385	6.42	173	0.006
390	6.50	171	0.006
395	6.58	170	0.006
400	6.67	168	0.006
405	6.75	167	0.006
410	6.83	165	0.006
415	6.92	164	0.007
420	7.00	162	0.007
425	7.08	161	0.007
430	7.17	159	0.007
435	7.25	158	0.007
440	7.33	156	0.007
445	7.42	155	0.007
450	7.50	153	0.007
455	7.58	152	0.007
460	7.67	150	0.007
465	7.75	149	0.007
470	7.83	147	0.007
475	7.92	146	0.007
480	8.00	144	0.008
485	8.08	143	0.008
490	8.17	141	0.008
495	8.25	140	0.008
500	8.33	138	0.008
505	8.42	137	0.008
510	8.50	135	0.009
515	8.58	134	0.009
520	8.67	132	0.009
525	8.75	131	0.009
530	8.83	129	0.009
535	8.92	128	0.009

540	9.00	126	0.009
545	9.08	125	0.009
550	9.17	123	0.009
555	9.25	122	0.009
560	9.33	120	0.009
565	9.42	119	0.009
570	9.50	117	0.009
575	9.58	116	0.009
580	9.67	114	0.009
585	9.75	113	0.009
590	9.83	111	0.010
595	9.92	110	0.010
600	10.00	108	0.010
605	10.08	107	0.010
610	10.17	105	0.010
615	10.25	104	0.010
620	10.33	102	0.010
625	10.42	101	0.010
630	10.50	99	0.010
635	10.58	98	0.010
640	10.67	96	0.010
645	10.75	95	0.010
650	10.83	93	0.011
655	10.92	92	0.011
660	11.00	90	0.011
665	11.08	89	0.011
670	11.17	87	0.011
675	11.25	86	0.011
680	11.33	84	0.011
685	11.42	83	0.011
690	11.50	81	0.011
695	11.58	80	0.012
700	11.67	78	0.012
705	11.75	77	0.012
710	11.83	75	0.012
715	11.92	74	0.012
720	12.00	72	0.012
725	12.08	71	0.012
730	12.17	69	0.013
735	12.25	68	0.013
740	12.33	66	0.013
745	12.42	65	0.013
750	12.50	63	0.013
755	12.58	62	0.013
760	12.67	60	0.014
765	12.75	59	0.014
770	12.83	57	0.014
775	12.92	56	0.014
780	13.00	54	0.015
785	13.08	53	0.015
790	13.17	51	0.015
795	13.25	50	0.015
800	13.33	48	0.016
805	13.42	47	0.016
810	13.50	45	0.016

815	13.58	44	0.016
820	13.67	42	0.017
825	13.75	41	0.017
830	13.83	39	0.018
835	13.92	38	0.018
840	14.00	36	0.019
845	14.08	35	0.019
850	14.17	33	0.020
855	14.25	32	0.020
860	14.33	30	0.021
865	14.42	29	0.021
870	14.50	27	0.022
875	14.58	26	0.023
880	14.67	24	0.023
885	14.75	23	0.024
890	14.83	21	0.025
895	14.92	20	0.026
900	15.00	18	0.027
905	15.08	17	0.028
910	15.17	15	0.031
915	15.25	14	0.032
920	15.33	12	0.042
925	15.42	11	0.044
930	15.50	9	0.049
935	15.58	8	0.052
940	15.67	6	0.059
945	15.75	5	0.065
950	15.83	3	0.085
955	15.92	2	0.124
960	16.00	1	0.285
965	16.08	4	0.075
970	16.17	7	0.056
975	16.25	10	0.046
980	16.33	13	0.033
985	16.42	16	0.029
990	16.50	19	0.027
995	16.58	22	0.024
1000	16.67	25	0.023
1005	16.75	28	0.022
1010	16.83	31	0.021
1015	16.92	34	0.019
1020	17.00	37	0.018
1025	17.08	40	0.017
1030	17.17	43	0.017
1035	17.25	46	0.016
1040	17.33	49	0.015
1045	17.42	52	0.015
1050	17.50	55	0.014
1055	17.58	58	0.014
1060	17.67	61	0.014
1065	17.75	64	0.013
1070	17.83	67	0.013
1075	17.92	70	0.013
1080	18.00	73	0.012
1085	18.08	76	0.012

1090	18.17	79	0.012
1095	18.25	82	0.011
1100	18.33	85	0.011
1105	18.42	88	0.011
1110	18.50	91	0.011
1115	18.58	94	0.011
1120	18.67	97	0.010
1125	18.75	100	0.010
1130	18.83	103	0.010
1135	18.92	106	0.010
1140	19.00	109	0.010
1145	19.08	112	0.010
1150	19.17	115	0.009
1155	19.25	118	0.009
1160	19.33	121	0.009
1165	19.42	124	0.009
1170	19.50	127	0.009
1175	19.58	130	0.009
1180	19.67	133	0.009
1185	19.75	136	0.008
1190	19.83	139	0.008
1195	19.92	142	0.008
1200	20.00	145	0.007
1205	20.08	148	0.007
1210	20.17	151	0.007
1215	20.25	154	0.007
1220	20.33	157	0.007
1225	20.42	160	0.007
1230	20.50	163	0.007
1235	20.58	166	0.006
1240	20.67	169	0.006
1245	20.75	172	0.006
1250	20.83	175	0.006
1255	20.92	178	0.006
1260	21.00	181	0.006
1265	21.08	184	0.006
1270	21.17	187	0.006
1275	21.25	190	0.006
1280	21.33	193	0.006
1285	21.42	196	0.006
1290	21.50	199	0.006
1295	21.58	202	0.006
1300	21.67	205	0.006
1305	21.75	208	0.006
1310	21.83	211	0.006
1315	21.92	214	0.005
1320	22.00	217	0.005
1325	22.08	220	0.005
1330	22.17	223	0.005
1335	22.25	226	0.005
1340	22.33	229	0.005
1345	22.42	232	0.005
1350	22.50	235	0.005
1355	22.58	238	0.005
1360	22.67	241	0.005

1365	22.75	244	0.005
1370	22.83	247	0.005
1375	22.92	250	0.005
1380	23.00	253	0.005
1385	23.08	256	0.005
1390	23.17	259	0.005
1395	23.25	262	0.005
1400	23.33	265	0.005
1405	23.42	268	0.005
1410	23.50	271	0.005
1415	23.58	274	0.005
1420	23.67	277	0.005
1425	23.75	280	0.005
1430	23.83	283	0.005
1435	23.92	286	0.005

Appendix D

Land Use Data, Curve Numbers, and Manning's N Values

Table D-1 Manning's n values based on land use

Land Use	Manning's n
Pavement (Roads, Parking Lots)	0.020
Unconsolidated Shore	0.023
Hard Packed Dirt (Horse Tracks)/ Barren Land	0.025
Open Water (including San Dieguito River)/ Cultivated Crops	0.035
Grassland-Herbaceous/ Pasture-Hay	0.037
Developed - Open Space	0.040
Palustrine Forested Wetland	0.045
Estuarine Aquatic Bed	0.050
Developed - Low Intensity/ Palustrine Scrub-Shrub Wetland/ Estuarine Scrub-Shrub Wetland	0.070
Estuarine Emergent Wetland	0.073
Palustrine Emergent Wetland	0.085
Developed- Low Intensity	0.090
Estuarine Forested Wetland	0.100
Scrub-Shrub/ Evergreen Forest/ Developed - Medium Intensity/ Fairgrounds Buildings	0.120
Mixed Forest	0.140
Developed - High Intensity/ Deciduous Forest	0.150

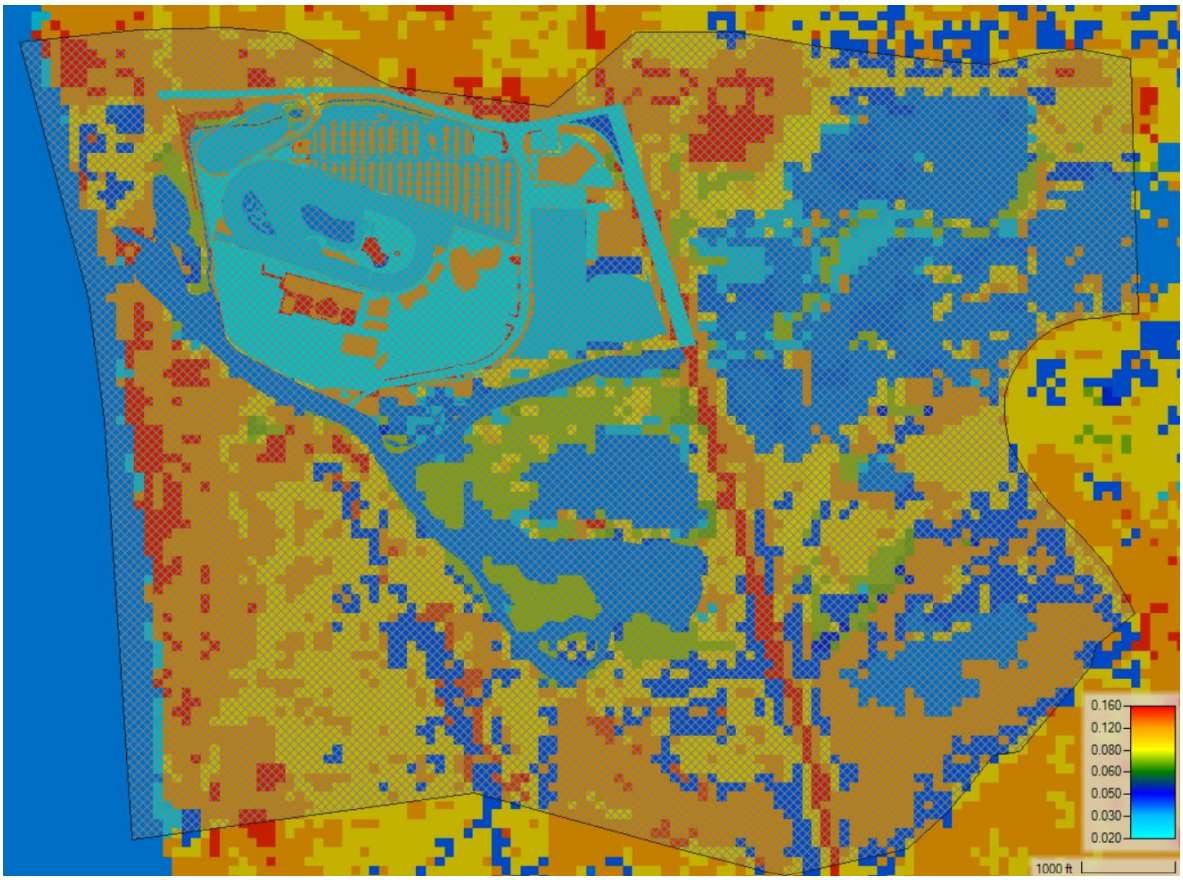


Figure D-1 Manning's n values within HEC-RAS 2D model domain

LandUse	SD LandType	SoilType	SoilClass	CurveNumber
NoData	residential districts, 1 acre	NoData	D	84
NoData	residential districts, 1 acre	A	A	51
NoData	residential districts, 1 acre	B	B	68
NoData	residential districts, 1 acre	C	C	79
NoData	residential districts, 1 acre	D	D	84
Estuarine Aquatic Bed	water surfaces	NoData	D	99
Estuarine Aquatic Bed	water surfaces	A	A	97
Estuarine Aquatic Bed	water surfaces	B	B	98
Estuarine Aquatic Bed	water surfaces	C	C	99
Estuarine Aquatic Bed	water surfaces	D	D	99
Open Water	water surfaces	NoData	D	99
Open Water	water surfaces	A	A	97
Open Water	water surfaces	B	B	98
Open Water	water surfaces	C	C	99
Open Water	water surfaces	D	D	99
Developed - Medium Intensity	residential districts, 1/8 acre	NoData	D	92
Developed - Medium Intensity	residential districts, 1/8 acre	A	A	77
Developed - Medium Intensity	residential districts, 1/8 acre	B	B	85
Developed - Medium Intensity	residential districts, 1/8 acre	C	C	90
Developed - Medium Intensity	residential districts, 1/8 acre	D	D	92
Developed - Low Intensity	residential districts, 1 acre	NoData	D	84
Developed - Low Intensity	residential districts, 1 acre	A	A	51
Developed - Low Intensity	residential districts, 1 acre	B	B	68
Developed - Low Intensity	residential districts, 1 acre	C	C	79
Developed - Low Intensity	residential districts, 1 acre	D	D	84
Grassland-Herbaceous	annual grass, fair	NoData	D	84
Grassland-Herbaceous	annual grass, fair	A	A	50
Grassland-Herbaceous	annual grass, fair	B	B	69
Grassland-Herbaceous	annual grass, fair	C	C	79
Grassland-Herbaceous	annual grass, fair	D	D	84
Developed - High Intensity	urban districts, commercial and business	NoData	D	95
Developed - High Intensity	urban districts, commercial and business	A	A	89
Developed - High Intensity	urban districts, commercial and business	B	B	92
Developed - High Intensity	urban districts, commercial and business	C	C	94
Developed - High Intensity	urban districts, commercial and business	D	D	95
Developed - Open Space	open space, grass cover 50% to 75%	NoData	D	84
Developed - Open Space	open space, grass cover 50% to 75%	A	A	49
Developed - Open Space	open space, grass cover 50% to 75%	B	B	69
Developed - Open Space	open space, grass cover 50% to 75%	C	C	79
Developed - Open Space	open space, grass cover 50% to 75%	D	D	84
Mixed Forest	woods, fair	NoData	D	79
Mixed Forest	woods, fair	A	A	36
Mixed Forest	woods, fair	B	B	60
Mixed Forest	woods, fair	C	C	73
Mixed Forest	woods, fair	D	D	79
Scrub-Shrub	open brush, fair	NoData	D	83
Scrub-Shrub	open brush, fair	A	A	46
Scrub-Shrub	open brush, fair	B	B	66
Scrub-Shrub	open brush, fair	C	C	77
Scrub-Shrub	open brush, fair	D	D	83

Evergreen Forest	woods, fair	NoData	D	79
Evergreen Forest	woods, fair	A	A	36
Evergreen Forest	woods, fair	B	B	60
Evergreen Forest	woods, fair	C	C	73
Evergreen Forest	woods, fair	D	D	79
Deciduous Forest	woods, poor	NoData	D	83
Deciduous Forest	woods, poor	A	A	45
Deciduous Forest	woods, poor	B	B	66
Deciduous Forest	woods, poor	C	C	77
Deciduous Forest	woods, poor	D	D	83
Palustrine Emergent Wetland	meadow, poor	NoData	D	88
Palustrine Emergent Wetland	meadow, poor	A	A	63
Palustrine Emergent Wetland	meadow, poor	B	B	77
Palustrine Emergent Wetland	meadow, poor	C	C	85
Palustrine Emergent Wetland	meadow, poor	D	D	88
Unconsolidated Shore	barren	NoData	D	93
Unconsolidated Shore	barren	A	A	78
Unconsolidated Shore	barren	B	B	86
Unconsolidated Shore	barren	C	C	91
Unconsolidated Shore	barren	D	D	93
Palustrine Scrub-Shrub Wetland	open brush, poor	NoData	D	88
Palustrine Scrub-Shrub Wetland	open brush, poor	A	A	62
Palustrine Scrub-Shrub Wetland	open brush, poor	B	B	76
Palustrine Scrub-Shrub Wetland	open brush, poor	C	C	84
Palustrine Scrub-Shrub Wetland	open brush, poor	D	D	88
Barren Land	barren	NoData	D	93
Barren Land	barren	A	A	78
Barren Land	barren	B	B	86
Barren Land	barren	C	C	91
Barren Land	barren	D	D	93
Palustrine Forested Wetland	woodland-grass combination, poor	NoData	D	86
Palustrine Forested Wetland	woodland-grass combination, poor	A	A	57
Palustrine Forested Wetland	woodland-grass combination, poor	B	B	73
Palustrine Forested Wetland	woodland-grass combination, poor	C	C	82
Palustrine Forested Wetland	woodland-grass combination, poor	D	D	86
Cultivated Crops	cultivated land, without conservation treatment	NoData	D	91
Cultivated Crops	cultivated land, without conservation treatment	A	A	72
Cultivated Crops	cultivated land, without conservation treatment	B	B	81
Cultivated Crops	cultivated land, without conservation treatment	C	C	88
Cultivated Crops	cultivated land, without conservation treatment	D	D	91
Estuarine Scrub-Shrub Wetland	open brush, poor	NoData	D	88
Estuarine Scrub-Shrub Wetland	open brush, poor	A	A	62
Estuarine Scrub-Shrub Wetland	open brush, poor	B	B	76
Estuarine Scrub-Shrub Wetland	open brush, poor	C	C	84
Estuarine Scrub-Shrub Wetland	open brush, poor	D	D	88
Estuarine Forested Wetland	woodland-grass combination, poor	NoData	D	86
Estuarine Forested Wetland	woodland-grass combination, poor	A	A	57
Estuarine Forested Wetland	woodland-grass combination, poor	B	B	73
Estuarine Forested Wetland	woodland-grass combination, poor	C	C	82
Estuarine Forested Wetland	woodland-grass combination, poor	D	D	86
Estuarine Emergent Wetland	meadow, poor	NoData	D	88

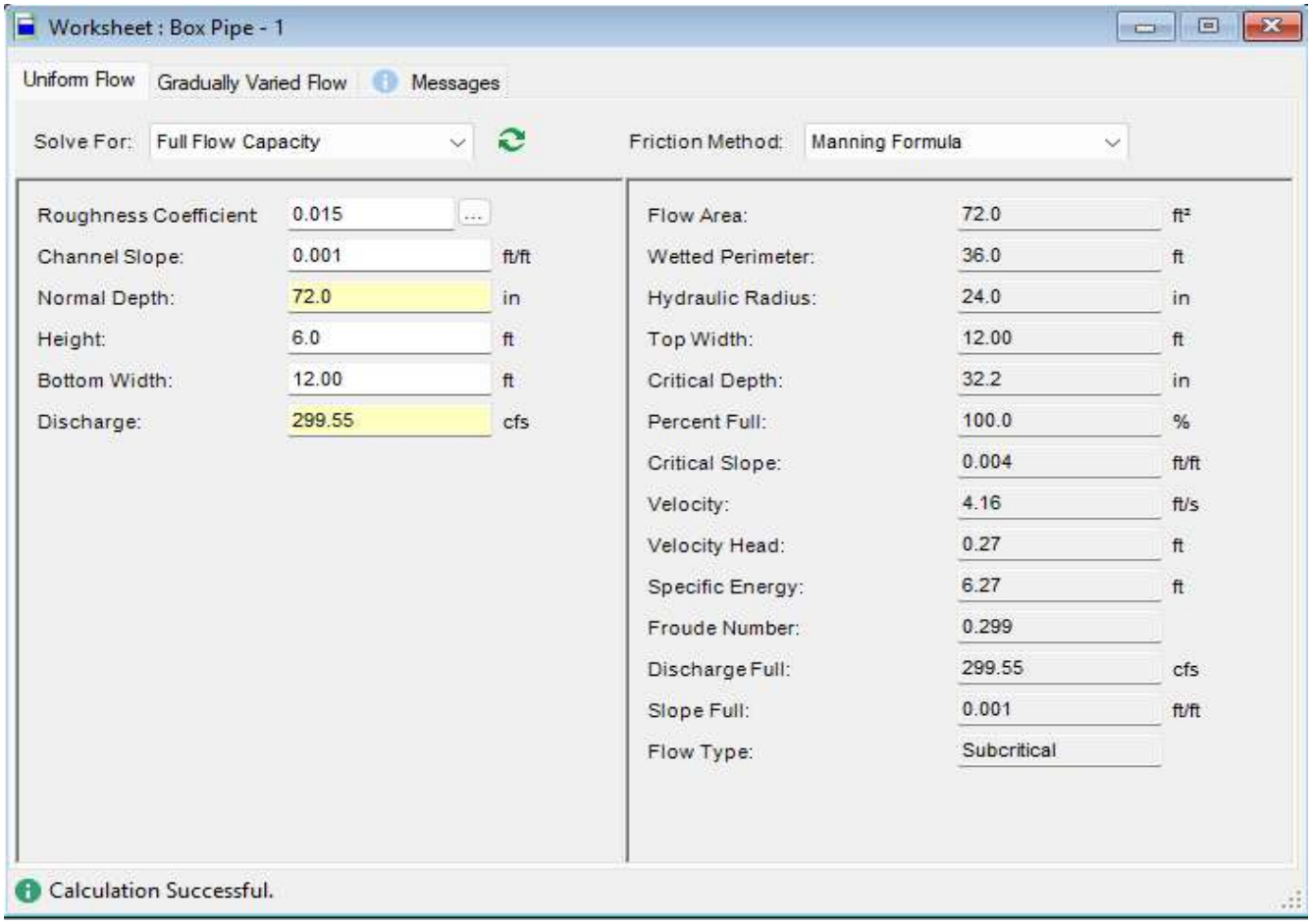
Estuarine Emergent Wetland	meadow, poor	A	A	63
Estuarine Emergent Wetland	meadow, poor	B	B	77
Estuarine Emergent Wetland	meadow, poor	C	C	85
Estuarine Emergent Wetland	meadow, poor	D	D	88
Pasture-Hay	pasture or range land, fair	NoData	D	84
Pasture-Hay	pasture or range land, fair	A	A	49
Pasture-Hay	pasture or range land, fair	B	B	69
Pasture-Hay	pasture or range land, fair	C	C	79
Pasture-Hay	pasture or range land, fair	D	D	84
Pavement	impervious areas	NoData	D	98
Pavement	impervious areas	A	A	98
Pavement	impervious areas	B	B	98
Pavement	impervious areas	C	C	98
Pavement	impervious areas	D	D	98
Hard packed dirt	Dirt	NoData	D	89
Hard packed dirt	Dirt	A	A	72
Hard packed dirt	Dirt	B	B	82
Hard packed dirt	Dirt	C	C	87
Hard packed dirt	Dirt	D	D	89
Roof	impervious areas	NoData	D	98
Roof	impervious areas	A	A	98
Roof	impervious areas	B	B	98
Roof	impervious areas	C	C	98
Roof	impervious areas	D	D	98

Appendix E

Stevens Creek Inflow Hydrographs

Ratio of the 10-year rainfall depth to the 100-year rainfall depth:		
10 yr peak	0.185	in/5-min
100 yr peak	0.285	in/5-min
10yr/100yr =	65%	

Double box culvert
100 year peak flow = 599.1 cfs **From FlowMaster Calculation



Stevens Creek Inflow Hydrograph

Based on SCS dimensionless unit hydrograph

100 year peak flow	599.1	cfs
10 year peak flow	388.8	cfs
Peak time*	16	hrs

*Conservative assumption that inflow peaks with rainfall.

SCS dimensionless unit hydrograph:

Time Ratios	Discharge Ratios	Mass Curve
0	0	0
0.1	0.03	0.001
0.2	0.1	0.006
0.3	0.19	0.012
0.4	0.31	0.035
0.5	0.47	0.065
0.6	0.66	0.107
0.7	0.82	0.163
0.8	0.93	0.228
0.9	0.99	0.3
1	1	0.375
1.1	0.99	0.45
1.2	0.93	0.522
1.3	0.86	0.589
1.4	0.78	0.65
1.5	0.68	0.7
1.6	0.56	0.751
1.7	0.46	0.79
1.8	0.39	0.822
1.9	0.33	0.849
2	0.28	0.871
2.2	0.207	0.908
2.4	0.147	0.934
2.6	0.107	0.953
2.8	0.077	0.967
3	0.055	0.977
3.2	0.04	0.984
3.4	0.029	0.989
3.6	0.021	0.993
3.8	0.015	0.995
4	0.011	0.997
4.5	0.005	0.999
5	0	1

Stevens Creek Hydrographs

Time (hrs)	100-year Flow (cfs)	10-year Flow (cfs)
0	0.000	0.000
1.6	17.973	11.664
3.2	59.910	38.882
4.8	113.829	73.875
6.4	185.721	120.533
8	281.577	182.743
9.6	395.406	256.618
11.2	491.262	318.829
12.8	557.163	361.599
14.4	593.109	384.928
16	599.100	388.816
17.6	593.109	384.928
19.2	557.163	361.599
20.8	515.226	334.382
22.4	467.298	303.276
24	407.388	264.395
25.6	335.496	217.737
27.2	275.586	178.855
28.8	233.649	151.638
30.4	197.703	128.309
32	167.748	108.868
35.2	124.014	80.485
38.4	88.068	57.156
41.6	64.104	41.603
44.8	46.131	29.939
48	32.951	21.385
51.2	23.964	15.553
54.4	17.374	11.276
57.6	12.581	8.165
60.8	8.987	5.832
64	6.590	4.277
72	2.996	1.944
80	0.000	0.000

UH from this site: https://www.nohrsc.noaa.gov/technology/gis/uhg_manual.html

Appendix F

Arena and Backstretch Pump Curves

Del Mar Arena Storm Drain Pump Station System Curve Calculations

Updated: 12/11/2025
By: MF

Input Parameters for Pipe Segment #1 (pump to tee)

Total Pipe Lenth:	2 ft
Pipe Inside Diameter:	8 in
Pipe Roughness Coefficient (C):	140

Input Parameters for Pipe Segment #2 (tee to enlargement)

Total Pipe Lenth:	2.5 ft
Pipe Inside Diameter:	8 in
Pipe Roughness Coefficient (C):	140

Input Parameters for Pipe Segment #3 (enlargement to node)

Total Pipe Lenth:	879.95 ft
Pipe Inside Diameter:	10 in
Pipe Roughness Coefficient (C):	140

Minor Losses for Pipe Segment #1

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	0	0.00
90° Expansion		0	0.00
45° Bend		0	0.00
90° Bend	0.42	1	0.42
Tee (Branch)	1.26	1	1.26
Gate Valve		0	0.00
Check Valve	0.70	0	0.00
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	1.68

Minor Losses for Pipe Segment #2

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	1	0.63
90° Expansion	0.42	1	0.42
45° Bend		0	0.00
90° Bend	0.42	0	0.00
Tee (Branch)	1.26	0	0.00
Gate Valve		0	0.00
Check Valve	1.40	1	1.40
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	2.45

Minor Losses for Pipe Segment #3

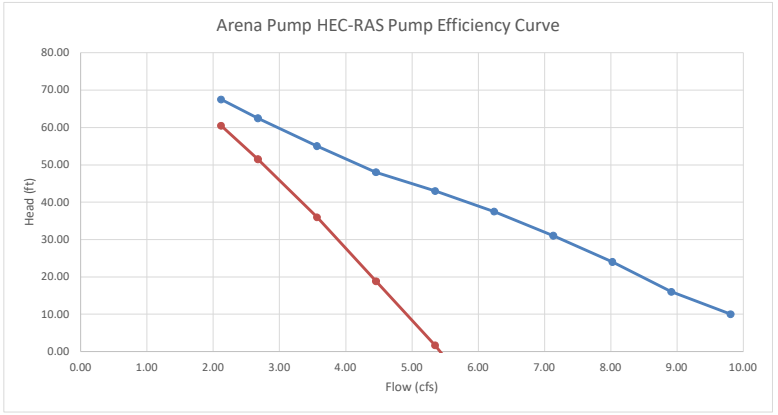
Fitting Type	k	Number	Total k
11.25° Bend		0	0.00
22.5° Bend		0	0.00
45° Bend	0.22	2	0.44
90° Bend	0.42	0	0.00
Tee (Thru)		0	0.00
Tee (Branch)		0	0.00
Check Valve		0	0.00
Ball Valve		0	0.00
Exit	1.00	1	1.00
		Sum k:	1.44

Total Dynamic Head Calculations

		Pipe Segment #1								Pipe Segment #2				Pipe Segment #3				TDH (ft)	
		1 Pump On		Headloss (ft)		2 Pumps On		Headloss (ft)				Headloss (ft)				Headloss (ft)			
Flow (cfs)	Flow (gpm)	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	1 Pump On	2 Pumps On
2.12	949.94	6.06	0.03	0.96	0.99	3.03	0.01	0.24	0.25	6.06	0.04	1.40	1.43	3.88	4.28	0.34	4.62	7.04	6.30
2.67	1199.92	7.66	0.04	1.53	1.57	3.83	0.01	0.38	0.39	7.66	0.06	2.23	2.29	4.90	6.60	0.54	7.13	11.00	9.82
3.56	1599.89	10.21	0.08	2.72	2.80	5.11	0.02	0.68	0.70	10.21	0.09	3.97	4.06	6.54	11.23	0.96	12.19	19.04	16.95
4.46	1999.87	12.77	0.11	4.25	4.37	6.38	0.03	1.06	1.09	12.77	0.14	6.20	6.34	8.17	16.97	1.49	18.46	29.17	25.90
5.35	2399.84	15.32	0.16	6.12	6.28	7.66	0.04	1.53	1.57	15.32	0.20	8.93	9.13	9.80	23.78	2.15	25.93	41.34	36.63
6.24	2799.81	17.87	0.21	8.33	8.55	8.94	0.06	2.08	2.14	17.87	0.27	12.15	12.42	11.44	31.62	2.93	34.55	55.51	49.11
7.13	3199.79	20.42	0.27	10.88	11.16	10.21	0.08	2.72	2.80	20.42	0.34	15.87	16.21	13.07	40.49	3.82	44.31	71.67	63.31
8.02	3599.76	22.98	0.34	13.77	14.11	11.49	0.09	3.44	3.54	22.98	0.42	20.09	20.51	14.71	50.34	4.84	55.18	89.80	79.23
8.91	3999.73	25.53	0.41	17.00	17.42	12.77	0.11	4.25	4.37	25.53	0.52	24.80	25.31	16.34	61.18	5.97	67.15	109.88	96.82
9.80	4399.71	28.08	0.49	20.58	21.07	14.04	0.14	5.14	5.28	28.08	0.61	30.01	30.62	17.97	72.97	7.22	80.20	131.88	116.10

Pump Duplex Grundfos s2.40.a80.420.4.58l.s.227.g.ex.d 60 hz "97660718"

Manufacturer Pump Curve		System Energy Loss Curve		Adjusted Pump Curve	
Head (ft)	Flow (cfs)	Head (ft)	Flow (cfs)	**Head (ft)**	**Flow (cfs)**
67.50	2.12	7.04	2.12	**60.46**	**2.12**
62.50	2.67	11.00	2.67	**51.50**	**2.67**
55.00	3.56	19.04	3.56	**35.96**	**3.56**
48.00	4.46	29.17	4.46	**18.83**	**4.46**
43.00	5.35	41.34	5.35	**1.66**	**5.35**
37.50	6.24	55.51	6.24	**-18.01**	**6.24**
31.00	7.13	71.67	7.13	**-40.67**	**7.13**
24.00	8.02	89.80	8.02	**-65.80**	**8.02**
16.00	8.91	109.88	8.91	**-93.88**	**8.91**
10.00	9.80	131.88	9.80	**-121.88**	**9.80**



Del Mar Arena Storm Drain Pump Station System Curve Calculations

Updated: 12/11/2025

By: MF

Input Parameters for Pipe Segment #1 (pump to tee)

Total Pipe Lenth:	2 ft
Pipe Inside Diameter:	8 in
Pipe Roughness Coefficient (C):	140

Input Parameters for Pipe Segment #2 (tee to enlargement)

Total Pipe Lenth:	3.5 ft
Pipe Inside Diameter:	8 in
Pipe Roughness Coefficient (C):	140

Input Parameters for Pipe Segment #3 (enlargement to node)

Total Pipe Lenth:	660.117 ft
Pipe Inside Diameter:	14 in
Pipe Roughness Coefficient (C):	140

Minor Losses for Pipe Segment #1

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	0	0.00
90° Expansion		0	0.00
45° Bend		0	0.00
90° Bend	0.42	1	0.42
Tee (Branch)	1.26	1	1.26
Gate Valve		0	0.00
Check Valve	0.70	0	0.00
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	1.68

Minor Losses for Pipe Segment #2

Fitting Type	k	Number	Total k
Butterfly Valve	0.63	1	0.63
90° Expansion	0.42	1	0.42
45° Bend		0	0.00
90° Bend	0.42	0	0.00
Tee (Branch)	1.26	0	0.00
Gate Valve		0	0.00
Check Valve	1.40	1	1.40
Plug Valve		0	0.00
Sudden Enlargement	0.31	0	0.00
		Sum k:	2.45

Minor Losses for Pipe Segment #3

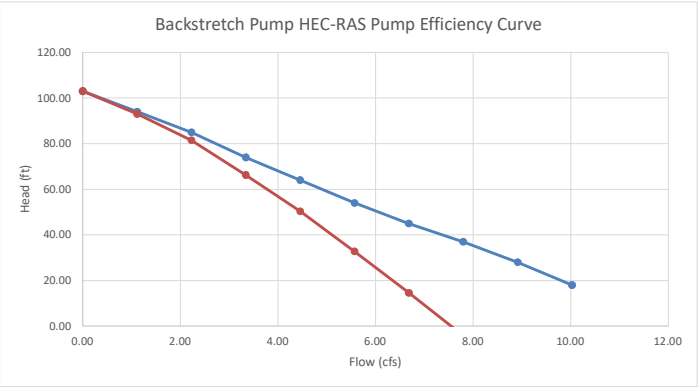
Fitting Type	k	Number	Total k
11.25° Bend		0	0.00
22.5° Bend		0	0.00
45° Bend	0.21	3	0.63
90° Bend		0	0.00
Tee (Thru)		0	0.00
Tee (Branch)		0	0.00
Check Valve		0	0.00
Ball Valve		0	0.00
Exit	1.00	1	1.00
		Sum k:	1.63

Total Dynamic Head Calculations

		Pipe Segment #1								Pipe Segment #2				Pipe Segment #3				TDH (ft)	
		1 Pump On		Headloss (ft)		2 Pumps On		Headloss (ft)				Headloss (ft)				Headloss (ft)			
Flow (cfs)	Flow (gpm)	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	Velocity (ft/s)	Pipe	Fittings	Total	1 Pump On	2 Pumps On
0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11	499.9665798	3.19	0.01	0.27	0.27	1.60	0.00	0.07	0.07	3.19	0.02	0.39	0.40	1.04	0.19	0.03	0.22	0.90	0.69
2.23	999.9331595	6.38	0.03	1.06	1.09	3.19	0.01	0.27	0.27	6.38	0.06	1.55	1.61	2.08	0.69	0.11	0.80	3.50	2.68
3.34	1499.899739	9.57	0.07	2.39	2.46	4.79	0.02	0.60	0.62	9.57	0.12	3.49	3.60	3.13	1.45	0.25	1.70	7.76	5.92
4.46	1999.866319	12.77	0.11	4.25	4.37	6.38	0.03	1.06	1.09	12.77	0.20	6.20	6.40	4.17	2.47	0.44	2.91	13.68	10.41
5.57	2499.832899	15.96	0.17	6.64	6.82	7.98	0.05	1.66	1.71	15.96	0.30	9.69	9.99	5.21	3.74	0.69	4.42	21.23	16.12
6.68	2999.799479	19.15	0.24	9.57	9.81	9.57	0.07	2.39	2.46	19.15	0.42	13.95	14.37	6.25	5.24	0.99	6.23	30.40	23.06
7.80	3499.766058	22.34	0.32	13.02	13.34	11.17	0.09	3.25	3.34	22.34	0.56	18.99	19.55	7.29	6.96	1.35	8.31	41.20	31.20
8.91	3999.732638	25.53	0.41	17.00	17.42	12.77	0.11	4.25	4.37	25.53	0.72	24.80	25.52	8.34	8.91	1.76	10.67	53.61	40.56
10.03	4499.699218	28.72	0.51	21.52	22.03	14.36	0.14	5.38	5.52	28.72	0.90	31.39	32.28	9.38	11.08	2.23	13.31	67.63	51.12

Pump Duplex Grundfos s2.40.a80.540.4.62l.s.245.g.ex.d "97660740"

Manufacturer Pump Curve		System Energy Loss Curve		Adjusted Pump Curve	
Head (ft)	Flow (cfs)	Head (ft)	Flow (cfs)	**Head (ft)**	**Flow (cfs)**
103.00	0.00	0.00	0.00	**103.00**	**0.00**
94.00	1.11	0.90	1.11	**93.10**	**1.11**
85.00	2.23	3.50	2.23	**81.50**	**2.23**
74.00	3.34	7.76	3.34	**66.24**	**3.34**
64.00	4.46	13.68	4.46	**50.32**	**4.46**
54.00	5.57	21.23	5.57	**32.77**	**5.57**
45.00	6.68	30.40	6.68	**14.60**	**6.68**
37.00	7.80	41.20	7.80	**-4.20**	**7.80**
28.00	8.91	53.61	8.91	**-25.61**	**8.91**
18.00	10.03	67.63	10.03	**-49.63**	**10.03**



Appendix G

Existing Depth Result Maps

Figure G-1 Flood depths resulting from the 10-year extreme water level (7.34 ft)

Figure G-2 Flood depths resulting from 2050 Intermediate-High SLR + MHHW (6.13 ft)

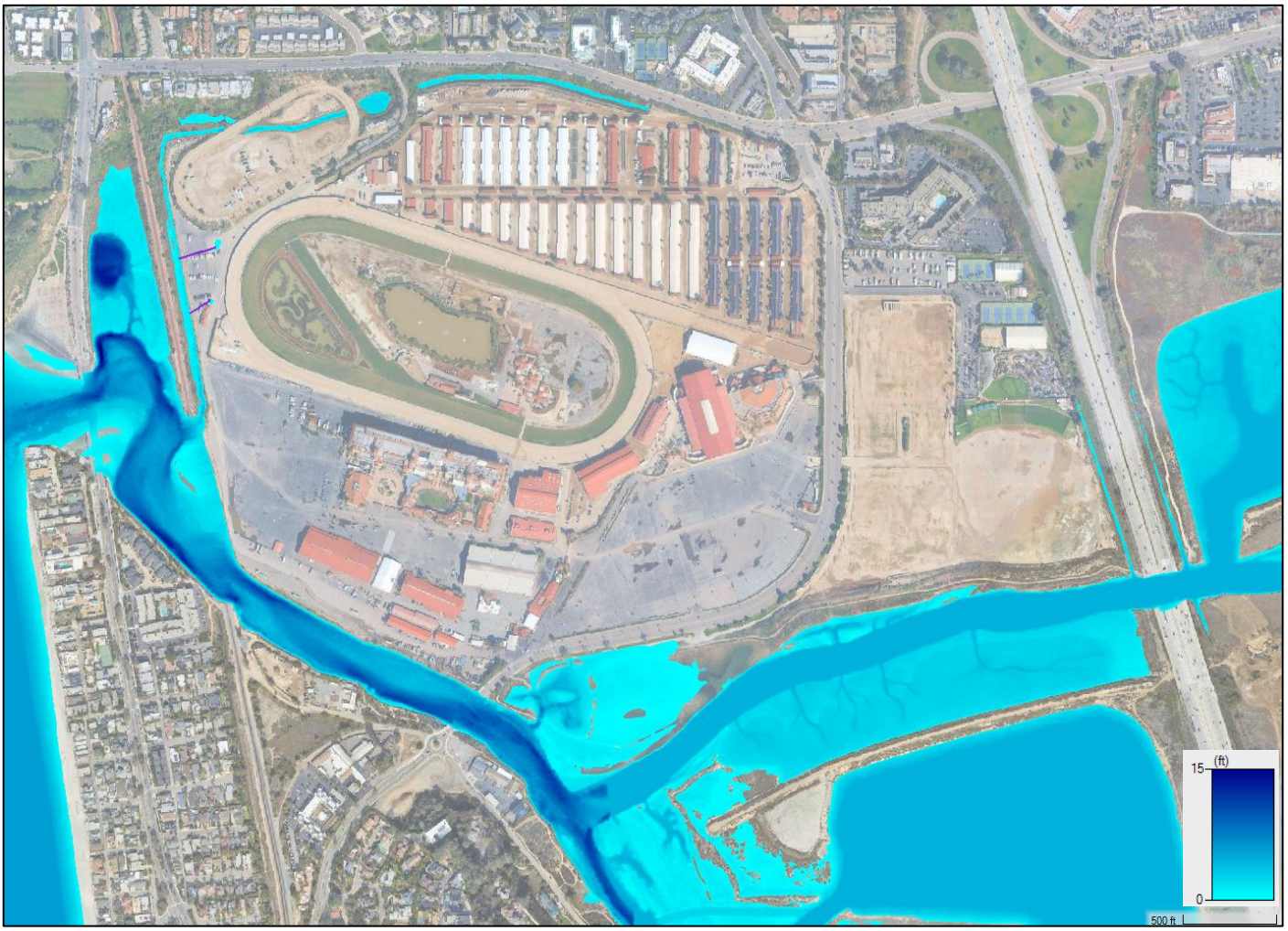


Figure G-3 Flood depths resulting from 2070 Intermediate-High SLR + MHHW (7.43 ft)

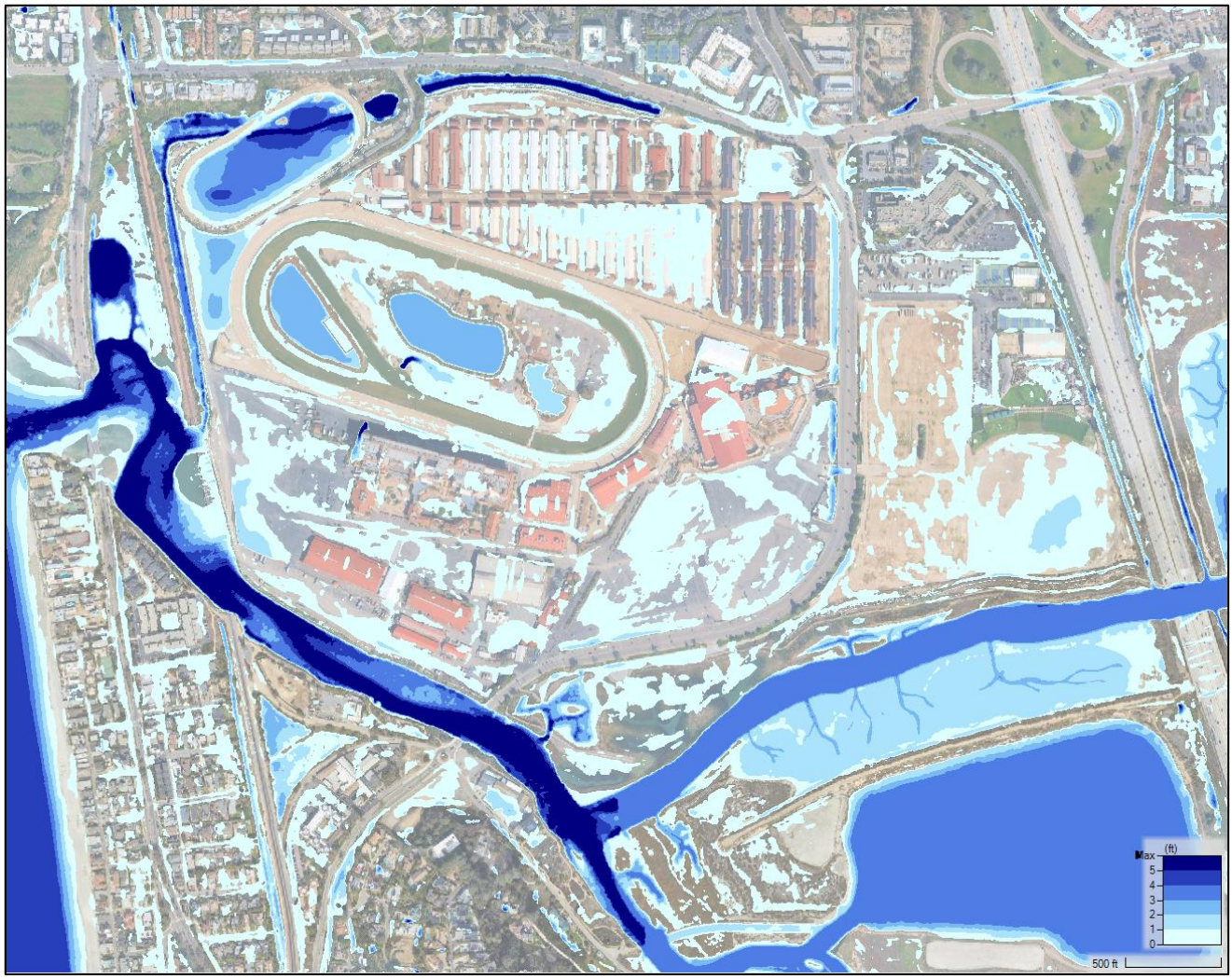


Figure G-4 Maximum flood depths during the 10-year onsite rainfall event with 2050 SLR

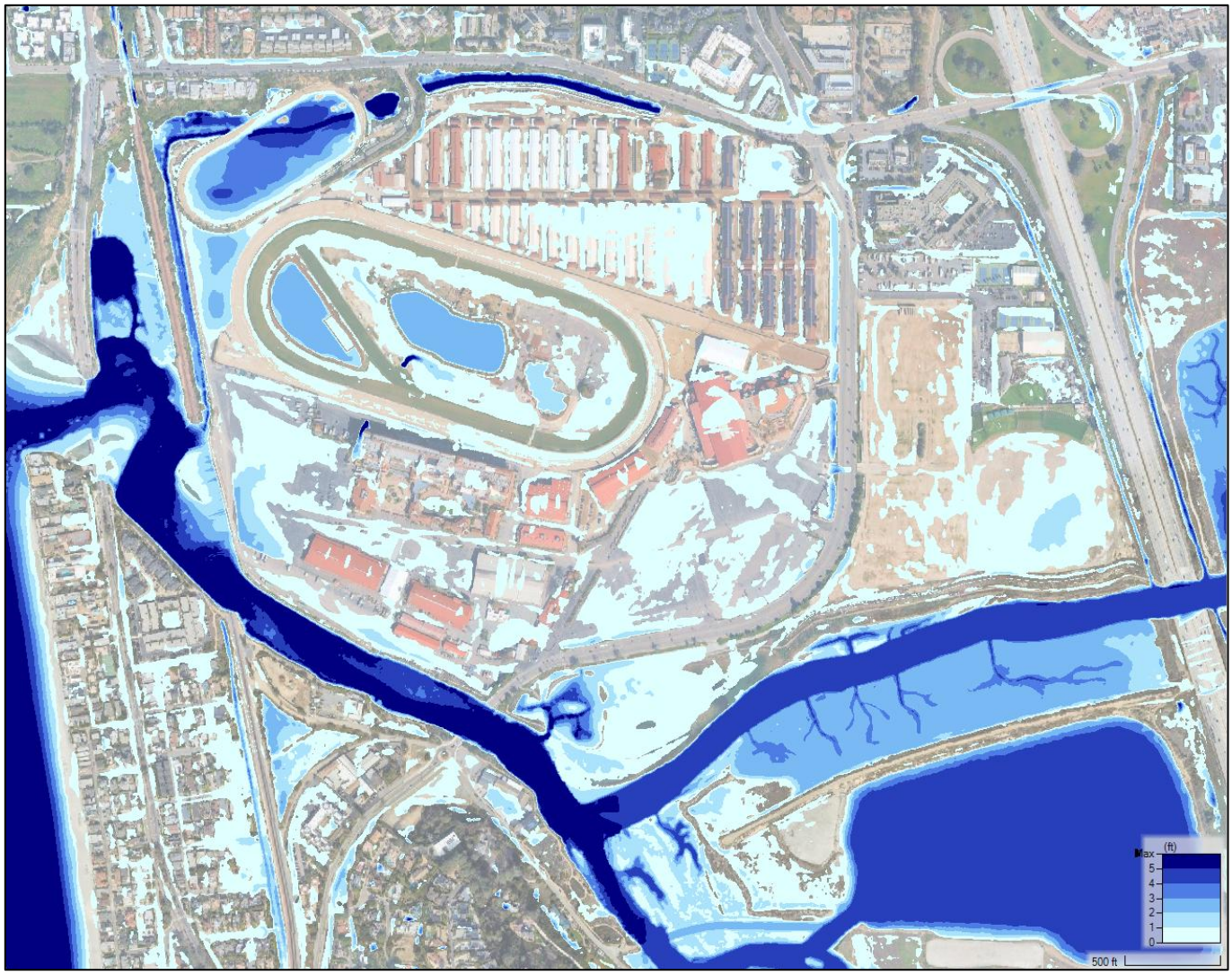


Figure G-5 Maximum flood depths during the onsite rainfall event with 2070 SLR

Appendix H

Conceptual Adaptation Strategies Depth Result Maps

Figure H-1 Strategy 1 depth results during the 10-year EWL tidal event

Figure H-2 Strategy 1 depth results during the MHHW +2050 SLR tidal event.

Figure H-3 Strategy 1 depth results during the MHHW +2070 SLR event

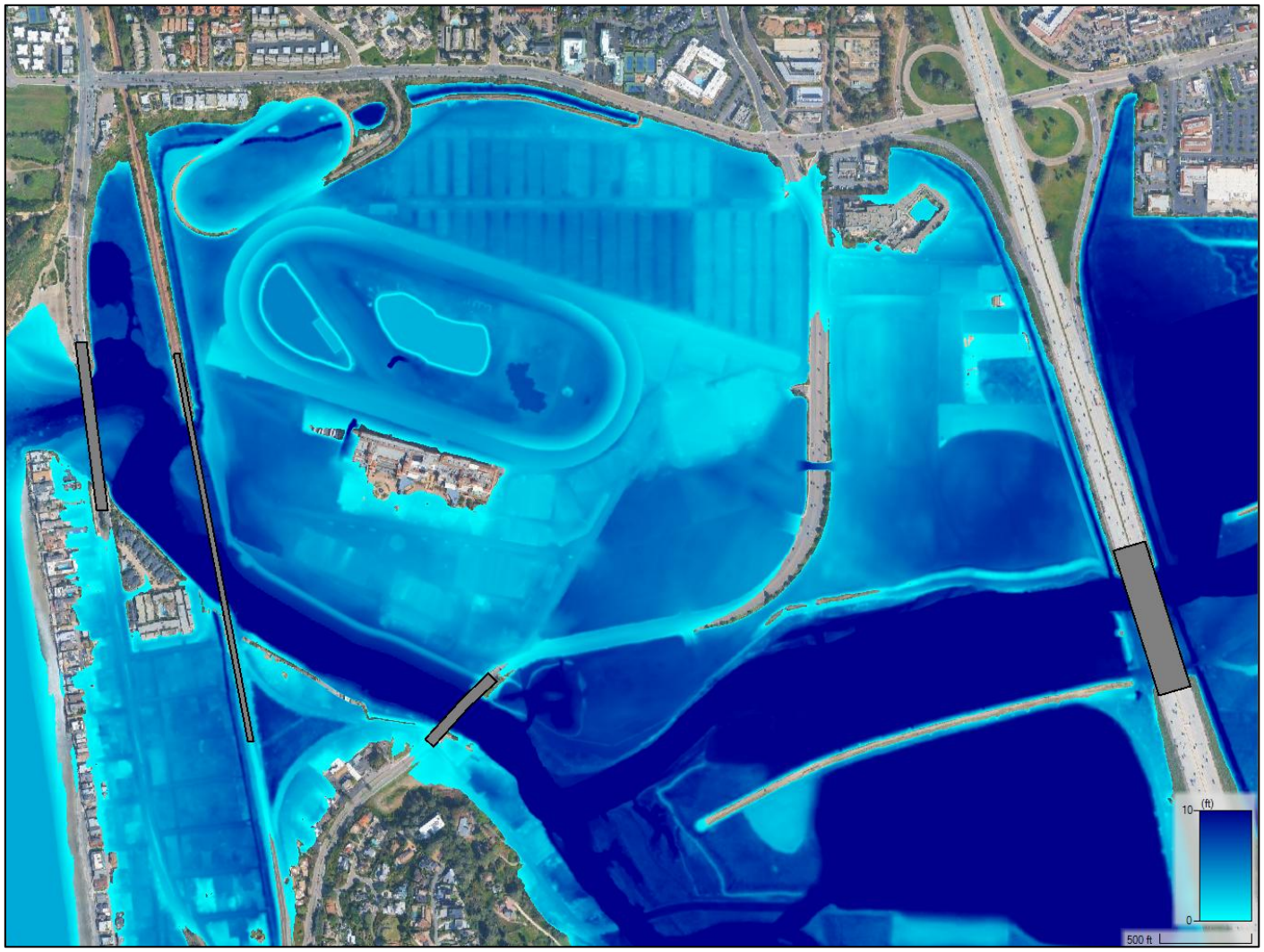


Figure H-4 Strategy 1 depth results during the 50-year fluvial event

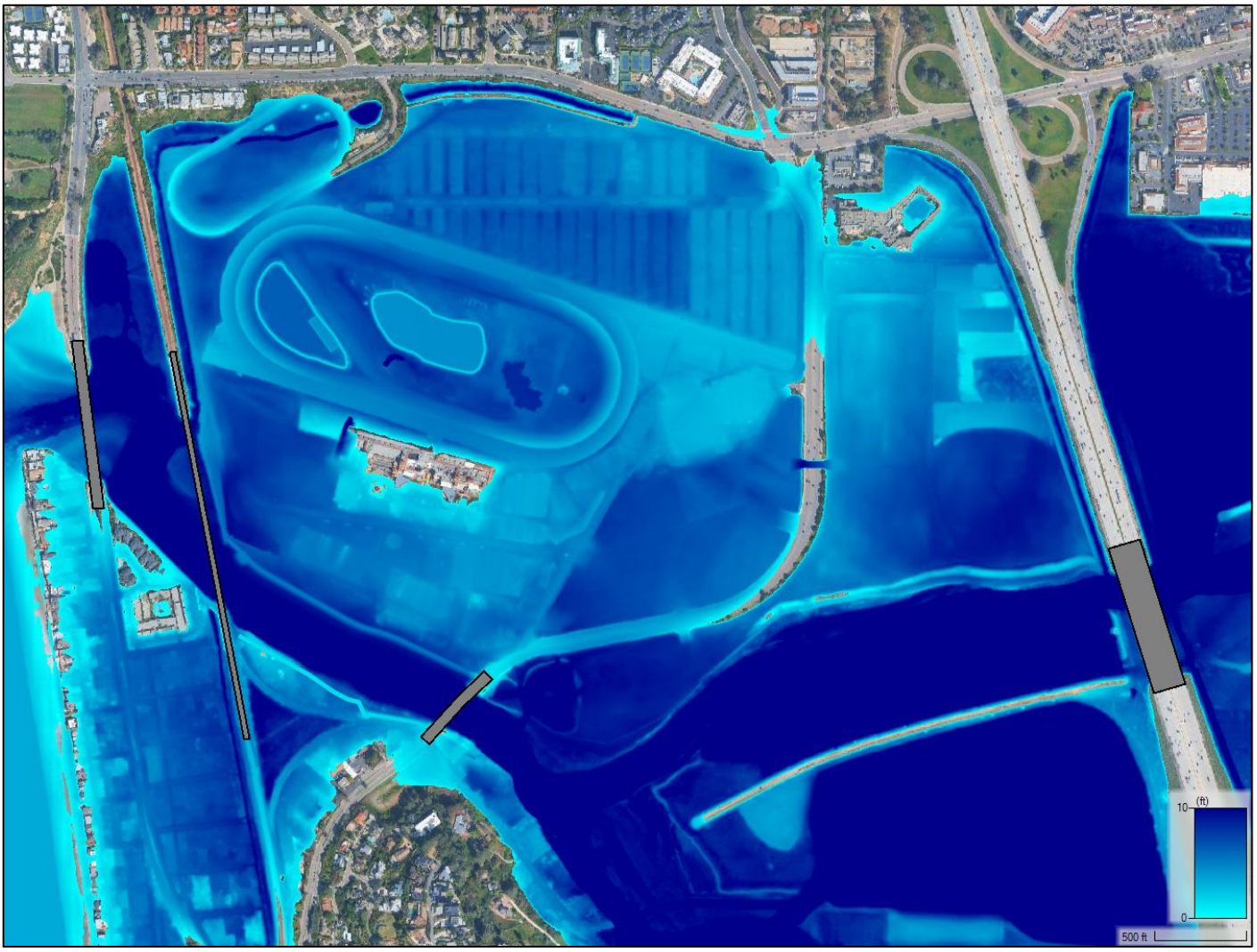


Figure H-5 Strategy 1 depth results during the 100-year fluvial event

Figure H-6 Strategy 1 depth results during the 10-year fluvial event + 2050 SLR.

Figure H-7 Strategy 1 depth results during the 10-year fluvial event + 2070 SLR.

Figure H-8 Strategy 2 depth results during the 10-year EWL tidal event

Figure H-9 Strategy 2 depth results during the 2050 SLR tidal event.

Figure H-10 Strategy 2 depth results during the 2070 SLR tidal event

Figure H-11 Strategy 2 flood depths during the 10-year fluvial event with 2050 SLR

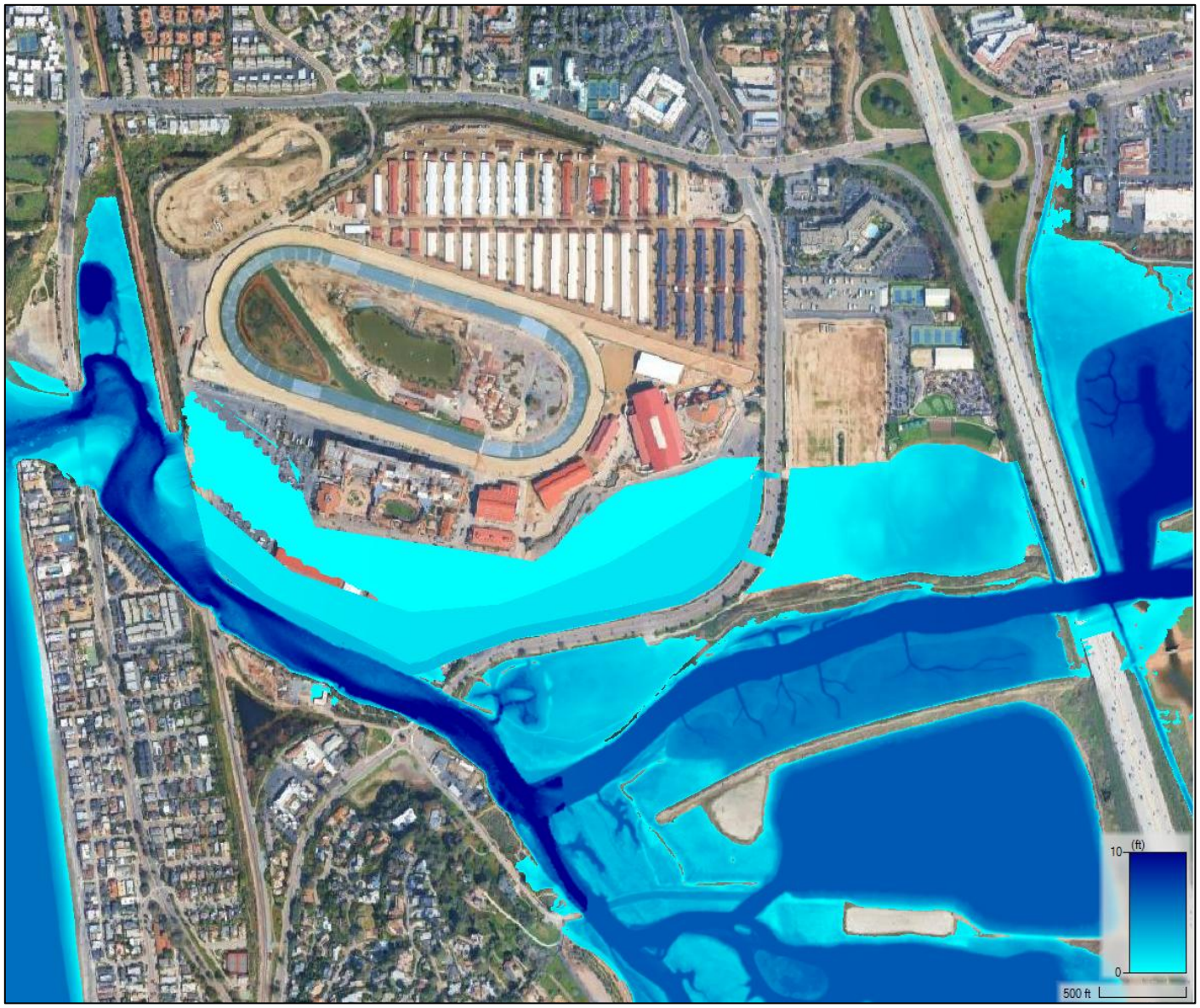


Figure H-12 Strategy 2 flood depths during the 10-year fluvial event with 2070 SLR

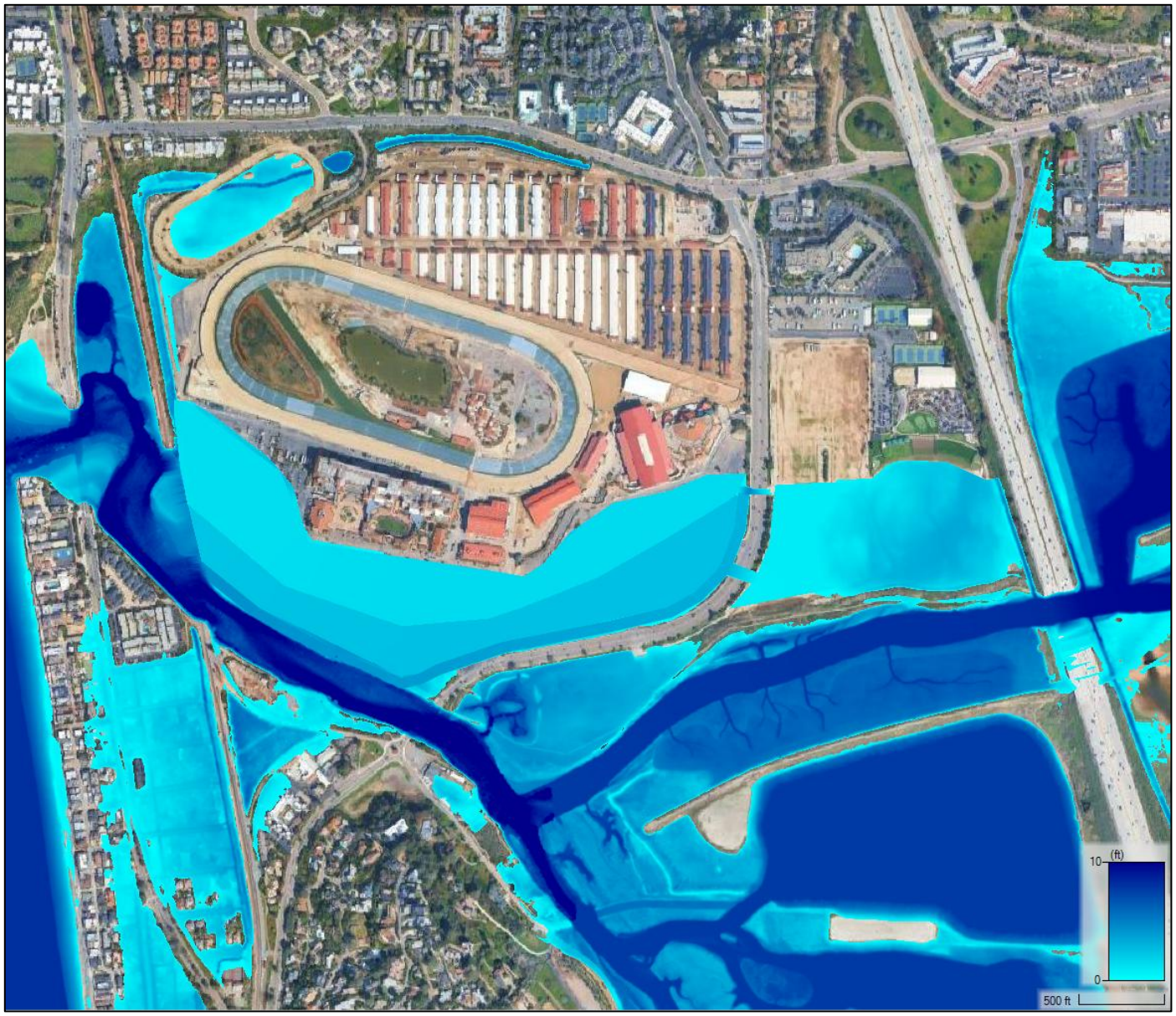


Figure H-13 Strategy 2 flood depths during the 10-year fluvial event with 2100 SLR

Figure H-14 Strategy 3 depth results during the 10-year EWL tidal event

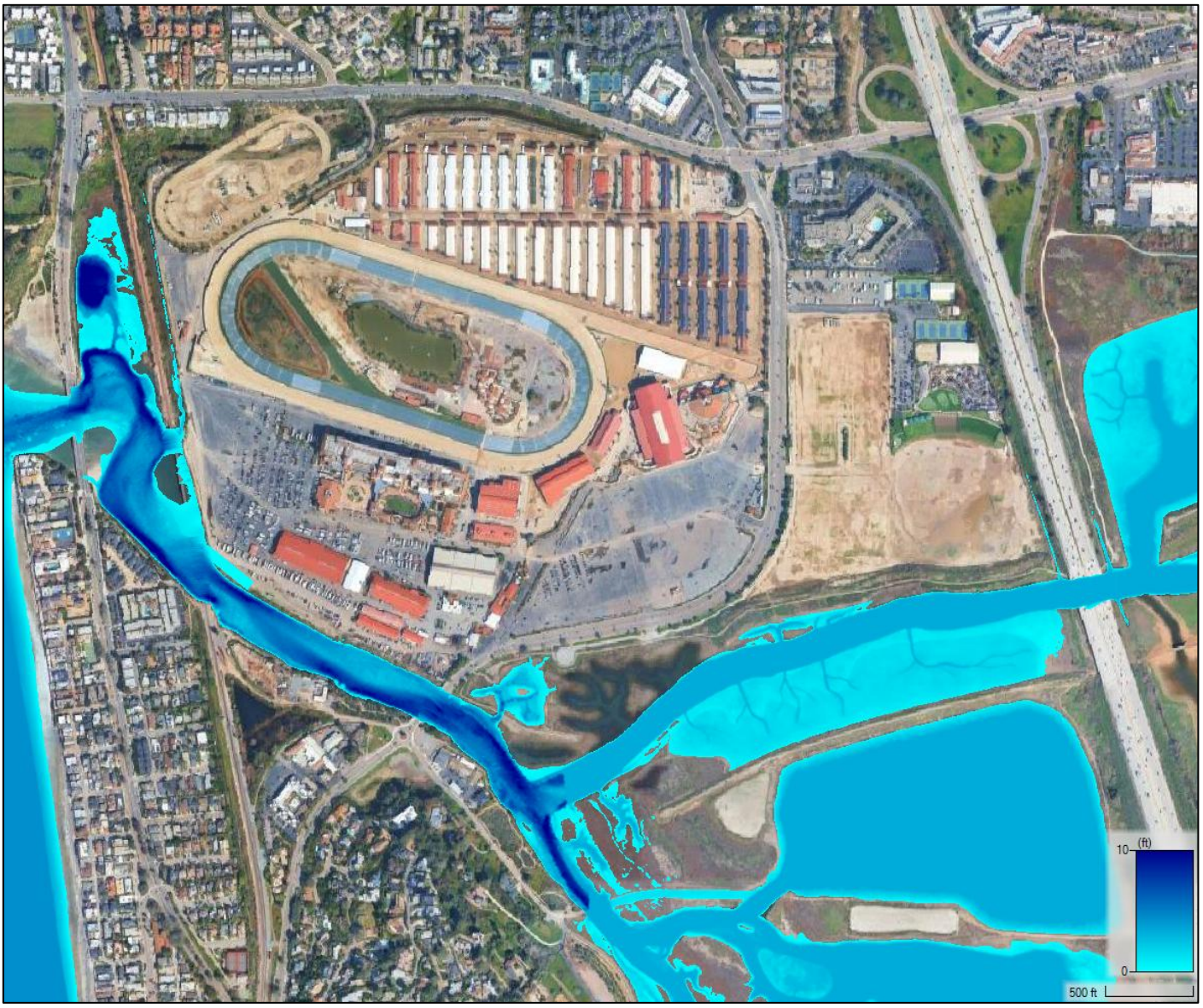


Figure H-15 Strategy 3 depth results during the 2050 SLR tidal event

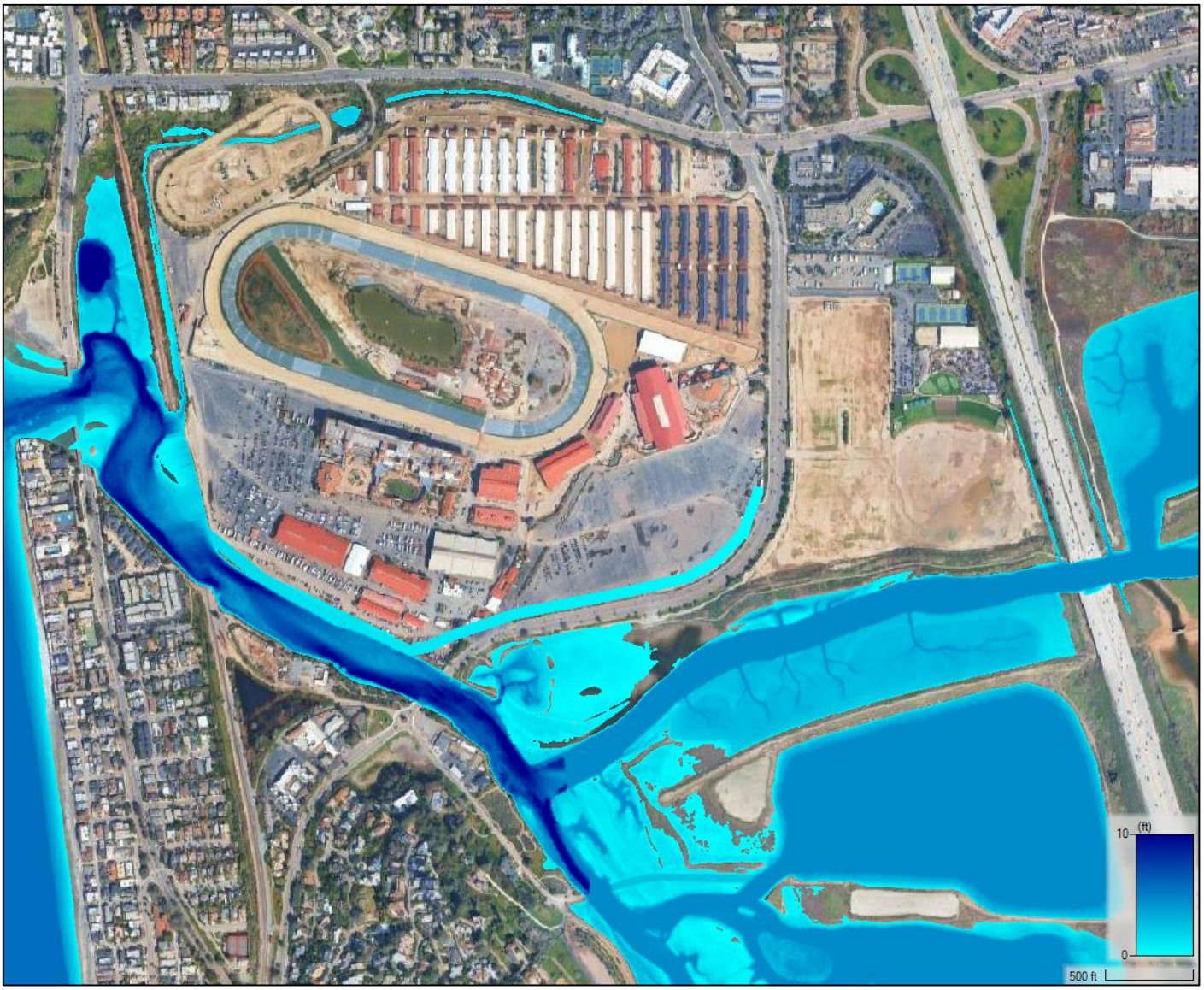


Figure H-16 Strategy 3 depth results during the 2070 SLR tidal event

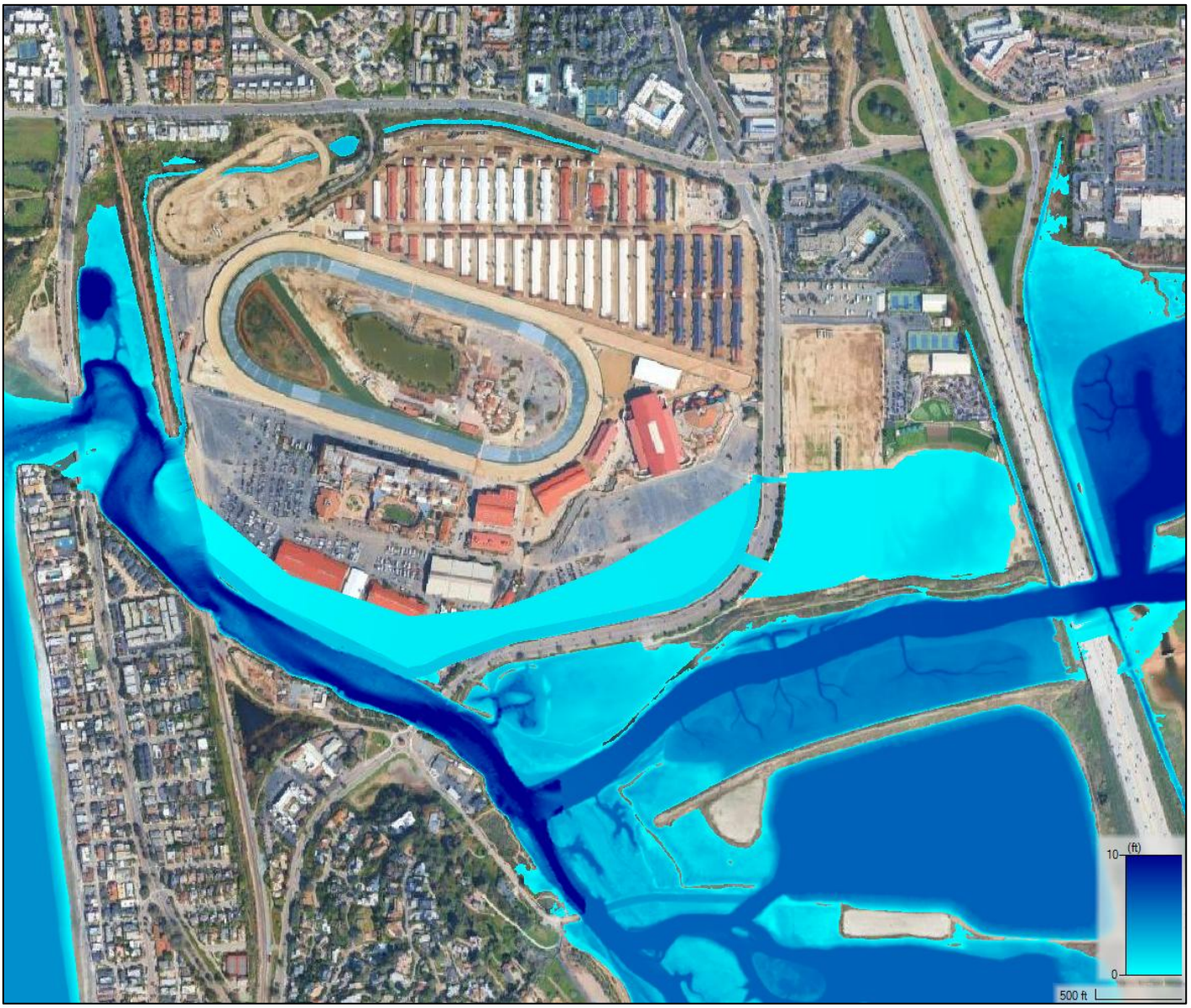


Figure H-17 Strategy 3 flood depths during the 10-year fluvial event with 2050 SLR

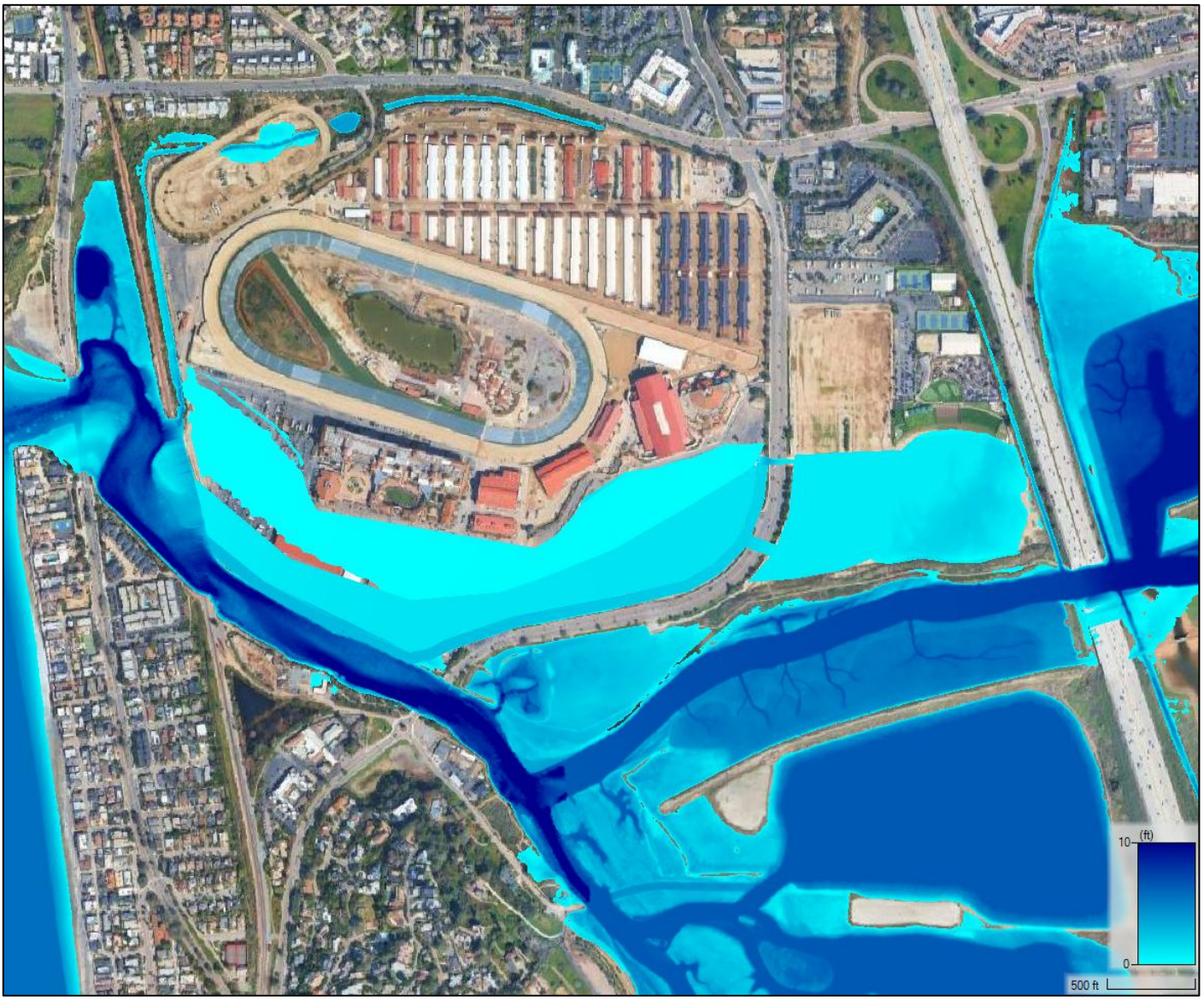


Figure H-18 Strategy 3 flood depths during the 10-year fluvial event with 2070 SLR

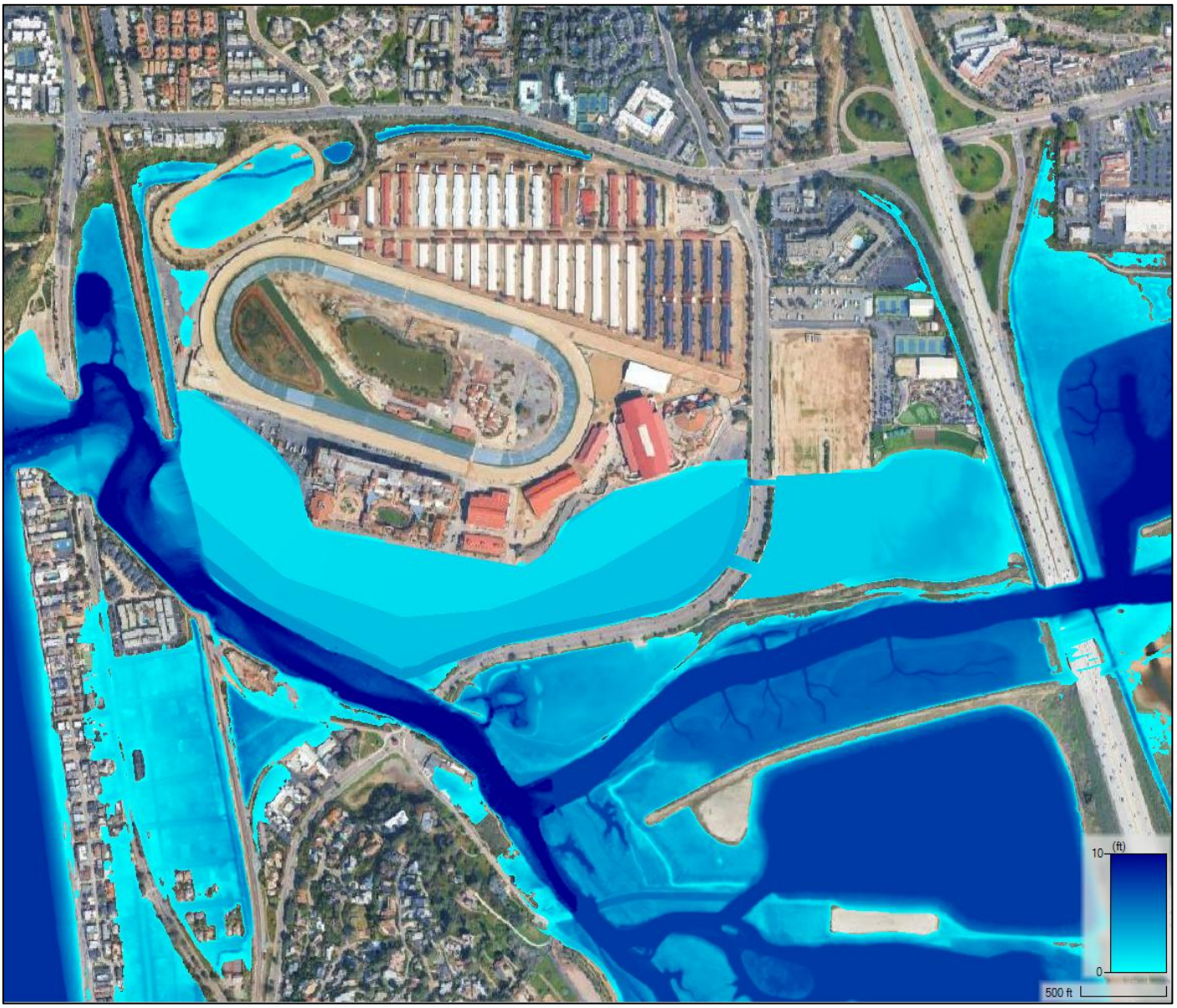


Figure H-19 Strategy 3 flood depths during the 10-year fluvial event with 2100 SLR

Appendix I

Conceptual Adaptation Strategies Hydraulic Impact Maps

Figure I-1 Comparison of Strategy 1 results with existing water surface elevations during the 100-year fluvial event

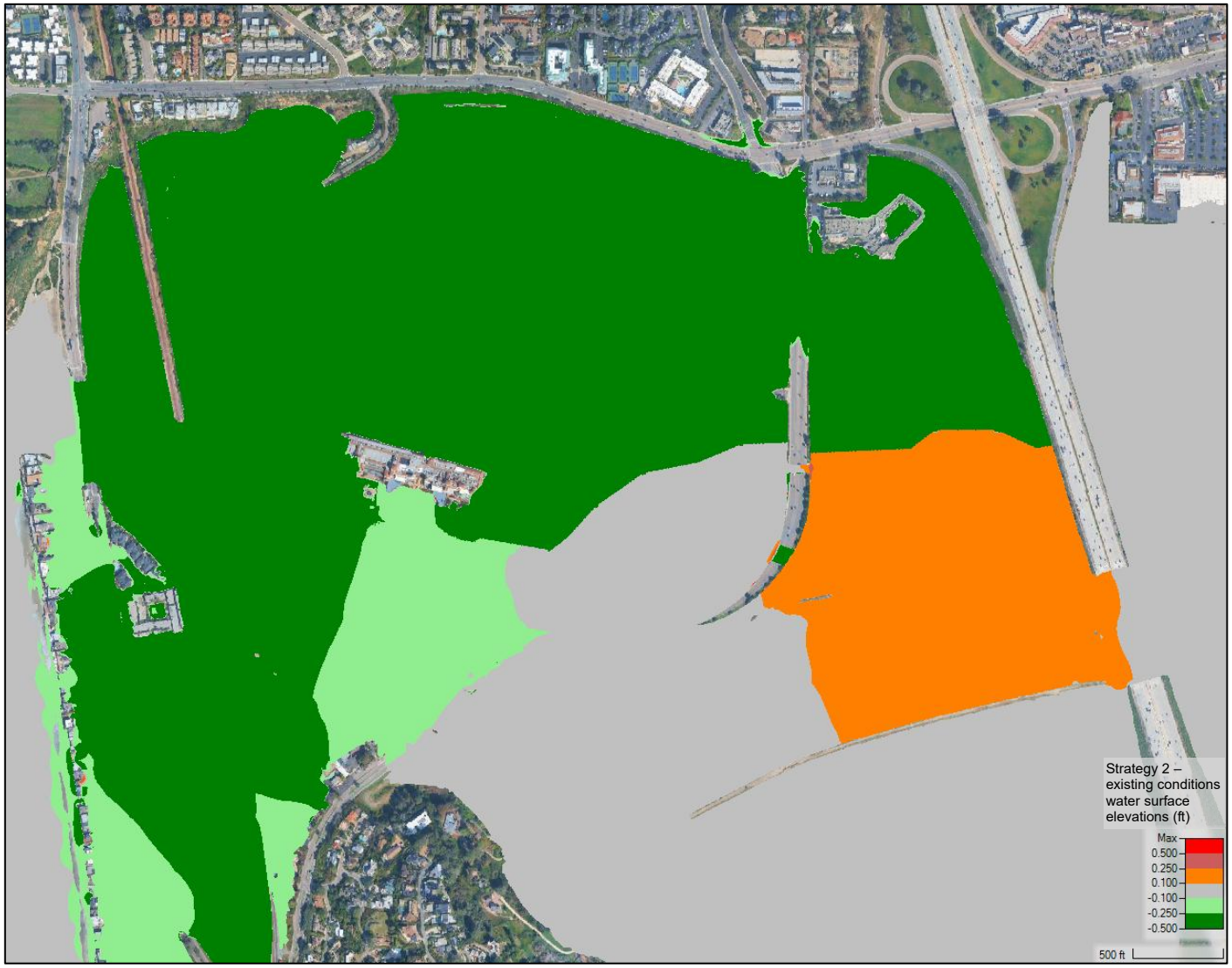


Figure I-2 Comparison of Strategy 2 to existing conditions water surface elevations in the 100-year fluvial event

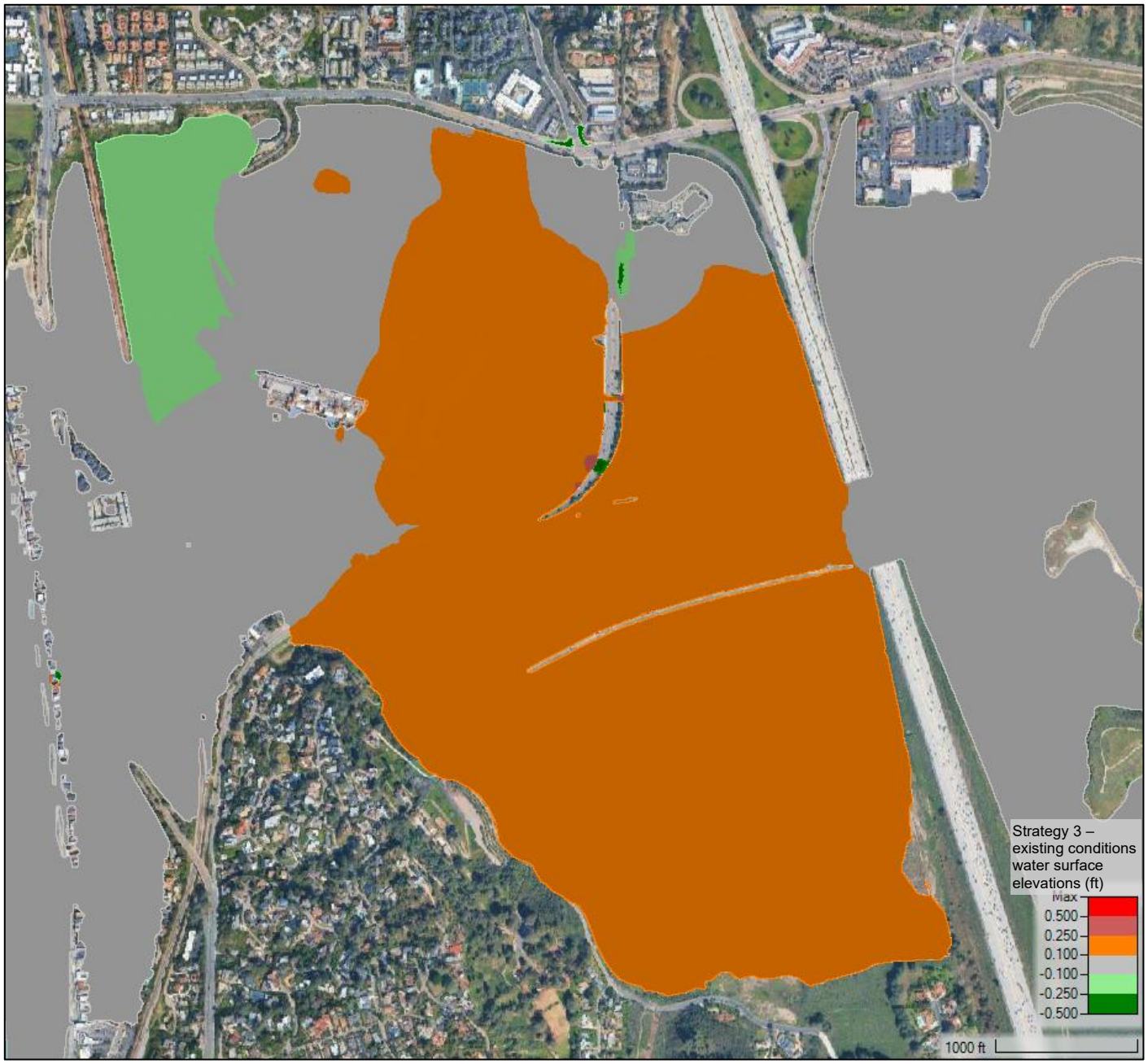


Figure I-3 *Comparison of Strategy 3 to existing conditions water surface elevations in the 100-year fluvial event*

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January 6, 2025

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LLG Reference: 3-25-4115

Subject: **Del Mar Fairgrounds Affordable Housing, TDM Plan**
Del Mar, California

Linscott, Law and Greenspan, Engineers (LLG) has prepared this letter report to detail our recommendations for the Transportation Demand Management (TDM) Plan for the Del Mar Fairgrounds Affordable Housing project. Included in this letter report are the following:

- Project Description
- TDM Plan Benefits Discussion
- Existing Conditions Discussion
- Recommended TDM Strategies

PROJECT DESCRIPTION

The 22nd District Agricultural Association (District) is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property (Property) which the District would be willing to make available for the development of affordable housing. In its 6th Cycle Housing Element Update, the City identified and included a portion of the Property in the Housing Element residential sites inventory as having potential to be developed to accommodate affordable housing units. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. This study of potential affordable housing on Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development (HCD) HAP Cycle 2.

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Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego. The five potential locations are as follows:

- **Site 1: East Main Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Via De La Valle, north of the East Main Stable Gate driveway. Located at the existing "East Main Stable Gate" horse boarding stables.
- **Site 2: South of Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast quadrant of the intersection of Jimmy Durante Boulevard & Via De La Valle, approximately 500 feet south of Via De La Valle, south of the East Main Stable Gate driveway. Located south of the existing "East Main Stable Gate" horse boarding stables.
- **Site 3: Adjacent to Fire Station Site –** Within the City of Del Mar on Fairgrounds Property. Located adjacent to the existing "Del Mar Fire Department" fire station.
- **Site 4: Surf and Turf RV Park Site –** Within the City of San Diego. Located on the northeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing Del Mar Fairgrounds Surf & Turf RV Park, north of Turf Road.
- **Site 5: Dirt Lot Site –** Within the City of San Diego. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing "Del Mar Horsepark" dirt parking lot.

The five (5) potential housing sites vary in size. ***Table 1*** summarizes the location and acreage of the sites.

TABLE 1
POTENTIAL HOUSING SITES ACREAGE

Site Number	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	2982710300	City of Del Mar	1.5
2	South of Stable Gate Site	2990300500, 2990302200	City of Del Mar	1.5
3	Adjacent to Fire Station Site	2990302200	City of Del Mar	1
4	Surf and Turf RV Park Site	2990420300	City of San Diego	1.5
5	Dirt Lot Site	2990420300	City of San Diego	1.5

Notes:

1. The 2023 Stephen Dalton Architects (SDA) Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5 acre new housing site that would also include redevelopment of the fire station. This study focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

All five sites are approximately 1 to 1.5-acres in size. For the purpose of this study, the assumption is that a prospective housing project would include at least 61 units of lower income housing in a housing project that is a 100% multi-family lower income affordable housing development or a mixed income project, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022-2023). Due to the Fairgrounds property location within the FEMA-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed accordingly with floodproofing measures and include a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface level parking.

Due to the different alternatives for the proposed housing project, LLG calculated the trip generation for four (4) alternatives. The trip generation calculation summary is included in ***Table 2***.

TABLE 2
DEL MAR HAP TRIP GENERATION COMPARISON TABLE

Alternative	ADT	AM Total	PM Total	Total Peak Hour Trips
82 DU of Affordable Housing (100% Affordable)	445	34	45	79
61 DU of Affordable Housing & 21 DU of Multi-Family Housing (Mixed Income)	497	39	48	87
128 DU of Senior Affordable Housing (100% Affordable)	474	42	22	64
61 DU of Senior Affordable Housing & 67 DU of Senior Multi-Family Housing (Mixed Income)	444	33	27	60

Footnotes:

2. Rates are based on the ITE Trip Generation Manual, 12th Edition
3. ADT = Average Daily Traffic
4. DU = Dwelling Units

Affordable housing and senior affordable housing generate trips at different rates. Therefore, for the sake of consistency and simplicity, all technical reports prepared by LLG assume the Project development would be the alternative calculated to generate the highest number of trips, which provides a conservative analysis. This report assumes the Project will construct 61 units of affordable multi-family housing and 21 units of market rate multi-family housing, since ***Table 2*** shows that alternative will generate the most traffic.

Figure 1 depicts the Project Area Map and ***Figure 2*** shows the potential housing site locations. Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego.

TRANSPORTATION DEMAND MANAGEMENT PLAN BENEFITS

Per the City's June 1, 2020 *Update to the City of Del Mar CEQA Guidelines*, TDM is a mitigation tool that is used to improve mobility and reduce congestion, VMT, GHG emissions, and air pollution. TDM can be beneficial to residents, property owners/managers, and the community. More importantly, it can be cost-effective and is

environmentally sustainable/ responsible. The benefits of a TDM plan are described below.

- ***TDM Benefits for Residents*** – TDM services and strategies provide residents with options for alternative forms of transportation and provide them with the information to choose what is best for their transportation needs. Additionally, active forms of transportation, such as walking and biking, can provide substantial health benefits.

- ***TDM Benefits for Property Owners/Managers*** – Implementing a TDM Plan can also benefit property owners/managers. TDM services and strategies can be a selling point for potential residents. For example, alternative forms of transportation, such as cycling or utilizing transit, are increasingly becoming more popular. Therefore, providing secure bicycle parking or providing a convenient connection to transit gives the property an advantage over other similar properties.

- ***TDM Benefits for the Community*** – TDM services and strategies are aimed at reducing congestion and increasing mobility. By doing so, the community's general quality of life will be enhanced, and the transportation system becomes more balanced. Less vehicular traffic equates to fewer vehicle miles traveled (VMT) and less air pollution. Reducing SOV travel and providing alternative forms of transportation is environmentally sustainable, is responsible, and is for the community's betterment.

EXISTING CONDITIONS

An effective TDM plan requires an understanding of the existing transportation system in the Project area. The existing transportation pedestrian, bicycle, and transit network is described below, and shown on ***Figure 3***:

- ***Pedestrian Network*** – Contiguous sidewalks are provided along both sides of Highway 101, Camino Del Mar, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard. .

- ***Bicycle Network*** – Currently, Class II bike lanes are provided along Highway 101, Camino Del Mar, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard. .

- ***Transit*** – The North County Transit District operates bus and rail services in close proximity of the Project. The bus routes serving the immediate Project

area include NTCD routes 101 and 308. A description of each route is provided below.

- ***Bus Route* 101** runs between Oceanside and VA/UCSD/UTC. The route runs along Highway 101 and Camino Del Mar. Weekday service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM. Weekend service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM. The closest Route 101 bus stop to all 5 potential housing sites is located at the Hwy 101 & Via De La Valle intersection.

- ***Bus Route 308*** runs between Solana Beach and Escondido. The route runs along Lomas Santa Fe and Valley Avenue. Weekday service begins at 5:00 AM with 60-minute headways and ends at 9:10 PM. Weekend service begins at 7:00 AM with 60-minute headways and ends at 9:00 PM. The closest Route 308 bus stop to all 5 potential housing sites is located at Valley Av & Highland Dr (just north of Jimmy Durante Blvd & Via De La Valle).

- The ***COASTER*** runs between San Diego Santa Fe Depot and Oceanside with 40-minue headways. There is a total of eight (8) stops along this route. The COASTER has a stop at the Solana Beach Transit Center, located approximately 400 feet north of the intersection of Hwy 101 & Lomas Santa Fe Drive. COASTER service provides thirty (30) daily trips on the weekdays with an additional two (2) trips on Fridays. It also provides twenty (20) daily weekend trips.

- ***Future Transit Services*** – As part of SANDAG's adopted 2021 Regional Plan for the North Coast corridor, Next Generation Rapid bus service (Rapid bus) identified as Rapid 473 is planned to connect Oceanside to Solana Beach to UTC/UC San Diego via Highway 101 Coastal Communities with a build-out year of 2035. The connecting corridors identified in of SANDAG's adopted 2021 Regional Plan are SR 56, CCT (Coast, Canyons, and Trails), North County Corridor, and SB2S (South Bay to Sorrento Comprehensive Multimodal Corridor Plan).

  The planned Next Generation Rapid bus service (Rapid 473), identified in SANDAG's adopted 2021 Regional Plan, would provide future residents of the proposed housing development with enhanced regional transit connectivity throughout North County and the greater San Diego region.

South of Solana Beach, Rapid 473 is intended to serve the UTC area, including the UTC Transit Center near the Westfield UTC Mall on Genesee Avenue. This transit center provides direct connections to UC San Diego via both local bus service and the Mid-Coast Trolley (Blue Line).

The UTC Transit Center also functions as a major regional hub, allowing riders to continue travel south via the trolley to destinations such as downtown San Diego, South Bay communities, and the international border, or eastward via connecting bus services toward East County. As a result, the planned Rapid bus service would significantly expand access to employment, education, healthcare, and regional services for future residents of the proposed housing, supporting the project's consistency with regional mobility, sustainability, and housing–transportation integration goals.

RECOMMENDED TDM STRATEGIES

Based on a review of the proposed site locations, existing conditions that affect TDM, and the *TDM Strategies Matrix* included in the City's June 1, 2020 *Update to the City of Del Mar CEQA Guidelines,* the following TDM strategies are recommended to be considered for implementation by the Project. It should be noted that some strategies may be better suited for multi-family developments without age requirements and some better suited for senior housing types. Specific measures should be tailored to the target population, once determined.

The City's June 1, 2020 *Update to the City of Del Mar CEQA Guidelines* are included as ***Attachment A***.

ON-SITE AMENITIES

- ***On-Site TDM Coordinator***
  An on-site TDM coordinator serves as a liaison and source of TDM information for residents, employees, and other tenants. The TDM coordinator could be responsible for sharing TDM information, answering questions, and coordinating with the City on matters such as monitoring and reporting. A designated on-site TDM coordinator could be hired solely for that position or be an existing staff member. For example, the coordinator could be a member of building management.
- ***Information Center for Transportation Alternatives***
  A physical (on-site) or web-based information center that has information for residents such as ride matching information, public transit information, contact information for carpool/vanpool and transit, carpool/vanpool promotional

material, bicycle facility information, and listing of on-site services or facilities should be provided by the Project. If physical, the information shall be displayed on a bulletin board, display case, or kiosk where the greatest number of residents are likely to see it. If web-based, the webpage should be located on a website frequented by employees, residents, and other visitors; information about accessing the webpage shall be physically posted in an area where the greatest number of residents are likely to see it.

- ***Telecommute Work Center for Residents***
  Telecommuting programs enable employees to work from home or another remote location instead of driving daily to work. Residential projects can support telecommuting for their residents by providing a common area with tables, internet access, and other amenities. The telecommute center should be appropriately scaled for the size of the development.
- ***Delivery Supportive Amenities***
  Secure, easily accessible, and well-lit delivery amenities such as delivery lockers can reduce the number of trips residents make to pick up deliveries at off-site locations, especially for larger items.
- ***Promotional Events***
  Promote national events such as Bike To Work Day and Rideshare Week. Promoting such events would encourage residents to explore bicycling, carpooling, and vanpooling. It is also recommended to provide annual promotional events such as a free on-site bike tune-up event.

TRANSIT SUPPORTIVE AMENITIES

- ***Transit Passes or Subsidies***
  As shown on ***Figure*** 3, the Project sites are generally well served by existing transit lines and bus stop facilities. The Project could offer free transit passes or subsidies that cover a portion of the cost of a monthly transit pass to encourage residents to use transit.
- ***Transit Shuttle***
  The Project could offer shuttle buses from the site to:
  A) COASTER Station
  B) Nearest shopping center

CARPOOL SUPPORTIVE AMENITIES

- ***Ride-share Matching Services***

The Project appointed TDM coordinator could develop an in-house ride-matching service to assist residents who wish to carpool. The coordinator could also assist residents in registering with the regional ride-sharing program which provides ride-matching services for car-pooling and van-pooling.

- ***Reserved Parking for Carpool, Vanpool, Carshare and/or Park-and-Ride***
  Reserving parking at preferred locations for carshare, carpool, vanpool, park-and-ride, and other modes can help increase average vehicle occupancy and discourage single-occupant vehicle use. Reserved preferential parking for these vehicles should be close to the building entrance and covered when possible.
- ***Carshare Parking Space with a Dedicated Carshare Vehicle***
  Carshare vehicles offer people convenient access to a vehicle while helping reduce the need for individual vehicle ownership. Under this strategy, the Project could provide an on-site car share vehicle that could be shared for use only amongst residents. The vehicle should be a dedicated vehicle for carshare purposes, rather than shared with other uses. Zero emissions/electric vehicles are encouraged.

BICYCLE SUPPORTIVE AMENITIES

- ***Secure Bicycle Parking***
  The Project should provide secure and weather-protected bike parking spaces and/or racks. Pedestrian-scale lighting for security and safety is recommended.
- ***Bike Repair Station***
  Bike repair stations include a space for repairs with on-site repair stands, air pumps, and other tools. Bike repair stations should be located in a visible, well-lit, and secure area and should be regularly maintained to ensure usability.
- ***Secure Parking for E-Bikes and Cargo Bikes***
  Cargo bikes can be used to make short trips and run errands. Providing accessible parking for these bikes on-site can help encourage their use by residents, reducing short local vehicle trips. A power source for e-bikes should be included. Parking for e-bikes and cargo bikes should be secure and weather-protected.
- ***On-Site Fleet of Bicycles, E-Bikes, or Scooters***
  Bikeshare and scootershare programs can help reduce vehicle trips by providing on-demand access to bikes and scooters for short-term trips. E-bikes can help increase the range of these trips, increasing the program's convenience. The Projects could provide an on-site fleet for residents to support a shift away from driving for short trips.

OFF-SITE IMPROVEMENTS

- ***Pedestrian Access with Internal and External Connections and Sidewalk Connections***
  It is recommended that the Project incorporate features such as pedestrian pathways through parking lots, direct access for pedestrians through wall openings (in gated/walled projects), direct walkways to transit/bus stops, and/or pedestrian access close to transit/bus stops during the site design process. The Project's pedestrian facilities should be designed to encourage walking by being well-lit, ADA accessible, and with features such as landscaping to improve the walking experience.
- ***Wayfinding Signage***
  The Project site should be designed with wayfinding signage, including pedestrian and cyclist signage, to improve the convenience and ease of accessing and navigating the project site as well as to provide directions to access points, bicycle parking, transit stops, rideshare pick-up/drop-off zones, nearby uses, and other related amenities.

Additional measures as noted in the *TDM Strategies Matrix* from the City's June 1, 2020 *Update to the City of Del Mar CEQA Guidelines* may also be considered applicable for implementation. It should be noted that some strategies may be better suited for multi-family developments without age requirements and some better suited for senior housing types. Specific measures should be tailored to the target population, once determined.

Please let us know if you have any questions. Thank you.

Sincerely,

Linscott, Law & Greenspan, Engineers

John Boarman, P.E.
Principal

Amelia Giacalone
Senior Transportation Planner

cc: File

Figures:

1 Project Area Map
2 Potential Housing Sites Locations
3 Transit Mobility Network

Attachments:

A *Update to the City of Del Mar CEQA Guidelines*, June 1, 2020

LLG

N:\4115\Figures
Date: 10/22/25

Figure 1

Project Area Map

DEL MAR FAIRGROUNDS / AFFORDABLE HOUSING

Harris & A

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Date: 10/22/25

Figure 2-

Potential Housing Site Locations

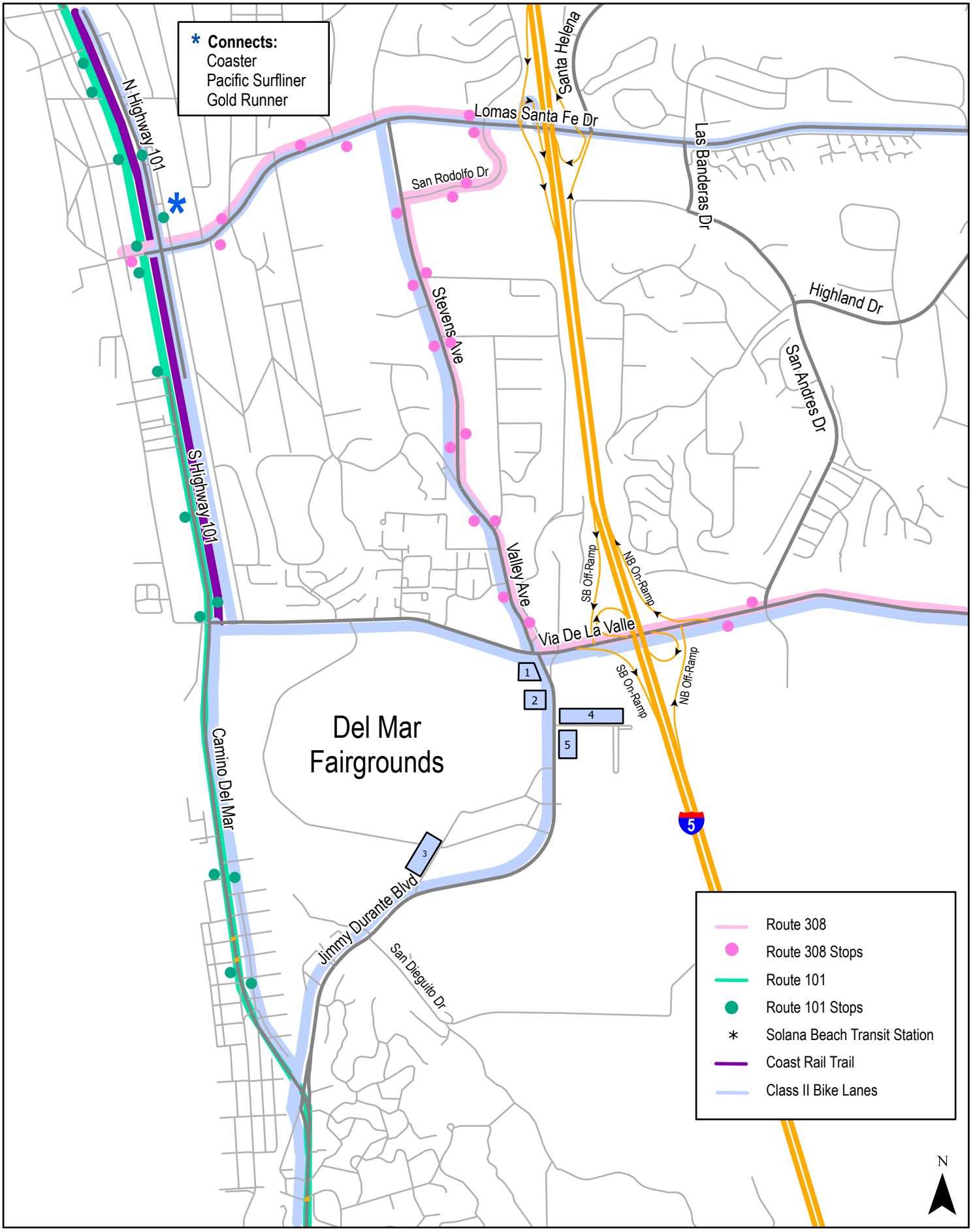

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Figure 3
Transit Mobility Network

ATTACHMENT A

UPDATE TO THE CITY OF DEL MAR CEQA GUIDELINES, JUNE 1, 2020

Update to the City of Del Mar CEQA Guidelines

Guidelines for Transportation Impact Analysis

Introduction:

The Transportation Impact Analysis guidance is intended to assist City staff, project proponents, the public, and decision makers in determining whether, based on substantial evidence, a project may have a significant effect on the environment under CEQA Section 21082.2 that requires mitigation. This guidance is consistent with 2013 California Senate Bill 743 (SB 743), the Del Mar Community Plan (General Plan), Del Mar Climate Action Plan, and City Council Policy 114 (Complete Streets).

The purpose is to analyze the transportation impact of a proposed project by assessing the associated vehicle miles traveled (VMT) and related noise, air pollution, and greenhouse gas emission impacts. Analysis of the significance of a proposed project transportation-related impact will depend on multiple factors (i.e. project setting, design, construction, timing, etc). Where transportation-related impacts are identified, the intent of the mitigation is to promote public health and quality of life through strategies that reduce VMT and invest in "complete streets" improvements that support non-vehicular access to everyday activities in Del Mar.

This guidance is intended to provide a consistent and objective basis for determining the level of significance of a project's transportation-related impacts. It is to be used in conjunction with commonly accepted professional standards, judgements, and practices.

Step 1: Determine the Project Type

Determine which type of project is proposed.

For the purpose of the CEQA analysis, VMT for a project is to be classified into the following categories and the associated metrics are to be analyzed accordingly as applicable:

- Residential uses – Compare project to Del Mar VMT per resident
- Employment uses – Compare project to Del Mar VMT per employee
- Other land use uses – Compare project to total Regional VMT

The San Diego Association of Governments (SANDAG) provides an online VMT calculation tool to estimate project VMT. SANDAG also has a VMT database where models can be run for each City and the region as a whole. The SANDAG VMT database is what is used to identify the Del Mar VMT and Regional VMT for comparison to the estimated VMT of a proposed project.

Step 2: Determine if the project is eligible to be "screened out" and exempt from further VMT analysis

Determine whether the proposed project has potential to cause a significant effect on the environment. Where applicable, calculate the trip generation for the project. Then determine

whether the project type is eligible to be screened out with no further VMT analysis required. The following project types are presumed to cause a less than significant impact on the environment and are therefore exempt from any further VMT analysis, unless substantial evidence is otherwise identified that indicates a project would generate a potentially significant level of VMT:

- Projects that generate less than 110 trips per day
- Projects of 18 apartments or less
- Projects of 11 single dwelling units or less
- Projects of 2,750 square feet or less of commercial retail
- Projects of local serving retail that are less than 10,000 square feet and that would offer a new retail option in Del Mar that is currently only offered outside of the City
- Projects within .5 miles of a high-quality transit stop with fixed route bus service that has bus intervals no longer than 15 minutes during the weekday commute hours (State PRC 2115)
- Projects with 100 percent affordable units
- Transit, bicycle, and pedestrian projects
- Roadway and mobility projects included in the Del Mar Community Plan
- Amendments to a Land Use Plan or Zoning Ordinance that provide for mixed use zoning that allows up to 20 dwelling units per acre

If the project is not screened out, then proceed to the Step 3 analysis per the CEQA Guidelines.

<u>Step 3: Analyze and Compare the Project to the City's Transportation - CEQA Significance Thresholds:</u>

Answer the following CEQA Guideline questions about the proposed project to help determine whether there will be a potential significant impact as follows:

a. Would the project or plan/policy conflict with an adopted program, plan, ordinance or policy addressing the transportation system including transit, roadways, bicycle, and pedestrian facilities?

b. Would the project or plan/policy result in VMT that is not at least 15 percent below the existing baseline VMT for Del Mar as applicable?

c. Would the project or plan/policy substantially increase hazards due to a design feature or incompatible use?

d. Would the project or plan/policy result in inadequate emergency access?

Step 4: Determine whether the proposed project has the Potential to cause a Significant Impact

As the City of Del Mar residential, employment and total VMT are above the regional average, proposed projects that are not screened out will result in a significant transportation impact. Therefore, the City of Del Mar has established the existing baseline to be the existing City of Del Mar VMT/resident (residential project), VMT/employee (employment projects) and total VMT for all other projects. The existing VMT baseline condition is based on SANDAG's VMT maps using the most recent version of the SANDAG travel demand forecasting model.

View SANDAG's VMT per capita and VMT per employee map here:

- VMT/capita: http://sandag.github.io/sb743/sb743_concept_map.htm
- VMT/employee: http://sandag.github.io/sb743/sb743_concept_map_employee.htm

Mitigation shall be required to reduce project VMT to 15 percent below the existing baseline. The required 15 percent reduction is consistent with the Del Mar Climate Action Plan and with recommendations of the Governor's Office of Planning and Research and California Air Resources Board as necessary to meet the State of California climate action goals.

Step 5: Require mitigation

If a project is not screened out, then the project is required to provide VMT mitigation that would result in a reduction in project VMT to a level considered below the Threshold of Significance. As stated in Step 4, this is 15% below the baseline condition. If the project is not able to provide the 15% VMT reduction, as outlined in Step 4, the environmental document shall disclose an unmitigated significant transportation impact associated with the proposed project.

The following mitigation options should be made available to address mobility and reduced congestion, VMT, greenhouse gas emissions (GHG) and air pollution:

- Implementation of Local Transportation Demand Management (TDM) Strategies
- Mitigation through Payment of an In-Lieu Fee

Mitigation through the Implementation of Transportation Demand Management

Transportation Demand Management (TDM) is a mitigation tool that is used to improve mobility and reduce congestion, VMT, GHG emissions, and air pollution. For a project that requires mitigation, an applicant may select one or more measures from the City's TDM Matrix or equivalent mitigation measures consistent with City Council Policy 114 (Complete Streets) as necessary to reduce the project VMT by at least 15%.

Mitigation through the Payment of In-Lieu Fee

As an alternative to implementing TDM improvements or programs in accordance with the mitigation option above, a project applicant may pay an in-lieu fee in accordance with the methodology approved by the City Council into the City's in-lieu fee mitigation fund. Once established, the in-lieu mitigation fund shall be used by the City to contribute to or fund active transportation projects and programs. This can include decisions by the Del Mar City Council to approve the contribution of in-lieu program funds towards:

- Local mobility programs to be determined such as:
  - Bike share or Electric Vehicle share program
  - On-demand transportation service (community assistance programs, first/last mile transit)
  - Shuttle (electric vehicle)
  - Wayfinding signage to connect users to locations of sustainable transportation choices
- Mobility partnership agreements with major employers located in Del Mar or that employ a significant number of local residents (i.e. 22nd District Agricultural Association and UCSD)
- Mobility projects in SANDAG's regional TDM program (i.e. removal of the railroad from the bluff)

Transportation Demand Management (TDM) Strategies Matrix

Method	Description	CAPCOA	SANDAG	Level of Effort	Potential Cost
PG1. Comprehensive Employer Commute Program and/or Involvement in Free Commute Trip Reduction Program (iCommute)	Helps local businesses, helping them develop and implement customized employee commuter benefit programs. May include some or all the following: • Marketing, outreach, and education of alternative travel to employees • Bi-annual surveying of employee commutes • Personal trip planning • Commuter assistance • Guaranteed Ride Home • Regional recognition program	Voluntary involvement 6.2% Required involvement and monitoring 21%	Up to 26% (SANDAG)	Low	Free
PG2. Commute Information for New Hires	A flyer or communication to new hires that highlight local alternative travel options. May include: • Nearby or regional bike routes or facilities • Local or regional transit connections • Guaranteed Ride Home information • Carpool/vanpool information/resources	Minimal in isolation (CAPCOA), best grouped with PG1	Minimal in isolation (SANDAG), best grouped with PG1	Low	$
PG3. Telecommuting and/or Alternative Work Schedules	Remote work at least one day per week or implement a condensed workweek schedule	Up to 21% (CAPCOA)	Up to 44% (SANDAG)	Med	$
Alternative Travel Employer Subsidies	Subsidies or partial subsidies provided for various alternative travel: • Bike commuting • Carpooling • Vanpooling • Transit	5.5% (CAPCOA)	Up to 11% (SANDAG)	Med	$$$
Priced Workplace Parking	Employers or property managers charge single occupancy vehicle commuters a daily rate	Up to 2% (CAPCOA)	-	High	$$$
Onsite Bike Share	Employer provides a bike share program for staff to use to minimize VMT during workhours	Minimal in isolation. Works best when implemented with PG1	--	High	$

Method	Description	CAPCOA	SANDAG	Level of Effort	Potential Cost
Subsidize Costs Associated with Alternative Travel	Provide partial or full reimbursement for: • Costs associated with biking to work (lights, reflectors, panniers, tune-ups, etc) • Costs associated with carpooling to work (car wash, oil changes, headphones) • Costs associated with walking to work (new shoes, reflective gear, headphones)	--	--	Med	$$$
Provide end-of-trip facilities	Provide lockers, bike parking, and showers; can be established based on the number of parking spaces or parking space reduction.	Minimal in isolation. Works best when implemented with PG1	Minimal in isolation (SANDAG)	Med	$$
Commute Trip Reduction Marketing	Marketing materials that highlight alternative commuting on an ongoing basis or participation in Rideshare Week and/or Bike to Work Day. Marketing materials can be provided by SANDAG. Businesses and/or employers can promote campaigns to staff and city residents.	Up to 4% (CAPCOA)	Works best when implemented will full commute trip reduction program (see PG1)	Low	$

Cost for Implementation

$ Low Cost (less than $10,000)

$$ Medium Cost ($10,000 to $50,000, may include annual recurring cost)

$$$ High Cost (more than $50,000, may include annual recurring cost)

Method	Description	CAPCOA	SANDAG	Level of Effort	Potential Cost
S1. Increase TODs (with affordable or BMR housing)		See S2, PJ2, and PJ6	Up to 14%	High	$$$
S2. Integrate Affordable and Below Market Housing	BMR housing provides greater opportunity for lower income families to live closer to jobs centers and achieve jobs/housing match near transit	1.2% (CAPCOA)	Varies widely. Works best when implemented with S1 and other TDM strategies	High	$$$
S3. Increase Land Density	Percentage increase in housing units per acre, number of jobs per job acre,	Up to 30% (CAPCOA)	--	High	$$$
S4. Increase Transit Accessibility	Transit connections to regional destinations and neighborhoods designed for walking and cycling to transit	Up to 25% (CAPCOA)	--	Low	$$
S4. Zone for and/or Support Mixed Use Development	Co-locate land uses; strategically place development close to transit, jobs, and/or bike facilities (lanes, trails, etc.)	Up to 30% (CAPCOA)	Varies widely. Works best when implemented with a variety of TDM strategies	Med	$
S5. Enhancements to Pedestrian and/or Bike Network	Enhancement of sidewalks, bike lanes, bike parking, wayfinding, or payment to city for improvements	1% per square mile of Class II bike lanes (CAPCOA)	up to 1.4 for pedestrian improvements and 0.3% for bike improvements (SANDAG)	Med	$$$

Method	Description	CAPCOA	SANDAG	Level of Effort	Potential Cost
S6. Traffic Calming Measures	• Bulb outs • High visibility (continental) crosswalks • Lane width reductions • Reverse-angled parking in dense areas or near beach • Traffic circles and/or roundabouts • Chicanes • Raised crosswalks at highly trafficked intersections • Medians and islands	2% (CAPCOA)	--	Medium	$$-$$$
S7. Microtransit to/from COASTER Station	A public-private partnership to implement first/last mile options to/from the COASTER station. May include: • NEV community shuttle • Van shuttle • E-bike share	--	Varies widely	Medium	$$
S8. Reduce Parking Requirements on Development Applications	Establish parking maximums or provide incentives for employment uses to reduce employee parking through implementation of complimentary TDM programs (vanpool, carpool, etc).	--	Varies widely based on parking minimum	Low	$
S9. Implement a Citywide Bikeshare Program	Could expand upon North County Coastal communities bike share program	Best implemented grouped with S10 and PJ3	Up to 0.1% (SANDAG)	High	$
S10. Expand Pedestrian and Bike facilities and/or designate land for pedestrian or bike trails	Connection to regional trail systems.	Best implemented grouped with PJ3	Up to 5% (SANDAG)	High	$$-$$$
S11. Implement a Rideshare Program with a Rideshare, Carpool, or Vanpool Vendor	Assistance can be provided by SANDAG or vanpool vendor in establishing citywide program	--	Up to 8% (SANDAG)	Medium	$$

Method	Description	CAPCOA	SANDAG	Level of Effort	Potential Cost
S12. Citywide Commute Reduction Marketing	Marketing material for city residents	5.5% work VMT	--	Low	$
S13. Mobility Hub Improvements	Designate a mobility hub and apply for grants to enhance, with the support of SANDAG staff and/or make mobility hub improvements to existing transit	--	Up to 5.9% (SANDAG)	High	$$$
S14. School Pool Program	A program and/or app that allows parents to connect to one another and promote alternative travel to/from school	Up to 15.8% (CAPCOA)	--	Medium	$-$$
S16. Community Bike Education	Provide bike education for all ages at public events	--	--	Low	$-$$
S17. Implement A Transportation Management Association (TMA) or Transportation Management Organization (TMO)	Non-profit, member-controlled organizations that provide transportation services in a given area. Allows businesses to pool money and provide commuter support	TMA's are cited in CAPCOA, but are not highlighted as a specific *method*. May result in similar VMT reduction as noted in PG1.	--	High	$$$
S18. Citywide Carshare Program	Partner with a vendor to provide a carshare program to reduce parking demand and VMT in high-demand areas such as the coast and/or shopping centers	--	0.7% (SANDAG)	Medium	$$

Cost for Implementation

$ Low Cost (less than $10,000)

$$ Medium Cost ($10,000 to $50,000, may include annual recurring cost)

$$$ High Cost (more than $50,000, may include annual recurring cost)

Method	Description	CAPCOA	SANDAG	Level of Effort	Potential Cost
PJ 1. Parking management	• Flexible curb space (varies) • Shared parking (varies) • Smart parking (varies) • Reduced parking (5-12%, CAPCOA) • Parking Cash-out (up to 12%, SANDAG) • Unsubsidized (or priced) parking (2.6-12.8% CAPCOA; 12%, SANDAG) • Preferential parking for carpool and vanpool (varies) • Unbundle parking cost from property cost (varies)	Up to 20% (CAPCOA)	Varies widely based on what type of parking management is implement (SANDAG)	Low	$$$
PJ 2. Increase Transit Accessibility (project)	Provide access and connections to local and regional facilities such bicycle lanes, trails and transit stops.	Up to 25% (CAPCOA)	--	Low	$$
PJ 3. Enhancements or Expansions to Pedestrian and/or Bike Network (project)	Installation of sidewalks, bike lanes, bike parking, wayfinding, or payment to city for improvements	1% per square mile of Class II bike lanes (CAPCOA)	up to 1.4 for pedestrian improvements and 0.3% for bike improvements (SANDAG)	High	$$-$$$
PJ 4. Bikeshare Program	Program available for tenants, residents, or guests of development	0.01% (CAPCOA)	Up to 0.1% (SANDAG)	Medium	$$
PJ 5. Transit Fare Subsidy	Provide transit passes for tenants or residents for up to a year	20% work VMT; no data for housing developments (CAPCOA)	--	Low	$$$

Method	Description	CAPCOA	SANDAG	Level of Effort	Potential Cost
PJ 6. Improve project or development design	Pedestrian-forward design • Shade • Sidewalks in parking lots • Garden area and seating • Benches and/or street furniture on sidewalk adjacent to property Design with commuters in-mind (or end-of-trip facilities) • showers • secure, covered bike storage • lockers • café or dining area on site • orientation to sidewalk, bike path, or transit facility	Up to 21.3% (CAPCOA)	Best used with other TDM strategies listed in section	High	$$$
PJ 7. Impact fees	If developer or employer is not willing or able to implement X% of final City TDM measures, they pay a fee which goes to help City fund multi-modal travel enhancements or projects	--	--	High	$$-$$$

Cost for Implementation

$ Low Cost (less than $10,000)

$$ Medium Cost ($10,000 to $50,000, may include annual recurring cost)

$$$ High Cost (more than $50,000, may include annual recurring cost)

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TRANSPORTATION ANALYSIS

DEL MAR AFFORDABLE HOUSING

Del Mar, California
January 7, 2026

LLG Ref. 3-25-4115

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TRANSPORTATION IMPACT ANALYSIS

DEL MAR AFFORDABLE HOUSING

Del Mar, California
January 7, 2026

1.0 INTRODUCTION

The 22nd District Agricultural Association (District) owns and operates the Del Mar Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts a variety of uses, including the annual San Diego County Fair, two horse racing seasons, and other events, activities, and celebrations such as concerts and festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year.

The District is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. The District and the City of Del Mar have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. Five potential housing site locations have been selected through this mutual planning effort. Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego.

This Transportation Impact Analysis (TIA) assesses the five potential sites where the housing could be built and determines the potential impacts/constraints of each.

Various intersections within the study area were analyzed to determine potential project-related transportation effects, as set forth in the following sections in this document.

- Project Description
- Existing Conditions Description
- CEQA VMT Discussion
- Project Study Area, Analysis Approach and Methodology
- Substantial Effect Criteria
- Analysis of Existing Conditions
- Project Trip Generation, Distribution and Assignment
- Analysis of Existing + Project Conditions
- Opening Day Conditions
- Analysis of Opening Day Conditions
- Access Assessment
- Conclusion

2.0 PROJECT DESCRIPTION

2.1 Potential Project Locations

Five (5) potential Project site locations are being considered; three (3) within the City of Del Mar and two (2) within the City of San Diego. The five potential locations are as follows:

- **Site 1: East Main Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Via De La Valle, north of the East Main Stable Gate driveway. Located at the existing "East Main Stable Gate" horse boarding stables.
- **Site 2: South of Stable Gate Site** – Within the City of Del Mar on Fairgrounds Property. Located on the southeast quadrant of the intersection of Jimmy Durante Boulevard & Via De La Valle, approximately 500 feet south of Via De La Valle, south of the East Main Stable Gate driveway. Located south of the existing "East Main Stable Gate" horse boarding stables.
- **Site 3: Adjacent to Fire Station Site –** Within the City of Del Mar on Fairgrounds Property. Located adjacent to the existing "Del Mar Fire Department" fire station.
- **Site 4: Surf and Turf RV Park Site –** Within the City of San Diego. Located on the northeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing Del Mar Fairgrounds Surf & Turf RV Park, north of Turf Road.
- **Site 5: Dirt Lot Site –** Within the City of San Diego. Located on the southeast corner of the intersection of Jimmy Durante Boulevard & Turf Road. Located at the existing "Del Mar Horsepark" dirt parking lot.

The five (5) potential housing sites vary in size. ***Table 2-1*** summarizes the location and acreage of the sites.

TABLE 2–1
POTENTIAL HOUSING SITES ACREAGE

Site Number	Site Name	APN	City	Acreage
1	East Main Stable Gate Site	2982710300	City of Del Mar	1.5
2	South of Stable Gate Site	2990300500, 2990302200	City of Del Mar	1.5
3	Adjacent to Fire Station Site	2990302200	City of Del Mar	1.0
4	Surf and Turf RV Park Site	2990420300	City of San Diego	1.5
5	Dirt Lot Site	2990420300	City of San Diego	1.5

Notes:

1. The 2023 Stephen Dalton Architects (SDA) Study identified two scenarios for Site 3, including a 1-acre new housing site, or a 1.5 acre new housing site that would also include redevelopment of the fire station. This study focuses on the 1-acre new housing site detailed in the 2023 SDA Study.

Figure 2-1 depicts the Project vicinity, and ***Figure 2-2*** depicts the Project area. ***Figure 2-3*** depicts the potential Project site locations.

2.2 Project Description

The 22nd District Agricultural Association (District) is undergoing a master site planning process to plan immediate, near-term projects as well as conceptual, long-term projects focusing on enhancing and improving Del Mar Fairground facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property (Property) which the District would be willing to make available for the development of affordable housing.

In its 6th Cycle Housing Element Update, the City identified and included a portion of the Property in the Housing Element residential sites inventory as having potential to be developed to accommodate affordable housing units. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds Property. This study of potential affordable housing on Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development (HCD) HAP Cycle 2.

Five potential housing site locations have been selected through this mutual planning effort. All five sites are approximately 1 to 1.5-acres in size. For the purpose of this study, the assumption is that a prospective housing project would include *at least* 61 units of lower income housing in a housing project that is a 100% multi-family lower income affordable housing development OR a mixed income project, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing consistent with prior feasibility studies completed (2022-2023).

Due to the Fairgrounds property location within the FEMA-mapped floodplain, which is vulnerable to potential flooding from the nearby San Dieguito River, all five housing site locations would be designed accordingly with floodproofing measures and include a floodable first floor in the form of housing development built on a podium at least 10 feet above grade and above tuck-under surface level parking.

Since there are several alternatives for the proposed housing project, LLG calculated the trip generation for each of the four (4) alternatives. The trip generation calculation summary is included in ***Table 2-2***.

TABLE 2–2
DEL MAR HAP TRIP GENERATION COMPARISON TABLE

Alternative	ADT	AM Total	PM Total	Total Peak Hour Trips
82 DU of Multi-Family Affordable Housing (100% Affordable)	445	34	45	79
61 DU of Multi-Family Affordable Housing 21 DU of Multi-Family Housing (Mixed Income)	497	39	48	87
128 DU of Senior Affordable Housing (100% Affordable)	474	42	22	64
61 DU of Senior Affordable Housing 67 DU of Senior Multi-Family Housing (Mixed Income)	444	33	27	60

Notes:

2. Rates are based on the ITE Trip Generation Manual, 12th Edition
3. ADT = Average Daily Traffic
4. DU = Dwelling Units

Affordable multi-family housing, market rate multi-family housing, affordable senior housing, and market rate senior housing use-types generate trips at different rates. Therefore, the analysis included in this report assumes the Project development would be the alternative calculated to generate the highest number of trips, which provides a conservative analysis. Therefore, this report assumes the Project will construct 61 units of affordable multi-family housing and 21 units of market-rate multi-family housing.

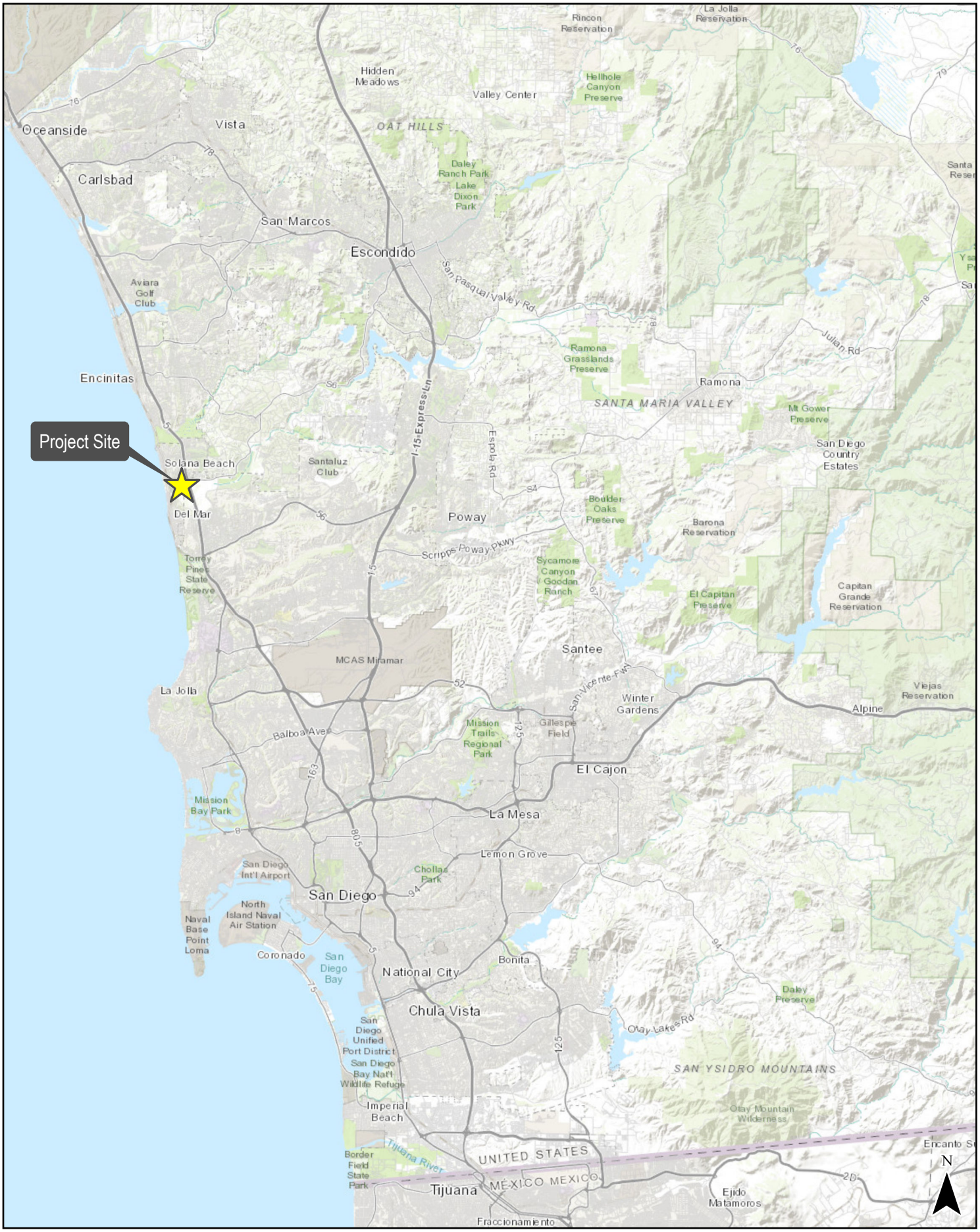
2.3 Project Access

Site 1 and Site 2 – Access for Site 1 and Site 2 would be provided by the East Main Stable Gate driveway, which connects to Jimmy Durante Boulevard.

Since only right-in / right-out turns are permitted at the East Main Stable Gate driveway, outbound residents heading north of the site are expected to make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and inbound residents coming from south of the site are expected to make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

Site 3 – Access to Site 3 would be provided via Jimmy Durante Way, which connects to Jimmy Durante Boulevard.

Site 4 and Site 5 – Access for Site 4 and Site 5 would be provided via Turf Road, which connects to Jimmy Durante Boulevard.



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SanGIS, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

Figure 2-1
Vicinity Map

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Figure 2-2

Project Area Map

DEL MAR FAIRGROUNDS / AFFORDABLE HOUSING

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Figure 2-3

Potential Housing Site Locations

3.0 EXISTING CONDITIONS

Effective evaluation of the traffic effects associated with the proposed Project requires an understanding of the existing transportation system within the project area. ***Figure 3–1*** shows an existing conditions diagram, including signalized intersections and lane configurations.

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Highway 101

Highway 101 is currently constructed as a four-lane divided roadway north of Via De La Valle. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit ranges from 35 mph to 40 mph.

Camino Del Mar

Camino Del Mar is currently constructed as a two-lane divided roadway south of Via De La Valle. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is generally permitted on both sides of the roadway in the Project vicinity. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 40 mph.

Via De La Valle

Via De La Valle is currently constructed as a two-lane undivided roadway with a two-way left-turn lane. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

Valley Avenue

Valley Avenue north of Via de la Valle is currently constructed as a two-lane undivided roadway with a two-way left-turn lane. Contiguous sidewalks are provided on both sides of the roadway. Curbside parking is permitted intermittently along the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 35 mph.

Jimmy Durante Boulevard

Jimmy Durante Boulevard is currently constructed as a four-lane undivided roadway with a two-way left-turn lane between Via De La Valle and Jimmy Durante Way. Jimmy Durante Boulevard transitions into a two-lane divided roadway south of San Dieguito Drive. Contiguous sidewalks are provided on the west side of the roadway. Curbside parking is prohibited on both sides of the roadway. Class II bike lanes are provided on both sides of the roadway. The posted speed limit is 45 mph.

3.2 Mobility Network

The project area is centrally located just south of Via de la Valle, which provides direct west-east access to Interstate 5, with north-south access provided via Highway 101 (Hwy 101). Via de la Valle and Hwy 101 provide multiple lanes of vehicle travel, sidewalks for pedestrian movement, and on-street bicycle lanes. See ***Figure 3-3***.

The project area is located approximately 2.5 miles (from the furthest proposed site) from the Solana Beach Amtrak/Coaster Station (Solana station). Pedestrian and bicycle access to the Solana station is available via the Coastal Rail Trail – a separated ped/bike trail adjacent to Highway 101 (Hwy 101) that begins at the Hwy 101/Via de la Valle intersection and extends north through Solana Beach. See ***Figure 3-2***.

3.2.1 *Bicycle Network*

Currently, Class II bike lanes are provided along Highway 101, Camino Del Mar, Lomas Santa Fe, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard.

3.2.2 *Pedestrian Conditions*

Contiguous sidewalks are provided along both sides of Highway 101, Camino Del Mar, Lomas Santa Fe, Via De La Valle, Valley Avenue, and Jimmy Durante Boulevard.

3.2.3 *Existing Transit Conditions*

Existing Bus Services

Bus service is provided by the North County Transit District (NCTD). The bus routes serving the immediate Project area include NTCD routes 101 and 308. A description of each route is provided below. ***Appendix A*** includes the timetable of these bus routes.

Route 101 runs between Oceanside and VA/UCSD/UTC. The route runs along Highway 101 and Camino Del Mar. Weekday service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM. Weekend service begins at 5:00 AM with 30-minute headways and ends at 11:20 PM.

Route 308 runs between Solana Beach and Escondido. The route runs along Lomas Santa Fe and Valley Avenue. Weekday service begins at 5:00 AM with 60-minute headways and ends at 9:10 PM. Weekend service begins at 7:00 AM with 60-minute headways and ends at 9:00 PM.

Future Bus Services

As part of SANDAG's adopted 2021 Regional Plan for the North County corridor, Next Generation Rapid bus service (Rapid bus) identified as Rapid 473 is planned to connect Oceanside to Solana Beach to UTC/UC San Diego via Highway 101 Coastal Communities with a build-out year of 2035.

Rail Service

Fixed rail service is provided by the North County Transit District (NCTD). The COASTER serves in the immediate Project area. The nearest coaster stop is at the Solana Beach Station, as shown in *Figure 3-2*.

The COASTER runs between San Diego Santa Fe Depot and Oceanside with 40-minue headways. There is a total of eight (8) stops along this route. COASTER service provides thirty (30) daily trips on the weekdays with an additional two (2) trips on Fridays. It also provides twenty (20) daily weekend trips.

Appendix A includes the timetable of this train service.

3.3 Existing Traffic Volumes

Peak hour counts at the study area intersections were conducted on Tuesday, September 16, 2025, when area schools were in session. Peak hour counts at the study area project access driveways were conducted on Wednesday, October 1, 2025, when area schools were in session.

Figure 3–2 shows the Existing Traffic Volumes. ***Appendix B*** contains the manual count sheets.

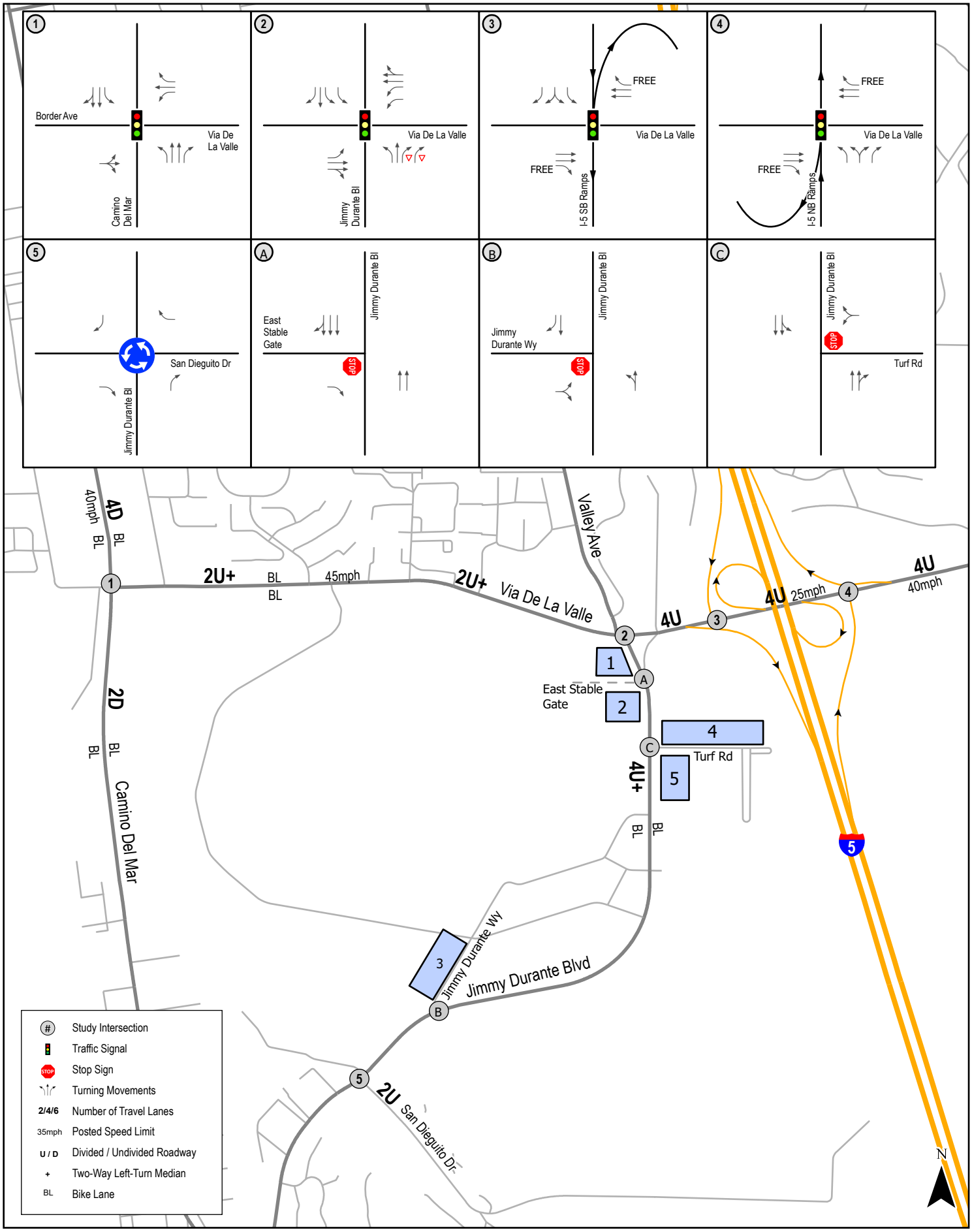

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Figure 3-1
Existing Conditions Diagram

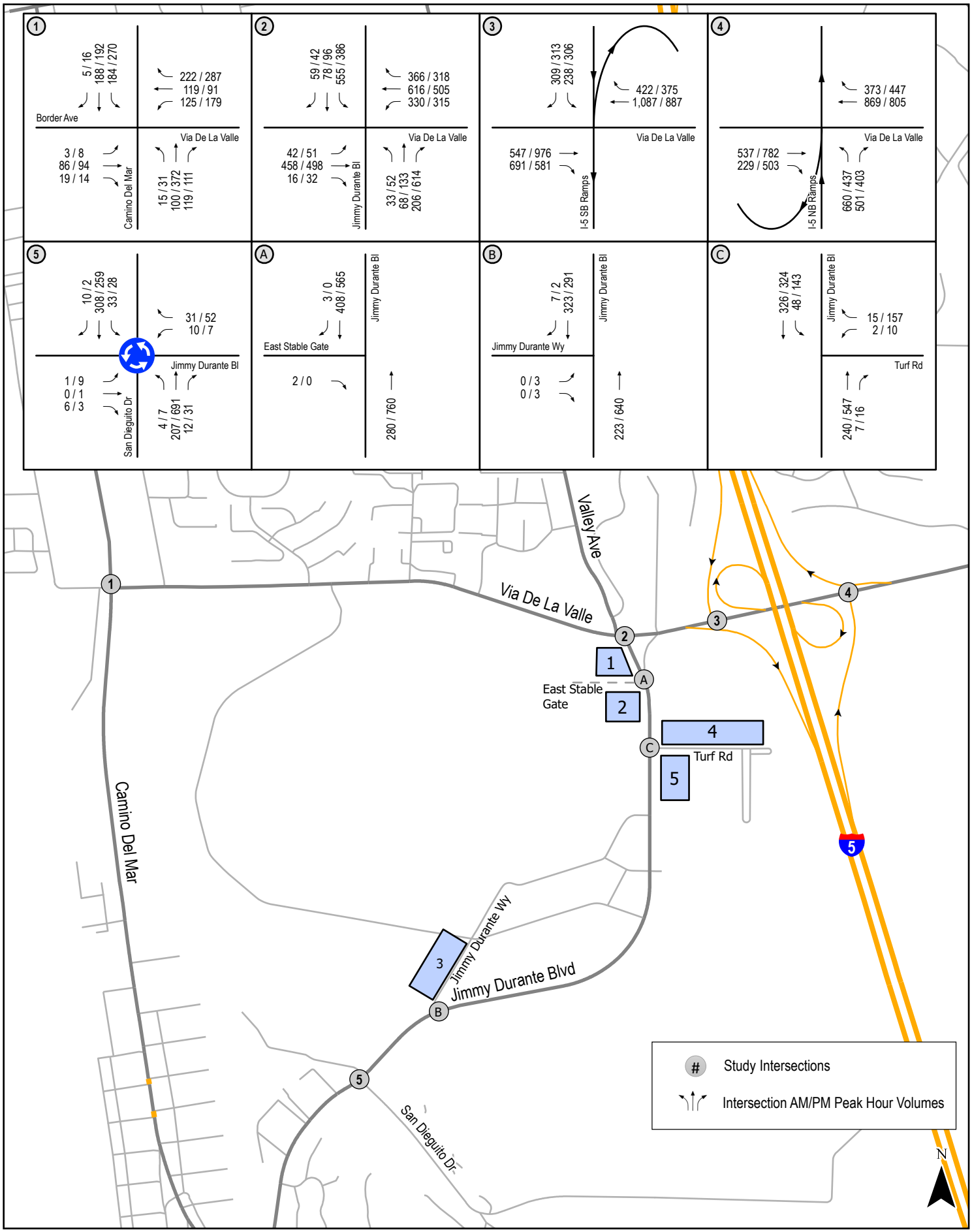

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Figure 3-2
Existing Traffic Volumes

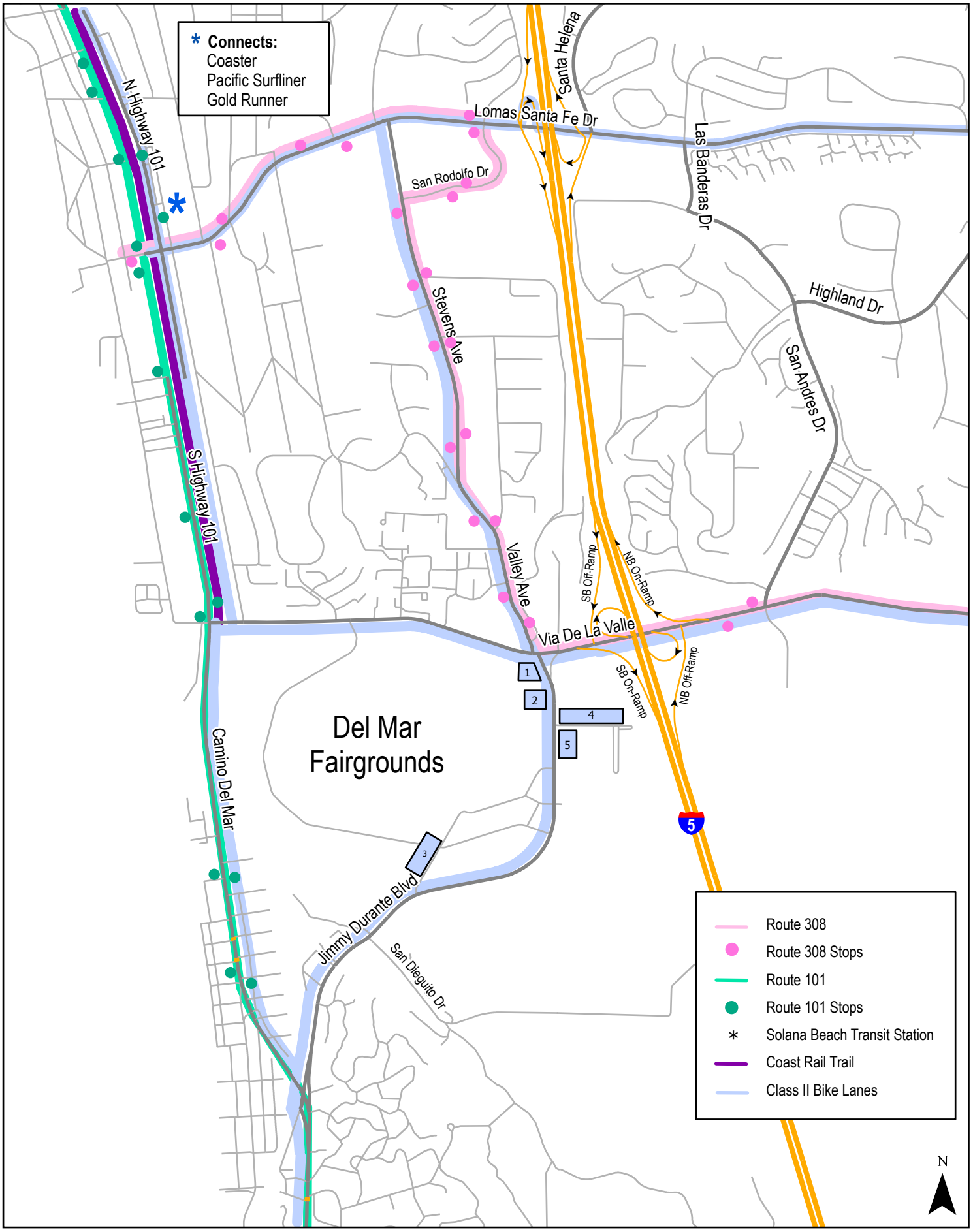

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Figure 3-3
Transit Mobility Network

4.0 CEQA VMT ANALYSIS

An assessment was conducted to determine the Project's potential Vehicle Miles Traveled (VMT) impact. This assessment utilizes methodologies presented within the Governor's Office of Planning and Research (OPR) Technical Advisory developed to assist with implementation of Senate Bill 743 (SB 743), which resulted in a shift in the measure of effectiveness for determining transportation impacts from Level of Service (LOS) and vehicular delay to VMT. VMT analyses are required in all California Environmental Quality Act (CEQA) documents as of July 1, 2020.

The City of Del Mar *CEQA Guidelines*, June 1, 2020, and the City of San Diego's *Traffic Study Manual*, September 2022, provide guidance on the preparation of VMT studies including significance thresholds, screening criteria, and analysis methodology for a variety of land uses.

4.1 Project Screening

Per the City of Del Mar *CEQA Guidelines*, June 1, 2020, the requirement to prepare a detailed transportation Vehicle Miles Traveled (VMT) analysis applies to all land development projects except for those that meet at least one of the provided screening criteria. A project that meets at least one of the screening criteria listed below would be considered to have a less significant impact due to the project or location characteristics.

1. Projects that generate less than 110 trips per day
2. Projects of 18 apartments or less
3. Projects of 11 single dwelling units or less
4. Projects of 2,750 square feet or less of commercial retail
5. Projects of local serving retail that are less than 10,000 square feet and that would offer a new retail option in Del Mar that is currently only offered outside of the City
6. Projects within .5 miles of a high-quality transit stop with fixed route bus service that has bus intervals no longer than 15 minutes during the weekday commute hours (State PRC 2115)
7. Projects with 100 percent affordable units
8. Transit, bicycle, and pedestrian projects
9. Roadway and mobility projects included in the Del Mar Community Plan
10. Amendments to a Land Use Plan or Zoning Ordinance that provide for mixed use zoning that allows up to 20 dwelling units per acre

As noted in *Section 2.2*, the Project (regardless of site location) would include at least 61 units of lower income housing (either multi-family or senior), either in a development that is a 100% affordable OR as part of a mixed income project.

4.1.1 *100% Affordable Housing Scenarios*

Any of the proposed development scenarios that assume 100% affordable housing are considered "screened out" from any further VMT analysis based on screening criteria #7 listed above (projects with 100 percent affordable units). Therefore any of the proposed development scenarios that assume 100% affordable housing are presumed to cause a less than significant impact, and are exempt from any further VMT analysis.

4.1.2 *Mixed Income Housing Scenarios*

In development scenarios that include both affordable and market rate units, the affordable units would continue to be screened out as noted above. Market rate units would likely not be screened out (unless fewer than 18 DU are proposed, in which case screening criteria #2 would apply). Since the market rate component would not be screened out, further VMT analysis is required.

4.2 VMT Assessment – Market Rate Units

In development scenarios that include both affordable and market rate units, the market rate units would not be screened out from VMT analysis as noted above. The Project is considered a "Residential" land use and therefore, the SANDAG Series 14 ABM 2+, Base Year 2016, VMT per resident data was reviewed as applicable to the City of Del Mar and City of San Diego's CEQA Guidelines. The Cities of Del Mar and San Diego measure VMT impacts against different metrics: the average Del Mar VMT per resident of 22.6 VMT for project's located within the City of Del Mar and the average Regional VMT per resident of 18.9 VMT for project's located within the City of San Diego. Therefore, the VMT analysis for Sites 1, 2, and 3, located within the City of Del Mar, and for Sites 4 and 5, located within the City of San Diego (as shown on *Figure 2-3)* were analyzed based on the applicable City guidelines as outlined below.

4.2.1 *Sites 1, 2, and 3 (City of Del Mar)*

Sites 1, 2, and 3 are located within the City of Del Mar. The Project falls under the "Residential" land use type and therefore, per City of Del Mar guidelines, the Project's VMT per resident is considered the same as the VMT per resident of the census tract in which it is located. The site's VMT per resident is then compared to the existing City of Del Mar VMT/resident of 22.6 VMT per City resident as noted in the City's June 1, 2020, *Item 14 Resolution – Update to CEQA Guidelines*, included as ***Appendix L***. A significant VMT impact would be identified if a project or plan/policy would result in VMT that is not at least 15 percent below the existing baseline VMT for Del Mar.

Sites 1, 2, and 3 are located within Census Tract 172. Per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the VMT per resident for Census Tract 172 is 24.2 and the existing City of Del Mar VMT/resident is 22.6. Therefore, the Project site is approximately 107.1 % of the City average. Based on this analysis, a significant VMT impact would be identified for Sites 1, 2, and 3.

Mitigation would be required to reduce Project VMT to 15 percent below the existing baseline, consistent with the Del Mar Climate Action Plan.

If the Project is not able to provide the 15% VMT reduction, the environmental document shall disclose an unmitigated significant transportation impact. Implementation of local Transportation Demand Management (TDM) strategies and mitigation through payment of an in-lieu fee may be required for development on Sites 1, 2, or 3.

4.2.2 *Sites 4 and 5 (City San Diego)*

Sites 4 and 5 are located within the City of San Diego. The Project falls under the "Residential" land use type and is calculated to generate less than 2,400 daily unadjusted driveway trips and therefore, per City of San Diego guidelines, the Project's VMT per resident is considered the same as the VMT per resident of the census tract in which it is located. The site's VMT per resident is then compared to the regional average VMT/resident of 18.9 VMT per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map. A significant VMT impact would be identified if a project would result in VMT that is not at least 15 percent below the regional average VMT/resident.

Sites 4 and 5 are located within Census Tract 83.24. Per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the VMT per resident for Census Tract 83.24 is 24.0 and the regional average VMT/resident is 18.9. Therefore, the Project site is approximately 126.5% % of the regional average. Based on this analysis, a significant VMT impact would be identified for Sites 4 and 5. Mitigation would be required to reduce the project's VMT impact to the greatest extent feasible.

Development of Sites 4 and 5 could choose to participate in the City of San Diego's Complete Communities Mobility Choices Program to mitigate the significant transportation impact to the extent feasible by relying on the Findings and Statement of Overriding Considerations (SOC) from the Complete Communities: Housing Solutions and Mobility Choices Program Final Program Environmental Impact Report (PEIR; May 2020)(SCH No. 2019060003).

4.3 Conclusions

Any of the proposed development scenarios on any of the proposed sites that assume 100% affordable housing can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis.

In development scenarios that include both affordable and market rate units, the affordable units can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis. Market rate units on any of the proposed Sites 1-5 would be expected to result in a significant transportation impact with mitigation required. Mitigation could include implementation of a robust TDM plan or participation in the City of San Diego's Complete Communities Mobility Choices Program, depending on whether the development site is located within the City of Del Mar or the City of San Diego.

5.0 PROJECT STUDY AREA, ANALYSIS APPROACH AND METHODOLOGY

5.1 Project Study Area

The study area includes all intersections in the Project vicinity that are likely to be potentially affected by the Project traffic. The Project study area includes the following intersections:

Intersections

1. Hwy 101 (Camino Del Mar) / Via de la Valle (Border Avenue)
2. Jimmy Durante Boulevard (Valley Ave) / Via de la Valle
3. I-5 SB Ramps / Via de la Valle
4. I-5 NB Ramps / Via de la Valle
5. Jimmy Durante Boulevard / San Dieguito Road

Access Driveways

A. Jimmy Durante Blvd / East Stable Gate (Driveway for Site 1 and 2)
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for Site 3)
C. Jimmy Durante Blvd / Turf Road (Driveway for Site 4 and 5)

5.2 Analysis Scenarios

This study includes analysis of the following scenarios:

- Existing
- Existing + Project (Site 1 and Site 2)
- Existing + Project (Site 3)
- Existing + Project (Site 4 and Site 5)
- Opening Day (Year 2028) Without Project
- Opening Day (Year 2028) + Project (Site 1 and Site 2)
- Opening Day (Year 2028) + Project (Site 3)
- Opening Day (Year 2028) + Project (Site 4 and Site 5)

5.3 Analysis Approach and Methodology

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized intersections, unsignalized intersections and roadway segments.

In the Highway Capacity Manual (HCM) 7th Edition, LOS for signalized intersections is defined in terms of delay. The LOS analysis provides results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. ***Table 5–1*** summarizes the signalized intersections levels of service descriptions.

5.3.1 *Signalized Intersections*

Table 5–2 depicts the criteria, which are based on the average control delay for any particular minor movement (unsignalized intersections) and overall intersection (signalized intersections).

For signalized intersections, LOS criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

LOS A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay in the range 10.1 seconds and 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of Average delay.

LOS C describes operations with delay in the range 20.1 seconds and 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

LOS D describes operations with delay in the range 35.1 seconds and 55.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or higher v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are frequent.

LOS E describes operations with delay in the range of 55.1 seconds to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of over 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

5.3.2 *Unsignalized Intersections*

For unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor movement. For All-Way-Stop-controlled (AWSC) intersections, the overall intersection delay is reported. For two-way-stop-controlled (TWSC) intersections, LOS is not defined for the intersection as a whole, but the worst-case movement (typically the minor street left-turn) delay and LOS are reported.

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This LOS is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits.

LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

TABLE 5–1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

LOS	Description
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation i.e. when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

TABLE 5–2
INTERSECTION LEVEL OF SERVICE (LOS) & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	**Unsignalized Intersections**
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: Highway Capacity Manual 6.

6.0 SUBSTANTIAL EFFECT CRITERIA

The City of Del Mar has published Transportation Impact Guidelines within its *City of Del Mar CEQA Guidelines* (dated June 1, 2020). Consistent with CEQA, these guidelines address VMT since LOS is no longer a standard that can be used to measure significant effects on the environment for CEQA. The City of Del Mar does not have transportation impact guidelines that provide guidelines for a capacity (Level of Service) analysis. Therefore, the San Diego Traffic Engineers' Council (SANTEC) regional guidelines were used to evaluate potential operational effects to traffic that could result from the project.

A project is considered to have a substantial effect if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds shown in ***Table 6–1*** below for freeway segments, roadway segments, and intersections are based on published SANTEC/ITE guidelines with the exception that LOS D is considered acceptable per the City of Del Mar General Plan. If the project exceeds the thresholds in *Table 6–1*, then the project may be considered to have a substantial project effect. A feasible improvement will need to be identified to return the effects within the thresholds (pre-project + allowable increase).

If project traffic causes the location to degrade from an acceptable LOS D or better to LOS E or LOS F, or exceeds the allowable thresholds as shown in *Table 6–1* below for currently LOS E or F operating locations, a substantial effect occurs.

TABLE 6–1
TRAFFIC EFFECTS SIGNIFICANCE THRESHOLDS

Level of Service with Project [a]	Allowable Increase Due to Project Effects [b]				
	Freeways		Roadway Segments		Intersections
	V/C	Speed (mph)	V/C [c]	Speed (mph)	Delay (sec.)
E & F	0.01	1.0	0.02	1.0	2.0

Footnotes:

a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using *Table 3–3* or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D".

b. If a proposed project's traffic causes the values shown in the table to be exceeded, the effects are deemed to be substantial. These effects may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible improvements (within the Transportation Analysis that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a substantial amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating substantial effects.

c. The V/C ratio threshold of 0.02 is based on the fact that such a small change is virtually unnoticeable for the average motorists. For example: for a four-lane roadway (two lane each direction) with a capacity of 40,000 vehicles, the peak hour directional volumes are about 2,800. Two percent of that is 56 vehicles per hour which translate to less than one vehicle per lane in every two minutes for that approach. Such a small change is hardly noticeable to motorists. Therefore, a V/C ratio of 0.02 is a very conservative threshold.

General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections.
4. LOS = Level of Service

7.0 ANALYSIS OF EXISTING CONDITIONS

Table 7-1 summarizes the existing study area peak hour intersection operations. As shown in *Table 7-1*, all the study area intersections are calculated to currently operate at LOS D or better.

Appendix C includes the Existing peak hour intersection analysis worksheets.

TABLE 7–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Delay [a]	LOS [b]
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B
		PM	19.1	B
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D
		PM	37.2	D
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B
		PM	13.9	B
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C
		PM	19.0	B
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A
		PM	8.9	A
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [c]	AM	10.4	B
		PM	0.0	A
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A
		PM	14.4	B
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A
		PM	12.8	B

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. MSSC – Minor Street Stop Controlled intersection. worst delay is reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

8.1 Trip Generation

The Project proposes five potential housing site locations. All five sites are approximately 1 to 1.5-acres in size and would include a multi-family lower income affordable housing development, ranging from either 61 to 82 units of family housing or 61 to 128 units of senior housing.

Trip generation rates for the Project were derived from the Institute of *Transportation Engineers (ITE) Trip Generation Manual, 12th Edition*. The ITE manual was selected over SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates (2002)* because ITE provides a more current (updated in 2025) and comprehensive dataset.

ITE database includes a wider range of land use types, such as low-income affordable and senior housing. Additionally, many local jurisdictions, including the County of San Diego, have begun transitioning from the use of SANDAG rates to ITE rates. Therefore, trip generation rates were taken from the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 12th Edition*. Trip generation rates for the following land uses were reviewed:

- Affordable Housing - Income Limits (ITE land use code 223)
- Multifamily Housing (Low-Rise; Not Close to Rail Transit) (ITE land use code 220)
- Affordable Housing - Senior (ITE land use code 223)
- Senior Adult Housing - Multi-Family (ITE land use code 252)

The land uses listed above generate trips at different rates. As described in *Section 2*.2, due to the different alternatives for the proposed housing project and different trip rates, LLG calculated the trip generation for four (4) alternatives. The trip generation calculation summary is included in *Table 2-1*.

The alternative with the highest trip generation was assumed for the analysis. Therefore, all technical reports prepared by LLG assume the Project development is 61 units of affordable multi-family housing and 21 units of market rate multi-family housing, providing a conservative analysis.

Table 8–1 summarizes the traffic generation assuming the Project development is 61 units of affordable multi-family housing and 21 units of market rate multi-family housing. The project is calculated to generate 497 ADT with 39 AM peak hour trips (11 inbound and 28outbound) and 48 PM peak hour trips (29 inbound / 19 outbound).

8.2 Trip Distribution/Assignment

The distribution of project trips was based on the location of likely destinations for the residential project traffic in this area, including shopping opportunities, schools and employment. The proximity of the project to I-5 was also taken into account. While family housing and senior housing would not have identical trip distributions, the distributions would be similar and since family

housing was found to be the highest trip generator, this land use type was used as the basis for the trip distribution.

Figure 8-1 shows the trip distribution. This figure shows that 70% of peak commuter trips are estimated to be oriented to / from I-5 with 13% into Solana Beach and 7% towards Del Mar. The remaining 10% are oriented to Via De La Valle east of I-5.

It is important to note that the Regional Project Traffic Distribution for all five potential sites is the same. However, the Project Traffic Distribution at the driveways/access points varies depending on the site location.

The assumed access driveway for Site #1 and Site #2 is the existing East Stable Gate driveway. Therefore, the Project traffic assignment for Site #1 and Site #2 is the same. The East Main Stable Gate driveway is a right-in / right-out access point. Therefore, 95% of outbound residents will make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and 5% of inbound residents will make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

The proposed access driveway of Site #3 is the existing Jimmy Durante Way roadway.

The proposed access driveway for Site #4 and Site #5 is the existing Turf Road roadway. Therefore, the Project traffic assignment for Site #4 and Site #5 is the same.

Figure 8-1 depicts the Project traffic distribution. ***Figure 8-2a*** depicts the Project traffic volumes (Site 1 and Site 2). ***Figure 8-2b*** depicts the Project traffic volumes (Site 3). ***Figure 8-2c*** depicts the Project traffic volumes (Site 4 and Site 5). ***Figure 8-3a*** depicts the Existing + Project traffic volumes (Site 1 and Site 2). ***Figure 8-3b*** depicts the Existing + Project traffic volumes (Site 3). ***Figure 8-3c*** depicts the Existing + Project traffic volumes (Site 3).

TABLE 8–1
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)[a]		AM Peak Hour					PM Peak Hour				
		Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Affordable Housing – Income Limits (223)	61 DU	[b]	367	[c]	29:71	9	21	30	[d]	59:41	22	15	37
Multifamily Housing – Low-Rise; Not Close to Transit (220)	21 DU	6.21 /DU	130	0.41/ DU[e]	24:76	2	7	9	0.52/ DU[e]	62:38	7	4	11
Total	**82 DU**		**497**			**11**	**28**	**39**			**29**	**19**	**48**

Footnotes:

a. ADT = Average Daily Traffic
b. Fitted curve equation: T = 3.73(X) + 139.35
c. Fitted curve equation: T = 0.21(X) + 17.21
d. Fitted curve equation: Ln(T) = 0.72 Ln(X) + 0.64
e. Due to the small number of units proposed, ITE's fitted curve equation for this use type results in an overly conservative trip rate of approximately 11 ADT per DU. ITE's average rate of 6.21 ADT/DU is a more realistic assumption and is in line with SANDAG and City of San Diego rates of 6 ADT / DU for the same use type.

General Notes:

1. DU = Dwelling Units
2. Rates are based on ITE Trip Generation Manual, 12th Edition.
3. (###) = ITE Land Use Code

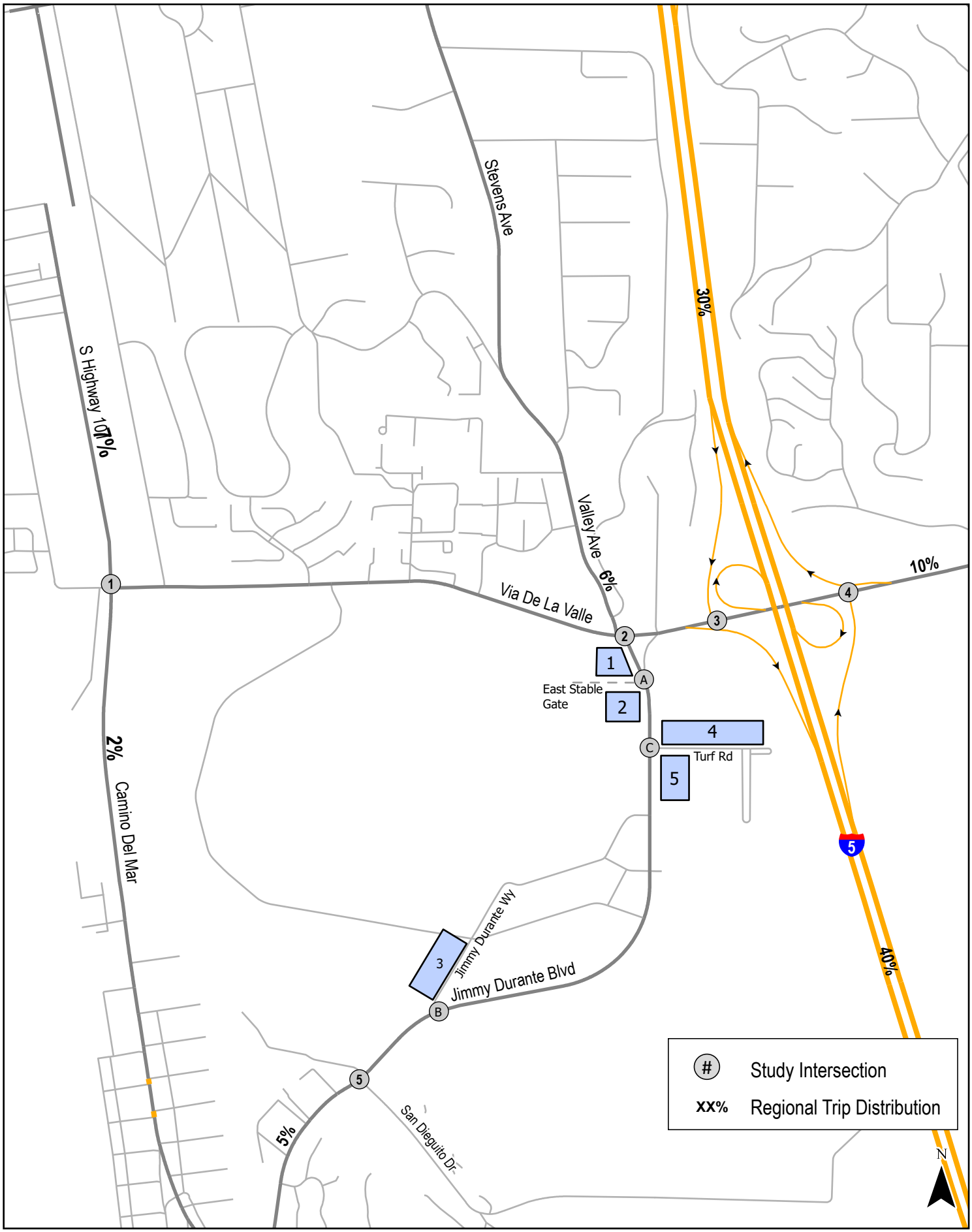

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Figure 8-1
Project Traffic Distribution

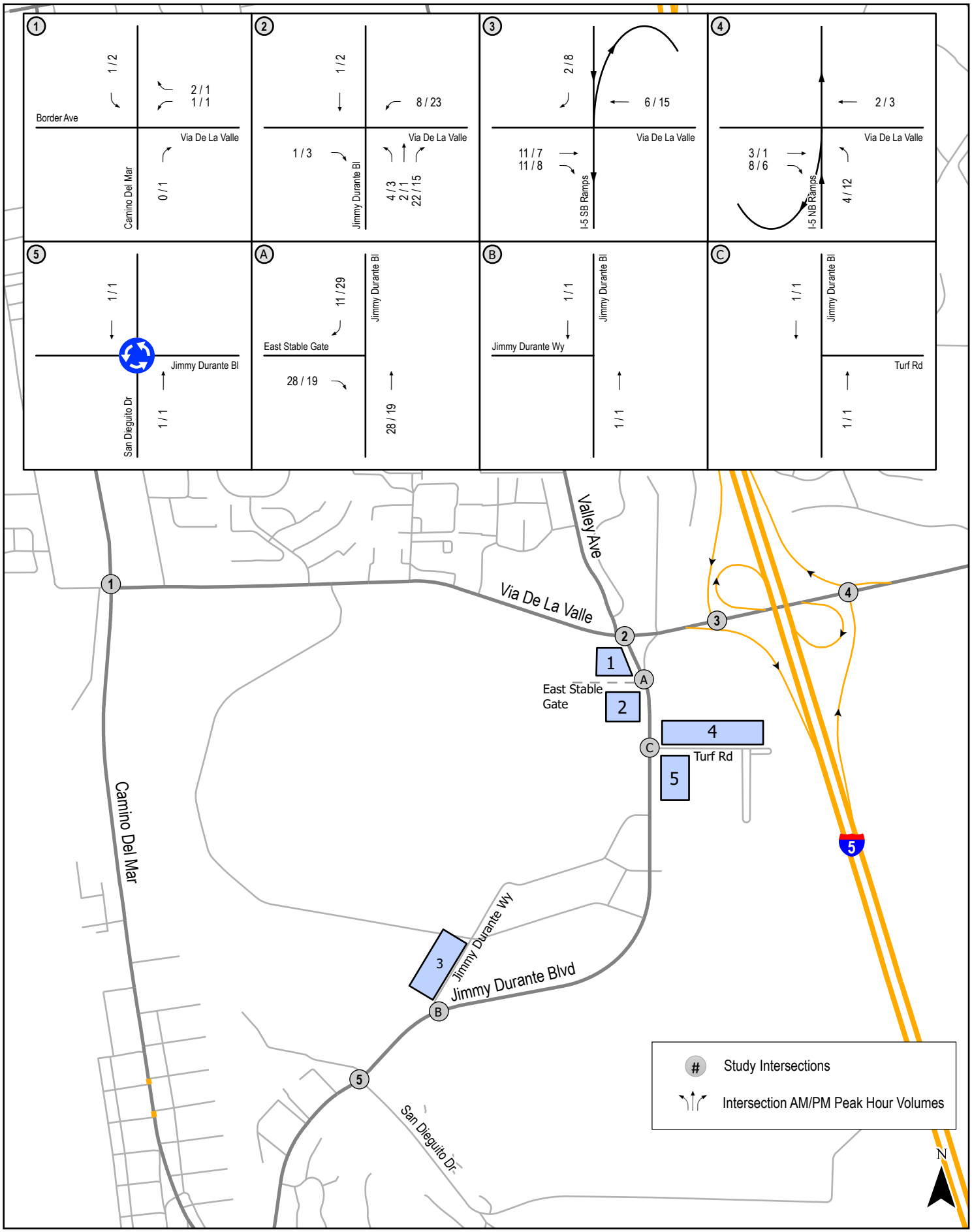

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Figure 8-2A
Site 1 or 2 Project Traffic Volumes

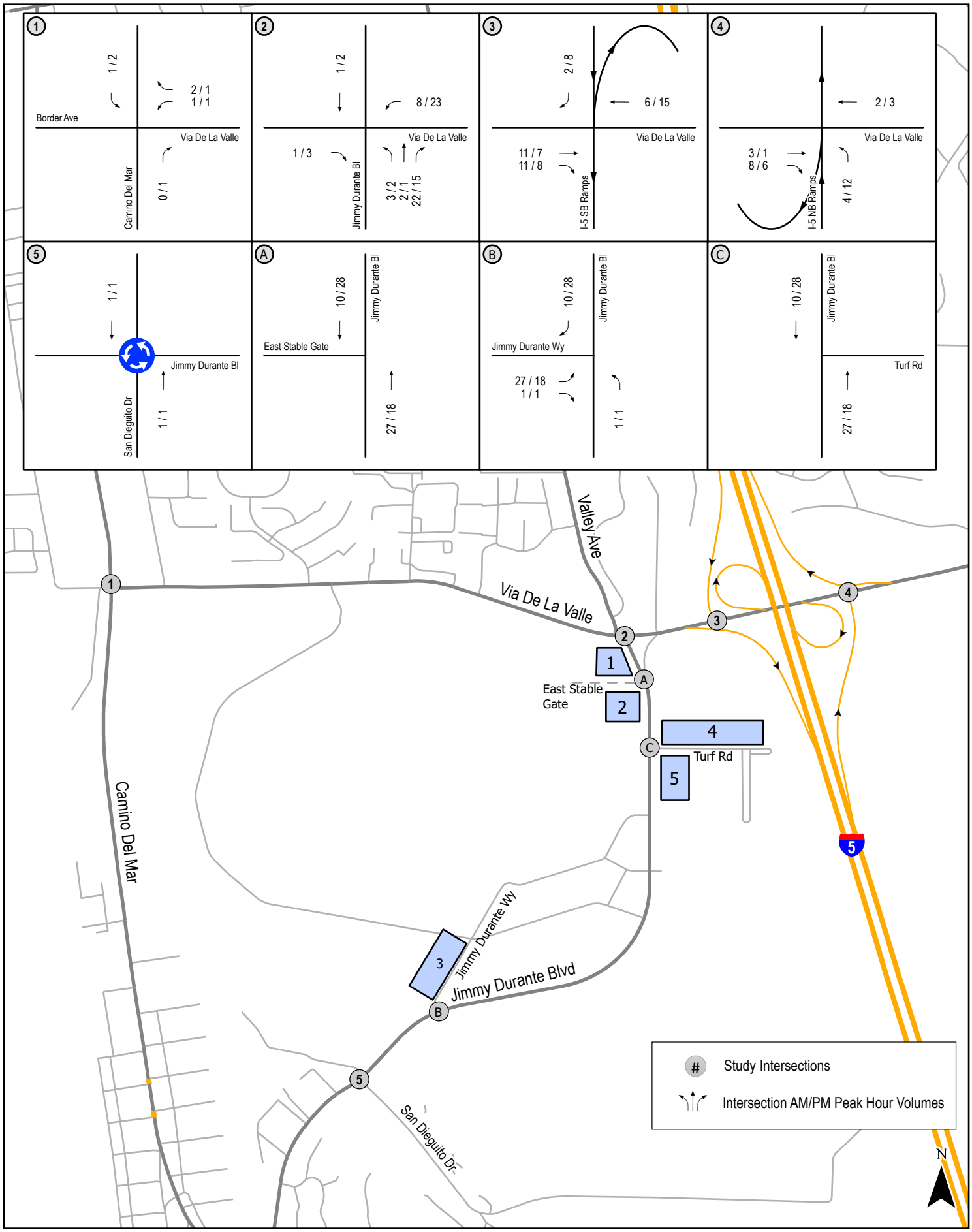

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Figure 8-2B
Site 3 Project Traffic Volumes

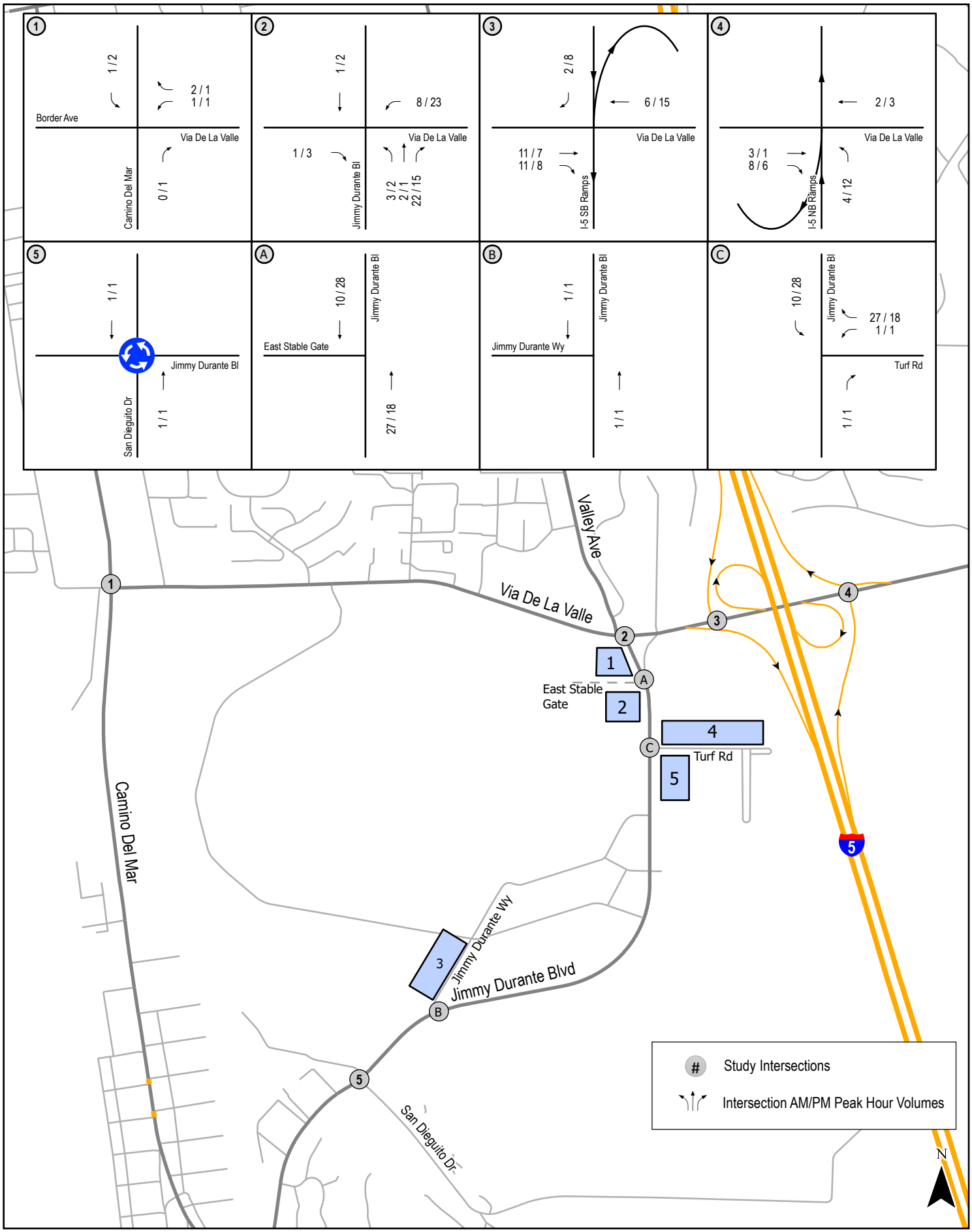

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Figure 8-2C
Site 4 or 5 Project Traffic Volumes

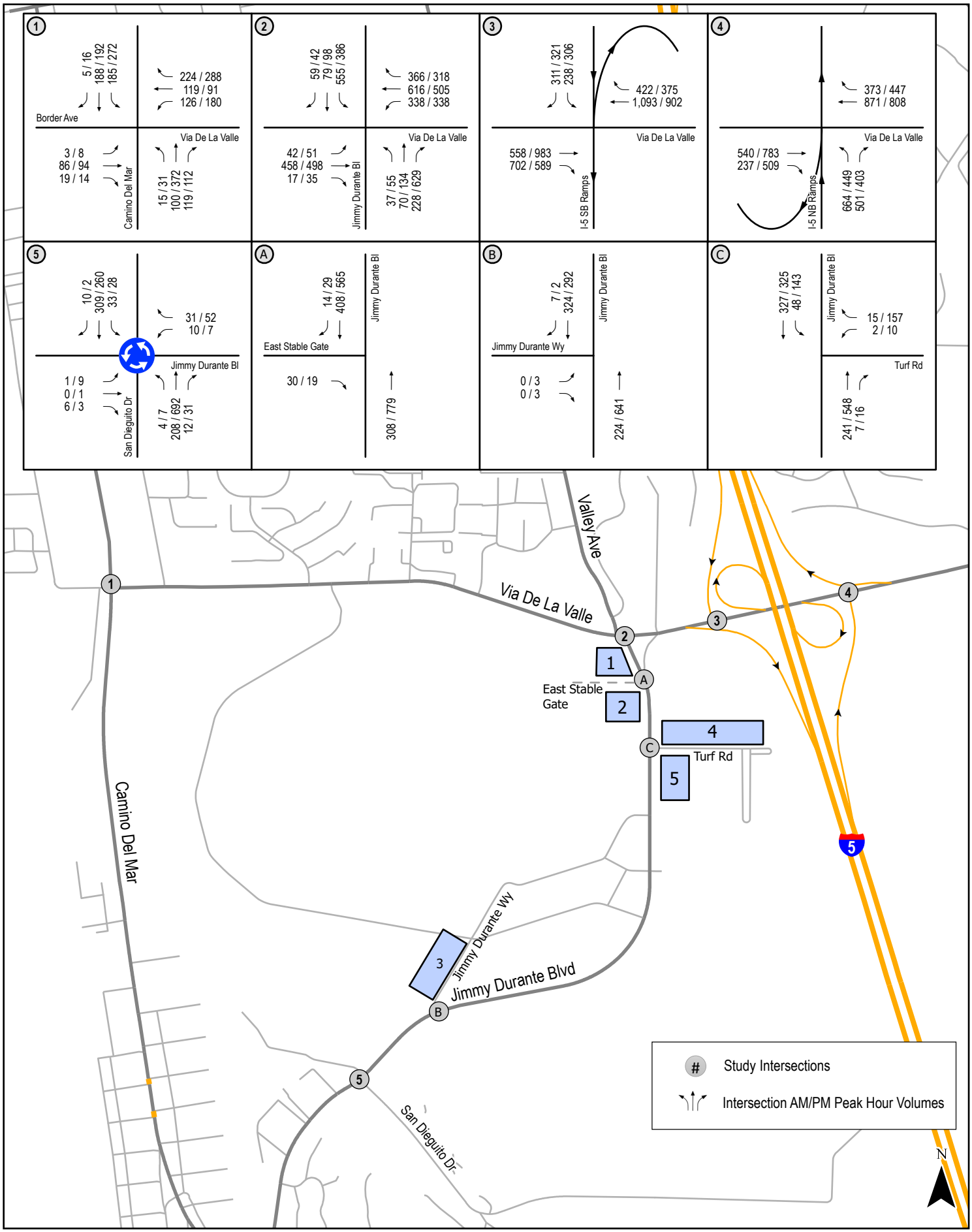

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Figure 8-3A
Existing + Site 1 or 2 Project Traffic Volumes

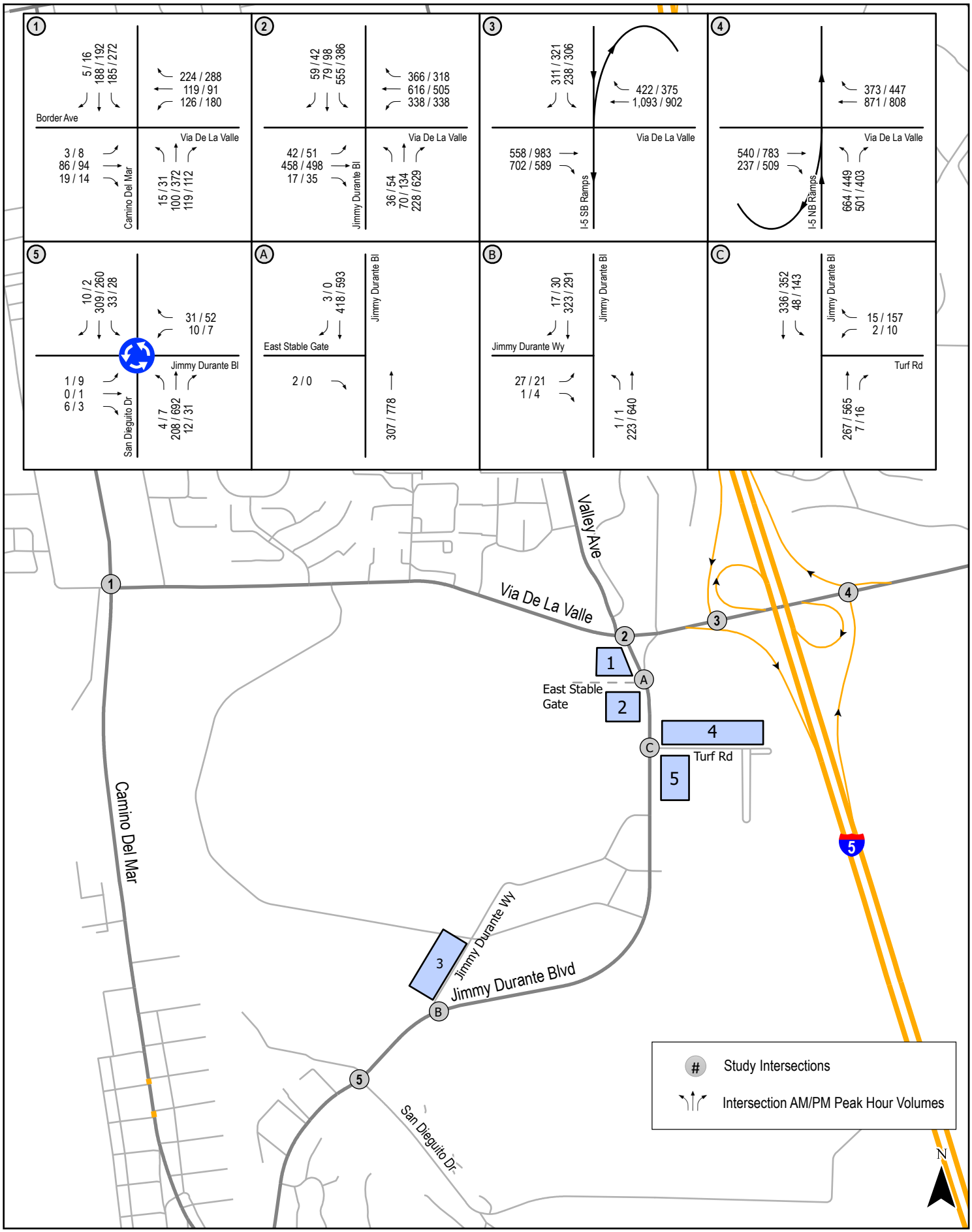

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Figure 8-3B
Existing + Site 3 Project Traffic Volumes

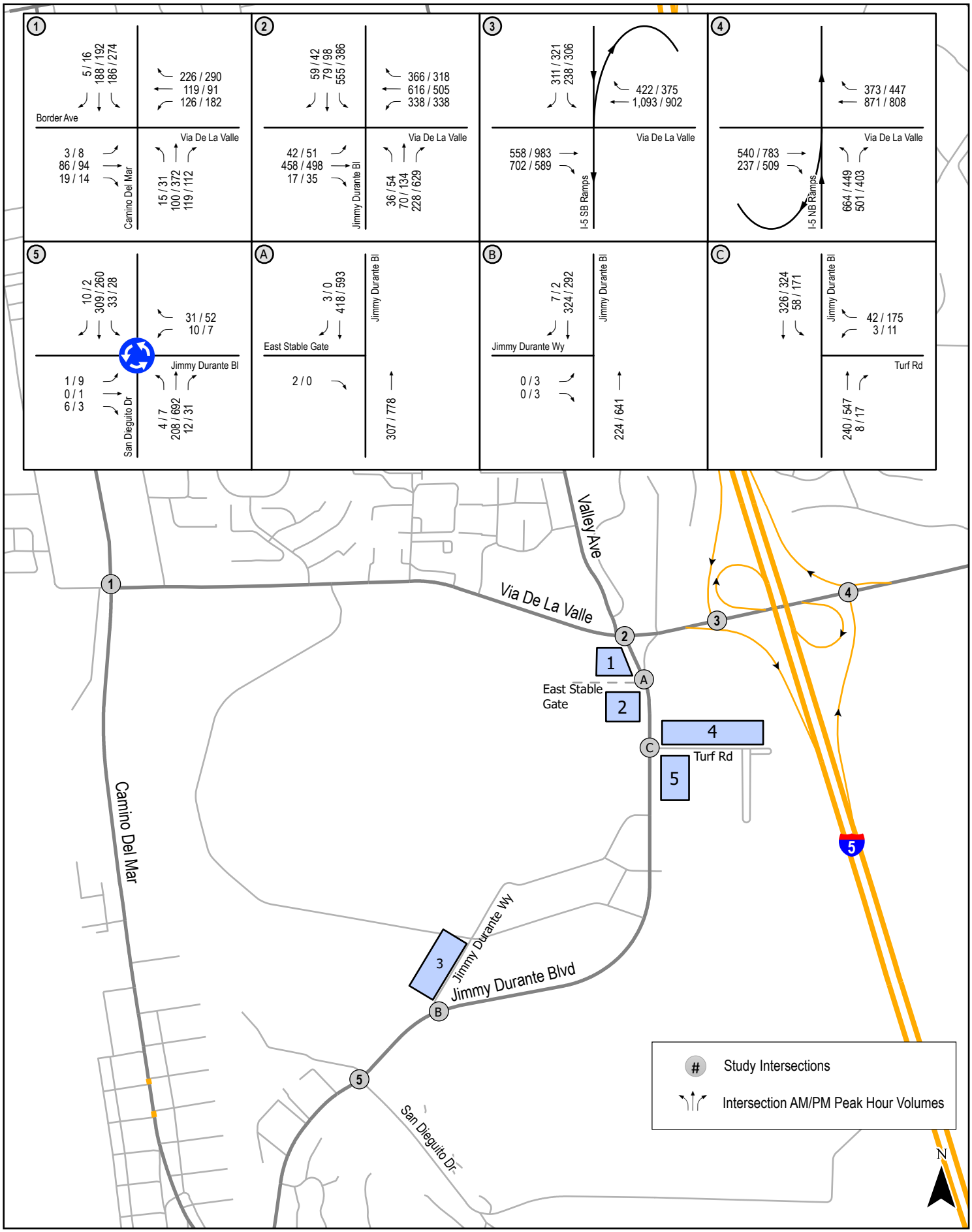

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Figure 8-3C
Existing + Site 4 or 5 Project Traffic Volumes

9.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 1 AND SITE 2

Existing + Project is defined as the Existing day traffic plus the traffic generated by the Project Site #1 or Project Site #2.

9.1 Existing without Project – Site 1 and Site 2

Table 9-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 9-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

9.2 Existing with Project – Site 1 and Site 2

Table 9-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 9-1*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix D includes the Existing with Project (Site 1 and 2) peak hour intersection analysis worksheets.

TABLE 9–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	074	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.4	B	10.8	B	0.4	No
		PM	0.0	A	11.5	B	11.5	No

Continued on the Next Page

TABLE 9–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.4	B	14.5	B	0.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	12.8	B	12.8	B	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

10.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 3

Existing + Project is defined as the Existing day traffic plus the traffic generated the Project Site #3.

10.1 Existing without Project – Site 3

Table 10-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 10-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

10.2 Existing with Project – Site 3

Table 10-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 10-0*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix E includes the Existing with Project (Site 3) peak hour intersection analysis worksheets.

TABLE 10–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	0.7	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.4	B	10.5	B	0.1	No
		PM	0.0	A	0.0	A	0.0	No

Continued on the Next Page

TABLE 10–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	13.2	B	13.2	No
		PM	14.4	B	18.5	C	4.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.6	A	0.1	No
		PM	12.8	B	13.0	B	0.2	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

11.0 ANALYSIS OF EXISTING WITH PROJECT SCENARIOS – SITE 4 AND SITE 5

Existing + Project is defined as the Existing day traffic plus the traffic generated by the Project Site #4 or Project Site #5.

11.1 Existing without Project – Site 4 and Site 5

Table 11-1 summarizes the Existing without Project peak hour intersection operations. As seen in *Table 11-1*, in the Existing without Project traffic, all intersections are calculated to operate at LOS D or better.

11.2 Existing with Project – Site 4 and Site 5

Table 11-1 summarizes the Existing with Project peak hour intersection operations. As seen in *Table 11-1*, in the Existing with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix F includes the Existing with Project (Site 4 and 5) peak hour intersection analysis worksheets.

TABLE 11–1
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.3	B	16.4	B	0.1	No
		PM	19.1	B	19.2	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	40.8	D	41.0	D	0.2	No
		PM	37.2	D	37.9	D	0.7	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	15.9	B	16.0	B	0.1	No
		PM	13.9	B	13.9	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	23.8	C	23.8	C	0.0	No
		PM	19.0	B	19.1	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.0	A	5.0	A	0.0	No
		PM	8.9	A	8.9	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.4	B	10.5	B	0.1	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 11–1 (CONTINUED)
EXISTING WITH PROJECT INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Existing Without Project		Existing With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.4	B	14.5	B	0.1	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	12.8	B	13.3	B	0.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

12.0 OPENING DAY (YEAR 2028) CONDITIONS

This section describes the Opening Day (Year 2028) roadway network and traffic volume conditions.

12.1 Network Conditions

The existing street system network illustrated in *Figure 3–1* is used for Opening Day (Year 2028) conditions with no assumed improvements within the study area.

Figure 12–1 shows the Opening Day (Year 2028) without Project traffic volumes. ***Figure 12–2a*** shows the Opening Day (Year 2028) with Project (Site 1 and Site 2) traffic volumes. ***Figure 12–2b*** shows the Opening Day (Year 2028) with Project (Site 3) traffic volumes. ***Figure 12–2c*** shows the Opening Day (Year 2028) with Project(Site 4 and Site 5) traffic volumes.

12.2 Opening Day (Year 2028) Traffic Volumes

To forecast future traffic volumes for Opening Day (Year 2028) conditions, the SANDAG ABM2+ model was first utilized to determine Year 20250 volumes. Year 2028 traffic volumes were then developed based on a calculated ambient growth factor between Existing Year 2025 and future Year 2050 traffic volumes.

A comparison between SANDAG Year 2050 traffic volumes and existing Year 2025 traffic volumes shows an average growth of 0.45% per year. To be conservative, LLG utilized an ambient growth rate of 1% per year for 3 years to calculate Year 2028 traffic volumes.

The growth factor calculations are included in ***Appendix G.***

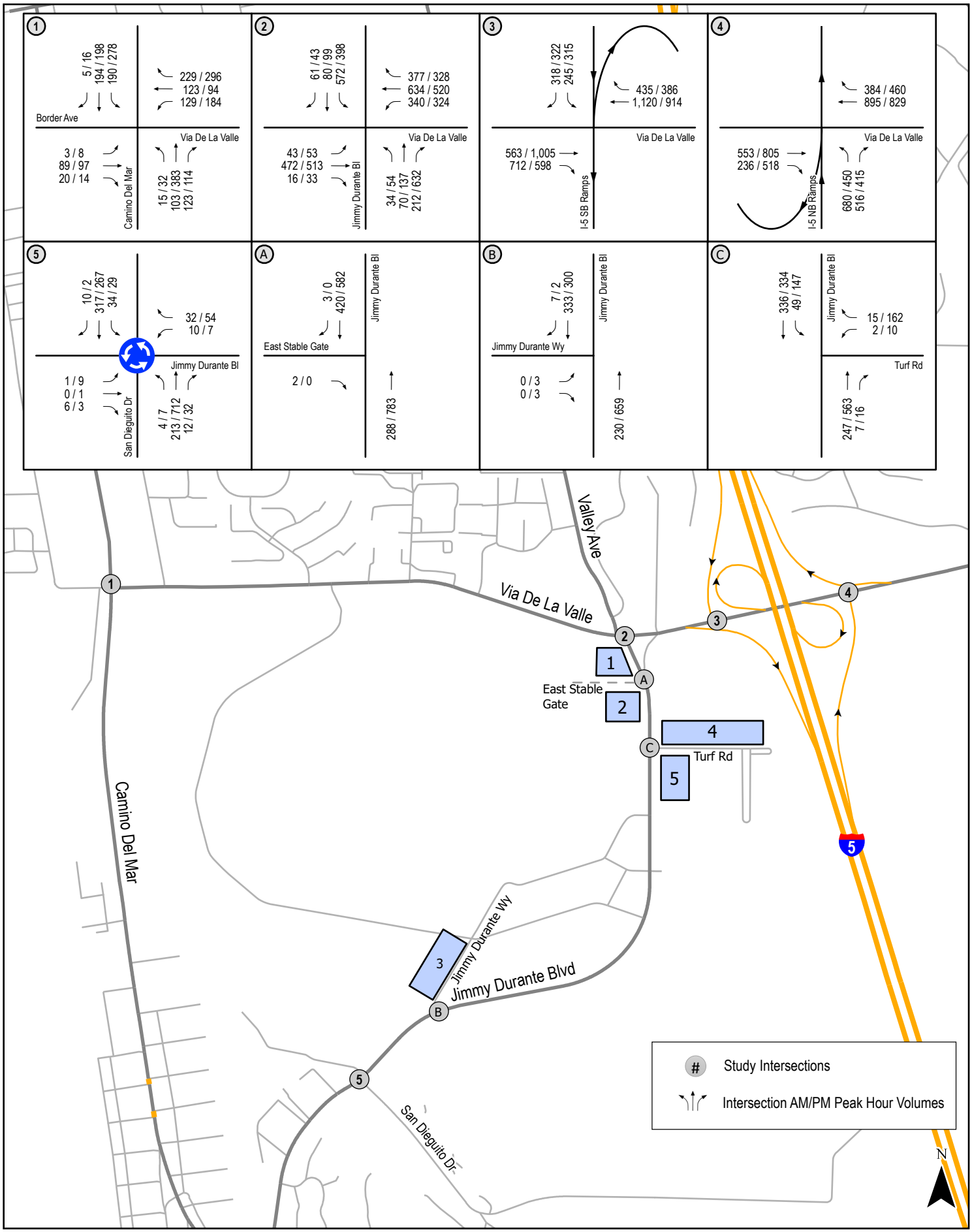

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Figure 12-1
Near-Term (Year 2028) without Project Traffic Volumes

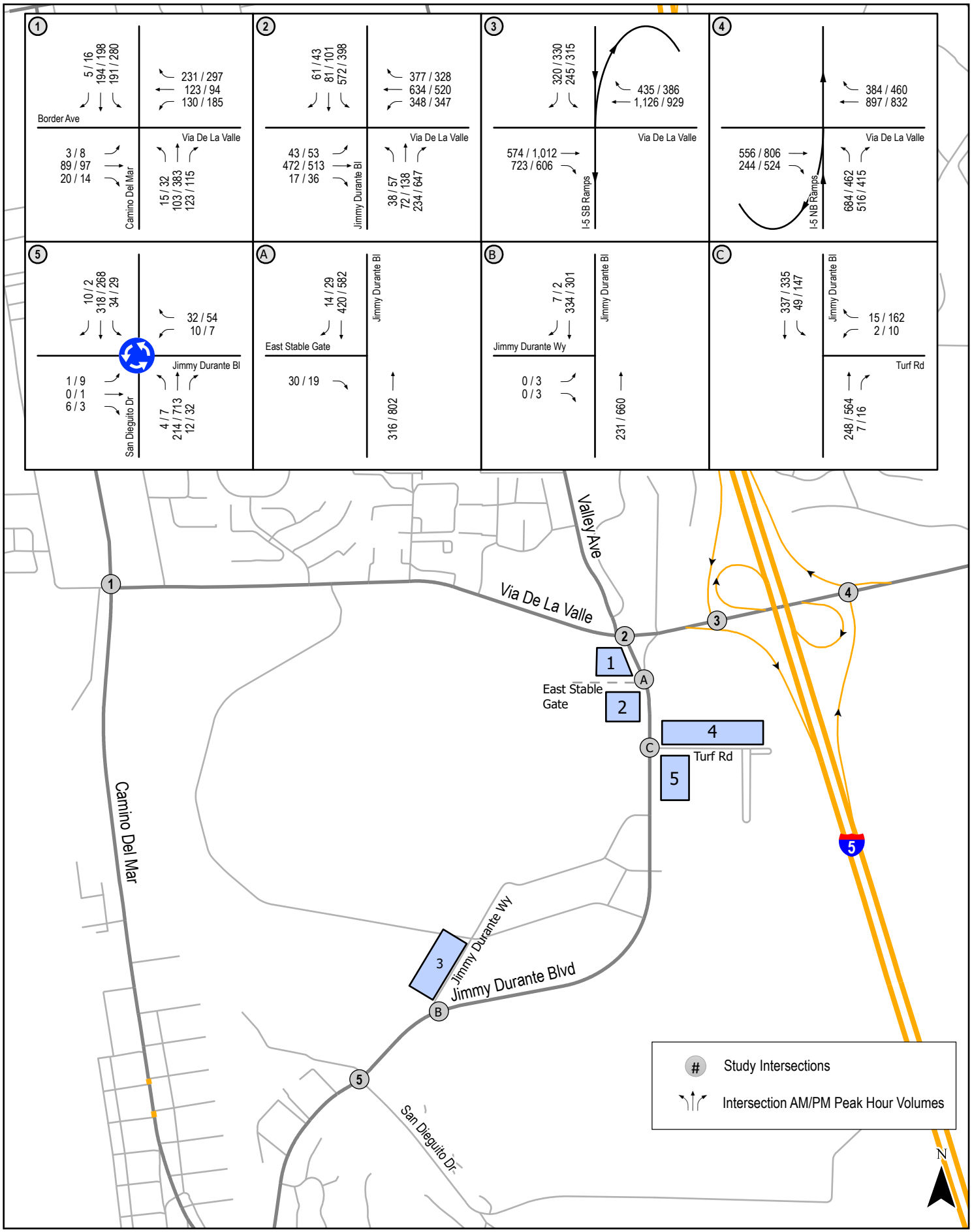

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Figure 12-2A
Near-Term (Year 2028) without Project Sites 1 or 2 Traffic Volumes

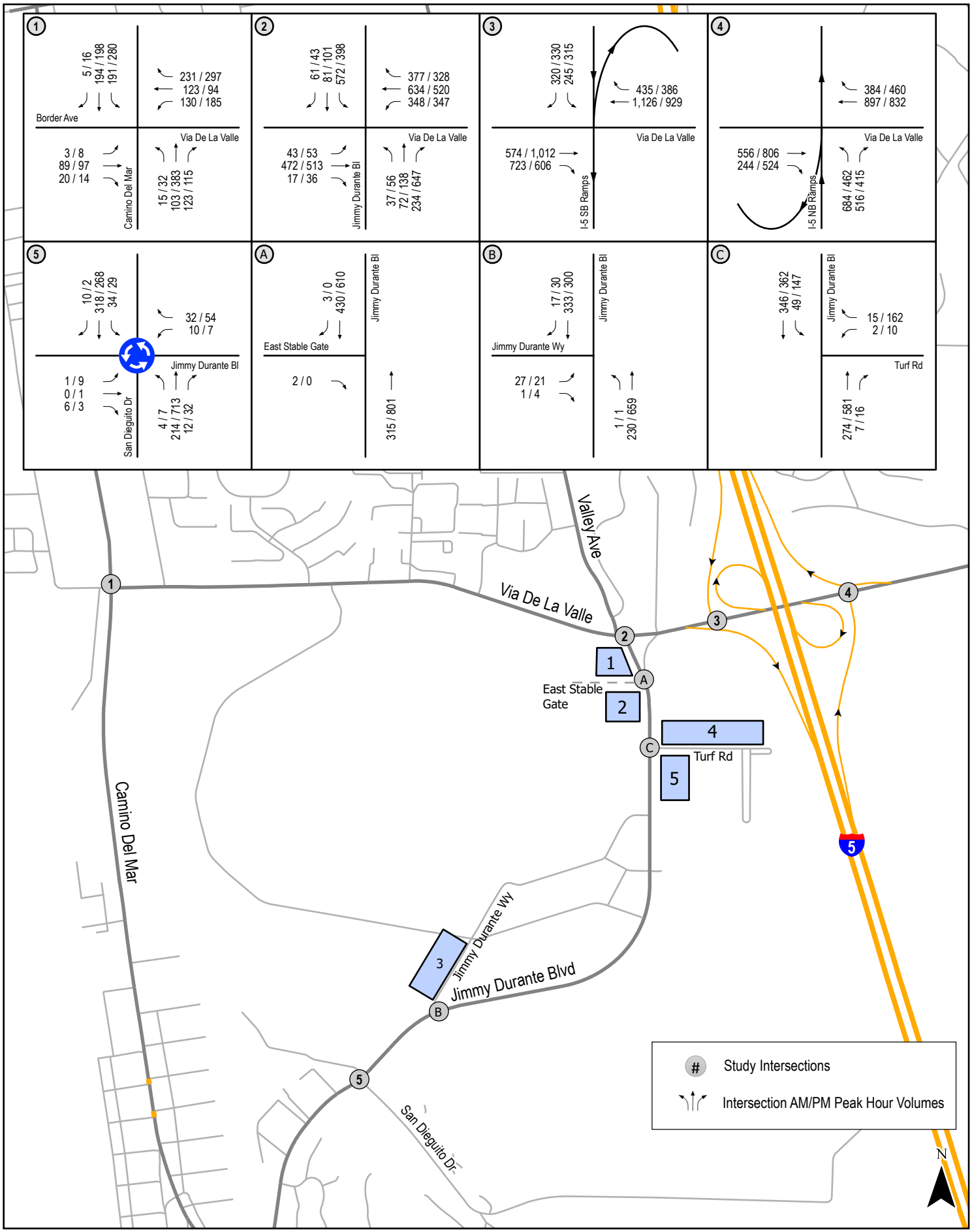

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Figure 12-2B
Near-Term (Year 2028) + Project Site 3 Project Traffic Volumes

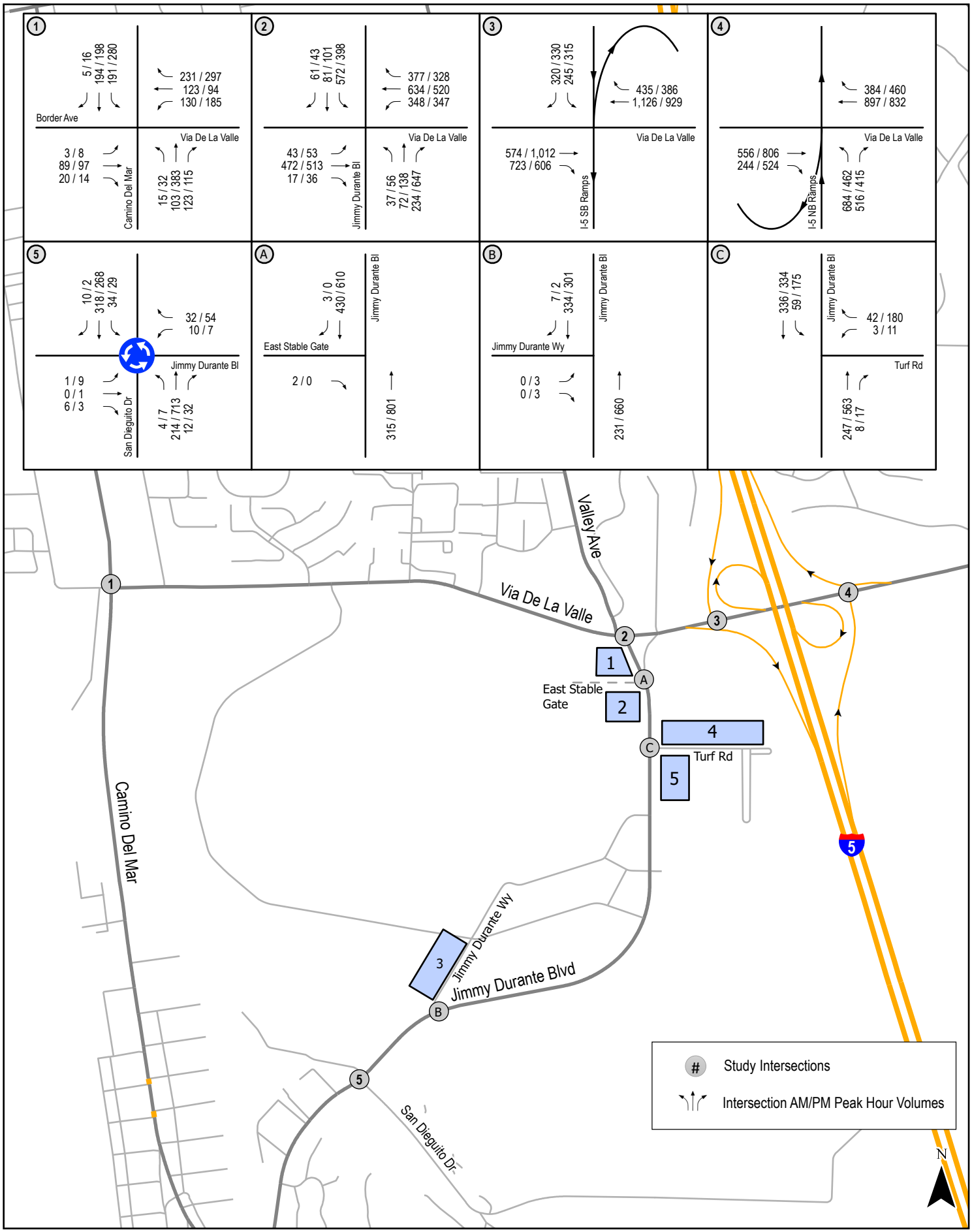

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Figure 12-2C
Near-Term (Year 2028) + Project Site 4 or 5 Project Traffic Volumes

13.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 1 AND SITE 2

The Opening day (Year) for this Project is 2028.

13.1 Opening Day (Year 2028) without Project – Site 1 and Site 2

Table 13-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 13-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

13.2 Opening Day (Year 2028) with Project – Site 1 and Site 2

Table 13-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 13-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix I includes the Opening Day (Year 2028) with Project (Site 1 and 2) peak hour intersection analysis worksheets.

TABLE 13–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	0.6	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.0	No
		PM	19.2	B	19.3	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC[e]	AM	10.5	B	10.8	B	0.3	No
		PM	0.0	A	11.6	B	11.6	No

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TABLE 13–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 1 AND SITE 2

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.8	B	14.8	B	0.0	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.1	B	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

14.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 3

The Opening day (Year) for this Project is 2028.

14.1 Opening Day (Year 2028) without Project – Site 3

Table 14-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 14-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

14.2 Opening Day (Year 2028) with Project – Site 3

Table 14-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 14-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix J includes the Opening Day (Year 2028) with Project (Site 3) peak hour intersection analysis worksheets.

TABLE 14–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	1.3	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.3	No
		PM	19.2	B	19.3	B	0.3	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.5	B	10.5	B	0.0	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 14–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 3

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	13.4	B	13.4	No
		PM	14.8	B	19.1	C	4.3	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.2	B	0.1	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table 6-1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

15.0 ANALYSIS OF OPENING DAY (YEAR 2028) SCENARIOS – SITE 4 AND SITE 5

The Opening day (Year) for this Project is 2028.

15.1 Opening Day (Year 2028) without Project – Site 4 and Site 5

Table 15-1 summarizes the Opening Day (Year 2028) without Project peak hour intersection operations. As seen in *Table 15-1*, in the Opening Day (Year 2028) without Project traffic, all intersections are calculated to operate at LOS D or better.

Appendix H includes the Opening Day (Year 2028) without Project peak hour intersection analysis worksheets.

15.2 Opening Day (Year 2028) with Project – Site 4 and Site 5

Table 15-1 summarizes the Opening Day (Year 2028) with Project peak hour intersection operations. As seen in *Table 15-1*, in the Opening Day (Year 2028) with Project traffic, all intersections are calculated to continue to operate at LOS D or better.

Appendix K includes the Opening Day (Year 2028) with Project (Site 4 and 5) peak hour intersection analysis worksheets.

TABLE 15–1
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required? [d]
			Delay[a]	LOS[b]	Delay	LOS		
1. Camino Del Mar / Via De La Valle	Signal	AM	16.5	B	16.6	B	0.1	No
		PM	19.6	B	19.7	B	0.1	No
2. Via De La Valle / Jimmy Durante Blvd	Signal	AM	42.0	D	42.2	D	0.2	No
		PM	37.9	D	38.5	D	0.6	No
3. I-5 SB Ramps / Via de la Valle	Signal	AM	16.1	B	16.1	B	0.0	No
		PM	14.0	B	14.0	B	0.0	No
4. I-5 NB Ramps / Via de la Valle	Signal	AM	24.1	C	24.1	C	0.0	No
		PM	19.2	B	19.3	B	0.1	No
5. Jimmy Durante Blvd / San Dieguito Rd	Round-about	AM	5.1	A	5.1	A	0.0	No
		PM	9.3	A	9.3	A	0.0	No
A. Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2)	MSSC [e]	AM	10.5	B	10.5	B	0.0	No
		PM	0.0	A	0.0	A	0.0	No

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TABLE 15–1 (CONTINUED)
OPENING DAY (YEAR 2028) INTERSECTION OPERATIONS – SITE 4 AND SITE 5

Intersection	Control Type	Peak Hour	Opening Day (Year 2028) Without Project		Opening Day (Year 2028) With Project		Δ[c]	Improvement Required?
			Delay[a]	LOS[b]	Delay	LOS		
Continued From the Previous Page								
B. Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3)	MSSC	AM	0.0	A	0.0	A	0.0	No
		PM	14.8	B	14.8	B	0.0	No
C. Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5)	MSSC	AM	9.5	A	9.5	A	0.0	No
		PM	13.1	B	13.6	B	0.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. Per Table -1 Traffic Effects Significance Thresholds.
e. MSSC – Minor Street-Stop-Controlled intersection. Worst delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

16.0 PROJECT ACCESS ASSESSMENT

Site 1 and Site 2
Access for Site 1 and Site 2 would be provided by the East Main Stable Gate driveway, which connects to Jimmy Durante Boulevard. The East Main Stable Gate driveway is a right-in / right-out access point.

Since only right-in / right-out turns are permitted at the East Main Stable Gate driveway, outbound residents heading north of the site are expected to make a southbound U-turn at the Hilton Hotel driveway (located approximately 260 feet north of Tuft Road), and inbound residents coming from south of the site are expected to make a northbound U-turn at the intersection of Via De La Valle & Jimmy Durante Boulevard.

As seen in *Table 9-1* and *Table 13-1*, the Jimmy Durante Blvd / East Stable Gate (Driveway for 1 and 2) intersection will continue to operate acceptably at LOS B or better with the addition of Project traffic.

Site 3
Access to Site 3 would be provided via Jimmy Durante Way, which connects to Jimmy Durante Boulevard. The Jimmy Durante Boulevard / Jimmy Durante Way driveway is a full-access, minor street stop-controlled intersection. As seen in *Table 10-1* and *Table 14-1*, the Jimmy Durante Blvd / Jimmy Durante Way (Driveway for 3) intersection will continue to operate acceptably at LOS C or better with the addition of Project traffic.

Site 4 and Site 5 – Access for Site 4 and Site 5 would be provided via Turf Road, which connects to Jimmy Durante Boulevard. The Jimmy Durante Boulevard / Turf Road driveway is a full-access, minor street stop-controlled intersection. As seen in *Table 11-1* and *Table 15-1*, the Jimmy Durante Blvd / Turf Road (Driveway for 4 and 5) intersection will continue to operate acceptably at LOS D or better with the addition of Project traffic.

17.0 CONCLUSIONS

17.1 Operations Analysis

Based on the intersection analysis, all study intersections are calculated to continue to operate at LOS D or better with the addition of the Project located at all five (5) proposed sites. Therefore, no improvements are necessary from an operations perspective.

17.2 VMT

Any of the proposed development scenarios on any of the proposed sites that assume 100% affordable housing can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis.

In development scenarios that include both affordable and market rate units, the affordable units can be presumed to cause a less than significant transportation impact and are exempt from any further VMT analysis. Market rate units on any of the proposed Sites 1-5 would be expected to result in a significant transportation impact with mitigation required. Mitigation could include implementation of a robust TDM plan or participation in the City of San Diego's Complete Communities Mobility Choices Program, depending on whether the development site is located within the City of Del Mar or the City of San Diego.

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Irvine
San Diego

TECHNICAL APPENDICES

DEL MAR AFFORDABLE HOUSING

Del Mar, California
January 2026

LLG Ref. 3-25-4115

APPENDICES

APPENDIX	
A.	Transit and Train Timetables
B.	Intersection Count Sheets
C.	Peak Hour Intersection Analysis Worksheets - Existing
D.	Peak Hour Intersection Analysis Worksheets – Existing + Project (Site 1 & Site 2)
E.	Peak Hour Intersection Analysis Worksheets – Existing + Project (Site 3)
F.	Peak Hour Intersection Analysis Worksheets – Existing + Project (Site 4 & Site 5)
G.	Growth factor calculations
H.	Peak Hour Intersection Analysis Worksheets – Year 2028 without Project
I.	Peak Hour Intersection Analysis Worksheets – Year 2028 with Project (Site 1 & Site 2)
J.	Peak Hour Intersection Analysis Worksheets – Year 2028 with Project (Site 3)
K.	Peak Hour Intersection Analysis Worksheets – Year 2028 with Project (Site 4 & Site 5)
L.	City of Del Mar VMT Resolution – Item 14

APPENDIX A

TRANSIT AND TRAIN TIMETABLES

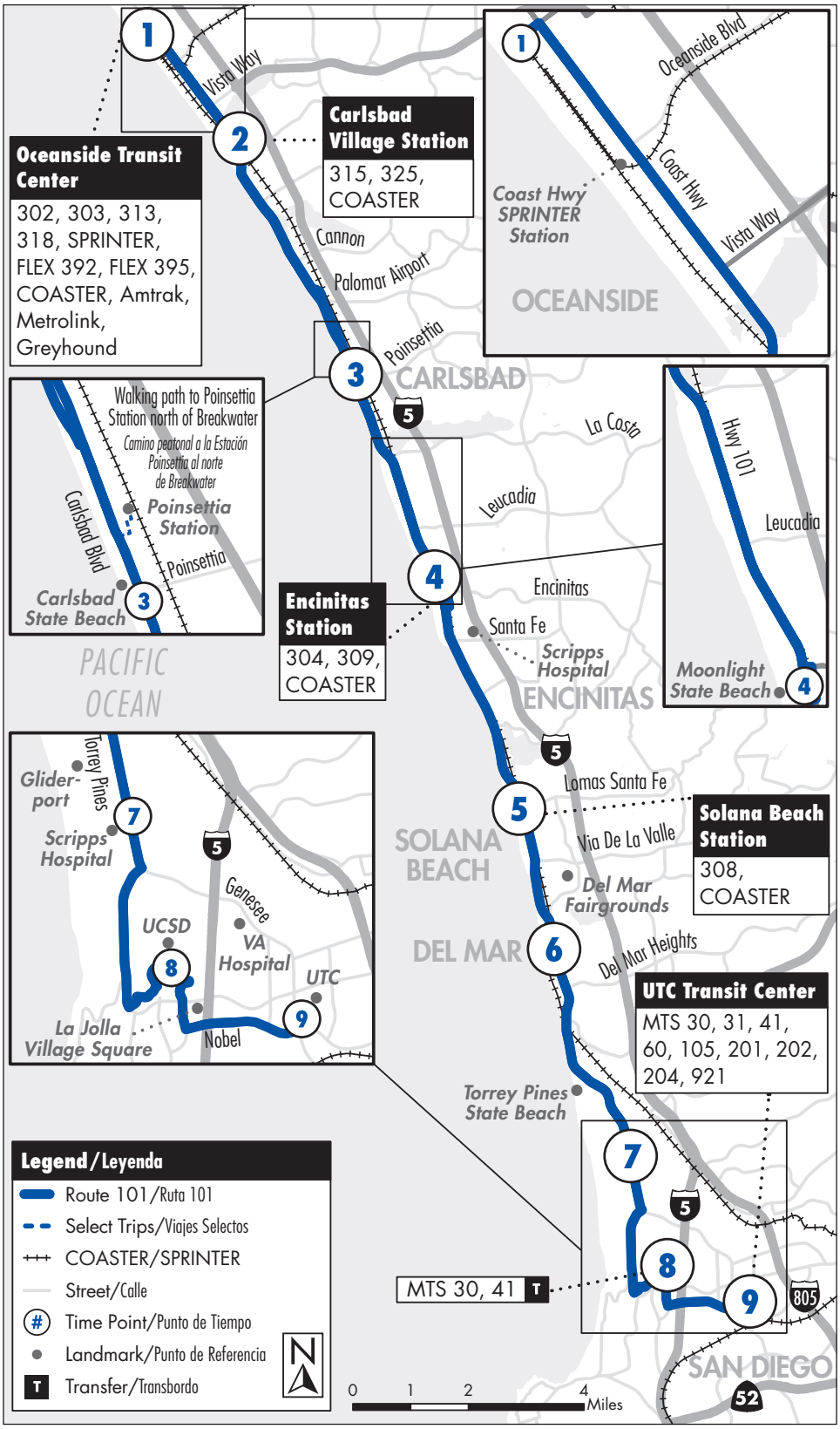
101 | Oceanside to VA/UCSD/UTC via Highway 101

Oceanside a VA/UCSD/UTC a través de la autopista 101

M-F • SA • SU
L-V • SÁ • DO

Destinations/Destinos

- University of California, San Diego
- VA Medical Center
- Scripps Green Hospital
- Carlsbad State Beach
- Del Mar Fairgrounds & Racetrack
- UTC
- Torrey Pines State Beach



101 | Oceanside to VA/UCSD/UTC via Highway 101

Oceanside a VA/UCSD/UTC a través de la autopista 101

Monday - Friday
Southbound to VA Medical Center/UCSD/UTC

Lunes a Viernes • Dirección hacia el sur a VA Medical Center/UCSD/UTC

Oceanside Transit Center	Carlsbad Village Station	Carlsbad Blvd. & Poinsettia Ln.	Encinitas Station **ARRIVAL**	Encinitas Station **DEPARTURE**	Highway 101 & Lomas Santa Fe Dr.	Camino Del Mar & 15th St.	Torrey Pines & Scripps	Gilman Transit Center	UTC
1	2	3	4	4	5	6	7	8	9
5:08a	5:18a	5:29a	5:42a	5:47a	5:56a	6:02a	6:13a	6:26a	6:35a
5:38a	5:48a	5:59a	6:12a	6:17a	6:26a	6:32a	6:43a	6:56a	7:06a
6:08a	6:18a	6:30a	6:43a	6:48a	7:01a	7:07a	7:19a	7:35a	7:45a
6:38a	6:49a	7:01a	7:15a	7:20a	7:33a	7:39a	7:51a	8:07a	8:18a
7:08a	7:20a	7:34a	7:54a	7:59a	8:12a	8:19a	8:33a	8:50a	9:01a
7:38a	7:50a	8:04a	8:24a	8:29a	8:42a	8:49a	9:03a	9:20a	9:31a
8:08a	8:20a	8:34a	8:54a	8:59a	9:12a	9:19a	9:32a	9:49a	10:00a
8:38a	8:50a	9:04a	9:24a	9:29a	9:41a	9:48a	10:01a	10:18a	10:29a
9:08a	9:20a	9:34a	9:54a	9:59a	10:11a	10:18a	10:31a	10:48a	10:59a
9:38a	9:50a	10:04a	10:24a	10:29a	10:41a	10:48a	11:01a	11:18a	11:29a
10:08a	10:21a	10:35a	10:55a	11:00a	11:12a	11:19a	11:32a	11:50a	**12:02p**
10:38a	10:51a	11:05a	11:25a	11:30a	11:42a	11:49a	**12:02p**	**12:20p**	**12:32p**
11:08a	11:22a	11:36a	11:56a	**12:01p**	**12:13p**	**12:20p**	**12:33p**	**12:51p**	**1:03p**
11:38a	11:52a	**12:06p**	**12:26p**	**12:31p**	**12:43p**	**12:50p**	**1:03p**	**1:21p**	**1:33p**
12:08p	**12:22p**	**12:36p**	**12:56p**	**1:01p**	**1:13p**	**1:20p**	**1:34p**	**1:53p**	**2:05p**
12:38p	**12:52p**	**1:06p**	**1:26p**	**1:31p**	**1:43p**	**1:50p**	**2:04p**	**2:24p**	**2:36p**
1:08p	**1:22p**	**1:36p**	**1:56p**	**2:01p**	**2:13p**	**2:20p**	**2:34p**	**2:54p**	**3:06p**
1:38p	**1:52p**	**2:06p**	**2:26p**	**2:31p**	**2:43p**	**2:50p**	**3:04p**	**3:24p**	**3:36p**
2:08p	**2:22p**	**2:36p**	**2:56p**	**3:01p**	**3:13p**	**3:20p**	**3:34p**	**3:55p**	**4:07p**
2:38p	**2:52p**	**3:06p**	**3:26p**	**3:31p**	**3:44p**	**3:51p**	**4:05p**	**4:26p**	**4:39p**
3:08p	**3:23p**	**3:37p**	**3:57p**	**4:02p**	**4:15p**	**4:22p**	**4:36p**	**4:57p**	**5:10p**
3:38p	**3:52p**	**4:06p**	**4:26p**	**4:31p**	**4:44p**	**4:51p**	**5:05p**	**5:26p**	**5:39p**
4:08p	**4:22p**	**4:36p**	**4:56p**	**5:01p**	**5:14p**	**5:21p**	**5:35p**	**5:56p**	**6:09p**
4:38p	**4:52p**	**5:06p**	**5:26p**	**5:31p**	**5:44p**	**5:51p**	**6:05p**	**6:26p**	**6:39p**
5:08p	**5:22p**	**5:36p**	**5:55p**	**6:00p**	**6:13p**	**6:20p**	**6:33p**	**6:51p**	**7:04p**
5:38p	**5:52p**	**6:05p**	**6:23p**	**6:28p**	**6:41p**	**6:48p**	**7:00p**	**7:18p**	**7:31p**
6:08p	**6:21p**	**6:34p**	**6:50p**	**6:55p**	**7:07p**	**7:14p**	**7:26p**	**7:42p**	**7:54p**
6:38p	**6:51p**	**7:04p**	**7:20p**	**7:25p**	**7:36p**	**7:43p**	**7:55p**	**8:11p**	**8:22p**
7:38p	**7:51p**	**8:04p**	**8:20p**	**8:25p**	**8:36p**	**8:43p**	**8:55p**	**9:12p**	**9:23p**
8:38p	**8:50p**	**9:03p**	**9:18p**	**9:23p**	**9:35p**	**9:41p**	**9:53p**	**10:07p**	**10:17p**
9:38p	**9:49p**	**10:00p**	**10:13p**	–	–	–	–	–	–

101 | Oceanside to VA/UCSD/UTC via Highway 101

Oceanside a VA/UCSD/UTC a través de la autopista 101

Monday - Friday
Northbound to Oceanside

Lunes a Viernes • Dirección hacia el norte a Oceanside

UTC	Gilman Transit Center	Torrey Pines & Scripps	Camino Del Mar & 15th St.	Highway 101 & Lomas Santa Fe Dr.	Encinitas Station **ARRIVAL**	Encinitas Station **DEPARTURE**	Carlsbad Blvd. & Poinsettia Ln.	Carlsbad Village Station	Oceanside Transit Center
9	**8**	**7**	**6**	**5**	**4**	**4**	**3**	**2**	**1**
–	–	–	–	–	–	5:52a	6:03a	6:14a	6:23a
5:28a	5:37a	5:48a	5:57a	6:03a	6:17a	6:22a	6:33a	6:44a	6:53a
5:52a	6:02a	6:13a	6:23a	6:29a	6:43a	6:48a	6:59a	7:11a	7:23a
6:16a	6:26a	6:38a	6:49a	6:56a	7:11a	7:16a	7:28a	7:41a	7:53a
6:43a	6:54a	7:07a	7:18a	7:25a	7:40a	7:45a	7:58a	8:11a	8:23a
7:07a	7:19a	7:34a	7:46a	7:54a	8:10a	8:15a	8:28a	8:41a	8:53a
7:33a	7:47a	8:03a	8:15a	8:23a	8:39a	8:44a	8:57a	9:11a	9:23a
8:03a	8:17a	8:33a	8:45a	8:53a	9:09a	9:14a	9:27a	9:41a	9:53a
8:33a	8:47a	9:03a	9:15a	9:23a	9:39a	9:44a	9:57a	10:11a	10:23a
9:03a	9:17a	9:33a	9:45a	9:53a	10:09a	10:14a	10:27a	10:41a	10:53a
9:32a	9:46a	10:02a	10:14a	10:22a	10:38a	10:43a	10:56a	11:10a	11:23a
10:00a	10:14a	10:30a	10:42a	10:50a	11:07a	11:12a	11:25a	11:39a	11:53a
10:30a	10:44a	11:00a	11:12a	11:20a	11:37a	11:42a	11:55a	**12:09p**	**12:23p**
10:57a	11:11a	11:27a	11:39a	11:48a	**12:05p**	**12:10p**	**12:23p**	**12:38p**	**12:53p**
11:25a	11:39a	11:55a	**12:07p**	**12:17p**	**12:35p**	**12:40p**	**12:53p**	**1:08p**	**1:23p**
11:55a	**12:09p**	**12:25p**	**12:37p**	**12:47p**	**1:05p**	**1:10p**	**1:23p**	**1:38p**	**1:53p**
12:25p	**12:39p**	**12:55p**	**1:07p**	**1:17p**	**1:35p**	**1:40p**	**1:53p**	**2:08p**	**2:23p**
12:53p	**1:07p**	**1:23p**	**1:35p**	**1:45p**	**2:05p**	**2:10p**	**2:23p**	**2:38p**	**2:53p**
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1:52p	**2:06p**	**2:22p**	**2:35p**	**2:45p**	**3:05p**	**3:10p**	**3:23p**	**3:38p**	**3:53p**
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2:43p	**2:57p**	**3:14p**	**3:29p**	**3:40p**	**4:00p**	**4:05p**	**4:19p**	**4:37p**	**4:53p**
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3:39p	**3:53p**	**4:10p**	**4:25p**	**4:38p**	**4:58p**	**5:03p**	**5:18p**	**5:36p**	**5:53p**
4:13p	**4:27p**	**4:44p**	**4:59p**	**5:12p**	**5:31p**	**5:36p**	**5:51p**	**6:09p**	**6:23p**
4:47p	**5:01p**	**5:18p**	**5:33p**	**5:46p**	**6:04p**	**6:09p**	**6:23p**	**6:40p**	**6:53p**
5:25p	**5:39p**	**5:56p**	**6:10p**	**6:20p**	**6:37p**	**6:42p**	**6:55p**	**7:10p**	**7:23p**
6:00p	**6:13p**	**6:30p**	**6:43p**	**6:52p**	**7:09p**	**7:14p**	**7:27p**	**7:40p**	**7:53p**
6:33p	**6:45p**	**7:00p**	**7:13p**	**7:22p**	**7:39p**	**7:44p**	**7:57p**	**8:10p**	**8:23p**
7:39p	**7:51p**	**8:05p**	**8:17p**	**8:25p**	**8:42p**	**8:47p**	**8:59p**	**9:12p**	**9:23p**
8:47p	**8:58p**	**9:10p**	**9:20p**	**9:27p**	**9:42p**	**9:47p**	**9:59p**	**10:12p**	**10:23p**
9:49p	**10:00p**	**10:11p**	**10:21p**	**10:28p**	**10:43p**	**10:48p**	**11:00p**	**11:13p**	**11:23p**

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Saturday & Sunday
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Sábado y Domingo • Dirección hacia el sur a VA Medical Center/UCSD/UTC

Oceanside Transit Center	Carlsbad Village Station	Carlsbad Blvd. & Poinsettia Ln.	Encinitas Station **ARRIVAL**	Encinitas Station **DEPARTURE**	Highway 101 & Lomas Santa Fe Dr.	Camino Del Mar & 15th St.	Torrey Pines & Scripps	Gilman Transit Center	UTC
1	2	3	4	4	5	6	7	8	9
5:11a	5:21a	5:32a	5:46a	5:51a	6:02a	6:07a	6:17a	6:27a	6:36a
5:38a	5:48a	5:59a	6:13a	6:18a	6:29a	6:34a	6:44a	6:54a	7:03a
6:41a	6:52a	7:04a	7:19a	7:31a	7:42a	7:49a	7:59a	8:11a	8:20a
7:11a	7:22a	7:35a	7:50a	8:01a	8:13a	8:20a	8:30a	8:42a	8:52a
7:41a	7:52a	8:06a	8:21a	8:31a	8:44a	8:51a	9:01a	9:14a	9:24a
8:11a	8:23a	8:37a	8:53a	9:01a	9:14a	9:21a	9:31a	9:44a	9:54a
8:41a	8:53a	9:08a	9:24a	9:31a	9:44a	9:51a	10:01a	10:14a	10:24a
9:11a	9:24a	9:39a	9:55a	10:01a	10:15a	10:22a	10:33a	10:48a	10:58a
9:41a	9:54a	10:09a	10:26a	10:31a	10:45a	10:52a	11:03a	11:18a	11:29a
10:11a	10:25a	10:40a	10:58a	11:03a	11:17a	11:24a	11:35a	11:50a	**12:01p**
10:41a	10:55a	11:10a	11:28a	11:33a	11:48a	11:55a	**12:06p**	**12:22p**	**12:33p**
11:10a	11:25a	11:40a	11:58a	**12:03p**	**12:19p**	**12:26p**	**12:38p**	**12:54p**	**1:05p**
11:38a	11:54a	**12:10p**	**12:28p**	**12:33p**	**12:49p**	**12:56p**	**1:08p**	**1:24p**	**1:36p**
12:08p	**12:24p**	**12:40p**	**12:58p**	**1:03p**	**1:20p**	**1:27p**	**1:39p**	**1:55p**	**2:08p**
12:38p	**12:54p**	**1:10p**	**1:28p**	**1:33p**	**1:50p**	**1:57p**	**2:09p**	**2:26p**	**2:39p**
1:07p	**1:23p**	**1:39p**	**1:58p**	**2:03p**	**2:20p**	**2:27p**	**2:39p**	**2:56p**	**3:10p**
1:37p	**1:53p**	**2:09p**	**2:28p**	**2:33p**	**2:50p**	**2:57p**	**3:09p**	**3:26p**	**3:40p**
2:08p	**2:24p**	**2:40p**	**2:59p**	**3:04p**	**3:21p**	**3:28p**	**3:40p**	**3:56p**	**4:09p**
2:39p	**2:55p**	**3:10p**	**3:29p**	**3:34p**	**3:51p**	**3:58p**	**4:10p**	**4:26p**	**4:39p**
3:10p	**3:26p**	**3:41p**	**3:59p**	**4:04p**	**4:20p**	**4:27p**	**4:39p**	**4:54p**	**5:07p**
3:40p	**3:56p**	**4:11p**	**4:29p**	**4:34p**	**4:49p**	**4:56p**	**5:07p**	**5:22p**	**5:35p**
4:10p	**4:26p**	**4:40p**	**4:57p**	**5:02p**	**5:17p**	**5:24p**	**5:35p**	**5:50p**	**6:03p**
4:40p	**4:56p**	**5:10p**	**5:27p**	**5:32p**	**5:47p**	**5:54p**	**6:05p**	**6:20p**	**6:33p**
5:10p	**5:25p**	**5:39p**	**5:56p**	**6:01p**	**6:15p**	**6:21p**	**6:32p**	**6:47p**	**6:59p**
5:40p	**5:54p**	**6:08p**	**6:25p**	**6:30p**	**6:43p**	**6:49p**	**7:00p**	**7:15p**	**7:27p**
6:10p	**6:24p**	**6:38p**	**6:54p**	**6:59p**	**7:12p**	**7:18p**	**7:29p**	**7:42p**	**7:54p**
6:40p	**6:54p**	**7:07p**	**7:23p**	**7:28p**	**7:41p**	**7:47p**	**7:58p**	**8:11p**	**8:22p**
7:40p	**7:53p**	**8:06p**	**8:21p**	**8:28p**	**8:40p**	**8:46p**	**8:56p**	**9:09p**	**9:19p**
8:40p	**8:52p**	**9:05p**	**9:20p**	**9:28p**	**9:40p**	**9:46p**	**9:56p**	**10:09p**	**10:19p**

101 | Oceanside to VA/UCSD/UTC via Highway 101

Oceanside a VA/UCSD/UTC a través de la autopista 101

Saturday & Sunday
Northbound to Oceanside

Sábado y Domingo • Dirección hacia el norte a Oceanside

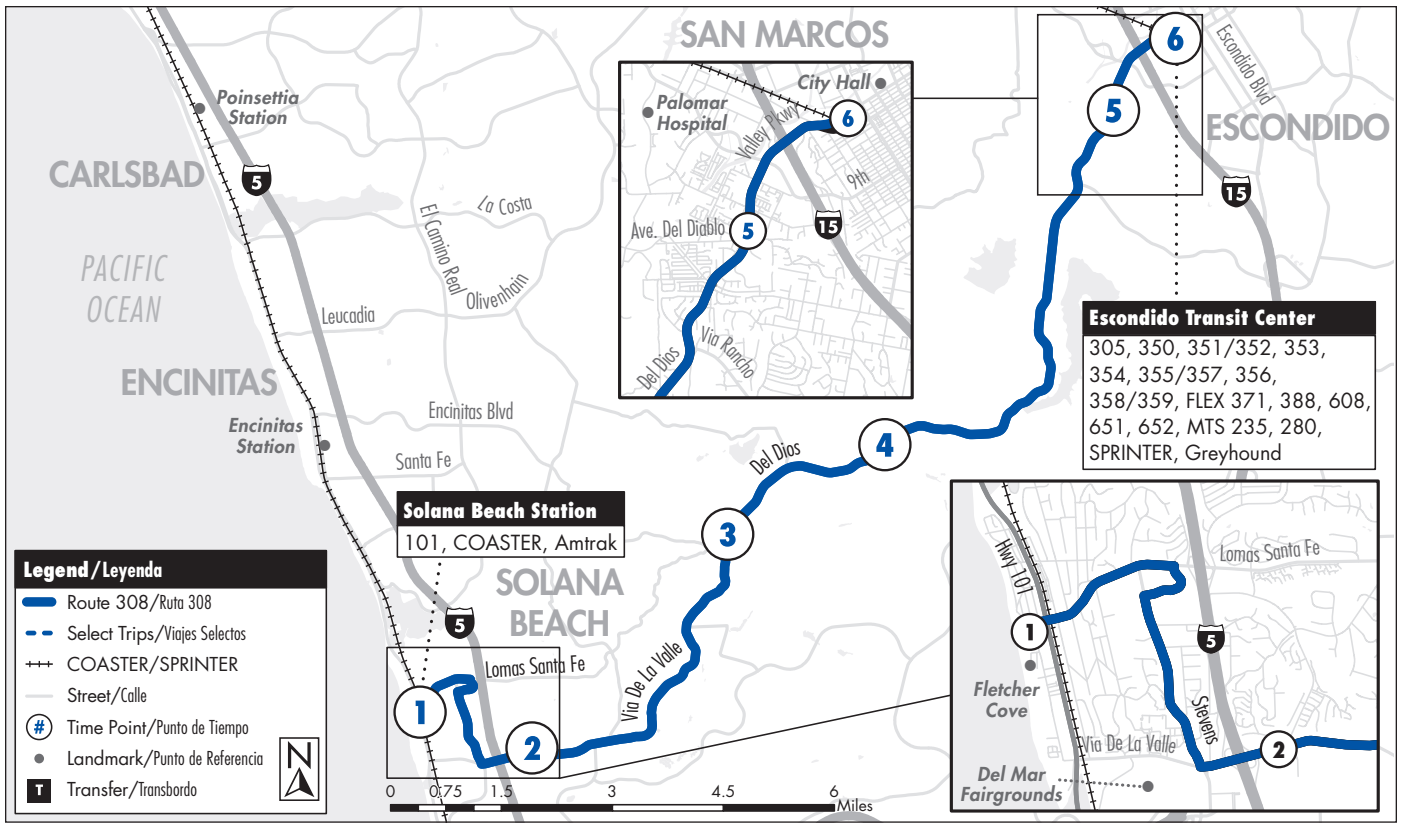
UTC	Gilman Transit Center	Torrey Pines & Scripps	Camino Del Mar & 15th St.	Highway 101 & Lomas Santa Fe Dr.	Encinitas Station **ARRIVAL**	Encinitas Station **DEPARTURE**	Carlsbad Blvd. & Poinsettia Ln.	Carlsbad Village Station	Oceanside Transit Center
9	**8**	**7**	**6**	**5**	**4**	**4**	**3**	**2**	**1**
–	–	–	–	–	–	5:44a	5:56a	6:08a	6:19a
5:47a	5:56a	6:06a	6:15a	6:23a	6:41a	6:46a	6:58a	7:10a	7:21a
6:14a	6:23a	6:33a	6:42a	6:50a	7:08a	7:13a	7:25a	7:38a	7:49a
6:42a	6:51a	7:02a	7:11a	7:19a	7:37a	7:42a	7:54a	8:07a	8:18a
7:09a	7:18a	7:29a	7:39a	7:47a	8:05a	8:10a	8:23a	8:36a	8:47a
7:35a	7:45a	7:56a	8:07a	8:15a	8:34a	8:39a	8:52a	9:05a	9:17a
8:04a	8:14a	8:25a	8:36a	8:44a	9:03a	9:08a	9:21a	9:35a	9:48a
8:32a	8:42a	8:53a	9:04a	9:12a	9:32a	9:37a	9:50a	10:04a	10:17a
9:01a	9:12a	9:23a	9:34a	9:42a	10:02a	10:07a	10:20a	10:35a	10:49a
9:30a	9:41a	9:52a	10:03a	10:11a	10:31a	10:36a	10:50a	11:05a	11:20a
9:59a	10:10a	10:21a	10:32a	10:41a	11:01a	11:06a	11:20a	11:35a	11:50a
10:30a	10:41a	10:52a	11:03a	11:12a	11:32a	11:37a	11:52a	**12:08p**	**12:23p**
10:57a	11:08a	11:20a	11:32a	11:41a	**12:01p**	**12:06p**	**12:21p**	**12:37p**	**12:53p**
11:25a	11:37a	11:49a	**12:01p**	**12:10p**	**12:30p**	**12:35p**	**12:50p**	**1:06p**	**1:23p**
11:52a	**12:04p**	**12:16p**	**12:28p**	**12:37p**	**12:58p**	**1:03p**	**1:18p**	**1:35p**	**1:53p**
12:21p	**12:33p**	**12:45p**	**12:57p**	**1:06p**	**1:27p**	**1:32p**	**1:47p**	**2:04p**	**2:23p**
12:50p	**1:02p**	**1:14p**	**1:26p**	**1:35p**	**1:56p**	**2:01p**	**2:16p**	**2:33p**	**2:53p**
1:19p	**1:31p**	**1:43p**	**1:55p**	**2:04p**	**2:25p**	**2:30p**	**2:46p**	**3:03p**	**3:23p**
1:49p	**2:01p**	**2:13p**	**2:25p**	**2:34p**	**2:55p**	**3:00p**	**3:16p**	**3:33p**	**3:53p**
2:20p	**2:32p**	**2:44p**	**2:56p**	**3:05p**	**3:25p**	**3:30p**	**3:46p**	**4:03p**	**4:23p**
2:51p	**3:03p**	**3:15p**	**3:27p**	**3:36p**	**3:56p**	**4:01p**	**4:16p**	**4:33p**	**4:53p**
3:22p	**3:34p**	**3:46p**	**3:58p**	**4:07p**	**4:27p**	**4:32p**	**4:47p**	**5:04p**	**5:24p**
3:52p	**4:04p**	**4:16p**	**4:28p**	**4:37p**	**4:57p**	**5:02p**	**5:17p**	**5:34p**	**5:53p**
4:24p	**4:36p**	**4:48p**	**5:00p**	**5:09p**	**5:29p**	**5:34p**	**5:48p**	**6:04p**	**6:22p**
4:56p	**5:08p**	**5:20p**	**5:31p**	**5:40p**	**6:00p**	**6:05p**	**6:19p**	**6:35p**	**6:50p**
5:32p	**5:44p**	**5:56p**	**6:07p**	**6:15p**	**6:33p**	**6:38p**	**6:52p**	**7:08p**	**7:23p**
6:36p	**6:48p**	**6:59p**	**7:10p**	**7:17p**	**7:35p**	**7:40p**	**7:54p**	**8:08p**	**8:23p**
7:41p	**7:53p**	**8:04p**	**8:15p**	**8:22p**	**8:38p**	**8:43p**	**8:56p**	**9:09p**	**9:23p**
8:45p	**8:56p**	**9:07p**	**9:17p**	**9:24p**	**9:40p**	**9:45p**	**9:58p**	**10:11p**	**10:23p**
9:50p	**10:01p**	**10:12p**	**10:21p**	**10:27p**	**10:43p**	**10:48p**	**11:00p**	**11:13p**	**11:23p**

308 | Solana Beach to Escondido via Del Dios Hwy.

Solana Beach a Escondido vía Del Dios Hwy.

M-F • SA • SU
L-V • SÁ • DO

Destinations/Destinos
- Del Mar Fairgrounds & Racetrack
- Lake Hodges



308 | Solana Beach to Escondido via Del Dios Hwy.

Solana Beach a Escondido vía Del Dios Hwy..

Monday - Friday Eastbound to Escondido *Lunes a Viernes • Dirección hacia el este a Escondido*					
Plaza St. & Highway 101	Via De La Valle & Flower Hill	Paseo Delicias & Via De La Valle	Del Dios Hwy. & Bing Crosby Bl.	Valley Pkwy. & Ave. Del Diablo	Escondido Transit Center
1	**2**	**3**	**4**	**5**	**6**
6:15a	6:22a	6:32a	6:36a	6:46a	6:55a
7:10a	7:19a	7:29a	7:33a	7:43a	7:55a
8:06a	8:18a	8:28a	8:32a	8:42a	8:55a
9:12a	9:21a	9:31a	9:35a	9:45a	9:58a
10:12a	10:21a	10:31a	10:35a	10:45a	10:58a
11:11a	11:21a	11:31a	11:35a	11:45a	11:58a
12:10p	**12:20p**	**12:30p**	**12:34p**	**12:44p**	**12:57p**
1:06p	**1:17p**	**1:27p**	**1:32p**	**1:42p**	**1:56p**
2:00p	**2:11p**	**2:21p**	**2:27p**	**2:40p**	**2:58p**
3:06p	**3:20p**	**3:31p**	**3:41p**	**3:59p**	**4:16p**
4:11p	**4:23p**	**4:34p**	**4:41p**	**4:58p**	**5:12p**
5:15p	**5:27p**	**5:38p**	**5:42p**	**5:52p**	**6:06p**
6:11p	**6:21p**	**6:30p**	**6:34p**	**6:44p**	**6:58p**
7:14p	**7:24p**	**7:33p**	**7:37p**	**7:46p**	**7:57p**
8:32p	**8:41p**	**8:50p**	**8:54p**	**9:03p**	**9:13p**

308 Solana Beach to Escondido via Del Dios Hwy.

Solana Beach a Escondido vía Del Dios Hwy.

Monday - Friday Westbound to Solana Beach *Lunes a Viernes • Dirección hacia el oeste a Solana Beach*					
Escondido Transit Center	Valley Pkwy. & Ave. Del Diablo	Del Dios Hwy. & Bing Crosby Bl.	Paseo Delicias & Via De La Valle	Via De La Valle & Flower Hill	Plaza St. & Highway 101
6	**5**	**4**	**3**	**2**	**1**
5:03a	5:07a	5:15a	5:19a	5:27a	5:37a
6:03a	6:08a	6:16a	6:22a	6:31a	6:45a
7:03a	7:09a	7:20a	7:29a	7:40a	7:56a
8:09a	8:15a	8:26a	8:35a	8:46a	9:01a
9:09a	9:15a	9:24a	9:28a	9:38a	9:53a
10:09a	10:15a	10:24a	10:28a	10:38a	10:53a
11:09a	11:15a	11:24a	11:28a	11:38a	11:53a
12:09p	**12:15p**	**12:24p**	**12:28p**	**12:38p**	**12:53p**
1:09p	**1:15p**	**1:24p**	**1:28p**	**1:38p**	**1:53p**
2:09p	**2:15p**	**2:24p**	**2:29p**	**2:39p**	**2:55p**
3:09p	**3:15p**	**3:24p**	**3:29p**	**3:39p**	**3:55p**
4:09p	**4:15p**	**4:24p**	**4:29p**	**4:39p**	**4:55p**
5:09p	**5:15p**	**5:24p**	**5:29p**	**5:39p**	**5:55p**
6:11p	**6:16p**	**6:25p**	**6:29p**	**6:39p**	**6:53p**
7:09p	**7:14p**	**7:23p**	**7:27p**	**7:37p**	**7:50p**

308 Solana Beach to Escondido via Del Dios Hwy.

Solana Beach a Escondido vía Del Dios Hwy..

Saturday & Sunday
Eastbound to Escondido
Sábado y Domingo • Dirección hacia el este a Escondido

Plaza St. & Highway 101	Via De La Valle & Flower Hill	Paseo Delicias & Via De La Valle	Del Dios Hwy. & Bing Crosby Bl.	Valley Pkwy. & Ave. Del Diablo	Escondido Transit Center
1	**2**	**3**	**4**	**5**	**6**
8:11a	8:21a	8:32a	8:36a	8:46a	8:56a
9:12a	9:22a	9:33a	9:37a	9:47a	9:57a
10:10a	10:21a	10:32a	10:36a	10:46a	10:56a
11:09a	11:21a	11:32a	11:36a	11:46a	11:56a
12:09p	**12:21p**	**12:32p**	**12:36p**	**12:46p**	**12:56p**
1:09p	**1:21p**	**1:32p**	**1:36p**	**1:46p**	**1:56p**
2:09p	**2:20p**	**2:32p**	**2:36p**	**2:46p**	**2:56p**
3:09p	**3:20p**	**3:32p**	**3:36p**	**3:46p**	**3:56p**
4:09p	**4:20p**	**4:32p**	**4:36p**	**4:46p**	**4:56p**
5:10p	**5:21p**	**5:32p**	**5:36p**	**5:46p**	**5:56p**
6:12p	**6:22p**	**6:32p**	**6:36p**	**6:46p**	**6:56p**
7:12p	**7:22p**	**7:32p**	**7:36p**	**7:46p**	**7:56p**
8:12p	**8:22p**	**8:32p**	**8:36p**	**8:46p**	**8:56p**

Saturday & Sunday
Westbound to Solana Beach
Sábado y Domingo • Dirección hacia el oeste a Solana Beach

Escondido Transit Center	Valley Pkwy. & Ave. Del Diablo	Del Dios Hwy. & Bing Crosby Bl.	Paseo Delicias & Via De La Valle	Via De La Valle & Flower Hill	Plaza St. & Highway 101
6	**5**	**4**	**3**	**2**	**1**
7:03a	7:10a	7:19a	7:24a	7:34a	7:43a
8:03a	8:10a	8:19a	8:24a	8:34a	8:45a
9:03a	9:10a	9:19a	9:24a	9:34a	9:45a
10:03a	10:11a	10:20a	10:24a	10:34a	10:46a
11:03a	11:12a	11:21a	11:25a	11:35a	11:47a
12:03p	**12:12p**	**12:21p**	**12:25p**	**12:35p**	**12:47p**
1:03p	**1:12p**	**1:21p**	**1:25p**	**1:35p**	**1:47p**
2:03p	**2:12p**	**2:21p**	**2:25p**	**2:35p**	**2:47p**
3:03p	**3:12p**	**3:21p**	**3:25p**	**3:35p**	**3:47p**
4:03p	**4:12p**	**4:21p**	**4:25p**	**4:34p**	**4:46p**
5:03p	**5:12p**	**5:21p**	**5:25p**	**5:34p**	**5:45p**
6:03p	**6:11p**	**6:20p**	**6:24p**	**6:33p**	**6:44p**
7:03p	**7:11p**	**7:20p**	**7:24p**	**7:33p**	**7:44p**

EFFECTIVE October 12, 2025
VÁLIDO 12 de Octubre, 2025

NORTH COUNTY TRANSIT
SAN DIEGO RAILROAD

Rider's Guide
Guía de Pasajeros

Selected PDFs:

1. COASTER - Download Schedule - NCTD Routes

COASTER Schedule

EFFECTIVE October 12, 2025 / VÁLIDO 12 de Octubre 2025

SOUTHBOUND OCEANSIDE TO SAN DIEGO		MONDAY-FRIDAY															FRI ONLY
ZONES	TRAIN SERVICE NO.	620	622	624	626	628	630	632	634	636	638	640	642	644	646	648	650
1	Oceanside DEPART	4:56a	5:56a	6:36a	7:36a	8:16a	9:16a	10:36a	11:36a	12:36p	1:36p	2:36p	3:36p	4:36p	5:36p	7:16p	9:16p
1	Carlsbad Village ↓	5:03a	6:03a	6:43a	7:43a	8:23a	9:23a	10:43a	11:43a	12:43p	1:43p	2:43p	3:43p	4:43p	5:43p	7:23p	9:23p
1	Carlsbad Poinsettia ↓	5:09a	6:09a	6:49a	7:49a	8:29a	9:29a	10:49a	11:49a	12:49p	1:49p	2:49p	3:49p	4:49p	5:49p	7:29p	9:29p
1	Encinitas ↓	5:15a	6:15a	6:55a	7:55a	8:35a	9:35a	10:55a	11:55a	12:55p	1:55p	2:55p	3:55p	4:55p	5:55p	7:35p	9:35p
1	Solana Beach ↓	5:21a	6:21a	7:01a	8:01a	8:41a	9:41a	11:01a	12:01p	1:01p	2:01p	3:01p	4:01p	5:01p	6:01p	7:41p	9:41p
2	Sorrento Valley ↓	5:30a	6:30a*	7:10a*	8:10a*	8:50a*	9:50a	11:10a	12:10p	1:10p	2:10p	3:10p	4:10p*	5:10p	6:10p	7:50p	9:50p
3	San Diego-Old Town ↓	5:51a	6:51a	7:31a	8:31a	9:11a	10:11a	11:31a	12:31p	1:31p	2:31p	3:31p	4:31p	5:31p	6:31p	8:11p	10:11p
3	San Diego-SF Depot ARRIVE	5:57a	6:57a	7:37a	8:37a	9:17a	10:17a	11:37a	12:37p	1:37p	2:37p	3:37p	4:37p	5:37p	6:37p	8:17p	10:17p

NORTHBOUND SAN DIEGO TO OCEANSIDE		MONDAY-FRIDAY															FRI ONLY
ZONES	TRAIN SERVICE NO.	621	623	625	627	629	631	633	635	637	639	641	643	645	647	649	651
1	San Diego-SF Depot DEPART	6:20a	7:40a	8:20a	9:20a	10:20a	11:20a	12:40p	1:40p	2:40p	3:40p	4:20p	5:20p	6:20p	7:40p	9:20p	10:40p
1	San Diego-Old Town ↓	6:27a	7:47a	8:27a	9:27a	10:27a	11:27a	12:47p	1:47p	2:47p	3:47p	4:27p	5:27p	6:27p	7:47p	9:27p	10:47p
2	Sorrento Valley ↓	6:49a	8:09a*	8:49a*	9:49a	10:49a	11:49a	1:09p	2:09p	3:09p	4:09p*	4:49p*	5:49p*	6:49p*	8:09p	9:49p	11:09p
3	Solana Beach ↓	6:59a	8:19a	8:59a	9:59a	10:59a	11:59a	1:19p	2:19p	3:19p	4:19p	4:59p	5:59p	6:59p	8:19p	9:59p	11:19p
3	Encinitas ↓	7:05a	8:25a	9:05a	10:05a	11:05a	12:05p	1:25p	2:25p	3:25p	4:25p	5:05p	6:05p	7:05p	8:25p	10:05p	11:25p
3	Carlsbad Poinsettia ↓	7:11a	8:31a	9:11a	10:11a	11:11a	12:11p	1:31p	2:31p	3:31p	4:31p	5:11p	6:11p	7:11p	8:31p	10:11p	11:31p
3	Carlsbad Village ↓	7:17a	8:37a	9:17a	10:17a	11:17a	12:17p	1:37p	2:37p	3:37p	4:37p	5:17p	6:17p	7:17p	8:37p	10:17p	11:37p
3	Oceanside ARRIVE	7:22a	8:42a	9:22a	10:22a	11:22a	12:22p	1:42p	2:42p	3:42p	4:42p	5:22p	6:22p	7:22p	8:42p	10:22p	11:42p

PADRES

699
Train departs 60 minutes (1 hour) after end of select games & special events with an absolute departure of 11:55 p.m.

SOUTHBOUND OCEANSIDE TO SAN DIEGO		SATURDAY & SUNDAY										SAT ONLY
ZONES	TRAIN SERVICE NO.	670	672	674	676	678	680	682	684	686	688	690
1	Oceanside DEPART	6:56a	8:16a	9:36a	10:56a	12:16p	1:36p	2:56p	4:16p	5:36p	7:16p	9:16p
1	Carlsbad Village ↓	7:03a	8:23a	9:43a	11:03a	12:23p	1:43p	3:03p	4:23p	5:43p	7:23p	9:23p
1	Carlsbad Poinsettia ↓	7:09a	8:29a	9:49a	11:09a	12:29p	1:49p	3:09p	4:29p	5:49p	7:29p	9:29p
1	Encinitas ↓	7:15a	8:35a	9:55a	11:15a	12:35p	1:55p	3:15p	4:35p	5:55p	7:35p	9:35p
1	Solana Beach ↓	7:21a	8:41a	10:01a	11:21a	12:41p	2:01p	3:21p	4:41p	6:01p	7:41p	9:41p
2	Sorrento Valley ↓	7:30a	8:50a	10:10a	11:30a	12:50p	2:10p	3:30p	4:50p	6:10p	7:50p	9:50p
3	San Diego-Old Town ↓	7:51a	9:11a	10:31a	11:51a	1:11p	2:31p	3:51p	5:11p	6:31p	8:11p	10:11p
3	San Diego-SF Depot ARRIVE	7:57a	9:17a	10:37a	11:57a	1:17p	2:37p	3:57p	5:17p	6:37p	8:17p	10:17p

NORTHBOUND SAN DIEGO TO OCEANSIDE		SATURDAY & SUNDAY										SAT ONLY
ZONES	TRAIN SERVICE NO.	671	673	675	677	679	681	683	685	687	689	691
1	San Diego-SF Depot DEPART	8:20a	9:40a	11:00a	12:20p	1:40p	3:00p	4:20p	5:40p	7:20p	8:40p	10:40p
1	San Diego-Old Town ↓	8:27a	9:47a	11:07a	12:27p	1:47p	3:07p	4:27p	5:47p	7:27p	8:47p	10:47p
2	Sorrento Valley ↓	8:49a	10:09a	11:29a	12:49p	2:09p	3:29p	4:49p	6:09p	7:49p	9:09p	11:09p
3	Solana Beach ↓	8:59a	10:19a	11:39a	12:59p	2:19p	3:39p	4:59p	6:19p	7:59p	9:19p	11:19p
3	Encinitas ↓	9:05a	10:25a	11:45a	1:05p	2:25p	3:45p	5:05p	6:25p	8:05p	9:25p	11:25p
3	Carlsbad Poinsettia ↓	9:11a	10:31a	11:51a	1:11p	2:31p	3:51p	5:11p	6:31p	8:11p	9:31p	11:31p
3	Carlsbad Village ↓	9:17a	10:37a	11:57a	1:17p	2:37p	3:57p	5:17p	6:37p	8:17p	9:37p	11:37p
3	Oceanside ARRIVE	9:22a	10:42a	12:02p	1:22p	2:42p	4:02p	5:22p	6:42p	8:22p	9:42p	11:42p

* This trip is served by COASTER Connection shuttle service.

Este viaje es atendido por medio del servicio de transporte COASTER Connection.

Zones:
COASTER one-way & round trip prices dependent on number of zones traveled.

Zonas:
Los precios en viajes de un solo trayecto y redondo de COASTER dependen del número de zonas recorridas.

COASTER 699 will depart 60 minutes (1 hour) after end of select games & special events with an absolute departure of 11:55 p.m.
Padres game times are subject to change. Visit **GoNCTD.com** for service updates.

COASTER 699 partirá 60 minutos (1 hora) después del final de juegos o eventos especiales selectos, con una hora de salida absoluta de 11:55 p.m.
Los horarios de los juegos de los Padres están sujetos a cambios. Visite GoNCTD.com para notificaciones sobre cambios.

COASTER Connection service does not operate on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.
Schedule subject to change.

El servicio de conexión de COASTER no opera en Año Nuevo, Día de los Caídos (Memorial Day), Día de la Independencia, Día del Trabajo, Día de Acción de Gracias ni en Navidad.
Los horarios están sujetos a cambios.

For holiday schedules visit GoNCTD.com/Schedules
Schedule subject to change.
Para conocer los horarios de días festivos, visite GoNCTD.com/Schedules
Los horarios están sujetos a cambios.

COASTER | AMTRAK PACIFIC SURFLINER

PLATFORMS / PLATAFORMAS

COASTER and Amtrak Pacific Surfliner platform assignments for multi-track stations

Asignaciones de plataforma para COASTER y Amtrak Pacific Surfliner para estaciones multi-pista

Oceanside Transit Center

COASTER trains scheduled to depart from Platform 3

Amtrak and Metrolink trains scheduled to depart from Platform 1 or Platform 2

Trenes COASTER programados para partir de la Plataforma 3

Trenes Amtrak y Metrolink programados para partir de la Plataforma 1 o la Plataforma 2

Carlsbad Poinsettia; Solana Beach; Sorrento Valley; Old Town**

All trains observe the following at these stations:
Southbound trains depart from Platform 1 (easternmost track)
Northbound trains depart from Platform 2 (westernmost track)

Todos los trenes observan lo siguiente en estas estaciones:
Los trenes hacia el sur salen de la Plataforma 1 (vía más oriental)
Los trenes hacia el norte salen de la Plataforma 2 (vía más occidental)

** *At Old Town, all Southbound trains depart from Platform 3 (closest to the Trolley); all Northbound trains depart from Platform 4 (closest to the parking lot). COASTER Ticket Machines are located on Platform 3.*

** *En Old Town, todos los trenes hacia el sur salen de la Plataforma 3 (la más cercana al Trolley); todos los trenes hacia el norte salen de la Plataforma 4 (la más cercana al estacionamiento). Las máquinas expendedoras de boletos de COASTER están localizadas en la Plataforma 3.*

Amtrak Pacific Surfliner®

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Tickets sold at vending machines VALID ONLY for the SAME DAY of purchase. NO REFUNDS. One-way tickets valid for 2 hours from time of purchase. Tickets and stored value may be purchased via the PRONTO app on mobile devices.
Los boletos comprados en una máquina expendedora SOLO SON VÁLIDOS para el MISMO DÍA de su compra. NO HAY REEMBOLSOS. Los boletos de un solo trayecto son válidos por 2 horas desde su compra. Boletos y Stored Value pueden comprarse a través de la aplicación de PRONTO en dispositivos móviles.

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Monday, January 5, 2026

San Diego - Bakersfield

Operated By Amtrak Chartered Motorcoach

Thruway Number	5811	5703	5713	5715	5717	5719	5801	5813	5815	5817	
Days of Operation	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Symbols**
San Diego, CA - Santa Fe Depot (SAN)	10:10p	—	—	—	—	—	—	—	—	—	●
Solana Beach, CA (SOL)	10:40p	—	—	—	—	—	—	—	—	—	●
Oceanside, CA (OSD)	11:10p	—	—	—	—	—	—	—	—	—	●
Irvine, CA (IRV)	11:55p	—	—	—	—	—	—	—	—	—	○
Santa Ana, CA (SNA)	12:15a	—	—	—	—	—	—	—	—	—	○
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	12:30a	—	—	—	—	—	—	—	—	—	●
Fullerton, CA (FUL)	12:50a	—	—	—	—	—	—	—	—	—	●
Los Angeles, CA - Union Station (LAX)	01:45a	02:45p	05:55a	07:50a	10:55a	12:55p	03:45a	05:50a	08:00a	11:05a	●
Glendale, CA (GDL)	02:00a	03:05p	—	08:10a	11:15a	01:15p	04:00a	06:10a	—	—	○
Burbank, CA (BUR)	02:15a	—	06:15a	—	—	—	04:15a	—	—	—	○
Santa Clarita-Newhall, CA (NHL)	02:40a	—	06:40a	—	—	—	04:40a	—	—	—	○
Bakersfield, CA (BFD)	04:40a	05:45p	08:40a	10:40a	01:45p	03:45p	06:40a	08:40a	10:40a	01:45p	●

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Monday, January 5, 2026

Bakersfield - San Diego

Operated By Amtrak Chartered Motorcoach

Thruway Number	5818	5710	5810	5712	5812	5714	5716	5702	5802	
Days of Operation	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Symbols**
Bakersfield, CA (BFD)	12:10a	02:45p	02:45p	04:45p	04:45p	06:45p	08:45p	12:50p	12:50p	●
Santa Clarita-Newhall, CA (NHL)	01:30a	—	—	—	—	—	—	—	—	○
Burbank, CA (BUR)	01:55a	—	—	—	—	—	—	—	—	○
Glendale, CA (GDL)	02:10a	04:55p	—	06:55p	—	08:55p	10:55p	03:00p	—	○
Los Angeles, CA - Union Station (LAX)	02:35a	05:15p	05:15p	07:15p	07:15p	09:15p	11:15p	03:20p	03:20p	●
Fullerton, CA (FUL)	03:10a	—	—	—	—	—	—	—	—	●
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	03:25a	—	—	—	—	—	—	—	—	●
Santa Ana, CA (SNA)	03:40a	—	—	—	—	—	—	—	—	○
Irvine, CA (IRV)	04:00a	—	—	—	—	—	—	—	—	○
San Juan Capistrano, CA (SNC)	04:15a	—	—	—	—	—	—	—	—	○
Oceanside, CA (OSD)	04:50a	—	—	—	—	—	—	—	—	●
Solana Beach, CA (SOL)	05:10a	—	—	—	—	—	—	—	—	●
San Diego, CA - Santa Fe Depot (SAN)	05:35a	—	—	—	—	—	—	—	—	●

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Station Symbols Legend

▲ Read Up - Read the direction of travel and stop sequence from the bottom up.

▼ Read Down - Read the direction of travel and stop sequence from the top down.

— No Scheduled Stop - Train does not stop at a this station.

☾ Overnight Train- The train stops at this location between 8:00pm - 5:00am.

● Staffed Station - The station is staffed.

○ Unstaffed Station - The station is not staffed.

Amtrak Kiosk - Self-service ticketing kiosk at the station.

Wheelchair Accessible - Station is wheelchair accessible; no barriers between station and train.

Bus - Thruway bus connections at this station.

Taxi - Taxi connections at this station.

Ferry - Ferry connections at this station.

Van - Shuttle van connections at this station.

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Pacific Surfliner

Sunday, January 4, 2026

Service Number	761	765	769	573	1765	1769	1777	581	779	587	
Route	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	
Days of Operation	Mo-Fr	Mo-Fr	Mo-Fr	Mo-Fr	Daily	Daily	Daily	Mo-Fr	Mo-Fr	Daily	
Duration	**8h 38m**	**6h 2m**	**6h 1m**	**2h 56m**	**0h 54m**	**0h 52m**	**0h 51m**	**2h 56m**	**8h 56m**	**3h 3m**	Symbols
San Diego, CA - Santa Fe Depot (SAN)	**4:01a**	**6:01a**	**8:01a**	**10:01a**	**5:36a**	**7:23a**	**11:03a**	**2:01p**	**1:01p**	**5:01p**	●
San Diego, CA - Old Town Transportation Center (OLT)	4:10a	6:10a	8:10a	10:10a	5:45a	7:32a	11:12a	2:10p	1:10p	5:10p	○
Solana Beach, CA (SOL)	4:40a	6:40a	8:40a	10:40a	6:15a	8:02a	11:41a	2:40p	1:42p	5:40p	●
Oceanside, CA (OSD)	4:57a	6:57a	8:57a	10:57a	6:30a	8:15a	11:54a	2:57p	1:57p	5:57p	●
San Clemente Pier, CA (SNP)	—	—	—	—	—	—	—	3:20p	—	6:23p	○
San Juan Capistrano, CA (SNC)	5:34a	7:34a	9:34a	11:34a	—	—	—	3:37p	2:34p	6:36p	○
Irvine, CA (IRV)	5:49a	7:49a	9:49a	11:49a	—	—	—	3:52p	2:49p	6:53p	○
Santa Ana, CA (SNA)	6:01a	8:01a	10:01a	12:01p	—	—	—	4:04p	3:01p	7:06p	○
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	6:10a	8:10a	10:10a	12:10p	—	—	—	4:13p	3:10p	7:17p	●
Fullerton, CA (FUL)	6:18a	8:18a	10:18a	12:18p	—	—	—	4:21p	3:18p	7:25p	●
Los Angeles, CA - Union Station (LAX)	7:13a	9:13a	11:13a	12:57p	—	—	—	4:57p	4:13p	8:04p	●
Glendale, CA (GDL)	7:26a	9:26a	11:26a	—	—	—	—	—	4:25p	—	○
Burbank, CA - Downtown (BBK)	7:33a	—	—	—	—	—	—	—	4:32p	—	○
Burbank, CA (BUR)	7:39a	9:36a	11:36a	—	—	—	—	—	4:38p	—	○
Van Nuys, CA (VNC)	7:47a	9:44a	11:44a	—	—	—	—	—	4:46p	—	●
Northridge, CA (NRG)	**7:55a**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**4:54p**	**—**	○

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AMTRAK

Pacific Surfliner

Sunday, January 4, 2026

Service Number	785	591	593	595	577	1785	953	1591	573	581	
Route	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	
Days of Operation	Mo-Fr	Mo-Fr	Mo-Fr	Mo-Fr	Daily	Daily	Daily	Daily	SuSa	SuSa	
Duration	**6h 11m**	**2h 56m**	**2h 56m**	**2h 56m**	**2h 56m**	**1h 1m**	**2h 46m**	**0h 54m**	**1h 23m**	**1h 20m**	Symbols
San Diego, CA - Santa Fe Depot (SAN)	**4:01p**	**7:01p**	**8:01p**	**9:01p**	**12:01p**	**3:26p**	**12:05p**	**6:55p**	**—**	**—**	●
San Diego, CA - Old Town Transportation Center (OLT)	4:10p	7:10p	8:10p	9:10p	12:10p	3:33p	12:12p	7:04p	—	—	○
Solana Beach, CA (SOL)	4:40p	7:40p	8:40p	9:40p	12:40p	4:03p	12:43p	7:34p	—	—	●
Oceanside, CA (OSD)	4:57p	7:57p	8:57p	9:57p	12:57p	4:27p	1:00p	7:49p	—	—	●
San Clemente Pier, CA (SNP)	5:20p	—	—	—	—	—	—	—	—	—	○
San Juan Capistrano, CA (SNC)	5:37p	8:34p	9:34p	10:34p	1:34p	—	1:33p	—	11:34a	3:37p	○
Irvine, CA (IRV)	5:52p	8:49p	9:49p	10:49p	1:49p	—	1:48p	—	11:49a	3:52p	○
Santa Ana, CA (SNA)	6:04p	9:01p	10:01p	11:01p	2:01p	—	1:59p	—	12:01p	4:04p	○
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	6:13p	9:10p	10:10p	11:10p	2:10p	—	2:08p	—	12:10p	4:13p	●
Fullerton, CA (FUL)	6:21p	9:18p	10:18p	11:18p	2:18p	—	2:16p	—	12:18p	4:21p	●
Los Angeles, CA - Union Station (LAX)	7:13p	9:57p	10:57p	11:57p	2:57p	—	2:51p	—	12:57p	4:57p	●
Glendale, CA (GDL)	7:26p	—	—	—	—	—	—	—	—	—	○
Burbank, CA - Downtown (BBK)	—	—	—	—	—	—	—	—	—	—	○
Burbank, CA (BUR)	7:36p	—	—	—	—	—	—	—	—	—	○
Van Nuys, CA (VNC)	7:44p	—	—	—	—	—	—	—	—	—	●
Northridge, CA (NRG)	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	○

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Pacific Surfliner

Sunday, January 4, 2026

Service Number	591	593	595	761	765	769	779	785	
Route	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	
Days of Operation	SuSa	SuSa	SuSa	SuSa	SuSa	SuSa	SuSa	SuSa	
Duration	**1h 23m**	**1h 23m**	**1h 23m**	**5h 26m**	**4h 14m**	**4h 28m**	**7h 23m**	**4h 35m**	Symbols
San Diego, CA - Santa Fe Depot (SAN)	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	●
San Diego, CA - Old Town Transportation Center (OLT)	—	—	—	—	—	—	—	—	○
Solana Beach, CA (SOL)	—	—	—	—	—	—	—	—	●
Oceanside, CA (OSD)	—	—	—	—	—	—	—	—	●
San Clemente Pier, CA (SNP)	—	—	—	—	—	—	—	—	○
San Juan Capistrano, CA (SNC)	8:34p	9:34p	10:34p	—	—	9:34a	2:34p	5:37p	○
Irvine, CA (IRV)	8:49p	9:49p	10:49p	—	7:49a	9:49a	2:49p	5:52p	○
Santa Ana, CA (SNA)	9:01p	10:01p	11:01p	—	8:01a	10:01a	3:01p	6:04p	○
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	9:10p	10:10p	11:10p	—	8:10a	10:10a	3:10p	6:13p	●
Fullerton, CA (FUL)	9:18p	10:18p	11:18p	—	8:18a	10:18a	3:18p	6:21p	●
Los Angeles, CA - Union Station (LAX)	9:57p	10:57p	11:57p	7:13a	9:13a	11:13a	4:13p	7:13p	●
Glendale, CA (GDL)	—	—	—	7:26a	9:26a	11:26a	4:25p	7:26p	○
Burbank, CA - Downtown (BBK)	—	—	—	7:33a	—	—	4:32p	—	○
Burbank, CA (BUR)	—	—	—	7:39a	9:36a	11:36a	4:38p	7:36p	○
Van Nuys, CA (VNC)	—	—	—	7:47a	9:44a	11:44a	4:46p	7:44p	●
Northridge, CA (NRG)	**—**	**—**	**—**	**7:55a**	**—**	**—**	**4:54p**	**—**	○

Pacific Surfliner

Sunday, January 4, 2026

Service Number	774	774	794	794	562	562	564	564	566	566	
Route	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	
Days of Operation	Mo-Fr	SuSa	Mo-Th	SuFrSa	Mo-Fr	SuSa	Mo-Fr	SuSa	Mo-Fr	SuSa	
Duration	**8h 53m**	**7h 13m**	**8h 44m**	**5h 32m**	**2h 54m**	**1h 1m**	**2h 54m**	**1h 14m**	**2h 57m**	**1h 14m**	Symbols
Burbank, CA - Downtown (BBK)	—	—	—	—	—	—	—	—	—	—	○♿
Glendale, CA (GDL) 🚌	11:26a	11:26a	☾ 9:36p	9:36p	—	—	—	—	—	—	○♿
Los Angeles, CA - Union Station (LAX) 🚌	12:10p	12:10p	☾ 10:10p	9:52p	6:10a	6:10a	7:10a	7:10a	8:10a	8:10a	○♿
Fullerton, CA (FUL) 🚌	12:41p	12:41p	☾ 10:41p	—	6:41a	6:41a	7:41a	7:41a	8:41a	8:41a	○♿
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA) 🚌	12:49p	12:49p	☾ 10:49p	—	6:49a	6:49a	7:49a	7:49a	8:49a	8:49a	●🍴♿
Santa Ana, CA (SNA) 🚌	1:01p	1:01p	☾ 11:01p	—	7:01a	7:01a	8:01a	8:01a	9:01a	9:01a	○♿
Irvine, CA (IRV) 🚌	1:12p	1:12p	☾ 11:12p	—	7:12a	7:11a	8:12a	8:12a	9:12a	9:12a	○♿
San Juan Capistrano, CA (SNC) 🚌	1:26p	1:24p	☾ 11:26p	—	7:26a	—	8:26a	8:24a	9:26a	9:24a	●♿
San Clemente Pier, CA (SNP)	—	—	—	—	—	—	—	—	9:38a	—	○♿
Oceanside, CA (OSD) 🚌	2:05p	—	☾ 12:05a	—	8:05a	—	9:05a	—	10:08a	—	○♿
Solana Beach, CA (SOL) 🚌	2:20p	—	☾ 12:20a	—	8:20a	—	9:20a	—	10:22a	—	○♿
San Diego, CA - Old Town Transportation Center (OLT)	2:51p	—	☾ 12:51a	—	8:51a	—	9:51a	—	10:54a	—	○♿
San Diego, CA - Santa Fe Depot (SAN) 🚌	**3:04p**	**—**	☾ **1:04a**	**—**	**9:04a**	**—**	**10:04a**	**—**	**11:07a**	**—**	●🍴♿

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Pacific Surfliner

Sunday, January 4, 2026

Service Number	572	580	580	582	586	586	770	770	784	784	
Route	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	
Days of Operation	Daily	Mo-Fr	SuSa	Daily	Mo-Fr	SuSa	Mo-Fr	SuSa	Mo-Fr	SuSa	
Duration	**2h 57m**	**2h 54m**	**1h 14m**	**2h 54m**	**2h 54m**	**1h 14m**	**6h 28m**	**4h 45m**	**6h 33m**	**4h 53m**	Symbols
Burbank, CA - Downtown (BBK)	**—**	**—**	**—**	**—**	**—**	**—**	**9:22a**	**9:22a**	**4:26p**	**4:26p**	○ ♿
Glendale, CA (GDL)	—	—	—	—	—	—	9:29a	9:29a	4:34p	4:34p	○ ♿
Los Angeles, CA - Union Station (LAX)	11:10a	3:10p	3:10p	4:10p	6:10p	6:10p	10:10a	10:10a	5:10p	5:10p	○ ♿
Fullerton, CA (FUL)	11:41a	3:41p	3:41p	4:41p	6:41p	6:41p	10:41a	10:41a	5:41p	5:41p	○ ♿
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	11:49a	3:49p	3:49p	4:49p	6:49p	6:49p	10:49a	10:49a	5:49p	5:49p	● 🍴 ♿
Santa Ana, CA (SNA)	12:01p	4:01p	4:01p	5:01p	7:01p	7:01p	11:01a	11:01a	6:01p	6:01p	○ ♿
Irvine, CA (IRV)	12:12p	4:12p	4:12p	5:09p	7:12p	7:12p	11:12a	11:12a	6:12p	6:12p	○ ♿
San Juan Capistrano, CA (SNC)	12:25p	4:26p	4:24p	5:23p	7:26p	7:24p	11:25a	11:24a	6:26p	6:24p	● ♿
San Clemente Pier, CA (SNP)	12:38p	—	—	—	—	—	11:38a	—	—	—	○ ♿
Oceanside, CA (OSD)	1:08p	5:05p	—	6:05p	8:05p	—	12:08p	—	7:05p	—	○ ♿
Solana Beach, CA (SOL)	1:23p	5:20p	—	6:20p	8:20p	—	12:23p	—	7:20p	—	○ ♿
San Diego, CA - Old Town Transportation Center (OLT)	1:54p	5:51p	—	6:51p	8:51p	—	12:54p	—	7:51p	—	○ ♿
San Diego, CA - Santa Fe Depot (SAN)	**2:07p**	**6:04p**	**—**	**7:04p**	**9:04p**	**—**	**1:07p**	**—**	**8:04p**	**—**	● 🍴 ♿

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Pacific Surfliner

Sunday, January 4, 2026

Service Number	790	790	1562	1770	1774	1784	1790	
Route	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner	
Days of Operation	Mo-Fr	SuSa	Daily	Daily	Daily	Daily	Daily	
Duration	**6h 46m**	**5h 7m**	**1h 1m**	**1h 0m**	**0h 59m**	**0h 57m**	**0h 59m**	Symbols
Burbank, CA - Downtown (BBK)	**—**	**—**	**—**	**—**	**—**	**—**	**—**	○ ♿
Glendale, CA (GDL) 🚌	7:21p	7:21p	—	—	—	—	—	○ ♿
Los Angeles, CA - Union Station (LAX) 🚌	8:10p	8:10p	—	—	—	—	—	○ ♿
Fullerton, CA (FUL) 🚌	8:41p	8:41p	—	—	—	—	—	○ ♿
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA) 🚌	8:49p	8:49p	—	—	—	—	—	● 🍴 ♿
Santa Ana, CA (SNA) 🚌	9:01p	9:01p	—	—	—	—	—	○ ♿
Irvine, CA (IRV) 🚌	9:12p	9:12p	—	—	—	—	—	○ ♿
San Juan Capistrano, CA (SNC) 🚌	9:26p	9:25p	—	—	—	—	—	● ♿
San Clemente Pier, CA (SNP)	—	—	—	—	—	—	—	○ ♿
Oceanside, CA (OSD) 🚌	10:02p	—	8:40a	12:34p	2:30p	7:28p	10:28p	○ ♿
Solana Beach, CA (SOL) 🚌	10:20p	—	8:57a	12:49p	2:45p	7:43p	10:43p	○ ♿
San Diego, CA - Old Town Transportation Center (OLT)	10:49p	—	9:28a	1:21p	3:16p	8:12p	11:14p	○ ♿
San Diego, CA - Santa Fe Depot (SAN) 🚌	**11:04p**	**—**	**9:41a**	**1:34p**	**3:29p**	**8:25p**	**11:27p**	● 🍴 ♿

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Sunday, January 4, 2026

San Diego - Bakersfield

Operated By Amtrak Chartered Motorcoach

Thruway Number	5811	5703	5713	5715	5717	5719	5801	5813	5815	5817	
Days of Operation	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Symbols**
San Diego, CA - Santa Fe Depot (SAN)	10:10p	—	—	—	—	—	—	—	—	—	●
Solana Beach, CA (SOL)	10:40p	—	—	—	—	—	—	—	—	—	●
Oceanside, CA (OSD)	11:10p	—	—	—	—	—	—	—	—	—	●
Irvine, CA (IRV)	11:55p	—	—	—	—	—	—	—	—	—	○
Santa Ana, CA (SNA)	12:15a	—	—	—	—	—	—	—	—	—	○
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	12:30a	—	—	—	—	—	—	—	—	—	●
Fullerton, CA (FUL)	12:50a	—	—	—	—	—	—	—	—	—	●
Los Angeles, CA - Union Station (LAX)	01:45a	02:45p	05:55a	07:50a	10:55a	12:55p	03:45a	05:50a	08:00a	11:05a	●
Glendale, CA (GDL)	02:00a	03:05p	—	08:10a	11:15a	01:15p	04:00a	06:10a	—	—	○
Burbank, CA (BUR)	02:15a	—	06:15a	—	—	—	04:15a	—	—	—	○
Santa Clarita-Newhall, CA (NHL)	02:40a	—	06:40a	—	—	—	04:40a	—	—	—	○
Bakersfield, CA (BFD)	04:40a	05:45p	08:40a	10:40a	01:45p	03:45p	06:40a	08:40a	10:40a	01:45p	●

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Sunday, January 4, 2026

Bakersfield - San Diego

Operated By Amtrak Chartered Motorcoach

Thruway Number	5818	5710	5810	5712	5812	5714	5716	5702	5802	
Days of Operation	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Daily**	**Symbols**
Bakersfield, CA (BFD)	12:10a	02:45p	02:45p	04:45p	04:45p	06:45p	08:45p	12:50p	12:50p	●
Santa Clarita-Newhall, CA (NHL)	01:30a	—	—	—	—	—	—	—	—	○
Burbank, CA (BUR)	01:55a	—	—	—	—	—	—	—	—	○
Glendale, CA (GDL)	02:10a	04:55p	—	06:55p	—	08:55p	10:55p	03:00p	—	○
Los Angeles, CA - Union Station (LAX)	02:35a	05:15p	05:15p	07:15p	07:15p	09:15p	11:15p	03:20p	03:20p	●
Fullerton, CA (FUL)	03:10a	—	—	—	—	—	—	—	—	●
Anaheim, CA - Regional Trans.Intermodal Ctr. (ANA)	03:25a	—	—	—	—	—	—	—	—	●
Santa Ana, CA (SNA)	03:40a	—	—	—	—	—	—	—	—	○
Irvine, CA (IRV)	04:00a	—	—	—	—	—	—	—	—	○
San Juan Capistrano, CA (SNC)	04:15a	—	—	—	—	—	—	—	—	○
Oceanside, CA (OSD)	04:50a	—	—	—	—	—	—	—	—	●
Solana Beach, CA (SOL)	05:10a	—	—	—	—	—	—	—	—	●
San Diego, CA - Santa Fe Depot (SAN)	05:35a	—	—	—	—	—	—	—	—	●

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Station Symbols Legend

▲ Read Up - Read the direction of travel and stop sequence from the bottom up.

▼ Read Down - Read the direction of travel and stop sequence from the top down.

— No Scheduled Stop - Train does not stop at a this station.

☾ Overnight Train- The train stops at this location between 8:00pm - 5:00am.

● Staffed Station - The station is staffed.

○ Unstaffed Station - The station is not staffed.

Amtrak Kiosk - Self-service ticketing kiosk at the station.

Wheelchair Accessible - Station is wheelchair accessible; no barriers between station and train.

Bus - Thruway bus connections at this station.

Taxi - Taxi connections at this station.

Ferry - Ferry connections at this station.

Van - Shuttle van connections at this station.

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APPENDIX B

INTERSECTION COUNT SHEETS

Intersection Turning Movement - Peak Hour Vehicle Count

Location:	#01	File Name:	ITM-25-055-01
Intersection:	Jimmy Durante Boulevard & Stable Gate Driveway	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing

AM	Jimmy Durante Boulevard Southbound			- Westbound			Jimmy Durante Boulevard Northbound			Stable Gate Driveway Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	55	0	0	0	0	0	42	0	0	0	0	97
7:15	0	65	0	0	0	0	0	41	0	0	0	0	106
7:30	0	68	0	0	0	0	0	57	0	0	0	0	125
7:45	0	79	0	0	0	0	0	89	0	0	0	0	168
8:00	0	98	1	0	0	0	0	67	0	0	0	0	166
8:15	0	105	0	0	0	0	0	67	0	0	0	1	173
8:30	0	102	0	0	0	0	0	63	0	0	0	0	165
8:45	0	103	2	0	0	0	0	83	0	0	0	1	189
Total	0	675	3	0	0	0	0	509	0	0	0	2	1189
Approach%	-	99.6	0.4	-	-	-	-	100.0	-	-	-	100.0	
Total%	-	56.8	0.3	-	-	-	-	42.8	-	-	-	0.2	

AM Intersection Peak Hour: **08:00 to 09:00**

Volume	-	408	3	-	-	-	-	280	-	-	-	2	693
Approach%	-	99.3	0.7	-	-	-	-	100.0	-	-	-	100.0	
Total%	-	58.9	0.4	-	-	-	-	40.4	-	-	-	0.3	
PHF			0.98			#DIV/0!			0.84			0.50	0.92

PM	Jimmy Durante Boulevard Southbound			- Westbound			Jimmy Durante Boulevard Northbound			Stable Gate Driveway Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	0	76	0	0	0	0	0	207	0	0	0	1	284
16:15	0	131	0	0	0	0	0	207	1	0	0	0	339
16:30	0	112	2	0	0	0	0	214	0	0	0	0	328
16:45	0	122	0	0	0	0	0	175	0	1	0	1	299
17:00	0	127	0	0	0	0	0	205	0	0	0	0	332
17:15	0	136	0	0	0	0	0	209	0	0	0	0	345
17:30	0	135	0	0	0	0	0	180	0	0	0	0	315
17:45	0	167	0	0	0	0	0	166	0	0	0	0	333
Total	0	1006	2	0	0	0	0	1563	1	1	0	2	2575
Approach%	-	99.8	0.2	-	-	-	-	99.9	0.1	33.3	-	66.7	
Total%	-	39.1	0.1	-	-	-	-	60.7	0.0	0.0	-	0.1	

PM Intersection Peak Hour: **17:00 to 18:00**

Volume	-	565	-	-	-	-	-	760	-	-	-	-	1,325
Approach%	-	100.0	-	-	-	-	-	100.0	-	-	-	-	
Total%	-	42.6	-	-	-	-	-	57.4	-	-	-	-	
PHF			0.85			#DIV/0!			0.91			#DIV/0!	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count

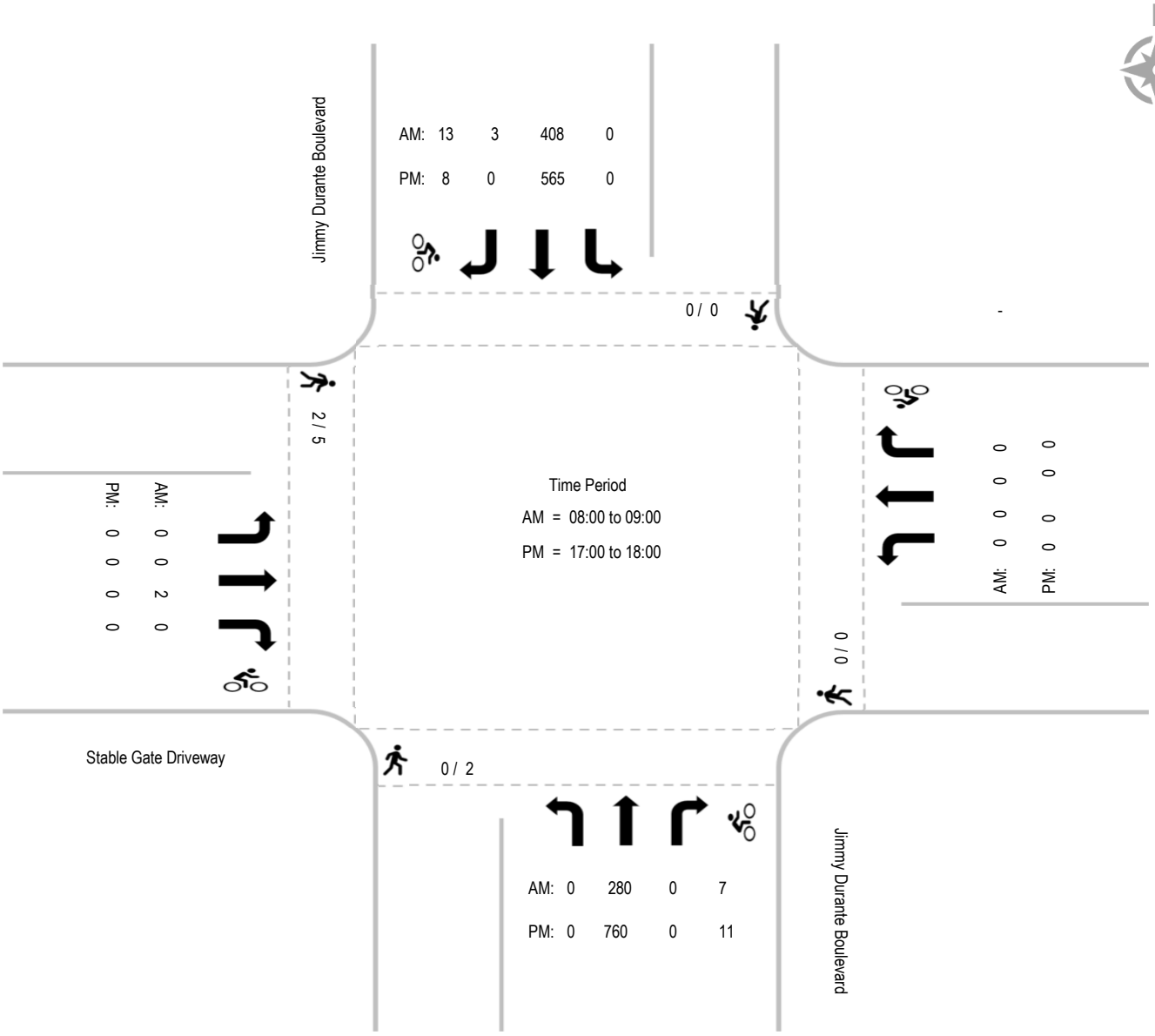
Location:	#01	File Name:	ITM-25-055-01
Intersection:	Jimmy Durante Boulevard & Stable Gate Driveway	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing

AM	Jimmy Durante Boulevard Southbound				- Westbound				Jimmy Durante Boulevard Northbound				Stable Gate Driveway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
7:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:45	0	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0	0	7
8:00	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	1	2
Ped Total	0				0				0				2				2	
Bike Total		0	13	0		0	0	0		0	7	0		0	0	0		20

PM	Jimmy Durante Boulevard Southbound				- Westbound				Jimmy Durante Boulevard Northbound				Stable Gate Driveway Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
16:15	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
16:30	0	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	6
16:45	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1
17:00	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
17:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
17:45	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	0	2	3
Ped Total	0				0				2				5				7	
Bike Total		0	8	0		0	0	0		0	11	0		0	0	0		19

Intersection Turning Movement - Peak Hour Summary

Location:	#01	File Name:	ITM-25-055-01
Intersection:	Jimmy Durante Boulevard & Stable Gate Driveway	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing



Intersection Turning Movement - Peak Hour Vehicle Count

Location:	#02	File Name:	ITM-25-055-02
Intersection:	Jimmy Durante Boulevard & Turf Road	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing

AM	Jimmy Durante Boulevard Southbound			Turf Road Westbound			Jimmy Durante Boulevard Northbound			- Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	50	0	0	0	1	0	35	0	0	0	0	86
7:15	4	50	0	0	0	1	0	35	0	0	0	0	90
7:30	3	57	0	0	0	1	0	48	0	0	0	0	109
7:45	10	52	0	1	0	1	0	82	3	0	0	0	149
8:00	9	82	0	0	0	2	0	57	5	0	0	0	155
8:15	8	84	0	0	0	1	0	61	0	0	0	0	154
8:30	18	80	0	2	0	6	0	53	0	0	0	0	159
8:45	13	80	0	0	0	6	0	69	2	0	0	0	170
Total	65	535	0	3	0	19	0	440	10	0	0	0	1072
Approach%	10.8	89.2	-	13.6	-	86.4	-	97.8	2.2	-	-	-	
Total%	6.1	49.9	-	0.3	-	1.8	-	41.0	0.9	-	-	-	

AM Intersection Peak Hour: **08:00 to 09:00**

Volume	48	326	-	2	-	15	-	240	7	-	-	-	638
Approach%	12.8	87.2	-	11.8	-	88.2	-	97.2	2.8	-	-	-	
Total%	7.5	51.1	-	0.3	-	2.4	-	37.6	1.1	-	-	-	
PHF			0.95			0.53			0.87			#DIV/0!	0.94

PM	Jimmy Durante Boulevard Southbound			Turf Road Westbound			Jimmy Durante Boulevard Northbound			- Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	20	49	0	0	0	26	0	181	3	0	0	0	279
16:15	36	74	0	2	0	20	0	177	6	0	0	0	315
16:30	22	79	0	6	0	43	0	140	2	0	0	0	292
16:45	31	88	0	2	0	17	0	122	6	0	0	0	266
17:00	54	75	0	1	0	34	0	150	4	0	0	0	318
17:15	36	82	0	1	0	63	0	135	4	0	0	0	321
17:30	29	84	0	0	0	23	0	116	3	0	0	0	255
17:45	51	95	0	2	0	30	0	107	6	0	0	0	291
Total	279	626	0	14	0	256	0	1128	34	0	0	0	2337
Approach%	30.8	69.2	-	5.2	-	94.8	-	97.1	2.9	-	-	-	
Total%	11.9	26.8	-	0.6	-	11.0	-	48.3	1.5	-	-	-	

PM Intersection Peak Hour: **16:30 to 17:30**

Volume	143	324	-	10	-	157	-	547	16	-	-	-	1,197
Approach%	30.6	69.4	-	6.0	-	94.0	-	97.2	2.8	-	-	-	
Total%	11.9	27.1	-	0.8	-	13.1	-	45.7	1.3	-	-	-	
PHF			0.91			0.65			0.91			#DIV/0!	0.93

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Intersection Turning Movement - Bicycle & Pedestrian Count

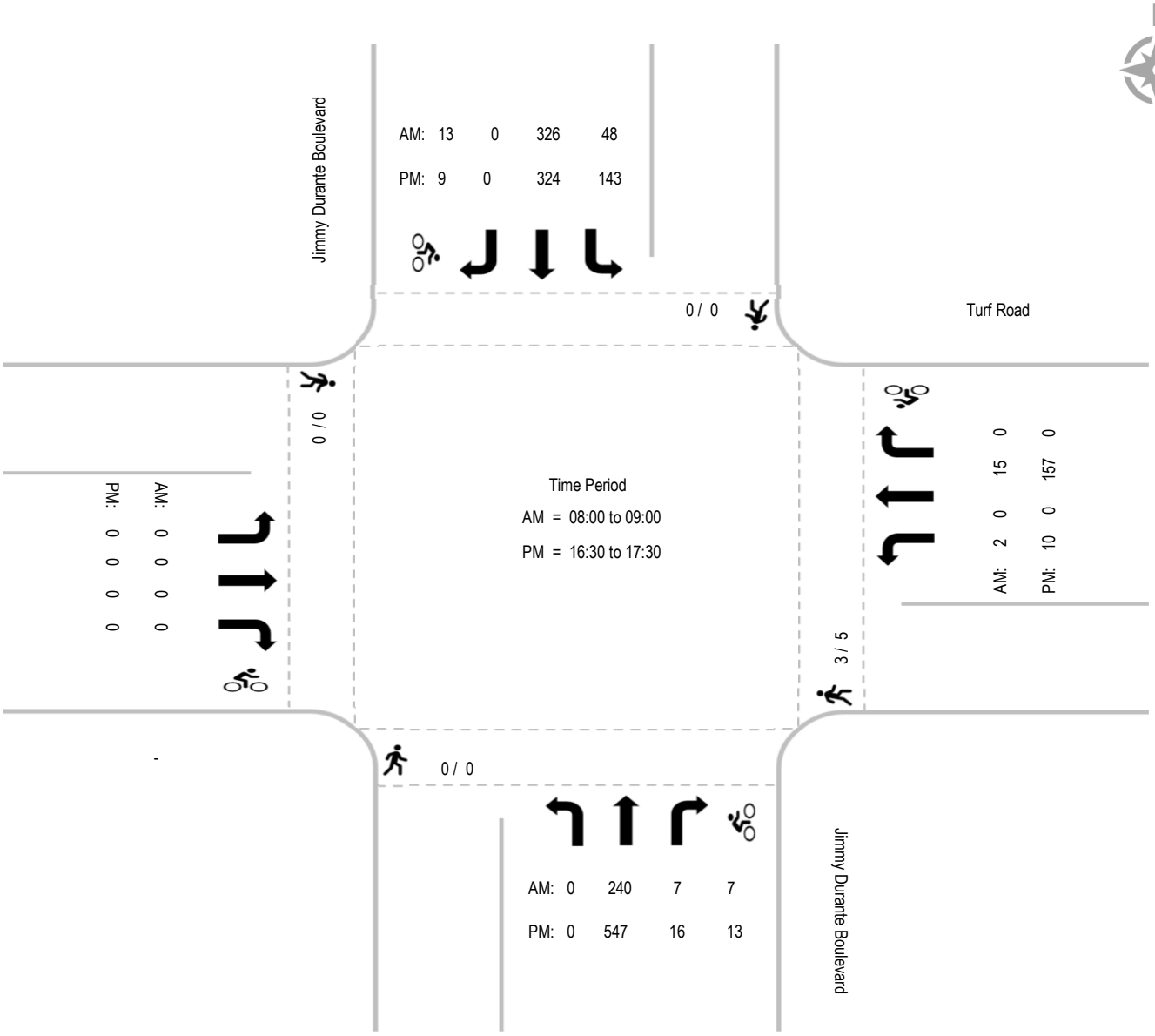
Location:	#02	File Name:	ITM-25-055-02
Intersection:	Jimmy Durante Boulevard & Turf Road	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing

AM	Jimmy Durante Boulevard Southbound				Turf Road Westbound				Jimmy Durante Boulevard Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	1
7:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:45	0	0	3	0	1	0	0	0	0	0	4	0	0	0	0	0	1	7
8:00	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	2
Ped Total	0				3				0				0				3	
Bike Total		0	13	0		0	0	0		0	7	0		0	0	0		20

PM	Jimmy Durante Boulevard Southbound				Turf Road Westbound				Jimmy Durante Boulevard Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
16:15	0	0	1	0	3	0	0	0	0	0	2	0	0	0	0	0	3	3
16:30	0	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0	0	7
16:45	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
17:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
17:30	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
17:45	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
Ped Total	0				5				0				0				5	
Bike Total		0	9	0		0	0	0		0	13	0		0	0	0		22

Intersection Turning Movement - Peak Hour Summary

Location:	#02	File Name:	ITM-25-055-02
Intersection:	Jimmy Durante Boulevard & Turf Road	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing



Intersection Turning Movement - Peak Hour Vehicle Count

Location:	#03	File Name:	ITM-25-055-03
Intersection:	Jimmy Durante Boulevard & Del Mar Fairgrounds South Entrance	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing

AM	Jimmy Durante Boulevard Southbound			- Westbound			Jimmy Durante Boulevard Northbound			Del Mar Fair So. Entrance Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	49	1	0	0	0	0	31	0	1	0	0	82
7:15	0	54	0	0	0	0	0	31	0	0	0	0	85
7:30	0	48	2	0	0	0	0	47	0	0	0	0	97
7:45	0	57	0	0	0	0	0	87	0	1	0	0	145
8:00	0	78	1	0	0	0	0	51	0	0	0	0	130
8:15	0	84	1	0	0	0	0	58	0	0	0	0	143
8:30	0	76	4	0	0	0	0	48	0	0	0	0	128
8:45	0	85	1	0	0	0	0	66	0	0	0	0	152
Total	0	531	10	0	0	0	0	419	0	2	0	0	962
Approach%	-	98.2	1.8	-	-	-	-	100.0	-	100.0	-	-	
Total%	-	55.2	1.0	-	-	-	-	43.6	-	0.2	-	-	

AM Intersection Peak Hour: **08:00 to 09:00**

Volume	-	323	7	-	-	-	-	223	-	-	-	-	553
Approach%	-	97.9	2.1	-	-	-	-	100.0	-	-	-	-	
Total%	-	58.4	1.3	-	-	-	-	40.3	-	-	-	-	
PHF			0.96			#DIV/0!			0.84			#DIV/0!	0.91

PM	Jimmy Durante Boulevard Southbound			- Westbound			Jimmy Durante Boulevard Northbound			Del Mar Fair So. Entrance Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	0	58	1	0	0	0	0	172	0	1	0	0	232
16:15	0	71	1	0	0	0	0	172	0	0	0	2	246
16:30	0	81	0	0	0	0	0	150	0	1	0	1	233
16:45	0	81	0	0	0	0	0	146	0	1	0	0	228
17:00	0	69	0	0	0	0	0	157	0	0	0	0	226
17:15	0	70	0	0	0	0	0	138	0	0	0	0	208
17:30	0	79	0	0	0	0	1	127	0	1	0	1	209
17:45	0	72	3	0	0	0	4	120	0	6	0	2	207
Total	0	581	5	0	0	0	5	1182	0	10	0	6	1789
Approach%	-	99.1	0.9	-	-	-	0.4	99.6	-	62.5	-	37.5	
Total%	-	32.5	0.3	-	-	-	0.3	66.1	-	0.6	-	0.3	

PM Intersection Peak Hour: **16:00 to 17:00**

Volume	-	291	2	-	-	-	-	640	-	3	-	3	939
Approach%	-	99.3	0.7	-	-	-	-	100.0	-	50.0	-	50.0	
Total%	-	31.0	0.2	-	-	-	-	68.2	-	0.3	-	0.3	
PHF			0.90			#DIV/0!			0.93			0.75	0.95

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Intersection Turning Movement - Bicycle & Pedestrian Count

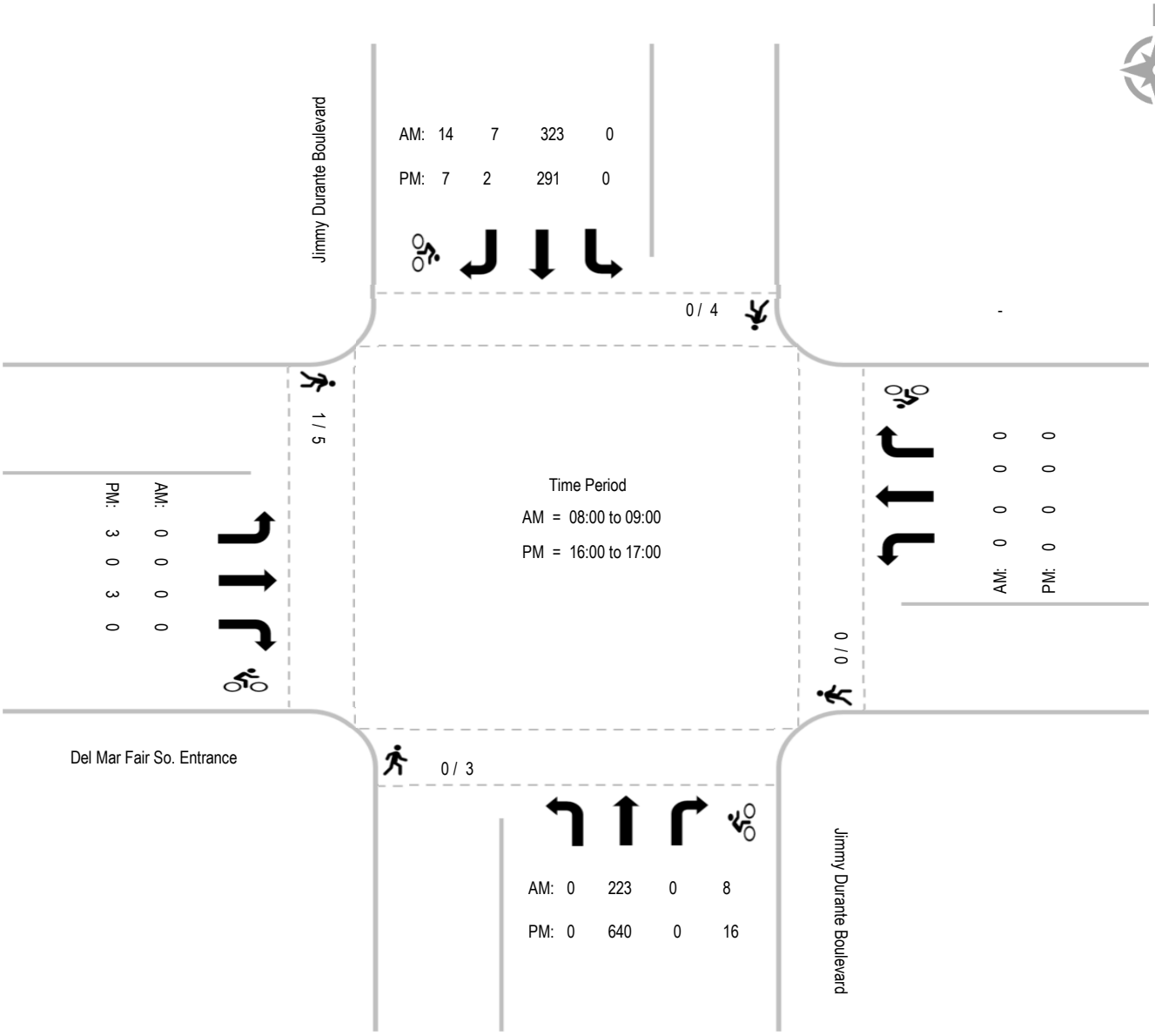
Location:	#03	File Name:	ITM-25-055-03
Intersection:	Jimmy Durante Boulevard & Del Mar Fairgrounds South Entrance	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing

AM	Jimmy Durante Boulevard Southbound				- Westbound				Jimmy Durante Boulevard Northbound				Del Mar Fair So. Entrance Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
7:45	0	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0	0	7
8:00	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45	0	0	2	0	0	0	0	0	0	0	2	0	1	0	0	0	1	4
Ped Total	0				0				0				1				1	
Bike Total		0	14	0		0	0	0		0	8	0		0	0	0		22

PM	Jimmy Durante Boulevard Southbound				- Westbound				Jimmy Durante Boulevard Northbound				Del Mar Fair So. Entrance Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	3	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3	3
16:15	0	0	2	0	0	0	0	0	0	0	7	0	0	0	0	0	0	9
16:30	0	0	1	0	0	0	0	0	0	0	3	0	1	0	0	0	1	4
16:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
17:00	0	0	1	0	0	0	0	0	2	0	1	0	0	0	0	0	2	2
17:15	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1
17:30	0	0	1	0	0	0	0	0	0	0	1	0	3	0	0	0	3	2
17:45	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	1
Ped Total	4				0				3				5				12	
Bike Total		0	7	0		0	0	0		0	16	0		0	0	0		23

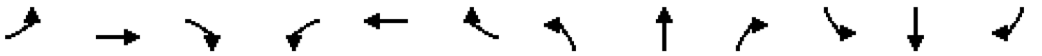
Intersection Turning Movement - Peak Hour Summary

Location:	#03	File Name:	ITM-25-055-03
Intersection:	Jimmy Durante Boulevard & Del Mar Fairgrounds South Entrance	Project:	LLG Ref. 3-25-4115
Date of Count:	Wednesday, October 01, 2025		Del Mar Affordable Housing



APPENDIX C

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS - EXISTING



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	86	19	125	119	222	15	100	119	184	188	5
Future Volume (veh/h)	3	86	19	125	119	222	15	100	119	184	188	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	126	28	160	153	285	16	110	131	211	216	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	418	91	532	535	440	28	810	341	277	1296	36
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.23	0.23	0.16	0.37	0.37
Sat Flow, veh/h	12	1461	317	1224	1870	1538	1781	3554	1494	1781	3527	98
Grp Volume(v), veh/h	158	0	0	160	153	285	16	110	131	211	108	114
Grp Sat Flow(s),veh/h/ln	1790	0	0	1224	1870	1538	1781	1777	1494	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.2	8.1	0.4	1.2	3.7	5.6	2.0	2.1
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.6	3.2	8.1	0.4	1.2	3.7	5.6	2.0	2.1
Prop In Lane	0.03		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	586	0	0	532	535	440	28	810	341	277	653	679
V/C Ratio(X)	0.27	0.00	0.00	0.30	0.29	0.65	0.56	0.14	0.38	0.76	0.17	0.17
Avail Cap(c_a), veh/h	1222	0	0	974	1210	995	230	1798	756	948	1616	1680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	0.0	13.9	13.8	15.5	24.2	15.3	16.2	20.1	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.6	16.3	0.1	0.7	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.2	1.1	2.5	0.3	0.4	1.1	2.3	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	0.0	14.2	14.1	17.1	40.5	15.3	16.9	24.4	10.7	10.7
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		158			598			257			433	
Approach Delay, s/veh		14.1			15.6			17.7			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.3	17.2		20.1	5.4	24.1		20.1				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.6	5.7		5.4	2.4	4.1		10.1				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.2		2.3				

Intersection Summary		
HCM 7th Control Delay, s/veh		16.3
HCM 7th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	458	16	330	616	366	33	68	206	555	78	59
Future Volume (veh/h)	42	458	16	330	616	366	33	68	206	555	78	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	487	17	388	725	431	42	87	0	694	98	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	1357	47	434	1021	604	175	183		748	405	
Arrive On Green	0.03	0.39	0.39	0.21	0.81	0.81	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3500	122	3456	2113	1251	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	45	247	257	388	609	547	42	87	0	694	98	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.5	13.8	13.9	15.3	21.7	22.0	3.0	6.2	0.0	27.6	6.1	0.0
Cycle Q Clear(g_c), s	3.5	13.8	13.9	15.3	21.7	22.0	3.0	6.2	0.0	27.6	6.1	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	58	689	715	434	858	767	175	183		748	405	
V/C Ratio(X)	0.78	0.36	0.36	0.89	0.71	0.71	0.24	0.47		0.93	0.24	
Avail Cap(c_a), veh/h	65	689	715	479	858	767	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	30.5	30.5	54.4	9.1	9.1	58.3	59.7	0.0	53.8	45.4	0.0
Incr Delay (d2), s/veh	40.1	1.5	1.4	15.3	2.3	2.6	0.7	1.9	0.0	17.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	6.2	6.4	6.9	4.9	4.4	1.4	3.0	0.0	13.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.4	31.9	31.9	69.7	11.4	11.7	59.0	61.6	0.0	70.9	45.7	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		549			1544			129			792	
Approach Delay, s/veh		38.1			26.2			60.8			67.8	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	23.8	60.5		36.2	10.5	73.8		19.5
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0
Max Q Clear Time (g_c+I1), s	17.3	15.9		29.6	5.5	24.0		8.2
Green Ext Time (p_c), s	0.3	2.6		0.6	0.0	8.2		0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	40.8
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	547	691	0	1087	422	0	0	0	238	0	309
Future Volume (veh/h)	0	547	691	0	1087	422	0	0	0	238	0	309
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	651	0	0	1264	0				259	0	336
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	651	0	0	1264	0				259	0	336
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	16.5	0.0	0.0	0.0	0.0				17.4	0.0	12.1
Cycle Q Clear(g_c), s	0.0	16.5	0.0	0.0	0.0	0.0				17.4	0.0	12.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.28		0.00	0.55					0.54	0.00	0.39
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.69	0.00	0.00	0.78	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.6	0.0	0.0	0.0	0.0				43.6	0.0	41.6
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				4.2	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.4	0.0	0.0	0.2	0.0				8.3	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	18.8	0.0	0.0	0.7	0.0				47.8	0.0	43.0
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		651			1264						595	
Approach Delay, s/veh		18.8			0.7						45.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	18.5	19.4	2.0
Green Ext Time (p_c), s	4.8	2.1	12.0

Intersection Summary	
HCM 7th Control Delay, s/veh	15.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	537	229	0	869	373	660	0	501	0	0	0
Future Volume (veh/h)	0	537	229	0	869	373	660	0	501	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	590	0	0	966	0	887	0	363			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	590	0	0	966	0	887	0	363			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.4	0.0	0.0	28.7	0.0	24.6	0.0	22.2			
Cycle Q Clear(g_c), s	0.0	3.4	0.0	0.0	28.7	0.0	24.6	0.0	22.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.37		0.00	0.60		0.53	0.00	0.49			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.0	0.0	26.1	0.0	25.5			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.7	0.0	1.2	0.0	2.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	12.2	0.0	10.7	0.0	8.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	30.7	0.0	27.3	0.0	27.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		590			966			1250				
Approach Delay, s/veh		4.6			30.7			27.4				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.4	30.7	26.6
Green Ext Time (p_c), s	4.2	7.2	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	23.8
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	52	282	403
Demand Flow Rate, veh/h	12	53	287	411
Vehicles Circulating, veh/h	413	274	41	18
Vehicles Exiting, veh/h	16	54	384	309
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.6	5.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	53	287	411
Cap Entry Lane, veh/h	906	1043	1323	1355
Entry HV Adj Factor	1.000	0.981	0.982	0.980
Flow Entry, veh/h	12	52	282	403
Cap Entry, veh/h	904	1022	1297	1326
V/C Ratio	0.013	0.051	0.217	0.304
Control Delay, s/veh	4.1	4.0	4.6	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	280	408	3
Future Vol, veh/h	0	2	0	280	408	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	304	443	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	223	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	664	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	664	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.44	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	664	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	223	323	7
Future Vol, veh/h	0	0	0	223	323	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	242	351	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	593	351	359	0	-	0
Stage 1	351	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	468	692	1200	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	468	692	1200	-	-	-
Mov Cap-2 Maneuver	468	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1200	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

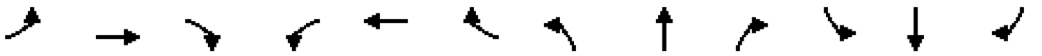
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	240	7	48	326
Future Vol, veh/h	2	15	240	7	48	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	261	8	52	354

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	546	134	0	0	268	0
Stage 1	265	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	468	890	-	-	1292	-
Stage 1	756	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	447	890	-	-	1292	-
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.46	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	826	462	-
HCM Lane V/C Ratio	-	-	0.022	0.04	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	94	14	179	91	287	31	372	111	270	192	16
Future Volume (veh/h)	8	94	14	179	91	287	31	372	111	270	192	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	124	18	206	105	330	34	413	123	278	198	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	455	63	532	558	459	52	759	318	347	1258	101
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.19	0.38	0.38
Sat Flow, veh/h	45	1527	210	1237	1870	1539	1781	3554	1490	1781	3320	265
Grp Volume(v), veh/h	153	0	0	206	105	330	34	413	123	278	105	109
Grp Sat Flow(s),veh/h/ln	1781	0	0	1237	1870	1539	1781	1777	1490	1781	1777	1809
Q Serve(g_s), s	0.0	0.0	0.0	2.4	2.3	10.7	1.1	5.8	4.0	8.3	2.2	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.0	2.3	10.7	1.1	5.8	4.0	8.3	2.2	2.2
Prop In Lane	0.07		0.12	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	600	0	0	532	558	459	52	759	318	347	673	685
V/C Ratio(X)	0.25	0.00	0.00	0.39	0.19	0.72	0.65	0.54	0.39	0.80	0.16	0.16
Avail Cap(c_a), veh/h	1072	0	0	874	1074	884	204	1532	643	873	1434	1460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	0.0	0.0	15.7	14.6	17.5	26.8	19.6	18.8	21.5	11.5	11.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.1	12.8	0.6	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.8	0.9	3.4	0.6	2.2	1.3	3.4	0.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.2	0.0	0.0	16.1	14.7	19.6	39.6	20.2	19.6	25.8	11.6	11.6
LnGrp LOS	B			B	B	B	D	C	B	C	B	B
Approach Vol, veh/h		153			641			570			492	
Approach Delay, s/veh		15.2			17.7			21.2			19.6	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.5	17.8		22.6	6.2	27.1		22.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.3	7.8		5.6	3.1	4.2		12.7				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		19.1	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	498	32	315	505	318	52	133	614	386	96	42
Future Volume (veh/h)	51	498	32	315	505	318	52	133	614	386	96	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	553	36	328	526	331	56	143	0	482	120	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1455	95	378	1032	648	206	217		596	322	
Arrive On Green	0.04	0.43	0.43	0.18	0.84	0.84	0.12	0.12	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1781	3382	220	3456	2061	1294	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	57	290	299	328	453	404	56	143	0	482	120	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1824	1728	1777	1579	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.4	15.6	15.6	12.9	10.2	10.2	4.0	10.2	0.0	18.8	7.9	0.0
Cycle Q Clear(g_c), s	4.4	15.6	15.6	12.9	10.2	10.2	4.0	10.2	0.0	18.8	7.9	0.0
Prop In Lane	1.00		0.12	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	73	764	785	378	890	790	206	217		596	322	
V/C Ratio(X)	0.78	0.38	0.38	0.87	0.51	0.51	0.27	0.66		0.81	0.37	
Avail Cap(c_a), veh/h	103	764	785	464	890	790	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.5	27.2	27.2	56.2	6.6	6.6	56.5	59.2	0.0	55.7	51.2	0.0
Incr Delay (d2), s/veh	21.4	1.4	1.4	12.3	0.4	0.5	0.7	3.4	0.0	5.0	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	6.8	7.0	5.8	2.7	2.4	1.8	5.0	0.0	8.6	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.9	28.6	28.6	68.5	7.0	7.0	57.2	62.7	0.0	60.8	52.0	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		646			1185			199			602	
Approach Delay, s/veh		33.8			24.0			61.1			59.0	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.5	66.4		30.0	11.6	76.3		22.0
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	14.9	17.6		20.8	6.4	12.2		12.2
Green Ext Time (p_c), s	0.4	3.1		1.8	0.0	5.8		0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	37.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	976	581	0	887	375	0	0	0	306	0	313
Future Volume (veh/h)	0	976	581	0	887	375	0	0	0	306	0	313
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1084	0	0	986	0				352	0	360
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1084	0	0	986	0				352	0	360
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	19.5	0.0	0.0	0.0	0.0				21.7	0.0	11.3
Cycle Q Clear(g_c), s	0.0	19.5	0.0	0.0	0.0	0.0				21.7	0.0	11.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.56		0.00	0.51					0.53	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.65	0.00	0.00	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.2	0.0	0.0	0.0	0.0				34.5	0.0	31.3
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.8	0.0				3.1	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.0	0.0	0.2	0.0				10.0	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.0	0.0	0.0	0.8	0.0				37.6	0.0	31.9
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1084			986						712	
Approach Delay, s/veh		12.0			0.8						34.7	
Approach LOS		B			A						C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	21.5	23.7	2.0
Green Ext Time (p_c), s	9.6	2.7	8.0

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	782	503	0	805	447	437	0	403	0	0	0
Future Volume (veh/h)	0	782	503	0	805	447	437	0	403	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	850	0	0	885	0	632	0	302			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	850	0	0	885	0	632	0	302			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	21.9	0.0	18.4	0.0	20.2			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	21.9	0.0	18.4	0.0	20.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.45		0.00	0.47		0.45	0.00	0.49			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.7	0.0	31.4	0.0	32.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.8	0.0	1.1	0.0	2.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	8.9	0.0	8.2	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.6	0.0	0.0	21.5	0.0	32.5	0.0	34.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		850			885			934				
Approach Delay, s/veh		0.6			21.5			33.2				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	23.9	22.2
Green Ext Time (p_c), s	6.8	6.8	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	76	819	314
Demand Flow Rate, veh/h	21	77	836	321
Vehicles Circulating, veh/h	328	814	47	17
Vehicles Exiting, veh/h	10	69	302	874
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	7.6	10.7	4.7
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	77	836	321
Cap Entry Lane, veh/h	988	602	1315	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	76	819	314
Cap Entry, veh/h	984	593	1287	1326
V/C Ratio	0.021	0.128	0.636	0.237
Control Delay, s/veh	3.8	7.6	10.7	4.7
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	760	565	0
Future Vol, veh/h	0	0	0	760	565	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	826	614	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	307	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	588	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	588	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	640	291	2
Future Vol, veh/h	3	3	0	640	291	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	696	316	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1012	316	-	0	-	0
Stage 1	316	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	265	724	0	-	-	-
Stage 1	739	-	0	-	-	-
Stage 2	495	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	265	724	-	-	-	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.43	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	388	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	157	547	16	143	324
Future Vol, veh/h	10	157	547	16	143	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	171	595	17	155	352

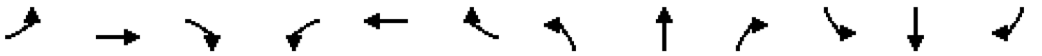
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1090	306	0	0	612	0
Stage 1	603	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	210	690	-	-	963	-
Stage 1	509	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	172	690	-	-	963	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	479	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	12.82	0	3.52
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	869	-
HCM Lane V/C Ratio	-	-	0.283	0.161	-
HCM Control Delay (s/veh)	-	-	12.8	9.5	0.9
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

APPENDIX D

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING + PROJECT (SITE 1 & SITE 2)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	86	19	126	119	224	15	100	119	185	188	5
Future Volume (veh/h)	3	86	19	126	119	224	15	100	119	185	188	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	126	28	162	153	287	16	110	131	213	216	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	419	91	533	536	441	28	808	339	279	1298	36
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.23	0.23	0.16	0.37	0.37
Sat Flow, veh/h	12	1461	317	1224	1870	1538	1781	3554	1494	1781	3527	98
Grp Volume(v), veh/h	158	0	0	162	153	287	16	110	131	213	108	114
Grp Sat Flow(s),veh/h/ln	1790	0	0	1224	1870	1538	1781	1777	1494	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.3	3.2	8.1	0.4	1.2	3.7	5.7	2.0	2.1
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.7	3.2	8.1	0.4	1.2	3.7	5.7	2.0	2.1
Prop In Lane	0.03		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	587	0	0	533	536	441	28	808	339	279	654	680
V/C Ratio(X)	0.27	0.00	0.00	0.30	0.29	0.65	0.56	0.14	0.39	0.76	0.17	0.17
Avail Cap(c_a), veh/h	1217	0	0	971	1206	991	229	1791	753	944	1609	1673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	0.0	13.9	13.8	15.6	24.3	15.3	16.3	20.1	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.6	16.3	0.1	0.7	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.2	1.1	2.5	0.3	0.4	1.2	2.3	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	0.0	14.3	14.1	17.2	40.6	15.4	17.0	24.4	10.7	10.7
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		158			602			257			435	
Approach Delay, s/veh		14.1			15.6			17.8			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	17.2		20.2	5.4	24.2		20.2				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.7	5.7		5.4	2.4	4.1		10.1				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			16.4									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	458	17	338	616	366	37	70	228	555	79	59
Future Volume (veh/h)	42	458	17	338	616	366	37	70	228	555	79	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	487	18	398	725	431	47	90	0	694	99	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	1344	50	443	1021	604	175	184		748	405	
Arrive On Green	0.03	0.38	0.38	0.21	0.81	0.81	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3491	129	3456	2113	1251	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	45	247	258	398	609	547	47	90	0	694	99	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.5	13.9	14.0	15.7	21.7	22.0	3.4	6.4	0.0	27.6	6.1	0.0
Cycle Q Clear(g_c), s	3.5	13.9	14.0	15.7	21.7	22.0	3.4	6.4	0.0	27.6	6.1	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	58	684	710	443	858	766	175	184		748	405	
V/C Ratio(X)	0.78	0.36	0.36	0.90	0.71	0.71	0.27	0.49		0.93	0.24	
Avail Cap(c_a), veh/h	65	684	710	479	858	766	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	30.8	30.8	54.1	9.1	9.1	58.5	59.8	0.0	53.8	45.4	0.0
Incr Delay (d2), s/veh	40.1	1.5	1.4	16.1	2.3	2.6	0.8	2.0	0.0	17.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	6.2	6.5	7.1	4.9	4.4	1.6	3.1	0.0	13.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.4	32.2	32.2	70.2	11.4	11.8	59.3	61.8	0.0	70.9	45.7	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		550			1554			137			793	
Approach Delay, s/veh		38.4			26.6			61.0			67.8	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	60.1		36.2	10.5	73.8		19.5				
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8				
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0				
Max Q Clear Time (g_c+I1), s	17.7	16.0		29.6	5.5	24.0		8.4				
Green Ext Time (p_c), s	0.3	2.6		0.6	0.0	8.2		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	41.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Future Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	664	0	0	1271	0				259	0	338
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	664	0	0	1271	0				259	0	338
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Cycle Q Clear(g_c), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.29		0.00	0.55					0.54	0.00	0.39
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.69	0.00	0.00	0.78	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.7	0.0	0.0	0.0	0.0				43.6	0.0	41.7
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				4.2	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.6	0.0	0.0	0.2	0.0				8.3	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.0	0.0	0.0	0.7	0.0				47.8	0.0	43.0
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		664			1271						597	
Approach Delay, s/veh		19.0			0.7						45.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	18.9	19.4	2.0
Green Ext Time (p_c), s	4.9	2.1	12.2

Intersection Summary	
HCM 7th Control Delay, s/veh	16.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Future Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	593	0	0	968	0	892	0	363			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	593	0	0	968	0	892	0	363			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Cycle Q Clear(g_c), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.37		0.00	0.60		0.53	0.00	0.49			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.0	0.0	26.2	0.0	25.5			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.7	0.0	1.2	0.0	2.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	12.2	0.0	10.8	0.0	8.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	30.7	0.0	27.4	0.0	27.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		593			968			1255				
Approach Delay, s/veh		4.6			30.7			27.5				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.5	30.8	26.8
Green Ext Time (p_c), s	4.3	7.2	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	23.8
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	52	283	404
Demand Flow Rate, veh/h	12	53	288	412
Vehicles Circulating, veh/h	414	275	41	18
Vehicles Exiting, veh/h	16	54	385	310
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.6	5.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	53	288	412
Cap Entry Lane, veh/h	905	1042	1323	1355
Entry HV Adj Factor	1.000	0.981	0.982	0.980
Flow Entry, veh/h	12	52	283	404
Cap Entry, veh/h	903	1021	1297	1326
V/C Ratio	0.013	0.051	0.218	0.305
Control Delay, s/veh	4.1	4.0	4.6	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	30	0	308	408	14
Future Vol, veh/h	0	30	0	308	408	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	33	0	335	443	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	229	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	659	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	659	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.75	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	659	-	-
HCM Lane V/C Ratio	-	0.05	-	-
HCM Control Delay (s/veh)	-	10.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	224	324	7
Future Vol, veh/h	0	0	0	224	324	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	243	352	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	596	352	360	0	-	0
Stage 1	352	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	467	691	1199	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	467	691	1199	-	-	-
Mov Cap-2 Maneuver	467	-	-	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	797	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1199	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

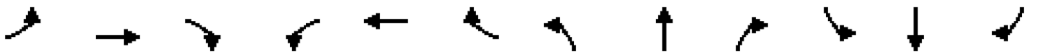
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	241	7	48	327
Future Vol, veh/h	2	15	241	7	48	327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	262	8	52	355

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	548	135	0	0	270	0
Stage 1	266	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	466	889	-	-	1291	-
Stage 1	755	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	889	-	-	1291	-
Mov Cap-2 Maneuver	536	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.46	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	825	461	-
HCM Lane V/C Ratio	-	-	0.022	0.04	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	94	14	180	91	288	31	372	112	272	192	16
Future Volume (veh/h)	8	94	14	180	91	288	31	372	112	272	192	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	124	18	207	105	331	34	413	124	280	198	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	456	63	532	558	459	52	758	318	349	1261	101
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	45	1527	210	1237	1870	1539	1781	3554	1490	1781	3320	265
Grp Volume(v), veh/h	153	0	0	207	105	331	34	413	124	280	105	109
Grp Sat Flow(s),veh/h/ln	1781	0	0	1237	1870	1539	1781	1777	1490	1781	1777	1809
Q Serve(g_s), s	0.0	0.0	0.0	2.4	2.3	10.8	1.1	5.8	4.0	8.4	2.2	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.0	2.3	10.8	1.1	5.8	4.0	8.4	2.2	2.2
Prop In Lane	0.07		0.12	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	601	0	0	532	558	459	52	758	318	349	675	687
V/C Ratio(X)	0.25	0.00	0.00	0.39	0.19	0.72	0.65	0.55	0.39	0.80	0.16	0.16
Avail Cap(c_a), veh/h	1068	0	0	871	1070	881	203	1527	640	870	1429	1454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	0.0	15.7	14.6	17.6	26.9	19.6	18.9	21.5	11.5	11.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.1	12.8	0.6	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.9	0.9	3.5	0.6	2.2	1.3	3.5	0.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.3	0.0	0.0	16.2	14.8	19.7	39.8	20.3	19.7	25.8	11.6	11.6
LnGrp LOS	B			B	B	B	D	C	B	C	B	B
Approach Vol, veh/h		153			643			571			494	
Approach Delay, s/veh		15.3			17.8			21.3			19.7	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.6	17.9		22.6	6.2	27.2		22.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.4	7.8		5.6	3.1	4.2		12.8				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.2									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	498	35	338	505	318	55	134	629	386	98	42
Future Volume (veh/h)	51	498	35	338	505	318	55	134	629	386	98	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	553	39	352	526	331	59	144	0	482	122	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1423	100	401	1031	647	207	218		596	322	
Arrive On Green	0.04	0.42	0.42	0.19	0.84	0.84	0.12	0.12	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1781	3361	237	3456	2061	1294	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	57	292	300	352	453	404	59	144	0	482	122	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.4	15.9	15.9	13.9	10.2	10.3	4.2	10.3	0.0	18.8	8.1	0.0
Cycle Q Clear(g_c), s	4.4	15.9	15.9	13.9	10.2	10.3	4.2	10.3	0.0	18.8	8.1	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	73	752	771	401	889	790	207	218		596	322	
V/C Ratio(X)	0.78	0.39	0.39	0.88	0.51	0.51	0.28	0.66		0.81	0.38	
Avail Cap(c_a), veh/h	103	752	771	464	889	790	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.5	27.9	27.9	55.5	6.6	6.6	56.5	59.2	0.0	55.7	51.3	0.0
Incr Delay (d2), s/veh	21.4	1.5	1.5	14.0	0.4	0.5	0.7	3.4	0.0	5.0	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	7.0	7.2	6.2	2.7	2.4	1.9	5.0	0.0	8.6	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.9	29.4	29.4	69.5	7.0	7.1	57.3	62.6	0.0	60.8	52.0	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		649			1209			203			604	
Approach Delay, s/veh		34.5			25.2			61.1			59.0	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.4	65.5		30.0	11.6	76.2		22.1
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	15.9	17.9		20.8	6.4	12.3		12.3
Green Ext Time (p_c), s	0.4	3.1		1.8	0.0	5.8		0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	37.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Future Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1092	0	0	1002	0				352	0	369
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1092	0	0	1002	0				352	0	369
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Cycle Q Clear(g_c), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.56		0.00	0.51					0.53	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.63	0.00	0.00	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.3	0.0	0.0	0.0	0.0				34.5	0.0	31.4
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.8	0.0				3.1	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.0	0.0	0.2	0.0				10.0	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.0	0.0	0.0	0.8	0.0				37.6	0.0	32.1
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1092			1002						721	
Approach Delay, s/veh		12.0			0.8						34.8	
Approach LOS		B			A						C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	21.7	23.7	2.0
Green Ext Time (p_c), s	9.7	2.7	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Future Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	851	0	0	888	0	645	0	302			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	851	0	0	888	0	645	0	302			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.45		0.00	0.47		0.46	0.00	0.49			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.7	0.0	31.6	0.0	32.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.9	0.0	1.1	0.0	2.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	8.9	0.0	8.4	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.6	0.0	0.0	21.5	0.0	32.7	0.0	34.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		851			888			947				
Approach Delay, s/veh		0.6			21.5			33.4				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.0	22.2
Green Ext Time (p_c), s	6.8	6.8	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	76	821	315
Demand Flow Rate, veh/h	21	77	838	322
Vehicles Circulating, veh/h	329	816	47	17
Vehicles Exiting, veh/h	10	69	303	876
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	7.6	10.8	4.7
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	77	838	322
Cap Entry Lane, veh/h	987	600	1315	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	76	821	315
Cap Entry, veh/h	983	592	1287	1326
V/C Ratio	0.021	0.128	0.638	0.238
Control Delay, s/veh	3.8	7.6	10.8	4.7
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	19	0	779	565	29
Future Vol, veh/h	0	19	0	779	565	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	21	0	847	614	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	323	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	574	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	574	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	574	-	-
HCM Lane V/C Ratio	-	0.036	-	-
HCM Control Delay (s/veh)	-	11.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	641	292	2
Future Vol, veh/h	3	3	0	641	292	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	697	317	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1014	317	-	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	264	723	0	-	-	-
Stage 1	738	-	0	-	-	-
Stage 2	494	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	264	723	-	-	-	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.46	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	387	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	157	548	16	143	325
Future Vol, veh/h	10	157	548	16	143	325
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	171	596	17	155	353

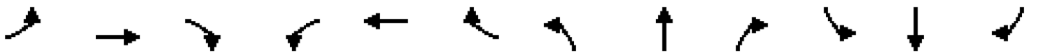
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1092	307	0	0	613	0
Stage 1	604	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	209	689	-	-	962	-
Stage 1	508	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	172	689	-	-	962	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	479	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	12.83	0	3.52
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	868	-
HCM Lane V/C Ratio	-	-	0.283	0.162	-
HCM Control Delay (s/veh)	-	-	12.8	9.5	0.9
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

APPENDIX E

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING + PROJECT (SITE 3)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	86	19	126	119	224	15	100	119	185	188	5
Future Volume (veh/h)	3	86	19	126	119	224	15	100	119	185	188	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	126	28	162	153	287	16	110	131	213	216	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	419	91	533	536	441	28	808	339	279	1298	36
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.23	0.23	0.16	0.37	0.37
Sat Flow, veh/h	12	1461	317	1224	1870	1538	1781	3554	1494	1781	3527	98
Grp Volume(v), veh/h	158	0	0	162	153	287	16	110	131	213	108	114
Grp Sat Flow(s),veh/h/ln	1790	0	0	1224	1870	1538	1781	1777	1494	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.3	3.2	8.1	0.4	1.2	3.7	5.7	2.0	2.1
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.7	3.2	8.1	0.4	1.2	3.7	5.7	2.0	2.1
Prop In Lane	0.03		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	587	0	0	533	536	441	28	808	339	279	654	680
V/C Ratio(X)	0.27	0.00	0.00	0.30	0.29	0.65	0.56	0.14	0.39	0.76	0.17	0.17
Avail Cap(c_a), veh/h	1217	0	0	971	1206	991	229	1791	753	944	1609	1673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	0.0	13.9	13.8	15.6	24.3	15.3	16.3	20.1	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.6	16.3	0.1	0.7	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.2	1.1	2.5	0.3	0.4	1.2	2.3	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	0.0	14.3	14.1	17.2	40.6	15.4	17.0	24.4	10.7	10.7
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		158			602			257			435	
Approach Delay, s/veh		14.1			15.6			17.8			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	17.2		20.2	5.4	24.2		20.2				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.7	5.7		5.4	2.4	4.1		10.1				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			16.4									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	458	17	338	616	366	36	70	228	555	79	59
Future Volume (veh/h)	42	458	17	338	616	366	36	70	228	555	79	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	487	18	398	725	431	46	90	0	694	99	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	1344	50	443	1021	604	175	184		748	405	
Arrive On Green	0.03	0.38	0.38	0.21	0.81	0.81	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3491	129	3456	2113	1251	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	45	247	258	398	609	547	46	90	0	694	99	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.5	13.9	14.0	15.7	21.7	22.0	3.3	6.4	0.0	27.6	6.1	0.0
Cycle Q Clear(g_c), s	3.5	13.9	14.0	15.7	21.7	22.0	3.3	6.4	0.0	27.6	6.1	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	58	684	710	443	858	767	175	184		748	405	
V/C Ratio(X)	0.78	0.36	0.36	0.90	0.71	0.71	0.26	0.49		0.93	0.24	
Avail Cap(c_a), veh/h	65	684	710	479	858	767	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	30.8	30.8	54.1	9.1	9.1	58.4	59.8	0.0	53.8	45.4	0.0
Incr Delay (d2), s/veh	40.1	1.5	1.4	16.1	2.3	2.6	0.8	2.0	0.0	17.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	6.2	6.5	7.1	4.9	4.4	1.5	3.1	0.0	13.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.4	32.2	32.2	70.2	11.4	11.8	59.2	61.8	0.0	70.9	45.7	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		550			1554			136			793	
Approach Delay, s/veh		38.4			26.6			61.0			67.8	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.2	60.1		36.2	10.5	73.8		19.5
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0
Max Q Clear Time (g_c+I1), s	17.7	16.0		29.6	5.5	24.0		8.4
Green Ext Time (p_c), s	0.3	2.6		0.6	0.0	8.2		0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	41.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Future Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	664	0	0	1271	0				259	0	338
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	664	0	0	1271	0				259	0	338
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Cycle Q Clear(g_c), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.29		0.00	0.55					0.54	0.00	0.39
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.69	0.00	0.00	0.78	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.7	0.0	0.0	0.0	0.0				43.6	0.0	41.7
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				4.2	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.6	0.0	0.0	0.2	0.0				8.3	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.0	0.0	0.0	0.7	0.0				47.8	0.0	43.0
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		664			1271						597	
Approach Delay, s/veh		19.0			0.7						45.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	18.9	19.4	2.0
Green Ext Time (p_c), s	4.9	2.1	12.2

Intersection Summary	
HCM 7th Control Delay, s/veh	16.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Future Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	593	0	0	968	0	892	0	363			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	593	0	0	968	0	892	0	363			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Cycle Q Clear(g_c), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.37		0.00	0.60		0.53	0.00	0.49			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.0	0.0	26.2	0.0	25.5			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.7	0.0	1.2	0.0	2.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	12.2	0.0	10.8	0.0	8.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	30.7	0.0	27.4	0.0	27.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		593			968			1255				
Approach Delay, s/veh		4.6			30.7			27.5				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.5	30.8	26.8
Green Ext Time (p_c), s	4.3	7.2	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	23.8
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	52	283	404
Demand Flow Rate, veh/h	12	53	288	412
Vehicles Circulating, veh/h	414	275	41	18
Vehicles Exiting, veh/h	16	54	385	310
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.6	5.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	53	288	412
Cap Entry Lane, veh/h	905	1042	1323	1355
Entry HV Adj Factor	1.000	0.981	0.982	0.980
Flow Entry, veh/h	12	52	283	404
Cap Entry, veh/h	903	1021	1297	1326
V/C Ratio	0.013	0.051	0.218	0.305
Control Delay, s/veh	4.1	4.0	4.6	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	307	418	3
Future Vol, veh/h	0	2	0	307	418	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	334	454	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	229	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	659	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	659	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.48	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	659	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	1	1	223	323	17
Future Vol, veh/h	27	1	1	223	323	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	1	1	242	351	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	596	351	370	0	-	0
Stage 1	351	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	467	692	1189	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	466	692	1189	-	-	-
Mov Cap-2 Maneuver	466	-	-	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.16	0.04	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	8	-	472	-	-
HCM Lane V/C Ratio	0.001	-	0.065	-	-
HCM Control Delay (s/veh)	8	0	13.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

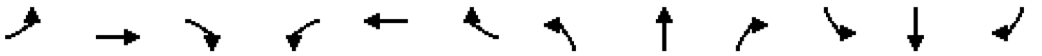
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	267	7	48	336
Future Vol, veh/h	2	15	267	7	48	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	290	8	52	365

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	581	149	0	0	298	0
Stage 1	294	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	445	871	-	-	1260	-
Stage 1	730	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	424	871	-	-	1260	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.57	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	807	450	-
HCM Lane V/C Ratio	-	-	0.023	0.041	-
HCM Control Delay (s/veh)	-	-	9.6	8	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	94	14	180	91	288	31	372	112	272	192	16
Future Volume (veh/h)	8	94	14	180	91	288	31	372	112	272	192	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	124	18	207	105	331	34	413	124	280	198	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	456	63	532	558	459	52	758	318	349	1261	101
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	45	1527	210	1237	1870	1539	1781	3554	1490	1781	3320	265
Grp Volume(v), veh/h	153	0	0	207	105	331	34	413	124	280	105	109
Grp Sat Flow(s),veh/h/ln	1781	0	0	1237	1870	1539	1781	1777	1490	1781	1777	1809
Q Serve(g_s), s	0.0	0.0	0.0	2.4	2.3	10.8	1.1	5.8	4.0	8.4	2.2	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.0	2.3	10.8	1.1	5.8	4.0	8.4	2.2	2.2
Prop In Lane	0.07		0.12	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	601	0	0	532	558	459	52	758	318	349	675	687
V/C Ratio(X)	0.25	0.00	0.00	0.39	0.19	0.72	0.65	0.55	0.39	0.80	0.16	0.16
Avail Cap(c_a), veh/h	1068	0	0	871	1070	881	203	1527	640	870	1429	1454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	0.0	15.7	14.6	17.6	26.9	19.6	18.9	21.5	11.5	11.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.1	12.8	0.6	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.9	0.9	3.5	0.6	2.2	1.3	3.5	0.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.3	0.0	0.0	16.2	14.8	19.7	39.8	20.3	19.7	25.8	11.6	11.6
LnGrp LOS	B			B	B	B	D	C	B	C	B	B
Approach Vol, veh/h		153			643			571			494	
Approach Delay, s/veh		15.3			17.8			21.3			19.7	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.6	17.9		22.6	6.2	27.2		22.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.4	7.8		5.6	3.1	4.2		12.8				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.2									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	498	35	338	505	318	54	134	629	386	98	42
Future Volume (veh/h)	51	498	35	338	505	318	54	134	629	386	98	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	553	39	352	526	331	58	144	0	482	122	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1423	100	401	1031	647	207	218		596	322	
Arrive On Green	0.04	0.42	0.42	0.19	0.84	0.84	0.12	0.12	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1781	3361	237	3456	2061	1294	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	57	292	300	352	453	404	58	144	0	482	122	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.4	15.9	15.9	13.9	10.2	10.3	4.2	10.3	0.0	18.8	8.1	0.0
Cycle Q Clear(g_c), s	4.4	15.9	15.9	13.9	10.2	10.3	4.2	10.3	0.0	18.8	8.1	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	73	752	771	401	889	790	207	218		596	322	
V/C Ratio(X)	0.78	0.39	0.39	0.88	0.51	0.51	0.28	0.66		0.81	0.38	
Avail Cap(c_a), veh/h	103	752	771	464	889	790	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.5	27.9	27.9	55.5	6.6	6.6	56.5	59.2	0.0	55.7	51.3	0.0
Incr Delay (d2), s/veh	21.4	1.5	1.5	14.0	0.4	0.5	0.7	3.4	0.0	5.0	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	7.0	7.2	6.2	2.7	2.4	1.9	5.0	0.0	8.6	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.9	29.4	29.4	69.5	7.0	7.1	57.2	62.6	0.0	60.8	52.0	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		649			1209			202			604	
Approach Delay, s/veh		34.5			25.2			61.1			59.0	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.4	65.5		30.0	11.6	76.2		22.1
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	15.9	17.9		20.8	6.4	12.3		12.3
Green Ext Time (p_c), s	0.4	3.1		1.8	0.0	5.8		0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	37.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Future Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1092	0	0	1002	0				352	0	369
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1092	0	0	1002	0				352	0	369
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Cycle Q Clear(g_c), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.56		0.00	0.51					0.53	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.63	0.00	0.00	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.3	0.0	0.0	0.0	0.0				34.5	0.0	31.4
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.8	0.0				3.1	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.0	0.0	0.2	0.0				10.0	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.0	0.0	0.0	0.8	0.0				37.6	0.0	32.1
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1092			1002						721	
Approach Delay, s/veh		12.0			0.8						34.8	
Approach LOS		B			A						C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	21.7	23.7	2.0
Green Ext Time (p_c), s	9.7	2.7	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Future Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	851	0	0	888	0	645	0	302			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	851	0	0	888	0	645	0	302			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.45		0.00	0.47		0.46	0.00	0.49			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.7	0.0	31.6	0.0	32.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.9	0.0	1.1	0.0	2.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	8.9	0.0	8.4	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.6	0.0	0.0	21.5	0.0	32.7	0.0	34.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		851			888			947				
Approach Delay, s/veh		0.6			21.5			33.4				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.0	22.2
Green Ext Time (p_c), s	6.8	6.8	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	76	821	315
Demand Flow Rate, veh/h	21	77	838	322
Vehicles Circulating, veh/h	329	816	47	17
Vehicles Exiting, veh/h	10	69	303	876
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	7.6	10.8	4.7
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	77	838	322
Cap Entry Lane, veh/h	987	600	1315	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	76	821	315
Cap Entry, veh/h	983	592	1287	1326
V/C Ratio	0.021	0.128	0.638	0.238
Control Delay, s/veh	3.8	7.6	10.8	4.7
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	778	593	0
Future Vol, veh/h	0	0	0	778	593	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	846	645	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	322	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	575	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	575	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	4	1	640	291	30
Future Vol, veh/h	21	4	1	640	291	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	4	1	696	316	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1014	316	349	0	-	0
Stage 1	316	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	264	724	1210	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	264	724	1210	-	-	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	18.5	0.01	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1210	-	294	-	-
HCM Lane V/C Ratio	0.001	-	0.092	-	-
HCM Control Delay (s/veh)	8	-	18.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	157	565	16	143	352
Future Vol, veh/h	10	157	565	16	143	352
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	171	614	17	155	383

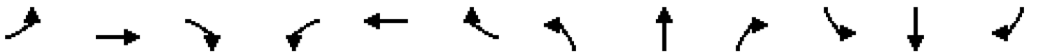
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1125	316	0	0	632	0
Stage 1	623	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	199	680	-	-	947	-
Stage 1	497	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	162	680	-	-	947	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	468	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13	0	3.45
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	630	846	-
HCM Lane V/C Ratio	-	-	0.288	0.164	-
HCM Control Delay (s/veh)	-	-	13	9.5	1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

APPENDIX F

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING + PROJECT (SITE 4 & SITE 5)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	86	19	126	119	226	15	100	119	186	188	5
Future Volume (veh/h)	3	86	19	126	119	226	15	100	119	186	188	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	126	28	162	153	290	16	110	131	214	216	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	421	91	534	539	443	28	805	338	280	1297	36
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.23	0.23	0.16	0.37	0.37
Sat Flow, veh/h	12	1461	317	1224	1870	1538	1781	3554	1494	1781	3527	98
Grp Volume(v), veh/h	158	0	0	162	153	290	16	110	131	214	108	114
Grp Sat Flow(s),veh/h/ln	1790	0	0	1224	1870	1538	1781	1777	1494	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.3	3.2	8.3	0.4	1.2	3.7	5.8	2.1	2.1
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.7	3.2	8.3	0.4	1.2	3.7	5.8	2.1	2.1
Prop In Lane	0.03		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	590	0	0	534	539	443	28	805	338	280	653	680
V/C Ratio(X)	0.27	0.00	0.00	0.30	0.28	0.65	0.56	0.14	0.39	0.76	0.17	0.17
Avail Cap(c_a), veh/h	1213	0	0	967	1201	988	228	1785	750	941	1603	1667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	0.0	13.9	13.8	15.6	24.4	15.4	16.4	20.2	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.6	16.3	0.1	0.7	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.2	1.1	2.5	0.3	0.4	1.2	2.4	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	0.0	14.3	14.1	17.3	40.7	15.5	17.1	24.5	10.8	10.8
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		158			605			257			436	
Approach Delay, s/veh		14.1			15.6			17.9			17.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.5	17.2		20.3	5.4	24.3		20.3				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.8	5.7		5.4	2.4	4.1		10.3				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.2		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.4	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	458	17	338	616	366	36	70	228	555	79	59
Future Volume (veh/h)	42	458	17	338	616	366	36	70	228	555	79	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	487	18	398	725	431	46	90	0	694	99	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	1344	50	443	1021	604	175	184		748	405	
Arrive On Green	0.03	0.38	0.38	0.21	0.81	0.81	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3491	129	3456	2113	1251	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	45	247	258	398	609	547	46	90	0	694	99	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.5	13.9	14.0	15.7	21.7	22.0	3.3	6.4	0.0	27.6	6.1	0.0
Cycle Q Clear(g_c), s	3.5	13.9	14.0	15.7	21.7	22.0	3.3	6.4	0.0	27.6	6.1	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	58	684	710	443	858	767	175	184		748	405	
V/C Ratio(X)	0.78	0.36	0.36	0.90	0.71	0.71	0.26	0.49		0.93	0.24	
Avail Cap(c_a), veh/h	65	684	710	479	858	767	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	30.8	30.8	54.1	9.1	9.1	58.4	59.8	0.0	53.8	45.4	0.0
Incr Delay (d2), s/veh	40.1	1.5	1.4	16.1	2.3	2.6	0.8	2.0	0.0	17.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	6.2	6.5	7.1	4.9	4.4	1.5	3.1	0.0	13.7	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	107.4	32.2	32.2	70.2	11.4	11.8	59.2	61.8	0.0	70.9	45.7	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		550			1554			136			793	
Approach Delay, s/veh		38.4			26.6			61.0			67.8	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	60.1		36.2	10.5	73.8		19.5				
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8				
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0				
Max Q Clear Time (g_c+I1), s	17.7	16.0		29.6	5.5	24.0		8.4				
Green Ext Time (p_c), s	0.3	2.6		0.6	0.0	8.2		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	41.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Future Volume (veh/h)	0	558	702	0	1093	422	0	0	0	238	0	311
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	664	0	0	1271	0				259	0	338
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	664	0	0	1271	0				259	0	338
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Cycle Q Clear(g_c), s	0.0	16.9	0.0	0.0	0.0	0.0				17.4	0.0	12.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.29		0.00	0.55					0.54	0.00	0.39
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.69	0.00	0.00	0.78	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.7	0.0	0.0	0.0	0.0				43.6	0.0	41.7
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				4.2	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.6	0.0	0.0	0.2	0.0				8.3	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.0	0.0	0.0	0.7	0.0				47.8	0.0	43.0
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		664			1271						597	
Approach Delay, s/veh		19.0			0.7						45.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	18.9	19.4	2.0
Green Ext Time (p_c), s	4.9	2.1	12.2

Intersection Summary	
HCM 7th Control Delay, s/veh	16.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Future Volume (veh/h)	0	540	237	0	871	373	664	0	501	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	593	0	0	968	0	892	0	363			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	593	0	0	968	0	892	0	363			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Cycle Q Clear(g_c), s	0.0	3.5	0.0	0.0	28.8	0.0	24.8	0.0	22.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.37		0.00	0.60		0.53	0.00	0.49			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.0	0.0	26.2	0.0	25.5			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.7	0.0	1.2	0.0	2.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	12.2	0.0	10.8	0.0	8.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	30.7	0.0	27.4	0.0	27.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		593			968			1255				
Approach Delay, s/veh		4.6			30.7			27.5				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.5	30.8	26.8
Green Ext Time (p_c), s	4.3	7.2	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	23.8
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	52	283	404
Demand Flow Rate, veh/h	12	53	288	412
Vehicles Circulating, veh/h	414	275	41	18
Vehicles Exiting, veh/h	16	54	385	310
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.6	5.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	53	288	412
Cap Entry Lane, veh/h	905	1042	1323	1355
Entry HV Adj Factor	1.000	0.981	0.982	0.980
Flow Entry, veh/h	12	52	283	404
Cap Entry, veh/h	903	1021	1297	1326
V/C Ratio	0.013	0.051	0.218	0.305
Control Delay, s/veh	4.1	4.0	4.6	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	307	418	3
Future Vol, veh/h	0	2	0	307	418	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	334	454	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	229	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	659	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	659	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.48	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	659	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	224	324	7
Future Vol, veh/h	0	0	0	224	324	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	243	352	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	596	352	360	0	-	0
Stage 1	352	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	467	691	1199	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	467	691	1199	-	-	-
Mov Cap-2 Maneuver	467	-	-	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	797	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1199	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

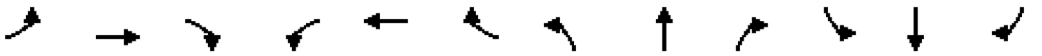
Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	42	240	8	58	326
Future Vol, veh/h	3	42	240	8	58	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	46	261	9	63	354

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	568	135	0	0	270	0
Stage 1	265	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	453	889	-	-	1291	-
Stage 1	755	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	428	889	-	-	1291	-
Mov Cap-2 Maneuver	522	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.5	0	1.47
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	849	544	-
HCM Lane V/C Ratio	-	-	0.058	0.049	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	94	14	182	91	290	31	372	112	274	192	16
Future Volume (veh/h)	8	94	14	182	91	290	31	372	112	274	192	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	124	18	209	105	333	34	413	124	282	198	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	457	63	532	560	461	52	756	317	351	1263	101
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	45	1527	210	1237	1870	1539	1781	3554	1490	1781	3320	265
Grp Volume(v), veh/h	153	0	0	209	105	333	34	413	124	282	105	109
Grp Sat Flow(s),veh/h/ln	1781	0	0	1237	1870	1539	1781	1777	1490	1781	1777	1809
Q Serve(g_s), s	0.0	0.0	0.0	2.5	2.3	10.9	1.1	5.8	4.0	8.5	2.2	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.2	2.3	10.9	1.1	5.8	4.0	8.5	2.2	2.2
Prop In Lane	0.07		0.12	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	602	0	0	532	560	461	52	756	317	351	676	688
V/C Ratio(X)	0.25	0.00	0.00	0.39	0.19	0.72	0.65	0.55	0.39	0.80	0.16	0.16
Avail Cap(c_a), veh/h	1063	0	0	867	1065	877	202	1520	637	866	1422	1448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	0.0	15.8	14.7	17.7	27.1	19.8	19.0	21.6	11.5	11.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.2	12.9	0.6	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.9	0.9	3.5	0.6	2.2	1.3	3.5	0.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.3	0.0	0.0	16.3	14.8	19.8	39.9	20.4	19.8	25.9	11.6	11.6
LnGrp LOS	B			B	B	B	D	C	B	C	B	B
Approach Vol, veh/h		153			647			571			496	
Approach Delay, s/veh		15.3			17.9			21.4			19.7	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.7	17.9		22.8	6.3	27.3		22.8				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.5	7.8		5.6	3.1	4.2		12.9				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.2									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	498	35	338	505	318	54	134	629	386	98	42
Future Volume (veh/h)	51	498	35	338	505	318	54	134	629	386	98	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	553	39	352	526	331	58	144	0	482	122	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1423	100	401	1031	647	207	218		596	322	
Arrive On Green	0.04	0.42	0.42	0.19	0.84	0.84	0.12	0.12	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1781	3361	237	3456	2061	1294	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	57	292	300	352	453	404	58	144	0	482	122	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.4	15.9	15.9	13.9	10.2	10.3	4.2	10.3	0.0	18.8	8.1	0.0
Cycle Q Clear(g_c), s	4.4	15.9	15.9	13.9	10.2	10.3	4.2	10.3	0.0	18.8	8.1	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	73	752	771	401	889	790	207	218		596	322	
V/C Ratio(X)	0.78	0.39	0.39	0.88	0.51	0.51	0.28	0.66		0.81	0.38	
Avail Cap(c_a), veh/h	103	752	771	464	889	790	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.5	27.9	27.9	55.5	6.6	6.6	56.5	59.2	0.0	55.7	51.3	0.0
Incr Delay (d2), s/veh	21.4	1.5	1.5	14.0	0.4	0.5	0.7	3.4	0.0	5.0	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	7.0	7.2	6.2	2.7	2.4	1.9	5.0	0.0	8.6	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.9	29.4	29.4	69.5	7.0	7.1	57.2	62.6	0.0	60.8	52.0	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		649			1209			202			604	
Approach Delay, s/veh		34.5			25.2			61.1			59.0	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.4	65.5		30.0	11.6	76.2		22.1
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	15.9	17.9		20.8	6.4	12.3		12.3
Green Ext Time (p_c), s	0.4	3.1		1.8	0.0	5.8		0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	37.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Future Volume (veh/h)	0	983	589	0	902	375	0	0	0	306	0	321
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1092	0	0	1002	0				352	0	369
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1092	0	0	1002	0				352	0	369
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Cycle Q Clear(g_c), s	0.0	19.7	0.0	0.0	0.0	0.0				21.7	0.0	11.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.56		0.00	0.51					0.53	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.63	0.00	0.00	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.3	0.0	0.0	0.0	0.0				34.5	0.0	31.4
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.8	0.0				3.1	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.0	0.0	0.2	0.0				10.0	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.0	0.0	0.0	0.8	0.0				37.6	0.0	32.1
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1092			1002						721	
Approach Delay, s/veh		12.0			0.8						34.8	
Approach LOS		B			A						C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	21.7	23.7	2.0
Green Ext Time (p_c), s	9.7	2.7	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Future Volume (veh/h)	0	783	509	0	808	447	449	0	403	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	851	0	0	888	0	645	0	302			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	851	0	0	888	0	645	0	302			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.0	0.0	18.8	0.0	20.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.45		0.00	0.47		0.46	0.00	0.49			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.7	0.0	31.6	0.0	32.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.9	0.0	1.1	0.0	2.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	8.9	0.0	8.4	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.6	0.0	0.0	21.5	0.0	32.7	0.0	34.8			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		851			888			947				
Approach Delay, s/veh		0.6			21.5			33.4				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.0	22.2
Green Ext Time (p_c), s	6.8	6.8	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	19.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	76	821	315
Demand Flow Rate, veh/h	21	77	838	322
Vehicles Circulating, veh/h	329	816	47	17
Vehicles Exiting, veh/h	10	69	303	876
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	7.6	10.8	4.7
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	77	838	322
Cap Entry Lane, veh/h	987	600	1315	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	76	821	315
Cap Entry, veh/h	983	592	1287	1326
V/C Ratio	0.021	0.128	0.638	0.238
Control Delay, s/veh	3.8	7.6	10.8	4.7
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	778	593	0
Future Vol, veh/h	0	0	0	778	593	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	846	645	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	322	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	575	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	575	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	641	292	2
Future Vol, veh/h	3	3	0	641	292	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	697	317	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1014	317	-	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	264	723	0	-	-	-
Stage 1	738	-	0	-	-	-
Stage 2	494	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	264	723	-	-	-	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.46	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	387	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	175	547	17	171	324
Future Vol, veh/h	11	175	547	17	171	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	190	595	18	186	352

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1152	307	0	0	613	0
Stage 1	604	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	191	689	-	-	962	-
Stage 1	508	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	150	689	-	-	962	-
Mov Cap-2 Maneuver	280	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	427	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13.31	0	3.99
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	634	868	-
HCM Lane V/C Ratio	-	-	0.319	0.193	-
HCM Control Delay (s/veh)	-	-	13.3	9.6	1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.7	-

APPENDIX G

GROWTH FACTOR CALCULATIONS

Growth Factor Calculations

INTERSECTION	DIRECTION	LEG	SANDAG 2016 AMB2+	SANDAG 2025 AMB2+	OVERALL GROWTH FACTOR (9 YEARS)	ANNUAL GROWTH FACTOR
1. Camino Del Mar / Via De La Valle	**S**b	**North**	12,900	13,300	3.10%	0.34%
	Wb	**East**	10,900	10,500	-3.67%	-0.41%
	Nb	**South**	8,200	8,500	3.66%	0.41%
	Eb	**West**	2,900	2,600	-10.34%	-1.15%
2. Via De La Valle / Jimmy Durante Blvd	**S**b	**North**	15,700	15,900	1.27%	0.14%
	Wb	**East**	38,200	38,700	1.31%	0.15%
	Nb	**South**	15,600	16,500	5.77%	0.64%
	Eb	**West**	13,000	12,600	-3.08%	-0.34%
3. I-5 SB / Via De La Valle	**S**b	**North**	6,100	6,000	-1.64%	-0.18%
	Wb	**East**	26,900	27,500	2.23%	0.25%
	Nb	**South**	10,700	10,300	-3.74%	-0.42%
	Eb	**West**	27,500	28,400	3.27%	0.36%
4. I-5 NB / Via De La Valle	**S**b	**North**	3,100	3,100	0.00%	0.00%
	Wb	**East**	25,400	23,700	-6.69%	-0.74%
	Nb	**South**	15,100	14,300	-5.30%	-0.59%
	Eb	**West**	29,000	27,900	-3.79%	-0.42%
5.San Dieguito Dr / Jimmy Durante Blvd	**S**b	**North**	9,800	10,500	7.14%	0.79%
	Wb	**East**				
	Nb	**South**	9,100	9,900	8.79%	0.98%
	Eb	**West**				

AVERAGE GROWTH	-0.09%	-0.01%
AVERAGE GROWTH USING ONLY DATA SETS WITH POSITIVE GROWTH	4.06%	0.45%

ASSUME 1%/YEAR GROWTH FOR OPENING YEAR

Growth Factor Calculations

INTERSECTION	DIRECTION	LEG	SANDAG 2025 AMB2+	SANDAG 2035 AMB2+	OVERALL GROWTH FACTOR (10 YEARS)	ANNUAL GROWTH FACTOR
1. Camino Del Mar / Via De La Valle	Sb	North	13,300	12,700	-4.51%	-0.50%
	Wb	East	10,500	10,400	-0.95%	-0.11%
	Nb	South	8,500	8,200	-3.53%	-0.39%
	Eb	West	2,600	2,400	-7.69%	-0.85%
2. Via De La Valle / Jimmy Durante Blvd	Sb	North	15,900	16,900	6.29%	0.70%
	Wb	East	38,700	38,300	-1.03%	-0.11%
	Nb	South	16,500	16,100	-2.42%	-0.27%
	Eb	West	12,600	12,300	-2.38%	-0.26%
3. I-5 SB / Via De La Valle	Sb	North	6,000	5,900	-1.67%	-0.19%
	Wb	East	27,500	27,500	0.00%	0.00%
	Nb	South	10,300	10,100	-1.94%	-0.22%
	Eb	West	28,400	28,200	-0.70%	-0.08%
4. I-5 NB / Via De La Valle	Sb	North	3,100	3,200	3.23%	0.36%
	Wb	East	23,700	25,000	5.49%	0.61%
	Nb	South	14,300	14,300	0.00%	0.00%
	Eb	West	27,900	28,600	2.51%	0.28%
5.San Dieguito Dr / Jimmy Durante Blvd	Sb	North	10,500	10,400	-0.95%	-0.11%
	Wb	East				
	Nb	South	9,900	9,800	-1.01%	-0.11%
	Eb	West				

AVERAGE GROWTH	-0.63%	-0.07%
AVERAGE GROWTH USING ONLY DATA SETS WITH POSITIVE GROWTH	4.38%	0.49%

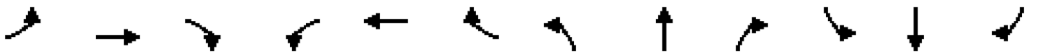
Growth Factor Calculations

INTERSECTION	DIRECTION	LEG	SANDAG 2035 AMB2+	SANDAG 2050 AMB2+	OVERALL GROWTH FACTOR (15 YEARS)	ANNUAL GROWTH FACTOR
1. Camino Del Mar / Via De La Valle	Sb	North	12,700	15,100	18.90%	1.26%
	Wb	East	10,400	11,200	7.69%	0.51%
	Nb	South	8,200	9,600	17.07%	1.14%
	Eb	West	2,400	2,600	8.33%	0.56%
2. Via De La Valle / Jimmy Durante Blvd	Sb	North	16,900	17,100	1.18%	0.08%
	Wb	East	38,300	38,500	0.52%	0.03%
	Nb	South	16,100	15,700	-2.48%	-0.17%
	Eb	West	12,300	13,100	6.50%	0.43%
3. I-5 SB / Via De La Valle	Sb	North	5,900	4,600	-22.03%	-1.47%
	Wb	East	27,500	27,000	-1.82%	-0.12%
	Nb	South	10,100	11,000	8.91%	0.59%
	Eb	West	28,200	27,600	-2.13%	-0.14%
4. I-5 NB / Via De La Valle	Sb	North	3,200	2,600	-18.75%	-1.25%
	Wb	East	25,000	25,100	0.40%	0.03%
	Nb	South	14,300	14,800	3.50%	0.23%
	Eb	West	28,600	29,500	3.15%	0.21%
5.San Dieguito Dr / Jimmy Durante Blvd	Sb	North	10,400	10,200	-1.92%	-0.13%
	Wb	East				
	Nb	South	9,800	9,600	-2.04%	-0.14%
	Eb	West				

AVERAGE GROWTH	1.39%	0.09%
AVERAGE GROWTH USING ONLY DATA SETS WITH POSITIVE GROWTH	6.92%	0.46%

APPENDIX H

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2028 WITHOUT PROJECT



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	89	20	129	123	229	15	103	123	190	194	5
Future Volume (veh/h)	3	89	20	129	123	229	15	103	123	190	194	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	131	29	165	158	294	16	113	135	218	223	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	424	92	535	543	446	28	799	336	284	1301	35
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.22	0.22	0.16	0.37	0.37
Sat Flow, veh/h	11	1462	317	1217	1870	1538	1781	3554	1493	1781	3530	95
Grp Volume(v), veh/h	164	0	0	165	158	294	16	113	135	218	112	117
Grp Sat Flow(s),veh/h/ln	1790	0	0	1217	1870	1538	1781	1777	1493	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.3	8.5	0.4	1.3	3.9	5.9	2.1	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.7	3.3	8.5	0.4	1.3	3.9	5.9	2.1	2.2
Prop In Lane	0.02		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	593	0	0	535	543	446	28	799	336	284	655	681
V/C Ratio(X)	0.28	0.00	0.00	0.31	0.29	0.66	0.56	0.14	0.40	0.77	0.17	0.17
Avail Cap(c_a), veh/h	1203	0	0	957	1191	979	226	1770	744	933	1590	1654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.0	13.9	15.7	24.6	15.6	16.7	20.3	10.7	10.7
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.3	1.7	16.4	0.1	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.2	1.2	2.6	0.3	0.5	1.2	2.4	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	14.3	14.2	17.4	41.0	15.7	17.4	24.6	10.8	10.8
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		164			617			264			447	
Approach Delay, s/veh		14.2			15.7			18.1			17.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.6	17.2		20.5	5.4	24.5		20.5				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	7.9	5.9		5.6	2.4	4.2		10.5				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.3		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.5	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	472	16	340	634	377	34	70	212	572	80	61
Future Volume (veh/h)	43	472	16	340	634	377	34	70	212	572	80	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	502	17	400	746	444	44	90	0	715	100	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	1335	45	445	1012	598	175	183		760	411	
Arrive On Green	0.03	0.38	0.38	0.22	0.80	0.80	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3504	118	3456	2114	1250	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	46	254	265	400	626	564	44	90	0	715	100	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.6	14.5	14.5	15.8	24.1	24.5	3.2	6.4	0.0	28.5	6.2	0.0
Cycle Q Clear(g_c), s	3.6	14.5	14.5	15.8	24.1	24.5	3.2	6.4	0.0	28.5	6.2	0.0
Prop In Lane	1.00		0.06	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	677	703	445	851	760	175	183		760	411	
V/C Ratio(X)	0.78	0.38	0.38	0.90	0.74	0.74	0.25	0.49		0.94	0.24	
Avail Cap(c_a), veh/h	65	677	703	479	851	760	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	31.3	31.3	54.1	9.7	9.8	58.4	59.8	0.0	53.7	45.0	0.0
Incr Delay (d2), s/veh	40.9	1.6	1.5	16.1	2.8	3.2	0.7	2.0	0.0	19.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.4	6.7	7.1	5.3	4.9	1.5	3.1	0.0	14.3	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	108.0	32.9	32.8	70.2	12.5	13.0	59.1	61.8	0.0	73.1	45.3	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		565			1590			134			815	
Approach Delay, s/veh		39.0			27.2			61.0			69.7	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.2	59.5		36.7	10.6	73.2		19.5				
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8				
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0				
Max Q Clear Time (g_c+I1), s	17.8	16.5		30.5	5.6	26.5		8.4				
Green Ext Time (p_c), s	0.3	2.7		0.3	0.0	8.2		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	42.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	563	712	0	1120	435	0	0	0	245	0	318
Future Volume (veh/h)	0	563	712	0	1120	435	0	0	0	245	0	318
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	670	0	0	1302	0				266	0	346
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	670	0	0	1302	0				266	0	346
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	17.1	0.0	0.0	0.0	0.0				17.9	0.0	12.5
Cycle Q Clear(g_c), s	0.0	17.1	0.0	0.0	0.0	0.0				17.9	0.0	12.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.29		0.00	0.57					0.55	0.00	0.40
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.67	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.8	0.0	0.0	0.0	0.0				43.8	0.0	41.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.8	0.0				4.5	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.7	0.0	0.0	0.2	0.0				8.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.0	0.0	0.0	0.8	0.0				48.3	0.0	43.2
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		670			1302						612	
Approach Delay, s/veh		19.0			0.8						45.4	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	19.1	19.9	2.0
Green Ext Time (p_c), s	5.0	2.1	12.7

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	553	236	0	895	384	680	0	516	0	0	0
Future Volume (veh/h)	0	553	236	0	895	384	680	0	516	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	608	0	0	994	0	914	0	374			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	608	0	0	994	0	914	0	374			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.6	0.0	0.0	29.9	0.0	25.6	0.0	23.1			
Cycle Q Clear(g_c), s	0.0	3.6	0.0	0.0	29.9	0.0	25.6	0.0	23.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.38		0.00	0.62		0.55	0.00	0.50			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.3	0.0	26.4	0.0	25.7			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.8	0.0	1.3	0.0	2.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	0.0	12.7	0.0	11.2	0.0	9.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	31.1	0.0	27.7	0.0	28.2			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		608			994			1288				
Approach Delay, s/veh		4.6			31.1			27.8				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.6	31.9	27.6
Green Ext Time (p_c), s	4.4	7.5	5.8

Intersection Summary	
HCM 7th Control Delay, s/veh	24.1
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	54	290	414
Demand Flow Rate, veh/h	12	55	295	422
Vehicles Circulating, veh/h	424	282	42	18
Vehicles Exiting, veh/h	16	55	394	319
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.0	4.7	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	55	295	422
Cap Entry Lane, veh/h	895	1035	1322	1355
Entry HV Adj Factor	1.000	0.982	0.982	0.980
Flow Entry, veh/h	12	54	290	414
Cap Entry, veh/h	894	1015	1296	1326
V/C Ratio	0.013	0.053	0.223	0.312
Control Delay, s/veh	4.1	4.0	4.7	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	288	420	3
Future Vol, veh/h	0	2	0	288	420	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	313	457	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	230	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	658	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	658	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.49	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	658	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	230	333	7
Future Vol, veh/h	0	0	0	230	333	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	250	362	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	612	362	370	0	-	0
Stage 1	362	-	-	-	-	-
Stage 2	250	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	457	683	1189	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	457	683	1189	-	-	-
Mov Cap-2 Maneuver	457	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	792	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

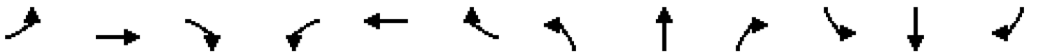
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	247	7	49	336
Future Vol, veh/h	2	15	247	7	49	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	268	8	53	365

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	561	138	0	0	276	0
Stage 1	272	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	457	885	-	-	1284	-
Stage 1	749	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	436	885	-	-	1284	-
Mov Cap-2 Maneuver	529	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	701	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.49	0	1.26
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	820	458	-
HCM Lane V/C Ratio	-	-	0.023	0.041	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	97	14	184	94	296	32	383	114	278	198	16
Future Volume (veh/h)	8	97	14	184	94	296	32	383	114	278	198	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	128	18	211	108	340	36	426	127	287	204	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	463	62	532	564	464	54	762	320	355	1276	99
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	44	1535	204	1233	1870	1539	1781	3554	1490	1781	3329	258
Grp Volume(v), veh/h	157	0	0	211	108	340	36	426	127	287	108	112
Grp Sat Flow(s),veh/h/ln	1783	0	0	1233	1870	1539	1781	1777	1490	1781	1777	1810
Q Serve(g_s), s	0.0	0.0	0.0	2.5	2.5	11.4	1.2	6.2	4.2	8.9	2.3	2.3
Cycle Q Clear(g_c), s	3.8	0.0	0.0	6.3	2.5	11.4	1.2	6.2	4.2	8.9	2.3	2.3
Prop In Lane	0.07		0.11	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	604	0	0	532	564	464	54	762	320	355	681	694
V/C Ratio(X)	0.26	0.00	0.00	0.40	0.19	0.73	0.66	0.56	0.40	0.81	0.16	0.16
Avail Cap(c_a), veh/h	1042	0	0	848	1043	858	198	1487	624	848	1392	1418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	16.0	14.9	18.0	27.6	20.2	19.4	22.0	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.3	13.1	0.6	0.8	4.4	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	2.0	0.9	3.7	0.7	2.4	1.4	3.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	0.0	0.0	16.5	15.1	20.3	40.7	20.8	20.2	26.4	11.8	11.8
LnGrp LOS	B			B	B	C	D	C	C	C	B	B
Approach Vol, veh/h		157			659			589			507	
Approach Delay, s/veh		15.6			18.2			21.9			20.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.1	18.3		23.3	6.4	28.0		23.3				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	10.9	8.2		5.8	3.2	4.3		13.4				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.6									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	513	33	324	520	328	54	137	632	398	99	43
Future Volume (veh/h)	53	513	33	324	520	328	54	137	632	398	99	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	570	37	338	542	342	58	147	0	498	124	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	1427	92	388	1016	640	210	220		609	329	
Arrive On Green	0.04	0.42	0.42	0.19	0.82	0.82	0.12	0.12	0.00	0.18	0.18	0.00
Sat Flow, veh/h	1781	3382	219	3456	2058	1297	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	59	299	308	338	468	416	58	147	0	498	124	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1825	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.6	16.4	16.4	13.3	11.5	11.6	4.2	10.5	0.0	19.4	8.2	0.0
Cycle Q Clear(g_c), s	4.6	16.4	16.4	13.3	11.5	11.6	4.2	10.5	0.0	19.4	8.2	0.0
Prop In Lane	1.00		0.12	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	76	750	770	388	877	779	210	220		609	329	
V/C Ratio(X)	0.78	0.40	0.40	0.87	0.53	0.53	0.28	0.67		0.82	0.38	
Avail Cap(c_a), veh/h	103	750	770	464	877	779	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.4	28.1	28.1	55.9	7.2	7.2	56.3	59.1	0.0	55.5	50.9	0.0
Incr Delay (d2), s/veh	22.7	1.6	1.6	12.9	0.5	0.6	0.7	3.5	0.0	5.6	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	7.2	7.4	6.0	3.0	2.7	1.9	5.1	0.0	8.9	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	89.1	29.7	29.7	68.8	7.8	7.9	57.0	62.6	0.0	61.1	51.6	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		666			1222			205			622	
Approach Delay, s/veh		35.0			24.7			61.0			59.2	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.9	65.3		30.6	11.8	75.3		22.3
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	15.3	18.4		21.4	6.6	13.6		12.5
Green Ext Time (p_c), s	0.4	3.1		1.8	0.0	6.0		0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	37.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	1005	598	0	914	386	0	0	0	315	0	322
Future Volume (veh/h)	0	1005	598	0	914	386	0	0	0	315	0	322
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1117	0	0	1016	0				362	0	370
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1117	0	0	1016	0				362	0	370
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	20.5	0.0	0.0	0.0	0.0				22.5	0.0	11.6
Cycle Q Clear(g_c), s	0.0	20.5	0.0	0.0	0.0	0.0				22.5	0.0	11.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.57		0.00	0.52					0.55	0.00	0.31
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.00	0.00	0.86	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.4	0.0	0.0	0.0	0.0				34.8	0.0	31.4
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.9	0.0				3.3	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	0.0	0.2	0.0				10.4	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.1	0.0	0.0	0.9	0.0				38.0	0.0	32.1
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1117			1016						732	
Approach Delay, s/veh		12.1			0.9						35.0	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	22.5	24.5	2.0
Green Ext Time (p_c), s	10.0	2.8	8.4

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	805	518	0	829	460	450	0	415	0	0	0
Future Volume (veh/h)	0	805	518	0	829	460	450	0	415	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	875	0	0	911	0	651	0	311			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	875	0	0	911	0	651	0	311			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.7	0.0	19.0	0.0	21.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.7	0.0	19.0	0.0	21.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.47		0.00	0.48		0.47	0.00	0.50			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.9	0.0	31.6	0.0	32.2			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.9	0.0	1.1	0.0	2.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	9.3	0.0	8.5	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.7	0.0	0.0	21.8	0.0	32.8	0.0	35.2			
LnGrp LOS		A			C		C		D			
Approach Vol, veh/h		875			911			962				
Approach Delay, s/veh		0.7			21.8			33.5				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.7	23.0
Green Ext Time (p_c), s	7.1	7.0	3.9

Intersection Summary	
HCM 7th Control Delay, s/veh	19.2
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	78	844	324
Demand Flow Rate, veh/h	21	79	861	331
Vehicles Circulating, veh/h	338	838	49	17
Vehicles Exiting, veh/h	10	72	310	900
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.9	7.9	11.3	4.8
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	79	861	331
Cap Entry Lane, veh/h	978	587	1313	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	78	844	324
Cap Entry, veh/h	974	579	1285	1326
V/C Ratio	0.022	0.135	0.657	0.244
Control Delay, s/veh	3.9	7.9	11.3	4.8
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	783	582	0
Future Vol, veh/h	0	0	0	783	582	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	851	633	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	316	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	580	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	580	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	659	300	2
Future Vol, veh/h	3	3	0	659	300	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	716	326	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1042	326	-	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	254	715	0	-	-	-
Stage 1	731	-	0	-	-	-
Stage 2	484	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	254	715	-	-	-	-
Mov Cap-2 Maneuver	254	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.77	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	375	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	162	563	16	147	334
Future Vol, veh/h	10	162	563	16	147	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	176	612	17	160	363

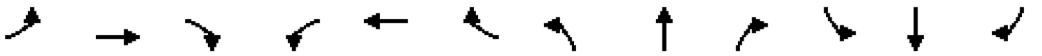
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1122	315	0	0	629	0
Stage 1	621	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	200	681	-	-	949	-
Stage 1	498	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	162	681	-	-	949	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13.06	0	3.58
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	633	853	-
HCM Lane V/C Ratio	-	-	0.296	0.168	-
HCM Control Delay (s/veh)	-	-	13.1	9.6	1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

APPENDIX I

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2028 WITH PROJECT (SITE 1 & SITE 2)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Future Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	131	29	167	158	296	16	113	135	220	223	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	426	92	536	544	448	28	796	334	287	1303	35
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.22	0.22	0.16	0.37	0.37
Sat Flow, veh/h	11	1462	317	1217	1870	1538	1781	3554	1493	1781	3530	95
Grp Volume(v), veh/h	164	0	0	167	158	296	16	113	135	220	112	117
Grp Sat Flow(s),veh/h/ln	1790	0	0	1217	1870	1538	1781	1777	1493	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.8	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Prop In Lane	0.02		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	594	0	0	536	544	448	28	796	334	287	656	682
V/C Ratio(X)	0.28	0.00	0.00	0.31	0.29	0.66	0.56	0.14	0.40	0.77	0.17	0.17
Avail Cap(c_a), veh/h	1198	0	0	954	1186	976	225	1763	741	929	1584	1647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.0	13.9	15.7	24.7	15.7	16.8	20.3	10.8	10.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.7	16.4	0.1	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.3	1.2	2.6	0.3	0.5	1.2	2.5	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	14.4	14.2	17.4	41.1	15.8	17.5	24.6	10.9	10.9
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		164			621			264			449	
Approach Delay, s/veh		14.2			15.8			18.2			17.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	17.2		20.6	5.4	24.6		20.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	8.0	5.9		5.6	2.5	4.2		10.5				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.3		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.6	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	472	17	348	634	377	38	72	234	572	81	61
Future Volume (veh/h)	43	472	17	348	634	377	38	72	234	572	81	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	502	18	409	746	444	49	92	0	715	101	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	1324	47	453	1012	598	175	184		760	411	
Arrive On Green	0.03	0.38	0.38	0.22	0.80	0.80	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3496	125	3456	2114	1250	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	46	255	265	409	626	564	49	92	0	715	101	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1844	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.6	14.6	14.6	16.1	24.1	24.5	3.6	6.5	0.0	28.5	6.2	0.0
Cycle Q Clear(g_c), s	3.6	14.6	14.6	16.1	24.1	24.5	3.6	6.5	0.0	28.5	6.2	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	673	698	453	850	760	175	184		760	411	
V/C Ratio(X)	0.78	0.38	0.38	0.90	0.74	0.74	0.28	0.50		0.94	0.25	
Avail Cap(c_a), veh/h	65	673	698	479	850	760	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	31.5	31.6	53.8	9.7	9.8	58.5	59.9	0.0	53.7	45.0	0.0
Incr Delay (d2), s/veh	40.9	1.6	1.6	16.9	2.8	3.2	0.9	2.1	0.0	19.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.5	6.7	7.3	5.3	4.9	1.6	3.2	0.0	14.3	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	108.0	33.2	33.1	70.7	12.5	13.0	59.4	62.0	0.0	73.1	45.3	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		566			1599			141			816	
Approach Delay, s/veh		39.2			27.6			61.1			69.7	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.5	59.2		36.7	10.6	73.2		19.5
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0
Max Q Clear Time (g_c+I1), s	18.1	16.6		30.5	5.6	26.5		8.5
Green Ext Time (p_c), s	0.2	2.7		0.3	0.0	8.2		0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	42.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Future Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	683	0	0	1309	0				266	0	348
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	683	0	0	1309	0				266	0	348
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Cycle Q Clear(g_c), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.30		0.00	0.57					0.55	0.00	0.41
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.67	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.9	0.0	0.0	0.0	0.0				43.8	0.0	41.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.8	0.0				4.5	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	0.0	0.2	0.0				8.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.1	0.0	0.0	0.8	0.0				48.3	0.0	43.2
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		683			1309						614	
Approach Delay, s/veh		19.1			0.8						45.4	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	19.5	19.9	2.0
Green Ext Time (p_c), s	5.1	2.1	12.8

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Future Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	611	0	0	997	0	918	0	374			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	611	0	0	997	0	918	0	374			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Cycle Q Clear(g_c), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.38		0.00	0.62		0.55	0.00	0.50			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.4	0.0	26.4	0.0	25.7			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.8	0.0	1.3	0.0	2.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	0.0	12.7	0.0	11.2	0.0	9.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	31.2	0.0	27.7	0.0	28.2			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		611			997			1292				
Approach Delay, s/veh		4.6			31.2			27.8				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.6	32.0	27.7
Green Ext Time (p_c), s	4.4	7.5	5.8

Intersection Summary	
HCM 7th Control Delay, s/veh	24.1
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	54	291	416
Demand Flow Rate, veh/h	12	55	296	424
Vehicles Circulating, veh/h	426	283	42	18
Vehicles Exiting, veh/h	16	55	396	320
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.2	4.0	4.7	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	55	296	424
Cap Entry Lane, veh/h	894	1034	1322	1355
Entry HV Adj Factor	1.000	0.982	0.982	0.980
Flow Entry, veh/h	12	54	291	416
Cap Entry, veh/h	892	1014	1296	1326
V/C Ratio	0.013	0.053	0.224	0.313
Control Delay, s/veh	4.2	4.0	4.7	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	30	0	316	420	14
Future Vol, veh/h	0	30	0	316	420	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	33	0	343	457	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	236	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	652	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	652	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.81	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	652	-	-
HCM Lane V/C Ratio	-	0.05	-	-
HCM Control Delay (s/veh)	-	10.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	231	334	7
Future Vol, veh/h	0	0	0	231	334	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	251	363	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	614	363	371	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	251	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	455	682	1188	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	682	1188	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	791	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1188	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

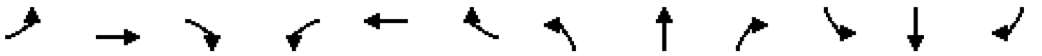
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	248	7	49	337
Future Vol, veh/h	2	15	248	7	49	337
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	270	8	53	366

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	563	139	0	0	277	0
Stage 1	273	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	456	884	-	-	1283	-
Stage 1	748	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	435	884	-	-	1283	-
Mov Cap-2 Maneuver	528	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.5	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	819	457	-
HCM Lane V/C Ratio	-	-	0.023	0.042	-
HCM Control Delay (s/veh)	-	-	9.5	7.9	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Future Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	128	18	213	108	341	36	426	128	289	204	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	463	62	532	564	464	54	761	319	357	1279	99
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	44	1535	204	1233	1870	1539	1781	3554	1490	1781	3329	258
Grp Volume(v), veh/h	157	0	0	213	108	341	36	426	128	289	108	112
Grp Sat Flow(s),veh/h/ln	1783	0	0	1233	1870	1539	1781	1777	1490	1781	1777	1810
Q Serve(g_s), s	0.0	0.0	0.0	2.7	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Cycle Q Clear(g_c), s	3.8	0.0	0.0	6.5	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Prop In Lane	0.07		0.11	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	605	0	0	532	564	464	54	761	319	357	683	695
V/C Ratio(X)	0.26	0.00	0.00	0.40	0.19	0.73	0.67	0.56	0.40	0.81	0.16	0.16
Avail Cap(c_a), veh/h	1038	0	0	844	1039	855	197	1482	621	844	1386	1413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	16.1	15.0	18.1	27.7	20.3	19.5	22.1	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.3	13.1	0.6	0.8	4.4	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	2.0	0.9	3.7	0.7	2.4	1.4	3.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	0.0	0.0	16.6	15.1	20.4	40.9	20.9	20.3	26.5	11.8	11.8
LnGrp LOS	B			B	B	C	D	C	C	C	B	B
Approach Vol, veh/h		157			662			590			509	
Approach Delay, s/veh		15.6			18.3			22.0			20.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	18.3		23.3	6.4	28.1		23.3				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	11.0	8.2		5.8	3.2	4.3		13.5				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		19.7	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	513	36	347	520	328	57	138	647	398	101	43
Future Volume (veh/h)	53	513	36	347	520	328	57	138	647	398	101	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	570	40	361	542	342	61	148	0	498	126	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	1396	98	409	1015	640	211	221		609	330	
Arrive On Green	0.04	0.42	0.42	0.20	0.82	0.82	0.12	0.12	0.00	0.18	0.18	0.00
Sat Flow, veh/h	1781	3362	235	3456	2058	1297	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	59	301	309	361	468	416	61	148	0	498	126	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.6	16.7	16.8	14.2	11.6	11.6	4.4	10.6	0.0	19.4	8.3	0.0
Cycle Q Clear(g_c), s	4.6	16.7	16.8	14.2	11.6	11.6	4.4	10.6	0.0	19.4	8.3	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	76	738	756	409	876	778	211	221		609	330	
V/C Ratio(X)	0.78	0.41	0.41	0.88	0.53	0.53	0.29	0.67		0.82	0.38	
Avail Cap(c_a), veh/h	103	738	756	464	876	778	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.4	28.8	28.8	55.2	7.3	7.3	56.4	59.1	0.0	55.5	50.9	0.0
Incr Delay (d2), s/veh	22.7	1.7	1.6	14.6	0.5	0.6	0.8	3.5	0.0	5.6	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	7.4	7.6	6.4	3.0	2.7	2.0	5.2	0.0	8.9	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	89.1	30.5	30.5	69.9	7.8	7.9	57.1	62.6	0.0	61.1	51.7	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		669			1245			209			624	
Approach Delay, s/veh		35.7			25.8			61.0			59.2	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.8	64.3		30.6	11.8	75.2		22.3				
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8				
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2				
Max Q Clear Time (g_c+I1), s	16.2	18.8		21.4	6.6	13.6		12.6				
Green Ext Time (p_c), s	0.3	3.1		1.9	0.0	6.0		0.8				

Intersection Summary	
HCM 7th Control Delay, s/veh	38.5
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Future Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1124	0	0	1032	0				362	0	379
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1124	0	0	1032	0				362	0	379
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Cycle Q Clear(g_c), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.58		0.00	0.53					0.55	0.00	0.32
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.61	0.00	0.00	0.86	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.4	0.0	0.0	0.0	0.0				34.8	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.9	0.0				3.3	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	0.0	0.2	0.0				10.4	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.2	0.0	0.0	0.9	0.0				38.0	0.0	32.2
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1124			1032						741	
Approach Delay, s/veh		12.2			0.9						35.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	22.7	24.5	2.0
Green Ext Time (p_c), s	10.1	2.8	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Future Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	876	0	0	914	0	664	0	311			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	876	0	0	914	0	664	0	311			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.47		0.00	0.49		0.48	0.00	0.50			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.9	0.0	31.8	0.0	32.2			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.9	0.0	1.2	0.0	2.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	9.3	0.0	8.7	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.7	0.0	0.0	21.8	0.0	33.0	0.0	35.2			
LnGrp LOS		A			C		C		D			
Approach Vol, veh/h		876			914			975				
Approach Delay, s/veh		0.7			21.8			33.7				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.8	23.0
Green Ext Time (p_c), s	7.1	7.1	4.0

Intersection Summary	
HCM 7th Control Delay, s/veh	19.3
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	78	845	325
Demand Flow Rate, veh/h	21	79	862	332
Vehicles Circulating, veh/h	339	839	49	17
Vehicles Exiting, veh/h	10	72	311	901
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.9	7.9	11.3	4.8
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	79	862	332
Cap Entry Lane, veh/h	977	586	1313	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	78	845	325
Cap Entry, veh/h	973	578	1285	1326
V/C Ratio	0.022	0.135	0.658	0.245
Control Delay, s/veh	3.9	7.9	11.3	4.8
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	19	0	802	582	29
Future Vol, veh/h	0	19	0	802	582	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	21	0	872	633	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	332	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	566	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	566	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	566	-	-
HCM Lane V/C Ratio	-	0.036	-	-
HCM Control Delay (s/veh)	-	11.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	660	301	2
Future Vol, veh/h	3	3	0	660	301	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	717	327	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1045	327	-	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	253	714	0	-	-	-
Stage 1	731	-	0	-	-	-
Stage 2	483	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	253	714	-	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.79	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	374	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	162	564	16	147	335
Future Vol, veh/h	10	162	564	16	147	335
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	176	613	17	160	364

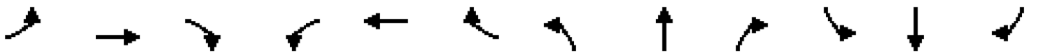
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1123	315	0	0	630	0
Stage 1	622	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	199	681	-	-	948	-
Stage 1	498	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	162	681	-	-	948	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13.07	0	3.58
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	632	852	-
HCM Lane V/C Ratio	-	-	0.296	0.169	-
HCM Control Delay (s/veh)	-	-	13.1	9.6	1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

APPENDIX J

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2028 WITH PROJECT (SITE 3)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Future Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	131	29	167	158	296	16	113	135	220	223	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	426	92	536	544	448	28	796	334	287	1303	35
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.22	0.22	0.16	0.37	0.37
Sat Flow, veh/h	11	1462	317	1217	1870	1538	1781	3554	1493	1781	3530	95
Grp Volume(v), veh/h	164	0	0	167	158	296	16	113	135	220	112	117
Grp Sat Flow(s),veh/h/ln	1790	0	0	1217	1870	1538	1781	1777	1493	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.8	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Prop In Lane	0.02		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	594	0	0	536	544	448	28	796	334	287	656	682
V/C Ratio(X)	0.28	0.00	0.00	0.31	0.29	0.66	0.56	0.14	0.40	0.77	0.17	0.17
Avail Cap(c_a), veh/h	1198	0	0	954	1186	976	225	1763	741	929	1584	1647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.0	13.9	15.7	24.7	15.7	16.8	20.3	10.8	10.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.7	16.4	0.1	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.3	1.2	2.6	0.3	0.5	1.2	2.5	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	14.4	14.2	17.4	41.1	15.8	17.5	24.6	10.9	10.9
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		164			621			264			449	
Approach Delay, s/veh		14.2			15.8			18.2			17.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	17.2		20.6	5.4	24.6		20.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	8.0	5.9		5.6	2.5	4.2		10.5				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.3		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.6	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	472	17	348	634	377	37	72	234	572	81	61
Future Volume (veh/h)	43	472	17	348	634	377	37	72	234	572	81	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	502	18	409	746	444	47	92	0	715	101	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	1324	47	453	1012	598	175	184		760	411	
Arrive On Green	0.03	0.38	0.38	0.22	0.80	0.80	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3496	125	3456	2114	1250	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	46	255	265	409	626	564	47	92	0	715	101	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1844	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.6	14.6	14.6	16.1	24.1	24.5	3.4	6.5	0.0	28.5	6.2	0.0
Cycle Q Clear(g_c), s	3.6	14.6	14.6	16.1	24.1	24.5	3.4	6.5	0.0	28.5	6.2	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	673	698	453	851	760	175	184		760	411	
V/C Ratio(X)	0.78	0.38	0.38	0.90	0.74	0.74	0.27	0.50		0.94	0.25	
Avail Cap(c_a), veh/h	65	673	698	479	851	760	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	31.5	31.6	53.8	9.7	9.8	58.5	59.9	0.0	53.7	45.0	0.0
Incr Delay (d2), s/veh	40.9	1.6	1.6	16.9	2.8	3.2	0.8	2.1	0.0	19.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.5	6.7	7.3	5.3	4.9	1.6	3.2	0.0	14.3	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	108.0	33.2	33.1	70.7	12.5	13.0	59.3	62.0	0.0	73.1	45.3	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		566			1599			139			816	
Approach Delay, s/veh		39.2			27.6			61.1			69.7	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.5	59.2		36.7	10.6	73.2		19.5
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0
Max Q Clear Time (g_c+I1), s	18.1	16.6		30.5	5.6	26.5		8.5
Green Ext Time (p_c), s	0.2	2.7		0.3	0.0	8.2		0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	42.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Future Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	683	0	0	1309	0				266	0	348
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	683	0	0	1309	0				266	0	348
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Cycle Q Clear(g_c), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.30		0.00	0.57					0.55	0.00	0.41
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.67	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.9	0.0	0.0	0.0	0.0				43.8	0.0	41.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.8	0.0				4.5	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	0.0	0.2	0.0				8.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.1	0.0	0.0	0.8	0.0				48.3	0.0	43.2
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		683			1309						614	
Approach Delay, s/veh		19.1			0.8						45.4	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	19.5	19.9	2.0
Green Ext Time (p_c), s	5.1	2.1	12.8

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Future Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	611	0	0	997	0	918	0	374			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	611	0	0	997	0	918	0	374			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Cycle Q Clear(g_c), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.38		0.00	0.62		0.55	0.00	0.50			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.4	0.0	26.4	0.0	25.7			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.8	0.0	1.3	0.0	2.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	0.0	12.7	0.0	11.2	0.0	9.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	31.2	0.0	27.7	0.0	28.2			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		611			997			1292				
Approach Delay, s/veh		4.6			31.2			27.8				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	69.0	69.0	71.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	63.1	63.1	65.9
Max Q Clear Time (g_c+I1), s	5.6	32.0	27.7
Green Ext Time (p_c), s	4.4	7.5	5.8

Intersection Summary	
HCM 7th Control Delay, s/veh	24.1
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	54	291	416
Demand Flow Rate, veh/h	12	55	296	424
Vehicles Circulating, veh/h	426	283	42	18
Vehicles Exiting, veh/h	16	55	396	320
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.2	4.0	4.7	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	55	296	424
Cap Entry Lane, veh/h	894	1034	1322	1355
Entry HV Adj Factor	1.000	0.982	0.982	0.980
Flow Entry, veh/h	12	54	291	416
Cap Entry, veh/h	892	1014	1296	1326
V/C Ratio	0.013	0.053	0.224	0.313
Control Delay, s/veh	4.2	4.0	4.7	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	315	430	3
Future Vol, veh/h	0	2	0	315	430	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	342	467	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	235	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	653	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	653	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.53	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	653	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	1	1	230	333	17
Future Vol, veh/h	27	1	1	230	333	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	1	1	250	362	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	614	362	380	0	-	0
Stage 1	362	-	-	-	-	-
Stage 2	252	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	455	683	1178	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	683	1178	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.38	0.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	8	-	460	-	-
HCM Lane V/C Ratio	0.001	-	0.066	-	-
HCM Control Delay (s/veh)	8.1	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

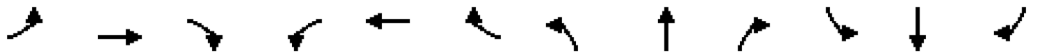
Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	15	274	7	49	346
Future Vol, veh/h	2	15	274	7	49	346
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	298	8	53	376

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	596	153	0	0	305	0
Stage 1	302	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	435	866	-	-	1252	-
Stage 1	724	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	414	866	-	-	1252	-
Mov Cap-2 Maneuver	513	-	-	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	695	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.6	0	1.25
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	801	447	-
HCM Lane V/C Ratio	-	-	0.023	0.043	-
HCM Control Delay (s/veh)	-	-	9.6	8	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Future Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	128	18	213	108	341	36	426	128	289	204	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	463	62	532	564	464	54	761	319	357	1279	99
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	44	1535	204	1233	1870	1539	1781	3554	1490	1781	3329	258
Grp Volume(v), veh/h	157	0	0	213	108	341	36	426	128	289	108	112
Grp Sat Flow(s),veh/h/ln	1783	0	0	1233	1870	1539	1781	1777	1490	1781	1777	1810
Q Serve(g_s), s	0.0	0.0	0.0	2.7	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Cycle Q Clear(g_c), s	3.8	0.0	0.0	6.5	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Prop In Lane	0.07		0.11	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	605	0	0	532	564	464	54	761	319	357	683	695
V/C Ratio(X)	0.26	0.00	0.00	0.40	0.19	0.73	0.67	0.56	0.40	0.81	0.16	0.16
Avail Cap(c_a), veh/h	1038	0	0	844	1039	855	197	1482	621	844	1386	1413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	16.1	15.0	18.1	27.7	20.3	19.5	22.1	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.3	13.1	0.6	0.8	4.4	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	2.0	0.9	3.7	0.7	2.4	1.4	3.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	0.0	0.0	16.6	15.1	20.4	40.9	20.9	20.3	26.5	11.8	11.8
LnGrp LOS	B			B	B	C	D	C	C	C	B	B
Approach Vol, veh/h		157			662			590			509	
Approach Delay, s/veh		15.6			18.3			22.0			20.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	18.3		23.3	6.4	28.1		23.3				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	11.0	8.2		5.8	3.2	4.3		13.5				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary		
HCM 7th Control Delay, s/veh		19.7
HCM 7th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	513	36	347	520	328	56	138	647	398	101	43
Future Volume (veh/h)	53	513	36	347	520	328	56	138	647	398	101	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	570	40	361	542	342	60	148	0	498	126	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	1396	98	409	1015	640	210	221		609	330	
Arrive On Green	0.04	0.42	0.42	0.20	0.82	0.82	0.12	0.12	0.00	0.18	0.18	0.00
Sat Flow, veh/h	1781	3362	235	3456	2058	1297	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	59	301	309	361	468	416	60	148	0	498	126	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.6	16.7	16.8	14.2	11.6	11.6	4.3	10.6	0.0	19.4	8.3	0.0
Cycle Q Clear(g_c), s	4.6	16.7	16.8	14.2	11.6	11.6	4.3	10.6	0.0	19.4	8.3	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	76	738	756	409	876	778	210	221		609	330	
V/C Ratio(X)	0.78	0.41	0.41	0.88	0.53	0.53	0.29	0.67		0.82	0.38	
Avail Cap(c_a), veh/h	103	738	756	464	876	778	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.4	28.8	28.8	55.2	7.3	7.3	56.3	59.1	0.0	55.5	50.9	0.0
Incr Delay (d2), s/veh	22.7	1.7	1.6	14.6	0.5	0.6	0.7	3.5	0.0	5.6	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	7.4	7.6	6.4	3.0	2.7	2.0	5.2	0.0	8.9	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	89.1	30.5	30.5	69.9	7.8	7.9	57.1	62.6	0.0	61.1	51.7	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		669			1245			208			624	
Approach Delay, s/veh		35.6			25.8			61.0			59.2	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.8	64.3		30.6	11.8	75.3		22.3
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	16.2	18.8		21.4	6.6	13.6		12.6
Green Ext Time (p_c), s	0.3	3.1		1.9	0.0	6.0		0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	38.5
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↦	↱
Traffic Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Future Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1124	0	0	1032	0				362	0	379
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1124	0	0	1032	0				362	0	379
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Cycle Q Clear(g_c), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.58		0.00	0.53					0.55	0.00	0.32
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.61	0.00	0.00	0.86	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.4	0.0	0.0	0.0	0.0				34.8	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.9	0.0				3.3	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	0.0	0.2	0.0				10.4	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.2	0.0	0.0	0.9	0.0				38.0	0.0	32.2
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1124			1032						741	
Approach Delay, s/veh		12.2			0.9						35.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	22.7	24.5	2.0
Green Ext Time (p_c), s	10.1	2.8	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Future Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	876	0	0	914	0	664	0	311			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	876	0	0	914	0	664	0	311			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.47		0.00	0.49		0.48	0.00	0.50			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.9	0.0	31.8	0.0	32.2			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.9	0.0	1.2	0.0	2.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	9.3	0.0	8.7	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.7	0.0	0.0	21.8	0.0	33.0	0.0	35.2			
LnGrp LOS		A			C		C		D			
Approach Vol, veh/h		876			914			975				
Approach Delay, s/veh		0.7			21.8			33.7				
Approach LOS		A			C			C				

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	80.0		80.0		60.0	
Change Period (Y+Rc), s	5.9		5.9		5.1	
Max Green Setting (Gmax), s	74.1		74.1		54.9	
Max Q Clear Time (g_c+I1), s	2.0		24.8		23.0	
Green Ext Time (p_c), s	7.1		7.1		4.0	

Intersection Summary		
HCM 7th Control Delay, s/veh	19.3	
HCM 7th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	78	845	325
Demand Flow Rate, veh/h	21	79	862	332
Vehicles Circulating, veh/h	339	839	49	17
Vehicles Exiting, veh/h	10	72	311	901
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.9	7.9	11.3	4.8
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	79	862	332
Cap Entry Lane, veh/h	977	586	1313	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	78	845	325
Cap Entry, veh/h	973	578	1285	1326
V/C Ratio	0.022	0.135	0.658	0.245
Control Delay, s/veh	3.9	7.9	11.3	4.8
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	801	610	0
Future Vol, veh/h	0	0	0	801	610	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	871	663	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	332	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	567	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	567	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	4	1	659	300	30
Future Vol, veh/h	21	4	1	659	300	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	4	1	716	326	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1045	326	359	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	253	715	1200	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	253	715	1200	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	19.1	0.01	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1200	-	282	-	-
HCM Lane V/C Ratio	0.001	-	0.096	-	-
HCM Control Delay (s/veh)	8	-	19.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	162	581	16	147	362
Future Vol, veh/h	10	162	581	16	147	362
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	176	632	17	160	393

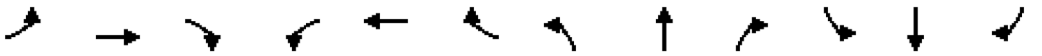
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1157	324	0	0	649	0
Stage 1	640	-	-	-	-	-
Stage 2	516	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	190	671	-	-	933	-
Stage 1	487	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	153	671	-	-	933	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	455	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13.25	0	3.52
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	622	831	-
HCM Lane V/C Ratio	-	-	0.301	0.171	-
HCM Control Delay (s/veh)	-	-	13.3	9.7	1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.6	-

APPENDIX K

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2028 WITH PROJECT (SITE 4 & SITE 5)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Future Volume (veh/h)	3	89	20	130	123	231	15	103	123	191	194	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	131	29	167	158	296	16	113	135	220	223	6
Peak Hour Factor	0.68	0.68	0.68	0.78	0.78	0.78	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	426	92	536	544	448	28	796	334	287	1303	35
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.02	0.22	0.22	0.16	0.37	0.37
Sat Flow, veh/h	11	1462	317	1217	1870	1538	1781	3554	1493	1781	3530	95
Grp Volume(v), veh/h	164	0	0	167	158	296	16	113	135	220	112	117
Grp Sat Flow(s),veh/h/ln	1790	0	0	1217	1870	1538	1781	1777	1493	1781	1777	1848
Q Serve(g_s), s	0.0	0.0	0.0	0.2	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.8	3.3	8.5	0.5	1.3	3.9	6.0	2.1	2.2
Prop In Lane	0.02		0.18	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	594	0	0	536	544	448	28	796	334	287	656	682
V/C Ratio(X)	0.28	0.00	0.00	0.31	0.29	0.66	0.56	0.14	0.40	0.77	0.17	0.17
Avail Cap(c_a), veh/h	1198	0	0	954	1186	976	225	1763	741	929	1584	1647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.0	13.9	15.7	24.7	15.7	16.8	20.3	10.8	10.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.3	1.7	16.4	0.1	0.8	4.3	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.3	1.2	2.6	0.3	0.5	1.2	2.5	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	14.4	14.2	17.4	41.1	15.8	17.5	24.6	10.9	10.9
LnGrp LOS	B			B	B	B	D	B	B	C	B	B
Approach Vol, veh/h		164			621			264			449	
Approach Delay, s/veh		14.2			15.8			18.2			17.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	17.2		20.6	5.4	24.6		20.6				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	26.4	25.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	8.0	5.9		5.6	2.5	4.2		10.5				
Green Ext Time (p_c), s	0.5	1.0		0.9	0.0	1.3		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		16.6	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	472	17	348	634	377	37	72	234	572	81	61
Future Volume (veh/h)	43	472	17	348	634	377	37	72	234	572	81	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	502	18	409	746	444	47	92	0	715	101	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.78	0.78	0.78	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	1324	47	453	1012	598	175	184		760	411	
Arrive On Green	0.03	0.38	0.38	0.22	0.80	0.80	0.10	0.10	0.00	0.22	0.22	0.00
Sat Flow, veh/h	1781	3496	125	3456	2114	1250	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	46	255	265	409	626	564	47	92	0	715	101	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1844	1728	1777	1587	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	3.6	14.6	14.6	16.1	24.1	24.5	3.4	6.5	0.0	28.5	6.2	0.0
Cycle Q Clear(g_c), s	3.6	14.6	14.6	16.1	24.1	24.5	3.4	6.5	0.0	28.5	6.2	0.0
Prop In Lane	1.00		0.07	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	673	698	453	851	760	175	184		760	411	
V/C Ratio(X)	0.78	0.38	0.38	0.90	0.74	0.74	0.27	0.50		0.94	0.25	
Avail Cap(c_a), veh/h	65	673	698	479	851	760	394	414		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.82	0.82	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.2	31.5	31.6	53.8	9.7	9.8	58.5	59.9	0.0	53.7	45.0	0.0
Incr Delay (d2), s/veh	40.9	1.6	1.6	16.9	2.8	3.2	0.8	2.1	0.0	19.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.5	6.7	7.3	5.3	4.9	1.6	3.2	0.0	14.3	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	108.0	33.2	33.1	70.7	12.5	13.0	59.3	62.0	0.0	73.1	45.3	0.0
LnGrp LOS	F	C	C	E	B	B	E	E		E	D	
Approach Vol, veh/h		566			1599			139			816	
Approach Delay, s/veh		39.2			27.6			61.1			69.7	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.5	59.2		36.7	10.6	73.2		19.5
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	19.4	* 35		31.1	5.1	49.0		31.0
Max Q Clear Time (g_c+I1), s	18.1	16.6		30.5	5.6	26.5		8.5
Green Ext Time (p_c), s	0.2	2.7		0.3	0.0	8.2		0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	42.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Future Volume (veh/h)	0	574	723	0	1126	435	0	0	0	245	0	320
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	683	0	0	1309	0				266	0	348
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2302		0	2302					482	0	858
Arrive On Green	0.00	0.43	0.00	0.00	1.00	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	683	0	0	1309	0				266	0	348
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Cycle Q Clear(g_c), s	0.0	17.5	0.0	0.0	0.0	0.0				17.9	0.0	12.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2302		0	2302					482	0	858
V/C Ratio(X)	0.00	0.30		0.00	0.57					0.55	0.00	0.41
Avail Cap(c_a), veh/h	0	2302		0	2302					482	0	858
HCM Platoon Ratio	1.00	0.67	0.67	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.67	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.9	0.0	0.0	0.0	0.0				43.8	0.0	41.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.8	0.0				4.5	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	0.0	0.2	0.0				8.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.1	0.0	0.0	0.8	0.0				48.3	0.0	43.2
LnGrp LOS		B			A					D		D
Approach Vol, veh/h		683			1309						614	
Approach Delay, s/veh		19.1			0.8						45.4	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	97.0	43.0	97.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	90.7	37.9	90.7
Max Q Clear Time (g_c+I1), s	19.5	19.9	2.0
Green Ext Time (p_c), s	5.1	2.1	12.8

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Future Volume (veh/h)	0	556	244	0	897	384	684	0	516	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	611	0	0	997	0	918	0	374			
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1602		0	1602		1677	0	741			
Arrive On Green	0.00	0.90	0.00	0.00	0.45	0.00	0.47	0.00	0.47			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1575			
Grp Volume(v), veh/h	0	611	0	0	997	0	918	0	374			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1575			
Q Serve(g_s), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Cycle Q Clear(g_c), s	0.0	3.6	0.0	0.0	30.0	0.0	25.7	0.0	23.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1602		0	1602		1677	0	741			
V/C Ratio(X)	0.00	0.38		0.00	0.62		0.55	0.00	0.50			
Avail Cap(c_a), veh/h	0	1602		0	1602		1677	0	741			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.0	0.0	0.0	29.4	0.0	26.4	0.0	25.7			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	1.8	0.0	1.3	0.0	2.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	0.0	12.7	0.0	11.2	0.0	9.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	4.6	0.0	0.0	31.2	0.0	27.7	0.0	28.2			
LnGrp LOS		A			C		C		C			
Approach Vol, veh/h		611			997			1292				
Approach Delay, s/veh		4.6			31.2			27.8				
Approach LOS		A			C			C				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		69.0				69.0		71.0				
Change Period (Y+Rc), s		5.9				5.9		5.1				
Max Green Setting (Gmax), s		63.1				63.1		65.9				
Max Q Clear Time (g_c+I1), s		5.6				32.0		27.7				
Green Ext Time (p_c), s		4.4				7.5		5.8				

Intersection Summary		
HCM 7th Control Delay, s/veh	24.1	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	12	54	291	416
Demand Flow Rate, veh/h	12	55	296	424
Vehicles Circulating, veh/h	426	283	42	18
Vehicles Exiting, veh/h	16	55	396	320
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.2	4.0	4.7	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	12	55	296	424
Cap Entry Lane, veh/h	894	1034	1322	1355
Entry HV Adj Factor	1.000	0.982	0.982	0.980
Flow Entry, veh/h	12	54	291	416
Cap Entry, veh/h	892	1014	1296	1326
V/C Ratio	0.013	0.053	0.224	0.313
Control Delay, s/veh	4.2	4.0	4.7	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	315	430	3
Future Vol, veh/h	0	2	0	315	430	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	342	467	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	235	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	653	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	653	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.53	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	653	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s/veh)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	231	334	7
Future Vol, veh/h	0	0	0	231	334	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	251	363	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	614	363	371	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	251	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	455	682	1188	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	682	1188	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	791	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1188	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

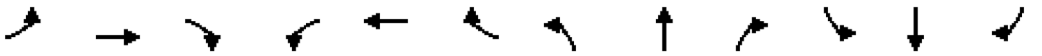
Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	42	247	8	59	336
Future Vol, veh/h	3	42	247	8	59	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	46	268	9	64	365

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	584	139	0	0	277	0
Stage 1	273	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	443	884	-	-	1283	-
Stage 1	748	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	418	884	-	-	1283	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	676	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.53	0	1.47
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	844	538	-
HCM Lane V/C Ratio	-	-	0.058	0.05	-
HCM Control Delay (s/veh)	-	-	9.5	8	0.3
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Future Volume (veh/h)	8	97	14	185	94	297	32	383	115	280	198	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		0.94	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	128	18	213	108	341	36	426	128	289	204	16
Peak Hour Factor	0.76	0.76	0.76	0.87	0.87	0.87	0.90	0.90	0.90	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	463	62	532	564	464	54	761	319	357	1279	99
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.03	0.21	0.21	0.20	0.38	0.38
Sat Flow, veh/h	44	1535	204	1233	1870	1539	1781	3554	1490	1781	3329	258
Grp Volume(v), veh/h	157	0	0	213	108	341	36	426	128	289	108	112
Grp Sat Flow(s),veh/h/ln	1783	0	0	1233	1870	1539	1781	1777	1490	1781	1777	1810
Q Serve(g_s), s	0.0	0.0	0.0	2.7	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Cycle Q Clear(g_c), s	3.8	0.0	0.0	6.5	2.5	11.5	1.2	6.2	4.3	9.0	2.3	2.3
Prop In Lane	0.07		0.11	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	605	0	0	532	564	464	54	761	319	357	683	695
V/C Ratio(X)	0.26	0.00	0.00	0.40	0.19	0.73	0.67	0.56	0.40	0.81	0.16	0.16
Avail Cap(c_a), veh/h	1038	0	0	844	1039	855	197	1482	621	844	1386	1413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	16.1	15.0	18.1	27.7	20.3	19.5	22.1	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.5	0.2	2.3	13.1	0.6	0.8	4.4	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	2.0	0.9	3.7	0.7	2.4	1.4	3.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	0.0	0.0	16.6	15.1	20.4	40.9	20.9	20.3	26.5	11.8	11.8
LnGrp LOS	B			B	B	C	D	C	C	C	B	B
Approach Vol, veh/h		157			662			590			509	
Approach Delay, s/veh		15.6			18.3			22.0			20.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	18.3		23.3	6.4	28.1		23.3				
Change Period (Y+Rc), s	4.6	5.9		5.9	4.6	5.9		5.9				
Max Green Setting (Gmax), s	27.4	24.1		32.1	6.4	45.1		32.1				
Max Q Clear Time (g_c+I1), s	11.0	8.2		5.8	3.2	4.3		13.5				
Green Ext Time (p_c), s	0.7	2.8		0.9	0.0	1.2		2.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		19.7	
HCM 7th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	513	36	347	520	328	56	138	647	398	101	43
Future Volume (veh/h)	53	513	36	347	520	328	56	138	647	398	101	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	570	40	361	542	342	60	148	0	498	126	0
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	1396	98	409	1015	640	210	221		609	330	
Arrive On Green	0.04	0.42	0.42	0.20	0.82	0.82	0.12	0.12	0.00	0.18	0.18	0.00
Sat Flow, veh/h	1781	3362	235	3456	2058	1297	1781	1870	2790	3456	1870	1585
Grp Volume(v), veh/h	59	301	309	361	468	416	60	148	0	498	126	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1728	1777	1578	1781	1870	1395	1728	1870	1585
Q Serve(g_s), s	4.6	16.7	16.8	14.2	11.6	11.6	4.3	10.6	0.0	19.4	8.3	0.0
Cycle Q Clear(g_c), s	4.6	16.7	16.8	14.2	11.6	11.6	4.3	10.6	0.0	19.4	8.3	0.0
Prop In Lane	1.00		0.13	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	76	738	756	409	876	778	210	221		609	330	
V/C Ratio(X)	0.78	0.41	0.41	0.88	0.53	0.53	0.29	0.67		0.82	0.38	
Avail Cap(c_a), veh/h	103	738	756	464	876	778	397	417		768	415	
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.4	28.8	28.8	55.2	7.3	7.3	56.3	59.1	0.0	55.5	50.9	0.0
Incr Delay (d2), s/veh	22.7	1.7	1.6	14.6	0.5	0.6	0.7	3.5	0.0	5.6	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	7.4	7.6	6.4	3.0	2.7	2.0	5.2	0.0	8.9	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	89.1	30.5	30.5	69.9	7.8	7.9	57.1	62.6	0.0	61.1	51.7	0.0
LnGrp LOS	F	C	C	E	A	A	E	E		E	D	
Approach Vol, veh/h		669			1245			208			624	
Approach Delay, s/veh		35.6			25.8			61.0			59.2	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.8	64.3		30.6	11.8	75.3		22.3
Change Period (Y+Rc), s	6.2	* 6.2		5.9	5.9	6.2		5.8
Max Green Setting (Gmax), s	18.8	* 35		31.1	8.1	45.8		31.2
Max Q Clear Time (g_c+I1), s	16.2	18.8		21.4	6.6	13.6		12.6
Green Ext Time (p_c), s	0.3	3.1		1.9	0.0	6.0		0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	38.5
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Future Volume (veh/h)	0	1012	606	0	929	386	0	0	0	315	0	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1124	0	0	1032	0				362	0	379
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	1947		0	1947					660	0	1175
Arrive On Green	0.00	0.73	0.00	0.00	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3647	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1124	0	0	1032	0				362	0	379
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Cycle Q Clear(g_c), s	0.0	20.7	0.0	0.0	0.0	0.0				22.5	0.0	12.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1947		0	1947					660	0	1175
V/C Ratio(X)	0.00	0.58		0.00	0.53					0.55	0.00	0.32
Avail Cap(c_a), veh/h	0	1947		0	1947					660	0	1175
HCM Platoon Ratio	1.00	1.33	1.33	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.61	0.00	0.00	0.86	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.4	0.0	0.0	0.0	0.0				34.8	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.9	0.0				3.3	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	0.0	0.2	0.0				10.4	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.2	0.0	0.0	0.9	0.0				38.0	0.0	32.2
LnGrp LOS		B			A					D		C
Approach Vol, veh/h		1124			1032						741	
Approach Delay, s/veh		12.2			0.9						35.1	
Approach LOS		B			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	83.0	57.0	83.0
Change Period (Y+Rc), s	6.3	5.1	6.3
Max Green Setting (Gmax), s	76.7	51.9	76.7
Max Q Clear Time (g_c+I1), s	22.7	24.5	2.0
Green Ext Time (p_c), s	10.1	2.8	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰	✣	↱			
Traffic Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Future Volume (veh/h)	0	806	524	0	832	460	462	0	415	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	876	0	0	914	0	664	0	311			
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1881		0	1881		1397	0	617			
Arrive On Green	0.00	1.00	0.00	0.00	0.53	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	0	3647	1585	0	3647	1585	3563	0	1573			
Grp Volume(v), veh/h	0	876	0	0	914	0	664	0	311			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1777	1585	1781	0	1573			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.8	0.0	19.5	0.0	21.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1881		0	1881		1397	0	617			
V/C Ratio(X)	0.00	0.47		0.00	0.49		0.48	0.00	0.50			
Avail Cap(c_a), veh/h	0	1881		0	1881		1397	0	617			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	20.9	0.0	31.8	0.0	32.2			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.9	0.0	1.2	0.0	2.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	9.3	0.0	8.7	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.7	0.0	0.0	21.8	0.0	33.0	0.0	35.2			
LnGrp LOS		A			C		C		D			
Approach Vol, veh/h		876			914			975				
Approach Delay, s/veh		0.7			21.8			33.7				
Approach LOS		A			C			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.0	80.0	60.0
Change Period (Y+Rc), s	5.9	5.9	5.1
Max Green Setting (Gmax), s	74.1	74.1	54.9
Max Q Clear Time (g_c+I1), s	2.0	24.8	23.0
Green Ext Time (p_c), s	7.1	7.1	4.0

Intersection Summary	
HCM 7th Control Delay, s/veh	19.3
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	78	845	325
Demand Flow Rate, veh/h	21	79	862	332
Vehicles Circulating, veh/h	339	839	49	17
Vehicles Exiting, veh/h	10	72	311	901
Ped Vol Crossing Leg, #/h	10	10	10	10
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.9	7.9	11.3	4.8
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	21	79	862	332
Cap Entry Lane, veh/h	977	586	1313	1356
Entry HV Adj Factor	0.998	0.987	0.980	0.979
Flow Entry, veh/h	21	78	845	325
Cap Entry, veh/h	973	578	1285	1326
V/C Ratio	0.022	0.135	0.658	0.245
Control Delay, s/veh	3.9	7.9	11.3	4.8
LOS	A	A	B	A
95th %tile Queue, veh	0	0	5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	801	610	0
Future Vol, veh/h	0	0	0	801	610	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	871	663	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	332	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	567	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	567	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	0	660	301	2
Future Vol, veh/h	3	3	0	660	301	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	0	717	327	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1045	327	-	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	253	714	0	-	-	-
Stage 1	731	-	0	-	-	-
Stage 2	483	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	253	714	-	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.79	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	374	-	-
HCM Lane V/C Ratio	-	0.017	-	-
HCM Control Delay (s/veh)	-	14.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	180	563	17	175	334
Future Vol, veh/h	11	180	563	17	175	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	196	612	18	190	363

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1183	315	0	0	630	0
Stage 1	621	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	182	681	-	-	948	-
Stage 1	498	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	142	681	-	-	948	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	415	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	13.58	0	4.05
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	626	852	-
HCM Lane V/C Ratio	-	-	0.332	0.201	-
HCM Control Delay (s/veh)	-	-	13.6	9.7	1.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.7	-

APPENDIX L

CITY OF DEL MAR VMT RESOLUTION – ITEM 14

Item 14 - Resolution:
Update to CEQA Guidelines
Senate Bill 743 Implementation of VMT

DEL MAR

CITY COUNCIL

JUNE 1, 2020

CITY OF DEL MAR

CALIFORNIA

Requested Action

Adopt a Resolution to Update Del Mar CEQA Guidelines

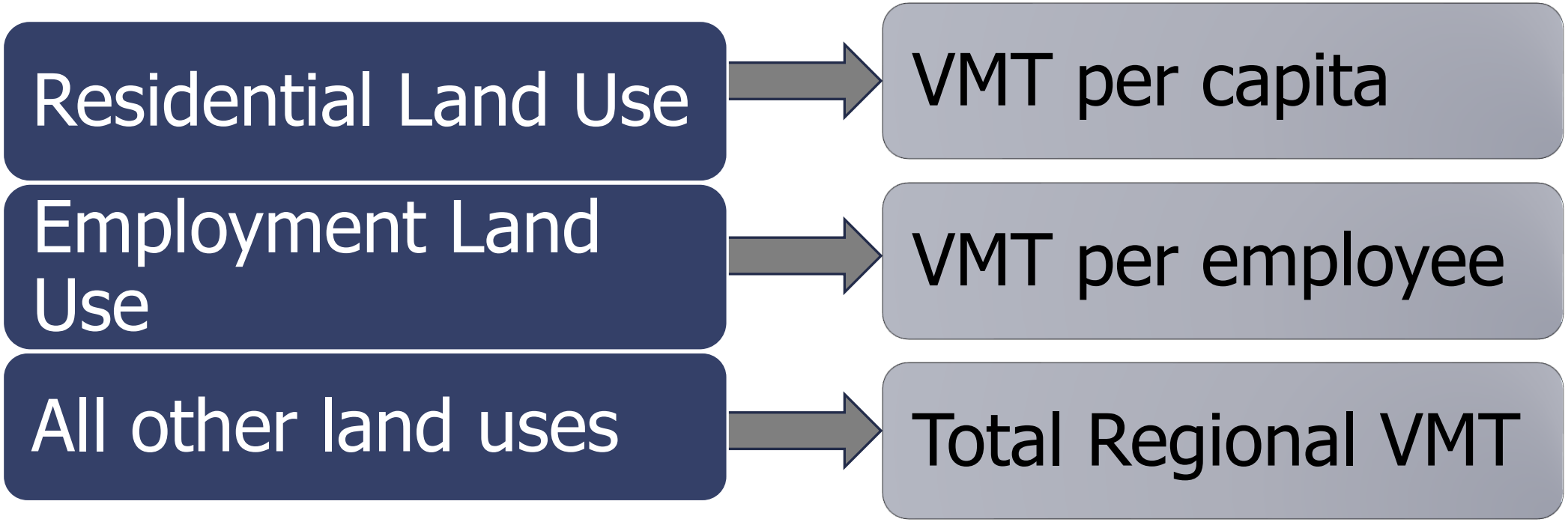
Overview

- **Senate Bill 743 approved September 2013** - effective July 1, 2020

- **Created new CEQA review process for discretionary projects**
  - Must consider "transportation impact" of project – to meet CAP goals (Noise, air pollution, safety concerns, and greenhouse gas emissions)
  - No longer can consider traffic delay/congestion as environmental impact

- **City prepared CEQA procedures to implement "VMT" analysis**
  - VMT – Vehicle Miles of Travel

Defining VMT for CEQA Analysis



Residential VMT

Regional VMT / Capita

17.6 VMT
per Resident in
all of San Diego County

Del Mar VMT / Capita

22.6 VMT
per City Resident
In the City of Del Mar

127% of the Regional Average

"OPR recommends that a per capita or a per employee VMT that is 15% below that of existing development may be a reasonable threshold."

- Technical Advisory (December 2018)

Employment VMT

Regional VMT / Employee

25.90 VMT

per Resident Employee in
all of San Diego County

Del Mar VMT / Employee

34.19 VMT

per City Resident Employee
In the City of Del Mar

132% of the Regional Average

"OPR recommends that a per capita or a per employee VMT that is 15% below that of existing development may be a reasonable threshold."

- Technical Advisory (December 2018)

What does this mean for the City?

Projects in the City of Del Mar **subject to CEQA** will either:

- be "screened out"

  OR

- required to mitigate VMT by 15%

Less Than Significant Determination

"Screened Out"

- Projects that generate less than 110 trips per day
- Projects of 18 apartments or less
- Projects of 11 single dwelling units or less
- Projects of 2,750 square feet or less of commercial retail
- Projects of local serving retail that are less than 10,000 square feet and that would offer a new retail option in Del Mar that is currently only offered outside of the City
- Projects within 0.5 miles of a high-quality transit stop with fixed route bus service that has bus intervals no longer than 15 minutes during the weekday commute hours
- Projects with 100 percent affordable units
- Transit, bicycle, and pedestrian projects
- Roadway and mobility projects included in the Del Mar Community Plan
- Amendments to a Land Use Plan or Zoning Ordinance that provide for mixed use zoning that allows up to 20 dwelling

Mitigation: Transportation Demand Management (TDM) & Fee Programs

Project VMT impacts can be mitigated:

- **Create TDM Program**: Use SANDAG tools & CAPCOA measures to reduce project VMT

- **Establish In Lieu Fee:** To be addressed by council at a later date

Provide Bike Parking or Storage; Implement Shared Mobility Programs

Provide Pedestrian & Bicycle Access and Connectivity Improvements

Implement a Neighborhood Electric Vehicle (NEV) Network

Provide Electric Vehicle Parking and Charging Infrastructure

Improve Access to Transit including Local Shuttles and First-Last Mile Solutions

Implement Commute Trip Reductions & Ride Sharing Programs

TDM Program Options

Programmatic

- ✓ iCommute
- ✓ Employer Programs
- ✓ Telecommuting
- ✓ Subsidies for Alternative Travel
- ✓ Trip End Facilities
- ✓ Commute Trip Reduction Marketing

Systemic

- ✓ Land Use / Density
- ✓ Affordable Housing Policy
- ✓ Traffic Calming
- ✓ Citywide Bike Share
- ✓ Bike Improvement
- ✓ Pedestrian Improvements
- ✓ Microtransit Facilities
- ✓ Mobility Hub

Project

- ✓ Parking Management
- ✓ Project adjacent ped, bike, and transit improvements
- ✓ Impact Fees
- ✓ On-Site Bike Share

Requested Action & Next Steps

Adopt a Resolution to Update Del Mar CEQA Guidelines

Small Projects

OPR:

Consistency with General Plan or Community Plan **not** Considered

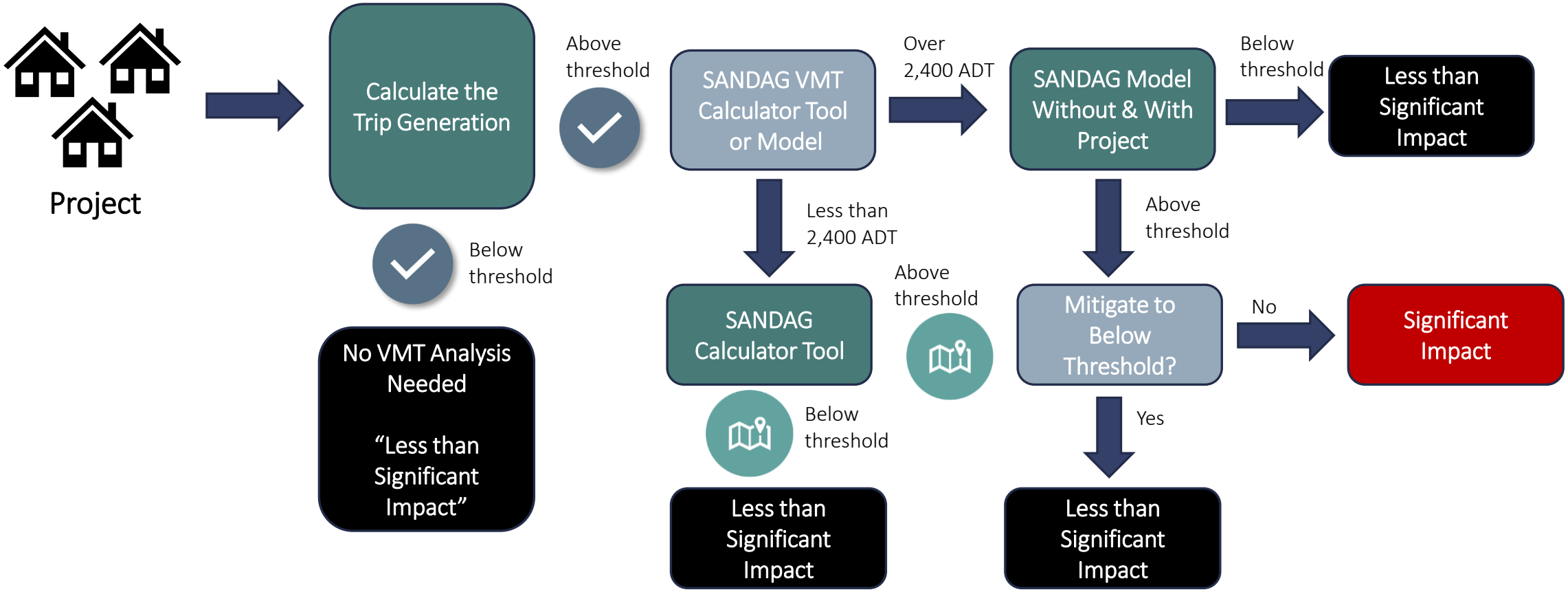
- **110 trips per day or more require VMT analysis** (equivalent to average trips for 10,000 sf office building)

SAN DIEGO ITE:

Inconsistent with a General Plan or Community Plan
500 trips per day or more require VMT analysis

Consistent with a General Plan or Community Plan
1,000 trips per day or more require VMT analysis

The Process..


Project
Calculate the Trip Generation
Above threshold
SANDAG VMT Calculator Tool or Model
Over 2,400 ADT
SANDAG Model Without & With Project
Below threshold
Less than Significant Impact
Below threshold
No VMT Analysis Needed
"Less than Significant Impact"
Less than 2,400 ADT
Above threshold
Above threshold
SANDAG Calculator Tool
Mitigate to Below Threshold?
No
Significant Impact
Below threshold
Yes
Less than Significant Impact
Less than Significant Impact

Types of Projects

- **No intensification of use** (compared to existing development)
  - Includes change out of tenants and replacement of existing use
  - Do not increase VMT and are exempt from VMT analysis

- **Additions or Redevelopment**
  - Typically includes intensification of existing use; or addition of new uses
  - May increase VMT; additional screening required

- **New development on a vacant parcel**
  - May increase VMT; additional screening required

What happens if we do nothing?

If City does not adopt VMT Guidelines/Thresholds prior to July 1 effective date:

- **Project applicants can choose their own methodology and thresholds**

- **Submitted reports must be reviewed - with no local standards in place**
  - State or Regional standards likely selected by applicants – less likely to trigger mitigation
  - Project approvals more likely to be challenged

- **Ambiguity/uncertainty expected to add time & cost to permit process**

Significance of Change: LOS to VMT

Change to VMT will result in pedestrian, bicycle, and transit improvements to reduce reliance on automobiles

- Congestion-related improvements can no longer be required per CEQA

  (road widening, traffic signals, roundabouts)

City can adopt separate "Local Mobility Analysis" to address automobile traffic

- Would need amendment to General Plan, Council Policy, or DMMC to set standards
- Would allow City to require intersection improvements or fee towards CIP

END OF APPENDICES

Harris & Associates

UTILITY INFRASTRUCTURE FINANCIAL REVIEW MEMORANDUM

To: Dustin Fuller, Supervising Environmental Planner, 22nd District Agricultural Association; Amanda Lee, Principal Planner, City of Del Mar
From: Megan Quinn, Director; Lynn Kelly, Senior Project Manager, Harris & Associates
Subject: **Financial Review of Water and Sewer Infrastructure for the HAP Grant Affordable Housing Project**
Date: March 10, 2026
Att: 1, Bid Results; 2, Special District Financing Option; 3, Traditional Public Financing Sources

1 Executive Summary

The 22nd District Agricultural Association (District) owns and operates the Del Mar Fairgrounds (Fairgrounds) as a state institution. This regional entertainment venue hosts various purposes, including the annual County Fair, two horse racing seasons, concerts and meetings in The Sound, and other events, such as festivals, trade shows and consumer expos, equestrian competitions and animal shows, sporting events, and fundraisers. Existing operations draw millions of visitors to the Fairgrounds each year. The District is undergoing a master site planning process to plan immediate, near-term projects and conceptual, long-term projects focusing on enhancing and improving the Fairgrounds facilities. During this master site planning process, the District has worked with the City of Del Mar (City) to identify portions of the Fairgrounds property that the District may be willing to make available for affordable housing development. In its 6th Cycle Housing Element Update, the City identified and included a portion of the property in the Housing Element residential sites inventory as having the potential to develop and accommodate affordable housing units. The District and the City have entered into an agreement to select a mutually agreeable site for affordable housing on the Fairgrounds property. Harris & Associates' (Harris') engineering master plan services for the Housing Acceleration Program (HAP) Grant Affordable Housing Project, herein referred to as "Study," of potential affordable housing on the Fairgrounds property is one of multiple due diligence studies being prepared using grant funding awarded through the California Department of Housing and Community Development Housing Acceleration Program Cycle 2.

Harris was retained by the District to identify site locations that are feasible for the development of at least 61 lower-income units on a site that is 1 to 1.5 acres on the Fairgrounds property within the City. The ultimate objective of the Study is for the City and District to reach a mutual agreement on a feasible site based on the information collected and analyzed by Harris through multiple individual studies.

As part of this project, Harris completed a Utility Impact Study to provide an updated system overview of the existing water and sewer conveyance capacities within the Fairgrounds property, west of Jimmy Durante Boulevard. The updated hydraulic models from the Utility Impact Study provide pre-development information related to existing water and sewer system capacities, which determine the potential infrastructure impacts and public improvements needed to support the development of the proposed affordable housing units. The costs

associated with the identified infrastructure improvements will be factors for consideration by the District and City in selecting the final site options and allowable densities for affordable housing development on the Fairgrounds property within the City.

This financial review memorandum summarizes the estimated water and sewer infrastructure costs, identifies potential traditional public funding sources and special district financing mechanisms, and outlines recommended next steps for implementation.

2 Funding for this Project

The Study is funded through HAP grant funds that the City secured in 2023 through a HAP grant agreement between the City, California Department of Housing and Community Development, and the San Diego Association of Governments. The City and District executed a Memorandum of Understanding in 2025, enabling the District to use a portion of the City's grant funds to complete feasibility studies, including a site assessment and a financial review.

3 Infrastructure Costs

As part of the Study, Harris previously completed an assessment of water and sewer infrastructure capacities available to serve the Fairgrounds property. This process led to the identification of the potential impacts of constructing approximately 61 affordable housing units at various locations on the Fairgrounds property and potential improvements that may be necessary to ensure the water and sewer systems will have adequate capacity to serve the additional development. As part of the Utility Impact Study, Harris collected record drawings, conducted interviews with District and City staff, reviewed the San Diego Association of Governments San Dieguito Double Track improvement plans, and performed field data collection to update the existing hydraulic models to accurately assess the current system capacities for the water and sewer systems. Harris did not identify any hydraulic or sanitary sewer system deficiencies in the existing water system at the Fairgrounds. The Utility Impact Study focused exclusively on the Fairgrounds property west of Jimmy Durante Boulevard.

Harris then calculated the potential impacts on water demand and sanitary sewer flows and added to the hydraulic model to estimate a post-project condition for each of the three identified potential housing site locations. A preliminary cost estimate was developed for each of the three sites to quantify the infrastructure upgrades that would be needed to facilitate a 61 unit affordable housing project.

3.1 Site 1: East Main Stable Gate Site

Site 1, East Main Stable Gate Site (Assessor's Parcel Number 2982710300), includes the Del Mar Fairgrounds East Main Stable Gate and parking lot with direct access to and from Jimmy Durante Boulevard. The gate provides access to the racetrack's stable area for track personnel and approved vehicles. The site comprises 1.5 acres of developable land. As noted in the Housing Site Assessment, completed by Harris, Site 1 is within a 1 percent annual chance flood hazard zone within the floodway fringe and is approximately 2,000 feet from the Federal Emergency Management Agency Regulatory Floodway zone. As noted in the 2022 Keyser Marston Associates and Stephen Dalton Architects Study, future development occurring on Site 1 will require that the first-floor level must be elevated above the base flood elevation (BFE) and floodproofed. Figure 1 provides the property outline and relative location of the site.

Figure 1. Site 1—East Main Stable Gate Site

Table 1 summarizes high-level cost estimates for implementing the necessary water and sewer infrastructure improvements associated with Site 1. These estimates focus exclusively on the water and sewer system upgrades required to support new development and do not include improvements related to sea-level rise adaptation, stormwater management, or flood control facilities, which are outside the scope of this analysis.[1] Accordingly, the costs presented are intended for planning-level evaluation and comparison purposes rather than final design or construction budgeting.

The estimated costs for the proposed water and sewer infrastructure improvements for all three sites reflect a combination of mainline extensions and supporting connections, calculated on a linear-foot basis at varying unit rates depending on size and installation requirements. Cost estimates are based on cost data from RS Means, PlanetBids bid results, and unit costs published by the City of Del Mar (Attachment 1). Estimates exclude relocation of existing infrastructure, upgrades or additional wastewater lift, wastewater holding tanks, force main improvements, water main upsizing, and system looping requirements.

As noted in the Utility Impact Study, there were no recommended improvements to the sanitary sewer main lines based on the available capacity of the existing sanitary sewer collection system for any of the sites. The additional wastewater produced by the proposed housing on the Fairgrounds can be conveyed by the existing system. The only identified concern relates to pipe velocities, which could affect the long-term lifespan and maintenance of the system. However, this issue does not impact the overall capacity of the sanitary sewer system.

The Utility Impact Study recommends the construction of sewer laterals for the proposed housing to the nearest sewer line. Other improvements to the existing sewer pump stations may be necessary, as wastewater from the proposed housing sites will pass through up to four of the sewer pump stations, depending on location.[2]

[1] A comprehensive financial review of stormwater and flood control infrastructure was not part of the scope of work for this Study.

[2] For the Utility Impact Study, information was unavailable for the sewer pump station. Therefore, impacts on the station were not assessed.

Additionally, water demand for the proposed housing on the Fairgrounds can be met without reducing pressure below the allowable limits set by the City, and fire flow demands can be met on the proposed housing sites. Therefore, there are no recommended improvements to the potential to the water pipelines based on the hydraulic performance of the existing system. The Utility Impact Study recommends the construction of water service lines and the installation of associated fixtures, such as isolation valves and water meters. Construction of the proposed housing may require realignment of existing piping.[3]

Overall, these costs demonstrate that most project expenditures are associated with extending primary water and sewer lines, with unit costs varying based on pipe type, diameter, and construction complexity. Collectively, the improvements represent a significant but necessary investment to expand service capacity, support future development, and ensure reliable utility infrastructure.

Table 1. High Level Cost Estimes for Site 1 East Main Stable Gate

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
	Site 1 - East Main Stable Gate Site [1], [2], [3]					
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$ 8,500	$ 8,500	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$ 67,749	$ 67,749	
1.c	Sewer Connection Fees	LS	1	$ 51,548	$ 51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$ 10,000	$ 10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	245	$ 240	$ 58,800	
2.b	Water Service Tap to Existing Main	LS	1	$ 10,000	$ 10,000	
2.c	6" Sewer Lateral Installation	LF	210	$ 260	$ 54,600	
2.d	Sewer Cleanout Installation	EA	1	$ 2,550	$ 2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$ 4,600	$ 4,600	
2.f	1" A.C. Paving Restoration	SF	675	$ 7.00	$ 4,725	
2.g	Dewatering (allowance)	LS	1	$ 15,000	$ 15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$ 20,000	$ 20,000	
				Estimated Direct Construction Cost Subtotal:	*$ 170,275*	
				Escalation to Mid-Point of Construction (March 2028):	$ 17,440	(4)
				Estimated Base Bid Subtotal:	**$ 325,513**	
				Design and Permitting:	$ 39,062	12%
				Estimating Contingency:	$ 65,103	20%
				Project Administration/Project Management:	$ 6,510	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$ 32,551	10%
				Estimated Total Base Bid:	**$ 468,738**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to the end of 2025).

3.2 Site 2: South of Stable Gate Site

Site 2, South of Stable Gate Site (Assessor's Parcel Numbers 2990300500 and 2990302200), encompasses approximately 1.5 acres total and is directly south of Site 1. Currently, the site is used for horse boarding stables. As noted in the Housing Site Assessment, completed by Harris, Site 2 is within a 1 percent annual chance flood hazard zone within the floodway fringe and is approximately 1,750 feet from the Federal Emergency Management Agency Regulatory Floodway zone. As noted in the 2022 Keyser Marston Associates and Stephen

[3] This cost is not included in the Utility Impact Study, as it was assumed that the proposed housing could be constructed without placing structures over existing infrastructure.

Dalton Architects Study, the first-floor level of any new development that occurs on this site must be elevated above the BFE and floodproofed. Figure 2 provides the property outline and relative location of Site 2.

Figure 2. Site 2—South of Stable Gate Site

Table 2 summarizes high-level cost estimates for implementing the necessary water and sewer infrastructure improvements associated with Site 2.[4] Accordingly, the costs presented are intended for planning-level evaluation and comparison purposes rather than final design or construction budgeting.

[4] These estimates focus exclusively on the water and sewer system upgrades required to support new development and do not include improvements related to sea-level rise adaptation, stormwater management, or flood control facilities, which are outside the scope of this analysis. A comprehensive financial review of stormwater and flood control infrastructure was not part of the scope of work for this Study.

Table 2. High Level Cost Estimates for Site 2 South of Stable Gate

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
	Site 2 - South of Stable Gate Site [1], [2], [3]					
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$ 7,100	$ 7,100	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$ 67,749	$ 67,749	
1.c	Sewer Connection Fees	LS	1	$ 51,548	$ 51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$ 10,000	$ 10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	20	$ 240	$ 4,800	
2.b	Water Service Tap to Existing Main	LS	1	$ 10,000	$ 10,000	
2.c	6" Sewer Lateral Installation	LF	315	$ 260	$ 81,900	
2.d	Sewer Cleanout Installation	EA	1	$ 2,550	$ 2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$ 4,600	$ 4,600	
2.f	1" A.C. Paving Restoration	SF	510	$ 7.00	$ 3,570	
2.g	Dewatering (allowance)	LS	1	$ 15,000	$ 15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$ 20,000	$ 20,000	
				Estimated Direct Construction Cost Subtotal:	*$ 142,420*	
				Escalation to Mid-Point of Construction (March 2028):	$ 14,587	(4)
				Estimated Base Bid Subtotal:	**$ 293,405**	
				Design and Permitting:	$ 35,209	12%
				Estimating Contingency:	$ 58,681	20%
				Project Administration/Project Management:	$ 5,868	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$ 29,340	10%
				Estimated Total Base Bid:	**$ 422,503**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to the end of 2025).

3.3 Site 3: Adjacent to Fire Station Site

Site 3, Adjacent to Fire Station Site (Assessor's Parcel Number 2990302200), features 1 acre of developable land and is directly north of the existing Del Mar Fire Department station. District office buildings and public restrooms are currently on this site. Figure 3 provides the property outline and relative location of Site 3.

While the site is roughly 725 feet from the San Dieguito River and approximately 275 feet from the FEMA Regulatory Floodway zone, as noted in the Housing Site Assessment, the site itself falls within the 1 percent annual chance flood hazard zone within the floodway fringe, meaning that development is permitted at this location. As noted in the 2022 Keyser Marston Associates and Stephen Dalton Architects Study, the site will require that the first-floor level must be elevated above the BFE and floodproofed.

Figure 3. Site 3—Adjacent to Fire Station Site

Table 3 summarizes high-level cost estimates for implementing the necessary water and sewer infrastructure improvements associated with each of the proposed housing location options. These estimates focus exclusively on the water and sewer system upgrades required to support new development and do not include improvements related to sea-level rise adaptation, stormwater management, or flood control facilities, which are outside the scope of this analysis.[5] Accordingly, the costs presented are intended for planning-level evaluation and comparison purposes rather than final design or construction budgeting.

[5] A comprehensive financial review of stormwater and flood control infrastructure was not part of the scope of work for this Study.

Table 3. High-Level Cost Estimates for Site 3 Adjacent to Fire Station

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
Site 3 - Adjacent to Fire Station [1], [2], [3]						
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$ 4,500	$ 4,500	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$ 67,749	$ 67,749	
1.c	Sewer Connection Fees	LS	1	$ 51,548	$ 51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$ 10,000	$ 10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	50	$ 240	$ 12,000	
2.b	Water Service Tap to Existing Main	LS	1	$ 10,000	$ 10,000	
2.c	6" Sewer Lateral Installation	LF	85	$ 260	$ 22,100	
2.d	Sewer Cleanout Installation	EA	1	$ 2,550	$ 2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$ 4,600	$ 4,600	
2.f	1" A.C. Paving Restoration	SF	400	$ 7.00	$ 2,800	
2.g	Dewatering (allowance)	LS	1	$ 15,000	$ 15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$ 20,000	$ 20,000	
				Estimated Direct Construction Cost Subtotal:	*$ 89,050*	
				Escalation to Mid-Point of Construction (March 2028):	$ 9,121	(4)
				Estimated Base Bid Subtotal:	**$ 231,968**	
				Design and Permitting:	$ 27,836	12%
				Estimating Contingency:	$ 46,394	20%
				Project Administration/Project Management:	$ 4,639	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$ 23,197	10%
				Estimated Total Base Bid:	**$ 334,034**	

Clarifications, Inclusions, and/or Exclusions Notes:
1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.
2) A 2" water meter is assumed for the connection and capacity fees.
3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.
4) Inflation escalation of 4.79% (average index from 2020 to the end of 2025).

4 Special District Financing Tools and Mechanisms

Development of the Del Mar Fairgrounds will require a coordinated and flexible approach to funding the infrastructure, public facilities, and community amenities needed to support long-term development. Because a single funding source is often insufficient to deliver all required improvements, the City and District may rely on a combination of public financing tools, private investment, voter-approved revenues, and grants. The appropriate mix will depend on the type of improvement, timing, eligibility requirements, market conditions, and the level of nexus to new development or communitywide benefit.

This section provides an overview of the potential financing mechanisms available to the City and District, including those already in use and those that may be established specifically for the Fairgrounds property. These mechanisms range from development-driven tools, such as development impact fees (DIFs), to district-based or revenue-based tools, including Community Facilities Districts (CFDs), and potential sales tax measures. Additional sources such as municipal bonds, the City's Capital Improvement Program, and enterprise or general fund allocations identify opportunities for broader communitywide funding. Although this Study did not analyze the costs of factors like sea-level rise, stormwater improvements, and flood control, many of these financing mechanisms can include related infrastructure to those components outside our scope of work.

Each financing tool varies in its eligible uses, procedural requirements, and potential revenue capacity. Collectively, they offer the City a flexible suite of options to phase and implement key improvements. As development progresses, the City may refine, expand, or update these mechanisms to ensure that new growth contributes its fair share toward necessary infrastructure while maintaining fiscal sustainability and alignment

with community priorities. Funding sources must be authorized and initiated by the City Council, or policy decision. The details of each of these special financing mechanisms are in Attachment 2.

4.1 Special District

A special district levies a tax for a specific purpose within a defined geographic area. The tax is based on a formula established in the rate and method of apportionment and is not required to be proportional to the benefit received. Formation requires two-thirds voter approval, either by registered voters or, in areas with fewer than 12 registered voters, by landowners voting based on acreage. Once approved, the special tax may be levied annually for a specified term or for the life of the bonds, if bonds are issued. Special taxes are typically used to fund public infrastructure, facilities, or ongoing services within the district. This can include but not be limited to infrastructure related to water, sewer, drainage, and stormwater.

4.2 Special District Funding Constraints and Considerations

Because districts require ongoing administration, small districts can struggle with administrative costs such as legal, accounting, and audits, as well as board governance requirements, annual reporting, and elections. For the purposes of developing housing on the Fairgrounds, a special district may have a lot of work for potentially a little amount of revenue. Furthermore, formation of a special district requires approval by a two-thirds supermajority vote, either by registered voters or, in areas with fewer than 12 registered voters, by landowners voting based on acreage. This voting threshold can present a barrier to formation, particularly if there is uncertainty among voters or landowners regarding the long-term tax obligation, potentially increasing the risk that the district would not receive the required level of approval.

4.3 Community Facilities District

One or more CFDs may be formed to finance the construction and/or acquisition of backbone infrastructure and facilities within the Fairgrounds property. Under the 1982 Mello-Roos Community Facilities Act, cities and other public agencies may establish a CFD to levy a special tax that funds public improvements or services. CFD revenues may be used to construct or acquire facilities directly or to repay bonds issued for such purposes. A separate services CFD may also be formed to provide ongoing maintenance and operations of facilities that offer a special benefit to properties within the Fairgrounds development area. CFDs can fund projects including but not limited to sewer and water systems, drainage, flood control, storm protection, and other public infrastructure. A CFD formation involves an election where a two-thirds supermajority vote is required when there are more than 12 voters. It may take 9 to 12 months to form a CFD.

4.4 Community Facilities District Funding Constraints and Considerations

While a CFD can provide a flexible and scalable funding source for backbone water and sewer infrastructure serving the Fairgrounds affordable housing sites, its use is constrained by voter approval thresholds, tax capacity, and affordability considerations. Formation requires a two-thirds supermajority vote, which may introduce political risk and timing uncertainty, particularly if ownership or voter composition changes over time. Special tax levels must be calibrated to avoid adversely affecting affordable housing feasibility, operating costs, or tax credit competitiveness. In addition, CFDs are best suited for improvements with a clear nexus to new development; funding for broader systemwide upgrades may require cost-sharing or supplemental sources.

Administrative costs, ongoing disclosure requirements, and long-term debt service obligations should also be considered when evaluating CFD feasibility.

4.5 Enhanced Infrastructure Financing District

An enhanced infrastructure financing district (EIFD) may be established to use tax-increment financing for public infrastructure, such as affordable housing, water systems, sewer, wastewater, climate adaptation, road, and other qualifying infrastructure projects, within or near the Fairgrounds property. EIFDs can be a flexible tool for long-term funding of district-wide improvements. An EIFD does not require an election; however, an EIFD requires the formation of a Public Financing Authority. It may take 12 to 18 months to form an EIFD.

4.6 Enhanced Infrastructure Financing District Funding Constraints and Considerations

EIFD offers a flexible mechanism to fund infrastructure using tax increment financing; however, its applicability is constrained by revenue availability, participation requirements, and timing considerations. EIFD revenues depend on future growth in property tax increment, which may be limited or delayed for affordable housing developments with restricted assessed value growth. Formation requires coordination among affected taxing entities and establishment of a public financing authority, which may increase administrative complexity and extend implementation timelines. Generally, EIFDs are less effective for near-term infrastructure needs unless paired with interim financing. Additionally, EIFD funds must be used for eligible capital improvements, and ongoing operations or maintenance costs are not permitted, potentially requiring complementary funding mechanisms.

4.7 Climate Resilience District

A climate resilience district (CRD) is a financing district that can be created by a city, county, or a combination of jurisdictions to raise and allocate funding for projects that address climate change, mitigation, adaptation, and resilience. They are closely related to EIFDs but are focused on climate-related projects. CRDs function similarly to tax increment financing districts. Examples of eligible projects include flood protection infrastructure, levees and erosion control, cool pavements and reflective materials, groundwater recharge, water storage projects, and infrastructure improvements for extreme storms or heavy rain. While this Study did not analyze the specific costs related to climate change, given its coastal location, the City and District may wish to consider finance mechanisms related to climate change.

4.8 Climate Resilience District Funding Constraints and Considerations

Like EIFDs, CRDs offer a flexible mechanism to fund infrastructure using tax increment financing; however, their applicability is constrained by revenue availability, participation requirements, and timing considerations. Revenues depend on future growth in property tax increment, which may be limited or delayed for affordable housing developments with restricted assessed value growth. Formation requires coordination among affected taxing entities and establishment of a public financing authority, which may increase administrative complexity and extend implementation timelines. CRDs are less effective for near-term infrastructure needs unless paired with interim financing. Additionally, CRD funds must be used for eligible capital improvements related to climate

resilience. Ongoing operations or maintenance costs are not permitted, potentially requiring complementary funding mechanisms.

4.9 Municipal Bonds

The City may issue municipal bonds to finance large-scale public improvements associated with the housing development on the Fairgrounds. Bond proceeds can support major capital investments, such as water and sewer infrastructure, with repayment sourced from designated revenue streams, such as special taxes, assessments, or general municipal revenues. Bond measures require a bond measure with a two-thirds supermajority vote for approval. It may take 18 to 24 months to issue a municipal bond.

4.10 Municipal Bonds Funding Constraints and Considerations

Municipal bonds can provide substantial upfront capital for large-scale infrastructure improvements; however, their use is constrained by voter approval requirements, debt capacity, and long-term fiscal impacts on the City. Issuance typically requires a two-thirds supermajority vote and identification of a reliable repayment source, which may limit flexibility or increase pressure on general fund or special tax revenues. Bond proceeds must generally be allocated to capital improvements, and debt service obligations may extend for decades, reducing future budgetary capacity. For affordable housing-related infrastructure, careful consideration must be given to aligning bond financing with development phasing and ensuring that repayment structures do not indirectly burden project feasibility or citywide fiscal sustainability.

4.11 Assessment District

An assessment district may be used to finance specific water and sewer infrastructure improvements that provide a direct and special benefit to properties developed for affordable housing on the Fairgrounds. Eligible improvements may include water and sewer main extensions, system upsizing, and related backbone facilities that have been identified through the Utility Impact Study. Assessments are levied on benefiting parcels based on a proportionate share of the total project cost, typically expressed as a fixed percentage of the total debt or improvement cost allocated to each parcel. The allocation methodology must demonstrate a clear connection between the improvements and the special benefit received by each assessed parcel, consistent with Proposition 218 requirements.

Formation of an assessment district requires a noticed public hearing and a weighted majority protest proceeding, where each property owner's ballot is weighted by the proposed assessment amount for their parcel rather than by a one-parcel, one-vote standard. If ballots submitted in opposition exceed 50 percent of the total weighted assessment amount, the district cannot be formed.

Given the limited number of parcels and the District's ownership of the Fairgrounds property, an assessment district could offer a targeted mechanism to recover infrastructure costs directly attributable to the affordable housing development without relying on broader citywide revenues. The formation process typically requires 6 to 12 months, depending on final project scope, assessment methodology, and coordination with site selection and development phasing.

4.12 Assessment District Funding Constraints and Considerations

While an assessment district can provide a targeted mechanism to fund water and sewer improvements directly benefiting the proposed affordable housing sites, its applicability is constrained by Proposition 218 requirements and project feasibility considerations. Only infrastructure that delivers clearly demonstrated special benefit to the assessed parcels may be funded, limiting the ability to recover costs for systemwide or oversized improvements. Assessment amounts must be proportionate to benefit received, which may restrict cost recovery and complicate funding for future capacity. Additionally, assessment liens increase ongoing property costs and may adversely affect affordable housing project feasibility, operating budgets, or competitiveness for tax credit financing unless offset by subsidies or alternative funding. Administrative complexity, legal documentation requirements, and limited revenue capacity further constrain the use of assessment districts. They are often most effective when applied to narrowly defined, site-specific improvements and in combination with complementary financing tools.

4.13 Sales Tax Measure

Voter-approved sales tax measures may provide supplemental funding for water, sewer, and storm infrastructure, as well as public safety facilities, streets, parks, and other improvements not considered in this financial review. These revenues can help close funding gaps or accelerate delivery of key public amenities. Sales tax measures require a ballot measure with one-half-major majority vote for approval. The voters of the City of Del Mar recently approved Measure Q, a 1 cent sales and tax use for City Council priorities, including utility undergrounding, Shores Park, and downtown streetscape projects. The City may wish to consider either allocating funds from Measure Q toward the needed infrastructure for this housing project or establishing an additional tax. It can take 18 to 24 months to implement a sales tax measure.

4.14 Sales Tax Funding Constraints and Considerations

Sales tax revenues can provide flexible, broadly applicable funding for infrastructure; however, their use is constrained by voter approval requirements and competing policy priorities. Revenues are shared across community needs and are not legally restricted to benefiting the Fairgrounds or affordable housing sites, which may reduce funding certainty or timing alignment. Sales tax proceeds also fluctuate with economic conditions, introducing revenue volatility. While allocation of existing Measure Q revenues may be feasible, competing capital priorities and City Council discretion may limit the amount and duration of funding available for water and sewer infrastructure tied to this project. An additional sales tax measure may not be politically palatable at this time, due to the recent passing of Measure Q.

4.15 Transient Occupancy Tax Revenue

Transient occupancy tax (TOT) revenue generated from lodging facilities within or near the Fairgrounds area may be used, subject to City policy, to fund capital improvements, public amenities, or services that support increased visitation, economic development, and tourism-related activities. This can include but is not limited to stormwater, flood control, water systems, and drainage. TOT increases require a ballot measure with one-half majority vote for approval. It can take 6 to 12 months to increase TOT.

4.16 Transient Occupancy Tax Funding Constraints and Considerations

TOT revenues may support capital improvements that enhance tourism-related facilities and economic activity; however, their applicability to affordable housing infrastructure is constrained by policy priorities and legal use considerations. TOT funds are typically prioritized for visitor-serving amenities, public safety, or economic development, and use for utility infrastructure serving residential development may face policy or public scrutiny. Revenues are also sensitive to lodging market conditions and seasonal fluctuations. Increases to TOT require voter approval and may encounter political resistance, while allocation of existing TOT revenues may be limited by prior commitments or budgetary constraints.

4.17 Development Impact Fees

DIFs are a funding tool used to construct capital improvements needed to support new development. DIFs are imposed on new development to ensure that growth contributes its fair share toward the cost of infrastructure and public facilities required to serve that development. The creation of new DIFs, or updates to existing fee programs, can fund new or expanded improvements tied directly to new development, including water, stormwater, sanitary sewer, transportation, parks, and other critical infrastructure. It can take 9 to 12 months to create or update DIFs.

4.18 Development Impact Fee Funding Constraints and Considerations

DIFs provide a legally defensible mechanism to fund infrastructure necessitated by new development; however, their use is constrained by nexus, proportionality, and affordability considerations. DIFs must be directly tied to impacts generated by new development and cannot fund existing deficiencies or broader system upgrades without clear justification. For affordable housing projects, high fee levels may impair financial feasibility unless reduced, deferred, or offset by subsidies. Fee program updates require a nexus study in compliance with the Mitigation Fee Act (Assembly Bill 1600), public process, and adoption timelines, and revenues are realized incrementally as development occurs, rather than upfront.

4.19 Business Improvement District

A business improvement district (BID) is a defined area in which businesses or property owners pay a special assessment to fund the services, improvements, and activities that benefit businesses or properties within that area. While BIDs often focus on commercial properties, property-based improvement districts (PBIDs) can include residential properties in their assessment, particularly if those residences directly benefit from the enhanced services. It can take 6 to 9 months to form a BID.

4.20 Business Improvement District Funding Constraints and Considerations

BIDs and PBIDs can fund localized services and improvements but are generally constrained in their applicability to core water and sewer infrastructure. These districts are typically used for maintenance, operations, marketing, or streetscape enhancements rather than major utility capital projects. Assessment levels must be justified by direct benefit, and residential participation, particularly for affordable housing, may be limited or politically sensitive. As a result, BIDs or PBIDs are more appropriately considered as complementary tools for ongoing services or area enhancements rather than primary funding sources for backbone infrastructure.

5 Traditional Public Funding Sources

This section outlines a range of potential federal, state, regional, and local funding sources that may be leveraged to support infrastructure improvements, including investments related to affordable housing development. Due to overall funding limitations and funding constraints typical of affordable housing projects, the City may need to leverage multiple funding sources and combine external funding with the financing mechanisms discussed in the previous section to support implementation of the proposed improvements. Detailed descriptions, eligibility requirements, and program specifics for each loan and grant opportunity are provided in Attachment 3.

While a range of traditional public funding sources and financing mechanisms are available to support infrastructure improvements, funding gaps and implementation constraints are anticipated. Certain improvements may not be fully eligible for or covered by the identified grant and loan programs, requiring the City to secure supplemental funding or local contributions. In addition, timing considerations, such as competitive award cycles, reimbursement structures, and matching fund requirements, may delay project delivery or limit near-term feasibility. Funding sources may include restrictions on eligible uses, geographic priorities, or project types, which may constrain how funds can be applied across the proposed infrastructure improvements. As a result, a coordinated funding strategy that combines multiple sources and financing tools may be necessary to fully implement the recommended infrastructure projects.

5.1 Federal Resources

Table 4 summarizes key traditional public funding sources available to support water, wastewater, and infrastructure improvements for programs administered at the federal level. It identifies each funding agency or source, the program name, general funding category, type of assistance provided (e.g., grant or loan), and typical eligible uses. These funding sources represent direct capital resources that may be used independently or in combination with the financing mechanisms discussed in the previous section to help advance infrastructure investments and affordable housing related improvements. Additional program details and application considerations are provided in Attachment 3.

Because the City is a high-income coastal city, a key challenge with federal funding is that programs often prioritize low-income jurisdictions or distressed areas. In addition, federal funding is often limited to large-scale, multi-million-dollar infrastructure projects. However, there are still strong options, especially if the City frames the projects around housing supply, climate, resilience, infrastructure, or workforce housing. By partnering with the County of San Diego, the City is most competitive to apply for HOME Investment Partnerships Program and Community Development Block Grant funding at the federal level.

Table 4. Federal Funding Sources

Agency / Source	Name of Program	Funding Category	Type	Eligible Uses
US Environmental Protection Agency (EPA)	Water Infrastructure Finance and Innovation Act Loans (WIFIIA)	Infrastructure - Water, Stormwater	Low interest loans	Water quality and storm infrastructure
United States Department of Transportation (US DOT)	Better Utilizing Investments to Leverage Development (BUILD)	Infrastructure - Transportation	Grants	Planning or constructing transportation projects that will improve safety; environmental sustainability; quality of life; mobility and community connectivity; economic competitiveness and opportunity; partnership; innovation.
United States Department of Transportation (US DOT)	Transportation Infrastructure Finance and Innovation Act (TIFIA)	Infrastructure - Transportation	Direct loan, loan guarantee, line of credit	Large scale, surface transportation projects including highway, transit, railroad, intermodal freight, and port access.
United States Bureau of Reclamation (USBR)	WaterSMART	Infrastructure - Water	Grants	Water treatment, water infrastructure construction, conservation, water management, watershed restoration, water recycling, drought response, basin studies
United States Bureau of Reclamation (USBR)	USBR Small Surface Water and Groundwater Storage	Infrastructure - Water	Grants	Water storage capacity of not less than 200 acre-feet and not more than 30,000 acre-feet; and increases surface water or groundwater storage; or conveys water, directly or indirectly, to or from surface water or groundwater storage.
Department of Commerce Economic Development Administration (EDA)	Public Works Grants	Infrastructure	Grants	Water and wastewater infrastructure, Industrial and business park infrastructure, Site development and utilities, Transportation access related to economic development, Public facilities that support job creation and private investment
U.S. Department of Housing and Urban Development (HUD)	Community Development Block Grant (CDBG)	Infrastructure, Housing, Code Enforcement	Grants	Water and wastewater systems, public facilities, infrastructure improvements that support housing objectives
U.S. Department of Housing and Urban Development (HUD)	HOME Investment Partnerships Program	Housing, Infrastructure	Grants	Acquisition, site improvements, utilities, construction

5.2 State Resources

Table 5 summarizes key traditional public funding sources available to support water, wastewater, and infrastructure improvements for programs administered at the state level. It identifies each funding agency or source, program name, general funding category, type of assistance provided (e.g., grant or loan), and typical eligible uses. These funding sources represent direct capital resources that may be used independently or in combination with the financing mechanisms discussed in the previous section to help advance infrastructure investments and affordable housing related improvements. Additional program details and application considerations are provided in Attachment 3.

Table 5. State Funding Sources

Agency / Source	Name of Program	Funding Category	Type	Eligible Uses
California Infrastructure and Economic Development Bank (IBank)	California Infrastructure State Revolving Fund (ISRF)	Infrastructure	Loans	Public infrastructure including water and wastewater treatment plant upgrades or construction, venue construction, street repair and upgrades.
California Transportation Commission (CTC)	State Transportation Improvement Program (STIP)	Infrastructure - Transportation	Grants	State highway improvements, intercity rail, and regional highway and transit improvement
California Environmental Protection Agency (CalEPA)	Drinking Water State Revolving Fund (DWSRF)	Infrastructure - Water	Loans, principal forgiveness, grants	Helps finance upgrades and expansion of drinking water systems (treatment, distribution, compliance, source improvements).
California Environmental Protection Agency (CalEPA)	Clean Water State Revolving Fund (CWSRF)	Infrastructure - Water	Low cost financing and principal forgiveness; grants	Provides financial assistance for sewer/wastewater system construction and upgrades, including treatment plants, collection systems, septic-to-sewer conversions. Grant or principal forgiveness available for disadvantaged communities.
Strategic Growth Council	Affordable Housing and Sustainable Communities Program	Housing, Infrastructure	Grants and loans	Affordable housing development costs, housing related infrastructure, transit, active transportation, streetscape
California Tax Credit Allocation Committee	Low Income Housing Tax Credits - 9%	Housing	Tax Credits	Residential construction, on-site sewer and water infrastructure, utility connections, site work and grading, architect and engineering, permits, certain soft costs.
California Tax Credit Allocation Committee	Low Income Housing Tax Credits - 4%	Housing	Tax Credits	100% affordable units. residential construction, on-site sewer and water infrastructure, utility connections, site work and grading, architect and engineering, permits, certain soft costs.
California Department of Housing and Community Development (HCD)	Infill Infrastructure Grant Program	Infrastructure	Grants	Water and sewer connections, utility extensions, streets, sidewalks, lighting, site prep, public improvements
California Department of Housing and Community Development (HCD)	Permanent Local Housing Allocation	Housing	Grants	Development of affordable multifamily rental and ownership housing

As with federal funding, because the City is a high-income coastal city, a key challenge with state funding is that many programs prioritize low-income jurisdictions or distressed areas. However, there are still strong options, especially if the City frames the projects around housing supply, climate, resilience, infrastructure, or affordable housing. The California Department of Housing and Community Development offers a variety of grants that are tied to affordable housing to increase the state's housing supply. When the next round of funding opens in the future, the City may be particularly competitive for the Infill Infrastructure Grant Program, which can be used to fund critical infrastructure for affordable housing.

While Table 5 includes both 4 percent and 9 percent tax credits, the details and competitiveness of the three sites were analyzed separately in the Analysis of Financial Feasibility and Competitiveness for Tax Credit

Financing, completed by Harris in March 2026. The future affordable housing project may be even more competitive for tax credits when coupled with other state financial resources.

5.3 Regional and Local Resources

Table 6 summarizes key traditional public funding sources available to support water, wastewater, and infrastructure improvements for regional and local programs. It identifies each funding agency or source, specific program name, general funding category, type of assistance provided (e.g., grant or loan), and typical eligible uses. These funding sources represent direct capital resources that may be used independently or in combination with the financing mechanisms discussed in the previous section to help advance infrastructure investments and affordable housing related improvements. Additional program details and application considerations are provided in Attachment 3.

Table 6. Regional and Local Resources

Agency / Source	Name of Program	Funding Category	Type	Eligible Uses
California Department of Water Resources and San Diego Water Authority	Integrated Regional Water Management (IRWM) Grant Program	Infrastructure - Water	Grants	Planning and implementation of regional water management projects that improve water supply reliability, water quality, ecosystem protection, flood management, and climate resilience
City of Del Mar	Measure Q	Capital Projects	Budget allocation	City Council needs to approve projects.
City of Del Mar	Impact and In-Lieu Fee Deferrals, Waivers or Credits	Capital Projects	Deferral, Waiver, Credit	City Council needs to determine eligible projects
City of Del Mar	General Fund	Infrastructure	Budget allocation	The City's General Fund may be used to selectively support infrastructure, subject to Council authorization
City of Del Mar	Capital Improvement Program (CIP)	Infrastructure	Budget allocation	The City's CIP may allocate funding for public infrastructure, facilities, or operation, and maintenance project's that align with the City's goals.

The City has resources to provide affordable housing developers on the Fairgrounds property. The City may reduce, defer, or waive impact fees, in-lieu fees, or other fees for developers, improving their financing or cash flow options. In addition, the City can opt to fund infrastructure through a one-time budget allocation through the general fund or Capital Improvements Program, subject to City Council authorization, and alignment with City goals.

As previously discussed, while allocation of existing Measure Q sales tax revenues may be feasible, competing capital priorities and City Council discretion may limit the amount and duration of funding available for water and sewer infrastructure tied to this project. An additional sales tax measure may not be politically palatable at this time, due to the recent passing of Measure Q.

6 Next Steps

To transition from conceptual planning to implementation and infrastructure construction, a series of coordinated technical, financial, and policy actions are recommended to improve certainty, allocate infrastructure responsibilities, and establish sustainable funding mechanisms for the City.

6.1 Site Selection and Service Area Confirmation

The District and City should finalize site selection and clearly define water and wastewater service areas in coordination with adopted land use plans, environmental constraints, growth projections, and policy goals. Confirming development locations will support site specific infrastructure sizing, hydraulic modeling, and alignment with existing system capacities while also establishing the basis for cost allocation and financing options.

6.2 Refinement of Infrastructure Scope, Phasing, and Cost Estimates

Preliminary infrastructure concepts should be progressed through analysis to develop refined capital improvement programs. This effort may include the following:

- Preliminary design for infrastructure and capital improvements
- Identification of off-site versus on-site infrastructure responsibilities
- Phasing strategies aligned with development absorption
- Refining cost estimates

6.3 Additional Study Recommendations

As outlined in the Utility Impact Study, Harris recommends completing several additional studies for improvements for the final site selection prior to development. These include a Pump Station Condition Assessment and Capacity Analysis; Design and Installation of Restrictor Plates; Secondary Wet Well / Wet Well Expansion; and Installation of Variable Frequency Drives.

6.4 Evaluation of Sea-Level Rise and Climate Resilience Adaptations

Given the long-term nature of water and wastewater infrastructure investments, the District and City should continue to evaluate vulnerabilities related to sea-level rise, flooding, and climate change. This analysis may include elevated or flood-protected facilities, backup power, and adaptive system design. Associated capital and lifecycle costs should be incorporated into infrastructure financing plans to ensure long-term system reliability and regulatory compliance.

6.5 Framework for Developer Participation and Cost-Sharing

Developer participation should be formally incorporated into the infrastructure delivery strategy to ensure equitable cost allocation and timely project implementation. This may include the following:

- Identification of backbone infrastructure eligible for reimbursement or credit agreements
- Proportionate share methodologies to allocate costs among benefiting developments
- Front-funding structures where developers construct improvements in exchange for fee offsets or future reimbursements
- Coordination with DIFs, connection fees, and utility capacity charges

6.6 Feasibility Analysis of Special District and Alternative Financing Mechanisms

The City should evaluate the applicability of special district tools and complementary financing strategies, as referenced previously, including but not limited to CFDs, assessment districts, or public-private partnership structures. This effort may include the following:

- Financial modeling of revenue generation, bonding capacity, and pro-forma/cash flow modeling
- Legal formation requirements and approval thresholds
- Integration with developer participation frameworks and impact fee programs
- Long-term administrative and debt service considerations
- Political climate

7 References

- City of Del Mar and 22nd District Agricultural Association. 2024a. Exclusive Negotiating Rights Agreement (Fairgrounds). April.
- City of Del Mar and 22nd District Agricultural Association. 2024b. First Amendment to Fairgrounds Affordable Housing Exclusive Negotiating Rights Agreement. December.
- Harris & Associates. 2025. Housing Site Conditions and Constraint Assessment. November.
- Harris & Associates. 2026a. Analysis of Financial Feasibility and Competitiveness for Tax Credit Financing. February.
- Harris & Associates. 2026b. Fairgrounds Utility Impact Study. March.
- Keyser Marston Associates and Stephen Dalton Architects. 2022. Financial Feasibility Study. June.

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Attachment 1. Bid Results

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City	Year	Job	Item	Units	Unit Price
Ontario	2025	On-Ca	1" Water service, 50-75 linear feet (PE Pipe)	EA	$ 3,024.00
Ontario	2025	On-Ca	hot Tap, 4-6" Main	EA	$ 352.80
Ontario	2025	On-Ca	6" Sewer lateral (VCP), 0-25 linear feet, less than 8 foot depth	EA	$ 2,116.80
Ontario	2025	On-Ca	Remove and replace AC paving, existing 4" AC over 6" Class II base compacted to 95% max density	SF	$ 4.00
Ontario	2025	On-Ca	5/8-1" Water meter replacement/exchange	EA	$ 388.00
Ontario	2025	UT 10	FURNISH AND INSTALL 1-INCH COPPER WATER SERVICE, METER BOX, AND APPURTENANCES	EA	$ 9,500.00
Ontario	2024	UT10	CONSTRUCT 8-INCH DIAMETER VCP, EXTRA STRENGTH SEWER MAIN	LF	$ 300.00
San Diego	2020	North	Asphalt Overlay 2" (145,552 SF)	TON	$ 100.00
San Diego	2020	North	Water Service (1 Inch)	EA	$ 9,000.00
San Diego	2020	Sewer	Abandon and Fill Existing Sewer Main (8 Inch) Outside of Trench Limits	LF	$ 9.00
San Diego	2020	Sewer	Sewer Main (8 Inch)	LF	$ 195.00
San Diego	2020	Sewer	Water Service (1 Inch)	EA	$ 3,800.00
San Diego	2020	Sewer	Connection to Existing Manhole and Rechanneling	EA	$ 4,000.00
San Diego	2020	Sewer	Sewer Lateral and Cleanout (6 Inch, Street)	EA	$ 3,200.00
San Diego	2020	Sewer	Ashphalt Concrete Overlay (2 Inch)	TON	$ 105.00

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Attachment 2. Special District Financing Options

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	Special District	Community Facilities District (CFD)	Enhanced Infrastructure Financing District (EIFD)	Climate Resilience District	Public Bond Measures	Assessment District (AD)	General Sales Tax Increase	Transient Occupancy Tax (TOT) Increase	Development Impact Fees (DIF) Update &/or Additional DIFs	Business Improvement District (BID)
Description	Parcel tax for a specific purpose	Special tax district to fund public improvements and services	Special financing district that utilizes a portion of tax increment revenue to finance projects within the EIFD	Special financing district that utilizes a portion of tax increment revenue to finance climate resiliency projects within the CRD	Long-term borrowing that governments frequently use to raise money	Benefit assessment to fund certain public improvements and services	General Local Sales Tax (percentage increase range 0.125%-2%)	TOTs are imposed on rooms or living spaces at hotels, inns, rental houses, homes, motels, or campsites	One-time charges assessed on new development for public facilities needed to serve new development	Defined area which businesses and/or property owners pay a special assessment to fund services, improvements, and activities that benefit businesses or properties within that area.
Authority	Laws passed by the State Legislature, Principal Acts	Mello-Roos Community Facilities Act of 1982 (Government Code Section 53311 et. seq.)	Laws passed by the State Legislature	California Government Code Sections 62300 - 62312	Laws passed by the State Legislature	Improvement Act of 1911; Municipal Improvement Act of 1913	Laws passed by the State Legislature	Revenue & Taxation Code Sec. 7280	Assembly Bill 1600 (Mitigation Fee Act)	Property and Business Improvement District Law of 1994 (CA Streets & Highways Code, § 36600 et seq.) or Proposition 218
Eligible for Funding	Specific or particular purpose only	Public services and capital projects, including maintenance	Public infrastructure projects, infrastructure maintenance, affordable housing development, economic development, etc.	Infrastructure projects that address climate change, mitigation, adaption, and resilience.	Primarily used for long-lived infrastructure assets, Bond will identify eligible projects	Public services and capital projects		General Services (goes to General Fund)	Capital Costs for new improvements only and must be tied to new development	Street cleaning, maintenance, beautification, graffiti removal, public safety, marketing, events, placemaking, tourism, business attraction and retention
Rate and Methodology	Apportioned out to each parcel within the special district	Not subject to strict principles of benefit assessment, tax formula must be reasonable, allows for defined tax exemptions	Increment increase in property tax is diverted into a separate pool of money, which can be used to pay for improvements or pay back bonds	Increment increase in property tax is diverted into a separate pool of money, which can be used to pay for improvements or pay back bonds	Bond amount is set - duration of loan established (~ 30 years) and repaid by taxable property within the jurisdiction over length of the bond	Mathematical formula based on how much each property will benefit, if a property benefits it must be assessed	General Services (goes to General Fund)	In CA, the TOT rate varies by locality, typical ranges from 8% to 15.5% of the room rate	Fair share based on a rational nexus test	Business based are assessed on businesses; property based are assessments on real property
Assessment	Fixed rate per property parcel based on either square footage or flat charge for a specified length of time	Maximum Annual Special Tax Rate, may run in perpetuity	Tax increment over the base amount; uses the growth from existing tax revenues	Tax increment over the base amount; uses the growth from existing tax revenues	Payback of loan is dispersed through collection of taxes	Fixed percentage of total district debt assigned to each parcel, requires annual public hearing process	Sales Tax revenue generated from increased sales tax apportioned to the City from County	The TOT is collected by the lodging establishment, then remitted to the agency	One-time fee on new development to mitigate impacts	Can be based on square footage, type of business, revenue, engineer's report
Concerns	Requires ballot measure, costly, requires 2/3 registered voter approval.	Higher taxes and can be complex to administer when funding public improvements through bonding, requires 2/3 registered voter approval	Need to form Public Financing Authority for oversight	Need to form Public Financing Authority for oversight	Requires ballot measure, costly, requires 2/3 registered voter approval	Unless narrowly crafted, unable to fund 100% of a program due to general benefits.	Fixed rate increase on sales of goods and services	Requires ballot measure, requires 1/2 registered voter approval	Cannot fund existing deficiencies, ongoing maintenance, or salaries. Limited large scale new development growth in the City.	BIDs need to be renewed every 5-10 years
	In this case, a lot of work for potentially little revenue.					Cannot assess for general benefit (defined as benefit to the public at large or benefits that are not property related, for example, through traffic on arterial roadway, traffic signals, protection of life).	Requires ballot measure, costly to campaign for, requires 1/2 registered voter approval		Will take considerable amount of time to receive additional funding for proposed infrastructure projects.	If the development Is 100% residential, it may not be eligible for a BID without including other surrounding properties
		If less than 12 registered voters, may be a landowner vote, requires 2/3 of all acreage within district boundary in favor for approval	Small area may not produce much tax increment	Small area may not produce much tax increment						
Why use this approach?	Can be used for specific or particular purpose, not subject to Prop 13 limitations	Broadest range of eligible funding, may fund 100% of costs, allows for expedited future annexations – best used in developing areas	No voter requirement for formation or bond issuance (Assembly Bill 116 - 2019)	No voter requirement for formation or bond issuance (Assembly Bill 116 - 2019)	Can be used for specific or particular purpose, not subject to Prop 13 limitations	Can be used in undeveloped areas and/or established areas to fund public infrastructure and services	Can be used for specific or particular purpose, not subject to Prop 13 limitations	Does not typically produce financial hardship on residents. No cap.	Tried and true method of funding new development's share of capital facility costs. Does not impact property taxes. Required to update fees by 2030.	Funding is predictable; it is politically palatable
Primary steps to complete	1. Public outreach	1. Public outreach	1. Form team	1. Form team	1. Public outreach	1. Public outreach	1. Public outreach	1. Public Outreach	1. Public outreach	1. Feasibility and outreach
	2. Proposal filed with Attorney General for ballot title	2. Initiation of CFD	2. Evaluate EIFD feasibility	2. Evaluate CRD feasibility	2. Proposal filed with Attorney General for ballot title	2. Resolution of Intention	2. Proposal filed with Attorney General for ballot title	2. Proposal filed with Attorney General for ballot title	2. Public Hearing	2. Petition and Resolution of Intention
	3. Signature gathering	3. Adoption of Local Goals and Policies, Proposal of Resolution of Intention	3. Conduct outreach	3. Conduct outreach	3. Signature gathering	3. Prop 218 ballots mailed to each property owner in the district	3. Signature gathering	3. Signature gathering		3. Management District Plan
	4. Legislative hearings on proposal	4. Public Hearing, Adoption of Resolution of Formation	4. Initiate formal process	4. Initiate formal process	4. Legislative hearings on proposal	4. Public Hearing	4. Legislative hearings on proposal	4. Legislative hearings on proposal	3. Adoption of ordinance & resolution	4. Public Hearing
	5. Submission of signatures	5. Election (2/3 supermajority vote when more than 12 voters)	5. Prepare Infrastructure Financing Plan	5. Prepare Infrastructure Financing Plan	5. Submission of signatures	5. Adoption of Resolution of Formation	5. Submission of signatures	5. Submission of signatures		5. Final Resolution
	6. Ballot Measure (2/3 supermajority vote for approval)		6. Pre-adoption / Public Hearings	6. Pre-adoption / Public Hearings	6. Ballot Measure (2/3 supermajority vote for approval)	6. Protest Hearing (majority protest, weighted, of ballots returned)	6. Ballot Measure (1/2 majority vote for approval)	6. Ballot Measure (1/2 majority vote for approval)		
			7. Approval and Formation	7. Approval and Formation						
Timeframe	Estimate 12 to 24 months	Estimate 9 to 12 months	Estimate 12-18 months	Estimate 12 - 24 months	Estimate 18 to 24 months	Estimate 6 to 12 months	Estimate 18 to 24 months	Estimate 6-12 months	Estimate 6 to 9 months	6 to 9 months

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Attachment 3. Traditional Public Financing Sources

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Agency / Source	Name of Program	Funding Category	Type	Amount	Description	Eligible Uses
US Environmental Protection Agency (EPA)	Water Infrastructure Finance and Innovation Act Loans (WIFIIA)	Infrastructure - Water, Stormwater	Low interest loans	Varies by project	Supports large housing pipelines	Water quality and storm infrastructure
United States Department of Transportation (US DOT)	Better Utilizing Investments to Leverage Development (BUILD)	Infrastructure - Transportation	Grants	Max $25 Million Capital Grants Minimum Request $5 million	Provides grants for surface transportation infrastructure with significant local or regional impact.	Planning or constructing transportation projects that will improve safety; environmental sustainability; quality of life; mobility and community connectivity; economic competitiveness and opportunity; partnership; innovation.
United States Department of Transportation (US DOT)	Transportation Infrastructure Finance and Innovation Act (TIFIA)	Infrastructure - Transportation	Direct loan, loan guarantee, line of credit	Varies by project	The TIFIA program provides credit assistance for qualified projects of regional and national significance. Finance up to 49% of eligible project costs with flexible amortization.	Large scale, surface transportation projects including highway, transit, railroad, intermodal freight, and port access.
United States Bureau of Reclamation (USBR)	WaterSMART	Infrastructure - Water	Grants	Varies by project	Provides competitive grant funding to support projects that improve water use efficiency, enhance water supply reliability, and increase resilience to drought and climate impacts	Water treatment, water infrastructure construction, conservation, water management, watershed restoration, water recycling, drought response, basin studies
United States Bureau of Reclamation (USBR)	USBR Small Surface Water and Groundwater Storage	Infrastructure - Water	Grants	25% of the total project cost; or $30 million per project	Enhances water storage opportunities for future generations.	Water storage capacity of not less than 200 acre-feet and not more than 30,000 acre-feet; and increases surface water or groundwater storage; or conveys water, directly or indirectly, to or from surface water or groundwater storage.
Department of Commerce Economic Development Administration (EDA)	Public Works Grants	Infrastructure	Grants	Minimum $100,000 and maximum $30,000,000	Provides grant funding for infrastructure projects that promote economic development, support job creation, and advance regional competitiveness, particularly in economically distressed communities.	Water and wastewater infrastructure, Industrial and business park infrastructure, Site development and utilities, Transportation access related to economic development, Public facilities that support job creation and private investment
U.S. Department of Housing and Urban Development (HUD)	Community Development Block Grant (CDBG)	Infrastructure, Housing, Code Enforcement	Grants	Amount varies by project and jurisdiction	Funding to local governments to support community development activities benefiting low- and moderate-income persons, including public infrastructure and facilities that support housing and community needs	Water and wastewater systems, public facilities, infrastructure improvements that support housing objectives
U.S. Department of Housing and Urban Development (HUD)	HOME Investment Partnerships Program	Housing, Infrastructure	Grants	Amount varies by project and jurisdiction	Provides formula grants to localities to fund a wide range of activities including building, buying, and/or rehabilitating affordable housing for rent or homeownership.	Acquisition, site improvements, utilities, construction
California Infrastructure and Economic Development Bank (IBank)	California Infrastructure State Revolving Fund (ISRF)	Infrastructure	Loans	$1 million to $65 million, terms of up to 30 years	Provides low-cost, direct loans to local governments for a wide variety of public infrastructure and economic expansion projects (excluding housing) that improve and sustain communities	Public infrastructure including water and wastewater treatment plant upgrades or construction, venue construction, street repair and upgrades.
California Transportation Commission (CTC)	State Transportation Improvement Program (STIP)	Infrastructure - Transportation	Grants	Funding varies by cycle and project	Biennial five-year plan adopted by the CTC for future allocations of state transportation funds for state highway improvements, intercity rail, and regional highway and transit improvements.	State highway improvements, intercity rail, and regional highway and transit improvement
California Environmental Protection Agency (CalEPA)	Drinking Water State Revolving Fund (DWSRF)	Infrastructure - Water	Loans, principal forgiveness, grants	Varies by project	Provides financial assistance to public water systems to plan, design, and construct drinking water infrastructure projects that ensure compliance with standards and protect public health.	Helps finance upgrades and expansion of drinking water systems (treatment, distribution, compliance, source improvements).
California Environmental Protection Agency (CalEPA)	Clean Water State Revolving Fund (CWSRF)	Infrastructure - Water	Low cost financing and principal forgiveness; grants	Varies by project	The CWSRF provides financial assistance for wastewater and water quality infrastructure projects to help communities comply with clean water standards, protect water quality, and improve public health and the environment.	Provides financial assistance for sewer/wastewater system construction and upgrades, including treatment plants, collection systems, septic-to-sewer conversions. Grant or principal forgiveness available for disadvantaged communities.
Strategic Growth Council	Affordable Housing and Sustainable Communities Program	Housing, Infrastructure	Grants and loans	Set separately in each NOFA	Funding affordable housing and transportation projects near jobs, schools, and other daily destinations. Currently closed but has had multiple rounds.	Affordable housing development costs, housing related infrastructure, transit, active transportation, streetscape
California Tax Credit Allocation Committee	Low Income Housing Tax Credits - 9%	Housing	Tax Credits	Varies by project	Federal tax credit that allows developers to raise equity by selling tax credits to investors, which reduces the amount of permanent debt a project must carry.	Residential construction, on-site sewer and water infrastructure, utility connections, site work and grading, architect and engineering, permits, certain soft costs.
California Tax Credit Allocation Committee	Low Income Housing Tax Credits - 4%	Housing	Tax Credits	Varies by project	Federal tax credit that allows developers to raise equity by selling tax credits to investors, which reduces the amount of permanent debt a project must carry.	100% affordable units. residential construction, on-site sewer and water infrastructure, utility connections, site work and grading, architect and engineering, permits, certain soft costs.
California Department of Housing and Community Development (HCD)	Infill Infrastructure Grant Program	Infrastructure	Grants	Amount varies by project and jurisdiction	Funds infrastructure that is integral for the construction of affordable and mixed income housing including water, utilities, streets, and site improvements. Currently closed but has had multiple rounds.	Water and sewer connections, utility extensions, streets, sidewalks, lighting, site prep, public improvements
California Department of Housing and Community Development (HCD)	Permanent Local Housing Allocation	Housing	Grants	Formula based allocation	Funding available to eligible local Governments for housing-related projects and programs that assist in addressing the unmet housing needs of their local communities	Development of affordable multifamily rental and ownership housing
California Department of Water Resources and San Diego Water Authority	Integrated Regional Water Management (IRWM) Grant Program	Infrastructure - Water	Grants	Varies by project	IRWM is a collaborative effort to manage all aspects of water resources in a region. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple stakeholders	Planning and implementation of regional water management projects that improve water supply reliability, water quality, ecosystem protection, flood management, and climate resilience
City of Del Mar	Measure Q	Capital Projects	Budget allocation	Varies by project	Voter approved 1% sales and use tax. Currently includes utility undergrounding, shores park, and downtown streetscape projects.	City Council needs to approve projects.
City of Del Mar	Impact and In-Lieu Fee Deferrals, Waivers or Credits	Capital Projects	Deferral, Waiver, Credit	Varies by project	The City can use impact fee deferrals, waivers, or credits to lower the costs of construction.	City Council needs to determine eligible projects
City of Del Mar	General Fund	Infrastructure	Budget allocation	Varies by project	Primary operating fund for the City	The City's General Fund may be used to selectively support infrastructure, subject to Council authorization
City of Del Mar	Capital Improvement Program (CIP)	Infrastructure	Budget allocation	Varies by project	Long term, strategic roadmap and plan for the City's infrastructure and capital improvements	The City's CIP may allocate funding for public infrastructure, facilities, or operation, and maintenance project's that align with the City's goals.

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FINAL

Del Mar Fairgrounds Water and Sanitary Sewer Utility Impact Study

HAP Grant Affordable Housing Project

March 2026

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Appendices

Appendix A. Water Demand & Sewer Generation Calculations
Appendix B. InfoWater Pro Water Model Results
Appendix C. PCSWMM Sanitary Sewer Model Results

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Acronyms and Abbreviations

ADD	average day demand
CCTV	closed-circuit television
CIP	capital improvement program; capital improvement program project
d/D	depth-to-diameter ratio
DU	dwelling unit
District	22nd District Agricultural Association
Fairgrounds	Del Mar Fairgrounds
FF	fire flow
ft/s	feet/second
GIS	geographic information systems
gpd	gallons per day
gpm	gallons per minute
HAP	Housing Acceleration Program
Harris	Harris & Associates
I&I	inflow and infiltration
MDD	maximum day demand
MGD	million gallons per day
n	Manning's roughness coefficient
O&M	operations and maintenance
PHD	peak hour demand
psi	pounds per square inch
SEJPA	San Elijo Joint Powers Authority
VFD	variable-frequency drive
W&SMP	Water and Sewer Master Plan
W&SSUIS	Water and Sanitary Sewer Utility Impact Study

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The Del Mar Fairgrounds (Fairgrounds) are located in the northern portion of the City of Del Mar and the northwestern portion of the City of San Diego. As part of the City of Del Mar's efforts to meet its Regional Housing Needs Assessment allocation identified in its 6th Cycle Housing Element, the City of Del Mar and the 22nd Agricultural District (District) have entered into an agreement to identify and pursue a mutually acceptable site on the Fairgrounds for the development of at least 61 lower-income affordable housing units.

This Water and Sanitary Sewer Utility Impact Study (W&SSUIS) has been prepared to assess the capacity of the Del Mar Fairgrounds' existing water and sanitary sewer systems and to identify the potential impacts of the proposed housing on the Fairgrounds' systems.

Existing Condition Models

To analyze the impacts of the proposed housing, existing condition models were developed for the water distribution system and the sanitary sewer system to act as the "baseline" for comparing the proposed condition models to. The existing condition models for this W&SSUIS were developed based on the water and sanitary sewer models from the City of Del Mar 2014 Water and Sewer Master Plan (2014 W&SMP). To develop the existing condition models for this W&SSUIS, the Fairgrounds' water and sanitary sewer piping was incorporated into the 2014 W&SMP based on geographic information systems (GIS) data and as-built record drawings.

Using the water demands and wastewater flows assigned to the Fairgrounds in the 2014 W&SMP, the Fairgrounds water demands and wastewater flows in the existing condition model were allocated proportionally throughout the added Fairgrounds piping based on aerial imagery and building square footage provided by the District. Additional water demands and wastewater flows were added to the existing condition model to include Fairgrounds construction that has occurred since the 2014 W&SMP or construction that is planned for the near future, including the Phase II Storm Water Improvements – Stormwater Treatment Plant and the San Dieguito Double Track and Special Events Platform.

To develop the existing condition model, the water demands and wastewater flows from the 2014 W&SMP model were also updated to incorporate developments within the City of Del Mar that are planned for the near future or already approved by the City of Del Mar, as well as amendments to the City of Del Mar's land use zoning. The incorporated developments and zoning amendments include:

- North Commercial Zoning Amendment (Note: The North Commercial Zone modeling analysis includes seven parcels located at 2002, 2010, 2120, 2126, 2132, 2148, and

2236 Jimmy Durante Boulevard. The Watermark 50-Unit Apartment Project entitlement was analyzed separately).

- Professional Commercial Zoning Amendment
- Central Commercial Zoning Amendment
- 941 Camino Del Mar Specific Plan
- Watermark 50-Unit Apartment Project

To estimate the effects of these developments and zoning changes, the incremental increases in water demand and wastewater generation were estimated using the water demand and wastewater generation factors from the 2014 W&SMP, which were developed based on historical data and the City's land use data.

Proposed Conditions Models

For this analysis, three potential affordable housing sites were analyzed within the Fairgrounds property:

- **Site 1 –** East Main Stable Gate Site
- **Site 2 –** South of Stable Gate Site
- **Site 3 –** Adjacent to Fire Station Site

A separate proposed condition model was developed for each of these sites to independently analyze the potential impacts from future development at each of these potential housing sites. The incremental increases in water demand and wastewater generation were developed assuming the proposed housing will encompass 1.5 acres and include up to 128 units as the highest density scenario. The multi-family water demand and wastewater generation factors from the 2014 W&SMP were used for estimating the incremental increase in water demand and wastewater generation for the proposed housing.

While this analysis is focused on impacts to the City of Del Mar's water and sanitary sewer systems, two additional sites located within the City of San Diego's water and sanitary sewer service area are also being considered:

- **Site 4 –** Surf and Turf RV Park Site
- **Site 5 –** Dirt Lot Site

Sites 4 and 5 are outside the City of Del Mar's service area. Therefore, an analysis of housing impacts on these sites is being conducted concurrently as part of a separate project and scope of work using the City of San Diego's standards. The results of this analysis are summarized in a technical memorandum titled, Del Mar Fairgrounds Potential Housing Sites in City of San Diego – Utility Impact Study.

Water Hydraulic Modeling

The water hydraulic model from the City of Del Mar's 2014 W&SMP was used for developing the water models in this W&SSUIS. The 2014 W&SMP water model was created in Innovyze's InfoWater modeling program, so the InfoWater model was converted to Autodesk's InfoWater Pro, which is the current iteration of the InfoWater software series.

Water Demands

The 2014 W&SMP model had two demand scenarios: existing and future. The existing scenario water demands were estimated using historical data from 2012 while the future scenario demands were estimated by scaling the demands proportionally to estimated population growth. Based on data provided by the City during a meeting on August 4, 2025, the City's current water demand has decreased since the 2014 W&SMP was prepared, so the demands in the existing scenario were used as a baseline (Harris 2025a).

Existing Conditions Water Demand Changes

Using the existing scenario water demands from the 2014 W&SMP, the existing condition model demands for this W&SSUIS were developed by incorporating the incremental increase in water demand from the planned developments and approved zoning amendments. These incremental increases in demand were estimated by updating the land use for each area based on the development type or the amendment to the zoning code. The estimated increases in water demand are summarized in Table ES-1.

Table ES-1. Increased Water Demand Due to Added Developments and Approved Zoning Amendments

Developments and Zoning Changes	Total Acreage	Existing		Updated			Incremental Increase (gpd)
		Existing Land Use Type	Existing Water Demand (gpd)	Updated Land Use Type	Water Demand Factor[1] (gpd/acre)	Estimated Water Demand (gpd)	
North Commercial Zoning Amendment	6.46	Commercial	4,047	Multi-family	3,630	23,450	19,403
Professional Commercial Zoning Amendment	1.30	Commercial	871	Multi-family	3,630	4,719	3,848
Central Commercial Zoning Amendment	7.53	Commercial	4,747	Mixed-use	2,150	16,180	11,433
941 Camino Del Mar Specific Plan	0.59	Commercial	395	Mixed-use	2,150	1,268	873

Table ES-1. Increased Water Demand Due to Added Developments and Approved Zoning Amendments

Developments and Zoning Changes	Total Acreage	Existing		Updated			Incremental Increase (gpd)
		Existing Land Use Type	Existing Water Demand (gpd)	Updated Land Use Type	Water Demand Factor[1] (gpd/acre)	Estimated Water Demand (gpd)	
Watermark 50-Unit Apartment Project	2.68	Commercial	0	Multi-family	3,630	9,728	9,728
						Total	**45,285**

Sources:

[1] City of Del Mar 2015.

Notes: gpd = gallons per day

The additional water demands on the Fairgrounds for the existing water service supplying the Phase II Storm Water Improvements – Stormwater Treatment Plant and the planned water service to the San Dieguito Double Track and Special Events Platform were also added to develop the existing condition model demands. These additional water demands are summarized in Table ES-2.

Table ES-2. Additional Fairgrounds Water Demands

Project	Land Use	Water Demand Factor[1] (gpd/acre)	Approximate Area[2] (acres)	Water Demand (gpd)
Phase II Storm Water Improvements – Stormwater Treatment Plant	Institutional	1,090	0.09	96
San Dieguito Double Track and Special Events Platform	Institutional	1,090	0.84	915

Sources:

[1] City of Del Mar 2015.

Notes: gpd = gallons per day

[2] The approximate area for the Phase II Storm Water Improvements – Stormwater Treatment Plant was calculated as the building area based on aerial imagery. The approximate area for the San Dieguito Double Track and Special Events Platform was calculated as the estimated waiting area noted in the 100% improvement plans (SANDAG 2024).

Proposed Housing Water Demand Changes

Three proposed condition models were developed to evaluate the impact from the proposed housing sites. The incremental increase in water demand from the proposed housing is approximately 5,445 gpd, as summarized in Table ES-3. This demand was added at each of the proposed housing sites in each of the proposed models.

Table ES-3. Fairgrounds Housing Water Demand

Land Use Type	Water Demand Factor[1] (gpd/acre)	Fairgrounds Housing Site Acreage	Water Demand (gpd)
Multi-Family	3,630	1.5	5,445

Sources:

[1] City of Del Mar 2015.

Notes: gpd = gallons per day

The estimated water demand of 5,445 gpd for the proposed housing is less than the estimated demand for the Watermark 50-Unit Apartment Project (shown in Table ES-1) even though the proposed housing would have more units. This is due to how water demand was estimated in the 2014 W&SMP. The 2014 W&SMP used a multi-family water demand factor of 3,630 gpd/acre, which is based on the parcel size rather than the unit density, and the Watermark 50-Unit Apartment Project is located on a larger parcel. The City of Del Mar is in the process of updating its master plan. Therefore, the estimated water demands in this report may be impacted if the water demand factors are revised in the updated master plan.

Water Modeling Scenarios

Model simulations were run under peak hour demand (PHD) and the maximum day demand plus fire flow (MDD + FF) for the existing condition and the three proposed sites. This resulted in a total of eight modeling scenarios as listed below:

- Existing Condition PHD
- Proposed Condition Site 1 PHD
- Proposed Condition Site 2 PHD
- Proposed Condition Site 3 PHD
- Existing Condition MDD + FF
- Proposed Condition Site 1 MDD + FF
- Proposed Condition Site 2 MDD + FF
- Proposed Condition Site 3 MDD + FF

Modeling Results

No hydraulic deficiencies were identified in the existing water system at the Fairgrounds. The model results showed that the system met the maximum velocity and minimum pressure criteria under the PHD.

The fire flow analysis indicated that the water systems' capacity is adequate near all of the potential housing sites at the Fairgrounds as shown in Table ES-4. Separate hydrant testing was not included in the scope of work to verify the fire flow capacity on the remaining portions of the Fairgrounds. The City of Del Mar shared hydrant flow data, which included hydrant data at the intersection of San Dieguito Drive and Jimmy Durante Boulevard. Of the hydrants analyzed, the one at this

intersection is the closest hydrant to the Fairgrounds and is near the Fairgrounds' connection to the City of Del Mar's water system. The provided hydrant flow data demonstrated that the City of Del Mar's water system at this location has adequate fire flow capacity and is able to supply up to 5,800 gallons per minute (gpm) of fire flow while maintaining a residual pressure of 20 pounds per square inch (psi) (ISO 2023). The District also provided private fire service inspection, testing, and maintenance records from 2024 indicating that the on-site fire system at the Fairgrounds passed inspection (LVIS 2024). However, the on-site hydrant capacity was unclear because the location of the tested hydrant was not noted.

Table ES-4. Available Fire Flow

Housing Site	Available Fire Flow Rate (gpm)
Site 1	9,353
Site 2	9,353
Site 3	12,059

Notes: gpm = gallons per minute

The proposed modeling results show that the water demand for proposed housing within the Fairgrounds can be met while meeting the PHD criteria and the fire flow criteria at the proposed housing sites. Therefore, no capital improvement projects are recommended for the Fairgrounds' existing water distribution system. A service lateral to connect the development to the existing water mains will need to be installed as a site-specific improvement project.

Sanitary Sewer Hydraulic Modeling

The sanitary sewer hydraulic models from the City of Del Mar's 2014 W&SMP were used for developing the sanitary sewer models in this W&SSUIS. The 2014 W&SMP sanitary sewer models were created in Innovyze's InfoSewer modeling program, so the InfoSewer models were converted to the Computational Hydraulics Inc.'s PCSWMM modeling software because the InfoSewer modeling software is no longer supported.

Sanitary Sewer Generation

The 2014 W&SMP model had two wastewater flow scenarios: existing and future. The existing wastewater flows were estimated using historical data from 2013 while the future scenario wastewater flows were estimated by scaling the flows proportional to the estimated population growth. Because the City's current sewer generation has decreased since the 2014 W&SMP was prepared, the wastewater flows in the "existing" scenario were used as a baseline.

Similar to the previous 2014 W&SMP, the wastewater flows for the Fairgrounds are estimated separately for the summer months versus non-summer months. This is because there are more events and activities scheduled at the Fairgrounds during summer resulting in a significant increase in flow. The wastewater flows from the 2013 historical data in the 2014 W&SMP are slightly higher than the

current 2023 wastewater flows for the summer months but slightly lower than the current 2023 wastewater flows for the non-summer months (City of Del Mar 2015, 2025). Therefore, the existing scenario wastewater flows from the 2014 W&SMP were used for the summer months, and the existing scenario wastewater flows for the non-summer months were scaled proportionally to match the current non-summer wastewater flow data.

Existing Conditions Sewer Generation Changes

Using the existing scenario wastewater flows from the 2014 W&SMP, the existing condition model flows for this W&SSUIS were developed by incorporating the incremental increase in wastewater flows from the planned developments and approved zoning amendments. These incremental increases in wastewater flows were estimated by updating the land use for each area based on the development type or the amendment to the zoning code. The estimated increases in sewer generation are summarized in Table ES-5.

Table ES-5. Increased Sewer Generation Due to Added Developments and Approved Zoning Amendments

Developments and Zoning Changes	Total Acreage	Existing		Updated			Incremental Increase (gpd)
		Existing Land Use Type	Existing Sewer Generation (gpd)	Updated Land Use Type	Sewer Generation Factor[1] (gpd/DU or gpd/acre)	Estimated Sewer Generation (gpd)	
North Commercial Zoning Amendment	6.46	Commercial	4,288	Multi-Family	232	29,000	24,712
Professional Commercial Zoning Amendment	1.30	Commercial	923	Multi-Family	232	6,264	5,341
Central Commercial Zoning Amendment	7.53	Commercial	5,031	Mixed-Use	Varies[2]	30,860	25,829
941 Camino Del Mar Specific Plan	0.59	Commercial	419	Mixed-Use	Varies[2]	1,137	719
Watermark 50-Unit Apartment Project	2.68	Commercial	0	Multi-Family	232	11,600	11,600
						Total	**68,201**

Sources:

[1] City of Del Mar 2015.

Notes: DU = dwelling unit; gpd = gallons per day

[2] Varies based on dwelling unit density. Refer to Section 4.2.2 for mixed-use sewer generation factor calculation.

The additional sanitary sewer flows generated on the Fairgrounds for the Phase II Storm Water Improvements – Stormwater Treatment Plant were also added to develop the existing condition model. Based on the sewer generation factor for institutional land uses, this additional wastewater flow was estimated to be 147 gpd.

It should be noted that the sewer flows for the City of Del Mar exceed the metered water consumption and this discrepancy was documented in the previous 2014 W&SMP. It is the understanding of Harris & Associates (Harris) staff that the sewer generation rates are likely to be overly conservative because the generation rates included wet weather flows when they were developed. By including wet weather flows in the sewer generation rates, the sanitary sewer flows estimated in this W&SSUIS using these sewer generation rates are overestimated because they include some inflow and infiltration from the wet weather flows.

The City of Del Mar is in the process of updating its master plan. Therefore, the estimated sewer generation projections in this report may be impacted if the sewer generation factors are revised in the updated master plan.

Proposed Housing Sewer Generation Changes

Three proposed condition models were developed to evaluate the impact from the proposed housing sites. The incremental increase in wastewater flows from the proposed housing is approximately 29,696 gpd, as summarized in Table ES-6. This demand was added at each of the proposed housing sites in each of the proposed condition models.

Table ES-6. Fairgrounds Housing Sewer Generation

Land Use Type	Sewer Generation Factor[1] (gpd/unit)	Fairgrounds Housing Number of Units	Sewer Generation (gpd)
Multi-Family	232	128	29,696

Sources:
[1] City of Del Mar 2015.
Notes: gpd = gallons per day

Sanitary Sewer Modeling Scenarios

Model simulations were run under dry weather and wet weather conditions for the existing condition and the three proposed sites. This resulted in a total of eight modeling scenarios as listed below:

- Existing Condition Dry Weather
- Proposed Condition Site 1 Dry Weather
- Proposed Condition Site 2 Dry Weather
- Proposed Condition Site 3 Dry Weather
- Existing Condition Wet Weather
- Proposed Condition Site 1 Wet Weather
- Proposed Condition Site 2 Wet Weather
- Proposed Condition Site 3 Wet Weather

Modeling Results

The model results showed that all of the on-site piping met the maximum d/D criteria indicating the system has adequate capacity during the dry and wet weather scenarios.

While the maximum velocity criterion was also met for all of the Fairgrounds piping during each of the model runs, the minimum velocity of 2 ft/s was not met for the majority of the piping. In general, the added flow from the housing sites in the proposed condition models slightly increased the velocities, but most of the velocities were still below the minimum velocity of 2 ft/s. Low velocities in sanitary sewer systems generally result in maintenance-related issues and typically cannot be resolved without pipe rehabilitation or replacement projects.

While the modeling results did not demonstrate a need for any significant capital improvement projects, discussions with the O&M staff during field visits revealed that there are existing deficiencies in the system. This is most clearly indicated by the peak wastewater flow from the Fairgrounds occasionally exceeding the maximum limit of 630 gpm prescribed by the City of Del Mar in the District's memorandum of understanding with the City permitting the Fairgrounds to discharge to the City sanitary sewer system. These hydraulic deficiencies are not captured by the hydraulic models due to gaps in the available data and require additional studies to more clearly identify the deficiencies.

Capital Improvement Program Summary

No immediate Capital Improvement Program projects (CIPs) are needed to meet the water demands for the proposed housing sites. However, additional studies, such as pump station capacity and condition assessments, are recommended for identifying the necessary CIPs for addressing existing deficiencies in the Fairgrounds' sanitary sewer system. Potential CIPs that may be necessary based on the additional studies include:

- VFD installation at the pump stations to help control the speed and flow rate of the pumps
- Additional storage for Pump Station #1, such as the installation of a secondary wet well or expanding the existing wet well to help attenuate the peak flows
- Installation of restrictor plates or flow control valves to help control the wastewater flows

Table ES-7 summarizes rough order of magnitude costs for the recommended studies and potential costs for CIPs that may be identified by these studies. The costs of the CIPs will vary depending on the findings of the additional studies. For example, if the condition or capacity assessment requires an upgrade or replacement of the pump stations.

Table ES-7. Rough Order of Magnitude Costs for Sanitary Sewer CIP Development

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
1	**Recommended Studies**					
1.a	Pump Station Condition Assessment	LS	1	$75,000	$75,000	(1)
1.b	Pump Station Capacity Assessment	LS	1	$75,000	$75,000	(1), (2)
2	**Potential CIPs Identified by the Recommended Studies**					
2.a	Installation of VFDs on the Sanitary Sewer Pumps	LS	1	$300,00	$300,00	(3)
2.b	Secondary Storage Structure or Wet Well for Pump Station #1	LS	1	$200,000	$200,000	(4)
2.c	Installation of Restrictor Plates or Flow Control Valves	LS	1	$150,000	$150,000	
				Estimated Total:	**$800,000**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) The pump station condition assessment and capacity assessment should be performed on Sanitary Sewer Pump Station #1, #2, and #3. The Fairgrounds sanitary sewer system includes other pump stations, but these were not included in the assessment cost because they are not expected to be impacted by the additional flows from the proposed housing.
2) The pump station capacity assessment should include flow monitoring to better understand the wastewater flows and patterns at the Fairgrounds.
3) VFDs were assumed to be necessary for the pumps in Pump Station #1, #2, and #3 resulting in a total of 6 VFDs.
4) Assumes adequate storage capacity could be provided by an oversized manhole (i.e. 10-foot diameter manhole). Depending on the sizing from the pump station capacity analysis, this cost can vary greatly if the necessary storage is much larger.

Besides the CIPs, other site-specific improvement projects are necessary for constructing the connecting water service and sanitary sewer laterals for the proposed housing. The associated costs for these site-specific improvements are summarized in Table ES-8 through ES-10. These costs assume that the existing water and sanitary sewer mains located within the potential housing sites can be avoided during the design process. If existing water and sanitary sewer mains cannot be avoided, additional costs may be incurred. These cost estimates exclude other infrastructure improvements to the Fairgrounds water and sanitary sewer systems, such as upgrade, replacement, or new installation of piping, pump stations, and storage facilities.

Table ES-8. Site-Specific Improvement Project Cost Estimate for Site 1

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
Site 1 – East Main Stable Gate Site [1], [2], [3]						
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$8,500	$8,500	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$67,749	$67,749	
1.c	Sewer Connection Fees	LS	1	$51,548	$51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$10,000	$10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	245	$240	$58,800	
2.b	Water Service Tap to Existing Main	LS	1	$10,000	$10,000	
2.c	6" Sewer Lateral Installation	LF	210	$260	$54,600	
2.d	Sewer Cleanout Installation	EA	1	$2,550	$2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$4,600	$4,600	
2.f	1" A.C. Paving Restoration	SF	675	$7.00	$4,725	
2.g	Dewatering (allowance)	LS	1	$15,000	$15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$20,000	$20,000	
				Estimated Direct Construction Cost Subtotal:	$170,275	
				Escalation to Mid-Point of Construction (March 2028):	$17,440	(4)
				Estimated Base Bid Subtotal:	$325,513	
				Design and Permitting:	$39,062	12%
				Estimating Contingency:	$65,103	20%
				Project Administration/Project Management:	$6,510	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$32,551	10%
				Estimated Total Base Bid:	**$468,738**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to end of 2025).

Table ES-9. Site-Specific Improvement Project Cost Estimate for Site 2

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
Site 2 – South of Stable Gate Site [1], [2], [3]						
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$7,100	$7,100	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$67,749	$67,749	
1.c	Sewer Connection Fees	LS	1	$51,548	$51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$10,000	$10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	20	$240	$4,800	
2.b	Water Service Tap to Existing Main	LS	1	$10,000	$10,000	
2.c	6" Sewer Lateral Installation	LF	315	$260	$81,900	
2.d	Sewer Cleanout Installation	EA	1	$2,550	$2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$4,600	$4,600	
2.f	1" A.C. Paving Restoration	SF	510	$7.00	$3,570	
2.g	Dewatering (allowance)	LS	1	$15,000	$15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$20,000	$20,000	
				Estimated Direct Construction Cost Subtotal:	*$142,420*	
				Escalation to Mid-Point of Construction (March 2028):	$14,587	(4)
				Estimated Base Bid Subtotal:	*$293,405*	
				Design and Permitting:	$35,209	12%
				Estimating Contingency:	$58,681	20%
				Project Administration/Project Management:	$5,868	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$29,340	10%
				Estimated Total Base Bid:	**$422,503**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to end of 2025).

Table ES-10. Site-Specific Improvement Project Cost Estimate for Site 3

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
Site 3 – Adjacent to Fire Station Site [(1), (2), (3)]						
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$4,500	$4,500	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$67,749	$67,749	
1.c	Sewer Connection Fees	LS	1	$51,548	$51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$10,000	$10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	50	$240	$12,000	
2.b	Water Service Tap to Existing Main	LS	1	$10,000	$10,000	
2.c	6" Sewer Lateral Installation	LF	85	$260	$22,100	
2.d	Sewer Cleanout Installation	EA	1	$2,550	$2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$4,600	$4,600	
2.f	1" A.C. Paving Restoration	SF	400	$7.00	$2,800	
2.g	Dewatering (allowance)	LS	1	$15,000	$15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$20,000	$20,000	
				Estimated Direct Construction Cost Subtotal:	*$89,050*	
				Escalation to Mid-Point of Construction (March 2028):	$9,121	(4)
				Estimated Base Bid Subtotal:	*$231,968*	
				Design and Permitting:	$27,836	12%
				Estimating Contingency:	$46,394	20%
				Project Administration/Project Management:	$4,639	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$23,197	10%
				Estimated Total Base Bid:	**$334,034**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to end of 2025).

Conclusions and Recommendations

No immediate CIPs to the Fairgrounds' water distribution system are necessary to implement the proposed housing projects. However, existing deficiencies in the sanitary sewer system were discovered through conversations with O&M staff. Due to the lack of available data, the necessary CIPs for addressing the sanitary sewer system deficiencies could not be accurately selected and sized, so additional studies, such as pump station capacity and condition assessments, are recommended to address the existing deficiencies prior to construction of the proposed housing.

Additionally, there are recommended actions that can be implemented by the City or the Fairgrounds to improve asset management and increase the reliability and condition of the existing water and sewer networks. Those include:

- Develop an asset management system for tracking problem areas and condition-related issues.
- Implement a condition assessment program to systematically assess the condition of the water and sewer systems.
- Update the fire flow analysis using building-specific fire flow needs to verify projected deficiencies.
- Develop a rain-derived infiltration and inflow study to determine the true level of I&I into the sewer system, which may account for a significant portion of the sewer flows.

Section 1 Introduction

1.1 Background

The City of Del Mar is in northern San Diego County and is bordered by the City of Solana Beach to the north and the City of San Diego to the east and south. Covering approximately 2.2 square miles, the City of Del Mar has a population of about 4,200 and is primarily residential with some commercial uses. The City of Del Mar also includes most of the Del Mar Fairgrounds (Fairgrounds), a 370-acre multi-use venue owned and managed by the 22nd District Agricultural Association (District), a State of California agency (City of Del Mar 2025a). Figure 1-1 shows the City of Del Mar boundary and Fairgrounds footprint.

The City of Del Mar and the District have entered into an agreement to identify and pursue a mutually acceptable site on the Fairgrounds for the development of at least 61 lower-income affordable housing units. This partnership is driven by the City of Del Mar's 6th Cycle Housing Element (adopted in April 2021; amended in December 2021), a component of the Del Mar General Plan. The Housing Element, now in the 6th Cycle planning period of 2021 to 2029, is a state-mandated policy document that outlines how the City of Del Mar will accommodate existing and projected future housing needs across all income levels.

As part of the 6th Cycle Housing Element, the City of Del Mar identified the Fairgrounds as a key opportunity site for affordable housing that could address the City of Del Mar's Regional Housing Needs Assessment allocation. To support this effort, the City of Del Mar is currently conducting feasibility studies on potential housing at the Fairgrounds using California Department of Housing and Community Development Housing Acceleration Program Cycle 2 Grant funding. In parallel, the District is undergoing a master planning process to plan immediate, near-term projects and conceptual, long-term projects to enhance and improve the Fairgrounds, including evaluating new residential housing.

This Water and Sanitary Sewer Utility Impact Study (W&SSUIS) was developed to understand existing system deficiencies within the Fairgrounds and to determine incremental impacts from the proposed affordable housing sites on the Fairgrounds' water and sanitary sewer systems in order to support feasibility studies being conducted for each of the proposed housing sites. In this W&SSUIS, incremental impacts from the proposed housing are compared to the City of Del Mar's most recent 2014 Water and Sewer Master Plan (W&SMP), completed in March 2015.

1.2 Objective and Scope

The objective of this W&SSUIS is to update the existing water and sewer models to understand any existing deficiencies within the Fairgrounds, and to analyze the potential impacts from the proposed housing on the Fairgrounds water and sanitary sewer systems. The City of Del Mar's water and sewer

hydraulic models, developed for the 2014 W&SMP, were used as a baseline for this analysis. The 2014 W&SMP models were updated to develop the existing and proposed conditions models used in the S&SSUIS for examining the hydraulic deficiencies and identifying required infrastructure improvements to serve the proposed housing.

1.3 Existing Condition Model Updates

The 2014 W&SMP was used as the existing (baseline) condition for this W&SSUIS. Developments planned for the near future or already approved by the City of Del Mar since the 2014 W&SMP were reviewed, discussed with the City of Del Mar, and added to the 2014 W&SMP hydraulic models to develop the existing condition models. The following proposed developments and zoning amendments were added to the models and are discussed further in later sections of this W&SSUIS:

- **North Commercial Zoning Amendment.** Approved by the Del Mar City Council in March 2021, this zoning amendment allows residential use of up to 20 dwelling units (DUs) per acre in the North Commercial Zone. While 16 parcels were originally identified in the North Commercial Zoning Amendment, only seven of these parcels were deemed eligible for redevelopment. Two of the parcels were analyzed separately as part of the Watermark 50-Unit Apartment Project, and the remaining parcels were determined to be ineligible due to their proximity to the San Dieguito Lagoon and River or their inclusion in other projects (City of Del Mar 2021). The amendment to the North Commercial Zoning allows these parcels to be redeveloped solely as residential, a combination of residential and commercial, or solely commercial (City of Del Mar 2023). For this analysis, a land use change consistent with the North Commercial Zoning Amendment from commercial to multi-family use was applied to the seven eligible parcels located at 2002, 2010, 2120, 2126, 2132, 2148, and 2236 Jimmy Durante Boulevard, totaling approximately 6.46 acres.
- **Professional Commercial Zoning Amendment.** Approved by the Del Mar City Council in September 2020, this zoning amendment allows residential use of up to 20 DUs per acre in the Professional Commercial Zone (City of Del Mar 2020). The Professional Commercial Zoning Amendment allows these parcels to be redeveloped as solely residential, a combination of residential and commercial, or solely commercial (City of Del Mar 2023). For this analysis, a land use change consistent with the Professional Commercial Zoning Amendment from commercial to multi-family use was applied to the four eligible parcels, totaling approximately 1.30 acres.
- **Central Commercial Zoning Amendment.** Approved by the Del Mar City Council in April 2024, this zoning amendment allows residential use of up to 20 DUs per acre in the Central Commercial Zone on a total of 39 potential sites. Of these 39 sites, 21 sites are eligible for a density bonus, which increases the allowable DUs by 50 percent per

the State Affordable Housing Density Bonus Project (City of Del Mar 2024a). Only the 21 sites eligible for the density bonus were included in this analysis because they are most likely to be redeveloped. The Central Commercial Zoning Amendment does not allow for solely residential development (City of Del Mar 2023). Therefore, a land use change to mixed-use, consistent with the Central Commercial Zoning Amendment, was applied to the 37 parcels making up the 21 sites, totaling approximately 7.53 acres.

- **941 Camino Del Mar Specific Plan.** This approved specific plan allows redevelopment of an existing 0.59-acre lot into a mixed-use building that will include approximately 38,890 square feet of commercial uses and eight residential units (City of Del Mar 2018, 2022). Of the eight residential units, two would be allocated for affordable housing (City of Del Mar 2023). A land use change from commercial to mixed-use, consistent with the 941 Camino Del Mar Specific Plan, was applied to the parcels in this specific plan.
- **Watermark 50-Unit Apartment Project.** The City of Del Mar approved a multi-family residential development, known as the Watermark 50-Unit Apartment Project, on a vacant 2.68-acre lot in the North Commercial Zone. Of the proposed 50 units of housing, 10 units are planned to be affordable housing (CCC 2023). This development will be solely residential and will result in a housing density of approximately 21 DUs per acre (Starck 2022). A land use change from commercial to multi-family, consistent with the Watermark 50-Unit Apartment Project agreement, was applied to the two parcels combined to form the lot for this development.

Refer to Figure 1-2 for a map depicting the locations and parcels included in the existing condition model updates.

1.4 Proposed Housing Sites on the Fairgrounds

Three potential housing sites have been identified on the Fairgrounds that are within the City of Del Mar's water and sewer service area (illustrated in Figure 1-3):

- **Site 1 –** East Main Stable Gate Site
- **Site 2 –** South of Stable Gate Site
- **Site 3 –** Adjacent to Fire Station Site

These housing sites were incorporated into the water and sewer hydraulic models to create the proposed conditions models with a model scenario created for each site to independently analyze the effects of the three housing options. The potential housing sites range in size from 1 to 1.5 acres and will be developed as either multi-family lower-income affordable housing or senior housing with a potential unit range of 61 to 128 units. For the purpose of evaluating incremental impacts on the utility systems from the affordable housing development, the development was conservatively assumed to encompass 1.5 acres and include up to 128 units as the highest density scenario.

While this analysis is focused on impacts to the City of Del Mar's water and sanitary sewer systems, two additional sites located within the City of San Diego's water and sanitary sewer service area are also being considered (illustrated in Figure 1-3):

- **Site 4 –** Surf and Turf RV Park Site
- **Site 5 –** Dirt Lot Site

Sites 4 and 5 are outside the City of Del Mar's service area. Therefore, an analysis of housing impacts on these sites is being conducted concurrently as part of a separate project and scope of work using the City of San Diego's standards. The results of this analysis are summarized in a technical memorandum titled Del Mar Fairgrounds Potential Housing Sites in City of San Diego – Utility Impact Study.

1.5 Previous Planning Studies and Reference Documents

This W&SSUIS builds upon the following master plans and studies prepared for the City of Del Mar:

- City of Del Mar Wastewater Master Plan, prepared by James M. Mongomery, Consulting Engineers, Inc., dated August 1983
- Investigation of Water Circulation Improvements for the Del Mar Water Distribution System, prepared by PBS&J, dated April 2006
- City of Del Mar 2014 W&SMP, prepared by RBF Consulting, dated March 2015
- City of Del Mar Water and Wastewater Rate Cost-of-Service Study, prepared by HF&H Consultants, LLC, dated April 12, 2024
- Del Mar Fairgrounds Utility Master Plan, prepared by Fuscoe Engineering, dated October 16, 2014

1.6 Report Organization

This W&SSUIS is structured with sections that focus on the Fairgrounds' water system demand projections and modeling followed by the sanitary sewer generation projections and modeling. The results for these sections are synthesized into capital improvement projects, site-specific improvement projects, and additional recommendations. The report sections and a brief description of each section are provided below:

- **Section 1, Introduction.** Discusses the W&SSUIS background and scope.
- **Section 2, Water Demand.** Discusses the methodology for estimating the water demands and documents the estimated increase in water demand based on updates to the 2014 W&SMP models and the potential impacts from the proposed housing in the proposed conditions models.
- **Section 3, Water System Impact.** Discusses the hydraulic modeling of the system, performance criteria, and modeling results demonstrating the potential impacts on the water system from the proposed housing.

- **Section 4, Sanitary Sewer Generation.** Discusses the methodology for estimating the generated sanitary sewer flows and documents the estimated increase in wastewater flows based on updates to the 2014 W&SMP models and the potential impacts from the proposed housing in the proposed conditions models.
- **Section 5, Sanitary Sewer System Impact.** Discusses the hydraulic modeling of the system, performance criteria, and the modeling results demonstrating the potential impacts on the sanitary sewer system from the proposed housing.
- **Section 6, Capital Improvement Program.** Discusses the system deficiencies and outlines the recommended site-specific improvements and capital improvement projects for implementing the proposed housing.
- **Section 7, Conclusions and Recommendations.** Discusses the final conclusions and recommendations for maintaining the systems and refining the hydraulic models.
- **Section 8, References.** Outlines the references cited in this W&SSUIS.

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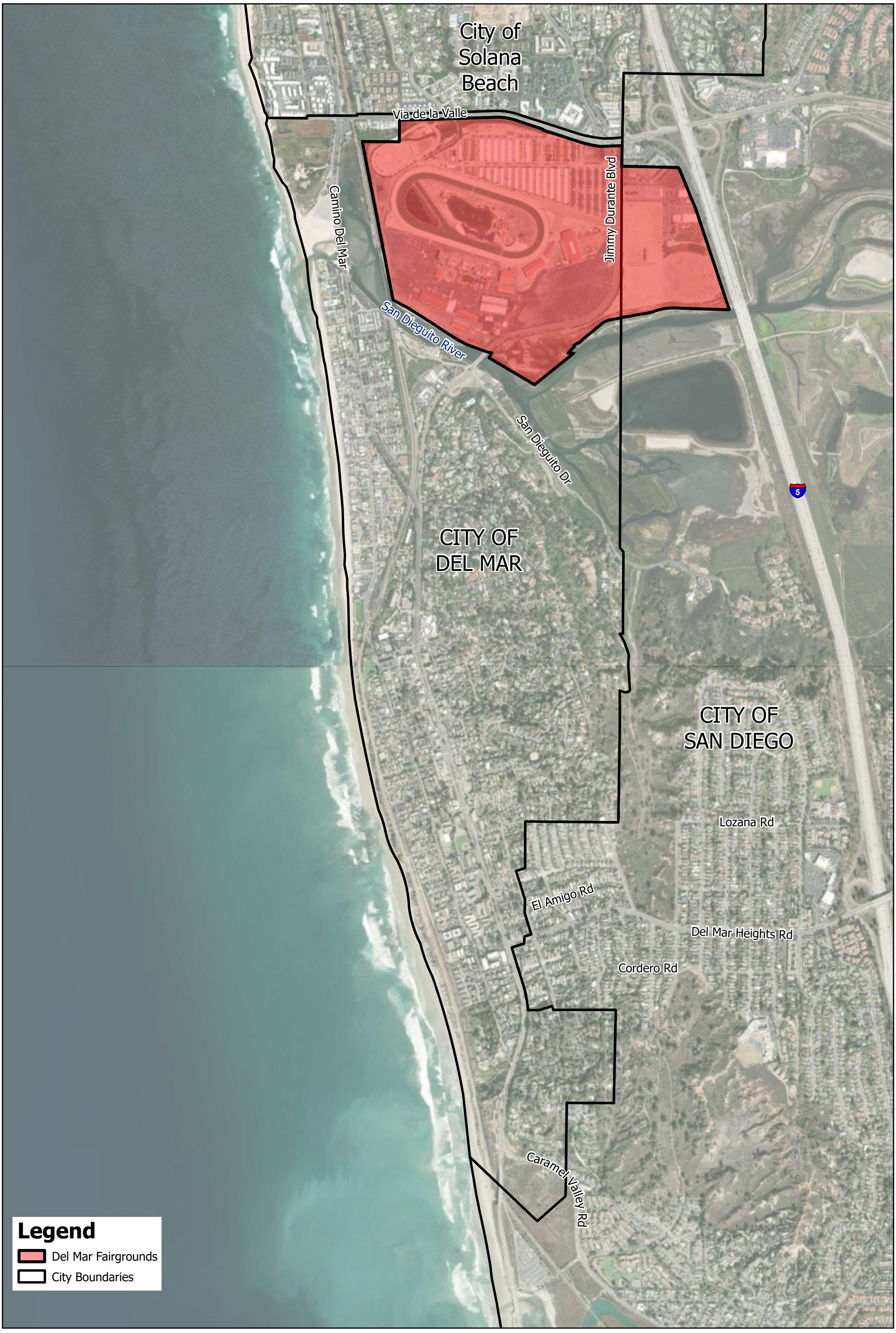

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Figure 1-1
Del Mar Fairgrounds
Project Location Map

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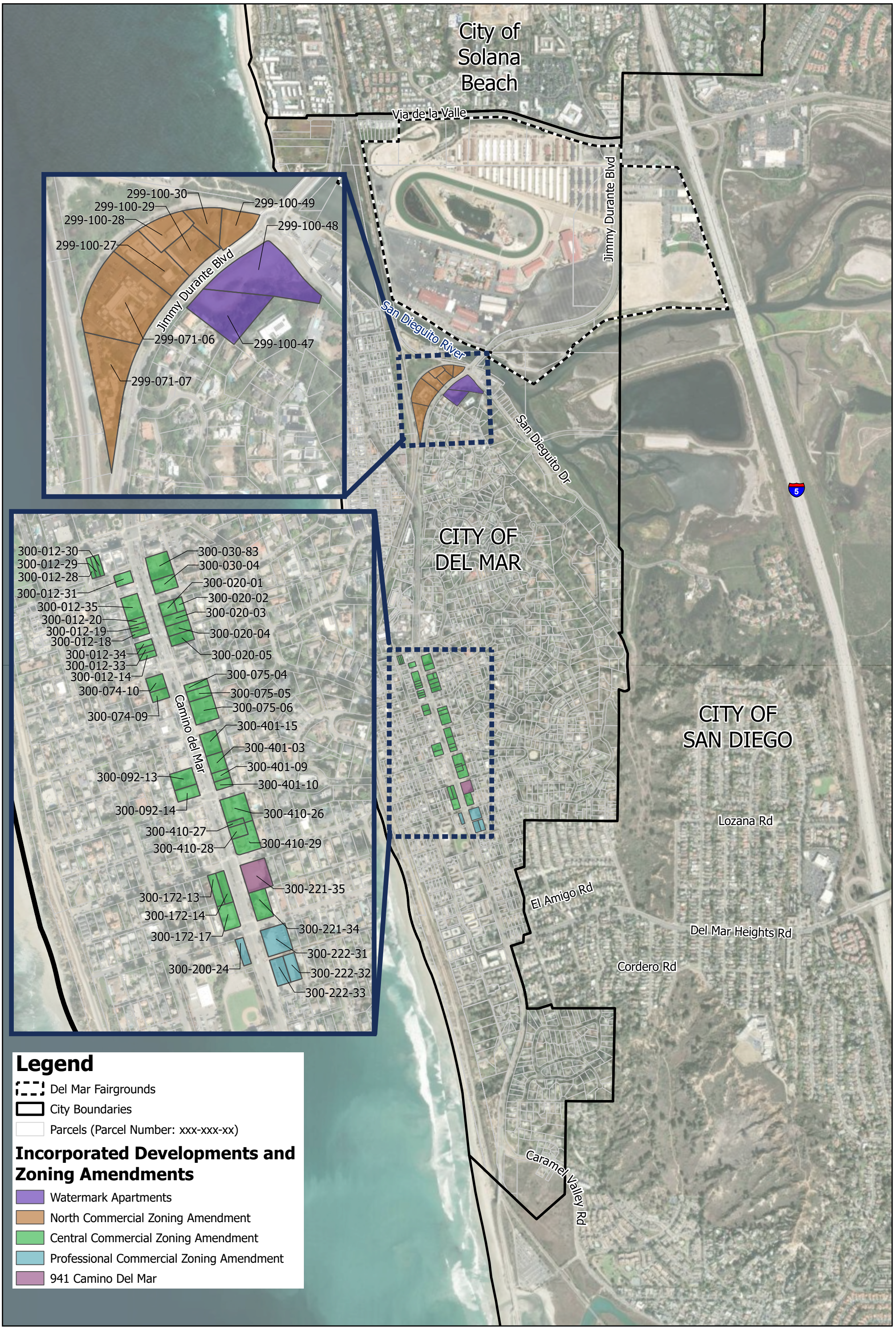

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Figure 1-2
Existing Condition Model Updates
Incorporated Developments & Zoning Amendments

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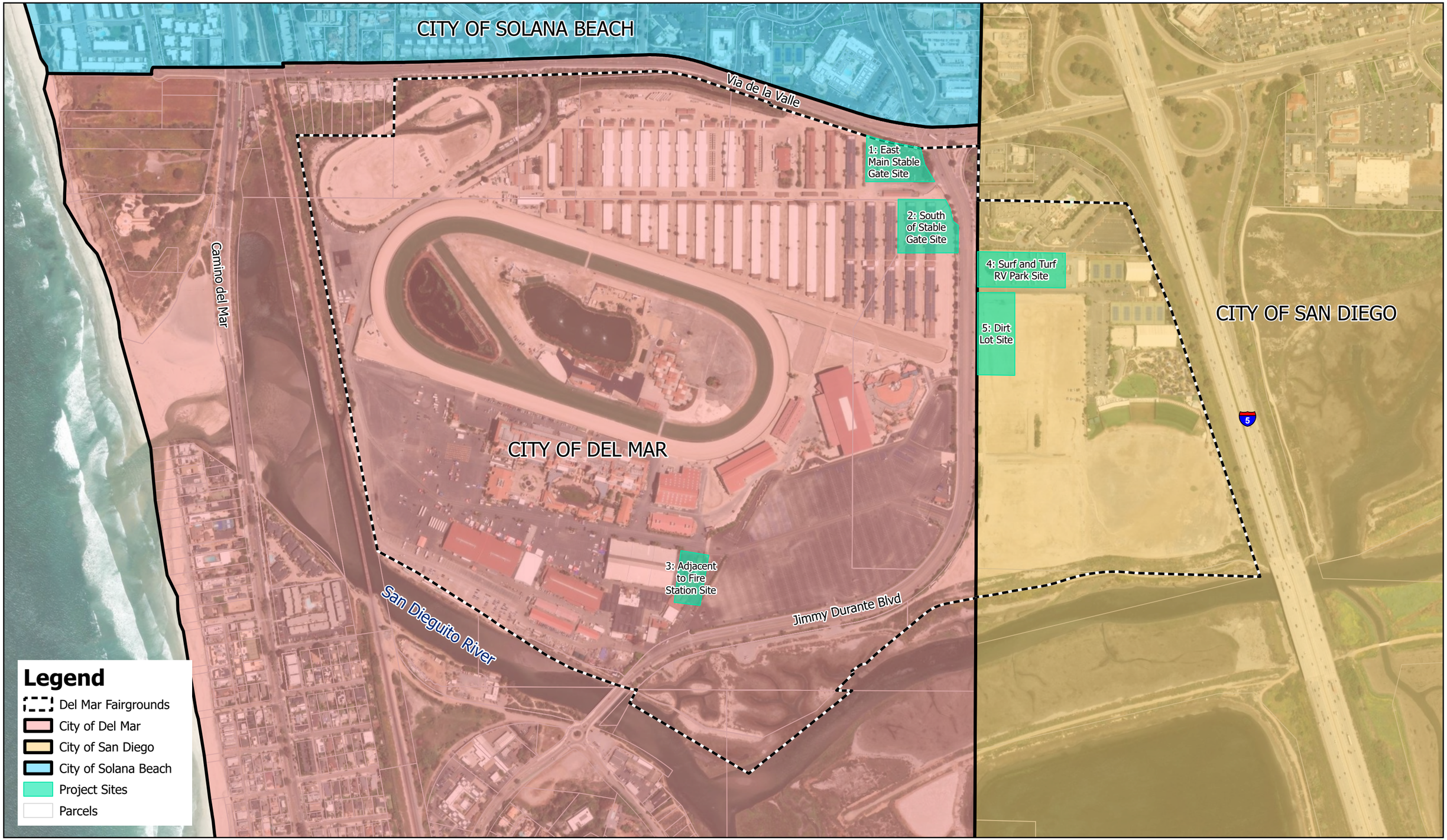

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Figure 1-3
Del Mar Fairgrounds
Proposed Housing Sites

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Section 2 Water Demand

2.1 System Overview

The City of Del Mar's Public Works Department provides potable water service to approximately 1,900 metered accounts via its distribution system, which includes about 27 miles of water mains, five pressure zones, and four storage reservoirs (City of Del Mar 2015, 2024).

The Fairgrounds are located within the City of Del Mar's Zuni Pressure Zone, which is supplied by the Intermediate Zone. This Pressure Zone can also receive water from the Racetrack View turnout and pressure reducing valve from the City of San Diego. The Fairgrounds also receives recycled water from the San Elijo Joint Powers Authority (SEJPA) for irrigation water, reducing the Fairgrounds potable water demand. The Fairgrounds water distribution system includes piping ranging in size from 2 to 18 inches, which are supplied by the 18-inch and 20-inch water mains owned by the City of Del Mar and located along Jimmy Durante Boulevard. Refer to Figure 2-1, which depicts the modeled water distribution system within and around the Fairgrounds.

2.2 Water Demand Projections

The additional water demand from the proposed housing project will increase the water demand on the Fairgrounds water distribution system. This section details how the increase in water demand from existing improvements and near-term developments were added to the 2014 W&SMP model for developing the existing condition model. This section also discusses the projected water demand from the proposed housing project, which was added to the existing condition model at each of the proposed housing sites to develop three proposed condition models. The results from this section will be used for modeling and analyzing how the incremental increase in water demand from the housing project will impact the Fairgrounds water distribution system.

2.2.1 Existing Condition

The 2014 W&SMP had two demand scenarios: existing and future. The existing demand scenario from the 2014 W&SMP model was used as a starting point to develop the existing condition model used in this housing site utility impact study. Developments planned for the near future or already approved by the City of Del Mar since the 2014 W&SMP were reviewed and discussed with the City of Del Mar, and the estimated demands from these developments were added to the 2014 W&SMP model to develop the existing condition model for this W&SSUIS.

The 2014 W&SMP used historical meter and purchase data from 2012 and established the existing demand scenario based on a total water demand in 2012 of 554,069 hundred cubic feet, or 1,270 acre-feet, including a 9 percent increase for non-revenue water (City of Del Mar 2015). The City of Del Mar shared that the current total water demand for the City, which includes the Fairgrounds, is approximately 1,000 acre-feet per year (Harris 2025a). This is consistent with the City of Del

Mar's most recent Water and Wastewater Rate Cost-of-Service Study, dated April 12, 2024, which cites a total average annual water demand for 2020–2022 of 402,949 hundred cubic feet, or 925 acre-feet (City of Del Mar 2024b). This is also consistent with the City of Del Mar's water sales and the 5-year projection included in the San Diego County Water Authority's 2020 Urban Water Management Plan, which projected water demands for 2025 to be 1,005 acre-feet per year (SDCWA 2021).

Although the City of Del Mar's current demand of approximately 1,000 acre-feet per year is less than the 2014 W&SMP existing demand scenario based on the 2012 total of 1,270 acre-feet, this existing demand scenario from the 2014 W&SMP model was conservatively used as the baseline for this analysis to evaluate potential impacts associated with adding housing at the Fairgrounds. While the 2014 W&SMP projected increases in water demand over time, actual demand data shows no significant rise. Therefore, the future demand scenarios from the 2014 W&SMP modeling were not included in this analysis.

2.2.2 Water Demand Factors

The water demand factors used in this analysis were adopted from the 2014 W&SMP. The 2014 W&SMP established three demand factor scenarios: existing, future, and planning. For this evaluation, the existing demand factors were selected because they best reflect the City of Del Mar's latest water usage from 2024. Table 2-1 summarizes the existing demand factors from the 2014 W&SMP based on the 2012 meter and production data. Additional details on the development of these demand factors are provided in the 2014 W&SMP.

Table 2-1. 2014 W&SMP Existing Water Demand Factors

Land Use	Existing Water Demand Factor (gpd/acre)
Single Family	1,800
Multi-Family	3,630
Commercial	670
Institutional	1,090
Park	750
Fairgrounds	4

Source: City of Del Mar 2015.
Notes: gpd = gallons per day

As discussed in Section 1.3, some of the near-term developments and approved land use zoning amendments will result in mixed-use developments. To estimate a demand factor for mixed-use land uses, the water demand factors for multi-family and commercial were averaged, resulting in a mixed-use demand factor of 2,150 gallons per day (gpd) per acre.

The City of Del Mar is in the process of updating its master plan. Therefore, the estimated water demands in this report may be impacted if the water demand factors are revised in the updated master plan.

2.2.3 Updates to City of Del Mar Water Demands

To develop the existing condition model, the 2014 W&SMP model was updated to incorporate the zoning amendments and specific plans approved since the 2014 W&SMP was prepared. Incremental changes in estimated water demand based on approved land use changes, parcel acreage, and applicable water demand factors were added to the 2014 W&SMP model and are summarized in Table 2-2.

Table 2-2. Increased Water Demand Due to Added Developments and Approved Zoning Amendments

Developments and Zoning Changes	Total Acreage	Existing		Updated			Incremental Increase (gpd)
		Existing Land Use Type	Existing Water Demand (gpd)	Updated Land Use Type	Water Demand Factor[1] (gpd/acre)	Estimated Water Demand (gpd)	
North Commercial Zoning Amendment	6.46	Commercial	4,047	Multi-family	3,630	23,450	19,403
Professional Commercial Zoning Amendment	1.30	Commercial	871	Multi-family	3,630	4,719	3,848
Central Commercial Zoning Amendment	7.53	Commercial	4,747	Mixed-use	2,150	16,180	11,433
941 Camino Del Mar Specific Plan	0.59	Commercial	395	Mixed-use	2,150	1,268	873
Watermark 50-Unit Apartment Project	2.68	Commercial	0	Multi-family	3,630	9,728	9,728
						Total	**45,285**

Sources:

[1] City of Del Mar 2015.

Notes: gpd = gallons per day

For empty parcels, the calculated water demands were added directly. However, for parcels that are already developed, only the net increase in water demand was added to avoid overestimating the additional demands associated with redeveloping the parcels. All demand estimates in this section represent the average day demand (ADD). Refer to Table A-1 in Appendix A for a more detailed breakdown of the estimated water demands for each of the developments that were incorporated into the 2014 W&SMP model for developing the existing condition model. No additional updates were

made to the water system model based on other City of Del Mar CIP projects completed since the 2014 W&SMP.

2.2.4 Allocating the Fairgrounds Water Demands

In the 2014 W&SMP hydraulic model, the water demand for the Fairgrounds was only applied at three nodes near Jimmy Durante Boulevard. However, to better understand the hydraulics of the Fairgrounds' water distribution system, the water demand in the existing condition model for this W&SSIUS was allocated proportionally throughout the modeled Fairgrounds piping based on aerial imagery and building square footages provided by the District.

2.2.4.1 Additional Fairgrounds Water Demands

Since the 2014 W&SMP was prepared, the Phase II Storm Water Improvements project was constructed, which included a small on-site stormwater treatment plant with a 2.5-inch water service line connecting to the Fairgrounds' water distribution system. To prepare the existing condition model, the 2014 W&SMP model was revised to include a new water demand at this location based on the water demand factor for institutional land uses. The estimated water demand is summarized in Table 2-3.

Additionally, the San Diego Association of Governments plans to construct the San Dieguito Double Track and Special Events Platform. The special events platform will include a 3-inch water service line that will tie in to the Fairgrounds' water distribution system. Therefore, the existing condition model used for this W&SSUIS includes a water demand at the assumed tie in location based on the water demand factor for institutional land uses as summarized in Table 2-3.

Table 2-3. Additional Fairgrounds Water Demands

Project	Land Use	Water Demand Factor[1] (gpd/acre)	Approximate Area[2] (acres)	Water Demand (gpd)
Phase II Storm Water Improvements – Stormwater Treatment Plant	Institutional	1,090	0.09	96
San Dieguito Double Track and Special Events Platform	Institutional	1,090	0.84	915

Sources:

[1] City of Del Mar 2015.

Notes: gpd = gallons per day

[2] The approximate area for the Phase II Storm Water Improvements – Stormwater Treatment Plant was calculated as the building area based on aerial imagery. The approximate area for the San Dieguito Double Track and Special Events Platform was calculated as the estimated waiting area noted in the 100% improvement plans (SANDAG 2024).

2.2.5 Proposed Housing Scenario Conditions

To estimate the water demand from the proposed housing development, the water demand factor for multi-family land use was applied, assuming the development would be 1.5 acres, which is the largest proposed development size. This resulted in a total water demand of 5,445 gpd. This water

demand represents a conservative estimate of the potential housing project and was added to the updated existing condition model at the three potential Fairgrounds sites in three independent model runs. Table 2-4 summarizes this calculation.

Table 2-4. Fairgrounds Housing Water Demand

Land Use Type	Water Demand Factor[1] (gpd/acre)	Fairgrounds Housing Site Area (acres)	Water Demand (gpd)
Multi-Family	3,630	1.5	5,445

Sources:
[1] City of Del Mar 2015.
Notes: gpd = gallons per day

The estimated water demand of 5,445 gpd for the proposed housing is less than the estimated demand for the Watermark 50-Unit Apartment Project (shown in Table 2-2) even though the proposed housing will have more units. This is due to how water demand was estimated in the 2014 W&SMP. The 2014 W&SMP used a multi-family water demand factor of 3,630 gpd/acre, which is based on the parcel size rather than the unit density, and the Watermark 50-Unit Apartment Project is located on a larger parcel.

Table 2-5 summarizes the modeled water demand and shows the percentage increase in water demand associated with the proposed Fairgrounds housing relative to existing conditions for the City of Del Mar, within the Zuni Pressure Zone, and within the Fairgrounds.

Table 2-5. Summary of Modeled Water Demand (Average Day Demand)

	Total Demand – Updated Existing Condition (MGD)	Total Demand – With Fairgrounds Housing (MGD)	Percentage Increase
City of Del Mar	1.608	1.610	0.12%
Zuni Pressure Zone	0.697	0.702	0.72%
Fairgrounds	0.206	0.211	2.43%

Notes: MGD = million gallons per day

2.3 Diurnal Curves

Since the water demand fluctuates temporally throughout the day, diurnal curves were used to scale the base demands from Section 2.2 to vary on an hourly basis. The Fairgrounds' activity levels differ from those of the City of Del Mar, so separate diurnal curves were applied. These diurnal curves were developed in the 2014 W&SMP by calibrating them based on reservoir level data. The diurnal curves are summarized in Table 2-6.

Table 2-6. Hourly Diurnal Curve Factors

Hour	City of Del Mar	Fairgrounds
1	0.15	0.05
2	0.20	0.10
3	0.20	0.15
4	0.35	0.25
5	0.50	0.40
6	0.80	0.45
7	1.40	0.55
8	1.55	0.70
9	1.40	1.00
10	0.85	1.90
11	0.70	2.20
12	0.85	2.65
13	1.10	2.90
14	1.35	2.70
15	1.55	2.40
16	2.00	2.20
17	2.80	1.60
18	2.70	0.60
19	1.50	0.40
20	0.75	0.30
21	0.55	0.20
22	0.40	0.15
23	0.20	0.10
24	0.15	0.05

Source: City of Del Mar 2015.

The proposed housing development will include multi-family affordable housing. Therefore, the anticipated temporal pattern of water demand is expected to be more similar to the City of Del Mar than the Fairgrounds. This is because the Fairgrounds diurnal curve is controlled mainly by the events and activities held at the Fairgrounds while the City of Del Mar includes residential land uses similar to the proposed multi-family housing. Therefore, the City of Del Mar's diurnal curve was used for the proposed housing development even though the proposed housing sites are located on the Fairgrounds property.

2.4 Fire Flow Demands

Fire flow requirements were also evaluated using the 2014 W&SMP guidelines and fire flow rates. More information on how the fire flow demands were selected can be found in the 2014 W&SMP.

For this analysis, the fire flow demands in the 2014 W&SMP hydraulic model were reviewed at the locations where the planned developments and zoning amendments from Section 1.3 were incorporated. At each location, the fire flow demands in the 2014 W&SMP model were compared with the fire flow demands for the new land uses identified for the new developments and zoning amendments. Based on this comparison, the larger of the two fire flow demands was applied at each location for modeling the fire flow demands in the existing condition model used for this analysis. Refer to Table A-2 in Appendix A for more detailed information on the fire flow demand changes.

At the Fairgrounds, the required fire flow rate is 4,000 gpm, which is higher than typical requirements for commercial properties due to the events and large structures there. For multi-family land uses, the 2014 W&SMP identifies a fire flow requirement of 3,500 gpm. While the proposed housing would have a lower fire flow requirement, the higher Fairgrounds requirement would govern fire flow needs within the vicinity. Therefore, the Fairgrounds fire flow requirement of 4,000 gpm was used to analyze the fire flow for the proposed housing sites.

As detailed housing plans are developed, the required fire flow per the California Fire Code and the local authority having jurisdiction may require a higher or lower fire flow than the adopted planning-level requirement of 4,000 gpm. If so, additional hydraulic modeling or hydrant testing may be required.

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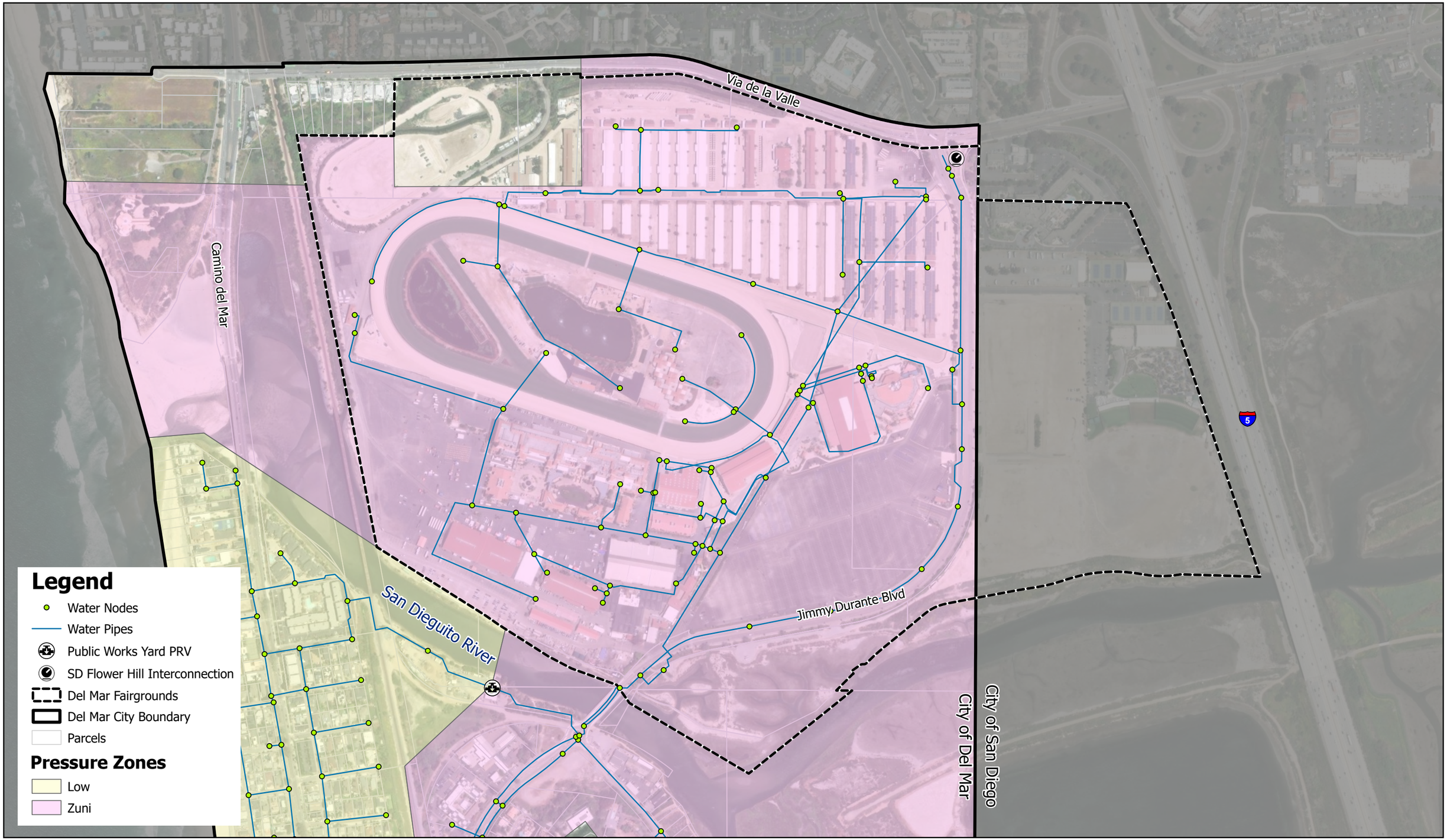

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Figure 2-1
Existing Condition Water System Model
Water Distribution System

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Section 3 Water System Impact

The previous section discussed how the water demands were estimated for existing improvements, near-term developments, and the proposed Fairgrounds housing. Using the water demands discussed in Sections 2.2.3 and 2.2.4, the City of Del Mar and Fairgrounds water demands in the 2014 W&SMP model were updated to develop the existing condition model. The demands for the proposed housing development in Sections 2.3.5 were then added to the existing condition model at each of the proposed housing sites to develop three separate proposed condition models for each of the proposed sites. This section details the process for developing the hydraulic models and discusses the model results.

3.1 Data Collection

3.1.1 Water System GIS Data

Geographic information system (GIS) data from Fuscoe Engineering Inc. (Fuscoe) was provided to develop the water distribution model for the Fairgrounds area. This GIS data included elevation data (as contours) and shapefiles for water piping and structures. Some attributes were populated for some of the features in the shapefiles, such as pipe material, pipe diameter, pipe type, and structure rim elevations. System information from the shapefile attributes was incorporated into the model when available.

3.1.2 As-Built Record Drawings and Other Utility References

To supplement the GIS data, the Del Mar Fairgrounds Utility Master Plan map, prepared by Fuscoe, was also referenced and incorporated into the model. Additionally, as-built record drawings were provided by the District for review. Key record drawings referenced for developing the hydraulic models include the following:

- Del Mar Fairgrounds Force Main Replacement as-built record drawings, prepared by Fuscoe Engineering and dated July 8, 2009
- Phase II Storm Water Improvements 100 percent design drawings, prepared by Fuscoe Engineering and dated February 15, 2018
- San Diego Association of Governments San Dieguito River Bridge Replacement Double Track and Special Events Platform 100 percent design drawings, prepared by HNTB and dated September 25, 2024

A site visit was also performed on January 23, 2026, to view and take pictures of other utility maps and record drawings that could not be shared digitally.

3.1.3 Field Investigation

A site visit occurred on December 17, 2025, to perform field investigation, record visible utilities, and discuss the Fairgrounds' water system with the operations and maintenance (O&M) staff. The information gathered during this site visit was incorporated into the hydraulic model, as discussed in the following section.

3.2 Water Hydraulic Model Development

3.2.1 Hydraulic Model Software

The water hydraulic models in the 2014 W&SMP were developed using Innovyze's InfoWater modeling program. However, InfoWater is no longer supported, so the model was converted to Autodesk InfoWater Pro. For this hydraulic analysis, the InfoWater Pro version 2026.1.1 was used.

3.2.2 Modeling the Fairgrounds Piping

The 2014 W&SMP model included a single pipe to represent all piping within the Fairgrounds. For this analysis, additional main piping through the Fairgrounds was added using the data collected (refer to Section 3.1) to better understand the housing's impact on the distribution system.

Figure 3-1 shows the modeled piping within and around the Fairgrounds and highlights the additional piping that was added to the InfoWater Pro model and the piping that was included in the GIS data from Fuscoe but was not modeled. These unmodeled pipes include segments identified as abandoned or already in the existing hydraulic model. Because the model is intended to be a skeletonized version of the Fairgrounds system, some smaller lateral piping was also excluded to avoid excessive detail and complexity.

3.2.2.1 Modeling Assumptions

As discussed in Section 3.1, some information about the water distribution system was missing from the reviewed data. Therefore, assumptions had to be made when building the Fairgrounds portion of the hydraulic model, including the following:

- For segments where the diameter was unknown, the diameter was assumed based on the nearest adjacent piping where the diameter was identified in the reviewed data.
- For segments where the piping material was unknown, a Hazen-Williams coefficient of 130 was assumed.
- Pipe elevations were estimated based on the Fuscoe contour data or from the reviewed maps and record drawings.
- Dedicated fire flow lines throughout the Fairgrounds, shown on the Del Mar Fairgrounds Utility Master Plan map, were modeled for fire flow only using a general fire flow demand of 4,000 gpm, as discussed in Section 2.4.

3.2.3 Modeling Scenarios

To compare the existing condition to the proposed housing options, an existing condition model and three proposed condition models (one for each proposed housing site) were developed. Model simulations were run under peak hour demand (PHD) to evaluate minimum pressure and maximum velocities and under maximum day demand plus fire flow (MDD + FF) to assess available fire flow rates while maintaining residual pressures of 20 psi. This resulted in a total of eight modeling scenarios as listed below:

- Existing Condition PHD
- Proposed Condition Site 1 PHD
- Proposed Condition Site 2 PHD
- Proposed Condition Site 3 PHD
- Existing Condition MDD + FF
- Proposed Condition Site 1 MDD + FF
- Proposed Condition Site 2 MDD + FF
- Proposed Condition Site 3 MDD + FF

3.2.4 Performance Criteria

The water system is evaluated against several criteria to ensure it can accommodate the additional water demand from the proposed housing. The performance criteria primarily focus on the system's hydraulic performance to ensure the Fairgrounds system can supply the additional water demand for potable water use and fire flow. The established performance criteria were then used to identify the necessary improvements to accommodate the additional demands.

3.2.4.1 Peak Hour Demand

For the PHD analysis, the MDD was first calculated by multiplying the ADD by the peaking factors in Table 3-1. The diurnal curves discussed in Section 2.3 were then applied to scale the MDD on an hourly basis with the peak hour factor scaling the MDD to the PHD.

Table 3-1. Demand Peaking Factors

	Demand Peaking Factor
City of Del Mar	1.63
Fairgrounds	2.55

Source: City of Del Mar 2015.

Note: The 2014 W&SMP refers to the peaking factor as a maximum monthly demand peaking factor because they were developed from historical billing data by dividing the maximum month demand by the average month demand for scaling the ADD to the MDD.

The peak hour factors for the City of Del Mar and Fairgrounds diurnal curves are provided in Table 3-2 showing that these diurnal curves peak at different times. Therefore, to truly capture the peak

condition, the model was run as an extended period simulation and the most critical condition (i.e., minimum pressure or maximum velocity) was recorded.

Table 3-2. Peak Hour Factors

	Peak Hour Factor	Time of Peak
City of Del Mar	2.80	17:00
Fairgrounds	2.90	13:00

Source: City of Del Mar 2015.

The model results from the PHD scenarios were then compared to the PHD criteria. Table 3-3 summarizes the PHD criteria adopted from the 2014 W&SMP.

Table 3-3. Peak Hour Demand Hydraulic Performance Criteria

Model Demand Scenario	Maximum Velocity	Minimum Pressure
PHD	10 ft/s	45 psi

Source: City of Del Mar 2015.

Notes: ft/s = feet per second; PHD = peak hour demand; psi = pounds per square inch

3.2.4.2 Max Day Demand with Fire Flow

To ensure adequate fire flow is available, the fire flow demands from Section 2.4 were applied to the model, and a fire flow analysis was run with the MDD. As discussed in the previous section, the MDD was determined by scaling the ADD by the peaking factors in Table 3-1. The modeling results were then analyzed to confirm that the performance criteria for the Max Day Demand with Fire Flow were met. These criteria include:

- Supplying adequate fire flow to meet the fire flow demands. Refer to Section 2.4 for fire flow demands.
- Maintaining a minimum residual pressure of 20 psi.

3.3 Existing Condition Analysis

The existing condition model results showed that the PHD performance criteria were met indicating no deficiencies in the existing system for meeting potable water demands. For the PHD modeling scenario, Figure 3-2 shows that all the modeled nodes met the City of Del Mar's minimum pressure requirement of 45 psi. The model results also indicated that all the Fairgrounds' piping velocities stayed below the maximum velocity criteria of 10 feet per second (ft/s).

For the fire flow analysis shown in Figures 3-3 and 3-4, the required planning-level fire flow of 4,000 gpm at the Fairgrounds could be supplied to the transmission lines and the City of Del Mar's water mains along Jimmy Durante Boulevard. This is further supported by hydrant flow data provided by the City of Del Mar, which included hydrant data at the intersection of San Dieguito Drive and Jimmy Durante Boulevard. Of the hydrants analyzed, the one at this intersection is the closest hydrant to the Fairgrounds and is located near the Fairgrounds' connection to the City of

Del Mar's water system. The provided hydrant flow data demonstrated that the City of Del Mar's water system at this location has adequate fire flow capacity and is able to supply up to 5,800 gpm of fire flow while maintaining a residual pressure of 20 psi (ISO 2023).

The model results showed that some of the separate on-site fire flow lines did not meet the 4,000 gpm fire flow and 20 psi residual pressure requirements; however, some of the diameters of these separate lines were unknown and assumed based on the size of adjacent piping. Additionally, more specific fire flow demands for the connecting buildings would likely require less fire flow than the 4,000 gpm used for planning purposes. Therefore, a more detailed fire flow analysis is recommended for verifying the on-site fire flow capacity.

A more detailed fire flow analysis or hydrant testing would be necessary for verifying whether the fire flow requirements are indeed not met for these separate fire flow lines. The District provided private fire service inspection, testing, and maintenance records from 2024 indicating that the on-site fire system at the Fairgrounds passed inspection (LVIS 2024). However, the on-site hydrant capacity was unclear because the location of the tested hydrant was not noted.

Refer to Tables B-1 through B-3 in Appendix B for more detailed modeling outputs.

3.4 Proposed Conditions Analysis

Similarly, the proposed conditions model results showed that the PHD performance criteria were met for each of the proposed sites indicating that the potable water demands for the proposed housing can be met. For the PHD modeling scenario, Figures 3-5, 3-6, and 3-7 show that all the modeled nodes met the City of Del Mar's minimum pressure requirement of 45 psi. The model results also indicated that all the Fairgrounds' piping velocities stayed below the maximum velocity criteria of 10 feet per second (ft/s) with the added demands from the housing.

The model results for the fire flow analysis are shown in Figures 3-8 through 3-13 indicating that the required planning-level fire flow rate of 4,000 gpm at the Fairgrounds could be supplied at each of the proposed housing sites. Table 3-4 shows the available flow at each of the proposed housing sites. However, as discussed in Section 3.3, some of the on-site piping at the Fairgrounds did not meet the 4,000 gpm fire flow and 20 psi residual pressure requirements, so a more detailed fire flow analysis is recommended for verifying the on-site fire flow capacity.

Table 3-4. Available Fire Flow

Performance Criteria	Available Fire Flow Rate (gpm)
Site 1	9,353
Site 2	9,353
Site 3	12,059

Notes: gpm = gallons per minute

Refer to Tables B-4 through B-12 in Appendix B for more detailed modeling outputs.

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Figure 3-1
Del Mar Fairgrounds Water System
Modeled Water Piping

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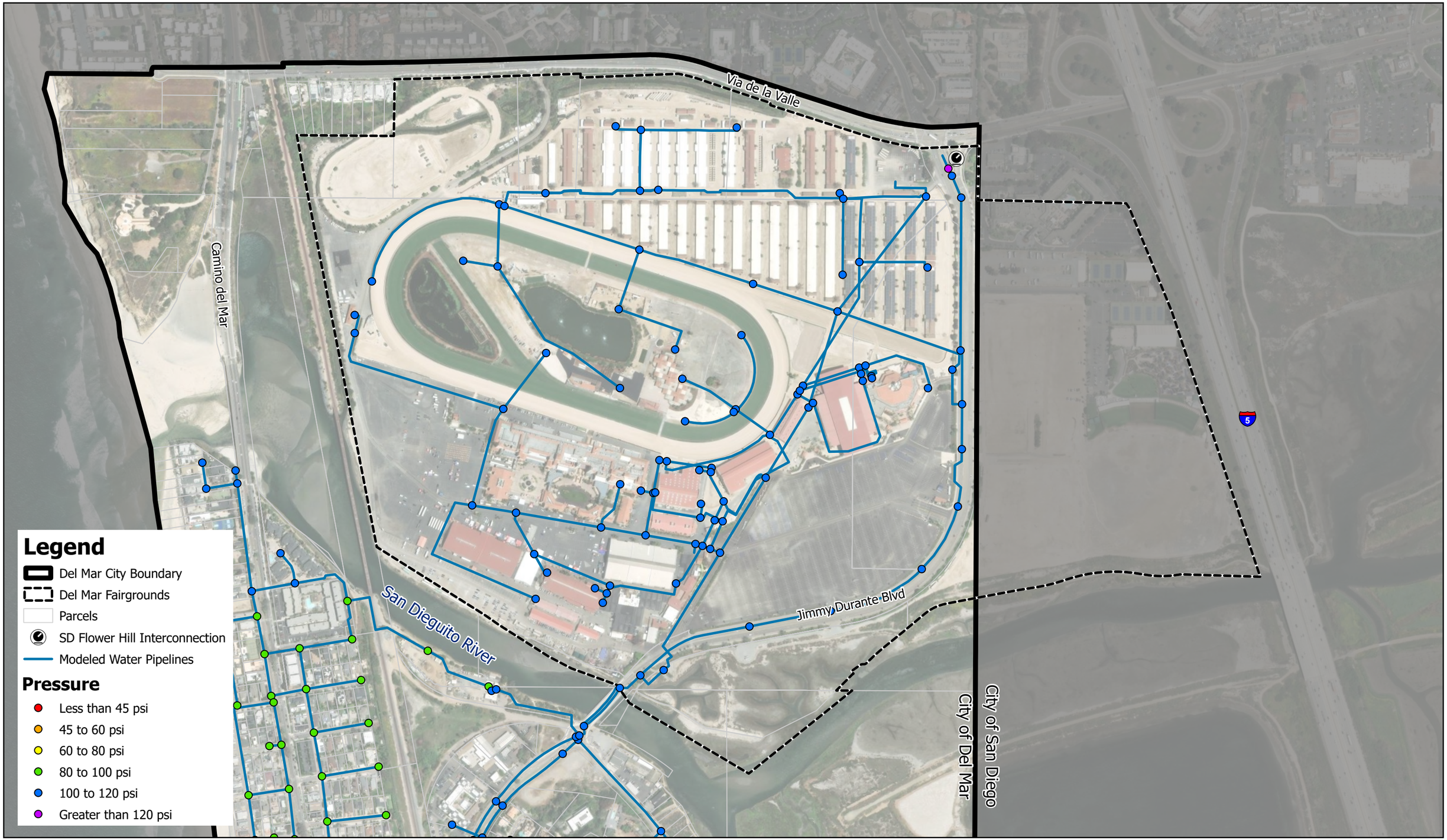

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Figure 3-2
Existing Condition Water System Model
Peak Hour Model Results

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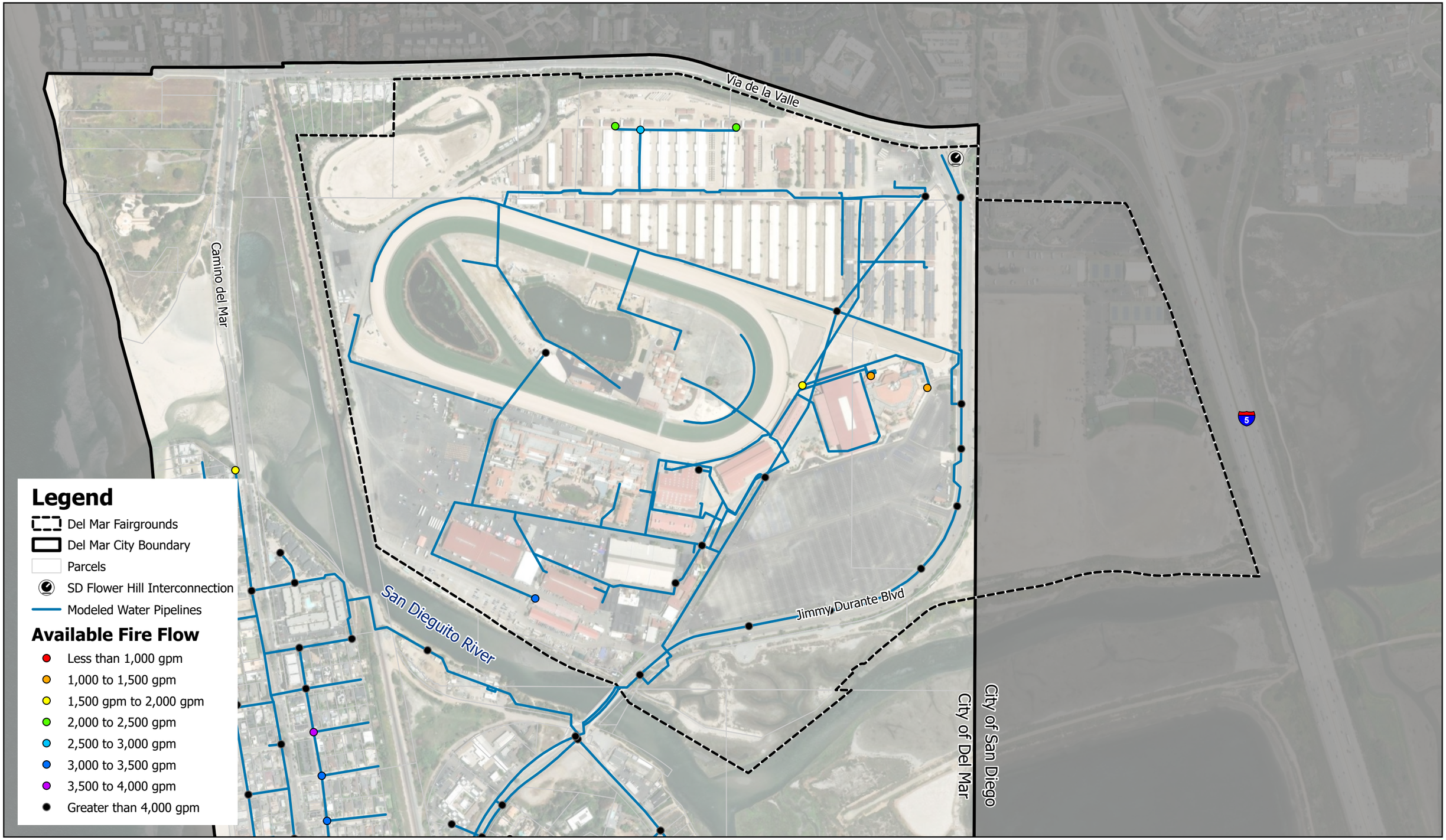

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Figure 3-3
Existing Condition Water System Model
Available Fire Flow with Maximum Day Demand

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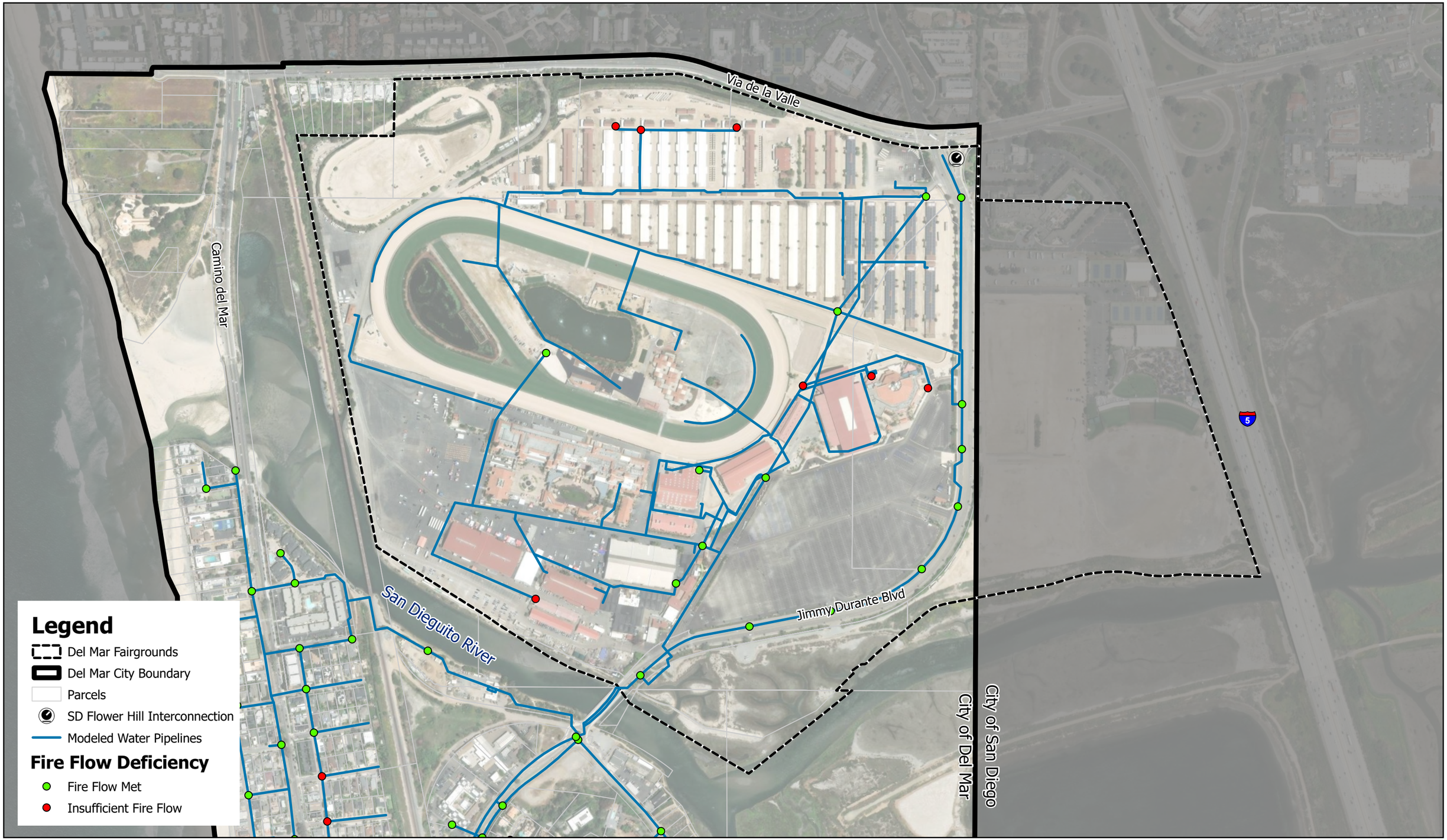

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Figure 3-4
Existing Condition Water System Model
Fire Flow Deficiency

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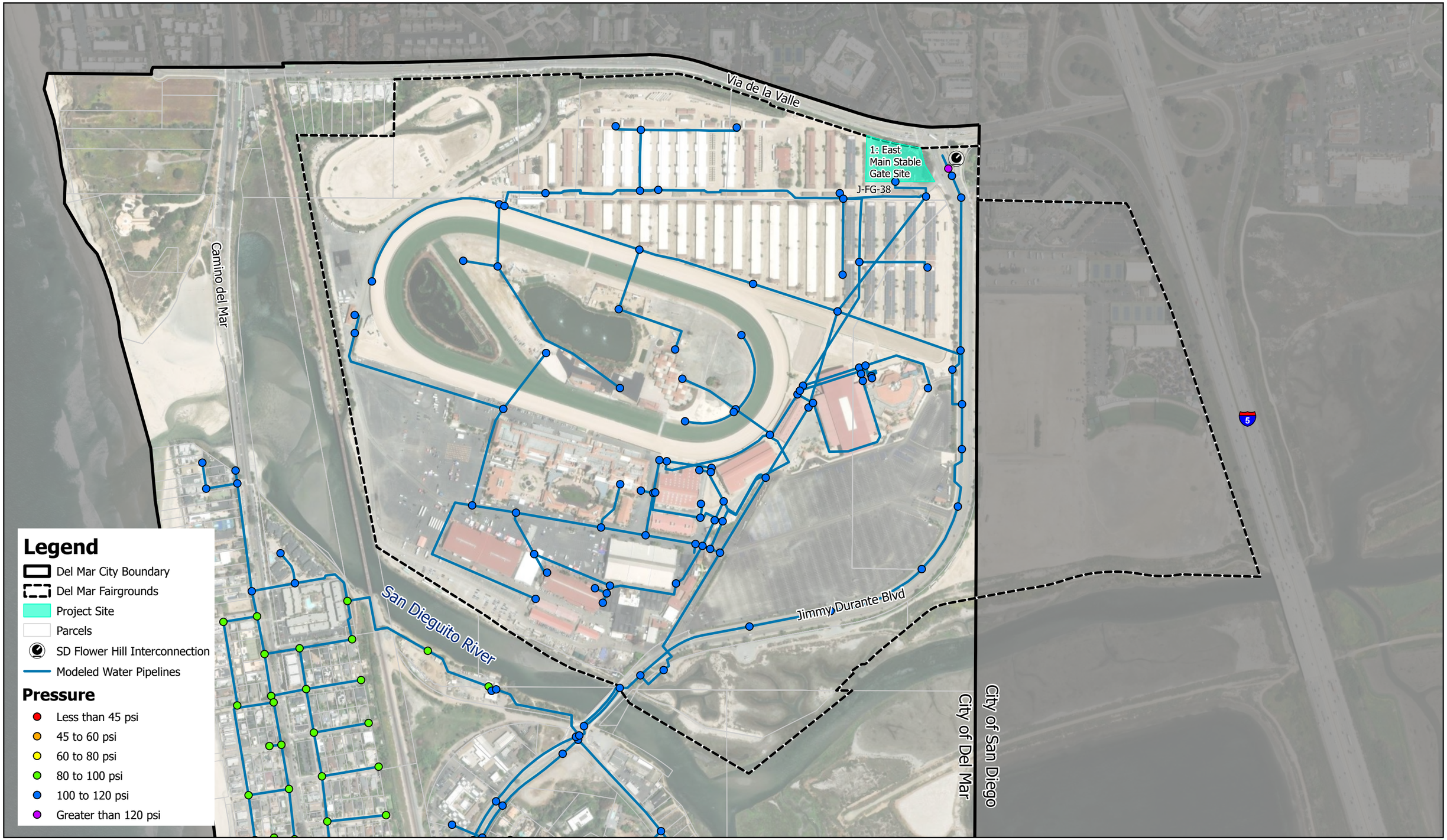

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Figure 3-5
Proposed Condition Water System Model
Site 1 Peak Hour Model Results

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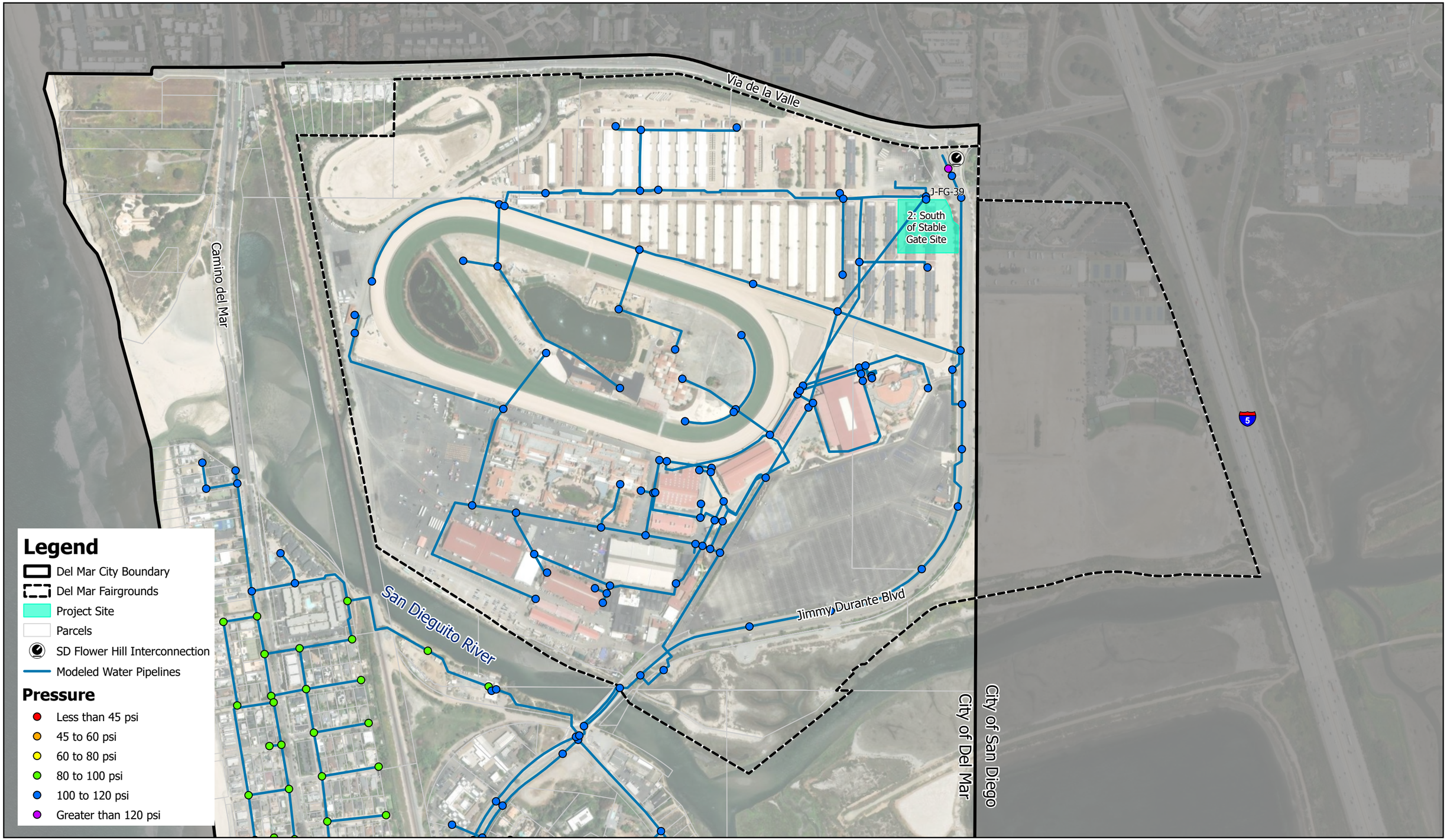

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Figure 3-6
Proposed Condition Water System Model
Site 2 Peak Hour Model Results

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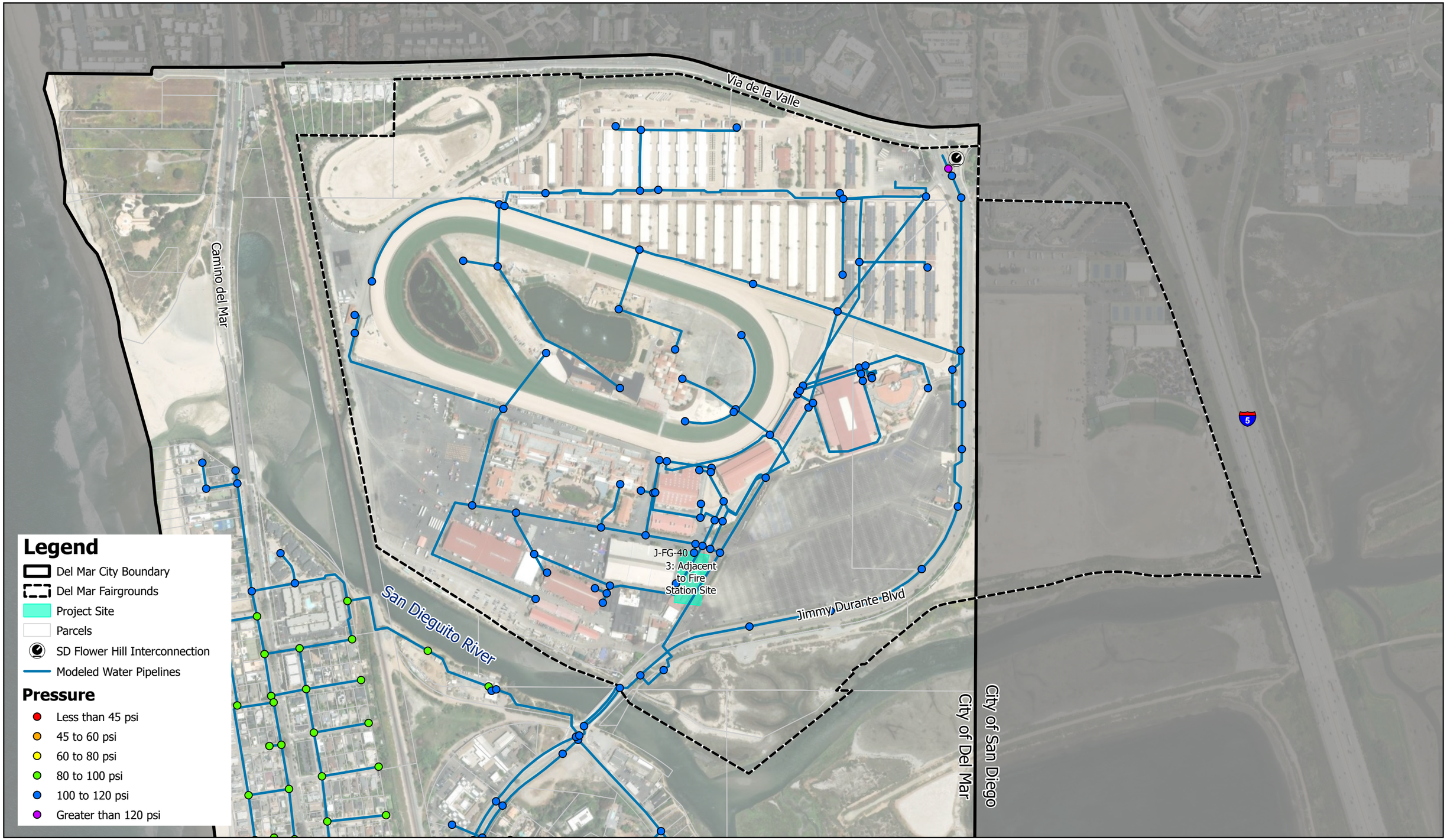

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Figure 3-7
Proposed Condition Water System Model
Site 3 Peak Hour Model Results

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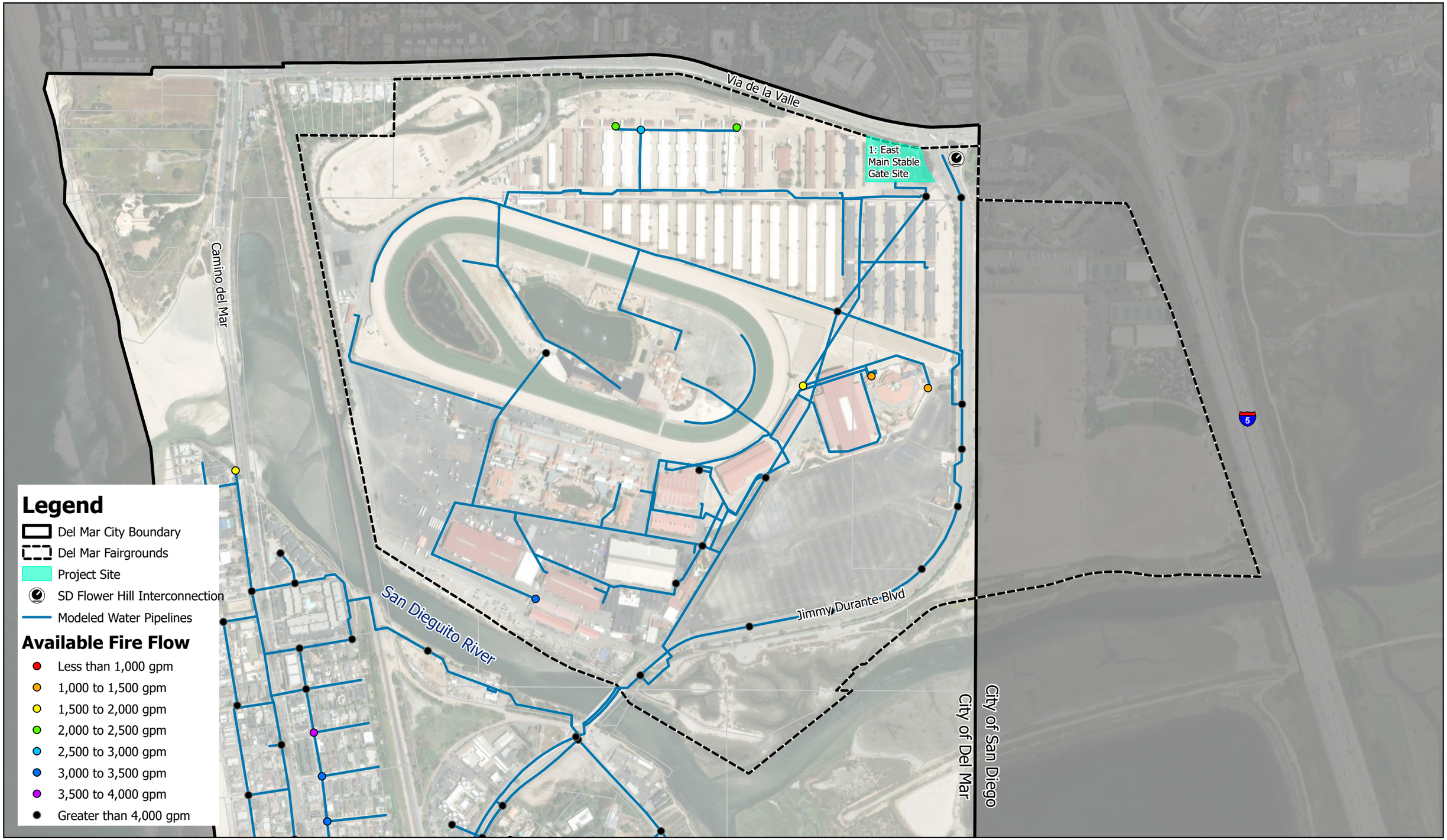

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Figure 3-8
Proposed Condition Water System Model
Site 1 Available Fire Flow with Maximum Day Demand

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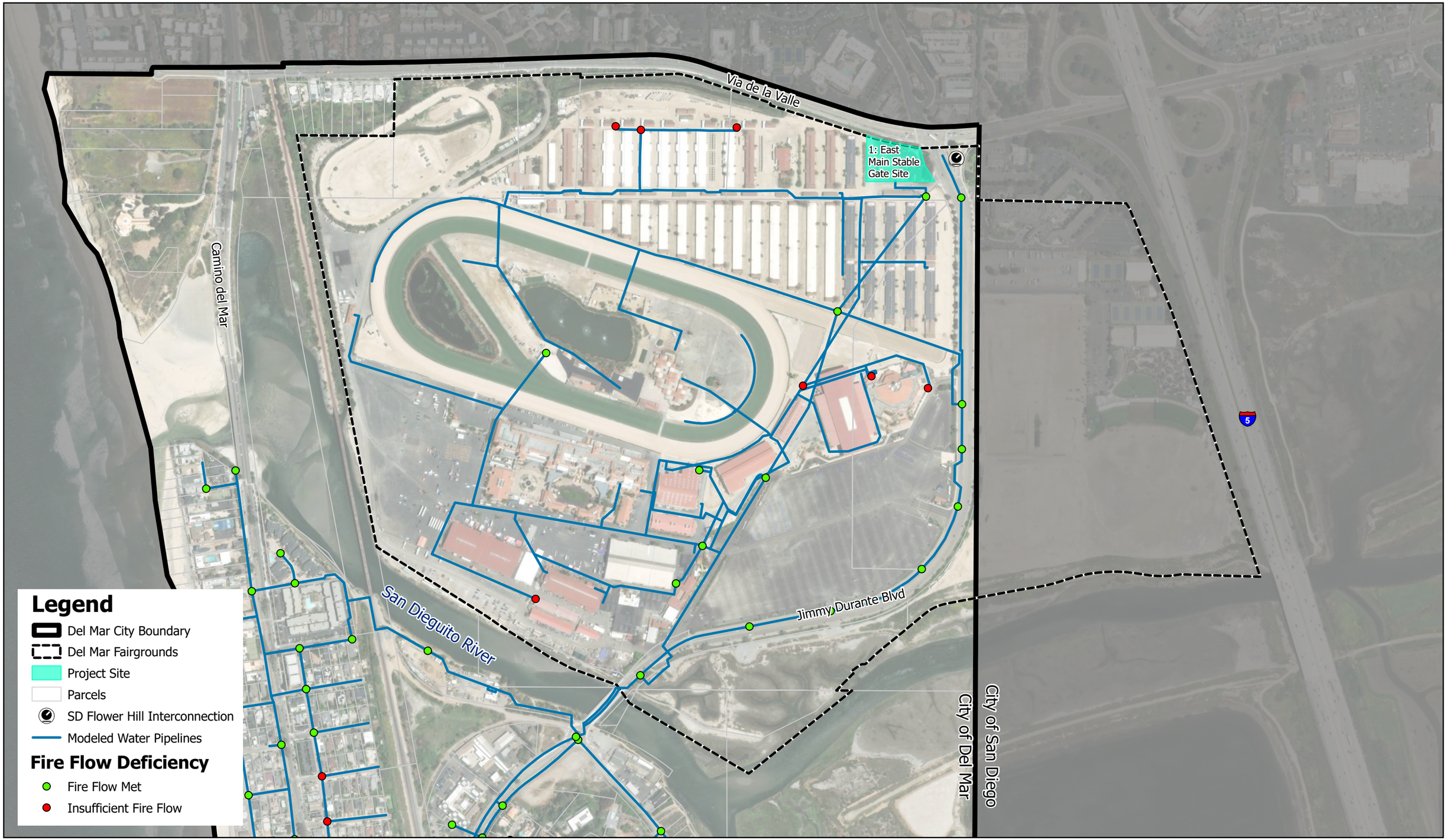

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Figure 3-9
Proposed Condition Water System Model
Site 1 Fire Flow Deficiency

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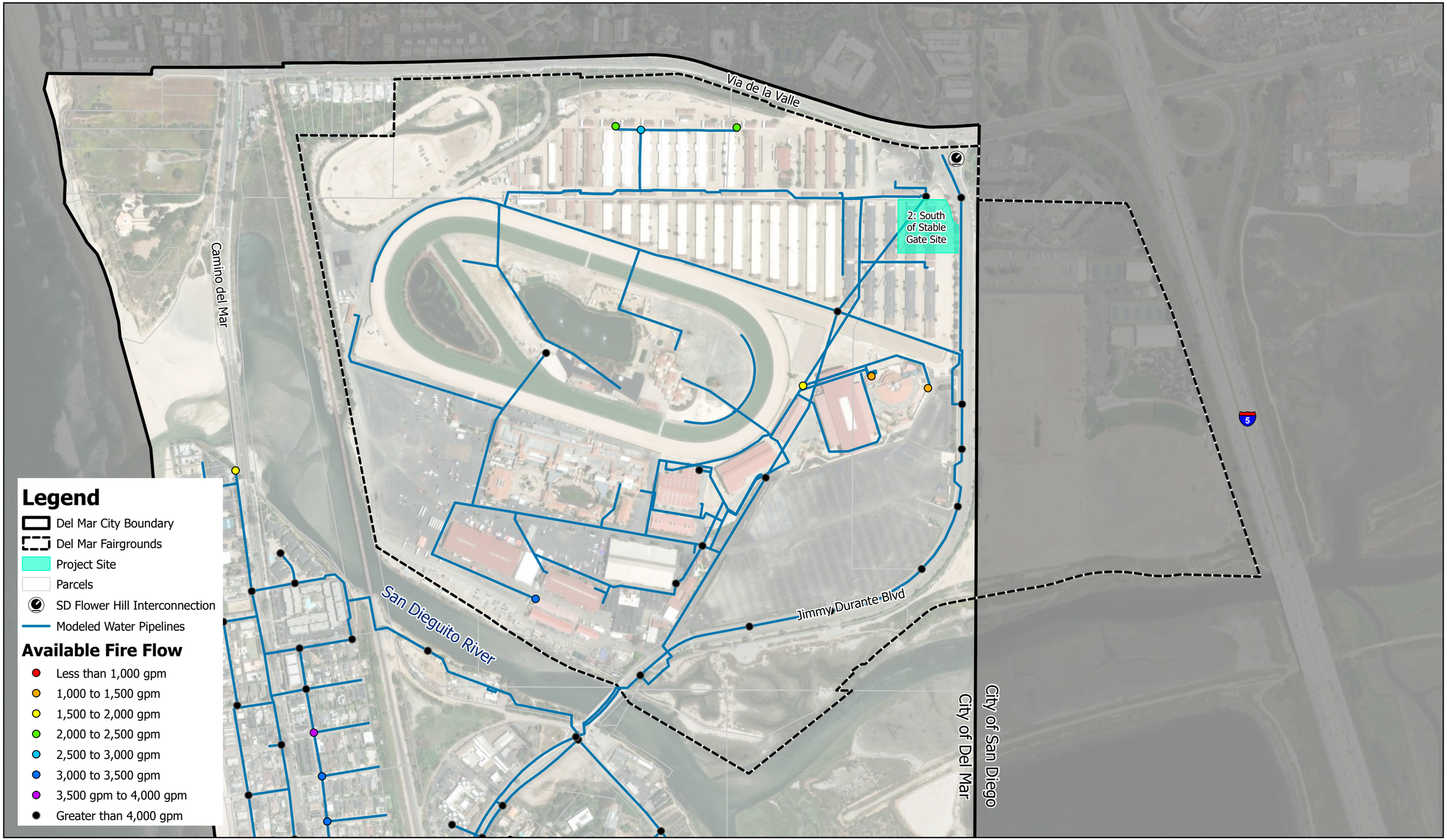

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Figure 3-10
Proposed Condition Water System Model
Site 2 Available Fire Flow with Maximum Day Demand

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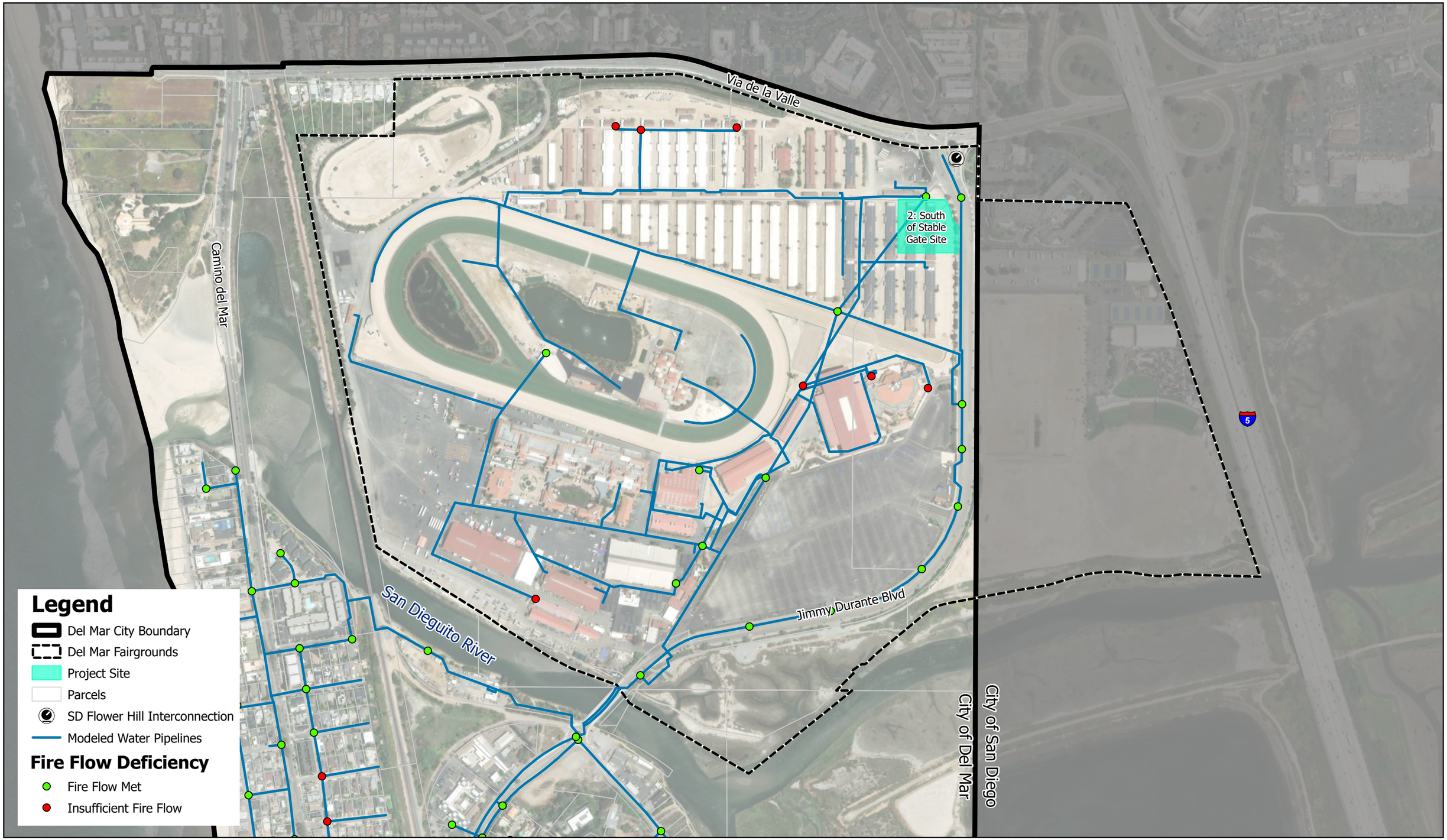

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Figure 3-11
Proposed Condition Water System Model
Site 2 Fire Flow Deficiency

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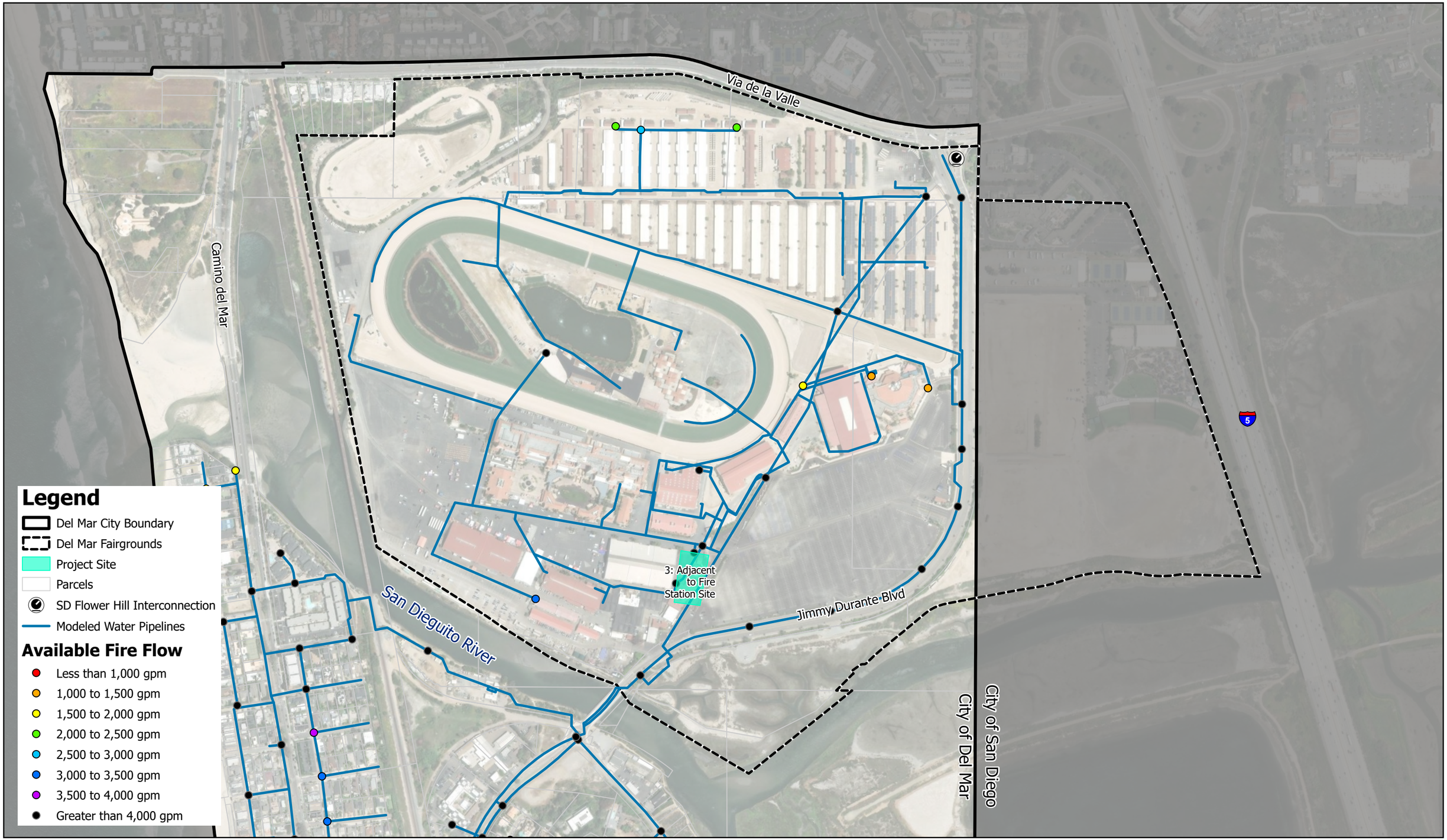

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Figure 3-12
Proposed Condition Water System Model
Site 3 Available Fire Flow with Maximum Day Demand

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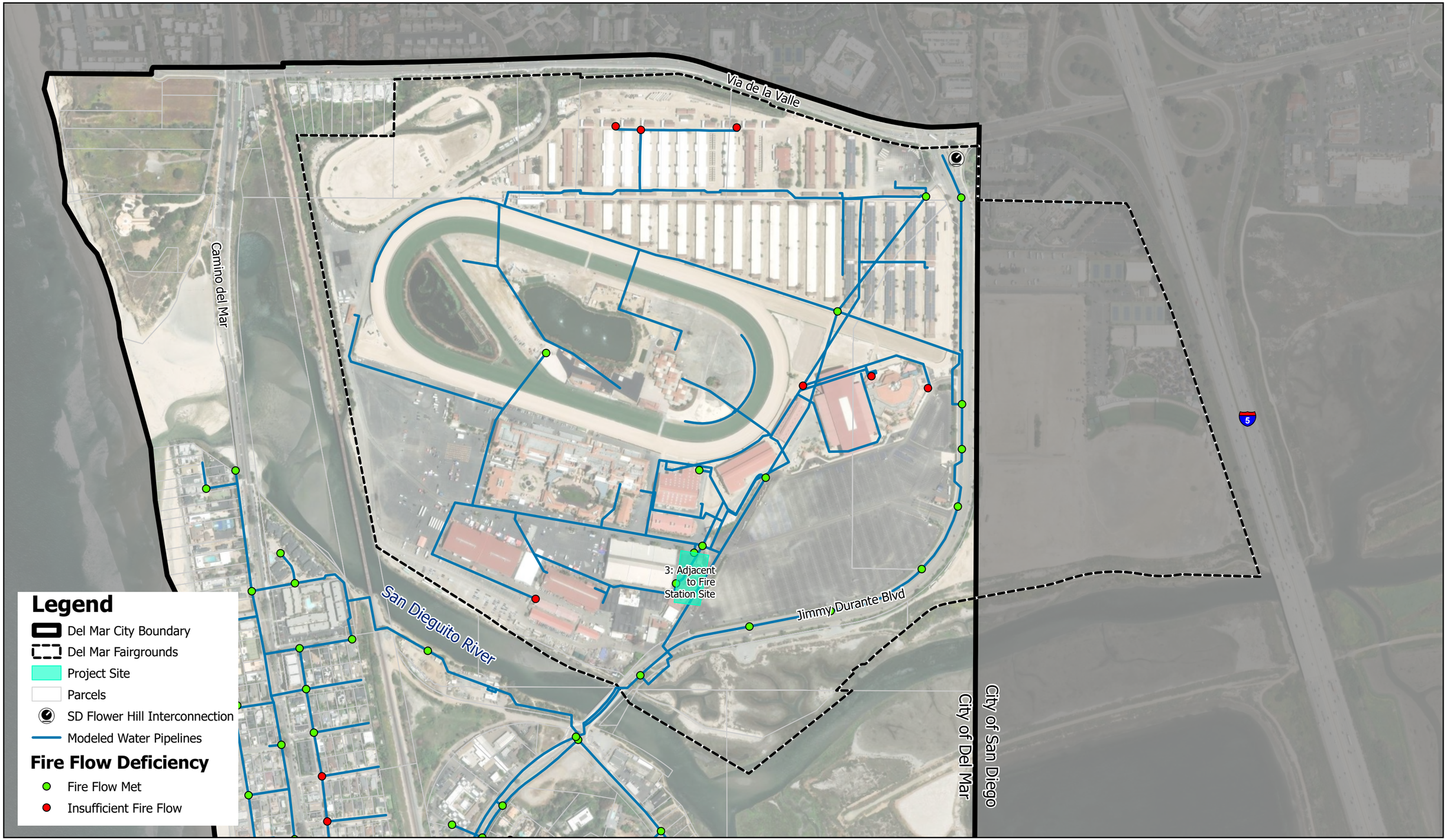

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Figure 3-13
Proposed Condition Water System Model
Site 3 Fire Flow Deficiency

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Section 4 Sanitary Sewer Generation

4.1 System Overview

The City of Del Mar's sanitary sewer system collects wastewater throughout the City of Del Mar, the Fairgrounds, and portions of the City of San Diego. The majority of the City of Del Mar's sanitary sewer system discharges to the San Elijo Water Reclamation Facility in Cardiff-by-the-Sea. The City of Del Mar's current agreement with SEJPA permits the City of Del Mar to discharge up to 0.6 million gallons per day (MGD) during dry weather conditions and up to 1 MGD during wet weather conditions for treatment at the San Elijo Water Reclamation Facility (City of Del Mar 2026). A small portion of the City of Del Mar south of Cordero Road discharges to the City of San Diego for treatment at the Point Loma Wastewater Treatment Plant in the City of San Diego.

The Fairgrounds discharges to the City of Del Mar system via an 8-inch force main at the southern end of the Fairgrounds. The Fairgrounds makes up a significant portion of the wastewater conveyed by the City of Del Mar, especially during the summer months when the majority of the Fairgrounds events are held, including the San Diego County Fair and Del Mar Thoroughbred Club Horse Races. During the summer, the wastewater generated by the Fairgrounds makes up nearly 30 percent of the total wastewater flow in the City of Del Mar, based on the 2023 wastewater flow data from the City of Del Mar's 21st Street Lift Station (City of Del Mar 2025b). Currently, the District has a Memorandum of Understanding with the City of Del Mar that permits the Fairgrounds to discharge to the City of Del Mar's sanitary sewer system and limits the discharge to a maximum flow rate of 630 gpm (District 2026a).

The potential housing sites are proposed on the Fairgrounds property, so this analysis focuses on the Fairgrounds sanitary sewer system. While the Fairgrounds discharge to the City of Del Mar's sanitary sewer system, the previous 2014 W&SMP did not note significant capacity issues in the City of Del Mar's system, and analysis of the City of Del Mar's existing system is not included in this W&SSUIS.

The Fairgrounds sanitary sewer system collects wastewater flows throughout the property via a network of piping ranging in diameter from 4 to 15 inches. Two tributary areas are within the Fairgrounds property. Sanitary sewer flows collected on the eastern side of Jimmy Durante Boulevard are transported to the Point Loma Wastewater Treatment Plant via the City of San Diego sanitary sewer infrastructure. Sanitary sewer flows collected on the western side of Jimmy Durante Boulevard are discharged to the City of Del Mar, where the sanitary sewer flows are transported to the San Elijo Water Reclamation Facility in Cardiff-by-the-Sea for treatment. Refer to Figure 4-1, which depicts the modeled sanitary sewer system within and around the Fairgrounds.

Previously, sanitary sewer flows from the Fairgrounds RV park located east of Jimmy Durante Boulevard were collected by truck and discharged to the Fairgrounds system on the western side

of Jimmy Durante Boulevard (Fuscoe 2014). Since the 2014 W&SMP was prepared, the District constructed a sanitary sewer pump station located near the Hilton Hotel on Via de la Valle. This pump station pumps the RV Park wastewater to the City of San Diego sanitary sewer system and reduces the Fairgrounds' wastewater flows to the City of Del Mar by eliminating the need for trucking the wastewater west of Jimmy Durante Boulevard where it is discharged to the City of Del Mar system.

Due to the topography of the Fairgrounds west of Jimmy Durante Boulevard, a network of pump stations transports wastewater to the City of Del Mar system. Some pump stations collect surface runoff from animal areas and discharge it to the sanitary sewer system due to the high concentration of organic matter. The Fairgrounds also have two seasonal sewer and stormwater pump stations that pump surface runoff from animal areas and the main track area to the sewer system during dry months and are manually switched over to discharge to the stormwater system during wet months after the pump station has been flushed (Fuscoe 2014).

The main sanitary sewer pump station, Sewer Pump Station #1, pumps all wastewater flows collected west of Jimmy Durante Boulevard to the City of Del Mar system via an 8-inch force main. The 8-inch force main is a siphon crossing that runs under San Dieguito Lagoon and ties into the City of Del Mar system at the City of Del Mar Public Works Yard. This force main was last replaced in May 2009 (District 2009).

4.2 Sanitary Sewer Generation Projections

The additional wastewater generated by the proposed housing project will increase wastewater loads on the Fairgrounds sanitary sewer system. This section details how the increase in wastewater loading from existing improvements and near-term developments were added to the 2014 W&SMP model for developing the existing condition model. This section also discusses the projected wastewater flows generated by the proposed housing project, which were added to the existing condition model at each of the proposed housing sites to develop three proposed condition models. The results from this section will be used for modeling and analyzing how the incremental increase in wastewater flows from the housing project will impact the Fairgrounds sanitary sewer collection system.

4.2.1 Existing Condition

The 2014 W&SMP model had two wastewater flow scenarios: existing and future. The existing wastewater flow scenario from the 2014 W&SMP model was used as a starting point to develop the existing condition model used in this housing site utility impact study. Developments planned for the near future or already approved by the City of Del Mar since the 2014 W&SMP were reviewed and discussed with the City of Del Mar, and the estimated wastewater flows were added to the 2014 W&SMP model to develop the existing condition model for this W&SSUIS.

To understand the nature of sewer generation in the City of Del Mar and on the Fairgrounds, the City of Del Mar shared wastewater flow meter data identifying monthly wastewater flow volumes for the City of Del Mar and the Fairgrounds spanning the years 2019 through 2024. The most recent complete year of data was 2023 (City of Del Mar 2025b).

In 2023, the City of Del Mar and the Fairgrounds generated 146 million gallons and 23 million gallons of wastewater, respectively (City of Del Mar 2025b). As summarized in Table 4-1, the sanitary sewer flows have decreased since the 2013 data recorded in the 2014 W&SMP.

Table 4-1. Summary of 2023 versus 2013 Sanitary Sewer Flows

	2023 Sanitary Sewer Flows[1] (million gallons)	2023 Sanitary Sewer Flows[1] (MGD)	2013 Sanitary Sewer Flows[2] (MGD)
City of Del Mar	146.1	0.400	0.540
Fairgrounds	22.9	0.063	0.067

Sources:

[1] City of Del Mar 2025b.

[2] City of Del Mar 2015.

Notes: MGD = million gallons per day

The 2014 W&SMP used the 2013 sanitary sewer flows to develop the existing wastewater flow scenario. Since the Fairgrounds' current sanitary sewer flows of approximately 0.063 MGD are less than the 2013 flows of 0.067 MGD, the existing wastewater flow scenario in the original hydraulic model was conservatively used as the baseline to evaluate potential impacts associated with adding housing at the Fairgrounds. Although the 2014 W&SMP projected increases in sanitary sewer generation over time, the actual sewer generation has not risen significantly since then. Therefore, the projected sewer generation rates for future wastewater flow scenarios from the 2014 W&SMP were not included in this analysis.

The wastewater generated by the Fairgrounds varies throughout the year based on the activities and events at the Fairgrounds. The largest events occur during summer, so the 2014 W&SMP separately analyzed the wastewater flows for summer (June through August) and non-summer months (January through May and September through December). Table 4-2 summarizes the Fairgrounds wastewater flows for 2013 versus 2023, separated based on summer versus non-summer months.

Table 4-2. Fairgrounds Summer versus Non-Summer Sanitary Sewer Flows

	2023 Sanitary Sewer Flows[1] (MG)	2023 Sanitary Sewer Flows[1] (MGD)	2013 Sanitary Sewer Flows[2] (MGD)
Summer (June–August)	12.6	0.137	0.190
Non-Summer (September–May)	10.3	0.038	0.025

Sources:

[1] City of Del Mar 2025b.

[2] City of Del Mar 2015.

Notes: MGD = million gallons per day

When analyzed over the entire year, Table 4-1 shows that the average wastewater flow rate of 0.063 MGD in 2023 is less than the average wastewater flow rate of 0.067 MGD in 2013. However, Table 4-2 shows that the summer wastewater flow rate in 2023 is less than the 2013 flow rate, while the non-summer flow rate for 2023 exceeds the flow rate in 2013 by a factor of 1.53.

For analyzing the wastewater loads at the Fairgrounds during summer, the original Fairgrounds wastewater loading from the 2014 W&SMP hydraulic model was used for developing the existing condition model. However, since the non-summer months demonstrated an increase in flow since the 2013 data, the original Fairgrounds wastewater loading from the 2014 W&SMP hydraulic model was scaled by a factor of 1.53 to more accurately reflect current wastewater flows from the Fairgrounds in the existing condition model used for this W&SSUIS.

4.2.2 Sewer Generation Factors

To model the sanitary sewer system, the wastewater flow rates were estimated using sewer generation factors. The sewer generation factors from the 2014 W&SMP were developed based on land use data and the sewer generation factors from the City of Del Mar's 1983 Sewer Master Plan, which were scaled so the total wastewater generated by the City matched the 2013 data. The sewer generation factors from the 2014 W&SMP are summarized in Table 4-3. The existing sewer generation factors, based on 2013 sewer flow data, were used for this analysis because they are a conservative estimate of current flows, as demonstrated in Section 4.2.1 by comparing the 2013 and 2023 data.

Table 4-3. 2014 W&SMP Existing Sewer Generation Factors

Land Use	Existing Sewer Generation Factor	Unit
Single Family	116	gpd/DU
Multi-Family	232	gpd/DU
Commercial	710	gpd/acre
Institutional	520	gpd/acre

Source: City of Del Mar 2015.
Notes: DU = dwelling unit; gpd = gallons per day

As discussed in Section 1.3, some of the near-term developments and approved land use zoning amendments will result in mixed-use developments. To estimate mixed-use sewer generation rates, a sewer generation factor was developed by averaging the multi-family factor and the commercial factor. Since the multi-family factor is based on the number of DUs, the DU density in DU per acre was used, as shown in the following equation:

$$Mixed\ Use\ Flow\ Factor = \frac{density\ \frac{DU}{acre}\ x\ 232\ \frac{gpd}{DU} + 710\ \frac{gpd}{acre}}{2}$$

It should be noted that the sewer flows for the City of Del Mar exceed the metered water consumption. This discrepancy has been documented in the previous 2014 W&SMP and is also reflected in the updated water demands and wastewater flows in this analysis because the 2014 W&SMP factors are being used in this analysis. For example, the water demand factor for commercial land uses in Table 2-1 is 670 gpd/acre, which is lower than the sewer generation factor of 710 gpd/acre in Table 4-3. It is the understanding of Harris staff that this sewer generation is likely to be overly conservative because the generation rates included wet weather flows when they were developed. By including wet weather flows in the sewer generation rates, the sanitary sewer flows estimated in this W&SSUIS using these sewer generation rates are overestimated because they include some inflow and infiltration from the wet weather flows.

Furthermore, the water demand factors and sewer generation factors for the single family and multi-family land uses are based on different units with water demand being per acre and sewer generation being per DU. This difference in the unit for the factors also contributes to the sewer generation being higher than the water demand because the updates to the existing model and the proposed affordable housing have a high density of DUs.

The City of Del Mar is in the process of updating its master plan. Therefore, the estimated sewer generation projections in this report may be impacted if the sewer generation factors are revised in the updated master plan.

4.2.3 Updates to City of Del Mar Wastewater Loads

To develop the existing condition model, the 2014 W&SMP model was updated to incorporate the zoning amendments and specific plans approved since the 2014 W&SMP was prepared. Incremental changes in estimated wastewater flows based on approved land use changes, parcel acreage, and applicable sewer generation factors were added to the 2014 W&SMP model and are summarized in Table 4-4.

For empty parcels, the calculated sewer flows were added directly. However, for parcels that are already developed, only the net increase in sewer generation was added to avoid overestimating the additional flows associated with redeveloping the parcels. This net increase in sewer generation was added at the nearest node in the hydraulic model. Refer to Table A-3 in Appendix A for a more detailed breakdown of the estimated sewer generation for each of the developments that were incorporated into the 2014 W&SMP model for developing the existing condition model. No additional updates were made to the sanitary sewer system model based on other City of Del Mar CIP projects completed since the 2014 W&SMP.

Table 4-4. Increased Sewer Generation Due to Added Developments and Approved Zoning Amendments

Developments and Zoning Changes	Total Acreage	Existing		Updated			Incremental Increase (gpd)
		Existing Land Use Type	Existing Sewer Generation (gpd)	Updated Land Use Type	Sewer Generation Factor[1] (gpd/DU or gpd/acre)	Estimated Sewer Generation (gpd)	
North Commercial Zoning Amendment	6.46	Commercial	4,288	Multi-Family	232	29,000	24,712
Professional Commercial Zoning Amendment	1.30	Commercial	923	Multi-Family	232	6,264	5,341
Central Commercial Zoning Amendment	7.53	Commercial	5,031	Mixed-Use	Varies[2]	30,860	25,829
941 Camino Del Mar Specific Plan	0.59	Commercial	419	Mixed-Use	Varies[2]	1,137	719
Watermark 50-Unit Apartment Project	2.68	Commercial	0	Multi-Family	232	11,600	11,600
						Total	**68,201**

Sources:

[1] City of Del Mar 2015.

Notes: DU = dwelling unit; gpd = gallons per day

[2] Varies based on dwelling unit density. Refer to Section 4.2.2 for mixed-use sewer generation factor calculation.

4.2.4 Allocating the Fairgrounds Wastewater Loads

In the 2014 W&SMP hydraulic model, the wastewater generated by the Fairgrounds was only applied at a single node. However, to better understand the hydraulics of the Fairgrounds sanitary sewer system, the wastewater load in the existing condition model for this W&SSUIS was allocated proportionally throughout the modeled Fairgrounds piping based on aerial imagery and building square footages provided by the District.

As discussed in Section 4.2.1, the Fairgrounds wastewater loads for the summer versus non-summer seasons were modeled separately because the Fairgrounds generate significantly more wastewater during the summer due to the various events and activities that occur during the summer. For the non-summer loads, the 2013 wastewater loads were scaled to be consistent with the current 2023 wastewater flow data.

4.2.4.1 Additional Fairgrounds Wastewater Loads

Since the 2014 W&SMP was prepared, the Phase II Storm Water Improvements project was constructed, which included a small on-site stormwater treatment plant with a sewer force main connecting to the Fairgrounds' sanitary sewer system for discharging wastewater, including the filter backwash water. To prepare the existing condition model, the 2014 W&SMP model was

revised to include a new wastewater load at this location based on the sewer generation factor for institutional land uses. The estimated wastewater load is summarized in Table 4-5.

Table 4-5. Additional Fairgrounds Wastewater Load

Project	Land Use	Sewer Generation Factor[1] (gpd/acre)	Approximate Area[2] (acres)	Wastewater Load (gpd)
Phase II Storm Water Improvements – Stormwater Treatment Plant	Institutional	520	0.09	147

Sources:

[1] City of Del Mar 2015.

Notes: gpd = gallons per day

[2] The approximate area for the Phase II Storm Water Improvements – Stormwater Treatment Plant was calculated as the building area based on aerial imagery.

Additionally, the San Diego Association of Governments plans to construct the San Dieguito Double Track and Special Events Platform. While the construction of the platform will require relocation of an existing sanitary sewer force main, no additional wastewater loads are expected for this project so no increase in wastewater loading was included in the existing condition model for this project.

4.2.5 Proposed Housing Scenario Conditions

To estimate the wastewater generated by the proposed housing development, the sewer generation factor for multi-family land use was applied, assuming 128 DUs would be constructed. This resulted in a total wastewater load of 29,696 gpd, or 20.6 gpm, as shown in Table 4-6. This wastewater load represents a conservative estimate of the potential housing project and was added to the updated existing condition model at the three potential housing sites in three independent model runs.

Table 4-6. Fairgrounds Housing Sewer Generation

Land Use Type	Sewer Generation Factor[1] (gpd/unit)	Fairgrounds Housing Number of Units	Sewer Generation (gpd)
Multi-Family	232	128	29,696

Sources:

[1] City of Del Mar 2015.

Notes: gpd = gallons per day

4.3 Diurnal Curves

Since the wastewater generation fluctuates temporally throughout the day, diurnal curves were used to scale the base loads from Section 4.2 to vary on an hourly basis. The Fairgrounds' activity levels differ from those of the City of Del Mar and vary by season (i.e., summer versus non-summer). Consequently, separate diurnal curves were developed in the 2014 W&SMP based on historical flow meter data. The City diurnal curve was also calibrated in the 2014 W&SMP based

on flow data from the 21st Street Lift Station, the main lift station that handles the majority of the City of Del Mar's wastewater flows, including the Fairgrounds wastewater. For this analysis, the three diurnal curves from the 2014 W&SMP were adopted. The diurnal curves are summarized in Table 4-7.

Table 4-7. Hourly Diurnal Curve Factors

Hour	City of Del Mar	Fairgrounds Non-Summer	Fairgrounds Summer
1	1	0.45	0.25
2	0.625	0.5	0.2
3	0.6	0.55	0.2
4	0.475	0.45	0.18
5	0.46	0.6	0.35
6	0.25	0.7	0.75
7	0.4	0.8	0.85
8	0.42	1.1	1.05
9	0.8	1.4	1.15
10	1.35	1.55	1.3
11	1.55	1.75	1.45
12	1.45	1.7	1.3
13	1.4	1.65	1.25
14	1.35	1.85	1.3
15	1.25	1.7	1.5
16	1.2	1.6	1.65
17	1.19	1.3	1.7
18	1.18	0.95	1.75
19	1.15	0.8	1.6
20	1.2	0.6	1.4
21	1.25	0.5	1.1
22	1.2	0.5	1
23	1.15	0.45	0.65
24	1.1	0.6	0.4

Source: City of Del Mar 2015.

The proposed housing development will include multi-family affordable housing. Therefore, the anticipated temporal pattern of sewer generation is expected to be more similar to that of the City of Del Mar than the Fairgrounds. This is because the Fairgrounds diurnal curve is controlled mainly by the events and activities held at the Fairgrounds while the City of Del Mar includes residential land uses similar to the proposed multi-family housing. Therefore, the City of Del Mar diurnal curve was used for the proposed housing development even though the proposed housing sites are located within the Fairgrounds property.

4.4 Inflow and Infiltration

Inflow and infiltration (I&I) occur as external water from groundwater or stormwater seeps into the sanitary sewer system, adding to the total wastewater flows. Typically, I&I is most prevalent during wet weather events. For this analysis, the I&I rates from the previous model were used. Changes or updates to the I&I were not performed because an updated analysis of wastewater flow data and storm data was not included in the scope of this update.

In the original hydraulic model, I&I was assumed to occur at a rate of 0.605 gpm for an 8-hour period from 3:00 a.m. to 10:00 a.m. on the second day of the 2-day analysis time frame. The I&I was applied to all nodes in the original hydraulic model. This I&I rate and pattern were developed in the 2014 W&SMP by comparing dry weather wastewater flow data from the City of Del Mar's 21st Street Lift Station meter with meter readings during a storm event of known magnitude.

In the updated hydraulic model, additional nodes have been added to incorporate the Fairgrounds piping. However, the I&I was not applied to these new nodes and was kept at just the single node that was originally used in the model to represent the Fairgrounds to avoid overestimating the I&I in the system. Since the original I&I analysis in the 2014 W&SMP was developed by comparing wastewater flows during dry and wet weather, it is assumed that the I&I from the Fairgrounds is accounted for in the I&I applied to all other nodes.

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Figure 4-1
Existing Condition Sewer System Model
Sanitary Sewer Collection System

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Section 5 Sanitary Sewer System Impact

The previous section discussed how the wastewater flows were estimated for existing improvements, near-term developments, and the proposed Fairgrounds housing. Using the wastewater loads discussed in Sections 4.2.3 and 4.2.4, the City of Del Mar and Fairgrounds wastewater loads in the 2014 W&SMP model were updated to develop the existing condition model. The wastewater loads for the proposed housing development in Sections 2.3.5 were then added to the existing condition model at each of the proposed housing sites to develop three separate proposed condition models for each of the proposed sites. This section details the process for developing the hydraulic models and discusses the model results.

5.1 Data Collection

5.1.1 Sanitary Sewer System GIS Data

GIS data from Fuscoe was provided to develop the sanitary sewer model for the Fairgrounds area. This GIS data included elevation data (as contours) and shapefiles for sewer piping and structures. Some attributes were populated for some of the features in the shapefiles, such as pipe material, pipe diameter, pipe type, and structure rim elevations. System information from the shapefile attributes was incorporated into the model when available.

5.1.2 As-Built Record Drawings and Other Utility References

To supplement the GIS data, the Del Mar Fairgrounds Utility Master Plan map, prepared by Fuscoe, was also referenced and incorporated into the model. Additionally, as-built record drawings were provided by the District for review. Key record drawings referenced for developing the hydraulic models include the following:

- Del Mar Fairgrounds Force Main Replacement as-built record drawings, prepared by Fuscoe Engineering and dated July 8, 2009
- Phase II Storm Water Improvements 100 percent design drawings, prepared by Fuscoe Engineering and dated February 15, 2018
- San Diego Association of Governments San Dieguito River Bridge Replacement Double Track and Special Events Platform 100 percent design drawings, prepared by HNTB and dated September 25, 2024

A site visit was also performed on January 23, 2026, to view and take pictures of other utility maps and record drawings that could not be shared digitally.

5.1.3 Field Investigation

A site visit occurred on December 17, 2025, to perform field investigation, record visible utilities, view the sanitary sewer pump stations, and discuss the Fairgrounds' sanitary sewer system with

the O&M staff. The information gathered during this site visit was incorporated into the hydraulic model, as discussed in the following section.

5.2 Sewer Hydraulic Model Development

5.2.1 Hydraulic Modeling Software

The sanitary sewer hydraulic models in the 2014 W&SMP were developed using Innovyze's InfoSewer modeling program. However, InfoSewer is no longer supported, so the model was converted to the Computational Hydraulics Inc. modeling software, called PCSWMM. For this hydraulic analysis, PCSWMM version 7.7.3920 was used.

5.2.2 Modeling the Fairgrounds Piping

The 2014 W&SMP model only included the City of Del Mar's sanitary sewer piping, and a single node was used to represent the Fairgrounds. For this analysis, the sanitary sewer piping for the Fairgrounds was added to the PCSWMM model using the data collected in Section 5.1 to better understand the housing's impact on the wastewater collection system.

Figure 5-1 shows the modeled piping within and around the Fairgrounds and highlights the additional piping that was added to the PCSWMM model as well as the piping that was included in the GIS data from Fuscoe but was not modeled. These unmodeled pipes include segments identified as abandoned or already present in the existing hydraulic model. Because the model is a skeletonized version of the Fairgrounds system, some smaller lateral piping was also excluded to avoid adding excessive detail and complexity.

The Manning's roughness of the piping was assigned based on the piping material and the roughness coefficients listed in Table 5-1.

Table 5-1. Manning's Roughness Coefficients

Pipe Material	Manning's Roughness "n"
Concrete Pipe	0.015
Vitrified Clay Pipe	0.013
Cast Iron Pipe	0.012
Polyvinyl Chloride Pipe	0.011
Asbestos Concrete Pipe	0.011

Source: City of Del Mar 2015.

5.2.2.1 Modeling Assumptions

As discussed in Section 5.1, some information about the sanitary sewer system was missing from the reviewed data. Therefore, assumptions had to be made when building the Fairgrounds portion of the hydraulic model, including the following:

- For segments where the diameter was unknown, the diameter was assumed based on the nearest adjacent piping where the diameter was identified in the reviewed data.
- For segments where the piping material was unknown, the material was assumed to be vitrified clay pipe.
- For the force main piping within the Fairgrounds, a Hazen-Williams coefficient of 135 was used (City of Del Mar 2015).
- Rim elevations were extracted from the Fuscoe contour data or from the reviewed maps and record drawings.
- When invert elevations were not identified in the reviewed maps and record drawings, invert elevations were assumed based on the rim elevations and by generally maintaining a minimum pipe cover of 3.5 feet and assuming the slope was in compliance with the minimum pipe slope requirements in Table 5-2.

Table 5-2. Minimum Pipe Slope Requirements

Pipe Size	Minimum Slope (ft/ft)
6-inch or smaller	0.007
8-inch	0.004
10-inch	0.003
12-inch	0.0025
15-inch	0.0015
18-inch or larger	0.001

Source: City of Del Mar 2015.

5.2.3 Modeling the Fairgrounds Sanitary Sewer Pump Stations

The Fairgrounds sanitary sewer system includes a series of sewer pump stations for conveying the wastewater off site to the City of Del Mar system. The main sanitary sewer pump stations that were modeled for this analysis include: Pump Station #1, Pump Station #2, and Pump Station #3 because these three pump stations will likely be impacted by the additional wastewater flows from the proposed housing.

5.2.3.1 Pump Station #1

Pump Station #1 is located at the downstream end of the Fairgrounds' wastewater collection system and is responsible for pumping all wastewater generated within the Fairgrounds west of Jimmy Durante Boulevard across the San Dieguito River, where it discharges to the City of Del Mar sanitary sewer system at the point of connection in the City of Del Mar Public Works Yard. Because this is the main pump station for the Fairgrounds, the O&M staff noted that the pump station is checked and maintained regularly. The O&M staff also noted that Pump Station #1 can sometimes have significant issues with odor control.

Pump Station #1 is equipped with two self-priming centrifugal pumps, a Gorman-Rupp T6A3S-B/F and a Gorman-Rupp T6C60SC-B/F, which are operated in a lead/lag configuration. More information on the pumps is summarized in Table 5-3. The wet well for Pump Station #1 was measured in the field to be approximately 20 feet wide by 17.5 feet long by 12 feet deep.

Table 5-3. Pump Station #1 Summary

Description	Lead Pump	Lag Pump
Pump Model	Gorman-Rupp T6A3S-B/F	Gorman-Rupp T6C60SC-B/F
Impeller Diameter	12.38 inches	12.38 inches
Operating Levels – Start Depth	2.5 ft	3.5 ft
Operating Levels – Stop Depth	1.0 ft	1.0 ft
Motor Information	Model WEG 020180T3E256T; 20HP/ 208-230V/ 55.3-50A/ 3PH/ 60Hz/ RPM 1775	Model WEG 02018ET3E256T-W22; 20HP/ 230V/ 48.2A/ 3PH/ 60Hz/ RPM 1770

Source: District 2026b.

When reviewing the pump curves for the Gorman-Rupp T6A3S-B/F and a Gorman-Rupp T6C60SC-B/F and the provided motor information, it appeared that the speed of the motors did not correspond to the speed of the pumps. Since the Fairgrounds pump stations do not use variable-frequency drives (VFDs), it is possible that the motors and pumps are not directly coupled and may be connected using a belt drive or gear box, which would explain why the motor speed appears to be higher than the pump speed. Without the pump speed, the pump curve could not be identified. Therefore, Pump Station #1 was modeled as an ideal pump.

5.2.3.2 Pump Station #2

Pump Station #2 is equipped with two submersible pumps and is located upstream of Pump Station #1 between the Livestock Barn (Barn W) and the Expo Center. The pump station is below ground and requires heavy equipment to excavate and access the pump station. Therefore, limited information on the pump station was available. The only information provided was the pump operating levels, which are summarized in Table 5-4. The pump models and the wet well geometry were not known, so Pump Station #2 was modeled as an ideal pump.

Table 5-4. Pump Station #2 Operating Levels

Description	Lead Pump	Lag Pump
Operating Levels – Start Depth	3.8 ft	4.5 ft
Operating Levels – Stop Depth	2.5 ft	2.8 ft

Source: District 2026b.

5.2.3.1 Pump Station #3

Pump Station #3 is located upstream of Pump Station #2 and is located in building NN within the Backstretch Stable area. The pump station is equipped with two self-priming centrifugal pumps, a Gorman-Rupp T4A3S-B/F and a Rotech SXT-4, which are operated in a lead/lag configuration.

More information on the pumps is summarized in Table 5-5. The wet well for Pump Station #3 was measured in the field to be approximately 12.5 feet wide by 10.5 feet long by 12 feet deep.

Table 5-5. Pump Station #3 Summary

Description	Lead Pump	Lag Pump
Pump Model	Gorman-Rupp T4A3S-B/F	Rotech SXT-4
Impeller Diameter	9.75 inches	9.75 inches
Operating Levels – Start Depth	2.5 ft	3.0 ft
Operating Levels – Stop Depth	1.5 ft	1.5 ft
Motor Information	BALDOR SuperE Motors Model: EM3714T; 10HP/ 208-230V/ 25.4-24A/ 3PH/ 60Hz/ RPM 1770	BALDOR SuperE Motors Model: EM3714T; 10HP/ 208-230V/ 25.4-24A/ 3PH/ 60Hz/ RPM 1770

Source: District 2026b.

Similar to Pump Station #1, it appeared that the speed of the motors did not correspond to the speed of the pumps. Since the Fairgrounds pump stations do not use VFDs, it is possible that the motors and pumps are not directly coupled and may be connected using a belt drive or gear box, which would explain why the motor speed appears to be higher than the pump speed. Without the pump speed, the pump curve could not be identified. Therefore, Pump Station #3 was modeled as an ideal pump.

5.2.3.2 Modeling Assumptions

Some information about the sanitary sewer pump stations was missing from the reviewed data. Therefore, assumptions had to be made when adding the pump stations into the hydraulic model, including the following:

- Pump Station C-C and the sanitary sewer pump station for the Phase II Storm Water Improvements – Stormwater Treatment Plant were also modeled as ideal pumps for conveying the Fairgrounds' wastewater flows. However, these pump stations are not impacted by the additional wastewater flows from the proposed housing.
- Pump stations that are dual storm drain/sanitary sewer pump stations were not modeled due to a lack of information on the pump stations and the anticipated flows from these stations.
- The Motel 6 Pump Station was omitted from the model because it has been removed and is no longer in use based on direction from the Fairgrounds O&M staff.
- The wet well dimensions for Pump Stations #1 and #3 were approximated by assuming the footprint of the wet well is similar to the footprint of the pump station.
- Pump Station #2 was modeled with ideal pumps because information on the existing pumps was not available. A wet well volume was assumed by using the same wet well volume as Pump Station #3.
- A detailed pump station analysis was not included in this scope of work. The pumps were only modeled to confirm that the system could still operate; however, a more

detailed analysis of the pump stations and the corresponding system curves is recommended to confirm the pump station is operating with an acceptable number of starts/stops per hour and at an acceptable efficiency.

5.2.4 Modeling Scenarios

To compare the existing condition to the proposed housing options, an existing condition model and three proposed condition models (one for each proposed housing site) were developed. These models were run under two scenarios: dry weather (including higher Fairgrounds flows) and wet weather (including I&I flows). This resulted in the following eight modeling scenarios:

- Existing Condition Dry Weather
- Proposed Condition Site 1 Dry Weather
- Proposed Condition Site 2 Dry Weather
- Proposed Condition Site 3 Dry Weather
- Existing Condition Wet Weather
- Proposed Condition Site 1 Wet Weather
- Proposed Condition Site 2 Wet Weather
- Proposed Condition Site 3 Wet Weather

While wet weather scenarios are typically more critical than dry weather scenarios due to the added loads from the I&I, the Fairgrounds has significantly more flow during the summer, making the dry weather scenario a critical condition to analyze.

5.2.5 Performance Criteria

The sanitary sewer system is evaluated against several criteria to ensure it can accommodate the additional wastewater generated by the proposed housing. The performance criteria primarily focus on the system's hydraulic performance to ensure the Fairgrounds system can handle the additional loading and to identify the improvements necessary to accommodate it.

5.2.5.1 Pipe Capacity

One of the main performance criteria is the depth-to-diameter ratio (d/D), which represents the maximum depth compared to the pipe diameter. This ratio indicates the pipe's capacity. For this analysis, the d/D criteria are listed in Table 5-6.

Table 5-6. Maximum Depth-to-Diameter Ratio Criteria

Pipe Diameter	New Pipe Maximum d/D Criteria	Existing Pipe Maximum d/D Criteria
< 12 inches	0.50	0.67
≥12 inches	0.75	0.90

Source: City of Del Mar 2015.
Notes: d/D = depth-to-diameter ratio

5.2.5.2 Pipe Velocity

Controlling flow velocity in the system is important for preserving the piping and reducing maintenance and replacement costs. The pipe velocity criteria are summarized in Table 5-7.

Table 5-7. Pipe Velocity Criteria

	Gravity Sewer	Force Main Sewer
Minimum Velocity (ft/s)	2	3
Maximum Velocity (ft/s)	10	5

Source: City of Del Mar 2015.
Notes: ft/s = feet per second

Low pipe velocities can allow material to settle out of the wastewater and prevent it from moving through the system, which can ultimately create blockages in the pipes. Consequently, a minimum velocity of 2 feet per second is often accepted as an industry standard for gravity sewers to prevent such blockages.

Furthermore, the minimum velocity criteria are necessary to prevent corrosion of concrete structures caused by sulfuric acid generated when slow-moving water allows anaerobic bacteria to produce hydrogen sulfide gas, which is then converted by aerobic bacteria into sulfuric acid.

The maximum velocity of 10 feet per second is recommended in gravity sewers because faster velocities can result in erosion of the pipe due to the wastewater and material within the wastewater abrading the pipe. Furthermore, faster velocities often have more turbulence, which can emit hydrogen sulfide gas that can corrode concrete structures when converted by aerobic bacteria into sulfuric acid.

For force mains, the maximum pipe velocity is more stringent to reduce head losses in the system and maximize lift station efficiency.

5.2.5.3 Maximum Peak Flow

The Fairgrounds' current Memorandum of Understanding with the City of Del Mar requires the Fairgrounds to limit the peak wastewater flow to a maximum flow rate of 630 gpm (District 2026a). Previous reports noted that additional developments may require on-site improvements, such as holding tanks, to maintain the Fairgrounds sewer flows below 630 gpm (District 2009). Therefore, the peak wastewater flows leaving the Fairgrounds were analyzed for each of the modeling scenarios.

5.3 Existing Condition Analysis

Figures 5-2 and 5-3 show the dry weather and wet weather modeling results for the existing condition model. The model results showed no significant pipe capacity issues in the Fairgrounds sanitary sewer system, as shown by the d/D criteria being met for all on-site piping. Table 5-8

summarizes the maximum d/D observed in the dry and wet weather modeling results. These results showing adequate capacity are consistent with the modeling results for the rest of the City of Del Mar included in the 2014 W&SMP.

Table 5-8. Existing Condition Pipeline Capacity Results

	Dry Weather Maximum d/D	Wet Weather Maximum d/D
Existing Piping	0.35	0.16

Notes: d/D = depth-to-diameter ratio

While the model does not indicate pipe capacity issues, there may be pipe defects, buildups, and blockages in the existing system, that are not captured in the model and may reduce the capacity or efficiency. Therefore, closed-circuit television (CCTV) of the piping is recommended, as discussed in Section 7.3 to confirm the system's condition and capacity.

Low velocities were observed in most of the on-site piping; over 95 percent of the piping had a maximum velocity below the minimum 2 ft/s. This could be due to the assumptions in the model set up regarding the pipe sizing and slopes. Low velocities were also observed in the force main piping; however, this is likely due to the pump station modeling. As discussed in Section 5.2.3, the pump stations are currently modeled as ideal pumps because additional information is not available at this time.

The model results showed that the maximum velocity criterion of 10 ft/s was met for all on-site piping. Table 5-9 summarizes the maximum velocities observed in the dry and wet weather scenarios. These velocity results are also consistent with the modeling results for the rest of the City of Del Mar included in the 2014 W&SMP.

Table 5-9. Existing Condition Pipeline Velocity Modeling Results

	Dry Weather Maximum Velocity (ft/s)	Wet Weather Maximum Velocity (ft/s)
Existing Piping	7.96	4.92

Notes: ft/s = feet per second

Based on the existing conditions model, the estimated peak flow leaving the Fairgrounds is 235 gpm during the dry weather scenario and 50 gpm during the wet weather scenario. While this is below the maximum wastewater flow rate of 630 gpm as required in the District's memorandum of understanding with the City of Del Mar, discussions with the O&M staff have indicated that the peak wastewater flow rate sometimes exceeds the maximum limit under existing operations. This indicates that there are deficiencies in the system that are not captured by the hydraulic modeling. Refer to Section 6.4 for a more in-depth discussion on the potential deficiencies in the existing system.

While Tables 5-8 and 5-9 provide a general overview of the existing condition modeling results refer to Tables C-1 through C-4 in Appendix C for more detailed modeling outputs.

5.4 Proposed Conditions Analysis

Figures 5-4 through 5-9 show the dry weather and wet weather modeling results from the proposed condition models for each housing site. Similar to the existing condition model results, the proposed models showed no significant issues with pipe capacity in the Fairgrounds sanitary sewer system, as shown by the d/D criteria being met for all on-site piping (Table 5-10). This indicates that the existing on-site sanitary sewer collection system is capable of conveying the wastewater flow for the proposed housing.

Table 5-10. Proposed Condition Pipeline Capacity Results

Modeling Scenarios		Dry Weather Maximum d/D	Wet Weather Maximum d/D
Site 1	Existing Piping	0.40	0.29
	New/Proposed Piping	0.25	0.25
Site 2	Existing Piping	0.40	0.29
	New/Proposed Piping	0.25	0.25
Site 3	Existing Piping	0.39	0.30
	New/Proposed Piping	0.27	0.26

Notes: d/D = depth-to-diameter ratio

The analysis in the 2014 W&SMP indicated that the City of Del Mar trunk main to which the Fairgrounds discharges had a d/D ranging from 0.58 to 0.66 (City of Del Mar 2015). This indicates that the system was well below the maximum d/D requirement of 0.90 for existing large-diameter piping. Since the incremental increase in flow from the proposed housing on the Fairgrounds is expected to be approximately 20.6 gpm, it is assumed that the downstream capacity of the City's sewer infrastructure is adequate for conveying this additional flow.

Similar to the existing condition analysis, low velocities were observed in the on-site piping with none of the piping exceeding the maximum velocity of 10 ft/s and the majority of piping being below the minimum of 2 ft/s. In general, the added flow from the housing sites in the proposed condition models slightly increased the velocities, but most of the velocities were still below the minimum velocity of 2 ft/s.

Similar to the existing conditions model results, low velocities were also observed in the force main piping; however, this is likely due to the modeling of the pump stations as discussed in the previous section.

Table 5-11 summarizes the maximum velocities observed in the gravity piping during the dry weather and wet weather modeling scenarios.

Table 5-11. Proposed Condition Pipeline Velocity Modeling Results

Modeling Scenarios		Dry Weather Maximum Velocity (ft/s)	Wet Weather Maximum Velocity (ft/s)
Site 1	Existing Piping	8.18	5.70
	New/Proposed Piping	2.40	2.40
Site 2	Existing Piping	8.18	5.71
	New/Proposed Piping	2.40	2.40
Site 3	Existing Piping	8.18	5.71
	New/Proposed Piping	2.04	2.04

Notes: ft/s = feet per second

The model results with the proposed housing sites also indicated that the estimated peak flow leaving the Fairgrounds is 260 gpm during the dry weather scenario and 98 gpm during the wet weather scenario, which meets the maximum peak flow requirement of 630 gpm. As discussed with the existing condition model results, there may be existing deficiencies not captured in the model that already affect the existing sanitary sewer system resulting in the wastewater flows sometimes exceeding the 630 gpm limit. Therefore, the addition of wastewater flows from the proposed housing may worsen any existing issues in the system. Refer to Section 6.4 for a more in-depth discussion on the potential deficiencies in the system.

While Tables 5-10 and 5-11 provide a general overview of the proposed condition modeling results, refer to Tables C-5 through C-16 in Appendix C for more detailed modeling outputs.

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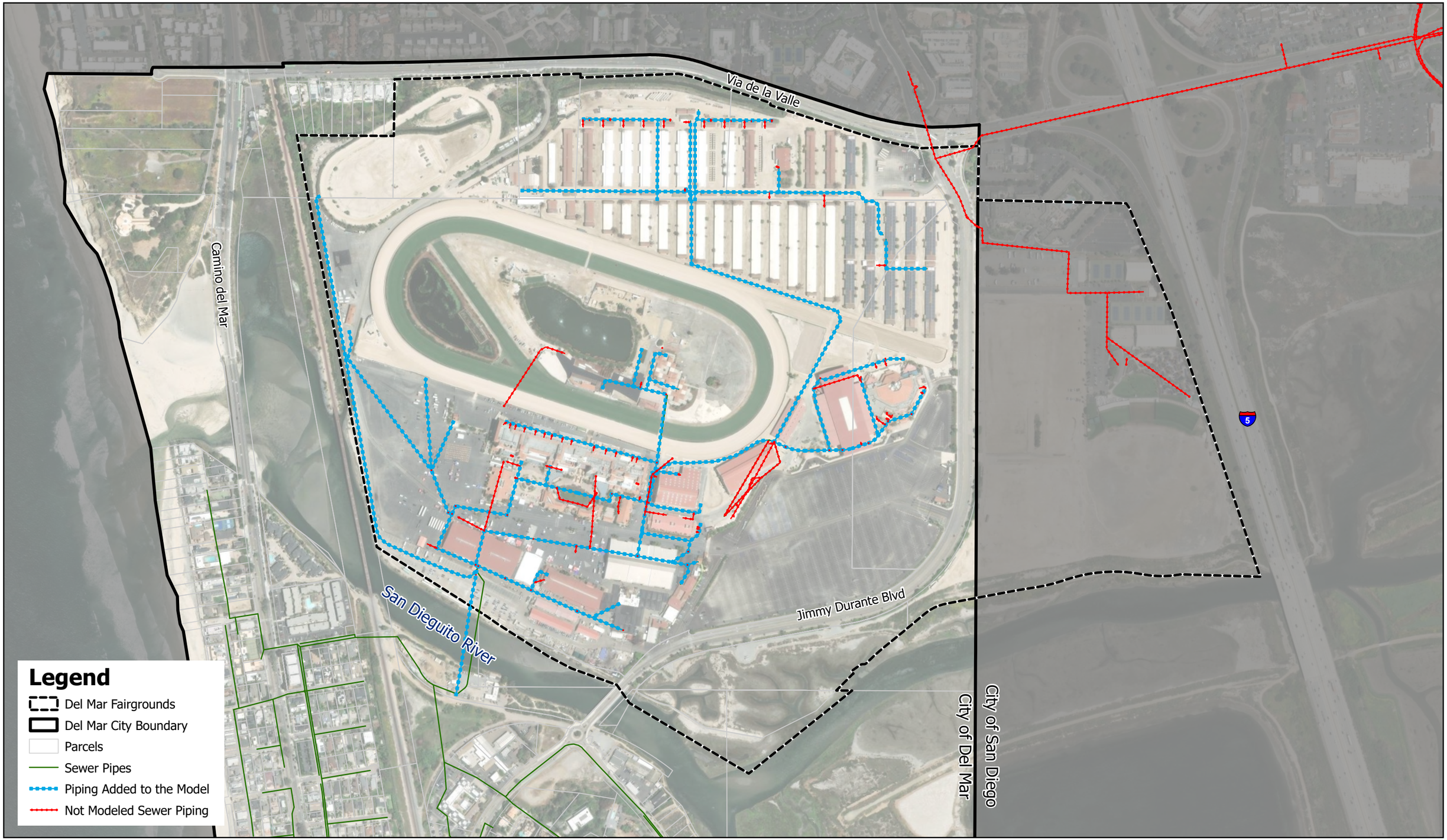

Harris & Associates

N

0 500 1,000

Feet

Figure 5-1
Del Mar Fairgrounds Sanitary Sewer System
Modeled Sanitary Sewer Piping

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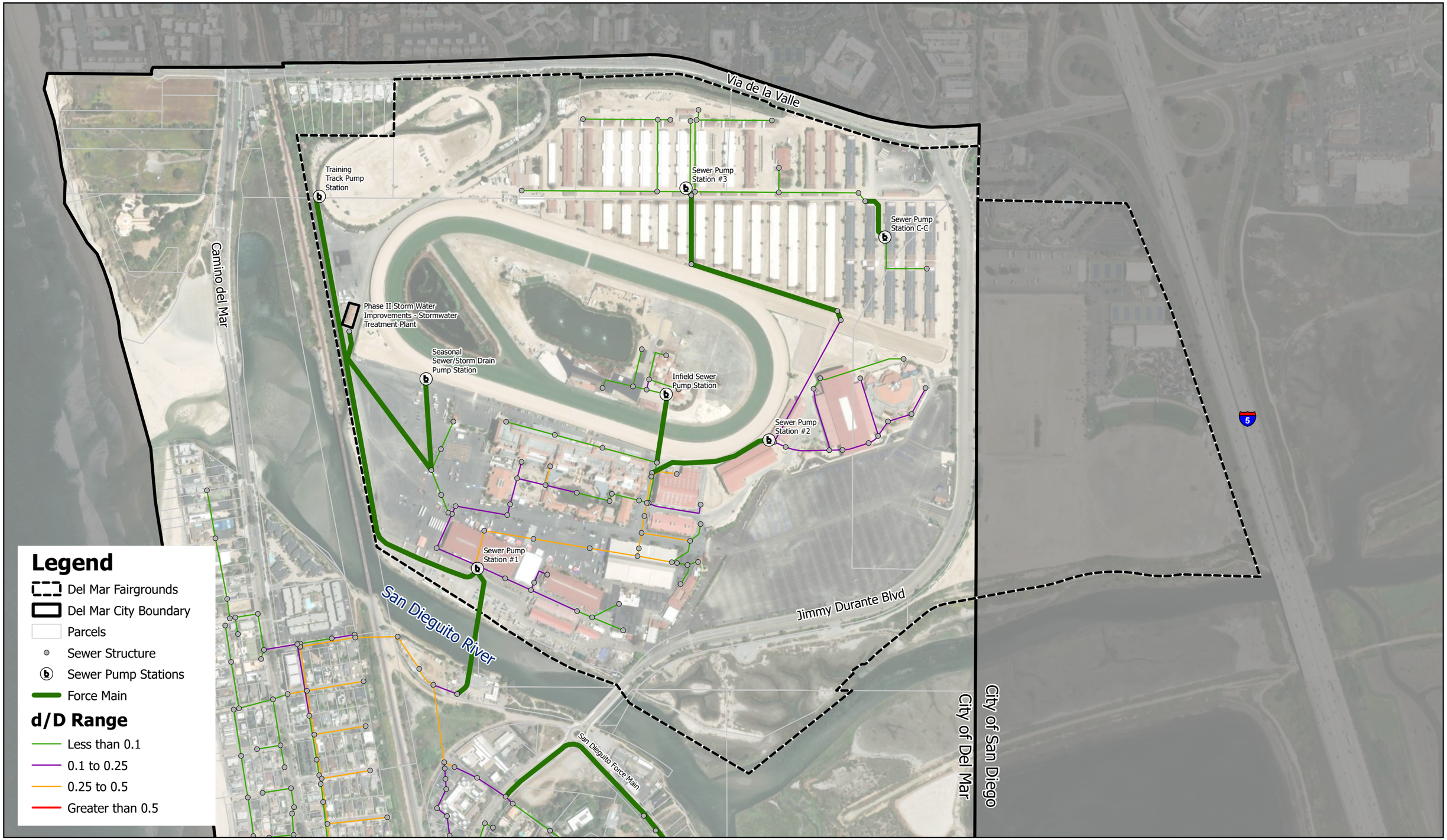

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Figure 5-2
Existing Condition Sewer System Model
Pipe d/D Ratio During Dry Weather Scenario

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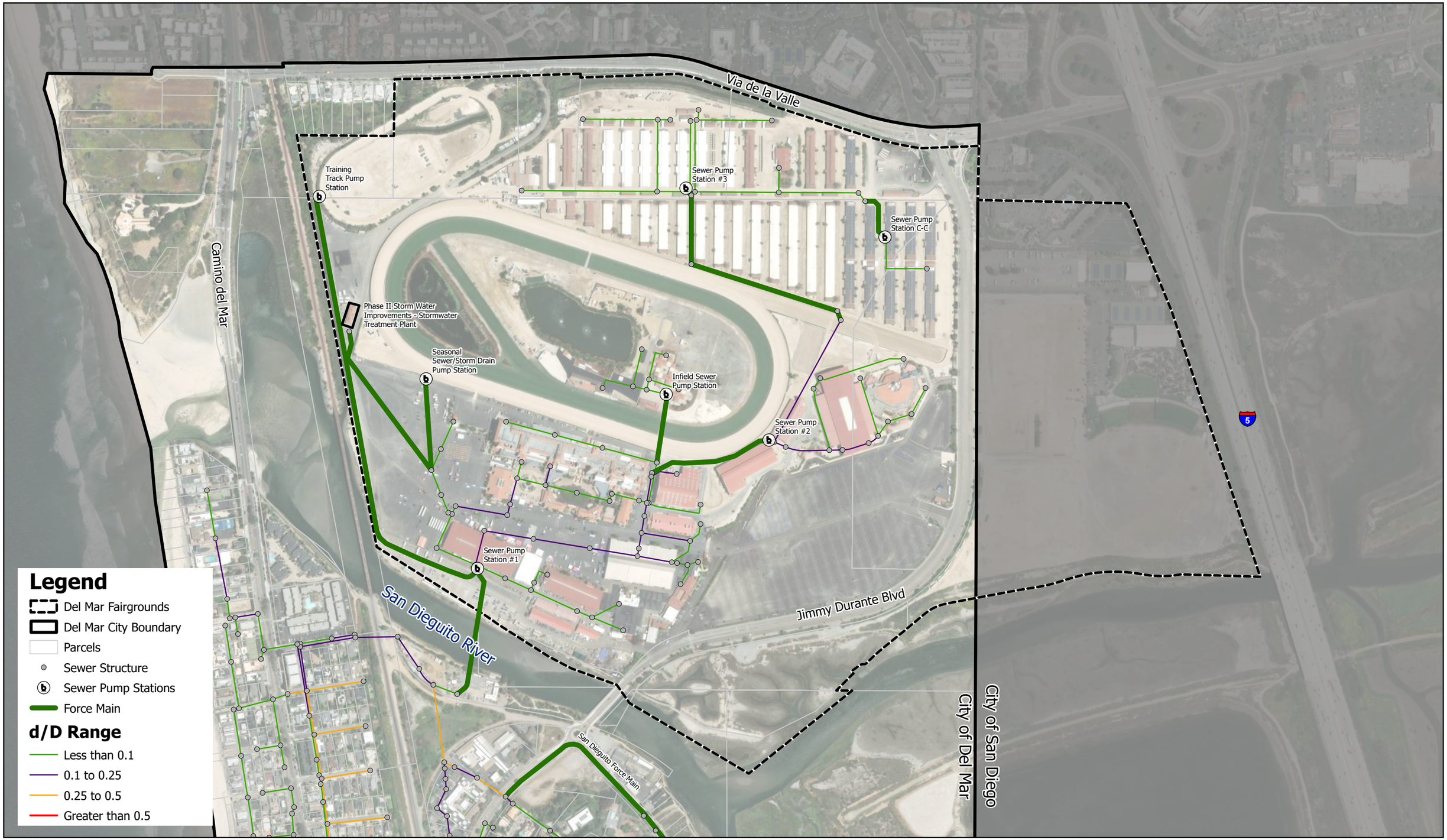

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Figure 5-3
Existing Condition Sewer System Model
Pipe d/D Ratio During Wet Weather Scenario

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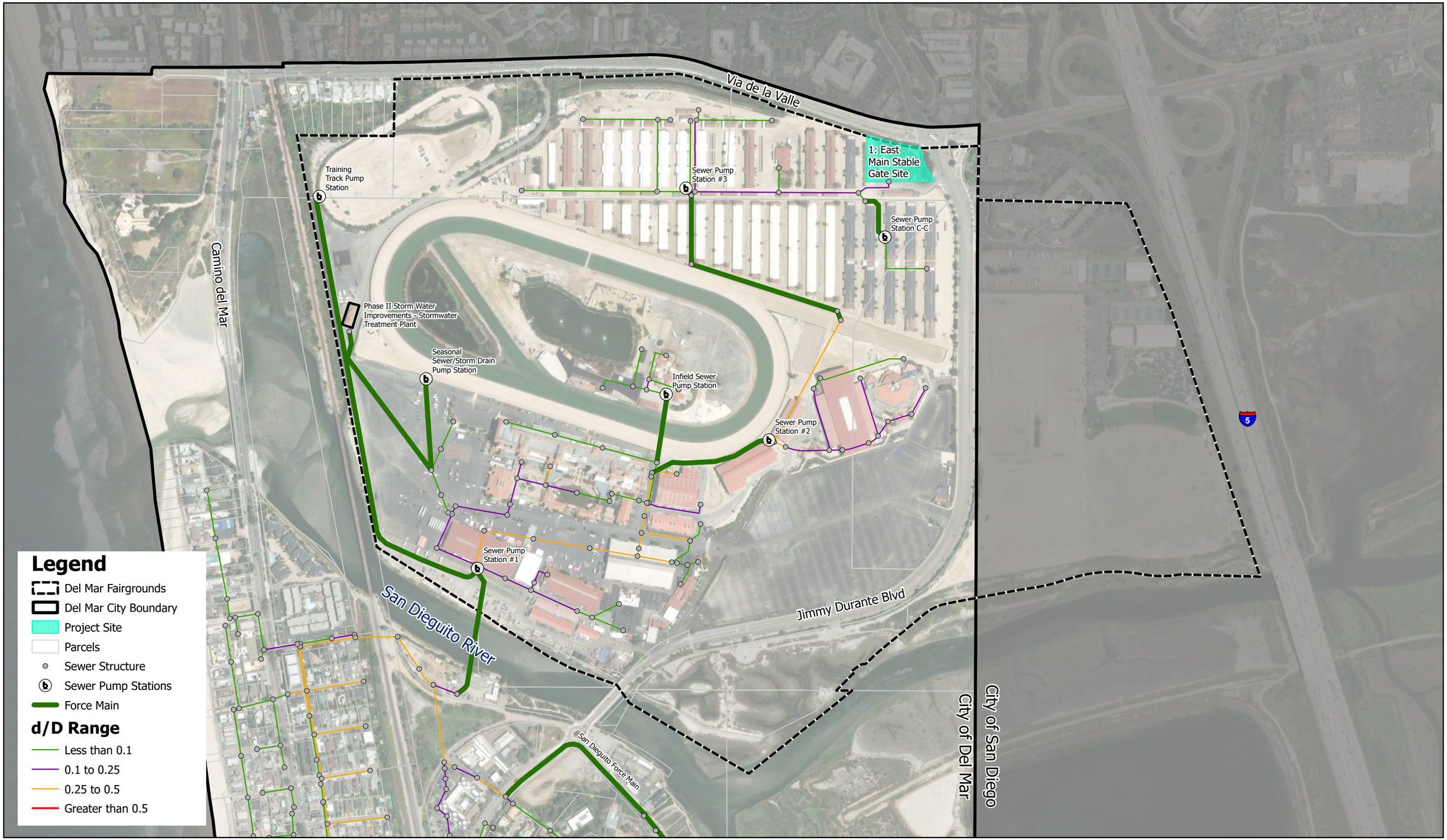

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Figure 5-4

Proposed Condition Sewer System Model
Site 1 Pipe d/D Ratio During Dry Weather Scenario

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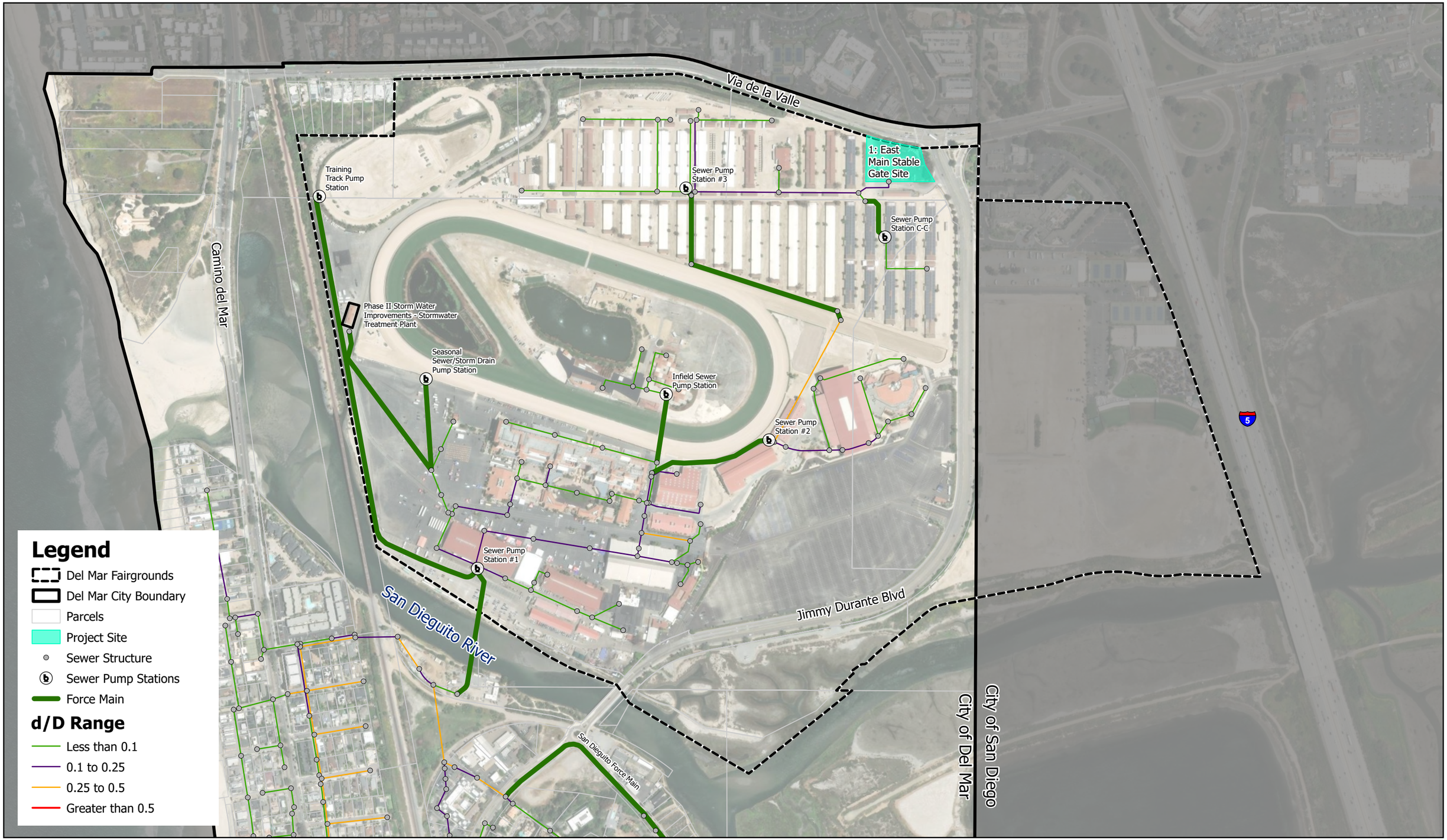

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Figure 5-5
Proposed Condition Sewer System Model
Site 1 Pipe d/D Ratio During Wet Weather Scenario

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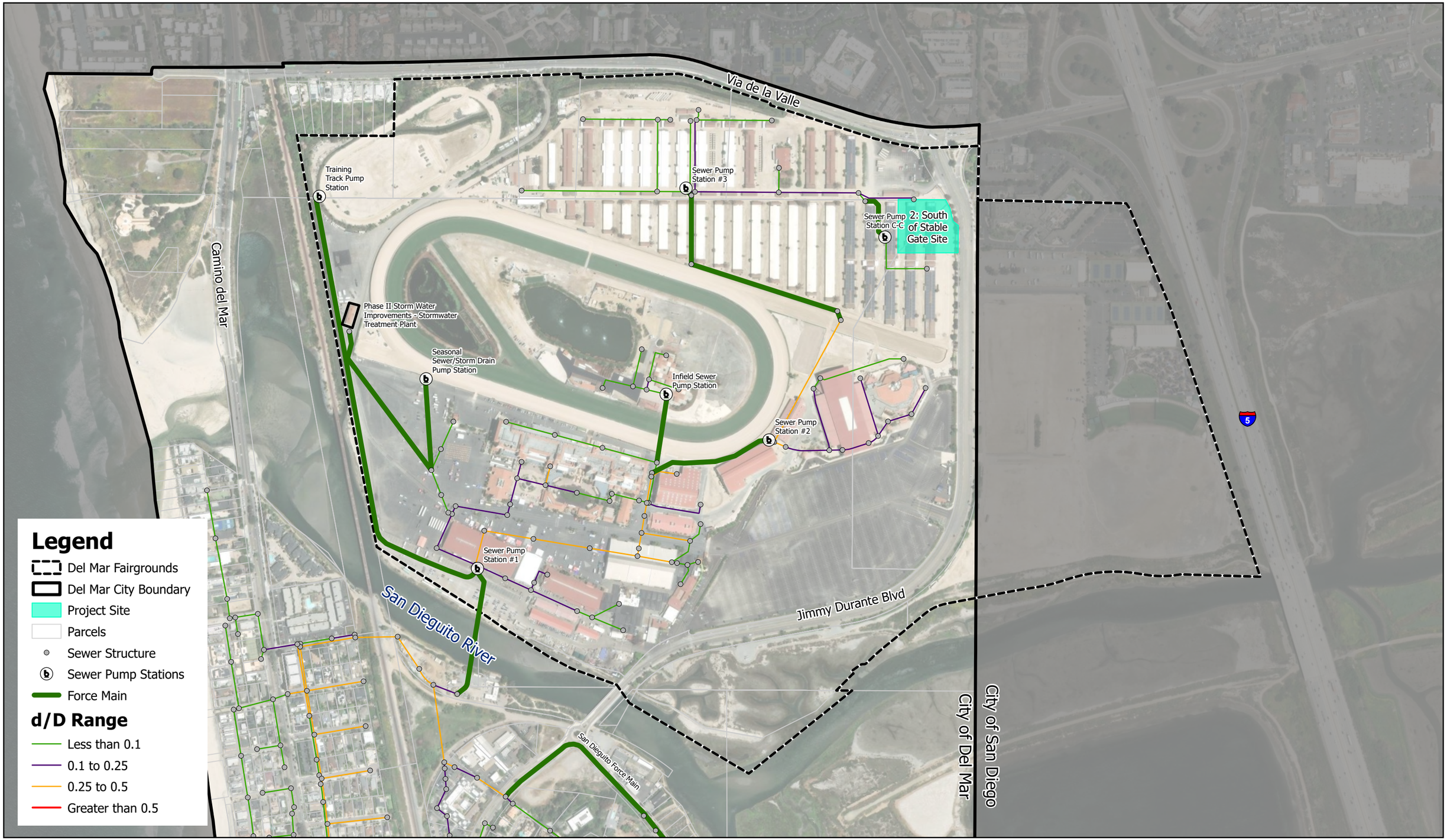

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Figure 5-6
Proposed Condition Sewer System Model
Site 2 Pipe d/D Ratio During Dry Weather Scenario

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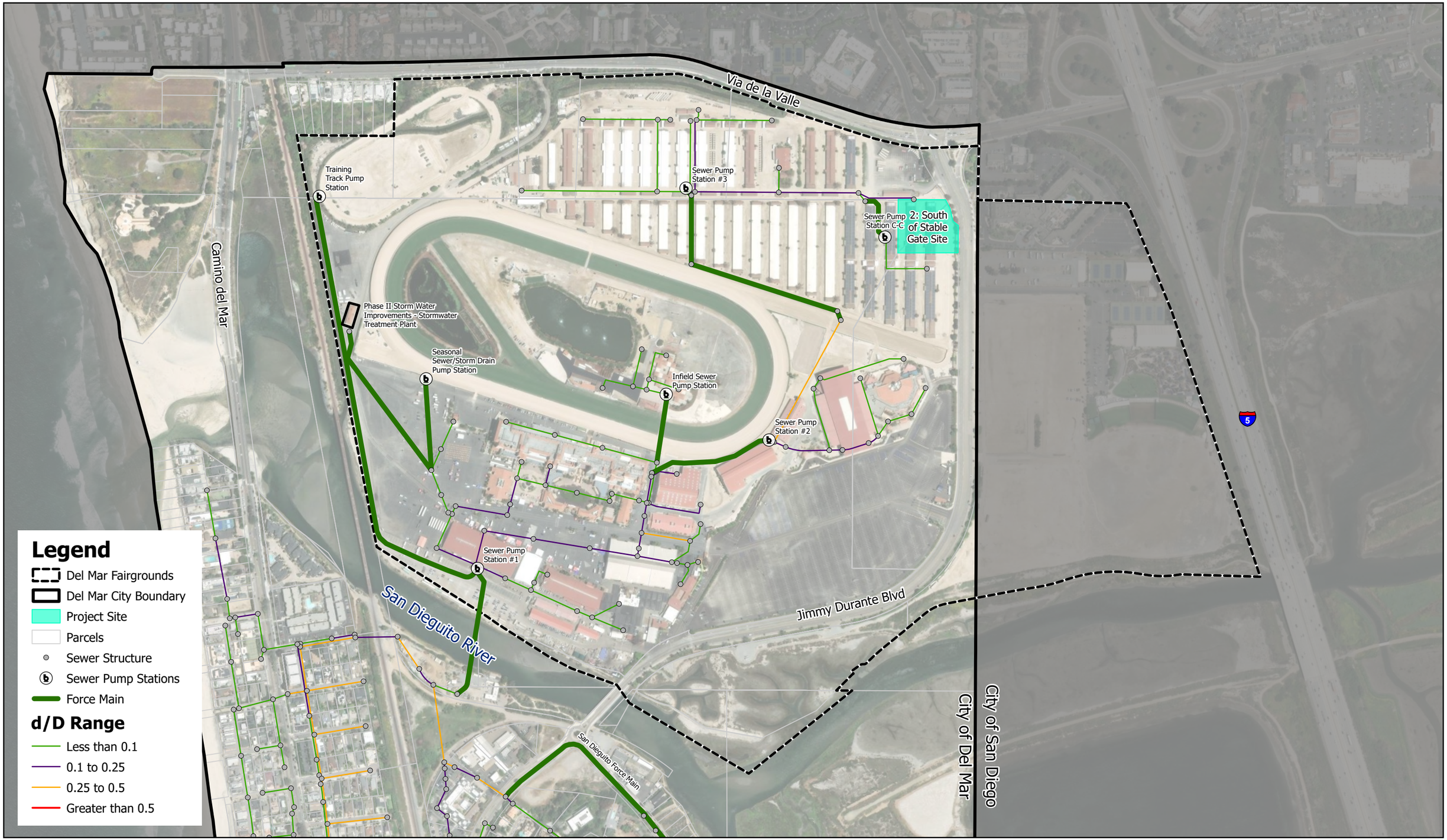

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Figure 5-7
Proposed Condition Sewer System Model
Site 2 Pipe d/D Ratio During Wet Weather Scenario

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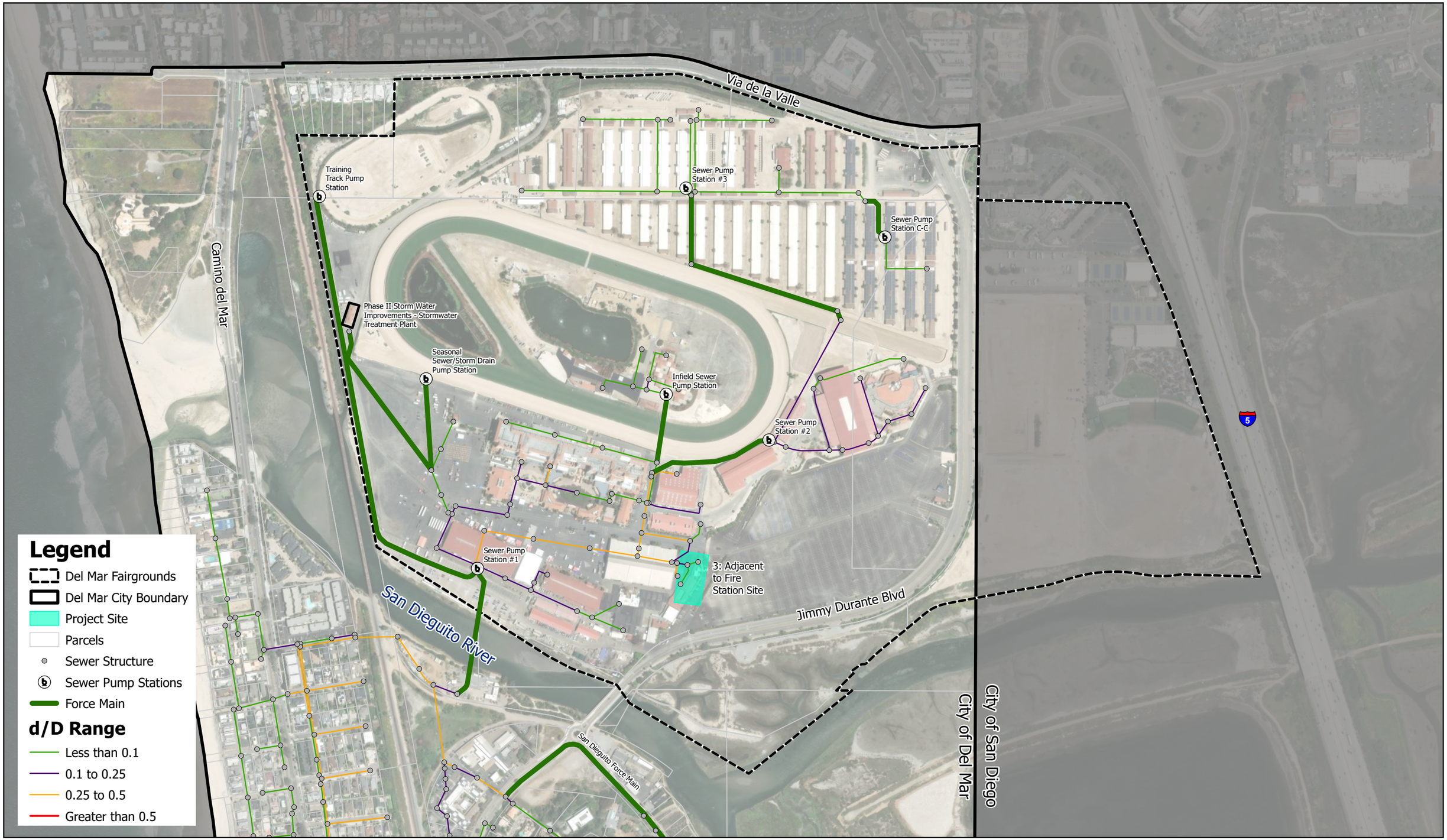

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Figure 5-8
Proposed Condition Sewer System Model
Site 3 Pipe d/D Ratio During Dry Weather Scenario

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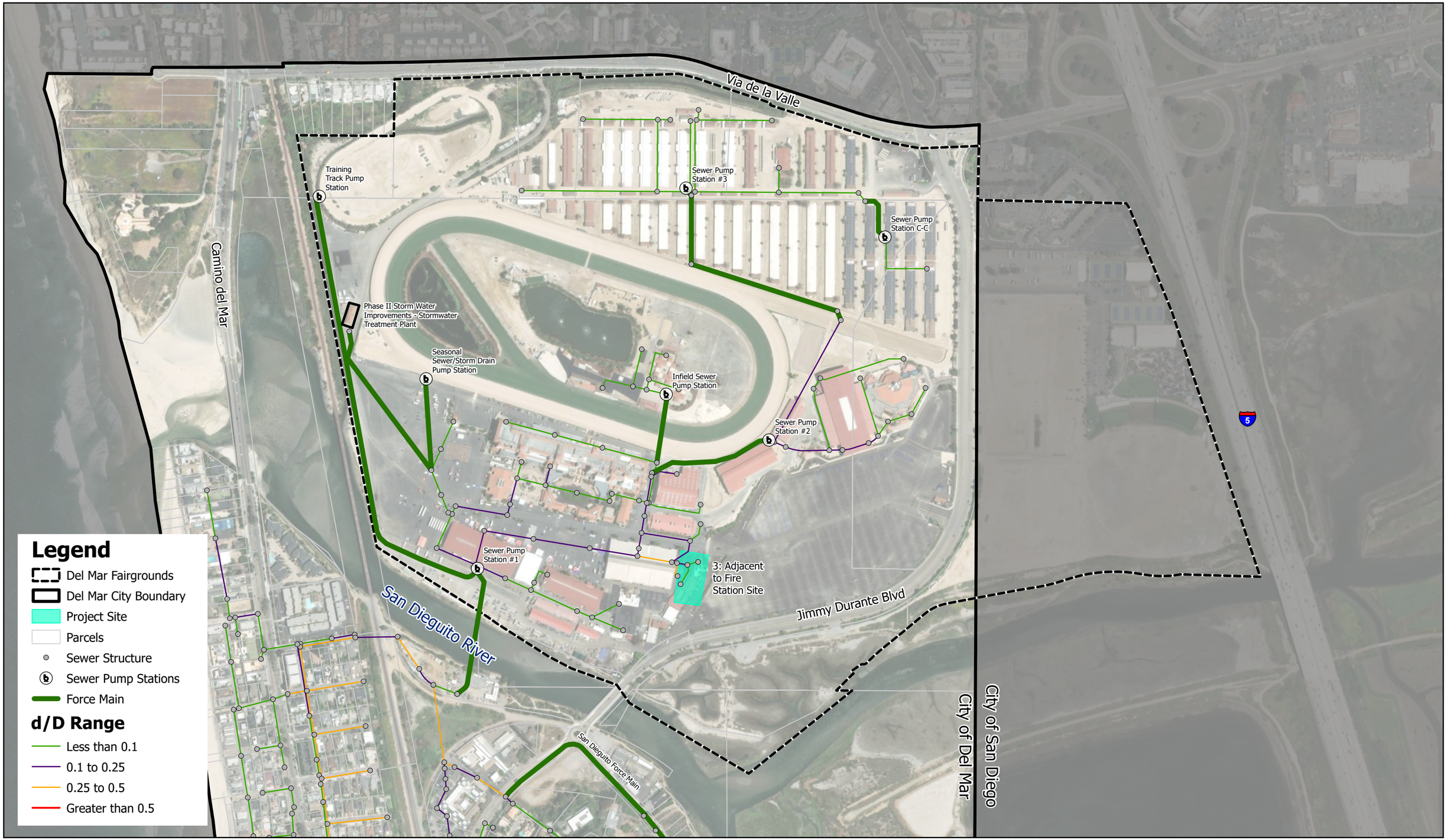

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Figure 5-9
Proposed Condition Sewer System Model
Site 3 Pipe d/D Ratio During Wet Weather Scenario

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Section 6 Capital Improvement Program

This section identifies the existing deficiencies in the Fairgrounds systems and the infrastructure projects necessary for constructing the proposed housing, such as the construction of a new water service and sanitary sewer lateral for the proposed housing sites. For the purposes of discussion and cost estimating in this Section, the work associated with the new water service and sanitary sewer lateral is classified as a site-specific improvement project directly tied with the housing development project, while the larger-scale improvements to the Fairgrounds system are referred to as capital improvement program projects (CIPs).

6.1 Water System Existing System Deficiencies

No hydraulic deficiencies were identified in the existing water system at the Fairgrounds for meeting the peak hour demands with or without the proposed housing. While the fire flow analysis showed that some fire lines on the Fairgrounds did not meet the planning-level fire flow requirement of 4,000 gpm, the model results showed this planning-level fire flow can be supplied for future development at each of the potential housing sites. In anticipation of additional development per the Fairgrounds Master Plan update, it is recommended that a more detailed fire flow analysis be performed using building-specific fire needs to verify fire flow requirements, fire flow capacities, and the sizes of the on-site fire flow lines. This is discussed in more detail in Section 7.3.

6.2 Sewer System Existing System Deficiencies

Based on the hydraulic modeling results, the capacity criteria were met for the maximum d/D indicating that the Fairgrounds sanitary sewer system has adequate capacity. The primary issue identified through the modeling was that the minimum velocity of 2 ft/s was not met for a majority of the Fairgrounds piping. The modeled pipe velocities are directly dependent on the model inputs, such as the pipe diameters and slopes. Since the majority of the pipe diameters and invert elevations were assumed based on utility maps and GIS contour data, follow-up asset management projects to update the pipe diameters, inverts, and slopes may help to address this issue.

Otherwise, the modeled low velocity should not be a significant issue, aside from the additional risk of corrosion to the concrete sewer structures. Low wastewater velocities generally result in maintenance-related issues and typically cannot be resolved without pipe rehabilitation or replacement projects. The Fairgrounds O&M staff have indicated that the sanitary sewer system is prone to clogging due to sand from the horse washing racks and rags and other foreign objects being flushed by visitors at the Fairgrounds. Therefore, the O&M staff perform regular maintenance and jet the sanitary sewer system two to three times per year to prevent blockages.

While no significant sewer system deficiencies were identified based on the hydraulic modeling results, discussions with O&M staff have revealed that there may be existing deficiencies in the system that are not captured by the current hydraulic model. For example, the O&M staff have noted that the Fairgrounds peak wastewater flows sometimes exceed the wastewater flow limit of 630 gpm from the District's memorandum of understanding with the City of Del Mar. According to the O&M staff, controlling the wastewater flows to be below the 630 gpm limit is especially challenging during wet weather events and sometimes during Fairgrounds events, such as the San Diego County Fair.

The current hydraulic model of the Fairgrounds' sanitary sewer system is unable to capture these issues due to missing or incomplete data. The most critical data gaps include:

- **Sanitary Sewer Pump Station Operations** – Information was provided for Pump Station #1 and #3, but limited information was available for Pump Station #2. From the information that was provided, the exact pump curves could not be determined because the motor speed did not seem to correspond to the pump speed. The motor speed provided for each of the pumps exceeded the pump operating speeds for each of the specific pump models. Consequently, the pump stations are currently modeled as ideal pumps, which prevents the hydraulic model from calculating the true peak flow leaving the Fairgrounds through Pump Station #1.

- **Dual Stormwater/Sanitary Sewer Pump Station Operations** – Limited information was available on the Fairgrounds' dual stormwater and sanitary sewer pump stations. No wastewater flows were incorporated into the model for these pump stations because there are no steady wastewater flows from these pump stations. Wastewater flows are primarily generated when hosing down the Backstretch Stables or due to runoff during wet weather events from the Backstretch Stables and the main track area. During the wet weather events, these pump stations discharge to the sanitary sewer system until they are flushed and manually switched over to discharge to the stormwater system. Therefore, depending on when the pump station is manually switched over, the flows from these pump stations can be significant.

- **Sanitary Sewer Loading** – As discussed in Section 4, the sanitary sewer flows generated by the Fairgrounds were determined using the flow rates and diurnal curves from the 2014 W&SMP, which included a separate diurnal curve during summer to capture the larger sanitary sewer loading during the Fairgrounds' events. Since the O&M staff have noted that the peak wastewater flow sometimes exceeds the 630 gpm limit during Fairgrounds events, the flow rates or the diurnal curves may need to be adjusted to more accurately model the wastewater flows during these periods marked by high occupancy events that result in significant sanitary sewer loading.

6.3 Water System Recommended Capital Improvement Projects for Housing

The additional water demand for proposed housing within the Fairgrounds can be met without reducing pressures below the allowable limits set by the City of Del Mar, and fire flow demands can be met at each of the proposed housing sites. Therefore, no CIPs were identified as necessary for the construction of the potential housing development based on the modeling results and the hydraulic performance of the Fairgrounds' water distribution system.

The only necessary infrastructure project associated with potential housing development is the site-specific improvement project to construct the connecting water service lines and to install associated fixtures, such as isolation valves and water meters. It is assumed housing could be constructed on each of the potential housing sites without placing new structures over the Fairgrounds' existing water infrastructure. This assumption will need to be verified by a separate analysis of site conditions during the design of the housing development. If the existing water infrastructure cannot be avoided, a CIP project to realign and relocate the Fairgrounds' water lines would be necessary prior to construction of the proposed housing.

6.4 Sewer System Recommended Capital Improvement Projects for Housing

The model results show that the existing sanitary sewer collection system has available capacity to convey the expected wastewater flows from the proposed housing within the Fairgrounds. The low pipe velocities in the existing sewer main lines is a factor that affects lifespan and maintenance for the affected segments of the existing system, but does not limit the sewer system's capacity. The additional wastewater produced by new development would help to increase pipe velocities.

Based on the model results, no CIPs were identified; however, deficiencies in the Fairgrounds' sanitary sewer collection system are present based on anecdotal information from the O&M staff. The deficiencies could not be identified with the hydraulic model due to limited data on the Fairgrounds' system. Therefore, additional studies, such as a pump station capacity assessment and condition assessment, are recommended to identify the necessary CIPs for addressing the existing deficiencies. Potential CIPs that may be necessary include:

- VFD installation at the pump stations to help control the speed and flow rate of the pumps
- Additional storage for Pump Station #1, such as the installation of a secondary wet well or expansion of the existing wet well to help attenuate the peak flows
- Installation of restrictor plates or flow control valves to help control the wastewater flows

Besides the potential CIPs for the Fairgrounds' sanitary sewer system, the potential housing development will require a site-specific improvement project to construct the connecting sewer laterals between the proposed housing and the nearest sewer line. It is assumed housing could be constructed on each of the potential housing sites without placing new structures over the Fairgrounds' existing sanitary sewer infrastructure. This assumption will need to be verified by a separate analysis of site conditions during the design of the housing. If the existing sanitary sewer infrastructure cannot be avoided, a CIP project to realign and relocate the Fairgrounds' sewer lines would be necessary prior to construction of the proposed housing.

6.5 CIP Summary and Costs for Housing Implementation

For the water distribution system, no immediate CIPs are necessary on the City of Del Mar system or on the Fairgrounds system to allow for housing development at any of the three proposed housing sites.

For the sanitary sewer system, CIPs could not be identified for with the current available information. Therefore, additional studies are recommended for identifying the necessary CIPs. Table 6-1 summarizes rough order of magnitude costs for the recommended studies and potential costs for CIPs that may be identified by these studies. The costs of the CIPs will vary depending on the findings of the additional studies. For example, the cost may increase if the condition or capacity assessment requires an upgrade or replacement of one of the pump stations.

Table 6-1. Rough Order of Magnitude Costs for Sanitary Sewer CIP Development

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
1	**Recommended Studies**					
1.a	Pump Station Condition Assessment	LS	1	$75,000	$75,000	(1)
1.b	Pump Station Capacity Assessment	LS	1	$75,000	$75,000	(1), (2)
2	**Potential CIPs Identified by the Recommended Studies**					
2.a	Installation of VFDs on the Sanitary Sewer Pumps	LS	1	$300,00	$300,00	(3)
2.b	Secondary Storage Structure or Wet Well for Pump Station #1	LS	1	$200,000	$200,000	(4)
2.c	Installation of Restrictor Plates or Flow Control Valves	LS	1	$150,000	$150,000	
				Estimated Total:	**$800,000**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) The pump station condition assessment and capacity assessment should be performed on Sanitary Sewer Pump Station #1, #2, and #3. The Fairgrounds sanitary sewer system includes other pump stations, but these were not included in the assessment cost because they are not expected to be impacted by the additional flows from the proposed housing.

2) The pump station capacity assessment should include flow monitoring to better understand the wastewater flows and patterns at the Fairgrounds.

3) VFDs were assumed to be necessary for the pumps in Pump Station #1, #2, and #3 resulting in a total of 6 VFDs.

4) Assumes adequate storage capacity could be provided by an oversized manhole (i.e. 10-foot diameter manhole). Depending on the sizing from the pump station capacity analysis, this cost can vary greatly if the necessary storage is much larger.

This analysis focused on the impacts to the Fairgrounds water and sanitary sewer systems from the proposed housing. However, further refinement of the City of Del Mar's water and sanitary sewer hydraulic models is recommended to identify additional potential impacts to the Citywide water distribution system and wastewater collection system. The City is currently updating their Water and Sewer Master Plan, so any additional CIPs are expected to be identified with the Master Plan update.

To inform infrastructure needs for housing implementation at the Fairgrounds, site-specific improvement projects for constructing the water service and sanitary sewer laterals were identified. These site-specific improvement projects were grouped into three separate cost estimates — one for each proposed housing site. These cost estimates included in Tables 6-2 through 6-4 were developed using cost data from RSMeans, PlanetBids bid tab results, and unit costs published by the City of Del Mar. Figure 6-1 shows the preliminary alignments for the water service and sanitary sewer lateral lines assumed for estimating the construction costs.

The cost estimates in Tables 6-2 through 6-4 assume the water service line and sanitary sewer lateral installation will be implemented as a stand-alone project directly associated with the proposed housing developments and will be constructed concurrently with the housing. These cost estimates exclude other infrastructure improvements to the Fairgrounds water and sanitary sewer systems, such as upgrade, replacement, or new installation of piping, pump stations, and storage facilities.

Table 6-2. Site-Specific Improvement Project Cost Estimate for Site 1

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
Site 1 – East Main Stable Gate Site (1), (2), (3)						
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$8,500	$8,500	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$67,749	$67,749	
1.c	Sewer Connection Fees	LS	1	$51,548	$51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$10,000	$10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	245	$240	$58,800	
2.b	Water Service Tap to Existing Main	LS	1	$10,000	$10,000	
2.c	6" Sewer Lateral Installation	LF	210	$260	$54,600	
2.d	Sewer Cleanout Installation	EA	1	$2,550	$2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$4,600	$4,600	
2.f	1" A.C. Paving Restoration	SF	675	$7.00	$4,725	
2.g	Dewatering (allowance)	LS	1	$15,000	$15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$20,000	$20,000	
				Estimated Direct Construction Cost Subtotal:	$170,275	
				Escalation to Mid-Point of Construction (March 2028):	$17,440	(4)
				Estimated Base Bid Subtotal:	$325,513	
				Design and Permitting:	$39,062	12%
				Estimating Contingency:	$65,103	20%
				Project Administration/Project Management:	$6,510	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$32,551	10%
				Estimated Total Base Bid:	**$468,738**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to end of 2025).

Table 6-3. Site-Specific Improvement Project Cost Estimate for Site 2

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
Site 2 – South of Stable Gate Site [1], [2], [3]						
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$7,100	$7,100	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$67,749	$67,749	
1.c	Sewer Connection Fees	LS	1	$51,548	$51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$10,000	$10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	20	$240	$4,800	
2.b	Water Service Tap to Existing Main	LS	1	$10,000	$10,000	
2.c	6" Sewer Lateral Installation	LF	315	$260	$81,900	
2.d	Sewer Cleanout Installation	EA	1	$2,550	$2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$4,600	$4,600	
2.f	1" A.C. Paving Restoration	SF	510	$7.00	$3,570	
2.g	Dewatering (allowance)	LS	1	$15,000	$15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$20,000	$20,000	
				Estimated Direct Construction Cost Subtotal:	*$142,420*	
				Escalation to Mid-Point of Construction (March 2028):	$14,587	(4)
				Estimated Base Bid Subtotal:	*$293,405*	
				Design and Permitting:	$35,209	12%
				Estimating Contingency:	$58,681	20%
				Project Administration/Project Management:	$5,868	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$29,340	10%
				Estimated Total Base Bid:	**$422,503**	

Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to end of 2025).

Table 6-4. Site-Specific Improvement Project Cost Estimate for Site 3

Item	Description	Units	Quantity	Unit Price	Total	Reference Notes
Site 3 – Adjacent to Fire Station Site [(1), (2), (3)]						
1	**General**					
1.a	Mobilization and Demobilization	LS	1	$4,500	$4,500	5%
1.b	Water Capacity and Connection Fees (2" meter)	LS	1	$67,749	$67,749	
1.c	Sewer Connection Fees	LS	1	$51,548	$51,548	
1.d	Erosion Control and Temporary Facilities	LS	1	$10,000	$10,000	
2	**Improvements**					
2.a	2" Copper Pipe Type "K" Water Service Installation	LF	50	$240	$12,000	
2.b	Water Service Tap to Existing Main	LS	1	$10,000	$10,000	
2.c	6" Sewer Lateral Installation	LF	85	$260	$22,100	
2.d	Sewer Cleanout Installation	EA	1	$2,550	$2,550	
2.e	Connection to Existing Manhole and Rechanneling	EA	1	$4,600	$4,600	
2.f	1" A.C. Paving Restoration	SF	400	$7.00	$2,800	
2.g	Dewatering (allowance)	LS	1	$15,000	$15,000	
2.h	Testing, Inspection, Commissioning (allowance)	LS	1	$20,000	$20,000	
				Estimated Direct Construction Cost Subtotal:	*$89,050*	
				Escalation to Mid-Point of Construction (March 2028):	$9,121	(4)
				Estimated Base Bid Subtotal:	*$231,968*	
				Design and Permitting:	$27,836	12%
				Estimating Contingency:	$46,394	20%
				Project Administration/Project Management:	$4,639	2%
				Contractor Markup (Indirect Cost, Profit, Overhead):	$23,197	10%
				Estimated Total Base Bid:	**$334,034**	

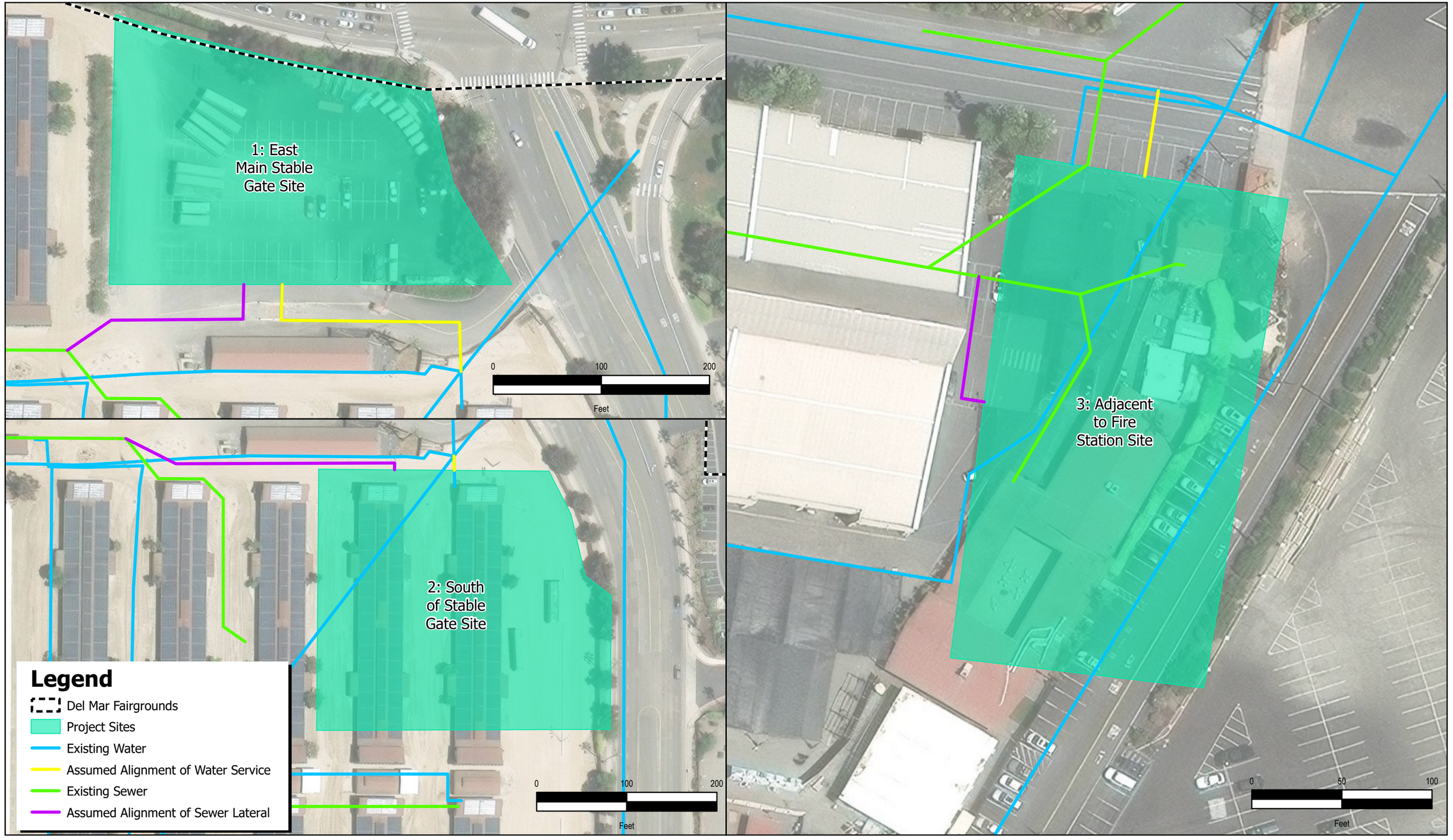
Clarifications, Inclusions, and/or Exclusions Notes:

1) This conceptual, planning-level cost estimate is for the design and construction of new water and sewer laterals to service the potential housing developments. It is assumed the developer's contractor will be responsible for the design and construction of the laterals including the connection to the existing Fairground private pipelines. This fee excludes the cost to install the water meter and assumes the City will install the meter.

2) A 2" water meter is assumed for the connection and capacity fees.

3) Assumes no relocation of existing utilities is required and existing main pipes are in adequate condition for tapping to connect the new laterals.

4) Inflation escalation of 4.79% (average index from 2020 to end of 2025).



Note: The assumed pipe alignments for the water and sewer services are conceptual and intended for high-level planning and preliminary cost estimating purposes only.

Harris & Associates

Figure 6-1
Recommended Private Improvement Projects
Assumed Water Service and Sewer Lateral Alignments

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Section 7 Conclusions and Recommendations

This section summarizes the conclusions of this analysis on the impacts from the proposed affordable housing and includes additional recommendations to support the District's continued use and operation of the water and sanitary sewer systems.

7.1 Water System Conclusions

The existing water system has adequate capacity for supplying the water demands for the proposed affordable housing. No capital improvements are needed to build housing within the Fairgrounds other than the site-specific expansion of the water distribution system by constructing the service line for the housing development. It is assumed the existing water mains located within the potential housing sites can be avoided during the design process – if these cannot be avoided, additional costs may be incurred.

7.2 Sanitary Sewer System Conclusions

The existing sanitary system has adequate capacity for conveying the wastewater flow from the proposed affordable housing. However, existing deficiencies in the sanitary sewer system were discovered through conversations with O&M staff. Due to the lack of available data, the necessary CIPs for addressing the system deficiencies could not be accurately selected and sized, so additional studies, such as a pump station capacity and condition assessments, are recommended to address the existing deficiencies prior to construction of the proposed housing.

Besides the CIPs that must be identified through further studies, the construction of housing on the Fairgrounds property will also require the site-specific expansion of the sanitary sewer collection system. It is assumed the existing sewer mains located within the potential housing sites can be avoided during the design process – if these cannot be avoided, additional costs may be incurred.

7.3 Additional Recommendations

The District has plans for development on the Fairgrounds besides the proposed housing, including the redevelopment of some existing areas and buildings to convert them for different uses. These additional recommendations are intended to help the District manage its water and sanitary sewer systems and plan ahead for future water and sanitary sewer needs by improving the accuracy of the hydraulic modeling.

7.3.1 Asset Management

An asset management program should be implemented to inventory the water and sanitary sewer systems and to help manage the systems' condition, maintenance, and repair. The asset inventories would also be used for updating the GIS data and refining the hydraulic models to produce more accurate model results. This would be especially helpful for the sewer hydraulic model, which

showed that the majority of the piping had low velocities and did not meet the minimum velocity criteria. Therefore, refining the input data, specifically the piping invert elevations and slopes, would help confirm whether the velocity is indeed lower than the minimum criteria.

7.3.2 Pipeline Condition Assessment

The pipe condition for a majority of the piping within the Fairgrounds is unknown. Therefore, the asset management program could also include a phased pipeline condition assessment, including CCTV. CCTV footage can be especially helpful for identifying pipe defects, such as sags, joint offsets, and cracking, which may have developed over time and could lead to inflow and infiltration This would allow the District to plan, manage, and budget for necessary rehabilitation and replacement projects.

7.3.3 Updated Fire Flow Analysis

As discussed in Sections 3.3 and 3.4, the fire flow analysis demonstrated that some lines lacked adequate fire flow or did not meet the residual pressure requirements based on the planning-level fire flow requirement of 4,000 gpm, which did not assess the fire flow demands for individual buildings. To refine this analysis and confirm these deficiencies within the Fairgrounds, a more detailed fire flow analysis should be performed using more refined fire flow demands based on the California Fire Code and the specific building and construction types. The updated fire flow analysis should also include confirming the sizing of the fire flow lines.

While some hydrant testing results were provided by the City of Del Mar and the District, separate hydrant testing was not included in the scope of work. Updated hydrant testing should also be performed as part of the fire flow analysis to provide more detailed hydrant testing results for the on-site system and further confirm the fire flow capacities at the Fairgrounds.

7.3.4 Rain-Derived Infiltration and Inflow Study

The current model uses an I&I rate and pattern developed in the 2014 W&SMP based on wastewater flow and rainfall data. Since the I&I rate and pattern have not been updated and the I&I is only applied at a single node for the entire Fairgrounds property, an updated study is recommended for a better understanding of the I&I effects at the Fairgrounds and throughout the City of Del Mar.

Based on anecdotal feedback from the Fairgrounds staff during a meeting on November 21, 2025, the Fairgrounds has had issues complying with the flow limits in the Memorandum of Understanding with the City of Del Mar during wet weather events (Harris 2025b). This seems to indicate that there is a noticeable problem with I&I. While CCTV will help identify locations where piping defects may be allowing I&I to enter the system, a rain-derived infiltration and inflow

study can help with understanding the extents and severity of the I&I and help with updating the modeling inputs for the I&I at the Fairgrounds.

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Appendix A. Water Demand & Sewer Generation Calculations

Table A-1. Increased Water Demand Calculations for Added Developments and Approved Zoning Amendments

Table A-2. Changes to Fire Flow Demands for Added Developments and Approved Zoning Amendments

Table A-3. Changes to Sanitary Sewer Generation for Added Developments and Approved Zoning Amendments

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Table A-1. Increased Water Demand Calculations For Added Developments and Approved Zoning Amendments

Project Name/Address	Project APN	Housing Element Cycle	Housing Element Program	Zoning Designation	Existing Land Use	Proposed Land Use	Project Area[1] (acres)	Number of Units[2]	Existing Condition[3]	Project Description/Notes	Water Model Node No.	Existing Water Demand Factor (gpd/acre)	Existing Water Demand (gpd)	Existing Water Demand (gpm)	Updated Water Demand Factor (gpd/acre)	Updated Water Demand (gpd)	Updated Water Demand (gpm)	Change in Water Demand (gpd)	Change in Water Demand (gpm)
Watermark 50-Unit Apartment Southeast corner of Jimmy Durante Blvd and San Dieguito Dr	299-100-47-00 299-100-48-00	5th	2G	North Commercial	Commercial	Multifamily	2.68	50	Vacant Lot	Constructing 50-unit apartment complex on land previously considered commercial.	**J68**	670	0	**0.00**	3,630	9,728	**6.76**	9,728	**6.76**
941 Camino Del Mar	300-221-35	n/a	n/a	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.59	8	Small Commercial Bldg	Commercial (retail, restaurant, professional office) and residential hospitality (8 residential units)	**236**	670	395	**0.27**	2,150	1,268	**0.88**	873	**0.61**
832 Camino Del Mar	300-200-24-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.18	4	Office Bldg	Mixed use commercial/office and residential	**370**	670	121	**0.08**	3,630	653	**0.45**	533	**0.37**
853 Camino Del Mar	300-222-31-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.56	11	Office Bldg	Mixed use commercial/office and residential	**240**	670	375	**0.26**	3,630	2,033	**1.41**	1,658	**1.15**
322 8th Street	300-222-32-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.26	6	Office/Retail Bldg	Mixed use commercial/office and residential	**362**	670	174	**0.12**	3,630	944	**0.66**	770	**0.53**
807 Camino Del Mar	300-222-33-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.30	6	Office Bldg	Mixed use commercial/office and residential	**362**	670	201	**0.14**	3,630	1,089	**0.76**	888	**0.62**
2236 Jimmy Durante Blvd	299-100-49-00	5th	2E	North Commercial	Commercial	Multifamily	0.42	8	Vacant Lot	Mixed use commercial/light industrial and residential	**820**	670	0	**0.00**	3,630	1,525	**1.06**	1,525	**1.06**
2148 Jimmy Durante Blvd	299-100-30-00	5th	2E	North Commercial	Commercial	Multifamily	0.38	8	Office/Retail Bldg	Mixed use commercial/light industrial and residential	**838**	670	255	**0.18**	3,630	1,379	**0.96**	1,125	**0.78**
2126 Jimmy Durante Blvd	299-100-28-00	5th	2E	North Commercial	Commercial	Multifamily	0.51	10	Ex Warehouse Bldgs	Mixed use commercial/light industrial and residential	**838**	670	342	**0.24**	3,630	1,851	**1.29**	1,510	**1.05**
2132 Jimmy Durante Blvd	299-100-29-00	5th	2E	North Commercial	Commercial	Multifamily	0.51	10	Veterinary Office	Mixed use commercial/light industrial and residential	**838**	670	342	**0.24**	3,630	1,851	**1.29**	1,510	**1.05**
2120 Jimmy Durante Blvd	299-100-27-00	5th	2E	North Commercial	Commercial	Multifamily	0.90	18	Office Bldg	Mixed use commercial/light industrial and residential	**838**	670	603	**0.42**	3,630	3,267	**2.27**	2,664	**1.85**
2010 Jimmy Durante Blvd	299-071-06-00	5th	2E	North Commercial	Commercial	Multifamily	2.32	43	Office Bldg	Mixed use commercial/light industrial and residential	**838**	670	1,554	**1.08**	3,630	8,422	**5.85**	6,867	**4.77**
2002 Jimmy Durante Blvd	299-071-07-00	5th	2E	North Commercial	Commercial	Multifamily	1.42	28	Ex Warehouse Bldgs	Mixed use commercial/light industrial and residential	**838**	670	951	**0.66**	3,630	5,155	**3.58**	4,203	**2.92**
915 Camino Del Mar (Commercial) and 300 9th Street Accessory Unit (Accessory Unit)	300-221-34	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.39	12	Commercial Bldg + 1 DU	Mixed use commercial/light industrial and residential	**240**	670	260	**0.18**	2,150	835	**0.58**	574	**0.40**
910 Camino Del Mar	300-172-17	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.34	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**240**	670	230	**0.16**	2,150	737	**0.51**	508	**0.35**
Southwest Corner of 10th St & Camino Del Mar	**300-172-13** **300-172-14**	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.44	14	Vacant Lot	Mixed use commercial/light industrial and residential	**J116**	670	0	**0.00**	2,150	946	**0.66**	946	**0.66**
1011 Camino Del Mar	300-410-27 300-410-28 300-410-29	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.65	20	Commercial Bldg	Mixed use commercial/light industrial and residential	**236**	670	436	**0.30**	2,150	1,399	**0.97**	963	**0.67**
1047 Camino Del Mar	300-410-26	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.51	17	Commercial Bldg	Mixed use commercial/light industrial and residential	**254**	670	341	**0.24**	2,150	1,095	**0.76**	754	**0.52**
1135 Camino Del Mar	300-401-15	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.30	9	Commercial Bldg	Mixed use commercial/light industrial and residential	**258**	670	203	**0.14**	2,150	651	**0.45**	448	**0.31**
1110 Camino Del Mar	300-092-13	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.31	9	Commercial Bldg	Mixed use commercial/light industrial and residential	**568**	670	206	**0.14**	2,150	661	**0.46**	455	**0.32**
1104 Camino Del Mar	300-092-14	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.22	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**568**	670	146	**0.10**	2,150	467	**0.32**	321	**0.22**
1101 and 1105 Camino Del Mar	300-401-09 300-401-10	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.23	8	Commercial Bldg + 1 DU	Mixed use commercial/light industrial and residential	**254**	670	157	**0.11**	2,150	504	**0.35**	347	**0.24**
1125 Camino Del Mar	300-401-03	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.24	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**254**	670	161	**0.11**	2,150	517	**0.36**	356	**0.25**
1201 Camino Del Mar	300-075-06	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.45	14	Commercial Bldg	Mixed use commercial/light industrial and residential	**258**	670	302	**0.21**	2,150	970	**0.67**	668	**0.46**
1219 and 1229 Camino Del Mar	300-075-04 300-075-05	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.33	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**258**	670	219	**0.15**	2,150	702	**0.49**	483	**0.34**

Table A-1. Increased Water Demand Calculations For Added Developments and Approved Zoning Amendments

Project Name/Address	Project APN	Housing Element Cycle	Housing Element Program	Zoning Designation	Existing Land Use	Proposed Land Use	Project Area[1] (acres)	Number of Units[2]	Existing Condition[3]	Project Description/Notes	Water Model Node No.	Existing Water Demand Factor (gpd/acre)	Existing Water Demand (gpd)	Existing Water Demand (gpm)	Updated Water Demand Factor (gpd/acre)	Updated Water Demand (gpd)	Updated Water Demand (gpm)	Change in Water Demand (gpd)	Change in Water Demand (gpm)
1234 Camino Del Mar	300-074-09 300-074-10	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.34	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**J54**	670	227	**0.16**	2,150	727	**0.51**	501	**0.35**
1310 and 1312 Camino Del Mar	300-012-14 300-012-33 300-012-34	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.24	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**592**	670	164	**0.11**	2,150	526	**0.37**	362	**0.25**
1330, 1340, and 1342 Camino Del Mar	300-012-18 300-012-19 300-012-20	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.25	8	Commercial/Office Bldg	Mixed use commercial/light industrial and residential	**592**	670	166	**0.12**	2,150	532	**0.37**	366	**0.25**
1327, 1335, and 1349 Camino Del Mar and 317 14th Street	300-020-01 300-020-02 300-020-03 300-020-04 300-020-05	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.84	26	Commercial/Medical Office Bldg	Mixed use commercial/light industrial and residential	**264**	670	560	**0.39**	2,150	1,795	**1.25**	1,236	**0.86**
1401 Camino Del Mar	300-030-04	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.25	8	Commercial/Office Bldg	Mixed use commercial/light industrial and residential	**264**	670	170	**0.12**	2,150	544	**0.38**	375	**0.26**
1431 Camino Del Mar	300-030-83	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.44	14	Medical Office Bldg	Mixed use commercial/light industrial and residential	**276**	670	295	**0.20**	2,150	946	**0.66**	651	**0.45**
1404 Camino Del Mar	300-012-35	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.33	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**592**	670	219	**0.15**	2,150	703	**0.49**	484	**0.34**
1438 Camino Del Mar	300-012-31	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.22	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**594**	670	144	**0.10**	2,150	463	**0.32**	319	**0.22**
201, 207, and 211 15th St	300-012-28 300-012-29 300-012-30	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.21	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**594**	670	143	**0.10**	2,150	459	**0.32**	316	**0.22**

Notes:

1 - From Council Meeting Agenda or from ParcelQuest

2 - Either from provided documentation from City or calculated using 20 DU/acre and rounding up to the nearest whole number. Central Commercial unit calcs account for State Affordable Housing Density Bonus

3 - Based on Google Maps or Council Meeting Agenda information

Table A-2. Changes to Fire Flow Demands For Added Developments and Approved Zoning Amendments

Project Name/Address	Project APN	Housing Element Cycle	Housing Element Program	Zoning Designation	Existing Land Use	Proposed Land Use	Project Area[1] (acres)	Number of Units[2]	Existing Condition[3]	Project Description/Notes	Fire Flow Node No.	Existing Fire Flow at Node (gpm)	Proposed Fire Flow Factor (gpm)	Updated Fire Flow (gpm)	Fire Flow Duration (hrs)
Watermark 50-Unit Apartment Southeast corner of Jimmy Durante Blvd and San Dieguito Dr	299-100-47-00 299-100-48-00	5th	2G	North Commercial	Commercial	Multifamily	2.68	50	Vacant Lot	Constructing 50-unit apartment complex on land previously considered commercial.	**818/832**	2,500	3,500	**3,500**	**3**
941 Camino Del Mar	300-221-35	n/a	n/a	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.59	8	Small Commercial Bldg	Commercial (retail, restaurant, professional office) and residential hospitality (8 residential units)	**238**	2,500	3,500	**3,500**	**3**
832 Camino Del Mar	300-200-24-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.18	4	Office Bldg	Mixed use commercial/office and residential	**J114**	4,000	3,500	**No Change**	**4**
853 Camino Del Mar	300-222-31-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.56	11	Office Bldg	Mixed use commercial/office and residential	**J114**	4,000	3,500	**No Change**	**4**
322 8th Street	300-222-32-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.26	6	Office/Retail Bldg	Mixed use commercial/office and residential	**J114**	4,000	3,500	**No Change**	**4**
807 Camino Del Mar	300-222-33-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.30	6	Office Bldg	Mixed use commercial/office and residential	**J114**	4,000	3,500	**No Change**	**4**
2236 Jimmy Durante Blvd	299-100-49-00	5th	2E	North Commercial	Commercial	Multifamily	0.42	8	Vacant Lot	Mixed use commercial/light industrial and residential	**820**	2,500	3,500	**3,500**	**3**
2148 Jimmy Durante Blvd	299-100-30-00	5th	2E	North Commercial	Commercial	Multifamily	0.38	8	Office/Retail Bldg	Mixed use commercial/light industrial and residential	**836/838**	2,500	3,500	**3,500**	**3**
2126 Jimmy Durante Blvd	299-100-28-00	5th	2E	North Commercial	Commercial	Multifamily	0.51	10	Ex Warehouse Bldgs	Mixed use commercial/light industrial and residential	**836/838**	2,500	3,500	**3,500**	**3**
2132 Jimmy Durante Blvd	299-100-29-00	5th	2E	North Commercial	Commercial	Multifamily	0.51	10	Veterinary Office	Mixed use commercial/light industrial and residential	**836/838**	2,500	3,500	**3,500**	**3**
2120 Jimmy Durante Blvd	299-100-27-00	5th	2E	North Commercial	Commercial	Multifamily	0.90	18	Office Bldg	Mixed use commercial/light industrial and residential	**836/838**	2,500	3,500	**3,500**	**3**
2010 Jimmy Durante Blvd	299-071-06-00	5th	2E	North Commercial	Commercial	Multifamily	2.32	43	Office Bldg	Mixed use commercial/light industrial and residential	**836/838**	2,500	3,500	**3,500**	**3**
2002 Jimmy Durante Blvd	299-071-07-00	5th	2E	North Commercial	Commercial	Multifamily	1.42	28	Ex Warehouse Bldgs	Mixed use commercial/light industrial and residential	**836/838**	2,500	3,500	**3,500**	**3**
915 Camino Del Mar (Commercial) and 300 9th Street Accessory Unit (Accessory Unit)	300-221-34	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.39	12	Commercial Bldg + 1 DU	Mixed use commercial/light industrial and residential	**J114**	4,000	3,500	**No Change**	**4**
910 Camino Del Mar	300-172-17	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.34	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**J114**	4,000	3,500	**No Change**	**4**
Southwest Corner of 10th St & Camino Del Mar	**300-172-13** **300-172-14**	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.44	14	Vacant Lot	Mixed use commercial/light industrial and residential	**J116**	4,000	3,500	**No Change**	**4**
1011 Camino Del Mar	300-410-27 300-410-28 300-410-29	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.65	20	Commercial Bldg	Mixed use commercial/light industrial and residential	**236**	2,500	3,500	**3,500**	**3**
1047 Camino Del Mar	300-410-26	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.51	17	Commercial Bldg	Mixed use commercial/light industrial and residential	**254**	2,500	3,500	**3,500**	**3**
1135 Camino Del Mar	300-401-15	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.30	9	Commercial Bldg	Mixed use commercial/light industrial and residential	**260**	2,500	3,500	**3,500**	**3**
1110 Camino Del Mar	300-092-13	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.31	9	Commercial Bldg	Mixed use commercial/light industrial and residential	**J66**	4,000	3,500	**No Change**	**4**

Table A-2. Changes to Fire Flow Demands For Added Developments and Approved Zoning Amendments

Project Name/Address	Project APN	Housing Element Cycle	Housing Element Program	Zoning Designation	Existing Land Use	Proposed Land Use	Project Area[1] (acres)	Number of Units[2]	Existing Condition[3]	Project Description/Notes	Fire Flow Node No.	Existing Fire Flow at Node (gpm)	Proposed Fire Flow Factor (gpm)	Updated Fire Flow (gpm)	Fire Flow Duration (hrs)
1104 Camino Del Mar	300-092-14	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.22	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**J66**	4,000	3,500	**No Change**	**4**
1101 and 1105 Camino Del Mar	300-401-09 300-401-10	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.23	8	Commercial Bldg + 1 DU	Mixed use commercial/light industrial and residential	**254**	2,500	3,500	**3,500**	**3**
1125 Camino Del Mar	300-401-03	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.24	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**254**	2,500	3,500	**3,500**	**3**
1201 Camino Del Mar	300-075-06	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.45	14	Commercial Bldg	Mixed use commercial/light industrial and residential	**258**	3,500	3,500	**No Change**	**3**
1219 and 1229 Camino Del Mar	300-075-04 300-075-05	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.33	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**272**	4,000	3,500	**No Change**	**4**
1234 Camino Del Mar	300-074-09 300-074-10	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.34	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**J54**	3,500	3,500	**No Change**	**3**
1310 and 1312 Camino Del Mar	300-012-14 300-012-33 300-012-34	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.24	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**592**	3,500	3,500	**No Change**	**3**
1330, 1340, and 1342 Camino Del Mar	300-012-18 300-012-19 300-012-20	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.25	8	Commercial/Office Bldg	Mixed use commercial/light industrial and residential	**592**	3,500	3,500	**No Change**	**3**
1327, 1335, and 1349 Camino Del Mar and 317 14th Street	300-020-01 300-020-02 300-020-03 300-020-04 300-020-05	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.84	26	Commercial/Medical Office Bldg	Mixed use commercial/light industrial and residential	**264**	3,500	3,500	**No Change**	**3**
1401 Camino Del Mar	300-030-04	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.25	8	Commercial/Office Bldg	Mixed use commercial/light industrial and residential	**274**	2,500	3,500	**3,500**	**3**
1431 Camino Del Mar	300-030-83	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.44	14	Medical Office Bldg	Mixed use commercial/light industrial and residential	**274**	2,500	3,500	**3,500**	**3**
1404 Camino Del Mar	300-012-35	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.33	11	Commercial Bldg	Mixed use commercial/light industrial and residential	**592**	3,500	3,500	**No Change**	**3**
1438 Camino Del Mar	300-012-31	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.22	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**J56**	2,500	3,500	**3,500**	**3**
201, 207, and 211 15th St	300-012-28 300-012-29 300-012-30	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.21	8	Commercial Bldg	Mixed use commercial/light industrial and residential	**596**	3,500	3,500	**No Change**	**3**

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3 - Based on Google Maps or Council Meeting Agenda information

Table A-3. Changes to Sanitary Sewer Generation For Added Developments and Approved Zoning Amendments

Project Name/Address	Project APN	Housing Element Cycle	Housing Element Program	Zoning Designation	Existing Land Use	Proposed Land Use	Project Area[1] (acres)	Number of Units[2]	Existing Condition[3]	Project Description/Notes	Existing Sewer Demand Factor (gpd/unit or gpd/acre)	Existing Sewer Demand (gpd)	Existing Sewer Demand (gpm)	Updated Sewer Demand Factor (gpd/unit or gpd/acre)	Updated Sewer Demand (gpd)	Updated Sewer Demand (gpm)	Change in Sewer Demand (gpd)	Change in Sewer Demand (gpm)	Existing Model Demand (gpm)
Watermark 50-Unit Apartment Southeast corner of Jimmy Durante Blvd and San Dieguito Dr	299-100-47-00 299-100-48-00	5th	2G	North Commercial	Commercial	Multifamily	2.68	50	Vacant Lot	Constructing 50-unit apartment complex on land previously considered commercial.	710	0	**0.00**	232	11,600	**8.06**	11,600	**8.06**	0.916299
941 Camino Del Mar	300-221-35	n/a	n/a	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.59	8	Small Commercial Bldg	Commercial (retail, restaurant, professional office) and residential hospitality (8 residential units)	710	419	**0.29**	Calc Avg	1,137	**0.79**	719	**0.50**	0.850125
832 Camino Del Mar	300-200-24-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.18	4	Office Bldg	Mixed use commercial/office and residential	710	128	**0.09**	232	928	**0.64**	800	**0.56**	1.102894
853 Camino Del Mar	300-222-31-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.56	11	Office Bldg	Mixed use commercial/office and residential	710	398	**0.28**	232	2,552	**1.77**	2,154	**1.50**	0.567069
322 8th Street	300-222-32-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.26	6	Office/Retail Bldg	Mixed use commercial/office and residential	710	185	**0.13**	232	1,392	**0.97**	1,207	**0.84**	0.757269
807 Camino Del Mar	300-222-33-00	5th	2F	Professional Commercial	Commercial	Multifamily	0.30	6	Office Bldg	Mixed use commercial/office and residential	710	213	**0.15**	232	1,392	**0.97**	1,179	**0.82**	0.725504
2236 Jimmy Durante Blvd	299-100-49-00	5th	2E	North Commercial	Commercial	Multifamily	0.42	8	Vacant Lot	Mixed use commercial/light industrial and residential	710	0	**0.00**	232	1,856	**1.29**	1,856	**1.29**	1.105107
2148 Jimmy Durante Blvd	299-100-30-00	5th	2E	North Commercial	Commercial	Multifamily	0.38	8	Office/Retail Bldg	Mixed use commercial/light industrial and residential	710	270	**0.19**	232	1,856	**1.29**	1,586	**1.10**	1.105107
2126 Jimmy Durante Blvd	299-100-28-00	5th	2E	North Commercial	Commercial	Multifamily	0.51	10	Ex Warehouse Bldgs	Mixed use commercial/light industrial and residential	710	362	**0.25**	232	2,320	**1.61**	1,958	**1.36**	1.105107
2132 Jimmy Durante Blvd	299-100-29-00	5th	2E	North Commercial	Commercial	Multifamily	0.51	10	Veterinary Office	Mixed use commercial/light industrial and residential	710	362	**0.25**	232	2,320	**1.61**	1,958	**1.36**	1.105107
2120 Jimmy Durante Blvd	299-100-27-00	5th	2E	North Commercial	Commercial	Multifamily	0.90	18	Office Bldg	Mixed use commercial/light industrial and residential	710	639	**0.44**	232	4,176	**2.90**	3,537	**2.46**	1.105107
2010 Jimmy Durante Blvd	299-071-06-00	5th	2E	North Commercial	Commercial	Multifamily	2.32	43	Office Bldg	Mixed use commercial/light industrial and residential	710	1,647	**1.14**	232	9,976	**6.93**	8,329	**5.78**	0.205271
2002 Jimmy Durante Blvd	299-071-07-00	5th	2E	North Commercial	Commercial	Multifamily	1.42	28	Ex Warehouse Bldgs	Mixed use commercial/light industrial and residential	710	1,008	**0.70**	232	6,496	**4.51**	5,488	**3.81**	0.123048
915 Camino Del Mar (Commercial) and 300 9th Street Accessory Unit (Accessory Unit)	300-221-34	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.39	12	Commercial Bldg + 1 DU	Mixed use commercial/light industrial and residential	710	276	**0.19**	Calc Avg	1,530	**1.06**	1,254	**0.87**	0.288350
910 Camino Del Mar	300-172-17	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.34	11	Commercial Bldg	Mixed use commercial/light industrial and residential	710	244	**0.17**	Calc Avg	1,398	**0.97**	1,154	**0.80**	1.102894
Southwest Corner of 10th St & Camino Del Mar	**300-172-13** **300-172-14**	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.44	14	Vacant Lot	Mixed use commercial/light industrial and residential	710	0	**0.00**	Calc Avg	1,780	**1.24**	1,780	**1.24**	0.297688
1011 Camino Del Mar	300-410-27 300-410-28 300-410-29	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.65	20	Commercial Bldg	Mixed use commercial/light industrial and residential	710	462	**0.32**	Calc Avg	2,551	**1.77**	2,089	**1.45**	0.705348
1047 Camino Del Mar	300-410-26	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.51	17	Commercial Bldg	Mixed use commercial/light industrial and residential	710	362	**0.25**	Calc Avg	2,153	**1.50**	1,791	**1.24**	0.705348
1135 Camino Del Mar	300-401-15	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.30	9	Commercial Bldg	Mixed use commercial/light industrial and residential	710	215	**0.15**	Calc Avg	1,152	**0.80**	936	**0.65**	0.653963
1110 Camino Del Mar	300-092-13	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.31	9	Commercial Bldg	Mixed use commercial/light industrial and residential	710	218	**0.15**	Calc Avg	1,153	**0.80**	935	**0.65**	0.408289
1104 Camino Del Mar	300-092-14	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.22	8	Commercial Bldg	Mixed use commercial/light industrial and residential	710	154	**0.11**	Calc Avg	1,005	**0.70**	851	**0.59**	0.408289
1101 and 1105 Camino Del Mar	300-401-09 300-401-10	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.23	8	Commercial Bldg + 1 DU	Mixed use commercial/light industrial and residential	710	167	**0.12**	Calc Avg	1,011	**0.70**	845	**0.59**	0.653963
1125 Camino Del Mar	300-401-03	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.24	8	Commercial Bldg	Mixed use commercial/light industrial and residential	710	171	**0.12**	Calc Avg	1,013	**0.70**	843	**0.59**	0.653963

Table A-3. Changes to Sanitary Sewer Generation For Added Developments and Approved Zoning Amendments

Project Name/Address	Project APN	Housing Element Cycle	Housing Element Program	Zoning Designation	Existing Land Use	Proposed Land Use	Project Area[1] (acres)	Number of Units[2]	Existing Condition[3]	Project Description/Notes	Existing Sewer Demand Factor (gpd/unit or gpd/acre)	Existing Sewer Demand (gpd)	Existing Sewer Demand (gpm)	Updated Sewer Demand Factor (gpd/unit or gpd/acre)	Updated Sewer Demand (gpd)	Updated Sewer Demand (gpm)	Change in Sewer Demand (gpd)	Change in Sewer Demand (gpm)	Existing Model Demand (gpm)
1201 Camino Del Mar	300-075-06	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.45	14	Commercial Bldg	Mixed use commercial/light industrial and residential	710	320	**0.22**	Calc Avg	1,784	**1.24**	1,464	**1.02**	0.218378
1219 and 1229 Camino Del Mar	300-075-04 300-075-05	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.33	11	Commercial Bldg	Mixed use commercial/light industrial and residential	710	232	**0.16**	Calc Avg	1,392	**0.97**	1,160	**0.81**	0.218378
1234 Camino Del Mar	300-074-09 300-074-10	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.34	11	Commercial Bldg	Mixed use commercial/light industrial and residential	710	240	**0.17**	Calc Avg	1,396	**0.97**	1,156	**0.80**	0.811804
1310 and 1312 Camino Del Mar	300-012-14 300-012-33 300-012-34	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.24	8	Commercial Bldg	Mixed use commercial/light industrial and residential	710	174	**0.12**	Calc Avg	1,015	**0.70**	841	**0.58**	0.246213
1330, 1340, and 1342 Camino Del Mar	300-012-18 300-012-19 300-012-20	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.25	8	Commercial/Office Bldg	Mixed use commercial/light industrial and residential	710	176	**0.12**	Calc Avg	1,016	**0.71**	840	**0.58**	0.246213
1327, 1335, and 1349 Camino Del Mar and 317 14th Street	300-020-01 300-020-02 300-020-03 300-020-04 300-020-05	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.84	26	Commercial/Medical Office Bldg	Mixed use commercial/light industrial and residential	710	593	**0.41**	Calc Avg	3,312	**2.30**	2,720	**1.89**	0.630761
1401 Camino Del Mar	300-030-04	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.25	8	Commercial/Office Bldg	Mixed use commercial/light industrial and residential	710	180	**0.12**	Calc Avg	1,018	**0.71**	838	**0.58**	0.160161
1431 Camino Del Mar	300-030-83	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.44	14	Medical Office Bldg	Mixed use commercial/light industrial and residential	710	312	**0.22**	Calc Avg	1,780	**1.24**	1,468	**1.02**	1.008437
1404 Camino Del Mar	300-012-35	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.33	11	Commercial Bldg	Mixed use commercial/light industrial and residential	710	232	**0.16**	Calc Avg	1,392	**0.97**	1,160	**0.81**	0.426763
1438 Camino Del Mar	300-012-31	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.22	8	Commercial Bldg	Mixed use commercial/light industrial and residential	710	153	**0.11**	Calc Avg	1,004	**0.70**	852	**0.59**	0.403295
201, 207, and 211 15th St	300-012-28 300-012-29 300-012-30	5th	2E	Central Commercial	Commercial	Mixed Use (Multifamily/Commercial)	0.21	8	Commercial Bldg	Mixed use commercial/light industrial and residential	710	152	**0.11**	Calc Avg	1,004	**0.70**	852	**0.59**	0.403295

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Appendix B. InfoWater Pro Water Model Results

Table B-1. Existing Condition Peak Hour Scenario – Junction Output Table

Table B-2. Existing Condition Peak Hour Scenario – Conduit Output Table

Table B-3. Existing Condition Max Day Demand with Fire Flow Scenario – Junction Output Table

Table B-4. Proposed Condition (Site 1) Peak Hour Scenario – Junction Output Table

Table B-5. Proposed Condition (Site 1) Peak Hour Scenario – Conduit Output Table

Table B-6. Proposed Condition (Site 1) Max Day Demand with Fire Flow Scenario – Junction Output Table

Table B-7. Proposed Condition (Site 2) Peak Hour Scenario – Junction Output Table

Table B-8. Proposed Condition (Site 2) Peak Hour Scenario – Conduit Output Table

Table B-9. Proposed Condition (Site 2) Max Day Demand with Fire Flow Scenario – Junction Output Table

Table B-10. Proposed Condition (Site 3) Peak Hour Scenario – Junction Output Table

Table B-11. Proposed Condition (Site 3) Peak Hour Scenario – Conduit Output Table

Table B-12. Proposed Condition (Site 3) Max Day Demand with Fire Flow Scenario – Junction Output Table

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Table B-1. Existing Condition Peak Hour Scenario - Junction Output Table				
Model ID	Peak Hour Demand (gpm)	Max. Pressure (psi)	Min. Pressure (psi)	Average Pressure(psi)
906	0	109.93	107.88	108.81
904	0	110.72	108.67	109.59
886	0	112.23	110.25	111.13
J-FG-0001	0	111.68	109.24	110.43
J-FG-002	17.34	112.11	109.68	110.86
J-FG-3	21.61	111.78	109.35	110.53
J-FG-4	48.4	111.67	109.07	110.38
J-FG-5	13.98	111.23	108.62	109.94
J-FG-6	7.57	110.92	108.50	109.67
J-FG-7	465.33	108.92	106.33	107.63
J-FG-8	17.37	111.01	108.80	109.81
J-FG-9	0	111.23	109.14	110.07
J-FG-11	22.42	111.25	108.97	110.03
J-FG-12	0	113.89	111.46	112.64
J-FG-14	0	112.51	110.41	111.35
J-FG-15	0	112.55	110.44	111.38
J-FG-16	0	111.38	109.28	110.22
J-FG-17	0	112.16	110.05	110.99
J-FG-19	0	111.74	109.64	110.58
J-FG-21	6.67	111.24	109.14	110.08
J-FG-22	0	111.66	109.59	110.53
J-FG-23	22.53	111.89	109.78	110.72
J-FG-24	1.07	110.27	108.22	109.15
J-FG-25	0	112.14	110.09	111.01
J-FG-27	0	110.99	108.81	109.80
J-FG-28	0	110.79	108.62	109.60
J-FG-29	0	110.95	108.79	109.77
J-FG-30	0	111.47	109.37	110.30
J-FG-31	0	111.63	109.46	110.44
J-FG-32	17.31	112.33	110.16	111.14
J-FG-33	0	111.36	109.33	110.24
J-FG-34	35.81	111.24	109.15	110.08
J-FG-35	0	111.25	109.16	110.09
J-FG-36	0	111.66	109.62	110.54
J-FG-37	0	110.90	108.86	109.78
J-FG-41	4.79	111.27	107.47	109.70
J-FG-42	31.73	111.37	106.95	109.66
J-FG-43	13.98	111.24	107.27	109.63
J-FG-44	60.23	111.24	108.66	109.96
J-FG-45	0	109.95	107.77	108.76
J-FG-46	0	111.26	109.19	110.12
J-FG-49	17.86	111.14	108.85	109.92
J-FG-50	0	111.25	108.97	110.04
J-FG-51	17.86	111.22	108.94	110.01
J-FG-52	0	110.80	108.70	109.63
J-FG-54	0	111.52	109.41	110.35
J-FG-55	0	112.28	110.11	111.09
J-FG-56	0	112.25	110.09	111.07
J-FG-57	0	112.05	109.88	110.86
J-FG-58	0	112.11	109.94	110.92
J-FG-61	0	111.27	107.47	109.70
J-FG-62	0.26	111.24	108.96	110.03
J-FG-63	0	111.24	107.44	109.67
J-FG-64	0	110.76	106.96	109.19
J-FG-65	0	112.12	110.07	110.99
J-FG-66	0	111.98	109.93	110.85
J-FG-67	0	111.68	109.63	110.56
J-FG-68	0	111.59	109.54	110.46
J-FG-69	7.45	111.44	107.63	109.87
J-FG-70	0	111.42	107.62	109.85
J-FG-71	0	111.26	107.46	109.69
J-FG-72	14.04	111.28	107.48	109.71
J-FG-73	97.35	110.81	106.98	109.23
J-FG-74	0	110.81	106.98	109.23
J-FG-75	0	110.98	107.18	109.41
J-FG-76	0	111.22	107.43	109.66

Table B-1. Existing Condition Peak Hour Scenario - Junction Output Table				
Model ID	Peak Hour Demand (gpm)	Max. Pressure (psi)	Min. Pressure (psi)	Average Pressure(psi)
J-FG-77	0	111.09	107.26	109.52
J-FG-78	0	110.81	107.01	109.24
J-FG-79	0	110.82	107.02	109.25
J-FG-80	0	111.24	107.44	109.67
J-FG-81	75.4	110.73	106.81	109.14
J-FG-82	0	111.29	109.20	110.14
J-FG-83	0	111.72	109.63	110.57
J-FG-84	17.31	112.06	109.96	110.90

Table B-2. Existing Condition Peak Hour Scenario - Conduit Output Table

Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
894	791.39	1.26	0.07	177	16	130
912	262.31	0.33	0.02	796	18	130
914	262.31	0.33	0.01	239	18	130
916	272.15	0.34	0.02	541	18	130
P-FG-001	0.00	0.00	0.00	1007	8	130
P-FG-002	20.68	0.08	0.00	240	10	130
P-FG-003	13.98	0.36	0.02	125	4	130
P-FG-004	42.15	1.08	0.38	251	4	130
P-FG-005	84.44	0.34	0.03	465	10	130
P-FG-006	465.33	1.90	0.40	266	10	130
P-FG-007	557.34	2.28	0.51	244	10	130
P-FG-008	425.13	1.74	0.05	39	10	130
P-FG-010	153.36	1.74	0.58	251	6	130
P-FG-011	130.95	1.49	0.71	414	6	130
P-FG-012	3.34	0.01	0.00	550	10	130
P-FG-014	0.00	0.00	0.00	953	6	130
P-FG-015	0.00	0.00	0.00	335	4	130
P-FG-017	0.00	0.00	0.00	188	6	130
P-FG-019	0.00	0.00	0.00	918	6	130
P-FG-020	0.00	0.00	0.00	30	6	130
P-FG-021	46.52	0.53	0.16	641	6	130
P-FG-022	22.53	0.14	0.01	912	8	130
P-FG-023	0.00	0.00	0.00	1574	8	130
P-FG-024	149.58	0.61	0.04	232	10	130
P-FG-025	149.58	0.61	0.03	180	10	130
P-FG-026	149.58	0.95	0.02	40	8	130
P-FG-027	166.89	1.07	0.16	244	8	130
P-FG-028	17.31	0.11	0.01	649	8	130
P-FG-029	17.31	0.20	0.01	231	6	130
P-FG-030	791.39	1.00	0.17	764	18	130
P-FG-031	799.86	3.27	0.23	57	10	130
P-FG-032	298.96	0.38	0.02	474	18	130
P-FG-033	11.82	0.13	0.00	153	6	130
P-FG-034	11.82	0.13	0.00	113	6	130
P-FG-035	193.71	1.24	0.34	386	8	130
P-FG-036	166.89	1.07	0.12	177	8	130
P-FG-037	46.52	0.53	0.12	479	6	130
P-FG-038	272.15	0.34	0.01	443	18	130
P-FG-039	1.07	0.00	0.00	782	12	130
P-FG-043	20.22	0.23	0.02	442	6	130
P-FG-044	50.49	5.16	2.80	45	2	130
P-FG-045	31.73	3.24	1.44	55	2	130
P-FG-046	13.98	1.43	0.40	69	2	130
P-FG-047	0.00	0.00	0.00	68	8	130
P-FG-048	587.49	2.40	0.10	45	10	130
P-FG-049	212.37	2.41	0.69	163	6	130
P-FG-050	17.86	0.20	0.02	356	6	130
P-FG-051	0.00	0.00	0.00	84	6	130
P-FG-052	166.89	1.07	0.02	23	8	130
P-FG-053	0.00	0.00	0.00	63	6	130
P-FG-054	17.31	0.20	0.01	333	6	130
P-FG-055	0.00	0.00	0.00	18	6	130
P-FG-056	0.00	0.00	0.00	279	6	130
P-FG-057	0.00	0.00	0.00	473	6	100
P-FG-058	17.86	0.20	0.01	148	6	130
P-FG-059	194.24	2.20	3.49	978	6	130
P-FG-060	0.00	0.00	0.00	397	6	130
P-FG-061	7.45	0.08	0.01	755	6	130
P-FG-062	0.00	0.00	0.00	531	6	130
P-FG-063	0.00	0.00	0.00	328	8	130
P-FG-064	0.00	0.00	0.00	153	8	130
P-FG-065	0.00	0.00	0.00	544	8	130
P-FG-066	7.45	0.08	0.00	444	6	130
P-FG-067	7.45	0.08	0.00	47	6	130
P-FG-068	0.00	0.00	0.00	410	6	130
P-FG-069	82.85	0.94	0.02	24	6	130
P-FG-070	97.35	1.10	0.09	96	6	130
P-FG-071	0.00	0.00	0.00	893	8	130

Table B-2. Existing Condition Peak Hour Scenario - Conduit Output Table						
Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
P-FG-072	0.00	0.00	0.00	39	8	130
P-FG-073	0.00	0.00	0.00	318	8	130
P-FG-074	0.00	0.00	0.00	36	8	130
P-FG-075	0.00	0.00	0.00	473	8	130
P-FG-076	0.00	0.00	0.00	132	8	130
P-FG-077	7.45	0.08	0.00	31	6	130
P-FG-078	75.40	0.86	0.27	436	6	130
P-FG-079	29.20	0.33	0.08	764	6	130
P-FG-080	17.31	0.20	0.01	340	6	130
P-FG-081	17.31	0.20	0.02	464	6	130

Table B-3. Existing Condition Max Day Demand With Fire Flow Scenario - Junction Output Table				
Model ID	Static MDD (gpm)	Static Pressure (psi)	Fire-Flow Requirement (gpm)	Available Fire-Flow (gpm) at 20 psi Residual Pressure
904	0	111	4000	15,481
J-FG-0001	0	111	4000	3,098
J-FG-9	0	111	4000	13,562
J-FG-11	0.39	111	4000	4,375
J-FG-12	0	114	4000	4,521
J-FG-24	0.02	110	4000	9,354
J-FG-36	0	111	4000	15,797
J-FG-52	0	111	4000	5,721
J-FG-61	0	111	4000	1,569
J-FG-66	0	112	4000	2,517
J-FG-67	0	111	4000	2,419
J-FG-68	0	111	4000	2,216
J-FG-76	0	111	4000	1,443
J-FG-79	0	111	4000	1,488

Table B-4. Proposed Condition (Site 1) Peak Hour Scenario - Junction Output Table				
Model ID	Peak Hour Demand (gpm)	Max. Pressure (psi)	Min. Pressure (psi)	Average Pressure (psi)
906	0	109.93	107.85	108.80
904	0	110.71	108.64	109.59
886	0	112.22	110.23	111.12
J-FG-0001	0	111.68	109.23	110.42
J-FG-002	17.34	112.11	109.67	110.85
J-FG-3	21.61	111.78	109.34	110.52
J-FG-4	48.4	111.67	109.06	110.38
J-FG-5	13.98	111.22	108.61	109.93
J-FG-6	7.57	110.92	108.49	109.67
J-FG-7	465.33	108.92	106.32	107.63
J-FG-8	17.37	111.00	108.80	109.80
J-FG-9	0	111.23	109.12	110.06
J-FG-11	22.42	111.25	108.96	110.03
J-FG-12	0	113.89	111.45	112.63
J-FG-14	0	112.51	110.39	111.35
J-FG-15	0	112.54	110.42	111.38
J-FG-16	0	111.38	109.25	110.21
J-FG-17	0	112.15	110.03	110.99
J-FG-19	0	111.74	109.61	110.57
J-FG-21	6.67	111.24	109.11	110.07
J-FG-22	0	111.66	109.57	110.52
J-FG-23	22.53	111.88	109.76	110.72
J-FG-24	1.07	110.27	108.20	109.14
J-FG-25	0	112.14	110.06	111.01
J-FG-27	0	110.99	108.80	109.79
J-FG-28	0	110.78	108.61	109.59
J-FG-29	0	110.95	108.79	109.76
J-FG-30	0	111.47	109.34	110.30
J-FG-31	0	111.62	109.45	110.43
J-FG-32	17.31	112.33	110.15	111.13
J-FG-33	0	111.36	109.30	110.23
J-FG-34	35.81	111.24	109.13	110.08
J-FG-35	0	111.24	109.13	110.08
J-FG-36	0	111.66	109.59	110.53
J-FG-37	0	110.90	108.83	109.77
J-FG-38	6.78	111.68	109.60	110.55
J-FG-41	4.79	111.27	107.46	109.70
J-FG-42	31.73	111.37	106.94	109.65
J-FG-43	13.98	111.23	107.26	109.62
J-FG-44	60.23	111.24	108.65	109.95
J-FG-45	0	109.95	107.76	108.75
J-FG-46	0	111.26	109.17	110.11
J-FG-49	17.86	111.14	108.84	109.92
J-FG-50	0	111.25	108.96	110.03
J-FG-51	17.86	111.22	108.93	110.00
J-FG-52	0	110.80	108.67	109.62
J-FG-54	0	111.52	109.39	110.34
J-FG-55	0	112.27	110.10	111.08
J-FG-56	0	112.25	110.08	111.06
J-FG-57	0	112.05	109.88	110.86

Table B-4. Proposed Condition (Site 1) Peak Hour Scenario - Junction Output Table				
Model ID	**Peak Hour Demand (gpm)**	**Max. Pressure (psi)**	**Min. Pressure (psi)**	**Average Pressure (psi)**
J-FG-58	0	112.11	109.94	110.92
J-FG-61	0	111.27	107.46	109.70
J-FG-62	0.26	111.24	108.95	110.02
J-FG-63	0	111.24	107.43	109.67
J-FG-64	0	110.76	106.95	109.19
J-FG-65	0	112.11	110.04	110.99
J-FG-66	0	111.98	109.90	110.85
J-FG-67	0	111.68	109.61	110.55
J-FG-68	0	111.59	109.51	110.46
J-FG-69	7.45	111.43	107.62	109.86
J-FG-70	0	111.42	107.61	109.84
J-FG-71	0	111.26	107.45	109.68
J-FG-72	14.04	111.27	107.48	109.70
J-FG-73	97.35	110.81	106.97	109.23
J-FG-74	0	110.81	106.97	109.23
J-FG-75	0	110.98	107.17	109.41
J-FG-76	0	111.22	107.42	109.65
J-FG-77	0	111.09	107.25	109.51
J-FG-78	0	110.81	107.00	109.24
J-FG-79	0	110.82	107.01	109.25
J-FG-80	0	111.24	107.43	109.67
J-FG-81	75.4	110.73	106.81	109.13
J-FG-82	0	111.29	109.18	110.13
J-FG-83	0	111.72	109.60	110.56
J-FG-84	17.31	112.05	109.93	110.89
J-FG-85	0	111.24	109.13	110.08
J-FG-86	0	111.51	109.06	110.25

Table B-5. Proposed Condition (Site 1) Peak Hour Scenario - Conduit Output Table						
Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
894	795.01	1.27	0.07	177	16	130
912	254.69	0.32	0.02	796	18	130
914	254.69	0.32	0.01	239	18	130
916	281.17	0.35	0.02	541	18	130
P-FG-001	0.00	0.00	0.00	1007	8	130
P-FG-002	20.68	0.08	0.00	240	10	130
P-FG-003	13.98	0.36	0.02	125	4	130
P-FG-004	42.15	1.08	0.38	251	4	130
P-FG-005	84.44	0.34	0.03	465	10	130
P-FG-006	465.33	1.90	0.40	266	10	130
P-FG-007	557.34	2.28	0.51	244	10	130
P-FG-008	425.13	1.74	0.05	39	10	130
P-FG-010	153.36	1.74	0.58	251	6	130
P-FG-011	130.95	1.49	0.71	414	6	130
P-FG-012	3.33	0.01	0.00	550	10	130
P-FG-014	0.00	0.00	0.00	953	6	130
P-FG-015	0.00	0.00	0.00	335	4	130
P-FG-017	0.00	0.00	0.00	188	6	130
P-FG-019	0.00	0.00	0.00	918	6	130
P-FG-020	0.00	0.00	0.00	30	6	130
P-FG-021	46.52	0.53	0.16	641	6	130
P-FG-022	22.53	0.14	0.01	912	8	130
P-FG-023	0.00	0.00	0.00	1574	8	130
P-FG-024	149.58	0.61	0.04	232	10	130
P-FG-025	149.58	0.61	0.03	180	10	130
P-FG-026	149.58	0.95	0.02	40	8	130
P-FG-027	166.89	1.07	0.16	244	8	130
P-FG-028	17.31	0.11	0.01	649	8	130
P-FG-029	17.31	0.20	0.01	231	6	130
P-FG-030	795.01	1.00	0.18	764	18	130
P-FG-031	799.86	3.27	0.23	57	10	130
P-FG-032	307.30	0.39	0.02	474	18	130
P-FG-033	12.26	0.14	0.00	153	6	130
P-FG-034	12.26	0.14	0.00	113	6	130
P-FG-035	193.71	1.24	0.34	386	8	130
P-FG-036	166.89	1.07	0.12	177	8	130
P-FG-037	46.52	0.53	0.12	479	6	130
P-FG-038	281.17	0.35	0.01	443	18	130
P-FG-039	17.84	0.05	0.00	782	12	130
P-FG-040	17.25	0.05	0.00	243	12	100
P-FG-043	20.22	0.23	0.02	442	6	130
P-FG-044	50.49	5.16	2.80	45	2	130
P-FG-045	31.73	3.24	1.44	55	2	130
P-FG-046	13.98	1.43	0.40	69	2	130
P-FG-047	0.00	0.00	0.00	68	8	130
P-FG-048	587.49	2.40	0.10	45	10	130
P-FG-049	212.37	2.41	0.69	163	6	130
P-FG-050	17.86	0.20	0.02	356	6	130
P-FG-051	0.00	0.00	0.00	84	6	130
P-FG-052	166.89	1.07	0.02	23	8	130
P-FG-053	0.00	0.00	0.00	63	6	130
P-FG-054	17.31	0.20	0.01	333	6	130
P-FG-055	0.00	0.00	0.00	18	6	130
P-FG-056	0.00	0.00	0.00	279	6	130
P-FG-057	0.00	0.00	0.00	473	6	100
P-FG-058	17.86	0.20	0.01	148	6	130
P-FG-059	194.24	2.20	3.49	978	6	130

Table B-5. Proposed Condition (Site 1) Peak Hour Scenario - Conduit Output Table						
Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
P-FG-060	0.00	0.00	0.00	397	6	130
P-FG-061	7.45	0.08	0.01	755	6	130
P-FG-062	0.00	0.00	0.00	531	6	130
P-FG-063	0.00	0.00	0.00	328	8	130
P-FG-064	0.00	0.00	0.00	153	8	130
P-FG-065	0.00	0.00	0.00	544	8	130
P-FG-066	7.45	0.08	0.00	444	6	130
P-FG-067	7.45	0.08	0.00	47	6	130
P-FG-068	0.00	0.00	0.00	410	6	130
P-FG-069	82.85	0.94	0.02	24	6	130
P-FG-070	97.35	1.10	0.09	96	6	130
P-FG-071	0.00	0.00	0.00	893	8	130
P-FG-072	0.00	0.00	0.00	39	8	130
P-FG-073	0.00	0.00	0.00	318	8	130
P-FG-074	0.00	0.00	0.00	36	8	130
P-FG-075	0.00	0.00	0.00	473	8	130
P-FG-076	0.00	0.00	0.00	132	8	130
P-FG-077	7.45	0.08	0.00	31	6	130
P-FG-078	75.40	0.86	0.27	436	6	130
P-FG-079	29.20	0.33	0.08	764	6	130
P-FG-080	17.31	0.20	0.01	340	6	130
P-FG-081	17.31	0.20	0.02	464	6	130

Table B-6. Proposed Condition (Site 1) Max Day Demand With Fire Flow Scenario - Junction Output Table				
Model ID	Static MDD(gpm)	Static Pressure (psi)	Fire-Flow Requirement (gpm)	Available Fire-Flow (gpm) at 20 psi Residual Pressure
904	0	110.52	4,000	15,480
J-FG-0001	0	111.49	4,000	3,098
J-FG-9	0	111.04	4,000	13,561
J-FG-11	0.39	111.06	4,000	4,375
J-FG-12	0	113.70	4,000	4,521
J-FG-24	0.02	110.08	4,000	9,353
J-FG-36	0	111.47	4,000	15,796
J-FG-52	0	110.61	4,000	5,720
J-FG-61	0	111.08	4,000	1,569
J-FG-66	0	111.79	4,000	2,517
J-FG-67	0	111.49	4,000	2,418
J-FG-68	0	111.40	4,000	2,216
J-FG-76	0	111.03	4,000	1,443
J-FG-79	0	110.63	4,000	1,488

Table B-7. Proposed Condition (Site 2) Peak Hour Scenario - Junction Output Table				
Model ID	Peak Hour Demand (gpm)	Max. Pressure (psi)	Min. Pressure (psi)	Average Pressure (psi)
906	0	109.93	107.85	108.80
904	0	110.71	108.64	109.59
886	0	112.22	110.23	111.12
J-FG-0001	0	111.68	109.23	110.42
J-FG-002	17.34	112.11	109.67	110.85
J-FG-3	21.61	111.78	109.34	110.52
J-FG-4	48.4	111.67	109.06	110.38
J-FG-5	13.98	111.22	108.61	109.93
J-FG-6	7.57	110.92	108.49	109.67
J-FG-7	465.33	108.92	106.32	107.63
J-FG-8	17.37	111.00	108.80	109.80
J-FG-9	0	111.23	109.12	110.06
J-FG-11	22.42	111.25	108.96	110.03
J-FG-12	0	113.89	111.45	112.63
J-FG-14	0	112.51	110.39	111.35
J-FG-15	0	112.54	110.42	111.38
J-FG-16	0	111.38	109.25	110.21
J-FG-17	0	112.15	110.03	110.99
J-FG-19	0	111.74	109.61	110.57
J-FG-21	6.67	111.24	109.11	110.07
J-FG-22	0	111.66	109.57	110.52
J-FG-23	22.53	111.88	109.76	110.72
J-FG-24	1.07	110.27	108.20	109.14
J-FG-25	0	112.14	110.06	111.01
J-FG-27	0	110.99	108.80	109.79
J-FG-28	0	110.78	108.61	109.59
J-FG-29	0	110.95	108.79	109.76
J-FG-30	0	111.47	109.34	110.30
J-FG-31	0	111.62	109.45	110.43
J-FG-32	17.31	112.33	110.15	111.13
J-FG-33	0	111.36	109.30	110.23
J-FG-34	35.81	111.24	109.13	110.08
J-FG-35	0	111.24	109.13	110.08
J-FG-36	0	111.66	109.59	110.53
J-FG-37	0	110.90	108.83	109.77
J-FG-39	6.78	110.39	108.32	109.26
J-FG-41	4.79	111.27	107.46	109.70
J-FG-42	31.73	111.37	106.94	109.65
J-FG-43	13.98	111.23	107.26	109.62
J-FG-44	60.23	111.24	108.65	109.95
J-FG-45	0	109.95	107.76	108.75
J-FG-46	0	111.26	109.17	110.11
J-FG-49	17.86	111.14	108.84	109.92
J-FG-50	0	111.25	108.96	110.03
J-FG-51	17.86	111.22	108.93	110.00
J-FG-52	0	110.80	108.67	109.62
J-FG-54	0	111.52	109.39	110.34
J-FG-55	0	112.27	110.10	111.08
J-FG-56	0	112.25	110.08	111.06
J-FG-57	0	112.05	109.88	110.86
J-FG-58	0	112.11	109.94	110.92

Table B-7. Proposed Condition (Site 2) Peak Hour Scenario - Junction Output Table				
Model ID	Peak Hour Demand (gpm)	Max. Pressure (psi)	Min. Pressure (psi)	Average Pressure (psi)
J-FG-61	0	111.27	107.46	109.70
J-FG-62	0.26	111.24	108.95	110.02
J-FG-63	0	111.24	107.43	109.67
J-FG-64	0	110.76	106.95	109.19
J-FG-65	0	112.11	110.04	110.99
J-FG-66	0	111.98	109.90	110.85
J-FG-67	0	111.68	109.61	110.55
J-FG-68	0	111.59	109.51	110.46
J-FG-69	7.45	111.43	107.62	109.86
J-FG-70	0	111.42	107.61	109.84
J-FG-71	0	111.26	107.45	109.68
J-FG-72	14.04	111.27	107.48	109.70
J-FG-73	97.35	110.81	106.97	109.23
J-FG-74	0	110.81	106.97	109.23
J-FG-75	0	110.98	107.17	109.41
J-FG-76	0	111.22	107.42	109.65
J-FG-77	0	111.09	107.25	109.51
J-FG-78	0	110.81	107.00	109.24
J-FG-79	0	110.82	107.01	109.25
J-FG-80	0	111.24	107.43	109.67
J-FG-81	75.4	110.73	106.81	109.13
J-FG-82	0	111.29	109.18	110.13
J-FG-83	0	111.72	109.60	110.56
J-FG-84	17.31	112.05	109.93	110.89
J-FG-85	0	111.24	109.13	110.08
J-FG-86	0	111.51	109.06	110.25

Table B-8. Proposed Condition (Site 2) Peak Hour Scenario - Conduit Output Table						
Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
894	795.01	1.27	0.07	177	16	130
912	254.69	0.32	0.02	796	18	130
914	254.69	0.32	0.01	239	18	130
916	281.17	0.35	0.02	541	18	130
P-FG-001	0.00	0.00	0.00	1007	8	130
P-FG-002	20.68	0.08	0.00	240	10	130
P-FG-003	13.98	0.36	0.02	125	4	130
P-FG-004	42.15	1.08	0.38	251	4	130
P-FG-005	84.44	0.34	0.03	465	10	130
P-FG-006	465.33	1.90	0.40	266	10	130
P-FG-007	557.34	2.28	0.51	244	10	130
P-FG-008	425.13	1.74	0.05	39	10	130
P-FG-010	153.36	1.74	0.58	251	6	130
P-FG-011	130.95	1.49	0.71	414	6	130
P-FG-012	3.34	0.01	0.00	550	10	130
P-FG-014	0.00	0.00	0.00	953	6	130
P-FG-015	0.00	0.00	0.00	335	4	130
P-FG-017	0.00	0.00	0.00	188	6	130
P-FG-019	0.00	0.00	0.00	918	6	130
P-FG-020	0.00	0.00	0.00	30	6	130
P-FG-021	46.52	0.53	0.16	641	6	130
P-FG-022	22.53	0.14	0.01	912	8	130
P-FG-023	0.00	0.00	0.00	1574	8	130
P-FG-024	149.58	0.61	0.04	232	10	130
P-FG-025	149.58	0.61	0.03	180	10	130
P-FG-026	149.58	0.95	0.02	40	8	130
P-FG-027	166.89	1.07	0.16	244	8	130
P-FG-028	17.31	0.11	0.01	649	8	130
P-FG-029	17.31	0.20	0.01	231	6	130
P-FG-030	795.01	1.00	0.18	764	18	130
P-FG-031	799.86	3.27	0.23	57	10	130
P-FG-032	307.30	0.39	0.02	474	18	130
P-FG-033	12.26	0.14	0.00	153	6	130
P-FG-034	12.26	0.14	0.00	113	6	130
P-FG-035	193.71	1.24	0.34	386	8	130
P-FG-036	166.89	1.07	0.12	177	8	130
P-FG-037	46.52	0.53	0.12	479	6	130
P-FG-038	281.17	0.35	0.01	443	18	130
P-FG-039	17.84	0.05	0.00	782	12	130
P-FG-41	17.25	0.05	0.00	16	12	100
P-FG-043	20.22	0.23	0.02	442	6	130
P-FG-044	50.49	5.16	2.80	45	2	130
P-FG-045	31.73	3.24	1.44	55	2	130
P-FG-046	13.98	1.43	0.40	69	2	130
P-FG-047	0.00	0.00	0.00	68	8	130
P-FG-048	587.49	2.40	0.10	45	10	130
P-FG-049	212.37	2.41	0.69	163	6	130
P-FG-050	17.86	0.20	0.02	356	6	130
P-FG-051	0.00	0.00	0.00	84	6	130
P-FG-052	166.89	1.07	0.02	23	8	130
P-FG-053	0.00	0.00	0.00	63	6	130
P-FG-054	17.31	0.20	0.01	333	6	130
P-FG-055	0.00	0.00	0.00	18	6	130
P-FG-056	0.00	0.00	0.00	279	6	130
P-FG-057	0.00	0.00	0.00	473	6	100
P-FG-058	17.86	0.20	0.01	148	6	130
P-FG-059	194.24	2.20	3.49	978	6	130
P-FG-060	0.00	0.00	0.00	397	6	130
P-FG-061	7.45	0.08	0.01	755	6	130
P-FG-062	0.00	0.00	0.00	531	6	130
P-FG-063	0.00	0.00	0.00	328	8	130

Table B-8. Proposed Condition (Site 2) Peak Hour Scenario - Conduit Output Table						
Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
P-FG-064	0.00	0.00	0.00	153	8	130
P-FG-065	0.00	0.00	0.00	544	8	130
P-FG-066	7.45	0.08	0.00	444	6	130
P-FG-067	7.45	0.08	0.00	47	6	130
P-FG-068	0.00	0.00	0.00	410	6	130
P-FG-069	82.85	0.94	0.02	24	6	130
P-FG-070	97.35	1.10	0.09	96	6	130
P-FG-071	0.00	0.00	0.00	893	8	130
P-FG-072	0.00	0.00	0.00	39	8	130
P-FG-073	0.00	0.00	0.00	318	8	130
P-FG-074	0.00	0.00	0.00	36	8	130
P-FG-075	0.00	0.00	0.00	473	8	130
P-FG-076	0.00	0.00	0.00	132	8	130
P-FG-077	7.45	0.08	0.00	31	6	130
P-FG-078	75.40	0.86	0.27	436	6	130
P-FG-079	29.20	0.33	0.08	764	6	130
P-FG-080	17.31	0.20	0.01	340	6	130
P-FG-081	17.31	0.20	0.02	464	6	130

Table B-9. Proposed Condition (Site 2) Max Day Demand With Fire Flow Scenario - Junction Output Table				
Model ID	Static MDD (gpm)	Static Pressure (psi)	Fire-Flow Requirement (gpm)	Available Fire-Flow (gpm) at 20 psi Residual Pressure
904	0	110.52	4,000	15,480
J-FG-0001	0	111.49	4,000	3,098
J-FG-9	0	111.04	4,000	13,561
J-FG-11	0.39	111.06	4,000	4,375
J-FG-12	0	113.70	4,000	4,521
J-FG-24	0.02	110.08	4,000	9,353
J-FG-36	0	111.47	4,000	15,796
J-FG-52	0	110.61	4,000	5,720
J-FG-61	0	111.08	4,000	1,569
J-FG-66	0	111.79	4,000	2,517
J-FG-67	0	111.49	4,000	2,418
J-FG-68	0	111.40	4,000	2,216
J-FG-76	0	111.03	4,000	1,443
J-FG-79	0	110.63	4,000	1,488

Table B-10. Proposed Condition (Site 3) Peak Hour Scenario - Junction Output Table				
Model ID	Peak Hour Demand (gpm)	Max. Pressure (psi)	Min. Pressure (psi)	Average Pressure (psi)
906	0	109.93	107.84	108.80
904	0	110.71	108.63	109.58
886	0	112.22	110.22	111.11
J-FG-0001	0	111.67	109.20	110.41
J-FG-002	17.34	112.11	109.64	110.84
J-FG-3	21.61	111.78	109.31	110.52
J-FG-4	48.4	111.67	109.04	110.37
J-FG-5	13.98	111.22	108.58	109.92
J-FG-6	7.57	110.92	108.46	109.66
J-FG-7	465.33	108.92	106.29	107.62
J-FG-8	17.37	111.00	108.77	109.79
J-FG-9	0	111.22	109.10	110.06
J-FG-11	22.42	111.25	108.93	110.02
J-FG-12	0	113.89	111.42	112.63
J-FG-14	0	112.51	110.37	111.34
J-FG-15	0	112.54	110.40	111.37
J-FG-16	0	111.38	109.24	110.21
J-FG-17	0	112.15	110.01	110.98
J-FG-19	0	111.74	109.60	110.56
J-FG-21	6.67	111.24	109.10	110.07
J-FG-22	0	111.66	109.55	110.51
J-FG-23	22.53	111.88	109.74	110.71
J-FG-24	1.07	110.27	108.18	109.14
J-FG-25	0	112.13	110.05	111.00
J-FG-27	0	110.99	108.77	109.79
J-FG-28	0	110.78	108.58	109.58
J-FG-29	0	110.95	108.76	109.75
J-FG-30	0	111.47	109.32	110.29
J-FG-31	0	111.62	109.43	110.42
J-FG-32	17.31	112.32	110.12	111.12
J-FG-33	0	111.36	109.29	110.23
J-FG-34	35.81	111.24	109.11	110.07
J-FG-35	0	111.24	109.11	110.07
J-FG-36	0	111.66	109.58	110.52
J-FG-37	0	110.90	108.82	109.77
J-FG-40	6.78	111.24	109.11	110.07
J-FG-41	4.79	111.27	107.43	109.69
J-FG-42	31.73	111.37	106.91	109.64
J-FG-43	13.98	111.23	107.23	109.61
J-FG-44	60.23	111.24	108.62	109.94
J-FG-45	0	109.95	107.73	108.74
J-FG-46	0	111.26	109.15	110.10
J-FG-49	17.86	111.14	108.75	109.90
J-FG-50	0	111.25	108.87	110.01
J-FG-51	17.86	111.22	108.84	109.98

Table B-10. Proposed Condition (Site 3) Peak Hour Scenario - Junction Output Table				
Model ID	Peak Hour Demand (gpm)	Max. Pressure (psi)	Min. Pressure (psi)	Average Pressure (psi)
J-FG-52	0	110.80	108.65	109.61
J-FG-54	0	111.51	109.37	110.33
J-FG-55	0	112.27	110.07	111.07
J-FG-56	0	112.25	110.05	111.05
J-FG-57	0	112.05	109.85	110.85
J-FG-58	0	112.11	109.91	110.91
J-FG-61	0	111.27	107.39	109.68
J-FG-62	0.26	111.24	108.88	110.00
J-FG-63	0	111.24	107.35	109.65
J-FG-64	0	110.76	106.87	109.17
J-FG-65	0	112.11	110.03	110.98
J-FG-66	0	111.97	109.89	110.84
J-FG-67	0	111.68	109.59	110.55
J-FG-68	0	111.58	109.50	110.45
J-FG-69	7.45	111.43	107.55	109.84
J-FG-70	0	111.42	107.53	109.82
J-FG-71	0	111.26	107.37	109.66
J-FG-72	14.04	111.27	107.40	109.68
J-FG-73	97.35	110.81	106.89	109.21
J-FG-74	0	110.81	106.89	109.21
J-FG-75	0	110.98	107.10	109.39
J-FG-76	0	111.22	107.34	109.63
J-FG-77	0	111.09	107.18	109.49
J-FG-78	0	110.81	106.93	109.22
J-FG-79	0	110.82	106.94	109.23
J-FG-80	0	111.24	107.36	109.65
J-FG-81	75.4	110.73	106.73	109.11
J-FG-82	0	111.29	109.16	110.13
J-FG-83	0	111.72	109.59	110.55
J-FG-84	17.31	112.05	109.92	110.89
J-FG-85	0	111.24	109.11	110.07

Table B-11. Proposed Condition (Site 3) Peak Hour Scenario - Conduit Output Table						
Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
894	807.15	1.29	0.07	177	16	130
912	258.65	0.33	0.02	796	18	130
914	258.65	0.33	0.01	239	18	130
916	266.82	0.34	0.02	541	18	130
P-FG-001	0.00	0.00	0.00	1007	8	130
P-FG-002	20.68	0.08	0.00	240	10	130
P-FG-003	13.98	0.36	0.02	125	4	130
P-FG-004	42.14	1.08	0.38	251	4	130
P-FG-005	84.42	0.34	0.03	465	10	130
P-FG-006	465.33	1.90	0.40	266	10	130
P-FG-007	557.32	2.28	0.51	244	10	130
P-FG-008	431.39	1.76	0.05	39	10	130
P-FG-010	153.38	1.74	0.58	251	6	130
P-FG-011	130.96	1.49	0.71	414	6	130
P-FG-012	3.34	0.01	0.00	550	10	130
P-FG-014	0.00	0.00	0.00	953	6	130
P-FG-015	0.00	0.00	0.00	335	4	130
P-FG-017	0.00	0.00	0.00	188	6	130
P-FG-019	0.00	0.00	0.00	918	6	130
P-FG-020	0.00	0.00	0.00	30	6	130
P-FG-021	46.52	0.53	0.16	641	6	130
P-FG-022	22.53	0.14	0.01	912	8	130
P-FG-023	0.00	0.00	0.00	1574	8	130
P-FG-024	150.08	0.61	0.04	232	10	130
P-FG-025	150.08	0.61	0.03	180	10	130
P-FG-026	150.08	0.96	0.02	40	8	130
P-FG-027	167.39	1.07	0.16	244	8	130
P-FG-028	17.31	0.11	0.01	649	8	130
P-FG-029	17.31	0.20	0.01	231	6	130
P-FG-030	807.15	1.02	0.18	764	18	130
P-FG-031	821.11	3.35	0.24	57	10	130
P-FG-032	297.39	0.37	0.02	474	18	130
P-FG-033	9.75	0.11	0.00	153	6	130
P-FG-034	9.75	0.11	0.00	113	6	130
P-FG-035	197.10	1.26	0.35	386	8	130
P-FG-036	167.39	1.07	0.12	177	8	130
P-FG-037	46.52	0.53	0.12	479	6	130
P-FG-038	266.82	0.34	0.01	443	18	130
P-FG-039	1.07	0.00	0.00	782	12	130
P-FG-42	17.25	0.05	0.00	58	12	100
P-FG-043	20.24	0.23	0.02	442	6	130
P-FG-044	50.49	5.16	2.80	45	2	130
P-FG-045	31.73	3.24	1.44	55	2	130
P-FG-046	13.98	1.43	0.40	69	2	130
P-FG-047	0.00	0.00	0.00	68	8	130
P-FG-048	590.88	2.41	0.10	45	10	130
P-FG-049	230.23	2.61	0.80	163	6	130
P-FG-050	17.86	0.20	0.02	356	6	130
P-FG-051	17.86	0.20	0.00	84	6	130
P-FG-052	167.39	1.07	0.02	23	8	130
P-FG-053	0.00	0.00	0.00	63	6	130
P-FG-054	17.31	0.20	0.01	333	6	130
P-FG-055	0.00	0.00	0.00	18	6	130

Table B-11. Proposed Condition (Site 3) Peak Hour Scenario - Conduit Output Table						
Model ID	Max. Flow (gpm)	Max. Velocity (ft/s)	Max. Headloss (ft)	Length (ft)	Diameter (in)	Roughness (unitless)
P-FG-056	0.00	0.00	0.00	279	6	130
P-FG-057	0.00	0.00	0.00	473	6	100
P-FG-058	35.73	0.41	0.02	148	6	130
P-FG-059	194.24	2.20	3.49	978	6	130
P-FG-060	0.00	0.00	0.00	397	6	130
P-FG-061	7.45	0.08	0.01	755	6	130
P-FG-062	0.00	0.00	0.00	531	6	130
P-FG-063	0.00	0.00	0.00	328	8	130
P-FG-064	0.00	0.00	0.00	153	8	130
P-FG-065	0.00	0.00	0.00	544	8	130
P-FG-066	7.45	0.08	0.00	444	6	130
P-FG-067	7.45	0.08	0.00	47	6	130
P-FG-068	0.00	0.00	0.00	410	6	130
P-FG-069	82.85	0.94	0.02	24	6	130
P-FG-070	97.35	1.10	0.09	96	6	130
P-FG-071	0.00	0.00	0.00	893	8	130
P-FG-072	0.00	0.00	0.00	39	8	130
P-FG-073	0.00	0.00	0.00	318	8	130
P-FG-074	0.00	0.00	0.00	36	8	130
P-FG-075	0.00	0.00	0.00	473	8	130
P-FG-076	0.00	0.00	0.00	132	8	130
P-FG-077	7.45	0.08	0.00	31	6	130
P-FG-078	75.40	0.86	0.27	436	6	130
P-FG-079	29.20	0.33	0.08	764	6	130
P-FG-080	17.31	0.20	0.01	340	6	130
P-FG-081	17.31	0.20	0.02	464	6	130

Table B-12. Proposed Condition (Site 3) Max Day Demand With Fire Flow Scenario - Junction Output Table				
ID	Static MDD (gpm)	Static Pressure (psi)	Fire-Flow Requirement (gpm)	Available Fire-Flow (gpm) at 20 psi Residual Pressure
904	0	110.52	4,000	15,480
J-FG-0001	0	111.49	4,000	3,098
J-FG-9	0	111.04	4,000	13,560
J-FG-11	0.39	111.06	4,000	4,375
J-FG-12	0	113.70	4,000	4,521
J-FG-24	0.02	110.08	4,000	9,353
J-FG-36	0	111.47	4,000	15,796
J-FG-40	0.92	111.05	4,000	12,059
J-FG-52	0	110.61	4,000	5,720
J-FG-61	0	111.08	4,000	1,569
J-FG-66	0	111.78	4,000	2,517
J-FG-67	0	111.49	4,000	2,419
J-FG-68	0	111.39	4,000	2,216
J-FG-76	0	111.03	4,000	1,443
J-FG-79	0	110.63	4,000	1,488

Appendix C. PCSWMM Sanitary Sewer Model Results

Table C-1. Existing Condition Dry Weather Scenario – Junction Output Table

Table C-2. Existing Condition Dry Weather Scenario – Conduit Output Table

Table C-3. Existing Condition Wet Weather Scenario – Junction Output Table

Table C-4. Existing Condition Wet Weather Scenario – Conduit Output Table

Table C-5. Proposed Condition (Site 1) Dry Weather Scenario – Junction Output Table

Table C-6. Proposed Condition (Site 1) Dry Weather Scenario – Conduit Output Table

Table C-7. Proposed Condition (Site 1) Wet Weather Scenario – Junction Output Table

Table C-8. Proposed Condition (Site 1) Wet Weather Scenario – Conduit Output Table

Table C-9. Proposed Condition (Site 2) Dry Weather Scenario – Junction Output Table

Table C-10. Proposed Condition (Site 2) Dry Weather Scenario – Conduit Output Table

Table C-11. Proposed Condition (Site 2) Wet Weather Scenario – Junction Output Table

Table C-12. Proposed Condition (Site 2) Wet Weather Scenario – Conduit Output Table

Table C-13. Proposed Condition (Site 3) Dry Weather Scenario – Junction Output Table

Table C-14. Proposed Condition (Site 3) Dry Weather Scenario – Conduit Output Table

Table C-15. Proposed Condition (Site 3) Wet Weather Scenario – Junction Output Table

Table C-16. Proposed Condition (Site 3) Wet Weather Scenario – Conduit Output Table

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Table C-1. Existing Condition Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	2.202	FAIRGROUNDS_SUMMER	0.24	2.57	11/09/2025 17:45 PM	121.44	8.65
SMH-FG-002	3.15	12.08	8.92	2.745	FAIRGROUNDS_SUMMER	0.09	3.24	11/09/2025 17:42 PM	14.19	8.84
SMH-FG-003	3.61	11.70	8.09	0.000		0.07	3.68	11/09/2025 17:39 PM	9.38	8.02
SMH-FG-004	4.22	9.99	5.77	0.000		0.06	4.28	11/08/2025 17:36 PM	7.7	5.71
SMH-FG-005	5.20	10.23	5.03	0.000		0.19	5.39	11/08/2025 17:59 PM	57.91	4.84
SMH-FG-006	4.77	10.94	6.16	0.000		0.06	4.84	11/08/2025 17:35 PM	7.74	6.10
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.2	4.45	11/08/2025 18:00 PM	65.81	5.55
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	7.649	FAIRGROUNDS_SUMMER	0.23	3.6	11/08/2025 18:00 PM	87.25	6.16
SMH-FG-015	0.73	6.66	5.93	0.000		0.26	0.99	11/07/2025 17:44 PM	121.54	5.67
SMH-FG-016	1.04	6.81	5.77	0.000		0.26	1.29	11/07/2025 17:39 PM	121.88	5.52
SMH-FG-017	1.11	7.03	5.92	0.000		0.26	1.36	11/07/2025 17:41 PM	121.44	5.67
SMH-FG-018	1.81	7.65	5.84	0.000		0.24	2.05	11/09/2025 17:48 PM	121.44	5.60
SMH-FG-019	1.63	7.26	5.63	0.000		0.09	1.72	11/08/2025 18:00 PM	15.11	5.54
SMH-FG-020	3.36	7.78	4.42	0.000		0.08	3.44	11/08/2025 18:00 PM	15.11	4.34
SMH-FG-021	5.27	9.00	3.73	4.029	FAIRGROUNDS_SUMMER	0.07	5.34	11/08/2025 18:00 PM	8.89	3.66
SMH-FG-022	1.67	7.91	6.24	0.000		0.23	1.9	11/07/2025 18:00 PM	87.24	6.01
SMH-FG-023	0.86	7.99	7.12	6.147	FAIRGROUNDS_SUMMER	0.25	1.12	11/09/2025 18:00 PM	98	6.87
SMH-FG-024	2.60	8.68	6.08	0.000		0.23	2.82	11/07/2025 18:00 PM	87.25	5.86
SMH-FG-025	0.32	6.71	6.39	0.000		0.13	0.45	11/09/2025 18:00 PM	234.54	6.26
SMH-FG-026	0.85	9.21	8.35	1.782	FAIRGROUNDS_SUMMER	0.17	1.02	11/08/2025 18:00 PM	49.93	8.19
SMH-FG-027	1.21	8.75	7.54	0.032	FAIRGROUNDS_SUMMER	0.15	1.36	11/08/2025 18:00 PM	38.44	7.39
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.15	2.31	11/08/2025 18:00 PM	38.39	7.41
SMH-FG-030	2.45	9.11	6.66	0.000		0.15	2.6	11/07/2025 17:12 PM	38.39	6.51
SMH-FG-031	3.03	10.00	6.96	0.000		0.15	3.18	11/07/2025 17:57 PM	38.39	6.82
SMH-FG-032	3.70	10.49	6.79	0.000		0.1	3.8	11/07/2025 17:09 PM	16.77	6.69
SMH-FG-033	4.87	9.04	4.17	9.574	FAIRGROUNDS_SUMMER	0.1	4.97	11/07/2025 17:02 PM	16.75	4.07
SMH-FG-034	4.23	10.31	6.08	0.000		0.1	4.33	11/08/2025 17:05 PM	16.78	5.98
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0.11	1.29	11/07/2025 17:38 PM	1.01	5.41
SMH-FG-037	7.16	8.62	1.47	0.445	FAIRGROUNDS_SUMMER	0.02	7.18	11/07/2025 17:50 PM	0.78	1.44
SMH-FG-038	5.29	8.62	3.33	0.000		0.05	5.34	11/09/2025 17:07 PM	4.21	3.28
SMH-FG-039	0.39	7.25	6.86	0.000		0.26	0.65	11/09/2025 18:00 PM	219.43	6.60
SMH-FG-040	4.54	10.00	5.46	0.000		0.2	4.74	11/08/2025 18:00 PM	65.81	5.26

Table C-1. Existing Condition Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	7.7	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.15	3.44	11/07/2025 17:57 PM	38.39	6.85
SMH-FG-044	4.58	9.80	5.22	12.362	FAIRGROUNDS_SUMMER	0.11	4.7	11/07/2025 17:47 PM	21.63	5.10
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0.01	3.29	11/08/2025 18:00 PM	0.14	6.63
SMH-FG-048	4.22	8.22	4.00	0.078	FAIRGROUNDS_SUMMER	0.01	4.23	11/08/2025 18:00 PM	0.14	3.99
SMH-FG-049	-2.02	7.26	9.28	0.000		0.04	-1.98	11/08/2025 18:00 PM	2.03	9.24
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.07	-1.36	11/08/2025 18:00 PM	6.35	8.77
SMH-FG-056	1.50	6.00	4.50	3.630	FAIRGROUNDS_SUMMER	0.06	1.56	11/08/2025 18:00 PM	6.35	4.44
SMH-FG-057	1.98	8.86	6.88	0.000		0.01	1.99	11/08/2025 18:00 PM	0.24	6.87
SMH-FG-058	4.61	8.78	4.17	0.136	FAIRGROUNDS_SUMMER	0.01	4.62	11/08/2025 18:00 PM	0.24	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		2.8	7.25	11/10/2025 16:40 PM	9.98	0.81
SMH-FG-061	6.94	10.22	3.28	0.000		0.24	7.18	11/10/2025 17:58 PM	10.01	3.04
SMH-FG-062	7.10	11.10	4.00	0.000		0.07	7.17	11/07/2025 18:03 PM	8.38	3.93
SMH-FG-063	3.33	7.81	4.48	0.000		3.92	7.24	11/09/2025 16:53 PM	13.44	0.57
SMH-FG-064	3.20	7.59	4.39	0.000		4.04	7.24	11/07/2025 18:15 PM	11.18	0.35
SMH-FG-065	3.17	7.17	4.00	0.000		4.07	7.24	11/08/2025 19:04 PM	8.38	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		2.9	7.86	11/09/2025 11:01 AM	57.88	1.10
SMH-FG-068	3.55	9.88	6.33	0.000		0.2	3.75	11/08/2025 18:00 PM	67.79	6.13
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	29.543	FAIRGROUNDS_SUMMER	0.16	2.71	11/07/2025 17:11 PM	51.7	11.25
SMH-FG-071	3.45	13.66	10.20	29.543	FAIRGROUNDS_SUMMER	0.15	3.61	11/07/2025 17:07 PM	51.7	10.05
SMH-FG-072	1.96	9.01	7.05	0.000		0.24	2.21	11/09/2025 17:46 PM	121.44	6.80
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.2	5.2	11/08/2025 18:00 PM	234.58	3.10
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.18	2.9	11/09/2025 17:44 PM	65.89	9.12

Table C-1. Existing Condition Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.85	4.98	11/07/2025 04:45 AM	7.7	1.15
SMH-FG-085	2.86	6.66	3.80	0.000		19.52	22.38	11/07/2025 06:36 AM	234.54	0.00
SMH-FG-086	4.30	9.30	5.00	0.947	FAIRGROUNDS_SUMMER	0.03	4.33	11/07/2025 17:46 PM	1.66	4.97
SMH-FG-087	-0.22	8.55	8.76	0.000		0.04	-0.18	11/08/2025 18:00 PM	1.9	8.73
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.56	11/07/2025 17:35 PM	3.85	3.96
SMH-FG-093	2.10	6.10	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.14	11/07/2025 17:28 PM	3.85	3.96
SMH-FG-094	0.48	7.00	6.53	0.000		0.06	0.54	11/07/2025 17:56 PM	7.7	6.46
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.08	0	11/07/2025 17:58 PM	7.7	6.03
SMH-FG-097	3.67	7.75	4.09	0.000		0.06	3.72	11/07/2025 17:05 PM	6.22	4.03
SMH-FG-098	4.48	9.13	4.65	3.553	FAIRGROUNDS_SUMMER	0.06	4.54	11/07/2025 17:02 PM	6.22	4.59
SMH-FG-099	7.03	9.00	1.97	0.608	FAIRGROUNDS_SUMMER	0.03	7.05	11/07/2025 17:44 PM	1.06	1.95
SMH-FG-100	5.89	8.40	2.51	0.000		0.03	5.92	11/08/2025 18:00 PM	1.84	2.48
SMH-FG-101	6.10	8.28	2.18	2.402	FAIRGROUNDS_SUMMER	0.05	6.15	11/08/2025 17:02 PM	4.2	2.13
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.06	4.75	11/08/2025 18:00 PM	6.08	3.94
SMH-FG-104	6.64	9.00	2.36	2.205	FAIRGROUNDS_SUMMER	0.05	6.69	11/10/2025 17:03 PM	3.86	2.31
SMH-FG-105	3.89	9.78	5.90	0.000		0.2	4.09	11/08/2025 18:00 PM	67.79	5.69
SMH-FG-106	5.84	9.00	3.16	0.000		0.03	5.87	11/07/2025 17:57 PM	3.86	3.13
SMH-FG-107	4.09	10.85	6.76	0.962	FAIRGROUNDS_SUMMER	0.07	4.16	11/07/2025 17:33 PM	9.38	6.69
SMH-FG-108	6.14	9.99	3.85	4.533	FAIRGROUNDS_SUMMER	0.07	6.2	11/07/2025 17:25 PM	7.93	3.79
SMH-FG-109	5.12	10.60	5.48	0.000		0.2	5.32	11/08/2025 18:00 PM	65.81	5.28
SMH-FG-110	3.71	13.91	10.20	0.000		0.07	3.78	11/09/2025 17:38 PM	9.38	10.13
SMH-FG-111	2.14	8.03	5.89	0.000		0.28	2.42	11/11/2025 00:00 AM	0.18	5.61
SMH-FG-112	4.89	8.68	3.79	0.000		0.05	4.94	11/07/2025 17:08 PM	4.2	3.74

Table C-2. Existing Condition Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	51.7	11/07/2025 17:07 PM	2.02	0.33	156.21
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	16.76	11/07/2025 17:09 PM	0.82	0.19	270.02
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:15 PM	1.45	0.23	248.39
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:58 PM	1.45	0.23	248.39
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:57 PM	1.45	0.23	248.75
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/08/2025 18:00 PM	1.45	0.23	248.39
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	38.44	11/08/2025 18:00 PM	1.32	0.24	248.34
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	16.77	11/07/2025 17:07 PM	1.13	0.15	270.01
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	16.78	11/07/2025 17:03 PM	1.13	0.15	270.00
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	21.63	11/07/2025 17:47 PM	0.99	0.2	265.15
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	15.11	11/08/2025 18:00 PM	1.09	0.21	175.53
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	97.99	11/09/2025 18:00 PM	1.36	0.26	480.56
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	121.46	11/07/2025 17:40 PM	1.5	0.2	990.23
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	121.54	11/07/2025 17:39 PM	1.5	0.2	986.46
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	121.45	11/07/2025 17:44 PM	1.48	0.21	986.55
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	8.89	11/08/2025 18:00 PM	1.06	0.15	167.03
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/09/2025 17:39 PM	0.74	0.08	779.55
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	14.19	11/09/2025 17:42 PM	0.52	0.13	774.74
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	65.89	11/09/2025 17:44 PM	1.22	0.21	723.04
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/09/2025 17:38 PM	0.86	0.07	781.13
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	87.25	11/08/2025 18:00 PM	1.62	0.27	361.98
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	87.24	11/07/2025 18:00 PM	1.62	0.27	361.99
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	87.24	11/07/2025 18:00 PM	1.49	0.29	361.99
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	4.2	11/08/2025 17:07 PM	0.95	0.1	171.72
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	6.08	11/08/2025 18:00 PM	0.31	0.29	169.84
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.15	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	15.11	11/08/2025 18:00 PM	1.55	0.17	208.70
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.78	11/07/2025 17:50 PM	0.41	0.06	175.14
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	1.84	11/08/2025 18:00 PM	0.39	0.1	174.08
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	51.7	11/07/2025 17:11 PM	1.17	0.2	737.23
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/09/2025 17:46 PM	1.84	0.24	667.49
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	57.88	11/08/2025 17:59 PM	1.55	0.29	230.33
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	65.81	11/08/2025 18:00 PM	1.69	0.3	220.97
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	65.81	11/08/2025 18:00 PM	1.69	0.3	220.97
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	65.81	11/08/2025 18:00 PM	1.67	0.3	220.97
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/09/2025 17:48 PM	1.78	0.25	667.49

Table C-2. Existing Condition Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.08	372.54
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	1.01	11/07/2025 05:09 AM	0.1	0.28	371.80
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	67.79	11/08/2025 18:00 PM	1.57	0.32	219.71
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	67.79	11/08/2025 18:00 PM	1.7	0.3	218.99
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/09/2025 17:46 PM	1.84	0.24	667.49
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0.01	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.81	0.1	280.43
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.9	0.09	280.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	0.24	11/08/2025 18:00 PM	0.13	0.04	323.90
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	1.9	11/08/2025 18:00 PM	0.54	0.06	284.88
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	2.03	11/08/2025 18:00 PM	0.66	0.05	285.11
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.14	11/07/2025 17:59 PM	0	0.01	659.02
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.14	11/08/2025 18:00 PM	0.08	0.03	596.11
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.24	11/08/2025 18:00 PM	0	0.01	637.32
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	8.37	11/07/2025 18:03 PM	0.53	0.24	183.77
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.11	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:36 PM	0.76	0.07	781.23
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/07/2025 17:33 PM	0.86	0.07	779.55
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:35 PM	0.81	0.06	781.23
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0.01	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	7.74	11/10/2025 17:27 PM	0.15	0.56	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.6	0.013	0	0	FORCE_MAIN	6	-0.0004	57.91	11/10/2025 17:59 PM	0.9	0.69	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.1	0.013	0	0	FORCE_MAIN	8	-0.0030	234.58	11/07/2025 17:59 PM	2.18	0.65	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.0	0.011	0	0	FORCE_MAIN	6	-0.0030	8.38	11/10/2025 17:58 PM	0.37	0.3	n/a
FG1080	SMH-FG-065	SMH-FG-064	10.0	0.011	0	0	FORCE_MAIN	6	-0.0030	11.18	11/10/2025 17:49 PM	0.16	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.0	0.011	0	0	FORCE_MAIN	6	-0.0030	13.44	11/07/2025 17:49 PM	0.15	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.8	0.011	0	0	FORCE_MAIN	6	-0.0030	9.98	11/07/2025 09:07 AM	0.14	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.9	0.011	0	0	FORCE_MAIN	6	-0.0030	10.01	11/07/2025 09:07 AM	0.22	0.74	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.9	0.011	0	0	CIRCULAR	15	0.0044	219.43	11/09/2025 18:00 PM	4	0.16	1680.40
FG1085	SMH-FG-025	SMH-FG-078	28.9	0.011	0	2.5	CIRCULAR	15	0.0988	234.54	11/09/2025 18:00 PM	7.96	0.1	8759.18
FG1086	SMH-FG-077	SMH-B4-02	137.9	0.013	0	2	CIRCULAR	15	0.0228	234.54	11/09/2025 17:59 PM	4.23	0.16	3419.06
FG1087	SMH-FG-089	SMH-FG-088	376.4	0.013	0	1	CIRCULAR	6	0.0082	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.1	0.013	0	2.5	CIRCULAR	6	0.0153	1.66	11/07/2025 17:46 PM	0.93	0.05	258.26

Table C-2. Existing Condition Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	7.7	11/07/2025 17:58 PM	2.27	0.08	168.22
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.08	175.92
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	7.7	11/07/2025 17:56 PM	1.01	0.14	200.24
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	3.85	11/07/2025 17:35 PM	0.8	0.1	204.20
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	3.85	11/07/2025 17:28 PM	0.8	0.1	202.38
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/07/2025 17:05 PM	0.84	0.14	169.70
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/07/2025 17:03 PM	1.07	0.12	169.70
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	1.06	11/07/2025 17:44 PM	0.51	0.06	174.86
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.05	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	4.21	11/07/2025 17:03 PM	0.95	0.1	171.71
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	1.87	11/07/2025 17:57 PM	0.5	0.09	174.05
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	3.86	11/08/2025 17:04 PM	1.11	0.08	172.06
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	7.93	11/07/2025 17:25 PM	0.85	0.26	167.99
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	49.93	11/08/2025 18:00 PM	1.71	0.24	237.57
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.42	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	1.99	11/07/2025 17:57 PM	0.66	0.35	77.34
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	4.2	11/08/2025 17:08 PM	0.83	0.11	171.72

Table C-3. Existing Condition Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	0.444	FAIRGROUNDS_NON_SUMM	0.11	2.44	11/10/2025 14:00 PM	25.91	8.78
SMH-FG-002	3.15	12.08	8.92	0.554	FAIRGROUNDS_NON_SUMM	0.04	3.19	11/10/2025 14:00 PM	3.03	8.89
SMH-FG-003	3.61	11.70	8.09	0.000		0.03	3.64	11/07/2025 13:59 PM	2	8.06
SMH-FG-004	4.22	9.99	5.77	0.000		0.03	4.25	11/07/2025 13:53 PM	1.65	5.74
SMH-FG-005	5.20	10.23	5.03	0.000		0.09	5.29	11/10/2025 14:01 PM	12.26	4.94
SMH-FG-006	4.77	10.94	6.16	0.000		0.03	4.8	11/10/2025 13:43 PM	1.68	6.14
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.09	4.35	11/10/2025 14:02 PM	13.91	5.65
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	1.544	FAIRGROUNDS_NON_SUMM	0.11	3.48	11/10/2025 14:00 PM	18.44	6.28
SMH-FG-015	0.73	6.66	5.93	0.000		0.12	0.85	11/08/2025 13:26 PM	25.9	5.81
SMH-FG-016	1.04	6.81	5.77	0.000		0.12	1.16	11/10/2025 14:01 PM	25.91	5.65
SMH-FG-017	1.11	7.03	5.92	0.000		0.12	1.23	11/10/2025 14:00 PM	25.91	5.80
SMH-FG-018	1.81	7.65	5.84	0.000		0.11	1.93	11/10/2025 14:00 PM	25.91	5.72
SMH-FG-019	1.63	7.26	5.63	0.000		0.04	1.67	11/09/2025 14:00 PM	3.22	5.59
SMH-FG-020	3.36	7.78	4.42	0.000		0.04	3.4	11/09/2025 14:00 PM	3.22	4.38
SMH-FG-021	5.27	9.00	3.73	0.813	FAIRGROUNDS_NON_SUMM	0.03	5.31	11/09/2025 14:00 PM	1.9	3.69
SMH-FG-022	1.67	7.91	6.24	0.000		0.11	1.78	11/10/2025 14:03 PM	18.39	6.13
SMH-FG-023	0.86	7.99	7.12	1.241	FAIRGROUNDS_NON_SUMM	0.12	0.98	11/10/2025 14:00 PM	20.61	7.01
SMH-FG-024	2.60	8.68	6.08	0.000		0.11	2.7	11/10/2025 14:00 PM	18.42	5.98
SMH-FG-025	0.32	6.71	6.39	0.000		0.06	0.38	11/10/2025 14:01 PM	49.64	6.33
SMH-FG-026	0.85	9.21	8.35	0.360	FAIRGROUNDS_NON_SUMM	0.08	0.94	11/10/2025 14:00 PM	10.61	8.27
SMH-FG-027	1.21	8.75	7.54	0.006	FAIRGROUNDS_NON_SUMM	0.07	1.28	11/10/2025 13:32 PM	8.21	7.47
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.07	2.23	11/10/2025 13:26 PM	8.2	7.49
SMH-FG-030	2.45	9.11	6.66	0.000		0.07	2.52	11/09/2025 13:19 PM	8.19	6.59
SMH-FG-031	3.03	10.00	6.96	0.000		0.07	3.1	11/09/2025 13:22 PM	8.19	6.90
SMH-FG-032	3.70	10.49	6.79	0.000		0.05	3.75	11/09/2025 13:14 PM	3.59	6.74
SMH-FG-033	4.87	9.04	4.17	1.932	FAIRGROUNDS_NON_SUMM	0.05	4.92	11/07/2025 13:04 PM	3.57	4.12
SMH-FG-034	4.23	10.31	6.08	0.000		0.05	4.28	11/09/2025 13:08 PM	3.6	6.03
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0	1.18	11/07/2025 00:00 AM	0	5.52
SMH-FG-037	7.16	8.62	1.47	0.090	FAIRGROUNDS_NON_SUMM	0.01	7.17	11/09/2025 14:00 PM	0.17	1.45
SMH-FG-038	5.29	8.62	3.33	0.000		0.02	5.31	11/09/2025 13:08 PM	0.9	3.31
SMH-FG-039	0.39	7.25	6.86	0.000		0.12	0.51	11/10/2025 14:01 PM	46.44	6.74
SMH-FG-040	4.54	10.00	5.46	0.000		0.09	4.64	11/10/2025 14:01 PM	13.92	5.36

Table C-3. Existing Condition Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	1.64	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.07	3.36	11/09/2025 13:19 PM	8.2	6.93
SMH-FG-044	4.58	9.80	5.22	2.495	FAIRGROUNDS_NON_SUMM	0.05	4.64	11/07/2025 14:00 PM	4.62	5.16
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0	3.28	11/09/2025 14:00 PM	0.03	6.64
SMH-FG-048	4.22	8.22	4.00	0.016	FAIRGROUNDS_NON_SUMM	0	4.22	11/07/2025 00:34 AM	0.03	4.00
SMH-FG-049	-2.02	7.26	9.28	0.000		0.02	-2	11/09/2025 14:03 PM	0.43	9.26
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.03	-1.39	11/09/2025 14:00 PM	1.36	8.80
SMH-FG-056	1.50	6.00	4.50	0.733	FAIRGROUNDS_NON_SUMM	0.03	1.53	11/09/2025 14:00 PM	1.36	4.47
SMH-FG-057	1.98	8.86	6.88	0.000		0.01	1.99	11/09/2025 14:00 PM	0.05	6.87
SMH-FG-058	4.61	8.78	4.17	0.028	FAIRGROUNDS_NON_SUMM	0	4.62	11/09/2025 14:00 PM	0.05	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		2.75	7.19	11/10/2025 11:39 AM	3.21	0.87
SMH-FG-061	6.94	10.22	3.28	0.000		0.19	7.13	11/10/2025 14:03 PM	2.81	3.09
SMH-FG-062	7.10	11.10	4.00	0.000		0.03	7.13	11/10/2025 14:11 PM	1.78	3.97
SMH-FG-063	3.33	7.81	4.48	0.000		3.87	7.2	11/10/2025 09:46 AM	3.7	0.61
SMH-FG-064	3.20	7.59	4.39	0.000		3.98	7.18	11/10/2025 13:59 PM	4.43	0.41
SMH-FG-065	3.17	7.17	4.00	0.000		4	7.18	11/10/2025 13:59 PM	1.78	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		0.39	5.34	11/10/2025 14:00 PM	12.3	3.62
SMH-FG-068	3.55	9.88	6.33	0.000		0.09	3.64	11/10/2025 14:03 PM	14.32	6.24
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	5.962	FAIRGROUNDS_NON_SUMM	0.08	2.63	11/07/2025 13:18 PM	11.03	11.33
SMH-FG-071	3.45	13.66	10.20	5.962	FAIRGROUNDS_NON_SUMM	0.07	3.53	11/07/2025 13:12 PM	11.03	10.13
SMH-FG-072	1.96	9.01	7.05	0.000		0.11	2.08	11/10/2025 14:00 PM	25.91	6.93
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.09	5.09	11/10/2025 14:03 PM	49.67	3.21
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.09	2.8	11/10/2025 14:00 PM	14.06	9.22

Table C-3. Existing Condition Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.82	4.95	11/07/2025 08:10 AM	1.64	1.18
SMH-FG-085	2.86	6.66	3.80	0.000		8.23	11.09	11/07/2025 11:51 AM	49.64	0.00
SMH-FG-086	4.30	9.30	5.00	0.191	FAIRGROUNDS_NON_SUMM	0.01	4.32	11/09/2025 14:00 PM	0.35	4.98
SMH-FG-087	-0.22	8.55	8.76	0.000		0.02	-0.2	11/09/2025 14:00 PM	0.4	8.75
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.54	11/07/2025 13:53 PM	0.82	3.98
SMH-FG-093	2.10	6.10	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.12	11/07/2025 13:42 PM	0.82	3.98
SMH-FG-094	0.48	7.00	6.53	0.000		0.03	0.5	11/09/2025 14:00 PM	1.64	6.50
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.04	-0.04	11/09/2025 14:00 PM	1.64	6.07
SMH-FG-097	3.67	7.75	4.09	0.000		0.03	3.69	11/09/2025 13:08 PM	1.33	4.06
SMH-FG-098	4.48	9.13	4.65	0.717	FAIRGROUNDS_NON_SUMM	0.03	4.51	11/10/2025 13:03 PM	1.33	4.62
SMH-FG-099	7.03	9.00	1.97	0.123	FAIRGROUNDS_NON_SUMM	0.01	7.04	11/07/2025 14:00 PM	0.23	1.96
SMH-FG-100	5.89	8.40	2.51	0.000		0.02	5.9	11/09/2025 14:00 PM	0.39	2.50
SMH-FG-101	6.10	8.28	2.18	0.485	FAIRGROUNDS_NON_SUMM	0.02	6.13	11/07/2025 13:04 PM	0.9	2.15
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.03	4.72	11/09/2025 14:00 PM	1.29	3.97
SMH-FG-104	6.64	9.00	2.36	0.445	FAIRGROUNDS_NON_SUMM	0.02	6.67	11/10/2025 13:05 PM	0.82	2.33
SMH-FG-105	3.89	9.78	5.90	0.000		0.09	3.98	11/10/2025 14:02 PM	14.33	5.80
SMH-FG-106	5.84	9.00	3.16	0.000		0.02	5.85	11/09/2025 14:00 PM	0.82	3.15
SMH-FG-107	4.09	10.85	6.76	0.194	FAIRGROUNDS_NON_SUMM	0.03	4.12	11/07/2025 13:54 PM	2	6.73
SMH-FG-108	6.14	9.99	3.85	0.915	FAIRGROUNDS_NON_SUMM	0.03	6.17	11/07/2025 13:38 PM	1.69	3.82
SMH-FG-109	5.12	10.60	5.48	0.000		0.09	5.21	11/10/2025 14:00 PM	13.93	5.39
SMH-FG-110	3.71	13.91	10.20	0.000		0.03	3.74	11/07/2025 13:57 PM	2	10.17
SMH-FG-111	2.14	8.03	5.89	0.000		0.27	2.41	11/11/2025 00:00 AM	0.19	5.62
SMH-FG-112	4.89	8.68	3.79	0.000		0.02	4.91	11/09/2025 13:12 PM	0.9	3.77

Table C-4. Existing Condition Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	11.03	11/07/2025 13:12 PM	1.33	0.16	196.88
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	3.58	11/09/2025 13:14 PM	0.52	0.09	283.20
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/09/2025 13:22 PM	0.91	0.11	278.58
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:22 PM	0.91	0.11	278.59
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:19 PM	0.91	0.11	278.95
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/10/2025 13:27 PM	0.91	0.11	278.58
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/10/2025 13:32 PM	0.87	0.12	278.58
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	3.59	11/09/2025 13:11 PM	0.71	0.07	283.19
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	3.6	11/09/2025 13:06 PM	0.71	0.07	283.18
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	4.62	11/07/2025 14:00 PM	0.64	0.09	282.16
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	3.22	11/09/2025 14:00 PM	0.78	0.1	187.42
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	20.54	11/10/2025 14:00 PM	0.85	0.12	558.01
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	25.91	11/10/2025 14:00 PM	0.95	0.1	1085.78
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/10/2025 14:01 PM	0.95	0.1	1082.10
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 13:52 PM	0.95	0.1	1082.10
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	1.9	11/09/2025 14:00 PM	0.67	0.07	174.02
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.02	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 13:59 PM	0.46	0.04	786.93
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	3.03	11/10/2025 14:00 PM	0.33	0.06	785.90
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	14.06	11/10/2025 14:00 PM	0.77	0.1	774.87
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 13:57 PM	0.54	0.03	788.51
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	18.42	11/10/2025 14:00 PM	1.02	0.13	430.81
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	18.39	11/10/2025 14:00 PM	1.02	0.13	430.84
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	18.36	11/10/2025 14:03 PM	0.94	0.13	430.87
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:10 PM	0.59	0.05	175.02
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	1.29	11/09/2025 14:00 PM	0.24	0.13	174.63
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.07	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	3.22	11/09/2025 14:00 PM	0.98	0.08	220.59
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.17	11/07/2025 14:00 PM	0.26	0.03	175.75
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/09/2025 14:00 PM	0.24	0.05	175.53
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	11.03	11/07/2025 13:18 PM	0.84	0.09	777.90
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/10/2025 14:00 PM	1.17	0.11	763.02
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	12.24	11/10/2025 14:01 PM	0.99	0.13	275.97
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	13.92	11/10/2025 14:00 PM	1.07	0.14	272.86
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	13.91	11/10/2025 14:01 PM	1.07	0.14	272.87
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	13.9	11/10/2025 14:02 PM	1.06	0.14	272.88
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/10/2025 14:00 PM	1.12	0.12	763.02
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	372.54

Table C-4. Existing Condition Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.09	372.81
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	14.32	11/10/2025 14:03 PM	0.99	0.15	273.18
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	14.32	11/10/2025 14:02 PM	1.08	0.14	272.46
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/10/2025 14:00 PM	1.17	0.11	763.02
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.03	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	1.36	11/09/2025 14:00 PM	0.48	0.05	285.42
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	1.35	11/09/2025 14:00 PM	0.58	0.04	285.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	0.05	11/09/2025 14:00 PM	0.09	0.02	324.09
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	0.4	11/09/2025 14:00 PM	0.33	0.03	286.38
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	0.43	11/09/2025 14:03 PM	0.57	0.02	286.71
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.03	11/09/2025 14:00 PM	0	0	659.13
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.03	11/09/2025 14:00 PM	0.05	0.02	596.22
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.05	11/09/2025 14:00 PM	0	0	637.51
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	1.75	11/10/2025 14:11 PM	0.32	0.11	190.39
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.05	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	1.64	11/07/2025 13:53 PM	0.47	0.03	787.29
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 13:55 PM	0.54	0.03	786.93
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	1.65	11/07/2025 13:52 PM	0.5	0.03	787.28
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	1.68	11/08/2025 13:48 PM	0.04	0.53	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.6	0.013	0	0	FORCE_MAIN	6	-0.0004	12.26	11/10/2025 14:00 PM	0.3	0.47	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.1	0.013	0	0	FORCE_MAIN	8	-0.0030	49.67	11/10/2025 14:01 PM	0.56	0.57	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.0	0.011	0	0	FORCE_MAIN	6	-0.0030	1.78	11/10/2025 14:03 PM	0.12	0.22	n/a
FG1080	SMH-FG-065	SMH-FG-064	10.0	0.011	0	0	FORCE_MAIN	6	-0.0030	4.43	11/09/2025 13:33 PM	0.33	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.0	0.011	0	0	FORCE_MAIN	6	-0.0030	3.7	11/10/2025 13:50 PM	0.09	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.8	0.011	0	0	FORCE_MAIN	6	-0.0030	3.21	11/09/2025 12:31 PM	0.04	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.9	0.011	0	0	FORCE_MAIN	6	-0.0030	2.81	11/09/2025 15:42 PM	0.06	0.69	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.9	0.011	0	0	CIRCULAR	15	0.0044	46.41	11/10/2025 14:01 PM	2.52	0.07	1853.42
FG1085	SMH-FG-025	SMH-FG-078	28.9	0.011	0	2.5	CIRCULAR	15	0.0988	49.64	11/10/2025 14:01 PM	4.92	0.05	8944.08
FG1086	SMH-FG-077	SMH-B4-02	137.9	0.013	0	2	CIRCULAR	15	0.0228	49.61	11/10/2025 14:03 PM	2.65	0.07	3603.99
FG1087	SMH-FG-089	SMH-FG-088	376.4	0.013	0	1	CIRCULAR	6	0.0082	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.1	0.013	0	2.5	CIRCULAR	6	0.0153	0.35	11/07/2025 13:58 PM	0.7	0.02	259.57
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	1.64	11/09/2025 14:00 PM	1.41	0.04	174.28
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.04	175.92

Table C-4. Existing Condition Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	1.64	11/09/2025 14:00 PM	0.63	0.07	206.30
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	0.82	11/07/2025 13:53 PM	0.5	0.05	207.23
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	0.82	11/07/2025 13:42 PM	0.5	0.05	205.41
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/09/2025 13:08 PM	0.53	0.07	174.59
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/09/2025 13:05 PM	0.67	0.06	174.59
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	0.23	11/07/2025 13:59 PM	0.32	0.03	175.69
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.02	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:05 PM	0.59	0.05	175.02
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/09/2025 14:00 PM	0.29	0.04	175.53
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	0.82	11/10/2025 13:07 PM	0.7	0.04	175.10
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	1.69	11/07/2025 13:38 PM	0.62	0.12	174.23
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	10.6	11/10/2025 14:00 PM	1.09	0.11	276.90
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.41	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	0.43	11/09/2025 14:00 PM	0.31	0.16	78.90
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:12 PM	0.52	0.05	175.02

Table C-5. Proposed Condition (Site 1) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	2.202	FAIRGROUNDS_SUMMER	0.24	2.57	11/08/2025 17:51 PM	121.44	8.65
SMH-FG-002	3.15	12.08	8.92	2.745	FAIRGROUNDS_SUMMER	0.09	3.24	11/08/2025 17:49 PM	14.19	8.84
SMH-FG-003	3.61	11.70	8.09	0.000		0.07	3.68	11/08/2025 17:46 PM	9.38	8.02
SMH-FG-004	4.22	9.99	5.77	0.000		0.06	4.28	11/08/2025 17:41 PM	7.7	5.71
SMH-FG-005	5.20	10.23	5.03	0.000		0.22	5.42	11/08/2025 17:59 PM	82.26	4.81
SMH-FG-006	4.77	10.94	6.16	0.000		0.06	4.84	11/08/2025 17:40 PM	7.74	6.10
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.23	4.49	11/08/2025 18:00 PM	90.16	5.51
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	7.649	FAIRGROUNDS_SUMMER	0.26	3.63	11/07/2025 18:00 PM	111.61	6.13
SMH-FG-015	0.73	6.66	5.93	0.000		0.26	0.99	11/07/2025 17:44 PM	121.53	5.67
SMH-FG-016	1.04	6.81	5.77	0.000		0.26	1.29	11/07/2025 17:35 PM	121.87	5.52
SMH-FG-017	1.11	7.03	5.92	0.000		0.26	1.36	11/07/2025 17:44 PM	121.44	5.67
SMH-FG-018	1.81	7.65	5.84	0.000		0.24	2.05	11/08/2025 17:54 PM	121.44	5.60
SMH-FG-019	1.63	7.26	5.63	0.000		0.09	1.72	11/08/2025 18:00 PM	15.11	5.54
SMH-FG-020	3.36	7.78	4.42	0.000		0.08	3.44	11/08/2025 18:00 PM	15.11	4.34
SMH-FG-021	5.27	9.00	3.73	4.029	FAIRGROUNDS_SUMMER	0.07	5.34	11/08/2025 18:00 PM	8.89	3.66
SMH-FG-022	1.67	7.91	6.24	0.000		0.26	1.93	11/07/2025 18:00 PM	111.6	5.98
SMH-FG-023	0.86	7.99	7.12	6.147	FAIRGROUNDS_SUMMER	0.29	1.15	11/07/2025 18:00 PM	122.36	6.84
SMH-FG-024	2.60	8.68	6.08	0.000		0.26	2.85	11/07/2025 18:00 PM	111.6	5.83
SMH-FG-025	0.32	6.71	6.39	0.000		0.13	0.45	11/08/2025 18:00 PM	258.91	6.26
SMH-FG-026	0.85	9.21	8.35	1.782	FAIRGROUNDS_SUMMER	0.21	1.06	11/08/2025 18:00 PM	74.27	8.15
SMH-FG-027	1.21	8.75	7.54	0.032	FAIRGROUNDS_SUMMER	0.15	1.36	11/08/2025 18:00 PM	38.44	7.39
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.15	2.31	11/08/2025 18:00 PM	38.39	7.41
SMH-FG-030	2.45	9.11	6.66	0.000		0.15	2.6	11/09/2025 17:12 PM	38.39	6.51
SMH-FG-031	3.03	10.00	6.96	0.000		0.15	3.18	11/07/2025 17:57 PM	38.39	6.82
SMH-FG-032	3.70	10.49	6.79	0.000		0.1	3.8	11/09/2025 17:09 PM	16.77	6.69
SMH-FG-033	4.87	9.04	4.17	9.574	FAIRGROUNDS_SUMMER	0.1	4.97	11/07/2025 17:02 PM	16.75	4.07
SMH-FG-034	4.23	10.31	6.08	0.000		0.1	4.33	11/08/2025 17:05 PM	16.78	5.98
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0.11	1.29	11/07/2025 17:34 PM	1.05	5.41
SMH-FG-037	7.16	8.62	1.47	0.445	FAIRGROUNDS_SUMMER	0.02	7.18	11/07/2025 17:50 PM	0.78	1.44
SMH-FG-038	5.29	8.62	3.33	0.000		0.05	5.34	11/07/2025 17:07 PM	4.21	3.28
SMH-FG-039	0.39	7.25	6.86	0.000		0.28	0.67	11/08/2025 18:00 PM	243.8	6.58
SMH-FG-040	4.54	10.00	5.46	0.000		0.23	4.78	11/08/2025 18:00 PM	90.16	5.22

Table C-5. Proposed Condition (Site 1) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	7.7	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.15	3.44	11/07/2025 17:57 PM	38.39	6.85
SMH-FG-044	4.58	9.80	5.22	12.362	FAIRGROUNDS_SUMMER	0.11	4.7	11/07/2025 17:46 PM	21.63	5.10
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0.01	3.29	11/08/2025 18:00 PM	0.14	6.63
SMH-FG-048	4.22	8.22	4.00	0.078	FAIRGROUNDS_SUMMER	0.01	4.23	11/07/2025 18:00 PM	0.14	3.99
SMH-FG-049	-2.02	7.26	9.28	0.000		0.14	-1.88	11/08/2025 10:32 AM	33.7	9.14
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.07	-1.36	11/08/2025 18:00 PM	6.35	8.77
SMH-FG-056	1.50	6.00	4.50	3.630	FAIRGROUNDS_SUMMER	0.06	1.56	11/08/2025 18:00 PM	6.35	4.44
SMH-FG-057	1.98	8.86	6.88	0.000		0.13	2.11	11/09/2025 11:00 AM	32.16	6.75
SMH-FG-058	4.61	8.78	4.17	0.136	FAIRGROUNDS_SUMMER	0.01	4.62	11/08/2025 18:00 PM	0.24	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		3	7.44	11/07/2025 10:55 AM	39.32	0.62
SMH-FG-061	6.94	10.22	3.28	0.000		0.35	7.3	11/07/2025 10:59 AM	39.16	2.92
SMH-FG-062	7.10	11.10	4.00	0.000		0.14	7.24	11/07/2025 11:01 AM	38.91	3.86
SMH-FG-063	3.33	7.81	4.48	0.000		4.18	7.51	11/10/2025 10:36 AM	39.79	0.30
SMH-FG-064	3.20	7.59	4.39	0.000		4.31	7.51	11/07/2025 11:00 AM	41.49	0.08
SMH-FG-065	3.17	7.17	4.00	0.000		4.36	7.54	11/10/2025 10:56 AM	38.9	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		2.34	7.29	11/09/2025 23:02 PM	82.23	1.67
SMH-FG-068	3.55	9.88	6.33	0.000		0.24	3.78	11/08/2025 18:00 PM	92.14	6.10
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	29.543	FAIRGROUNDS_SUMMER	0.16	2.71	11/07/2025 17:11 PM	51.7	11.25
SMH-FG-071	3.45	13.66	10.20	29.543	FAIRGROUNDS_SUMMER	0.15	3.61	11/07/2025 17:07 PM	51.7	10.05
SMH-FG-072	1.96	9.01	7.05	0.000		0.24	2.21	11/08/2025 17:52 PM	121.44	6.80
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.21	5.21	11/07/2025 18:00 PM	258.95	3.09
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.18	2.9	11/08/2025 17:50 PM	65.89	9.12

Table C-5. Proposed Condition (Site 1) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.85	4.98	11/07/2025 04:45 AM	7.7	1.15
SMH-FG-085	2.86	6.66	3.80	0.000		20.24	23.1	11/07/2025 06:11 AM	258.91	0.00
SMH-FG-086	4.30	9.30	5.00	0.947	FAIRGROUNDS_SUMMER	0.03	4.33	11/07/2025 17:46 PM	1.66	4.97
SMH-FG-087	-0.22	8.55	8.76	0.000		0.14	-0.07	11/10/2025 10:17 AM	33.53	8.62
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.56	11/07/2025 17:35 PM	3.85	3.96
SMH-FG-093	2.10	6.10	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.14	11/07/2025 17:28 PM	3.85	3.96
SMH-FG-094	0.48	7.00	6.53	0.000		0.06	0.54	11/07/2025 17:56 PM	7.7	6.46
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.08	0	11/07/2025 17:57 PM	7.7	6.03
SMH-FG-097	3.67	7.75	4.09	0.000		0.06	3.72	11/08/2025 17:05 PM	6.22	4.03
SMH-FG-098	4.48	9.13	4.65	3.553	FAIRGROUNDS_SUMMER	0.06	4.54	11/07/2025 17:02 PM	6.22	4.59
SMH-FG-099	7.03	9.00	1.97	0.608	FAIRGROUNDS_SUMMER	0.03	7.05	11/07/2025 17:44 PM	1.06	1.95
SMH-FG-100	5.89	8.40	2.51	0.000		0.03	5.92	11/08/2025 18:00 PM	1.84	2.48
SMH-FG-101	6.10	8.28	2.18	2.402	FAIRGROUNDS_SUMMER	0.05	6.15	11/07/2025 17:02 PM	4.2	2.13
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.06	4.75	11/07/2025 18:00 PM	6.08	3.94
SMH-FG-104	6.64	9.00	2.36	2.205	FAIRGROUNDS_SUMMER	0.05	6.69	11/07/2025 17:03 PM	3.86	2.31
SMH-FG-105	3.89	9.78	5.90	0.000		0.24	4.12	11/08/2025 18:00 PM	92.14	5.66
SMH-FG-106	5.84	9.00	3.16	0.000		0.03	5.87	11/07/2025 17:58 PM	3.86	3.13
SMH-FG-107	4.09	10.85	6.76	0.962	FAIRGROUNDS_SUMMER	0.07	4.16	11/08/2025 17:42 PM	9.38	6.69
SMH-FG-108	6.14	9.99	3.85	4.533	FAIRGROUNDS_SUMMER	0.07	6.2	11/07/2025 17:26 PM	7.93	3.79
SMH-FG-109	5.12	10.60	5.48	0.000		0.23	5.35	11/08/2025 18:00 PM	90.16	5.25
SMH-FG-110	3.71	13.91	10.20	0.000		0.07	3.78	11/08/2025 17:45 PM	9.38	10.13
SMH-FG-111	2.14	8.03	5.89	0.000		0.28	2.42	11/11/2025 00:00 AM	0.18	5.61
SMH-FG-112	4.89	8.68	3.79	0.000		0.05	4.94	11/09/2025 17:08 PM	4.2	3.74
SMH-FG-S01	4.00	8.00	4.00	20.620	DEL_MAR_CITY	0.12	4.12	11/07/2025 10:18 AM	31.96	3.88

Table C-6. Proposed Condition (Site 1) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	51.7	11/07/2025 17:07 PM	2.02	0.33	156.21
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	16.76	11/08/2025 17:09 PM	0.82	0.19	270.02
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/09/2025 17:15 PM	1.45	0.23	248.39
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:58 PM	1.45	0.23	248.39
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:57 PM	1.45	0.23	248.75
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 18:00 PM	1.45	0.23	248.39
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	38.44	11/08/2025 18:00 PM	1.13	0.27	248.34
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	16.77	11/08/2025 17:07 PM	1.13	0.15	270.01
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	16.78	11/07/2025 17:03 PM	1.13	0.15	270.00
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	21.63	11/07/2025 17:47 PM	0.99	0.2	265.15
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	15.11	11/08/2025 18:00 PM	1.05	0.22	175.53
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	122.36	11/07/2025 18:00 PM	1.5	0.28	456.19
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	121.46	11/07/2025 17:37 PM	1.5	0.2	990.23
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	121.53	11/07/2025 17:35 PM	1.5	0.2	986.47
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	121.45	11/07/2025 17:44 PM	1.42	0.21	986.55
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	8.89	11/08/2025 18:00 PM	1.06	0.15	167.03
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:46 PM	0.74	0.08	779.55
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	14.19	11/08/2025 17:49 PM	0.52	0.13	774.74
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	65.89	11/08/2025 17:50 PM	1.22	0.21	723.04
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:45 PM	0.86	0.07	781.13
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	111.6	11/07/2025 18:00 PM	1.73	0.31	337.63
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	111.6	11/07/2025 18:00 PM	1.73	0.31	337.63
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	111.6	11/07/2025 18:00 PM	1.6	0.33	337.63
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	4.2	11/07/2025 17:07 PM	0.95	0.1	171.72
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	6.08	11/07/2025 18:00 PM	0.31	0.32	169.84
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.17	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	15.11	11/08/2025 18:00 PM	1.55	0.17	208.70
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.78	11/07/2025 17:50 PM	0.41	0.06	175.14
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	1.84	11/08/2025 18:00 PM	0.39	0.1	174.08
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	51.7	11/07/2025 17:11 PM	1.17	0.2	737.23
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:52 PM	1.84	0.24	667.49
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	82.23	11/08/2025 17:59 PM	1.73	0.34	205.98
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	90.16	11/08/2025 18:00 PM	1.84	0.35	196.62
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	90.16	11/08/2025 18:00 PM	1.84	0.35	196.62
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	90.16	11/08/2025 18:00 PM	1.83	0.35	196.62
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:54 PM	1.78	0.25	667.49
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.08	372.54
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	1.05	11/08/2025 05:08 AM	0.1	0.28	371.76

Table C-6. Proposed Condition (Site 1) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	92.14	11/08/2025 18:00 PM	1.75	0.37	195.36
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	92.14	11/08/2025 18:00 PM	1.86	0.35	194.64
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:52 PM	1.84	0.24	667.49
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0.01	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.81	0.1	280.43
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.9	0.09	280.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	32.16	11/09/2025 11:00 AM	1.64	0.2	291.98
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	33.59	11/09/2025 10:20 AM	1.4	0.21	253.19
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	33.65	11/08/2025 10:32 AM	1.52	0.2	253.49
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.14	11/07/2025 17:59 PM	0	0.01	659.02
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.14	11/08/2025 18:00 PM	0.02	0.11	596.11
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.24	11/08/2025 18:00 PM	0	0.01	637.32
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	38.9	11/07/2025 11:01 AM	1.44	0.35	153.24
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.11	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:41 PM	0.76	0.07	781.23
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:44 PM	0.86	0.07	779.55
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:41 PM	0.81	0.06	781.23
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0.01	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	7.74	11/07/2025 17:21 PM	0.15	0.56	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.639	0.013	0	0	FORCE_MAIN	6	-0.00037	82.26	11/08/2025 17:59 PM	1.2	0.72	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.087	0.013	0	0	FORCE_MAIN	8	-0.00303	258.95	11/08/2025 17:58 PM	2.38	0.65	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.015	0.011	0	0	FORCE_MAIN	6	-0.00302	38.91	11/07/2025 11:00 AM	0.9	0.49	n/a
FG1080	SMH-FG-065	SMH-FG-064	10	0.011	0	0	FORCE_MAIN	6	-0.003	41.49	11/09/2025 10:54 AM	0.58	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.042	0.011	0	0	FORCE_MAIN	6	-0.00302	39.79	11/07/2025 10:48 AM	0.55	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.839	0.011	0	0	FORCE_MAIN	6	-0.00302	39.32	11/07/2025 10:41 AM	0.75	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.934	0.011	0	0	FORCE_MAIN	6	-0.00302	39.16	11/07/2025 11:00 AM	0.53	0.85	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.862	0.011	0	0	CIRCULAR	15	0.00441	243.8	11/08/2025 18:00 PM	4.13	0.16	1656.03
FG1085	SMH-FG-025	SMH-FG-078	28.936	0.011	0	2.5	CIRCULAR	15	0.09883	258.91	11/08/2025 18:00 PM	8.18	0.11	8734.81
FG1086	SMH-FG-077	SMH-B4-02	137.887	0.013	0	2	CIRCULAR	15	0.02278	258.91	11/07/2025 18:00 PM	4.36	0.16	3394.69
FG1087	SMH-FG-089	SMH-FG-088	376.445	0.013	0	1	CIRCULAR	6	0.00817	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.062	0.013	0	2.5	CIRCULAR	6	0.01528	1.66	11/07/2025 17:46 PM	0.93	0.05	258.26
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	7.7	11/07/2025 17:57 PM	2.27	0.08	168.22
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.08	175.92
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48

Table C-6. Proposed Condition (Site 1) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	7.7	11/07/2025 17:56 PM	1.01	0.14	200.24
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	3.85	11/07/2025 17:35 PM	0.8	0.1	204.20
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	3.85	11/07/2025 17:28 PM	0.8	0.1	202.38
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/08/2025 17:05 PM	0.84	0.14	169.70
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/07/2025 17:03 PM	1.07	0.12	169.70
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	1.06	11/07/2025 17:44 PM	0.51	0.06	174.86
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.05	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	4.21	11/08/2025 17:03 PM	0.95	0.1	171.71
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	1.87	11/07/2025 17:58 PM	0.5	0.09	174.05
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	3.86	11/07/2025 17:04 PM	1.11	0.08	172.06
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	7.93	11/07/2025 17:26 PM	0.85	0.3	167.99
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	74.27	11/08/2025 18:00 PM	1.91	0.3	213.23
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.42	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	1.99	11/07/2025 17:58 PM	0.66	0.4	77.34
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	4.2	11/09/2025 17:08 PM	0.83	0.11	171.72
FGP001	SMH-FG-S01	SMH-FG-057	203.3	0.013	0	0	CIRCULAR	6	0.0099	31.96	11/07/2025 10:18 AM	2.4	0.25	177.68

Table C-7. Proposed Condition (Site 1) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	0.444	FAIRGROUNDS_NON_SUMM	0.11	2.44	11/07/2025 14:00 PM	25.91	8.78
SMH-FG-002	3.15	12.08	8.92	0.554	FAIRGROUNDS_NON_SUMM	0.04	3.19	11/07/2025 14:00 PM	3.03	8.89
SMH-FG-003	3.61	11.70	8.09	0.000		0.03	3.64	11/07/2025 14:00 PM	2	8.06
SMH-FG-004	4.22	9.99	5.77	0.000		0.03	4.25	11/07/2025 13:59 PM	1.65	5.74
SMH-FG-005	5.20	10.23	5.03	0.000		0.16	5.36	11/07/2025 10:45 AM	46.34	4.87
SMH-FG-006	4.77	10.94	6.16	0.000		0.03	4.8	11/07/2025 13:47 PM	1.68	6.14
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.16	4.42	11/07/2025 10:48 AM	44.8	5.58
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	1.544	FAIRGROUNDS_NON_SUMM	0.17	3.55	11/07/2025 10:51 AM	49.05	6.21
SMH-FG-015	0.73	6.66	5.93	0.000		0.12	0.85	11/09/2025 14:02 PM	25.9	5.81
SMH-FG-016	1.04	6.81	5.77	0.000		0.12	1.16	11/09/2025 14:01 PM	25.9	5.65
SMH-FG-017	1.11	7.03	5.92	0.000		0.12	1.23	11/09/2025 14:00 PM	25.91	5.80
SMH-FG-018	1.81	7.65	5.84	0.000		0.11	1.93	11/07/2025 14:00 PM	25.91	5.72
SMH-FG-019	1.63	7.26	5.63	0.000		0.04	1.67	11/09/2025 14:00 PM	3.22	5.59
SMH-FG-020	3.36	7.78	4.42	0.000		0.04	3.4	11/09/2025 14:00 PM	3.22	4.38
SMH-FG-021	5.27	9.00	3.73	0.813	FAIRGROUNDS_NON_SUMM	0.03	5.31	11/09/2025 14:00 PM	1.9	3.69
SMH-FG-022	1.67	7.91	6.24	0.000		0.17	1.84	11/07/2025 10:55 AM	48.96	6.07
SMH-FG-023	0.86	7.99	7.12	1.241	FAIRGROUNDS_NON_SUMM	0.2	1.06	11/07/2025 10:56 AM	51.07	6.93
SMH-FG-024	2.60	8.68	6.08	0.000		0.17	2.76	11/07/2025 10:52 AM	48.99	5.92
SMH-FG-025	0.32	6.71	6.39	0.000		0.08	0.4	11/07/2025 10:58 AM	78.54	6.31
SMH-FG-026	0.85	9.21	8.35	0.360	FAIRGROUNDS_NON_SUMM	0.16	1.01	11/10/2025 11:00 AM	42.03	8.20
SMH-FG-027	1.21	8.75	7.54	0.006	FAIRGROUNDS_NON_SUMM	0.07	1.28	11/09/2025 13:32 PM	8.21	7.47
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.07	2.23	11/09/2025 13:25 PM	8.2	7.49
SMH-FG-030	2.45	9.11	6.66	0.000		0.07	2.52	11/09/2025 13:19 PM	8.19	6.59
SMH-FG-031	3.03	10.00	6.96	0.000		0.07	3.1	11/09/2025 13:22 PM	8.19	6.90
SMH-FG-032	3.70	10.49	6.79	0.000		0.05	3.75	11/09/2025 13:14 PM	3.59	6.74
SMH-FG-033	4.87	9.04	4.17	1.932	FAIRGROUNDS_NON_SUMM	0.05	4.92	11/10/2025 13:04 PM	3.57	4.12
SMH-FG-034	4.23	10.31	6.08	0.000		0.05	4.28	11/09/2025 13:08 PM	3.6	6.03
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0	1.18	11/07/2025 00:00 AM	0	5.52
SMH-FG-037	7.16	8.62	1.47	0.090	FAIRGROUNDS_NON_SUMM	0.01	7.17	11/09/2025 14:00 PM	0.17	1.45
SMH-FG-038	5.29	8.62	3.33	0.000		0.02	5.31	11/09/2025 13:08 PM	0.9	3.31
SMH-FG-039	0.39	7.25	6.86	0.000		0.16	0.55	11/07/2025 10:58 AM	75.51	6.70
SMH-FG-040	4.54	10.00	5.46	0.000		0.16	4.71	11/07/2025 10:47 AM	44.94	5.29

Table C-7. Proposed Condition (Site 1) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	1.64	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.07	3.36	11/09/2025 13:19 PM	8.2	6.93
SMH-FG-044	4.58	9.80	5.22	2.495	FAIRGROUNDS_NON_SUMM	0.05	4.64	11/07/2025 14:00 PM	4.62	5.16
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0	3.28	11/08/2025 14:01 PM	0.03	6.64
SMH-FG-048	4.22	8.22	4.00	0.016	FAIRGROUNDS_NON_SUMM	0	4.22	11/07/2025 00:36 AM	0.03	4.00
SMH-FG-049	-2.02	7.26	9.28	0.000		0.14	-1.88	11/08/2025 10:30 AM	32.43	9.14
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.03	-1.39	11/09/2025 14:00 PM	1.36	8.80
SMH-FG-056	1.50	6.00	4.50	0.733	FAIRGROUNDS_NON_SUMM	0.03	1.53	11/09/2025 14:00 PM	1.36	4.47
SMH-FG-057	1.98	8.86	6.88	0.000		0.13	2.11	11/10/2025 11:00 AM	32.01	6.75
SMH-FG-058	4.61	8.78	4.17	0.028	FAIRGROUNDS_NON_SUMM	0	4.62	11/09/2025 14:00 PM	0.05	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		2.96	7.41	11/09/2025 10:28 AM	34.2	0.66
SMH-FG-061	6.94	10.22	3.28	0.000		0.34	7.28	11/08/2025 11:01 AM	34.01	2.94
SMH-FG-062	7.10	11.10	4.00	0.000		0.13	7.23	11/10/2025 11:01 AM	33.65	3.87
SMH-FG-063	3.33	7.81	4.48	0.000		4.13	7.46	11/07/2025 10:41 AM	34.77	0.35
SMH-FG-064	3.20	7.59	4.39	0.000		4.26	7.46	11/07/2025 10:50 AM	36.24	0.13
SMH-FG-065	3.17	7.17	4.00	0.000		4.31	7.48	11/10/2025 10:50 AM	33.65	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		2.57	7.53	11/08/2025 10:40 AM	43.63	1.43
SMH-FG-068	3.55	9.88	6.33	0.000		0.16	3.71	11/07/2025 10:49 AM	45.14	6.17
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	5.962	FAIRGROUNDS_NON_SUMM	0.08	2.63	11/07/2025 13:18 PM	11.03	11.33
SMH-FG-071	3.45	13.66	10.20	5.962	FAIRGROUNDS_NON_SUMM	0.07	3.53	11/07/2025 13:12 PM	11.03	10.13
SMH-FG-072	1.96	9.01	7.05	0.000		0.11	2.08	11/07/2025 14:00 PM	25.91	6.93
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.12	5.12	11/07/2025 11:00 AM	97.75	3.18
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.09	2.8	11/07/2025 14:00 PM	14.06	9.22

Table C-7. Proposed Condition (Site 1) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.82	4.95	11/07/2025 08:10 AM	1.64	1.18
SMH-FG-085	2.86	6.66	3.80	0.000		12.57	15.43	11/07/2025 09:58 AM	78.54	0.00
SMH-FG-086	4.30	9.30	5.00	0.191	FAIRGROUNDS_NON_SUMM	0.01	4.32	11/09/2025 14:00 PM	0.35	4.98
SMH-FG-087	-0.22	8.55	8.76	0.000		0.14	-0.08	11/08/2025 10:17 AM	32.34	8.63
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.54	11/07/2025 13:53 PM	0.82	3.98
SMH-FG-093	2.10	6.10	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.12	11/07/2025 13:42 PM	0.82	3.98
SMH-FG-094	0.48	7.00	6.53	0.000		0.03	0.5	11/09/2025 14:00 PM	1.64	6.50
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.04	-0.04	11/09/2025 14:00 PM	1.64	6.07
SMH-FG-097	3.67	7.75	4.09	0.000		0.03	3.69	11/09/2025 13:08 PM	1.33	4.06
SMH-FG-098	4.48	9.13	4.65	0.717	FAIRGROUNDS_NON_SUMM	0.03	4.51	11/08/2025 13:03 PM	1.33	4.62
SMH-FG-099	7.03	9.00	1.97	0.123	FAIRGROUNDS_NON_SUMM	0.01	7.04	11/09/2025 14:00 PM	0.23	1.96
SMH-FG-100	5.89	8.40	2.51	0.000		0.02	5.9	11/09/2025 14:00 PM	0.39	2.50
SMH-FG-101	6.10	8.28	2.18	0.485	FAIRGROUNDS_NON_SUMM	0.02	6.13	11/07/2025 13:04 PM	0.9	2.15
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.03	4.72	11/09/2025 14:00 PM	1.29	3.97
SMH-FG-104	6.64	9.00	2.36	0.445	FAIRGROUNDS_NON_SUMM	0.02	6.67	11/09/2025 13:05 PM	0.82	2.33
SMH-FG-105	3.89	9.78	5.90	0.000		0.16	4.05	11/07/2025 10:49 AM	45.18	5.73
SMH-FG-106	5.84	9.00	3.16	0.000		0.02	5.85	11/09/2025 14:00 PM	0.82	3.15
SMH-FG-107	4.09	10.85	6.76	0.194	FAIRGROUNDS_NON_SUMM	0.03	4.12	11/07/2025 14:00 PM	2.01	6.73
SMH-FG-108	6.14	9.99	3.85	0.915	FAIRGROUNDS_NON_SUMM	0.03	6.17	11/07/2025 13:43 PM	1.69	3.82
SMH-FG-109	5.12	10.60	5.48	0.000		0.16	5.28	11/07/2025 10:46 AM	44.98	5.32
SMH-FG-110	3.71	13.91	10.20	0.000		0.03	3.74	11/07/2025 14:00 PM	2.01	10.17
SMH-FG-111	2.14	8.03	5.89	0.000		0.27	2.41	11/11/2025 00:00 AM	0.19	5.62
SMH-FG-112	4.89	8.68	3.79	0.000		0.02	4.91	11/09/2025 13:12 PM	0.9	3.77

Table C-8. Proposed Condition (Site 1) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	11.03	11/07/2025 13:12 PM	1.33	0.16	196.88
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	3.58	11/09/2025 13:14 PM	0.52	0.09	283.20
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/09/2025 13:22 PM	0.91	0.11	278.58
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:22 PM	0.91	0.11	278.59
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:19 PM	0.91	0.11	278.95
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/09/2025 13:28 PM	0.91	0.11	278.58
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	8.21	11/09/2025 13:32 PM	0.62	0.17	278.57
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	3.59	11/09/2025 13:11 PM	0.71	0.07	283.19
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	3.6	11/08/2025 13:06 PM	0.71	0.07	283.18
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	4.62	11/07/2025 14:00 PM	0.64	0.09	282.16
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	3.22	11/09/2025 14:00 PM	0.78	0.12	187.42
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	51.02	11/07/2025 10:57 AM	1.2	0.18	527.53
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 14:00 PM	0.95	0.1	1085.79
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 14:01 PM	0.95	0.1	1082.10
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 14:02 PM	0.8	0.11	1082.10
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	1.9	11/09/2025 14:00 PM	0.67	0.07	174.02
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.02	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 14:00 PM	0.47	0.04	786.93
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	3.03	11/07/2025 14:00 PM	0.33	0.06	785.90
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	14.06	11/07/2025 14:00 PM	0.77	0.1	774.87
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 14:00 PM	0.54	0.03	788.51
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	48.99	11/07/2025 10:51 AM	1.37	0.2	400.24
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	48.96	11/07/2025 10:53 AM	1.37	0.2	400.27
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	48.9	11/07/2025 10:55 AM	1.21	0.22	400.33
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:10 PM	0.59	0.05	175.02
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	1.29	11/09/2025 14:00 PM	0.24	0.2	174.63
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.12	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	3.22	11/09/2025 14:00 PM	0.98	0.08	220.59
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.17	11/07/2025 14:00 PM	0.26	0.03	175.75
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/09/2025 14:00 PM	0.24	0.05	175.53
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	11.03	11/07/2025 13:18 PM	0.84	0.09	777.90
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.17	0.11	763.02
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	43.38	11/07/2025 10:45 AM	1.48	0.24	244.83
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	44.94	11/07/2025 10:46 AM	1.52	0.24	241.84
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	44.8	11/07/2025 10:47 AM	1.51	0.24	241.98
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	44.78	11/07/2025 10:48 AM	1.51	0.24	242.00
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.12	0.12	763.02
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	372.54
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.09	372.81

Table C-8. Proposed Condition (Site 1) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	45.13	11/07/2025 10:49 AM	1.48	0.25	242.37
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	45.14	11/07/2025 10:49 AM	1.52	0.24	241.64
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.17	0.11	763.02
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.03	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	1.36	11/09/2025 14:00 PM	0.48	0.05	285.42
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	1.35	11/09/2025 14:00 PM	0.58	0.04	285.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	32.01	11/10/2025 11:00 AM	1.64	0.2	292.13
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	32.41	11/08/2025 10:22 AM	1.4	0.21	254.37
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	32.38	11/08/2025 10:30 AM	1.51	0.19	254.76
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.03	11/09/2025 14:00 PM	0	0	659.13
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.03	11/08/2025 14:01 PM	0	0.11	596.22
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.05	11/09/2025 14:00 PM	0	0	637.51
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	33.64	11/10/2025 11:01 AM	1.61	0.29	158.50
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.05	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	1.65	11/07/2025 13:59 PM	0.47	0.03	787.28
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	2.01	11/07/2025 14:00 PM	0.54	0.03	786.92
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	1.65	11/07/2025 13:58 PM	0.51	0.03	787.28
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	1.68	11/08/2025 13:31 PM	0.04	0.53	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.6	0.013	0	0	FORCE_MAIN	6	-0.0004	46.34	11/09/2025 11:05 AM	0.75	0.66	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.1	0.013	0	0	FORCE_MAIN	8	-0.0030	97.75	11/07/2025 09:58 AM	1.24	0.59	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.0	0.011	0	0	FORCE_MAIN	6	-0.0030	33.65	11/08/2025 11:01 AM	0.84	0.47	n/a
FG1080	SMH-FG-065	SMH-FG-064	10.0	0.011	0	0	FORCE_MAIN	6	-0.0030	36.24	11/07/2025 10:50 AM	0.58	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.0	0.011	0	0	FORCE_MAIN	6	-0.0030	34.77	11/07/2025 10:40 AM	0.55	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.8	0.011	0	0	FORCE_MAIN	6	-0.0030	34.2	11/07/2025 10:40 AM	0.73	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.9	0.011	0	0	FORCE_MAIN	6	-0.0030	34.01	11/07/2025 10:41 AM	0.5	0.84	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.9	0.011	0	0	CIRCULAR	15	0.0044	75.49	11/07/2025 10:58 AM	2.93	0.09	1824.34
FG1085	SMH-FG-025	SMH-FG-078	28.9	0.011	0	2.5	CIRCULAR	15	0.0988	78.54	11/07/2025 10:58 AM	5.7	0.06	8915.18
FG1086	SMH-FG-077	SMH-B4-02	137.9	0.013	0	2	CIRCULAR	15	0.0228	78.52	11/07/2025 11:00 AM	3.05	0.09	3575.08
FG1087	SMH-FG-089	SMH-FG-088	376.4	0.013	0	1	CIRCULAR	6	0.0082	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.1	0.013	0	2.5	CIRCULAR	6	0.0153	0.35	11/07/2025 13:58 PM	0.7	0.02	259.57
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	1.64	11/09/2025 14:00 PM	1.41	0.04	174.28
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.04	175.92
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48

Table C-8. Proposed Condition (Site 1) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	1.64	11/09/2025 14:00 PM	0.63	0.07	206.30
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	0.82	11/07/2025 13:53 PM	0.5	0.05	207.23
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	0.82	11/07/2025 13:42 PM	0.5	0.05	205.41
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/09/2025 13:08 PM	0.53	0.07	174.59
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/08/2025 13:05 PM	0.67	0.06	174.59
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	0.23	11/07/2025 13:59 PM	0.32	0.03	175.69
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.02	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/07/2025 13:05 PM	0.59	0.05	175.02
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/09/2025 14:00 PM	0.29	0.04	175.53
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	0.82	11/09/2025 13:08 PM	0.7	0.04	175.10
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	1.69	11/07/2025 13:43 PM	0.62	0.19	174.23
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	42.02	11/10/2025 11:00 AM	1.62	0.22	245.48
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.41	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	0.43	11/09/2025 14:00 PM	0.31	0.27	78.90
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:12 PM	0.52	0.05	175.02
FGP001	SMH-FG-S01	SMH-FG-057	203.3	0.013	0	0	CIRCULAR	6	0.0099	31.96	11/07/2025 10:18 AM	2.4	0.25	177.68

Table C-9. Proposed Condition (Site 2) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	2.202	FAIRGROUNDS_SUMMER	0.24	2.57	11/08/2025 17:51 PM	121.44	8.65
SMH-FG-002	3.15	12.08	8.92	2.745	FAIRGROUNDS_SUMMER	0.09	3.24	11/08/2025 17:49 PM	14.19	8.84
SMH-FG-003	3.61	11.70	8.09	0.000		0.07	3.68	11/08/2025 17:46 PM	9.38	8.02
SMH-FG-004	4.22	9.99	5.77	0.000		0.06	4.28	11/08/2025 17:41 PM	7.7	5.71
SMH-FG-005	5.20	10.23	5.03	0.000		0.22	5.42	11/08/2025 17:57 PM	82.26	4.81
SMH-FG-006	4.77	10.94	6.16	0.000		0.06	4.84	11/08/2025 17:40 PM	7.74	6.10
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.23	4.49	11/08/2025 18:00 PM	90.16	5.51
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	7.649	FAIRGROUNDS_SUMMER	0.26	3.63	11/08/2025 18:00 PM	111.61	6.13
SMH-FG-015	0.73	6.66	5.93	0.000		0.26	0.99	11/10/2025 18:00 PM	121.54	5.67
SMH-FG-016	1.04	6.81	5.77	0.000		0.26	1.29	11/07/2025 17:45 PM	121.89	5.52
SMH-FG-017	1.11	7.03	5.92	0.000		0.26	1.36	11/07/2025 17:45 PM	121.44	5.67
SMH-FG-018	1.81	7.65	5.84	0.000		0.24	2.05	11/08/2025 17:54 PM	121.44	5.60
SMH-FG-019	1.63	7.26	5.63	0.000		0.09	1.72	11/08/2025 18:00 PM	15.11	5.54
SMH-FG-020	3.36	7.78	4.42	0.000		0.08	3.44	11/08/2025 18:00 PM	15.11	4.34
SMH-FG-021	5.27	9.00	3.73	4.029	FAIRGROUNDS_SUMMER	0.07	5.34	11/08/2025 18:00 PM	8.89	3.66
SMH-FG-022	1.67	7.91	6.24	0.000		0.26	1.93	11/08/2025 18:00 PM	111.61	5.98
SMH-FG-023	0.86	7.99	7.12	6.147	FAIRGROUNDS_SUMMER	0.29	1.15	11/08/2025 18:00 PM	122.36	6.84
SMH-FG-024	2.60	8.68	6.08	0.000		0.26	2.85	11/08/2025 18:00 PM	111.61	5.83
SMH-FG-025	0.32	6.71	6.39	0.000		0.13	0.45	11/08/2025 17:59 PM	258.91	6.26
SMH-FG-026	0.85	9.21	8.35	1.782	FAIRGROUNDS_SUMMER	0.21	1.06	11/08/2025 17:56 PM	74.27	8.15
SMH-FG-027	1.21	8.75	7.54	0.032	FAIRGROUNDS_SUMMER	0.15	1.36	11/08/2025 18:00 PM	38.44	7.39
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.15	2.31	11/08/2025 18:00 PM	38.39	7.41
SMH-FG-030	2.45	9.11	6.66	0.000		0.15	2.6	11/10/2025 17:12 PM	38.39	6.51
SMH-FG-031	3.03	10.00	6.96	0.000		0.15	3.18	11/08/2025 17:57 PM	38.39	6.82
SMH-FG-032	3.70	10.49	6.79	0.000		0.1	3.8	11/08/2025 17:09 PM	16.77	6.69
SMH-FG-033	4.87	9.04	4.17	9.574	FAIRGROUNDS_SUMMER	0.1	4.97	11/07/2025 17:02 PM	16.75	4.07
SMH-FG-034	4.23	10.31	6.08	0.000		0.1	4.33	11/07/2025 17:05 PM	16.78	5.98
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0.11	1.29	11/07/2025 17:44 PM	1.05	5.41
SMH-FG-037	7.16	8.62	1.47	0.445	FAIRGROUNDS_SUMMER	0.02	7.18	11/07/2025 17:50 PM	0.78	1.44
SMH-FG-038	5.29	8.62	3.33	0.000		0.05	5.34	11/10/2025 17:07 PM	4.21	3.28
SMH-FG-039	0.39	7.25	6.86	0.000		0.28	0.67	11/08/2025 17:59 PM	243.81	6.58
SMH-FG-040	4.54	10.00	5.46	0.000		0.23	4.78	11/08/2025 18:00 PM	90.16	5.22

Table C-9. Proposed Condition (Site 2) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	7.7	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.15	3.44	11/07/2025 17:57 PM	38.39	6.85
SMH-FG-044	4.58	9.80	5.22	12.362	FAIRGROUNDS_SUMMER	0.11	4.7	11/07/2025 17:46 PM	21.63	5.10
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0.01	3.29	11/08/2025 18:00 PM	0.14	6.63
SMH-FG-048	4.22	8.22	4.00	0.078	FAIRGROUNDS_SUMMER	0.01	4.23	11/08/2025 18:00 PM	0.14	3.99
SMH-FG-049	-2.02	7.26	9.28	0.000		0.14	-1.88	11/09/2025 11:00 AM	33.69	9.14
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.07	-1.36	11/08/2025 18:00 PM	6.35	8.77
SMH-FG-056	1.50	6.00	4.50	3.630	FAIRGROUNDS_SUMMER	0.06	1.56	11/08/2025 18:00 PM	6.35	4.44
SMH-FG-057	1.98	8.86	6.88	0.000		0.13	2.11	11/09/2025 11:00 AM	32.16	6.75
SMH-FG-058	4.61	8.78	4.17	0.136	FAIRGROUNDS_SUMMER	0.01	4.62	11/08/2025 18:00 PM	0.24	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		3	7.44	11/10/2025 10:28 AM	39.34	0.62
SMH-FG-061	6.94	10.22	3.28	0.000		0.35	7.3	11/09/2025 10:59 AM	39.17	2.92
SMH-FG-062	7.10	11.10	4.00	0.000		0.14	7.24	11/09/2025 11:00 AM	38.91	3.86
SMH-FG-063	3.33	7.81	4.48	0.000		4.18	7.51	11/07/2025 10:53 AM	39.82	0.30
SMH-FG-064	3.20	7.59	4.39	0.000		4.31	7.51	11/07/2025 10:30 AM	41.49	0.08
SMH-FG-065	3.17	7.17	4.00	0.000		4.36	7.54	11/07/2025 10:48 AM	38.9	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		2.81	7.77	11/09/2025 22:00 PM	82.23	1.19
SMH-FG-068	3.55	9.88	6.33	0.000		0.24	3.78	11/08/2025 18:00 PM	92.15	6.10
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	29.543	FAIRGROUNDS_SUMMER	0.16	2.71	11/07/2025 17:11 PM	51.7	11.25
SMH-FG-071	3.45	13.66	10.20	29.543	FAIRGROUNDS_SUMMER	0.15	3.61	11/07/2025 17:07 PM	51.7	10.05
SMH-FG-072	1.96	9.01	7.05	0.000		0.24	2.21	11/08/2025 17:52 PM	121.44	6.80
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.21	5.21	11/08/2025 17:59 PM	258.96	3.09
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.18	2.9	11/08/2025 17:50 PM	65.89	9.12

Table C-9. Proposed Condition (Site 2) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.85	4.98	11/07/2025 04:45 AM	7.7	1.15
SMH-FG-085	2.86	6.66	3.80	0.000		20.27	23.13	11/07/2025 06:11 AM	258.91	0.00
SMH-FG-086	4.30	9.30	5.00	0.947	FAIRGROUNDS_SUMMER	0.03	4.33	11/07/2025 17:46 PM	1.66	4.97
SMH-FG-087	-0.22	8.55	8.76	0.000		0.14	-0.07	11/07/2025 10:18 AM	33.53	8.62
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.56	11/07/2025 17:35 PM	3.85	3.96
SMH-FG-093	2.10	6.10	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.14	11/07/2025 17:28 PM	3.85	3.96
SMH-FG-094	0.48	7.00	6.53	0.000		0.06	0.54	11/07/2025 17:56 PM	7.7	6.46
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.08	0	11/07/2025 17:57 PM	7.7	6.03
SMH-FG-097	3.67	7.75	4.09	0.000		0.06	3.72	11/07/2025 17:05 PM	6.22	4.03
SMH-FG-098	4.48	9.13	4.65	3.553	FAIRGROUNDS_SUMMER	0.06	4.54	11/08/2025 17:02 PM	6.22	4.59
SMH-FG-099	7.03	9.00	1.97	0.608	FAIRGROUNDS_SUMMER	0.03	7.05	11/07/2025 17:44 PM	1.06	1.95
SMH-FG-100	5.89	8.40	2.51	0.000		0.03	5.92	11/08/2025 18:00 PM	1.84	2.48
SMH-FG-101	6.10	8.28	2.18	2.402	FAIRGROUNDS_SUMMER	0.05	6.15	11/10/2025 17:02 PM	4.2	2.13
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.06	4.75	11/07/2025 18:00 PM	6.08	3.94
SMH-FG-104	6.64	9.00	2.36	2.205	FAIRGROUNDS_SUMMER	0.05	6.69	11/10/2025 17:03 PM	3.86	2.31
SMH-FG-105	3.89	9.78	5.90	0.000		0.24	4.12	11/08/2025 18:00 PM	92.15	5.66
SMH-FG-106	5.84	9.00	3.16	0.000		0.03	5.87	11/07/2025 17:58 PM	3.86	3.13
SMH-FG-107	4.09	10.85	6.76	0.962	FAIRGROUNDS_SUMMER	0.07	4.16	11/08/2025 17:42 PM	9.38	6.69
SMH-FG-108	6.14	9.99	3.85	4.533	FAIRGROUNDS_SUMMER	0.07	6.2	11/07/2025 17:26 PM	7.93	3.79
SMH-FG-109	5.12	10.60	5.48	0.000		0.23	5.35	11/08/2025 17:58 PM	90.16	5.25
SMH-FG-110	3.71	13.91	10.20	0.000		0.07	3.78	11/08/2025 17:45 PM	9.38	10.13
SMH-FG-111	2.14	8.03	5.89	0.000		0.28	2.42	11/11/2025 00:00 AM	0.18	5.61
SMH-FG-112	4.89	8.68	3.79	0.000		0.05	4.94	11/10/2025 17:08 PM	4.2	3.74
SMH-FG-S02	5.42	9.42	4.00	20.620	DEL_MAR_CITY	0.12	5.54	11/07/2025 10:28 AM	31.96	3.88

Table C-10. Proposed Condition (Site 2) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	51.7	11/07/2025 17:07 PM	2.02	0.33	156.21
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	16.76	11/07/2025 17:09 PM	0.82	0.19	270.02
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/10/2025 17:15 PM	1.45	0.23	248.39
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:58 PM	1.45	0.23	248.39
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:57 PM	1.45	0.23	248.75
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/08/2025 18:00 PM	1.45	0.23	248.39
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	38.44	11/08/2025 18:00 PM	1.13	0.27	248.34
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	16.77	11/07/2025 17:06 PM	1.13	0.15	270.01
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	16.78	11/07/2025 17:03 PM	1.13	0.15	270.00
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	21.63	11/07/2025 17:47 PM	0.99	0.2	265.15
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	15.11	11/08/2025 18:00 PM	1.05	0.22	175.53
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	122.36	11/08/2025 18:00 PM	1.5	0.28	456.19
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	121.47	11/07/2025 17:46 PM	1.5	0.2	990.22
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	121.54	11/07/2025 17:45 PM	1.5	0.2	986.46
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	121.46	11/10/2025 18:00 PM	1.42	0.21	986.54
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	8.89	11/08/2025 18:00 PM	1.06	0.15	167.03
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:46 PM	0.74	0.08	779.55
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	14.19	11/08/2025 17:49 PM	0.52	0.13	774.74
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	65.89	11/08/2025 17:50 PM	1.22	0.21	723.04
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:45 PM	0.86	0.07	781.13
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	111.61	11/08/2025 18:00 PM	1.73	0.31	337.62
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	111.61	11/08/2025 18:00 PM	1.73	0.31	337.62
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	111.61	11/08/2025 18:00 PM	1.6	0.33	337.62
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	4.2	11/10/2025 17:07 PM	0.95	0.1	171.72
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	6.08	11/07/2025 18:00 PM	0.31	0.32	169.84
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.17	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	15.11	11/08/2025 18:00 PM	1.55	0.17	208.70
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.78	11/07/2025 17:50 PM	0.41	0.06	175.14
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	1.84	11/08/2025 18:00 PM	0.39	0.1	174.08
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	51.7	11/07/2025 17:11 PM	1.17	0.2	737.23
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:52 PM	1.84	0.24	667.49
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	82.23	11/08/2025 17:57 PM	1.73	0.34	205.98
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	90.16	11/08/2025 17:59 PM	1.84	0.35	196.62
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	90.16	11/08/2025 18:00 PM	1.84	0.35	196.62
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	90.16	11/08/2025 18:00 PM	1.83	0.35	196.62
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:54 PM	1.78	0.25	667.49
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.08	372.54
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	1.05	11/09/2025 05:08 AM	0.1	0.28	371.76

Table C-10. Proposed Condition (Site 2) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	92.15	11/08/2025 18:00 PM	1.75	0.37	195.35
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	92.15	11/08/2025 18:00 PM	1.86	0.35	194.63
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:52 PM	1.84	0.24	667.49
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0.01	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.81	0.1	280.43
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.9	0.09	280.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	32.16	11/09/2025 11:00 AM	1.59	0.2	291.98
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	33.58	11/07/2025 10:21 AM	1.39	0.21	253.20
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	33.64	11/09/2025 11:00 AM	1.52	0.2	253.50
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.14	11/07/2025 17:59 PM	0	0.01	659.02
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.14	11/08/2025 18:00 PM	0.02	0.11	596.11
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.24	11/08/2025 18:00 PM	0	0.01	637.32
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	38.9	11/09/2025 11:00 AM	1.44	0.35	153.24
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.11	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:41 PM	0.76	0.07	781.23
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:44 PM	0.86	0.07	779.55
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:40 PM	0.81	0.06	781.23
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0.01	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	7.74	11/10/2025 17:24 PM	0.15	0.56	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.6	0.013	0	0	FORCE_MAIN	6	-0.0004	82.26	11/08/2025 17:55 PM	1.2	0.72	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.1	0.013	0	0	FORCE_MAIN	8	-0.0030	258.96	11/08/2025 17:57 PM	2.38	0.65	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.0	0.011	0	0	FORCE_MAIN	6	-0.0030	38.91	11/09/2025 10:59 AM	0.9	0.49	n/a
FG1080	SMH-FG-065	SMH-FG-064	10.0	0.011	0	0	FORCE_MAIN	6	-0.0030	41.49	11/08/2025 10:55 AM	0.57	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.0	0.011	0	0	FORCE_MAIN	6	-0.0030	39.82	11/09/2025 11:01 AM	0.55	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.8	0.011	0	0	FORCE_MAIN	6	-0.0030	39.34	11/07/2025 10:49 AM	0.76	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.9	0.011	0	0	FORCE_MAIN	6	-0.0030	39.17	11/07/2025 10:54 AM	0.53	0.85	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.9	0.011	0	0	CIRCULAR	15	0.0044	243.8	11/08/2025 17:59 PM	4.13	0.16	1656.03
FG1085	SMH-FG-025	SMH-FG-078	28.9	0.011	0	2.5	CIRCULAR	15	0.0988	258.91	11/08/2025 17:59 PM	8.18	0.11	8734.81
FG1086	SMH-FG-077	SMH-B4-02	137.9	0.013	0	2	CIRCULAR	15	0.0228	258.91	11/08/2025 17:59 PM	4.36	0.16	3394.69
FG1087	SMH-FG-089	SMH-FG-088	376.4	0.013	0	1	CIRCULAR	6	0.0082	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.1	0.013	0	2.5	CIRCULAR	6	0.0153	1.66	11/07/2025 17:46 PM	0.93	0.05	258.26
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	7.7	11/07/2025 17:57 PM	2.27	0.08	168.22
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.08	175.92
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48

Table C-10. Proposed Condition (Site 2) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	7.7	11/07/2025 17:56 PM	1.01	0.14	200.24
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	3.85	11/07/2025 17:35 PM	0.8	0.1	204.20
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	3.85	11/07/2025 17:28 PM	0.8	0.1	202.38
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/07/2025 17:05 PM	0.84	0.14	169.70
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/07/2025 17:03 PM	1.07	0.12	169.70
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	1.06	11/07/2025 17:44 PM	0.51	0.06	174.86
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.05	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	4.21	11/07/2025 17:03 PM	0.95	0.1	171.71
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	1.87	11/07/2025 17:58 PM	0.5	0.09	174.05
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	3.86	11/10/2025 17:04 PM	1.11	0.08	172.06
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	7.93	11/07/2025 17:26 PM	0.85	0.3	167.99
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	74.27	11/08/2025 17:56 PM	1.91	0.3	213.23
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.42	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	1.99	11/07/2025 17:58 PM	0.66	0.4	77.34
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	4.2	11/08/2025 17:08 PM	0.83	0.11	171.72
FGP002	SMH-FG-S02	SMH-FG-057	312.3	0.013	0	0	CIRCULAR	6	0.0110	31.96	11/07/2025 10:28 AM	2.4	0.25	188.67

Table C-11. Proposed Condition (Site 2) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	0.444	FAIRGROUNDS_NON_SUMM	0.11	2.44	11/07/2025 14:00 PM	25.91	8.78
SMH-FG-002	3.15	12.08	8.92	0.554	FAIRGROUNDS_NON_SUMM	0.04	3.19	11/07/2025 14:00 PM	3.03	8.89
SMH-FG-003	3.61	11.70	8.09	0.000		0.03	3.64	11/07/2025 13:59 PM	2	8.06
SMH-FG-004	4.22	9.99	5.77	0.000		0.03	4.25	11/07/2025 13:51 PM	1.65	5.74
SMH-FG-005	5.20	10.23	5.03	0.000		0.16	5.36	11/09/2025 10:54 AM	46.42	4.87
SMH-FG-006	4.77	10.94	6.16	0.000		0.03	4.8	11/07/2025 13:49 PM	1.68	6.14
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.16	4.42	11/09/2025 10:58 AM	45.03	5.58
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	1.544	FAIRGROUNDS_NON_SUMM	0.17	3.55	11/09/2025 11:00 AM	49.32	6.21
SMH-FG-015	0.73	6.66	5.93	0.000		0.12	0.85	11/09/2025 14:02 PM	25.9	5.81
SMH-FG-016	1.04	6.81	5.77	0.000		0.12	1.16	11/07/2025 14:01 PM	25.9	5.65
SMH-FG-017	1.11	7.03	5.92	0.000		0.12	1.23	11/07/2025 14:00 PM	25.91	5.80
SMH-FG-018	1.81	7.65	5.84	0.000		0.11	1.93	11/07/2025 14:00 PM	25.91	5.72
SMH-FG-019	1.63	7.26	5.63	0.000		0.04	1.67	11/09/2025 14:00 PM	3.22	5.59
SMH-FG-020	3.36	7.78	4.42	0.000		0.04	3.4	11/09/2025 14:00 PM	3.22	4.38
SMH-FG-021	5.27	9.00	3.73	0.813	FAIRGROUNDS_NON_SUMM	0.03	5.31	11/09/2025 14:00 PM	1.9	3.69
SMH-FG-022	1.67	7.91	6.24	0.000		0.17	1.84	11/09/2025 11:03 AM	49.2	6.07
SMH-FG-023	0.86	7.99	7.12	1.241	FAIRGROUNDS_NON_SUMM	0.2	1.06	11/09/2025 11:05 AM	51.27	6.93
SMH-FG-024	2.60	8.68	6.08	0.000		0.17	2.77	11/09/2025 11:01 AM	49.26	5.91
SMH-FG-025	0.32	6.71	6.39	0.000		0.08	0.4	11/09/2025 11:05 AM	78.73	6.31
SMH-FG-026	0.85	9.21	8.35	0.360	FAIRGROUNDS_NON_SUMM	0.16	1.01	11/09/2025 11:00 AM	42.03	8.20
SMH-FG-027	1.21	8.75	7.54	0.006	FAIRGROUNDS_NON_SUMM	0.07	1.28	11/09/2025 13:32 PM	8.21	7.47
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.07	2.23	11/09/2025 13:25 PM	8.2	7.49
SMH-FG-030	2.45	9.11	6.66	0.000		0.07	2.52	11/09/2025 13:19 PM	8.19	6.59
SMH-FG-031	3.03	10.00	6.96	0.000		0.07	3.1	11/09/2025 13:22 PM	8.19	6.90
SMH-FG-032	3.70	10.49	6.79	0.000		0.05	3.75	11/09/2025 13:14 PM	3.59	6.74
SMH-FG-033	4.87	9.04	4.17	1.932	FAIRGROUNDS_NON_SUMM	0.05	4.92	11/10/2025 13:04 PM	3.57	4.12
SMH-FG-034	4.23	10.31	6.08	0.000		0.05	4.28	11/09/2025 13:08 PM	3.6	6.03
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0	1.18	11/07/2025 00:00 AM	0	5.52
SMH-FG-037	7.16	8.62	1.47	0.090	FAIRGROUNDS_NON_SUMM	0.01	7.17	11/09/2025 14:00 PM	0.17	1.45
SMH-FG-038	5.29	8.62	3.33	0.000		0.02	5.31	11/09/2025 13:08 PM	0.9	3.31
SMH-FG-039	0.39	7.25	6.86	0.000		0.16	0.55	11/09/2025 11:05 AM	75.72	6.70
SMH-FG-040	4.54	10.00	5.46	0.000		0.16	4.71	11/09/2025 10:57 AM	45.08	5.29

Table C-11. Proposed Condition (Site 2) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	1.64	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.07	3.36	11/09/2025 13:19 PM	8.2	6.93
SMH-FG-044	4.58	9.80	5.22	2.495	FAIRGROUNDS_NON_SUMM	0.05	4.64	11/09/2025 14:00 PM	4.62	5.16
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0	3.28	11/08/2025 14:01 PM	0.03	6.64
SMH-FG-048	4.22	8.22	4.00	0.016	FAIRGROUNDS_NON_SUMM	0	4.22	11/07/2025 00:33 AM	0.03	4.00
SMH-FG-049	-2.02	7.26	9.28	0.000		0.14	-1.88	11/08/2025 10:32 AM	32.42	9.14
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.03	-1.39	11/09/2025 14:00 PM	1.36	8.80
SMH-FG-056	1.50	6.00	4.50	0.733	FAIRGROUNDS_NON_SUMM	0.03	1.53	11/09/2025 14:00 PM	1.36	4.47
SMH-FG-057	1.98	8.86	6.88	0.000		0.13	2.11	11/09/2025 11:00 AM	32.01	6.75
SMH-FG-058	4.61	8.78	4.17	0.028	FAIRGROUNDS_NON_SUMM	0	4.62	11/09/2025 14:00 PM	0.05	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		2.96	7.41	11/08/2025 10:30 AM	34.18	0.65
SMH-FG-061	6.94	10.22	3.28	0.000		0.34	7.28	11/10/2025 11:01 AM	34.03	2.94
SMH-FG-062	7.10	11.10	4.00	0.000		0.13	7.23	11/10/2025 11:01 AM	33.65	3.87
SMH-FG-063	3.33	7.81	4.48	0.000		4.13	7.46	11/09/2025 10:35 AM	34.69	0.35
SMH-FG-064	3.20	7.59	4.39	0.000		4.26	7.46	11/07/2025 10:57 AM	36.24	0.13
SMH-FG-065	3.17	7.17	4.00	0.000		4.31	7.48	11/07/2025 10:28 AM	33.65	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		2.59	7.55	11/10/2025 10:50 AM	43.63	1.41
SMH-FG-068	3.55	9.88	6.33	0.000		0.16	3.71	11/09/2025 10:59 AM	45.4	6.17
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	5.962	FAIRGROUNDS_NON_SUMM	0.08	2.63	11/07/2025 13:18 PM	11.03	11.33
SMH-FG-071	3.45	13.66	10.20	5.962	FAIRGROUNDS_NON_SUMM	0.07	3.53	11/07/2025 13:12 PM	11.03	10.13
SMH-FG-072	1.96	9.01	7.05	0.000		0.11	2.08	11/07/2025 14:00 PM	25.91	6.93
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.12	5.12	11/09/2025 11:06 AM	97.65	3.18
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.09	2.8	11/07/2025 14:00 PM	14.06	9.22

Table C-11. Proposed Condition (Site 2) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.82	4.95	11/07/2025 08:10 AM	1.64	1.18
SMH-FG-085	2.86	6.66	3.80	0.000		12.56	15.42	11/07/2025 09:58 AM	78.73	0.00
SMH-FG-086	4.30	9.30	5.00	0.191	FAIRGROUNDS_NON_SUMM	0.01	4.32	11/07/2025 14:00 PM	0.35	4.98
SMH-FG-087	-0.22	8.55	8.76	0.000		0.14	-0.08	11/08/2025 10:18 AM	32.34	8.63
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.54	11/07/2025 13:53 PM	0.82	3.98
SMH-FG-093	2.10	6.10	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.12	11/07/2025 13:42 PM	0.82	3.98
SMH-FG-094	0.48	7.00	6.53	0.000		0.03	0.5	11/09/2025 14:00 PM	1.64	6.50
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.04	-0.04	11/09/2025 14:00 PM	1.64	6.07
SMH-FG-097	3.67	7.75	4.09	0.000		0.03	3.69	11/09/2025 13:08 PM	1.33	4.06
SMH-FG-098	4.48	9.13	4.65	0.717	FAIRGROUNDS_NON_SUMM	0.03	4.51	11/08/2025 13:03 PM	1.33	4.62
SMH-FG-099	7.03	9.00	1.97	0.123	FAIRGROUNDS_NON_SUMM	0.01	7.04	11/09/2025 14:00 PM	0.23	1.96
SMH-FG-100	5.89	8.40	2.51	0.000		0.02	5.9	11/09/2025 14:00 PM	0.39	2.50
SMH-FG-101	6.10	8.28	2.18	0.485	FAIRGROUNDS_NON_SUMM	0.02	6.13	11/07/2025 13:04 PM	0.9	2.15
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.03	4.72	11/09/2025 14:00 PM	1.29	3.97
SMH-FG-104	6.64	9.00	2.36	0.445	FAIRGROUNDS_NON_SUMM	0.02	6.67	11/09/2025 13:05 PM	0.82	2.33
SMH-FG-105	3.89	9.78	5.90	0.000		0.16	4.05	11/09/2025 10:58 AM	45.43	5.73
SMH-FG-106	5.84	9.00	3.16	0.000		0.02	5.85	11/09/2025 14:00 PM	0.82	3.15
SMH-FG-107	4.09	10.85	6.76	0.194	FAIRGROUNDS_NON_SUMM	0.03	4.12	11/07/2025 13:53 PM	2	6.73
SMH-FG-108	6.14	9.99	3.85	0.915	FAIRGROUNDS_NON_SUMM	0.03	6.17	11/07/2025 13:43 PM	1.69	3.82
SMH-FG-109	5.12	10.60	5.48	0.000		0.16	5.28	11/09/2025 10:55 AM	45.12	5.32
SMH-FG-110	3.71	13.91	10.20	0.000		0.03	3.74	11/07/2025 13:56 PM	2	10.17
SMH-FG-111	2.14	8.03	5.89	0.000		0.27	2.41	11/11/2025 00:00 AM	0.19	5.62
SMH-FG-112	4.89	8.68	3.79	0.000		0.02	4.91	11/09/2025 13:12 PM	0.9	3.77
SMH-FG-S02	5.42	9.42	4.00	20.620	DEL_MAR_CITY	0.12	5.54	11/07/2025 10:28 AM	31.96	3.88

Table C-12. Proposed Condition (Site 2) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	11.03	11/07/2025 13:12 PM	1.33	0.16	196.88
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	3.58	11/09/2025 13:14 PM	0.52	0.09	283.20
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/09/2025 13:22 PM	0.91	0.11	278.58
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:22 PM	0.91	0.11	278.59
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:19 PM	0.91	0.11	278.95
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/09/2025 13:28 PM	0.91	0.11	278.58
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	8.21	11/09/2025 13:32 PM	0.62	0.17	278.57
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	3.59	11/09/2025 13:11 PM	0.71	0.07	283.19
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	3.6	11/09/2025 13:06 PM	0.71	0.07	283.18
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	4.62	11/07/2025 14:00 PM	0.64	0.09	282.16
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	3.22	11/09/2025 14:00 PM	0.78	0.12	187.42
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	51.24	11/09/2025 11:05 AM	1.21	0.18	527.31
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/07/2025 14:00 PM	0.95	0.1	1085.79
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/07/2025 14:01 PM	0.95	0.1	1082.10
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 14:02 PM	0.8	0.11	1082.10
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	1.9	11/09/2025 14:00 PM	0.67	0.07	174.02
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.02	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 13:59 PM	0.46	0.04	786.93
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	3.03	11/07/2025 14:00 PM	0.33	0.06	785.90
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	14.06	11/07/2025 14:00 PM	0.77	0.1	774.87
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 13:56 PM	0.54	0.03	788.51
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	49.26	11/09/2025 11:00 AM	1.37	0.2	399.97
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	49.2	11/09/2025 11:02 AM	1.37	0.2	400.03
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	49.16	11/09/2025 11:03 AM	1.21	0.22	400.07
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:10 PM	0.59	0.05	175.02
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	1.29	11/09/2025 14:00 PM	0.24	0.2	174.63
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.12	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	3.22	11/09/2025 14:00 PM	0.98	0.08	220.59
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.17	11/09/2025 14:00 PM	0.26	0.03	175.75
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/09/2025 14:00 PM	0.24	0.05	175.53
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	11.03	11/07/2025 13:18 PM	0.84	0.09	777.90
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.17	0.11	763.02
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	43.51	11/09/2025 10:54 AM	1.48	0.24	244.70
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	45.08	11/09/2025 10:55 AM	1.52	0.24	241.70
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	45.03	11/09/2025 10:57 AM	1.52	0.24	241.75
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	45.02	11/09/2025 10:58 AM	1.51	0.25	241.76
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.12	0.12	763.02
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	372.54
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.09	372.81

Table C-12. Proposed Condition (Site 2) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	45.4	11/09/2025 10:59 AM	1.48	0.25	242.10
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	45.4	11/09/2025 10:59 AM	1.52	0.25	241.38
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.17	0.11	763.02
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.03	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	1.36	11/09/2025 14:00 PM	0.48	0.05	285.42
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	1.35	11/09/2025 14:00 PM	0.58	0.04	285.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	32.01	11/09/2025 11:00 AM	1.6	0.2	292.13
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	32.4	11/08/2025 10:22 AM	1.39	0.21	254.38
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	32.37	11/08/2025 10:32 AM	1.51	0.19	254.77
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.03	11/09/2025 14:00 PM	0	0	659.13
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.03	11/08/2025 14:01 PM	0	0.11	596.22
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.05	11/09/2025 14:00 PM	0	0	637.51
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	33.64	11/10/2025 11:01 AM	1.61	0.29	158.50
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.05	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	1.65	11/07/2025 13:51 PM	0.47	0.03	787.28
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 13:54 PM	0.54	0.03	786.93
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	1.65	11/07/2025 13:49 PM	0.51	0.03	787.28
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	1.68	11/09/2025 13:37 PM	0.04	0.53	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.6	0.013	0	0	FORCE_MAIN	6	-0.0004	46.42	11/09/2025 10:58 AM	0.76	0.66	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.1	0.013	0	0	FORCE_MAIN	8	-0.0030	97.65	11/07/2025 09:58 AM	1.24	0.59	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.0	0.011	0	0	FORCE_MAIN	6	-0.0030	33.65	11/10/2025 11:01 AM	0.84	0.47	n/a
FG1080	SMH-FG-065	SMH-FG-064	10.0	0.011	0	0	FORCE_MAIN	6	-0.0030	36.24	11/10/2025 11:00 AM	0.57	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.0	0.011	0	0	FORCE_MAIN	6	-0.0030	34.69	11/10/2025 11:00 AM	0.55	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.8	0.011	0	0	FORCE_MAIN	6	-0.0030	34.18	11/10/2025 10:45 AM	0.73	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.9	0.011	0	0	FORCE_MAIN	6	-0.0030	34.03	11/10/2025 10:45 AM	0.5	0.84	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.9	0.011	0	0	CIRCULAR	15	0.0044	75.71	11/09/2025 11:05 AM	2.93	0.09	1824.12
FG1085	SMH-FG-025	SMH-FG-078	28.9	0.011	0	2.5	CIRCULAR	15	0.0988	78.73	11/09/2025 11:05 AM	5.71	0.06	8914.99
FG1086	SMH-FG-077	SMH-B4-02	137.9	0.013	0	2	CIRCULAR	15	0.0228	78.72	11/09/2025 11:06 AM	3.06	0.09	3574.88
FG1087	SMH-FG-089	SMH-FG-088	376.4	0.013	0	1	CIRCULAR	6	0.0082	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.1	0.013	0	2.5	CIRCULAR	6	0.0153	0.35	11/07/2025 13:58 PM	0.7	0.02	259.57
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	1.64	11/09/2025 14:00 PM	1.41	0.04	174.28
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.04	175.92
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48

Table C-12. Proposed Condition (Site 2) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	1.64	11/09/2025 14:00 PM	0.63	0.07	206.30
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	0.82	11/07/2025 13:53 PM	0.5	0.05	207.23
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	0.82	11/07/2025 13:42 PM	0.5	0.05	205.41
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/09/2025 13:08 PM	0.53	0.07	174.59
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/08/2025 13:05 PM	0.67	0.06	174.59
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	0.23	11/07/2025 13:59 PM	0.32	0.03	175.69
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.02	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/07/2025 13:05 PM	0.59	0.05	175.02
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/09/2025 14:00 PM	0.29	0.04	175.53
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	0.82	11/09/2025 13:08 PM	0.7	0.04	175.10
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	1.69	11/07/2025 13:43 PM	0.62	0.19	174.23
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	42.02	11/09/2025 11:00 AM	1.62	0.22	245.48
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.41	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	0.43	11/09/2025 14:00 PM	0.31	0.27	78.90
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:12 PM	0.52	0.05	175.02
FGP002	SMH-FG-S02	SMH-FG-057	312.3	0.013	0	0	CIRCULAR	6	0.0110	31.96	11/07/2025 10:28 AM	2.4	0.25	188.67

Table C-13. Proposed Condition (Site 3) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	2.202	FAIRGROUNDS_SUMMER	0.24	2.57	11/08/2025 17:46 PM	121.44	8.65
SMH-FG-002	3.15	12.08	8.92	2.745	FAIRGROUNDS_SUMMER	0.09	3.24	11/08/2025 17:43 PM	14.19	8.84
SMH-FG-003	3.61	11.70	8.09	0.000		0.07	3.68	11/08/2025 17:38 PM	9.38	8.02
SMH-FG-004	4.22	9.99	5.77	0.000		0.06	4.28	11/08/2025 17:33 PM	7.7	5.71
SMH-FG-005	5.20	10.23	5.03	0.000		0.19	5.39	11/07/2025 18:00 PM	57.91	4.84
SMH-FG-006	4.77	10.94	6.16	0.000		0.06	4.84	11/08/2025 17:26 PM	7.74	6.10
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.2	4.45	11/07/2025 18:00 PM	65.81	5.55
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	7.649	FAIRGROUNDS_SUMMER	0.26	3.63	11/07/2025 18:00 PM	111.59	6.13
SMH-FG-015	0.73	6.66	5.93	0.000		0.26	0.99	11/10/2025 17:57 PM	121.54	5.67
SMH-FG-016	1.04	6.81	5.77	0.000		0.26	1.29	11/10/2025 17:56 PM	121.88	5.52
SMH-FG-017	1.11	7.03	5.92	0.000		0.26	1.36	11/10/2025 17:56 PM	121.44	5.67
SMH-FG-018	1.81	7.65	5.84	0.000		0.24	2.05	11/08/2025 17:48 PM	121.44	5.60
SMH-FG-019	1.63	7.26	5.63	0.000		0.09	1.72	11/08/2025 18:00 PM	15.11	5.54
SMH-FG-020	3.36	7.78	4.42	0.000		0.08	3.44	11/08/2025 18:00 PM	15.11	4.34
SMH-FG-021	5.27	9.00	3.73	4.029	FAIRGROUNDS_SUMMER	0.07	5.34	11/08/2025 18:00 PM	8.89	3.66
SMH-FG-022	1.67	7.91	6.24	0.000		0.26	1.93	11/07/2025 18:00 PM	111.58	5.98
SMH-FG-023	0.86	7.99	7.12	6.147	FAIRGROUNDS_SUMMER	0.29	1.15	11/07/2025 18:00 PM	122.33	6.84
SMH-FG-024	2.60	8.68	6.08	0.000		0.26	2.85	11/07/2025 18:00 PM	111.58	5.83
SMH-FG-025	0.32	6.71	6.39	0.000		0.13	0.45	11/10/2025 17:59 PM	258.88	6.26
SMH-FG-026	0.85	9.21	8.35	1.782	FAIRGROUNDS_SUMMER	0.17	1.02	11/07/2025 18:00 PM	49.93	8.19
SMH-FG-027	1.21	8.75	7.54	0.032	FAIRGROUNDS_SUMMER	0.15	1.36	11/08/2025 18:00 PM	38.44	7.39
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.15	2.31	11/08/2025 18:00 PM	38.39	7.41
SMH-FG-030	2.45	9.11	6.66	0.000		0.15	2.6	11/09/2025 17:12 PM	38.39	6.51
SMH-FG-031	3.03	10.00	6.96	0.000		0.15	3.18	11/07/2025 17:57 PM	38.39	6.82
SMH-FG-032	3.70	10.49	6.79	0.000		0.1	3.8	11/10/2025 17:09 PM	16.77	6.69
SMH-FG-033	4.87	9.04	4.17	9.574	FAIRGROUNDS_SUMMER	0.1	4.97	11/07/2025 17:02 PM	16.75	4.07
SMH-FG-034	4.23	10.31	6.08	0.000		0.1	4.33	11/07/2025 17:05 PM	16.78	5.98
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0.11	1.29	11/09/2025 17:43 PM	1.05	5.41
SMH-FG-037	7.16	8.62	1.47	0.445	FAIRGROUNDS_SUMMER	0.02	7.18	11/07/2025 17:50 PM	0.78	1.44
SMH-FG-038	5.29	8.62	3.33	0.000		0.05	5.34	11/07/2025 17:10 PM	4.21	3.28
SMH-FG-039	0.39	7.25	6.86	0.000		0.28	0.67	11/10/2025 17:59 PM	243.77	6.58
SMH-FG-040	4.54	10.00	5.46	0.000		0.2	4.74	11/07/2025 18:00 PM	65.81	5.26

Table C-13. Proposed Condition (Site 3) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	7.7	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.15	3.44	11/07/2025 17:57 PM	38.39	6.85
SMH-FG-044	4.58	9.80	5.22	12.362	FAIRGROUNDS_SUMMER	0.11	4.7	11/07/2025 17:46 PM	21.63	5.10
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0.01	3.29	11/08/2025 18:00 PM	0.14	6.63
SMH-FG-048	4.22	8.22	4.00	0.078	FAIRGROUNDS_SUMMER	0.01	4.23	11/08/2025 18:00 PM	0.14	3.99
SMH-FG-049	-2.02	7.26	9.28	0.000		0.04	-1.98	11/08/2025 18:00 PM	2.03	9.24
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.07	-1.36	11/08/2025 18:00 PM	6.35	8.77
SMH-FG-056	1.50	6.00	4.50	3.630	FAIRGROUNDS_SUMMER	0.06	1.56	11/08/2025 18:00 PM	6.35	4.44
SMH-FG-057	1.98	8.86	6.88	0.000		0.01	1.99	11/08/2025 18:00 PM	0.24	6.87
SMH-FG-058	4.61	8.78	4.17	0.136	FAIRGROUNDS_SUMMER	0.01	4.62	11/08/2025 18:00 PM	0.24	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		2.8	7.25	11/09/2025 18:05 PM	10.09	0.82
SMH-FG-061	6.94	10.22	3.28	0.000		0.24	7.18	11/07/2025 18:01 PM	10.15	3.04
SMH-FG-062	7.10	11.10	4.00	0.000		0.07	7.17	11/07/2025 18:02 PM	8.38	3.93
SMH-FG-063	3.33	7.81	4.48	0.000		3.93	7.25	11/09/2025 17:44 PM	13.35	0.56
SMH-FG-064	3.20	7.59	4.39	0.000		4.03	7.24	11/09/2025 18:43 PM	11.06	0.35
SMH-FG-065	3.17	7.17	4.00	0.000		4.07	7.24	11/08/2025 17:56 PM	8.38	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		2.64	7.59	11/07/2025 10:13 AM	57.88	1.36
SMH-FG-068	3.55	9.88	6.33	0.000		0.2	3.75	11/07/2025 18:00 PM	67.79	6.13
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	29.543	FAIRGROUNDS_SUMMER	0.16	2.71	11/07/2025 17:11 PM	51.7	11.25
SMH-FG-071	3.45	13.66	10.20	29.543	FAIRGROUNDS_SUMMER	0.15	3.61	11/07/2025 17:07 PM	51.7	10.05
SMH-FG-072	1.96	9.01	7.05	0.000		0.24	2.21	11/08/2025 17:47 PM	121.44	6.80
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.21	5.21	11/07/2025 18:00 PM	258.92	3.09
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.18	2.9	11/08/2025 17:45 PM	65.89	9.12

Table C-13. Proposed Condition (Site 3) Dry Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.85	4.98	11/07/2025 04:45 AM	7.7	1.15
SMH-FG-085	2.86	6.66	3.80	0.000		13.54	16.4	11/07/2025 05:56 AM	258.88	0.00
SMH-FG-086	4.30	9.30	5.00	0.947	FAIRGROUNDS_SUMMER	0.03	4.33	11/07/2025 17:46 PM	1.66	4.97
SMH-FG-087	-0.22	8.55	8.76	0.000		0.04	-0.18	11/08/2025 18:00 PM	1.9	8.73
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.56	11/07/2025 17:35 PM	3.85	3.96
SMH-FG-093	2.10	6.10	4.00	2.199	FAIRGROUNDS_SUMMER	0.04	2.14	11/07/2025 17:28 PM	3.85	3.96
SMH-FG-094	0.48	7.00	6.53	0.000		0.06	0.54	11/07/2025 17:56 PM	7.7	6.46
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.08	0	11/07/2025 17:57 PM	7.7	6.03
SMH-FG-097	3.67	7.75	4.09	0.000		0.06	3.72	11/07/2025 17:05 PM	6.22	4.03
SMH-FG-098	4.48	9.13	4.65	3.553	FAIRGROUNDS_SUMMER	0.06	4.54	11/07/2025 17:02 PM	6.22	4.59
SMH-FG-099	7.03	9.00	1.97	0.608	FAIRGROUNDS_SUMMER	0.03	7.05	11/07/2025 17:44 PM	1.06	1.95
SMH-FG-100	5.89	8.40	2.51	0.000		0.03	5.92	11/08/2025 18:00 PM	1.84	2.48
SMH-FG-101	6.10	8.28	2.18	2.402	FAIRGROUNDS_SUMMER	0.05	6.15	11/07/2025 17:02 PM	4.2	2.13
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.14	4.83	11/07/2025 11:00 AM	36.99	3.86
SMH-FG-104	6.64	9.00	2.36	2.205	FAIRGROUNDS_SUMMER	0.05	6.69	11/07/2025 17:03 PM	3.86	2.31
SMH-FG-105	3.89	9.78	5.90	0.000		0.2	4.09	11/07/2025 18:00 PM	67.8	5.69
SMH-FG-106	5.84	9.00	3.16	0.000		0.03	5.87	11/07/2025 18:00 PM	3.86	3.13
SMH-FG-107	4.09	10.85	6.76	0.962	FAIRGROUNDS_SUMMER	0.07	4.16	11/08/2025 17:33 PM	9.38	6.69
SMH-FG-108	6.14	9.99	3.85	4.533	FAIRGROUNDS_SUMMER	0.07	6.2	11/07/2025 17:25 PM	7.93	3.79
SMH-FG-109	5.12	10.60	5.48	0.000		0.2	5.32	11/07/2025 18:00 PM	65.81	5.28
SMH-FG-110	3.71	13.91	10.20	0.000		0.07	3.78	11/08/2025 17:37 PM	9.38	10.13
SMH-FG-111	2.14	8.03	5.89	0.000		0.28	2.42	11/11/2025 00:00 AM	0.18	5.61
SMH-FG-112	4.89	8.68	3.79	0.000		0.14	5.03	11/09/2025 10:11 AM	35.44	3.65
SMH-FG-S03	5.46	8.67	3.21	20.620	DEL_MAR_CITY	0.13	5.59	11/07/2025 10:08 AM	31.96	3.08

Table C-14. Proposed Condition (Site 3) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	51.7	11/07/2025 17:07 PM	2.02	0.33	156.21
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	16.76	11/07/2025 17:09 PM	0.82	0.19	270.02
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/09/2025 17:15 PM	1.45	0.23	248.39
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:58 PM	1.45	0.23	248.39
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/07/2025 17:57 PM	1.45	0.23	248.75
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	38.39	11/08/2025 18:00 PM	1.45	0.23	248.39
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	38.44	11/08/2025 18:00 PM	1.32	0.24	248.34
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	16.77	11/07/2025 17:06 PM	1.13	0.15	270.01
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	16.78	11/07/2025 17:03 PM	1.13	0.15	270.00
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	21.63	11/07/2025 17:47 PM	0.99	0.2	265.15
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	15.11	11/08/2025 18:00 PM	1.05	0.22	175.53
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	122.32	11/07/2025 18:00 PM	1.5	0.28	456.23
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	121.47	11/10/2025 17:57 PM	1.5	0.2	990.22
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	121.54	11/10/2025 17:56 PM	1.5	0.2	986.46
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	121.45	11/10/2025 17:58 PM	1.42	0.21	986.55
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	8.89	11/08/2025 18:00 PM	1.06	0.15	167.03
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:38 PM	0.74	0.08	779.55
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	14.19	11/08/2025 17:43 PM	0.52	0.13	774.74
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	65.89	11/08/2025 17:45 PM	1.22	0.21	723.04
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:37 PM	0.86	0.07	781.13
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	111.58	11/07/2025 18:00 PM	1.73	0.31	337.65
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	111.58	11/07/2025 18:00 PM	1.73	0.31	337.65
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	111.57	11/07/2025 18:00 PM	1.6	0.33	337.66
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	4.2	11/07/2025 17:10 PM	0.44	0.18	171.72
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	36.99	11/07/2025 10:59 AM	1.72	0.39	138.93
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.15	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	15.11	11/08/2025 18:00 PM	1.55	0.17	208.70
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.78	11/07/2025 17:50 PM	0.41	0.06	175.14
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	1.84	11/08/2025 18:00 PM	0.39	0.1	174.08
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	51.7	11/07/2025 17:11 PM	1.17	0.2	737.23
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:46 PM	1.84	0.24	667.49
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	57.88	11/07/2025 17:59 PM	1.55	0.29	230.33
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	65.81	11/07/2025 18:00 PM	1.69	0.3	220.97
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	65.81	11/07/2025 18:00 PM	1.69	0.3	220.97
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	65.81	11/07/2025 18:00 PM	1.67	0.3	220.97
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:48 PM	1.78	0.25	667.49
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.08	372.54
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	1.05	11/08/2025 05:08 AM	0.1	0.28	371.76

Table C-14. Proposed Condition (Site 3) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	67.79	11/07/2025 18:00 PM	1.43	0.34	219.71
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	67.79	11/07/2025 18:00 PM	1.7	0.3	218.99
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	121.44	11/08/2025 17:47 PM	1.84	0.24	667.49
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.05	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0.01	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.81	0.1	280.43
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	6.35	11/08/2025 18:00 PM	0.9	0.09	280.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	0.24	11/08/2025 18:00 PM	0.13	0.04	323.90
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	1.9	11/08/2025 18:00 PM	0.54	0.06	284.88
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	2.03	11/08/2025 18:00 PM	0.66	0.05	285.11
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.14	11/07/2025 17:59 PM	0	0.01	659.02
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.14	11/08/2025 18:00 PM	0.08	0.03	596.11
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.24	11/08/2025 18:00 PM	0	0.01	637.32
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	8.37	11/07/2025 18:02 PM	0.53	0.24	183.77
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.11	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:33 PM	0.76	0.07	781.23
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	9.38	11/08/2025 17:36 PM	0.86	0.07	779.55
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	7.7	11/08/2025 17:32 PM	0.81	0.06	781.23
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0.01	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	7.74	11/08/2025 17:19 PM	0.15	0.56	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.6	0.013	0	0	FORCE_MAIN	6	-0.0004	57.91	11/07/2025 17:59 PM	0.9	0.69	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.1	0.013	0	0	FORCE_MAIN	8	-0.0030	258.92	11/08/2025 18:00 PM	2.38	0.65	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.0	0.011	0	0	FORCE_MAIN	6	-0.0030	8.38	11/07/2025 18:01 PM	0.37	0.3	n/a
FG1080	SMH-FG-065	SMH-FG-064	10.0	0.011	0	0	FORCE_MAIN	6	-0.0030	11.06	11/07/2025 17:52 PM	0.16	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.0	0.011	0	0	FORCE_MAIN	6	-0.0030	13.35	11/07/2025 18:03 PM	0.15	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.8	0.011	0	0	FORCE_MAIN	6	-0.0030	10.09	11/07/2025 09:07 AM	0.14	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.9	0.011	0	0	FORCE_MAIN	6	-0.0030	10.15	11/07/2025 09:07 AM	0.23	0.74	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.9	0.011	0	0	CIRCULAR	15	0.0044	243.76	11/10/2025 17:59 PM	4.13	0.16	1656.07
FG1085	SMH-FG-025	SMH-FG-078	28.9	0.011	0	2.5	CIRCULAR	15	0.0988	258.88	11/10/2025 17:59 PM	8.18	0.11	8734.84
FG1086	SMH-FG-077	SMH-B4-02	137.9	0.013	0	2	CIRCULAR	15	0.0228	258.87	11/07/2025 18:00 PM	4.36	0.16	3394.73
FG1087	SMH-FG-089	SMH-FG-088	376.4	0.013	0	1	CIRCULAR	6	0.0082	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.1	0.013	0	2.5	CIRCULAR	6	0.0153	1.66	11/07/2025 17:46 PM	0.93	0.05	258.26
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	7.7	11/07/2025 17:57 PM	2.27	0.08	168.22
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.08	175.92
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48

Table C-14. Proposed Condition (Site 3) Dry Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	7.7	11/07/2025 17:56 PM	1.01	0.14	200.24
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	3.85	11/07/2025 17:35 PM	0.8	0.1	204.20
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	3.85	11/07/2025 17:28 PM	0.8	0.1	202.38
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/07/2025 17:05 PM	0.84	0.14	169.70
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	6.22	11/07/2025 17:03 PM	1.07	0.12	169.70
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	1.06	11/07/2025 17:44 PM	0.51	0.06	174.86
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.05	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	4.21	11/07/2025 17:03 PM	0.95	0.1	171.71
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	1.87	11/07/2025 17:56 PM	0.22	0.17	174.05
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	3.86	11/10/2025 17:04 PM	1.11	0.08	172.06
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	7.93	11/07/2025 17:25 PM	0.85	0.26	167.99
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	49.93	11/07/2025 18:00 PM	1.71	0.24	237.57
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.42	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	1.99	11/07/2025 17:56 PM	0.61	0.35	77.34
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	35.44	11/09/2025 10:11 AM	2.17	0.28	140.48
FGP003	SMH-FG-S03	SMH-FG-112	81.1	0.013	0	0	CIRCULAR	6	0.0070	31.96	11/07/2025 10:08 AM	2.04	0.27	143.96

Table C-15. Proposed Condition (Site 3) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-001	2.33	11.22	8.89	0.444	FAIRGROUNDS_NON_SUMM	0.11	2.44	11/07/2025 14:00 PM	25.91	8.78
SMH-FG-002	3.15	12.08	8.92	0.554	FAIRGROUNDS_NON_SUMM	0.04	3.19	11/07/2025 14:00 PM	3.03	8.89
SMH-FG-003	3.61	11.70	8.09	0.000		0.03	3.64	11/07/2025 14:00 PM	2	8.06
SMH-FG-004	4.22	9.99	5.77	0.000		0.03	4.25	11/07/2025 13:56 PM	1.65	5.74
SMH-FG-005	5.20	10.23	5.03	0.000		0.09	5.29	11/10/2025 14:01 PM	12.26	4.94
SMH-FG-006	4.77	10.94	6.16	0.000		0.03	4.8	11/07/2025 13:55 PM	1.68	6.14
SMH-FG-007	5.98	11.43	5.45	0.000		0	5.98	11/07/2025 00:00 AM	0	5.45
SMH-FG-008	7.05	11.66	4.61	0.000		0	7.05	11/07/2025 00:00 AM	0	4.61
SMH-FG-010	4.26	10.00	5.74	0.000		0.09	4.35	11/10/2025 14:02 PM	13.91	5.65
SMH-FG-013	5.89	9.05	3.17	0.000		0	5.89	11/07/2025 00:00 AM	0	3.16
SMH-FG-014	3.38	9.76	6.38	1.544	FAIRGROUNDS_NON_SUMM	0.17	3.55	11/08/2025 11:00 AM	49.36	6.21
SMH-FG-015	0.73	6.66	5.93	0.000		0.12	0.85	11/09/2025 14:02 PM	25.9	5.81
SMH-FG-016	1.04	6.81	5.77	0.000		0.12	1.16	11/09/2025 14:01 PM	25.9	5.65
SMH-FG-017	1.11	7.03	5.92	0.000		0.12	1.23	11/09/2025 14:00 PM	25.91	5.80
SMH-FG-018	1.81	7.65	5.84	0.000		0.11	1.93	11/09/2025 14:00 PM	25.91	5.72
SMH-FG-019	1.63	7.26	5.63	0.000		0.04	1.67	11/07/2025 14:00 PM	3.22	5.59
SMH-FG-020	3.36	7.78	4.42	0.000		0.04	3.4	11/10/2025 14:00 PM	3.22	4.38
SMH-FG-021	5.27	9.00	3.73	0.813	FAIRGROUNDS_NON_SUMM	0.03	5.31	11/10/2025 14:00 PM	1.9	3.69
SMH-FG-022	1.67	7.91	6.24	0.000		0.17	1.84	11/08/2025 11:01 AM	49.31	6.07
SMH-FG-023	0.86	7.99	7.12	1.241	FAIRGROUNDS_NON_SUMM	0.2	1.06	11/08/2025 11:02 AM	51.43	6.93
SMH-FG-024	2.60	8.68	6.08	0.000		0.17	2.77	11/08/2025 11:00 AM	49.33	5.91
SMH-FG-025	0.32	6.71	6.39	0.000		0.08	0.4	11/08/2025 11:02 AM	78.92	6.31
SMH-FG-026	0.85	9.21	8.35	0.360	FAIRGROUNDS_NON_SUMM	0.08	0.94	11/10/2025 14:00 PM	10.61	8.27
SMH-FG-027	1.21	8.75	7.54	0.006	FAIRGROUNDS_NON_SUMM	0.07	1.28	11/10/2025 13:32 PM	8.21	7.47
SMH-FG-028	3.88	10.03	6.15	0.000		0	3.88	11/07/2025 00:00 AM	0	6.15
SMH-FG-029	2.16	9.72	7.56	0.000		0.07	2.23	11/09/2025 13:26 PM	8.2	7.49
SMH-FG-030	2.45	9.11	6.66	0.000		0.07	2.52	11/07/2025 13:19 PM	8.19	6.59
SMH-FG-031	3.03	10.00	6.96	0.000		0.07	3.1	11/09/2025 13:22 PM	8.19	6.90
SMH-FG-032	3.70	10.49	6.79	0.000		0.05	3.75	11/09/2025 13:14 PM	3.59	6.74
SMH-FG-033	4.87	9.04	4.17	1.932	FAIRGROUNDS_NON_SUMM	0.05	4.92	11/07/2025 13:04 PM	3.57	4.12
SMH-FG-034	4.23	10.31	6.08	0.000		0.05	4.28	11/07/2025 13:08 PM	3.6	6.03
SMH-FG-035	2.84	5.96	3.12	0.000		0	2.84	11/07/2025 00:00 AM	0	3.12
SMH-FG-036	1.18	6.70	5.52	0.000		0	1.18	11/07/2025 00:00 AM	0	5.52
SMH-FG-037	7.16	8.62	1.47	0.090	FAIRGROUNDS_NON_SUMM	0.01	7.17	11/10/2025 14:00 PM	0.17	1.45
SMH-FG-038	5.29	8.62	3.33	0.000		0.02	5.31	11/09/2025 13:13 PM	0.9	3.31
SMH-FG-039	0.39	7.25	6.86	0.000		0.16	0.55	11/09/2025 11:03 AM	75.88	6.70
SMH-FG-040	4.54	10.00	5.46	0.000		0.09	4.64	11/10/2025 14:01 PM	13.92	5.36

Table C-15. Proposed Condition (Site 3) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-041	-0.85	6.13	6.98	0.000		0	-0.85	11/07/2025 00:00 AM	1.64	6.98
SMH-FG-042	3.61	9.79	6.18	0.000		0	3.61	11/07/2025 00:00 AM	0	6.18
SMH-FG-043	3.29	10.29	7.01	0.000		0.07	3.36	11/09/2025 13:19 PM	8.2	6.93
SMH-FG-044	4.58	9.80	5.22	2.495	FAIRGROUNDS_NON_SUMM	0.05	4.64	11/10/2025 14:00 PM	4.62	5.16
SMH-FG-045	5.85	10.02	4.17	0.000		0	5.85	11/07/2025 00:00 AM	0	4.17
SMH-FG-046	8.10	12.10	4.00	0.000		0	8.1	11/07/2025 00:00 AM	0	4.00
SMH-FG-047	3.28	9.92	6.64	0.000		0	3.28	11/10/2025 14:00 PM	0.03	6.64
SMH-FG-048	4.22	8.22	4.00	0.016	FAIRGROUNDS_NON_SUMM	0	4.22	11/07/2025 00:34 AM	0.03	4.00
SMH-FG-049	-2.02	7.26	9.28	0.000		0.02	-2	11/10/2025 14:03 PM	0.43	9.26
SMH-FG-051	4.39	8.39	4.00	0.000		0	4.39	11/07/2025 00:00 AM	0	4.00
SMH-FG-052	0.97	8.00	7.03	0.000		0	0.97	11/07/2025 00:00 AM	0	7.03
SMH-FG-053	3.20	7.12	3.92	0.000		0	3.2	11/07/2025 00:00 AM	0	3.92
SMH-FG-054	0.30	7.95	7.65	0.000		0	0.3	11/07/2025 00:00 AM	0	7.65
SMH-FG-055	-1.42	7.41	8.84	0.000		0.03	-1.39	11/10/2025 14:00 PM	1.36	8.80
SMH-FG-056	1.50	6.00	4.50	0.733	FAIRGROUNDS_NON_SUMM	0.03	1.53	11/10/2025 14:00 PM	1.36	4.47
SMH-FG-057	1.98	8.86	6.88	0.000		0.01	1.99	11/10/2025 14:00 PM	0.05	6.87
SMH-FG-058	4.61	8.78	4.17	0.028	FAIRGROUNDS_NON_SUMM	0	4.62	11/10/2025 14:00 PM	0.05	4.16
SMH-FG-059	3.99	8.99	5.00	0.000		0	3.99	11/07/2025 00:00 AM	0	5.00
SMH-FG-060	4.45	8.06	3.62	0.000		2.75	7.2	11/08/2025 14:22 PM	3.06	0.86
SMH-FG-061	6.94	10.22	3.28	0.000		0.19	7.13	11/10/2025 14:09 PM	2.42	3.09
SMH-FG-062	7.10	11.10	4.00	0.000		0.03	7.13	11/10/2025 14:10 PM	1.77	3.97
SMH-FG-063	3.33	7.81	4.48	0.000		3.88	7.2	11/09/2025 14:00 PM	4.68	0.61
SMH-FG-064	3.20	7.59	4.39	0.000		3.98	7.18	11/10/2025 12:37 PM	6.42	0.41
SMH-FG-065	3.17	7.17	4.00	0.000		4	7.17	11/08/2025 14:24 PM	1.78	0.00
SMH-FG-066	4.96	8.96	4.00	0.000		0.39	5.34	11/10/2025 14:00 PM	12.3	3.62
SMH-FG-068	3.55	9.88	6.33	0.000		0.09	3.64	11/10/2025 14:03 PM	14.32	6.24
SMH-FG-069	8.14	9.77	1.63	0.000		0	8.14	11/07/2025 00:00 AM	0	1.63
SMH-FG-070	2.56	13.96	11.41	5.962	FAIRGROUNDS_NON_SUMM	0.08	2.63	11/07/2025 13:18 PM	11.03	11.33
SMH-FG-071	3.45	13.66	10.20	5.962	FAIRGROUNDS_NON_SUMM	0.07	3.53	11/07/2025 13:12 PM	11.03	10.13
SMH-FG-072	1.96	9.01	7.05	0.000		0.11	2.08	11/07/2025 14:00 PM	25.91	6.93
SMH-FG-073	1.87	6.55	4.68	0.000		0	1.87	11/07/2025 00:00 AM	0	4.68
SMH-FG-074	3.72	5.73	2.01	0.000		0	3.72	11/07/2025 00:00 AM	0	2.01
SMH-FG-075	4.86	9.52	4.67	0.000		0	4.86	11/07/2025 00:00 AM	0	4.66
SMH-FG-076	3.00	8.25	5.25	0.000		0	3	11/07/2025 00:00 AM	0	5.25
SMH-FG-077	5.00	8.30	3.30	0.000		0.12	5.12	11/09/2025 11:04 AM	94.32	3.18
SMH-FG-079	-6.00	9.70	15.70	0.000		0	-6	11/07/2025 00:00 AM	0	15.70
SMH-FG-082	2.72	12.02	9.30	0.000		0.09	2.8	11/07/2025 14:00 PM	14.06	9.22

Table C-15. Proposed Condition (Site 3) Wet Weather Scenario - Junction Output Table

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Baseline (gpm)	Baseline Pattern	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Total Inflow (gpm)	Available Freeboard (ft)
SMH-FG-084	2.13	6.13	4.00	0.000		2.82	4.95	11/07/2025 08:10 AM	1.64	1.18
SMH-FG-085	2.86	6.66	3.80	0.000		12.11	14.97	11/07/2025 09:22 AM	78.92	0.00
SMH-FG-086	4.30	9.30	5.00	0.191	FAIRGROUNDS_NON_SUMM	0.01	4.32	11/07/2025 14:00 PM	0.35	4.98
SMH-FG-087	-0.22	8.55	8.76	0.000		0.02	-0.2	11/10/2025 14:00 PM	0.4	8.75
SMH-FG-088	1.99	8.99	7.00	0.000		0	1.99	11/07/2025 00:00 AM	0	7.00
SMH-FG-089	6.07	10.07	4.00	0.000		0	6.07	11/07/2025 00:00 AM	0	4.00
SMH-FG-090	1.84	5.84	4.00	0.000		0	1.84	11/07/2025 00:00 AM	0	4.00
SMH-FG-091	4.01	8.01	4.00	0.000		0	4.01	11/07/2025 00:00 AM	0	4.00
SMH-FG-092	2.52	6.52	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.54	11/07/2025 13:53 PM	0.82	3.98
SMH-FG-093	2.10	6.10	4.00	0.444	FAIRGROUNDS_NON_SUMM	0.02	2.12	11/07/2025 13:42 PM	0.82	3.98
SMH-FG-094	0.48	7.00	6.53	0.000		0.03	0.5	11/10/2025 14:00 PM	1.64	6.50
SMH-FG-095	0.45	6.00	5.55	0.000		0	0.45	11/07/2025 00:00 AM	0	5.55
SMH-FG-096	-0.08	6.03	6.11	0.000		0.04	-0.04	11/10/2025 14:00 PM	1.64	6.07
SMH-FG-097	3.67	7.75	4.09	0.000		0.03	3.69	11/07/2025 13:08 PM	1.33	4.06
SMH-FG-098	4.48	9.13	4.65	0.717	FAIRGROUNDS_NON_SUMM	0.03	4.51	11/09/2025 13:03 PM	1.33	4.62
SMH-FG-099	7.03	9.00	1.97	0.123	FAIRGROUNDS_NON_SUMM	0.01	7.04	11/10/2025 14:00 PM	0.23	1.96
SMH-FG-100	5.89	8.40	2.51	0.000		0.02	5.9	11/10/2025 14:00 PM	0.39	2.50
SMH-FG-101	6.10	8.28	2.18	0.485	FAIRGROUNDS_NON_SUMM	0.02	6.13	11/08/2025 13:04 PM	0.9	2.15
SMH-FG-102	5.71	9.00	3.29	0.000		0	5.71	11/07/2025 00:00 AM	0	3.29
SMH-FG-103	4.69	8.69	4.00	0.000		0.13	4.83	11/07/2025 11:00 AM	33.18	3.86
SMH-FG-104	6.64	9.00	2.36	0.445	FAIRGROUNDS_NON_SUMM	0.02	6.67	11/10/2025 13:05 PM	0.82	2.33
SMH-FG-105	3.89	9.78	5.90	0.000		0.09	3.98	11/10/2025 14:02 PM	14.33	5.80
SMH-FG-106	5.84	9.00	3.16	0.000		0.02	5.85	11/07/2025 14:00 PM	0.82	3.15
SMH-FG-107	4.09	10.85	6.76	0.194	FAIRGROUNDS_NON_SUMM	0.03	4.12	11/07/2025 13:58 PM	2	6.73
SMH-FG-108	6.14	9.99	3.85	0.915	FAIRGROUNDS_NON_SUMM	0.03	6.17	11/07/2025 13:38 PM	1.69	3.82
SMH-FG-109	5.12	10.60	5.48	0.000		0.09	5.21	11/10/2025 14:00 PM	13.93	5.39
SMH-FG-110	3.71	13.91	10.20	0.000		0.03	3.74	11/07/2025 14:00 PM	2	10.17
SMH-FG-111	2.14	8.03	5.89	0.000		0.27	2.41	11/11/2025 00:00 AM	0.19	5.62
SMH-FG-112	4.89	8.68	3.79	0.000		0.13	5.02	11/09/2025 10:14 AM	32.81	3.66
SMH-FG-S03	5.46	8.67	3.21	20.620	DEL_MAR_CITY	0.13	5.59	11/08/2025 10:00 AM	31.96	3.08

Table C-16. Proposed Condition (Site 3) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1002	SMH-FG-071	SMH-FG-082	105.0	0.011	0	0	CIRCULAR	6	0.0070	11.03	11/07/2025 13:12 PM	1.33	0.16	196.88
FG1003	SMH-FG-032	SMH-FG-043	103.8	0.013	0	0	CIRCULAR	8	0.0040	3.58	11/09/2025 13:14 PM	0.52	0.09	283.20
FG1004	SMH-FG-030	SMH-FG-029	71.2	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/07/2025 13:22 PM	0.91	0.11	278.58
FG1005	SMH-FG-031	SMH-FG-030	146.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:22 PM	0.91	0.11	278.59
FG1006	SMH-FG-043	SMH-FG-031	63.2	0.013	0	0	CIRCULAR	8	0.0040	8.19	11/09/2025 13:19 PM	0.91	0.11	278.95
FG1007	SMH-FG-029	SMH-FG-027	238.0	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/10/2025 13:27 PM	0.91	0.11	278.58
FG1008	SMH-FG-027	SMH-FG-026	89.3	0.013	0	0	CIRCULAR	8	0.0040	8.2	11/10/2025 13:32 PM	0.87	0.12	278.58
FG1009	SMH-FG-034	SMH-FG-032	132.7	0.013	0	0	CIRCULAR	8	0.0040	3.59	11/09/2025 13:11 PM	0.71	0.07	283.19
FG1010	SMH-FG-033	SMH-FG-034	159.7	0.013	0	0	CIRCULAR	8	0.0040	3.6	11/09/2025 13:06 PM	0.71	0.07	283.18
FG1011	SMH-FG-028	SMH-FG-042	65.1	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	294.21
FG1012	SMH-FG-044	SMH-FG-043	324.6	0.013	0	0	CIRCULAR	8	0.0040	4.62	11/07/2025 14:00 PM	0.64	0.09	282.16
FG1013	SMH-FG-019	SMH-FG-025	159.4	0.013	0	0	CIRCULAR	6	0.0082	3.22	11/07/2025 14:00 PM	0.59	0.12	187.42
FG1014	SMH-FG-023	SMH-FG-039	189.6	0.015	0	0	CIRCULAR	12	0.0025	51.38	11/08/2025 11:02 AM	1.21	0.18	527.17
FG1015	SMH-FG-017	SMH-FG-016	46.3	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 14:00 PM	0.95	0.1	1085.79
FG1016	SMH-FG-016	SMH-FG-015	202.0	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 14:01 PM	0.95	0.1	1082.10
FG1017	SMH-FG-015	SMH-FG-039	228.7	0.011	0	0	CIRCULAR	15	0.0015	25.9	11/09/2025 14:02 PM	0.79	0.11	1082.10
FG1018	SMH-FG-021	SMH-FG-020	273.4	0.013	0	0	CIRCULAR	6	0.0070	1.9	11/10/2025 14:00 PM	0.67	0.07	174.02
FG1019	SMH-FG-007	SMH-FG-006	302.2	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.02	338.92
FG1020	SMH-FG-069	SMH-FG-008	273.3	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1021	SMH-FG-008	SMH-FG-007	266.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0	338.92
FG1022	SMH-FG-003	SMH-FG-002	182.2	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 14:00 PM	0.46	0.04	786.93
FG1023	SMH-FG-002	SMH-FG-082	173.7	0.011	0	0	CIRCULAR	12	0.0025	3.03	11/07/2025 14:00 PM	0.33	0.06	785.90
FG1024	SMH-FG-082	SMH-FG-001	157.6	0.011	0	0	CIRCULAR	12	0.0025	14.06	11/07/2025 14:00 PM	0.77	0.1	774.87
FG1025	SMH-FG-110	SMH-FG-003	40.3	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 14:00 PM	0.54	0.03	788.51
FG1026	SMH-FG-014	SMH-FG-024	260.5	0.013	0	0	CIRCULAR	10	0.0030	49.33	11/08/2025 11:00 AM	1.37	0.2	399.90
FG1027	SMH-FG-024	SMH-FG-022	308.5	0.013	0	0	CIRCULAR	10	0.0030	49.31	11/08/2025 11:00 AM	1.37	0.2	399.92
FG1028	SMH-FG-022	SMH-FG-023	268.7	0.013	0	0	CIRCULAR	10	0.0030	49.28	11/08/2025 11:01 AM	1.21	0.22	399.95
FG1029	SMH-FG-045	SMH-FG-028	468.3	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0	293.86
FG1030	SMH-FG-038	SMH-FG-112	57.1	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/09/2025 13:13 PM	0.14	0.16	175.02
FG1031	SMH-FG-103	SMH-FG-014	187.8	0.013	0	0	CIRCULAR	6	0.0070	33.18	11/07/2025 11:00 AM	1.8	0.3	142.74
FG1035	SMH-FG-013	SMH-FG-040	335.6	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.07	338.92
FG1036	SMH-FG-020	SMH-FG-019	152.7	0.013	0	0	CIRCULAR	6	0.0113	3.22	11/10/2025 14:00 PM	0.98	0.08	220.59
FG1037	SMH-FG-037	SMH-FG-100	181.1	0.013	0	0	CIRCULAR	6	0.0070	0.17	11/10/2025 14:00 PM	0.26	0.03	175.75
FG1038	SMH-FG-100	SMH-FG-021	87.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/10/2025 14:00 PM	0.24	0.05	175.53
FG1039	SMH-FG-070	SMH-FG-001	91.9	0.011	0	0	CIRCULAR	12	0.0025	11.03	11/07/2025 13:18 PM	0.84	0.09	777.90
FG1040	SMH-FG-001	SMH-FG-072	144.8	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.17	0.11	763.02
FG1041	SMH-FG-005	SMH-FG-109	20.0	0.013	0	0	CIRCULAR	8	0.0040	12.24	11/10/2025 14:01 PM	0.99	0.13	275.97
FG1042	SMH-FG-109	SMH-FG-040	143.8	0.013	0	0	CIRCULAR	8	0.0040	13.92	11/10/2025 14:00 PM	1.07	0.14	272.86
FG1043	SMH-FG-075	SMH-FG-074	162.9	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1044	SMH-FG-040	SMH-FG-010	72.0	0.013	0	0	CIRCULAR	8	0.0040	13.91	11/10/2025 14:01 PM	1.07	0.14	272.87
FG1045	SMH-FG-010	SMH-FG-105	92.6	0.013	0	0	CIRCULAR	8	0.0040	13.9	11/10/2025 14:02 PM	1.06	0.14	272.88
FG1046	SMH-FG-018	SMH-FG-017	282.9	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/09/2025 14:00 PM	1.12	0.12	763.02
FG1047	SMH-FG-073	SMH-FG-036	102.4	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	372.54
FG1048	SMH-FG-036	SMH-FG-016	21.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0.09	372.81

Table C-16. Proposed Condition (Site 3) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1049	SMH-FG-068	SMH-FG-014	42.1	0.013	0	0	CIRCULAR	8	0.0040	14.32	11/10/2025 14:03 PM	0.69	0.2	273.18
FG1050	SMH-FG-105	SMH-FG-068	85.0	0.013	0	0	CIRCULAR	8	0.0040	14.32	11/10/2025 14:02 PM	1.08	0.14	272.46
FG1051	SMH-FG-072	SMH-FG-018	60.3	0.011	0	0	CIRCULAR	12	0.0025	25.91	11/07/2025 14:00 PM	1.17	0.11	763.02
FG1052	SMH-FG-074	SMH-FG-035	125.4	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	175.92
FG1053	SMH-FG-035	SMH-FG-073	143.3	0.013	0	0	CIRCULAR	8	0.0068	0	11/07/2025 00:00 AM	0	0	373.09
FG1054	SMH-FG-051	SMH-FG-050	380.9	0.013	0	2.5	CIRCULAR	6	0.0171	0	11/07/2025 00:00 AM	0	0	275.12
FG1055	SMH-FG-054	SMH-FG-055	431.5	0.011	0	0	CIRCULAR	8	0.0040	0	11/07/2025 00:00 AM	0	0.03	338.92
FG1056	SMH-FG-053	SMH-FG-054	403.2	0.013	0	0	CIRCULAR	6	0.0072	0	11/07/2025 00:00 AM	0	0	178.29
FG1057	SMH-FG-052	SMH-FG-054	66.5	0.013	0	0	CIRCULAR	6	0.0100	0	11/07/2025 00:00 AM	0	0	210.27
FG1058	SMH-FG-046	SMH-FG-047	405.6	0.013	0	0	CIRCULAR	6	0.0119	0	11/07/2025 00:00 AM	0	0	229.28
FG1059	SMH-FG-056	SMH-FG-055	731.2	0.013	0	0	CIRCULAR	8	0.0040	1.36	11/10/2025 14:00 PM	0.48	0.05	285.42
FG1060	SMH-FG-055	SMH-FG-050	177.3	0.013	0	2.5	CIRCULAR	8	0.0040	1.35	11/10/2025 14:00 PM	0.58	0.04	285.43
FG1061	SMH-FG-057	SMH-FG-087	429.3	0.013	0	0	CIRCULAR	8	0.0051	0.05	11/10/2025 14:00 PM	0.09	0.02	324.09
FG1062	SMH-FG-087	SMH-FG-049	451.8	0.013	0	0	CIRCULAR	8	0.0040	0.4	11/10/2025 14:00 PM	0.33	0.03	286.38
FG1063	SMH-FG-049	SMH-FG-050	27.9	0.013	0	2.5	CIRCULAR	8	0.0040	0.43	11/10/2025 14:03 PM	0.57	0.02	286.71
FG1064	SMH-FG-048	SMH-FG-047	62.1	0.011	0	0	CIRCULAR	8	0.0151	0.03	11/10/2025 14:00 PM	0	0	659.13
FG1065	SMH-FG-047	SMH-FG-049	428.2	0.011	0	0	CIRCULAR	8	0.0124	0.03	11/10/2025 14:00 PM	0.05	0.02	596.22
FG1066	SMH-FG-058	SMH-FG-057	57.3	0.013	0	1.5	CIRCULAR	8	0.0198	0.05	11/10/2025 14:00 PM	0	0	637.51
FG1067	SMH-FG-062	SMH-FG-026	748.7	0.013	0	0	CIRCULAR	6	0.0084	1.75	11/10/2025 14:10 PM	0.32	0.11	190.39
FG1068	SMH-FG-042	SMH-FG-029	343.6	0.013	0	0	CIRCULAR	8	0.0042	0	11/07/2025 00:00 AM	0	0.05	293.86
FG1069	SMH-FG-004	SMH-FG-107	53.6	0.011	0	0	CIRCULAR	12	0.0025	1.65	11/07/2025 13:56 PM	0.47	0.03	787.28
FG1070	SMH-FG-107	SMH-FG-110	150.9	0.011	0	0	CIRCULAR	12	0.0025	2	11/07/2025 13:58 PM	0.54	0.03	786.93
FG1071	SMH-FG-006	SMH-FG-004	221.6	0.011	0	0	CIRCULAR	12	0.0025	1.65	11/07/2025 13:55 PM	0.51	0.03	787.28
FG1072	SMH-FG-079	SMH-FG-078	2456.6	0.013	0	0	FORCE_MAIN	6	-0.0004	0	11/07/2025 00:00 AM	0	0.5	n/a
FG1073	SMH-FG-059	SMH-FG-058	252.3	0.013	0	0	FORCE_MAIN	6	-0.0025	0	11/07/2025 00:00 AM	0	0	n/a
FG1074	SMH-FG-076	SMH-FG-035	494.2	0.013	0	1	FORCE_MAIN	6	-0.0017	0	11/07/2025 00:00 AM	0	0	n/a
FG1075	SMH-FG-084	SMH-FG-006	367.0	0.013	0	0	FORCE_MAIN	6	-0.0072	1.68	11/08/2025 13:52 PM	0.04	0.53	n/a
FG1076	SMH-FG-066	SMH-FG-005	664.6	0.013	0	0	FORCE_MAIN	6	-0.000370	12.26	11/10/2025 14:00 PM	0.3	0.47	n/a
FG1077	SMH-FG-085	SMH-FG-077	707.1	0.013	0	0	FORCE_MAIN	8	-0.0030	94.32	11/07/2025 09:22 AM	1.19	0.59	n/a
FG1079	SMH-FG-061	SMH-FG-062	52.0	0.011	0	0	FORCE_MAIN	6	-0.0030	1.77	11/10/2025 14:10 PM	0.12	0.22	n/a
FG1080	SMH-FG-065	SMH-FG-064	10.0	0.011	0	0	FORCE_MAIN	6	-0.0030	6.42	11/07/2025 09:05 AM	0.12	1	n/a
FG1081	SMH-FG-064	SMH-FG-063	41.0	0.011	0	0	FORCE_MAIN	6	-0.0030	4.68	11/07/2025 09:19 AM	0.06	1	n/a
FG1082	SMH-FG-063	SMH-FG-060	370.8	0.011	0	0	FORCE_MAIN	6	-0.0030	3.06	11/07/2025 15:16 PM	0.06	1	n/a
FG1083	SMH-FG-060	SMH-FG-061	826.9	0.011	0	0	FORCE_MAIN	6	-0.0030	2.42	11/08/2025 14:24 PM	0.04	0.69	n/a
FG1084	SMH-FG-039	SMH-FG-025	15.9	0.011	0	0	CIRCULAR	15	0.0044	75.88	11/09/2025 11:03 AM	2.93	0.09	1823.95
FG1085	SMH-FG-025	SMH-FG-078	28.9	0.011	0	2.5	CIRCULAR	15	0.0988	78.92	11/08/2025 11:02 AM	5.71	0.06	8914.80
FG1086	SMH-FG-077	SMH-B4-02	137.9	0.013	0	2	CIRCULAR	15	0.0228	78.91	11/09/2025 11:04 AM	3.06	0.09	3574.69
FG1087	SMH-FG-089	SMH-FG-088	376.4	0.013	0	1	CIRCULAR	6	0.0082	0	11/07/2025 00:00 AM	0	0	190.06
FG1088	SMH-FG-086	SMH-FG-087	132.1	0.013	0	2.5	CIRCULAR	6	0.0153	0.35	11/07/2025 13:58 PM	0.7	0.02	259.57
FG1089	SMH-FG-096	SMH-FG-041	110.0	0.013	0	0	CIRCULAR	6	0.0070	1.64	11/10/2025 14:00 PM	1.41	0.04	174.28
FG1090	SMH-FG-095	SMH-FG-096	75.7	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.04	175.92
FG1091	SMH-FG-090	SMH-FG-095	198.0	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0	176.17
FG1092	SMH-FG-091	SMH-FG-095	206.2	0.013	0	0	CIRCULAR	6	0.0173	0	11/07/2025 00:00 AM	0	0	276.48

Table C-16. Proposed Condition (Site 3) Wet Weather Scenario - Conduit Output Table

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Cross-Section	Diameter (in)	Slope (ft/ft)	Max. |Flow| (gpm)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max d/D	Available Capacity (gpm)
FG1093	SMH-FG-094	SMH-FG-096	56.7	0.013	0	0	CIRCULAR	6	0.0098	1.64	11/10/2025 14:00 PM	0.63	0.07	206.30
FG1094	SMH-FG-092	SMH-FG-094	209.0	0.013	0	0	CIRCULAR	6	0.0098	0.82	11/07/2025 13:53 PM	0.5	0.05	207.23
FG1095	SMH-FG-093	SMH-FG-094	168.7	0.013	0	0	CIRCULAR	6	0.0096	0.82	11/07/2025 13:42 PM	0.5	0.05	205.41
FG1096	SMH-FG-097	SMH-FG-020	43.6	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/07/2025 13:08 PM	0.53	0.07	174.59
FG1097	SMH-FG-098	SMH-FG-097	116.1	0.013	0	0	CIRCULAR	6	0.0070	1.33	11/07/2025 13:05 PM	0.67	0.06	174.59
FG1098	SMH-FG-099	SMH-FG-100	162.4	0.013	0	0	CIRCULAR	6	0.0070	0.23	11/07/2025 13:59 PM	0.32	0.03	175.69
FG1099	SMH-FG-102	SMH-FG-038	60.2	0.013	0	0	CIRCULAR	6	0.0070	0	11/07/2025 00:00 AM	0	0.02	176.05
FG1100	SMH-FG-101	SMH-FG-038	116.0	0.013	0	0	CIRCULAR	6	0.0070	0.9	11/07/2025 13:06 PM	0.59	0.05	175.02
FG1101	SMH-FG-106	SMH-FG-103	163.8	0.013	0	0	CIRCULAR	6	0.0070	0.39	11/07/2025 14:00 PM	0.07	0.15	175.53
FG1102	SMH-FG-104	SMH-FG-106	115.1	0.013	0	0	CIRCULAR	6	0.0070	0.82	11/08/2025 13:08 PM	0.7	0.04	175.10
FG1104	SMH-FG-108	SMH-FG-109	145.6	0.013	0	0	CIRCULAR	6	0.0070	1.69	11/07/2025 13:38 PM	0.62	0.12	174.23
FG1105	SMH-FG-026	SMH-FG-083	29.9	0.013	0	3.508	CIRCULAR	8	0.0040	10.6	11/10/2025 14:00 PM	1.09	0.11	276.90
FG1106	SMH-FG-111	SMH-FG-035	902.4	0.011	0	1	FORCE_MAIN	4	-0.0019	0	11/07/2025 00:00 AM	0	0.41	n/a
FG1107	SMH-FG-106	SMH-FG-105	265.3	0.01	0	0	CIRCULAR	4	0.0074	0.43	11/07/2025 14:00 PM	0.29	0.16	78.90
FG1108	SMH-FG-112	SMH-FG-103	28.6	0.013	0	0	CIRCULAR	6	0.0070	32.81	11/09/2025 10:14 AM	2.16	0.27	143.11
FGP003	SMH-FG-S03	SMH-FG-112	81.1	0.013	0	0	CIRCULAR	6	0.0070	32.04	11/08/2025 10:01 AM	2.04	0.26	143.88