UC San Diego

Rancho Bernardo Healthcare Center Medical Office Building Project
UC San Diego Project Number/Job Number: 5666

Draft Initial Study and Mitigated Negative Declaration

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April 2024

TABLE OF CONTENTS

Section Page

List of Figures

List of Tables

List of Appendices

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ACM	asbestos-containing materials
AF	attenuation factor
AHJ	Authority Having Jurisdiction
AMSL	above mean sea level
APCD	Air Pollution Control District
APN	Assessor's Parcel Number
BMPs	best management practices
C&D	Construction and Demolition
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERS	California Environmental Reporting System
CFS	cubic feet per second
CGP	Construction General Permit
CHRIS	California Historical Resources Information System
CMP	Construction Management Plan
CNPS	California Native Plant Society
COCs	contaminants of concern
CRPR	California Rare Plant Rank
CUPA	Certified Unified Program Agency
dBA	A-weighted decibel
DMA	drainage management areas
DPM	diesel particulate matter
DTSC-SL	Department of Toxic Substances Control modified screening level
EDR	Environmental Data Resources
EH&S	Environmental Health & Safety
EIFS	exterior insulation and finish system
EOC	Emergency Operations Center
ESA	Environmental Site Assessment
EUI	energy use intensity
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FS	factor of safety
FTA	Federal Transit Administration
GHG	Greenhouse Gas

GPCD	gallons per capita daily
gpm	gallons per minute
GSF	gross square feet
HCAI	Health Care Access and Information
HFCs	halocarbons
HMIS	hazardous materials inventory statement
HVAC	heating, ventilation, and air conditioning
IS/MND	Initial Study/Mitigated Negative Declaration
LEED	Leadership in Energy and Environmental Design
Leq	equivalent continuous sound level
LID	low impact development
LRDP	Long Range Development Plan
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
MLD	most likely descendent
MOB	Medical Office Building
MS4s	Small Municipal Separate Storm Sewer Systems
MSCP	Multiple Species Conservation Program
MTS	Metropolitan Transit System
MWS	modular wetland systems
NAHC	Native American Heritage Commission
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
OSHPD	Office of Statewide Hospital Planning and Development
PLWTP	Point Loma Wastewater Treatment Plant
POC	pollutants of concern
PUD	Public Utilities Department
PV	photovoltaic
QSP	Qualified SWPPP Practitioner
RAQS	Regional Air Quality Strategy
REC	recognized environmental concerns
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SB	Senate Bill
SDAPCD	San Diego Air Pollution Control District
SDFD	City of San Diego Fire-Rescue Department
SDG&E	San Diego Gas & Electric
SDMC	City of San Diego Municipal Code
SF	square feet
SIP	State Implementation Plan
SPCC	Spill Prevention, Control, and Countermeasures Plan

SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCP	Traffic Control Plan
TCR	Tribal Cultural Resources
TDM	Transportation Demand Management
TPA	Transit Priority Area
TSM	Transportation Study Manual
UC	University of California
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VMT	Vehicle miles traveled
VOCs	volatile organic compounds
WMA	Watershed Management Area

1 INTRODUCTION

1.1 PROJECT SUMMARY

The following project is addressed in this Initial Study/Mitigated Negative Declaration (IS/MND).

Project name:	Rancho Bernardo Healthcare Center Medical Office Building Project
Project location:	Northwest corner Bernardo Center Drive and Interstate 15 (Assessor's Parcel Number [APN] 678-252-1100 and a parcel without an APN).
Lead agency's name and address:	The Regents of the University of California 1111 Franklin Street Oakland, California 94607
Contact person:	Alison Buckley, Senior Environmental Planner UC San Diego Campus Planning
Project sponsor's name and mailing address:	UC San Diego 9500 Gilman Drive, MC 0074 La Jolla, California 92093-0074
Location of administrative record:	UC San Diego Campus Planning Office 10280 North Torrey Pines Road, Suite 460 La Jolla, California 92037

1.2 CEQA DETERMINATION

On the basis of this evaluation and pursuant to the California Environmental Quality Act (CEQA) Guidelines:

☐ University of California San Diego finds that the project WOULD NOT have a significant effects on the environment. A NEGATIVE DECLARATION will be prepared.

☒ University of California San Diego finds that although the project WOULD have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent, including implementation of the mitigation measures identified herein. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ University of California San Diego finds that the project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Alison Buckley

Alison Buckley, Senior Environmental Planner
Campus Planning Office
University of California, San Diego

April 24, 2024
Date

2 PROJECT DESCRIPTION

2.1 REGIONAL LOCATION AND SETTING

The project site is on a 9.81-gross-acre site on Bernardo Center Drive west of Interstate (I-) 15 in the suburban community of Rancho Bernardo in the northern portion of the City of San Diego (City), San Diego County (County) (refer to Figure 1, Regional Location). The community of Rancho Bernardo is bounded by the communities of San Pasqual Valley to the north, Carmel Mountain Ranch and Rancho Peñasquitos to the south, and 4S Ranch and Black Mountain Ranch to the west and southwest, respectively. The project site is not part of the University of California (UC) San Diego 2018 La Jolla Campus Long Range Development Plan (LRDP) (UC San Diego 2018a). The La Jolla Campus is approximately 12 miles southwest of the project site.

2.2 PROJECT SITE AND SETTING

The project site is composed of two vacant parcels: Parcel 1 is approximately 2.76 gross acres, has no Assessor's Parcel Number (APN), and includes the California Department of Transportation's (Caltrans) I-15 off-ramp easement, and Parcel 2, where the previously mass graded superpad is located, is approximately 7.05 gross acres (APN 678-252-1100). Refer to Figure 2, Parcel Map. The project site topography varies considerably where the central building pad area gently slopes downward from north to south from approximate elevation 668 feet above mean sea level (AMSL) to 655 feet AMSL. The entrance road at Bernardo Center Drive is at about elevation 635 feet AMSL. The slope descending to Bernardo Center Drive varies from 15- to 45-feet high and the slope descending to the I-15 offramp varies from 45- to 55-feet high. The toe of the lower slope along the I-15 offramp is at an approximate elevation of 600 to 610 feet AMSL. The ascending slopes to the north and west vary from 20 feet and 60 feet high, respectively. The top of the upper slope along the western property line is at an approximate elevation of 690 to 715 feet AMSL. Parcel 2 contains a 25-foot public water easement along the western boundary, an approximately 0.25-acre parking easement for the off-site development to the north, and dedicated easement to Caltrans granting non-exclusive use over any portion of the property in which any redevelopment within would be subject to Caltrans approval. Of the 9.81 gross acres, approximately 4.3 acres would be graded for development.

The project site has been previously mass graded and is a part of larger graded property with a 2:1 slope on the south, west, and east and a large retaining wall to the north and northwest. Refer to Figure 3, Local Vicinity. The project site slopes toward an existing catch basin located at the southwestern corner of the project site and a graded driveway approach leads from Bernardo Center Drive to the portion of the project site that has been mass graded.[1] Gate maintenance access to the project site is provided via a dirt road off Bernardo Center Drive. At the toe of the eastern slope, a large grade beam wall (with significant tiebacks which encroach under the superpad) parallels the I-15 southbound off-ramp. The tieback encroachment occupies an area of about 1 acre into the superpad.

The project site is bounded by a developed parcel with two office buildings and an associated surface parking lot to the north, Bernardo Center Drive to the south, I-15 to the east, and the Intel Corporate campus to the west. Beyond the two office buildings to the north are other office parks, one medical office building, and light industrial park buildings, and beyond Bernardo Center Drive to the south are undeveloped open space hills and single-family residences in the High Country West residential community.

2.3 PROJECT FEATURES

2.3.1 Building Program and Design

The project involves development of the UC San Diego Rancho Bernardo Healthcare Center Medical Office Building (healthcare center or MOB) composed of two new buildings, a five-story above-grade medical office building and a one-level at-grade plus five-level above-grade parking structure. Refer to Figure 4, Proposed Site Plan. The project site would be accessed via one vehicular driveway from Bernardo Center Drive and supported by two private on-site driveways, serving both structures, along with a private surface lot to accommodate additional parking capacity and access. Additionally, an elevated pedestrian bridge and a garden would be provided between the two buildings. A staff patio would be provided on the south side of the healthcare center, and a healing garden would be provided at the northeast corner of the project site.

BUILDING PROGRAM

The healthcare center would total approximately 152,000 gross square feet with approximately 121,825 square feet of programmed areas as shown in Table 1, UC San Diego Healthcare Center Building Program Breakdown. The project is anticipated to house approximately 250 staff and providers on site. Figures 5a and 5b, MOB Preliminary Floor Plans, show conceptual blocking floor plans for Levels 1 through 5 for the MOB.

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[1] Super pad refers to a mass grading operation that brings the site nominally within the range of the final design grades.

Table 1. UC San Diego Healthcare Center Building Program Breakdown

Bldg, Level	Program	Square Feet
Level 1	Public (lobbies, restrooms, info/greeter, café)	Included as part of grossing factor
	Lab Services	2,565
	Specialty	16,550
	Clinic Module	4,970
	Materials Management and Security	1,190
	Management and Support	1,200
	Building Support	Included as part of grossing factor
	Level 1 Total	**26,475**
Level 2	Public (lobbies, restrooms)	Included as part of grossing factor
	Pharmacy (Retail)	2,225
	Specialty (x2)	19,890
	Shared Support	1,100
	Level 2 Total	**23,215**
Level 3	Public (lobbies, restrooms)	Included as part of grossing factor
	Clinic – Primary Care	13,310
	Clinic– Specialty Care	4,415
	Shared Support	875
	Shell Support (Non-UC San Diego)	6,350
	Level 3 Total	**23,225**
Level 4	Public (lobbies, restrooms)	
	Clinic – Specialty Care (x4)	18,190
	PT Rehab	3,930
	Shared Support	900
	Level 4 Total	**23,020**
Level 5	Public (lobbies, restrooms)	
	Infusion Center	6,750
	Pharmacy (compounding)	2,130
	Cancer Clinic	5,440
	Clinic– Specialty Care	6,900
	Conference and Admin Center	2,375
	Shared Support	570
	Level 5 Total	**24,165**
Total Programmed SF		**121,825**

Notes: GSF = gross square feet; SF = square feet

MEDICAL OFFICE BUILDING DESIGN

The proposed project involves development of the UC San Diego Rancho Bernardo Healthcare Medical Office Building composed of two new buildings: a five-story above-grade medical office building and a one-level at-grade plus five-level above-grade parking structure. The healthcare center building would achieve Leadership in Energy and Environmental Design (LEED) Gold and the parking structure would achieve Parksmart

Silver Certification, as required by the UC Sustainable Practices Policy (UC San Diego 2024a). The overall sustainable strategies and practices to be implemented by the project are listed in Section 2.3.6, Sustainability Features. The healthcare center would total approximately 152,000 GSF and have a maximum height of 79 feet to the roof line and have a maximum height of approximately 93 feet at the top of the elevator shaft. The healthcare center would include spaces for lobbies, restrooms, pharmacies, clinic modules, laboratories, and other specialty rooms totaling 121,825 square feet of programmable areas. A coffee cart/cafe may be included in or near the healthcare center as well. The healthcare center building façade would consist of a combination of glazing, metal panel, and cement plaster. Figure 4 illustrates the proposed site plan, Figures 5a and 5b show the preliminary MOB floor plans, and Figures 6 and 7 show building elevations and proposed building materials.

PARKING STRUCTURE DESIGN

The proposed parking structure would total approximately 195,000 square feet and provide 622 parking spaces. The parking structure would have one-level at-grade plus five elevated decks. The maximum building height would be approximately 56 feet to the roof, and photovoltaic (PV) panels would be installed on the rooftop. The maximum height of the parking structure with the PV structure and panels would be approximately 66 feet. Figure 8, Parking Structure North and East Elevations and Building Materials, shows parking structure elevations and proposed parking structure building materials. The parking structure would be of Type 1B construction (fire resistive non-combustible), and sprinklers would be installed. The parking structure façade would be concrete with some metal scrim and a glass elevator. Cantilevered planters would be provided on the side to provide for stormwater management. The entire perimeter of the parking structure would have upturned vehicular impact-rated concrete crash protection walls that also provide code-required fall protection and eliminates vehicular headlight spillage. Figure 9, Parking Structure Floor Plans, shows floors plans for the parking structure. The parking structure would have two vehicular entryways, one for employee staff on the southern elevation and one for visitors on the eastern elevation. In addition to the structured spaces, the project would also provide 60 surface parking spaces for a net total of 682 parking spaces.

Figures 10a and 10b, Perspective Views, show perspective views of the project from Bernardo Center Drive and traveling north on I-15, respectively.

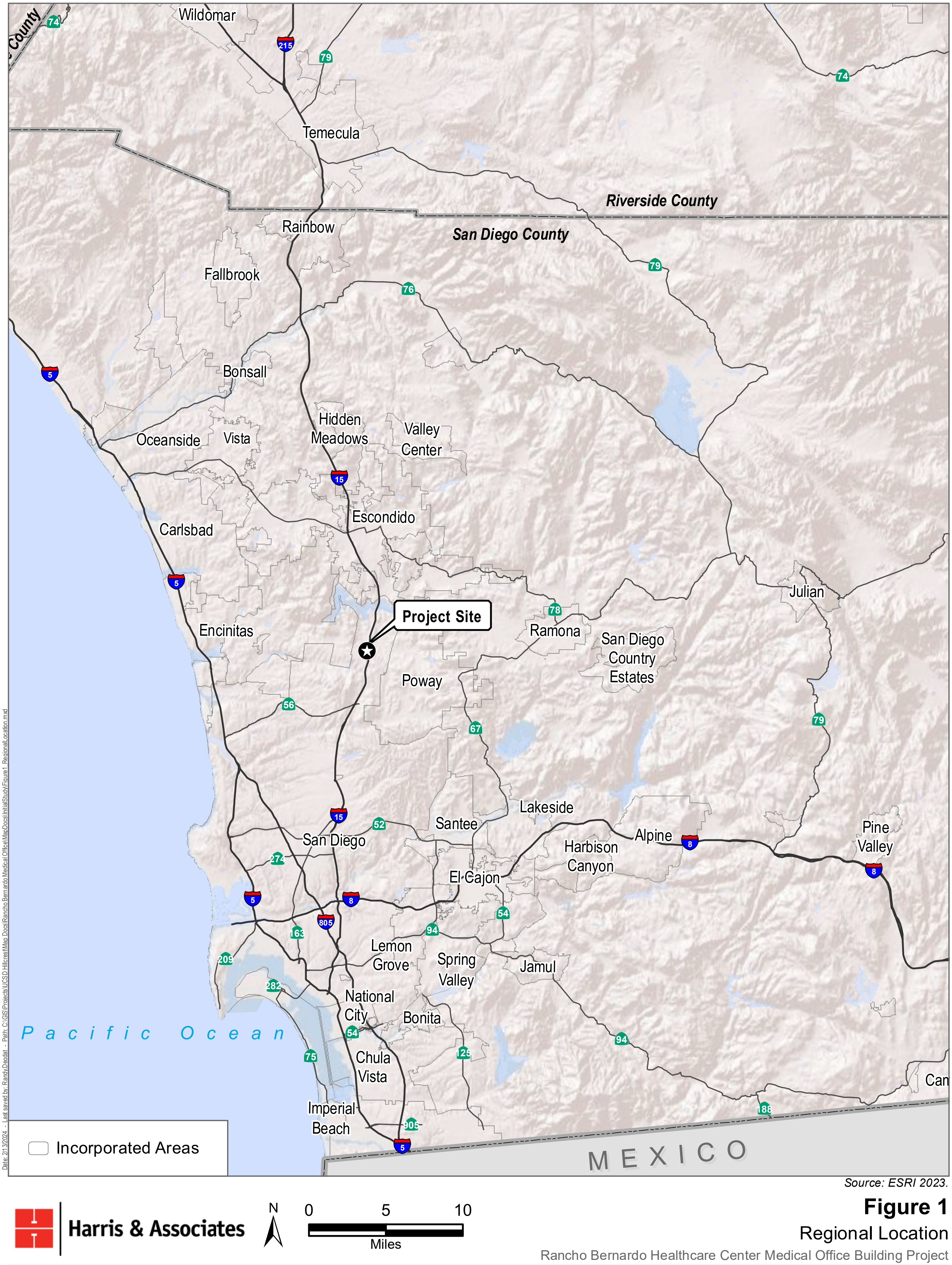

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Figure 1

Regional Location

Rancho Bernardo Healthcare Center Medical Office Building Project

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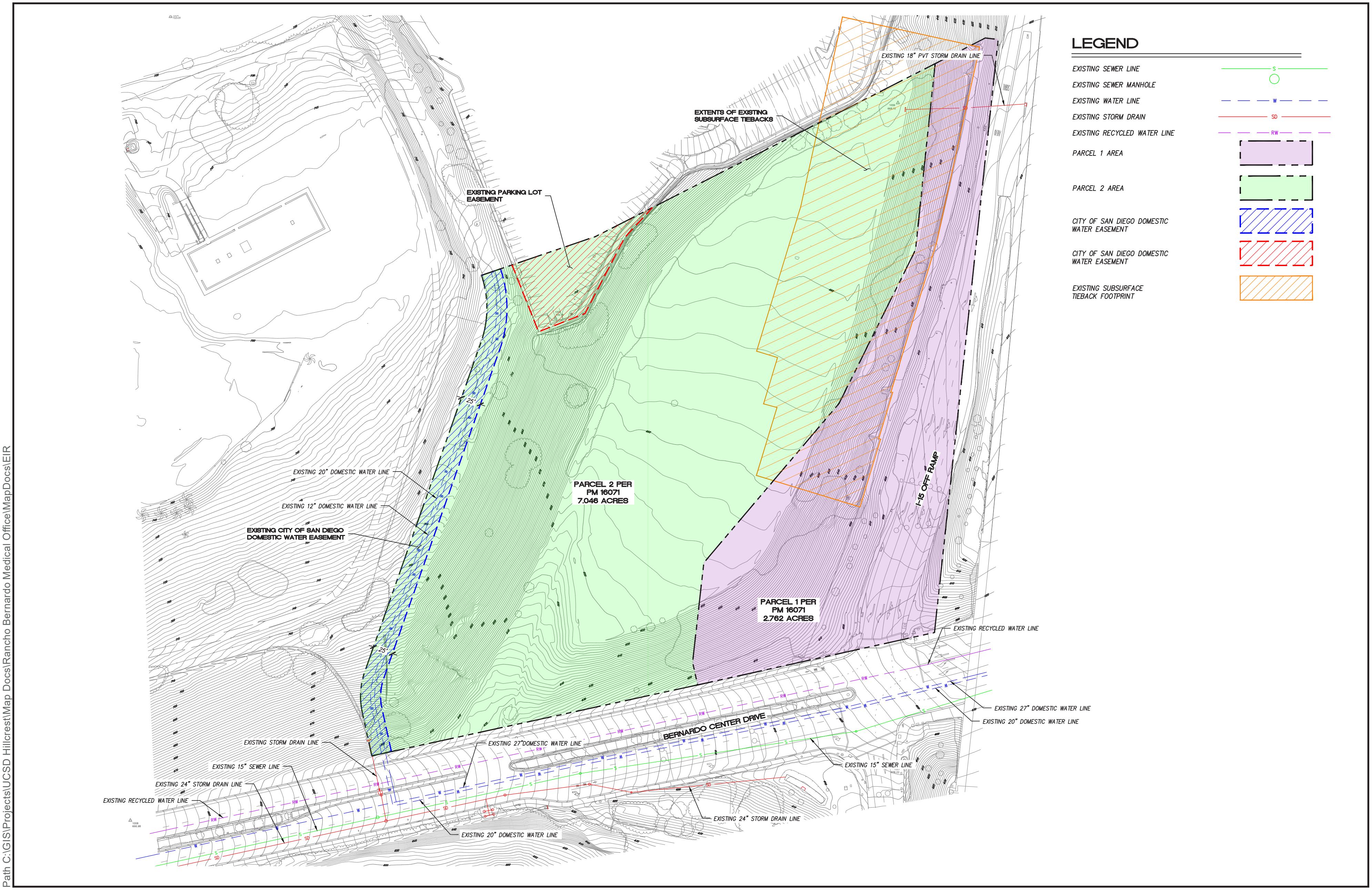

Source: Latitude 33 2018.

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Figure 2

Parcel Map

Rancho Bernardo Healthcare Center Medical Office Building Project

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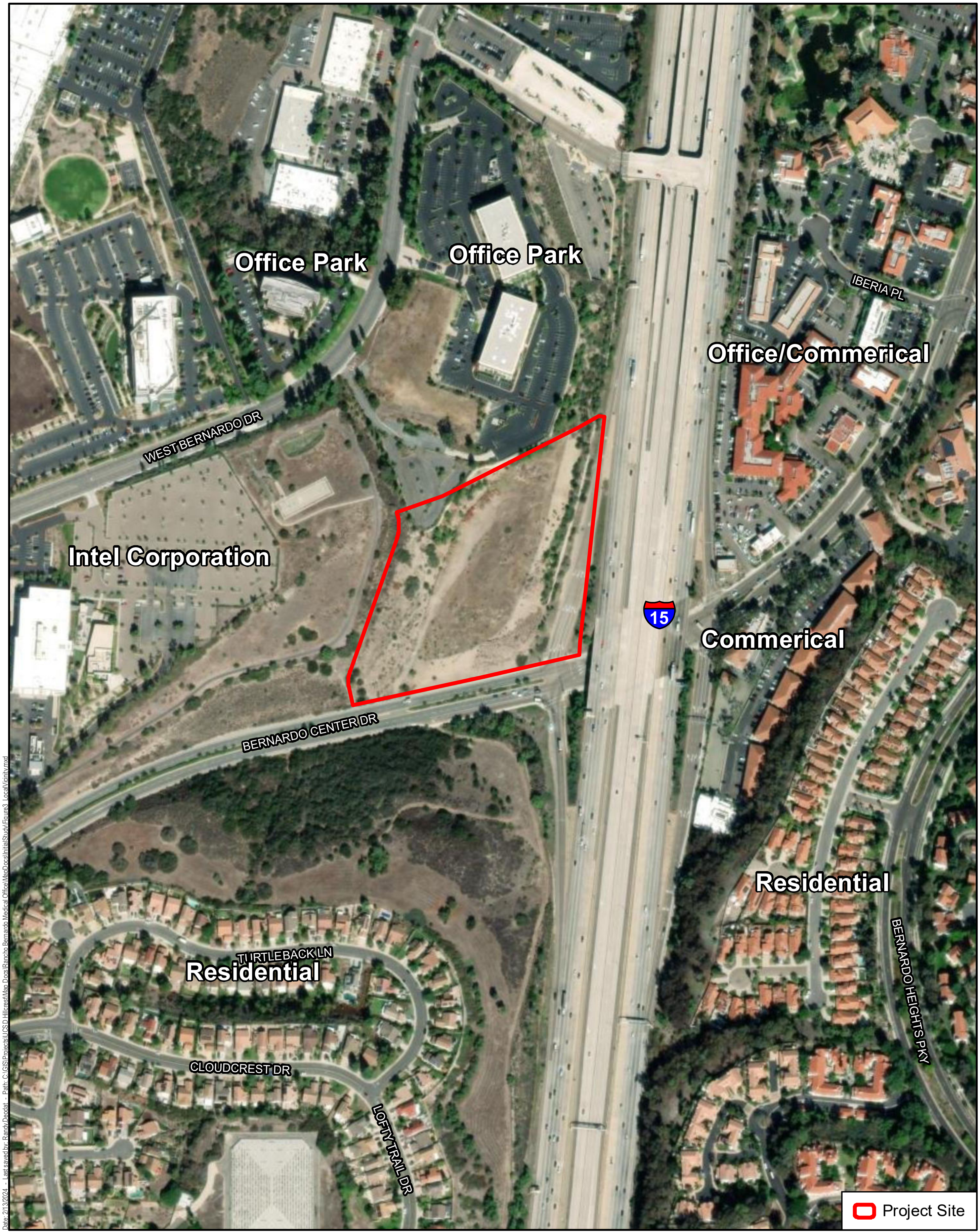

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Figure 3

Local Vicinity

Rancho Bernardo Healthcare Center Medical Office Building Project

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SITE PLAN AND CONCEPT

1. GATEWAY ENTRY
2. STAFF PATIO
3. CONNECTION GARDEN
4. PORTE-COCHERE/ENTRY PLAZA
5. PATIENT DROP-OFF
6. ACCESSIBLE PARKING
7. BACK OF HOUSE LOADING AREA
8. HEALING GARDEN
9. SHORT TERM BIKE PARKING
10. STAFF GARAGE ENTRY
11. EV CHARGING STATIONS
12. LONG TERM BIKE PARKING
13. PUBLIC GARAGE ENTRY
14. ELEVATED PEDESTRIAN BRIDGE
15. CALTRANS EASEMENT
16. EXISTING RETAINING WALL
17. EXISTING PARKING EASEMENT
18. EXISTING CITY OF SAN DIEGO WATER EASEMENT
19. NEW TRAFFIC SIGNAL/CROSSWALK (See Figure 11b, Circulation Plan - Roadway Improvements, for detailed view of this area.)

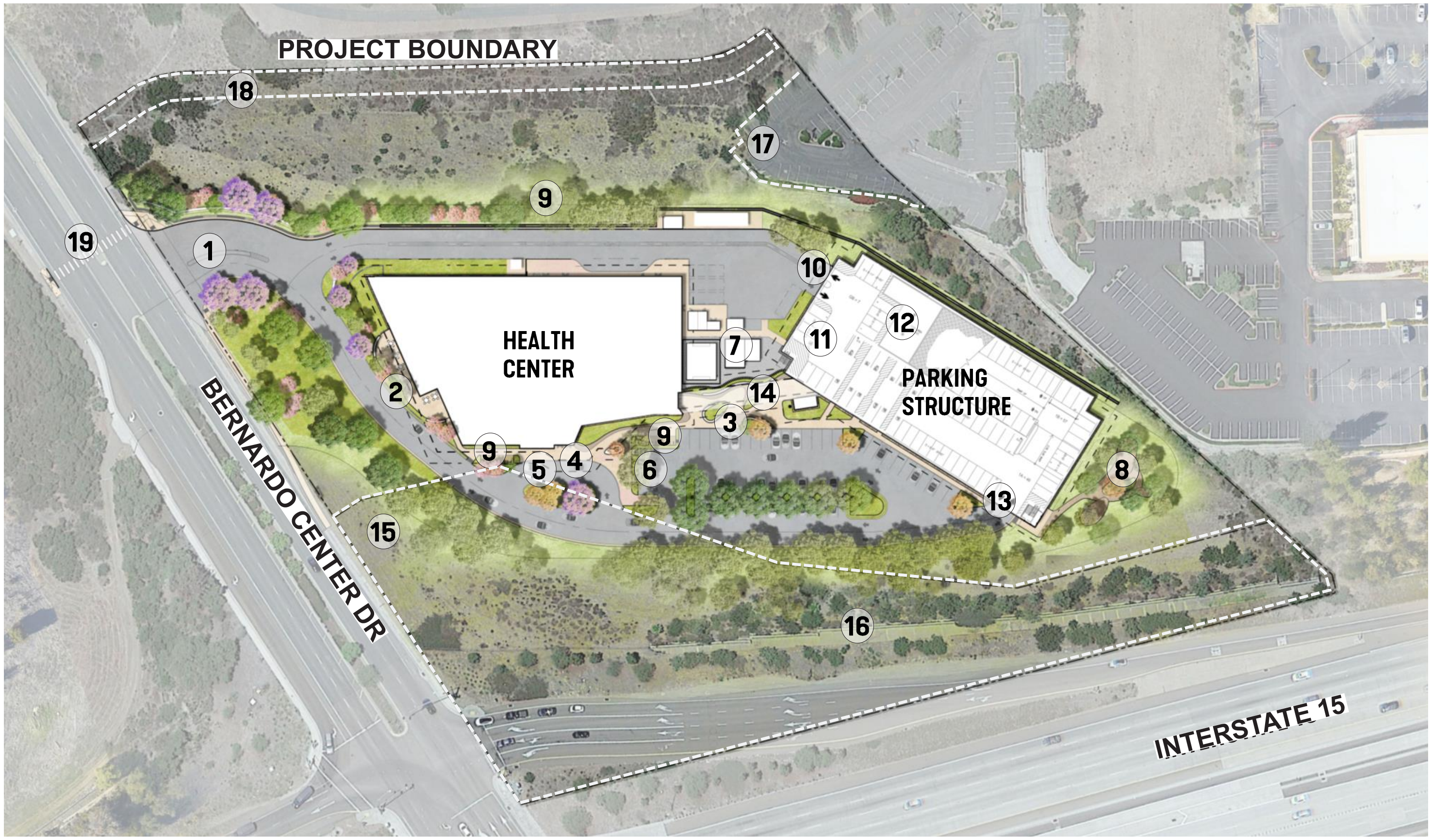

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Figure 4

Proposed Site Plan

Rancho Bernardo Healthcare Center Medical Office Building Project

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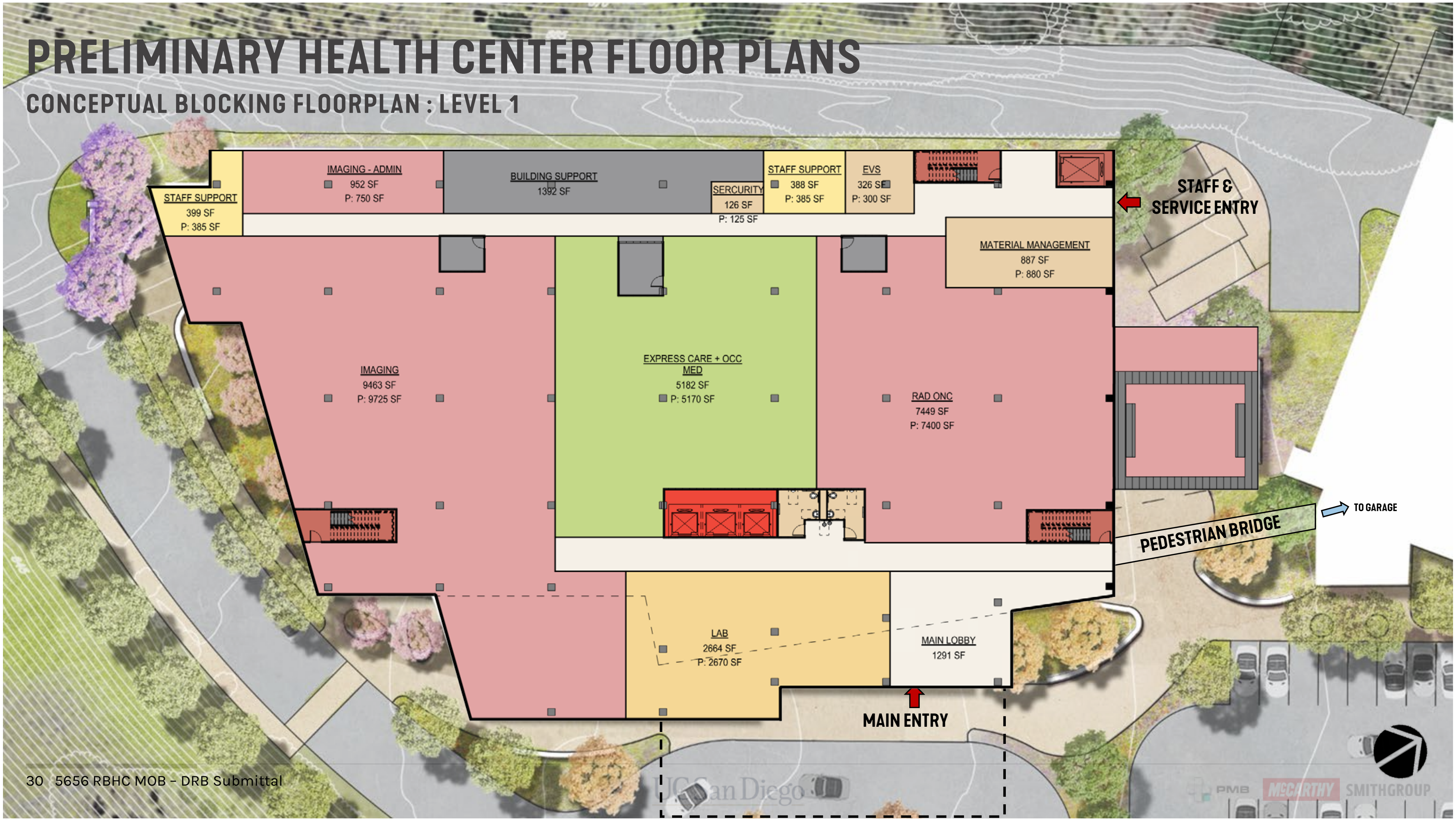

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Figure 5a

MOB Preliminary Floor Plans

Rancho Bernardo Healthcare Center Medical Office Building Project

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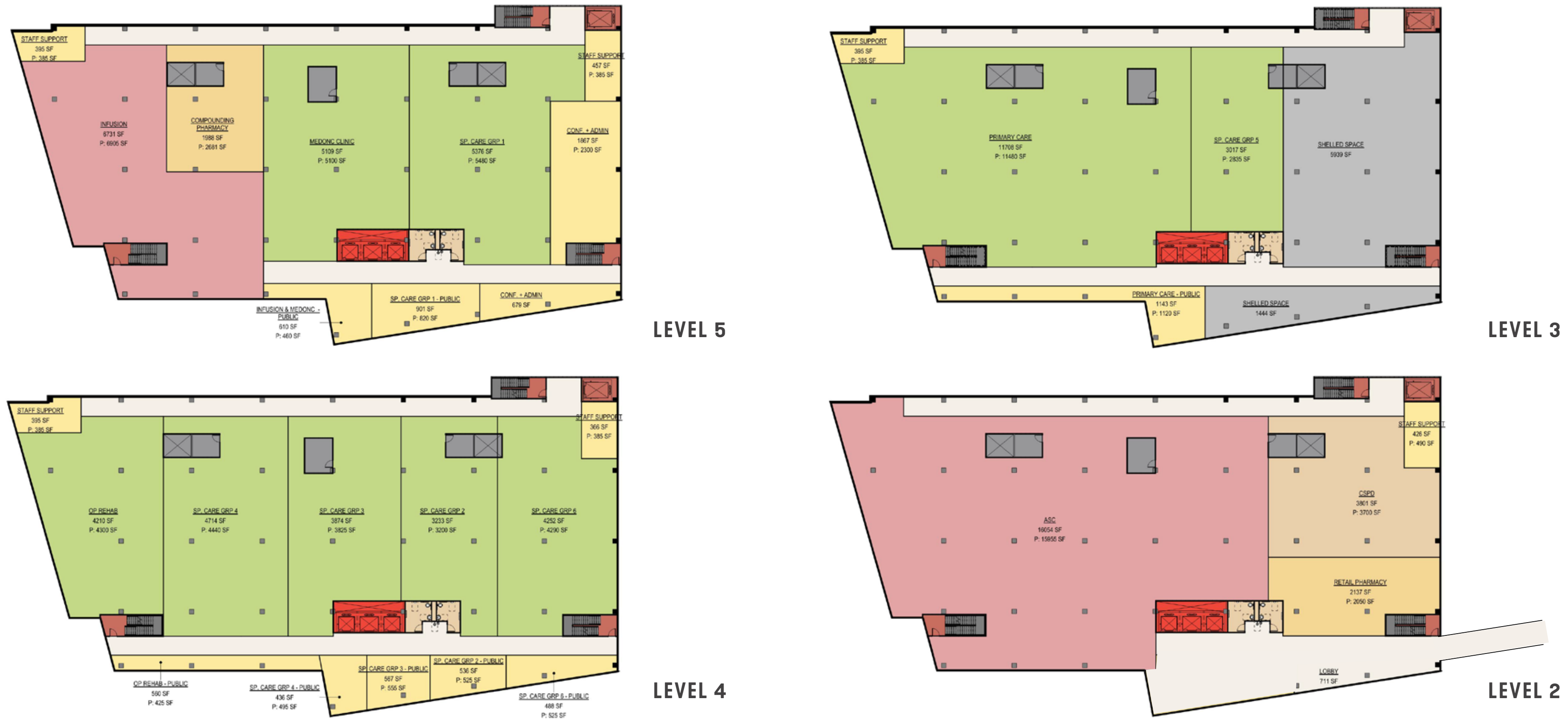

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Figure 5b

MOB Preliminary Floor Plans

Rancho Bernardo Healthcare Center Medical Office Building Project

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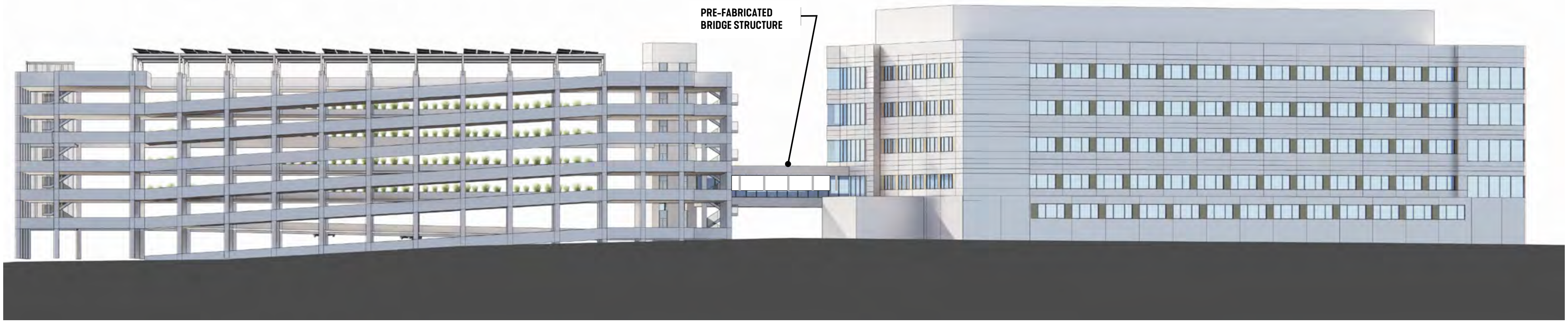
EAST ELEVATION



WEST ELEVATION

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Figure 6

East and West Building Elevations

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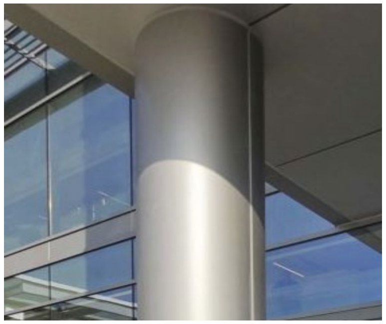
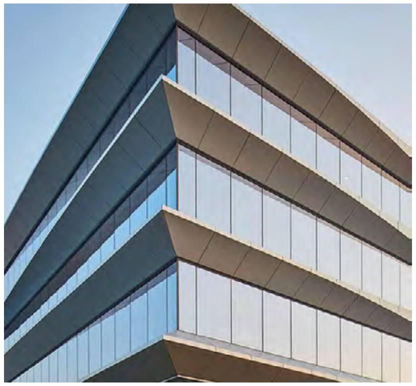
1. EIFS WALL SYSTEM -TYPICAL

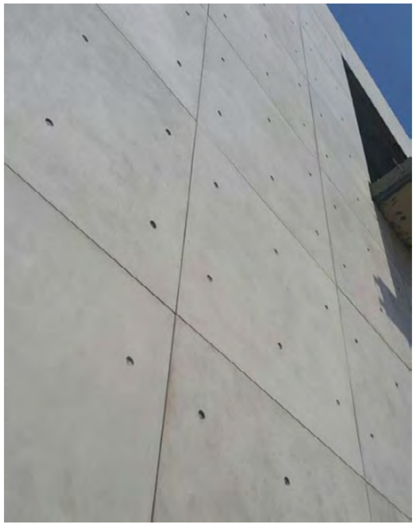
2. MECHANICAL SCREEN



3. METAL COLUMN COVER



4. LOW-E GLAZING



5. CONCRETE WALL

NORTH ELEVATION

SOUTH ELEVATION

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Figure 7

Healthcare Center North and South Elevations and Building Materials

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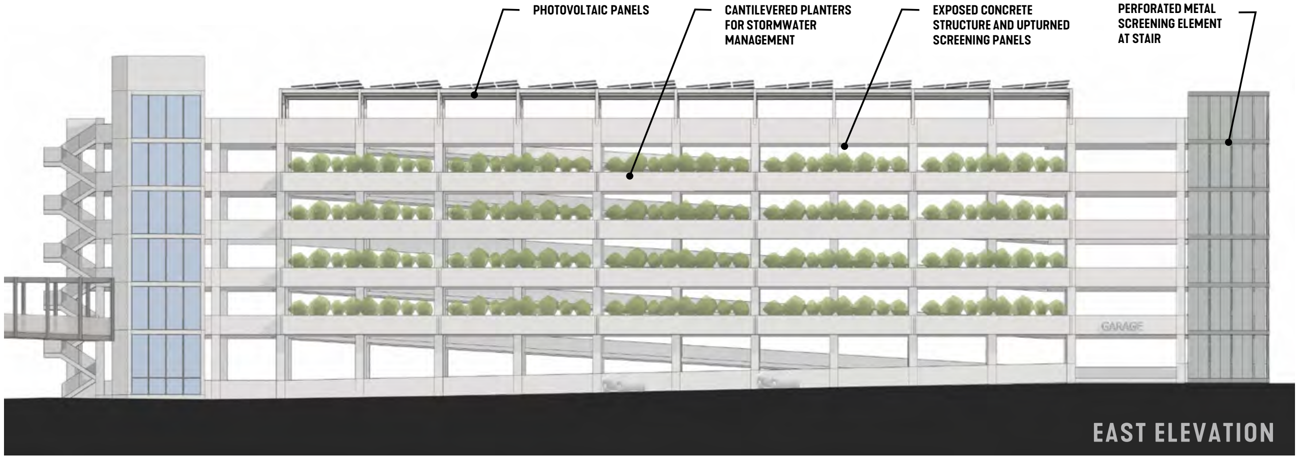
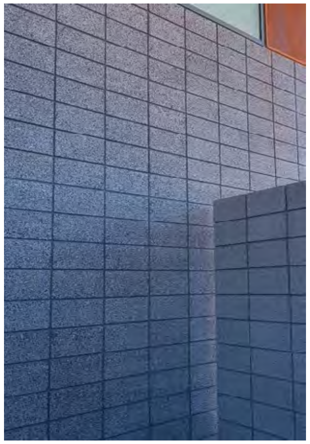
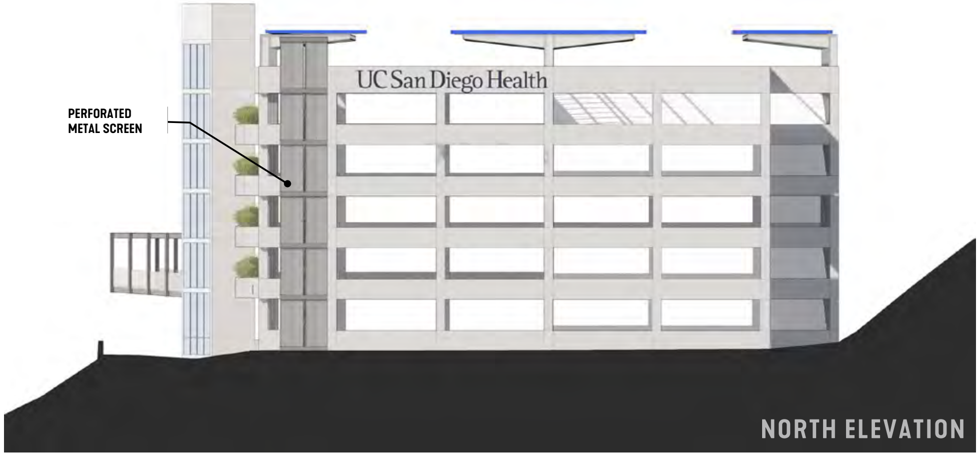



CMU ELEVATOR ENCLOSURE


PERFORATED METAL AT STAIR ENCLOSURE




CONCRETE


CANTILEVERED PLANTERS

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Figure 8

Parking Structure North and East Elevations and Building Materials

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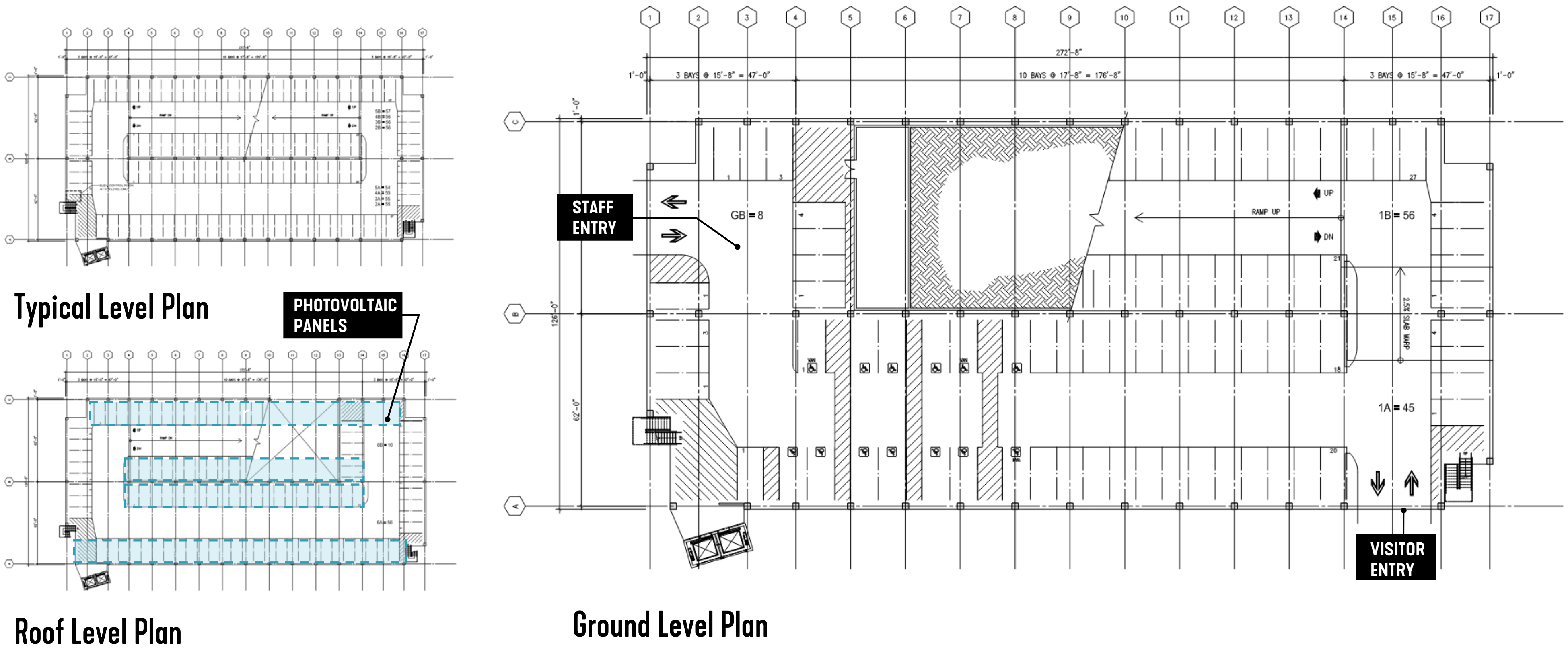

Typical Level Plan

Roof Level Plan

Ground Level Plan

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Figure 9

Parking Structure Floor Plans

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Figure 10a

Perspective Views

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Figure 10b

Perspective Views

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2.3.2 Project Site Access and Roadway Improvements

SITE ACCESS

As shown on Figure 11a, Circulation Plan – Internal Circulation, the project would be accessed via one vehicular driveway from Bernardo Center Drive. As it enters the site, the driveway is proposed to split into two driveways. The driveway proposed to be located to the east side of the MOB would be for public access to the front door of the building, to the surface parking lot and to the parking structure. This east side of the property is considered the public side of the property.

The other driveway, west of the MOB, is considered the service side of the property. The service drive would provide access for staff to the parking structure, for building deliveries to the loading dock, and for waste management.

A separate accessible pedestrian access and bicycle access would be provided from Bernardo Center Drive.

ROADWAY IMPROVEMENTS

The project includes the following roadway improvements (Figure 11b, Circulation Plan – Roadway Improvements):

- A 200-foot-long westbound dedicated right-turn lane with a 90-foot bay taper at the project driveway
- Two outbound lanes from the site, a dedicated left-turn lane and a 20-foot-wide shared left/right lane
- Paved sidewalk along the north side of Bernardo Center Drive along the project frontage, connecting to the existing sidewalk that currently ends 425 feet west of the I-15 southbound ramps
- Traffic signal and associated intersection improvements at entryway

2.3.3 Utility and Service System Improvements

UC San Diego Health is part of the University of California (UC), a constitutionally created entity of the State of California with “full powers of organization and government” (California Constitution Article IX, Section 9). As a constitutionally created state entity, the UC is not subject to the land-use regulations of local non-state agencies, such as those that may be found in the City’s General Plan or land use ordinances, for uses on property owned or controlled by the UC that are in furtherance of the UC’s mission. As such, UC San Diego does not consider local plans, policies, and regulations in its evaluation of the environmental effects of a proposed project unless needed to provide appropriate context for the assessment of environmental impacts and/or if UC San Diego expressly decides to use a local policy or regulation as a threshold or standard of significance. The project site is served by the City for water and sewer service. The City sent a Will Serve Letter for the project on November 20, 2023 (see Appendix I), and the project would be required to comply with the City's existing regulations pertaining to utility connections consistent with the Will Serve Letter. Refer to Figure 2, Parcel Map, that shows existing City utilities.

WATER

The project would connect to the existing water utility lines owned and operated by the City's Development Services Department. The existing water lines include 20-inch and 27-inch water transmission mains, a recycled water line in Bernardo Center Drive, and 12-inch and 20-inch distribution mains within a 25-foot public water easement along the western property line of the project site (see Figure 4). The project would not be permitted to connect directly to the water transmission mains and, therefore, would first connect to the existing 12-inch distribution line in the 25-foot water easement. The project would provide 10-inch, 4-inch, and 2-inch connections for fire, domestic, and potable irrigation waterlines to the 12-inch distribution line, respectively. The project would not be allowed to connect to the existing recycled water line in Bernardo Center Drive due to requirements of the City's Pure Water Program in which no new applications for connections to the City's Recycled Water Program are accepted in the northern part of the City after December 31, 2023. The project would implement efficient irrigation systems and plant drought-tolerant landscaping (including California native plants where feasible and appropriate) to be consistent with the Sustainable Water Systems Policy in the UC Sustainable Practices Policy.

SEWER

The project would connect to the existing 15-inch sewer utility lines along Bernardo Center Drive, owned and operated by the City's Development Services Department.

STORMWATER

The project would connect to a 24-inch storm drain located along Bernardo Center Drive. Detailed stormwater improvements are included in Section 2.3.4, Landscape/Hardscape Improvements and Stormwater Management. Refer to Figure 17, Existing Hydrology, and Figure 18, Proposed Hydrology.

DRY UTILITIES

The project would use 100 percent clean electricity contracted and purchased through a clean power provider, such as San Diego Community Power, Clean Energy Alliance, or Direct Access, that is delivered by San Diego Gas & Electric (SDG&E). Emergency and standby power would be provided by on-site diesel generators designed for unforeseen power loss. The parking structure would include PV panels on the roof top, which would meet the exceptions to the 2022 California Building Code (CBC) standards that require new buildings to install PV panels and battery equipment prior to building occupancy. The project would be 100 percent electric, and no natural gas would be required. The project would comply with UC San Diego's Lighting Policy, which includes shielded fixtures and downward-facing lighting. Various franchise telecommunication service providers (e.g., AT&T, Spectrum, Cox) are available to provide telecommunication services.

2.3.4 Landscape/Hardscape Improvements and Stormwater Management

HARDSCAPE IMPROVEMENTS

The project would provide hardscape composed of asphalt for the driveway and parking lot, integral colored concrete or concrete unit paver for pedestrian walkways and patios, and precast concrete for signage walls, seat walls, and specialty planters as shown on Figure 12, Hardscape Plan.

LANDSCAPE IMPROVEMENTS

The project would provide landscape for the developed center of the property. This would include the entryway, the public access from Bernardo Center Drive to the MOB, the connection and healing gardens, the patient drop-off area, the surface parking lot, a back of house planting area, and the perimeter planting area.

The planting and tree plans for these landscaped areas are shown on Figure 13a, Conceptual Landscaping Plan – Planting Plan, and Figure 13b, Conceptual Landscaping Plan – Tree Plan. The landscaping plans were designed to only include species from the County of San Diego's "Suggested Plant List for a Defensible Space" for low fire susceptibility, also in compliance with UC San Diego's Draft Campus Fire Protection Landscaping Guidelines (County of San Diego 2021, UC San Diego 2024b). The final landscaping plan would not include trees that have inherent flammability and would not be placed in a manner that canopies touch or overhang exterior walls and roof lines of buildings. The landscaping would be designed so that there would be a minimum of 10 feet of separation between exterior walls and the drip line of all mature trees.

The existing slopes to the east and west other than the graded pad would remain as is except for localized geotechnical mitigation for stability of the slopes.

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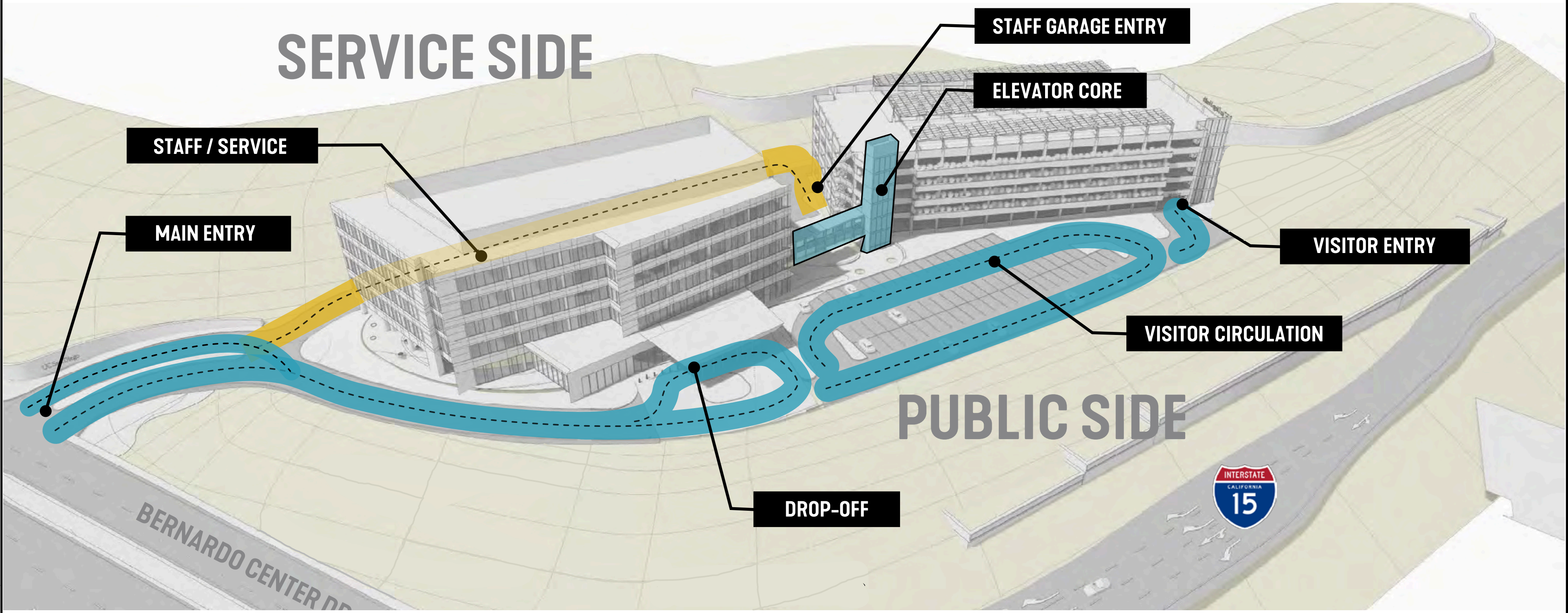

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Source: PMB McCarthy Smith Group 2024.

Harris & Associates

Figure 11a

Circulation Plan - Internal Circulation

Rancho Bernardo Healthcare Center Medical Office Building Project

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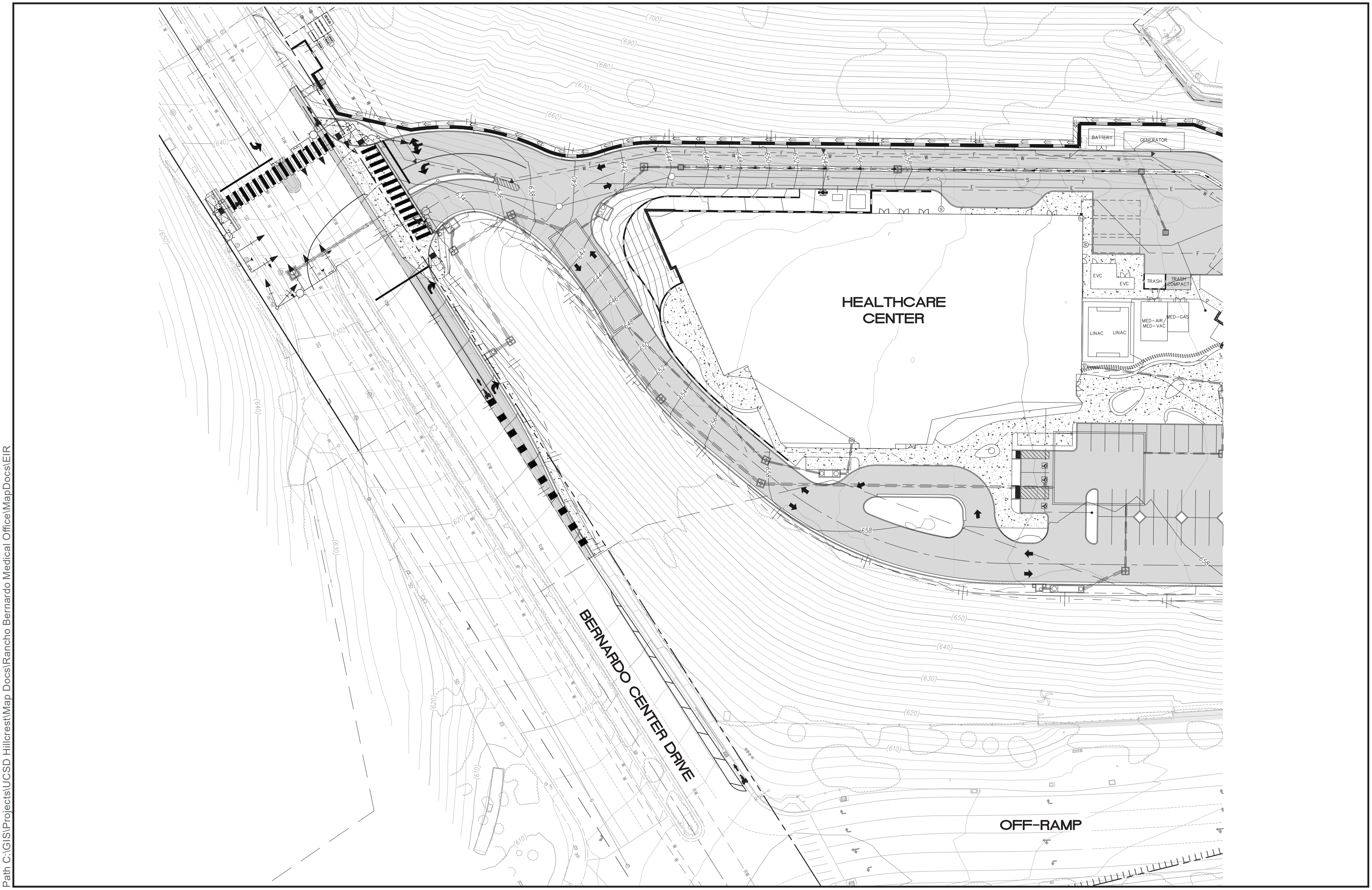

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Source: Latitude 33, Smith Group 2024.

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Figure 11b

Circulation Plan – Roadway Improvements

Rancho Bernardo Healthcare Center Medical Office Building Project

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Source: PMB McCarthy Smith Group 2024.

Figure 12

Hardscape Plan

Harris & Associates

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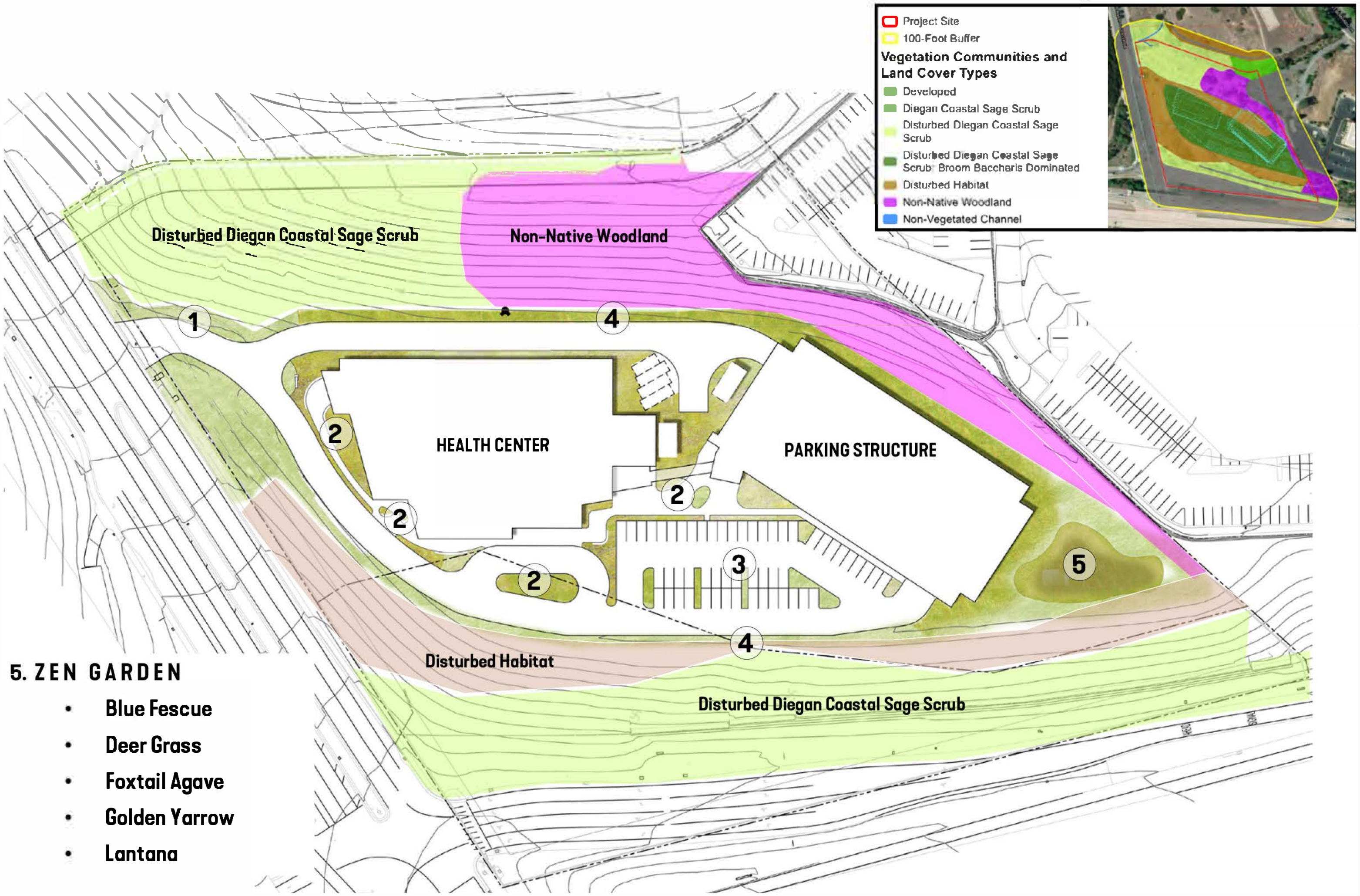
1. ENTRY STATEMENT
   - Toyon
   - Mountain marigold
   - Spanish Lavender
2. HEALTH CENTER GARDENS
   - Hummingbird Sage
   - California Fuchsia
   - Showy Penstemon
   - Rockrose
   - Blue Glow Agave
   - Fox Tail Agave
   - Blue Elf Aloe
   - Aloe Vera
   - Blue Chalksticks
   - Coppertone Stonecrop
3. PARKING LOT
   - Blue finger
4. PERIMETERS
   - Coffeeberry
   - Creeping barberry



5. ZEN GARDEN
   - Blue Fescue
   - Deer Grass
   - Foxtail Agave
   - Golden Yarrow
   - Lantana

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Source: PMB McCarthy Smith Group 2024.

Figure 13a

Conceptual Landscaping Plan - Planting Plan

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TREE PLAN

1. **COAST LIVE OAK** *
   - ● Specimen Tree
2. **VALLEY OAK** *
   - ● Trees Along The Plateau Edge
   - Parking Lot Shade Tree
3. **CALIFORNIA BAY** *
   - ● Parking Lot Shade Tree
4. **BIG LEAF MAPLE** *
   - ● Patio Shade Tree
   - Specimen Tree
5. **CRAPE MYRTLE TREE**
   - ● Patio Shade Tree
   - Specimen Tree
6. **PALO VERDE** *
   - ● Accent Tree
7. **WESTERN REDBUD** *
   - ● Accent Tree
8. **CATALINA CHERRY** *
   - ● Accent Tree
9. **DESERT WILLOW** *
   - ● Bioretention Basin Tree

* Trees native to Rancho Bernardo, CA

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Source: PMB McCarthy Smith Group 2024..

Harris & Associates

Figure 13b

Conceptual Landscaping Plan - Tree Plan

Rancho Bernardo Healthcare Center Medical Office Building Project

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BRUSH MANAGEMENT

In accordance with UC San Diego's Draft Campus Fire Protection Landscaping Guidelines (UC San Diego 2024b) and consistent with City of San Diego Municipal Code (SDMC), Section 142.0412, the project would provide 100 feet of brush management in two zones. Brush Management Zone 1 would extend 35 feet out from the habitable structure toward flammable vegetation. Zone 1 would be maintained on a regular basis by thinning and pruning plants, and would have permanent irrigation and no habitable structures. Brush Management Zone 2 is the remaining 65 feet that extends beyond Zone 1, and is mainly composed of undisturbed vegetation on a slope. Zone 2 would be maintained on a regular basis by controlling weeds and removing invasive species, and would be temporarily irrigated until plantings have established and no habitable structures. Figure 14, Brush Management Plan, shows Brush Management Zones 1 and 2. The project would provide a 10-inch waterline connection for fire suppression to the existing 12-inch distribution line within the water easement.

STORMWATER IMPROVEMENTS

The University would be required to obtain coverage under State Water Resources Control Board (SWRCB) Construction General Permit (CGP), in addition to complying with the applicable requirements under the SWRCB General Phase II Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) (Phase II Small MS4 Permit) program. The Phase II Small MS4 Permit program requires construction projects that would create and/or replace 2,500 square feet or more of impervious surfaces to incorporate post-construction storm water management controls into Project design and does not allow any new increases in runoff from the developed site. Stormwater management measures to be incorporated in the project would be coordinated with UC San Diego Environmental Health & Safety (EH&S) and Capital Program Management (CPM). A third-party Storm Water Pollution Prevention Plan (SWPPP) Monitor would be employed to work with EH&S to monitor stormwater preparations and policies for the site.

The project site's impervious areas would be divided into six distinct drainage management areas (DMA). Pursuant to the provision of the MS4 permit, all impervious areas after implementing the low impact development (LID) measures would be directed to modular wetland systems (MWS) for water quality treatment and two underground concrete vaults to comply with peak flow mitigation requirements. Refer to Figure 17, Existing Hydrology; Figure 18, Proposed Hydrology; and Figure 19, Proposed Drainage Management Areas. Also, refer to Section 3.2.9, Hydrology and Water Quality, and Appendices F1 and F2.

The project would include the following LID measures:

- **Tree Plant and Preservation:** The project was coordinated to protect in place on-site trees, where applicable. Approximately 116 new trees would be planted throughout the project site.
- **Rooftop and impervious area dispersion:** The project's proposed impervious areas are designed to flow to nearby landscape areas for impervious area dispersion (wherever feasible).
- **Source Control:** The project proposes storm drain stenciling, landscape design that minimizes irrigation and runoff, and use of native species that minimize the use of fertilizers and pesticides. This project does not propose any uncovered trash enclosures.
- **Vegetated Swales:** The project proposes vegetated swales to convey water toward inlets and the on-site detention basin. Planting, ground cover and rocky swales would be used to convey flow to low points at a controlled rate.

DMAs 1 through 5 would be routed to on-site storm drain systems tied to MWS, and flow from DMA 6 would be captured in a trench drain and tied to MWS before discharging to a single location at the right-of-way (ROW) of Bernardo Center Drive. Two concrete vaults would be designed to attenuate post-project flow rates to or below pre-project levels for the 100-year storm event. Vault 1 would be sized at 65 by 43 feet, with 5 feet of depth, and Vault 2 would be sized at 75 feet by 21 feet, with 5 feet of depth.

2.3.5 Project Construction

All project soils export or import would be coordinated with the EH&S Soils Management staff at the University. The Development Team would be required to complete a soils report/soils management plan for ultimate approval by EH&S prior to allowing the start of construction. EH&S staff would be coordinated with by the contracting team during soils export or import. All UC Policies regarding soils import/export will be followed.

The project is preliminary anticipated to require approximately 22,738 cubic yards of export and approximately 15,916 cubic yards of import. The export quantities would include a mixture of existing stockpile contents and soils from prior grading activities, native soil to make room for non-expansive select fill to underlay all site improvements and building pads, and vegetation. Import quantities would include concrete, asphalt concrete, aggregate base for ground level slabs, hardscape, and pile footings, and non-expansive select fill materials. The project site is vacant and undeveloped except for the paved parking lot easement portion to the north and the concrete channel on the western boundary. The project would not disturb these areas and would not require demolition of these pavements.

Project construction is anticipated to start in October 2024 and be completed by January 2027. The project site has been previously graded, and all construction staging and contractor parking would occur within the project site boundaries.

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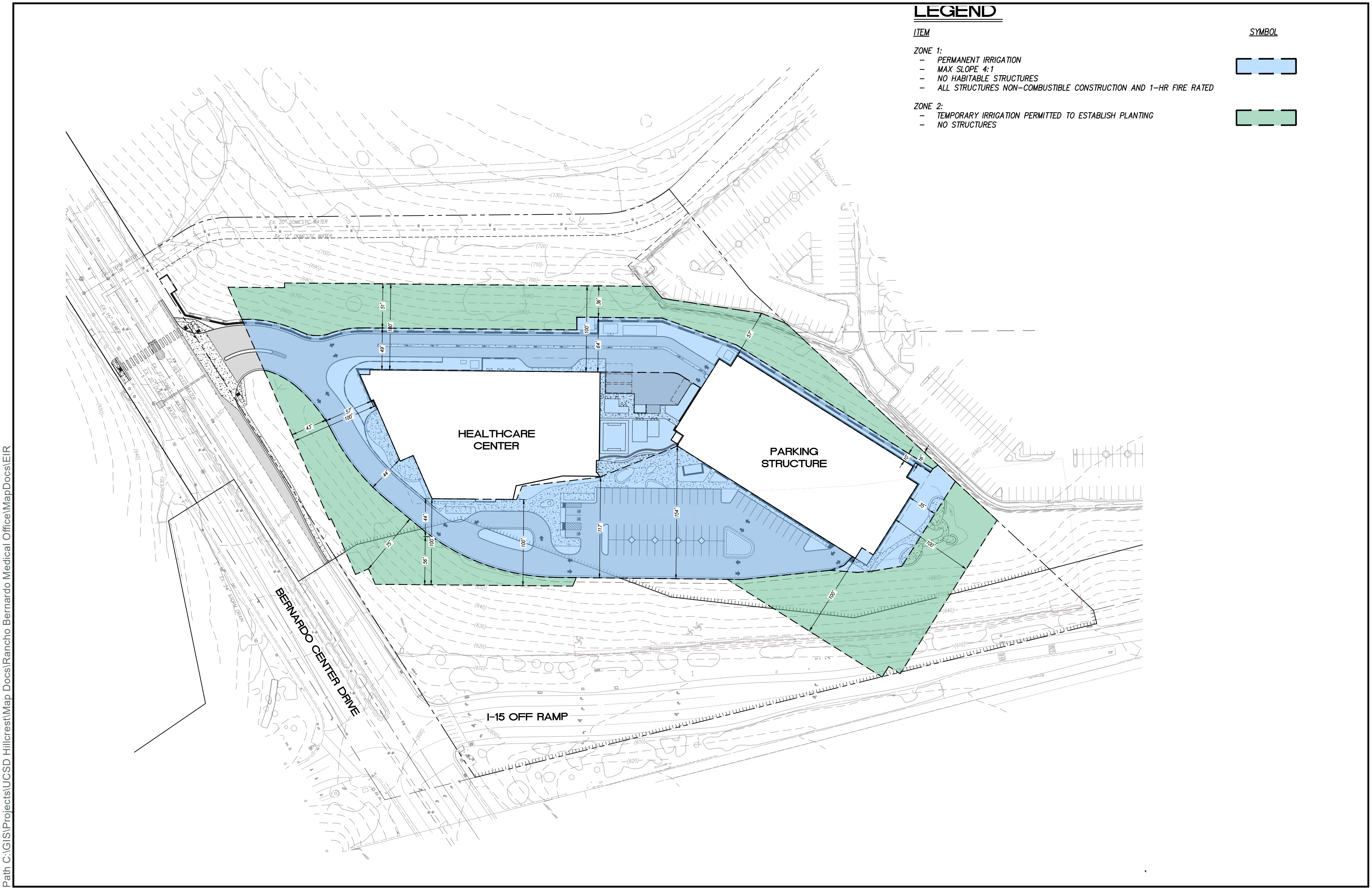

Source: Latitude 33 2024.

Harris & Associates

Figure 14

Brush Management Plan

Rancho Bernardo Healthcare Center Medical Office Building Project

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CONSTRUCTION MANAGEMENT PLAN AND TRAFFIC CONTROL PLAN

For construction within the City ROW, the project would implement a Construction Management Plan (CMP) and Traffic Control Plan (TCP) during construction in accordance with the SDMC (Section 129.0701 et seq.) and the California Department of Transportation California Manual of Uniform Traffic Control Devices (Caltrans 2024a). These traffic management controls would include measures determined on the basis of site-specific conditions, including coordination with local emergency services, training for flagman for emergency vehicles traveling through the work zone, temporary lane separators that have sloping sides to facilitate crossover by emergency vehicles, and vehicle storage and staging areas for emergency vehicles. These measures would ensure that ingress and egress from the project site would not interfere with traffic flows and emergency access for areas surrounding the project site. In addition, measures from the CMP and TCP would limit the number of peak hour construction employee and delivery/haul trips as appropriate; and include plans illustrating the placement of signage, striping, traffic personnel, and road cones, as applicable, such that the number of construction-related trips generated during peak commuter hours would be reduced.

For other site areas not within the City ROW or Caltrans Easements, a Construction Management Plan (CMP- U) would be submitted for approval by the University's Authority Having Jurisdiction (AHJ). This would be coordinated through the University's P3 Liaison and Real Estate Development contacts.

STORM WATER POLLUTION PREVENTION PLAN

A SWPPP[2] containing appropriate construction site erosion and sedimentation control best management practices (BMPs) would be prepared and implemented at the beginning of the project construction phase and adapted regularly during construction to reflect current conditions in the field and the weather. The SWPPP would outline BMPs to be actively implemented during construction of the proposed project, including but not limited to good housekeeping, trash management, construction material and waste management, stockpile management, rinse or wash water management, spill prevention and response, vehicle and equipment storage and maintenance, non-storm water discharge management, tracking controls, run-on and runoff controls, erosion controls such as the use of wattles and sediment controls, inlet protection, stabilization of construction entrances, coverage of materials storage areas, inspections, and use of concrete washout areas. Perimeter controls to prevent storm water pollution from exiting the construction site are particularly important along the site's perimeter with the adjacent open space. The contractor would be responsible for implementing the project's approved erosion control plan and cleanup of all BMP breaches into the adjacent vegetation (as applicable). A third

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[2] RWQCB Order No. R9-2013-001 available at: https://www.sandiego.gov/sites/default/files/order_r9-2013-0001.pdf.

party SWPPP Monitor would be employed to work with EH&S to monitor stormwater preparations and policies for the site.

AQUATIC RESOURCE AVOIDANCE

Permanent and temporary impacts to aquatic resources (e.g., non-vegetated channel), which are potentially under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife in the survey area, would be avoided. Prior to any soil disturbing activities, the aquatic resources would be clearly marked for avoidance with staking and flagging by a qualified biologist. Additionally, the limits of the work area would be fenced with silt fencing to avoid impacts.

2.3.6 Sustainability Features

The UC Sustainable Practices Policy covers 13 areas of sustainable practices: green building; clean energy; climate action; transportation; sustainable operations; zero waste; procurement; food services; water; healthcare; performance assessment; health and well-being; and diversity, equity, inclusion, and justice. The UC Sustainable Practices Policy, issued in April 2024, provides specific scope, direction, and expectations for implementing sustainable new capital projects, facility operations, and campus transportation resources. It commits UC to implementing actions intended to minimize the UC’s impact on the environment and reduce the UC’s dependence on non-renewable energy.

The project would comply with the UC Sustainable Practices Policy and would include the following sustainability strategies:

- LEED Gold certifications for the healthcare center and Parksmart Silver Certification for the parking structure.
- The project would implement energy efficiency actions in buildings and infrastructure systems to reduce the location’s energy use intensity by an average of at least 2 percent annually.
- The project would install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the City of San Diego’s Climate Action Plan or other goals.
- The project would limit building energy consumption.
- The project would use all-electric mechanical, electrical, and plumbing systems.
- The parking structure would include 6 percent electric vehicles (EV) charging stations to encourage zero-emission vehicles.
- The disturbed site would be restored with native vegetation, and topsoil would be preserved.
- The project would use LID and bioswales to infiltrate storm runoff.

- The project would use light-colored roof and paving materials to reduce heat island effects.
- The project would achieve water savings greater than 75 percent compared to LEED baseline.
- The project would use native and climate appropriate vegetation throughout the site.
- The project would include an energy use intensity (EUI) of 40 with renewable energy.
- The project would use improved wall (R-25) and roof (R-30) insulation beyond code.
- The project would use all-electric high part load efficiency heat recovery chillers (HRC) to reduce heating energy.
- The project would use all-electric air-cooled heat pumps for service hot water to provide higher efficiency.
- The project would provide solar PV panels on the roof of the parking structure.
- The project would use enhanced monitor-based and envelope commissioning to improve operating efficiencies.
- Materials in “red list” would be avoided for indoor and outdoor surfaces.
- Whole building life cycle would be used.
- Low emitting interior finish materials would be used.
- Pre-occupancy flushout or indoor air quality monitoring would be used to minimize the impact of any off-gassing materials.
- Individual lighting controls would be used.

The project would include the following sustainable and alternative transportation measures:

- A bicycle repair station would be provided.
- Five electric bicycle charging stations would be provided.
- Short-term bicycle parking spaces would be provided for at least 10 percent beyond minimum requirements.
- Long-term bicycle parking spaces would be provided for at least 10 percent beyond minimum requirements.
- Carpool parking spaces would be provided for 10 percent beyond the minimum requirements.

The project would include the following sustainable features related to waste management:

- Maximize waste reduction and diversion.
- Include LEED measures as part of the Waste Management Plan by incorporating energy-efficient designs and sustainable practices.
- Achieve Practice Greenhealth’s award Greenhealth Partner for Change.

- Achieve a target of 25 pounds of total waste as defined by Practice Greenhealth per Adjusted Patient Day by 2025 and strive for 20 pounds of total waste per Adjusted Patient Day by 2030.
- Participate in Practice Greenhealth's reporting program and report at a minimum metrics for energy, carbon, water, and waste.

2.4 PROJECT APPROVAL/SCHEDULE

The project is anticipated to be constructed and occupied by the first quarter of 2027. As a public agency principally responsible for approving or carrying out the project, the University of California is considered the lead agency under CEQA. The IS/MND for this project will be considered by The Regents of the University of California (The Regents). The project may be approved at The Regents discretion and only if The Regents determine that such approval complies with CEQA.

The following outside agency approvals would be required:

- California Department of Transportation: Approval of Restrictive Easement on Parcel 1 due to tiebacks and encroachment permit
- City of San Diego: Approval of ROW Permit, Public Improvement Plan, Traffic Control Plan, Storm Water Management Program to meet the MS4 Permit, Industrial Wastewater Discharge Permit
- San Diego Water Quality Control Board: Approval of National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) and Small Municipal Separate Storm Sewer Systems (Phase II Small MS4 Permit)
- San Diego County Air Pollution Control District (APCD): Approval of permits for emergency generators
- Occupational Safety and Health Administration: Approval of Crane Permits, Smoke Control systems third party testing, Fume Hoods inspection and testing, Spill Prevention, Control, and Countermeasures Plan (SPCC)
- California Department of Industrial Relations (DIR): Approval of Elevator Permits, (TI requirements for First Aid kits and Eye Wash / Douse Shower Inspections and Testing
- California Department of Health Care Access and Information (HCAI) (formerly known as Office of Statewide Hospital Planning and Development [OSHPD]): Approval of Seismic/ Structural, OSHPD/HCAI Tier 3, Pharmaceutical Certificate, Health Infection Control, and Medical Gas Certificates

3 INITIAL STUDY CHECKLIST

The following discussion of potential environmental effects was completed in accordance with Section 15063 of the CEQA Guidelines to determine if the proposed project may have a significant effect on the environment.

3.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

Environmental Topics Addressed

The environmental factors checked below would be potentially affected by the project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- ☐ Aesthetics
- ☐ Air Quality
- ☐ Biological Resources
- ☐ Cultural and Tribal Cultural Resources
- ☐ Energy
- ☐ Geology and Soils
- ☐ Greenhouse Gas Emissions
- ☐ Hazards and Hazardous Materials
- ☐ Hydrology and Water Quality
- ☐ Land Use and Planning
- ☐ Noise
- ☐ Population and Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Transportation/Traffic
- ☐ Utilities and Service Systems
- ☐ Wildfire
- ☐ Mandatory Findings of Significance
- ☒ None

Determination

On the basis of the initial evaluation that follows:

☐ I find that the proposed project COULD NOT have a significant effect on the environment. A NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Alison Buckley

April 24, 2024
Date

Alison Buckley,
Senior Environmental Planner
Printed Name

University of California, San Diego
For

3.2 EVALUATION OF ENVIRONMENTAL IMPACTS

This section documents the screening process used to identify and focus on environmental impacts that could result from the project. The checklist portion of the IS begins below and includes explanations of each CEQA issue topic. CEQA requires that an explanation of all answers be provided along with this checklist, including a discussion of ways to mitigate any significant effects identified. The following terminology is used to describe the potential level of significance of impacts:

No Impact. The analysis concludes that the project would not affect the particular resource in any way.

Less than Significant. The analysis concludes that the project would not cause substantial adverse change to the environment without the incorporation of mitigation.

Less than Significant with Mitigation Incorporated. The analysis concludes that it would not cause substantial adverse change to the environment with the inclusion of mitigation agreed upon by the applicant.

Potentially Significant. The analysis concludes that the project could result in a substantial adverse effect or significant effect on the environment, even if mitigation is incorporated. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.

3.2.1 Aesthetics

AESTHETICS Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a) Have a substantial adverse effect on a scenic vista?

No Impact. A scenic vista is a view composed of aesthetically scenic resources (e.g., a view of the ocean, canyons, foothills, and other open spaces). Because the project site is not within the main UC San Diego campus and is not within the UC San Diego LRDP area, the IS has reviewed the City of San Diego General Plan for purposes of impact evaluation only. The project site is undeveloped and vacant, but no scenic vistas are designated for protection within the project site vicinity by the City of San Diego General Plan, and the project site is not near Caltrans-designated or eligible scenic state highways (City of San Diego 2015; Caltrans 2024b). Therefore, no adverse impact on a scenic vista would occur, and no mitigation measures are necessary.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Implementation of the project would not result in substantial damage to scenic resources within a state scenic highway because no such resources or roads exist on or are adjacent to the project site (City of San Diego 2015; Caltrans 2024b). The nearest officially designated scenic highway is I-5 to the west, approximately 10 miles from the project site. No adverse impact on a state scenic highway would occur.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less Than Significant Impact. The project site is located within an urbanized area. Based on the City of San Diego Zoning Map, the project site is designated as IP-2-1 (Industrial-Park), which allows a mix of light industrial and office uses. However, the City's zoning for the project site does not apply to the project due to the UC's constitutional autonomy from local land use regulation and the regulations governing the visual character of the proposed buildings would be the UC San Diego Design Review Board. Because there are no applicable zoning regulations for the project site and no scenic vistas on or near the project site as discussed in Section 3.2.1(a), implementation of the project would not conflict with applicable zoning and other regulations governing scenic quality. Impacts would be less than significant. No mitigation measures are necessary.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. Potential new sources of light would include exterior building illumination, parking lots and parking structure lighting for safety, new landscaped areas, and new roadway lighting. During the day, lighting has limited potential to impact views. Potential impacts from glare may occur from the sun reflecting off reflective building surfaces. However, as shown on Figures 7 and 8, building materials would be primarily of low and non-reflective materials, such as concrete wall, exterior insulation and finish system (EIFS) wall, low-emissivity glass, perforated metal screen, and cantilevered planters to reduce glare impacts.

The project would include glass surfaces. However, per the California Building Standards Commission's CALGreen Bird-Friendly Design Workshop held in September 2022, bird strikes predominantly occur within the first 40 vertical feet of a building, and the U.S. Fish and Wildlife Service's Threats to Birds: Collisions-Buildings & Glass (CBSC 2022; USFWS 2024) states that most bird strike fatalities happen at homes and buildings shorter than four stories tall. Therefore, considering that bird strike potential is not just based on the total amount of exterior glass and that the proposed healthcare center would be five stories with a maximum height of 93 feet. Furthermore, the project design integrates a variety of building envelope measures to reduce bird collision into facades, including the use of low- and non-reflective materials such as EIFS walls and low-emissivity glass and horizontal stretching spandrel concreate on the parking structure to shield light glare from vehicles. The project's majority skin material would be EIFS, which is an opaque building material similar in look to plaster. The project would also use glazing that has a reflectivity well below 30 percent, which would allow birds to better differentiate it from its surroundings. Horizontal louvers would be used on the facades to reduce glare, heat gain, and bird collision. Mullion caps would be spaced at 5 feet and have a width of 2 inches to break up the planes of glass. If deemed appropriate, project design would also include fritted glass on the lower two levels, which represent the highest risk given the proximity of those levels to the surrounding landscaping and trees. Therefore, the potential for bird collision due to substantial light or glare would be less than significant.

The project site is bordered by industrial park uses to the north and west, I-15 to the east, and Bernardo Center Drive to the south. Office and commercial/retail land uses are east beyond I-15 and open space and residential uses are beyond Bernardo Center Drive to the south. The nearest sensitive uses to the project site are single-family residences approximately 800 feet to the south from the southern property line and approximately 1,000 feet to the east from the eastern property line beyond I-15. The parking structure would be located on the north side of the project site, behind the main MOB, and vehicle headlights from the new parking structure would not adversely affect these sensitive receptors. The entire perimeter of the parking structure would have upturned vehicular impact-rated concrete crash protection walls that also provide code-required fall protection and eliminates vehicular headlight spillage. Considering the lack of nearby light sensitive receptors, the project is not anticipated to create a substantial light or glare impacts to sensitive receptors from headlights of vehicles.

Additionally, although the project site is not on the UC San Diego campus, as a UC San Diego project, the project would comply with the UC San Diego Outdoor Lighting Policy (UC San Diego 2009). The policy applies to all exterior lighting, whether free-standing or attached to buildings or other structures. The primary goal of the UC San Diego Outdoor Lighting Policy is to reduce nighttime light pollution radiating from campus facilities to minimally acceptable levels so that local astronomical research is supported and advanced, while ensuring adequate lighting levels for safety and security. Project features in the MOB to achieve acceptable levels would include exterior awnings, interior shades, and occupancy sensors throughout the building to turn off lighting during non-business hours. Another important goal of the UC San Diego Outdoor Lighting Policy is to limit nuisance light and glare impacts to adjacent properties. For example, the Outdoor Lighting Policy requires full cutoff fixtures to avoid light spillover and upward light trespass for roads, entries, parking lots, and pathway lighting. Therefore, compliance with the UC San Diego Outdoor Lighting Policy would minimize adverse light and glare impacts. In addition, a Photometric Study would be conducted upon further design development, which is an advanced computer model that would model where the light would go, how bright, and how even or uniform it would be after installation. It would include footcandle levels in the calculation surface to minimize any unwanted light spillage other than for intended purposes. Impacts would be less than significant. No mitigation measures are necessary.

3.2.2 Air Quality

The analysis in this section is based in part on the Air Quality/Greenhouse Gas Emissions Data prepared by Harris & Associates (2023). A complete copy of the report is included in Appendix A, Air Quality/Greenhouse Gas Emissions Data.

AIR QUALITY Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The San Diego Air Pollution Control District (SDAPCD) prepared the Regional Air Quality Strategy (RAQS) that addresses state requirements, pursuant to the California Clean Air Act (CCAA) of 1998 and identifies feasible emission control measures and progress toward attaining state ozone standards (SDAPCD 2016). The RAQS relies on the San Diego Association of Governments (SANDAG) growth Projections which are based on population, vehicle trends, and land use plans developed by the City or County as part of their general plans. The State Implementation Plan (SIP) includes strategies to be used to attain and maintain air quality standards in the County pursuant to the CCAA (SDAPCD 2016). Under the SIP, SDAPCD has prepared the Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County (CARB 2021). The California Air Resources Board (CARB) mobile source emission Projections and SANDAG growth Projections are based on population and vehicle trends and land use plans developed by the cities and by the County. As such, projects that propose development that is consistent with the assumptions and emissions forecasts used in the development of the RAQS are considered to not conflict with or obstruct the attainment of the air quality standards identified in the plan. The proposed project is not currently included in the 2018 LRDP because the project site is not on UC San Diego's main campus or the Hillcrest Campus. As discussed in greater detail in Section 3.2.7, Greenhouse Gas Emissions, the proposed project would result in fewer emissions compared to buildout of the current allowable zoning for the project site and, therefore, has already been considered in the RAQS. The project would incorporate sustainability features, as outlined in Section 2.3.6, and would be located in a Transit Priority Area (TPA), consistent with the goals of the RAQS. Therefore, the project would result in a less than significant impact. No mitigation measures are necessary.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. Air quality emissions associated with the Project include emissions of CO, PM_{10}, $PM_{2.5}$, SO_2, VOC_s and NO_x from construction/grading activities, and also as the result of increase of traffic from project implementation. Construction and operational period criteria pollutant emissions and ozone precursors were calculated using California Emissions Estimator Model (CalEEMod), Version 2022.1.1.21. CalEEMod is a computer model used to estimate emissions resulting from construction and operation of land development projects throughout the State of California. CalEEMod was developed by the South Coast Air Quality Management District with the input of several air quality management and pollution control districts. The model calculates emissions of CO, PM_{10}, $PM_{2.5}$, SO_2, the ozone precursors VOC and NO_X. The input data and construction and operation assumptions for the proposed Project are discussed below.

CONSTRUCTION

As described above, Project construction emissions were estimated using CalEEMod, based on the anticipated construction schedule, equipment fleet, and earthwork quantities developed for the project. Refer to Appendix A, Air Quality/Greenhouse Gas Emissions Data, for detailed modeling assumptions. Construction of the proposed project would result in temporary criteria pollutant emissions from exhaust from construction equipment, vehicle and truck trips, and fugitive dust from ground disturbance. Maximum daily emissions levels associated with project construction are shown in Table 2, Estimated Construction Maximum Daily Air Pollutant Emissions (lb/day). As shown in Table 2, the project would not exceed construction thresholds for any pollutant. Therefore, the project would not result in a significant impact related to criteria pollutant emissions during construction. This impact would be less than significant. No mitigation measures are necessary.

Table 2. Estimated Construction Maximum Daily Air Pollutant Emissions (lb/day)

Construction Year	VOC	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
2025	7	36	45	<1	6	3
2026	3	4	7	<1	<1	<1
Maximum Daily Emissions	7	36	45	<1	6	3
Thresholds of Significance	137	250	550	250	100	100
Significant Impact?	No	No	No	No	No	No

Source: Appendix A.

Notes: CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns; SO_2 = sulfur dioxide; VOC = volatile organic compound

OPERATION

The Projects operational emissions were also calculated using CalEEMod. Operation of the proposed project would result in ongoing criteria pollutant emissions from vehicle trips, landscaping equipment, and use of consumer products and reapplication of coatings and paint. Vehicle trip data was obtained from the project traffic analysis (Appendix H1). The project would not include any use of natural gas. It was assumed that two emergency diesel generators would each be tested for 30 minutes per month. Modeling takes into account project sustainability features, including electric vehicle chargers and bicycle facilities. Refer to Appendix A for detailed modeling assumptions. The maximum estimated daily operational criteria pollutant emissions from the proposed project are provided in Table 3, Operational Maximum Air Pollutant Emissions. As shown in Table 3, operational emissions from the proposed project would not exceed any of the significance thresholds for maximum daily emissions. Because emissions of criteria pollutants under the project would be below applicable thresholds, which are established to assist maintaining or achieving regional attainment in the San Diego Air Basin, operation would not result in a cumulatively considerable contribution to regional acute and long-term health impacts related to non-attainment of the ambient air quality standards. Air quality impacts associated with operation of the project would be less than significant. No mitigation measures are necessary.

Table 3. Operational Maximum Air Pollutant Emissions

Emissions Source	Maximum Daily Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Mobile	10	6	59	<1	12	3
Area	6	<1	17	<1	<1	<1
Stationary (generators)	<1	1	<1	<1	<1	<1
Total Operational Emissions	16	7	76	<1	12	3
Thresholds of Significance	137	250	550	250	100	55
Significant Impact?	No	No	No	No	No	No

Sources: Appendix A.

Notes: CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns; SO_2 = sulfur dioxide; VOC = volatile organic compound

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Construction activities would result in short-term, Project-generated emissions of diesel particulate matter (DPM) from the exhaust of off-road, heavy-duty diesel equipment used for the Project's various construction activities. Due to the highly dispersive properties of DPM, and the short duration of construction, construction-related emissions of toxic air contaminants (TACs) would not expose sensitive receptors to substantial emissions of TACs. In addition, best management practices (BMPs), such as properly tuning and maintaining construction equipment, minimizing vehicle and equipment idling time, using alternative fuels if feasible or practical, using new model engines (higher tier), and locating staging areas as far as possible from sensitive receptors, would be implemented throughout the construction phase and would minimize exposure of nearby sensitive receptors. Therefore, construction impacts to sensitive receptors would be less than significant, and no mitigation is required.

With regard to long-term operations, future traffic associated with the project would not cause a substantial increase in delay at an existing deficient intersection (Appendix H1). Operation of the project would not expose sensitive receptors to substantial pollutant concentrations caused by localized CO impacts. Therefore, the project would result in a less than significant impact.

Minimal toxic air contaminants emissions would be associated with project-related operations due to DPM emissions from ongoing testing of emergency generators because generator testing would be short in duration. This impact would be less than significant. No mitigation measures are necessary.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. Potential sources that may emit odors during construction of the project would include exhaust from diesel construction equipment. However, because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, odors from construction equipment would not affect a substantial amount of people. The project would use typical construction techniques and the implementation of BMPs as discussed in Section III c), and the odors from off-road equipment and on-road vehicles would be typical of most construction sites and temporary in nature. In addition, project operation would not produce new sources of odor or other pollutants that would adversely affect a substantial number of people. The project would also be subject to San Diego County Air Pollution Control District Rule 51, which prohibits nuisance odors. Therefore, the project would result in a less than significant impact. No mitigation measures are necessary.

3.2.3 Biological Resources

The analysis in this section is based in part on the Rancho Bernardo Healthcare Center Project – Biological Resources Constraints Analysis prepared by Harris & Associates (2023). A complete copy of the report is included in Appendix B, Biological Resources Constraints Report.

BIOLOGICAL RESOURCES Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Less Than Significant Impact With Mitigation Incorporated. The project site is composed of four vegetation communities and two land cover types: non-vegetated channel; Diegan coastal sage scrub, including disturbed; Diegan coastal sage scrub: broom baccharis dominated, including disturbed; non-native woodland; disturbed habitat; and urban/developed land (Appendix B). Figure 15, Vegetation Communities and Land Cover Types, shows the project site, and Table 4, Vegetation Communities and Land Cover Types in the Survey Area, presents the acreages of the vegetation communities and land cover types that occur on the project site and within its 100-foot buffer surrounding the project site limits, herein referred to as the “survey area.” A survey area buffer of 100 feet was chosen based on the project site, available resources, and surrounding environment. Refer to Figure 16, Limits of Biological Resources Impact, which includes the 100-foot buffer. The total project site is 9.81 acres, and the survey area including the project site is 16.95 acres. Detailed description of the four vegetation communities and two land cover types are included in Appendix B to this IS/MND. As shown in Table 4, the project would disturb approximately 3.11 acres of scrub and chaparral (0.34 acre of Diegan coastal sage scrub and 2.77 acres of Diegan coastal sage scrub: broom baccharis dominated), 0.30 acre of non-native woodland, and 1.72 acres of disturbed habitat. The project would avoid disturbing the non-vegetated channel. Figure 16 shows the project’s areas of impact.

Table 4. Vegetation Communities and Land Cover Types in the Survey Area

Vegetation Community and Land Cover Type	Project Site (acres)	Survey Area (acres)	Disturbance Area (acres)
Aquatic			
Non-Vegetated Channel (64200)	0.003	0.01	0
Subtotal	*0.003*	*0.01*	*0*
Scrub and Chaparral			
Diegan Coastal Sage Scrub (including Disturbed) (32500)	2.27	3.43	0.34
Diegan Coastal Sage Scrub: Broom Baccharis Dominated (including Disturbed) (32530)	2.79	2.79	2.77
Subtotal	*5.06*	*6.22*	*3.11*
Upland			
Non-Native Woodland (79000)	1.15	1.52	0.30
Subtotal	*1.15*	*1.52*	*0.30*
Disturbed/Developed			
Disturbed Habitat (11300)	2.36	2.91	1.72
Urban/Developed (12000)	1.24	6.29	0
Subtotal	*3.60*	*9.20*	*1.72*
Total	**9.80**	**16.95**	**5.13**

Notes: Acreages are approximate and based on ArcGIS Collector data. Values are rounded up to one-hundredth of an acre.

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 U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW); those considered sensitive by the CDFW; and those species included in the California Rare Plant Rank inventory maintained by the California Native Plant Society (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.

The proposed project is within boundaries of the City of San Diego; however, UC San Diego is not an enrolled agency in the City's Multiple Species Conservation Program (MSCP) and is not required to comply with the City's MSCP preservation goals or objectives due to the UC's constitutional autonomy, as discussed above. However, UC San Diego has used standards in the MSCP for impact evaluation, including the sensitivity designations, mitigation ratios, and other appropriate aspects as described below.

Date: 2/13/2024 - Last saved by: Randy.Deodat - Path: C:\GIS\Projects\UCSD Hillcrest\Map Docs\Rancho Bernardo Medical Office\MapDocs\InitialStudy\Figure15_Vegetation.mxd

Source: Maxar Imagery 2022.

Harris & Associates

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Feet

Figure 15

Vegetation Communities and Land Cover Types

Rancho Bernardo Healthcare Center Medical Office Building Project

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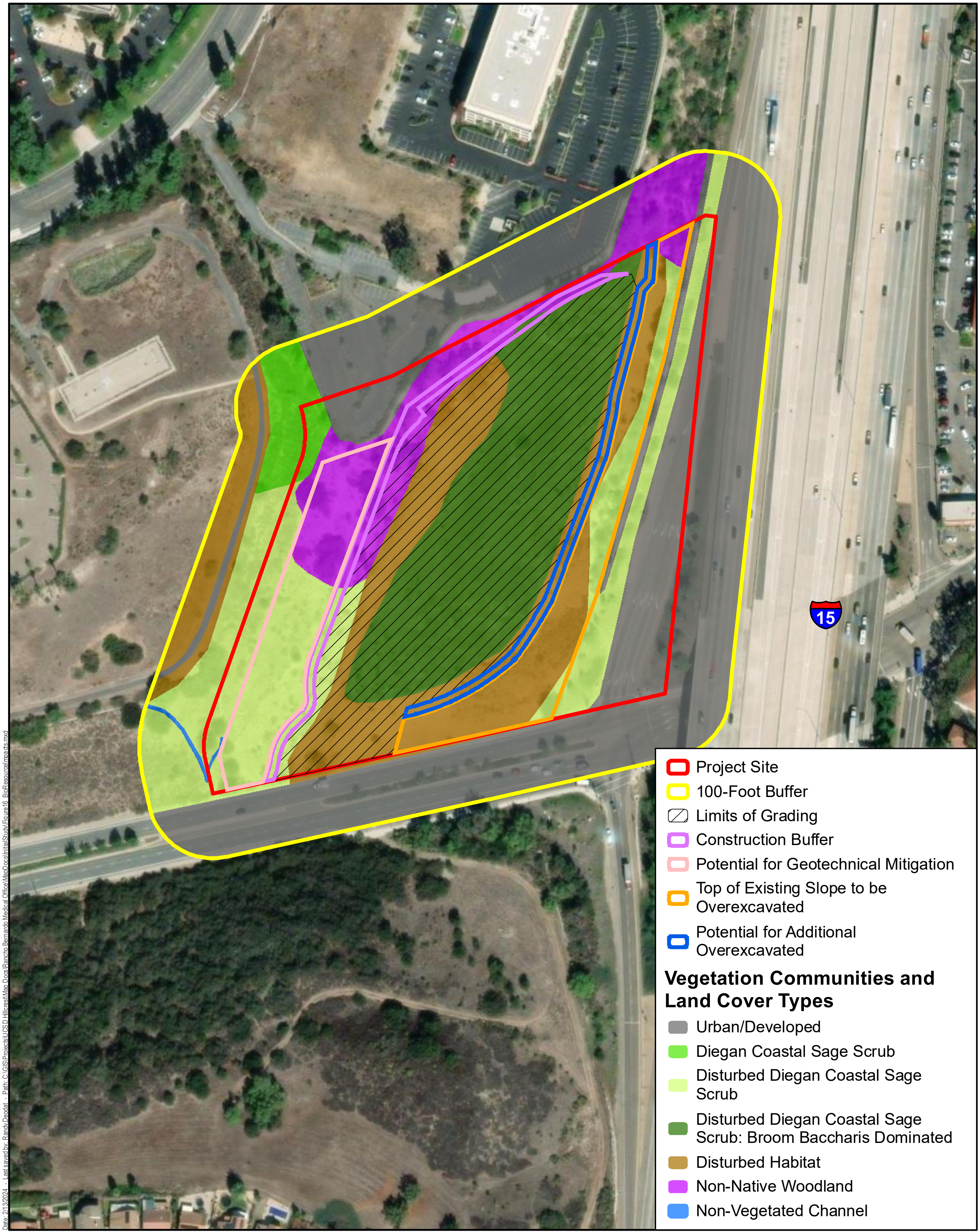

Source: Maxar Imagery 2022.

Harris & Associates

Figure 16

Limits of Biological Resources Impact

Rancho Bernardo Healthcare Center Medical Office Building Project

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SENSITIVE HABITAT AREAS

As described above and in Table 4, the project site contains approximately 5.06 acres of Diegan coastal sage scrub, including disturbed, and approximately 3.11 acres would be permanently impacted. Diegan coastal sage scrub is a sensitive habitat. The non-vegetated, concrete channel contains very little vegetation, including non-native grasses and star thistle (*Centaurea* sp.) as dominant species and fennel (*Foeniculum vulgare*), lemonade berry (*Rhus integrifolia*), and Peruvian pepper tree (*Schinus molle*) as subdominant species, and it does not contain sensitive riparian habitat. The non-native woodland is composed of exotic trees such as Aleppo pine (*Pinus halepensis*), Peruvian pepper tree, and tamarisk (*Tamarix* spp.) with scattered non-native grasses and bare ground in the understory and, therefore, would not be considered sensitive habitat. Implementation of **Mitigation Measure BIO-1** would be necessary to reduce potential impacts to Diegan coastal sage scrub to below a level of significance.

SENSITIVE PLANT AND WILDLIFE SPECIES

Table 5, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area, 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 5.

Table 5. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
		Plants		
Acanthomintha ilicifolia	San Diego thorn-mint	FT/SE/1B.1	Occurs in chaparral, coastal scrub, valley and foothill grassland, and vernal pools at elevations between 35 and 3,150 feet amsl. Blooms Apr–June.	*Not Expected*. No suitable vernal pool habitat or clay soil in the survey area. Historical locations exist within 1 mile northwest of the survey area but not within (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; CNPS 2023; USFWS 2023b).

Table 5. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/CRPR	Habitat	Potential to Occur
Dudleya variegata	Variegated dudleya	None/None/1B.2	Occurs on rocky slopes in chaparral, coastal scrub, cismontane woodland, and valley and foothill grassland at elevations between 10 to and 1,905 feet amsl. Blooms Apr–June.	*Not expected.* No rocky slopes in the coastal scrub in the survey area. Historical location exists within 1 mile northwest of the survey area but not within (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; CNPS 2023).
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/SE/1B.1	Occurs in mesic coastal scrub, valley and foothill grasslands, and vernal pools at elevations from 65 to 2,035 feet amsl. Blooms April–June.	*Not Expected*. No suitable vernal pool habitat or clay soil in the survey area. Historical location occurs less than 1 mile from the survey area but not within it (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; CNPS 2023; USFWS 2023b).
Ferocactus viridescens	San Diego barrel cactus	None/None/2B.1	Occurs in rocky and sandy chaparral, coastal scrub, valley and foothill grassland habitats from 10 to 1,500 feet amsl. Blooms May–Jun.	***High***. Coastal sage scrub available on the project site. San Diego barrel cactus was previously documented as occurring within the survey area in the northern portion of the project site; however, it was not observed during the 2023 survey and may be extirpated (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; CNPS 2023).

Table 5. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
Wildlife				
Invertebrates				
Danaus plexippus	**Monarch butterfly (California overwintering population)**	**FC/None/—**	**Occurs in a variety of habitats where patches of milkweed (*Asclepias* sp.), the monarch caterpillar host plant, are present. Overwinter in groves of eucalyptus, cypress, and pine along the California coast and high-elevation forests in Mexico.**	***Present.* Observed flying through the project site during the 2023 survey. Limited suitable nectar sources for foraging are present. A small number of pine trees suitable for overwintering are available within the survey area. No historical locations exist within a 1-mile radius of the survey area (Figure 9 of Appendix B, Sensitive Species Observed; CDFW 2023a; CDFW 2023b; USFWS 2023b).**
Euphydryas editha quino	Quino checkerspot butterfly	FE/None/—	Occurs in chaparral and coastal sage shrublands. Requires dot-seed plantain (*Plantago erecta*) or purple owl's clover (*Castilleja exserta*) as a host plant.	*Low.* Suitable coastal sage scrub within survey area. Host and preferred nectar plant presence unknown as survey was conducted outside blooming period for those species. Low potential to be observed flying through survey area; survey area surrounded by dense development. Historical locations within 1 mile of the project site from 1930s but location is not accurate (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; USFWS 2023b).

Table 5. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
Reptiles				
Arizona elegans occidentalis	California glossy snake	None/SSC/—	Inhabits arid scrub, rocky washes, grasslands, and chaparral. Prefers microhabitats of open areas with friable (burrowing) soils.	*Not Expected*. Suitable habitat not present within or surrounding the survey area. Historical locations within 1 mile of the survey area but not within (Figure 8 of Appendix B; CDFW 2023b; CDFW 2023b).
Birds				
Agelaius tricolor	Tricolored blackbird	BCC/SE/—	Occurs in freshwater wetlands with open water and protected nesting substrate. In San Diego County, known nesting only in Dameron Valley and Oak Grove, south to Ramona and Santa Ysabel, and the Campo Plateau from Potrero to Jacumba.	*Not expected*. Species only found in three locations in the County; none are within the survey area. No suitable habitat within survey area. Historical locations within 1 mile of the survey area occurred in 1906 and have been extirpated (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; USFWS 2023b).
Campylorhynchus brunneicapillus sandiegensis	Coastal cactus wren	BCC/SSC/—	Occurs in coastal sage scrub habitats with large cacti for nesting.	*Not Expected*. Nesting; Not Expected Foraging. No suitable nesting or foraging habitat within survey area. Historical locations occur within 1 mile of the survey area (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; USFWS 2023b).

Table 5. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC/—	Found in dense coastal sage scrub, occasionally baccharis scrub, and chaparral in Southern California to Baja Mexico below 2,500 feet amsl.	***High Foraging***, *Low Nesting*. Disturbed Diegan coastal sage scrub occurs in the survey area, which provides suitable habitat for foraging or dispersing individuals; however, there is low potential for nesting due to the limited amount of suitable habitat present in the survey area and the immediate surrounding available habitat due to development. Two adults observed in 1996; however, this pair is likely extirpated due to lack of adequate vegetation to support a breeding pair (Figure 8 of Appendix B; CDFW 2023a; CDFW 2023b; USFWS 2023b).
		Mammals		
Neotoma bryanti intermedia	Bryant’s woodrat	—/SSC/—	Requires habitats that provide adequate cover, appropriate areas of midden construction, and succulent vegetation. Occupies coastal sage scrub and chaparral (sea level) and pinyon-juniper woodland at higher	*Not expected.* No suitable rocky outcrops in coastal sage scrub available. Little to no succulent species available. Cover of scrub not dense enough to support a population of woodrats. Historical locations are known within the survey area and within a 1-mile radius for San Diego desert woodrat[2] (Figure

Table 5. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
			elevations. Builds middens most frequently within talus or rock outcrops, but sometimes in yuccas or at the base of shrubs and cacti.	8 of Appendix B; CDFW 2023a; CDFW 2023b).

Notes: amsl = above mean sea level; CDFW = California Department of Fish and Wildlife; USFWS = U.S. Fish and Wildlife Service; None = No status indicated for species; CRPR = California Rare Plant Rank

Bold = present on the project site

[1] Under review for protection under the federal Endangered Species Act.

[2] San Diego desert woodrat (*Neotoma lepida intermedia*) is now recognized as Bryant's woodrat (*N. b. intermedia*) (Patton et al. 2014; Tremor et al. 2017).

Federal Status
FC = Federal candidate
FE = Federally listed as endangered
FT = Federally listed as threatened

State Status
SE = State listed as endangered
SSC = State listed as special species of concern

CNPS Rare Plant Ranking
1B = Rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
2B = Rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.
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).

As described below and in Table 5, one sensitive plant species—San Diego barrel cactus (*Ferocactus viridescens*)—and two sensitive wildlife species—monarch butterfly (*Danaus plexippus*) and coastal California gnatcatcher (*Polioptila californica californica*)—have the potential to occur within the survey area:

- **San Diego Barrel Cactus (*Ferocactus viridescens*), CRPR 2B.1.** This species has a high potential to occur in the survey area.

  San Diego barrel cactus was mapped on the project site in 1980s and 1990s, but most populations have since been extirpated, and the population on the project site was not observed during the 2023 survey (CDFW 2023a). This population may have been removed during site grading prior to the 2000s that predates UC's ownership.

Although none were observed, there is still high potential for this species to be observed on the project site, as suitable coastal sage scrub habitat is available.

Therefore, **Mitigation Measure BIO-2** that requires focused rare plant surveys prior to any vegetation removal by a qualified biologist and relocation or conservation of habitat within a preserve system would ensure that impacts would be reduced to a less than significant level.

- **Monarch Butterfly (*Danaus Plexippus*), Federal Candidate:** This species was observed in the survey area. On December 15, 2020, the USFWS found that adding the monarch butterfly to the list of threatened and endangered species was warranted but precluded by higher-priority species reviews and work (USFWS 2020). As a result, the monarch butterfly remains a federal candidate for listing.

  One monarch butterfly was observed flying through the eastern portion of the survey area near the edge of the project site during the 2023 survey. There are a few pine trees available that may provide suitable overwintering habitat. No milkweed (*Asclepias sp.*) was observed during the survey that could serve as host plants; however, the survey was not conducted during the blooming period for milkweed. There are no historical locations for monarch butterfly within the survey area or a 1-mile radius. The presence of monarch butterfly on the project site provides high potential for the species to be observed flying through, and potentially roosting within, the survey area.

  Therefore, **Mitigation Measure BIO-3** requires that a pre-construction overwintering monarch butterfly survey be conducted if grubbing, trimming, or clearing of vegetation occurs during winter (November 1 through February 28), by a qualified biologist and avoidance within a 50-foot buffer area until the monarch butterflies are no longer occupying the vegetation. This would ensure that impacts are reduced to a less than significant level.

- **Coastal California Gnatcatcher (*Polioptila californica californica*), Federally Listed Threatened –** This species has a high potential for foraging and low potential for nesting in the survey area. Coastal California gnatcatcher (*Polioptila californica californica*) is a federally listed threatened species.

  Suitable foraging habitat for coastal California gnatcatcher occurs in the Diegan coastal sage scrub (including disturbed) and Diegan coastal sage scrub: baccharis dominated in the eastern central, and western portions of the survey area. Although the survey area contains suitable foraging habitat, it does not provide high potential for nesting because of the density of plants within, and coverage of, the coastal sage scrub in the survey area. In addition, its overall poor quality and lack of connectivity (immediate surrounding habitat is developed on two sides) further reduces potential for nesting. The northwestern corner of the survey area contains a small portion of high quality coastal sage scrub; however, it is located mainly in the survey area outside the project site itself and is not connected to large open space with more coastal sage scrub. Therefore, the Diegan coastal sage scrub habitat within the survey area has little to no potential to be included in the overall larger territory for an established pair and has no potential to support a pair year-round. While the survey area has low potential to support nesting coastal California gnatcatcher, the Diegan coastal sage scrub in the survey area provides adequate foraging opportunities for dispersing juveniles.

Therefore, a pre-construction nesting bird survey would be required prior to vegetation removal if construction is scheduled during the breeding season (January 15 through August 31). Implementation of **Mitigation Measure BIO-4** would reduce impacts to a less than significant level.

Nesting Birds

Nesting birds are protected by the Migratory Bird Treaty Act (MBTA) and similar provisions of the California Fish and Game Code. Native vegetation communities in the survey area such as Diegan coastal sage scrub, are used as nesting habitat by common species such as California scrub jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), and California towhee (*Melozone crissalis*). Pine trees are highly desirable for woodpeckers and other cavity nesting species. Other non-native tree species observed including tamarisk and Peruvian pepper may provide suitable nesting habitat. The survey area therefore has high potential to provide suitable nesting habitat for a number of species protected by federal and state regulations. However, implementation of **Mitigation Measure BIO-4** would ensure that impacts to nesting bird would be reduced to a less than significant level.

Roosting Bats

No bats were observed using the survey area for roosting or foraging during the 2023 survey, and no sensitive bat species are known to occur within the survey area or a 1-mile radius of the survey area. Although the survey area provides suitable roosting habitat (i.e., trees) and suitable foraging habitat (i.e., open spaces, open water) that indicates a number of bat species may have the potential to be found foraging or roosting in the survey area, they are common species including California myotis (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), and hoary bat (*Lasiurus cinereus*), which are not sensitive species. Therefore, impacts to these bat species would be considered less than significant, and no mitigation measures are required.

MITIGATION MEASURES

BIO-1 Diegan Coastal Sage Scrub. Permanent impacts to approximately 3.11 acres of Diegan coastal sage scrub (including disturbed) on the project site shall be mitigated by University of California San Diego at 1:1 ratio through the preservation of habitat, habitat creation, and/or enhancement, or combination thereof, through habitat acquisition and preservation within the University of California San Diego Ecological Reserve, or purchase of credits from an approved off-site conservation bank at a 1:1 ratio.

If mitigation within the University of California San Diego Ecological Reserve is selected, a detailed restoration plan shall be prepared by a qualified biologist. The restoration plan shall include the proposed location of the mitigation area(s), site preparation procedures, plant palette, installation procedures, success criteria, fencing and signage, minimum 3-year monitoring, maintenance, reporting requirements, and other details of the habitat restoration effort and be prepared by a qualified biologist.

If mitigation through a conservation bank is selected, University of California San Diego shall make the necessary payment and retain documentation of the purchase agreement in the project files. Mitigation for either option shall be implemented prior to project occupancy.

BIO-2 Pre-Construction San Diego Barrel Cactus Survey. Prior to any vegetation removal, a focused survey for San Diego barrel cactus shall be conducted for all project areas that support potential habitat for this species. The survey shall be conducted by a qualified biologist/botanist, and if San Diego barrel cactus is observed, they shall be avoided when feasible. Individuals to be avoided shall be marked clearly with flagging. If individuals cannot be avoided, impacts to those species must be evaluated, and any significant impacts shall be mitigated at a 1:1 ratio through translocation within the University of California Ecological Reserve system in suitable habitat.

BIO-3 Pre-Construction Overwintering Monarch Butterfly Survey. If grubbing, trimming, or clearing of vegetation occurs during winter (November 1 through February 28), a qualified biologist, as approved by University of California, San Diego, Campus Planning Office, shall perform a pre-construction overwintering monarch butterfly survey no more than 48 hours before the start of vegetation grubbing, trimming, or clearing to confirm that no overwintering monarch butterflies occupy vegetation on the project site. If overwintering monarch butterflies are found during the pre-construction survey, a 50-foot buffer around the occupied vegetation shall be established, and no disturbance shall be allowed within the buffer until a qualified biologist determines that monarch butterflies are no longer occupying the vegetation. If no overwintering monarch butterflies are on the project site, grubbing, trimming, or clearing shall proceed.

BIO-4 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 only 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 in the construction area, grubbing, trimming, or clearing shall proceed.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?

Less Than Significant Impact With Mitigation Incorporated. As discussed in Section 3.2.3(a), the project site contains approximately 5.06 acres of Diegan coastal sage scrub habitat, and approximately 3.11 acres would be directly impacted by the project. There are no other sensitive communities, including riparian habitat, on site. Riparian habitats are lands that occur along the edges of rivers, streams, lakes, and other water bodies, and as discussed in Section 3.2.3(a) in the Sensitive Habitat Areas section, the non-vegetated, concrete-lined channel does not support riparian habitats. Implementation of **Mitigation Measure BIO-1** would reduce impacts to sensitive natural community to a less than significant level.

MITIGATION MEASURE

Refer to **Mitigation Measure BIO-1**.

c) Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less Than Significant Impact. According to the Biological Resources Constraints Report (Appendix B), based on the USFWS National Wetlands Inventory (NWI) and the U.S. Geological Survey National Hydrography Dataset (NHD) mapping results, jurisdictional aquatic resources do not occur within the survey area (USFWS 2023a; USGS 2023). The nearest jurisdictional aquatic resources identified in the NWI and NHD include two freshwater ponds located approximately 0.20 mile northeast and 0.80 mile southeast of the survey area. A formal aquatic resources delineation was not conducted during the survey effort; however, one potentially jurisdictional aquatic resource, a non-vegetated concrete-lined channel, exists in the southwestern portion of the survey area as shown on Figure 15.

The non-vegetated, concrete-lined channel is approximately 227 feet long and covers approximately 0.013 acre of land, with approximately 0.003 acre occurring directly on the project site. This channel appears to direct stormwater flows into an underground culvert near Bernardo Center Drive and may potentially fall under the jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the Clean

Water Act because it may provide water quality functions for the San Dieguito Watershed. However, this non-vegetated, concrete-lined channel would not be disturbed by the project as shown on Figure 16. Additionally, as described in Section 2.3.5, Project Construction, the area of the non-vegetated, concrete-line channel would be clearly marked for avoidance with staking and flagging by a qualified biologist, and the limits of work area will be fenced with silt fencing to avoid any unintentional disturbance during project construction.

Therefore, the project would not have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. Impacts would be less than significant, and no mitigation measures are required.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant With Mitigation Incorporated. Wildlife corridors provide routes for local movement and also regional linkages and corridors, often following linear topographic, vegetation, or water features. These corridors can be continuous habitats, features, or “stepping-stone” areas, providing critical rest and foraging areas for, for example, birds traveling along migratory routes. Local routes of movement provide constant connections to resources that include sources of water, home/cover sites, and foraging areas. Regional linkages and movement corridors provide larger patches of open space to allow relatively free movement of wildlife species along multiple paths between important resources. These areas allow for not only long-term genetic flow between subpopulations but also critical pathways of seasonal/migratory movements. Larger predatory mammals often use regional corridors for hunting and reproduction needs. Potential wildlife corridors can include streams, riparian areas, and culverts under roadways. Habitat characteristics considered included topography, habitat quality, and adjacent land uses.

The survey area, which includes a 100-foot buffer surrounding the project site limits, is completely surrounded by urban development, with light industrial development to the north and west, I-15 directly to the east, and residential development to the south beyond some open space buffer. Therefore, the presence of urban development surrounding the project site limits large-scale east–west and north–south wildlife movement by species in the surrounding area. Although the value for migratory animals is excluded by development, the survey area may provide local routes of movement for terrestrial species such as reptiles, raccoons, and potentially common, non-sensitive rodent species within the immediate region because it is open and contains some level of vegetative cover. Local species are likely to use the survey area as refugia and for foraging opportunities but may potentially use it as a nursery site.

However, these species are native wildlife species, and impacts would be considered less than significant.

The availability of vegetative cover both native and non-native provides value for MBTA-protected migrating birds flying through to wintering or breeding grounds, and those species that nest locally and would be found year-round. 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. The survey area lies within and adjacent to critical stopover points for a large variety of birds during their annual migration. However, the survey area is not within a California Essential Habitat Connectivity area. The nearest area is 7 miles from the survey area to the east. Furthermore, as discussed in Section 3.2.1(d), the project would integrate bird-safe building design features, such as the use of low- and non-reflective materials (i.e., EIFS walls and low-emissivity glass), horizontal louvers on the facade, and mullion caps spaced at 5 feet and a width of 2 inches to break up the planes of glass to reduce impacts from bird striking.

The project would only impact approximately 4.3 acres of the 9.8-acre site to still allow for movement of any native wildlife species. Furthermore, with incorporation of bird-safe building design features and **Mitigation Measure BIO-4** related to nesting birds, the potential impacts to movement of any native wildlife species or established migratory wildlife corridors would be reduced to a less than significant level. Development of the project would not preclude wildlife movement or impact wildlife corridors or linkages. Therefore, impacts would be less than significant with incorporation of **Mitigation Measures BIO-1 and BIO-4**.

MITIGATION MEASURES

Refer to **Mitigation Measures BIO-1 and BIO-4**.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. UC San Diego is a part of the UC, a constitutionally created unit of the State of California. As a state entity, UC is not subject to municipal plans, policies, and regulations, such as County and City General Plans or local ordinances, including a tree preservation policy or ordinance. Therefore, local policies and/or ordinances would not be applicable to the project. Thus, the project would not result in any conflicts with any local policies protecting biological resources. No impact would occur, and no mitigation measures are necessary.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The project site is in the northern area of the City's MSCP Subarea Plan. However, the project site is not within the City of San Diego Multi-Habitat Planning Area (MHPA), and no natural vegetation communities have been identified for the project site by the MSCP Subarea Plan (City of San Diego 1997). Therefore, although the UC is not subject to the City's land use regulation, for informational purposes, the IS concludes that the project would not directly or indirectly affect resources preserved by the City of San Diego as part of its MSCP Subarea Plan (City of San Diego 1997, 2024a). Therefore, no impact would occur. No mitigation measures are necessary.

3.2.4 Cultural and Tribal Cultural Resources

CULTURAL AND TRIBAL CULTURAL RESOURCES Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐
d) Cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: 1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or 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 I of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

a) Cause a substantial adverse change in the significance of a historical resource as pursuant to §15064.5?

No Impact. The project site is currently vacant and partially graded and does not contain historical structures. To determine the presence of previously identified cultural resources, Harris & Associates conducted a records search on December 4, 2023, of the

California Historical Resources Information System (CHRIS) at the South Coastal Information Center (Appendix C1, Confidential Cultural Resources Data [available upon request]). The records search was conducted to identify previous cultural resources studies and previously recorded cultural resources for the project site within a 0.25-mile search radius. According to the records search, no historic structures or artifacts are known to exist within the boundaries of the project site, and the records search did not find any significant historical resources within the search radius. Therefore, the project would not result in a substantial adverse change in the significance of a historical resource and would not cause a substantial adverse change in historical resource as defined by California Code of Regulations, Section 15064.5(a). No impact would occur, and no mitigation measures are necessary.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant With Mitigation Incorporated. The CHRIS records search did not find any archaeological resources within the project site boundaries. According to the CHRIS records search result, only one archaeological resource was found within the 0.25-mile search area.[3] The project site is composed of existing artificial fill soils and landslide deposits. A Geotechnical Investigation prepared for the project found that up to 50 feet of compacted fill materials were placed on the project site, and the proposed grading activities would occur within the limits of the artificial fill materials (Appendix D). Therefore, although the project site is underdeveloped and vacant, it is highly unlikely that any subsurface archaeological resources would be discovered during project construction. However, in the event that unanticipated cultural resources are identified during construction, they should be treated in accordance with California Code of Regulations, Section 15064.5(f), which includes a provision for halting ground disturbance in the immediate area of the find until it can be evaluated by a qualified archaeologist. With implementation of **Mitigation Measure CUL-1**, potential impacts to unknown archaeological resources would be reduced to a less than significant level.

MITIGATION MEASURE

CUL-1 Archaeological Resources. Prior to construction, University of California San Diego shall retain an on-call archaeologist. If unanticipated cultural resources are identified during construction, they shall be treated in accordance with the California Environmental Quality Act Guidelines, Section 15064.5(f), which requires halting ground disturbance in the immediate area of the find until the resource can be evaluated by a qualified archaeologist and follow the below steps:

a. **Discovery Process.** In the event of a discovery, and when requested by the qualified archaeologist, or the Archaeological Principal Investigator, if the

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[3] See Appendix C1, Confidential Cultural Resources Data (available upon request).

archaeological monitor is not qualified as a Principal Investigator, the Environmental Planner and Project Manager shall be contacted and shall divert, direct, or temporarily halt ground-disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant archaeological resources. The Principal Investigator shall also immediately notify University of California San Diego, Campus Planning Office of such findings at the time of discovery.

b. **Determination of Significance.** The significance of the discovered resources shall be determined by the Principal Investigator in consultation with University of California San Diego Campus Planning Office and the Native American Community, as appropriate. University of California San Diego Campus Planning Office must concur with the evaluation before grading activities will be allowed to resume. For archaeological resources considered significant by the Principal Investigator, a Research Design and Data Recovery Program shall be prepared, approved by University of California San Diego Campus Planning Office, and carried out to mitigate impacts before ground-disturbing activities in the area of discovery will be allowed to resume.

c. **Handling and Curation of Significant Artifacts and Letter of Acceptance.** The qualified archaeologist shall ensure that all significant cultural remains collected are cleaned, cataloged, and permanently curated with an appropriate institution; that a letter of acceptance from the curation institution has been submitted to University of California San Diego Campus Planning Office; that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material is identified as to species; and that specialty studies are completed, as appropriate. Curation of artifacts associated with the survey, testing, and/or data recovery for this project shall be completed in consultation with University of California San Diego Campus Planning Office and the Native American representative, as applicable.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. As previously stated, the project site has been previously graded and is composed of artificial fill soils and landslide deposits. The disturbance of human remains is not anticipated during project grading or excavation activities due to prior disturbance of the site. However, in the unlikely event that human remains are encountered, Section 7050.5 of the California Health and Safety Code states that no further disturbance would occur until the County Coroner makes a determination of origin and disposition pursuant to California Public Resources Code, Section 5097.98. The County Coroner is required to immediately be notified of any discovered human remains. And if the remains are determined to be prehistoric, the County Coroner is required to notify the Native American Heritage Commission, which would determine and notify a most likely descendant. With the permission of the landowner or authorized representative, the most likely descendant would inspect the discoveries and the site conditions within 48 hours of being granted access to the site. Compliance with Section 7050.5 of the California Health and Safety Code would ensure human remains found on the project site would not be disturbed. Therefore, impacts are less than significant, and no mitigation measures are necessary.

d) Cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: 1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or 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 Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant With Mitigation Incorporated. As discussed in Section 3.2.4(a), the project site does not support any listed or eligible historical or cultural resources as defined by California Public Resources Code, Section 5020.1(k). Additionally, the Native American Heritage Commission's (NAHC) Sacred Lands File search found the result to be negative. Therefore, the project would not cause a substantial adverse effect on any such Tribal Cultural Resource (TCR).

Assembly Bill (AB) 52 requires that CEQA lead agencies consult with California Native American Tribes that have requested such consultation, at initiation of the CEQA process, to identify and evaluate the significance of TCRs. The process for identification of TCRs on UC San Diego property consisted of the formal consultation process mandated by AB 52.

In December 2023, Harris & Associates contacted California Native American Tribes on the contact list provided by the NAHC via email.[4] Three responses were received:

- The Jamul Indian Village of California thanked UC San Diego for the project information and indicated that no further information or contact would be needed.
- The San Pasqual Band of Mission Indians Tribal Historic Preservation Office indicated that the project site is not within the boundaries of the recognized San Pasqual Indian Reservation. It is, however, within the boundaries of the territory that

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[4] See Appendix C2, Confidential Tribal Cultural Resources Correspondence (available upon request).

the Tribe considers its Aboriginal Territory. The San Pasqual Band of Mission Indians requested to engage in a formal consultation under AB 52.

- The Viejas Band of Kumeyaay Indians indicated that the project site may contain many Sacred Sites to the Kumeyaay people and that these sites be avoided with adequate buffer zones. The Viejas Band of Kumeyaay Indians further requested all CEQA laws to be followed.

Subsequently, UC San Diego sent consultation notification letters pursuant to AB 52 on February 1, 2024, via email, to the San Pasqual Band of Mission Indians Tribal Historic Preservation Office (San Pasqual) and the Viejas Band of Kumeyaay Indians. Only the San Pasqual requested a formal government-to-government consultation meeting, and a virtual consultation meeting was held on March 8, 2024. The San Pasqual stated that Rancho Bernardo is close to San Pasqual Valley, therefore, the San Pasqual would be the most likely descendent (MLD) to this project. No other tribes requested a formal consultation pursuant to AB 52. Although the project site is underlain by approximately 50 feet of artificial fill materials and because there is no known record of the project site being monitored previously, the San Pasqual requested to monitor ground disturbing activities. With implementation of **Mitigation Measure CUL-2**, potential impacts to unknown tribal cultural resources would be reduced to a less than significant level.

MITIGATION MEASURE

CUL-2 Tribal Monitoring Services Coordination. Prior to any ground-disturbing activities, University of California San Diego shall coordinate with the San Pasqual Band of Mission Indians Tribal Historic Preservation Office (San Pasqual) as the lead monitor for the project. The Tribal monitor shall be authorized to be on-site during all ground-disturbing activities (including, but not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching). The coordination shall specify in writing the procedures for proper treatment of any Tribal Cultural Resources and/or Native American human remains discovered during the monitoring. The coordination shall also specify in writing the roles and authorities of the Native American monitors and other participants.

Pre-Grading Meeting. A pre-grading meeting shall be held that includes San Pasqual Tribal representative, project on-call archaeologist (as required under Mitigation Measure CUL-1), construction manager and/or grading contractor, and other appropriate personnel so the Tribal representative can make comments and/or suggestions concerning the Tribal monitoring program to the construction manager and/or grading contractor.

On-Site Monitoring. During all ground-disturbing activities, the Tribal monitor shall be authorized to be on site full-time. The frequency of inspections shall depend on the rate of excavation, the materials excavated, and any discoveries of Tribal Cultural Resources as defined in California Public Resources Code, Section 21074. Tribal monitoring shall stop when the depth of grading and soil conditions no longer retain the potential to contain cultural deposits. The project on-call archaeologist, in consultation with the Tribal monitor, shall be responsible for determining the duration and frequency of monitoring.

Discovery Process. In the event of a discovery, the San Pasqual monitor, in consultation with the construction manager and University of California San Diego Campus Planning Office, shall temporarily halt ground-disturbing activities in the 50-foot radius area of discovery to allow for preliminary evaluation of the Tribal Cultural Resources. The San Pasqual monitor shall also immediately notify University of California San Diego Campus Planning Office of such findings at the time of discovery.

Determination of Significance. The significance of the discovered resources shall be determined by the authorized San Pasqual representative in consultation with the project on-call archaeologist and University of California San Diego Campus Planning Office. University of California San Diego Campus Planning Office must concur with the evaluation before grading activities will be allowed to resume. Below are the possible treatments and dispositions of significant cultural resources in order of preference:

- Full avoidance.
- If avoidance is not feasible, Preservation in place.
- If Preservation in place is not feasible, all items shall be reburied in an area away from any future impacts and reside in a permanent conservation easement or Deed Restriction.
- If all other options are proven to be infeasible, data recovery through excavation and then curation in a Curation Facility that meets the Federal Curation Standards (CFR 79.1).

3.2.5 Energy

ENERGY Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact. Construction activities would primarily consume nonrenewable energy resources such as oil, diesel, and gasoline through operation of construction equipment, material deliveries, and debris hauling. However, construction-related energy consumption would be temporary, and no permanent new source of energy demand would result from construction activities. In addition, activities involving the use of nonrenewable energy resources would follow construction site BMPs, such as reducing idling time of equipment and vehicles to reduce energy use. While construction of the Project components would result in a short-term increase in energy use, construction related fuel use would have no noticeable effect on peak or baseline demands for energy, and construction design features would further help with energy conservation. The onetime expenditure of fuel is not considered a wasteful or inefficient use of nonrenewable resources. Therefore, construction of the proposed Project would result in a less than significant impact related to construction activity and energy conservation plans.

Project operations would rely on electricity for building heating and cooling, refrigeration, lighting, and commercial equipment. In compliance with the UC Sustainable Practices Policy, 100 percent clean electricity would be provided for the project. 100 percent clean electricity would be contracted and provided through a clean power provider, such as San Diego Community Power, Clean Energy Alliance, or Direct Access, that is delivered by SDG&E.

The project would comply with the energy conservation strategies expressed in the UC Sustainable Practices Policy in Section 2.3.6 of this IS, including achieving LEED Gold certification at a minimum for the healthcare center and Parksmart Silver Certification for the parking structure, providing PV panels on the rooftop of the parking structure. The project would implement energy efficiency actions in buildings and infrastructure systems to reduce the location's energy use intensity by an average of at least 2 percent annually. The project would install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the City of San Diego's Climate Action Plan or other goals. And the project would include an energy use intensity (EUI) of 40 with renewable energy. Although new employee vehicle trips associated with the project would also be a source of energy consumption, the project would implement vehicle miles traveled (VMT) reduction measures consistent with the City's Complete Communities: Mobility Choices program, thus reducing energy usage associated with vehicle trips. Therefore, the project would not result in wasteful, inefficient, or unnecessary use of energy, and impacts would be less than significant. No mitigation measures are necessary.

b) **Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

Less Than Significant Impact. Construction of the project would implement sustainability measures identified in Section 2.3.6 of this IS. Conformance with the UC Sustainable Practices Policy and other UC requirements related to energy reduction and carbon-free energy use would ensure that the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. In addition, the project would use 100 percent clean electricity contracted and purchased through a clean power provider, such as San Diego Community Power, Clean Energy Alliance, or Direct Access, that is delivered by SDG&E. Therefore, the project would not conflict with or obstruct any state or local plan for renewable energy or energy efficiency and therefore, impacts would be less than significant. No mitigation measures are necessary.

3.2.6 Geology and Soils

The analysis in this section is based in part on the Geotechnical Investigation Proposed Medical Office Building and Parking Structure UCSD Rancho Bernardo Health Center NWC Interstate 15 and Bernardo Center Drive San Diego, California, prepared by Geotechnical Professionals, Inc. (GPI) (2023). A copy of the report is included in Appendix D of this IS.

GEOLOGY AND SOILS Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less Than Significant Impact. Implementation of the project would not result in significant impacts related to fault rupture because the project site and the surrounding area are not located within an Alquist-Priolo Earthquake Fault Zone (CGS 2024). In addition, named surface faults are not mapped projecting toward or through the project site (Appendix D). Although the project site is located in a seismically active Southern California, the project would not directly or indirectly cause potential substantial adverse effects related to rupture of a known earthquake fault. No mitigation measures are required.

(ii) Strong seismic ground shaking

Less Than Significant Impact. Although the project site is not within an Alquist-Priolo Earthquake Fault Zone, there are known active faults within a 100-mile radius of the project site. The names and distances of the faults within 45 miles of the project site are provided in Table 6, Significant Regional Faults.

Table 6. Significant Regional Faults

Fault Name	Approximate Distance[1] (mi)
Rose Canyon	13.40
Newport-Inglewood (Offshore)	22.50
Elsinore	22.80
Coronado Bank	27.50
Palos Verdes Connected	27.50
Earthquake Valley	30.90
San Jacinto	44.20

Notes:

[1] Defined as the closest distance to projection of rupture area along fault trace.

The type and magnitude of seismic hazards that may affect the site are dependent on both the distance to causative faults and the intensity and duration of the seismic event. The project site would likely experience strong ground shaking caused by earthquakes on active, regional faults in the future. However, the project would be required to comply with the 2022 CBC, the UC Policy on Seismic Safety, and the applicable earthwork and building design recommendations identified in the Geotechnical Investigation prepared by GPI dated December 22, 2023, or any updates thereafter to ensure that impacts from ground shaking are reduced to a less than significant level. No mitigation measures are required.

(iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Soil liquefaction is a phenomenon in which saturated cohesionless soils undergo a temporary loss of strength during severe ground shaking and acquire a degree of mobility sufficient to permit ground deformation. In extreme cases, the soil particles can become suspended in groundwater, resulting in the soil deposit becoming mobile and fluid-like (Appendix D). Liquefaction is generally considered to occur primarily in loose to medium dense deposits of saturated soils. Thus, three conditions are required for liquefaction to occur: (1) a cohesionless soil of loose to medium density; (2) a saturated condition; and (3) rapid large strain, cyclic loading, normally provided by earthquake motions (Appendix D).

The Geotechnical Investigation prepared for the project (Appendix D to the IS) indicated that as mapped by the City of San Diego's 2008 Seismic Safety Study, the project site is not located in a zone associated with a potential for liquefaction, most likely due to the presence of relatively dense compacted fill soils and underlying bedrock materials, as well as the lack of shallow groundwater. Therefore, the potential for significant liquefaction impact would be low, and impacts would be less than significant. No mitigation measures are necessary.

(iv) Landslides?

Less Than Significant With Mitigation Incorporated. The project site's subsurface profile consists of compacted fill soils (Qaf) and landslide deposits (Qls) overlying bedrock predominantly of the Friars Formation (Tf). According to the Geotechnical Investigation, the project site is in an area of mapped landslides and has been subjected to past landslides. The City of San Diego Seismic Safety Study also categorizes the site as being associated with "confirmed, known, or highly suspected" landslides. The project site has been previously graded, and due to the past occurrences of landslides, the project site and adjacent sites were stabilized using a combination of earthwork shear keys and grade beam and tieback support systems.

As part of the Geotechnical Investigation, the stability of the existing and proposed slope configurations was evaluated covering west, east, north, and south slopes. The existing slopes generally have a factor of safety (FS) equal to or greater than 1.5, where a FS equal to or greater than 1.5 is the minimum required FS required to be considered stable for static considerations. Localized areas in west slope were found to be marginally unstable, having a FS of approximately 1.3. Detailed description and locations are contained in the Geotechnical Investigation (Appendix D to the IS).

Based on the slope stability analysis, the proposed slopes would generally be stable with FS greater than or equal to 1.5 except for the following areas that ranged FS of 1.18 to 1.46:

- Upper Slope at Vehicle Entrance Drive: An approximately 80-foot- to 120-foot-wide portion of the upper slope extending from the Bernardo Center Drive into the site along the vehicle entrance drive.
- Upper Slope at Medical Office Building: A portion of the upper slope adjacent to the proposed healthcare center.
- Upper Slope at Parking Structure: The proposed slope behind the southwest corner of the proposed parking structure where cuts into the existing slope are planned below the existing Keystone wall.
- Southern and Eastern Slope: Surficial slope instability.

The Geotechnical Investigation recommended mitigation that includes construction of a structural system such as a tieback anchored wall or grade beam that would apply an additional lateral restraint force to increase the FS to at least 1.5. Other alternatives include shear pins or rigid inclusions or for the upper slope behind the parking structure, the parking structure could be set back further from the existing slope. Implementation of **Mitigation Measure GEO-1** would ensure that proposed slopes would have FS equal to or greater than 1.5 and that the structures are supported by appropriate foundation. The required compliance with the 2022 CBC, the University of California Seismic Safety Policy, and the incorporation of the **Mitigation Measure GEO-1** would reduce impacts related to landslide to a less than significant level.

MITIGATION MEASURE

GEO-1 Landslides. UC San Diego's Construction Contractor shall demonstrate on construction plans submitted to the University of California, San Diego, Environmental Health & Safety and Capital Program Management that during site preparation, grading, and construction of the project that all or equivalent recommendations from the Geotechnical Investigation prepared by Geotechnical Professionals, Inc., dated December 22, 2023, or any updates thereafter have been incorporated (included as Appendix D to the Initial Study/Mitigated Negative Declaration). The recommendations include stabilizing slopes to appropriate factors of safety. Compliance with the final Geotechnical Investigation shall be verified and recorded in the field by the University of California, San Diego, Environmental Health & Safety and Capital Program Management.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. Similar to other UC San Diego development, the project would comply with the UC San Diego Design Guidelines, which include the incorporation of LID and erosion and sediment control BMPs, and UC San Diego's

Stormwater Management Program and other regulatory requirements, as needed to minimize erosion and topsoil loss. Specifically, the project would comply with relevant NPDES permits, including the General Permit for Storm Water Discharges Associated with Construction Activity (General Construction Permit) and the General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Phase II Small MS4 Permit), which require soil erosion control measures. Project compliance with these regulations during construction and operation would provide adequate protection against soil erosion during and after site construction. Therefore, impacts would be less than significant. No mitigation measures are necessary.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant With Mitigation Incorporated.

Landslide: Refer to Section 3.2.6(a)(iv). Incorporation of **Mitigation Measure GEO-1** would reduce impacts related to landslide to a less than significant level.

Lateral Spreading and Liquefaction: Lateral spreading is a phenomenon where large blocks of intact, nonliquefied soil move downslope on a large, liquefied substratum. The failure is caused by liquefaction, the process whereby saturated, loose, cohesionless sediments (usually sands and silts) are transformed from a solid into a liquefied state. As discussed in Section 3.2.6(a)(iii), the project would not be susceptible to liquefaction; therefore, the project is unlikely to be susceptible to lateral spreading. Impacts would be less than significant.

Subsidence and Collapse: Seismic ground subsidence and collapse, not related to liquefaction, occurs when loose, granular soils above the groundwater are densified during strong earthquake shaking. As discussed in Section 3.2.6(a)(ii), considering the presence of relatively dense compacted fill soils and underlying bedrock materials, as well as the lack of shallow groundwater at the project site, the potential for significant seismic ground subsidence and collapse impacts would be low. The Geotechnical Investigation further stated that the project site is not located in an area of known subsidence associated with the extraction of fluid, such as groundwater or petroleum. As such, the potential for subsidence is considered to be negligible.

As discussed above, the project would result in less than significant impacts related to, lateral spreading, subsidence, liquefaction, and collapse. On- or off-site landslide would require incorporation of **Mitigation Measure GEO-1**. Furthermore, the project would comply with the 2022 CBC and the UC Seismic Safety Policy. Project compliance with these regulations and incorporation of the mitigation measure would provide adequate protection against impacts related to unstable soil and slope conditions.

MITIGATION MEASURE

Refer to **Mitigation Measure GEO-1**.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less Than Significant With Mitigation Incorporated. Expansive soils generally consist of clays that can shrink and swell with changes in moisture content. Movement of soils in response to shrinkage and swelling has the potential to impact near-surface improvements such as lightly loaded foundations, floor slabs, and flatwork. The upper clayey soils at the project site have a medium to high potential for expansions (Expansion Indices ranging from 79 to 106) and these soils may shrink and swell with changes in moisture content. Therefore, the potential for expansive soils to adversely affect the project is considered high, and the Geotechnical Investigation included recommendations to provide adequate protection against impacts. As recommended by the Geotechnical Investigation, the existing expansive soils would not be used as retaining wall backfill, directly beneath hardscape, or within 3 feet of slab on grade floors. Or, the on-site expansive soils would be treated with cement or lime to reduce the expansion potential before used on site. The required compliance with the 2022 CBC, the University of California Seismic Safety Policy, and the incorporation of the **Mitigation Measure GEO-1** would reduce impacts related to expansive soils to a less than significant level.

MITIGATION MEASURE

Refer to **Mitigation Measure GEO-1**.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The project would not require the installation of a septic tank or alternative wastewater disposal system, but would use the City of San Diego’s local sewer system. Therefore, no impacts would result from soil conditions related to septic tanks or other on-site water disposal systems. No mitigation measures are necessary.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant With Mitigation Incorporated. The subsurface profile of the project site consists of fill soils (Qaf) and landslide deposits (Qls) overlying bedrock predominantly of the Friars Formation (Tf) (Appendix D). The Friars Formation generally consists of silty claystone, silty and clayey sandstone, and sandy siltstone. The bedrock materials are moderately to thinly bedded, moderately to well cemented, and hard to very hard. Laboratory testing by others indicates the claystone bedrock materials exhibited low to moderate plasticity. According to the City of San Diego General Plan Program EIR, Friars Formation is rich in vertebrate fossils, especially terrestrial mammals such as primates, rodents, artiodactyls, and perissodactyls. Well-preserved remains of marine microfossils and macroinvertebrates, and remains of fossil leaves have been recovered from the Friars Formation. Therefore, this formation is given high paleontological resource sensitivity. The proposed grading activities are anticipated to occur in the fill soils (Qaf), and would not disturb the Friars Formation (Tf). However, in the unlikely event that the project requires grading of 1,000 cubic yards or more at Friars Formation and is 10 feet or greater in depth, the potential for encountering paleontological resources could occur, and construction monitoring during initial earthwork activities would be required. Compliance with **Mitigation Measure GEO-2** would ensure the project would reduce its potentially significant impacts to a less than significant level.

MITIGATION MEASURE

GEO-2 Paleontological Resources. Grading and excavation in the Friars Formation (Tf) shall require monitoring by a qualified paleontologist if the project required grading of 1,000 cubic yards or more at Friars Formation and is 10 feet or greater in depth. Monitoring would include the following measures:

1. Prior to beginning any work that requires paleontological monitoring:
   a. A pre-construction meeting shall be held that includes the qualified paleontologist, Construction Manager and/or Grading Contractor, and other appropriate personnel so the qualified paleontologist can make comments and/or suggestions concerning the monitoring program to the Construction Manager and/or Grading Contractor.
   b. The qualified paleontologist shall (at that meeting or subsequently) submit to the Project Manager a copy of the site/grading plan (reduced to 11 x 17 inches) that identifies areas to be monitored as well as areas that may require delineation of grading limits.
   c. The qualified paleontologist shall also coordinate with the Project Manager on the construction schedule to identify when and where monitoring is to begin and to specify the start date for monitoring.
2. The qualified paleontologist shall document monitoring activity on a standardized form. A record of daily activity shall be sent to University of California Campus Planning Office and the Project Manager each month.
3. The qualified paleontologist shall be present initially during all earthmoving activities in the Friars Formation (Tf). After 50 percent of the excavations are complete within the unit, if no significant fossils have been recovered, the level of monitoring may be

reduced or suspended entirely at the qualified paleontologist's discretion and in consultation with University of California San Diego Campus Planning Office.

4. Discoveries

    a. **Discovery Process.** In the event of a discovery, and when requested by the qualified paleontologist, the Project Manager shall be contacted and shall divert, direct, or temporarily halt ground-disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant paleontological resources. The paleontologist shall also immediately notify University of California San Diego Campus Planning Office of such findings at the time of discovery.

    b. **Determination of Significance.** The significance of the discovered resources shall be determined by the paleontologist, consistent with the Society of Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources definition of significant paleontological resources, in consultation with University of California San Diego Campus Planning Office, who must concur with the evaluation before grading activities will be allowed to resume.

    c. **Documentation and Treatment of Finds.** Based on the scientific value and/or uniqueness of the find, the qualified paleontologist may record the find and allow work to continue, or recommend salvage and recovery of the fossil. If treatment and salvage are required, recommendations shall be consistent with the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources and currently accepted scientific practice. Work in the affected area may resume once the fossil has been assessed and/or salvaged and a paleontological monitor is present.

5. **Notification of Completion.** The paleontologist shall notify University of California San Diego Campus Planning Office in writing of the end date of monitoring.

6. **Handling and Curation of Significant Paleontological Specimens and Letter of Acceptance.** The paleontologist shall ensure that all significant fossils collected are appropriately prepared and permanently curated with an appropriate institution, and that a letter of acceptance from the curation institution has been submitted to University of California San Diego Campus Planning Office.

7. **Final Results Report (Monitoring and Research Design and Recovery Program).** Prior to completion of the project, two copies of the Final Results Report (even if no significant resources were found) and/or evaluation report, if applicable, which describe the results, analysis, and conclusions of the Paleontological Monitoring Program (with appropriate graphics) shall be submitted to University of California San Diego Campus Planning Office for approval.

3.2.7 Greenhouse Gas Emissions

GREENHOUSE GAS EMISSIONS Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose or reducing the emissions of greenhouse gases?	☐	☐	☒	☐

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. Greenhouse gas (GHG) Emissions are said to result in an increase in the Earth's average surface temperature commonly referred to as global warming. This rise in global temperature is associated with long-term changes in precipitation, temperature, wind patterns, and other elements of the earth's climate system, known as climate change. These changes are now broadly attributed to GHG emissions, particularly those emissions that result from the human production and use of fossil fuels.

GHGs include carbon dioxide, methane, halocarbons (HFCs), and nitrous oxide, among others. Human-induced GHG emissions are a result of energy production and consumption and personal vehicle use, among other sources.

Construction and operation of the project would result in GHG emissions from site preparation, construction vehicle trips, construction equipment, building energy use, water treatment/usage, solid waste disposal, and mobile sources (air and vehicle travel). The project site is off campus within the boundaries of the City of San Diego and is not included in the 2018 LRDP, and it was not included as part of the 2018 LRDP CEQA analysis. As a state entity, the UC is not subject to municipal plans, policies, and regulations, such as County and City General Plans or local ordinances. However, because the project site is located in an off-campus location in the City of San Diego, the UC has determined within its sole discretion that consistency with the City of San Diego Climate Action Plan (CAP) is an appropriate threshold for determining whether the proposed project would result in a significant impact related to GHG emissions.

Consistent with the City of San Diego California Environmental Quality Act Significance Determination Thresholds (2022), the first step in determining CAP consistency for development projects is to assess the project's consistency with the growth projections used in the development of the CAP (Step 1). A project that is consistent with existing zoning designations, increases density in a TPA, or includes a land use plan that would result in a less GHG intensive project compared to existing zoning designations would be consistent with CAP growth projections.

As a UC project, the existing zoning designation does not apply to the project, and UC San Diego is not required to comply with the City's zoning for the project site. Therefore, this criterion is not applicable to the project site. The project site is in a TPA and would increase density since the project site is currently vacant; however, the project would not increase allowable density compared to the zoning assumption for the project site in the CAP. Therefore, the project is not consistent with this criterion.

The proposed project is compared to development of the site under the existing Industrial-Park zoning assumed in the CAP to determine project consistency with CAP assumptions. Emissions were modeled using CalEEMod, consistent with the assumptions of the air quality analysis for the project. Project modeling takes into account sustainability features, including building electrification and on-site PV panels on the parking structure rooftop. Buildout of the site under the assumed zoning designation for the CAP assumes development of an industrial park on the same development footprint as the proposed project (3.90 acres), and the maximum allowable floor to area ratio of 2.0. Detailed assumptions are provided in Appendix A. Annual GHG from the proposed project and assumed zoning for the CAP are compared in Table 7, Annual Operational GHG Emissions. As shown in Table 7, the proposed project would result in a less GHG -intensive project compared to existing zoning. Considering that the annual operational GHG emissions calculations in Table 7 for the project scenario did not assume 100 percent clean electricity to be used for the project, the net decrease in GHG emissions under the project would be greater. Therefore, the project would meet one of the three criteria to be considered consistent with CAP growth projections and would be consistent with Step 1.

Table 7. Annual Operational GHG Emissions

Development Scenario	Annual Emissions (MT CO_2e)
Proposed Project	2,227
Assumed CAP Zoning (Industrial-Park)	3,673
Net Change Under Proposed Project	**(−1,446)**
Project is Less Intensive?	Yes

Sources: Appendix A.

Notes: CAP = Climate Action Plan; CO_2e = carbon dioxide equivalent, MT = metric tons

The second CAP consistency requirement (Step 2) as applied to the UC is consistency with the regulations set forth in SDMC Chapter 14, Article 3, Division 14 to ensure that new development is consistent with the CAP's assumptions for relevant CAP strategies toward achieving the identified GHG reduction targets. Specifically, a project must be consistent with SDMC Sections 143.1410 and 143.1415.

- SDMC Section 143.1410, Mobility and Land Use Regulations, supports alternative mobility options. The applicable regulations for the project site are those that apply to development that does not contain a street yard or abut a public ROW with a Furnishings Zone. Projects are required to plant trees at an off-site location with a street frontage or yard, or pay an Urban Tree Canopy Fee. UC San Diego is not subject to City development fees. Additionally, the project's street frontage would consist of the project access driveway and the requirements to provide pedestrian amenities would not apply to the project. However, as described below, the project would exceed the tree planting requirement related to carbon sequestration. Additionally, the project would include a paved sidewalk along the north side of Bernardo Center Drive along the project frontage that provides a connection to the existing sidewalk that currently ends approximately 425 feet west of the I-15 southbound ramps. The project would also include both short- and long-term bicycle parking facilities, electrical bicycle charging station, and a bicycle repair station and would be within proximity to the Rancho Bernardo Transit Center. Therefore, the proposed project would implement alternative transportation facilities as applicable and would be consistent with the goals of SDMC Section 143.1410.

- SDMC Section 143.1415, Resilient Infrastructure and Healthy Ecosystems Regulations, supports carbon sequestration as well as enhancement of air quality and the urban tree canopy. The regulations require development to provide two trees for every 5,000 square feet of lot area. The project would develop approximately 4.3 acres (approximately 187,308 square feet), requiring approximately 75 trees. The total number of trees to be planted on site is approximately 116 trees from the San Diego County's suggested plant list for a defensible space in fire prone area. Therefore, the project would be consistent with SDMC Section 143.1415.

The project is consistent with the growth assumptions of the City of San Diego's CAP and CAP goals as outlined in SDMC Sections 143.1410 and 143.1415. As such, the project would be consistent with the City's CAP and would have a less than significant impact from GHG emissions. No mitigation measures are necessary.

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose or reducing the emissions of greenhouse gases?

Less Than Significant Impact. As discussed above, the project would be consistent with the City of San Diego CAP, which the UC has determined in its sole discretion is the appropriate threshold of significance for the project site for evaluating GHG emissions impacts. The UC Sustainable Practices Policy is also applicable to the project. The project would support UC carbon neutrality efforts through the implementation of a suite of sustainability features, as described in Section 2.3.6. Measures include all electric power sources, achieving a minimum of LEED Gold standards for the healthcare center and Parksmart Silver Certification for the parking structure, providing electric vehicle and bicycle infrastructure and building electrification, and generating solar power on the site through PV panels located on the parking structure roof. In addition, the project would use 100 percent clean electricity contracted and purchased through a clean power provider, such as San Diego Community Power, Clean Energy Alliance, or Direct Access, that is delivered by SDG&E. See also Section 3.2.15, Transportation. The project would not conflict with an applicable plan, policy, or regulation adopted for the purpose or reducing the emissions of GHGs, and impacts would be less than significant. No mitigation measures are necessary.

3.2.8 Hazards and Hazardous Materials

The analysis in this section is based in part on the Phase I Environmental Site Assessment, Interstate 15 (I-15) and Bernardo Center Drive, San Diego County Assessor's Parcel Number (APN): 678-252-11-00 San Diego, California, prepared by Group Delta Consultants, Inc. (2022) and the Limited Phase II Environmental Site Assessment, Interstate 15 and Bernardo Center Drive, Assessor's Parcel Number (APN): 678-252-11-00, San Diego, California, prepared by Group Delta Consultants, Inc. (2022). Copies of the reports are included in Appendix E1, Phase I Environmental Site Assessment, and Appendix E2, Phase II Environmental Site Assessment.

HAZARDS AND HAZARDOUS MATERIALS Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. Project construction would require the use of hazardous materials, including fuels, greases and other lubricants, and coatings such as paint. The handling, use, transport, and disposal of hazardous materials during the construction phase of the project would comply with existing regulations of several agencies—the U.S. Environmental Protection Agency (USEPA), UC San Diego EH&S, Occupational Safety and Health Administration, California Division of Occupational Safety and Health, and the U.S. Department of Transportation.

The project site is currently vacant and does not require routine transport, use, or disposal of hazardous materials. During operation, as a medical office building, the proposed project may generate general waste, radioactive materials, biohazardous materials, and chemical materials. These hazardous materials are related to programs including, but not limited to medical and specialty care laboratories, patient care, and grounds services as described in Section 2.3.1, Table 1. Due to the UC's constitutional autonomy, UC San Diego EH&S has the primary responsibility for coordinating the management of hazardous materials at UC San Diego facilities and would advise on handling, storage, and disposal requirements for a variety of chemical, high hazard, biological, and radioactive wastes, in accordance with established UC San Diego procedures. Per Section 516-14, Hazardous Waste and Material Management of the UC San Diego Policy and Procedure Manual, all hazardous materials are inventoried and waste is removed from individual spaces as often as necessary to prevent disease, nuisance, and safety problems and to comply with regulatory requirements. Prior to removal, hazardous wastes are safely and securely stored in a manner compliant with regulatory requirements to prevent nuisance, spills, exposure, and environmental problems. UC San Diego EH&S does not have a specific requirement for the chemicals used in medical facilities. However, these reviews typically occur with a lab's annual review/audit of hazardous materials inventory statement (HMIS) from EH&S Lab Safety in compliance with applicable California Fire Code.

Adherence to Section 516-14, Hazardous Waste and Material Management, of the UC San Diego Policy and Procedure Manual and compliance with safety standards mandated by applicable federal, state, and local laws and regulations would minimize the risks resulting from the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes and from accidental releases during project construction and operation. Impacts would be less than significant. No mitigation measures are necessary.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant with Mitigation Incorporated. The project site is currently vacant without any aboveground structures. A Phase I Environmental Site Assessment (ESA) dated January 25, 2022, was prepared for the project site by Group Delta Consultants, and included as Appendix E1 to the IS. The Phase I ESA included a review of available federal and state data reported by Environmental Data Resources (EDR), available regulatory agency environmental records, and available site history and records. The Phase I ESA identified the following recognized environmental concerns (REC) for the project site:

- REC #1: Approximately 51.5 feet of undocumented fill that was placed during construction of the I-15 off-ramp adjoining the project site and construction of buttress to stabilize the landslide in 1981. Soils used during construction of the off-ramp were gathered from areas that adjoined the I-15 from at least 1966 to 1981. The potential exists for aerially deposited lead impacts in the fill soils placed on project site.
- REC #2: The adjoining property to the north was historically occupied by aerospace manufacturing facilities, including The Burroughs Corporation and Unisys from circa early 1970s to 1993. In 1983 and 1984, a 3,000-gallon solvent (tetrachloroethene and/or trichloroethene) underground storage tank (UST) and 4,000-gallon acid UST were removed from the property. Halogenated solvents and acids are typically used in plating activities in the aerospace manufacturing industry. The tanks area, located approximately 440 feet north of the northern project site boundary, was evaluated later in 1987 to determine whether a release had occurred. An unauthorized release of volatile organic compounds (VOCs) that impacted soil and groundwater was discovered, and a remedial excavation of approximately 300 cubic yards of soil was completed in 1988. A portion of the contaminated soil was disposed off-site in landfill, but the remainder was remediated via aeration on site and used to backfill the excavation. The case was issued closure by the San Diego County DEH on September 28, 1988, with the caveat that further site characterization and mitigation activity may be required if the site use changes from industrial. The property is currently vacant land. Based on the former aerospace manufacturing operations for approximately 20 years and residual contamination left in place at the former facility, the adjoining property to the north represents a REC to the project site.
- REC #3: Concrete construction debris was observed on site. The presence of asbestos-containing materials (ACM) will need to be investigated prior to removal of the concrete construction debris for development purposes in order to comply with environmental and worker safety regulatory requirements for ACM.

Therefore, the Phase I ESA recommended a limited soil and soil vapor survey to assess potential lead impacts to soil and VOC impact to soil vapor, and ACM sampling of the concrete construction debris prior to development at the project site. Based on the Phase I ESA findings and recommendations, a Phase II ESA dated February 25, 2022, was prepared and is included as Appendix E2. The Phase II ESA concluded the following:

- REC#1: Lead concentrations in all 20 collected soil samples were non-hazardous and did not exceed Department of Toxic Substances Control modified screening level (DTSC-SL) (320 mg/kg) or USEPA Regional Screening Level (800 mg/kg) for commercial/industrial land uses. Soil samples representing imported undocumented fill at the site did not contain unacceptable levels of lead; therefore, no further action is required.
- REC #2: VOC concentrations for 22 analytes were detected above laboratory reporting limits in one or more of the collected soil vapor samples and several exceedances of DTSC-SLs and/or Regional Screening Levels occurred. Using the measured subsurface soil vapor VOC analytical data, a vapor intrusion health risk assessment was performed to determine whether any of the concentrations presented an unacceptable risk to indoor air of future enclosed structures at the project site. The predicted indoor air concentrations calculated using USEPA attenuation factor (AF) of 0.03 determined that soil vapor concentrations in only one of the deeper probes (benzene in VS1-15 as shown on Figure 1 of the Phase II ESA in Appendix E2 of the IS) presents a cancer and non-cancer risk above generally accepted risk values. However, because shallow soil vapor is not impacted with VOCs across the project site and detected concentrations are relatively low, it was determined that there is no on-site source of VOCs. The only location exceeding the non-cancer hazard index (HI) risk value of 1.0 was in the VS1-15 location at 1.32, and the cumulative cancer risk of 1.0E-4 was not exceeded using the most conservative AF of 0.03.
- REC #3: None of the 20 bulk samples contained ACM and lead based paint was not present in the one sample of ceramic tile. Neither ACM nor materials containing lead-based paint were found at the site; therefore, no further action is required.

Because no further action is required for RECs #1 and #2, these impacts are considered less than significant, and no mitigation measures are required. Concerning REC #3, the Phase II ESA determined that incorporation of **Mitigation Measure HAZ-1** consisting of an impermeable sub-slab membrane barrier for all enclosed structures would be required to reduce impacts to a less than significant level. Implementation of **Mitigation Measure HAZ-1** would ensure that the project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts would be less than significant with mitigation incorporated.

MITIGATION MEASURE

HAZ-1 Hazardous Materials. During building construction, an impermeable sub-slab membrane shall be installed for all enclosed structures to minimize potential health risks from volatile organic compounds migrating from the off-site property to the north. This requirement shall be incorporated into project plans and confirmed by University of California San Diego Environmental Health & Safety. All soils removed from the site and any import soils will be coordinated with Environmental Health & Safety.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less Than Significant Impact. The project would involve the use or transport of hazardous materials during construction and operation. The Hope Christian Preschool is located approximately 0.22 mile east of the project site. However, the project would comply with federal and state regulations pertaining to hazardous wastes and with existing UC San Diego campus programs, practices, and procedures that would ensure that risks associated with hazardous emissions or materials to existing or proposed primary or secondary schools located within one-quarter mile from the project site would remain less that significant through proper handling procedures, disposal practices, and/or cleanup procedures. Impacts would be less than significant. No mitigation measures are necessary.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less Than Significant Impact. According to the Environmental Data Resources (EDR) search completed as part of the Phase I ESA, the project site is not located on a contaminated site pursuant to California Government Code, Section 65962.5 (Cortese List). Although multiple sites were listed in the EDR database search within 1-mile radius of the project site, the Phase I ESA determined that these listed properties would not pose a hazardous waste impact based on the following criteria, or a combination thereof:

- The regulatory case status of the property is identified as completed and closed;
- The type of media affected was identified as soil only;
- The release was in nominal amounts or concentrations as to not present a hazardous waste impact concern to the project;
- The listing was identified on low-hazardous risk databases (i.e., UST HAZNET, small quantity generator databases) with no reported spills, cleanups, or violations;
- The property is identified on a low-hazardous risk database as receiving one or more violations, but the nature of violations received was associated with financial, administrative, or record-keeping practices only;

- The distance of the listing to project limits is great enough that it does not present a hazardous waste impact concern to the project, and/or;
- The listing is down-gradient or cross-gradient from the project limits.

Therefore, impacts would be less than significant, and no mitigation measures are necessary.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The project site is not located with an airport land use plan or within 2 miles of a public airport or public use airport. The nearest public airport is the Ramona Airport, approximately 9.3 miles to the east (Airnav 2024). Implementation of the project would not result in a significant aircraft safety hazard, and no impact would occur. No mitigation measures are necessary.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant With Mitigation Incorporated. The authority having jurisdiction (AHJ) for fire and life safety services is UC San Diego. However, the City of San Diego Fire-Rescue Department (SDFD) is the first responder responding to emergency calls. The SDFD is a multi-faceted organization providing fire protection and emergency medical services to the project site. The SDFD is trained and equipped to implement emergency hazardous materials intervention and control techniques. The San Diego County Agreement for Hazardous Materials Automatic Aid provides the City of San Diego and other participating agencies with adequate hazardous materials emergency response capabilities, including a Level A hazardous materials incident. The SDFD and UC San Diego EH&S would review emergency access to ensure that adequate fire protection equipment access is provided on-site at all times. Furthermore, the Emergency Preparedness Program of the San Diego Office of Emergency Services enhances and supports the City's preparedness for major emergencies and disasters. This program leads the development, review and internal/external integration for all City emergency plans. It provides coordination and collaboration with County, state, and federal jurisdictions/agencies; manages/supports the City's readiness and utilization of the Regional Community Emergency Notification System (i.e., Alert San Diego); facilitates the provision of information to the public and the business community to assist in emergency preparations/response; and coordinates/oversees relevant citywide emergency training and exercises. During major emergencies and disasters, the City's Emergency Operations Center (EOC) may be activated to support and coordinate the City's overall multi-departmental emergency response and recovery operations. The San Diego Police Department provides evacuations, public emergency notification, and traffic control.

The project site is currently vacant; however, the City's zoning designation (not applicable to UC) is industrial park and is surrounded by various other urban uses, and the existing emergency response systems in place are anticipated to provide adequate emergency response services. Additionally, while the project would increase traffic volumes in roadways surrounding the project site, the Local Mobility Assessment included in Appendix H1, Local Mobility Assessment, demonstrated that the street segments and intersections would continue to operate at acceptable levels provided that improvements as described in Section 2.3.2, Project Site Access and Roadway Improvements, as part of project description are provided. Therefore, during operation, the project is not anticipated to impair implementation of or physically interfere with an emergency response plan or emergency evacuation plan.

As described in Section 2.3.5, Project Construction, for construction within the City ROW, the project would implement a Construction Management Plan and Traffic Control Plan during construction in accordance with SDMC Section 129.0701 et seq. and the California Department of Transportation California Manual of Uniform Traffic Control Devices (2014 edition). These traffic management controls would include measures determined on the basis of site-specific conditions, including coordination with local emergency services, training for flagman for emergency vehicles traveling through the work zone, temporary lane separators that have sloping sides to facilitate crossover by emergency vehicles, and vehicle storage and staging areas for emergency vehicles. These measures would ensure that ingress and egress from the project site would not interfere with off-site traffic flows and emergency access for areas surrounding the project site. In the event that project construction requires a partial temporary closure of Bernardo Center Drive for various roadway improvements, implementation of **Mitigation Measure HAZ-2** would ensure that impacts would be reduced to a less than significant level.

MITIGATION MEASURE

HAZ-2 Traffic Control During Lane Closure. Prior to construction, University of California San Diego shall contact the City of San Diego's Transportation Department and the City of San Diego Police Department and consult to disclose temporary lane and/or roadway closure to minimize congestion and provide adequate emergency access for emergency vehicles. Traffic congestion may be minimized by maintaining at least one unobstructed lane during construction and providing a temporary traffic signal, signal carriers (i.e., flagperson), or other appropriate traffic controls to allow travel when only a single lane is available.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact. The project site is identified as having a very high severity threat by the Very high Fire Hazard Verity Zone Map (City of San Diego 2024b). However, UC San Diego would implement brush management within 100-foot around buildings that are adjacent to natural or other significant fuel beds as shown on Figure 14. The buildings would be constructed of ignition-resistant materials and equipped with emergency fire sprinkler systems based on the 2022 CBC and Fire Code. Adequate fire truck access would be provided, reviewed and approved by both the UC San Diego Fire Marshal and the City of San Diego Fire Department. The landscape palettes would also consist primarily of ignition-resistant, low flammability landscape as part of perimeter brush management zone. Additionally, UC San Diego implements the following construction and design policies to reduce impacts from fire:

CONSTRUCTION-RELATED MEASURES

- UC San Diego construction specifications include a requirement that equipment (and trained personnel) be on site during project construction activities to extinguish small fires.
- UC San Diego prohibits smoking on University Controlled Property, including construction areas.

DESIGN-RELATED MEASURES

- Ignition-resistant materials based on the latest California Building and Fire Codes, or other ways to fire harden structures (i.e., fire deflection walls, exterior sprinklers, ignition-resistant landscape palette) are considered during the planning of new buildings in fire prone areas of campus.
- New buildings are designed to include fire department access to the satisfaction of the City of San Diego Fire-Rescue and the UC San Diego Fire Marshal.
- Water capacity and delivery of a reliable water source for firefighting operations and during emergencies are ensured during the planning of new buildings.
- Therefore, impacts related to exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires as a result of implementation of the project would be less than significant, and no mitigation measures are necessary.

3.2.9 Hydrology and Water Quality

The analysis in this section is based in part on the UC San Diego RBHC Drainage Report prepared by Latitude 33 Planning & Engineering (2023) and 16280 Bernardo Center Dr. Water Quality Report prepared by Latitude 33 Planning & Engineering (2023). Copies of the reports are included in Appendix F1, Drainage Report, and Appendix F2, Water Quality Report.

HYDROLOGY AND WATER QUALITY Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site? (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows?	☐	☒	☐	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?

Less Than Significant Impact. The project site is within the boundaries of the San Dieguito River Watershed Management Area (WMA) and drains to the San Dieguito Lagoon, where the pollutants of concern (POC) are heavy metals, particularly Lead and Selenium, before ultimately draining to the Pacific Ocean. The San Dieguito River WMA is subject to the San Dieguito River WMA Water Quality Improvement Plan, which was originally accepted by the San Diego Regional Water Quality Control Board in 2016 and has been updated in 2021. The San Dieguito River WMA is one of 10 watersheds within the San Diego Basin. The water quality standards, including the beneficial uses and water quality objectives, for each basin are detailed in the Water Quality Control Plan for San Diego Basin (Basin Plan).

The project could result in an increase in potential discharges of pollutants to receiving waters, including waters designated as impaired for certain contaminants of concern (COCs) during construction and operation. COCs found in urban runoff typically include sediments, non-sediment solids, nutrients, pathogens, oxygen-demanding substances, petroleum hydrocarbons, heavy metals, floatables, polycyclic aromatic hydrocarbons, trash, pesticides, and herbicides.

Construction activities could result in significant short-term water quality impacts from uncontrolled sediment and pollutants in storm water runoff that could conflict with the policies of the San Dieguito River WMA Water Quality Improvement Plan. However, the project would be regulated under the Phase II Small MS4 General permit and UC San Diego’s Storm Water Management Plan (SWMP) and prepare and implement the SWPPP, which emphasizes the use of appropriately selected, correctly installed, and maintained pollution reduction BMPs that would prevent construction pollutants from contacting storm water and leaving the project site. The project construction team is responsible for SWPPP preparation and the SWPPP must:

- Identify pollutant sources associated with construction activities that may affect the quality of storm water discharges.
- Identify and prevent non-storm water discharges.
- Identify, construct, and implement storm water pollution prevention measures or BMPs to reduce or eliminate pollutants in storm water discharges from the construction site, both during construction and after construction is completed.
- Storm water runoff from the construction site is monitored and analyzed based on the calculated risk level of the project.

The SWPPP also covers other required elements such as training and a construction BMP maintenance, inspection, and repair program. Throughout the construction period, a Qualified SWPPP Practitioner (QSP) would be required to conduct and document inspections and evaluations as detailed in the SWPPP. Therefore, the project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality during construction.

In addition, per UC San Diego Policy, the project would pay for a SWPPP third-party monitor who will be tasked with monitoring the QSP and the SWPPP implementation. For UC properties, all projects over 1 acre require this by UC San Diego Policy and in accordance with NPDES permits.

The project would result in land use changes and increases in impervious surface area, which could indirectly increase the total amount of pollutants in the storm water runoff and non-storm water runoff traveling to on-site drainages and downstream receiving waters. Figure 17, Existing Hydrology, shows the existing drainage pattern on the project site and Figure 18, Proposed Hydrology, shows the post-development drainage pattern of the project site. The project would incorporate the following LID measures to reduce downstream runoff.

LOW IMPACT DEVELOPMENT MEASURES

- **Tree Planting and Preservation:** The project was coordinated to protect in place on-site trees, where feasible. Approximately 116 new trees would be planted throughout the project site.
- **Rooftop and impervious area dispersion:** The project's proposed impervious areas are designed to flow to nearby landscape areas for impervious area dispersion (wherever feasible).
- **Source Control:** The project proposes storm drain stenciling, landscape design that minimizes irrigation and runoff, and use of native species that minimize the use of fertilizers and pesticides. This project does not propose any uncovered trash enclosures.
- **Vegetated Swales**: The project proposes vegetated swales to convey water toward inlets and the on-site detention basin. Planting, ground cover and rocky swales would be used to convey flow to low points at a controlled rate.

In addition, all impervious areas after implementing the LID measures would be directed to six modular wetland systems (MWS) for water quality treatment as part of BMPs and to two underground concrete vaults to reduce water quality and hydrology impacts. MWS is a stormwater biofiltration system that incorporates vegetation, rock sedimentation, filtration, absorption, and bioremediation to remove pollutants from storm water. The size of the MWS would range from 4 feet by 4 feet to 4 feet by 19 feet. DMA is a designated portion of the project site where runoff drains to a common point to be collected and managed to prevent flooding, erosion, and water pollution. The six DMAs for the impervious area are detailed below and shown on Figure 19, Proposed Drainage Management Areas:

- **DMA 1:** The west portion of the site, DMA 1, includes the west private fire access driveway, healthcare center building 1 loading dock, trash enclosure, and landscaping elements. DMA 1 drains south to a trench drain which ties to BMP 1, a 4x13 MWS unit.
- **DMA 2**: The north building on site (P1) is DMA 2 and is treated by BMP 2, a 4x17 MWS unit for water quality treatment.
- **DMA 3**: The northeast portion of the site, DMA 3, includes the surface parking lot, central buildings park area, and other landscaping and will flow south to a cross gutter, leading into BMP 3, a 4x19 MWS unit for water quality treatment.
- **DMA 4**: The south building on-site (healthcare center building 1) is DMA 4 and is treated by BMP 2, a 4x17 MWS unit for water quality treatment.
- **DMA 5**: The lower east portion of the site is DMA 5, including roadways, and landscaped pedestrian areas, and flows south to a trench drain tied to BMP 5, a 4x15 MWS unit for water quality treatment.
- **DMA 6**: DMA 6 covers the junction of the access roadways and driveway connection south to the start of the site. This flow is captured in a trench drain and tied to BMP 6, a 4x4 MWS unit for water quality treatment.

DMA 1 through 5 would be routed to on-site storm drain systems tied to MWS for water quality treatment. Flow from DMA 6 would be captured in a trench drain and tied to MWS for water quality treatment. As with the existing conditions, runoff from the project would outlet to the discharge location located south of the project site, where the project boundary meets Bernardo Center Drive.

Although the project would increase impervious surface area, implementation of the LID measures and BMPs would result in a net reduction in the peak flow. Under the existing conditions, the 100 year 6-hour event peak flow rate would be 12.90 cubic feet per second (CFS) and with project implementation, the peak flow rate would decrease to 12.43 CFS before discharging to a single outlet location at the ROW of Bernardo Center Drive (Appendix F1). Therefore, with the incorporation of the proposed site design, source control, and treatment control BMPs and the continued implementation of UC San Diego Design Guidelines, SWMP and other regulatory requirements, water quality impacts associated with changes in storm water runoff would be minimized and would not conflict with or obstruct implementation of the San Dieguito River WMA Water Quality Improvement Plan. Impacts would be less than significant. No mitigation measures are necessary.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. No removal of groundwater is proposed, as the project would use potable water supplied by the City of San Diego Public Utilities Department (PUD) via existing water line connections along Bernardo Center Drive. The PUD receives approximately 90 percent of the imported water from the San Diego County Water Authority to satisfy potable water demand (CDM Smith 2021). Although the project would increase the impervious surfaces, the project site is not a substantial groundwater recharge area. The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge. Impacts would be less than significant. No mitigation measures are necessary.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(i) Result in substantial erosion or siltation on- or off-site?

Less Than Significant Impact. The project site is located on an urbanized area and would not alter the course of a stream or river to result in substantial erosion or siltation on or off site. Although construction of the proposed project would increase the potential for erosion and siltation, the project would be constructed over a short period of time, and BMPs would be implemented to reduce erosion and siltation impacts in compliance with the NPDES statewide General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activity (General Permit).

As part of the General Permit, construction projects managed by outside contractors are required to implement SWPPPs, which specify BMPs to reduce the contribution of sediments, spilled and leaked liquids from construction equipment, and other construction-related pollutants to stormwater runoff. Compliance with the existing regulations would provide adequate protection from stormwater contamination and water quality protection from construction activities. Once the construction is complete, there would not be open soils prone to substantial erosion or siltation. The project stormwater would be captured and conveyed to MWS for water quality treatment before discharging to the existing local storm drain system on Bernardo Center Drive. Therefore, the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site; and impacts would be less than significant. No mitigation measures are necessary.

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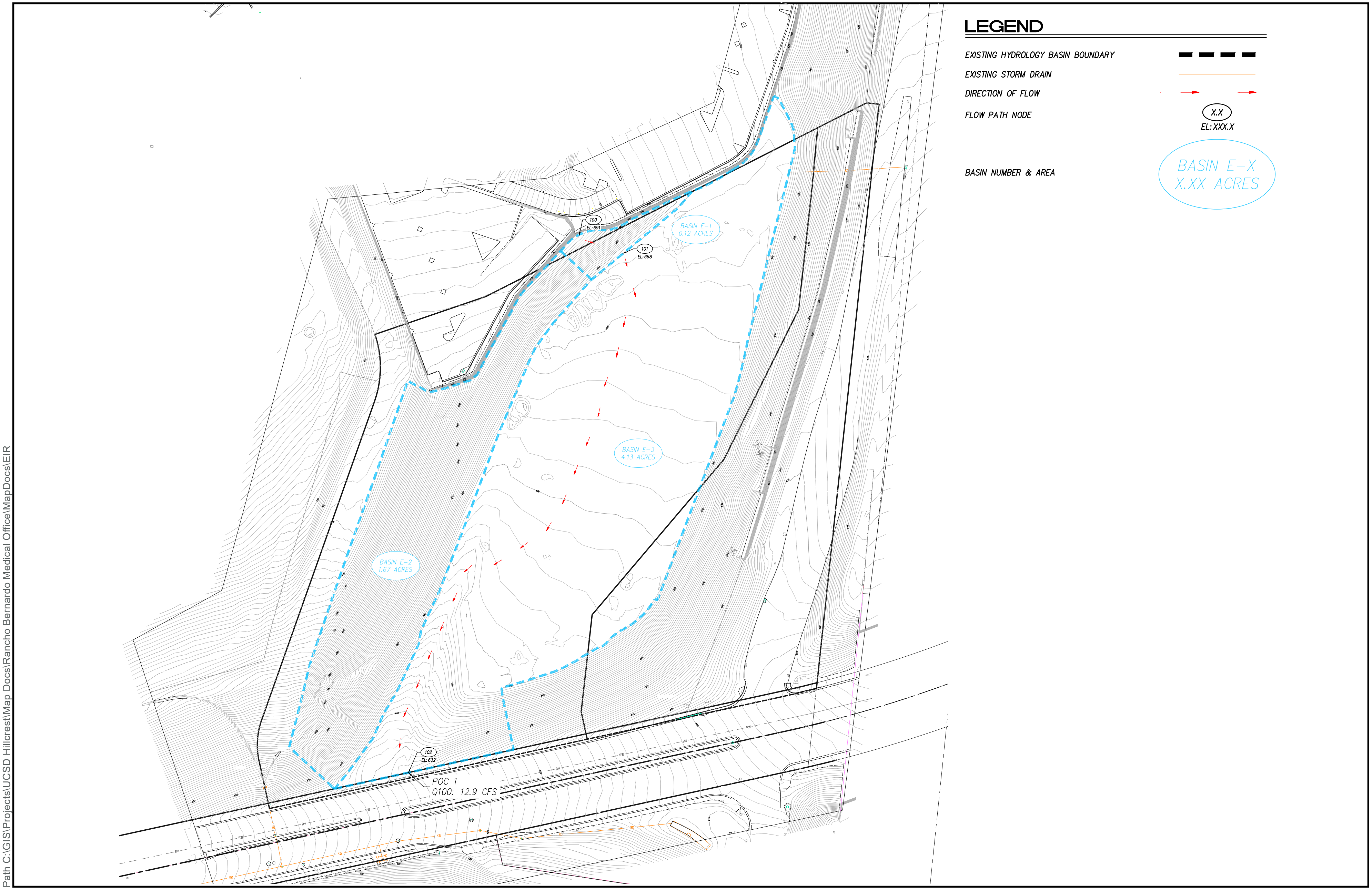

Source: Latitude 33 2023.

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Figure 17

Existing Hydrology

Rancho Bernardo Healthcare Center Medical Office Building Project

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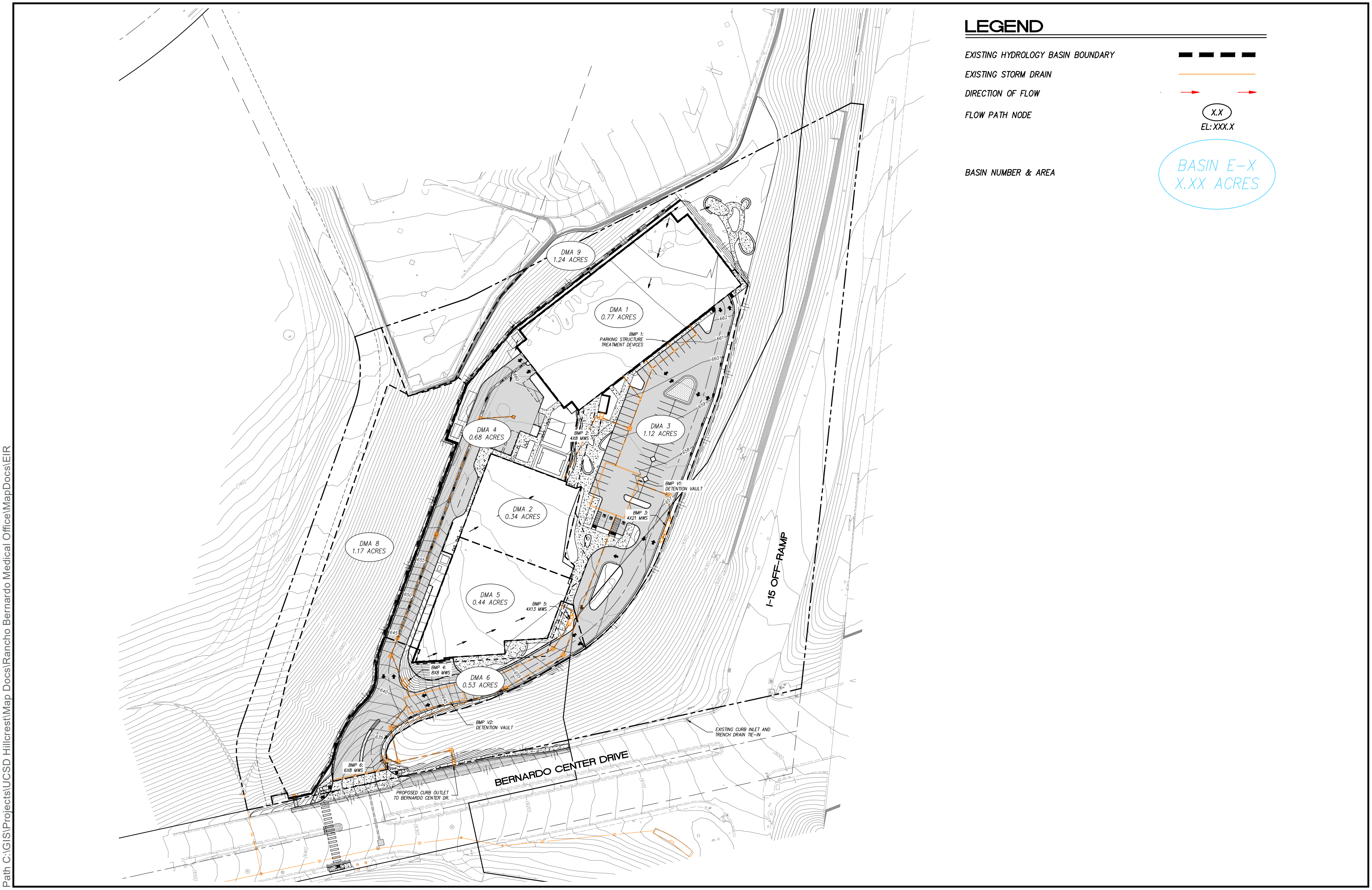

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Figure 18

Proposed Hydrology

Rancho Bernardo Healthcare Center Medical Office Building Project

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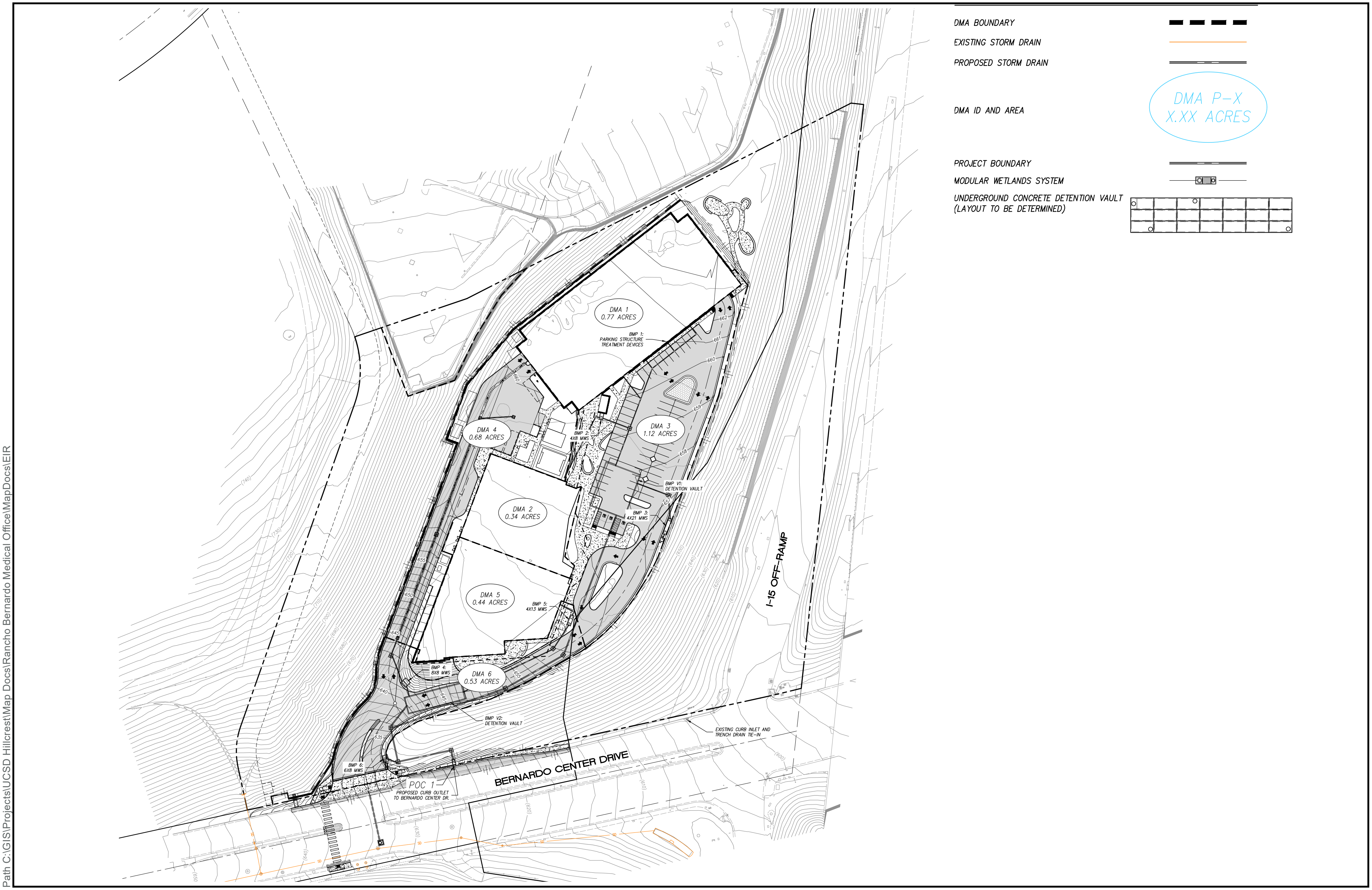

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Figure 19

Proposed Drainage Management Areas

Rancho Bernardo Healthcare Center Medical Office Building Project

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(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less Than Significant Impact. The project site is located in an urbanized area and would not alter the course of a stream or river. During construction, the contractor would be required to control run-on and runoff from the construction site in compliance with the NPDES permits and the SWPPP. Post-construction, the proposed project would result in an increase in impervious surface area, however, as discussed in Section 3.2.6(a), implementation of LID measures and BMPs would result in a net reduction of peak flow into the single discharge location at Bernardo Center Drive from the existing 100 year 6-hour event peak flow rate of 12.90 CFS to the post-project flow of 12.43 CFS (Appendix F1). The locations of six MWS as part of BMPs and two detention vaults are shown on Figure 18. The size of the detention Vault 1 would be 65 feet by 43 feet, with 5 feet of depth, and Vault 2 would be 75 feet by 21 feet, with 5 feet of depth. DMAs 1 and 5 would be routed through MWS and Vault 2 for peak flow detention before ultimately discharging to the single discharge location at Bernardo Center Drive, and DMAs 2, 3, and 4 would be routed through MWS and Vault 1 before discharging to the single discharge location at Bernardo Center Drive. Therefore, the project would not substantially increase the rate or amount of surface runoff to result in on or off-site flooding. Impacts would be less than significant. No mitigation measures are necessary.

(iii) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant Impact. As discussed in Section 3.2.9(a), the project would be required to comply with NPDES statewide General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activity (General Permit) and the MS4 requirements and implement appropriate BMPs during construction and operation. Additionally, as discussed in Section 3.2.9(c)(ii), the project would not increase the peak flow compared to the existing conditions, and runoff would be treated for water quality through LID measures and MWS. Therefore, the project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems and would not result in substantial additional sources of polluted runoff. Impacts would be less than significant. No mitigation measures are necessary.

(iv) Impede or redirect flood flows?

No Impact. As discussed in Sections 3.2.9(a) and 3.2.9(c)(ii), the project would not result in flooding on or off site and, therefore, would not impede or redirect flood flows. No impact would occur. No mitigation measures are necessary.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. The project site is located within Zone X, or “Area of Minimal Flood Hazard,” as defined by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), which is outside the 100-year and 500-year flood hazard areas (Flood Map ID No. 06073C1090G) (FEMA 2012). In addition, the project site is not within an area that contains risk from seiches because this phenomenon is typically associated with land-locked bodies of water. The project site is approximately 11 miles inland of the Pacific Ocean and not within the San Diego County Tsunami Hazard Areas (DOC 2024). Therefore, it is not at risk for inundation by tsunamis. Thus, the project would not result in significant impacts related to potential pollutant release during floods, tsunamis, and seiches. No impact would occur. No mitigation measures are necessary.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact. Construction activities could result in short-term water quality impacts from uncontrolled sediment and pollutants in storm water runoff that could conflict with the policies of the Basin Plan. However, as discussed in Section 3.2.9(a), the project would be required to comply with the Phase II MS4 permit, SWMP, and other regulatory requirements related to storm water runoff to minimize the potential for pollutants to enter receiving waters. Additionally, the project would integrate LID measures and storm water BMPs to treat storm water prior to being discharged to minimize the potential for urban pollutants to enter into downstream receiving waters. The Water Quality Report (Appendix F2) for the project indicated that per Table B.6-1 of the San Diego SWMP, the project would not generate POCs such as heavy metals, particularly lead and selenium, which are listed for the San Dieguito Lagoon in the San Dieguito River Watershed. Therefore, with the incorporation of the proposed site design that includes source control and treatment control BMPs and implementation of UC San Diego Design Guidelines, SWMP, and other regulatory requirements, water quality impacts associated with changes in storm water runoff would be minimized and would not conflict with or obstruct implementation of the Basin Plan. In addition, the project is not in an area governed by a Sustainable Groundwater Management Plan (CDWR 2024). The project would not conflict with or obstruct implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan. Impacts would be less than significant. No mitigation measures are necessary.

3.2.10 Land Use and Planning

LAND USE AND PLANNING Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

a) Physically divide an established community?

No Impact. The project site is currently undeveloped and vacant and is bordered by industrial park uses to the north and west, I-15 to the east, and Bernardo Center Drive to the south. No incursion into, or division of, the surrounding communities would occur. The project would not physically divide an established community. No impact would occur. No mitigation measures are necessary.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less Than Significant Impact. UC San Diego is a part of the UC, a constitutionally created unit of the State of California. As a state entity, the UC is not subject to municipal plans, policies, and regulations, such as County and City General Plans or local ordinances. The project site is located off campus and is not a part of UC San Diego's 2018 Long Range Development Plan. Although the City's Rancho Bernardo Community Plan is not applicable to the project site, the UC notes for information purposes that the project site is located within the Rancho Bernardo Community Plan area boundary and the project site is identified for industrial uses and part of 612 net acres set aside for the development of two industrial parks: the Bernardo Industrial Park consisting of 588 acres located south of Rancho Bernardo Road and west of I-15 and the approximately 30-acre Bernardo Heights Corporate Park located southeast of the I-15 and Camino del Norte intersection. The project site is part of the Bernardo Industrial Park.

Table 8, Consistency with the Rancho Bernardo Community Plan, shows objectives of the Industrial Element of the Rancho Bernardo Community Plan and the project's consistency with the objectives. As described, the project would be consistent with the objectives of the Industrial Element, and the project would not result in significant environmental impacts due to a conflict with a land use plan, policy, or regulation. Impacts would be less than significant. No mitigation measures are necessary.

Table 8. Consistency with the Rancho Bernardo Community Plan

Industrial Element Objectives	Consistency
To establish two viable industrial parks consisting of large and small industrial firms engaged in a wide variety of non-polluting industrial activities.	**Consistent:** Two viable industrial parks have been established in Rancho Bernardo, and the project would not conflict with operation of these industrial uses. Additionally, the project involves non-polluting activities. Use, handling, and disposal of hazardous materials would comply with the existing UC San Diego, County of San Diego, state, and federal regulations to result in less than significant impact (refer to discussed in Section 3.2.8[a]). Therefore, the project would not conflict with this objective.
To protect the designated industrial areas from encroachment by non-industrial uses by prohibiting residential uses and non-ancillary uses in industrially-designated areas.	**Consistent:** The project site is part of the Bernardo Industrial Park, and implementation of the project would not cause other designated industrial areas to be converted to non-industrial uses. The project does not involve development of residential uses and non-ancillary uses. Therefore, the project would not conflict with this objective.
To discourage the development of industrial operations which would create heavy truck traffic in adjacent streets and highways.	**Consistent:** The project is a healthcare center, and would not create heavy truck traffic in adjacent streets and highways. Therefore, the project would not conflict with this objective.
To encourage the establishment of labor-intensive industry to broaden the employment base in the community.	**Consistent:** The project would accommodate approximately 250 employees and would broaden the employment base in the community. Therefore, the project would not conflict with this objective.
To provide a pleasant working environment through performance standards and criteria related to architectural and site design.	**Consistent:** The project MOB building would be designed to be certified LEED Gold and the Parking Structure will be designed to meet Parksmart Silver certified. Both structures would incorporate various green building features as described in Section 2.3.6, Sustainability Features. As shown on Figures 6 through 8 and 11, project buildings would be of quality architectural design, and would provide a pleasant working environment. Therefore, the project would not conflict with this objective.
To provide environmental protection to adjacent residential property through site design measures.	**Consistent:** The project site is not located immediately adjacent to residential property. As discussed throughout this IS, the project would not result in significant environmental impacts with incorporation of mitigation measures. However, no potentially significant environmental impacts pertaining to residential uses have been identified. Therefore, the project would not conflict with this objective.

3.2.11 Noise

NOISE Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a) Generation of a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. Noise impacts from construction and operation of the project are discussed below.

TEMPORARY NOISE INCREASES

Construction of the project would have the potential to result in temporary noise level increases as a result of the operation of heavy equipment. Construction of the project would generate noise that could expose nearby receptors to elevated noise levels that may disrupt communication and routine activities. The magnitude of the impact would depend on the type of construction activity, equipment, duration of the construction phase, distance between the noise source and receiver, and intervening structures. Sound levels from typical construction equipment range from 60 to 90 A-weighted decibel (dBA) equivalent continuous sound level (L_{eq}) at 50 feet from the source (FHWA 2008). Noise from construction equipment generally exhibits point source acoustic characteristics. Strictly speaking, a point source sound decays at a rate of 6 dBA per doubling of distance from the source. The rule applies to the propagation of sound waves with no ground interaction.

Standard equipment, such as dozers, loaders, graders, backhoes, scrapers, and miscellaneous trucks, would be used for construction of the project. Noise levels from standard construction equipment on the project site were determined based on typical equipment noise levels established by the Roadway Construction Noise Model (FHWA 2008) (refer to Appendix G, Noise Data, of the IS). The three noisiest pieces of construction equipment (grader, dump truck, and dozer) that could be required for the project were assumed to operate simultaneously in the same location and would have the potential to generate noise levels up to 73 dBA at 200 feet from the construction site. The nearest receptors are office buildings approximately 200 feet north, and the nearest sensitive receptors are single-family residences 700 feet south of the project site. The project would not exceed the City of San Diego Noise Ordinance standard of 75 dBA L_{eq} averaged over a 12-hour period (7:00 a.m. to 7:00 p.m.) Monday through Saturday at the nearest receptor to the north. Temporary construction noise would be less than significant. No mitigation measures are necessary.

PERMANENT NOISE INCREASE

The potential for implementation of the project to permanently increase ambient noise levels as a result of increased traffic was assessed using standard noise modeling equations adapted from the Federal Highway Administration Noise Prediction Model (refer to Appendix G). The project’s direct impact on roadway noise levels on Opening Day of 2027 is provided in Table 9, Opening Day (2027) Noise Levels with and without Project Implementation. Cumulative increases in traffic with the project and cumulative development compared to existing conditions are provided in Table 10, Cumulative Noise Levels with and without Project Implementation.

Table 9. Opening Day (2027) Noise Levels with and without Project Implementation

Roadway	Segment	Opening Day (2027) Noise Level (dBA CNEL)	Opening Day (2027) + Project (dBA CNEL)	Increase in Noise Level	Significant Impact?
Bernardo Center Drive	West of Camino Del Norte	72.8	72.9	+0.1	No
	Camino Del Norte to West Bernardo Drive	70.7	70.8	+0.1	No
	West Bernardo Drive to Project Driveway	71.6	71.9	+0.3	No
	Project Drive to I-15	71.6	72.4	+0.8	No
	I-15 to Bernardo Heights Parkway	70.1	70.1	+0	No

Table 9. Opening Day (2027) Noise Levels with and without Project Implementation

Roadway	Segment	Opening Day (2027) Noise Level (dBA CNEL)	Opening Day (2027) + Project (dBA CNEL)	Increase in Noise Level	Significant Impact?
Camino Del Norte	North of Bernardo Center Drive	77.5	77.5	+0	No
	South of Bernardo Center Drive	77.6	77.6	+0	No
Bernardo Heights Parkway	South of Bernardo Center Drive	69.9	69.9	+0	No

Notes: CNEL = Community Noise Equivalent Level; dBA = A-weighted decibel; I- = Interstate

Table 10. Cumulative Noise Levels with and without Project Implementation

Roadway	Segment	Existing Noise Level (dBA CNEL)	Opening Day (2027) + Project (dBA CNEL)	Increase in Noise Level	Significant Cumulative Impact?
Bernardo Center Drive	West of Camino Del Norte	72.7	72.9	+0.2	No
	Camino Del Norte to West Bernardo Drive	70.5	70.8	+0.3	No
	West Bernardo Drive to Project Driveway	71.4	71.9	+0.5	No
	Project Drive to I-15	71.4	72.4	+1	No
	I-15 to Bernardo Heights Parkway	69.9	70.1	+0.2	No
Camino Del Norte	North of Bernardo Center Drive	77.3	77.5	+0.2	No
	South of Bernardo Center Drive	77.4	77.6	+0.2	No
Bernardo Heights Parkway	South of Bernardo Center Drive	69.7	69.9	+0.2	No

Notes: CNEL = Community Noise Equivalent Level; dBA = A-weighted decibel; I- = Interstate

Per the Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol, a 3 dBA change is the smallest increment that is perceptible by most receivers, and a 5 dBA change in community noise level is clearly noticeable. Generally, 1 to 2 dBA changes are not detectable except under controlled laboratory conditions (Caltrans 2013). Therefore, while there is no adopted threshold level, it is generally considered that a project would have a less than significant impact if an increase of less than 3 dBA occurs. Implementation of the project would contribute to projected increases in traffic noise along local roadways; however, as demonstrated in Table 9, project-related traffic would not result in a substantial noise increase because the overall change in noise levels would be less than 3 decibels (dB), which would be imperceptible to noise-sensitive land uses adjacent to the roads. Additionally, as shown in Table 10, the project and cumulative development would not result in a significant increase compared to existing conditions. Therefore, impacts would be less than significant. No mitigation measures are necessary.

OTHER OPERATIONAL NOISE SOURCES

The project would construct new stationary noise sources, such as heating, ventilation, and air conditioning (HVAC) units and ventilation from the parking structure. The 2018 LRDP EIR used a screening technique based on applicable American Society of Heating, Refrigerating and Air-Conditioning Engineers standards to evaluate HVAC noise and determined HVAC would produce 65 dBA CNEL at 100 feet. Therefore, impacts would be significant if HVAC units would be situated at or closer than 100 feet to noise-sensitive land uses (UC San Diego 2018b). These noise sources would not be constructed within the 100 feet (unshielded HVAC equipment) screening distance from the nearest noise-sensitive land use, which are single-family residences approximately 700 feet to the south.

The project operation would include ambulance services, primarily for non-emergency pickups but infrequent drop-offs may occur in special occasions. Sirens are typically only used when required, such as during high traffic times. Although ambulance services would be provided and sirens may be used, they would be infrequent and required to be turned off on-site. The project would also not involve the establishment of new noise-sensitive land uses near local roads, or within proximity to existing stationary noise sources (i.e., HVAC units, utility plants or parking structure ventilation units). Therefore, operational noise impacts would be less than significant. No mitigation measures are necessary.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. The main concerns associated with groundborne vibration from this type of project are annoyance and damage; however, vibration-sensitive instruments and operations can be disrupted at much lower levels than would typically affect other uses.

Construction activities associated with the project could temporarily expose noise-sensitive land uses to noise levels in excess of standards due to their proximity to the project site or use of certain construction equipment. No pile driving is anticipated for the project; therefore, project construction would have the potential to result in the greatest vibration during vibratory roller use. Based on the Federal Transit Administration (FTA) (2018) methodology, screening distances for vibratory sources and associated vibration-sensitive receptors were developed as part of this noise and vibration technical analysis. If vibration sources are located within the screening distances for a given receptor, the project may result in a significant impact.

The screening distance for vibratory roller operation applicable to the nearest potentially vibration-sensitive receptor (i.e., Northrop Gruman office building) is 85 feet, which is the screening distance for sensitive computer equipment. Northrop Gruman is located approximately 1,400 feet northwest from the project construction area, and would, therefore, not be within the screening distance for construction vibration exposure. Thus, groundborne vibration and groundborne noise impacts resulting from construction of the project would be less than significant. No mitigation measures are necessary.

c) For a project located within the vicinity of a private airstrip or within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project site is not within 2 miles of a public airport or private airstrip. The nearest airport is Ramona Airport, approximately 9.4 miles east of the project site. Because there are no private airstrips within 2 miles of the project site and the project is not located within the 60 dBA CNEL contour of any airport, including Marine Corps Air Station Miramar and the Medical Center heliport operations; there is no potential for significant noise impacts from aircraft operations on the project site. Therefore, no impact would occur. No mitigation measures are necessary.

3.2.12 Population and Housing

POPULATION AND HOUSING Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant Impact. The project site is vacant, and the project would introduce the UC San Diego Healthcare faculty and/or staff and other employees (approximately 250) in the leasable space. However, it is anticipated that the majority of the faculty and/or staff would be from the existing Healthcare location at 16950 Via Tazon, approximately 0.6 mile north of the project site, and other labor pool in San Diego region. The area surrounding the project site is developed and served by existing roads and other infrastructure. Any utility upgrades would be sized to accommodate the project. Therefore, implementation of the project would not induce substantial population growth in the area either directly or indirectly.

It is anticipated that construction workers during the construction phase of the project would likely be drawn from the existing labor pool in the region and their temporary presence would not result in an increase in demand for housing, goods, or services over existing conditions to result in substantial population growth in the area. Impacts would be less than significant, and no mitigation measures are necessary.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The project site is vacant and undeveloped. The project would not temporarily displace any existing people or housing, thereby creating a demand for new housing that cannot be accommodated locally. Therefore, no impact would occur. No mitigation measures are necessary.

3.2.13 Public Services

PUBLIC SERVICES Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities	☐	☐	☐	☒

a.i) Fire Protection

Less Than Significant Impact: The SDFD provides fire, emergency medical, lifeguard, and emergency management services (City of San Diego 2024c) in the City of San Diego. The project site is in an urbanized area where fire protection services are already provided. The project site is within the service area of SDFD Station 33 located at 16966 Bernardo Center Drive, approximately 0.65 miles to the northeast of the project site. Fire Station 33 is equipped with a fire engine, brush engine, and a medic rescue rig that serves both as ambulance and mini-rescue rig. UC San Diego’ s Fire, Life & General Safety Division of the EH&S Department supports fire management services for UC San Diego facilities.

Construction activities may require temporary lane closures that could impact response times. However, the contractor would coordinate all temporary lane closures and detour plans in advance with the SDFD to minimize temporary delays in emergency response times, including the identification of alternative routes for emergency vehicles during construction. See Section 3.2.8, Hazards and Hazardous Materials, **Mitigation Measure HAZ-2**.

Project site access would be designed to comply with City access requirements, overseen by UC San Diego’s Fire, Life & General Safety Division, including those addressing number and width of fire access roads, turning radii, and maximum grades. Additionally, the project would not adversely affect existing levels of fire protection services to the area and would not require the construction of new or expanded governmental facilities; therefore, impacts would be less than significant. No mitigation measures are necessary.

a.ii) Police Protection

Less Than Significant Impact. Police protection services in the City, including the project site, are provided by the San Diego Police Department. The closest substation to the project site is the San Diego Police Department Northeastern Division, located southwest of the project site at 13396 Salmon River Road (City of San Diego 2024d). The project site would not adversely affect the existing police services in the area and would not require the construction of new or expanded governmental facilities; therefore, impacts would be less than significant. No mitigation measures are necessary.

a.iii) Schools

No Impact. The project is located within the San Diego Unified School District. The project would not increase population or generate new students; therefore, the project would not increase the demand for schools in the area. Construction of a new school or the expansion of existing schools within the district would not be required; therefore, no impact would occur. No mitigation measures are necessary.

a.iv) Parks

No Impact. The project would not include any residential development, nor would it result in an increase in population that could increase demand for new or physically altered park facilities. Therefore, the project would not require the construction of a new park or the expansion of existing park facilities in the project vicinity, and no impact would occur.

a.v) Other Public Facilities

No Impact. The project would not create the need for other public facilities such as library services. No new facilities beyond those that exist or are already planned by the various service providers would be needed by the project and would not result in a significant physical impact to the environment. No impact would occur. No mitigation measures are necessary.

3.2.14 Recreation

RECREATION Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. The project would not include any residential development or result in an increase in population that could increase the use of existing neighborhood and regional parks or other recreational facilities that would accelerate or result in substantial physical deterioration of parks and recreational facilities. Substantial physical deterioration in recreation facilities is, therefore, not expected to occur as a result of the project. No impact would occur. No mitigation measures are necessary.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The project involves construction and operation of a medical office building and parking structure, and does not include provision of recreational facilities. In addition, it would not create a demand for additional recreational facilities. Implementation of the project would not require the construction or expansion of recreational facilities and would not contribute to the need for new or expanded facilities. Therefore, no adverse physical effect related to recreational facilities would occur. No mitigation measures are necessary.

3.2.15 Transportation

The analysis in this section is based in part on the Local Mobility Assessment, UC San Diego Rancho Bernardo Healthcare Center Medical Office Building Project, prepared by Linscott, Law & Greenspan, Engineers (2024), and the Vehicle Miles Traveled Assessment, UC San Diego Rancho Bernardo Healthcare Center Medical Office Building Project, prepared by Linscott, Law & Greenspan, Engineers (2024).

Copies of the reports are included in Appendix H1, Local Mobility Assessment, and Appendix H2, Vehicle Miles Traveled Assessment.

TRANSPORTATION Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☒	☐	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☒	☐	☐

a) Conflict with an applicable plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact. Implementation of the project would not conflict with applicable policies, plans, or programs regarding safety or performance of public transit, roadway, bicycle, or pedestrian facilities. The following is a brief description of the existing circulation system, including roadway, pedestrian, bicycle, and transit facilities, surrounding the project site.

The project site is served by existing roadways such as Bernardo Center Drive, I-15, Camino Del Norte, West Bernardo Drive, Cloudcrest Drive, and Bernardo Heights Parkway. Sidewalks are generally provided along both sides of the roadways surrounding the project site except for a few missing segments, including but not limited to the project frontage on Bernardo Center Drive between the HP driveway (located 180 feet east of Cloudcrest Drive) and approximately 420 feet west of I-15. Bicycle facilities surrounding the project site have been implemented to the Rancho Bernardo Community Plan's ultimate classification. Although the San Diego Metropolitan Transit System (MTS) provides bus routes within the vicinity of the project site, including Routes 20, 235, 290, and 945, there are currently no transit stops that serve Bernardo Center Drive between West Bernardo Drive and Rancho Bernardo Road.

Detailed description of the existing roadway, pedestrian, bicycle, and transit facilities is included in the Local Mobility Assessment (Appendix H1).

CONSISTENCY WITH RANCHO BERNARDO COMMUNITY PLAN

Although the UC is not subject to the Rancho Bernardo Community Plan, the project site is within the Rancho Bernardo Community Plan Area boundary. The Rancho Bernardo Community Plan goals are designed to give direction to future growth and development. The Circulation Element of the Rancho Bernardo Community Plan states that the primary goal for the Rancho Bernardo transportation system is the safe, orderly, effective, efficient, and convenient movement of people and goods within the community and to provide access to the regional transportation system. As an appropriate threshold for impact analysis, the project's consistency with the objectives is described in Table 11, Consistency with the Rancho Bernardo Community Plan Circulation Element.

Table 11. Consistency with the Rancho Bernardo Community Plan Circulation Element

Circulation Element Objectives	Consistency
To regard transportation facilities as an integral part of the landscape in which they are sited.	**Consistent:** The project considers transportation facilities, including vehicular, pedestrian, bicycle, and transit as integral part of the landscape by designing the project to support these facilities. The following motor vehicle and pedestrian supporting facilities would be provided: • A 200-foot-long westbound dedicated right-turn lane with a 90-foot bay taper at the project driveway. • Two outbound lanes from the site, a dedicated left-turn lane, and a 20-foot-wide shared left/right lane. • Paved sidewalk along the north side of Bernardo Center Drive along the project frontage, connecting to the existing sidewalk that currently ends 425 feet west of the I-15 southbound ramps. • Traffic signal at entryway.

Table 11. Consistency with the Rancho Bernardo Community Plan Circulation Element

Circulation Element Objectives	Consistency
	A dedicated ramp for pedestrian and bicycle access would be provided from Bernardo Center Drive up to the front of the healthcare center with a crosswalk at the drive isle. The project would also provide various measures to support bicycle mobility as listed in Section 2.3.6, Sustainability Features. Therefore, the project is consistent with this objective.
To provide a system that minimizes areas of conflict between pedestrians, bicycles and motor vehicle traffic while adequately serving all three transportation modes.	**Consistent:** As discussed above under the first objective, the project would provide site design features that support pedestrians, bicycles, and motor vehicle traffic from the project. These features would work collaboratively to reduce VMT and would not conflict with one another. Therefore, the project is consistent with this objective.
To provide aesthetically pleasing transportation facilities with landscaped medians as a design element on major streets. Landscaped medians should conform to Engineering Department policies and practices.	**Consistent:** Bernardo Center Drive is the only major street within the vicinity of the project. There are existing landscaped medians on Bernardo Center Drive adjacent to the project site. There is no need to provide an additional median on Bernardo Center Drive. Therefore, the project is consistent with this objective.
To provide a coordinated system of transportation that will safely and efficiently accommodate traffic generated within Rancho Bernardo and minimize negative impacts from adjoining communities.	**Consistent:** A Local Mobility Assessment was prepared for the project (Appendix H1 to the IS) to evaluate the potential traffic effect from the project. Traffic volumes for the opening year 2027 with and without project scenarios were developed and traffic operations were evaluated. Based on this analysis, the project is not calculated to result in any substantial transportation related effects, and no transportation related off-site improvements are required. As described in Section 2.3.2, Project Site Access and Roadway Improvements, the project would signalize its driveway as a project feature, in coordination with the City of San Diego. Therefore, the project would support a coordinated system of transportation that will safely and efficiently accommodate area traffic and minimize negative impacts. The project is consistent with this objective.

Table 11. Consistency with the Rancho Bernardo Community Plan Circulation Element

Circulation Element Objectives	Consistency
To avoid single-family housing fronting and deriving access from major streets.	**Consistent:** The project does not involve development of housing, and would not result in single-family housing to front and derive access from major streets. The project is consistent with this objective.
To ensure that project approvals are conditioned upon provision of noise mitigation measures to achieve compatibility with existing and projected land uses.	**Consistent:** As discussed in Section 3.2.11, Noise, the project would not result in significant noise impacts. Additionally, there are no nearby noise-sensitive uses that are incompatible with the proposed healthcare center use. The project is consistent with this objective.
To minimize the environmental impact of street construction.	**Consistent:** As discussed in Section 3.2.8(f) and Section 3.2.15(d), UC San Diego would be required to coordinate with the City of San Diego to minimize environmental impacts from roadway improvements. The project is consistent with this objective.
To provide for effective utilization of public transit facilities and services coordinated with regional transit services to provide convenient travel within Rancho Bernardo and throughout the region.	**Consistent:** The nearby transit facilities are described in the Local Mobility Assessment (see Appendix H1). The project would not remove or relocate any of the existing public transit facilities. Currently, there are no transit stops that serve Bernardo Center Drive east of West Bernardo Drive. However, the closest bus stop is Route 20 at West Bernardo Drive and Bernardo Center Drive, approximately 0.5 mile from the project site. And the project site is accessible via bicycle lane from the Route 20 bus stop. Therefore, public transit facilities can be used to access the project site, and the project would not conflict with the objective of providing convenient travel within Rancho Bernardo. The project is consistent with this objective.

Notes: I- = Interstate; VMT = vehicle miles traveled

Furthermore, UC San Diego has a Transportation Demand Management (TDM) program that helps to support alternative transportation, transit and carpool users to reduce single-occupancy vehicle use wherever feasible. It is anticipated that the healthcare center employees would be encouraged and incentivized to use alternative transportation options and reduce VMT. As discussed in Section 3.2.15(b) below, the project would also comply with the City of San Diego's Complete Communities: Mobility Choices Program by providing bicycle facilities that total a minimum of 8 points for

Mobility Zone 2. The Mobility Choice Program is intended to support reductions in Citywide VMT per capita through improvements to transportation infrastructure and amenities. By providing more infrastructure and improvements for pedestrian, bicycle, and transit users, these modes would be encouraged and ridership could increase. The Mobility Choices Program regulations support implementation of Senate Bill 743 (SB 743) by reducing Citywide VMT and support implementation of the City's Climate Action Plan (CAP) by strategically planning the mobility network to support infill development, promote active transportation modes and transit use, reducing GHG emissions and supporting public health goals. Therefore, the project would not conflict with an applicable plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities during operation.

Temporary impacts to the transportation system could occur due to construction activities on or adjacent to the streets from construction worker trips and deliveries of equipment and material supplies. However, temporary impacts would not conflict with the Circulation Element of the Ranch Bernardo Community Plan or the Complete Communities: Mobility Choices program. Impacts would be less than significant. No mitigation measures are necessary.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less Than Significant With Mitigation Incorporated. Vehicle miles traveled (VMT) is defined as the "amount and distance of automobile travel attributable to a project" per CEQA Guidelines, Section 15064.3. VMT is a measure of the use and efficiency of the transportation network as well land uses in a region. VMT is calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (roundtrip) travel and is estimated for a typical weekday for the purposes of measuring transportation impacts. A VMT Assessment was prepared for the project and is included as Appendix H2 to the IS.

Because the project site is outside the UC San Diego campus and is within the City of San Diego, the City of San Diego Transportation Study Manual (TSM) dated September 19, 2022, was used to evaluate the project's impact on VMT. Based on the VMT screening criteria from the TSM, the project does not screen out of VMT assessment. Although the project site is a commercial project located in a VMT efficient area, the project would exceed the VMT threshold for determination of a significant VMT impact of 15 percent or more below the base year average household VMT per capita or VMT per employee. The project site is in Census Tract 170.32. Per the San Diego Association of Governments (SANDAG) Series 14 ABM 2+ (Base Year 2016) screening map, the Commute VMT per Employee for Census Tract 170.32 is 23.8 miles and the regional average commute VMT per employee for comparison is 18.9 miles. Therefore, the project site is approximately 125.6 percent of the regional average. Therefore, it was determined that the project would not screen out from a VMT analysis.

Since the project did not satisfy the screening criterion, further VMT assessment was conducted. The regional average commute VMT per employee is 18.9 miles, the significance threshold for VMT impact is 85 percent of the regional VMT threshold, which is 16.07 miles. The project's commute VMT per employee is 23.8 miles, approximately 126.6 percent of the regional average. Table 12, Project Vehicle Miles Traveled Findings, shows the results of the VMT assessment comparison. Therefore, VMT impact was determined to be significant and implementation of **Mitigation Measure TRAN-1** would be required to reduce VMT impacts to a less than significant level.

Table 12. Project Vehicle Miles Traveled Findings

Scenario	Regional Baseline VMT (miles)	Significance Threshold (miles)	Project Commute VMT per Employee (miles)	Percentage of Regional Average	Transportation Impact? (Over Threshold)
Proposed Project	18.9	16.1	23.8	125.6%	Yes

The SDMC Ordinance Number O-21274, adopted on December 9, 2020, provides the development regulations for the Mobility Choices portion of the City of San Diego's Complete Communities program. According to the ordinance, the project is located in Mobility Zone 2, which means it is located either partially or entirely within a TPA. SDMC Section 143.1103(b) states that all development located within Mobility Zone 2 is required to provide VMT reduction measures in accordance with the City of San Diego's Land Development Manual Appendix T. The City of San Diego's Land Development Manual Appendix T includes a list of VMT reduction measures, each of which are given an assigned point value per unit of measure. The measures shall be on site or adjacent to the development site such that the measure can be shown on a site plan (Figure 4, Proposed Site Plan). Per SDMC Section 143.1103(b), developments in Mobility Zone 2 are required to provide VMT reduction measures totaling at least 8 points or may pay the Active Transportation In Lieu Fee instead of providing the VMT reduction measures.

With implementation of **Mitigation Measure TRAN-1**, the project would be required to provide VMT reduction measures that add up to at least 8 points as identified in the City of San Diego's Land Development Manual Appendix T. Additionally, as described in Section 2.3.6, the project would also include various other alternative transportation measures to reduce VMT impacts. Participating in the City of San Diego's Communities Mobility Choices Program and providing various bicycle supportive measures that total a minimum of 8 points for Mobility Zone 2 would reduce VMT impacts to a less than significant level. The measures shall be located on-site or adjacent to the development site such that the measure can be shown on a site plan.

MITIGATION MEASURE

TRAN-1Vehicle Miles Traveled. University of California San Diego shall participate in the City of San Diego's Complete Communities: Mobility Choices Program (approved by the City Council on November 9, 2020) by providing the following vehicle miles traveled reduction measures or other combination of measures from the City of San Diego's Land Development Manual Appendix T to total a minimum of 8 points:

- The project shall provide an on-site bicycle repair station (1.5 points).
- The project shall install five electric bicycle charging stations (2 points).
- The project shall provide short-term bicycle parking spaces, at least 10 percent beyond minimum requirements (1.5 points).
- The project shall provide long-term bicycle parking spaces, at least 10 percent beyond minimum requirements (2 points).
- The project shall provide carpool parking spaces 10 percent beyond the minimum number of carpool spaces required (1.5 points).

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. The project would not increase traffic hazards due to a geometric design feature. The project would provide one full access driveway on Bernardo Center Drive. Rancho Center Drive along the project frontage is relatively straight without sharp curves or dangerous intersections and there is an existing 180-foot eastbound left-turn lane on Bernardo Center Drive at the location where the proposed driveway will be. The access driveway would be designed and built to meet the City of San Diego's standards and specifications with appropriate sight distance, curb returns, spacing, permitting turn movements, and accommodation of delivery vehicles. Additionally, the project would construct a paved sidewalk along the north side of Bernardo Center Drive along the project frontage, connecting to the existing sidewalk that currently ends 425 feet west of the I-15 southbound ramps. Furthermore, based on the recommendations contained in the Local Mobility Assessment prepared for the project, the following improvements would be provided to ensure that increased vehicle activities at the project site does not result in increased safety hazards. The following improvements would be required to be designed to comply with the City of San Diego Street Design Standards and Fire-Rescue Department access requirements:

- A 200-foot-long westbound dedicated right-turn lane with a 90-foot bay taper at the project driveway
- Two outbound lanes from the site, a dedicated left-turn lane and a 20-foot-wide shared left/right lane

- Paved sidewalk along the northern side of Bernardo Center Drive along the project frontage, connecting to the existing sidewalk that currently ends 425 feet west of the I-15 southbound ramps
- Traffic signal at entryway

Therefore, the project would not result in a geometric design hazard, and impacts would be less than significant. No mitigation measures are necessary.

d) Result in inadequate emergency access?

Less Than Significant With Mitigation Incorporated. The project access would be required to meet the City's Fire-Rescue Department standards and turning radii to accommodate emergency vehicles. Therefore, the project would not result in inadequate emergency access during operation. As discussed previously, during construction, temporary partial lane closure of Bernardo Center Drive may be necessary for various roadway improvements. Therefore, as discussed in Section 3.2.8(f), **Mitigation Measure HAZ-2** has been incorporated to reduce potential impacts to a less than significant level.

MITIGATION MEASURE

Refer to **Mitigation Measure HAZ-2**.

3.2.16 Utilities and Service Systems

UTILITIES AND SERVICE SYSTEMS Would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities or expansion of existing facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards or the capacity of local infrastructure or negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities or expansion of existing facilities, the construction or relocation of which could cause significant environmental effects?

Less Than Significant Impact.

WATER AND SEWER

Implementation of the project would result in an increased demand for water and sewer services in the area. The project would connect to existing water and sewer utility lines as discussed in Section 2.3.3, Utility and Service System Improvements. As required by the City of San Diego, a hydraulic analysis and condition assessment of the existing utilities may be required to determine the availability of water service and sewer laterals prior to connecting to the existing lines. Preliminary estimated flow for domestic water and wastewater is 160 gallons per minute (gpm). However, the City has indicated that the project would be served by the City in its Will Serve Letter (Appendix I, Will Serve Letter, to the IS). Services for the project would be required to be compliant with all applicable ordinances and regulations set forth by the City. Additionally, the project would employ design features such as low flow plumbing fixtures as water saving measures. The project would also comply with the UC Sustainable Practices Policy, which outlines goals and policies to limit water use and increase efficiency of water systems on site for new construction. Although the project would not be allowed to connect to the existing recycled water line, the project would implement efficient irrigation systems and plant drought-tolerant landscaping (including California native plants where feasible and appropriate) to be consistent with the Sustainable Water Systems Policy in the UC Sustainable Practices Policy. In compliance with the UC Sustainable Practices Policy, the project would minimize water demand.

The project would also be able to be serviced by existing utility lines on Bernardo Center Drive and would not require construction of new off-site utility lines. Therefore, the project would not result in excessive demand for water or utility services that would require expansion or construction of water or sewer facilities and impacts are less than significant. No mitigation measures are necessary.

STORMWATER

Refer to response to Section 3.2.9(c)(iii). The project would not increase the peak flow compared to the existing conditions, and stormwater runoff would be treated for water quality through LID measures and MWS (refer to Section 3.2.9, Hydrology and Water Quality). Therefore, the project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Impacts would be less than significant. No mitigation measures are necessary.

ELECTRIC POWER

Implementation of the project would increase electricity demand within the City. Electrical power and related facilities would be provided by SDG&E. The project would use 100 percent clean electricity contracted and purchased through a clean power provider, such as San Diego Community Power, Clean Energy Alliance, or Direct Access, that is delivered by SDG&E, thereby adhering to the UC Sustainable Practices Policy for clean energy. As a regional public utilities provider, SDG&E has extensive and reliable electric power services in the City. There are existing electric power facilities along Bernardo Center Drive that the project would connect to. In compliance with the UC Sustainable Practices Policy, project construction would qualify for LEED Gold certifications for the healthcare center and Parksmart Silver Certification for the parking structure. Additionally, the project's design features, including reduction of EUI by an average of 2 percent annually and installation of solar panels would further minimize demand for electrical power on site. The project is anticipated to outperform Title 24 Building Energy Efficiency Standards by 20 percent through implementation of the UC Sustainability Practices Policy. The project may require construction and relocation of off-site electrical facilities. However, through compliance with the UC Sustainable Practices Policy and implementation of these project design features, demand for electrical power would be minimized. While the project would increase demand for electric power services, it is not anticipated to impact SDG&E service capabilities. Therefore, the project would not require construction or expansion of electric power facilities and impacts are less than significant. No mitigation measures are necessary.

NATURAL GAS

The surrounding area is developed and currently serviced by SDG&E. There's an existing natural gas distribution line along Bernardo Center Drive. However, the project would be 100 percent electrified, and no natural gas would be required. Therefore, the project's implementation would not increase demand on natural gas supplies or related distribution infrastructure. Therefore, the project would not affect servicing capabilities of SDG&E and would not result in significant environmental effects. Impacts are less than significant. No mitigation measures are necessary.

TELECOMMUNICATIONS

There are existing telecommunication facilities along Bernardo Center Drive and various telecommunications providers are available to service the area. No franchise telecommunication service providers have been selected for the project yet. Relocation and/or expansion of franchise telecommunications facilities may be required as part of the project. However, provision of telecommunication facilities generally does not involve unusual or extensive construction activities that would result in significant environmental effects. Additionally, the increased demands are projected to be within the service capabilities of the various telecommunications providers previously listed. Therefore, impacts from the relocation or construction of new or expanded telecommunication facilities would be less than significant. No mitigation measures are necessary.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less Than Significant Impact. The City of San Diego PUD would supply water to the project. Implementation of the project would result in an increase in water demand within the City. The City's Urban Water Management Plan (UWMP) (2020 UWMP), adopted in 2021, serves as an overarching integrated water resources planning document, and is updated every 5 years (CDM Smith 2021).

The City's UWMP concluded that there is adequate water supply to meet water demands for the City's retail and wholesale customers through 2045 in normal, dry, and multiple dry years. The water demand forecast assumption in the 2020 UWMP is based primarily on overall per capita water use. The citywide per capita water use is projected to be less than 101 gallons per capita daily (GPCD) through year 2045. Population and housing data for the City's PUD service area is based on SANDAG's demographic forecast, which in turn relies on U.S. Census data, annual population and housing estimates from the California Department of Finance, and local inputs. SANDAG's demographic forecast takes into account existing and planned land uses, development constraints, zoning, remaining housing capacity, current adopted general and community plans, and likely development patterns. The proposed use as a healthcare center is inconsistent with the City's assumed IP-2 (Industrial-Park) zoning used in forecasting water demand in the City's UWMP. However, given the scale of the project relative to the assumed zoning, it would not induce growth in the City's PUC service area or significantly impact SANDAG's demographic forecast for the City of San Diego. Commercial, institutional, and industrial water uses in the City represent approximately 27 percent of the total water consumption in the City, and the project would not create significant water demands that could potentially exceed water demand projection for the commercial, institutional, and industrial uses. The project would comply with the UC Sustainable Practices Policy to minimize water usage such as achieving water savings greater than 75 percent compared to LEED baseline, installing low-flow plumbing fixtures, implementing efficient irrigation system, and using drought-tolerant landscaping (including native and climate appropriate vegetation) throughout the project site as water-saving measures. Therefore, implementation of the project would not result in insufficient water supplies within the City service areas, and impacts would be less than significant. No mitigation measures are necessary.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments?

Less Than Significant Impact. Implementation of the project would increase the amount of building space within the City. Such increases would result in the generation and discharge of additional wastewater; the additional wastewater which would require treatment at the Point Loma Wastewater Treatment Plant (PLWTP). The PLWTP has a maximum capacity of 240 million gallons per day (mgd) of wastewater and currently, the plant treats an average of 175 mgd (City of San Diego 2024e). Implementation of the project is not expected to result in wastewater production that would cause the PLWTP to exceed its 240 mgd capacity, and the PLWTP would have more than adequate capacity to receive and treat wastewater from the project and existing commitments. Additionally, water conservation efforts to be implemented as part of the project's sustainability features as described in Section 2.3.6, would further reduce flow rates from the project. Therefore, less than significant impacts would occur and impacts would be less than significant. No mitigation measures are necessary.

d) Generate solid waste in excess of State or local standards or the capacity of local infrastructure or negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goals?

Less Than Significant Impact. Implementation of the project would generate solid waste during construction and operation. As a state entity, the UC is not subject to local municipal plans, policies, and regulations, such as general plans, municipal codes, or zoning ordinances. However, because the project site is in an off-campus location within the boundaries of the City of San Diego in which the City would be responsible for general solid waste disposal, the UC has determined within its sole discretion that consistency with the City of San Diego's Significance Determination Thresholds (City of San Diego 2022) for solid waste is an appropriate threshold to determine whether the project would result in a significant impact related solid waste. In addition, applicable waste reduction measures in accordance with the UC Sustainable Practices Policy would apply.

Solid waste is accepted primarily by West Miramar, Otay and Sycamore Landfills, accepting approximately 51, 28, and 15 percent of the solid waste, respectively, from the City in 2019, which is the most recent reported data available from the California Department of Resources Recycling and Recovery (CalRecycle 2019). El Sobrante Landfill was responsible for accepting approximately 5 percent of total solid waste from the City. The remaining approximate 1 percent of solid waste from the City was sent to Prima Deshecha, Azusa Land Reclamation Co., Olinda Alpha, McKittrick Waste Treatment Site, and Frank R. Bowerman Sanitary Landfills.

The West Miramar Sanitary Landfill in the City has an approximate remaining capacity of 11, 080,871 cubic yards with a maximum throughput of 8,000 tons per day. The Otay Landfill in the City of Chula Vista has an approximate remaining capacity of 21,194,008 cubic yards with a maximum permitted throughput of 6,700 tons per day. The Sycamore Landfill in the City of Santee has an approximate remaining capacity of 113,972,637 cubic yards with a maximum permitted throughput of 5,000 tons per day. The El Sobrante Landfill in the City of Corona has an approximate remaining capacity of 143,977,170 cubic yards with a maximum permitted throughput of 16,054 tons per day (CalRecycle 2023).

The reduction goal for the project would align with the City of San Diego's Zero Waste Plan and the City's waste diversion goals for general waste. In addition, the project building would be LEED Gold/Parksmart Silver Certified, which would demonstrate implementation of sustainability measures intended to minimize project impacts caused by waste generation (City of San Diego 2022). A Waste Management Plan would be prepared prior to project occupancy, which would require review and acceptance by UC San Diego. In addition, the project would comply with applicable waste reduction and diversion programs as part of the UC-wide effort to meet the UC Sustainable Practices Policy's zero waste goal. The UC Sustainable Practices Policy for UC Health includes achieving Practice Greenhealth's award Greenhealth Partner for Change and a target of 25 pounds of total waste per Adjusted Patient Day at opening of the healthcare center and strive for 20 pounds per Adjusted Patient Day. Therefore, the project is not anticipated to result in generation of solid waste or substantially impact the provision of solid waste services. Furthermore, as discussed in Section 3.2.8(a), chemical, radioactive, biohazardous materials waste generated by the project would be disposed of by licensed handlers in compliance with local, state, and federal regulations, and not to these general waste landfill sites. Landfills that service the City are anticipated to have sufficient permitted capacity to service solid waste generated by the project. Impacts would be less than significant. No mitigation measures are necessary.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. The project would comply with applicable federal, state, and local management and reduction statutes and regulations related to solid waste.

The project would be consistent with applicable waste reduction and diversion programs as part of the City of San Diego's waste reduction goals, in addition to UC-wide efforts to meet the UC Sustainable Practices Policy's zero waste goal. Additionally, although UC San Diego is a self-permitting institution and not directly subject to the City or state ordinances and regulations, UC San Diego collaborates with both and strive to meet their zero waste goals in addition to UC San Diego's own. The City has the Recycling Ordinance and the Construction and Demolition (C&D) Recycling Ordinance. The City has its own Zero Waste Plan with a diversion goal of 90 percent of the trash collected in the City by 2035 and 100 percent by 2040 (UC San Diego 2024c). Compliance with the UC Sustainable Practices Policy's zero waste goal would ensure that the project is consistent with state's waste management and recycling statutes such as AB 939, AB 341, AB 1826, Senate Bill (SB) 1383, and SB 1335. Brief descriptions of the statutes are listed below:

- AB 939 (Integrated Solid Waste Management Act of 1989; Public Resources Code 40050 et seq.) required counties to develop an Integrated Waste Management Plan (IWMP) that describes local waste diversion and disposal conditions and lays out programs to achieve waste diversion goals. Cities and counties were required to divert 50 percent of all solid waste out of the landfill by January 1, 2000, through source reduction, recycling, and composting activities.
- AB 341 (Chapter 476, Statutes of 2011) requires all commercial business and public entities to implement recycling programs, reduce refuse at the source, and compost waste to achieve the established 75 percent diversion of solid waste from landfills.
- AB 1826 requires implementation of organic waste recycling program to divert organic waste generated by businesses.

- SB 1383 (Chapter 395, Statutes of 2016) established methane emissions reduction targets that will aid the state in reducing greenhouse gas emissions to below 1990 levels as prescribed in AB 32. As it pertains to solid waste, it established targets to achieve a 50 percent reduction in the level of statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025.
- SB 1335 (Sustainable Packaging for the State of California Act of 2018) prohibits food service facilities located in a state-owned facility, operating on or acting as a concessionaire on state-owned property, or under contract to provide food service to a state agency from dispensing prepared food using food service packaging unless it is either recyclable, reusable, or compostable.

Consistent with the City of San Diego’s waste reduction goals and in compliance with the UC Sustainable Practices Policy’s zero waste measures, the project would reduce solid waste generation during operation; therefore, the project would minimize its solid waste disposal needs and assist the state and local agencies in achieving their applicable solid waste management and diversion goals. Impacts would be less than significant, and no mitigation measures are necessary.

3.2.17 Wildfire

WILDFIRE If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project…	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Less Than Significant With Mitigation Incorporated. The project site is located in lands classified as Very High Fire Hazard Severity Zone by the City of San Diego Very High Fire Hazard Severity Zone Map (City of San Diego 2024f). As discussed in Section 3.2.8(f), the project would not impair an adopted emergency response plan or emergency evacuation plan during operation; and implementation of **Mitigation Measure HAZ-2** would ensure that the project does not substantially impart an adopted emergency response plan or emergency evacuation plan during construction.

MITIGATION MEASURE

Refer to **Mitigation Measure HAZ-2**.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less Than Significant Impact. The project site is currently vacant and composed of scrub and chaparral, non-native woodland, and disturbed habitat. Implementation of the project would disturb approximately 5.13 acres of the project site, removing approximately 3.11 acres of vegetation (refer to Table 4). The project would also implement brush management within 100 feet around buildings that are adjacent to natural or other significant fuel beds as shown on Figure 14. As discussed in Section 2.2.7(g), the project would implement various construction and design measures to reduce impacts of fire. Implementation of these fire protection measures, fuel management regulations, and compliance with associated regulations would reduce impacts to project occupants due to wildfire pollutants under the project, and the project is not anticipated to exacerbate the existing risks of wildfire. Impacts would be less than significant, and mitigation measures are not required.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less Than Significant Impact. Installation and/or maintenance associated with new infrastructure would be necessary for the project. However, there are existing wet and dry utility lines along Bernardo Center Drive, and distribution connections to these lines are not anticipated to exacerbate fire risks or result in temporary or ongoing impacts to the environment. As discussed in Section 3.2.8(g), the project would be constructed and operated in compliance with the 2022 CBC and Fire Code, reviewed and approved by the San Diego Fire-Rescue and the UC San Diego Fire Marshal. Additionally, any temporary or ongoing impacts to the environment resulting from the installation and maintenance of infrastructure is part of ongoing operations. Therefore, the project would have less than significant effects regarding installation or maintenance of associated infrastructure. No mitigation measures are necessary.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less Than Significant Impact. As discussed in Section 3.2.6(a)(iv), the project site is subjected to past and future risks involving landslides. In the event that the steep slopes near the project are burned, unstable soils could occur due to the lack of vegetation to anchor the hillside. However, implementation of **Mitigation Measure GEO-1** would stabilize slopes and reduce potential impacts to landslides to a less than significant level. The existing vegetation on approximately 3.50 acres of the west and east slopes would not be disturbed. In the event of wildfire, UC San Diego would implement appropriate BMPs to stabilize slopes and prevent sediment movement exposure to off-site adjacent occupants, such as the placement of fiber rolls, straw wattles, or sandbags on the affected slopes, as well as erosion control mats, to stabilize and protect the burned areas. Furthermore, the project site is bordered by I-15 to the east and Bernardo Center Drive to the south, and the adjacent development to the north and east are on a higher elevation than the project. Therefore, the project would not expose people or structures to significant risks from downslope landslides, as a result of post-fire slope instability.

As discussed in Section 3.2.9, Hydrology and Water Quality, the project would not be subject to increased risk of flooding. The project would provide a vegetation detention basin and two water detention vaults to control storm water so that the peak flow rate at a single discharge point on Bernardo Center Drive would decrease compared to the existing conditions. Therefore, the project would not expose people or structure to significant risks of downstream flooding as a result of runoff or drainage changes. Impacts would be less than significant. No mitigation measures are necessary.

3.2.18 Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

a) Less Than Significant With Mitigation Incorporated. All mitigation measures identified in the IS would avoid and reduce impacts, and the project would not substantially degrade the quality of the environment. As described in Section 3.2.3, Biological Resources, the project would not significantly affect fish or wildlife habitat or species because it would comply with **Mitigation Measures BIO-1 through BIO-5**, reducing those impacts to less than significant levels.

As described in Section 3.2.4, Cultural and Tribal Cultural Resources, implementation of **Mitigation Measures CUL-1 and CUL-2** would reduce impacts to inadvertent discovery of archaeological and Tribal Cultural Resources. Therefore, the project would not eliminate any examples of the major periods of California history or prehistory.

b) Less Than Significant With Mitigation Incorporated. As described throughout this IS, the project would result in no impacts or less than significant impacts with or without mitigation measures. As part of the Local Mobility Assessment, ongoing cumulative projects in the traffic study area that could be constructed and generating traffic in the vicinity of the project site by the expected opening year of the project in Year 2027 were reviewed. Based on this research, no cumulative projects were planned nearby that would add traffic to the traffic study area intersections. Therefore, impacts would be individually limited with incorporation of **Mitigation Measures BIO-1 through BIO-5, CUL-1 and CUL-2, GEO-1 and GEO-2, HAZ-1 and HAZ-2, and TRAN-1,** and would not cumulatively considerable.

c) **Less Than Significant With Mitigation Incorporated.** Effects of the project would not result in substantial adverse effects on human beings beyond those analyzed in this IS. All potential impacts would be reduced to less than significant levels with implementation of **Mitigation Measures GEO-1 and GEO-2, HAZ-1 and HAZ-2, and TRAN-1**; therefore, the project would not cause substantial adverse effects on human beings, directly or indirectly. Impacts would be less than significant.

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4 MITIGATION MEASURES

The following mitigation measures have been identified in the IS and will be required to reduce the impacts associated with the project.

Biological Resources

BIO-1 Diegan Coastal Sage Scrub. Permanent impacts to approximately 3.11 acres of Diegan coastal sage scrub (including disturbed) on the project site shall be mitigated by University of California San Diego at 1:1 ratio through the preservation of habitat, habitat creation, and/or enhancement, or combination thereof, through habitat acquisition and preservation within the University of California San Diego Ecological Reserve, or purchase of credits from an approved off-site conservation bank at a 1:1 ratio.

If mitigation within the University of California San Diego Ecological Reserve is selected, a detailed restoration plan shall be prepared by a qualified biologist. The restoration plan shall include the proposed location of the mitigation area(s), site preparation procedures, plant palette, installation procedures, success criteria, fencing and signage, minimum 3-year monitoring, maintenance, reporting requirements, and other details of the habitat restoration effort and be prepared by a qualified biologist.

If mitigation through a conservation bank is selected, University of California San Diego shall make the necessary payment and retain documentation of the purchase agreement in the project files. Mitigation for either option shall be implemented prior to project occupancy.

BIO-2 Pre-Construction San Diego Barrel Cactus Survey. Prior to any vegetation removal, a focused survey for San Diego barrel cactus shall be conducted for all project areas that support potential habitat for this species. The survey shall be conducted by a qualified biologist/botanist, and if San Diego barrel cactus is observed, they shall be avoided when feasible. Individuals to be avoided shall be marked clearly with flagging. If individuals cannot be avoided, impacts to those species must be evaluated, and any significant impacts shall be mitigated at a 1:1 ratio through translocation within the University of California Ecological Reserve system in suitable habitat.

BIO-3 Pre-Construction Overwintering Monarch Butterfly Survey. If grubbing, trimming, or clearing of vegetation occurs during winter (November 1 through February 28), a qualified biologist, as approved by University of California, San Diego, Campus Planning Office, shall perform a pre-construction overwintering monarch butterfly survey no more than 48 hours before the start of vegetation grubbing, trimming, or clearing to confirm that no overwintering monarch butterflies occupy vegetation on the project site. If overwintering monarch butterflies are found during the pre-construction survey, a 50-foot buffer around the occupied vegetation shall be established, and no disturbance shall be allowed within the buffer until a qualified biologist determines that monarch butterflies are no longer occupying the vegetation. If no overwintering monarch butterflies are on the project site, grubbing, trimming, or clearing shall proceed.

BIO-4 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 only 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 in the construction area, grubbing, trimming, or clearing shall proceed.

Cultural and Tribal Cultural Resources

CUL-1 Archaeological Resources. Prior to construction, University of California San Diego shall retain an on-call archaeologist. If unanticipated cultural resources are identified during construction, they shall be treated in accordance with the California Environmental Quality Act Guidelines, Section 15064.5(f), which requires halting ground disturbance in the immediate area of the find until the resource can be evaluated by a qualified archaeologist and follow the below steps:

a. **Discovery Process.** In the event of a discovery, and when requested by the qualified archaeologist, or the Archaeological Principal Investigator, if the archaeological monitor is not qualified as a Principal Investigator, the Environmental Planner and Project Manager shall be contacted and shall divert, direct, or temporarily halt ground-disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant archaeological resources. The Principal Investigator shall also immediately notify University of California San Diego, Campus Planning Office of such findings at the time of discovery.

b. **Determination of Significance**. The significance of the discovered resources shall be determined by the Principal Investigator in consultation with University of California San Diego Campus Planning Office and the Native American Community, as appropriate. University of California San Diego Campus Planning Office must concur with the evaluation before grading activities will be allowed to resume. For archaeological resources considered significant by the Principal Investigator, a Research Design and Data Recovery Program shall be prepared, approved by University of California San Diego Campus Planning Office, and carried out to mitigate impacts before ground-disturbing activities in the area of discovery will be allowed to resume.

c. **Handling and Curation of Significant Artifacts and Letter of Acceptance.** The qualified archaeologist shall ensure that all significant cultural remains collected are cleaned, cataloged, and permanently curated with an appropriate institution; that a letter of acceptance from the curation institution has been submitted to University of California San Diego Campus Planning Office; that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material is identified as to species; and that specialty studies are completed, as appropriate. Curation of artifacts associated with the survey, testing, and/or data recovery for this project shall be completed in consultation with University of California San Diego Campus Planning Office and the Native American representative, as applicable.

CUL-2 Tribal Monitoring Services Coordination. Prior to any ground-disturbing activities, University of California San Diego shall coordinate with the San Pasqual Band of Mission Indians Tribal Historic Preservation Office (San Pasqual) as the lead monitor for the project. The Tribal monitor shall be authorized to be on-site during all ground-disturbing activities (including, but not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching). The coordination shall specify in writing the procedures for proper treatment of any Tribal Cultural Resources and/or Native American human remains discovered during the monitoring. The coordination shall also specify in writing the roles and authorities of the Native American monitors and other participants.

Pre-Grading Meeting. A pre-grading meeting shall be held that includes San Pasqual Tribal representative, project on-call archaeologist (as required under Mitigation Measure CUL-1), construction manager and/or grading contractor, and other appropriate personnel so the Tribal representative can make comments and/or suggestions concerning the Tribal monitoring program to the construction manager and/or grading contractor.

On-Site Monitoring. During all ground-disturbing activities, the Tribal monitor shall be authorized to be on site full-time. The frequency of inspections shall depend on the rate of excavation, the materials excavated, and any discoveries of Tribal Cultural Resources as defined in California Public Resources Code, Section 21074. Tribal monitoring shall stop when the depth of grading and soil conditions no longer retain the potential to contain cultural deposits. The project on-call archaeologist, in consultation with the Tribal monitor, shall be responsible for determining the duration and frequency of monitoring.

Discovery Process. In the event of a discovery, the San Pasqual monitor, in consultation with the construction manager and University of California San Diego

Campus Planning Office, shall temporarily halt ground-disturbing activities in the 50-foot radius area of discovery to allow for preliminary evaluation of the Tribal Cultural Resources. The San Pasqual monitor shall also immediately notify University of California San Diego Campus Planning Office of such findings at the time of discovery.

Determination of Significance. The significance of the discovered resources shall be determined by the authorized San Pasqual representative in consultation with the project on-call archaeologist and University of California San Diego Campus Planning Office. University of California San Diego Campus Planning Office must concur with the evaluation before grading activities will be allowed to resume. Below are the possible treatments and dispositions of significant cultural resources in order of preference:

- Full avoidance.
- If avoidance is not feasible, Preservation in place.
- If Preservation in place is not feasible, all items shall be reburied in an area away from any future impacts and reside in a permanent conservation easement or Deed Restriction.
- If all other options are proven to be infeasible, data recovery through excavation and then curation in a Curation Facility that meets the Federal Curation Standards (CFR 79.1).

Geology and Soils

GEO-1 Landslides. UC San Diego's Construction Contractor shall demonstrate on construction plans submitted to the University of California, San Diego, Environmental Health & Safety and Capital Program Management that during site preparation, grading, and construction of the project that all or equivalent recommendations from the Geotechnical Investigation prepared by Geotechnical Professionals, Inc., dated December 22, 2023, or any updates thereafter have been incorporated (included as Appendix D to the Initial Study/Mitigated Negative Declaration). The recommendations include stabilizing slopes to appropriate factors of safety. Compliance with the final Geotechnical Investigation shall be verified and recorded in the field by the University of California, San Diego, Environmental Health & Safety and Capital Program Management.

GEO-2 Paleontological Resources. Grading and excavation in the Friars Formation (Tf) shall require monitoring by a qualified paleontologist if the project required grading of 1,000 cubic yards or more at Friars Formation and is 10 feet or greater in depth. Monitoring would include the following measures:

1. Prior to beginning any work that requires paleontological monitoring:
    a. A pre-construction meeting shall be held that includes the qualified paleontologist, Construction Manager and/or Grading Contractor, and other appropriate personnel

so the qualified paleontologist can make comments and/or suggestions concerning the monitoring program to the Construction Manager and/or Grading Contractor.

   b. The qualified paleontologist shall (at that meeting or subsequently) submit to the Project Manager a copy of the site/grading plan (reduced to 11 x 17 inches) that identifies areas to be monitored as well as areas that may require delineation of grading limits.

   c. The qualified paleontologist shall also coordinate with the Project Manager on the construction schedule to identify when and where monitoring is to begin and to specify the start date for monitoring.

2. The qualified paleontologist shall document monitoring activity on a standardized form. A record of daily activity shall be sent to University of California Campus Planning Office and the Project Manager each month.

3. The qualified paleontologist shall be present initially during all earthmoving activities in the Friars Formation (Tf). After 50 percent of the excavations are complete within the unit, if no significant fossils have been recovered, the level of monitoring may be reduced or suspended entirely at the qualified paleontologist's discretion and in consultation with University of California San Diego Campus Planning Office.

4. Discoveries

   a. **Discovery Process.** In the event of a discovery, and when requested by the qualified paleontologist, the Project Manager shall be contacted and shall divert, direct, or temporarily halt ground-disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant paleontological resources. The paleontologist shall also immediately notify University of California San Diego Campus Planning Office of such findings at the time of discovery.

   b. **Determination of Significance.** The significance of the discovered resources shall be determined by the paleontologist, consistent with the Society of Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources definition of significant paleontological resources, in consultation with University of California San Diego Campus Planning Office, who must concur with the evaluation before grading activities will be allowed to resume.

   c. **Documentation and Treatment of Finds.** Based on the scientific value and/or uniqueness of the find, the qualified paleontologist may record the find and allow work to continue, or recommend salvage and recovery of the fossil. If treatment and salvage are required, recommendations shall be consistent with the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources and currently accepted scientific practice. Work in the affected area may resume once the fossil has been assessed and/or salvaged and a paleontological monitor is present.

5. **Notification of Completion.** The paleontologist shall notify University of California San Diego Campus Planning Office in writing of the end date of monitoring.
6. **Handling and Curation of Significant Paleontological Specimens and Letter of Acceptance.** The paleontologist shall ensure that all significant fossils collected are appropriately prepared and permanently curated with an appropriate institution, and that a letter of acceptance from the curation institution has been submitted to University of California San Diego Campus Planning Office.
7. **Final Results Report (Monitoring and Research Design and Recovery Program).** Prior to completion of the project, two copies of the Final Results Report (even if no significant resources were found) and/or evaluation report, if applicable, which describe the results, analysis, and conclusions of the Paleontological Monitoring Program (with appropriate graphics) shall be submitted to University of California San Diego Campus Planning Office for approval.

Hazards and Hazardous Materials

HAZ-1 Hazardous Materials. During building construction, an impermeable sub-slab membrane shall be installed for all enclosed structures to minimize potential health risks from volatile organic compounds migrating from the off-site property to the north. This requirement shall be incorporated into project plans and confirmed by University of California San Diego Environmental Health & Safety. All soils removed from the site and any import soils will be coordinated with Environmental Health & Safety.

HAZ-2 Traffic Control During Lane Closure. Prior to construction, University of California San Diego shall contact the City of San Diego's Transportation Department and the City of San Diego Police Department and consult to disclose temporary lane and/or roadway closure to minimize congestion and provide adequate emergency access for emergency vehicles. Traffic congestion may be minimized by maintaining at least one unobstructed lane during construction and providing a temporary traffic signal, signal carriers (i.e., flagperson), or other appropriate traffic controls to allow travel when only a single lane is available.

Transportation

TRAN-1Vehicle Miles Traveled. University of California San Diego shall participate in the City of San Diego's Complete Communities: Mobility Choices Program (approved by the City Council on November 9, 2020) by providing the following vehicle miles traveled reduction measures or other combination of measures from the City of San Diego's Land Development Manual Appendix T to total a minimum of 8 points:

- The project shall provide an on-site bicycle repair station (1.5 points).
- The project shall install five electric bicycle charging stations (2 points).
- The project shall provide short-term bicycle parking spaces, at least 10 percent beyond minimum requirements (1.5 points).
- The project shall provide long-term bicycle parking spaces, at least 10 percent beyond minimum requirements (2 points).
- The project shall provide carpool parking spaces 10 percent beyond the minimum number of carpool spaces required (1.5 points).

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5 REFERENCES

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Appendix A. Air Quality/Greenhouse Gas Emissions Data

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RBHC Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	RBHC
Construction Start Date	10/22/2024
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	26.2
Location	Rancho Bernardo, San Diego, CA, USA
County	San Diego
City	San Diego
Air District	San Diego County APCD
Air Basin	San Diego
TAZ	6395
EDFZ	12
Electric Utility	San Diego Gas & Electric
Gas Utility	San Diego Gas & Electric
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Medical Office Building	152	1000sqft	3.40	152,000	58,780	0.00	—	—
Unenclosed Parking with Elevator	587	Space	0.50	234,800	0.00	0.00	—	—
Parking Lot	88.0	Space	0.40	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Transportation	T-10	Provide End-of-Trip Bicycle Facilities
Transportation	T-14*	Provide Electric Vehicle Charging Infrastructure
Transportation	T-31-A*	Locate Project in Area with High Destination Accessibility
Transportation	T-34*	Provide Bike Parking
Energy	E-10-B	Establish Onsite Renewable Energy Systems: Solar Power
Energy	E-13	Install Electric Ranges in Place of Gas Ranges
Energy	E-21*	Install Cool Pavements
Energy	E-25*	Install Electric Heat Pumps

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.55	35.8	45.0	0.08	1.19	4.87	6.02	1.10	2.19	3.25	—	10,969	10,969	0.46	0.35	10.4	11,094

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.46	80.7	70.1	0.19	2.98	11.7	14.7	2.76	4.87	7.63	—	23,869	23,869	1.11	1.77	0.63	24,426
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.53	23.8	27.8	0.05	0.85	1.94	2.78	0.78	0.68	1.46	—	6,858	6,858	0.30	0.25	2.67	6,942
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.64	4.34	5.07	0.01	0.15	0.35	0.51	0.14	0.12	0.27	—	1,135	1,135	0.05	0.04	0.44	1,149

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	6.55	35.8	45.0	0.08	1.19	4.87	6.02	1.10	2.19	3.25	—	10,969	10,969	0.46	0.35	10.4	11,094
2026	2.65	3.69	6.84	0.01	0.06	0.25	0.31	0.06	0.06	0.12	—	1,166	1,166	0.05	0.02	0.96	1,173
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	7.33	80.7	70.1	0.19	2.98	11.7	14.7	2.76	4.87	7.63	—	23,869	23,869	1.11	1.77	0.63	24,426
2025	7.46	42.6	53.7	0.10	1.48	4.87	6.02	1.36	2.19	3.25	—	12,406	12,406	0.53	0.37	0.29	12,529
2026	2.65	3.70	6.69	0.01	0.06	0.25	0.31	0.06	0.06	0.12	—	1,151	1,151	0.05	0.02	0.02	1,157
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.55	6.02	5.28	0.01	0.22	0.87	1.10	0.21	0.37	0.58	—	1,746	1,746	0.08	0.13	0.75	1,787
2025	3.53	23.8	27.8	0.05	0.85	1.94	2.78	0.78	0.68	1.46	—	6,858	6,858	0.30	0.25	2.67	6,942
2026	1.37	1.92	3.47	< 0.005	0.03	0.13	0.16	0.03	0.03	0.06	—	598	598	0.03	0.01	0.21	602

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.10	1.10	0.96	< 0.005	0.04	0.16	0.20	0.04	0.07	0.10	—	289	289	0.01	0.02	0.12	296
2025	0.64	4.34	5.07	0.01	0.15	0.35	0.51	0.14	0.12	0.27	—	1,135	1,135	0.05	0.04	0.44	1,149
2026	0.25	0.35	0.63	< 0.005	0.01	0.02	0.03	0.01	0.01	0.01	—	99.0	99.0	< 0.005	< 0.005	0.04	99.6

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	6.55	35.8	45.0	0.08	1.19	4.87	6.02	1.10	2.19	3.25	—	10,969	10,969	0.46	0.35	10.4	11,094
2026	2.65	3.69	6.84	0.01	0.06	0.25	0.31	0.06	0.06	0.12	—	1,166	1,166	0.05	0.02	0.96	1,173
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	7.33	80.7	70.1	0.19	2.98	11.7	14.7	2.76	4.87	7.63	—	23,869	23,869	1.11	1.77	0.63	24,426
2025	7.46	42.6	53.7	0.10	1.48	4.87	6.02	1.36	2.19	3.25	—	12,406	12,406	0.53	0.37	0.29	12,529
2026	2.65	3.70	6.69	0.01	0.06	0.25	0.31	0.06	0.06	0.12	—	1,151	1,151	0.05	0.02	0.02	1,157
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.55	6.02	5.28	0.01	0.22	0.87	1.10	0.21	0.37	0.58	—	1,746	1,746	0.08	0.13	0.75	1,787
2025	3.53	23.8	27.8	0.05	0.85	1.94	2.78	0.78	0.68	1.46	—	6,858	6,858	0.30	0.25	2.67	6,942
2026	1.37	1.92	3.47	< 0.005	0.03	0.13	0.16	0.03	0.03	0.06	—	598	598	0.03	0.01	0.21	602
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.10	1.10	0.96	< 0.005	0.04	0.16	0.20	0.04	0.07	0.10	—	289	289	0.01	0.02	0.12	296
2025	0.64	4.34	5.07	0.01	0.15	0.35	0.51	0.14	0.12	0.27	—	1,135	1,135	0.05	0.04	0.44	1,149
2026	0.25	0.35	0.63	< 0.005	0.01	0.02	0.03	0.01	0.01	0.01	—	99.0	99.0	< 0.005	< 0.005	0.04	99.6

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.9	6.81	75.9	0.14	0.16	12.0	12.2	0.14	3.05	3.19	921	14,395	15,316	93.2	0.69	45.8	17,896
Mit.	15.8	6.77	75.6	0.14	0.16	12.0	12.1	0.14	3.03	3.17	921	14,286	15,207	93.1	0.68	45.6	17,784
% Reduced	< 0.5%	< 0.5%	< 0.5%	—	—	1%	1%	—	1%	1%	—	1%	1%	< 0.5%	1%	1%	1%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.9	7.22	57.0	0.13	0.13	12.0	12.2	0.12	3.05	3.17	921	13,715	14,636	93.2	0.72	4.97	17,187
Mit.	12.8	7.19	56.6	0.13	0.13	12.0	12.1	0.12	3.03	3.15	921	13,610	14,531	93.2	0.72	4.97	17,079
% Reduced	< 0.5%	1%	1%	—	—	1%	1%	—	1%	1%	—	1%	1%	< 0.5%	1%	< 0.5%	1%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.2	5.98	53.4	0.11	0.12	9.41	9.53	0.11	2.39	2.50	921	11,105	12,027	93.0	0.59	18.3	14,548
Mit.	12.2	5.96	53.1	0.11	0.12	9.35	9.47	0.11	2.37	2.49	921	11,016	11,937	93.0	0.59	18.2	14,456
% Reduced	< 0.5%	< 0.5%	< 0.5%	—	—	1%	1%	—	1%	1%	—	1%	1%	< 0.5%	1%	< 0.5%	1%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.23	1.09	9.74	0.02	0.02	1.72	1.74	0.02	0.44	0.46	153	1,839	1,991	15.4	0.10	3.03	2,409
Mit.	2.23	1.09	9.70	0.02	0.02	1.71	1.73	0.02	0.43	0.45	153	1,824	1,976	15.4	0.10	3.02	2,393
% Reduced	< 0.5%	< 0.5%	< 0.5%	1%	< 0.5%	1%	1%	< 0.5%	1%	1%	—	1%	1%	< 0.5%	1%	< 0.5%	1%

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	9.64	5.64	58.9	0.14	0.10	12.0	12.1	0.10	3.05	3.15	—	13,925	13,925	0.72	0.57	42.0	14,153
Area	6.22	0.14	16.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	69.2	69.2	< 0.005	< 0.005	—	69.4
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	339	339	0.25	0.03	—	355
Water	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Waste	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Stationary	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	15.9	6.81	75.9	0.14	0.16	12.0	12.2	0.14	3.05	3.19	921	14,395	15,316	93.2	0.69	45.8	17,896
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	9.44	6.19	56.8	0.13	0.10	12.0	12.1	0.10	3.05	3.15	—	13,314	13,314	0.77	0.60	1.09	13,513
Area	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	339	339	0.25	0.03	—	355
Water	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Waste	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Stationary	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	12.9	7.22	57.0	0.13	0.13	12.0	12.2	0.12	3.05	3.17	921	13,715	14,636	93.2	0.72	4.97	17,187
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	7.41	4.86	44.9	0.10	0.08	9.41	9.49	0.08	2.39	2.46	—	10,669	10,669	0.60	0.47	14.4	10,839
Area	4.81	0.07	8.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	34.1	34.1	< 0.005	< 0.005	—	34.2
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	339	339	0.25	0.03	—	355
Water	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Waste	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Stationary	0.01	1.06	0.21	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	46.3	46.3	< 0.005	< 0.005	0.00	46.4
Total	12.2	5.98	53.4	0.11	0.12	9.41	9.53	0.11	2.39	2.50	921	11,105	12,027	93.0	0.59	18.3	14,548
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.35	0.89	8.19	0.02	0.02	1.72	1.73	0.01	0.44	0.45	—	1,766	1,766	0.10	0.08	2.39	1,795
Area	0.88	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.65	5.65	< 0.005	< 0.005	—	5.67
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	56.2	56.2	0.04	< 0.005	—	58.7
Water	—	—	—	—	—	—	—	—	—	—	6.05	2.75	8.80	0.62	0.01	—	28.8
Waste	—	—	—	—	—	—	—	—	—	—	146	0.00	146	14.6	0.00	—	512
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64
Stationary	< 0.005	0.19	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	7.66	7.66	< 0.005	< 0.005	0.00	7.68
Total	2.23	1.09	9.74	0.02	0.02	1.72	1.74	0.02	0.44	0.46	153	1,839	1,991	15.4	0.10	3.03	2,409

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	9.59	5.60	58.5	0.14	0.10	12.0	12.1	0.10	3.03	3.13	—	13,842	13,842	0.72	0.56	41.7	14,069
Area	6.22	0.14	16.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	69.2	69.2	< 0.005	< 0.005	—	69.4
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	313	313	0.23	0.03	—	327

Water	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Waste	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Stationary	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	15.8	6.77	75.6	0.14	0.16	12.0	12.1	0.14	3.03	3.17	921	14,286	15,207	93.1	0.68	45.6	17,784
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	9.38	6.16	56.4	0.13	0.10	12.0	12.1	0.10	3.03	3.13	—	13,235	13,235	0.77	0.60	1.08	13,433
Area	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	313	313	0.23	0.03	—	327
Water	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Waste	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Stationary	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	12.8	7.19	56.6	0.13	0.13	12.0	12.1	0.12	3.03	3.15	921	13,610	14,531	93.2	0.72	4.97	17,079
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	7.37	4.83	44.6	0.10	0.08	9.35	9.44	0.08	2.37	2.45	—	10,606	10,606	0.60	0.47	14.3	10,775
Area	4.81	0.07	8.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	34.1	34.1	< 0.005	< 0.005	—	34.2
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	313	313	0.23	0.03	—	327
Water	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Waste	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Stationary	0.01	1.06	0.21	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	46.3	46.3	< 0.005	< 0.005	0.00	46.4
Total	12.2	5.96	53.1	0.11	0.12	9.35	9.47	0.11	2.37	2.49	921	11,016	11,937	93.0	0.59	18.2	14,456
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	1.34	0.88	8.14	0.02	0.02	1.71	1.72	0.01	0.43	0.45	—	1,756	1,756	0.10	0.08	2.37	1,784
Area	0.88	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.65	5.65	< 0.005	< 0.005	—	5.67
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	51.8	51.8	0.04	< 0.005	—	54.1
Water	—	—	—	—	—	—	—	—	—	—	6.05	2.75	8.80	0.62	0.01	—	28.8
Waste	—	—	—	—	—	—	—	—	—	—	146	0.00	146	14.6	0.00	—	512
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64
Stationary	< 0.005	0.19	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	7.66	7.66	< 0.005	< 0.005	0.00	7.68
Total	2.23	1.09	9.70	0.02	0.02	1.71	1.73	0.02	0.43	0.45	153	1,824	1,976	15.4	0.10	3.02	2,393

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.96	37.6	34.2	0.08	1.52	—	1.52	1.40	—	1.40	—	8,155	8,155	0.33	0.07	—	8,183
Dust From Material Movement	—	—	—	—	—	4.47	4.47	—	2.04	2.04	—	—	—	—	—	—	—
Onsite truck	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	2.57	2.35	0.01	0.10	—	0.10	0.10	—	0.10	—	559	559	0.02	< 0.005	—	560
Dust From Material Movement	—	—	—	—	—	0.31	0.31	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.47	0.43	< 0.005	0.02	—	0.02	0.02	—	0.02	—	92.5	92.5	< 0.005	< 0.005	—	92.8
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	1.30	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	274	274	0.01	0.01	0.03	278
Vendor	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
Hauling	0.17	11.6	4.04	0.05	0.15	2.11	2.26	0.15	0.58	0.73	—	8,344	8,344	0.45	1.34	0.46	8,754
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.9	18.9	< 0.005	< 0.005	0.03	19.2
Vendor	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

Hauling	0.01	0.80	0.28	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	571	571	0.03	0.09	0.53	600
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.14	3.14	< 0.005	< 0.005	0.01	3.18
Vendor	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
Hauling	< 0.005	0.15	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	94.6	94.6	0.01	0.02	0.09	99.3

3.2. Site Preparation (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.96	37.6	34.2	0.08	1.52	—	1.52	1.40	—	1.40	—	8,155	8,155	0.33	0.07	—	8,183
Dust From Material Movement	—	—	—	—	—	4.47	4.47	—	2.04	2.04	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	2.57	2.35	0.01	0.10	—	0.10	0.10	—	0.10	—	559	559	0.02	< 0.005	—	560
Dust From Material Movement	—	—	—	—	—	0.31	0.31	—	0.14	0.14	—	—	—	—	—	—	—

Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.47	0.43	< 0.005	0.02	—	0.02	0.02	—	0.02	—	92.5	92.5	< 0.005	< 0.005	—	92.8
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	1.30	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	274	274	0.01	0.01	0.03	278
Vendor	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
Hauling	0.17	11.6	4.04	0.05	0.15	2.11	2.26	0.15	0.58	0.73	—	8,344	8,344	0.45	1.34	0.46	8,754
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.9	18.9	< 0.005	< 0.005	0.03	19.2
Vendor	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
Hauling	0.01	0.80	0.28	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	571	571	0.03	0.09	0.53	600
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.14	3.14	< 0.005	< 0.005	0.01	3.18
Vendor	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
Hauling	< 0.005	0.15	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	94.6	94.6	0.01	0.02	0.09	99.3

3.3. Grading (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.92	28.7	28.4	0.05	1.28	—	1.28	1.18	—	1.18	—	4,912	4,912	0.20	0.04	—	4,929
Dust From Material Movement	—	—	—	—	—	4.15	4.15	—	2.00	2.00	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	2.41	2.39	< 0.005	0.11	—	0.11	0.10	—	0.10	—	413	413	0.02	< 0.005	—	415
Dust From Material Movement	—	—	—	—	—	0.35	0.35	—	0.17	0.17	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.44	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.4	68.4	< 0.005	< 0.005	—	68.7

Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.19	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	251	251	0.01	0.01	0.03	254
Vendor	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
Hauling	0.04	2.69	0.94	0.01	0.03	0.49	0.52	0.03	0.13	0.17	—	1,933	1,933	0.10	0.31	0.11	2,028
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.3	21.3	< 0.005	< 0.005	0.04	21.6
Vendor	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
Hauling	< 0.005	0.23	0.08	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	163	163	0.01	0.03	0.15	171
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.53	3.53	< 0.005	< 0.005	0.01	3.58
Vendor	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
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.9	26.9	< 0.005	< 0.005	0.02	28.3

3.4. Grading (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.92	28.7	28.4	0.05	1.28	—	1.28	1.18	—	1.18	—	4,912	4,912	0.20	0.04	—	4,929
Dust From Material Movement	—	—	—	—	—	4.15	4.15	—	2.00	2.00	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	2.41	2.39	< 0.005	0.11	—	0.11	0.10	—	0.10	—	413	413	0.02	< 0.005	—	415
Dust From Material Movement	—	—	—	—	—	0.35	0.35	—	0.17	0.17	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.44	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.4	68.4	< 0.005	< 0.005	—	68.7
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.19	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	251	251	0.01	0.01	0.03	254
Vendor	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
Hauling	0.04	2.69	0.94	0.01	0.03	0.49	0.52	0.03	0.13	0.17	—	1,933	1,933	0.10	0.31	0.11	2,028
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.3	21.3	< 0.005	< 0.005	0.04	21.6
Vendor	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
Hauling	< 0.005	0.23	0.08	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	163	163	0.01	0.03	0.15	171
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.53	3.53	< 0.005	< 0.005	0.01	3.58
Vendor	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
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.9	26.9	< 0.005	< 0.005	0.02	28.3

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.69	25.6	27.0	0.05	1.12	—	1.12	1.03	—	1.03	—	4,914	4,914	0.20	0.04	—	4,931

Dust From Material Movement	—	—	—	—	—	4.15	4.15	—	2.00	2.00	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.69	25.6	27.0	0.05	1.12	—	1.12	1.03	—	1.03	—	4,914	4,914	0.20	0.04	—	4,931
Dust From Material Movement	—	—	—	—	—	4.15	4.15	—	2.00	2.00	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.57	5.41	5.70	0.01	0.24	—	0.24	0.22	—	0.22	—	1,039	1,039	0.04	0.01	—	1,042
Dust From Material Movement	—	—	—	—	—	0.88	0.88	—	0.42	0.42	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.99	1.04	< 0.005	0.04	—	0.04	0.04	—	0.04	—	172	172	0.01	< 0.005	—	173
Dust From Material Movement	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	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

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.08	1.27	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	261	261	0.01	0.01	0.98	265
Vendor	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
Hauling	0.04	2.48	0.93	0.01	0.03	0.49	0.52	0.03	0.13	0.17	—	1,893	1,893	0.10	0.30	4.12	1,988
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.09	1.12	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	246	246	0.01	0.01	0.03	250
Vendor	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
Hauling	0.04	2.57	0.94	0.01	0.03	0.49	0.52	0.03	0.13	0.17	—	1,893	1,893	0.10	0.30	0.11	1,985
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	52.5	52.5	< 0.005	< 0.005	0.09	53.3
Vendor	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
Hauling	0.01	0.54	0.20	< 0.005	0.01	0.10	0.11	0.01	0.03	0.04	—	400	400	0.02	0.06	0.38	420
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.70	8.70	< 0.005	< 0.005	0.01	8.83
Vendor	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
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	66.2	66.2	< 0.005	0.01	0.06	69.5

3.6. Grading (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.69	25.6	27.0	0.05	1.12	—	1.12	1.03	—	1.03	—	4,914	4,914	0.20	0.04	—	4,931
Dust From Material Movement	—	—	—	—	—	4.15	4.15	—	2.00	2.00	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.69	25.6	27.0	0.05	1.12	—	1.12	1.03	—	1.03	—	4,914	4,914	0.20	0.04	—	4,931
Dust From Material Movement	—	—	—	—	—	4.15	4.15	—	2.00	2.00	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.57	5.41	5.70	0.01	0.24	—	0.24	0.22	—	0.22	—	1,039	1,039	0.04	0.01	—	1,042
Dust From Material Movement	—	—	—	—	—	0.88	0.88	—	0.42	0.42	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.99	1.04	< 0.005	0.04	—	0.04	0.04	—	0.04	—	172	172	0.01	< 0.005	—	173
Dust From Material Movement	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—

Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.08	1.27	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	261	261	0.01	0.01	0.98	265
Vendor	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
Hauling	0.04	2.48	0.93	0.01	0.03	0.49	0.52	0.03	0.13	0.17	—	1,893	1,893	0.10	0.30	4.12	1,988
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.09	1.12	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	246	246	0.01	0.01	0.03	250
Vendor	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
Hauling	0.04	2.57	0.94	0.01	0.03	0.49	0.52	0.03	0.13	0.17	—	1,893	1,893	0.10	0.30	0.11	1,985
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	52.5	52.5	< 0.005	< 0.005	0.09	53.3
Vendor	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
Hauling	0.01	0.54	0.20	< 0.005	0.01	0.10	0.11	0.01	0.03	0.04	—	400	400	0.02	0.06	0.38	420
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.70	8.70	< 0.005	< 0.005	0.01	8.83
Vendor	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
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	66.2	66.2	< 0.005	0.01	0.06	69.5

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.22	29.5	30.3	0.06	1.10	—	1.10	1.01	—	1.01	—	6,814	6,814	0.28	0.06	—	6,837
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.22	29.5	30.3	0.06	1.10	—	1.10	1.01	—	1.01	—	6,814	6,814	0.28	0.06	—	6,837
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.61	14.8	15.2	0.03	0.55	—	0.55	0.51	—	0.51	—	3,416	3,416	0.14	0.03	—	3,428
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	2.70	2.77	0.01	0.10	—	0.10	0.09	—	0.09	—	566	566	0.02	< 0.005	—	568
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.59	0.45	6.82	0.00	0.00	1.25	1.25	0.00	0.29	0.29	—	1,397	1,397	0.06	0.05	5.24	1,418
Vendor	0.06	2.11	0.98	0.01	0.02	0.41	0.43	0.02	0.11	0.13	—	1,587	1,587	0.07	0.22	4.12	1,659
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.58	0.50	5.97	0.00	0.00	1.25	1.25	0.00	0.29	0.29	—	1,319	1,319	0.07	0.05	0.14	1,337
Vendor	0.06	2.19	1.01	0.01	0.02	0.41	0.43	0.02	0.11	0.13	—	1,587	1,587	0.07	0.22	0.11	1,656
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.25	3.04	0.00	0.00	0.61	0.61	0.00	0.14	0.14	—	667	667	0.03	0.03	1.13	677
Vendor	0.03	1.09	0.50	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	796	796	0.04	0.11	0.89	831
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.55	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	0.01	< 0.005	0.19	112
Vendor	0.01	0.20	0.09	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	132	132	0.01	0.02	0.15	138
Hauling	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

3.8. Building Construction (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.22	29.5	30.3	0.06	1.10	—	1.10	1.01	—	1.01	—	6,814	6,814	0.28	0.06	—	6,837
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	3.22	29.5	30.3	0.06	1.10	—	1.10	1.01	—	1.01	—	6,814	6,814	0.28	0.06	—	6,837
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.61	14.8	15.2	0.03	0.55	—	0.55	0.51	—	0.51	—	3,416	3,416	0.14	0.03	—	3,428
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	2.70	2.77	0.01	0.10	—	0.10	0.09	—	0.09	—	566	566	0.02	< 0.005	—	568
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.59	0.45	6.82	0.00	0.00	1.25	1.25	0.00	0.29	0.29	—	1,397	1,397	0.06	0.05	5.24	1,418
Vendor	0.06	2.11	0.98	0.01	0.02	0.41	0.43	0.02	0.11	0.13	—	1,587	1,587	0.07	0.22	4.12	1,659
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.58	0.50	5.97	0.00	0.00	1.25	1.25	0.00	0.29	0.29	—	1,319	1,319	0.07	0.05	0.14	1,337
Vendor	0.06	2.19	1.01	0.01	0.02	0.41	0.43	0.02	0.11	0.13	—	1,587	1,587	0.07	0.22	0.11	1,656
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.25	3.04	0.00	0.00	0.61	0.61	0.00	0.14	0.14	—	667	667	0.03	0.03	1.13	677
Vendor	0.03	1.09	0.50	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	796	796	0.04	0.11	0.89	831

Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.55	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	0.01	< 0.005	0.19	112
Vendor	0.01	0.20	0.09	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	132	132	0.01	0.02	0.15	138
Hauling	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

3.9. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.71	6.52	8.84	0.01	0.29	—	0.29	0.26	—	0.26	—	1,351	1,351	0.05	0.01	—	1,355
Paving	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.32	0.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	66.6	66.6	< 0.005	< 0.005	—	66.8
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.0	11.0	< 0.005	< 0.005	—	11.1

Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.81	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	179	179	0.01	0.01	0.02	182
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.92	8.92	< 0.005	< 0.005	0.02	9.05
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.48	1.48	< 0.005	< 0.005	< 0.005	1.50
Vendor	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
Hauling	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

3.10. Paving (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.71	6.52	8.84	0.01	0.29	—	0.29	0.26	—	0.26	—	1,351	1,351	0.05	0.01	—	1,355
Paving	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.32	0.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	66.6	66.6	< 0.005	< 0.005	—	66.8
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.0	11.0	< 0.005	< 0.005	—	11.1
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.81	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	179	179	0.01	0.01	0.02	182
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.92	8.92	< 0.005	< 0.005	0.02	9.05
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.48	1.48	< 0.005	< 0.005	< 0.005	1.50
Vendor	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
Hauling	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

3.11. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	3.69	5.58	0.01	0.07	—	0.07	0.07	—	0.07	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	3.69	5.58	0.01	0.07	—	0.07	0.07	—	0.07	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	1.31	1.99	< 0.005	0.03	—	0.03	0.02	—	0.02	—	318	318	0.01	< 0.005	—	319
Architectural Coatings	0.80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.24	0.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	52.6	52.6	< 0.005	< 0.005	—	52.8
Architectural Coatings	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.09	1.36	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	279	279	0.01	0.01	1.05	284
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.10	1.19	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	264	264	0.01	0.01	0.03	267
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.43	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	94.8	94.8	< 0.005	< 0.005	0.16	96.2

Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.7	15.7	< 0.005	< 0.005	0.03	15.9
Vendor	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
Hauling	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

3.12. Architectural Coating (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	3.69	5.58	0.01	0.07	—	0.07	0.07	—	0.07	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	3.69	5.58	0.01	0.07	—	0.07	0.07	—	0.07	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	1.31	1.99	< 0.005	0.03	—	0.03	0.02	—	0.02	—	318	318	0.01	< 0.005	—	319
Architectural Coatings	0.80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.24	0.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	52.6	52.6	< 0.005	< 0.005	—	52.8
Architectural Coatings	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.09	1.36	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	279	279	0.01	0.01	1.05	284
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.10	1.19	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	264	264	0.01	0.01	0.03	267
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.43	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	94.8	94.8	< 0.005	< 0.005	0.16	96.2

Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.7	15.7	< 0.005	< 0.005	0.03	15.9
Vendor	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
Hauling	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

3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	3.61	5.56	0.01	0.06	—	0.06	0.06	—	0.06	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	3.61	5.56	0.01	0.06	—	0.06	0.06	—	0.06	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	1.87	2.89	< 0.005	0.03	—	0.03	0.03	—	0.03	—	463	463	0.02	< 0.005	—	464
Architectural Coatings	1.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.34	0.53	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.6	76.6	< 0.005	< 0.005	—	76.9
Architectural Coatings	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.08	1.27	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	274	274	0.01	0.01	0.96	278
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.09	1.12	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	259	259	0.01	0.01	0.02	262
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	135	135	0.01	0.01	0.21	137

Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.4	22.4	< 0.005	< 0.005	0.04	22.7
Vendor	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
Hauling	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

3.14. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	3.61	5.56	0.01	0.06	—	0.06	0.06	—	0.06	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	3.61	5.56	0.01	0.06	—	0.06	0.06	—	0.06	—	892	892	0.04	0.01	—	895
Architectural Coatings	2.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	1.87	2.89	< 0.005	0.03	—	0.03	0.03	—	0.03	—	463	463	0.02	< 0.005	—	464
Architectural Coatings	1.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.34	0.53	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.6	76.6	< 0.005	< 0.005	—	76.9
Architectural Coatings	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.08	1.27	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	274	274	0.01	0.01	0.96	278
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.09	1.12	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	259	259	0.01	0.01	0.02	262
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	135	135	0.01	0.01	0.21	137

Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.4	22.4	< 0.005	< 0.005	0.04	22.7
Vendor	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
Hauling	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

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	9.64	5.64	58.9	0.14	0.10	12.0	12.1	0.10	3.05	3.15	—	13,925	13,925	0.72	0.57	42.0	14,153
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	9.64	5.64	58.9	0.14	0.10	12.0	12.1	0.10	3.05	3.15	—	13,925	13,925	0.72	0.57	42.0	14,153
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Medical Office Building	9.44	6.19	56.8	0.13	0.10	12.0	12.1	0.10	3.05	3.15	—	13,314	13,314	0.77	0.60	1.09	13,513
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	9.44	6.19	56.8	0.13	0.10	12.0	12.1	0.10	3.05	3.15	—	13,314	13,314	0.77	0.60	1.09	13,513
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	1.35	0.89	8.19	0.02	0.02	1.72	1.73	0.01	0.44	0.45	—	1,766	1,766	0.10	0.08	2.39	1,795
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	1.35	0.89	8.19	0.02	0.02	1.72	1.73	0.01	0.44	0.45	—	1,766	1,766	0.10	0.08	2.39	1,795

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	9.59	5.60	58.5	0.14	0.10	12.0	12.1	0.10	3.03	3.13	—	13,842	13,842	0.72	0.56	41.7	14,069

Unenclosed	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
Parking Lot	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
Total	9.59	5.60	58.5	0.14	0.10	12.0	12.1	0.10	3.03	3.13	—	13,842	13,842	0.72	0.56	41.7	14,069
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	9.38	6.16	56.4	0.13	0.10	12.0	12.1	0.10	3.03	3.13	—	13,235	13,235	0.77	0.60	1.08	13,433
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	9.38	6.16	56.4	0.13	0.10	12.0	12.1	0.10	3.03	3.13	—	13,235	13,235	0.77	0.60	1.08	13,433
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	1.34	0.88	8.14	0.02	0.02	1.71	1.72	0.01	0.43	0.45	—	1,756	1,756	0.10	0.08	2.37	1,784
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	1.34	0.88	8.14	0.02	0.02	1.71	1.72	0.01	0.43	0.45	—	1,756	1,756	0.10	0.08	2.37	1,784

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	256	256	0.19	0.02	—	267
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	81.8	81.8	0.06	0.01	—	85.4
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	1.89	1.89	< 0.005	< 0.005	—	1.97
Total	—	—	—	—	—	—	—	—	—	—	—	339	339	0.25	0.03	—	355
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	256	256	0.19	0.02	—	267
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	81.8	81.8	0.06	0.01	—	85.4
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	1.89	1.89	< 0.005	< 0.005	—	1.97
Total	—	—	—	—	—	—	—	—	—	—	—	339	339	0.25	0.03	—	355
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	42.3	42.3	0.03	< 0.005	—	44.2
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	13.5	13.5	0.01	< 0.005	—	14.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.31	0.31	< 0.005	< 0.005	—	0.33
Total	—	—	—	—	—	—	—	—	—	—	—	56.2	56.2	0.04	< 0.005	—	58.7

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	229	229	0.17	0.02	—	240
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	81.8	81.8	0.06	0.01	—	85.4
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	1.89	1.89	< 0.005	< 0.005	—	1.97
Total	—	—	—	—	—	—	—	—	—	—	—	313	313	0.23	0.03	—	327
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	229	229	0.17	0.02	—	240

Unenclos Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	81.8	81.8	0.06	0.01	—	85.4
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	1.89	1.89	< 0.005	< 0.005	—	1.97
Total	—	—	—	—	—	—	—	—	—	—	—	313	313	0.23	0.03	—	327
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	38.0	38.0	0.03	< 0.005	—	39.7
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	13.5	13.5	0.01	< 0.005	—	14.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.31	0.31	< 0.005	< 0.005	—	0.33
Total	—	—	—	—	—	—	—	—	—	—	—	51.8	51.8	0.04	< 0.005	—	54.1

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	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
Unenclosed Parking with Elevator	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

Parking Lot	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
Total	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	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
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	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
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	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

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	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
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	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
Unenclosed Parking with Elevator	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
Parking Lot	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
Total	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	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

Unenclosed Parking with Elevator	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
Parking Lot	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
Total	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

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	3.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.76	0.14	16.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	69.2	69.2	< 0.005	< 0.005	—	69.4
Total	6.22	0.14	16.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	69.2	69.2	< 0.005	< 0.005	—	69.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	3.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectu Coatings	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.25	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.65	5.65	< 0.005	< 0.005	—	5.67
Total	0.88	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.65	5.65	< 0.005	< 0.005	—	5.67

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	3.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.76	0.14	16.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	69.2	69.2	< 0.005	< 0.005	—	69.4
Total	6.22	0.14	16.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	69.2	69.2	< 0.005	< 0.005	—	69.4

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	3.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.25	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.65	5.65	< 0.005	< 0.005	—	5.67
Total	0.88	0.01	1.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.65	5.65	< 0.005	< 0.005	—	5.67

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174

Unenclos Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	6.05	2.75	8.80	0.62	0.01	—	28.8
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	6.05	2.75	8.80	0.62	0.01	—	28.8

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	36.5	16.6	53.2	3.76	0.09	—	174
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	6.05	2.75	8.80	0.62	0.01	—	28.8

Unenclosed Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	6.05	2.75	8.80	0.62	0.01	—	28.8

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095

Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	146	0.00	146	14.6	0.00	—	512
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	146	0.00	146	14.6	0.00	—	512

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	885	0.00	885	88.4	0.00	—	3,095
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	146	0.00	146	14.6	0.00	—	512
Unenclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	146	0.00	146	14.6	0.00	—	512

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.88	3.88
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Medical Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergen Generator	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	< 0.005	0.19	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	7.66	7.66	< 0.005	< 0.005	0.00	7.68
Total	< 0.005	0.19	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	7.66	7.66	< 0.005	< 0.005	0.00	7.68

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Total	0.01	1.03	0.20	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	0.00	45.0	45.0	< 0.005	< 0.005	0.00	45.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergency Generato	< 0.005	0.19	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	7.66	7.66	< 0.005	< 0.005	0.00	7.68
Total	< 0.005	0.19	0.04	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	7.66	7.66	< 0.005	< 0.005	0.00	7.68

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequeste	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	10/22/2024	11/25/2024	5.00	25.0	—
Grading	Grading	11/19/2024	4/18/2025	5.00	109	—
Building Construction	Building Construction	4/21/2025	12/31/2025	5.00	183	—
Paving	Paving	10/29/2025	11/23/2025	5.00	18.0	—
Architectural Coating	Architectural Coating	7/3/2025	9/22/2026	5.00	319	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	6.00	84.0	0.37
Site Preparation	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Site Preparation	Off-Highway Trucks	Diesel	Average	2.00	6.00	376	0.38
Site Preparation	Pumps	Diesel	Average	1.00	6.00	11.0	0.74
Site Preparation	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40
Grading	Graders	Diesel	Average	2.00	6.00	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	6.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Grading	Cranes	Diesel	Average	1.00	6.00	367	0.29
Grading	Pumps	Diesel	Average	1.00	6.00	11.0	0.74
Grading	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40
Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
Building Construction	Generator Sets	Diesel	Average	2.00	6.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	6.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	6.00	84.0	0.37
Building Construction	Pumps	Diesel	Average	1.00	6.00	11.0	0.74
Building Construction	Aerial Lifts	Diesel	Average	4.00	6.00	46.0	0.31
Building Construction	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40
Building Construction	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Building Construction	Off-Highway Trucks	Diesel	Average	2.00	6.00	376	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37

Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Architectural Coating	Aerial Lifts	Diesel	Average	2.00	6.00	46.0	0.31
Architectural Coating	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	6.00	84.0	0.37
Site Preparation	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Site Preparation	Off-Highway Trucks	Diesel	Average	2.00	6.00	376	0.38
Site Preparation	Pumps	Diesel	Average	1.00	6.00	11.0	0.74
Site Preparation	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40
Grading	Graders	Diesel	Average	2.00	6.00	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	6.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Grading	Cranes	Diesel	Average	1.00	6.00	367	0.29
Grading	Pumps	Diesel	Average	1.00	6.00	11.0	0.74
Grading	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40
Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
Building Construction	Generator Sets	Diesel	Average	2.00	6.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	6.00	46.0	0.45

Building Construction	Tractors/Loaders/Backh	Diesel	Average	3.00	6.00	84.0	0.37
Building Construction	Pumps	Diesel	Average	1.00	6.00	11.0	0.74
Building Construction	Aerial Lifts	Diesel	Average	4.00	6.00	46.0	0.31
Building Construction	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40
Building Construction	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Building Construction	Off-Highway Trucks	Diesel	Average	2.00	6.00	376	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Architectural Coating	Aerial Lifts	Diesel	Average	2.00	6.00	46.0	0.31
Architectural Coating	Rough Terrain Forklifts	Diesel	Average	2.00	6.00	96.0	0.40

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	12.0	LDA,LDT1,LDT2
Site Preparation	Vendor	—	7.63	HHDT,MHDT
Site Preparation	Hauling	114	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	27.5	12.0	LDA,LDT1,LDT2

Grading	Vendor	—	7.63	HHDT,MHDT
Grading	Hauling	26.3	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	147	12.0	LDA,LDT1,LDT2
Building Construction	Vendor	63.4	7.63	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	12.0	LDA,LDT1,LDT2
Paving	Vendor	—	7.63	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	29.5	12.0	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	7.63	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	12.0	LDA,LDT1,LDT2
Site Preparation	Vendor	—	7.63	HHDT,MHDT
Site Preparation	Hauling	114	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—

Grading	Worker	27.5	12.0	LDA,LDT1,LDT2
Grading	Vendor	—	7.63	HHDT,MHDT
Grading	Hauling	26.3	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	147	12.0	LDA,LDT1,LDT2
Building Construction	Vendor	63.4	7.63	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	12.0	LDA,LDT1,LDT2
Paving	Vendor	—	7.63	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	29.5	12.0	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	7.63	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	228,980	76,109	2,352

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	22,738	56.3	0.00	—
Grading	22,965	0.00	164	0.00	—
Paving	0.00	0.00	0.00	0.00	0.90

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Medical Office Building	0.00	0%
Unenclosed Parking with Elevator	0.50	100%
Parking Lot	0.40	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2024	0.00	540	0.03	< 0.005
2025	0.00	540	0.03	< 0.005
2026	0.00	45.1	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Medical Office Building	2,660	1,303	216	772,678	17,024	8,337	1,381	4,945,138
Unenclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Medical Office Building	2,644	1,295	215	768,104	16,923	8,288	1,373	4,915,867
Unenclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	228,980	76,109	2,352

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Medical Office Building	2,070,076	45.1	0.0330	0.0040	0.00
Unenclosed Parking with Elevator	661,666	45.1	0.0330	0.0040	0.00
Parking Lot	15,263	45.1	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Medical Office Building	1,856,698	45.1	0.0330	0.0040	0.00
Unenclosed Parking with Elevator	661,666	45.1	0.0330	0.0040	0.00
Parking Lot	15,263	45.1	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Medical Office Building	19,073,042	878,418
Unenclosed Parking with Elevator	0.00	0.00
Parking Lot	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Medical Office Building	19,073,042	878,418
Unenclosed Parking with Elevator	0.00	0.00
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Medical Office Building	1,642	—
Unenclosed Parking with Elevator	0.00	—
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Medical Office Building	1,642	—
Unenclosed Parking with Elevator	0.00	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Medical Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Medical Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Medical Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Medical Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	2.00	0.02	6.00	1,676	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	16.8	annual days of extreme heat
Extreme Precipitation	4.15	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	10.2	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2

Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	53.7
AQ-PM	20.6
AQ-DPM	65.9
Drinking Water	29.0
Lead Risk Housing	21.9
Pesticides	52.5
Toxic Releases	9.79
Traffic	64.8
Effect Indicators	—
CleanUp Sites	9.59

Groundwater	59.6
Haz Waste Facilities/Generators	46.4
Impaired Water Bodies	72.2
Solid Waste	0.00
Sensitive Population	—
Asthma	6.11
Cardio-vascular	14.1
Low Birth Weights	16.8
Socioeconomic Factor Indicators	—
Education	1.46
Housing	42.8
Linguistic	18.1
Poverty	31.3
Unemployment	18.3

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	99.16591813
Employed	88.70781471
Median HI	95.21365328
Education	—
Bachelor's or higher	95.8039266
High school enrollment	100
Preschool enrollment	71.94918517
Transportation	—

Auto Access	87.47593995
Active commuting	18.19581676
Social	—
2-parent households	78.91697677
Voting	91.55652509
Neighborhood	—
Alcohol availability	81.70152701
Park access	31.91325549
Retail density	9.611189529
Supermarket access	31.6052868
Tree canopy	47.64532273
Housing	—
Homeownership	72.09033748
Housing habitability	93.94328243
Low-inc homeowner severe housing cost burden	84.21660465
Low-inc renter severe housing cost burden	90.38881047
Uncrowded housing	77.4541255
Health Outcomes	—
Insured adults	98.89644553
Arthritis	54.3
Asthma ER Admissions	96.1
High Blood Pressure	63.5
Cancer (excluding skin)	15.0
Asthma	95.7
Coronary Heart Disease	69.4
Chronic Obstructive Pulmonary Disease	92.7
Diagnosed Diabetes	90.6

Life Expectancy at Birth	87.8
Cognitively Disabled	85.7
Physically Disabled	87.9
Heart Attack ER Admissions	85.7
Mental Health Not Good	96.5
Chronic Kidney Disease	73.0
Obesity	94.9
Pedestrian Injuries	19.6
Physical Health Not Good	96.4
Stroke	80.6
Health Risk Behaviors	—
Binge Drinking	30.9
Current Smoker	97.2
No Leisure Time for Physical Activity	93.5
Climate Change Exposures	—
Wildfire Risk	59.2
SLR Inundation Area	0.0
Children	11.7
Elderly	46.6
English Speaking	48.9
Foreign-born	54.5
Outdoor Workers	93.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	67.7
Traffic Density	91.0
Traffic Access	23.0
Other Indices	—

Hardship	9.1
Other Decision Support	—
2016 Voting	93.4

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	10.0
Healthy Places Index Score for Project Location (b)	96.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Revised acreages to total 4.3 acre lot size
Construction: Construction Phases	Revised per Project-specific schedule
Construction: Off-Road Equipment	Revised per anticipated project fleet
Operations: Vehicle Data	Revised per project TIA and SANDAG Not So Brief Guide

Operations: Energy Use	Project specific energy use estimate provide. Project would be all-electric
Operations: Generators + Pumps EF	Revised based on available EFs from Spec sheet
Operations: Emergency Generators and Fire Pumps	Revised based on project specific specifications

Industrial Buildout Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Industrial Buildout
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	26.2
Location	Rancho Bernardo, San Diego, CA, USA
County	San Diego
City	San Diego
Air District	San Diego County APCD
Air Basin	San Diego
TAZ	6395
EDFZ	12
Electric Utility	San Diego Gas & Electric
Gas Utility	San Diego Gas & Electric
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Industrial Park	340	1000sqft	7.80	339,768	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	CO2e
Daily, Summer (Max)	—
Unmit.	23,561
Daily, Winter (Max)	—
Unmit.	23,111
Average Daily (Max)	—
Unmit.	22,183
Annual (Max)	—
Unmit.	3,673

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	CO2e
Daily, Summer (Max)	—
Mobile	8,480
Area	61.0
Energy	12,626
Water	1,512
Waste	794
Refrig.	88.4

Total	23,561
Daily, Winter (Max)	—
Mobile	8,090
Area	—
Energy	12,626
Water	1,512
Waste	794
Refrig.	88.4
Total	23,111
Average Daily	—
Mobile	7,132
Area	30.1
Energy	12,626
Water	1,512
Waste	794
Refrig.	88.4
Total	22,183
Annual	—
Mobile	1,181
Area	4.98
Energy	2,090
Water	250
Waste	132
Refrig.	14.6
Total	3,673

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	CO2e
Daily, Summer (Max)	—
Industrial Park	8,480
Total	8,480
Daily, Winter (Max)	—
Industrial Park	8,090
Total	8,090
Annual	—
Industrial Park	1,181
Total	1,181

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	CO2e
Daily, Summer (Max)	—
Industrial Park	9,129
Total	9,129
Daily, Winter (Max)	—
Industrial Park	9,129
Total	9,129
Annual	—

Industrial Park	1,511
Total	1,511

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	CO2e
Daily, Summer (Max)	—
Industrial Park	3,497
Total	3,497
Daily, Winter (Max)	—
Industrial Park	3,497
Total	3,497
Annual	—
Industrial Park	579
Total	579

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	CO2e
Daily, Summer (Max)	—
Consumer Products	—
Architectural Coatings	—
Landscape Equipment	61.0
Total	61.0
Daily, Winter (Max)	—

Consumer Products	—
Architectural Coatings	—
Total	—
Annual	—
Consumer Products	—
Architectural Coatings	—
Landscape Equipment	4.98
Total	4.98

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	CO2e
Daily, Summer (Max)	—
Industrial Park	1,512
Total	1,512
Daily, Winter (Max)	—
Industrial Park	1,512
Total	1,512
Annual	—
Industrial Park	250
Total	250

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	CO2e
Daily, Summer (Max)	—
Industrial Park	794
Total	794
Daily, Winter (Max)	—
Industrial Park	794
Total	794
Annual	—
Industrial Park	132
Total	132

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	CO2e
Daily, Summer (Max)	—
Industrial Park	88.4
Total	88.4
Daily, Winter (Max)	—
Industrial Park	88.4
Total	88.4
Annual	—
Industrial Park	14.6
Total	14.6

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	CO2e
Daily, Summer (Max)	—
Total	—
Daily, Winter (Max)	—
Total	—
Annual	—
Total	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	CO2e
Daily, Summer (Max)	—
Total	—
Daily, Winter (Max)	—
Total	—
Annual	—
Total	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	CO2e

Daily, Summer (Max)	—
Total	—
Daily, Winter (Max)	—
Total	—
Annual	—
Total	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	CO2e
Daily, Summer (Max)	—
Total	—
Daily, Winter (Max)	—
Total	—
Annual	—
Total	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	CO2e
Daily, Summer (Max)	—
Total	—
Daily, Winter (Max)	—
Total	—
Annual	—

Total	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	CO2e
Daily, Summer (Max)	—
Avoided	—
Subtotal	—
Sequestered	—
Subtotal	—
Removed	—
Subtotal	—
—	—
Daily, Winter (Max)	—
Avoided	—
Subtotal	—
Sequestered	—
Subtotal	—
Removed	—
Subtotal	—
—	—
Annual	—
Avoided	—
Subtotal	—
Sequestered	—
Subtotal	—
Removed	—

Subtotal	—
—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Industrial Park	1,145	863	421	365,491	10,305	7,767	3,792	3,289,418

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	509,652	169,884	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Industrial Park	5,638,303	589	0.0330	0.0040	10,880,400

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Industrial Park	78,571,350	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Industrial Park	421	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Industrial Park	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	16.8	annual days of extreme heat
Extreme Precipitation	4.15	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	10.2	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A

Sea Level Rise	0	0	0	N/A
Wildfire	0	0	0	N/A
Flooding	0	0	0	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	53.7
AQ-PM	20.6
AQ-DPM	65.9
Drinking Water	29.0
Lead Risk Housing	21.9
Pesticides	52.5
Toxic Releases	9.79
Traffic	64.8
Effect Indicators	—
CleanUp Sites	9.59
Groundwater	59.6
Haz Waste Facilities/Generators	46.4
Impaired Water Bodies	72.2
Solid Waste	0.00
Sensitive Population	—
Asthma	6.11
Cardio-vascular	14.1
Low Birth Weights	16.8
Socioeconomic Factor Indicators	—
Education	1.46
Housing	42.8

Linguistic	18.1
Poverty	31.3
Unemployment	18.3

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	99.16591813
Employed	88.70781471
Median HI	95.21365328
Education	—
Bachelor's or higher	95.8039266
High school enrollment	100
Preschool enrollment	71.94918517
Transportation	—
Auto Access	87.47593995
Active commuting	18.19581676
Social	—
2-parent households	78.91697677
Voting	91.55652509
Neighborhood	—
Alcohol availability	81.70152701
Park access	31.91325549
Retail density	9.611189529
Supermarket access	31.6052868
Tree canopy	47.64532273

Housing	—
Homeownership	72.09033748
Housing habitability	93.94328243
Low-inc homeowner severe housing cost burden	84.21660465
Low-inc renter severe housing cost burden	90.38881047
Uncrowded housing	77.4541255
Health Outcomes	—
Insured adults	98.89644553
Arthritis	54.3
Asthma ER Admissions	96.1
High Blood Pressure	63.5
Cancer (excluding skin)	15.0
Asthma	95.7
Coronary Heart Disease	69.4
Chronic Obstructive Pulmonary Disease	92.7
Diagnosed Diabetes	90.6
Life Expectancy at Birth	87.8
Cognitively Disabled	85.7
Physically Disabled	87.9
Heart Attack ER Admissions	85.7
Mental Health Not Good	96.5
Chronic Kidney Disease	73.0
Obesity	94.9
Pedestrian Injuries	19.6
Physical Health Not Good	96.4
Stroke	80.6
Health Risk Behaviors	—

Binge Drinking	30.9
Current Smoker	97.2
No Leisure Time for Physical Activity	93.5
Climate Change Exposures	—
Wildfire Risk	59.2
SLR Inundation Area	0.0
Children	11.7
Elderly	46.6
English Speaking	48.9
Foreign-born	54.5
Outdoor Workers	93.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	67.7
Traffic Density	91.0
Traffic Access	23.0
Other Indices	—
Hardship	9.1
Other Decision Support	—
2016 Voting	93.4

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	10.0
Healthy Places Index Score for Project Location (b)	96.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Operations: Vehicle Data	SANDAG trip length assumed

Appendix B. Biological Resources Constraints Report

Harris & Associates

February 20, 2024

Alison Buckley, Senior Environmental Planner
Campus Planning Office
University of California, San Diego
10280 North Torrey Pines Road, Suite 460
San Diego, California 92093

Subject: Rancho Bernardo Healthcare Center Project – Biological Resources Constraints Analysis

Dear Ms. Buckley,

On October 5, 2023, Harris & Associates (Harris) conducted a biological resources survey of the proposed Rancho Bernardo Healthcare Center Project (project), an approximately 3.90-net-acre (9.80-gross-acre) project site and its 100-foot buffer, herein referred to as the "survey area." The purpose of this survey was to identify the existing vegetation and other sensitive resources to assist in early planning and identify potential biological constraints for developing the site. In addition to the survey results, a review of biological databases is provided in this analysis to aid in the impact evaluation of the project on its current immediate and surrounding environment.

Project Description and Location

Project Description

The project includes construction of a five-story, approximately 150,000-gross-square-foot, medical office building; an approximately 665-stall parking structure; approximately 88 surface parking stalls; a new access drive connecting to Bernardo Center Drive; and a signalized intersection. The development plan also envisions a network of landscaped outdoor spaces, separate shaded areas with seating for staff break areas, and outdoor waiting areas for patients and visitors. The site plan would separate patient vehicle and pedestrian traffic from service vehicles by providing separate driveways upon entry to the project site. A combination of prominently placed building signage and entry monument signage would provide patients with enhanced wayfinding. The project would be a state-of-the-art, sustainable facility to be occupied by UC San Diego Health (Health) and complementary non-competitive healthcare providers. It is anticipated that approximately 102,000 gross square feet would be pre-leased and occupied by Health and that the balance of the space would be prioritized for lease to Health partners and amenity spaces, such as a café.

Health has been operating an approximate 57,000-square-foot primary care and specialty healthcare facility in nearby leased space on Via Tazon, approximately 0.6 mile north of the project site, for the past 6 years. Upon completion of construction of the project, Health would relocate its existing nearby operations to the new location. Subject to completion of the California Environmental Quality Act (CEQA) process and The Regents approval of design, construction of the project is anticipated in 2025–2026.

Project Location

The project is in the suburban community of Rancho Bernardo in west-central San Diego County. (Attachment 1, Figures; Figure 1, Regional Location, and Figure 2, Project Site). More specifically, the project site is immediately west of and adjacent to Interstate 15 (I-15), immediately north of and adjacent to Bernardo Center Drive, and southeast of West Bernardo Drive. University of San Diego (UC San Diego) proposes to develop the project through a public–private partnership approach on a 3.90-net-acre (9.80-gross-acre) project site. The project site is composed of two parcels: Parcel 1 is approximately 2.75 gross acres, has no Assessor's Parcel Number (APN) and includes an I-15 offramp, and Parcel 2 is approximately 7.05 gross acres (APN 678-252-1100).

Environmental Setting

Land Use

The project site is a vacant, undeveloped lot that has been disturbed by various construction efforts (i.e., the construction of I-15 and other surrounding commercial development) as far back as 1995 (Google Earth 2023). The site has been rough graded as recently as 2002 but has remained vacant and undeveloped.

Topography and Soils

Formerly, the project site was a part of the toe of a hill slope that was leveled and graded during construction and development of the surrounding area. Therefore, grading has created a level surface in the majority of the project site but does contain slopes above and below the site. Elevation ranges from approximately 605 to 720 feet above mean sea level (amsl) (Figure 3, USGS Topographic Map). A search of the U.S. Department of Agriculture Natural Resources Conservation Service soil series website returned one result, Diablo–Olivenhain complex (USDA 2019) (Figure 4, Soils). A description of this soil series is provided below:

- Diablo soils are formed in residuum weathered from shale, sandstone, and consolidated sediments with minor areas of tuffaceous material. Typically found on complex undulating, rolling to steep uplands with slopes of 5 to 50 percent. Elevations are 25 to 3,000 feet amsl. Diablo soils are well drained, have slow permeability, and runoff is slow when soil is dry and medium to rapid when soils are moist.
- Diablo–Olivenhain complex consists of cobbly loam and clay on hillslopes and uplands with 9 to 30 percent slopes. The Diablo series consists of well-drained, moderately deep to deep clays derived from soft, calcareous sandstone and shale. Olivenhain series consists of well-drained, slow-to-medium runoff and very slow permeability soils (USDA 2023).

Hydrology

The survey area is in the San Dieguito River Watershed, specifically within the Hodges Hydrologic Area (Hydrologic Unit 905.2). The San Dieguito River Watershed encompasses a region of approximately 345 square miles in west-central San Diego County. It borders the Carlsbad and San Luis Rey Watersheds to the north and Los Peñasquitos and San Diego River Watersheds to the south. Rainfall to the area primarily drains through the San Dieguito River, which stretches east to west, originating near Santa Ysabel, in the Cuyamaca Mountains. The river eventually discharges to the Pacific Ocean near the communities of Del Mar and Solana Beach. The Hodges Hydrologic Area includes numerous tributaries including Felicita Creek, Kit Carson Creek, and Lake Hodges Reservoir, which rests on the San Dieguito River (Project Clean Water 2023).

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and the U.S. Geological Survey National Hydrography Dataset (NHD) mapping results do not indicate any jurisdictional aquatic resources as occurring within the survey area (USFWS 2023a; USGS 2023). The NWI and NHD results identified several features in the surrounding area, including two freshwater ponds located approximately 0.80 mile southeast, and 0.20 mile northeast of the survey area, respectively. Additionally, there is an isolated riverine feature running north to south along the east side of the I-15 freeway approximately 0.15 mile southeast of the survey area and a larger riverine feature/NHD flowline located approximately 0.25mile northeast of the survey area that terminates into the northeastern freshwater pond (Figure 5, Hydrology).

A formal aquatic resources delineation was not conducted during the survey effort. However, one potentially jurisdictional aquatic resource, a non-vegetated concrete-lined channel, was observed in the southwestern portion of the survey area during the biological reconnaissance survey. The non-vegetated, concrete-lined channel has two points of origin forming a V-shape that terminates in a culvert in the southwestern corner of the project site. The western segment of the concrete-lined channel originates to the west, outside the survey buffer, and flows northwest to southeast. The eastern segment of the concrete-lined channel originates from a polyvinyl-chloride pipe within the survey area and travels southwest until the segments converge, at which point the concrete-lined channel briefly continues south before terminating in a culvert.

Further discussion of the aquatic feature documented in the survey area and the potential jurisdiction of this feature is provided in the Aquatic Resources section.

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 Rancho Bernardo weather station, located approximately 0.6 mile north of the survey area, the average maximum annual temperature for the area surrounding the project site is 66.7 degrees Fahrenheit (°F), and the average minimum temperature is 60.8°F. Average annual precipitation in the area is 12.68 inches spread across an average of 46 days. As of October 2023, the total precipitation for the rainy season was 0.13 inch (National Weather Service 2023).

Regulatory Setting

This section provides guidance on the potential regulatory requirements and/or limitations subject to projects that may impact sensitive environmental resources.

Federal

Endangered Species Act (U.S. Code, Title 16, Sections 1531 through 1543)

The federal Endangered Species Act and subsequent amendments prohibit the "take" (i.e., harm, harass, or kill individuals, or destroy 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 Sections 4(d), 7, or 10(a).

Migratory Bird Treaty Act (U.S. Code, Title 16, Sections 703 through 711)

The Migratory Bird Treaty Act (MBTA) is the domestic law that affirms or implements a commitment by the United States to four international conventions (Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, or kill migratory birds. The law also applies to the removal of nests occupied by migratory birds during the breeding season. The MBTA makes it unlawful to take, pursue, molest, or disturb these species, their nests, or their eggs anywhere in the United States.

Clean Water Act

Clean Water Act (CWA), Section 401 (40 CFR 121). Section 401 of the CWA gives the state authority to grant, deny, or waive certification of proposed federally licensed or permitted activities resulting in discharge to waters of the United States. The State Water Resources Control Board directly regulates multi-regional projects and supports the Section 401 certification and wetlands program statewide. The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal CWA, which specifies that certification from the state is required for any applicant requesting a federal license or permit to conduct any activity, including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the state or appropriate interstate water pollution control agency in/where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

CWA, 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 (ACOE).

On August 29, 2023, the U.S. Environmental Protection Agency (USEPA) and the 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.

State

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, Sections 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 of the California Fish and Game Code 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 the CEQA is to assist California public agencies in identifying potential significant negative environmental impacts caused by their actions and avoiding or mitigating those impacts when feasible.

The implementation of the project includes routine maintenance of an existing pipeline that does not require a discretionary action and, therefore, does not qualify as a project under CEQA (CEQA Guidelines, Section 15378). Therefore, the project is not subject to CEQA compliance.

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 of 1977 (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 RWQCB regulates impacts on water quality under Section 401 of the CWA. A project must comply with Section 401 of the CWA before the ACOE 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 ACOE jurisdiction) under the Porter-Cologne Water Quality Control Act (Porter-Cologne).

Porter-Cologne Water Quality Control Act

The Porter-Cologne 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 Section 401 in the CWA and Porter-Cologne. 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 ACOE to not have CWA jurisdiction, Porter-Cologne 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.

Methods

This biological resources analysis includes the results of a database review and biological resources survey that serve to document the existing biological conditions of the survey area. The results of the database review provide information on the permitting requirements and potential constraints to project construction due to the presence (or lack thereof) of sensitive biological resources.

Database Review

A review of online databases, including the CDFW California Natural Diversity Database (CDFW 2023a), CDFW Biogeographic Information and Observation System (CDFW 2023b), USFWS NWI Wetlands Mapper (USFWS 2023a), USFWS Information for Planning and Consultation (USFWS 2023b), Consortium of California Herbaria database (CCH 2022), Calflora database (Calflora 2023), and California Native Plant Society Inventory of Rare and Endangered Plants of California (CNPS 2023), was conducted for the project site and a 1-mile radius of the survey area.

Field Reconnaissance Survey

A biological resources survey of the survey area was conducted by Harris biologists on October 5, 2023. 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 2, Observed Plant Species, and Attachment 3, Observed Wildlife Species). Vegetation mapping was recorded in the field using the ArcGIS Collector application with an aerial image of the survey area. Binoculars were used to visually identify wildlife species, and biologists listened for vocalizations. The potential for sensitive plant and wildlife species to occur in the survey area is presented in Table 2, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area, 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 sign. 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, therefore, may not have been observed.

Results

Vegetation Communities and Land Cover Types

The project site is within the southwestern California region of the California Floristic Province (Jepson Flora Project 2023). Four vegetation communities and two land cover types were identified in the survey area: non-vegetated channel; Diegan coastal sage scrub, including disturbed; Diegan coastal sage scrub: broom baccharis dominated, including disturbed; non-native woodland; disturbed habitat; and urban/developed land (Oberbauer et al. 2008). (Figure 6, Vegetation Communities and Land Cover Types). Table 1, Vegetation Communities and Land Cover Types in the Survey Area, presents the acreages of the vegetation communities and land cover types that occur.

Table 1. Vegetation Communities and Land Cover Types in the Survey Area

Vegetation Community and Land Cover Type	Project Site (acres)	Survey Area (acres)
Aquatic		
Non-Vegetated Channel (64200)	0[1]	0.01
Subtotal	*0*	*0.01*
Scrub and Chaparral		
Diegan Coastal Sage Scrub (including Disturbed) (32500)	2.27	3.43
Diegan Coastal Sage Scrub: Broom Baccharis Dominated (including Disturbed) (32530)	2.79	2.79
Subtotal	*5.06*	*6.22*
Upland		
Non-Native Woodland (79000)	1.15	1.52
Subtotal	*1.15*	*1.52*
Disturbed/Developed		
Disturbed Habitat (11300)	2.36	2.91
Urban/Developed (12000)	1.24	6.29
Subtotal	*3.6*	*9.20*
Total	**9.81**	**16.95**

Notes: Acreages are approximate and based on ArcGIS Collector data. Values are rounded up to one-hundredth of an acre.

[1] Amount is 0.003 acre.

Aquatic Vegetation Communities

Non-Vegetated Channel (64200)

Non-vegetated channel consists of predominantly sandy, gravelly, or rocky channels lacking or with reduced vegetation. Variable water lines inhibit the growth of vegetation, although some weedy species of grasses may grow along the outer edges of the channel. Vegetation may exist here but is usually less than 10 percent of the total cover (Holland 1986).

Approximately 0.013 acre of non-vegetated channel occurs in the survey area, with 0.003 acre occurring directly within the project site boundary (Figure 6). The non-vegetated channel consists of a concrete-lined v-ditch, which occurs in the southwestern portion of the survey area. This channel appears to direct stormwater flows into an underground culvert, near Bernardo Center Drive. While the channel itself is concrete lined and contains very little vegetation, the dominant species observed lining the channel were non-native grasses and star thistle (*Centaurea sp.).* Subdominant species included fennel (*Foeniculum vulgare*), lemonade berry *(Rhus integrifolia*), and Peruvian pepper tree (*Schinus molle*).

Scrub and Chaparral Vegetation Communities

Diegan Coastal Sage Scrub (including Disturbed) (32500)

Diegan coastal sage scrub consists of low soft-woody shrubs, typically measuring 1.5 to 6.5 feet tall (Holland 1986). Species composition generally consists of California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), broom baccharis (*Baccharis sarothroides*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), and laurel sumac (*Malosma laurina*). Diegan coastal sage scrub is present in coastal Southern California from Los Angeles, California, to Baja California, Mexico, and supports a rich diversity of sensitive plants and wildlife.

A total of approximately 0.48 acre of undisturbed Diegan coastal sage scrub occurs in the survey area (Figure 6). Approximately 0.08 acre of Diegan coastal sage scrub occurs in the northwestern corner of the project site, while 0.4 acre occurs in the 100-foot buffer in the northwest corner of the survey area. The undisturbed Diegan coastal sage scrub is dominated by California buckwheat, broom baccharis, lemonade berry, and laurel sumac.

Approximately 3.03 acres of disturbed Diegan coastal sage scrub occurs in the survey area, with 2.19 acres of that occurring on the project site (Figure 6). The Diegan coastal sage scrub transitions from undisturbed Diegan coastal sage scrub to disturbed Diegan coastal sage scrub in the west-central and southwestern portions of the survey area. In addition, disturbed Diegan coastal sage scrub also occurs along the entire eastern portion of the project site immediately west of I-15. Dominant species within the disturbed Diegan coastal sage scrub located in the central western portion/southwestern portion include patches of broom baccharis interspersed with non-native grasses such as Crimson fountain grass (*Pennisetum setaceum*). The disturbed Diegan coastal sage scrub occurring along the eastern portion of the project site mostly consists of small patches of California buckwheat and broom baccharis, and the understory has been mowed for fire fuel modification purposes.

Diegan Coastal Sage Scrub: Broom Baccharis-Dominated (including Disturbed) (32530)

Broom baccharis-dominated Diegan coastal sage scrub is like Diegan coastal sage scrub but is dominated by baccharis species. Typically, this vegetation sub-community is found on disturbed sites or those with nutrient-poor soils. Often it occurs within other forms of Diegan coastal sage scrub and on upper terraces of river valleys.

Approximately, 2.79 acres of broom baccharis-dominated Diegan coastal sage scrub occurs within the central portion of the project site (Figure 6). Although it is dominated by typical species found in Diegan coastal sage scrub, such as California sagebrush, California buckwheat, black sage, and white sage, the broom baccharis is the dominant species. This community is considered disturbed on the project site as it contains many non-native and invasive species including cardoon (*Cynara cardunculus*), fountain grass (*Pennisetum* sp.), stinkwort (*Dittrichia graveolens*), fennel (*Foeniculum vulgare*), and black mustard (*Brassica nigra*).

Upland Vegetation Communities

Non-Native Woodland (79000)

Non-native woodland consists of woodland mostly composed of exotic trees, usually intentionally planted, which are not maintained or artificially irrigated. Characteristic species that usually occur are usually eucalyptus (*Eucalyptus* spp.) and Tamarisk (*Tamarix* spp.), but other non-native species may occur.

Approximately 1.52 acres of non-native woodland occurs in the survey area, with approximately 1.15 acres occurring in the west-central, northern, and northeastern portions of the project site (Figure 6). The non-native woodland is dominated by species such as Aleppo pine (*Pinus halepensis*), Peruvian pepper tree, and tamarisk with scattered non-native grasses and bare ground in the understory.

Land Cover Types

Disturbed Habitat (11300)

Disturbed (ruderal) habitat consists of previously disturbed areas that either are devoid of vegetation (dirt roads/trails) or support scattered non-native plant species, such as escaped ornamentals or ruderal exotic species that take advantage of disturbance, such as short-pod mustard (*Hirschfeldia incana*), black mustard, filaree (*Erodium* spp.), artichoke thistle, stinkwort, and other weedy grass species. These species are opportunistic and typically found in recently and/or repeatedly disturbed habitats, particularly in areas that have been graded, cleared for fuel management purposes, and/or experience ongoing use that prevents natural revegetation.

Approximately 0.56 acre of disturbed habitat occurs along the western edge of the survey area and a 2.35-acre "U" shape in the middle of the project site; together, these areas total 2.91 acres of disturbed habitat. The disturbed habitat is characterized by bare soil, debris piles, and patches of cardoon, pampas grass (*Cortaderia selloana),* and tamarisk. There is also a rudimentary access road that runs north to south through the survey area, and tire tracks were observed throughout the disturbed habitat.

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 6.29 acres of urban/developed land occur in the survey area, with 1.24 acres occurring directly on the project site (Figure 6). Urban/developed land occurs in the northern, central, and eastern portions of the survey area, consisting of a paved road, commercial buildings, I-15 to the east, Bernardo Center Drive to the south, and a paved parking lot to the north.

Aquatic Resources

A formal aquatic resources delineation was not conducted during the biological survey. As previously discussed in the Hydrology section, NWI and NHD database query results identified several aquatic features, including two freshwater ponds and two riverine features, that occur outside the survey area (Figure 5). One aquatic resource was observed during the biological resources survey in the southwestern portion of the survey area, consisting of a non-vegetated, concrete-lined channel (Figure 7 Potential Jurisdictional Resources). The concrete-lined channel has two points of origin, converging to form a V-shape before terminating into a culvert. The western segment of the channel originates outside the survey area and flows from northwest to southeast until it meets up with the eastern segment of the channel. The eastern segment of the channel originates from a polyvinyl-chloride pipe on the project site and flows southwest until the point of convergence, where the channel then continues south briefly before terminating in a culvert.

The non-vegetated, concrete-lined channel observed in the survey area is approximately 227 feet long and covers approximately 0.01 acre of land, with approximately 0.003 acre occurring directly on the project site. The feature appears to connect to a municipal stormwater system and does not appear to have direct downstream connectivity to any potentially jurisdictional aquatic features, and therefore may not be under the jurisdiction of ACOE pursuant to Section 404 of the CWA. In addition, this feature is unlikely to fall under the jurisdiction of the CDFW, pursuant to Section 1602 of the California Fish and Game code, as it is does not appear to provide habitat for species. However, the feature may potentially fall under the jurisdiction of the RWQCB pursuant to Section 401 of the CWA because it may provide water quality functions for the San Dieguito Watershed. Ultimately, only the agencies can make a final determination of federal, state, and regional jurisdictional boundaries.

Plant Species

Attachment 2 lists the vascular plant species observed in the survey area during the 2023 biological resources survey. In total, 23 plant species were identified in the survey area, 11 (48 percent) of which were native and

12 (52 percent) of which were non-native. Typical of a previously graded and heavily disturbed (mechanical) site, fewer native plant species remain, and non-native species have established throughout the site. No sensitive plant species were observed during the 2023 survey; however, a focused rare plant survey was not conducted. 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 3 lists the wildlife species observed in the survey area during the 2023 biological resources survey. In total, 15 wildlife species, all of which were native, were observed in the survey area, including three invertebrate species, and 12 bird species. The project site contains mostly disturbed remnant native vegetation communities and, due to previous intensive mechanical disturbance, provides few resources for wildlife to establish a large biodiversity. 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, California Native Plant Society (CNPS), and USFWS (CDFW 2023a, 2023c, 2023d; CNPS 2023; USFWS 2023b). 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 letter report. 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 the project site are addressed in this section. Figure 8, Historical Species, presents the California Natural Diversity Database results for sensitive species with potential to occur on the project site and within a 1-mile radius. Database results (i.e., CNPS, IPaC) that did not provide geographic information system mapping data are only listed in Table 2, Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area, and are not shown on Figure 8. Table 2 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 2.

Table 2. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
Plants				
Acanthomintha ilicifolia	San Diego thorn-mint	FT/SE/1B.1	Occurs in chaparral, coastal scrub, valley and foothill grassland, and vernal pools at elevations between 35 and 3,150 feet amsl. Blooms Apr–June.	*Not Expected*. No suitable vernal pool habitat or clay soil in the survey area. Historical locations exist within 1 mile northwest of the survey area but not within (Figure 8; CDFW 2023a; CDFW 2023b; CNPS 2023; USFWS 2023b).
Dudleya variegata	Variegated dudleya	None/None/1B.2	Occurs on rocky slopes in chaparral, coastal scrub, cismontane woodland, and valley and foothill grassland at elevations between 10 to and 1,905 feet amsl. Blooms Apr–June.	*Not expected.* No rocky slopes in the coastal scrub in the survey area. Historical location exists within 1 mile northwest of the survey area but not within (Figure 8; CDFW 2023a; CDFW 2023b; CNPS 2023).
Eryngium aristulatum var. parishii	San Diego button-celery	FE/SE/1B.1	Blooms April–June. Occurs in mesic coastal scrub, valley and foothill grasslands, and vernal pools at elevations from 65 to 2,035 feet amsl.	*Not Expected*. No suitable vernal pool habitat or clay soil in the survey area. Historical location occurs less than 1 mile from the survey area but not within it (Figure 8; CDFW 2023a; CDFW 2023b; CNPS 2023; USFWS 2023b).
Ferocactus viridescens	San Diego barrel cactus	None/None/2B.1	Occurs in rocky and sandy chaparral, coastal scrub, valley and foothill grassland habitats from 10 to 1,500 feet amsl. Blooms May–Jun.	*High*. Coastal sage scrub available on the project site. San Diego barrel cactus was previously documented as occurring within the survey area in the northern portion of the project site, however, it was not observed during the 2023 survey and may be extirpated (Figure 8; CDFW 2023a; CDFW2023b; CNPS 2023).
Wildlife				
Invertebrates				
Danaus plexippus	**Monarch butterfly (California overwintering population)**	**FC/None/—**	**Occurs in a variety of habitats where patches of milkweed (Asclepias sp.), the monarch caterpillar host plant, are present. Overwinter in groves of eucalyptus, cypress, and pine along the California coast and high-elevation forests in Mexico.**	***Present.* Observed flying through the project site during the 2023 survey. Limited suitable nectar sources for foraging are present. A small number of pine trees suitable for overwintering are available within the survey area. No historical locations exist within a 1-mile radius of the survey area (Figure 9, Sensitive Species Observed; CDFW 2023a; CDFW 2023b; USFWS 2023b).**

Table 2. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
Euphydryas editha quino	Quino checkerspot butterfly	FE/None/—	Occurs in chaparral and coastal sage shrublands. Requires dot-seed plantain (*Plantago erecta*) or purple owl's clover (*Castilleja exserta*) as a host plant.	*Low.* Suitable coastal sage scrub within survey area. Host and preferred nectar plant presence unknown as survey was conducted outside blooming period for those species. Low potential to be observed flying through survey area; survey area surrounded by dense development. Historical locations within one mile of the project site from 1930s but location is not accurate (Figure 8; CDFW 2023a; CDFW2023b; USFWS 2023b).
			Reptiles	
Arizona elegans occidentalis	California glossy snake	None/SSC/—	Inhabits arid scrub, rocky washes, grasslands, and chaparral. Prefers microhabitats of open areas with friable (burrowing) soils.	*Not Expected*. Suitable habitat not present within or surrounding the survey area. Historical locations within 1 mile of the survey area but not within (Figure 8; CDFW 2023b; CDFW 2023b).
			Birds	
Agelaius tricolor	Tricolored blackbird	BCC/SE/—	Occurs in freshwater wetlands with open water and protected nesting substrate. In San Diego County, known nesting only in Dameron Valley and Oak Grove, south to Ramona and Santa Ysabel, and the Campo Plateau from Potrero to Jacumba.	*Not expected*. Species only found in three locations in the County; none are within the survey area. No suitable habitat within survey area. Historical locations within 1 mile of the survey area occurred in 1906 and have been extirpated (Figure 8; CDFW 2023a; CDFW 2023b; USFWS 2023b).
Campylorhynchus brunneicapillus sandiegensis	Coastal cactus wren	BCC/SSC/—	Occurs in coastal sage scrub habitats with large cacti for nesting.	*Not Expected Nesting; Not Expected Foraging*. No suitable nesting or foraging habitat within survey area. Historical locations occur within 1 mile of the survey area (Figure 8; CDFW 2023a; CDFW 2023b; USFWS 2023b).

Table 2. Sensitive Plant and Wildlife Species with Potential to Occur in the Survey Area

Scientific Name	Common Name	Status Federal/State/ CRPR	Habitat	Potential to Occur
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC/—	Found in dense coastal sage scrub, occasionally baccharis scrub, and chaparral in Southern California to Baja Mexico below 2,500 feet amsl.	*High Foraging, Low Nesting*. Disturbed Diegan coastal sage scrub occurs in the survey area, which provides suitable habitat for foraging or dispersing individuals, however, there is low potential for nesting due to the limited amount of suitable habitat present in the survey area and the immediate surrounding available habitat due to development. Two adults observed in 1996 however this pair is likely extirpated due to lack of adequate vegetation to support a breeding pair (Figure 8; CDFW 2023a; CDFW 2023b; USFWS 2023b).
		Mammals		
Neotoma bryanti intermedia	Bryant's woodrat	—/SSC/—	Requires habitats that provide adequate cover, appropriate areas of midden construction, and succulent vegetation. Occupies coastal sage scrub and chaparral (sea level) and pinyon-juniper woodland at higher elevations. Builds middens most frequently within talus or rock outcrops, but sometimes in yuccas or at the base of shrubs and cacti.	*Not expected.* No suitable rocky outcrops in coastal sage scrub available. Little to no succulent species available. Cover of scrub not dense enough to support a population of woodrats. No woodrat middens were observed during the survey. Historical locations are known within the survey area and within a 1-mile radius for San Diego desert woodrat[2] (Figure 8; CDFW 2023a; CDFW 2023b).

Notes: amsl = above mean sea level; CDFW = California Department of Fish and Wildlife; USFWS = U.S. Fish and Wildlife Service; None = No status indicated for species; CRPR = California Rare Plant Rank

Bold = present on the project site

[1] Under review for protection under the federal Endangered Species Act

[2] San Diego desert woodrat (*Neotoma lepida intermedia*) is now recognized as Bryant's woodrat (*N. b. intermedia*) (Patton et al. 2014; Tremor et al. 2017).

Federal Status

FC = Federal candidate

FE = Federally listed as endangered

FT = Federally listed as threatened

State Status

SE = State listed as endangered

SSC = State listed as special species of concern

CNPS Rare Plant Ranking

1B = Rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.

2B = Rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.

.1 = Seriously threatened in California (over 80 percent of occurrences threatened; high degree and immediacy of threat).

.2 = Moderately threatened in California (20–80 percent occurrences threatened; moderate degree and immediacy of threat).

Sensitive Plant Species

No sensitive plants species were observed during the October 2023 survey; however, a focused rare plant survey was not conducted during the biological reconnaissance survey. One sensitive plant species, San Diego barrel cactus (*Ferocactus viridescens*) was found to have a high potential to occur in the survey area.

San Diego Barrel Cactus (*Ferocactus viridescens*), CRPR 2B.1

San Diego barrel cactus is a CRPR 2B.1 plant. San Diego barrel cactus is a perennial stem succulent in the cactus family occurring in chaparral, coastal sage scrub, valley and foothill grassland, and vernal pool habitat at elevations up to 1,500 feet amsl. This species blooms yellow to greenish flowers from March to June (Calflora 2023). Much of this species habitat has already been removed in the County, and its remaining habitat is threatened by development, agriculture, and other disturbances (CNPS 2023).

San Diego barrel cactus was mapped on the project site in 1980s and 1990s. It was mapped as several populations originally, with at least one on the project site, but most populations have since been extirpated, and the population on the project site was not observed during the 2023 (CDFW 2023a). This population may have been removed during site grading prior to the 2000s. Although none were observed, there is still high potential for this species to be observed on the project site, as suitable coastal sage scrub habitat is available.

Sensitive Wildlife Species

One sensitive wildlife species—monarch butterfly (*Danaus plexippus*) was observed in the survey area. One federally listed threatened wildlife species, coastal California gnatcatcher (*Polioptila californica californica*), was determined to have a high potential for foraging habitat but low potential for nesting. The species accounts are described in the following subsections.

Monarch Butterfly (Danaus Plexippus), Federal Candidate

On December 15, 2020, the USFWS found that adding the monarch butterfly to the list of threatened and endangered species was warranted but precluded by higher-priority species reviews and work (USFWS 2020). As a result, the monarch butterfly remains a federal candidate for listing. Monarch butterfly is one of the most recognizable butterfly species, with orange wings laced with black lines bordered with white dots. Its wingspan is 3.70 to 4.10 inches. This species occurs in patches of milkweed (*Asclepias* sp.), which is the species' caterpillar host plant. Although larvae only eat milkweed, adult monarchs feed on a variety of nectar-bearing flowers. Monarch butterflies are found across North America wherever suitable feeding, breeding, and overwintering habitat exists. Monarch butterflies overwinter in groves of eucalyptus, cypress, and pine trees along the California coast and high-elevation forests in Mexico. Threats to this species include habitat loss, climate change, and agriculture.

One monarch butterfly was observed flying through the eastern portion of the survey area near the edge of the project site during the 2023 survey (Figure 9, Sensitive Species Observed). There are a few pine trees available that may provide suitable overwintering habitat. No milkweed (*Asclepias* sp.) was observed during the survey that could serve as host plants; however, the survey was not conducted during the blooming period for milkweed. There are no historical locations for monarch butterfly within the survey area or a 1-mile radius. The presence of monarch butterfly on the project site provides high potential for the species to be observed flying through, and potentially roosting within, the survey area.

Coastal California Gnatcatcher (Polioptila californica californica), Federally Listed Threatened

Coastal California gnatcatcher (*Polioptila californica californica*) is a federally listed threatened species. The coastal California gnatcatcher is a small, gray, long-tailed insectivorous songbird that occurs almost exclusively in open coastal sage scrub vegetation with California sagebrush as the dominant or co-dominant species, but the coastal California gnatcatcher can also be found in chaparral sage scrub intergrades and riparian habitats (mulefat scrub) (USFWS 2010). Coastal California gnatcatchers are endemic to Southern California and Baja California, Mexico, and they do not migrate in winter. In Southern California, this species ranges from the County of Ventura south to the County of San Diego and east to the County of San Bernardino. Males have dark blue–gray plumage on their upperparts and grayish white plumage on their underparts, while females and hatch-year juveniles have gray–brown plumage above and grayish white plumage below. The tail is mostly black above and below. Males have a distinctive black cap, which is absent during the winter. Both sexes have a distinctive white eye ring. They have a distinct call, which sounds like a kittenish "mew." The breeding season extends from February through August, with peak nesting activities occurring from mid-March through May (USFWS 2010). Both the male and female in a pair will incubate between 3 and 5 eggs, with the average clutch being 4; and both adults will feed hatchlings and fledglings. Males will vigorously patrol territories which range in size from 2 acres to upwards of 40 acres. Territories are held year-round and are smallest during the wintertime, likely when lower resources are required (no longer feeding juveniles). Although nonmigratory, juveniles disperse typically less than 3 kilometers but have been known to move upwards of 20 kilometers. The major threat to this species is the rapid loss of coastal sage scrub habitat to urbanization and agricultural development.

Suitable foraging habitat for coastal California gnatcatcher occurs in the Diegan coastal sage scrub (including disturbed) and Diegan coastal sage scrub: baccharis dominated in the eastern central, and western portions of the survey area. Although the survey area contains suitable foraging habitat, it does not provide high potential for nesting because of the density of plants within, and coverage of, the coastal sage scrub in the survey area. In addition, its overall poor quality and lack of connectivity (immediate surrounding habitat is developed on two sides) further reduces potential for nesting. The northwestern corner of the survey area contains a small portion of high quality coastal sage scrub; however, it is located mainly in the survey area outside the project site itself and is not connected to large open space with more coastal sage scrub. Therefore, the Diegan coastal sage scrub habitat within the survey area has little to no potential to be included in the overall larger territory for an established pair and has no potential to support a pair year-round. Therefore, while the survey area has low potential to support nesting coastal California gnatcatcher, the Diegan coastal sage scrub in the survey area provides adequate foraging opportunities for dispersing juveniles.

Nesting Birds

Nesting birds are protected by the MBTA and similar provisions of the California Fish and Game Code. Native vegetation communities in the survey area such as Diegan coastal sage scrub, are used as nesting habitat by common species such as California scrub jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), and California towhee (*Melozone crissalis*). Pine trees are highly desirable for woodpeckers and other cavity nesting species. Other non-native tree species observed including tamarisk and Peruvian pepper may provide suitable nesting habitat. The survey area therefore has high potential to provide suitable nesting habitat for a number of species protected by federal and state regulations.

Roosting Bats

While no bats were observed using the survey area for roosting or foraging during the survey, no nighttime focused acoustic or exit-count surveys were conducted.

Although bats that avoid areas heavily used by humans may not be observed, the availability of suitable roosting habitat (i.e., trees) and suitable foraging habitat (i.e., open spaces, open water) indicate that a number of bat species may have the potential to be found foraging or roosting in the survey area. Common species including California myotis (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), and hoary bat (*Lasiurus cinereus*), which can be found roosting in trees and forage over open space areas, are likely to be found in the survey area. No sensitive bat species are known to occur within the survey area or a 1-mile radius.

Critical Habitat

No critical habitat for sensitive plants or wildlife occurs in the survey area. The nearest critical habitat to the survey area is for coastal California gnatcatcher, which is located approximately 2.9 miles to the northeast of the survey area.

Wildlife Corridors and Linkages

Wildlife corridors provide routes for local movement and also regional linkages and corridors, often following linear topographic, vegetation, or water features. These corridors can be continuous habitats, features, or "stepping-stone" areas, providing critical rest and foraging areas for, for example, birds traveling along migratory routes. Local routes of movement provide constant connections to resources that include sources of water, home/cover sites, and foraging areas. Regional linkages and movement corridors provide larger patches of open space to allow relatively free movement of wildlife species along multiple paths between important resources. These areas allow for not only long-term genetic flow between subpopulations but also critical pathways of seasonal/migratory movements. Larger predatory mammals often use regional corridors for hunting and reproduction needs. Potential wildlife corridors can include streams, riparian areas, and culverts under roadways. Habitat characteristics considered included topography, habitat quality, and adjacent land uses.

The survey area is completely surrounded by urban development, with commercial development to the north and west, I-15 directly to the east, and residential development to the south. Therefore, the presence of urban development surrounding the project site limits large-scale east–west and north–south wildlife movement by species in the surrounding area. Although the value for migratory animals is excluded by development, the survey area may provide local routes of movement for terrestrial species such as reptiles, mesocarnivores (i.e., raccoons), and potentially common, non-sensitive rodent species within the immediate region because it is open and contains some level of vegetative cover. Local species are likely to use the survey area as refugia and for foraging opportunities but may potentially use it as a nursery site.

In addition, the availability of vegetative cover both native and non-native provides value for MBTA-protected migrating birds flying through to wintering or breeding grounds, and those species that nest locally and would be found year-round. 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. The survey area lies within and adjacent to, critical stopover points for a large variety of birds during their annual migration.

The dataset for the California Essential Habitat Connectivity Project (CDFW 2023e) was reviewed to identify if any Essential Habitat lies within the survey area. The survey area is not within a California Essential Habitat Connectivity area. The nearest area is 7 miles from the survey area to the east.

Recommendations

The following impact avoidance recommendations are suggested to avoid potential impacts to biological and aquatic resources on the project site. Once design is complete, these recommendations may require modification, based on the extent and nature (temporary or permanent) of expected impacts.

BIO-1: Direct Diegan Coastal Sage Scrub Permanent Impacts. Permanent impacts to approximately 3.11 acres of Diegan coastal sage scrub (including disturbed) on the project site and in the survey area shall be mitigated through the preservation of habitat, habitat creation, and/or enhancement, or combination thereof through habitat acquisition and preservation or purchase of credits from an approved conservation bank at a 1:1 ratio.

BIO-2: Pre-Construction San Diego Barrel Cactus Survey. Prior to any vegetation removal, a focused survey for San Diego barrel cactus shall be conducted for all project areas that support potential habitat for this species. The survey shall be conducted by a qualified biologist/botanist, and if San Diego barrel cactus is observed, they shall be avoided when feasible. Individuals to be avoided shall be marked clearly with flagging. If individuals cannot be avoided, impacts to those species must be evaluated, and any significant impacts shall be mitigated at a 1:1 ratio through translocation within the UCSD preserve system in suitable habitat.

BIO-3: Pre-Construction Overwintering Monarch Butterfly Survey. If grubbing, trimming, or clearing of vegetation occurs during winter (November 1 through February 28), a qualified biologist, as approved by the City of San Diego, shall perform a pre-construction overwintering monarch butterfly survey no more than 48 hours before the start of vegetation grubbing, trimming, or clearing to confirm that no overwintering monarch butterflies occupy vegetation on the project site. If overwintering monarch butterflies are found during the pre-construction survey, a 50-foot buffer around the occupied vegetation shall be established, and no disturbance shall be allowed within the buffer until a qualified biologist determines that monarch butterflies are no longer occupying the vegetation. If no overwintering monarch butterflies are on the project site, grubbing, trimming, or clearing shall proceed.

BIO-4: 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 in the construction area, grubbing, trimming, or clearing shall proceed.

BIO-5: Aquatic Resource Avoidance. Permanent and temporary impacts to aquatic resources (e.g., non-vegetated channel), which are potentially under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife in the survey area, shall be avoided. The aquatic resources shall be clearly marked for avoidance with staking and flagging by a qualified biologist. Additionally, the limits of the work area shall be fenced with silt fencing.

BIO-6: 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.

After 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. UC San Diego's Environment, Health & Safety office shall review and provide input on the project stromwater management plan.

Constraints Analysis Conclusion

The survey area was rough graded prior to 2000 and was never restored; however, native vegetation from adjacent areas have re-established to some degree. Direct impacts to sensitive vegetation communities requires mitigation; therefore, avoidance of sensitive habitats is recommended. If avoidance is not feasible, purchase of credits from an approved conservation bank is required. While native vegetation has grown back in over the past 20 to 30 years, the extent of native vegetative cover is limited, greatly disturbed, and contains a minimal number of species which reduces biodiversity in the survey area. Therefore, the survey area provides limited habitat suitable for sensitive wildlife species to forage, nest, or seek refuge. While opportunities are limited, monarch butterfly, a federal candidate, was observed during the 2023 survey, and has potential to be found roosting within the survey area; therefore, an overwintering roost survey prior to construction is recommended. In addition, two other sensitive species, San Diego barrel cactus and coastal California gnatcatcher have a high potential to occur within the survey area. San Diego barrel cactus was not observed during the 2023 survey; however, a focused rare plant survey was not conducted, and the survey area has the potential to provide habitat required by this species. Therefore, a focused rare plant survey is recommended prior to construction to map the location of any San Diego barrel cactus. Direct impacts to San Diego barrel cactus should be avoided, but if avoidance is not feasible, individuals should be translocated. The survey area no longer provides adequate habitat for nesting for coastal California gnatcatcher; however, it may provide foraging opportunities for dispersing juveniles. A pre-construction nesting bird survey is recommended prior to vegetation removal that is scheduled for the breeding season (January 15 through August 31). Finally, survey area contains an aquatic feature that may potentially fall under the jurisdiction of the RWQCB pursuant to Section 401 of the CWA because it may provide water quality functions for the San Dieguito Watershed. Avoidance of aquatic resources subject to Section 401 of the CWA is recommended. If avoidance of direct impacts is not feasible, permitting is required. To avoid indirect impacts, a Stormwater Pollution Prevention Plan is recommended.

If you have any questions regarding this letter report, please contact me at (619) 510-5372 or Emily.Mastrelli@WeAreHarris.com.

Sincerely,

Emily Mastrelli

Emily Mastrelli
Principal Biologist

Attachments

1, Figures
2, Observed Plant Species
3, Observed Wildlife Species

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Attachment 1. Figures

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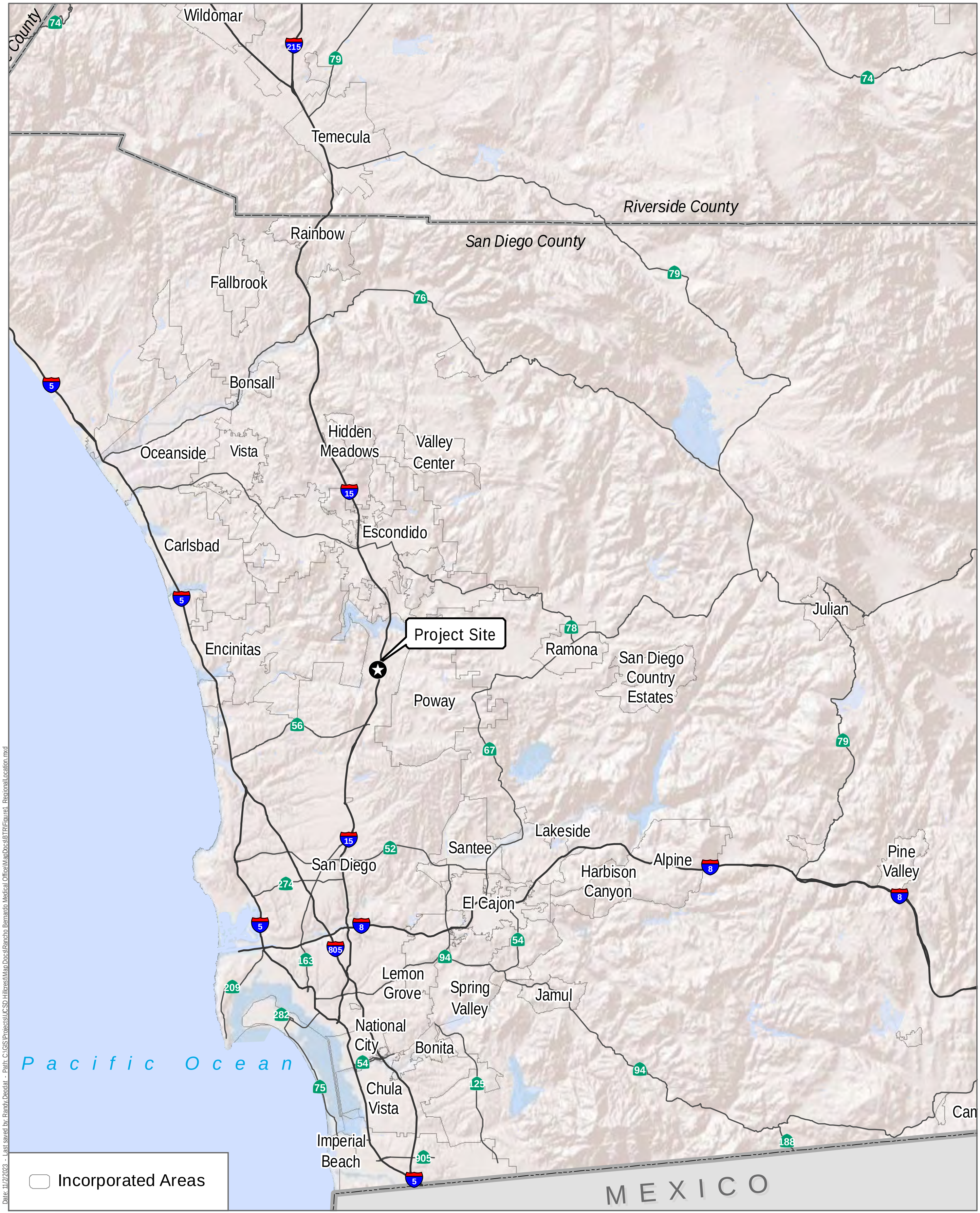

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Source: ESRI 2023.

Harris & Associates

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Figure 1

Regional Location

Rancho Bernardo Healthcare Center Project

Source: Maxar Imagery 2022.

Date: 1/11/2024 - Last saved by: Randy.Deodat - Path: C:\GIS\Projects\UCSD Hillcrest\Map Docs\Rancho Bernardo Medical Office\MapDocs\BTR\Figure2_ProjectSite.mxd

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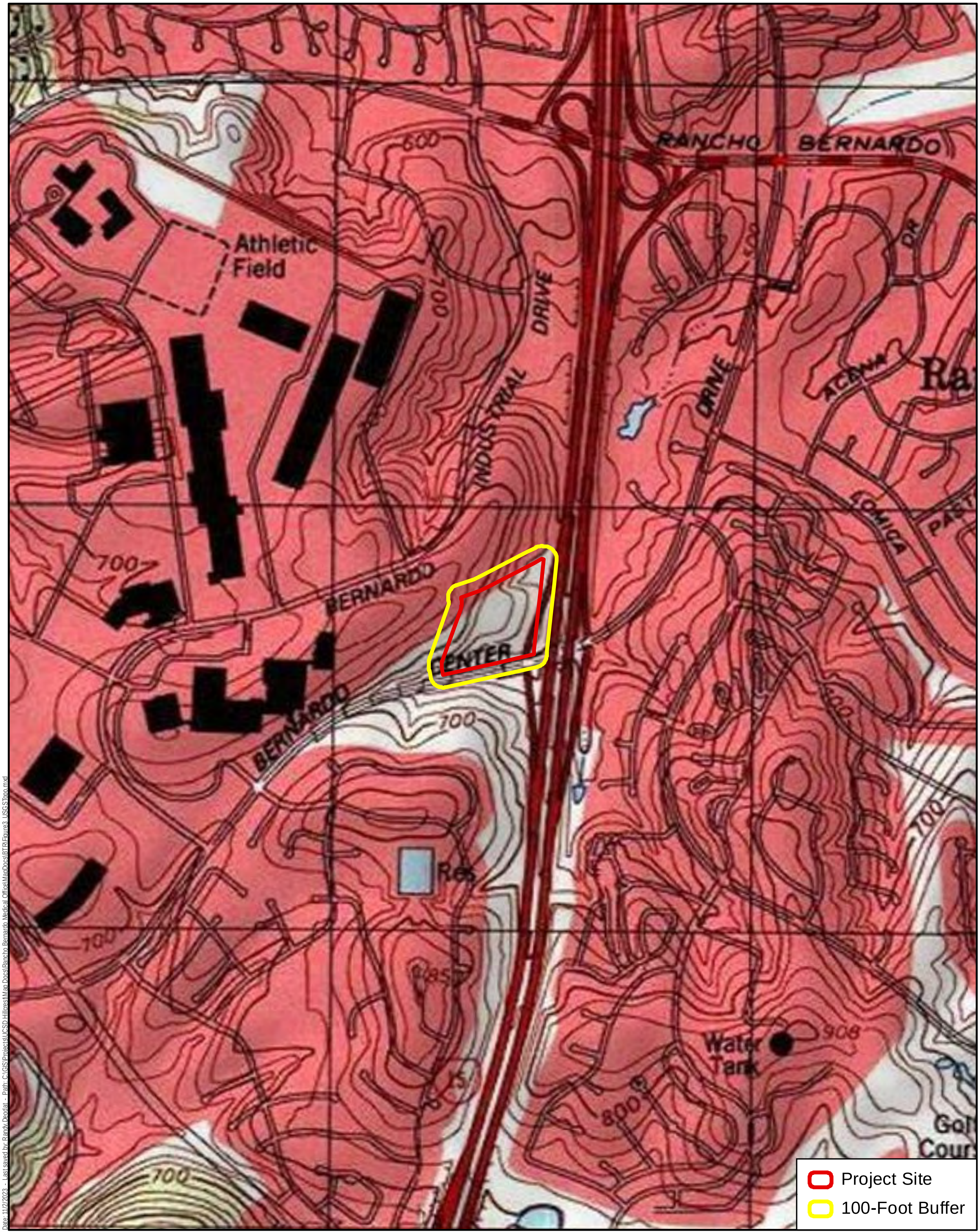
Figure 2

Project Site

Rancho Bernardo Healthcare Center Project



Source: USGS Escondido 7.5 Minute Quadrangle 1975.

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Figure 3

USGS Topographic Map

Rancho Bernardo Healthcare Center Project

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Source: USDA 1973; Maxar Imagery 2022.

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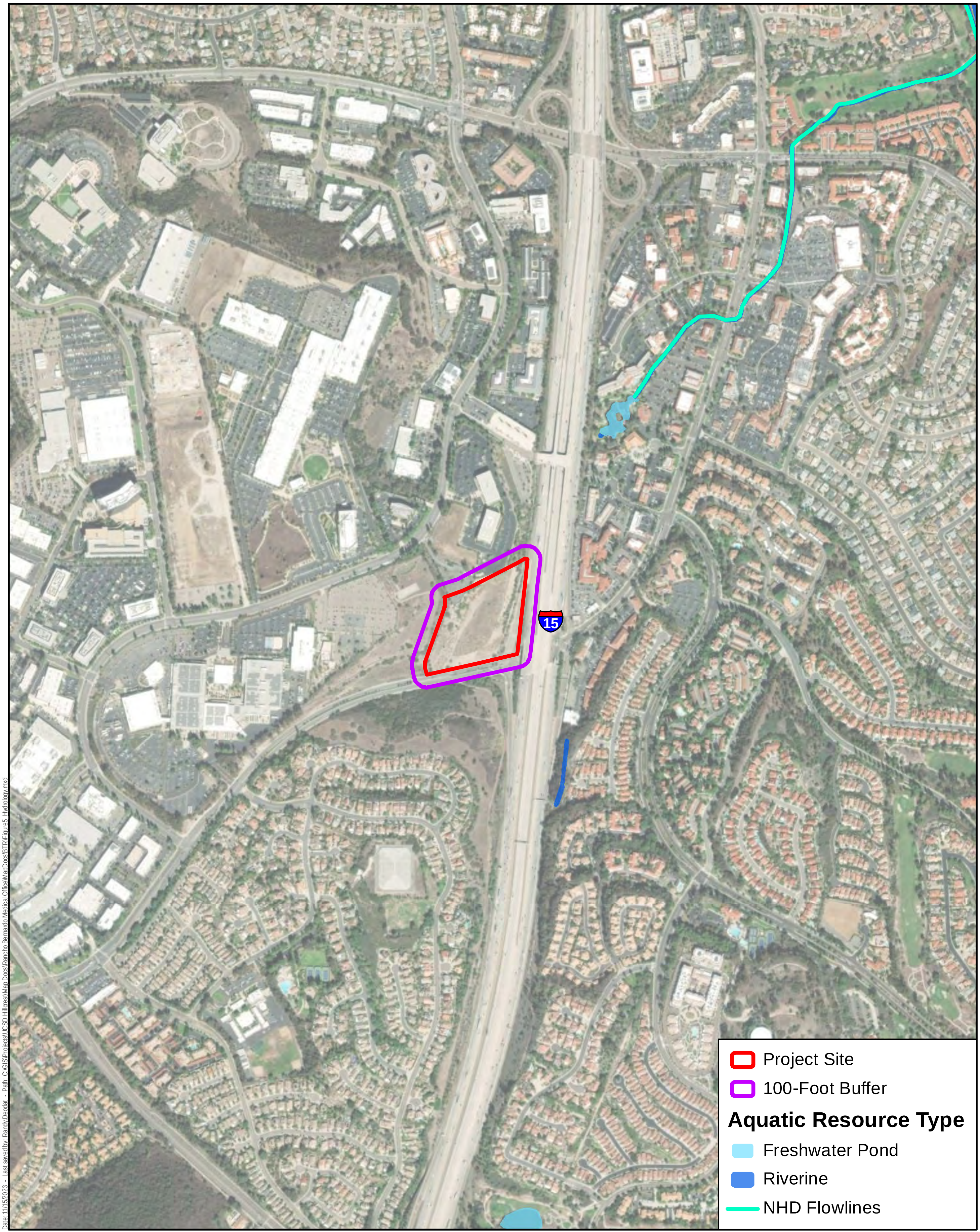
Figure 4

Soils

Rancho Bernardo Healthcare Center Project



Source: USFWS 2023; USGS 2023; Maxar Imagery 2022.

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Figure 5

Hydrology

UCSD - Rancho Bernardo Medical Office

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Source: Maxar Imagery 2022.

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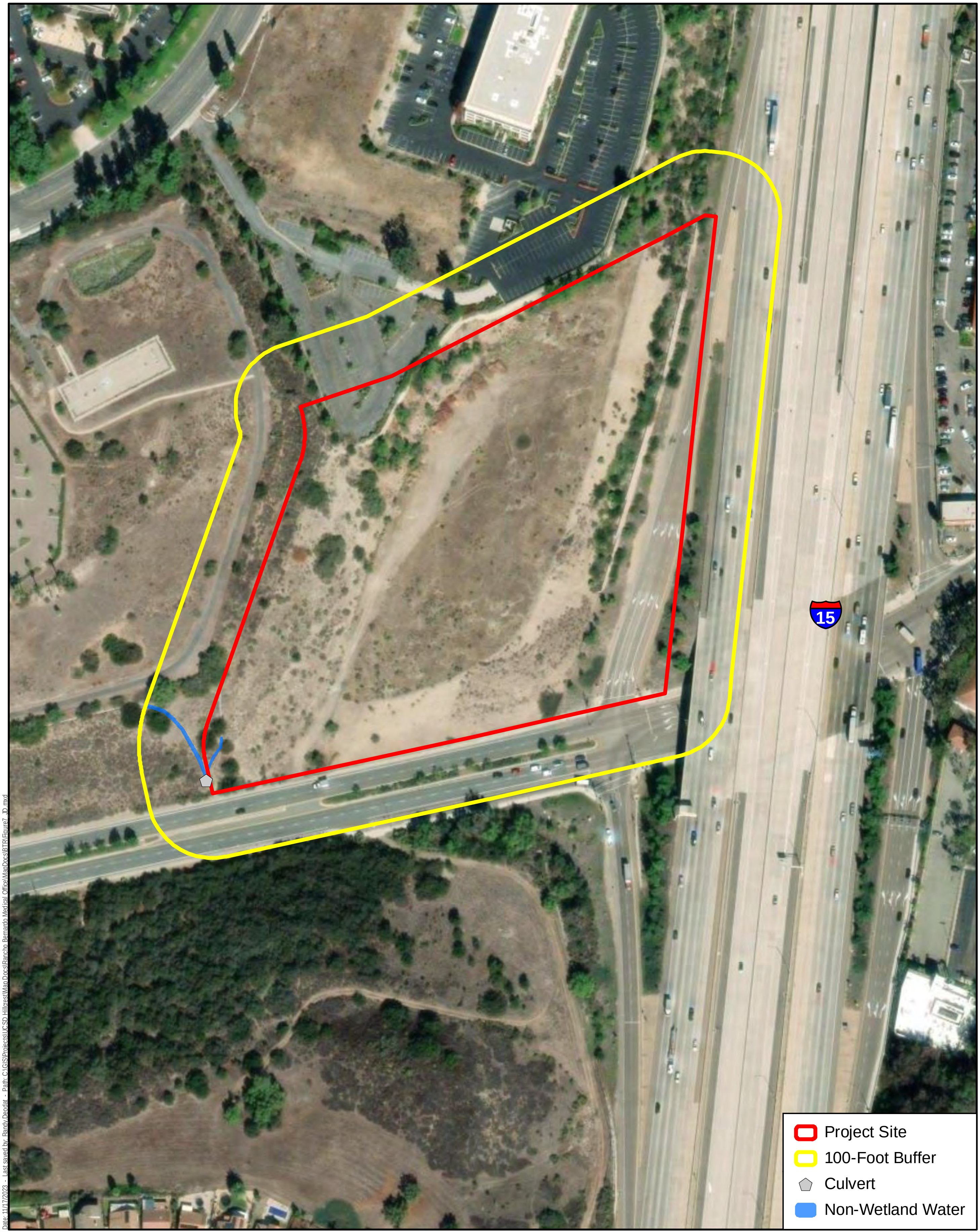
Figure 6

Vegetation Communities and Land Cover Types

Rancho Bernardo Healthcare Center Project



Source: Maxar Imagery 2022.

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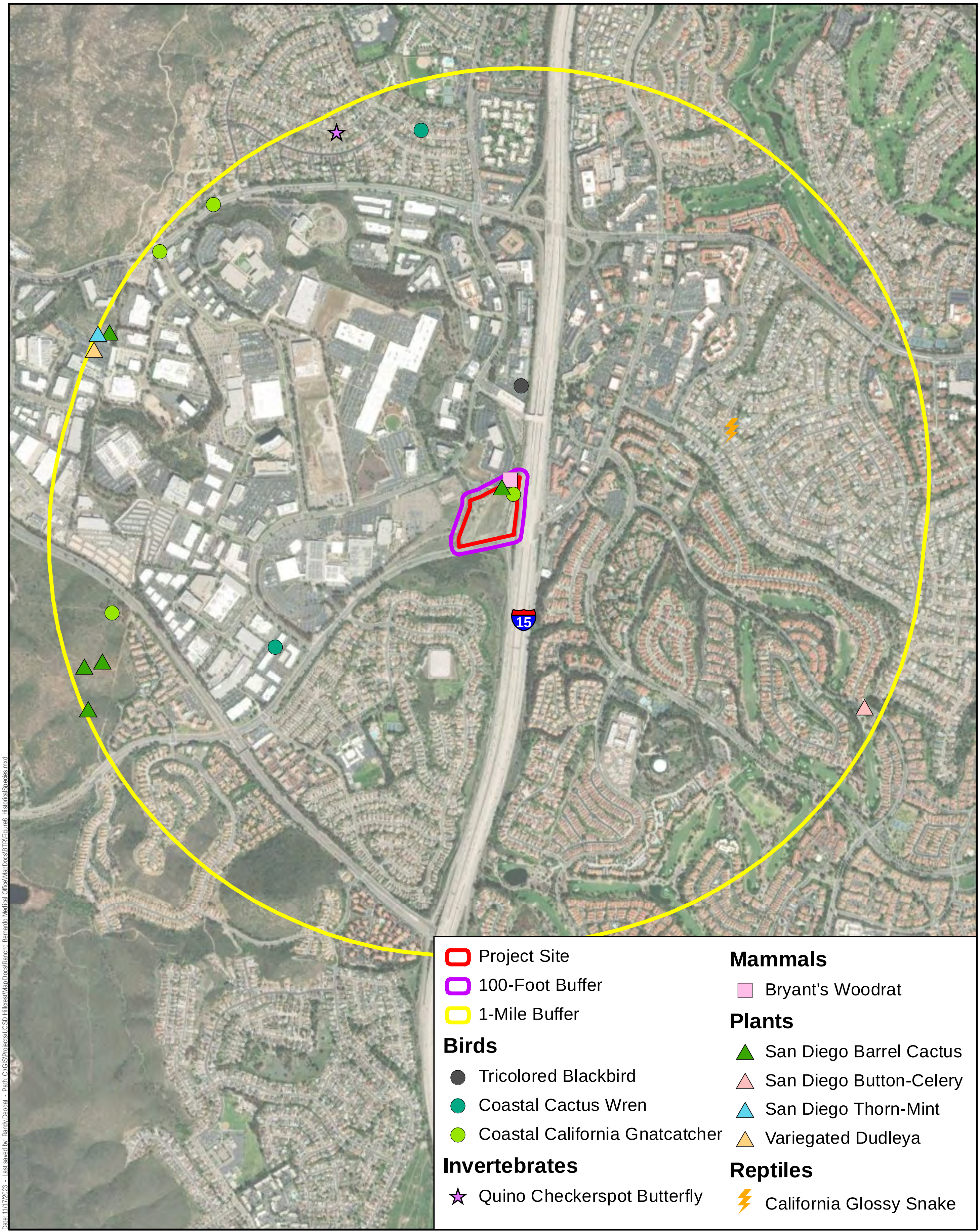
Figure 7

Potential Jurisdictional Resouces

Rancho Bernardo Healthcare Center Project



Source: USFWS 2022; Maxar Imagery 2022.

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Figure 8

Historical Species

UCSD - Rancho Bernardo Medical Office

Source: Maxar Imagery 2022.

Date: 11/15/2023 - Last saved by: Randy.Deodat - Path: C:\GIS\Projects\UCSD Hillcrest\Map Docs\Rancho Bernardo Medical Office\MapDocs\BTR\Figure9_SensitiveSpecies.mxd

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Figure 9

Sensitive Species Observed

Rancho Bernardo Healthcare Center Project

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Attachment 2. Observed Plant Species

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Attachment 2. Plant Species Observed

Scientific Name	Common Name	Special Status
GYMNOSPERMS		
Pinaceae - Pine family		
Pinus halepense	Aleppo pine	
EUDICOTS		
Anacardiaceae - Sumac Or Cashe		
Malosma laurina	Laurel sumac	
Rhus integrifolia	Lemonade berry	
* *Schinus molle*	Peruvian pepper tree	
Apiaceae - Carrot family		
* *Foeniculum vulgare*	Fennel	
Asteraceae - Sunflower family		
Artemisia californica	California sagebrush	
Baccharis salicifolia ssp. *salicifolia*	Mulefat	
Baccharis sarothroides	Broom baccharis	
* *Centaurea* sp.	Starthistle	
* *Cynara cardunculus*	Cardoon	
* *Dittrichia graveolens*	Stinkwort	
* *Helminthotheca echioides*	Bristly ox-tongue	
Brassicaceae - Mustard family		
* *Hirschfeldia incana*	Shortpod mustard	
Cactaceae - Cactus family		
Opuntia littoralis	Coastal prickly pear	
Lamiaceae - Mint family		
Salvia mellifera	Black sage	
Polygonaceae - Buckwheat famil		
Eriogonum fasciculatum	California buckwheat	
* *Rumex crispus*	Curly dock	
Solanaceae - Nightshade family		
Datura wrightii	Wright's jimsonweed	
Tamaricaceae - Tamarisk family		
Tamarix sp.	Tamarix	
MONOCOTS		
Poaceae - Grass family		
* *Avena barbata*	Slender wild oat	

	Scientific Name	Common Name	Special Status
*	*Bromus madritensis ssp. madritensis*	Foxtail brome	
*	*Cortaderia selloana*	Pampas grass	
*	*Pennisetum setaceum*	African fountain grass	

Legend

* Non-Native Invasive Species

Attachment 3. Observed Wildlife Species

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Attachment 3. Wildlife Species Observed

Scientific Name	Common Name	Special Status
INVERTEBRATES		
Moths, Skippers and Butterflies		
Papilionidae - Swallowtail Family		
Papilio rutulus	Western tiger swallowtail	
Nymphalidae - Brush-footed Butterfly Family		
Junonia coenia	Common buckeye	
Danaus plexippus	Monarch	FC
VERTEBRATES		
Birds		
Columbidae - Pigeon and Dove Family		
Zenaida macroura	Mourning dove	
Trochilidae - Hummingbird Family		
Calypte anna	Anna's hummingbird	
Tyrannidae - Tyrant Flycatcher Family		
Sayornis nigricans	Black phoebe	
Sayornis saya	Say's phoebe	
Corvidae - Jay and Crow Family		
Aphelocoma californica	California scrub-jay	
Corvus corax	Common raven	
Aegithalidae - Bushtit Family		
Psaltriparus minimus	Bushtit	
Troglodytidae - Wren Family		
Thryomanes bewickii	Bewick's wren	
Campylorhynchus brunneicapillus	Cactus wren	
Emberizidae - Sparrow Family		
Melozone crissalis	California towhee	
Fringillidae - Finch Family		
Haemorhous mexicanus	House finch	
Carduelis psaltria	Lesser goldfinch	

Scientific Name	Common Name	Special Status

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened
CSC = California Species of Special Concern
CFP = California Fully Protected Species

Appendix C1. Confidential Cultural Resources Data (available upon request)

Appendix C2. Confidential Tribal Cultural Resources Correspondence (available upon request)

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Appendix D. Geotechnical Report

GEOTECHNICAL
PROFESSIONALS INC.

GEOTECHNICAL INVESTIGATION
PROPOSED MEDICAL OFFICE BUILDING AND PARKING STRUCTURE
UCSD RANCHO BERNARDO HEALTH CENTER
NWC INTERSTATE 15 AND BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

Prepared for:
Pacific Medical Buildings
329 South Highway, Suite 160
Solana Beach, California 92075

Prepared by:
Geotechnical Professionals, Inc.
5736 Corporate Avenue
Cypress, California 90630
(714) 220-2211

Project No. 3202.I

December 22, 2023

GPI GEOTECHNICAL PROFESSIONALS INC.

December 22, 2023

Pacific Medical Buildings
329 South Highway 101, Suite 160
Solana Beach, California 92075

Attention: Mr. Pietro Martinez, AIA
Vice President, Architecture & Construction

Subject: Report of Geotechnical Investigation
Proposed Medical Office Building and Parking Structure
UCSD Rancho Bernardo Health Center
NWC Interstate 15 and Bernardo Center Drive
San Diego, California
GPI Project No. 3202.I

Dear Pietro:

Transmitted herewith is an electronic copy of our Geotechnical Investigation Report for the project. The report presents our design-level evaluation of the foundation conditions at the site and geotechnical recommendations for design and construction.

We appreciate the opportunity of offering our services on this project and look forward to seeing the project through its successful completion. Feel free to contact us if you have questions regarding our report or need further assistance.

Very truly yours,
Geotechnical Professionals, Inc.

Justin J. Kempton, G.E.
Principal

Donald A. Cords, G.E.
Principal

3202-I-01L.doc (12/23)

5736 Corporate Avenue • Cypress, CA 90630 • (714) 220-2211 , FAX (714) 220-2122

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

1.1 GENERAL

This report presents the results of a geotechnical investigation performed by Geotechnical Professionals, Inc. (GPI) for the proposed medical office building and parking structure development for the University of California, San Diego (UCSD) at the northwest corner of Interstate 15 and Bernardo Center Drive in San Diego, California. The location of the site is shown on the Site Location Map, Figure 1.

1.2 PROJECT DESCRIPTION

Pacific Medical Buildings (PMB) is planning to develop the subject project site for UCSD with a four- or five-story medical office building (MOB) and a four-story (3 elevated decks) parking structure (PS). These buildings will be located on a previously graded lot located on two parcels in the Rancho Bernardo area of San Diego. A retaining wall with a maximum height on the order of 7 feet is planned to widen the entry road at the southwest corner of the site. A retaining wall with heights up to approximately 12 feet is planned along the northwest side of the proposed PS.

An aerial image of the site is shown on Figure 2, Aerial Site Plan. The general topography of the site is shown on Figure 3, Topographic Site Plan. The proposed site improvements are shown on Figure 4, Proposed Site Plan. The base plan for Figure 4 is the Proposed and Existing Sections Exhibit by Latitude 33 Planning and Engineering, dated October 16, 2023.

The following includes our understanding of the project based on the information provided by PMB, Saiful-Bouquet (Structural Engineer for the MOB), Culp and Tanner (Structural Engineer for the PS), and Latitude 33 (Civil Engineer for the Project).

MOB Building Size	27,200 sf footprint 4 to 5 above grade levels / No subterranean levels
Parking Struct. (PS) Size	36,000 sf footprint 4 stories / No subterranean levels
Site Size	Parcel 1: 2.76 acres; Parcel 2: 7.04 acres
MOB Column Loads (D+L)	Typical Interior Column: DL=350 kips; LL=340 Kips
MOB Wall Loads (D+L)	9 to 12 kips (assumed)
MOB Structural System	Steel-Framed
PS Column Loads (D+L)	Range from 165 kips to 1270 kips
PS Structure	Cast-in-place Concrete
Floor Slabs (PS and MOB)	Supported on grade
Retaining Walls	Retaining walls up to 7 feet high are being considered along the toe of the 2:1 (H:V) fill slope ascending from the building pad area and entrance drive. Retaining walls on the order of 12 feet in height are planned along the northwest side of the PS

Additional Improvements	Minor site and retaining walls, appurtenant structures, at grade parking lot drives, outdoor amenities, underground utilities, and landscaping.

The site is currently vacant. The existing building pad area for the MOB and PS is located between previously constructed fill slopes that ascend to the west and north to commercial developments and slopes that descend to the south and east to Bernardo Center Drive and the southbound off-ramp of Interstate 15, respectively.

Background information regarding the existing compacted fill building pad, fill slopes, and tie-back anchored walls is presented in Section 1.4 of this report.

We have not been provided with the proposed final grades of the building pads. We assume that the grades will be within 3 feet of existing grades and that significant fills are not planned to construct the building pads. We understand that the existing fill slopes are intended to remain in their current configuration with the exception of local remedial grading or mitigation, if required.

Site improvements will include asphalt and portland cement concrete pavements, site walls (screen and retaining), utilities, and storm water management facilities. Based on site conditions (engineered fill pad and slopes) infiltration of storm water is not planned.

GPI's recommendations are based upon the above structural and finish grade information. GPI should be notified if the actual loads and/or grades differ or change during the project design to either confirm or modify GPI's recommendations. GPI should be provided with the project grading and foundation plans to review and comment once they become available.

1.3 PURPOSE OF INVESTIGATION

The primary purpose of this investigation and report is to provide an evaluation of the existing geotechnical conditions at the site as they relate to the design and construction of the planned development. Specifically, the investigation was aimed at providing geotechnical recommendations for earthwork and design of foundations, retaining walls, and pavements and preliminary recommendations for mitigation of slopes with having static factors of safety of less than 1.5 and/or excessive potential slope deformation under pseudo-static conditions.

1.4 BACKGROUND

From a geotechnical standpoint, the project site is a complicated site with a complicated history. The site is located in an area of mapped landslides. A significant number of geotechnical investigations have been performed at the site by at least eight geotechnical firms. A brief history of earthwork, construction and geotechnical studies is presented below.

- **1980s:** During widening of the I-15 southbound off-ramp to Bernardo Center Drive in 1981, an ancient landslide was re-activated on the Wellington property (the project site). Caltrans mitigated the slide with construction a shear key/buttress. Following corrective measures implemented in 1981 on the site, Leighton & Associates (Leighton) in the late 1980s performed additional investigations at the site.

- **1999 to 2000:** The Pointe (the property north of the project site) and the Wellington Property were graded to their current configuration. SCST was the geotechnical engineer of record during grading. The shear key that was installed in the lower slope in 1981 was enlarged, and a stability fill was constructed on the upper slope. Fills up to approximately 50 feet were placed in the central building pad area. Documentation of the compacted fill placed between November 1999 and April 2000 was provide by SCST in their report dated February 26, 2001 (SCST, 2001)

- **2002 to 2004:** Group Delta/TerraCosta Consultants (TCC) performed a distress investigation for The Pointe and discovered potential deep-seated slope instability (F.S. < 1.5) and recommended comprehensive stabilization. TCC contended that the SCST shear key on the Wellington property did not go deep enough to intercept a landslide slip surface and the site did not meet the minimum slope stability requirements.

- **2004:** Christian Wheeler performed their own investigation of the Wellington Property in 2004 and concluded that TCC mischaracterized the site geology, used overly conservative values in their analysis and the site was stable (Christian Wheeler, 2004).

- **2006:** Litigation resulted in a retaining wall, grade beam with tieback anchor system at The Pointe and the northern portion of the Wellington Property. As-built plans for the anchored system were provided to GPI by Caltrans, (Caltrans, 2006). The footprint of the tieback anchors is based on information reported by TerraCosta Consultants and SCST (2018).

- **2010:** TCC prepared a report indicating that the upper slope and southern portion of the lower slope (the portion south of the tieback grade beams) of the Wellington Property would likely require additional stabilization measures and additional analyses of these slopes was required. (TCC, 2010).

- **2018:** A consortium of geotechnical and engineering geologic consultants (TCC/Christian Wheeler/Geocon) worked together to develop a more conclusive characterization of the site and resolve differences between Christian Wheeler (2004) and Tera Costa Consultants (2010). This investigation consisted of performing additional large-diameter borings, sample acquisition, and down-hole logging by geologists from each of the three firms. Comprehensive laboratory shear strength testing was performed by Geocon. Based on the additional studies, TCC revised conclusions to indicate the Wellington Property is stable with the exception of the “western upper slope” (Area HP). The western upper slope was concluded to have variable factors of safety (FS) with some areas having a FS less than 1.5. There are no cross sections nor analyses published to support a FS = 1.3 in their report (TCC, 2018b)

- **2018:** SCST prepared a geotechnical investigation for UCSD during acquisition of the property to provide grading and foundation recommendations. The amount of landslide (Qls) material below the building pad was revised (reduced) from their original grading report (SCST, 2001) and they concluded that the fill slopes (upper and lower) appear to be stable.

2.0 SCOPE OF WORK

GPI's scope of work included review of published information, field explorations, site reconnaissance, field seismic-shear wave survey, laboratory testing, engineering analyses, assessments of slope stability and seismic hazards, and preparation of this report.

GPI's field investigation consisted of seven exploratory borings advanced with truck-mounted hollow-stem-auger equipment. The borings were drilled to depths of approximately 31 to 66 feet below existing grade. Descriptions of the field procedures and logs of the borings are presented in Appendix A.

GPI's laboratory testing program included determinations of in-place moisture content and dry density, Atterberg limits, fines content, shear strength, consolidation/swell tests, maximum density/optimum moisture (compaction), expansion index, and corrosivity screening. Laboratory test procedures and results are presented in Appendix B. Soil corrosivity testing was performed by Project X Corrosion Engineering under subcontract to GPI. Their test results are also presented in Appendix B.

GPI retained Terra Geosciences as a subconsultant to conduct a seismic shear-wave survey along two selected locations of the site to assess the average shear wave velocity below the two proposed structures to a depth of at least 100 feet. The results of the seismic shear-wave survey are presented in a report dated October 16, 2023, included as Appendix C of this report.

As mentioned above, several geotechnical studies were previously conducted at the site. Logs of borings from SCST (2018) and the 2018 study by the consortium of geotechnical and engineering geologic consultants (TCC/Christian Wheeler/Geocon) that were included in SCST (2018) are presented in Appendix D.

Engineering evaluations were performed by GPI to provide earthwork criteria and foundation, retaining wall, floor slab, and pavement design parameters. We also performed a site-specific ground motion hazard analysis for the site. The results of GPI's evaluations are presented in the remainder of the report.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 SITE CONDITIONS

The subject site is an irregularly shaped parcel, approximately 9.5 acres in size, located northwest of the intersection of Bernardo Center Drive and Interstate 15 in the City of San Diego. The overall site is bounded by Bernardo Center Drive to the south, Interstate 15 to the east, and existing commercial developments to the north and west.

The existing site is vacant and undeveloped. Prior site grading, as summarized in Section 1.4 of this report, included placement of up to 50 feet of compacted fill in the central building pad area, construction of a buttress fill slope and tie-back anchor grade beam/wall at the toe of the slope that descends from the central building pad area to the Interstate 15 off-ramp and Bernardo Center Drive, and construction of a stabilization fill slope ascending from the central pad area to the west.

Site topography varies considerably. The central building pad area is approximately 3.5 acres in size and gently slopes downward from north to south from about elevation +668 feet to +655 feet. The entrance road at Bernard Center Drive is at about elevation +635 feet. The slope descending to Bernado Center Drive is on the order of 15- to 45-feet high and the slope descending to the Interstate 15 offramp is on the order of 45- to 55-feet high. The toe of the lower slope along the Interstate 15 offramp is at approximate elevation +600 to +610 feet. The ascending slopes to the north and west are on the order of 20 feet and 60 feet high, respectively. The top of the upper slope along the western property line is at about elevation +690 to +715 feet. The fill slopes are generally at an overall gradient of approximately 2:1 (horizontal:vertical), range in height from 15 to 55 feet, and are within the property limits of the project.

A tie-back anchor-supported grade beam and retaining wall was previously installed along the northern portion of the toe of the slope at the Interstate 15 offramp. A second tie-back anchor-supported Keystone™ wall (a structural shotcrete tied-back wall) is located within the ascending slope in the northern portion of the site and supports a portion of the parking lot at the top of the western slope. As-built plans for the lower tie-back wall were provided to us by Caltrans. Our understanding of the as-built conditions for the tie-back supported Keystone™ wall are based on a 10-page white paper prepared by TerraCosta Consulting Group titled the Landslide Stabilization of The Pointe Project (undated).

The site is covered with weeds and grass, some medium to large shrubs, and a few small to medium size trees. Some scatter debris consisting of broken concrete, brick, masonry blocks, metal and wood were observed at the site. The grass on the lower slope was recently mowed at the time of our site visit (September 15, 2023). The lower slope appears to be irrigated.

Localized slumps and shallow surficial slope instabilities were observed within the lower slope descending from the building pad area during our site reconnaissance. Significant rodent burrows were also observed near the top of the lower slope (both within the pad and on the slope surface.

A City of San Diego waterline easement or right-of-way (ROW) exists along the top of the ascending slope within the property limits on the west side of the project site.

3.2 SUBSURFACE SOIL CONDITIONS

Based on GPI's field explorations and the prior explorations by others at the site, the subsurface profile consists of compacted fill soils (Qaf) and landslide deposits (Qls) overlying bedrock predominantly of the Friars Formation (Tf). The Stadium Conglomerate (Tst) overlies the Friars Formation and is mapped in the western portion of the site generally above elevation +690 to +700 feet. Detailed descriptions of the conditions encountered are shown in the Logs of Borings by GPI in Appendix A and the Logs of Borings by others in Appendix D. The locations of GPI's explorations and the explorations by others are shown on the Site Plans, Figures 2 through 4.

A Regional Geologic Map from Kennedy and Tan (1999), with the site location delineated, is shown on Figure 5-1. The interpreted subsurface conditions at the site are depicted on the Site Geologic Plan, Figure 5.2, and in Geologic Sections GPI-1 through GPI-7 on Figures 6-1 through 6-7, respectively. Each of the encountered subsurface units are discussed below.

Existing Fill (Qaf): A substantial amount of compacted fill was placed at the site during prior grading operations as documented by SCST (2001). As per the SCST 2001 report, the shear key and buttress fill (the lower fill slope) placed on the south and east sides of the side were constructed to reduce the potential of future movement of an ancient landslide and the stability fill placed on the western slope to provide support for adverse natural bedding exposed in the cut slope. The fills were reportedly compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557-91. Within the upper slope, the artificial fills extend up to depths of approximately 25 feet. Across the rough grade portion of the site and through the descending slopes to the east, the artificial fills extend up to depths of approximately 60 feet.

The fill soils encountered in our explorations consisted predominantly of sandy clay and clayey silt with some layers of silty sand. Some gravel, cobbles, siltstone, and sandstone bedrock fragments were encountered within the fills. The fills were generally stiff to hard with some shallow loose and soft areas. The moisture content of the fill generally ranged from moist to very moist and locally wet. Large obstructions, possibly large bedrock fragments or boulders were locally encountered in the fill.

Laboratory testing by GPI and others indicates the clayey fill soils have a medium to high expansion potential (Expansion Indices of 79 to 106).

Landslide Deposits (Qls): The prior reports referenced herein indicate some landslide debris materials were left in place during prior grading activities. The 2001 report by SCST generally mapped the entire central building pad fill area as being underlain by landslide deposits. Subsequent reports by SCST and others, based on downhole logging of large diameter borings and hollow stem auger borings, reduced the area considered to be underlain by landslide deposits. Based on the recent borings by GPI, prior borings by others, and prior geologic mapping, the approximate locations where landslide deposits are anticipated to remain is shown on the Site Geologic Plan, Figure 5-2. The areas with remaining landslide deposits are generally in the northern portion of the proposed MOB, extending to the southern edge of the proposed PS, and within the central portion of the upper slope. Additional landslide deposits are also anticipated to underlie the northwestern portion of the proposed PS, extending north into the adjacent property (The Pointe).

Based on our review of our recent explorations and prior explorations by others, the composition of the landslide deposits appeared to be dependent on the composition of their source materials. Specifically, landslide deposits derived from Friars Foundation bedrock were found to consist of sandy and silty clays with varying amounts of gravel while those derived from Stadium Conglomerate were found to consist of silty and sandy gravels. Overall, the landslide deposits were characterized by basal sliding surfaces, brecciation, gouges, crumbly or remolded consistencies, calcium carbonate includes, and low blow counts and relative densities.

GPI Boring B-2, drilled within the existing rough-graded building pad area, encountered the landslide deposit materials below the fill materials at depths between approximately 22 to 30 feet below grade. The landslide material consisted of very moist, medium dense silty sand and wet, stiff clay. Consolidation testing indicates the material to be somewhat more compressible than the overlying compacted fills. The landslide deposits encountered by others consisted of very stiff, sandy clay with varying amounts of gravel and trace amounts of cobbles.

The presence of landslide deposits below the stabilization fill on the western ascending slope is based on prior mapping by others. Supplemental explorations to confirm the presence of Qls materials at this location were not performed.

Stadium Conglomerate (Ts): The upper portion of the western fill slope (above approximate elevation +690 to +700 feet) is mapped as consisting of Tertiary Stadium Conglomerate. The formation reportedly consists of a massive coarse-grained sandstone matrix. It generally overlies the Friars Formation. Materials of this formation were not encountered in our explorations. However, as noted previously, select outcroppings of the landslide deposits appear to have been generated from the Stadium Conglomerate materials.

Friars Formation (Tf): The fill, landslide debris and Stadium Conglomerate are underlain by the Friars Formation at depth. The Friars Formation generally consists of silty claystone, silty and clayey sandstone, and sandy siltstone. The bedrock materials and moderately to thinly bedded, moderately to well cemented, and hard to very hard. Laboratory testing by others indicates the claystone bedrock materials exhibited low to moderate plasticity.

The lithologic characteristics within the Friars Formation are very complex from a slope stability standpoint because planes of weakness and internal fractures create potential landslide surfaces. Planes of weakness within the bedding materials include Fissured Claystone (FCS), characterized as soft and thin clays beds on the order of 1 to 2 feet in thickness, and Bedding Plane Shears (BPS), characterized as undulatory, very thin, and very soft clay gouge materials on the order of 1 to 2 inches in thickness. The landslides underlying the site and surrounding area are associated with the daylighting of these weak bedrock features in slopes. As logged by others, the FCS and BPS lenses are reported to be horizontal to subhorizontal (dips of less than 2 degrees). With the exception of the FCS and BPS features, the Friars Formation materials are considered to have very low compressibility and relatively high strength.

3.3 SEISMIC REFRACTION SURVEY RESULTS

As previously mentioned, the results of a Seismic Shear-Wave Survey conducted as part of this study are presented in a report by Terra Geosciences dated October 16, 2023 included in Appendix C.

Two seismic lines were performed to assess average shear-wave velocity to depths of at least 100 feet below the existing ground surface. Line SW-1 was oriented in the north-south direction and was located along the eastern side of the proposed MOB footprint. Line SW-2 was oriented in the northeast-southwest direction and was located along the eastern side of the proposed PS footprint. Analysis of the data obtained during the survey indicated that the “weighted average” shear-wave velocity within the upper 100 feet, Vs30, at the tested locations is as follows:

Seismic Line SW-1 (MOB):	1002.6 feet per second
Seismic Line SW-2 (PS):	1033.7 feet per second

As detailed in ASCE 7-16, these velocities correspond to a **Site Class D** (Stiff Soil).

3.4 GROUNDWATER AND CAVING

Groundwater was encountered in GPI Borings B-1 and B-7 at depths of 29 feet and 16 feet below the existing ground surface, respectively. Groundwater was also encountered at various depths in prior borings by others at the site. Based on review of our boring logs and logs by others (which are included in Appendix D of this report), the groundwater encountered appears to be perched groundwater seepage from zones of more granular bedrock and fills and at the fill/bedrock contacts that are confined by less permeable claystone and siltstone layers. The permanent groundwater table is expected to be below a depth that will influence the planned construction.

Minor caving occurred in localized granular fill layers where seepage was noted in our relatively small diameter hollow-stem auger drilling equipment. Based on the fines and moisture contents of the soils encountered, the caving potential of the upper soils is considered to be low.

4.0 GELOGIC HAZARDS

4.1 CITY OF SAN DIEGO SESIMIC SAFETY ELEMENT

The City of San Diego Seismic Safety Study (2008) and associated City of San Diego Seismic Safety Element, Grid Tile No. 47 (dated April 3, 2008) indicate that the subject site is located within Geologic Hazard Category 21, which is defined as being associated with confirmed, know, or highly suspected landslides. As noted previously, the site has been subjected to past landslides. However, following remedial grading and stabilization efforts, additional landsliding has not been identified at the site.

The referenced Seismic Safety Element, Grid Tile No. 47, along with the approximate limits of the subject site, are shown in the Geologic Hazards Map, Figure 7.

4.2 FAULTING AND SURFACE RUPTURE

We reviewed the 2008 National Seismic Hazard Maps Source Parameters (USGS, 2008) to identify known active faults within a 100-mile radius of the project site. The names and distances of the faults lying within 45 miles of the project site are provided in the following table (Table 4.3-1).

Table 4.2-1 – Significant Regional Faults

Fault Name	Approximate Distance* (mi)
Rose Canyon	13.4
Newport-Inglewood (Offshore)	22.5
Elsinore	22.8
Coronado Bank	27.5
Palos Verdes Connected	27.5
Earthquake Valley	30.9
San Jacinto	44.2

* Defined as the closest distance to projection of rupture area along fault trace.

The site does not lie within an Alquist-Priolo Earthquake Fault Zone as designated by the California Geological Survey (CGS, 2001). In addition, named surface faults are not mapped projecting towards or through the site.

4.3 SEISMIC SHAKING

As is the case with most locations in Southern California, the subject site is located in a seismically active area of southern California. The type and magnitude of seismic hazards that may affect the site are dependent on both the distance to causative faults and the intensity and duration of the seismic event. The subject site will likely experience strong ground shaking caused by earthquakes on active, regional faults in the future.

We present the mapped ASCE 7-16 seismic code values as well as the results of our site-specific ground motion hazard analysis in Section 6.2 of this report.

4.4 LANDSLIDES AND SLOPE STABILITY

The subject site is located in an area of mapped landslides (Kennedy and Tan; 1999, 2007). As indicated in the Regional Geologic Map, Figure 5-1, the landslide deposits are Pleistocene-age and Holocene-age materials that are the result of prior slope failure and are subject to renewed slope failure. The historical landslide failures associated with these deposits are mapped as trending to the east (downslope) towards Interstate 15. As noted previously, the City of San Diego Seismic Safety Study also categorizes the site as being associated with “confirmed, known, or highly suspected” landslides (Category 21).

Due to the past occurrences of landslides, the subject site and adjacent sites were stabilized using a combination of earthwork shear keys and grade beam and tie-back support systems. The approximate limits of the tie-back supported grade beams and Keystone™ wall are shown on the Proposed Site Plan, Figure 4, and the Preliminary Geotechnical Plan, Figure 8. Following the past earthwork at the site, localized outcroppings of landslide deposits remained buried-in-place. The approximate limits of the remaining landslide deposits are shown on the Site Geologic Plan, Figure 5-2.

We evaluated the stability of the existing and proposed slope configurations at seven locations across the site, covering both the upper and lower site slopes. The slope stability sections correspond to Geologic Cross Sections GPI-1 through GPI-7 and are shown in Figures 6-1 through 6-7. Further discussion on our slope stability analyses and findings is presented in Section 5.0. The results of our analyses are also presented in Appendix D.

4.5 LIQUEFACTION AND SEISMIC INDUCED SETTLEMENT

Soil liquefaction is a phenomenon in which saturated cohesionless soils undergo a temporary loss of strength during severe ground shaking and acquire a degree of mobility sufficient to permit ground deformation. In extreme cases, the soil particles can become suspended in groundwater, resulting in the soil deposit becoming mobile and fluid-like. Liquefaction is generally considered to occur primarily in loose to medium dense deposits of saturated soils. Thus, three conditions are required for liquefaction to occur: (1) a cohesionless soil of loose to medium density; (2) a saturated condition; and (3) rapid large strain, cyclic loading, normally provided by earthquake motions.

Seismic ground subsidence, not related to liquefaction, occurs when loose, granular soils above the groundwater are densified during strong earthquake shaking.

As mapped by the City of San Diego in their 2008 Seismic Safety Study, the subject site is not located in a zone associated with a potential for liquefaction. In our opinion, this is most likely due to the presence of relatively dense compacted fill soils and underlying bedrock materials, as well as the lack of shallow groundwater.

Based on the subsurface conditions at the site, we do not anticipate that liquefaction or seismic ground subsidence will adversely impact the project.

4.6 FLOODING

Various types of seismically induced flooding, which may be considered as potential hazards to a particular site, include flooding due to a tsunami (seismic sea wave), a seiche, or failure of a major water retention structure upstream of the project. The site is located approximately 11 miles inland from the Pacific Ocean at elevations of approximately +600 feet to +700 feet above mean sea level. Due to the distance to the coast and elevation at the site, the probability of flooding due to a tsunami is considered to be nonexistent.

There are no dams or reservoirs located upstream at the site that may be susceptible to seiche. In addition, the site is in an “area of minimal flood hazard” as mapped by the Federal Emergency Management Agency (FEMA) and the County of San Diego (SanGIS). As such, the probability of site flooding due to seiche, dam failure, or river overflow is also considered to be nonexistent.

4.7 SUBSIDENCE

The subject site is not located in an area of known subsidence associated with the extraction of fluid, such as groundwater or petroleum. As such, the potential for subsidence is considered to be negligible.

4.8 EXPANSIVE SOILS

Expansive soils generally consist of clays that can shrink and swell with changes in moisture content. Movement of soils in response to shrinkage and swelling has the potential to impact near-surface improvements such as lightly loaded foundations, floor slabs, and flatwork.

Laboratory testing by GPI and others (see References) indicated that the upper clayey soils at the site have a medium to high potential for expansions (EI’s of 79 to 106). These soils should be expected to shrink and swell with changes in moisture content. Therefore, the potential for expansive soils to adversely affect the project if not mitigated is considered to be high.

Mitigation measures to reduce the adverse impact of expansive soils may include:

- In-place chemical treatment of the expansive soils (cement or lime treatment, or equivalent).
- Removal and replacement of the expansive soils with non-expansive import soils where the potential for shrink/swell is not tolerable.
- Deepening spread foundations below zones of significant moisture variations that results in shrink /swell cycles.
- A structural control method that could be utilized would include design of foundations, floor slabs, and hardscape to resist the potential swell pressures of the expansive soils by increasing concrete reinforcing or using post-tension methods as outlined in the California Building Code.

5.0 SLOPE STABILTY ANALYSES

5.1 GENERAL

We evaluated the static stability of the existing upper and lower site slopes as well as the static and pseudo-static stability of the proposed slopes. Our analyses covered a total of seven slope sections at the site, identified as Sections GPI-1 through GPI-7. The locations of the slope cross sections are shown on the Site Plans, Figures 2 through 4. The subsurface geologic conditions at each slope section are presented in Figures 6-1 through 6-7.

Overall, the existing slopes bounding the subject site consist of the following:

- West Slope: An approximately 60-foot-high, 2:1 (h:v) slope ascending towards the existing Hewlett-Packard property and an existing City of San Diego waterline easement at the top of the subject slope. Portions of the western slope include landslide deposits that were not removed during prior earthwork at the site. The West slope was evaluated using Sections GPI-1, GPI-2, and GPI-3.
- North Slope: An approximately 20-foot-high, 2:1 (h:v) tie-back supported retaining wall separating the subject site from The Pointe property. The ground surface elevation of Pointe property is approximately 30 to 45 higher than the planned finish floor elevation of the proposed PS. The North slope was evaluated using Sections GPI-4 and GPI-7.
- South Slope: An approximately 15-foot to 35-foot-high, 2:1 (h:v) slope descending to Bernardo Center Drive. The height of the slope increases to the east as Bernardo Center Drive descends in elevation. The Soth slope was evaluated using Section GPI-5.
- East Slope: An approximately 50-foot-high, 2:1 (h:v) slope descending towards the Interstate 15 southbound offramp. The northern portion of the eastern slope is supported by a tied-back grade beam constructed by CalTrans to mitigate landslide instability within the subject site and the site to the north (The Point). The East slope was evaluated using Sections GPI-3 and GPI-6.

The details and results of our analyses are presented in Appendix E. A summary of the findings from our analyses is provided below.

5.2 STRENGTH PARAMETERS USED IN ANALYSES

The soil strength parameters of the subsurface materials were based on tested shear strength parameters by GPI and others (see References) as well as published shear strengths for the site bedrock materials. The strength parameters used in our stability analyses are as follows:

MATERIAL TYPE	UNIT WEIGHT (pcf)	FRICTION ANGLE (°)	COHESION (psf)
Artificial Fill (Qaf)	125	24	300
Landslide Deposits (Qls)	125	22	0
Stadium Conglomerate (Tst)	125	36	500
Friars Formation Bedrock (Tfs)	125	36	300
Fissured Claystone (FCS)	125	17	0
Bedding Plane Shear (BPS)	125	7	0
Concrete Retaining Wall	150	45	1,000

In addition to the shear strength parameters presented above, our stability analyses also accounted for the existing tie-back supports for the northern Keystone™ wall as well as the eastern Caltrans retaining wall system. The tie-backs in the northern Keystone™ wall were included in our evaluations of Sections GPI-4 and GPI-7. The tie-backs in the eastern Caltrans wall were included in our evaluations of Section GPI-6.

Our understanding of the tie-back loading for the Keystone™ is based on a white paper prepared by David Salter and others from TerraCosta (Salter et. al., undated). Our understanding of the existing conditions for the Caltrans retaining wall is based on the As-Built plans for the Point/Offsite Parcels Grade Beam and Retaining Wall (Sheets 25 to 37, 42 and 43) prepared by Caltrans (dated March 15, 2006). Based on the above references, we utilized the following tie-back parameters in our stability analyses where pertinent:

LOCATION	TIE-BACK PARAMETERS			
	SPACING (ft)	LENGTH (ft)	INCLINATION (°)	LOAD/TIEBACK (KIPS)
Keystone™: Top Row (GPI-4)	10	80	15	70*
Keystone™: Bottom Row (GPI-4)	10	80	15	70*
Keystone™: Top Row (GPI-7)	10	115	15	170**
Keystone™: Bottom Row (GPI-7)	10	115	15	170**
Caltrans RW: Row 1	6	165	27	354
Caltrans RW: Row 2	6	150	27	354
Caltrans RW: Row 3	6	135	27	354
Caltrans RW: Row 4	6	125	27	354

*Lower bound condition per Salter et. al. (see References)
**Tie-Back load required for existing static factor of safety of 1.5; Lower bound = 155 kips (Salter et al.)

5.3 STATIC CONDITIONS

We evaluated the static stability of the existing and proposed slope geometries using the shear strength parameters described above and the applicable cross sections. The analyses were performed using the computer program SLIDE 6.0 (Rocscience, 2016) for a number of translational block and circular failure surfaces. The calculated factors of safety were based on the Modified Bishop method.

Existing Slope Configurations

Based on our analyses, the existing slopes were evaluated to have a Factor of Safety (FS) equal to or greater than 1.5 at Sections GPI-2, GPI-3 (lower), GPI-4, GPI-5, and GPI-6. In addition, we determined that minimum existing tie-back loads of approximately 170 kips (at 10-foot spacings) would achieve a static factor of safety of 1.5 for Section GPI-7. Per the white paper prepared by Salter et at. (see References), the range of tie-back loads within the portion of the wall transected by Section GPI-7 was approximately 155 to 386 kips. As such, the minimum stable load of 170 kips is within the lower bound range of potential loads for this section of the existing Keystone Wall.

A FS equal to or greater than 1.5 is the minimum required FS required to be considered stable for static considerations. The calculated static factors of safety ranged from 1.50 (Section GPI-7) to a high of 1.90 (Section GPI-6). The existing slopes at Section GPI-1 (FS = 1.30) and the upper portion of Section GPI-3 (FS = 1.33) were found to marginally unstable, having static factors of safety of less than 1.5.

In general, the areas of marginal slope instability were associated with the presence of landslide deposits or bedding plane shears within the slope. For Section GPI-1, our analyses indicated a block-type translational failure surface beginning at the top of the upper, western slope at the existing waterline easement, intersecting the bedding plane shear encountered at approximate Elevation +622 feet, and then daylighting at the slope surface at approximate Elevation +636 feet within the limits of the proposed vehicle entrance drive. Our analyses indicated the relatively shallow depth of the bedding plane shear at the toe of the subject slope (approximately 14 feet below existing grade within Section GPI-1) contributes to the marginal slope instability. Where the depth to the bedding plane shear exceeds approximately 20 feet (corresponding to a ground surface Elevation of +642 feet), the resulting slope section was evaluated to have a factor of safety of at least 1.5.

For the upper slope portion of Section GPI-3, our analyses indicated a circular-type failure surface extending through the landslide deposits that remain within the upper, western slope. The circular failure surface begins in the upper portions of the western slope and daylights near the toe of the western slope. Based on our review of prior geotechnical reports performed at the site, we anticipate the areas of the western slope where landslide deposits remain in-place to be on the order of 75 to 100 feet wide

Additional details on our static slope stability analyses of the existing slope conditions are presented in Appendix E.

Proposed Slope Configurations

Based on the currently proposed grading plans as included in the Proposed Site Plan, Figure 4, the proposed finished grades will result in cuts on the order of 12 feet and fills on the order of 5 feet within the analyzed site cross sections. Based on our analyses, the proposed slopes were found to be stable (FS greater than or equal to 1.5) at Sections GPI-3 (lower), GPI-4, GPI-5, and GPI-6, with calculated static factors of safety ranging from 1.56 (Section GPI-3, lower) to a high of 1.91 (Section GPI-6). The proposed slopes at Section GPI-1 (FS = 1.23), GPI-2 (FS = 1.46), the upper portion of Section GPI-3 (FS = 1.18), and GPI-7 (FS = 1.30) were found to be marginally unstable, having static factors of safety of less than 1.5.

For Sections GPI-1 and the upper portion of GPI-3, the slope failure planes and failure mechanisms are comparable to those previously detailed in this report for the existing site conditions.

For Section GPI-2, our analyses indicated a block-type translational failure surface beginning at the top of the upper, western slope near the existing waterline easement, intersecting a fissured claystone layer encountered at approximate Elevation +657 feet, and then daylighting at approximate Elevation +660 feet at the bottom of the proposed slope. Based on our analyses, the planned cuts within Section GPI-2, which are anticipated to be on the order of 5 feet at the bottom of the upper slope, are the reason the static factor of safety dropped below 1.5 relative to the existing slope configuration.

For Section GPI-7, current plans indicate cuts on the order of 11 feet near the base of the existing slope, which is approximately 30 feet from the bottom of the existing tie-back supported Keystone™ wall. Our analyses indicate a circular-type failure surface beginning behind the top of the existing Keystone™ wall (on The Pointe property) and daylighting at the bottom of the planned cut. Without providing additional support, likely through the construction of a new tie-back supported retaining wall, the factor of safety reduced to roughly 1.30 due to the proposed cut.

Additional details on our static slope stability analyses of the proposed slope configurations are presented in Appendix E.

5.4 GEOTECHNICAL MITIGATION – STATIC CONDITIONS

Based on the results of our static stability analyses, we identified three slope areas that will need to be stabilized or mitigated as part of the proposed site development. For the proposed slope configurations where the static slope stability was evaluated to have a factor of safety of less than 1.5, we performed analyses to determine the estimated minimum additional lateral restraint force (kips per foot) within the cut portion of the proposed slope required to increase the FS to at least 1.5.

The locations of the identified mitigation areas are presented on the Preliminary Geotechnical Plan, Figure 8. A summary of the preliminary mitigation measures for the subject areas is detailed in the following sections.

Once more detailed grading plans are prepared, the preliminary mitigation recommendations presented below should be updated.

Upper Slope at Vehicle Entrance Drive

As noted previously, the existing and proposed slope configurations at Section GPI-1 were evaluated to have a FS less than 1.5 due to the presence of a relatively shallow bedding plane shear layer. In our analyses, we determined that where the depth to the bedding plane shear exceeded approximately 20 feet (corresponding to a ground surface elevation of +642 feet), the resulting slope section was evaluated to have a FS of at least 1.5.

Based on the above, we anticipate stabilization will be required for an approximately 80-foot to 120-foot-wide portion of the upper slope extending from the Bernardo Center Drive into the site along the vehicle entrance drive. The approximate limits of this area are shown on the attached Figure 8.

Based on our analysis of Section GPI-1, a minimum lateral restraint force of approximately 39 kips per foot will be required in order to obtain a static factor of safety of at least 1.5.

Upper Slope at Medical Office Building

Based on our slope stability analyses, the upper slope adjacent to the proposed MOB (detailed by Sections GPI-2 and GPI-3) were evaluated to be marginally unstable under the proposed slope configurations. As such, we anticipate stabilization will be required for an approximately 200-foot-wide area extending from central portions of the MOB north to the approximate southern edge of the proposed parking structure. The approximate limits of this area are shown on the attached Figure 8.

Based on our analyses of Section GPI-2 and the upper portion of Section GPI-3, minimum additional lateral restraint forces ranging from approximately 4 kips per foot (GPI-2) to 15 kips per foot (GPI-3) were required in order to obtain static factors of safety of at least 1.5.

We should note that for Section GPI-3 (upper), applying a minimum lateral restraint force above results in a minimum static factor of 1.5 for failure surfaces extending below the proposed retaining wall. However, circular failure surfaces with factors of safety between 1.3 and 1.5 are still present daylighting above the proposed wall, within the western slope. As such, mitigation of the failure surfaces in this area will also need to extend into this slope area in order to achieve a global minimum factor of safety of at least 1.5. Mitigation of the potential slope instability above the planned retaining wall may include soil nails. Once the grading plans are prepared, GPI should provide supplemental analyses to develop additional mitigation recommendations for this condition.

Upper Slope at Parking Structure

The proposed slopes adjacent to the southern portions of the existing Keystone™ wall (Section GPI-7) were found to be marginally unstable following the currently planned cuts on the order of 11 feet from the existing site grades. As noted previously, the planned cuts extend up to approximately 30 feet from the base of the existing Keystone™ wall. Based on this configuration, a minimum additional lateral restraint force on the order of 8 kips per foot was required in order to increase obtain static factors of safety of at least 1.5.

In lieu of installation of a tie-back grade beam or wall system to apply the above estimated additional lateral restraint force, the location of the proposed PS could be adjusted so as not to impact the stability of the existing slope. We performed iterative stability analyses of multiple offset distances for the southwest corner of the planned parking structure relative to the existing Keystone™ wall. The purpose of this analysis was to determine the estimated minimum setback distance required to limit the potential impact of the proposed development on the stability of the existing tied-back Keystone™ wall. Based on our analyses, the proposed cuts to the existing slope adjacent to the southwest corner of the proposed PS should be limited to an approximate lateral distance of at least ** feet from the base of the existing Keystone™ wall. The recommended structural setback is shown on the attached Figure 8.

<u>Southern and Eastern Slope - Surficial Slope Instability</u>

As noted previously, localized slumps and shallow surficial slope instabilities were observed within the lower slope descending from the existing building pad area during our site reconnaissance. Significant rodent burrows were also observed near the top of the lower slope (both within the pad and on the slope surface).

As part of the proposed development, the upper portions of the southern and eastern descending slopes will need to be overexcavated and recompacted as compacted fill. Detailed recommendations are included in the Earthwork section of this report.

5.5 PSEUDOSTATIC CONDITIONS

We evaluated stability of the subject proposed slopes under seismic conditions in general accordance with the guidelines of Special Publication 117 (CGS, 2008) by "Newmark" type cumulate displacement analyses. The procedure first involves calculation of the pseudostatic "yield" acceleration (k_y) that would result in a calculated FS of 1.0. Then the ratio of the peak ground acceleration (PGA_M) to the yield acceleration is used in empirical relationships to estimate the cumulative lateral slope displacement. For our evaluations, we used empirical relationships outlined in NCHRP Report 611 (2008).

As part of our analyses and where detailed in Section 5.4, we applied an external lateral restraint force to the proposed slopes that were found to have FS less than 1.5 under static conditions. The additional restraint force consisted of a horizontal tie-back under the loads required to achieve a static FS of 1.5 as previously detailed.

Based on our analyses, we calculated yield accelerations ranging from a low of approximately 0.10g (Section GPI-1) to a high of 0.34g (Section GPI-6). As detailed in Section 6.2 of this report, the peak ground acceleration (PGA_M) used in our analyses is 0.515g and was based on the site-specific seismic analyses.

The slope displacement chart used to calculate permanent slope displacements, derived using the methods outlined in the NCHRP Report 611, is presented in Figure E-1 (see Appendix E). Using the slope displacement chart presented in Figure E-1 and calculated yield accelerations as provided in Appendix E, we estimate the following approximate cumulative slope displacements for the analyzed proposed slope configurations (considering potential stabilization forces):

- Section GPI-1: Cumulative Slope Displacement = 22 inches
- Section GPI-2: Cumulative Slope Displacement = 7 inches
- Section GPI-3 (upper): Cumulative Slope Displacement = 8 inches
- Section GPI-3 (lower): Cumulative Slope Displacement = 4 inches
- Section GPI-4: Cumulative Slope Displacement = 1 inch
- Section GPI-5: Cumulative Slope Displacement = 2 inches
- Section GPI-6: Cumulative Slope Displacement < 1 inch
- Section GPI-7: Cumulative Slope Displacement = 2 inches

Additional details on our slope stability analyses are presented in Appendix E.

5.6 GEOTECHNICAL MITIGATION – PSEUDOSTATIC CONDITIONS

In considering allowable lateral displacements for the subject slopes, we note that Special Publication 117 (SP117; CGS, 2008) references displacement thresholds of approximately 5 cm (about 2 inches) and approximately 15 cm (about 6 inches). The above values cover different levels of acceptable displacements in typical slope stability analyses that are ultimately dependent on the underlying geology of the site, the significance of the proposed development, and the requirements of local regulatory agencies. Using the minimum lateral restraint forces determined in Section 5.4 to achieve static factors of safety of at least 1.5, we determined that the estimated cumulative slope displacement for Section GPI-1 exceeds the above thresholds while the remaining analyzed slopes are less than the threshold 6 inches.

In order to reduce the cumulative slope displacement for Section GPI-1 to either of the noted thresholds, we evaluated increased lateral restraint forces and their associated yield accelerations. Based on our analyses, a minimum lateral restraint force on the order of 100 kips per foot would be required to reduce the cumulative lateral slope displacement to approximately 6 inches or less. Using a threshold of 2 inches, the minimum lateral restraint force would be approximately 175 kips per foot.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 OVERVIEW

Based on the results of GPI's investigation, it is GPI's opinion that from a geotechnical viewpoint it is feasible to develop the site as proposed, provided the geotechnical constraints discussed below are incorporated into design and construction. The most significant geotechnical issues that will affect the design and construction of the proposed buildings are as follows:

- Based on the variable depths of existing fills overlying bedrock (Friars Formation) and the presence of localized deposits of moderately compressible landslide debris of various thickness below the existing fill, supporting the proposed MOB and PS on spread foundations will likely result in excessive differential settlement of foundations. Based on this and the history of landslide activity at the site, we recommend the proposed MOB and PS be supported on deep foundations extending into the underlying bedrock materials.

- Minor structures such as free-standing walls, trash enclosures, and minor retaining walls that do not support existing or proposed slopes may be supported in properly compacted fill following removal and recompaction of shallow loose or otherwise disturbed materials, of the underlying undisturbed bedrock materials.

- Retaining walls supporting existing or proposed slopes may be supported on spread foundations underlain by compacted fill provided that additional lateral restraint forces are not required to improve the FS of the slope to at least 1.5. Retaining walls required to provide additional lateral restraint forces are likely to consist of, or include, tieback anchored walls or grade beam systems.

- Where temporary vertical excavations at the toe of existing or proposed slopes do not have an appropriate factor of safety (FS=1.25) for construction of conventional spread footing supported wall, the retaining wall could consist of a soldier pile with permanent lagging type wall that has a top-down construction method, or the retaining wall supported on spread footings could be constructed using an ABC slot cut construction sequence.

- GPI identified three general slope areas that will need to be stabilized or mitigated as part of the proposed site development where the static FS is less than 1.5. These areas include:

    - An approximately 80-foot to 120-foot-wide portion of the upper slope extending from the Bernardo Center Drive into the site along the vehicle entrance drive (modeled by Section GPI-1).

    - A portion of the upper slope adjacent to the proposed MOB (detailed by Sections GPI-2 and GPI-3).

    - The proposed slope behind the southwest corner of the proposed PS where cuts into the existing slope are planned below the existing Keystone™ wall.

  Preliminarily, proposed mitigation includes construction of a structural system such as a tie-back anchored wall or grade beam that will apply an additional lateral restraint force to increase the FS to at least 1.5. Other mitigation alternatives may also be considered such as shear pins or rigid inclusions. A geotechnical design-build specialty contractor could be consulted with to explore other alternatives. Alternatively, for the upper slope behind the PS, the proposed PS could be set back further from the existing slope. Details of the preliminary mitigation recommendations to improve the static FS of the proposed slopes are included in Section 5.4.

- GPI evaluated potential for lateral displacement of the proposed slopes under seismic conditions. We determined that the estimated cumulative slope displacement for Section GPI-1 exceeds the typical maximum threshold of approximately 6 inches while the remaining analyzed slopes are near or less than 6 inches. An increased lateral restraint force beyond that required to satisfy static slope stability criteria foot would be required to reduce the cumulative lateral slope displacement to be on the order of 6 inches or less. Details are provided in Section 5.6.

- The upper portions of the southern and eastern slopes descending from the existing building pad area will need to be overexcavated and recompacted as properly compacted fill to mitigate rodent disturbance, localized slumps and shallow surficial slope instabilities. Locally, deeper removals and/or removals that extend further down the slopes may be required where localized slumps and/or disturbed materials extend deeper than 6 feet below existing pad grade. Additional field mapping can be conducted by GPI prior to grading to further identify these areas.

- The existing clayey fill soils have a medium to high expansion potential and should not be used as retaining wall backfill, directly beneath hardscape, or within 3 feet of slab on grade floors. Relatively non-expansive soils should be used as fill within 3 feet of slab-on-grade floors , as retaining wall backfill and below hardscape. Relatively non-expansive soils do not appear to be readily available on site and will need to be imported. Alternatively, the onsite clay soils could be treated with cement or lime to reduce the expansion potential of the clay soils so that they can be used within the areas mentioned above. Treatment of the clay soils with cement or lime will also enhance pavement subgrade characteristics resulting in thinner pavement sections.

- Oversize materials greater than 12 inches in diameter are anticipated to be encountered. Oversized materials greater than 6 inches in diameter are not considered suitable for use as compacted fill. Fills placed within 3 feet of the finished building pad subgrade should not contain particles greater than 3 inches in diameter. Large obstructions, possibly large bedrock fragments or boulders were locally encountered in the fill and should be anticipated.

Oversized materials should be crushed, removed from the site, or placed in deeper fills on site and should not be placed within 3 feet of shallow foundations, floor slabs, or pavements.

- Moisture contents of the upper soils are variable, ranging from roughly 8 to 19 percent. The optimum moisture contents of determined by laboratory testing ranged from 9½ to 13½ percent. Mixing and some moisture conditioning (drying and wetting) will be required during subgrade processing and placement and compaction of fill.

- GPI recommends a Site Class D be used for the seismic design of the proposed buildings. The recommended Site Class is based on seismic shear-wave velocity testing performed at the site. Additional details are presented in the "Seismic Design" section of this report.

- The subject site is not located in an Alquist-Priolo Earthquake Fault Zone and the potential for ground rupture at this site due to faulting is considered unlikely. Additionally, liquefaction is not expected to negatively impact the project.

- Corrosivity testing performed by Project X Corrosion Engineering on samples from GPI's borings indicated varying levels of soluble sulfate and soluble chloride content with respect to concrete and that the on-site soils are moderately corrosive to buried ferrous metals. Foundation concrete should be designed for negligible levels of soluble sulfate exposure for soil (Category S0) and low chloride exposure (Category C1).

GPI's recommendations related to the geotechnical aspects of the development of the site are presented in the subsequent sections of this report.

6.2 SEISMIC DESIGN

6.2.1 General

The site is located in a seismically active area of Southern California and is likely to be subjected to strong ground shaking due to earthquakes on nearby faults.

GPI retained Terra Geosciences to perform seismic shear-wave surveys to depths of at least 100 feet below the existing ground surface in the areas of the planned MOB and Parking Structure buildings (see Appendix C). Analysis of the data obtained during the seismic shear-wave surveys indicated that the "weighted average" shear-wave velocities within the upper 100 feet of the subject site, V_{s30}, is 1,002.8 feet per second (fps) in proximity to the planned MOB (Line SW-1) and 1033.7 fps in proximity to the planned parking structure (Line SW-2). In accordance with ASCE 7-16, this shear-wave velocity corresponds to a **Site Class D** (Stiff Soil).

We assume the seismic design of the proposed development will be in accordance with the 2022 California Building Code (CBC) criteria. Using the Site Class as determined above, which is dependent on geotechnical issues, and the appropriate internet website (https://seismicmaps.org/), the corresponding seismic design parameters from the CBC are as follows:

$S_S = 0.825g$	$S_{MS} = F_a * S_S = 0.966g$	$S_{DS} = 2/3 * S_{MS} = 0.644g$
$S_1 = 0.304g$	$S_{M1} = F_V * S_1 = 0.607g$	$S_{D1} = 2/3 * S_{M1} = 0.405g$

In accordance with the 2022 CBC, site-specific response spectra are required for structures located in a Site Class D (with S_1 greater than or equal to 0.2) unless, per the exceptions detailed in Section 11.4 8 of ASCE 7-16 (Supplement 3), the value of the parameter S_{M1}, determined by Eq. (11.4-2) is increased by 50 percent for all applications of S_{M1}. The resulting value of the parameter S_{D1} determined by Eq. (11.4-4) shall be used for all applications of S_{D1}.

At the request of the project team, we performed a site-specific ground motion hazard analysis in accordance with the requirements of the 2022 CBC and ASCE 7-16. The site-specific seismic parameters, along with the code-mapped values per ASCE 7-16, are presented in Appendix F. The Project Structural Engineers should determine the seismic design method.

The above seismic code values should be confirmed by the Project Structural Engineer using the value above and the pertinent internet website and tables from the building code. The Project Structural Engineer should also evaluate the period of the proposed structure with respect to the T_S value above when reviewing whether a site-specific response analysis will be utilized.

6.2.2 Strong Ground Motion Potential

Based on published information (USGS, 2008), the site is within approximately 13 miles of the Rose Canyon Fault and approximately 23 miles of the Elsinore Fault. During the life of the project, the site will likely be subject to strong ground motions due to earthquakes on nearby faults. Based on the OSHPD website (https://seismicmaps.org/), GPI computed that the site could be subjected to a peak ground acceleration (PGA_M) of 0.44g for a magnitude 7.0 earthquake. This acceleration has been computed using the mapped Maximum Considered Geometric Mean peak ground acceleration from ASCE 7-16 (ASCE, 2017) and a site coefficient (F_{PGA}) based on Site Class. The predominant earthquake magnitude was determined using a 2-percent probability of exceedance in a 50-year period, or an average return period of 2,475 years. The structural design will need to incorporate measures to mitigate the effects of strong ground motion.

It should be noted that the above PGA_M is based on the code mapped values. Per the site-specific analyses presented in Appendix F, the PGA_m for the subject site is 0.515g. We utilized both the map-based and site-specific based peak ground accelerations when evaluating potential lateral slope displacement as detailed in Appendix E.

6.3 EARTHWORK

The earthwork for the planned improvements is anticipated to consist of clearing and excavation of undocumented fill and upper natural soils, subgrade preparation, and the placement and compaction of fill. Earthwork recommendations are presented in the following sections.

6.3.1 Clearing

Prior to grading, performing excavations or constructing the proposed improvements, the areas to be developed should be stripped of vegetation and cleared of debris and pavements. Buried obstructions, such as footings, abandoned utilities, and tree roots should be removed from areas to be developed. Deleterious material generated during the clearing operation should be removed from the site. Existing vegetation should not be mixed into the soils used for fill.

Although unlikely, if cesspools or septic systems are encountered during grading, they should be removed in their entirety. The resulting excavation should be backfilled with properly compacted fill soils. As an alternative, cesspools can be backfilled with lean sand-cement slurry. At the conclusion of the clearing operations, a representative of GPI should observe and accept the site prior to further grading.

6.3.2 Excavations

Excavations at this site will include removals of undocumented/disturbed fill and disturbed low-density natural soils, excavation of existing compacted fill and native materials for the building pad and proposed slopes along the western portion of the site, footing excavations, and trenching for proposed utility lines. Recommended removals and overexcavation depths for various improvements are provided below.

Building Pads

Prior to placement of fills or construction of the building, existing disturbed or otherwise unsuitable fill materials within the proposed building pads should be removed and replaced as properly compacted fill. Excavations are also required to remove medium to highly expansive soils below the proposed building pads. GPI recommends removals for building pads extend at least 3 feet below bottom of floor slabs (to facilitate placement of at least 3 feet of relatively non-expansive fill) and at least 2 feet below existing grades, whichever is deeper. The removals should extend laterally at least 5 feet beyond the building limits.

If the onsite soils below building pads are treated with cement or lime to reduce the expansion potential of the onsite soils, removals could be limited to at least 2 feet below existing grades and 18 inches below bottom of floor slab, whichever is deeper. Treatment of the soils could then be conducted in two 18-inch lifts to construct the recommended 3-feet thick layer of non-expansive fill below floor slabs. The lower lift could be performed in place.

Retaining Walls, Site Walls, and Minor Structures

Retaining walls and minor structures supported by shallow spread footings should be underlain entirely by properly compacted fill or bedrock materials. Removals below foundations for minor structures should extend to depths of at least 2 feet below existing grades or 2 feet below bottom of footing, whichever is deeper. Removals shall also include unsuitable fill, disturbed native soils and/or bedrock materials, if encountered.

Pavements and Hardscape

Removals below new pavements and hardscape should extend to depths of at least 2 feet below existing grades or 1 foot below proposed finished grades, whichever is deeper. Removals for hardscape should extend at least 2 feet below bottom of hardscape to facilitate placement of at least 2 feet of relatively non-expansive fill unless the onsite soils below hardscape are treated with cement or lime as discussed herein to reduce the expansion potential of the supporting soils.

Existing Descending Fill Slope Mitigation

The upper portions of the southern and eastern slopes descending from the existing building pad area should be overexcavated and recompacted as compacted fill to mitigate rodent disturbance, localized slumps, and shallow surficial slope instabilities. The existing conditions have the potential to adversely impact the proposed site improvements over time without proper corrective mitigation measures. For preliminary planning purposes, the removals should extend at least 6 feet below existing grades (pad grade) and laterally at least 1½ equipment widths or 10 feet, whichever is wider, from the face of the slope. Deeper removals and/or removals that extend further down the slope will be required where localized slumps and/or disturbed materials extend deeper than 6 feet below existing pad grade. Additional field mapping can be conducted by GPI prior to grading to further identify these areas.

General

The actual depths of removals should be determined in the field during grading by GPI. The soils exposed at the base of the overexcavation should be processed in place as described in the “Subgrade Preparation” section of this report.

The Project Surveyor should accurately stake the corners of the areas to be overexcavated in the field. Where space is available, the base of the excavations should extend laterally at least 5 feet beyond the building line or edge of foundations, or a minimum distance equal to the depth of overexcavation/compaction below finish grade (i.e., a 1:1 projection below the top outside edge of footings, pavements, and hardscape), whichever is greater. Building lines include the footprint of the building and other foundation supported improvements, such as canopies and attached site walls.

Excavation of the soils at the site should be readily achieved using conventional methods. Some oversized materials from the Friars Formation derived fills may be encountered. Oversized materials should be placed in deeper fills on site and should not be placed within 3 feet of shallow foundations, floor slabs, or pavements. The contractor should determine the best method for removal based on the subsurface conditions outlined herein.

Where not removed by the aforementioned excavations, existing utility trench backfill should be removed and replaced as properly compacted fill within the building pad. For planning purposes, removals over the utilities should extend to within 1-foot of the top of the pipe. For utilities that are 5 feet or shallower, the removal should extend laterally 1-foot beyond both sides of the pipe. For deeper utilities, the removals should include a zone defined by a 1:1 projection upward (and away from the pipe) from each side of the pipe.

The actual limits of removal will be confirmed in the field. GPI recommends that known utilities be shown on the grading plan. Wet utilities left in-place outside building areas should be capped to reduce the potential for water to infiltrate into the building pad.

Temporary Excavations

The slightly moist to wet clayey soils at the site are expected to have low caving potential when exposed in open cuts. Temporary construction excavations may be made vertically into the undisturbed natural soils and compacted without shoring to a depth of 4 feet below adjacent grade.

For cuts up to 10 feet deep, the slopes should be properly shored or sloped back to at least 1:1 or flatter. For cuts up to 20 feet, the slopes should be properly shored or sloped back to at least 1½:1 (horizontal to vertical) or flatter. Deeper cuts, up to 30 feet in the compacted fills, the materials should be properly shored or sloped back to at least 2:1 (horizontal to vertical) or flatter. The allowable slope inclinations are measured from the toe to the top of the cut. Even at these inclinations, some raveling should be anticipated. The exposed slope face should be kept moist (but not saturated) during construction to reduce local sloughing. Surcharge loads should not be permitted within a horizontal distance equal to the height of cut from the top of the excavation or 5 feet from the top of the slopes, whichever is greater, unless the cut is properly shored. Excavations that extend below an imaginary plane inclined at 45 degrees below the edge of adjacent existing site facilities should be properly shored to maintain support of adjacent elements. Excavations and shoring systems should meet the minimum requirements given in the State of California Occupational Safety and Health Standards.

Removals that will undermine existing structures or pavements may utilize “ABC” slot cuts to depths not greater than 8 feet. Unsurcharged slot cuts up to 6 feet in height should not be wider than 8 feet and unsurcharged cuts up to 8 feet should not be wider than 6 feet. The slots should be backfilled to finished grade prior to excavation of the adjacent slots. A test slot should be performed prior to production slots to confirm the stability of the planned cuts. GPI should be provided with the details of planned slot cuts for review prior to execution.

Temporary cuts in Friars Formation should be constantly observed during grading for adverse geologic conditions. Sequenced cuts may be recommended to reduce exposure of unsupported slopes.

Where slot cuts are planned to be used at the toe of existing or proposed slopes to facilitate construction of retaining walls, GPI should be provided with the details of planned wall location and proposed excavations so that specific slot cut recommendations can be provided for the proposed condition.

6.3.3 Permanent Slopes

Based on stability analyses conducted for this investigation, the proposed unsurcharged fill slopes are recommended to be constructed as recommended in this report and at a gradient of 2:1 (h:v) or flatter. Additional stability analyses should be conducted to evaluate final slope configurations. Faces of fill slopes should be compacted either by rolling with a sheepsfoot roller or other suitable equipment or by overfilling and cutting back to design grade. Fills should be benched into sloping ground inclined steeper than 5:1 (horizontal:vertical). Slopes are susceptible to surficial slope failure and erosion. Water should not be allowed to flow over the top of slope. Additionally, slopes should be planted with vegetation that will reduce the potential for erosion and irrigated with the minimum amount of water to sustain landscape growth.

The proposed slopes should be graded so as to direct surface water run-off away from the top of slope and toward suitable discharge facilities. Long-term ponding of surface water should not be allowed behind the top of slopes.

6.3.4 Subgrade Preparation

After the recommended cuts and removals are performed and prior to placing fills or construction of the proposed improvements, the subgrade soils should be scarified to a depth of 12 inches, moisture conditioned, and compacted to at least 90 percent of the maximum dry density, determined in accordance with ASTM D1557. In areas to be paved outside of the structure footprints, the exposed subgrade should be scarified, moisture-conditioned, and compacted to at least 95 percent of the maximum dry density.

Where undisturbed bedrock materials are exposed at the base of the recommended cuts and removals, subgrade processing should be omitted.

6.3.5 Material for Fill

In general, the on-site soils are suitable for use as compacted fill, with the exception of the onsite clay soils that should not be used as retaining wall backfill, placed directly beneath building floor slabs, or placed directly beneath concrete hardscape.

Backfill materials placed within the upper 3 feet below building floor slabs or within 24 inches of concrete hardscape should be relatively non-expansive (Expansion Index of 20 or less). We do not anticipate that there will be sufficient quantities of non-expansive fill materials onsite. Import fill will be required unless the onsite clay soils are treated with cement or lime as discussed below.

Imported fill material should be predominantly granular (contain no more than 40 percent fines-portion passing No. 200 sieve), and relatively non-expansive (an Expansion Index of less than 20). GPI should be provided with a sample (at least 50 pounds) and notified at least 72 hours in advance of the location of soils proposed for import. Each proposed import source should be sampled, tested, and accepted for use prior to delivery of the soils to the site. Soils imported prior to acceptance by GPI may be rejected if not suitable.

Both imported and existing on-site soils to be used as fill should be free of debris and pieces larger than 6 inches in greatest dimension. Oversized materials greater than 6 inches in diameter are not considered suitable for use as compacted fill. On-site materials greater than 6 inches in diameter can be exported or crushed and blended uniformly with onsite soils.

Fills (imported and existing onsite soils) placed within 3 feet of the finished building pad subgrade should not contain particles greater than 3 inches in diameter.

As an alternative to importing non-expansive soils, the onsite clay soils can be blended with lime or cement to reduce its expansion potential. Determining the recommended percentage of lime or cement will require additional testing. Preliminarily, we anticipate approximately 4 to 5 percent lime or 6 to 8 percent cement (by dry unit weight) will be required to reduce the expansion potential adequately. We can provide additional recommendations regarding placement, mixing, mellow (cure period), and compaction of lime or cement treated soils with an appropriate mix design if this alternative is desired to be used.

6.3.6 Placement and Compaction of Fills

Fill soils should be placed in horizontal lifts, moisture-conditioned, and mechanically compacted to densities equal to at least 90 percent of the maximum dry density, determined in accordance with ASTM D1557. Soils within 1-foot of the finish subgrade for floor slabs and pavement areas, and the aggregate base material should be compacted to a relative compaction of at least 95 percent. The optimum lift thickness will depend on the compaction equipment used and can best be determined in the field.

The following uncompacted lift thickness can be used as preliminary guidelines.

Plate compactors	4-6 inches
Small vibratory or static rollers (5-ton±) or track equipment	6-9 inches
Heavy loaders, scrapers, and large vibratory rollers	9-12 inches

The maximum lift thickness should not be greater than 12 inches and each lift should be thoroughly compacted and accepted prior to subsequent lifts.

Fills should be placed at moisture contents of 1 to 3 percent over the optimum moisture content in order to readily achieve the required compaction. Current moisture contents of the upper soils range from slightly below to above the tested optimum moisture contents. As such, GPI anticipates that adequate mixing and some moisture conditioning (wetting and drying) will be required. Compacted fills should not be allowed to dry out prior to covering. If the fills are allowed to dry out, additional moisture conditioning, processing, and recompaction will be required.

6.3.7 Shrinkage and Subsidence

Shrinkage is the loss of soil volume caused by compaction of fills to a higher density than before grading. Subsidence is the settlement of in-place subgrade soils caused by loads generated by large earthmoving equipment. For earthwork volume estimating purposes, an average shrinkage value of 5 to 10 percent may be assumed for the surficial soils. Subsidence of the site is expected to be less than 0.1 feet. These values are estimates only and exclude losses due to removal of vegetation or debris. Actual shrinkage and subsidence will depend on the types of earthmoving equipment used and should be determined during grading.

6.3.8 Trench/Wall Backfill

Utility trench backfill consisting of the on-site soils or imported soil, or wall backfill consisting of granular material should be mechanically compacted in lifts. Lift thickness should not exceed those values given in the "Placement and Compaction of Fills" section of this report. Moisture conditioning (wetting) of the on-site soils will likely be required prior to re-use as backfill. Jetting or flooding of backfill materials should not be permitted. A representative of GPI should observe and test trench and wall backfill as they are placed.

In backfill areas where mechanical compaction of soil backfill is impractical due to space constraints, sand-cement slurry may be substituted for compacted backfill. The slurry should contain at least two sacks of cement per cubic yard and have a maximum slump of 5 inches.

If open-graded rock is used as backfill, the material should be placed in lifts and mechanically densified. Open-graded rock should be separated from the on-site soils by a suitable filter fabric (Mirafi 140N or equivalent).

6.3.9 Observation and Testing

A representative of GPI should observe excavations, subgrade preparation, and fill placement activities. Sufficient in-place field density tests should be performed during fill placement and in-place compaction to evaluate the overall compaction of the soils. Soils that do not meet minimum compaction requirements should be reworked and tested prior to placement of additional fill.

6.4 FOUNDATIONS

6.4.1 Foundation Type

Due to the remaining presence of landslide deposits within the footprints of the proposed structures, as well as the varying depths to bedrock materials across the site, we recommend the proposed Medical Office Building (MOB) and Parking Structure (PS) be supported on pile foundations extending through the fill soils and landslide deposits and into the underlying undisturbed bedrock. Recommendations for cast-in-drilled-hole (CIDH) pile foundations having diameters of 18 inches, 24 inches, and 30 inches are presented below.

Auger pressure grouted (APG) piles are also considered feasible for support of the MOB and parking structure. APG piles are typically designed and installed by specialty design-build pile contractors. All aspects of the design, construction, and performance verification of such systems are the responsibility of the registered engineer designing the system. The final foundation design, including embedment depths, downdrag loads, allowable capacities, and estimate settlements must be provided by the design-build contractor. The actual capacities used for design will need to be based on full-scale load tests and the structural design of the piles by the design-build pile contractor.

Other proprietary pile alternatives may also be considered for the project. The most suitable pile alternatives will be based on the economies of each system, the anticipated column loads, soil conditions, and environmental limitations such as noise and vibration.

Minor structures, such as equipment pads or trash enclosures, and minor retaining walls that do not support existing or proposed slopes may be supported on conventional isolated and/or continuous shallow footings provided the subsurface soils are prepared in accordance with the recommendations given in this report. Shallow foundations for minor structures should be supported on properly compacted fill.

6.4.2 Deep Foundations

As noted above, we recommend supporting the proposed MOB and PS on pile foundations due to the presence of varying amounts of compacted fill soils and localized areas of remaining landslide deposits. As such, we are providing the following recommendations for 18-, 24-, to 30-inch diameter cast-in-drilled-hole (CIDH) pile foundations. If APG piles or other proprietary pile alternatives are considered, axial and lateral pile capacities should be provided by the respective design-build contractor.

For the purposes of our analyses and recommendations and because of the varying depth to bedrock, we identified four zones of comparable subsurface profiles for determining allowable lateral and axial pile capacities. The approximate limits of these zones within the footprints of the proposed structures are provided on the Preliminary Geotechnical Plan, Figure 8. A summary of the subsurface profiles associated with each of these areas is provided below:

ZONE	**APPROXIMATE THICKNESS OF SOIL LAYERS OVERLYING FRIARS FORMATION (Tf) BEDROCK (feet)**	
	Artificial Fill (Qaf)	**Landslide Deposits (Qls)**
I	20	NONE
II	20	15
III	50	NONE
IV	5	25

For the artificial fills and Friars Formation bedrock materials, our pile capacity analyses were based on the shear strength parameters previously presented in Section 5.2. Due to the variability and uncompacted natural of the remaining landslide deposits as the site, we considered reduced strength parameters which will provide a relatively minimal contribution to the allowable axial and lateral pile capacities.

For design purposes, we recommend the pile foundations extend a minimum of 10 feet into the undisturbed Friars Formation bedrock materials.

Axial Pile Capacity

Drilled pile foundations will develop their frictional capacity with relatively small deflection (about ¼-inch). The allowable capacities will depend on the pile diameter and the total depth of the pile below the pile cap or ground surface. The downward vertical capacities shown below do not include capacity for end bearing, as it is difficult to adequately clean the base of small diameter drilled shafts. The values presented are for static loads and can be increased by one-third for short-term wind and seismic loads. As stated previously, the landslide deposits, where included, provide a minimal contribution in developing the axial capacity. The allowable uplift capacity for a given pile may be taken as one-half of the compressive capacity provided below.

Based upon the results of our subsurface explorations and laboratory testing, the drilled pile design parameters shown in the following tables may be used for axial pile design:

PILE ZONE I (Depth To Bedrock = 20 feet +/-)

DEPTH BELOW PILE CAP* (feet)	ALLOWABLE COMPRESSIVE CAPACITY (kips)*		
	18-inch Diameter	24-inch Diameter	30-inch Diameter
20	35	47	59
25	57	72	94
30**	84	112	135
35	115	153	192
40	151	201	251
45	191	254	318
50	235	313	391
55	283	378	472
60	336	448	560

* Assumes bottom of pile cap at finished ground surface.
** Minimum embedment if bedrock encountered at 20 feet below ground surface.

PILE ZONE II (Depth To Bedrock = 35 feet +/-)

DEPTH BELOW PILE CAP* (feet)	ALLOWABLE COMPRESSIVE CAPACITY (kips)*		
	18-inch Diameter	24-inch Diameter	30-inch Diameter
35	47	62	78
40	68	90	113
45**	108	143	179
50	152	202	253
55	200	267	334
60	253	337	422
65	310	413	517

* Assumes bottom of pile cap at finished ground surface.
** Minimum embedment if bedrock encountered at 35 feet below ground surface.

PILE ZONE III (Depth To Bedrock = 50 feet +/-)

DEPTH BELOW PILE CAP* (feet)	ALLOWABLE COMPRESSIVE CAPACITY (kips)*		
	18-inch Diameter	24-inch Diameter	30-inch Diameter
50	166	222	277
55	207	276	344
60**	259	346	432
65	316	422	527

* Assumes bottom of pile cap at finished ground surface.
** Minimum embedment if bedrock encountered at 50 feet below ground surface.

PILE ZONE IV (Depth To Bedrock = 30 feet +/-)

DEPTH BELOW PILE CAP* (feet)	ALLOWABLE COMPRESSIVE CAPACITY (kips)*		
	18-inch Diameter	24-inch Diameter	30-inch Diameter
30	16	21	26
35	42	56	70
40**	78	104	129
45	118	157	196
50	162	216	270
55	210	280	350
60	263	351	438

* Assumes bottom of pile cap at finished ground surface.
** Minimum embedment if bedrock encountered at 30 feet below ground surface.

We utilized a factor of safety of 2 to determine the allowable capacities of the CIDH pile. Since the drilled piles will be designed to derive resistance from friction only, rigorous cleaning of loose material from the bottom of the excavation prior to placement of steel and concrete is not considered essential. Effort should be made to clean the bottom with the drill rig-mounted equipment.

If axial loading of the structures, in compression or tension, is greater than provided above or other diameter CIDH piles are being considered, we can provide additional allowable capacities as requested.

Lateral Pile Capacity

For determinations of lateral pile capacity, we recommend utilizing the following design parameters, which can be used in lateral load analysis software such as LPILE or COM624:

Recommended Soil Parameters for Lateral Pile Analyses

Soil Type	L-Pile Model	Estimated Effective Unit Weight (pcf)	Internal Angle of Friction (Degrees)	Static Soil Modulus, k (pci)	Undrained Shear Strength, c_u (psf)	Strain È$_{50}$
Artificial Fill (Qaf)	Stiff Clay (Matlock)	125	---	---	1000	0.010
Landslide Deposits (Qls)	Soft Clay (Matlock)	125	---	---	200	0.020
Friars Formation Bedrock (Tf)	Sand (Reese)	125	34	250	---	---

* Assumes bottom of pile cap (top of pile) at 8 feet below existing basement level.

The unit weight, cohesion, internal friction angle, strain, and lateral subgrade modulus are based upon our explorations and laboratory data as well as our review of prior exploration and laboratory data by others (see References).

At the request of the Project Team, we can evaluate the lateral pile response for the proposed CIDH pile foundations. For lateral pile analyses, we should be provided with the anticipated loading conditions (i.e., axial load, shear at the pile top, moment at the pile top) as well as the configuration of the piles being considered. For APG piles or other proprietary pile foundations, the lateral capacities of the piles will be provided by the design-build pile contractor and will, in part, be controlled by the axial loads on the piles.

Pile Spacing

To avoid group effects on axial capacity, piles should be spaced at least 2½ diameters, center to center. To avoid group effect reduction of the lateral capacity of trailing piles, the piles should be spaced at least 8 diameters, center to center (in the direction of loading). If piles are spaced less than 8 diameters but greater than 2½ diameters, the lead pile can be designed for the full lateral resistance and the lateral resistance of trailing piles should be reduced by 50 percent.

Slope Setback

Standard setback requirements for foundation adjacent to descending slopes are provided in Section 1808.7 of 2022 California Building Code (CBC). Figures 1808.7.1 of the 2022 CBC provides a schematic detailing these typical setback requirements. Alternatively, the Code notes that these minimum setbacks are subject to modification with the approval of a building official (Section 1808.7.5).

From a geotechnical standpoint, GPI does not have a minimum setback from the top of slope for pile foundations. Although not anticipated, we recommend that the allowable lateral capacities for piles located within 8 pile diameters from the top of slope be reduced by 50 percent. The Project Architect and Civil Engineer should also evaluate the required building offset from the top of the slope.

Pile Constructability

Based on the density and moisture content of the soils encountered, the caving potential of the soils is considered to be low. If caving soil conditions are encountered, casing, slurry, or other methods should be utilized to maintain the pile excavation. In addition, caving soils would increase the required volume of concrete. Based on our explorations, we do not anticipate encountering groundwater during the installation of the piles. However, some groundwater seepage in more permeable/granular layers and at the fill/bedrock contact should be anticipated along with localized caving of these zones.

The hollow stem auger borings were advanced through the existing fill and bedrock materials. Very dense and hard bedrock fragments and clasts greater than 12 inches were encountered within the fills. Due to the hard nature of the bedrock, large diameter piles extending below depths of 20 feet may encounter difficulty during drilling. The drilled pile contractor should evaluate the potential drilling conditions when planning the installation methods.

Pile excavations should be filled with concrete on the same day they are drilled. Concrete mix designs should include provisions to minimize shrinkage, which can lead to lower frictional resistance of the pile shaft and reduced allowable capacity. The concrete should be placed with special equipment so that it is not allowed to fall freely more than 5 feet or strike the walls of the excavations.

If there is water within the pile excavation at the time of concrete placement, the water should be pumped out prior to concrete placement or the concrete should be placed through a solid tremie extending to the bottom of the pile and the tremie pipe should remain embedded at least a few feet into the concrete during placement of the concrete. We also recommend that the compressive strength of the foundation concrete be increased by 1,000 psi if during construction the pile extends below groundwater or significant groundwater seepage.

Drilling for piles should not be performed within 5 feet of recently excavated or recently poured piles until the concrete has been allowed to set for at least 6 hours. The piles should be poured in a manner that will not result in concrete flowing into adjacent drilled pile excavations and prevent segregation of aggregate. Drilled pile construction should be performed in accordance with the latest edition of ACI 336.1, "Standard Specifications for the Construction of Drilled Piles."

6.4.3 Shallow Foundations

As noted previously, minor structures such as equipment pads or trash enclosures, and minor retaining walls can be supported on conventional isolated and/or continues shallow footings provided the subsurface soils are prepared in accordance with the recommendations given in this report. Shallow foundations for minor structures should be supported on properly compacted fill.

Allowable Bearing Capacities

Based on the shear strength and elastic settlement characteristics of the recompacted on-site soils, a static allowable net bearing pressure of up to 3,000 pounds per square foot (psf) may be used for both continuous footings and isolated column footings for minor structures supported in properly compacted fill soils. These bearing pressures are for dead-plus-live-loads, and may be increased one-half for short-term, transient, wind and seismic loading. The actual bearing pressure used may be less than the value presented above and can be based on economics and structural loads to determine the minimum width for footings as discussed below. The maximum edge pressures induced by eccentric loading or overturning moments should not be allowed to exceed these recommended values.

The following minimum footing widths and embedments are recommended for the corresponding allowable bearing pressure.

FOOTINGS BEARING IN PROPERLY COMPACTED FILL

STATIC BEARING PRESSURE (psf)	MINIMUM FOOTING WIDTH (inches)	MINIMUM FOOTING* EMBEDMENT (inches)
3,000	36	24
2,500	24	24
2,000	18	18 (underlain by non-expansive soils)** 24 (underlain by onsite expansive soil)

* Refers to minimum depth below lowest adjacent grade at the time of foundation construction. If interior footings are not fully loaded before the slab is in-place, the depth of interior footings may be taken from the top of the floor slab.

** Where footings are underlain by compacted fill derived by onsite expansive clay soils, the minimum recommended footing embedment is 24 inches. If the footing is underlain by at least 1 foot of non-expansive soils, the recommended minimum embedment is 18 inches.

The minimum footing width and depth recommended above should be used even if the actual bearing pressure is less than 2,000 psf.

Where footings are located adjacent to underground utilities or existing structures, the footing should extend below a plane projected 45 degrees upward from the bottom of the adjacent structure (foundation) or underground utility to avoid surcharging the adjacent foundation or utility with building loads. Where underground utilities cross continuous perimeter footings within a depth equal to the width of the footing, either the footing should be deepened and a sleeve added for the utility to pass through or the footing should be designed to be unsupported over utility trench so as not to surcharge the underground utility.

Estimated Settlements

Total static settlement for minor structures (maximum static loads of up to 50 kips) is expected to be on the order of ½-inch or less. Maximum differential static settlement between similarly loaded adjacent footings or across a lateral distance of 40 feet is estimated to be on the order of ¼-inch or less.

The potential for seismic settlement was addressed in a previous section of this report and is anticipated to be negligible. The above estimates are based on the assumption that the recommended earthwork will be performed and that the footings will be sized in accordance with GPI's recommendations.

Lateral Load Resistance

Soil resistance to lateral loads will be provided by a combination of frictional resistance between the bottom of footings and underlying soils and by passive soil pressures acting against the embedded sides of the footings. For frictional resistance, a coefficient of friction of 0.30 may be used for design. In addition, an allowable lateral bearing pressure equal to an equivalent fluid weight of 300 pounds per cubic foot may be used, provided the footings are poured tight against the compacted fill. A one-third increase in the above allowable lateral bearing pressure (but not the frictional resistance) may be taken for short-term wind and seismic loads. The passive pressure provided also assumes a level ground surface extending to a horizontal distance from the wall or footing face at least twice the depth of embedment. These values may be used in combination without reduction.

Modulus of Subgrade Reaction

A modulus of subgrade reaction, k_1,may be used for preliminary design of minor structure foundations supported on the underlying soils as recommended in this report. Note that the modulus of subgrade reaction is dependent on foundation size and shape, magnitude of foundation load, type of loading (short term or long term), stiffness of the mat foundation, depth of the foundation, and the properties of the subsurface soils within the influence of the foundation (this can be 2 to 4 times the foundation width).

For preliminary design of spread foundations, a modulus of subgrade reaction (k_1) of 150 pounds per cubic inch (pounds per square inch per inch of deflection) may be used for foundations underlain by compacted fill derived from onsite soils and a modulus (k_1) of 175 pounds per cubic inch for foundations underlain by non-expansive granular fill soils or cement treated soils. This value is uncorrected and is based on a 1-foot square bearing area. The value of k_1 can be related to larger foundations measuring *B x B* in feet by the following equation.

$$k_{BxB} = k_1 \left(\frac{B+1}{2B} \right)^2$$

Where: k_1 = unit modulus of subgrade reaction
k_{BxB} = modulus for foundation area of width B in feet

6.4.4 Foundation Inspection

Prior to placement of steel and concrete, a representative of GPI should observe and approve foundation excavations. Footing excavations should not be allowed to dry out and crack and should be moistened immediately prior to concrete placement.

CIDH pile excavations and/or other deep foundations installations should be observed by a representative of GPI to confirm and document the depth, diameter, and embedment in suitable materials. Downhole inspection of drilled pile excavations (by lowering an inspector into the excavation) is not needed if the piles are designed as frictional elements.

6.4.5 Foundation Concrete

Three soil samples were subjected to corrosion screening testing by Project X Corrosion Engineering. The results are presented in Appendix B. The laboratory testing was performed on samples obtained from GPI’s Borings B-1, B-2, and B-6 indicate that the near surface soils and bedrock materials exhibit soluble sulfate contents of 128.3, 12.5, and 42.0 mg/kg (0.0012 to 0.0128 percent by weight) and chloride contents of 72.9, 7.4, and 51.7 mg/kg (0.0007 to 0.0073 percent by weight). Overall, the samples tested consisted of sandy clays.

For the 2022 CBC, foundation concrete should conform to the requirements outlined to the requirements outlined in ACI 318, Section 19.3. Foundation concrete should be designed for negligible levels of soluble sulfate exposure for soil (Category S0) and low chloride exposure (Category C1).

Based on the climate in the site vicinity, foundation concrete is not expected to be exposed to freeze-thaw cycles. Foundations elements are anticipated to be constructed adjacent to moist soils. The Structural Engineer should determine whether exposure category W1or W2 per ACI 318, Section 19.3.2 is applicable.

6.5 BUILDING FLOOR SLABS

Slab-on-grade floors should be supported on at least 36 inches of granular, non-expansive (EI $\leq$ 20), properly compacted soils as discussed in the "Placement and Compaction of

Fills" section. Based on our explorations, we do not anticipate suitable quantities of granular, non-expansive soils to be available on-site. Import of relatively non-expansive fill is anticipated. Alternatively, the onsite clayey soils could be treated with lime or cement as discussed in the earthwork section of this report to reduce the expansion potential of the onsite clay soils.

We suggest a minimum floor slab thickness of 5 inches with reinforcement of No. 3 rebar placed at 18 inches on-center, in both directions. Both the slab-on-grade thickness and reinforcing should be designed by the Structural Engineer, as structural loads on the floor slab may govern these items.

For elastic design of slabs-on-grade supporting concentrated loads, a modulus of subgrade reaction (k_1) of 175 pounds per cubic inch (pounds per square inch per inch of deflection) may be used for the on-site select, treated, or imported soils. This value is uncorrected and is based on a 1-foot square bearing area. The value of k_1 can be related to large floor slab areas measuring *B x B* in feet by the following equation.

$$k_{BxB} = k_1 \left(\frac{B+1}{2B} \right)^2$$

Where: k_1 = unit modulus of subgrade reaction
k_{BxB} = modulus for foundation area of width B in feet

The structural design should consider both long-term loads related to building operations and short-term construction loads. GPI has not been provided with specifications on the proposed floor slab design at this time.

Although not anticipated over the majority of the building, a vapor/moisture retarder should be placed under slabs that are to be covered with moisture-sensitive floor coverings (parquet, wood, vinyl, tile, etc.) or will be storing moisture sensitive supplies. Currently, common practice is to use a 15-mil polyethylene product such as Stego Wrap for this purpose. Whether to place the concrete slab directly on the vapor barrier or place a clean sand layer between the slab and vapor barrier is a decision for the Project Architect and General Contractor, as it is not a geotechnical issue. If covered by sand, the sand layer should be about 2 inches thick and contain less than 5 percent by weight passing the No. 200 sieve. Based on GPI’s explorations and laboratory testing, the soils at the site are not suitable for this purpose. The function of the sand layer is to protect the vapor retarder during construction and to aid in the uniform curing of the concrete. The sand layer should be nominally compacted using light equipment. The sand placed over the vapor retarder should only be slightly moist. If the sand gets wet (for example as a result of rainfall or excessive moistening) it must be allowed to dry prior to placing concrete. Care should be taken to avoid infiltration of water into the sand layer after placement of the concrete slab, such as at slab cut-outs and other exposures. A sand layer is not required beneath the vapor retarder, but GPI takes no exception if one is provided.

It should be noted that the material used as a vapor retarder is only one of several factors affecting the prevention of moisture accumulation under floor coverings. Other factors include maintaining a low water-cement ratio for the concrete used for the floor slab, effective sealing of joints and edges (particularly at pipe penetrations) as well as excess moisture in the concrete. The manufacturer of the floor coverings should be consulted for establishing acceptable criteria for the condition of the floor surface prior to placing moisture-sensitive floor coverings.

6.6 RETAINING STRUCTURES

6.6.1 General

Retaining walls up to approximately 12 feet high are planned to support the western and northern existing slope. Additional retaining structures planned for the project include dock-high walls. As noted previously in Section 5, portions of the proposed retaining walls located at the toe of the existing fill slopes will need to be designed for an additional lateral load to maintain a suitable FS for the overall slope/retaining wall configuration. This will require tieback anchors to be installed to increase the resistance of the wall so that the system satisfies the minimum FS required for static and pseudo-static (seismic) design. Additional analyses are required to provide recommendations for design of the various slope/retaining wall configurations along the length of the wall once design progresses.

6.6.2 Conventional Retaining Walls

GPI recommends that conventional retaining walls be backfilled with relatively non-expansive soils (EI less than 20). For design a unit weight of 125 pounds pe cubic foot may be used for retaining wall backfill and the native soils.

Active earth pressures can be used for designing cantilevered walls or shoring that can yield laterally at least ½-percent of the wall height under the imposed loads. At-rest pressures should be used for restrained walls that remain rigid enough to be essentially non-yielding. The lateral earth pressures imposed on planned retaining structures will depend on the subsurface material being retained and the inclination of the ground surface behind the retaining wall. The following lateral earth pressures are recommended for the preliminary design of the retaining structures at the project that do not require an additional lateral resistance so that the slope/wall configuration satisfies the minimum FS. These slope/wall systems should be further evaluated to determine that load once an updated design configuration is provided as it will vary across the length of wall.

Active earth pressures can be used for designing cantilevered walls or shoring that can yield laterally at least ½-percent of the wall height under the imposed loads. For level, drained backfill, derived from granular, non-expansive soils, a lateral pressure of an equivalent fluid weighing 40 pounds per cubic foot may be used. This value can also be used for design of temporary cantilevered shoring. If the walls are designed with sloping backfill (up to 2:1), a lateral pressure of an equivalent fluid weighing 60 pounds per cubic foot may be used.

At-rest pressures should be used for restrained walls that remain rigid enough to be essentially non-yielding. For select, non-expansive, level, drained backfill, a lateral pressure of an equivalent fluid weighing 60 pounds per cubic foot can be used. If the walls are designed with sloping backfill (up to 2:1), a lateral pressure of an equivalent fluid weighing 90 pounds per cubic foot may be used.

As outlined in the California Building Code, retaining walls 6 feet or taller should be designed to resist seismic lateral earth pressures. A seismic lateral pressure equivalent to a fluid with a unit weight of 25 pounds per cubic foot may be used. This pressure should be combined with the active earth pressure presented above. If the retaining walls are designed using the at-rest pressure provided above, only the difference between the active plus seismic pressures and the at-rest pressure needs to be included as the seismic pressure.

The recommended pressures assume that the supported earth will be fully drained, preventing the build-up of hydrostatic pressures. For traditional backfilled retaining walls, a drain consisting of perforated pipe and 1 cubic foot of gravel per lineal foot, wrapped in filter fabric should be used. The fabric (non-woven filter fabric, Mirafi 140N or equivalent) should be lapped at the top.

Walls subject to surcharge loads should be designed for an additional uniform lateral pressure equal to one-third and one-half the anticipated surcharge pressure for unrestrained and restrained walls, respectively.

Interior ramp retaining walls within the parking structure that are not exposed to external sources of irrigation or stormwater may be designed assuming a drained backfill condition (without additional drainage behind the retaining wall) provided the walls are backfilled with granular non-expansive soil.

A moisture barrier or waterproofing is recommended on the back side of retaining walls where efflorescence (formation of salt deposits on the outside face of the wall) is not desired.

The Structural Engineer should specify the use of select, granular wall backfill on the plans. Wall footings should be designed as discussed in the “Foundations” section.

6.6.3 Soldier Pile Retaining Walls

A soldier pile retaining wall could be constructed at the toe of the existing upper slope. The wall would consist of soldier piles spaced at 6 to 8 feet on center with permanent lagging between the soldier piles. Tie-back anchors will be required for the pile wall based on the results of the stability analyses discussed in Section 5 of this report. If desired, a decorative shotcrete face could be constructed for the permanent wall.

Earth Pressures

Active earth pressures can be used for designing walls that can yield at least ½-inch laterally in 10 feet of wall height under the imposed loads. For sloping (2:1 horizontal:vertical) backfill comprised of on-site compacted fill, the magnitude of active pressures is equivalent to the pressures imposed by a fluid weighing 68 pounds per cubic foot (pcf). At-rest pressures should be used for restrained walls that remain rigid enough to be essentially non-yielding. For sloping (2:1 horizontal:vertical) backfill comprised of on-site engineered fill and the native siltstone/sandstone materials, at-rest pressures are equivalent to the pressures imposed by a fluid weighing 93e The above active and at-rest pressures are for a drained condition.

To account for seismic loads, an additional lateral earth pressure equal to 25 pcf (equivalent fluid pressure distribution) should be added to the above active pressure. If walls are designed using at-rest pressures, a total lateral earth pressure may be limited to 93 pcf when considering seismic loads.

For the design of soldier pile wall, the piles should be spaced at least two diameters on centers. The allowable lateral bearing value (passive value) of the soils below the excavation on the soldier piles may be taken to be 600 pounds per square foot at the excavated surface, up to a maximum of 6,000 psf. To develop the full lateral value, provisions should be made to assure firm contact between the piles and the undisturbed soils. The concrete placed in the soldier pile excavation below the excavated level may be a lean mix, but is should be of adequate strength to transfer the imposed loads to the surrounding soils.

Soldier Piles

The soldier piles may be installed in a drilled hole. The retaining wall contractor should evaluate the potential drilling conditions when planning the installation methods. The frictional resistance between the soldier piles and the retained earth may be used in resisting the downward component of the anchor load where tieback anchors are installed. The coefficient of friction between the soldier pile and the retained earth may be taken as 0.35. This value is based on the assumption that uniform full bearing will be developed between the steel soldier beam and the lean-mix concrete and between the lean-mix concrete and the retained earth. In addition, provided the portion of the soldier piles below the excavated level is backfilled with structural concrete, the soldier piles below the excavated level may be used to resist downward loads. The frictional resistance between the concrete soldier piles and the soils below the excavated level may be taken as equal to 500 pounds per square foot.

Permanent Lagging

Continuous lagging will be required between the soldier piles. Careful installation of the lagging will be necessary to achieve bearing against the retained earth. We recommend that the voids between the lagging and retained earth be backfilled with a lean-mix sand-cement slurry prior to continuing the excavation deeper. The soldier piles should be designed for the full anticipated lateral pressure. However, the pressure on the lagging will be less because of arching of the soils between piles. We recommend that the lagging be designed for the recommended earth pressure but limited to a maximum value of 400 pounds per square foot, provided the soldier beam spacing is 8 feet or less.

Anchor Design

Tied-back friction anchors may be required to resist lateral loads from the slopes above the wall. For preliminary design purposes, it may be assumed that the active wedge adjacent to the wall is defined by a plane drawn at 35 degrees from the vertical through the bottom of the excavation. The anchors should extend at least 20 feet beyond the potential active wedge and to a greater length if necessary to develop the desired capacities and to increase the stability to an acceptable factor of safety. The capacities of anchors should be determined by testing of the initial anchors as outlined in the following paragraph. For preliminary design purposes, it may be estimated that conventional drilled cast-in-place friction anchors will develop an average friction value of 500 pounds per square foot. Post-grouted anchors typically obtain greater capacities compared to gravity grouted anchors. In general, the obtained capacity of post-grouted tie-back anchors is primarily a function of construction methods and experience of the specialty contractor along with local site conditions. The capacity of tie-back anchors should be determined through a performance specification.

Ultimately, it is the contractor’s responsibility to obtain the required pullout capacity, which may require extensive post grouting and/or field modifications. Only the frictional resistance developed beyond the active wedge would be effective is resisting lateral loads. If the anchors are spaced at least 6 feet on-center, group action reduction in the capacity of the anchors need not be considered.

The anchors may be installed at angles of 15 to 45 degrees below the horizontal. Caving of the anchor holes should be prevented with the installation method selected. For friction gravity, grouted anchors (non-post-grouted), the anchors should be filled with concrete placed by pumping from the tip out, and the concrete should extend from the tip of the anchor to the active wedge. The annular space around the tie-back tendons should not be backfilled until after anchor testing. If caving is a concern in the sandy deposits, the portion within the active wedge may be backfilled with sand and only enough cement to allow placement by pumping. Additional tendons may be required if the active wedge portion is filled to complete the 200 percent tests discussed below.

Anchor Testing

At least 10 percent of the total anchors should be selected for quick 200 percent tests. At least one anchor per row should be tested for 24 hours. The purpose of the 200 percent tests is to verify the friction value assumed in design. The anchors should be tested to develop twice the assumed friction value. Where satisfactory tests are not achieved on the initial anchors, the post grouting or anchor length should be increased until satisfactory test results are obtained. We should review the recommended test program and make modifications, as necessary. For the 24-hour 200 percent tests, the total deflection during loading should not exceed 12 inches. The deflection after the 200 percent test load has been applied should not exceed 0.75-inch during the 24-hour period. If the anchor movement after the 200 percent load has been applied for 10 hours is less than 0.5 inch, and the movement over the previous 4 hours has been less than 0.1-inch, the test may be terminated. For the quick 200 percent tests, the total deflection should not exceed 12 inches. The deflection after the 200 percent test load has been applied should not exceed 0.25 inch during a 30-minute period.

The remaining anchors should be pretested to at least 150 percent of the design load. The total deflection during the test should not exceed 12 inches. The rate of creep under the 150 percent load should not exceed 0.1 inch over a 15-minute period for the anchor to be approved for the design loading. After a satisfactory test, each production anchor should be locked-off at the design load. The locked-off load should be verified by rechecking the load in the anchor. If the locked-off load varies by more than 10 percent from the design load, the load should be reset until the target load is achieved.

Anchor testing should be performed by the contractor and observed by GPI. The contractor shall provide the necessary test equipment, including an independent fixed reference point (i.e., tripod) for placement of the dial gage for measuring anchor deflections during tensioning. Prior to testing, the contractor shall supply current calibration records of the

hydraulic jack to be used for testing. Calibration records should be signed by a California registered professional engineer and be within 3 months prior of the start of testing.

Deflection and Stability

It is difficult to accurately predict the amount of deflection of the shored embankment. It should be realized, however, that some deflection will occur. The soldier pile wall should be designed to limit deflection to 1-inch. In areas where less deflection is desired, such as adjacent to existing settlement sensitive improvements, the wall should be designed for higher lateral earth pressures.

The static and seismic global stability of the proposed walls should be evaluated by GPI to confirm that appropriate factors of safety are met. The wall designer should provide GPI with plans and details of the proposed soldier pile and tieback anchor wall for review and approval.

6.7 EXTERIOR CONCRETE AND MASONRY FLATWORK

Exterior concrete and masonry flatwork should be supported on at least 24 inches of non-expansive, compacted fill. This includes exterior sidewalks, stamped concrete, non-traffic pavement, pavers, etc. Prior to placement of concrete, the subgrade soils should be prepared as recommended in the “Subgrade Preparation” section of this report.

Import of relatively non-expansive fill is anticipated to be required as sufficient quantities of granular, non-expansive soils are not anticipated to be available on-site. Alternatively, the onsite clayey soils could be treated with lime or cement as discussed in the earthwork section of this report to reduce the expansion potential of the onsite clayey soils.

6.8 PAVEMENTS

Prior testing of the on-site soils by SCST (2018) indicates that the upper soils at the site have an R-value of 5, which was used in developing the preliminary pavement design for the site. The California Division of Highways Design Method and the Portland Cement Association Design Method were used for design of the recommended preliminary pavement sections. The following pavement sections are recommended for planning purposes only.

The Project Civil Engineer should select the appropriate traffic index for the pavement based on the anticipated traffic usage. For design purposes, the following traffic indices correspond to the following number of heavy (18-kip equivalent axel loaded) truck trips per day for a 20-year design life.

Traffic Index	Heavy Truck Trips/Day
4	0
5	1
6	3
7	11
8	35
9	92

ASPHALT PAVEMENTS

PAVEMENT AREA	TRAFFIC INDEX	SECTION THICKNESS (inches)	
		ASPHALT CONCRETE	AGGREGATE BASE COURSE
Auto Parking	4	3	7
Auto Drives	5.5	3.5	11

PCC PAVEMENTS

PAVEMENT AREA	TRAFFIC INDEX	SECTION THICKNESS (inches)		
		f'c = 3,000 psi PCC	f'c = 3,500 psi PCC	f'c = 4,000 psi PCC
Auto Parking/Drives	4/5	7.0	6.5	6.0
Truck Areas	6	7.0	6.5	6.5
	7	8.0	7.5	7.0
	8	8.0	8.0	7.5
	9	8.0	8.0	8.0

The concrete used for paving should have a modulus of rupture of at least 500 psi (equivalent to an approximate compressive strength of 3,000 psi) at the time the pavement is subjected to truck traffic. This recommendation should be considered a minimum based on the geotechnical site conditions, and the Project Structural or Civil Engineer should confirm if more stringent recommendations are needed for other purposes.

We recommend the portland cement concrete (PCC) pavement be underlain by at least 4 inches of aggregate base. Besides improving overall support, the aggregate base will serve to maintain the moisture content of the properly compacted clays and provide a working surface prior to the placement of PCC. The 4-inch layer of aggregate bases is not required below the slab-on-grade grade for the parking structure since it will be underlain by 3 feet of non-expansive granular fill or cement/lime treated soils.

If vehicular pavers are to be used for the project, the paver and leveling sand should be supported on a least the thickness of base shown above for the appropriate asphalt traffic index. The pavers should also be installed in accordance with the manufacturer's recommendations.

The pavement subgrade underlying the aggregate base or concrete should be properly prepared and compacted in accordance with the recommendations outlined under "Subgrade Preparation".

The pavement base course should be compacted to at least 95 percent of maximum dry density (ASTM D1557). Aggregate base should conform to the requirements of Section 26 of the California Department of Transportation Standard Specifications for Class II aggregate base (three-quarter inch maximum) or Section 200-2 of the Standard Specifications for Public Works Construction (Green Book) for untreated base materials (except processed miscellaneous base).

The above recommendations are based on the assumption that the base course and compacted subgrade will be properly drained. The design of paved areas should incorporate measures to prevent moisture build-up within the base course, which can otherwise lead to premature pavement failure. For example, curbing adjacent to landscaped areas should be deep enough to act as a barrier to infiltration of irrigation water into the adjacent base course.

6.9 CORROSION

Resistivity testing of a representative sample of the on-site soils indicates that they are moderately corrosive to buried ferrous metals. Soil corrosion with respect to foundation concrete was addressed in a prior section of this report. GPI does not practice corrosion engineering. If corrosion protection recommendations are required, GPI recommends that a corrosion engineering firm, such as Project X Corrosion Engineering or HDR, be consulted.

6.10 DRAINAGE

Positive surface gradients should be provided adjacent to structures so as to direct surface water run-off and roof drainage away from foundations and slabs toward suitable discharge facilities. Long-term ponding of surface water should not be allowed on pavements or adjacent to buildings.

The proposed slopes should be graded so as to direct surface water run-off away from the top of slope and toward suitable discharge facilities. Long-term ponding of surface water should not be allowed.

6.11 SUBSURFACE INFILTRATION

Field infiltration testing was not included in our scope of work. The subsurface soils at the site consist predominantly of compacted clayey fill soils overlying very dense/hard bedrock. The potential for water to infiltrate into a soil is based on the gradation and in-place density of a soil and is considered to be very low. As such, the subsurface conditions are not considered to be suitable for subsurface infiltration.

Additionally, because the site is underlain by compacted fill and the lower slope is partially supported by tieback anchors, we recommend that temporary stormwater chambers, basins, biofiltration systems, and similar structures be lined so that infiltration of storm water into the onsite fill soils does not occur.

In Appendix G, we included Worksheet C.4-1, Categorization of Infiltration Feasibility Condition from the City of San Diego Storm Water Standards. Based on the assessment outlined in this worksheet, we conclude that the site is considered appropriate for a No-Infiltration Designation.

6.12 GEOTECHNICAL OBSERVATION AND TESTING

GPI recommends that a representative of GPI observe earthwork during construction to confirm that the recommendations provided in GPI’s report are applicable during construction. The earthwork activities include grading, compaction of fills, subgrade preparation, pavement construction, and foundation excavations. If conditions are different than expected, GPI should be afforded the opportunity to provide an alternate recommendation based on the actual conditions encountered.

7.0 LIMITATIONS

This report, exploration logs, and other materials resulting from GPI's efforts were prepared exclusively for Pacific Medical Buildings and their consultants in designing the proposed development. The report is not intended to be suitable for reuse on extensions or modifications of the project or for use on projects other than the currently proposed development, as it may not contain sufficient or appropriate information for such uses.

Soil deposits may vary in type, strength, and many other important properties between points of exploration due to non-uniformity of the geologic formations or to man-made cut and fill operations. While GPI cannot evaluate the consistency of the properties of materials in areas not explored, the conclusions drawn in this report are based on the assumption that the data obtained in the field and laboratory are reasonably representative of field conditions and are conducive to interpolation and extrapolation.

Furthermore, GPI’s recommendations were developed with the assumption that a proper level of field observation and construction review will be provided by GPI during grading, excavation, and foundation construction. If others perform the construction phase services, they must accept full responsibility for all geotechnical aspects of the project, including this report.

GPI’s investigation and evaluations were performed using generally accepted engineering approaches and principles available at this time and the degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers practicing in this area. No other representation, either expressed or implied, is included or intended in GPI’s report.

Respectfully submitted,
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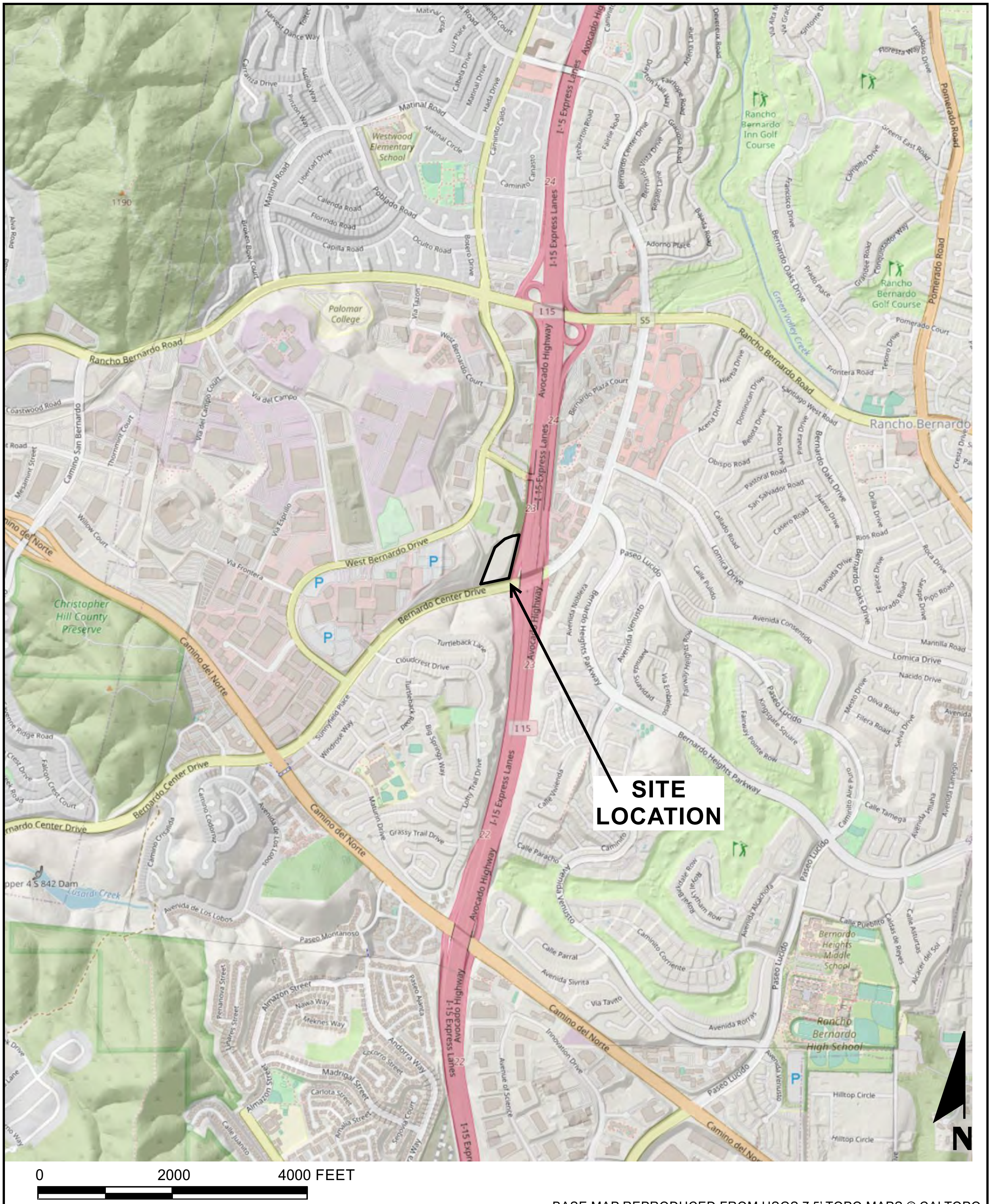

BASE MAP REPRODUCED FROM USGS 7.5' TOPO MAPS © CALTOPO

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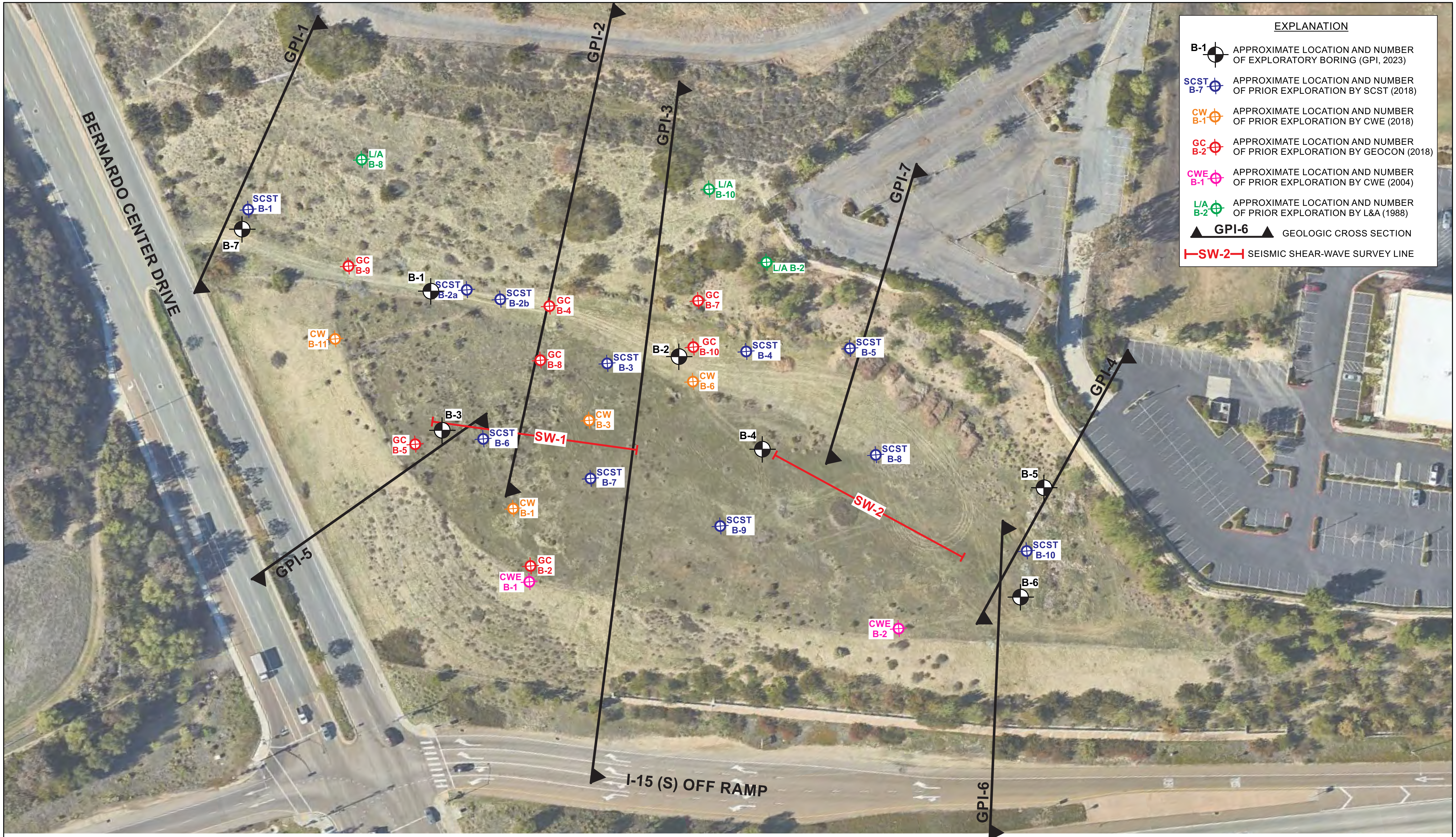
PMB RANCHO BERNARDO MOB PS

GPI PROJECT NO.: 3202.I

SCALE: 1" = 2000'

SITE LOCATION MAP

FIGURE 1



N

0 80 160 FEET

BASE MAP REPRODUCED FROM GOOGLE EARTH © 2023

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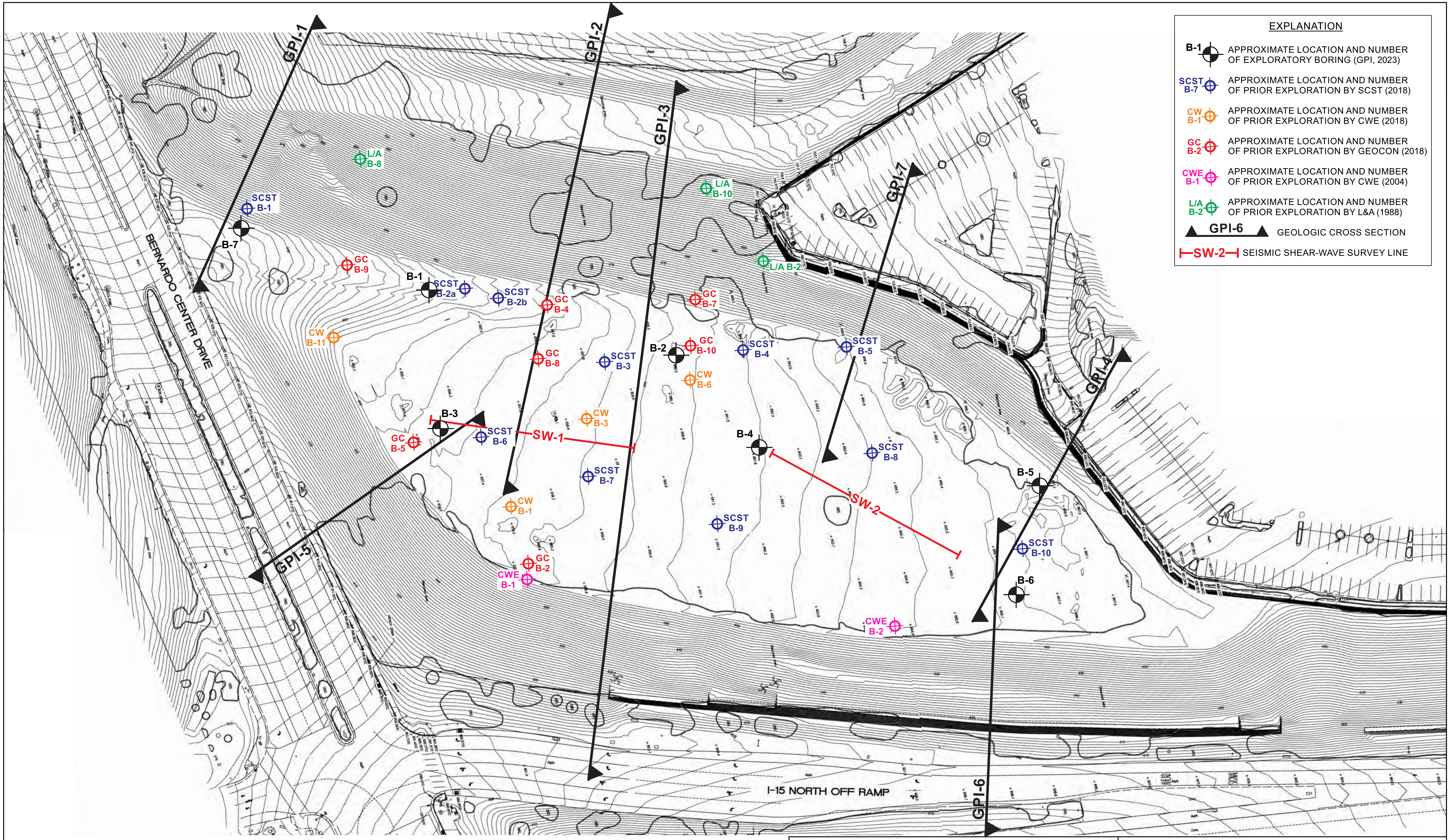
GPI PROJECT NO.: 3202.I

SCALE: 1" = 80'

AERIAL SITE PLAN

FIGURE 2



N

0 80 160 FEET

BASE MAP REPRODUCED FROM TOPOGRAPHIC SURVEY (SHEETS 1, 2)
PREPARED BY LATITUDE 33 PLANNING & ENGINEERING. DATED: 09-28-23

GPI GEOTECHNICAL PROFESSIONALS, INC.

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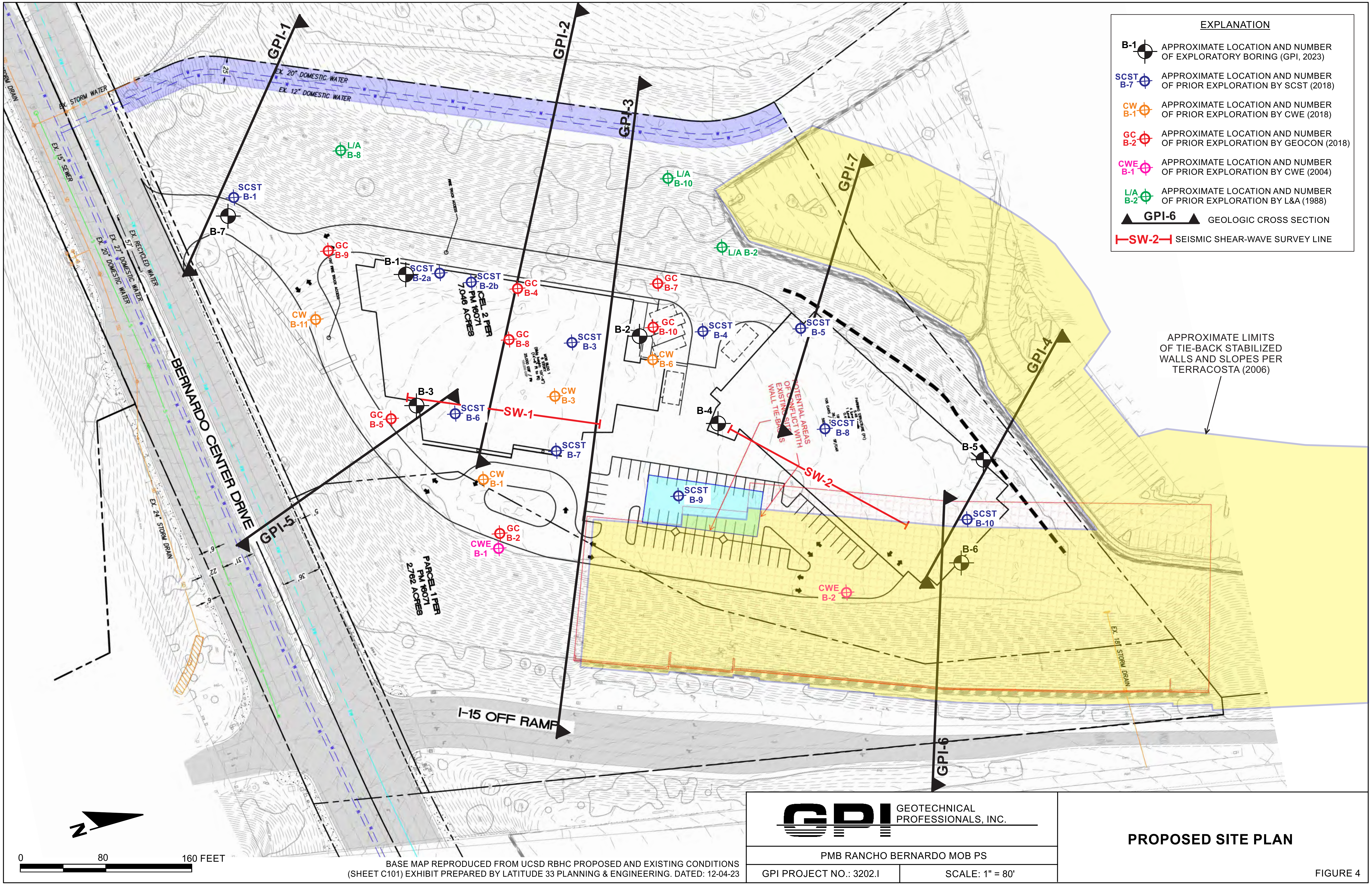
GPI PROJECT NO.: 3202.I

SCALE: 1" = 80'

TOPOGRAPHIC SITE PLAN

FIGURE 3



BASE MAP REPRODUCED FROM UCSD RBHC PROPOSED AND EXISTING CONDITIONS
(SHEET C101) EXHIBIT PREPARED BY LATITUDE 33 PLANNING & ENGINEERING. DATED: 12-04-23

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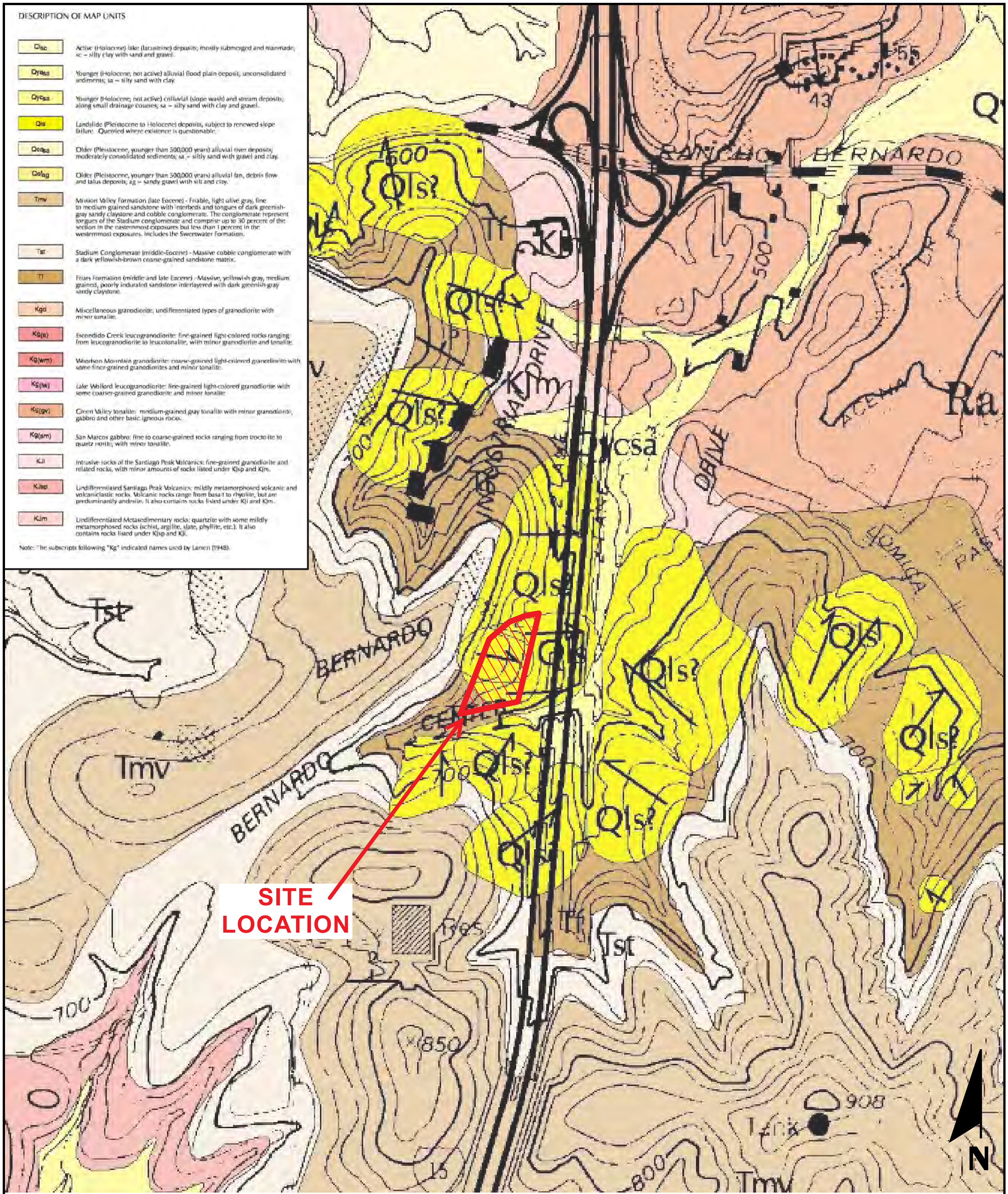
GPI PROJECT NO.: 3202.I

SCALE: 1" = 80'

PROPOSED SITE PLAN

FIGURE 4



DESCRIPTION OF MAP UNITS

Ql_{sc}	Active (Holocene) lake (lacustrine) deposits; mostly submerged and manmade; sc = silty clay with sand and gravel.
Qya_{sa}	Younger (Holocene; not active) alluvial flood plain deposit; unconsolidated sediments; sa = silty sand with clay.
Qyc_{sa}	Younger (Holocene; not active) colluvial (slope wash) and stream deposits; along small drainage courses; sa = silty sand with clay and gravel.
Qls	Landslide (Pleistocene to Holocene) deposits, subject to renewed slope failure. Queried where existence is questionable.
Qoa_{sa}	Older (Pleistocene, younger than 500,000 years) alluvial river deposits; moderately consolidated sediments; sa = siltly sand with gravel and clay.
Qof_{ag}	Older (Pleistocene, younger than 500,000 years) alluvial fan, debris flow and talus deposits; ag = sandy gravel with silt and clay.
Tmv	Mission Valley Formation (late Eocene) - Friable, light olive gray, fine to medium grained sandstone with interbeds and tongues of dark greenish-gray sandy claystone and cobble conglomerate. The conglomerate represent tongues of the Stadium conglomerate and comprise up to 30 percent of the section in the easternmost exposures but less than 1 percent in the westernmost exposures. Includes the Sweetwater Formation.
Tst	Stadium Conglomerate (middle-Eocene) - Massive cobble conglomerate with a dark yellowish-brown coarse-grained sandstone matrix.
Tf	Friars Formation (middle and late Eocene) - Massive, yellowish gray, medium grained, poorly indurated sandstone interlayered with dark greenish-gray sandy claystone.
Kgd	Miscellaneous granodiorite; undifferentiated types of granodiorite with minor tonalite.
$Kg_{(e)}$	Escondido Creek leucogranodiorite: fine-grained light-colored rocks ranging from leucogranodiorite to leucotonalite, with minor granodiorite and tonalite.
$Kg_{(wm)}$	Whorlson Mountain granodiorite: coarse-grained light-colored granodiorite with some finer-grained granodiorites and minor tonalite.
$Kg_{(lw)}$	Lake Wolford leucogranodiorite: fine-grained light-colored granodiorite with some coarser-grained granodiorite and minor tonalite.
$Kg_{(gv)}$	Green Valley tonalite: medium-grained gray tonalite with minor granodiorite, gabbro and other basic igneous rocks.
$Kg_{(sm)}$	San Marcos gabbro: fine to coarse-grained rocks ranging from troctolite to quartz norite; with minor tonalite.
KJi	Intrusive rocks of the Santiago Peak Volcanics: fine-grained granodiorite and related rocks, with minor amounts of rocks listed under Kjsp and Kjm.
KJsp	Undifferentiated Santiago Peak Volcanics: mildly metamorphosed volcanic and volcaniclastic rocks. Volcanic rocks range from basalt to rhyolite, but are predominantly andesite. It also contains rocks listed under Kji and Kjm.
KJm	Undifferentiated Metasedimentary rocks: quartzite with some mildly metamorphosed rocks (schist, argilite, slate, phyllite, etc.). It also contains rocks listed under Kjsp and Kji.

Note: The subscripts following "Kg" indicated names used by Larsen (1948).

0 1000 2000 FEET

BASE MAP REPRODUCED FROM THE GEOLOGIC MAP OF THE ESCONDIDO 7.5' QUADRANGLE, SAN DIEGO COUNTY, CALIFORNIA (USGS). DATED 1999

GPI GEOTECHNICAL PROFESSIONALS, INC.

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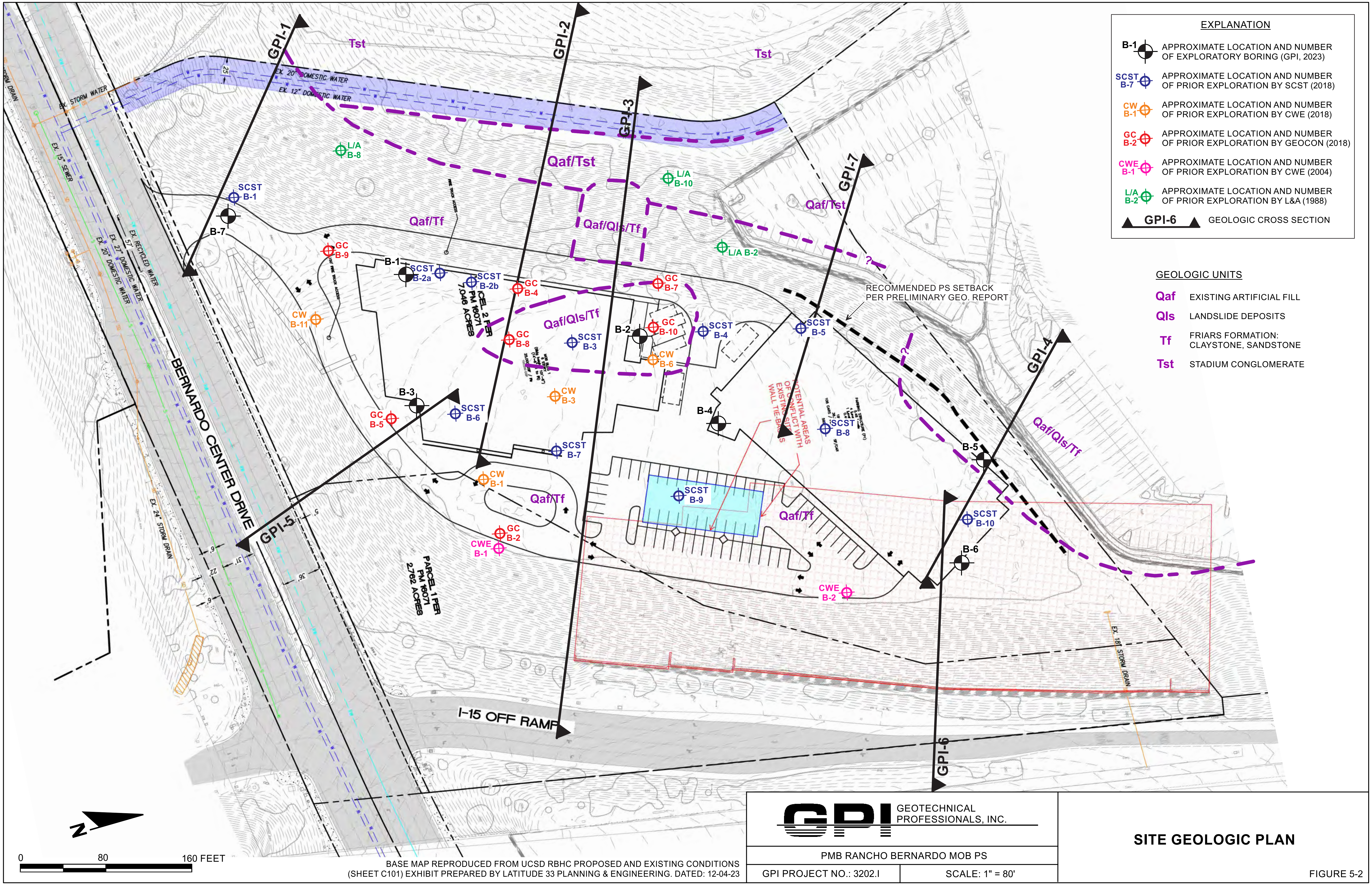
GPI PROJECT NO.: 3202.I

SCALE: 1" = 1000'

REGIONAL GEOLOGIC MAP

FIGURE 5-1



EXPLANATION

B-1	APPROXIMATE LOCATION AND NUMBER OF EXPLORATORY BORING (GPI, 2023)
SCST B-7	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY SCST (2018)
CW B-1	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY CWE (2018)
GC B-2	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY GEOCON (2018)
CWE B-1	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY CWE (2004)
L/A B-2	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY L&A (1988)
GPI-6	GEOLOGIC CROSS SECTION

GEOLOGIC UNITS

Qaf	EXISTING ARTIFICIAL FILL
Qls	LANDSLIDE DEPOSITS
Tf	FRIARS FORMATION: CLAYSTONE, SANDSTONE
Tst	STADIUM CONGLOMERATE

BASE MAP REPRODUCED FROM UCSD RBHC PROPOSED AND EXISTING CONDITIONS
(SHEET C101) EXHIBIT PREPARED BY LATITUDE 33 PLANNING & ENGINEERING. DATED: 12-04-23

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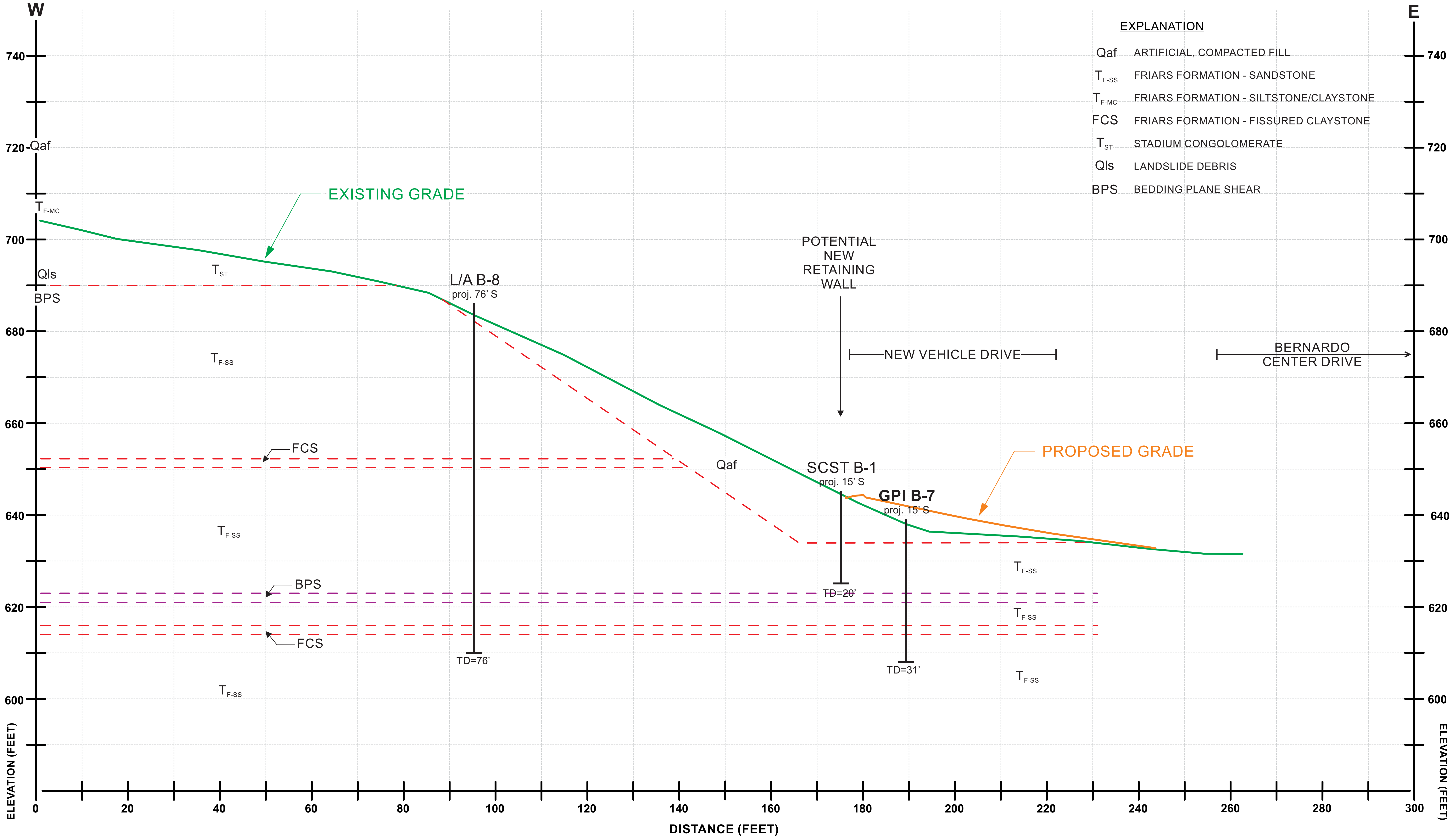
PMB RANCHO BERNARDO MOB PS

GPI PROJECT NO.: 3202.I

SCALE: 1" = 80'

SITE GEOLOGIC PLAN

FIGURE 5-2



Note: This section is based upon information obtained at borings obtained during geotechnical investigations by GPI and others (see References). The section is based upon limited geotechnical data and localized variations should be anticipated. This section is intended for descriptive purposes only.

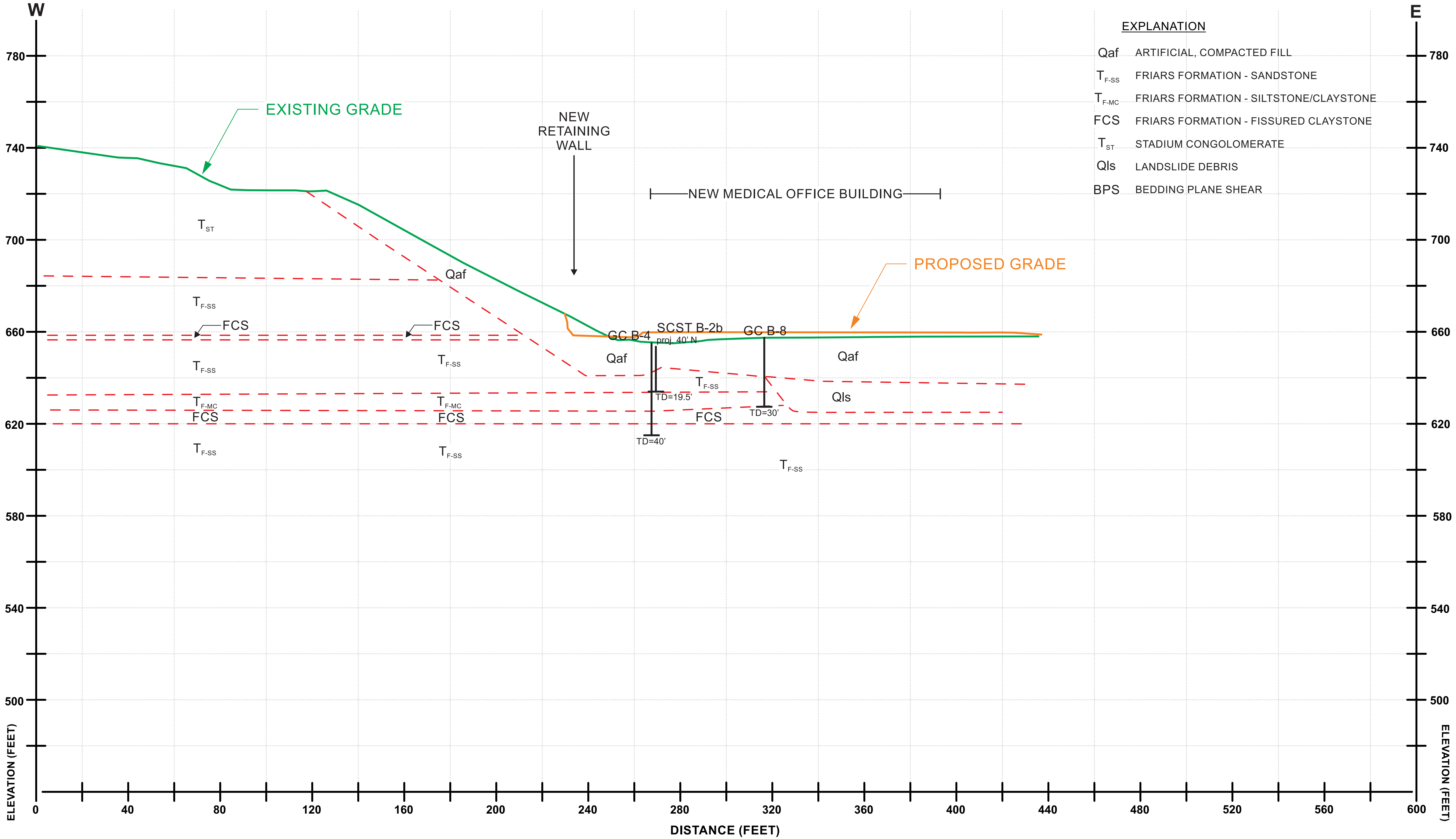
GPI GEOTECHNICAL PROFESSIONALS, INC.

PMB RANCHO BERNARDO - MOB PS

GPI PROJECT NO.: 3202.I	SCALE: 1" = 20'

GEOLOGIC CROSS SECTION: GPI-1

FIGURE 6-1



Note: This section is based upon information obtained at borings obtained during geotechnical investigations by GPI and others (see References). The section is based upon limited geotechnical data and localized variations should be anticipated. This section is intended for descriptive purposes only.

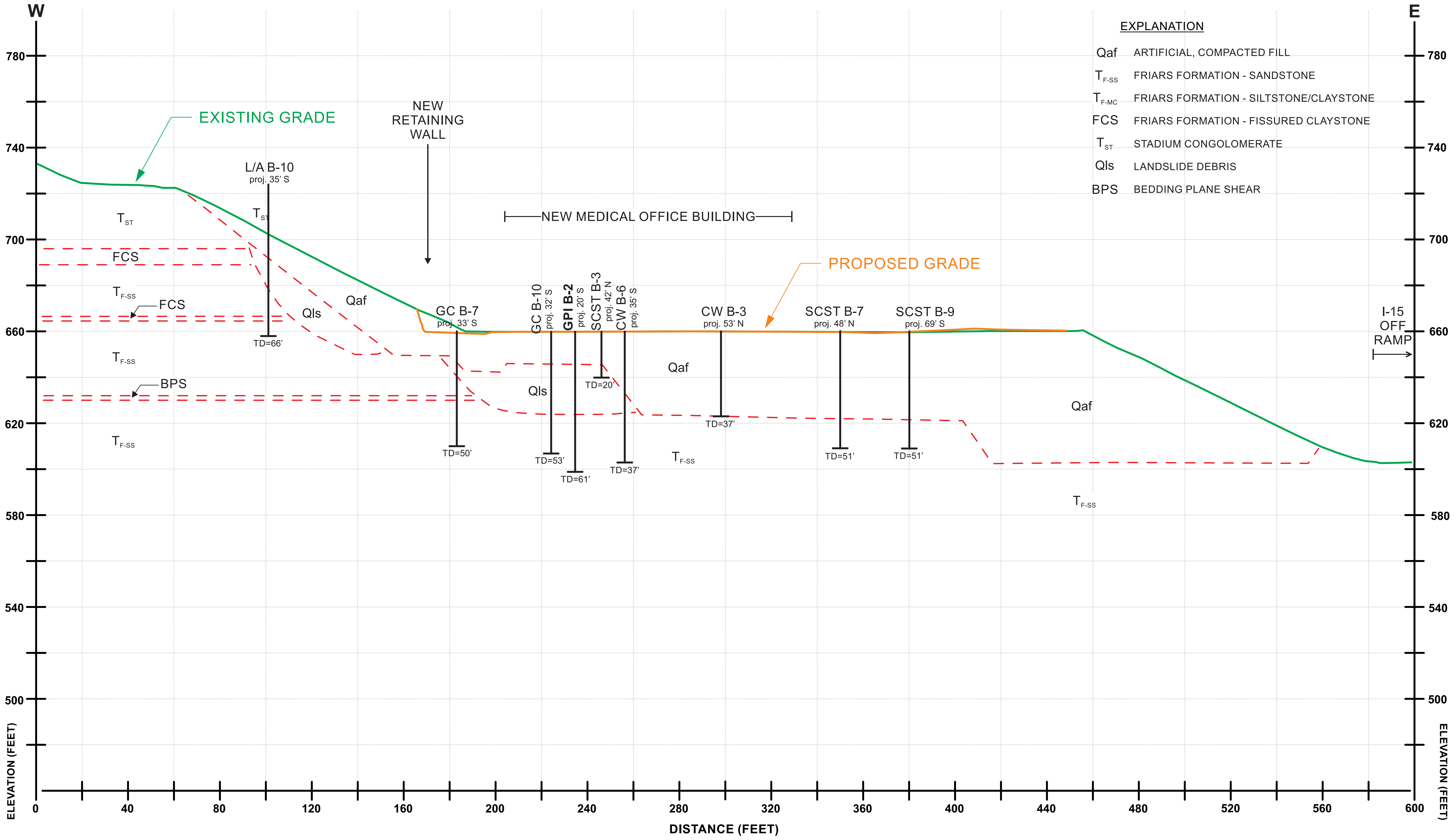
GPI GEOTECHNICAL PROFESSIONALS, INC.

PMB RANCHO BERNARDO MOB PS

GPI PROJECT NO.: 3202.I SCALE: 1" = 40'

GEOLOGIC CROSS SECTION: GPI-2

FIGURE 6-2



Note: This section is based upon information obtained at borings obtained during geotechnical investigations by GPI and others (see References). The section is based upon limited geotechnical data and localized variations should be anticipated. This section is intended for descriptive purposes only.

GEOTECHNICAL PROFESSIONALS, INC.

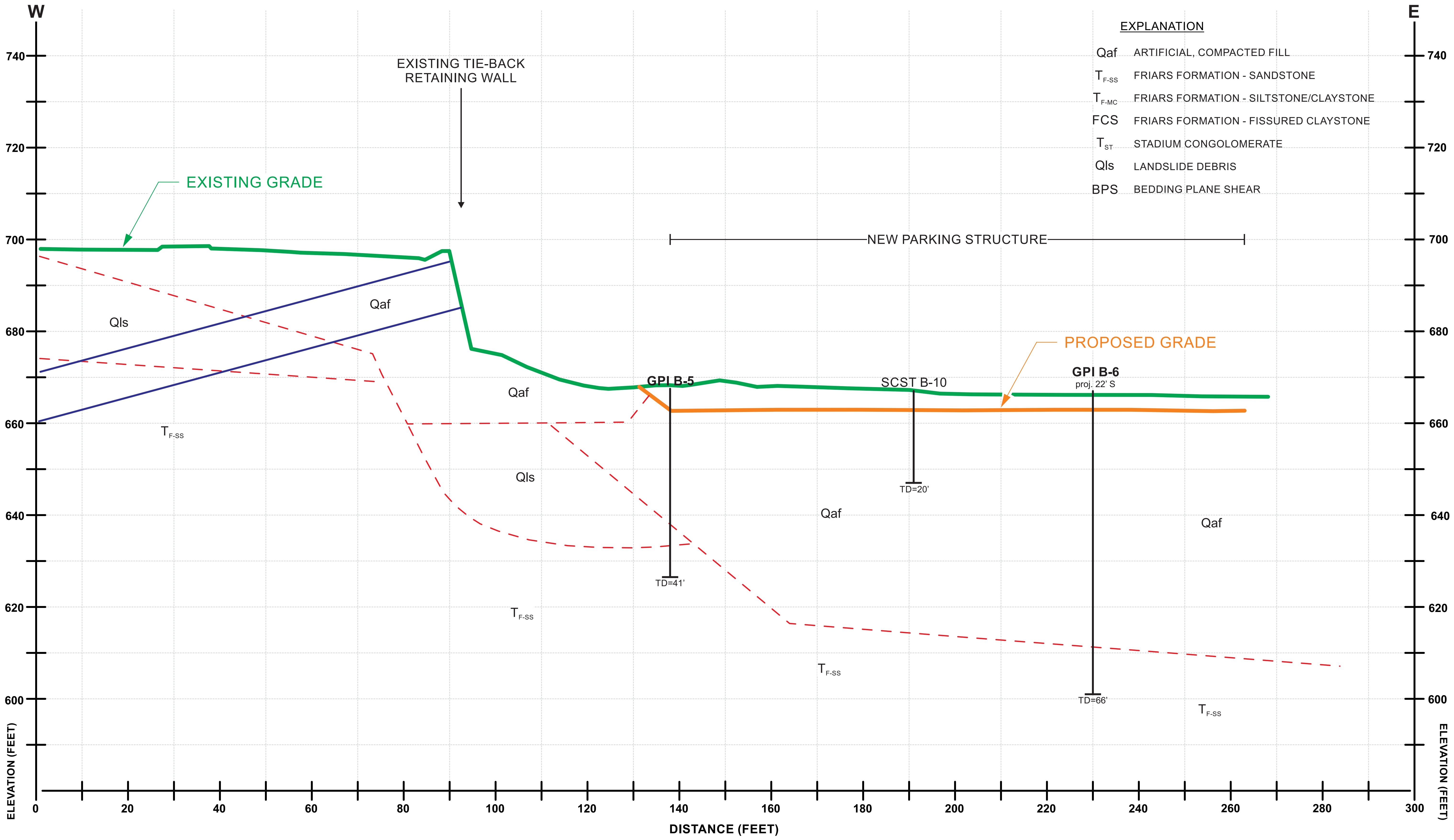
PMB RANCHO BERNARDO MOB PS

GPI PROJECT NO.: 3202.I

SCALE: 1" = 40'

GEOLOGIC CROSS SECTION:
GPI-3

FIGURE 6-3



Note: This section is based upon information obtained at borings obtained during geotechnical investigations by GPI and others (see References). The section is based upon limited geotechnical data and localized variations should be anticipated. This section is intended for descriptive purposes only.

GPI
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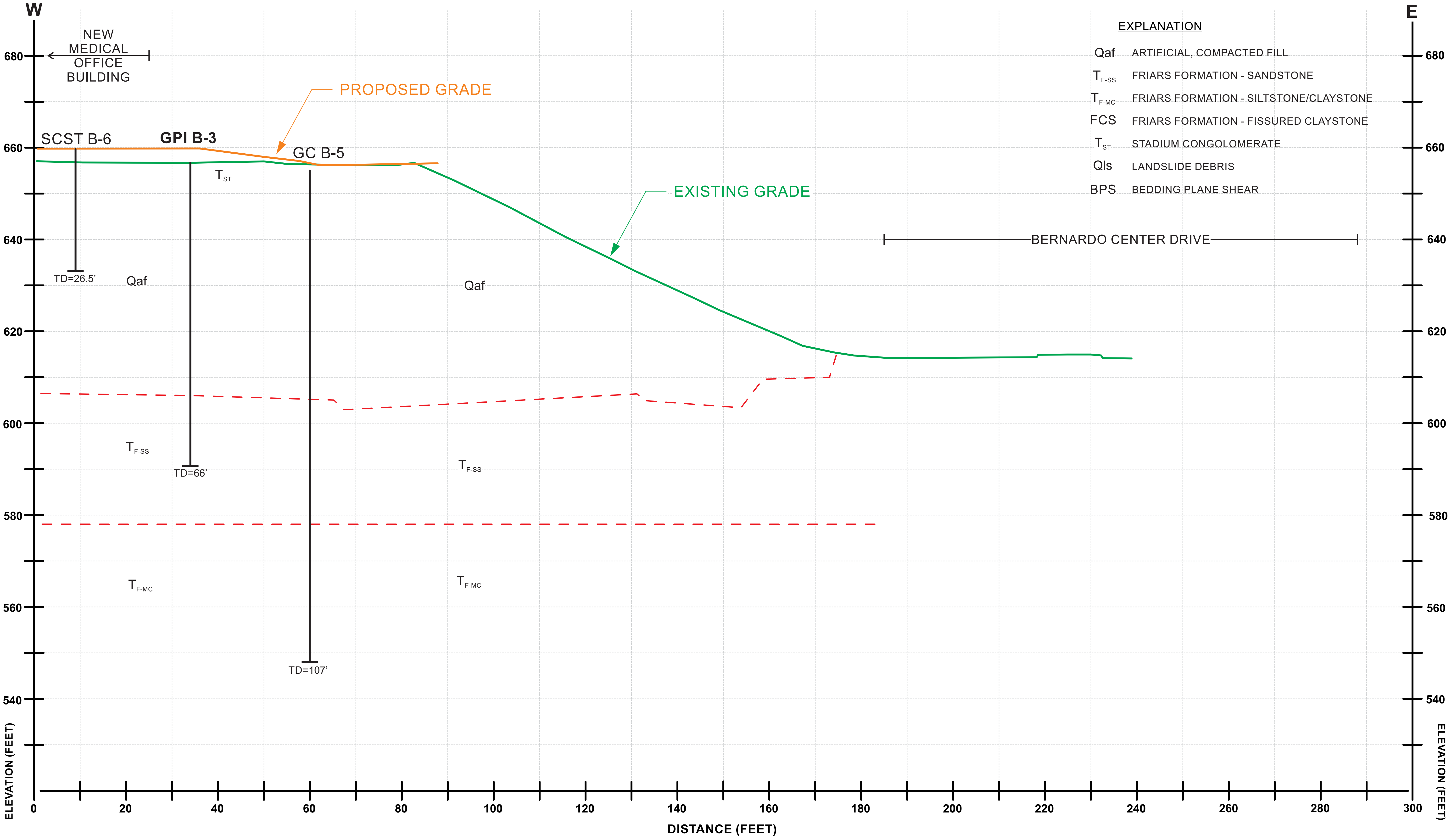
PMB RANCHO BERNARDO MOB PS

GPI PROJECT NO.: 3202.I
SCALE: 1" = 20'

GEOLOGIC CROSS SECTION: GPI-4

FIGURE 6-4



EXPLANATION

Qaf	ARTIFICIAL, COMPACTED FILL
T_{F-SS}	FRIARS FORMATION - SANDSTONE
T_{F-MC}	FRIARS FORMATION - SILTSTONE/CLAYSTONE
FCS	FRIARS FORMATION - FISSURED CLAYSTONE
T_{ST}	STADIUM CONGOLOMERATE
Qls	LANDSLIDE DEBRIS
BPS	BEDDING PLANE SHEAR

Note: This section is based upon information obtained at borings obtained during geotechnical investigations by GPI and others (see References). The section is based upon limited geotechnical data and localized variations should be anticipated. This section is intended for descriptive purposes only.

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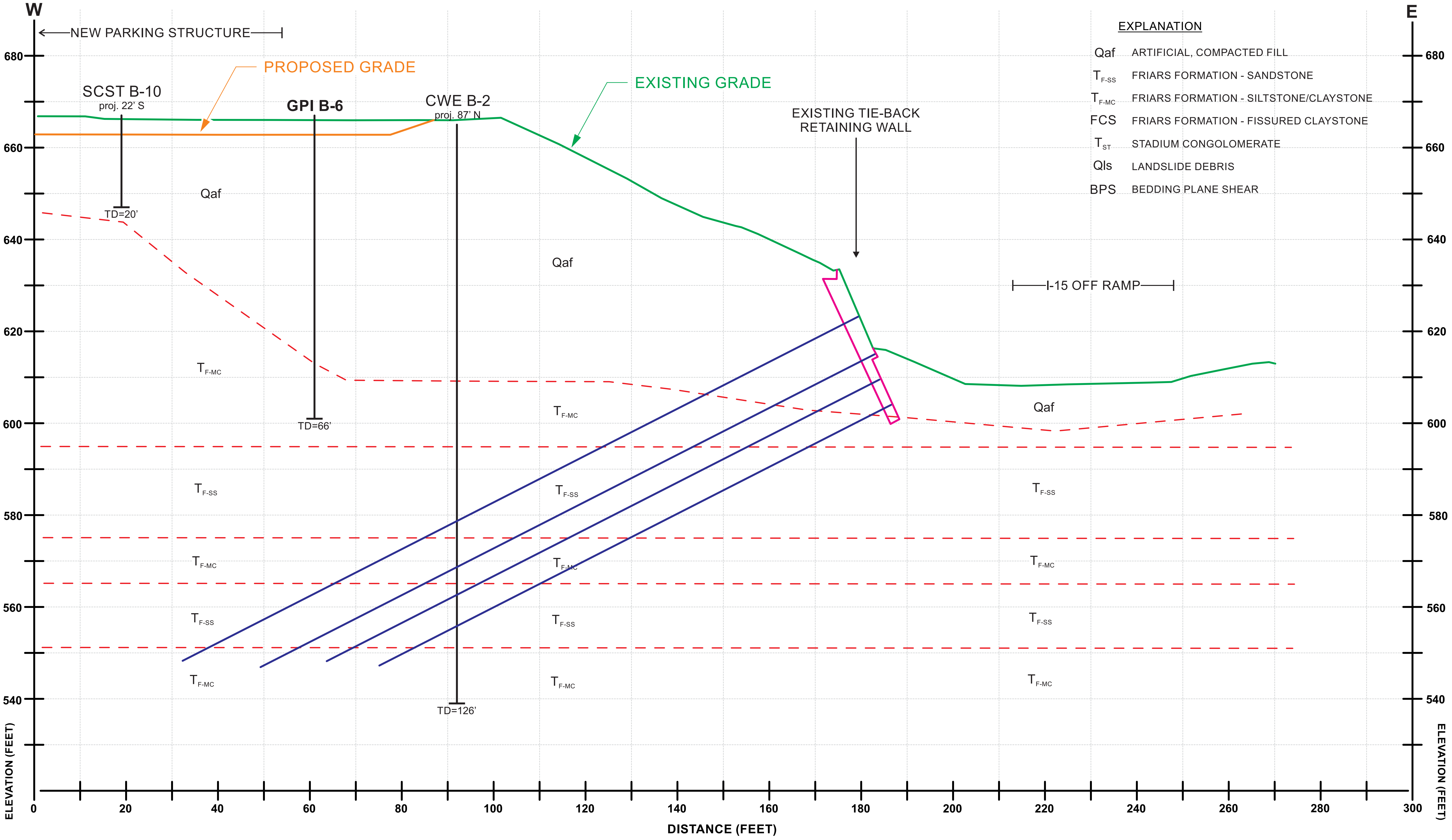
SCALE: 1" = 20'

GEOLOGIC CROSS SECTION:
GPI-5

FIGURE 6-5



Note: This section is based upon information obtained at borings obtained during geotechnical investigations by GPI and others (see References). The section is based upon limited geotechnical data and localized variations should be anticipated. This section is intended for descriptive purposes only.

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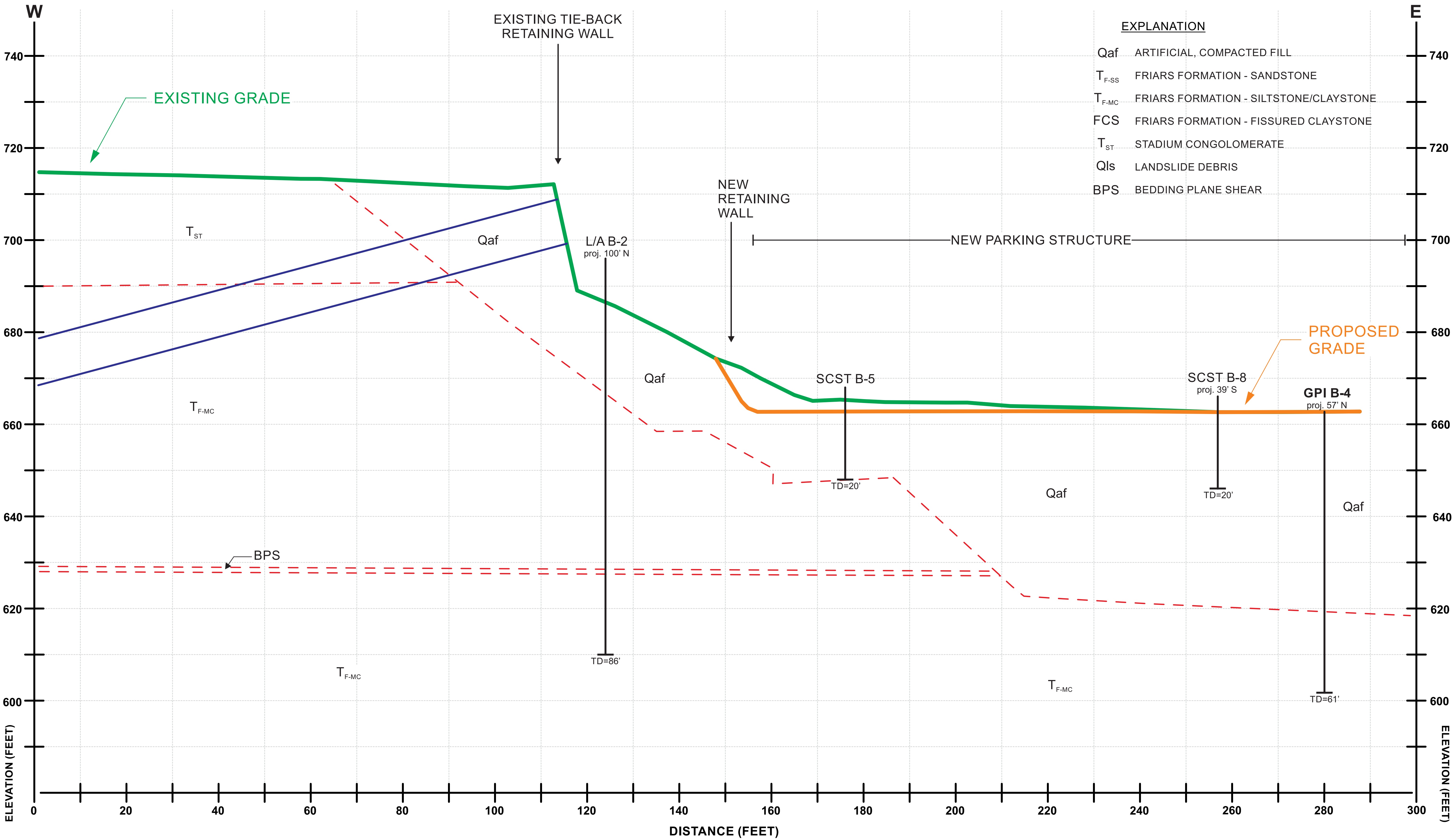
GPI PROJECT NO.: 3202.I | SCALE: 1" = 20'

GEOLOGIC CROSS SECTION: GPI-6

FIGURE 6-6



Note: This section is based upon information obtained at borings obtained during geotechnical investigations by GPI and others (see References). The section is based upon limited geotechnical data and localized variations should be anticipated. This section is intended for descriptive purposes only.

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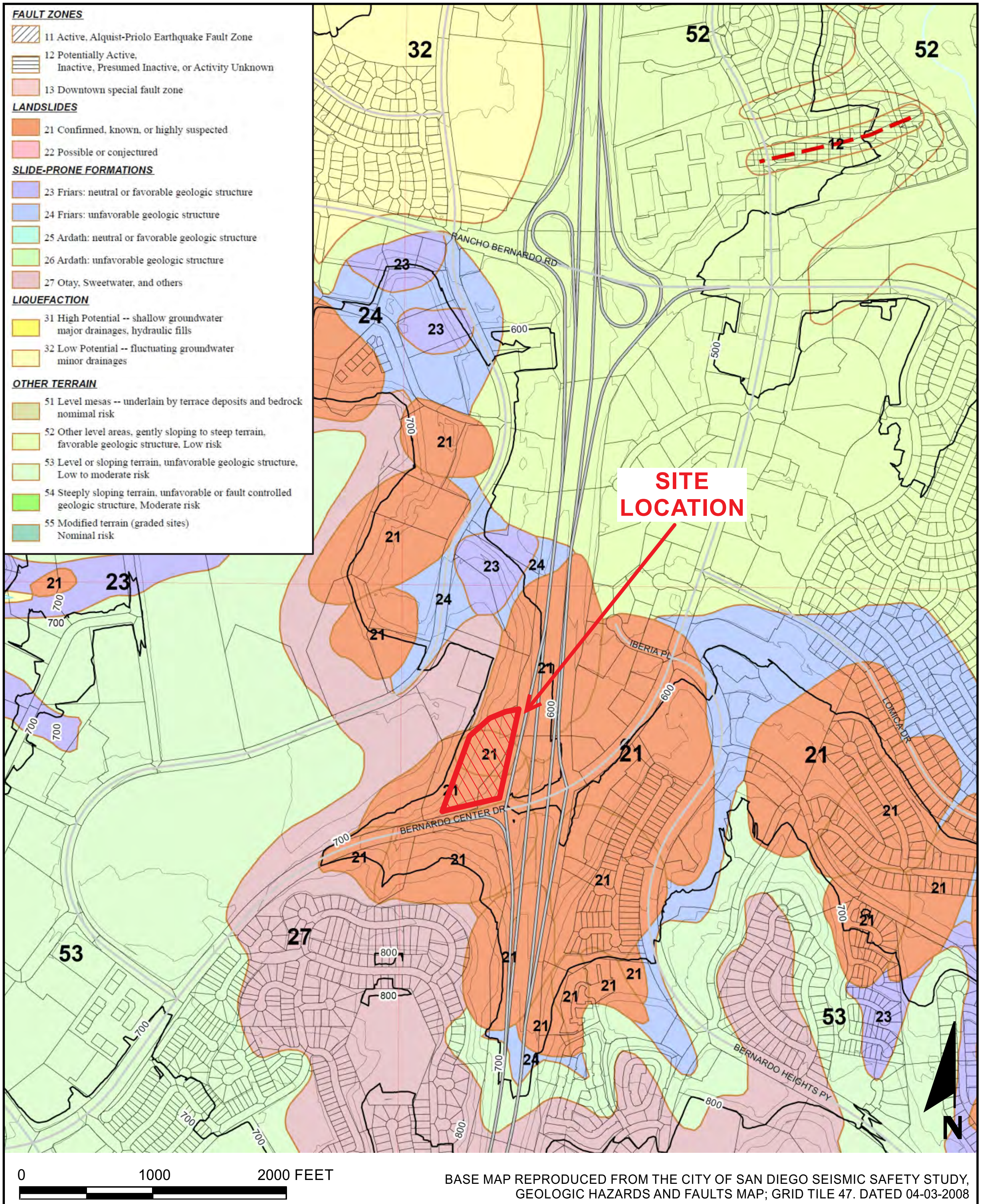
GPI PROJECT NO.: 3202.I

SCALE: 1" = 20'

GEOLOGIC CROSS SECTION: GPI-7

FIGURE 6-7



BASE MAP REPRODUCED FROM THE CITY OF SAN DIEGO SEISMIC SAFETY STUDY, GEOLOGIC HAZARDS AND FAULTS MAP; GRID TILE 47. DATED 04-03-2008

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GEOLOGIC HAZARDS MAP

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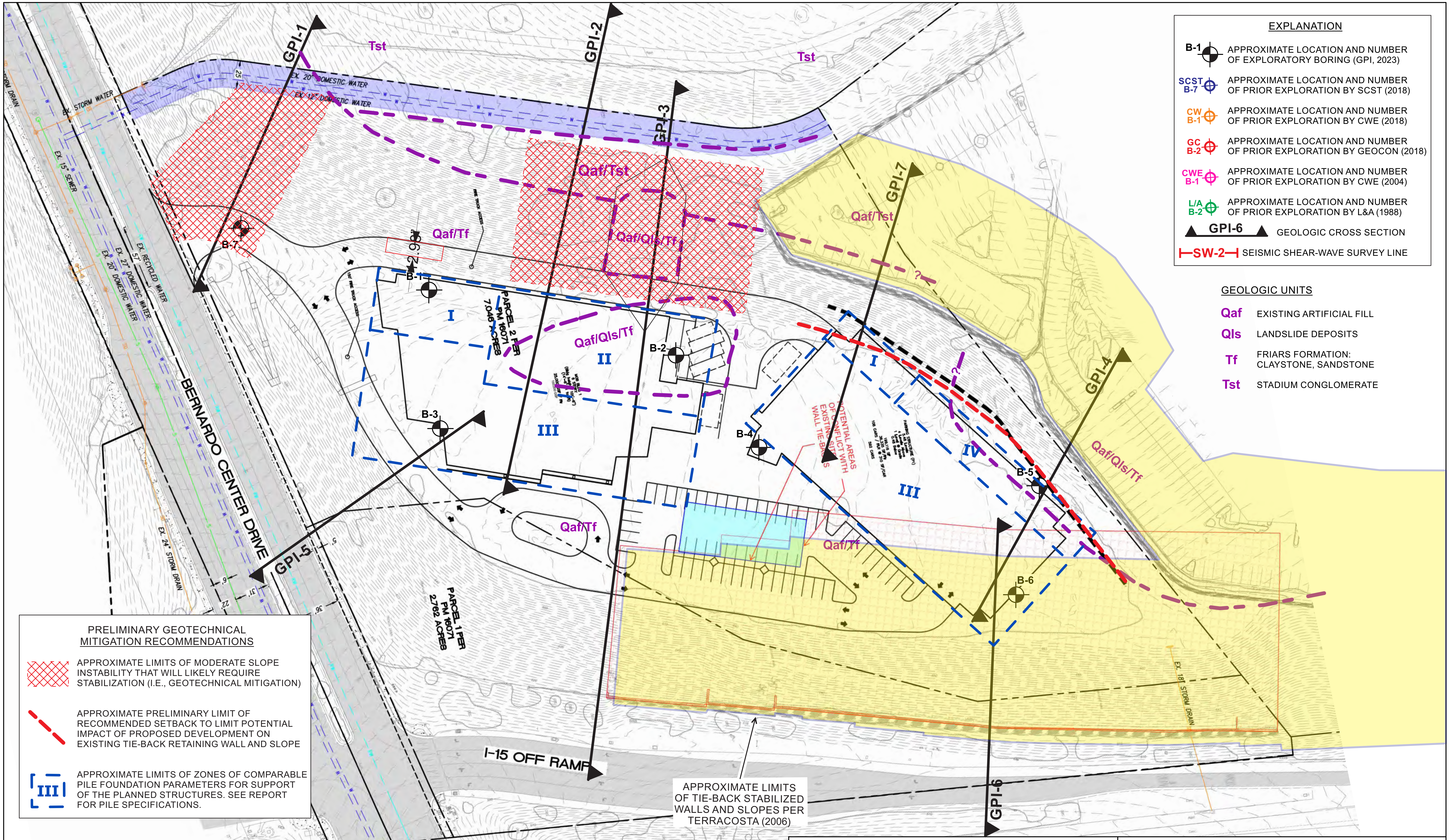
SCALE: 1" = 1000'

FIGURE 7



APPROXIMATE LIMITS OF TIE-BACK STABILIZED WALLS AND SLOPES PER TERRACOSTA (2006)

EXPLANATION

B-1 ⊕	APPROXIMATE LOCATION AND NUMBER OF EXPLORATORY BORING (GPI, 2023)
SCST B-7 ⊕	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY SCST (2018)
CW B-1 ⊕	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY CWE (2018)
GC B-2 ⊕	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY GEOCON (2018)
CWE B-1 ⊕	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY CWE (2004)
L/A B-2 ⊕	APPROXIMATE LOCATION AND NUMBER OF PRIOR EXPLORATION BY L&A (1988)
▲ GPI-6 ▲	GEOLOGIC CROSS SECTION
⊢SW-2⊣	SEISMIC SHEAR-WAVE SURVEY LINE

GEOLOGIC UNITS

Qaf	EXISTING ARTIFICIAL FILL
Qls	LANDSLIDE DEPOSITS
Tf	FRIARS FORMATION: CLAYSTONE, SANDSTONE
Tst	STADIUM CONGLOMERATE

PRELIMINARY GEOTECHNICAL MITIGATION RECOMMENDATIONS

▨	APPROXIMATE LIMITS OF MODERATE SLOPE INSTABILITY THAT WILL LIKELY REQUIRE STABILIZATION (I.E., GEOTECHNICAL MITIGATION)
╱	APPROXIMATE PRELIMINARY LIMIT OF RECOMMENDED SETBACK TO LIMIT POTENTIAL IMPACT OF PROPOSED DEVELOPMENT ON EXISTING TIE-BACK RETAINING WALL AND SLOPE
III	APPROXIMATE LIMITS OF ZONES OF COMPARABLE PILE FOUNDATION PARAMETERS FOR SUPPORT OF THE PLANNED STRUCTURES. SEE REPORT FOR PILE SPECIFICATIONS.

N

0 80 160 FEET

BASE MAP REPRODUCED FROM UCSD RBHC PROPOSED AND EXISTING CONDITIONS (SHEET C101) EXHIBIT PREPARED BY LATITUDE 33 PLANNING & ENGINEERING. DATED: 12-04-23

GPI GEOTECHNICAL PROFESSIONALS, INC.

PMB RANCHO BERNARDO MOB PS

GPI PROJECT NO.: 3202.I

SCALE: 1" = 80'

PRELIMINARY GEOTECHNICAL PLAN

FIGURE 8

APPENDIX A

APPENDIX A

EXPLORATORY BORINGS

We investigated the subsurface conditions at the site by drilling and sampling seven exploratory borings. The borings were advanced to depths ranging from approximately 31 to 66 feet below the existing ground surface. The locations of our recent explorations are shown on the Aerial, Topographic, and Proposed Site Plans, Figures 2 through 4, respectively.

The borings were drilled using truck-mounted hollow-stem auger drill equipment. Relatively undisturbed samples were obtained using a brass-ring lined sampler (ASTM D3550). The brass-rings have an inside diameter of 2.42 inches. The ring samples were driven into the soil by a 140-pound hammer dropping 30 inches. The number of blows needed to drive the sampler into the soil was recorded as the penetration resistance.

At selected locations, disturbed samples were obtained using a split-spoon sampler by means of the Standard Penetration Test (SPT, ASTM D 6066). The spoon sampler was driven into the soil by a 140-pound hammer dropping 30 inches, employing the “free-fall” hammer described above. After an initial seating drive of 6 inches, the number of blows needed to drive the sampler into the soil a depth of 12 inches was recorded as the penetration resistance. These values are the raw uncorrected blowcounts.

The field explorations for the investigation were performed under the continuous technical supervision of GPI's representative, who visually inspected the site, maintained detailed logs of the borings, classified the soils encountered, and obtained relatively undisturbed samples for examination and laboratory testing. The soils encountered in the borings were classified in the field and through further examination in the laboratory in accordance with the Unified Soils Classification System. Detailed logs of the borings are presented in Figures A-1 to A-7 in this appendix.

The boring locations were laid out in the field by measuring from existing site features. Ground surface elevations at the exploration locations were estimated from the Topographic Survey (Sheets 1 and 2) prepared Latitude 33 Planning & Engineering, dated September 28, 2023.

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
			B	0	Fill: **SANDY CLAY (CL)** olive, moist, very stiff, trace gravel	650
12.1		35	D			
18.7	98	35	D	5	@ 5 feet, moist to very moist, very stiff, with gravel	645
20.3	98	37	D		@ 7 feet, very moist, with siltstone fragments	
17.9	98	32	D	10	@ 10 feet, moist to very moist	640
					Friars Formation (Tf): **CLAYEY SANDSTONE** yellow, very moist, very dense	
15.1		50/5.5"	D	15		635
12.0	108	50/4"	D	20	@ 20 feet, moist	630
11.9	103	50/5"	D	25	**SILTY SANDSTONE** yellow, moist, very dense	625
		50/4.5"	D	30	@ 30 feet, sample disturbed	620
					Total Depth 31 feet	

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-2-23

EQUIPMENT USED:
8 " Hollow Stem Auger

GROUNDWATER LEVEL (ft):
29

GPI

PROJECT NO.: 3202.I

PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-1

FIGURE A-1

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
			B	0	Fill: **SANDY CLAY (CL)** light yellow/ olive/ dark olive, moist, hard, with gravel	660
16.0		54	D			
17.4		38	D	5	@ 5 feet, very stiff	655
19.9	100	20	D		@ 7 feet, very moist, stiff	
20.1	100	20	D	10		650
19.5	96	20	D			
15.4		12	S	15	Landslide Deposits (Qls): **SILTY GRAVEL (GM)** light brown and grey, very moist, medium dense, with sand and cobbles	645
		24	S		@ 18 feet, with cobbles, sample disturbed	
13.5		77	D	20	@ 20 feet, very dense, sample disturbed	640
13.1		18	S		@ 22 feet, moist to very moist, medium dense	
9.4	100	18	D	25	@ 24 feet, moist	635
27.2		27	S		**CLAY (CL)** mottled olive/ gray/ brown, wet, very stiff	
22.7	98	50/5"	D	30	Friars Formation (Tf): **CLAYSTONE** olive/ gray, very moist, hard, trace caliche, with fissuring	630
22.0	94	41	D	35	@ 35 feet, very stiff	625

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-2-23
EQUIPMENT USED:
8 " Hollow Stem Auger
GROUNDWATER LEVEL (ft):
Not Encountered

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-2

FIGURE A-2

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
	18.8	101	50/5"	D	40	@ 40 feet, light olive grey, moist to very moist, hard	620
	16.7	96	50/5"	D	45	@ 45 feet, moist	615
	13.0	97	50/5.5"	D	50		610
						@ 52 feet, greenish gray	
	14.6	101	50/3"	D	55		605
	9.9	107	50/5"	D	60	@ 60 feet, slightly moist	600
						Total Depth 61 feet	

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-2-23
EQUIPMENT USED:
8 " Hollow Stem Auger
GROUNDWATER LEVEL (ft):
Not Encountered

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-2

FIGURE A-2

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
					0	Fill: **SANDY CLAY (CL)** mottled light olive gray/ brown, moist, very stiff, with gravel and cobbles	655
	14.8	105	29	D			
	15.9	102	29	D	5		
							650
			29	D		@ 7 feet, sample disturbed	
	15.8		31	D	10	@ 10 feet, with gravel and cobbles	
							645
	14.5	109	40	D	15		
							640
			74	D	20	@ 20 feet, hard, with gravel and cobbles, sample disturbed	
							635
			48	D	25	@ 25 feet, with gravel and cobbles, sample disturbed	
							630
			54	D	30	@ 30 feet, very stiff to hard	
	16.6		25	S			625
			54	D	35	@ 35 feet, very moist, hard	
	19.1		31	S			620

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-2-23
EQUIPMENT USED:
8 " Hollow Stem Auger
GROUNDWATER LEVEL (ft):
Not Encountered

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-3

FIGURE A-3

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)		*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
	21.1	99	39	D	40	▨	@ 40 feet, mottled dark gray brown/ light yellow, light olive gray, very moist, very stiff	615
	16.2	111	50/6"	D	45	▨	@ 45 feet, moist, hard	610
	20.9	98	50/3"	D	50	▤	Friars Formation (Tf): **CLAYSTONE** light olive gray, very moist, hard, fissured	605
	14.8	113	50/4"	D	55	▤	@ 55 feet, moist	600
	15.8	94	50/5"	D	60	▤		595
	14.6	102	50/5.5"	D	65	▤		
							Total Depth 66 feet	

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-2-23

EQUIPMENT USED:
8 " Hollow Stem Auger

GROUNDWATER LEVEL (ft):
Not Encountered

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-3

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
					0	Fill: **SANDY CLAY (CL)** mottled light yellow/ light gray, dark olive brown, moist, very stiff, with gravel and cobbles	660
	16.2		35	D		@ 2 feet, lens of sandy silt	
			50/3"	D	5	@ 5 feet, hard, with gravel and cobbles, sample disturbed	
			50/5.5"	D		@ 7 feet, sample disturbed	655
			50/4"	D	10		
	16.5		35	S		@ 11 feet, hard	650
	13.9	106	33	D	15	@ 15 feet, moist, very stiff	645
	17.2	101	29	D	20		640
	17.3	110	56	D	25	@ 25 feet, brown/ olive brown, hard	635
	12.5	109	54	D	30		630
	25.0		79	S	35	@ 35 feet, wet	625

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-3-23

EQUIPMENT USED:
8 " Hollow Stem Auger

GROUNDWATER LEVEL (ft):
Not Encountered

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-4

FIGURE A-4

DESCRIPTION OF SUBSURFACE MATERIALS

This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
	23.6		36	S	40		
							620
	21.9	97	66	D	45	Friars Formation (Tf): **CLAYSTONE** greenish gray/ light gray, very moist, hard @ 45 feet, fissured	
							615
	18.7	101	50/5.5"	D	50		
							610
	16.5	107	50/5.5"	D	55	@ 55 feet, moist	
							605
	11.8	102	50/5.5"	D	60	@ 60 feet, slightly moist to moist	
						Total Depth 61 feet	

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-3-23
EQUIPMENT USED:
8 " Hollow Stem Auger
GROUNDWATER LEVEL (ft):
Not Encountered

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-4

FIGURE A-4

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
					0	Fill: **SANDY CLAY (CL)** light gray/ dark olive/ light yellow, moist, very stiff, with gravel	
							665
	16.6	101	42	D	5	@ 5 feet, with siltstone fragments	
							660
	17.4		39	D	10	@ 10 feet, with gravel and cobbles, sample disturbed	
							655
	20.5	102	33	D	15	@ 15 feet, very moist	
							650
	21.0	99	21	D	20	@ 20 feet, stiff, with gravel and cobbles	
							645
	21.2	97	42	D	25	@ 25 feet, very stiff	
							640
	23.4	93	50/1.5"	D	30	@ 30 feet, hard	
	22.7		55	S			
						Landslide Deposits (Qls): **SANDY CLAY (CL)** dark gray/ dark olive gray, very moist, hard, with gravel	635
						Friars Formation (Tf): **CLAYSTONE** olive gray/ olive, very moist, hard	
					35		
							630

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-4-23

EQUIPMENT USED:
8 " Hollow Stem Auger

GROUNDWATER LEVEL (ft):
Not Encountered

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-5

FIGURE A-5

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)		*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
	17.2	98	50/5.5"	D	40	☰	@ 40 feet, moist to very moist	
							Total Depth 41 feet	

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-4-23

EQUIPMENT USED:
8 " Hollow Stem Auger

GROUNDWATER LEVEL (ft):
Not Encountered

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-5

FIGURE A-5

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
			B	0	Fill: **SANDY CLAY (CL)** light yellow/ light gray, slightly moist, very stiff, with gravel and cobbles	665
					@ 4 feet, mottled brown/ dark olive brown	
7.8		28	D	5		660
		53	D	10	@ 10 feet, hard, with gravel and cobbles, sample disturbed	655
					between 13 and 17 feet, with rock fragments up to 6 inches in diameter	
				15		650
12.8 12.2	104 105	37	D	20	@ 20 feet, moist, very stiff	
					SILTY SAND (SM) light gray/ light yellow, moist, medium dense, with gravel and cobbles	645
				25	**SANDY CLAY (CL)** mottled brown/ olive/ light gray/ light yellow, very moist, hard, with gravel and cobbles, trace boulders	640
				30	@ 30 feet, potential boulders	635
				35		630

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-4-23
EQUIPMENT USED:
8 " Hollow Stem Auger
GROUNDWATER LEVEL (ft):
Not Encountered

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-6

FIGURE A-6

This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)		*DESCRIPTION OF SUBSURFACE MATERIALS*	ELEVATION (FEET)
	17.8	96	60	D	40	▨	@ 40 feet, moist to very moist	
								625
			62	D	45		@ 45 feet, with gravel and cobbles, sample disturbed	
								620
			55	D	50		@ 50 feet, very moist, with gravel and cobbles	
	19.6		34	S				615
						▤	Friars Formation (Tf): **CLAYSTONE** light olive gray, moist, hard	
	15.5	112	50/5"	D	55			
								610
					60			
								605
	13.6	97	50/3.5"	D	65			
							Total Depth 66 feet	

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-4-23

EQUIPMENT USED:
8 " Hollow Stem Auger

GROUNDWATER LEVEL (ft):
Not Encountered

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-6

FIGURE A-6

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	*DESCRIPTION OF SUBSURFACE MATERIALS* This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	ELEVATION (FEET)
				0	Fill: **SANDY CLAY (CL)** yellow/ olive brown, slightly moist to moist, very stiff, with gravel and cobbles	
10.5	108	34	D			635
14.6	94	27	D	5	@ 5 feet, moist	
10.2	116	76	D		Friars Formation (Tf): **SILTY TO CLAYEY SANDSTONE** light gray/ light yellow, moist, dense to very dense	630
8.1	111	50/5"	D	10	@ 10 feet, very dense	
						625
					SANDY CLAYSTONE gray/ light olive gray, moist, hard	
15.1	103	50/5"	D	15		
					SANDSTONE yellow, very moist, dense, with gravel	620
15.6	111	58	D	20		
					SANDY CLAYSTONE olive gray, moist to very moist, hard	615
13.8	107	50/5.5"	D	25	@ 25 feet, moist	
						610
18.5	106	50/5.5"	D	30	@ 30 feet, very moist	
					Total Depth 31 feet	

SAMPLE TYPES
- C Rock Core
- S Standard Split Spoon
- D Drive Sample
- B Bulk Sample
- T Tube Sample

DATE DRILLED:
10-3-23
EQUIPMENT USED:
8 " Hollow Stem Auger
GROUNDWATER LEVEL (ft):
16

GPI

PROJECT NO.: 3202.I
PMB UCSD RANCHO BERNARDO

LOG OF BORING NO. B-7

FIGURE A-7

APPENDIX B

APPENDIX B

LABORATORY TESTS

INTRODUCTION

Representative undisturbed soil samples and bulk samples were carefully packaged in the field and sealed to prevent moisture loss. The samples were then transported to our Cypress office for examination and testing assignments. Laboratory tests were performed on selected representative samples as an aid in classifying the soils and to evaluate the physical properties of the soils affecting foundation design and construction procedures. Detailed descriptions of the laboratory tests are presented below under the appropriate test headings. Test results are presented in the figures that follow.

MOISTURE CONTENT AND DRY DENSITY

Moisture content and dry density were determined from a number of the ring samples from the borings. Moisture contents were also determined for the disturbed samples. The samples were first trimmed to obtain volume and wet weight and then were dried in accordance with ASTM D2216. After drying, the weight of each sample was measured, and moisture content and dry density were calculated. Moisture content and dry density values are presented on the boring logs in Appendix A.

ATTERBERG LIMITS

Liquid and plastic limits were determined for select samples in accordance with ASTM D4318. The results of the Atterberg Limits tests are presented in Figure B-1.

GRAIN SIZE DISTRIBUTION

Select soil samples were dried, weighed, soaked in water until individual soil particles were separated, and then washed on the No. 200 sieve. That portion of the material retained on the No. 200 sieve was oven-dried and weighed to determine the percentage of the material passing the No. 200 sieve. A summary of the percentages passing the No. 200 sieve is presented below.

BORING NO.	DEPTH (ft)	SOIL DESCRIPTION	PERCENT PASSING No. 200 SIEVE
B-3	5	Sandy Clay (CL)	55
B-6	0 – 5	Sandy Clay (CL)	52

DIRECT SHEAR

Direct shear tests were performed on relatively undisturbed and remolded bulk samples in accordance with ASTM D3080. The bulk samples were remolded to 90 percent of the maximum dry density determined in accordance with ASTM D1557. The samples were placed in the shear machine, and pre-selected normal loads were applied. The samples were submerged, allowed to consolidate, and then were sheared to failure. Shear stress and sample deformation were monitored throughout the test. The results of the direct shear test are presented in Figures B-2 and B-12.

CONSOLIDATION

One-dimensional consolidation testing was performed on a select undisturbed samples in accordance with ASTM D2435. After trimming the ends, the samples were placed in the consolidometer and loaded to either 0.4 or 0.5 ksf. Thereafter, the samples were incrementally loaded to a maximum load of either 25.6 or 32.0 ksf. The samples were inundated at either 1.6, 2.0, 3.2, or 4.0 ksf. Sample deformation was measured to 0.0001 inch. Rebound behavior was investigated by unloading the samples back to either 0.4 or 0.5 ksf. Results of the consolidation tests, in the form of percent consolidation versus log pressure, are presented in Figures B-13 and B-19. The amount of hydroconsolidation following inundation is shown below as percent compression of the sample.

BORING NO.	**DEPTH (ft)**	**SOIL DESCRIPTION**	**SURCHARGE (PSF)**	**TOTAL COMPRESSION (%)**		
				BEFORE SATURATION	**AFTER SATURATION**	**PERCENT COLLAPSE**
B-1	10	Qaf: Sandy Clay (CL)	1600	1.81	2.06	0.25
B-2	12	Qaf: Sandy Clay (CL)	1600	1.74	1.82	0.08
B-2	24	Qls: Silty Gravel (GM)	4000	5.33	7.26	1.93
B-3	40	Qaf: Sandy Clay (CL)	3200	2.76	2.90	0.14
B-4	20	Qaf: Sandy Clay (CL)	3200	2.71	2.69	-0.02*
B-5	5	Qaf: Sandy Clay (CL)	1600	1.30	0.94	-0.36*
B-5	20	Qaf: Silty Sand (SM)	2000	3.07	3.22	0.15

* Sample swelled when inundated

EXPANSION INDEX

An expansion index test was performed on a selective bulk sample. The test was performed in accordance with ASTM D4829, to assess the expansion potential of on-site soils. The results of the test are summarized below:

BORING NO.	**DEPTH (ft)**	**SOIL DESCRIPTION**	**EXPANSION INDEX**
B-1	2 – 5	Sandy Clay (CL)	98

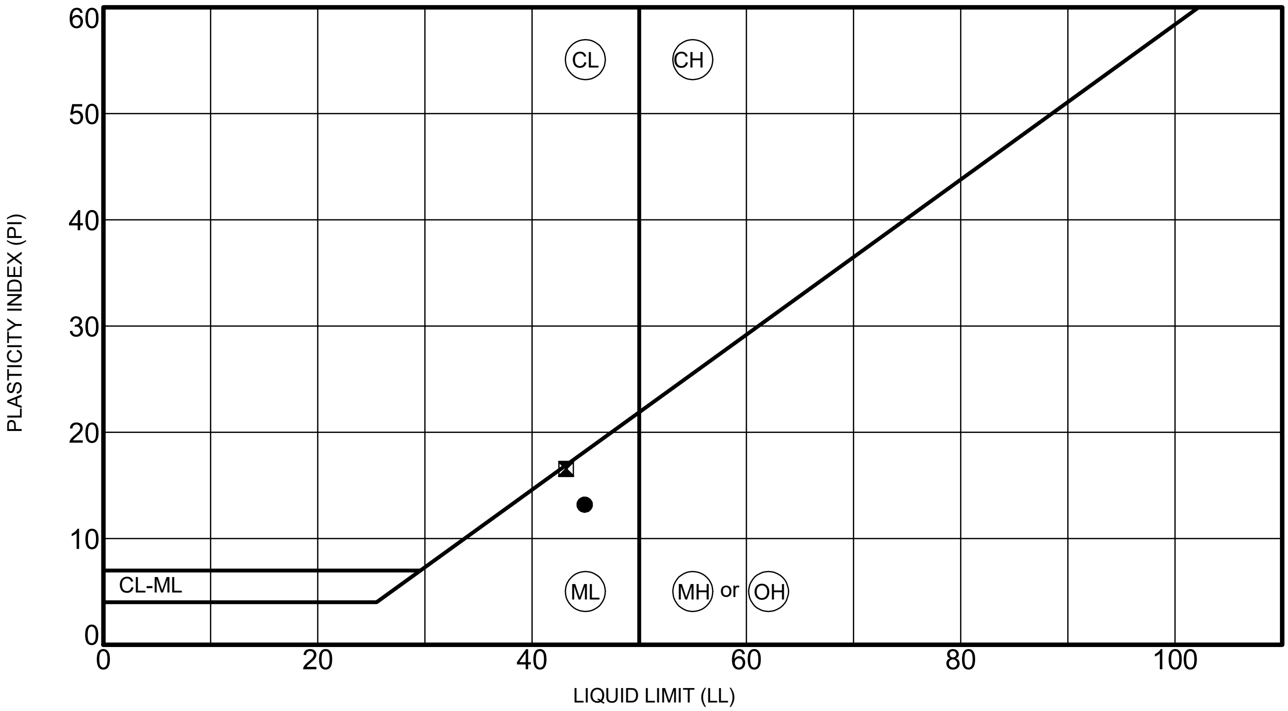
COMPACTION TEST

Maximum dry density/optimum moisture tests were performed in accordance with ASTM D1557 on representative bulk samples of the surficial soils. The test results are as follows.

BORING NO.	DEPTH (ft)	SOIL DESCRIPTION	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)
B-1	2 – 5	Sandy Clay (CL)	12.5	120
B-2	0 – 5	Sandy Clay (CL)	13.5	118
B-6	0 – 5	Sandy Clay (CL)	12.0	120
B-7	0 – 5	Sandy Clay (CL)	9.5	124

CORROSIVITY

Soil corrosivity testing was performed by Project X Corrosion Engineering under subcontract to GPI on select soil samples provided by GPI. The test results are summarized in the attached Table, Soil Analysis Lab Results prepared by Project X Corrosion Engineering.



	SAMPLE LOCATION		LL	PL	PI	Fines, %	Classification
●	B-1	5.0	45	32	13		SANDY CLAY (CL)
⧗	B-4	2.0	43	27	17		SANDY SILT (ML)

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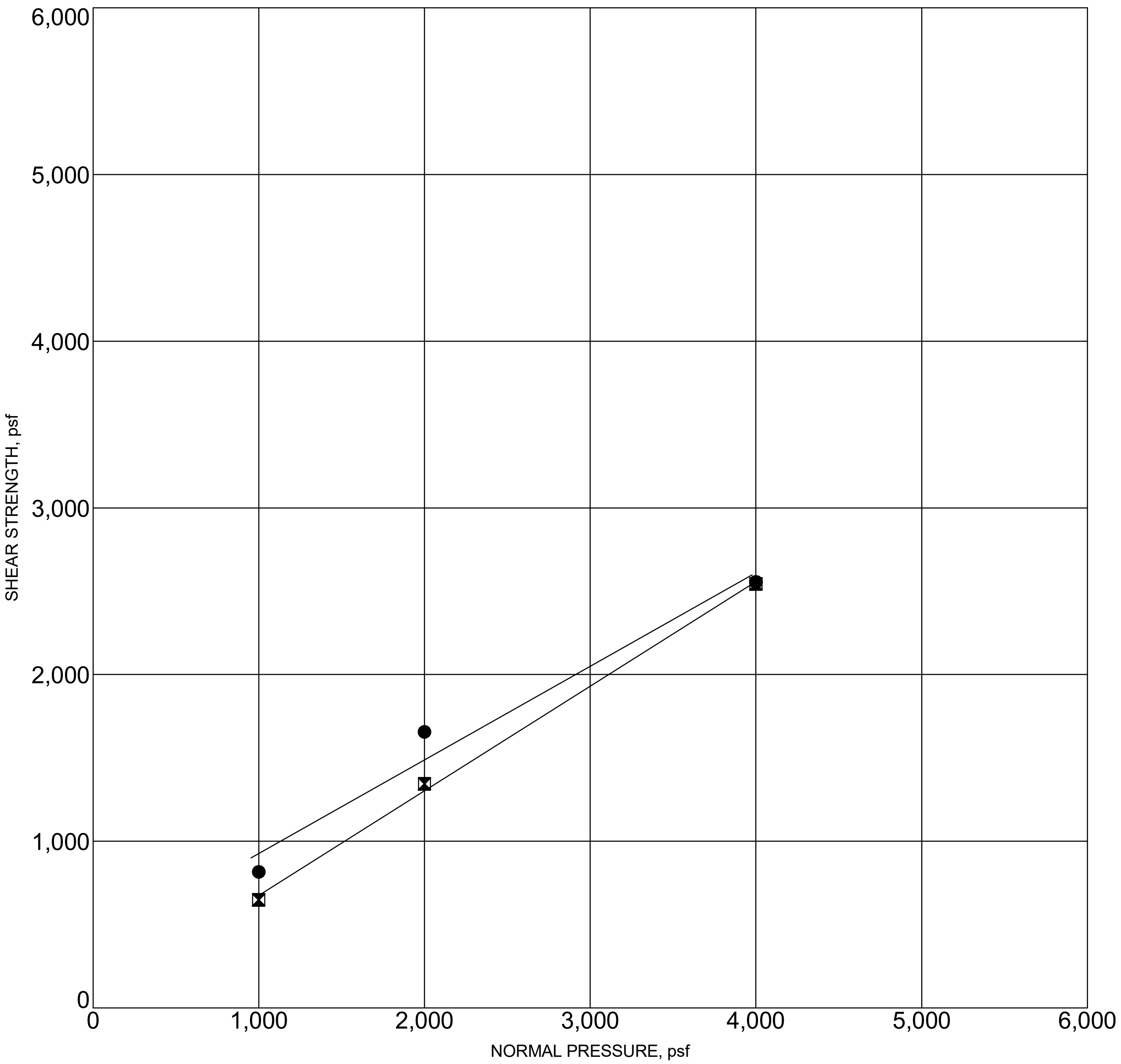
ATTERBERG LIMITS TEST RESULTS

FIGURE B-1



● **PEAK STRENGTH**
Friction Angle= 29 degrees
Cohesion= 366 psf

⧗ **ULTIMATE STRENGTH**
Friction Angle= 32 degrees
Cohesion= 48 psf

Sample Location		Classification	DD,pcf	MC,%
B-1	5.0	Fill: SANDY CLAY (CL)	98	18.7

PROJECT: PMB UCSD RANCHO BERNARDO PROJECT NO.: 3202.I

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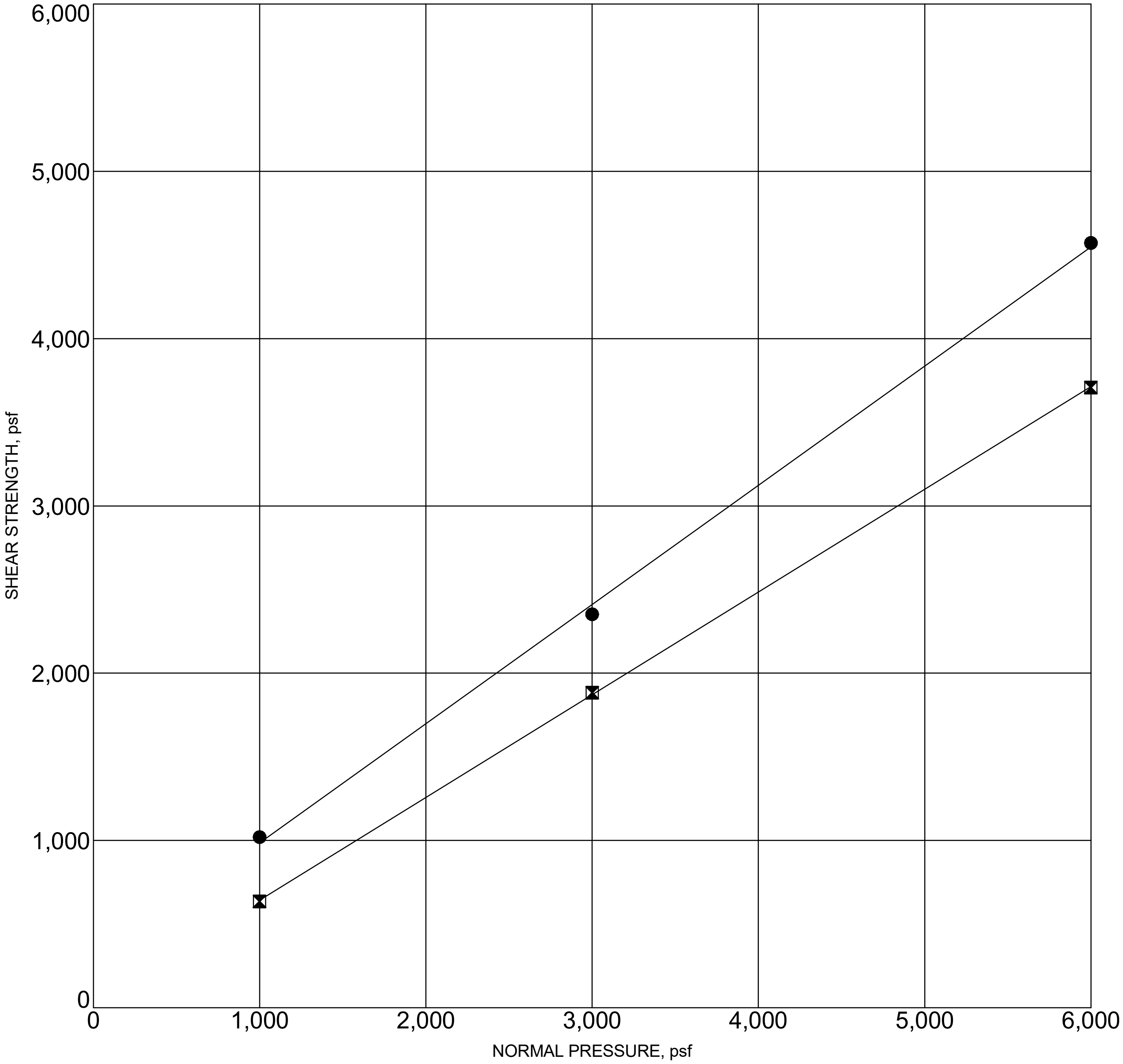
DIRECT SHEAR TEST RESULTS

FIGURE B-2



● **PEAK STRENGTH**
Friction Angle= 35 degrees
Cohesion= 272 psf

☒ **ULTIMATE STRENGTH**
Friction Angle= 32 degrees
Cohesion= 30 psf

Sample Location		Classification	DD,pcf	MC,%
B-1	20.0	Friars Formation (Tf): CLAYEY SANDSTONE	108	12.0

PROJECT: PMB UCSD RANCHO BERNARDO

PROJECT NO.: 3202.I

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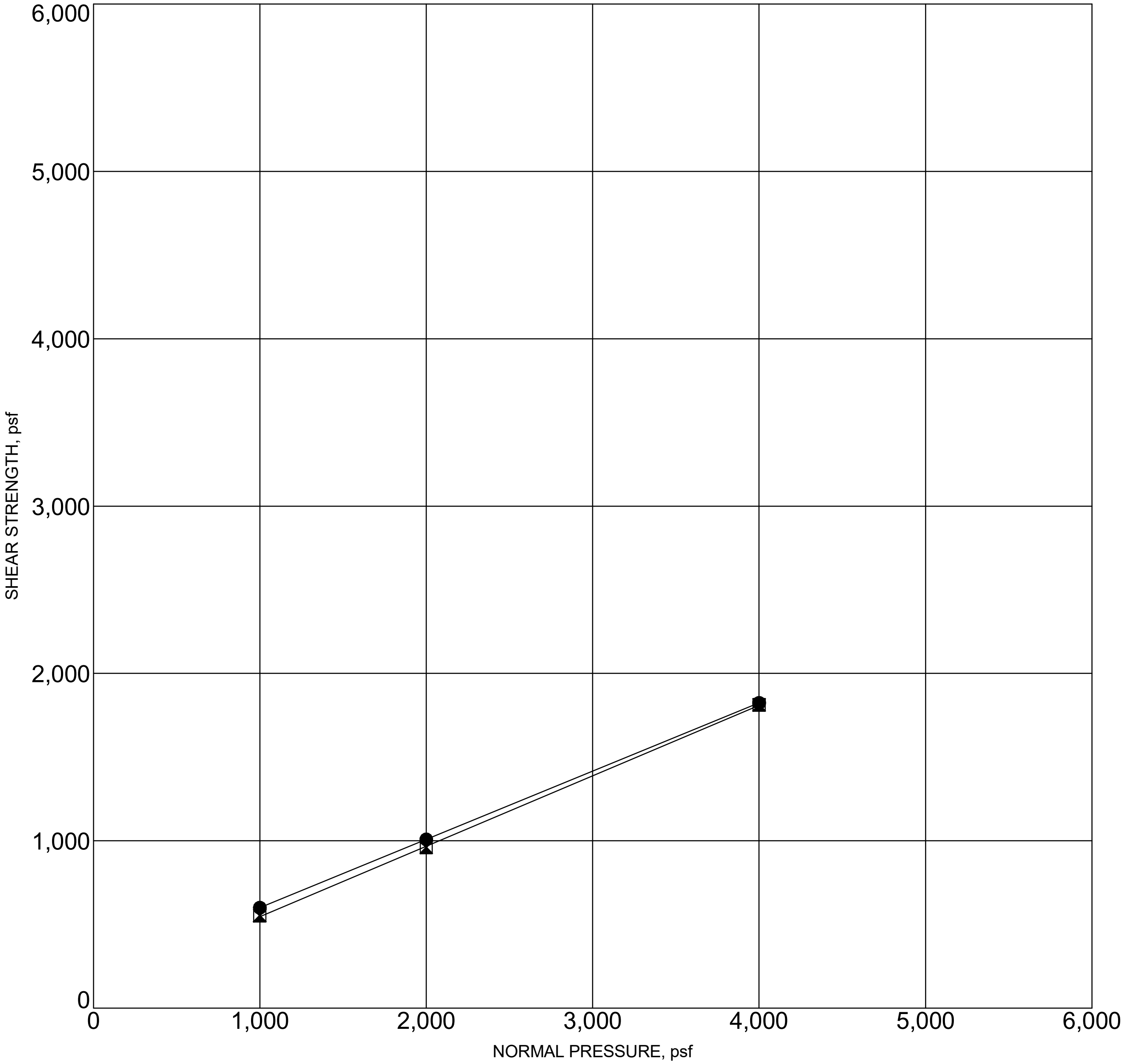
DIRECT SHEAR TEST RESULTS

FIGURE B-3



● **PEAK STRENGTH**
Friction Angle= 22 degrees
Cohesion= 192 psf

⧗ **ULTIMATE STRENGTH**
Friction Angle= 23 degrees
Cohesion= 126 psf

Note: Samples remolded to 90% of maximum dry density.

Sample Location		Classification	DD,pcf	MC,%
B-2	0-5	SANDY CLAY (CL)	106	13.5

PROJECT: PMB UCSD RANCHO BERNARDO PROJECT NO.: 3202.I

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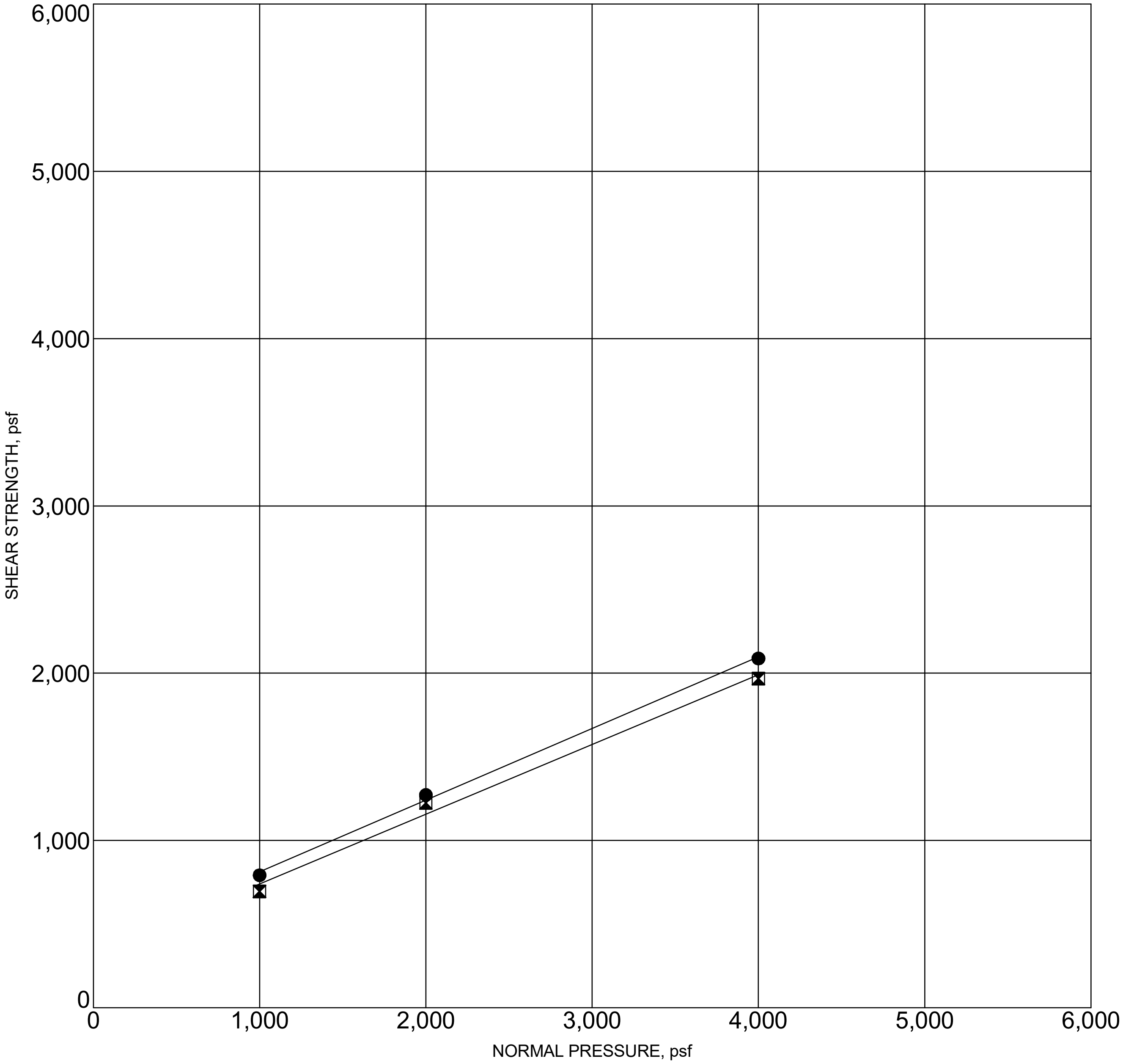
DIRECT SHEAR TEST RESULTS

FIGURE B-4



● **PEAK STRENGTH**
Friction Angle= 23 degrees
Cohesion= 384 psf

☒ **ULTIMATE STRENGTH**
Friction Angle= 23 degrees
Cohesion= 324 psf

Sample Location		Classification	DD,pcf	MC,%
B-2	10.0	Fill: SANDY CLAY (CL)	100	20.1

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PROJECT NO.: 3202.I

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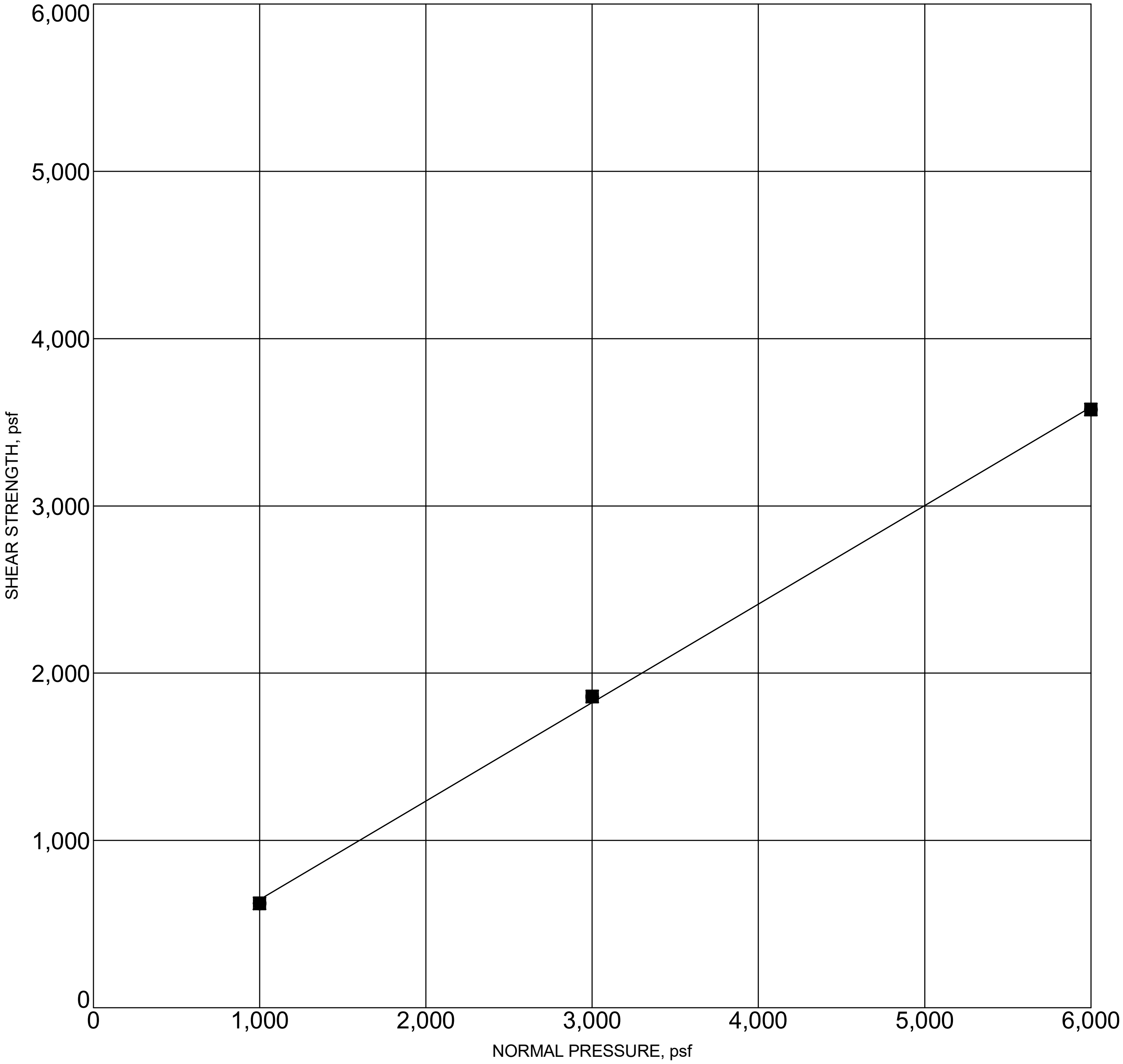
DIRECT SHEAR TEST RESULTS

FIGURE B-5



● **PEAK STRENGTH**
Friction Angle= 30 degrees
Cohesion= 57 psf

⧗ **ULTIMATE STRENGTH**
Friction Angle= 30 degrees
Cohesion= 57 psf

Sample Location		Classification	DD,pcf	MC,%
B-2	24.0	Landslide Deposits (Qls): SILTY SAND (SM)	100	9.4

PROJECT: PMB UCSD RANCHO BERNARDO PROJECT NO.: 3202.I

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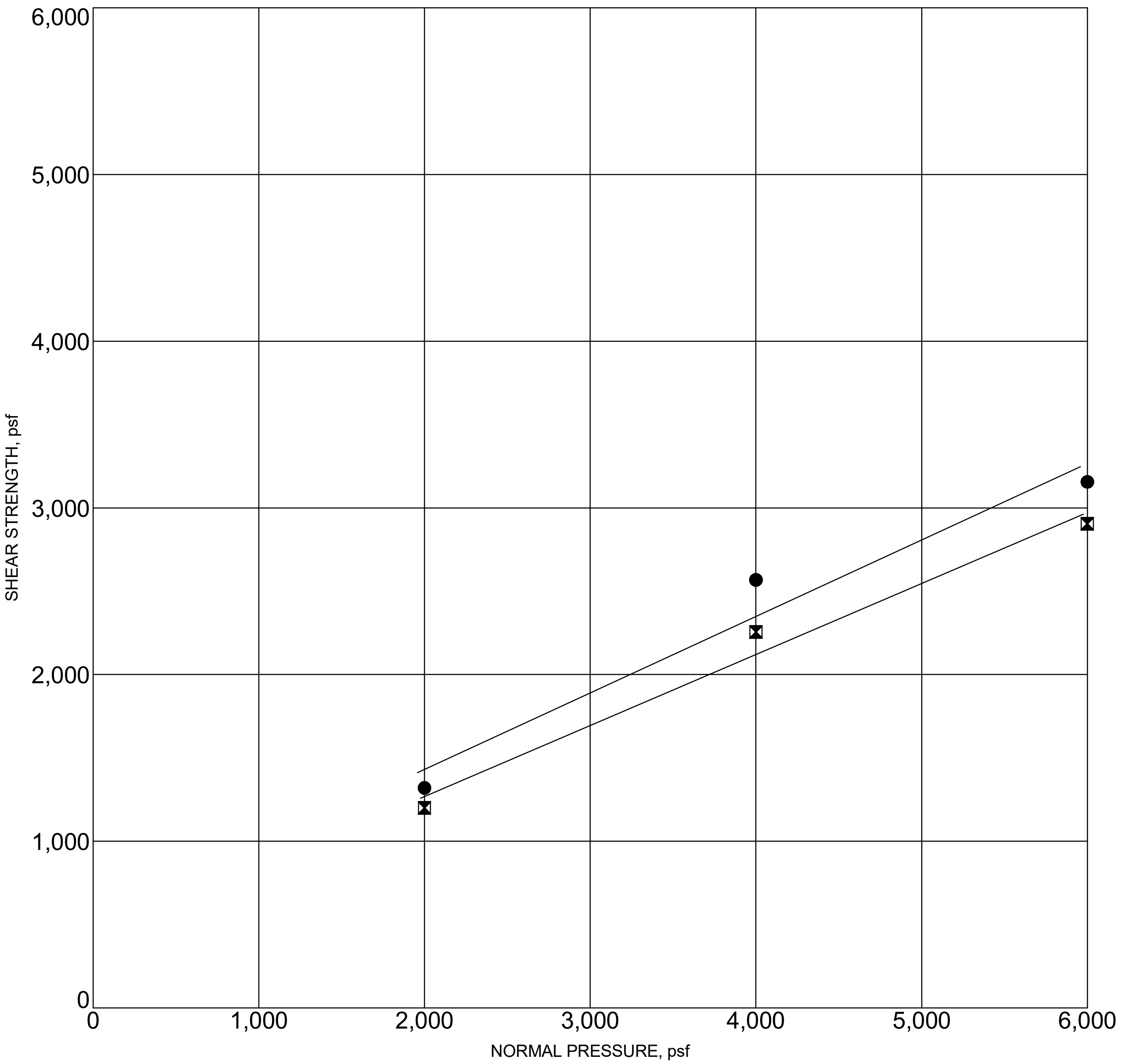
DIRECT SHEAR TEST RESULTS

FIGURE B-6



● **PEAK STRENGTH**
Friction Angle= 25 degrees
Cohesion= 512 psf

⧗ **ULTIMATE STRENGTH**
Friction Angle= 23 degrees
Cohesion= 416 psf

Sample Location		Classification	DD,pcf	MC,%
B-2	35.0	Friars Formation (Tf): CLAYSTONE	94	22.0

PROJECT: PMB UCSD RANCHO BERNARDO

PROJECT NO.: 3202.I

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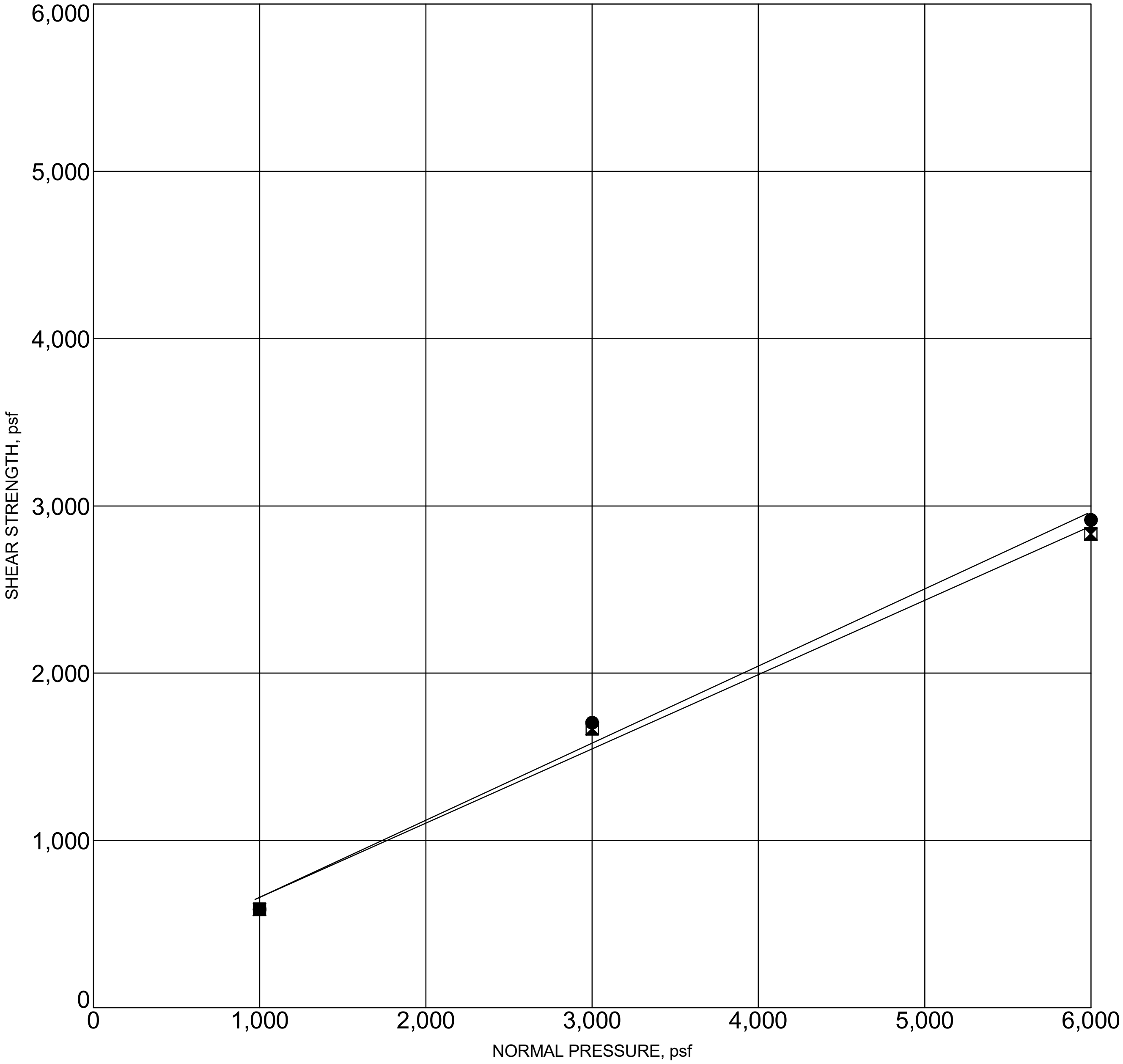
DIRECT SHEAR TEST RESULTS

FIGURE B-7



● **PEAK STRENGTH**
Friction Angle= 25 degrees
Cohesion= 200 psf

☒ **ULTIMATE STRENGTH**
Friction Angle= 24 degrees
Cohesion= 216 psf

Sample Location		Classification	DD,pcf	MC,%
B-4	15.0	Fill: SANDY CLAY (CL)	106	13.9

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PROJECT NO.: 3202.I

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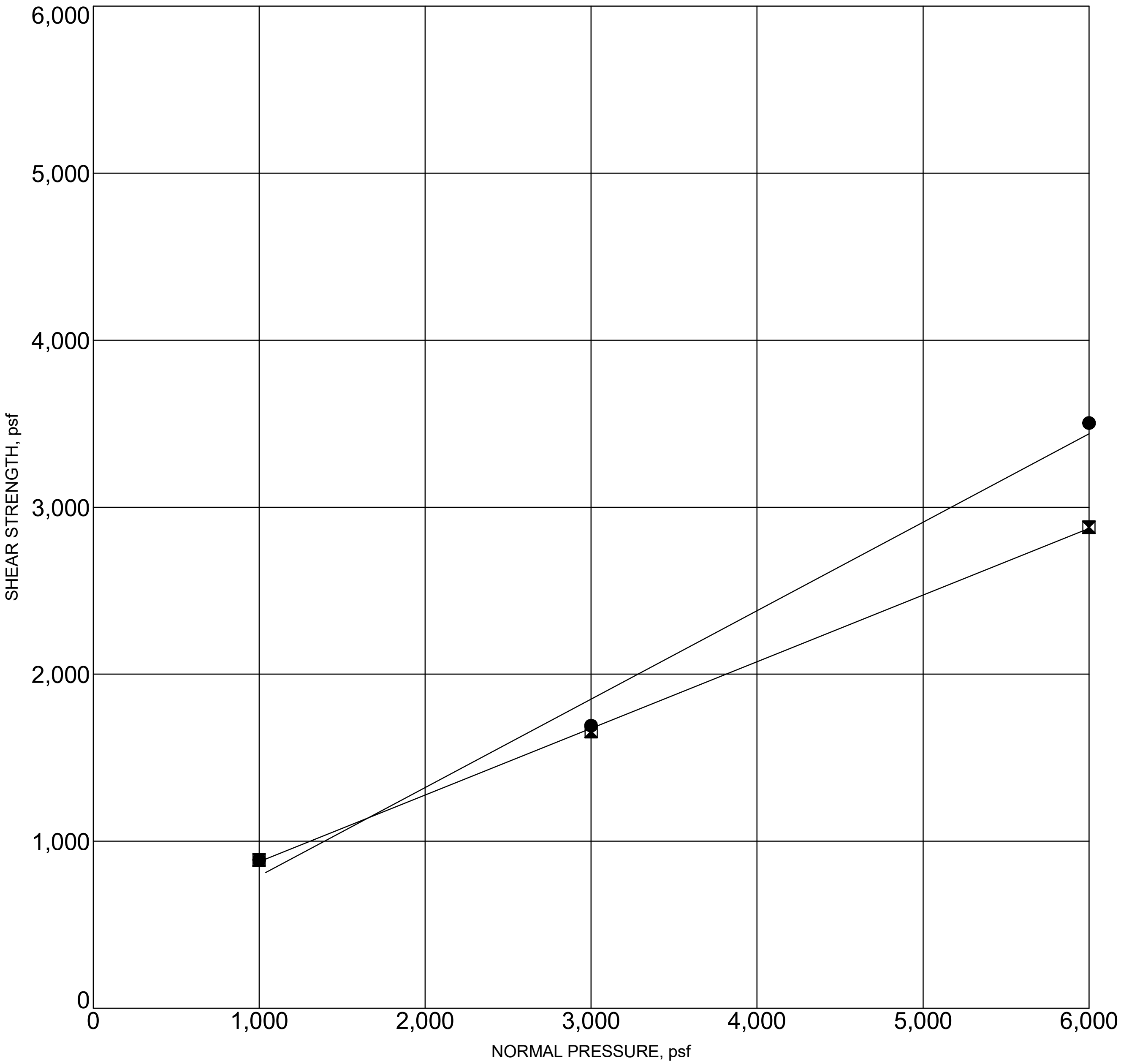
DIRECT SHEAR TEST RESULTS

FIGURE B-8



● **PEAK STRENGTH**
Friction Angle= 28 degrees
Cohesion= 263 psf

⧗ **ULTIMATE STRENGTH**
Friction Angle= 22 degrees
Cohesion= 477 psf

Sample Location		**Classification**	**DD,pcf**	**MC,%**
B-4	45.0	Friars Formation (Tf): CLAYSTONE	97	21.9

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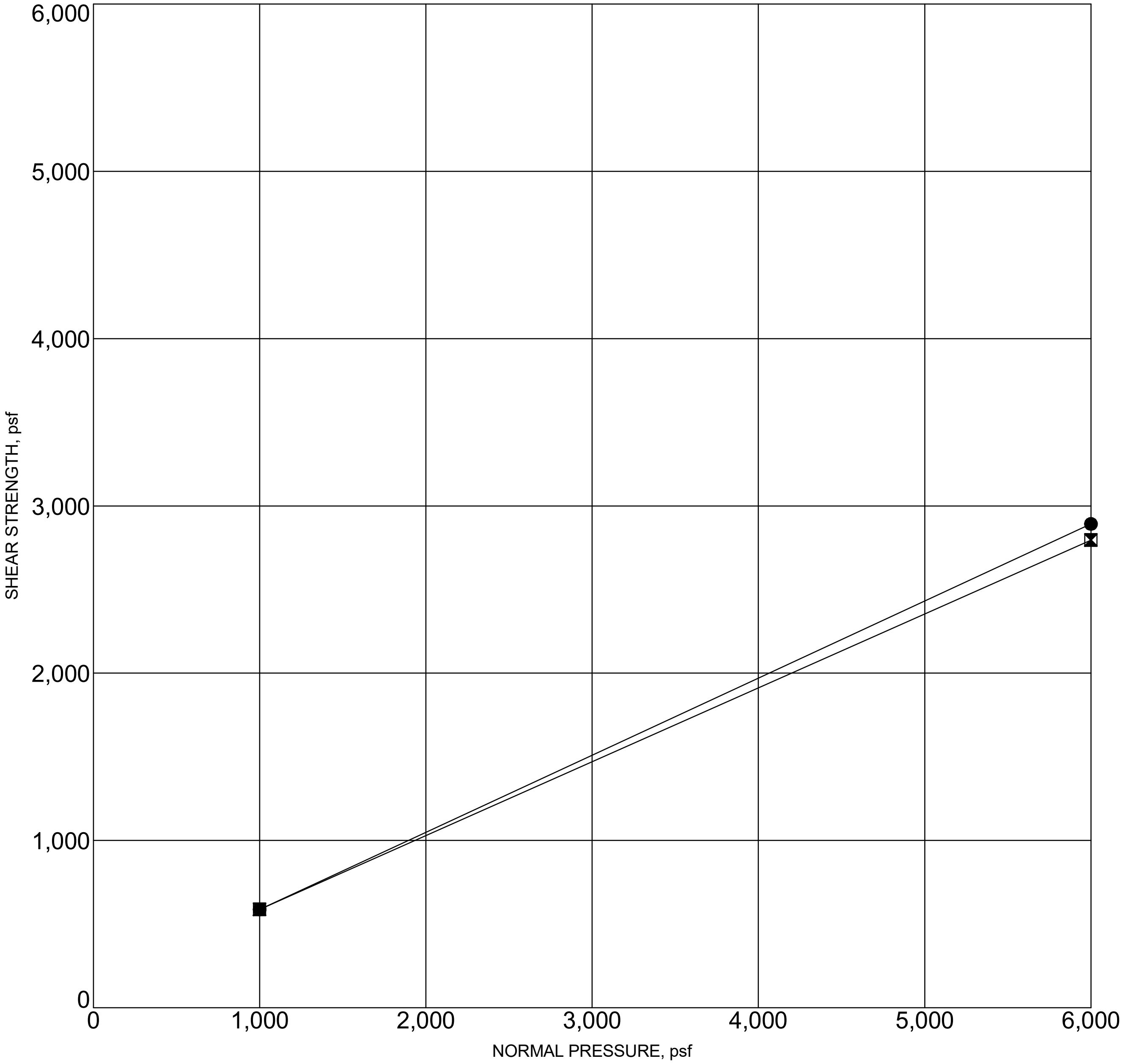
DIRECT SHEAR TEST RESULTS

FIGURE B-9



● **PEAK STRENGTH**
Friction Angle= 25 degrees
Cohesion= 127 psf

☒ **ULTIMATE STRENGTH**
Friction Angle= 24 degrees
Cohesion= 146 psf

Sample Location		Classification	DD,pcf	MC,%
B-6	40.0	Fill: SANDY CLAY (CL)	96	17.8

PROJECT: PMB UCSD RANCHO BERNARDO

PROJECT NO.: 3202.I

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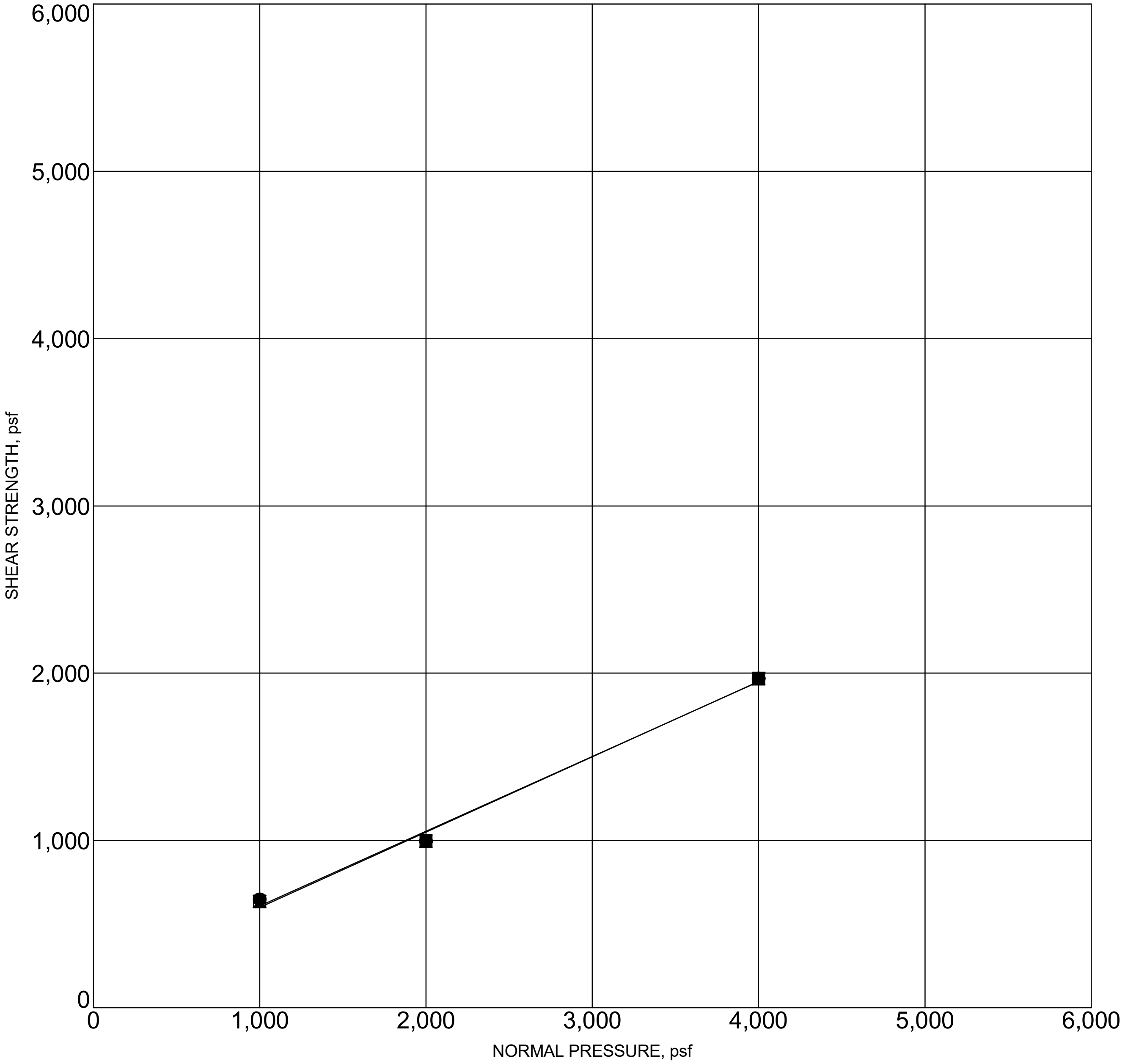
DIRECT SHEAR TEST RESULTS

FIGURE B-10



● **PEAK STRENGTH**
Friction Angle= 24 degrees
Cohesion= 162 psf

⧗ **ULTIMATE STRENGTH**
Friction Angle= 24 degrees
Cohesion= 150 psf

Sample Location		Classification	DD,pcf	MC,%
B-7	5.0	Fill: SANDY CLAY (CL)	94	14.6

PROJECT: PMB UCSD RANCHO BERNARDO

PROJECT NO.: 3202.I

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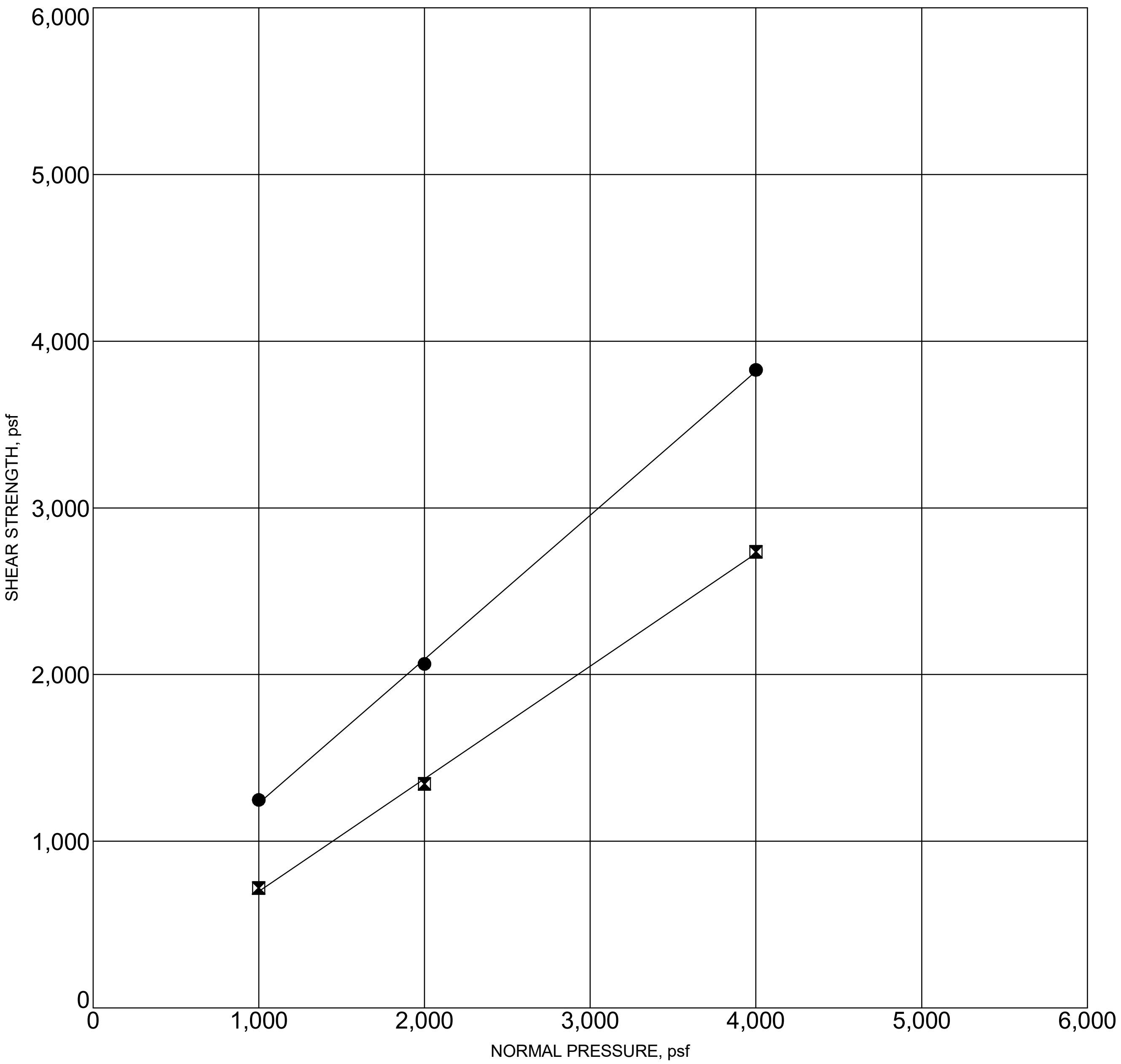
DIRECT SHEAR TEST RESULTS

FIGURE B-11



● **PEAK STRENGTH**
Friction Angle= 41 degrees
Cohesion= 366 psf

☒ **ULTIMATE STRENGTH**
Friction Angle= 34 degrees
Cohesion= 24 psf

Sample Location		**Classification**	**DD,pcf**	**MC,%**
B-7	7.0	Friars Formation (Tf): SILTY SANDSTONE	116	10.2

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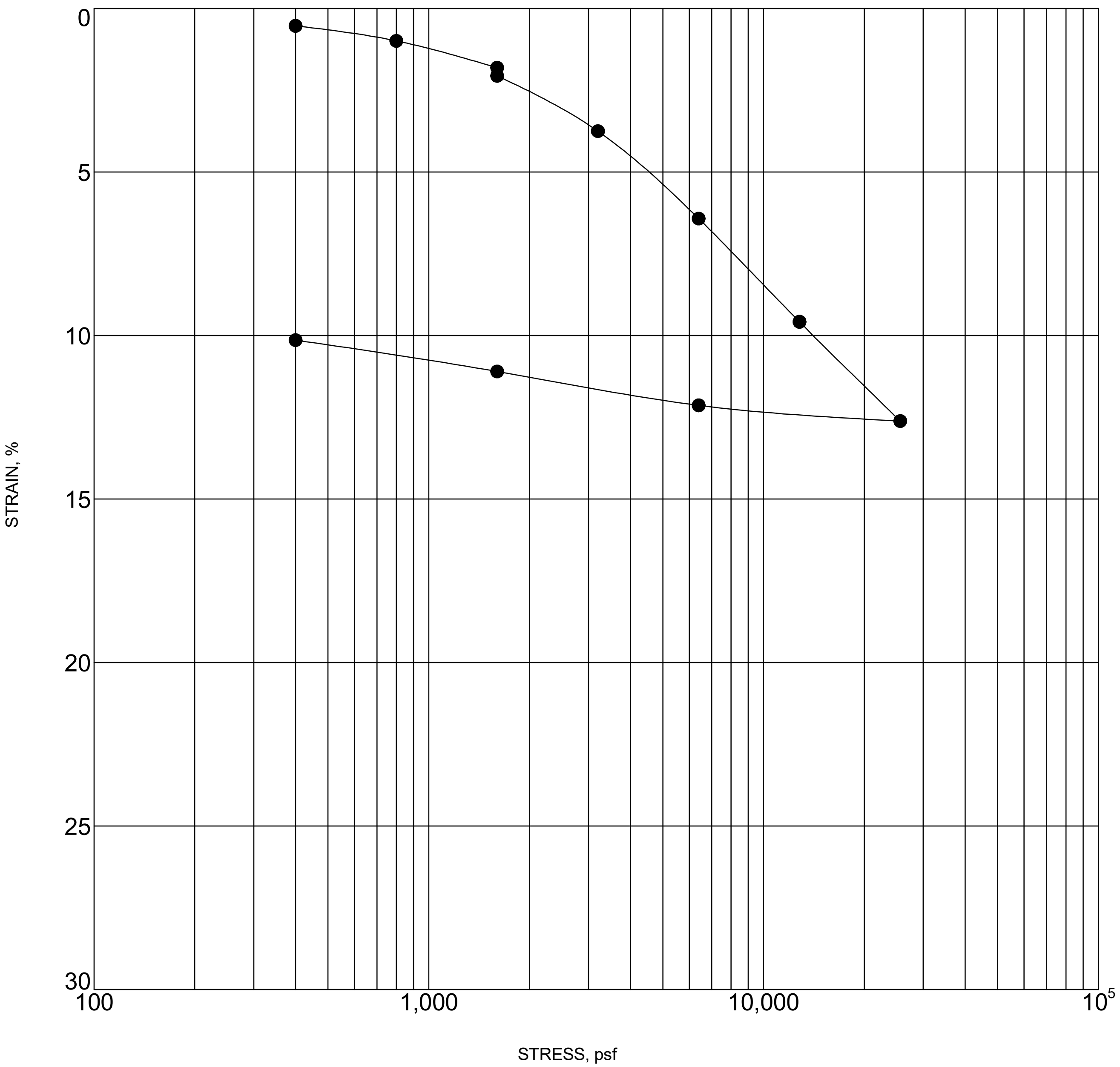
DIRECT SHEAR TEST RESULTS

FIGURE B-12



Sample inundated at 1600 psf

	Sample Location		**Classification**	**DD,pcf**	**MC,%**
●	B-1	10.0	Fill: SANDY CLAY (CL)	98	17.9

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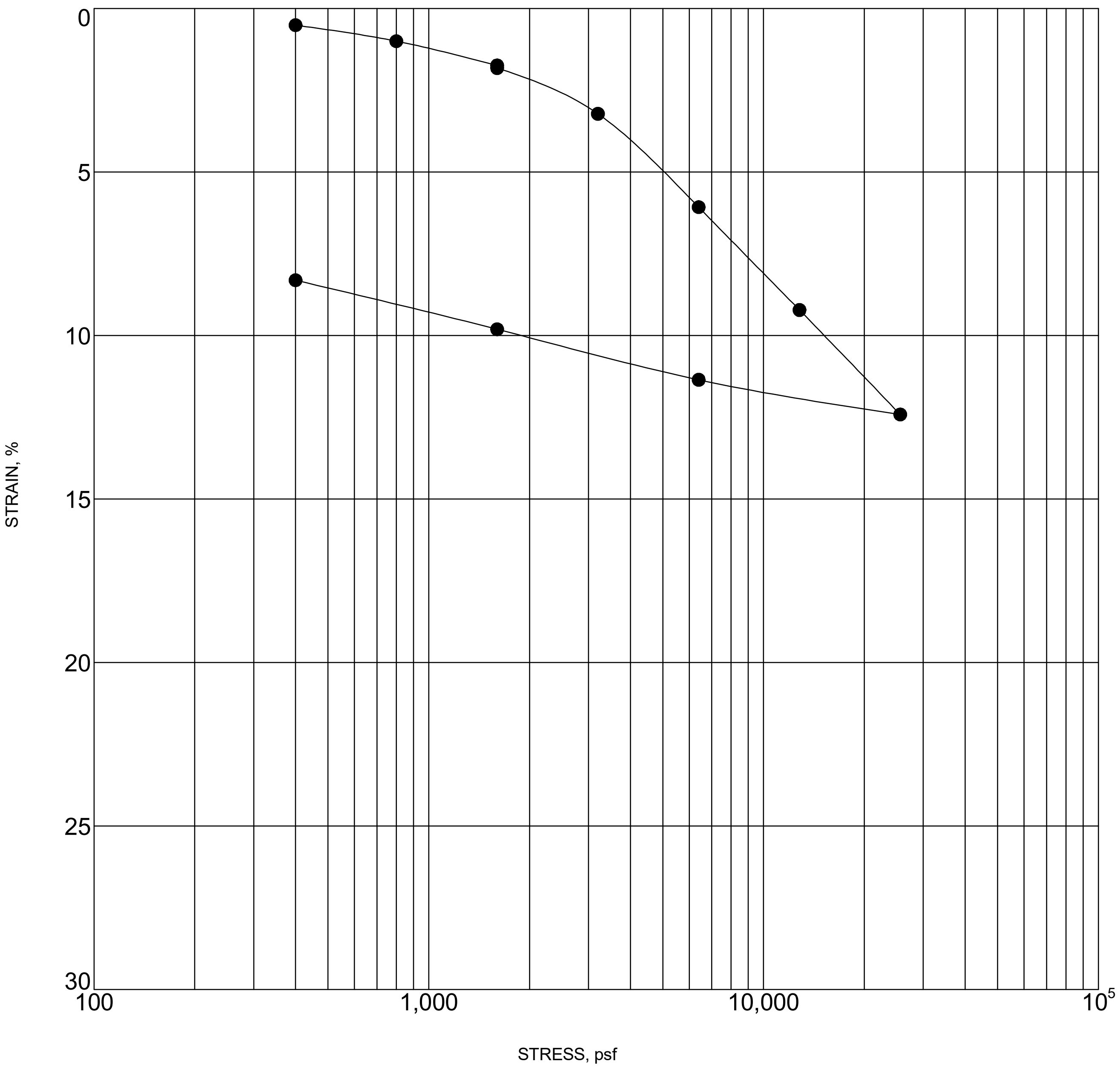
CONSOLIDATION TEST RESULTS

FIGURE B-13



Sample inundated at 1600 psf

	Sample Location		**Classification**	**DD,pcf**	**MC,%**
●	B-2	12.0	Fill: SANDY CLAY (CL)	96	19.5

PROJECT: PMB UCSD RANCHO BERNARDO PROJECT NO.: 3202.I

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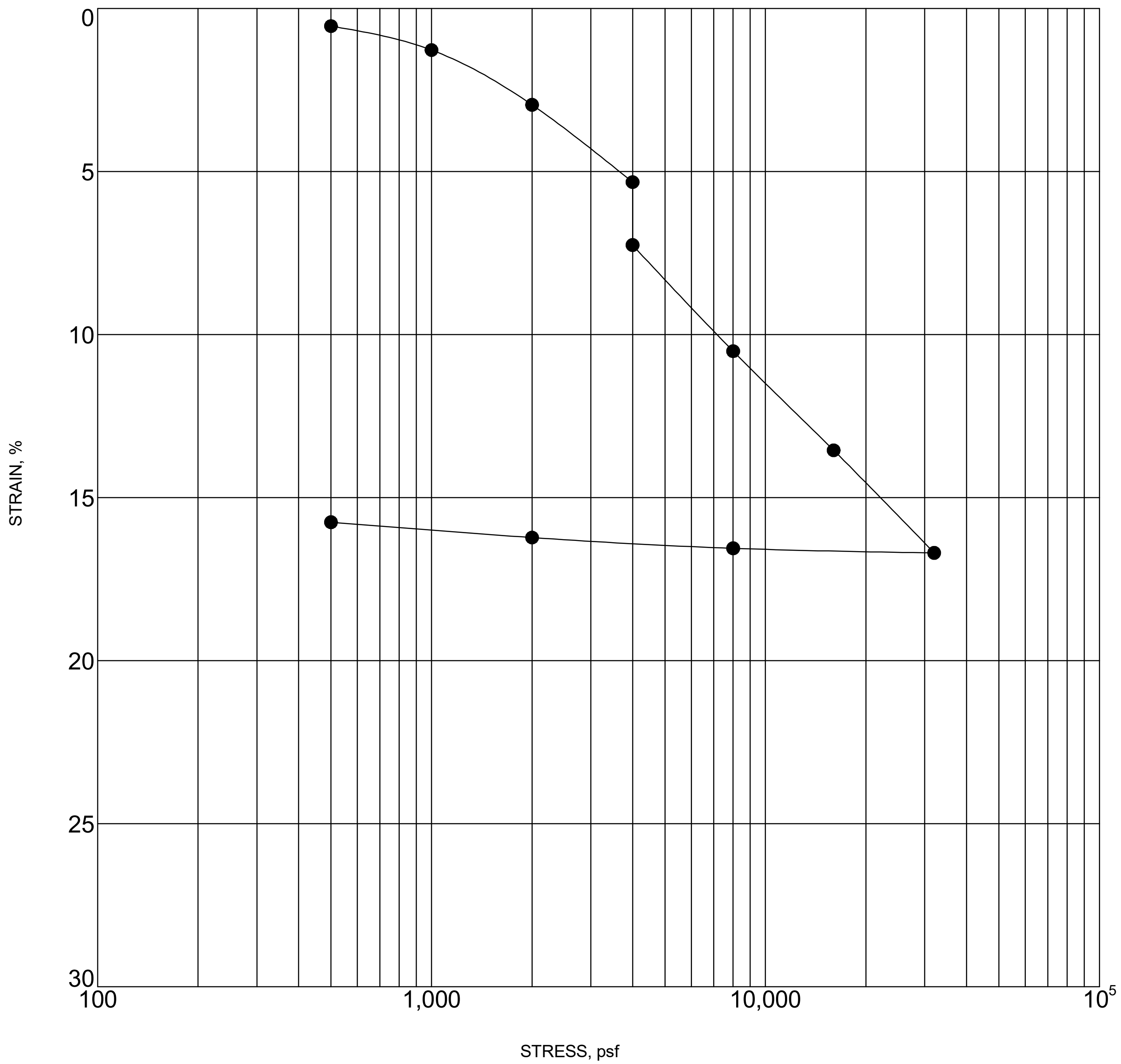
CONSOLIDATION TEST RESULTS

FIGURE B-14



Sample inundated at 4000 psf

	Sample Location		**Classification**	**DD,pcf**	**MC,%**
●	B-2	24.0	Landslide Deposits (Qls): SILTY SAND (SM)	100	9.4

PROJECT: PMB UCSD RANCHO BERNARDO PROJECT NO.: 3202.I

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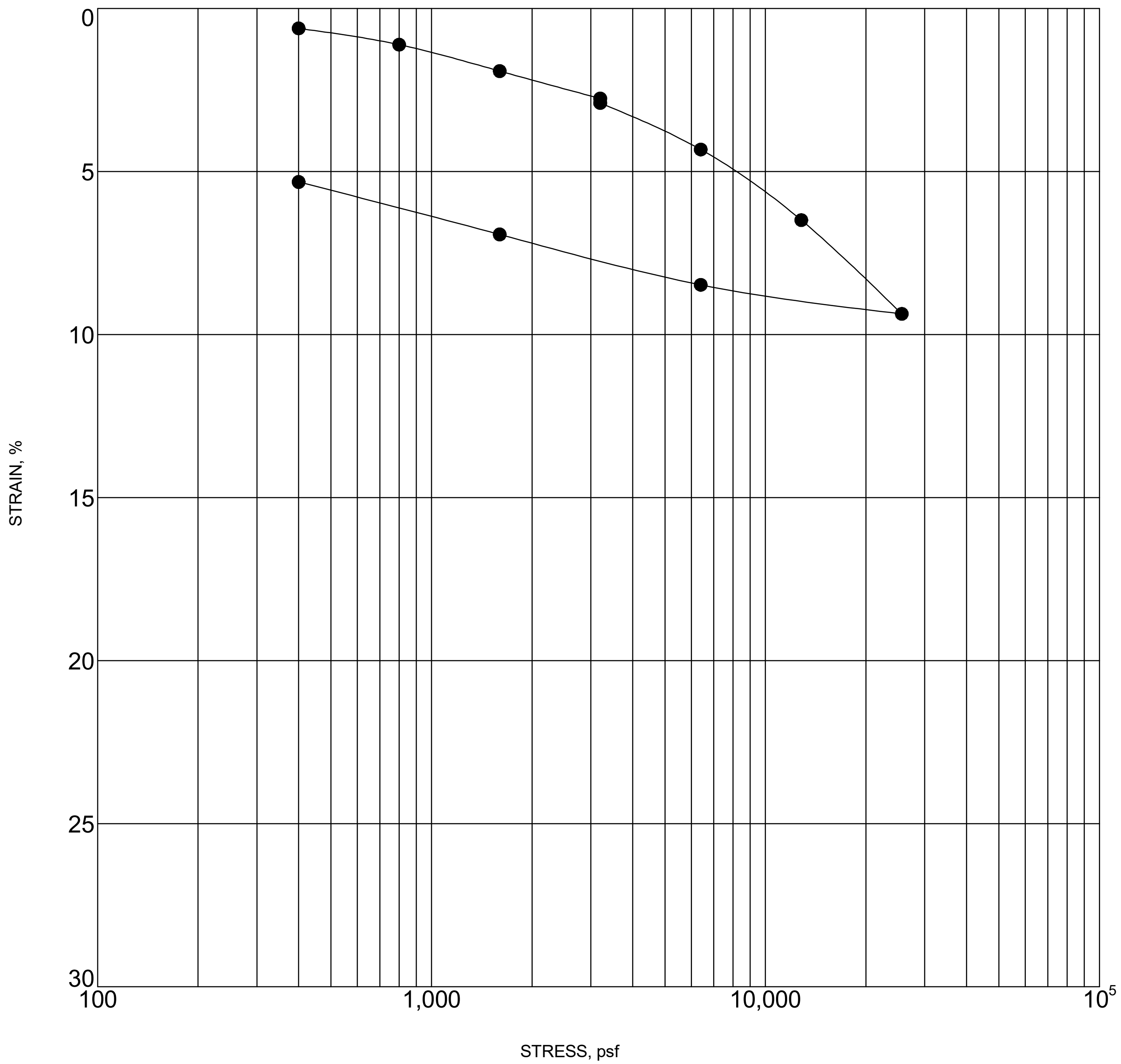
CONSOLIDATION TEST RESULTS

FIGURE B-15



Sample inundated at 3200 psf

	Sample Location		**Classification**	**DD,pcf**	**MC,%**
●	B-3	40.0	Fill: SANDY CLAY (CL)	99	21.1

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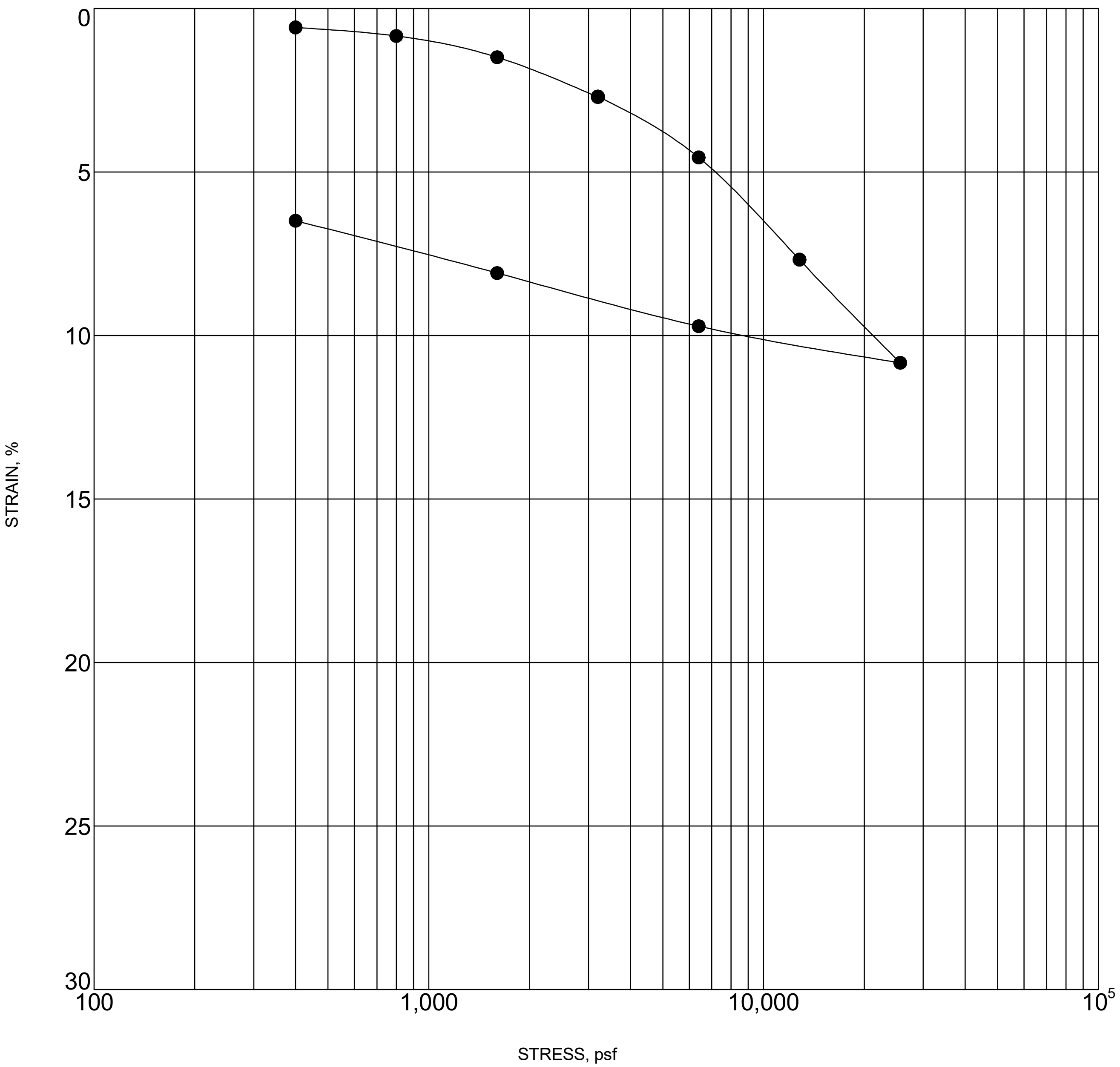
CONSOLIDATION TEST RESULTS

FIGURE B-16



Sample inundated at 3200 psf

	Sample Location		**Classification**	**DD,pcf**	**MC,%**
●	B-4	20.0	Fill: SANDY CLAY (CL)	101	17.2

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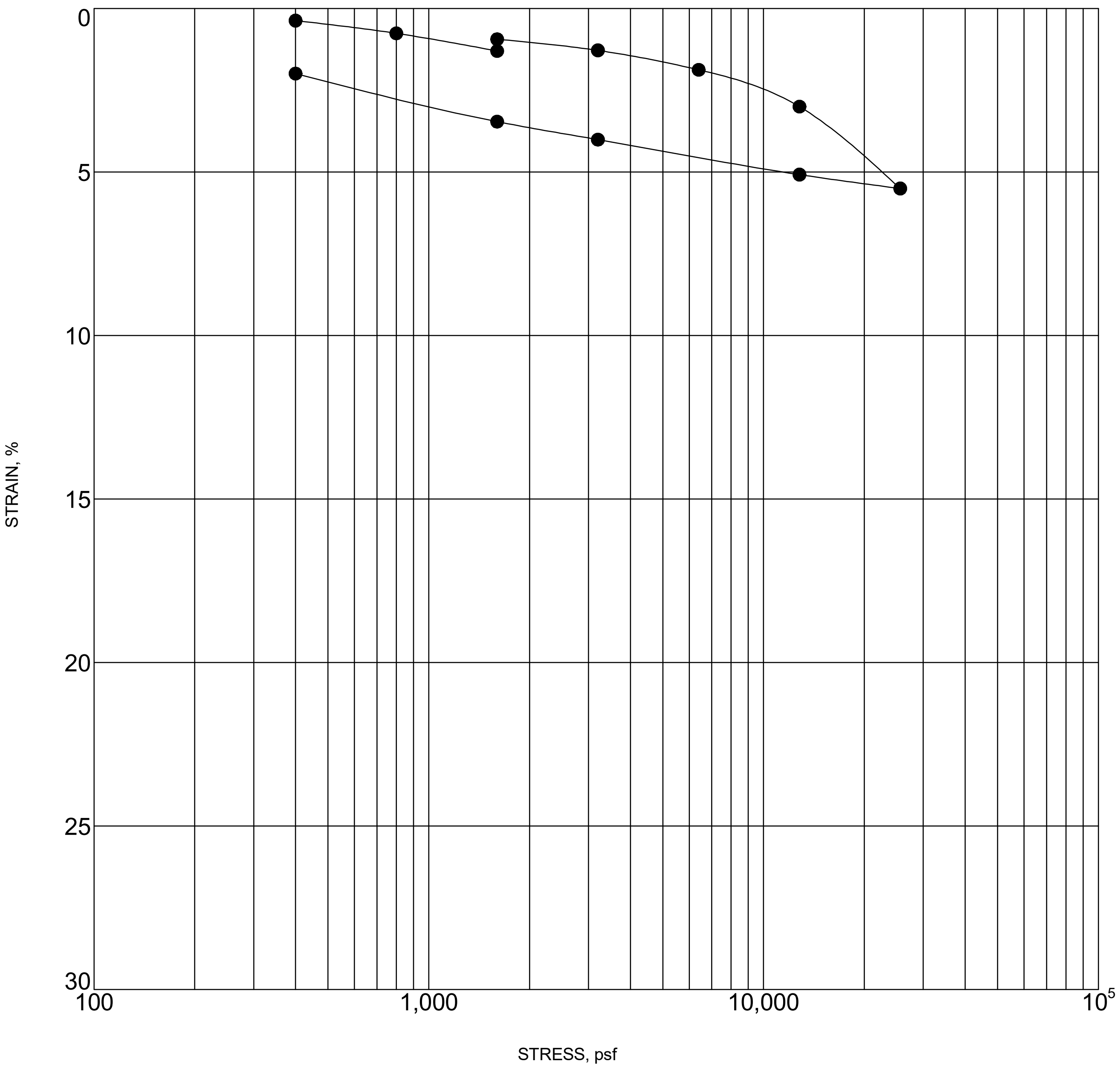
CONSOLIDATION TEST RESULTS

FIGURE B-17



Sample inundated at 1600 psf

	Sample Location		**Classification**	**DD,pcf**	**MC,%**
●	B-5	5.0	Fill: SANDY CLAY (CL) W/ SILTSTONE	101	16.6

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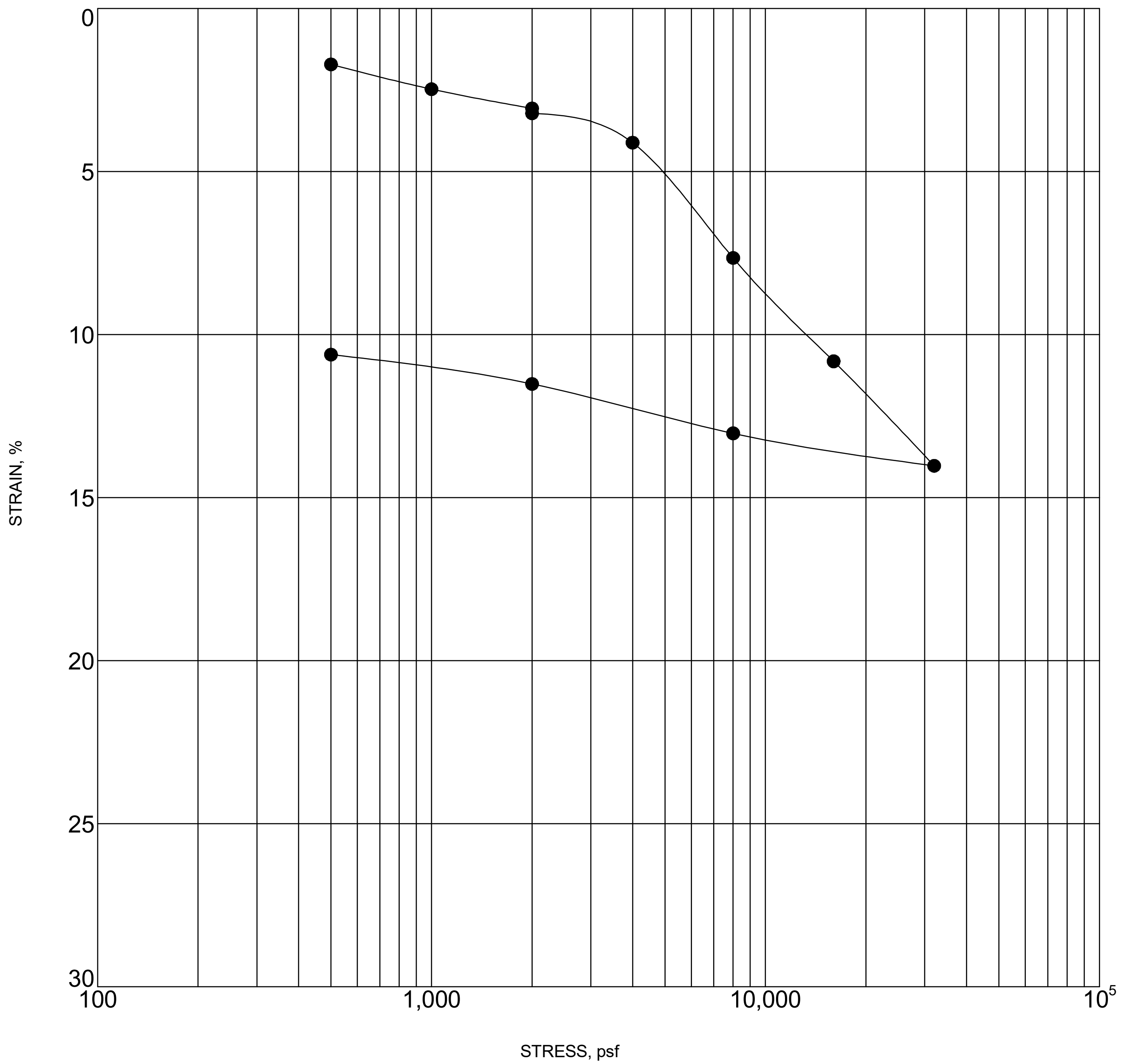
CONSOLIDATION TEST RESULTS

FIGURE B-18



Sample inundated at 2000 psf

	Sample Location		**Classification**	**DD,pcf**	**MC,%**
●	B-5	20.0	Fill: SANDY CLAY (CL)	99	21.0

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CONSOLIDATION TEST RESULTS

FIGURE B-19

Soil Analysis Lab Results

Client: Geotechnical Professionals Inc.
Job Name: Rancho Bernardo
Client Job Number: 3202.I
Project X Job Number: S231009F
October 11, 2023

	Method	ASTM D4327		ASTM D4327		ASTM G187		ASTM G51	ASTM G200	SM 4500-D	ASTM D4327	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D4327	ASTM D4327
Bore# / Description	**Depth**	**Sulfates** SO_4^{2-}		**Chlorides** Cl^-		**Resistivity** As Rec'd	Minimum	**pH**	**Redox**	**Sulfide** S^{2-}	**Nitrate** NO_3^-	**Ammonium** NH_4^+	**Lithium** Li^+	**Sodium** Na^+	**Potassium** K^+	**Magnesium** Mg^{2+}	**Calcium** Ca^{2+}	**Fluoride** F_2^{--}	**Phosphate** PO_4^{3-}
	(ft)	(mg/kg)	(wt%)	(mg/kg)	(wt%)	(Ohm-cm)	(Ohm-cm)		(mV)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
B-1	0-5	128.3	0.0128	72.9	0.0073	2,010	657	8.3	140	1.0	4.6	5.7	ND	152.5	4.5	24.3	72.3	8.1	6.9
B-2	0-5	12.5	0.0012	7.4	0.0007	3,618	1,139	8.4	128	0.3	2.8	3.1	ND	72.2	ND	21.2	77.1	7.3	40.9
B-6	0-5	42.0	0.0042	51.7	0.0052	2,613	737	8.4	153	0.3	5.3	3.2	ND	94.3	0.9	17.7	76.4	6.5	1.0

Cations and Anions, except Sulfide and Bicarbonate, tested with Ion Chromatography
mg/kg = milligrams per kilogram (parts per million) of dry soil weight
ND = 0 = Not Detected | NT = Not Tested | Unk = Unknown
Chemical Analysis performed on 1:3 Soil-To-Water extract
PPM = mg/kg (soil) = mg/L (Liquid)

Note: Sometimes a bad sulfate hit is a contaminated spot. Typical fertilizers are Potassium chloride, ammonium sulfate or ammonium sulfate nitrate (ASN). So this is another reason why testing full corrosion series is good because we then have the data to see if those other ingredients are present meaning the soil sample is just fertilizer-contaminated soil. This can happen often when the soil samples collected are simply surface scoops which is why it's best to dig in a foot, throw away the top and test the deeper stuff. Dairy farms are also notorious for these items.

APPENDIX C

TERRA GEOSCIENCES

SEISMIC SHEAR-WAVE SURVEY

UCSD RANCHO BERNARDO HEALTH CENTER

NWC INTERSTATE 15 AND BERNARDO CENTER DRIVE

SAN DIEGO, CALIFORNIA

Project No. 233994-1

October 16, 2023

Prepared for:

Geotechnical Professionals Inc.
5736 Corporate Avenue
Cypress, CA 90630

Geotechnical Professionals Inc.
5736 Corporate Avenue
Cypress, CA 90630

Attention: Don Cords, G.E., Principal

Regarding: Seismic Shear-Wave Survey
UCSD Rancho Bernardo Health Center
NWC Interstate 15 and Bernardo Center Drive
San Diego, California
GPI Project No. 3202.I

INTRODUCTION

As requested, this firm has performed a seismic shear-wave survey along two selected locations for the above referenced subject site, using the multi-channel analysis of surface waves (MASW) and microtremor array measurements (MAM) methods. The purpose of this survey was to assess the one-dimensional average shear-wave velocity structure beneath the subject survey areas to a depth of at least 100 feet. We understand that the site will be used for construction of a four- or five-story medical office building, along with a four-story parking structure. The site has been previously graded of which we understand is surficially mantled by artificial fill, underlain at depth by both landslide deposits and sedimentary bedrock of the Friars Formation (poorly-indurated sandstone with interbedded sandy claystone). The locations of the seismic traverses have been approximated on a partial copy of the Bernardo Center Drive Site Plan, prepared by Latitude Planning & Engineering, San Diego, California, which is presented as the Seismic Line Location Map, Plate 1. Additionally, photographic views of the survey lines are presented on Plates 2 and 3 for visual and reference purposes. As authorized by you, the following services were performed during this study:

- ***Review of available pertinent published and unpublished geologic and geophysical data in our files pertaining to the site.***

- ***Performing a seismic surface-wave survey by a licensed State of California Professional Geophysicist that included two traverses for shear-wave velocity analysis purposes.***

- ***Preparation of this report, presenting the results of our findings with respect to the shear-wave velocities of the subsurface earth materials.***

Accompanying Map, Illustrations, and Appendices

Plate 1 - Seismic Line Location Map
Plates 2 & 3 - Survey Line Photographs
Appendix A - Shear-Wave SW-1 Model and Data
Appendix B - Shear-Wave SW-2 Model and Data
Appendix C - References

SUMMARY OF SHEAR-WAVE SURVEY

Methodology

The fundamental premise of this survey uses the fact that the Earth is always in motion at various seismic frequencies. These relatively constant vibrations of the Earth's surface are called microtremors, which are very small with respect to amplitude and are generally referred to as background "noise" that contain abundant surface waves. These microtremors are caused by both human activity (i.e., cultural noise, traffic, factories, etc.) and natural phenomenon (i.e., wind, wave motion, rain, atmospheric pressure, etc.) which have now become regarded as useful signal information. Although these signals are generally very weak, the recording, amplification, and processing of these surface waves has greatly improved by the use of technologically improved seismic recording instrumentation and recently developed computer software. For this application, we are mainly concerned with the Rayleigh wave portion of the seismic signals, which is also referred to as "ground roll" since the Rayleigh wave is the dominant component of ground roll.

For the purposes of this study, there are two ways that the surface waves were recorded, one being "active" and the other being "passive." Active means that seismic energy is intentionally generated at a specific location relative to the survey spread and recording begins when the source energy is imparted into the ground (i.e., MASW survey technique). Passive surveying, also called "microtremor surveying," is where the seismograph records ambient background vibrations (i.e., MAM survey technique), with the ideal vibration sources being at a constant level. Longer wavelength surface waves (longer-period and lower-frequency) travel deeper and thus contain more information about deeper velocity structure and are generally obtained with passive survey information. Shorter wavelength (shorter-period and higher-frequency) surface waves travel shallower and thus contain more information about shallower velocity structure and are generally collected with the use of active sources. For the most part, higher frequency active source surface waves will resolve the shallower velocity structure and lower frequency passive source surface waves will better resolve the deeper velocity structure. Therefore, the combination of both of these surveying techniques provides a more accurate depiction of the subsurface velocity structure.

The assemblage of the data that is gathered from these surface wave surveys results in development of a dispersion curve. Dispersion, or the change in phase velocity of the seismic waves with frequency, is the fundamental property utilized in the analysis of surface wave methods. The fundamental assumption of these survey methods is that the signal wavefront is planar, stable, and isotropic (coming from all directions) making it independent of source locations and for analytical purposes uses the spatial autocorrelation method (SPAC). The SPAC method is based on theories that are able to detect "signals" from background "noise" (Okada, 2003). The shear wave velocity (V_S) can then be calculated by mathematical inversion of the dispersive phase velocity of the surface waves which can be significant in the presence of velocity layering, which is common in the near-surface environment.

Field Procedures

Two seismic shear-wave survey traverses (Seismic Lines SW-1 and SW-2) were performed along selected portions of the subject site, as directed by you, which are approximated on the Seismic Line Location Map, Plate 1. The traverses were located in the field by use of Google™ Earth imagery (2023) and GPS coordinates. For data collection, the field survey employed a twenty-four channel Geometrics Geode model signal-enhancement refraction seismograph. This survey employed both active (MASW) and passive (MAM) source methods to ensure that both quality shallow and deeper shear-wave velocity information was recorded (Park et al., 2005).

Both the MASW and MAM surveys for each line, used the same linear geometry array that consisted of a 184-foot-long spread using a series of twenty-four 4.5-Hz geophones that were spaced at regular eight-foot intervals. For the MASW survey, the ground vibrations were recorded using a one second record length at a sampling rate of 0.5-milliseconds. For each traverse, two seismic records were obtained using a 30-foot offset from the beginning and end of the survey line, utilizing a 16-pound sledge-hammer as the energy source to produce the seismic waves. Each of these shot points used multiple hammer impacts (stacking) to improve the signal to noise ratio of the data.

The MAM survey did not require the introduction of any artificial seismic sources and only background ambient noise was recorded. The ambient ground vibrations were recorded using a thirty-two second record length at a two-millisecond sampling rate with 20 separate seismic records being obtained for quality control purposes. The seismic-wave forms and associated frequency spectrum that were displayed on the seismograph screen were used to assess the recorded seismic wave data for quality control purposes in the field. The acceptable records were digitally recorded on the in-board seismograph computer and subsequently transferred to a flash drive so that they could be subsequently transferred to our office computer for analysis.

Data Reduction

For analysis and presentation of the shear-wave profile and supportive illustrations, this study used the SeisImager/SW™ computer software program developed by Geometrics, Inc. (2004-2021). Both the active (MASW) and passive (MAM) survey results were combined for this analysis (Park et al., 2005). The combined results maximize the resolution and overall depth range in order to obtain one high resolution V_s curve over the entire sampled depth range. These methods economically and efficiently estimate one-dimensional subsurface shear-wave velocities using data collected from standard primary-wave (P-wave) refraction surveys, however, it should be noted that surface waves by their physical nature cannot resolve relatively abrupt or small-scale velocity anomalies. Processing of the data proceeded by calculating the dispersion curve from the input data which subsequently created an initial shear-wave model based on the observed data. This initial model was then inverted in order to converge on the best fit of the initial model and the observed data, creating the final shear-wave models (Seismic Lines SW-1 and SW-2), as presented within Appendices A and B, respectively.

Summary of Data Analysis

Data acquisition went very smoothly and the quality was considered to be good. Analysis revealed that the average shear-wave velocity ("weighted average") in the upper 100 feet of the subject survey area for Seismic Line SW-1 is **1,002.8** feet per second, with Seismic Line SW-2 being **1,033.7** feet per second, as presented within Appendices A and B, respectively. These average velocities classify the underlying soils to that of Site Class "**D**" ("Stiff Soil" profile), which has a velocity ranging from 600 to 1,200 ft/sec (ASCE, 2017; Table 20.3-1).

The "weighted average" velocity is computed from a formula that is used by the ASCE (2017; Section 20.4, Equation 20.4-1) to determine the average shear-wave velocity for the upper 100 feet of the subsurface (V100). This formula is as follows:

$$\mathbf{V100' = 100/[(T1/V1) + (T2/V2) + \ldots + (TN/VN)]}$$

Where t1, t2, t3,...,tn, are the thicknesses for layers 1, 2, 3,...n, up to 100 feet, and v1, v2, v3,...,vn, are the seismic velocities (feet/second) for layers 1, 2, 3,...n.

The shear-wave models display these calculated layers and associated velocities (feet/second) to the maximum obtained depths of 179 feet (SW-1) and 168 feet (SW-2), where locally sampled. The dark gray shaded area on the shear-wave models represents the constrained data). The associated Dispersion Curves (for both the active and passive methods) which show the data quality and picks, along with the resultant combined dispersion curve models, are also included within Appendix A for visual and reference purposes.

It should be noted that when compared with traditional borehole shear-wave surveys, which use vertical body waves, the sources of error (if present) using horizontal surface waves for this project are not believed to be greater than 15 percent.

CLOSURE

The field survey was performed by the undersigned on October 14, 2023, using "state of the art" geophysical equipment and techniques along the selected portions of the subject study area as directed by you. It is important to note that the fundamental limitation for seismic surveys is known as nonuniqueness, wherein a specific seismic data set does not provide sufficient information to determine a single "true" earth model. Therefore, the interpretation of any seismic data set uses "best-fit" approximations along with the geologic models that appear to be most reasonable for the local area being surveyed. Client should also understand that when using the theoretical geophysical principles and techniques discussed in this report, sources of error are possible in both the data obtained and, in the interpretation, and that the results of this survey may not represent actual subsurface conditions.

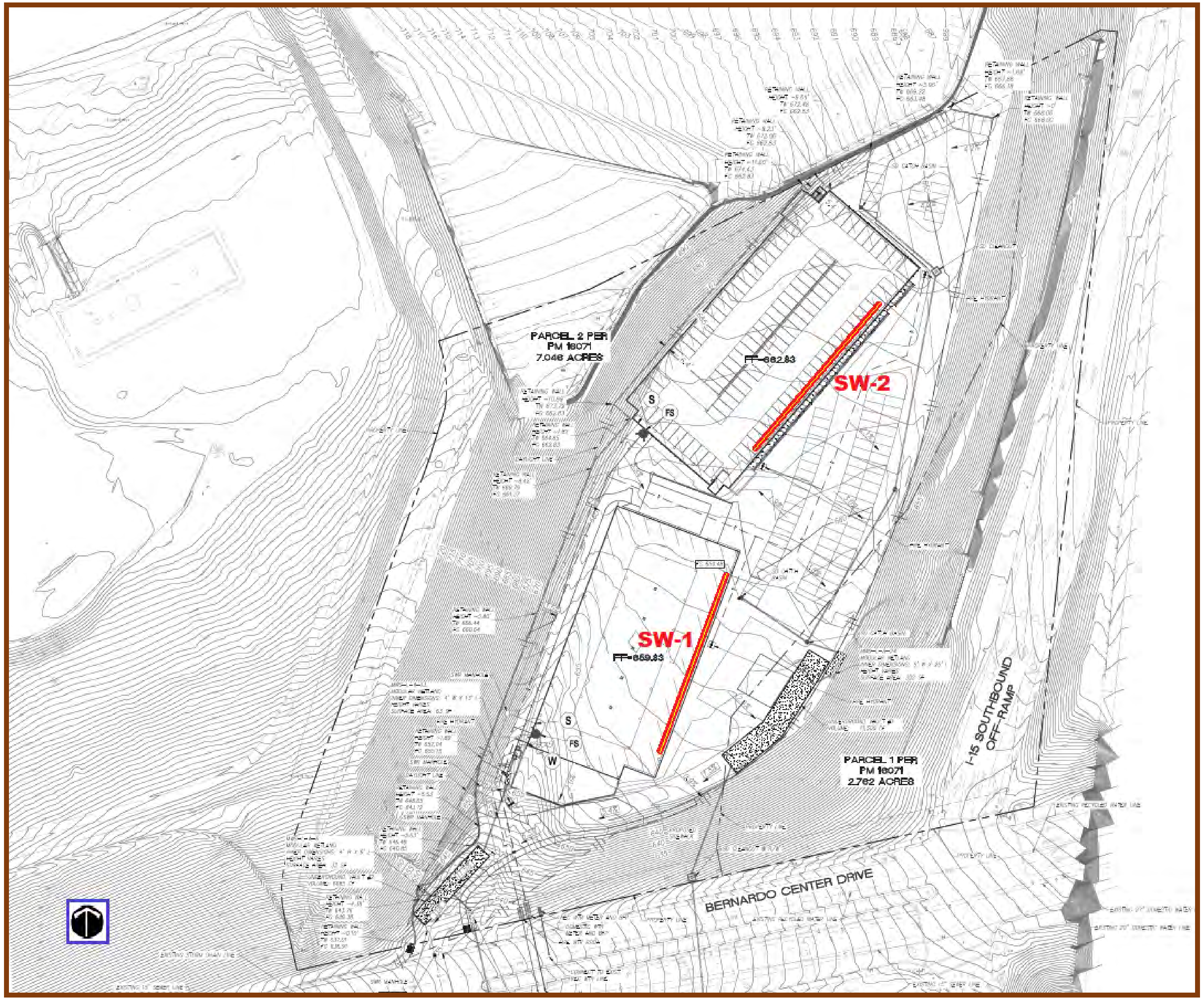
These are all factors beyond **Terra Geosciences** control and no guarantees as to the results of this survey can be made. We make no warranty, either expressed or implied. If the client does not understand the limitations of this geophysical survey, additional input should be sought from the consultant.

Respectfully submitted,
TERRA GEOSCIENCES

Donn C. Schwartzkopf
Principal Geophysicist
PGP 1002

PROFESSIONAL GEOPHYSICIST
DONN C.
SCHWARTZKOPF
No. 1002
STATE OF CALIFORNIA

SEISMIC LINE LOCATION MAP



Base Map: Partial copy of the provided Bernardo Center Drive Site Plan, prepared by Latitude Planning & Engineering, San Diego, California, dated June 6, 2022.

SURVEY LINE PHOTOGRAPHS

View looking southwest along Seismic Line SW-1.

View looking northeast along Seismic Line SW-1.

SURVEY LINE PHOTOGRAPHS

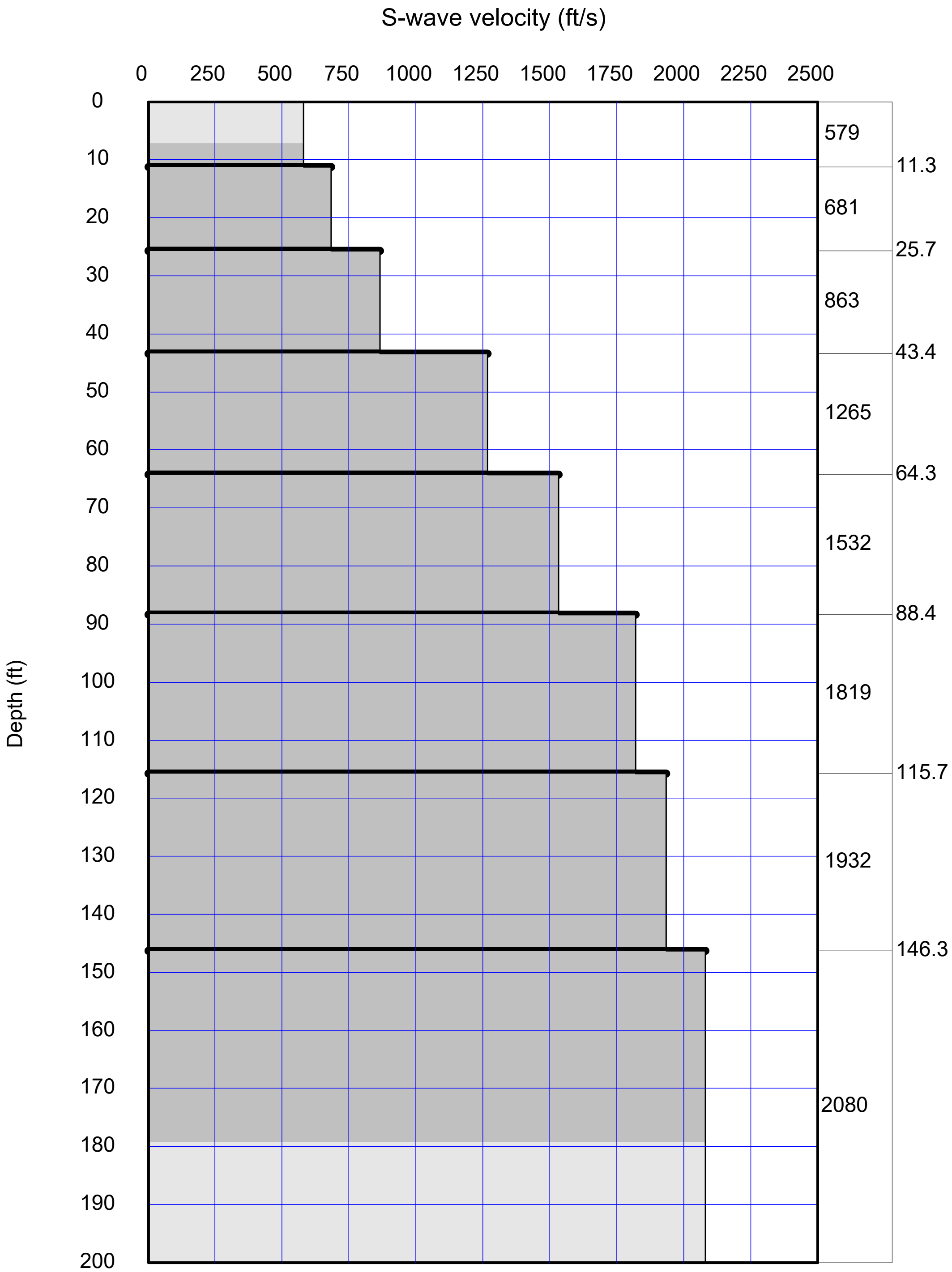
View looking northeast along Seismic Line SW-2.

View looking southwest along Seismic Line SW-2.

APPENDIX A

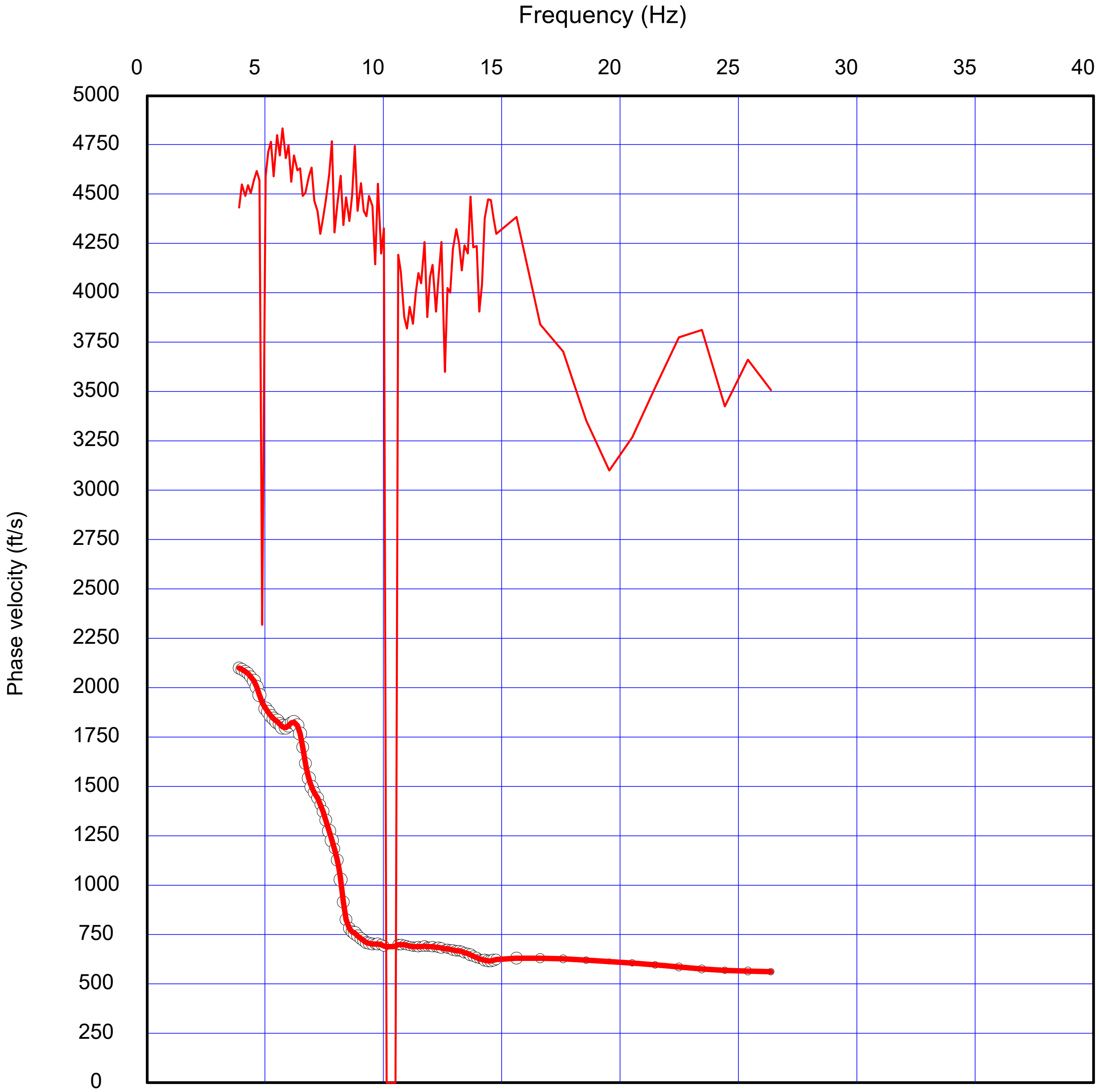
SHEAR-WAVE SW-1 MODEL AND DATA

SEISMIC LINE SW-1
SHEAR-WAVE MODEL



S-wave velocity model : FinalSW-1.rst **Average Vs 100ft = 1002.8 ft/sec**

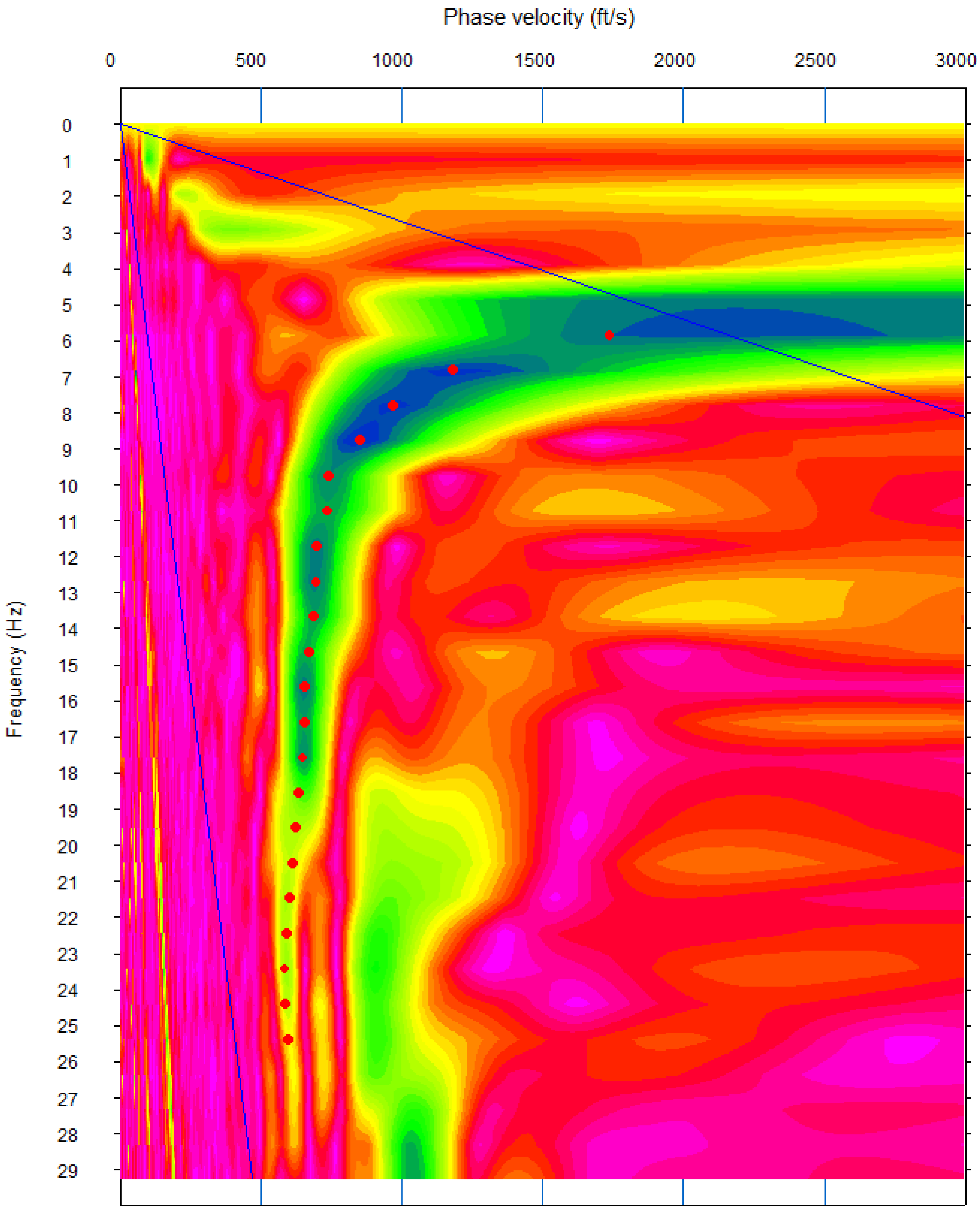
SEISMIC LINE SW-1



Dispersion curve : CombinedSW-1.rst

COMBINED DISPERSION CURVE

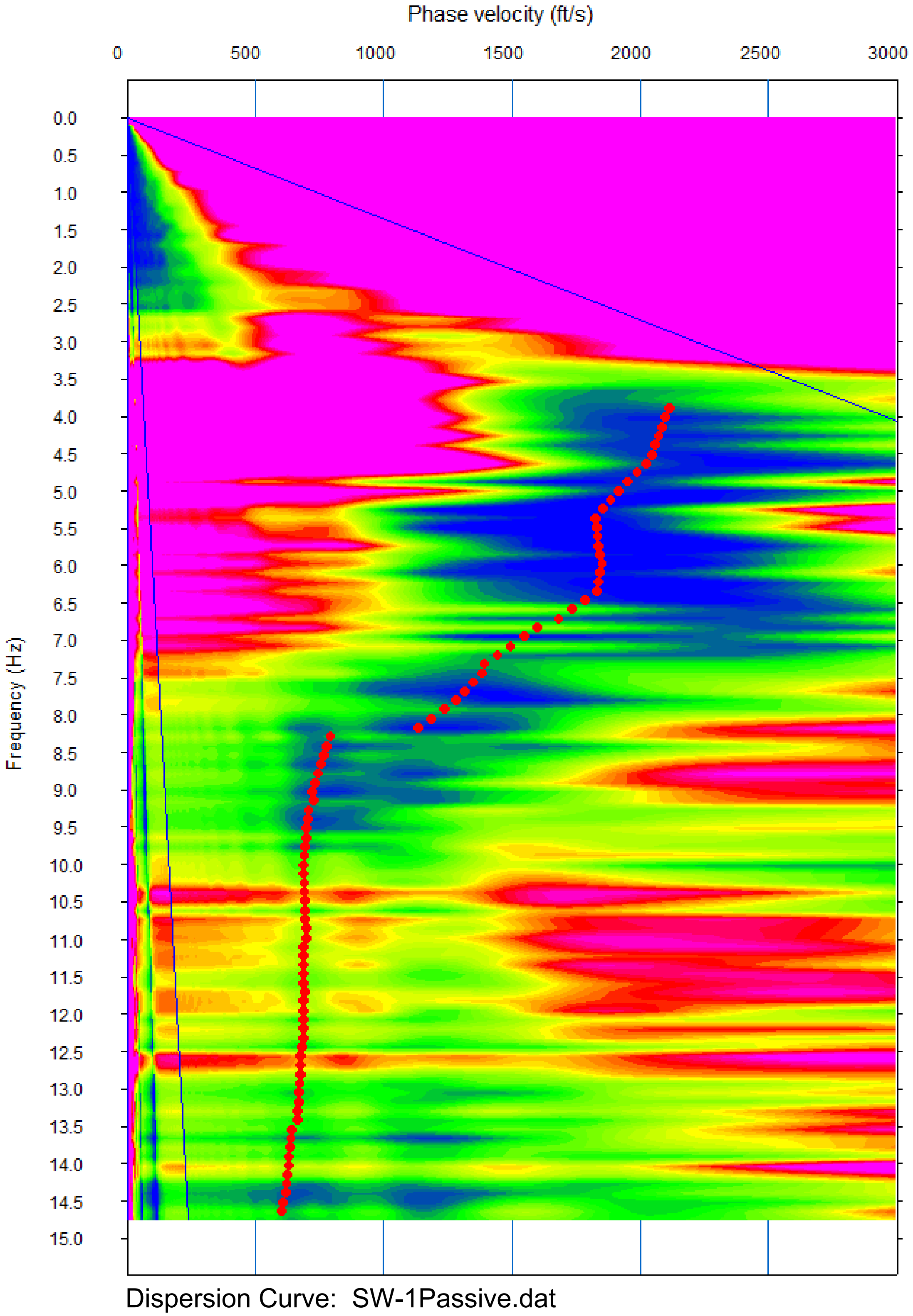
SEISMIC LINE SW-1



Dispersion Cure: SW-1Active.dat

ACTIVE DISPERSION CURVE

SEISMIC LINE SW-1



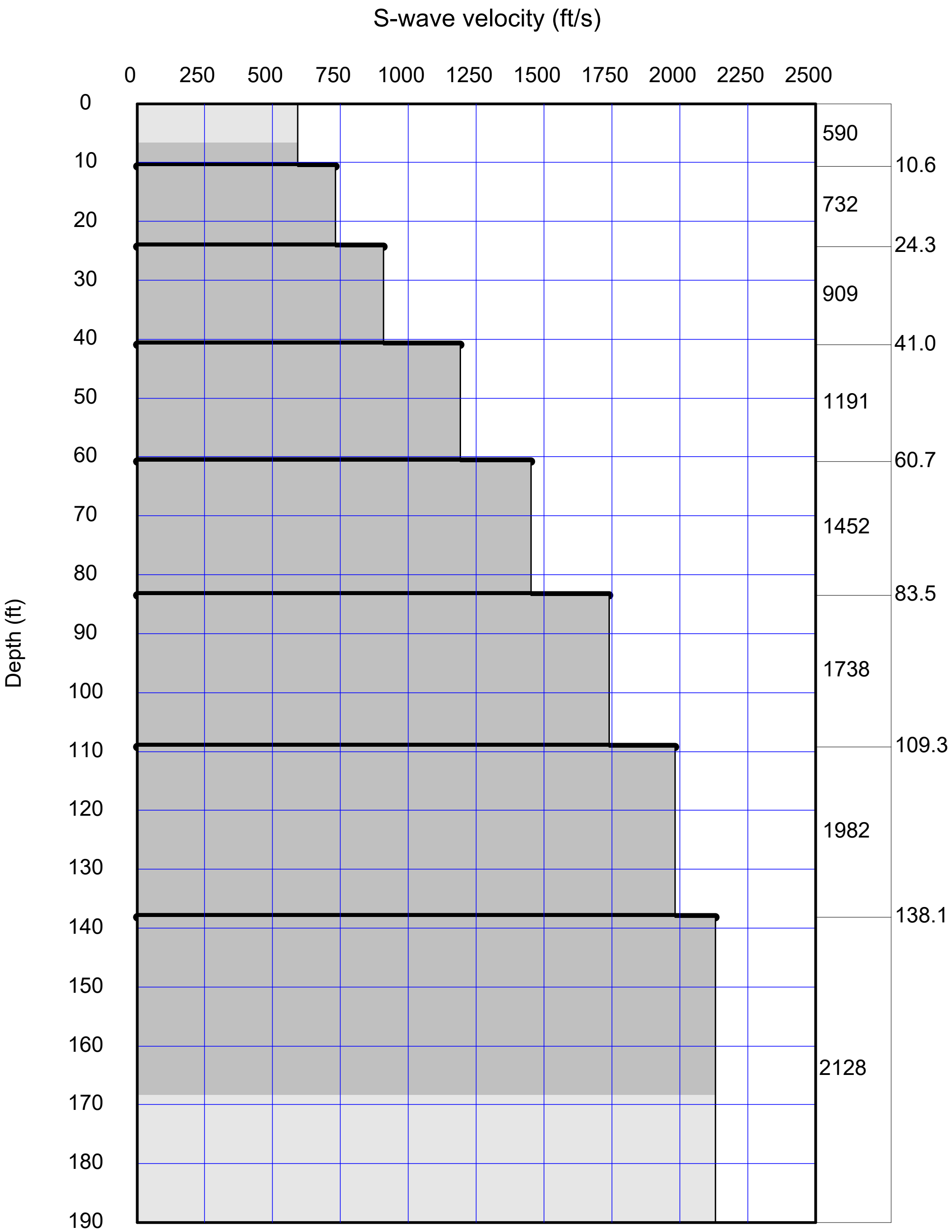
PASSIVE DISPERSION CURVE

APPENDIX B

SHEAR-WAVE SW-2 MODEL AND DATA

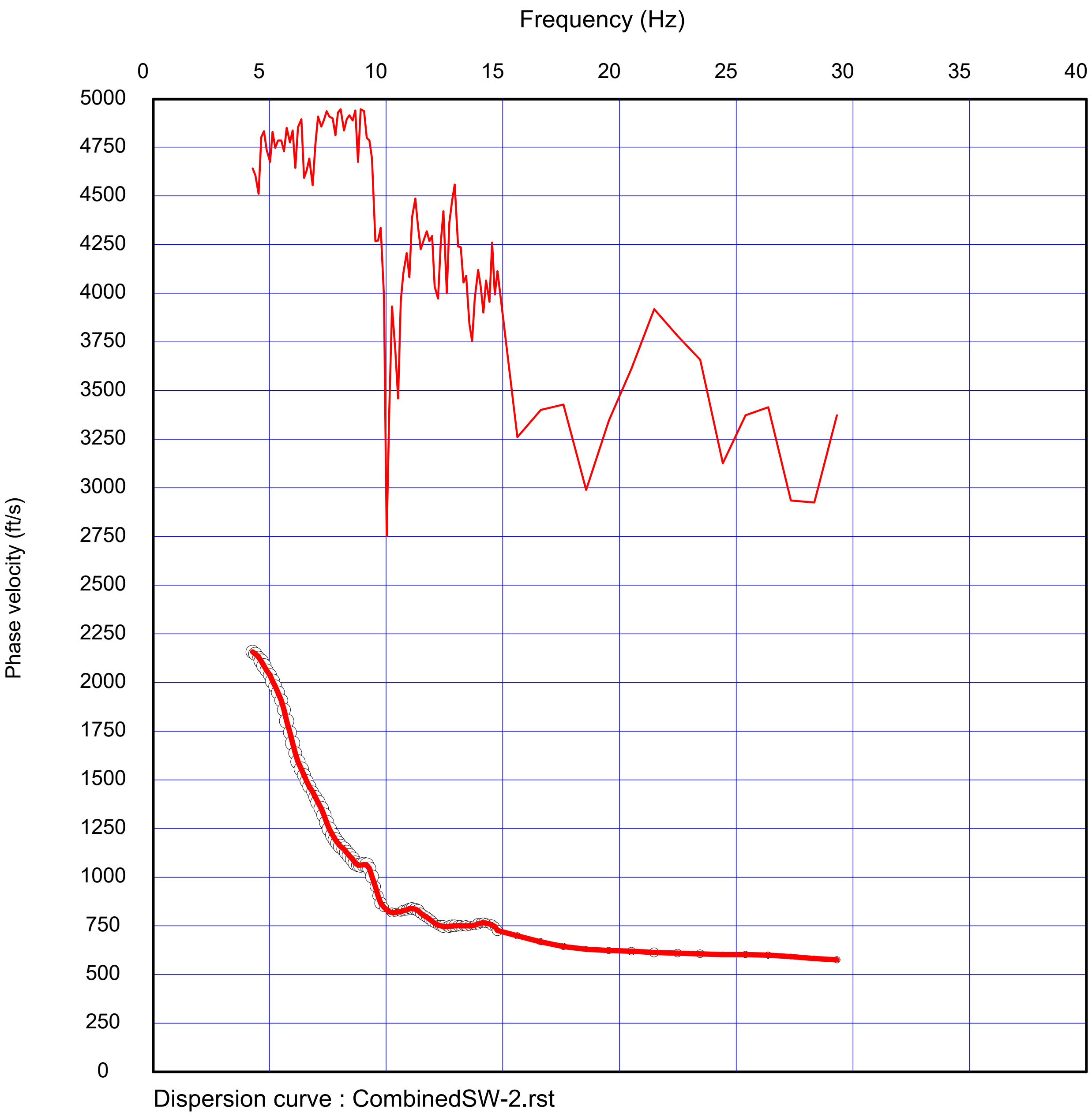
SEISMIC LINE SW-2

SHEAR-WAVE MODEL



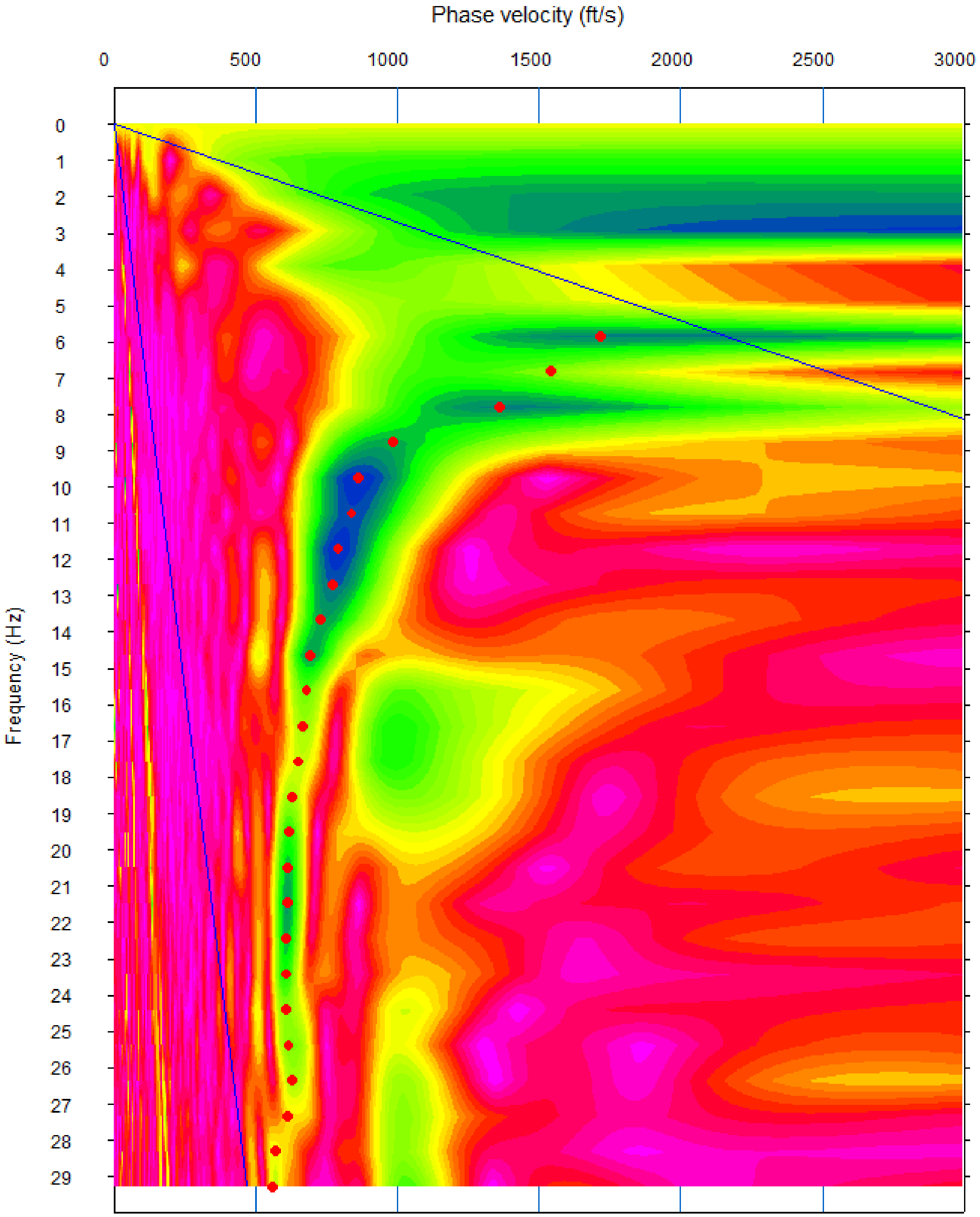
S-wave velocity model : FinalSW-2.rst **Average Vs 100ft = 1033.7 ft/sec**

SEISMIC LINE SW-2



COMBINED DISPERSION CURVE

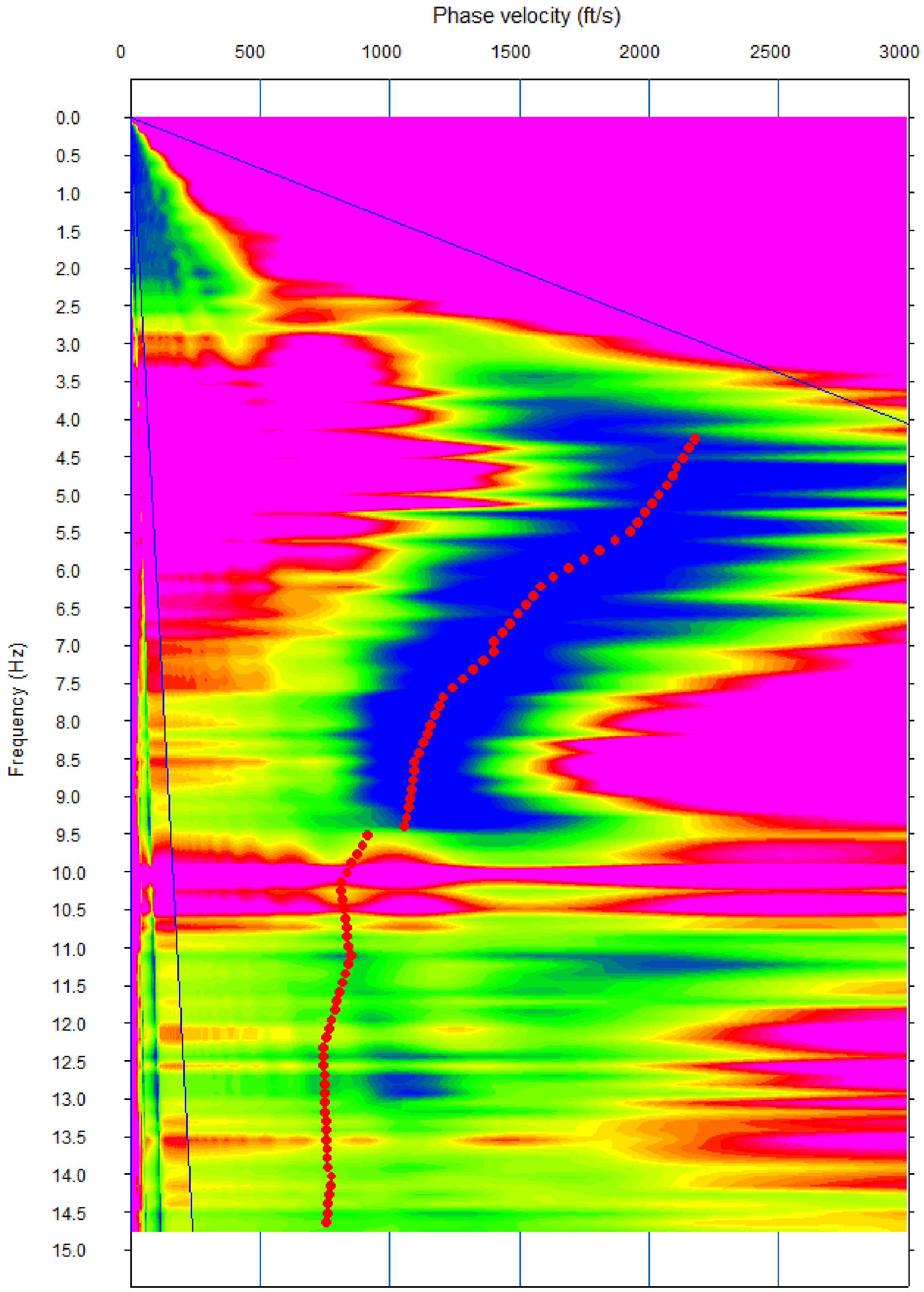
SEISMIC LINE SW-2



Dispersion Cure: SW-2Active.dat

ACTIVE DISPERSION CURVE

SEISMIC LINE SW-2



Dispersion Curve: SW-2Passive.dat

PASSIVE DISPERSION CURVE

APPENDIX C

REFERENCES

REFERENCES

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APPENDIX D

LOG OF BORING SB-1

Date Drilled: 6/27/2018
Equipment: CME-75 w/8-inch HSA
Elevation (ft): 645

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): 19

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**FILL (Qf):** CLAYEY SAND, loose to medium dense, light brown, moist, fine to coarse grained, trace gravel, trace cobbles.		☒					
1									
2									
3									
4									
5		Medium dense.							
6			CAL		26	22			
7									
8									
9		**FRIARS FORMATION (Tf):** SILTY TO CLAYEY SANDSTONE, light gray, moist, strongly cemented, moderately hard. Breaks down to very dense, fine to medium grained SILTY to CLAYEY SAND.							
10									
11			SPT		58	76			
12									
13									
14									
15			CAL		50/6"	>50			
16									
17									
18									
19		▽ Groundwater at 19 feet.	SPT		32	42			
20		**BORING TERMINATED AT 20 FEET**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-2

LOG OF BORING SB-2a

Date Drilled: 6/27/2018
Equipment: CME-75 w/8-inch HSA
Elevation (ft): 655

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
1 2 3 4	SC	**FILL (Qf):** CLAYEY SAND, loose to medium dense, light brown, moist, fine to coarse grained, highly plastic clay, few gravel.		☒					AL SA RV
5 6 7 8 9	SC	CLAYEY SAND with GRAVEL, medium dense, light brown, moist, fine to medium, few cobbles.	CAL		27	23			
10			SPT		50/4"	>50			
11 12 13 14 15 16 17 18 19 20		**BORING REFUSAL AT 10½ FEET ON COBBLE**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-3

LOG OF BORING SB-2b

Date Drilled:	6/27/2018	Logged by:	EMW
Equipment:	CME-75 w/8-inch HSA	Reviewed by:	JG
Elevation (ft):	657	Depth to Groundwater (ft):	Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**<u>FILL (Qf):</u>** CLAYEY SAND, loose to medium dense, light brown, moist, fine to medium grained, few gravel.							
1									
2									
3									
4									
5		Trace cobbles.							
			CAL		16	14	19.4	101.7	DS
6									
7									
8									
9									
10		Dense, light brown to greenish brown.							
			SPT		24	31			
11									
12									
13									
14									
15									
			CAL		50/3"	57			
16									
		<u>FRIARS FORMATION (Tf):</u> SILTY TO CLAYEY SANDSTONE, light gray, moist, strongly cemented, moderately hard. Breaks down into very dense, fine to medium grained SILTY to CLAYEY SAND.							
17									
18									
19			SPT		50/4"	>50			
		BORING TERMINATED AT 19½ FEET							
20									

SCST, Inc.

Bernardo Center Drive San Diego, California			
By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-4

LOG OF BORING SB-3

Date Drilled:	6/27/2018	Logged by:	EMW
Equipment:	CME-75 w/8-inch HSA	Reviewed by:	JG
Elevation (ft):	660	Depth to Groundwater (ft):	Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**<u>FILL (Qf):</u>** CLAYEY SAND, loose to medium dense, light brown to brown, moist, fine to coarse grained, trace gravel, trace cobbles.		☒					
1									
2									EI
3									
4									
5		Very dense.	CAL		50/6"	>50	16.2	92.3	
6									
7									
8									
9									
10		Medium dense.							
11			SPT		22	29			
12									
13									
14									
15	CL	**<u>LANDSLIDE DEPOSITS (Qls):</u>** SANDY CLAY, very stiff, reddish brown, moist, fine to coarse grained, trace gravel.							
16			CAL		20	17			
17									
18									
19			SPT		15	20			
20		**BORING TERMINATED AT 20 FEET**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-5

LOG OF BORING SB-4

Date Drilled: 6/27/2018
Equipment: CME-75 w/8-inch HSA
Elevation (ft): 670

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**FILL (Qf):** CLAYEY SAND with GRAVEL, loose to medium dense, light brown, moist, fine to coarse grained, trace cobbles.		☒					
1									
2									
3									
4									
5	CL	SANDY CLAY, very stiff, brown, moist, fine to coarse grained, few gravel, trace cobbles.							
6			SPT		17	22			
7									
8									
9									
10		Stiff.							
11			CAL		17	14	19.1	101.5	DS
12									
13									
14									
15									
16		**FRIARS FORMATION (Tf):** SILTY TO CLAYEY SANDSTONE, light gray, moist, moderately to strongly cemented, moderately hard. Breaks down into medium dense to very dense, fine to medium grained SILTY to CLAYEY SAND.	SPT		20	26			
17									
18									
19			CAL		61	52			
20		**BORING TERMINATED AT 20 FEET**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-6

LOG OF BORING SB-5

Date Drilled: 6/27/2018
Equipment: CME-75 w/8-inch HSA
Elevation (ft): 688

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**FILL (Qf):** CLAYEY SAND, loose to medium dense, light brown, moist, fine to coarse grained, trace gravel.		☒					
1									
2									
3		Light greenish brown.							
4									
5		Medium dense, greenish brown.	CAL		30	25	19.3	101.1	
6									
7									
8									
9									
10			SPT		14	18			
11									
12									
13									
14									
15			CAL		15	13	19.5	105.7	
16									
17									
18		Dense.							
19			SPT		25	33			
20		**BORING TERMINATED AT 20 FEET**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-7

LOG OF BORING SB-6

Date Drilled:	6/27/2018	Logged by:	EMW
Equipment:	CME-75 w/8-inch HSA	Reviewed by:	JG
Elevation (ft):	660	Depth to Groundwater (ft):	Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
0	SC	**<u>FILL (Qf):</u>** CLAYEY SAND, loose to medium dense, light brown, moist, fine to coarse grained, trace gravel.		☒					
1									
2									EI
3									
4									
5		Medium dense.	CAL		24	20	17.9	102.6	CON
6									
7									
8									
9									
10			CAL		26	22			
11									
12									
13									
14									
15		Dense, trace cobbles.	CAL		41	35			
16									
17									
18									
19			CAL		49	42			
20		**BORING CONTINUED ON I-9.**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-8

LOG OF BORING SB-6 (continued)

Date Drilled:	6/27/2018	Logged by:	EMW
Equipment:	CME-75 w/8-inch HSA	Reviewed by:	JG
Elevation (ft):	660	Depth to Groundwater (ft):	Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
21	SC	**FILL (Qf):** CLAYEY SAND, medium dense, light brown, moist, fine to coarse grained, trace gravel, trace cobbles.	SPT		22	29			
22		**BORING TERMINATED AT 21½ FEET**							
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-9

LOG OF BORING SB-7

Date Drilled: 6/28/2018
Equipment: CME-95 w/8-inch HSA
Elevation (ft): 662

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**FILL (Qf):** CLAYEY SAND, medium dense, light brown, moist, fine to coarse grained, few gravel, trace cobbles.		☒					
1									
2									COR
3									
4									
5			CAL		32	27			
6									
7									
8									
9									
10			SPT		20	26			
11									
12									
13									
14									
15			CAL		29	25			
16									
17									
18									
19									
20									
		BORING CONTINUED ON I-11.							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-10

LOG OF BORING SB-7 (continued)

Date Drilled: 6/28/2018
Equipment: CME-95 w/8-inch HSA
Elevation (ft): 662

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
21	SC	**FILL (Qf):** CLAYEY SAND, dense, light grayish brown, moist, fine to coarse grained, trace gravel.	SPT		24	31			
22									
23									
24									
25		Medium dense.	CAL		22	19			
26									
27									
28									
29									
30		Light greenish brown.	SPT		15	20			
31									
32									
33									
34									
35		Very dense, greenish brown.	CAL		67	57			
36									
37									
38									
39		**FRIARS FORMATION (Tf):**							
40		**BORING DESCRIPTION CONTINUED ON I-12.**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-11

LOG OF BORING SB-7 (continued)

Date Drilled:	6/28/2018	Logged by:	EMW
Equipment:	CME-95 w/8-inch HSA	Reviewed by:	JG
Elevation (ft):	662	Depth to Groundwater (ft):	Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
41		**FRIARS FORMATION (Tf):** SILTY TO CLAYEY SANDSTONE, light gray, moist, moderately to strongly cemented, moderately hard. Breaks down into medium dense to very dense, fine to medium grained, SILTY to CLAYEY SAND.	SPT		22	29			
42									
43									
44									
45									
46		Light green.	CAL		50/5"	68			
47									
48									
49									
50									
51			SPT		66	86			
52		**BORING TERMINATED AT 51½ FEET**							
53									
54									
55									
56									
57									
58									
59									
60									

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-12

LOG OF BORING SB-8

Date Drilled: 6/27/2018
Equipment: CME-75 w/8-inch HSA
Elevation (ft): 665

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**<u>FILL (Qf):</u>** CLAYEY SAND, loose to medium dense, greenish brown to brown, moist, fine to coarse grained, few gravel, trace cobble.		☒					
1									
2									SA EI
3									
4									
5		Medium dense, reddish brown.	CAL		30	25			
6									
7									
8									
9									
10		Dense, brown to reddish brown.	CAL		50	42			
11									
12									
13									
14									
15		Medium dense.	CAL		15	13			
16									
17									
18									
19			CAL		24	20			
20		**BORING TERMINATED AT 20 FEET**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-13

LOG OF BORING SB-9

Date Drilled: 6/28/2018
Equipment: CME-95 w/8-inch HSA
Elevation (ft): 664

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**FILL (Qf):** CLAYEY SAND, loose to medium dense, light brown, moist, fine to coarse grained, trace gravel, trace cobbles.		☒					
1									
2									EI
3									
4									
5		Medium dense, light brown to greenish brown, few gravel.	SPT		20	26			
6									
7									
8									
9									
10		Greenish brown.	CAL		35	30	17.6	104.5	
11									
12									
13		Trace cobbles.							
14									
15		Dense.	SPT		25	33			
16									
17									
18									
19									
20									

BORING CONTINUED ON I-15

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-14

LOG OF BORING SB-9 (continued)

Date Drilled: 6/28/2018
Equipment: CME-95 w/8-inch HSA
Elevation (ft): 664

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
21	SC	**FILL (Qf):** CLAYEY SAND, dense, light brown to light greenish brown, moist, fine to coarse grained, few gravel, trace cobbles.	CAL		51	43			
22									
23									
24									
25		Medium dense, greenish brown.							
26			SPT		22	29			
27									
28									
29									
30									
31			CAL		29	25	21.1	99.5	
32									
33									
34									
35									
36			SPT		15	20			
37									
38									
39									
40		**BORING CONTINUED ON I-16**							

SCST, Inc.

Bernardo Center Drive San Diego, California			
By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-15

LOG OF BORING SB-9 (continued)

Date Drilled: 6/28/2018
Equipment: CME-95 w/8-inch HSA
Elevation (ft): 664

Logged by: EMW
Reviewed by: JG
Depth to Groundwater (ft): Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
41	CL	**FILL (Qf):** SANDY CLAY, very stiff, greenish brown, moist, fine to coarse grained, trace gravel, trace cobbles.	CAL		36	31	20.4	105.0	
42									
43									
44									
45									
46			SPT		14	18			
47									
48									
49									
50		Hard, light greenish brown.	CAL		50/4"	>50			
51		**BORING TERMINATED AT 51 FEET**							
52									
53									
54									
55									
56									
57									
58									
59									
60									

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-16

LOG OF BORING SB-10

Date Drilled:	6/27/2018	Logged by:	EMW
Equipment:	CME-75 w/8-inch HSA	Reviewed by:	JG
Elevation (ft):	670	Depth to Groundwater (ft):	Not Encountered

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVEN	SAMPLES BULK	DRIVING RESISTANCE (blows/ft of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
	SC	**FILL (Qf):** CLAYEY SAND, loose to medium dense, light greenish brown, moist, fine to coarse grained, trace gravel, trace cobbles.		☒					
1									
2									SA
3									
4									
5		Light brown to light greenish brown.							
6			CAL		11	9	19.1	105.0	
7									
8									
9									
10		Greenish brown.							
11			SPT		14	18			
12									
13									
14									
15									
16			CAL		14	12	21.9	102.0	
17									
18		**FRIARS FORMATION (Tf):** SILTY TO CLAYEY SANDSTONE, light gray, moist, moderately to strongly cemented, moderately hard. Breaks down to medium dense to very dense, fine to medium grained SILTY to CLAYEY SAND.							
19			SPT		38	50			
20		**BORING TERMINATED AT 20 FEET**							

SCST, Inc.

Bernardo Center Drive
San Diego, California

By:	EMW	Date:	July, 2018
Job Number:	180176P4-3	Figure:	I-17

LOG OF TEST BORING B-1

Date Logged:	10/2/17	Equipment:	EZ Bore 120
Logged By:	DRR	Auger Type:	30" Bucket
Existing Elevation:	±661.0 feet	Drive Type:	0-27': 4,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0		▨	CL	**Artificial Fill (Qaf):** Olive brown, damp, medium stiff, SILTY CLAY with trace gravels to cobbles, upper 2' decmpacted.							
				Moist, very stiff.							
5											
						CK					
							▨				
10											
						CK					
15											
				Difficult drilling at 16 feet.							
20											
				SILTY CLAY.							
						CK					
				Dark brown.							
25											
				Olive brown.							
30											

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❜❜	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	JANUARY 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-1

CHRISTIAN WHEELER
ENGINEERING

LOG OF TEST BORING B-1 (Cont.)

Date Logged:	10/2/17	Equipment:	EZ Bore 120
Logged By:	DRR	Auger Type:	30" Bucket
Existing Elevation:	±661.0 feet	Drive Type:	27'-52': 3,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30		▨	CL	**Artificial Fill (Qaf):** Olive brown, moist, very stiff, SILTY CLAY.							
		▨	SC	White, moist, moist, medium dense to dense, very fine- to medium-grained, CLAYEY SAND.		CK					
		▨	CL	Olive brown, moist, medium dense to dense, SILTY CLAY.							
35		▨									
		▨				CK					
40		▨									
		▨				CK					
45		▨									
	❜❜	▨		Heavy seepage @ 48'							
		▨				CK					
50		▨			1	Cal					
55		▨									
		▨	CL	**Friars Formation (Tf):** Greenish-gray, moist, hard, SILTY CLAY with sand.							
60											

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❜❜	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	JANUARY 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-2

CHRISTIAN WHEELER
ENGINEERING

LOG OF TEST BORING B-1 (Cont.)

Date Logged:	10/2/17	Equipment:	EZ Bore 120
Logged By:	DRR	Auger Type:	30" Bucket
Existing Elevation:	±661.0 feet	Drive Type:	52'-78': 2,500 lb/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
60		▨	CL	**Friars Formation (Tf):** Greenish-gray, moist, hard, SILTY CLAY with sand.	10	Cal					
		▨				CK					
65		▨					▨				
70		▨				Cal*					
		▨			12	Cal					
75		▨									
		▨				CK					
80		▨				CK					
85		▨									
		▨				CK	▨				
90		▨			20	Cal	▨				

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
ʕʔ	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	JANUARY 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-3

CHRISTIAN WHEELER
ENGINEERING

LOG OF TEST BORING B-1 (Cont.)

Date Logged:	10/2/17	Equipment:	EZ Bore 120
Logged By:	DRR	Auger Type:	30" Bucket
Existing Elevation:	±661.0 feet	Drive Type:	78'-103': 1,000 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
90		▨	CL	**Friars Formation (Tf):** Greenish-gray, moist, hard, SILTY CLAY with sand.		CK	■				
		▨			30/10"	Cal	■				
		▨		Moist, very stiff.							
95		▨			25/10"	Cal					
100		▨			40/7"	Cal					
103				Boring terminated at 103 feet. Seepage from 48 to 58 feet. Caved to 53' overnight. Not downhole logged. Backfilled on 10/03/17.							
105											
110											
115											
120											

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❞	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	JANUARY 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-4

CHRISTIAN WHEELER
ENGINEERING

GEOCON ①
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE Wellington Property DATE 10-6-17
LOCATION FEATURE
EQUIPMENT TYPE EZBore 120 30-inch Bucket REF. EL. 658 DATUM MSL
DRILLING CONTRACTOR DRILLER Dave's Drilling GEOLOGIST/ENGR. EVANS
SAMPLE HAMMER: WT. DROP TYPE

BORING/TRENCH NO. B2

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY ☐
TWO—WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			0		COMPACTED FILL
			2		STIFF, MOIST, olive GREEN AND BROWN, SILTY/SANDY
			4		CLAY (CL/CH); MIXTURE F SILTY TO CLAYEY
			6		SAND W/COBBLES/GRAVEL, CLAYSTONE FRAGMENTS
650			8		(BASE F SLIDE SURFACE @ 650 ON GEOCON BERNARDO CENTER DRIVE REPAIR)
			10		
			12		(BASE F SLIDE SURFACE @ 645 ON 1981 FAILURE)
			14		
			16		
640			18		
			20		
			22		
			24		
			26		
630			28		
			30		

DRAFT

SAMPLE SYMBOLS
☐ — SAMPLING UNSUCCESSFUL
☒ — DISTURBED OR BAG SAMPLE
◧ — STANDARD PENETRATION TEST
◪ — CHUNK SAMPLE
■ — DRIVE SAMPLE (UNDISTURBED)
▼ — WATER TABLE OR SEEPAGE

E-103

GEOCON
INCORPORATED ②

FILE NO. G2199-32-01 PROJECT TITLE Wellington PROPERTY DATE 10-6-17
LOCATION FEATURE
EQUIPMENT TYPE REF. EL. DATUM
DRILLING CONTRACTOR DRILLER GEOLOGIST/ENGR.
SAMPLE HAMMER: WT. DROP TYPE

BORING/TRENCH NO. B2 (CONT)

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY ☐
TWO—WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			30		COMPACTED FILL CONTINUED
			32		
			34		
			36		
620			38		
			40		
			42		
			44		
			46		DRAFT
	610		48		
			50		
			52		
			54		WAXY CLAYSTONE
			56		59'
①	600		58		FRIARS FORMATION (OVERCONSOLIDATED CLAYSTONE) HARD, DAMP, LT GREEN, SILTY CLAYSTONE (CL/CH); WAXY AND SLIGHTLY FRACTURED/BLOCKY, SHINY PARTING SURFACES WITH SLIGHT MOISTURE ALONG SURFACES, SLIGHTLY BRITTLE
			60		

SAMPLE SYMBOLS
☐ --- SAMPLING UNSUCCESSFUL
☒ --- DISTURBED OR BAG SAMPLE
◧ --- STANDARD PENETRATION TEST
◪ --- CHUNK SAMPLE
■ --- DRIVE SAMPLE (UNDISTURBED)
▼ --- WATER TABLE OR SEEPAGE

GEOCON ③
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE Wellington Property DATE 10-6-17
LOCATION ______ FEATURE ______
EQUIPMENT TYPE ______ REF. EL. ______ DATUM ______
DRILLING CONTRACTOR ______ DRILLER ______ GEOLOGIST/ENGR. ______
SAMPLE HAMMER: WT. ______ DROP ______ TYPE ______

DRAFT

BORING/TRENCH NO. B2 (CONT)

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY ☐
TWO—WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
②			60		THROUGHGOING FRACTURE FROM 60.7 TO 61.8 FEET (40°; N65W);
BRITTLE DEFORMATION FEATURES			62		IRREGULAR ORIENTATION, PAPER THIN MOIST CLAY ALONG SURFACE, NO REMOLDING, SLIGHT SEEPAGE ALONG FRACTURE
③			64		DISCONTINUOUS FRACTURE AT 64 FEET (45°; S10W); EXPOSED IN 1/4 OF THE BORING THEN DIES OUT, SLIGHT
			66		MOISTURE ALONG FRACTURE
590			68		- BECOMES LESS WAXY AND BLOCKY AT 66 FEET, VERY COMPETENT
④			70		SEVERAL SUBPARALLEL DISCONTINUOUS FRACTURES@71.5' (60°; S40W);
			72		EXPOSED IN WESTERN 1/3 OF THE BORING, PAPER THIN MOIST CLAY FILM ALONG FRACTURES, NO REMOLDING, IRREGULAR
			74		ORIENTATION, BLOCKY TEXTURE, SLIGHTLY WAXY
⑤			76	▽	THROUGHGOING FRACTURE FROM 72.4 TO 74 FEET (34°; N55W); PAPER THIN MOIST CLAY FILM ALONG FRACTURE, NO REMOLDING,
580			78		SLIGHTLY FISSURED AND WAXY FOR 1 FOOT BELOW FRACTURE - BECOMES LESS FRACTURED AND VERY COMPETANT AT 75 FEET
578 ⑥			80		- SLIGHT SEEP ALONG FRACTURE @ 77 FEET ZONE OF FRACTURING FROM 80.5 TO 83 FEET (42°; N22E);
576			82		1" TO 10" THICK ZONE OF MULTIPLE IRREGULARLY ORIENTED FRACTURES CONTAINED IN A MODERATELY FISSURED CLAYSTONE,
574			84		SOME MOIST CLAY FILMS, SHINY PARTING SURFACES, SOME APPARENT GROOVING/MINOR STRIAE ALONG SHINY PARTING
572 ⑦			86		SURFACE IN DARK BLUE-GREEN CLAYSTONE - BECOMES VERY COMPETANT BELOW 83 FEET
570			88		THROUGHGOING FRACTURE FROM 87.5 TO 89 FEET (26°; S72W); IRREGULAR ORIENTATION, VERY COMPETENT ABOVE AND BELOW, CLAY FILM ALONG
568			90		FRACTURE W/NO REMOLDING, SECONDARY DISCONTINUOUS FRAC. BELOW FROM 87.5 TO 89 (24°, N20E), VERY TIGHT

SAMPLE SYMBOLS
☐ --- SAMPLING UNSUCCESSFUL
☒ --- DISTURBED OR BAG SAMPLE
◨ --- STANDARD PENETRATION TEST
◪ --- CHUNK SAMPLE
■ --- DRIVE SAMPLE (UNDISTURBED)
▽ --- WATER TABLE OR SEEPAGE

LOG OF TEST BORING B-3

Date Logged:	11/8/17	Equipment:	EZ Bore 120
Logged By:	DRR	Auger Type:	30" Bucket
Existing Elevation:	658.0 feet	Drive Type:	0-27': 4,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0		▨	CL	**Artificial Fill (Qaf):** Greenish-brown, dry, medium stiff, SANDY CLAY with gravels and cobbles.							
		▨		Moist, stiff.							
5		▨									
10		▨									
15		▨		Very moist.							
		▨		✓		CK					
20		▨									
25		▨									
30		▨									

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❜❜	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	JANUARY 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-9

CHRISTIAN WHEELER
ENGINEERING

LOG OF TEST BORING B-3 (Cont.)

Date Logged:	11/8/17	Equipment:	EZ Bore 120
Logged By:	DRR	Auger Type:	30" Bucket
Existing Elevation:	658.0 feet	Drive Type:	27'-52': 3,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30		▨	CL	**Artificial Fill (Qaf):** Greenish-brown, very moist, stiff, SANDY CLAY with gravels and cobbles.							
35	❞	▒	SM	Light brown, very moist, medium dense, very fine- to medium-grained, SILTY SAND with clay and gravels/cobbles. Heavy seepage at 35 feet and caving.		CK					
				Boring terminated at 37 feet. Seepage at 35 feet. Not downhole logged. Backfilled on 11/08/2017							
40											
45											
50											
55											
60											

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❞	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	JANUARY 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-10

CHRISTIAN WHEELER
ENGINEERING

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE Wellington PROPERTY DATE 11-9-17
LOCATION ______ FEATURE ______
EQUIPMENT TYPE EZ BORE 120 REF. EL. 656 DATUM ______
DRILLING CONTRACTOR ______ DRILLER DAVES DRILLING GEOLOGIST/ENGR. DBE
SAMPLE HAMMER: WT. ______ DROP ______ TYPE ______

BORING/TRENCH NO. B4

DRAFT

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY .... ☐
TWO—WAY COMMUNICATION .... ☐
COLLAR IN PLACE .... ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			0		COMPACTED FILL
			2		STIFF, MOIST TO VERY MOIST, OLIVE BROWN, SILTY CLAY (CL/CH); SOME SANDY ZONES, SPORADIC COBBLES/GRAVEL
			4		
			6		
			8		
	646 —		10		- BECOMES MARBLED W/ DARK BROWN CLAY AND WHITE SAND AT 10 FEET
			12		STND FILL FORE CUT
			14		- SHARP CONTACT FROM 13.5 TO 15.0; 32°, N89W
			16		FRIARS FORMATION VERY DENSE, DAMP, LT. GREY, SILTY F-M SANDSTONE (SM); MICACEOUS, SLIGHTLY BLOCKY, MODERATELY CEMENTED
			18		
	636 —		20		- SERIES OF OVAL SHAPED, 1 FOOT LONG CONCRETIONS FROM 16.5 TO 21 FEET
			22	▽	- BORING SIDEWALLS BECOME MOIST W/ SLIGHT SEEPAGE @ 22 FEET
			24		- SHARP IRREGULAR CONTACT FROM 22.5 TO 23.5 VERY DENSE, DAMP TO MOIST, BLUISH GREEN, F-M SANDY SILTSTONE/SILTY F-M SANDSTONE (ML/SM); VERY COMPETENT, RIP-UP CLASTS ABOVE CONTACT
			26		
			28		SEE NEX PAGE (OVERLAP IN LOG)
	626 —		30		

SAMPLE SYMBOLS
☐ --- SAMPLING UNSUCCESSFUL
☒ --- DISTURBED OR BAG SAMPLE
◧ --- STANDARD PENETRATION TEST
◩ --- CHUNK SAMPLE
■ --- DRIVE SAMPLE (UNDISTURBED)
▽ --- WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE Wellington Property DATE 11-9-17
LOCATION FEATURE
EQUIPMENT TYPE REF. EL. 656 DATUM
DRILLING CONTRACTOR DRILLER GEOLOGIST/ENGR. DBE
SAMPLE HAMMER: WT. DROP TYPE

BORING/TRENCH NO. B4 (CONT)

METHANE LEVEL %
OXYGEN LEVEL %

DRAFT

CHECK: AIR SUPPLY ☐
TWO—WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			26		
			28	▼	-IRREGULAR-SHAPED WHITE SILTY SANDSTONE CHANNEL INFILL WITH ORANGE BANDING FROM 27.5 TO 28.6; MODERATE SEEPAGE AT BASE OF CHANNEL -SHARP IRREGULAR CONTACT 40°, N80W
	626 —		30		HARD, DAMP, BLUISH GREEN, FINE SANDY SILTSTONE (ML) 1/4-INCH TO 5-INCH THICK, ORANGE, FISSURED CLAYSTONE BAND FROM 28.6 TO 29.9; 24°, S65E, SOFT CLAY ALONG FISSURE SURFACES FROM SEEPAGE, SHINEY PARTING SURFACES, NO REMOLDING
			32		31'
			34		HARD, DAMP, BLUISH GREEN, SILTY CLAYSTONE (CL); HIGHLY FISSURED, WAXY WITH SHINEY PARTING SURFACES, MODERATE CAVING BELOW 31 FEET
			36		
			38		
	616 —		40		- ZONE OF HEAVY FISSURING FROM 33 TO 35 FEET; MULTIPLE PLANAR SURFACES IN WAXY CLAYSTONE BAND, MAIN UPPER BOUNDARY/PLANE 35°, N80W, LOWER BOUNDARY/PLANE 26°, N78E, SEEPAGE ALONG PLANES, SHINEY PARTING SURFACES, NO REMOLDING, IRREGULAR THICKNESS
					DOWN HOLE LOGGED TO 35' DUE TO CAVING

SAMPLE SYMBOLS
☐ — SAMPLING UNSUCCESSFUL
◧ — STANDARD PENETRATION TEST
■ — DRIVE SAMPLE (UNDISTURBED)
☒ — DISTURBED OR BAG SAMPLE
◩ — CHUNK SAMPLE
▼ — WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE WELLINGTON PROPERTY DATE 11-14-17
LOCATION ______ FEATURE ______
EQUIPMENT TYPE EZ BORE 120 REF. EL 655 DATUM ______
DRILLING CONTRACTOR ______ DRILLER DAVES DRILLING GEOLOGIST/ENGR. DBE
SAMPLE HAMMER: WT. ______ DROP ______ TYPE ______

DRAFT

BORING/TRENCH NO. B5

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY .... ☐
TWO—WAY COMMUNICATION .... ☐
COLLAR IN PLACE .... ☐

SAMPLE SP.-STD.PEN B. -BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
①			0		COMPACTED FILL
			2		STIFF, MOIST TO VERY MOIST, OLIVE GREEN AND BROWN, SILTY/SANDY CLAY (CL/CH); SOME SILTY SAND ZONES, SPORADIC COBBLES/GRAVEL
			4		
			6		
			8		
645			10		
			12		
			14		
			16		
			18		
635			20		
			22		
			24		
			26		
			28		
625			30		

SAMPLE SYMBOLS
☐ — SAMPLING UNSUCCESSFUL
☒ — DISTURBED OR BAG SAMPLE
◧ — STANDARD PENETRATION TEST
◩ — CHUNK SAMPLE
■ — DRIVE SAMPLE (UNDISTURBED)
▼ — WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. 62199-32-01 PROJECT TITLE Wellington Property DATE 11-14-17
LOCATION ______ FEATURE ______
EQUIPMENT TYPE ______ REF. EL. ______ DATUM ______
DRILLING CONTRACTOR ______ DRILLER ______ GEOLOGIST/ENGR. ______
SAMPLE HAMMER: WT. ______ DROP ______ TYPE ______

DRAFT

BORING/TRENCH NO. B5 (CONT)

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY .... ☐
TWO—WAY COMMUNICATION .... ☐
COLLAR IN PLACE .... ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R.-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
625 ②			30		COMPACTED FILL CONTINUED
			32		
			34		
			36		
			38		
615			40		
			42		
			44		
			46		
			48		
605			50		SHARP CONTACT FROM 50.2 TO 50.5; NEAR HORIZONTAL
			52		FRIARS FORMATION HARD, DAMP, GREEN W/MAROON MOTTLING, SILTY CLAYSTONE (CL); SLIGHTLY WAXY AND BLOCKY
			54		HIGH ANGLE FRACTURE SET FROM 50.5 TO 52.3 (22°, S60W); SECONDARY FRACTURE IS 8" BELOW AND CUTS UPPER FRACTURE, NO CLAY
			56		GRADES TO VERY HARD, DAMP, GREEN, SANDY SILTSTONE W/CLAY (ML)
			58	▼	GRADES TO DENSE, DAMP TO MOIST, LT GREY SILTY SANDSTONE (SM) - SLIGHT SEEPAGE AT 59.5
595			60		

SAMPLE SYMBOLS
☐ — SAMPLING UNSUCCESSFUL
☒ — DISTURBED OR BAG SAMPLE
◧ — STANDARD PENETRATION TEST
◪ — CHUNK SAMPLE
■ — DRIVE SAMPLE (UNDISTURBED)
▼ — WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE WELLINGTON PROPERTY DATE 11-14-17
LOCATION _____ FEATURE _____
EQUIPMENT TYPE _____ REF. EL _____ DATUM _____
DRILLING CONTRACTOR _____ DRILLER _____ GEOLOGIST/ENGR. _____
SAMPLE HAMMER: WT. _____ DROP _____ TYPE _____

BORING/TRENCH NO. B5 (CONT)

DRAFT

METHANE LEVEL _____ %
OXYGEN LEVEL _____ %

CHECK: AIR SUPPLY ☐
TWO—WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
595 ③			60		SHARP IRREGULAR CONTACT FROM 60.5 TO 60.9
					HARD, DAMP, GREEN W/MAROON MOTTING, SILTY CLAYSTONE (CL/CH); MODERATELY FISSURED, WAXY W/SHINY PARTING SURFACES, SLIGHT SEEPAGE ALONG PLANAR SURFACES
			62		
			64		-FISSURING DIMINISHES AT 63 FEET, VERY HARD AND LESS WAXY -PROMINENT FISSURE SURFACE @ 64.2; 25°, N70E -PROMINENT FISSURE SURFACE @ 65.7; 35°, S5E
			66		-SOME CAVING/CALVING ALONG FISSURE BLOCKS @ 67 FEET
			68		
585			70		
583			72		ZONE OF HEAVY FISSURING FROM 72 TO 77 FEET; MULTIPLE INTERSECTING PLANAR SURFACES IN WAXY CLAYSTONE, MODERATE CAVING/CALVING OF BLOCKS, MULTIPLE SUBPARALLEL PLANAR SURFACES AT 74' (50, S88W)
581			74		
579			76		
578					VERY HARD, DAMP, GREEN W/MAROON MOTTING, SILTY CLAYSTONE (CL); VERY COMPETENT, GUN BARREL APPEARANCE
			78		
575			80		- GRADES BACK AND FORTH BETWEEN CLAYSTONE/SILTSTONE FROM 80 TO 92
			82		
			84		
570					
			86		
			88		
565			90		

SAMPLE SYMBOLS
☐ — SAMPLING UNSUCCESSFUL
☒ — DISTURBED OR BAG SAMPLE
◧ — STANDARD PENETRATION TEST
◪ — CHUNK SAMPLE
■ — DRIVE SAMPLE (UNDISTURBED)
▽ — WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE Wellington Property DATE 11-14-17
LOCATION ________ FEATURE ________
EQUIPMENT TYPE ________ REF. EL. ________ DATUM ________
DRILLING CONTRACTOR ________ DRILLER ________ GEOLOGIST/ENGR. ________
SAMPLE HAMMER: WT. ________ DROP ________ TYPE ________

BORING/TRENCH NO. B5 (CONT)

DRAFT

METHANE LEVEL ________ %
OXYGEN LEVEL ________ %

CHECK: AIR SUPPLY .... ☐
TWO—WAY COMMUNICATION .... ☐
COLLAR IN PLACE .... ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
④ 565			90		
			92		- ZONE OF MODERATE FISSURING FROM 92 TO 93.5, WAXY W/ SPS - CONTINUOUS HIGH ANGLE FRACTURE FROM 92 TO 94 FEET (20°N40W); SOME SOFT CLAY ALONG FRACTURE, NO REMOLD
			94		
			96		- GRADES BACK AND FORTH BETWEEN CLAYSTONE & SILTSTONE (CL/ML)
			98		- CONCRETIONARY FRAGMENTS FROM 97 TO 98.5 FEET - VERY DENSE, CEMENTED W/ GUN BARREL APPEARANCE BELOW 98.5'
545			100		
			102		
			104		
			106		
					BORING TERMINATED AT 107 FEET

SAMPLE SYMBOLS
☐ — SAMPLING UNSUCCESSFUL
☒ — DISTURBED OR BAG SAMPLE
◧ — STANDARD PENETRATION TEST
◩ — CHUNK SAMPLE
■ — DRIVE SAMPLE (UNDISTURBED)
▽ — WATER TABLE OR SEEPAGE

LOG OF TEST BORING B-6

Date Logged:	4/2/18	Equipment:	EZ Bore 120
Logged By:	DJF/DRR	Auger Type:	30" Bucket
Existing Elevation:	659.0.0 feet	Drive Type:	0-27': 4,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0		▨	CL	**Artificial Fill (Qaf):** Olive brown, damp, medium stiff, SANDY CLAY with gravels							
		▨		Moist, very stiff.							
5		▨									
10		▨									
15		▨									
		▨	CL	Greenish-brown, moist, very stiff, SILTY CLAY with sand.							
20		▨									
25		▨									
			GM	**Landslide Debris (Qls):** Orangish-brown, very moist, very dense, SILTY GRAVELS with sand (Stadium Conglomerate Derived Landslide Debris). Seepage at 27 feet.							
	❞										
30											

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❞	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	APRIL 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-19

CHRISTIAN WHEELER
ENGINEERING

LOG OF TEST BORING B-6 (Cont.)

Date Logged:	4/2/18	Equipment:	EZ Bore 120
Logged By:	DJF/DRR	Auger Type:	30" Bucket
Existing Elevation:	659.0 feet	Drive Type:	27'-52': 3,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30			GM	**Landslide Debris (Qls):** Orangish-brown, very moist, very dense, SILTY GRAVELS with sand (Stadium Conglomerate Derived Landslide Debris).	4/12"	Cal	▨				
35											
				Boring terminated at 37 feet. Seepage at 27 feet. Boring caved to 30'. Not downhole logged. Backfilled on 4/2/18/							
40											
45											
50				.							
55											
	ʻʻ										
60											

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
ʻʻ	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	APRIL 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-20

CHRISTIAN WHEELER
ENGINEERING

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE WELLINGTON PARCEL DATE 4/2/18
LOCATION FEATURE
EQUIPMENT TYPE REF. EL 660 DATUM
DRILLING CONTRACTOR DRILLER GEOLOGIST/ENGR.
SAMPLE HAMMER: WT. DROP TYPE

BORING/TRENCH NO. B7

METHANE LEVEL ____ %
OXYGEN LEVEL ____ %

CHECK: AIR SUPPLY ☐
TWO-WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

DRAFT

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			0		COMPACTED FILL
			2		STIFF, MOIST, GREYISH BLACK TO GREEN, F-M SANDY CLAY (CL/CH); SOME POCKETS OF SILTY SAND
			4		
			6		
CL/CH			8		
			10		
			12		NEAR HORIZONTAL CONTACT AT 17.6 FEET
			14		LANDSLIDE DEBRIS VERY STIFF TO HARD, DAMP, OLIVE GREEN, SILTY CLAY (CL); ONE-FOOT-THICK CONTORTED ORANGE/TAN SAND LENS BELOW CONTACT, DARK BROWN CLAY MARBLING, SOME BRECCIATION AND CRUMBLY APPEARANCE IN CLAY, CALCIUM CARBONITE PODS
			16		
			17.6 18		
CL			20	▽	BASAL SLIP SURFACE FROM 21 TO 23.2 FEET (34°, S70E); 1 TO 2-INCH-THICK, SOFT, VERY MOIST, SILTY CLAY GOUGE, MODERATELY REMOLDED, CALCIUM CARBONATE VEINING, ROLL-UP CLASTS, SLIGHT SEEPAGE ALONG CONTACT IN EAST THIRD OF BORING
638 ELV.			22		
			24		FRIARS FORMATION HARD, DAMP, GREEN, SILTY CLAYSTONE (CL/CH); VERY COMPETENT, SLIGHTLY FRACTURED BELOW CONTACT
ML/SM WELL CEMENTED			26		-GRADES TO V. HARD FINE SANDY SILTSTONE AT 24 FEET (ML)
			28	▼	-GRADES TO V. DENSE F. SANDY SILTSTONE/SILTY SANDSTONE AT 25 FEET, SOME CONCRETIONS, GUN BARREL APPEARANCE, WELL CEMENTED, LOW ANGLE BEDDING, CHANNEL, MOD. SEEPAGE SHARP, IRREGULAR CONTACT FROM 28 TO 29.8 FEET 26°, S75W
			30		

SAMPLE SYMBOLS
☐ ... SAMPLING UNSUCCESSFUL
☒ ... DISTURBED OR BAG SAMPLE
◧ ... STANDARD PENETRATION TEST
◪ ... CHUCK SAMPLE
■ ... DRIVE SAMPLE (UNDISTURBED)
▼ ... WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. PROJECT TITLE DATE
LOCATION FEATURE
EQUIPMENT TYPE REF. EL 660 DATUM
DRILLING CONTRACTOR DRILLER GEOLOGIST/ENGR.
SAMPLE HAMMER: WT. DROP TYPE

BORING/TRENCH NO. B7 (CONT)

METHANE LEVEL %
OXYGEN LEVEL %

CHECK: AIR SUPPLY ☐
TWO-WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE (SP.-STD.PEN, B.-BAG, CK-CHUNK, R-RING)	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			30		HARD, DAMP, OLIVE GREEN, SILTY CLAYSTONE (CL/CH); MODERATELY FISSURED / FRACTURED, SEEPAGE ALONG FRACTURES; SLIGHT TO MODERATE CAVING IN EAST SIDE OF BORING, SEEPAGE ALSO EMINATING FROM SANDSTONE ABOVE, 1-INCH-THICK SOFT CLAY AT BASE OF SANDSTONE IN 1/3 OF BORING
CL/CH FISSURED			32		
630 ELV. ←			34		ZONE OF REMOLDING IN WEST HALF OF BORING FROM 29.5 TO 30.6;
			36		ONE INCH THICK TO FIVE INCH THICK ZONE OF RAMDOMLY ORIENTED PLANES OF SLIGHTLY REMOLDED CLAY GOUGE
			38		- VERY HARD AND COMPETENT WITH NO FISSURING BELOW 33 FEET
			40		
			42		
			44		
			46		- LOWER 4 FEET HIGHLY FISSURED IN 1/4 OF BORING, SLIGHT CAVING
			48		
			50		BORING TERMINATED AT 50 FEET

DRAFT

SAMPLE SYMBOLS
☐ ... SAMPLING UNSUCCESSFUL
☒ ... DISTURBED OR BAG SAMPLE
◧ ... STANDARD PENETRATION TEST
◪ ... CHUNK SAMPLE
■ ... DRIVE SAMPLE (UNDISTURBED)
▼ ... WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. 62199-32-01 PROJECT TITLE Wellington Parcel L DATE 4-3-18
LOCATION ______ FEATURE ______
EQUIPMENT TYPE ______ REF. EL 657 DATUM ______
DRILLING CONTRACTOR ______ DRILLER ______ GEOLOGIST/ENGR. DBE
SAMPLE HAMMER: WT. ______ DROP ______ TYPE ______

BORING/TRENCH NO. B8

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY ☐
TWO-WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			0		COMPACTED FILL
					STIFF, MOIST TO V. MOIST, GREYISH BLACK TO GREEN,
			2		SILTY TO SANDY CLAY (CL/CH); SOME COBBLES
			4		AND POCKETS OF SILTY SAND
			6		
			8		
			10		
			12		
			14		
CL/CH					
			16		
					SHARP, NEAR HORIZONTAL CONTACT AT 17 FEET
			18		LANDSLIDE DEBRIS
					DENSE, MOIST, ORANGE-BROWN CLAYEY F-M SANDY GRAVEL/
GC			20		COBBLE CONGLOMERATE (GC); POCKETS OF ORANGE SOFT
					CLAY (CL)
			22		BASAL SLIP ZONE FROM 19.5 TO 23 FEET (56° EAST); 6-INCH
634 ELV.					THICK ZONE OF DARK GREEN PULVARIZED CLAYSTONE, POORLY REMOLDED,
			24	▼	CALCIUM CARBONATE PODS, CONTACT 19.5 TO 23 FEET
SM					FRIARS FORMATION
			26		DENSE, DAMP, LIGHT GREY SILTY F-M SANDSTONE (SM);
630 ELV.					FRACTURED AND BLOCKY, UPPER 24-INCHES SLIDE AFFECTED
					- MODERATE SEEPAGE AT 23 TO 24 FEET
CL/CH			28		- DOWN HOLE LOGGED TO 26 FEET
FISSURED					- HEAVY CAVING AND COLLAPSE BELOW 27 FEET IN FISSURED
			30		CLAYSTONE

DRAFT

SAMPLE SYMBOLS
☐ ... SAMPLING UNSUCCESSFUL
☒ ... DISTURBED OR BAG SAMPLE
◧ ... STANDARD PENETRATION TEST
◩ ... CHUCK SAMPLE
■ ... DRIVE SAMPLE (UNDISTURBED)
▼ ... WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE Wellington Parcel DATE 4/4/18
LOCATION FEATURE
EQUIPMENT TYPE REF. EL 645 DATUM
DRILLING CONTRACTOR DRILLER GEOLOGIST/ENGR.
SAMPLE HAMMER: WT. DROP TYPE

BORING/TRENCH NO. B9

METHANE LEVEL %
OXYGEN LEVEL %

CHECK: AIR SUPPLY ☐
TWO-WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

DRAFT

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			0		COMPACTED FILL
			2		STIFF, MOIST TO V. MOIST, GREYISH BLACK TO GREEN, SILTY TO SANDY CLAY (CL/CH); SOME COBBLES AND POCKETS OF SILTY SAND
			4		
CL/CH			6		
			8		
			10		IRREGULAR AND NEAR HORIZONTAL CONTACT FRIARS FORMATION
			12		VERY DENSE, DAMP, LIGHT GREY W/LIGHT BROWN, SILTY F-M SANDSTONE (SM); WELL CEMENTED, MASSIVE WITH SOME F-VC ZONES, CONCRETIONARY FRAGMENTS
CEMENTED			14		
SM			16		- HIGH ENERGY DEPOSITION ZONE FROM 16 TO 18 FEET; ABUNDANT CLAYSTONE RIP-UP CLASTS WITH VERY COARSE SAND FRAGMENTS, HIGHLY CEMENTED
			18		
			20	▼	- SLIGHT SEEPAGE AT 20 FEET - MODERATE SEEPAGE AT 22 FEET; ORANGE & MAROON CLAYSTONE RIP-UPS
			22		IRREGULAR CONTACT HARD, DAMP, GREEN, SILTY CLAYSTONE (CL/CH); BLOCKY AND FISSURED, SLIGHT TO MODERATE CAVING
CH W/			24		BEDDING PLANE SHEAR AT 26 FEET; PAPER THIN TO 2-INCH THICK SOFT REMOLDED PLASTIC CLAY GOUGE, IRREGULAR THICKNESS, THROUGHGOING BUT PAPERTHIN IN AREAS, UNDULATORY AND LOW ANGLE (<30), GENERALLY HORIZONTAL
BPS 619 ELV			26		
			28		VERY HARD, DAMP, BLUE-GREEN, SILTY CLAYSTONE (CL); GUN BARREL APPEARANCE
			30		

SAMPLE SYMBOLS
☐ ... SAMPLING UNSUCCESSFUL
☒ ... DISTURBED OR BAG SAMPLE
◧ ... STANDARD PENETRATION TEST
◪ ... CHUCK SAMPLE
■ ... DRIVE SAMPLE (UNDISTURBED)
▼ ... WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. ______ PROJECT TITLE Wellington Parcel DATE 4/4/18

LOCATION ______ FEATURE ______

EQUIPMENT TYPE ______ REF. EL 645 DATUM ______

DRILLING CONTRACTOR ______ DRILLER ______ GEOLOGIST/ENGR. ______

SAMPLE HAMMER: WT. ______ DROP ______ TYPE ______

BORING/TRENCH NO. B9 (CONT)

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY ☐
TWO-WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			30		
					31.5
ML			32		VERY HARD, DAMP, BLUE-GREEN, FINE SANDY SILTSTONE (ML) BULLET AUGER REQUIRED
			34		-DOWN HOLE LOGGED TO 32 FEET-
			36		
			38		
			40		

DRAFT

SAMPLE SYMBOLS
☐ ... SAMPLING UNSUCCESSFUL
☒ ... DISTURBED OR BAG SAMPLE
◧ ... STANDARD PENETRATION TEST
◩ ... CHUCK SAMPLE
■ ... DRIVE SAMPLE (UNDISTURBED)
▼ ... WATER TABLE OR SEEPAGE

GEOCON
INCORPORATED

FILE NO. G2199-32-01 PROJECT TITLE Wellington PARCEL DATE 4/5/18
LOCATION ______ FEATURE ______
EQUIPMENT TYPE ______ REF. EL 660 DATUM ______
DRILLING CONTRACTOR ______ DRILLER ______ GEOLOGIST/ENGR. ______
SAMPLE HAMMER: WT. ______ DROP ______ TYPE ______

BORING/TRENCH NO. B10

METHANE LEVEL ______ %
OXYGEN LEVEL ______ %

CHECK: AIR SUPPLY ☐
TWO-WAY COMMUNICATION ☐
COLLAR IN PLACE ☐

SAMPLE SP.-STD.PEN B.-BAG CK-CHUNK R-RING	PENETRATION RESISTANCE BLOWS/FT.	SAMPLE NO.	DEPTH IN FEET	GROUNDWATER	MATERIAL DESCRIPTION
			0		COMPACTED FILL
					STIFF, MOIST, MOTTLED GREEN AND BROWN, F-M SANDY
			2		CLAY (CL/CH); SPORATIC COBBLES AND GRAVEL
			4		
			6		DRAFT
			8		
CL/CH					
			10		
			12		
					SHARP IRREGULAR CONTACT AT 13.7 FEET
— — —	— —	— —	14		LANDSLIDE DEBRIS
					DENSE, DAMP, ORANGE-TAN F-M SANDY COBBLE/GRAVEL
			16		CONGLOMERATE (GM); APPROX. 60% COBBLE/GRAVEL
GM					
			18		
— — —	— —	— —	20		
					SHARP CONTACT FROM 20.2 TO 21 FEET
			22		DENSE, MOIST, LT GREY WITH ORANGE BANDING, SILTY FINE
SM					TO MEDIUM SAND (SM); HIGH ANGLE FRACTURES WITH BROWN
			24	▼	CLAY WEBBING, OFF-SETTING BEDDING
					- DOWN HOLE LOGGED TO 24 FEET
					- HEAVY SEEPAGE AND CAVING IN NW SIDE OF BORING AT 24 FEET
			26		- ESTIMATED CONTACT 25° N40W FROM ABOVE
					CLAYSTONE AS OBSERVED FROM ABOVE
			28		- BASE OF SLIDE ESTIMATED AT 35 FEET OR 625 MSL
			30		BORING DRILLED TO 53 FEET

SAMPLE SYMBOLS
☐ ... SAMPLING UNSUCCESSFUL
☒ ... DISTURBED OR BAG SAMPLE
◧ ... STANDARD PENETRATION TEST
◪ ... CHUCK SAMPLE
■ ... DRIVE SAMPLE (UNDISTURBED)
▼ ... WATER TABLE OR SEEPAGE

LOG OF TEST BORING B-11

Date Logged:	4/5/18	Equipment:	EZ Bore 120
Logged By:	DJF/DRR	Auger Type:	30" Bucket
Existing Elevation:	651.0 feet	Drive Type:	0-27': 4,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0			CL	**Artificial Fill (Qaf):** Greenish-gray, damp, stiff, SANDY CLAY with gravels to cobbles.							
5				Moist, very stiff.			▨				
10				Brown, abundant gravels/cobbles at 9 to 11 feet.							
				Greenish-gray.							
15				Concrete debris at 14 feet. Difficult drilling.							
20											
25											
30											

Notes:

Symbol Legend

▽	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❟❟	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	APRIL 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-29

CHRISTIAN WHEELER
ENGINEERING

LOG OF TEST BORING B-11 (Cont.)

Date Logged:	4/5/18	Equipment:	EZ Bore 120
Logged By:	DJF/DRR	Auger Type:	30" Bucket
Existing Elevation:	651.0 feet	Drive Type:	27'-52': 4,500 lbs/12"
Proposed Elevation:	Unknown	Depth to Water:	Unknown

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk
SPT	Standard Penetration Test	DR	Drive Ring
ST	Shelby Tube		
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential	SD	Sample Density

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30			CL	**Artificial Fill (Qaf):** Greenish-gray, moist, very stiff, SANDY CLAY with gravels to cobbles.	3/12"	Cal					
35							▨				
40				Olive green, very moist, very stiff, SILTY CLAY. Contact dips N70°E, 18°	2/12"	Cal					
45			CL	**Friars Formation (Tf):** Olive green, moist, hard, SILTY CLAY, upper 12" disturbed.	4/12"	2/12"					
50					8/12"	Cal					
55				Boring terminated at 55 feet. No groundwater or seepage. Backfilled on 4/5/18.							
60											

Notes:

Symbol Legend

∇	Groundwater Level During Drilling
▼	Groundwater Level After Drilling
❞	Apparent Seepage
*	No Sample Recovery
**	Non-Representative Blow Count (rocks present)

WELLINGTON PROPERTY
APNs 678-252-10 AND 678-252-1, BERNARDO CENTER DRIVE
SAN DIEGO, CALIFORNIA

DATE:	APRIL 2018	JOB NO.:	2170587.01
BY:	SRD	FIGURE NO.:	A-30

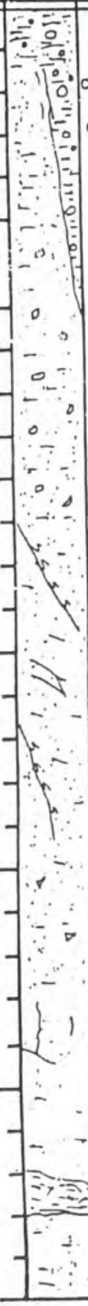
CHRISTIAN WHEELER
ENGINEERING

B2

696

GEOTECHNICAL BORING LOG

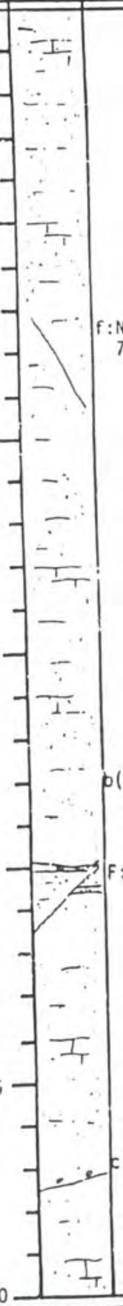
DATE 5-11-88 DRILL HOLE NO. B-2 SHEET 1 OF 3
PROJECT MPP/Bernardo Center Drive PROJECT NO. 4880341-01
DRILLING CO. Larive TYPE OF RIG Bucket
HOLE DIAMETER ±30" DRIVE WEIGHT 0-27';3,700 lbs/28'-55';2,600 lbs/56-80';1,400 lbs. DROP 12 IN.
ELEVATION TOP OF HOLE ±696' REF. OR DATUM Mean Sea Level

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY RI SAMPLED BY RI
0							CL	TOPSOIL/COLLUVIUM Reddish brown, moist to wet, soft to medium stiff sandy clay with abundant pebbles and cobbles, some thin roots (grass and shrubs at surface)
		c :N42E/ 68E gradational					SM/CL	LANDSLIDE DEPOSITS @ 3' Sheared contact between light brown, damp to moist, dense, silty fine to medium sand on westerly side and dark brown, wet, medium stiff sandy clay with abundant cobbles on east side
5								
							SM	@ 7' Yellow-brown, wet, medium dense to dense, silty sand with abundant dark brown streaks and mottling (partially decayed organics?), some light brown silt clasts, jumbled in appearance
			①					REMOVED
10								@ 10' Light yellow-brown, moist medium dense to dense, silty fine to medium sand, micaceous, some partially decayed roots, jumbled in appearance, somewhat punky
			1	2	108.8	17.3		
		s:N43E/ 56E						@ 12' Zones/patches of dark brown sandy clay @ 12' Poorly developed shear or infilled fracture
15		b:N20E/ 13E						@ 15' Brown-olive, moist, dense, silty fine to medium sand, micaceous, some black mineral stain, moderately to highly fractured @ 15' Moderately inclined (disturbed) bedding
		cs:N32E/ 80E						@ 17' Smooth shiny polished shear with ±1/16 inch remolded clay
20								@ 20' Light yellow-olive, damp to moist, dense, silty sand, some angular chunks of gray silt
			2	4	110.5	17.1		
								@ 23' Some near-vertical streaks of dark brown discoloration, abundant orange iron oxide stain @ 24' Yellow-gray, moist, dense, silty fine to very coarse sand, moderately friable, some irregular patches of dark brown clayey sand @ 24' A 1/4-inch thick shear or fracture
25		s/f:N26W/ 61E					CL-Ch	Rupture Surface: @ 27' A 1-foot thick zone of olive and dark brown, wet, soft to medium stiff sandy silt/clay, highly fractured, jumbled, punky, brown material appears to be organic debris, top of zone is irregular to undulatory, remolded clay generally not apparent, spalls easily. Bottom of zone irregular to undulatory and approximately horizontal
		RS :N52E/ 15E	②	ELV. 668				
							SM-ML	FRIARS FORMATION @ 28' Very sharp contact with underlying light olive damp, very dense, very silty fine sand, well indurated, only slightly fractured, massive, very coherent
30								

GEOTECHNICAL BORING LOG

DATE 5-11-88	DRILL HOLE NO. B-2	SHEET 2 OF 3	
PROJECT MPP/Bernardo Center Drive		PROJECT NO. 4bd-341-01	
DRILLING CO. Larive		TYPE OF RIG Bucket	
HOLE DIAMETER ±30"	DRIVE WEIGHT 0-27';3,700 lbs/28'-55';2,600 lbs/ 56-80': 1,400 lbs.	DROP 12 IN.	
ELEVATION TOP OF HOLE ±696'	REF. OR DATUM Mean Sea Level		

LOGGED BY RI
SAMPLED BY RI

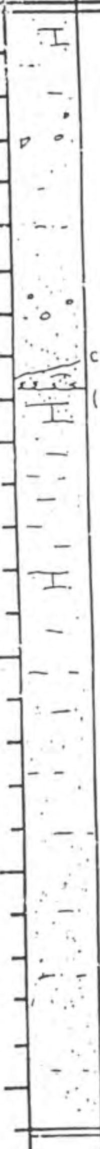
DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			3	14	117.4	12.7	SM-ML	FRIARS FORMATION (Cont.d) @ 30' Light olive, damp, very dense, very silty fine sand finely micaceous, well indurated, slower drilling, only slightly fractured, hard well-cemented zones
								@ 34' Slight seepage on westerly wall
35								@ 35' Olive, damp, very dense, very silty sand, well indurated (slow drilling), massive, few if any fractures, hard well-cemented zones
		f:N36E/ 76E						@ 38' A single tight fracture with iron oxide stain
40								@ 40' Olive, damp to moist, very dense, very silty fine sand/sandy silt, finely micaceous, very well-indurated, hard cemented zones, massive
								@ 43' Hard well-cemented zones
45								@ 45' Olive, damp, very dense, silty fine sand, very well indurated, some orange iron oxide stain, massive @ 46' Well-cemented zones
		b(?):N36E/ 8W						@ 48' A 2-inch wide hard well-cemented zone (bed?)
50		F:N42W/ 46W	△3					@ 50' Light gray-olive, damp, very dense, silty sand, well cemented @ 51' Slight seepage on southeasterly wall @ 50' Minor fault(?): a 1/16-inch wide, smooth, somewhat undulatory surface which offset a well-cemented zone; @ 54' Light olive-gray, damp, very dense, silty fine sand, hard, well-cemented zones, finely micaceous, some orange iron oxide stain @ 57' Tight depositional contact, some pebbles along contact @ 59' Slight seepage
							SW	@ 59' Light olive-gray, damp to moist, silty, poorly-sorted fine to coarse sand, some hard well-cemented zones
55		c:N22W/ 12W						
60								

505A(11/77)

GEOTECHNICAL BORING LOG

DATE 5-11-88 DRILL HOLE NO. B-2 SHEET 3 OF 3
PROJECT MPP/Bernardo Center Drive PROJECT NO. 4880341-01
DRILLING CO. Larive TYPE OF RIG Bucket
HOLE DIAMETER ±30" DRIVE WEIGHT 0-27';3,700 lbs/28'-55';2,600 lbs/ 56-80': 1,400 lbs. DROP 12 IN.
ELEVATION TOP OF HOLE ±696' REF. OR DATUM Mean Sea Level

LOGGED BY RI
SAMPLED BY RI



DEPTH FEET	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
60		4			♀	SM	FRIARS FORMATION (Cont.d) @ 60' Light olive-gray, damp to moist, very dense, silty fine to medium sand, well-indurated, micaceous generally massive @ 60' Slight seepage @ 63' Some silt rip-ups
65					♀		@ 65' Seepage continuous around boring @ 66' Light yellow-gray, saturated, wet, dense, silty, fine to coarse sand @ 67' Sand as above but medium to very coarse, locally saturated, some rip-up clasts of olive, sandy siltstone
	c:N24W/9W (generalized) cs:Horizontal						@ 68' Sharp somewhat irregular contact with underlying olive, damp, very dense, very silty fine sand, micaceous well-indurated @ 68'6" Remolded clay seam: 1/2-inch thick zone of brown-olive, saturated, soft plastic remolded clay, somewhat undulatory
70		5				ML	@ 69' Hard, wet, cemented zones @ 71' Primarily olive, damp, very stiff, sandy silt, well indurated @ 73' Hard zones
75						SM	@ 76' Olive, damp to moist, very dense, very silty fine sand, well indurated, massive
80							@ 80' Light olive, wet, dense, very silty fine sand, micaceous
85							@ 85' Light olive-gray, wet to saturated, dense, silty, fine to medium sand
							Total Depth = 86 feet Downhole Logged to 77 feet (Due to standing water) Seepage encountered at 34', 51', 59', 60', 65' Backfilled 5/11/88
90							

ELV. BPS 628

610 ELV.

505A(11/77)

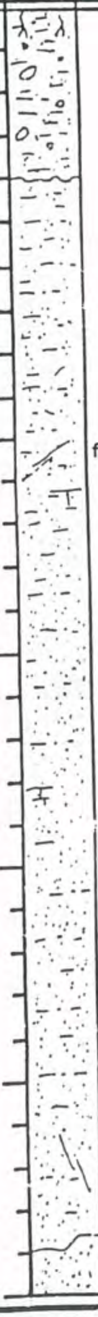
LEIGHTON & ASSOCIATES

686

L B8

GEOTECHNICAL BORING LOG

DATE 6-23-88
DRILL HOLE NO. B-8
SHEET 1 OF 3
PROJECT MMP/Bernardo Center Drive
PROJECT NO. 4880341-01
DRILLING CO. San Diego Drilling
TYPE OF RIG Bucker
HOLE DIAMETER ±30"
DRIVE WEIGHT 0-24': 3,545 lbs/25'-47': 2,574 lbs/ 46'-72': 1,645 lbs.
DROP 12 IN.
ELEVATION TOP OF HOLE ±686'
REF. OR DATUM Mean Sea Level

DEPTH FEET W	GRAPHIC LOG	E ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY RI SAMPLED BY RI
0							CL	COLLUVIUM Brown, moist to wet, soft, sandy clay with subrounded cobbles making up roughly 25% of bulk, some thin roots (grass and shrubs at surface) @ 3' Several chunks of weathered siltstone
							ML/ SM	FRIARS FORMATION @ 4' Sharp, somewhat irregular, approximately horizontal contact with underlying olive, damp, stiff to very stiff sandy silt and silty sand, moderately fractured
5								
							ML	@ 7' Olive, moist, stiff to very stiff, sandy silt, abundant orange iron oxide stain @ 8.5' Some smooth, randomly oriented, discontinuous parting surfaces
10		f:N21E/39W	1	4	105.4	23.8	SM/ CL	@ 10' Olive, damp, dense to very dense, silty fine sand with zones of sandy clay, breaks out into angular coherent chunks, some orange iron oxide stain, moderately fracutred, some white carbonate @ 10.5' Tight fracture @ 11' Sharp, hard, well-cemented zones, bedding not apparent @ 12' Well-indurated fractures not apparent
15							SM	@ 15' Olive, damp, very dense, very silty fine sand; massive, well-indurated, finely micaceous, fractures not apparent
								@ 18' Some hard, well-cemented zones
20			2	7	110.5	19.4		@ 20' Light olive, damp, very dense, very silty fine sand, well-indurated, finely micaceous, massive, some orange iron oxide stain
25								@ 25' Very silty fine sand as above @ 27' Tight fracture with orange iron oxide stain @ 29' Light olive, damp, very dense, very silty fine to medium sand, well-indurated, some orange iron oxide stain @ 29.5' Sharp, fairly irregular contact wiht underlying light gray, wet, dense, slightly silty medium to coarse sand, arkosic
		f:N40E/73E c:N74E/15S (very generalized)						
30								

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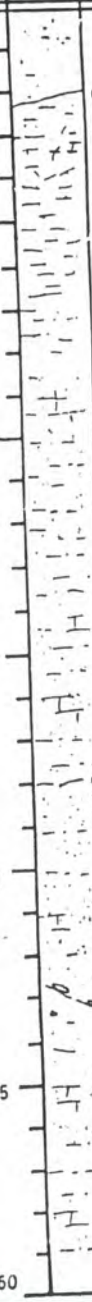
505A(11/77)

GEOTECHNICAL BORING LOG

DATE 6-23-88
DRILL HOLE NO. B-8
SHEET 2 OF 3
PROJECT MMP/Bernardo Center Drive
PROJECT NO. 4880341-01
DRILLING CO. San Diego Drilling
TYPE OF RIG Bucket
HOLE DIAMETER ±30"
DRIVE WEIGHT 0-24'; 3,545 lbs/25'-47'; 2,574 lbs/ ~~48'-72'; 1,646 lbs~~
12 IN.
ELEVATION TOP OF HOLE ±686
REF. OR DATUM Mean Sea Level

LOGGED BY RI
SAMPLED BY RI



DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			3	8	95.6	16.4	SM	FRIARS FORMATION (Cont'd.) @ 30' Light olive, damp to moist, very dense, silty sand, some hard well-cemented zones, micaceous, some orange iron oxide stain
		c:N4W/13W (generalized) f:N72E/36N			32- 37 ML/CL		ML/CL	@ 32' Sharp, fairly irregular contact with underlying olive, moist, very stiff sandy silt and clay, some smooth, shiny, randomly oriented, discontinuous parting sufaces FISSURE @ 32'6" Hard carbonate nodule up to 8 inches in diameter @ 33' Tight fracture
35							CL	@ 35' Light olive, damp, very stiff sandy clay, some short, shiny parting surfaces FISSURE 651 ELV.
							ML	@ 37' Grades into olive, damp, very stiff, sandy silt, well-indurated, massive
								@ 39' Hard, well-cemented zones
40			4	10	111.3	19.0	SM	@ 41' Grades into underlying light olive, damp, very dense, very silty very fine to medium sand, micaceous, well-indurated, bedding not apparent
								@ 44' Light olive, damp, very dense, very silty fine sand, well-indurated, with hard, well-cemented zones (slow drilling)
45								@ 46' Ripper bars used; light olive-gray, dry, hard, very silty fine sand, very well-cemented, some black secondary mineral stains @ 48' Contact (fairly gradational) with underlying light gray, saturated, dense, silty medium to coarse sand
		c:N32E/6W						
50			5	15	121.5	13.5		@ 50' Very light olive-gray, wet to saturated, very dense, silty medium to coarse sand; arkosic @ 50' Slight seepage @ 51' Hard, well-cemented zones @ 53' Pebble- to cobble-sized cross bedding indicated by rip-up clasts orientations
		xb:N58E/18S						
55								@ 55' Hard, well-cemented zones @ 57' Light olive-gray, moist, very dense, silty fine to medium sand, micaceous, bedding generally not apparent @ 58' Hard, well-cemented zones (slow drilling); ripper bar used
60								

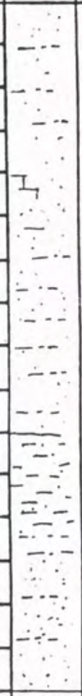
505A(11/77)

LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 6-23-88 DRILL HOLE No. B-8 SHEET 3 OF 3
PROJECT MMP/Bernardo Center Drive PROJECT No. 4880341-01
DRILLING CO. San Diego Drilling TYPE OF RIG Bucket
HOLE DIAMETER ±30" DRIVE WEIGHT 0-24'; 3,545 lbs/ 25'-47'; 2,574 lbs/ 48'-72'; 1,645 lbs DROP 12 IN.
ELEVATION TOP OF HOLE ±686 REF. OR DATUM Mean Sea Level

LOGGED BY RI
SAMPLED BY RI

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
60							SM	FRIARS FORMATION (Cont'd.) @ 60' Light olive-gray, damp to moist, very dense, silty fine to medium sand, arkosic, micaceous, well-indurated, bedding not apparent, fractures not apparent
								@ 64' Hard, well-cemented zones
65								
						♀		@ 66' Seepage
70			6	12	100.8	25.8	CL	BPS e 616? @ 70' Sharp contact with underlying dark and light olive, wet to saturated, medium stiff (with soft zones), clay, many sheared and polished surfaces, active caving (belled up to 1-1/2 feet or more), spalls very easily BPS OR FISSURED
75							SM	@ 75' Olive, damp, very dense, very silty fine to medium sand, well-indurated (slow drilling)

Total Depth = 76 Feet
Downhole Logged to 70 Feet
Seepage encountered at 50', 66'
Some Caving at 70 Feet
Backfilled 6/23/88

505A(11/77)

LEIGHTON & ASSOCIATES

LB10 LEIGHTON BORING

LB10

724

GEOTECHNICAL BORING LOG

DATE 6-24-88
DRILL HOLE NO. B-10
SHEET 1 OF 3
PROJECT MMP/Bernardo Center Drive
PROJECT NO. 4880341-01
DRILLING CO. San Diego Drilling
TYPE OF RIG Bucket
HOLE DIAMETER ±30"
DRIVE WEIGHT 0-24'; 3,545 lbs/25'-47'; 2,574 lbs 48'-72': 1,645 lbs
DROP 12 IN.
ELEVATION TOP OF HOLE ±724'
REF. OR DATUM Mean Sea Level

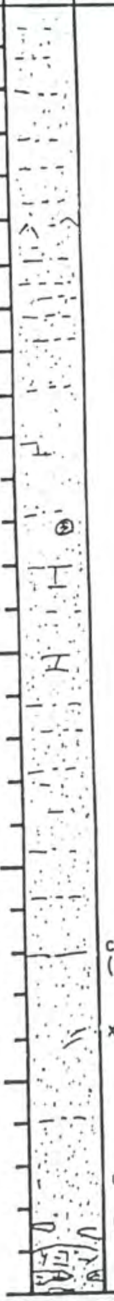
LOGGED BY RI
SAMPLED BY RI

DEPTH FEET	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0						SM	TOPSOIL Brown, dry to damp, loose to medium dense clayey sand, with abundant subrounded pebbles and cobbles making up roughly 30% to 40% of bulk, some thin routs (grass and shrubs at surface)
							STADIUM CONGLOMERATE @ 2' Gradational contact with underlying light brown, damp, dense, silty sand with pebbles and cobbles which make up about 30 to 40% of bulk, cobbles are generally matrix-supported
5							@ 7' Cobbly silty sand as above
10	c:Horizontal						@ 11' Slightly irregular contact with underlying light gray-brown, damp, dense, silty fine to medium sand with only a few cobbles, no offsets noted on contact @ 13' A 1-foot thick stringer/lens of cobbly sand
15	f:N17E/74E						@ 15' Steeply-inclined fracture with ±1/16-inch thick black stained infill, a few other steeply inclined to vertical, undulatory fractures, some with carbonate infill up to 1/8-inch thick @ 18' Light gray-brown, damp to moist, very dense, silty fine to medium sand, micaceous, moderately indurated, bedding not apparent, a few scattered cobbles, some tight very steeply-inclined undulatory fractures with dark brown stain
20							@ 23' Light gray-brown, moist, very dense, silty fine to medium sand @ 26' Slight seepage in sand as above but wet to saturated @ 27'6" Pebble-sized rip-up clast of olive silt
25					♀	CH/ML FSS	FRIARS FORMATION @ 28' Sharp, fairly irregular contact with underlying olive wet, medium stiff clay and silt, highly fractured, some saturated, soft zones along fractures, fractures are variously oriented and branching, spalls easily, several slick shiny parting surfaces, no continuous clay seams, several nodules of dull white, hard carbonate
	c:Horizontal ∇ (generalized)		696			ML	@ 29' Olive, moist, very stiff, sandy clay and silt, well indurated (ripper bars used during drilling)
30							

GEOTECHNICAL BORING LOG

DATE 6-24-88
DRILL HOLE NO. B-10
SHEET 2 OF 3
PROJECT MMP/Bernardo Center Drive
PROJECT NO. 4880341-01
DRILLING CO. San Diego Drilling
TYPE OF RIG Bucket
HOLE DIAMETER ±30"
DRIVE WEIGHT 0-24': 3,545 lbs/25'-47'; 2,574 lbs/48'-72': 1,645 lbs
DROP 12 IN.
ELEVATION TOP OF HOLE ±724'
REF. OR DATUM Mean Sea Level

LOGGED BY RI
SAMPLED BY RI



DEPTH FEET	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30						SM	FRIARS FORMATION (Cont'd.) @ 30' Light olive, moist, very dense, silty fine to medium sand, micaceous, some orange iron oxide stain, well indurated (ripper bars used), massive, fractures not apparent
35		1	16			CL/ML	@ 35' Dark olive, moist, very stiff sandy clay and silt some randomly oriented slick shiny discontinuous parting surfaces, some orange iron oxide stain, well indurated, slightly fractured FISSURED
						SM	@ 38' Grades into olive damp very dense, very silty fine sand, well indurated, massive
40							@ 40' Well-cemented zones
							@ 42' Some cobble-sized pods of white carbonate @ 43' Olive, damp, very dense, very silty fine sand, finely micaceous, well indurated hard well-cemented zones
45							@ 45' Sand as above with hard well-cemented zones, massive, well indurated
50		▽2					@ 50' Light olive, damp, very dense, very silty fine to medium sand, well indurated, finely micaceous
	c:Horizontal (generalized)						@ 52' Somewhat irregular contact with underlying very light gray-brown, moist, dense, silty fine to coarse sand, arkosic, well-cemented zones, some black secondary mineral stairs
	xb:N10E/ 12W						@ 54' Poorly defined cross bed
							@ 57' Sand as above but wet to saturated, some rip-up clasts of silt
55							@ 58' Slight seepage
	c:N85W/ 5S (generalized)						@ 59' Sharp, fairly irregular contact with underlying light olive, wet to saturated, medium stiff, silt and clay, moderately to highly fractured, spalls easily, several nodules of dull white hard carbonate
							@ 59'4" Olive, damp, very stiff sandy silt
60							

505A(11/77)

LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG

DATE 6-24-88 DRILL HOLE No. B-10 SHEET 3 OF 3
PROJECT MMP/Bernardo Center Drive PROJECT No. 4880341-01
DRILLING Co. San Diego Drilling TYPE OF RIG Bucket
HOLE DIAMETER ±30" DRIVE WEIGHT 0-24'; 3,545 lbs/25'-47'; 2,574 lbs 48'-72'; 1,645 lbs. DROP 12 IN.
ELEVATION TOP OF HOLE ±724' REF. OR DATUM Mean Sea Level

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY RI SAMPLED BY RI
60							SM/SC	FRIARS FORMATION (Cont'd.) @ 60' Olive, damp, very dense, silty and clayey fine sand with zones of sandy clay, finely micaceous, well indurated
							SM	@ 63' Light olive, damp, very dense, silty fine sand, micaceous, well indurated @ 64' Well indurated silty sand as above, fractures not apparent
65								
					658			Total Depth = 66 Feet Downhole Logged to 64 Feet Seepage encountered at 26', 58' Backfilled 6/24/88
70								

LEIGHTON & ASSOCIATES

505A(11/77)

LOG OF TEST BORING NUMBER B-1

Date Excavated:	January 19-21, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 661 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	0-27' = 3500 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES		PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
			SAMPLE TYPE	BULK				
2		**Artificial Fill (Qaf):** Olive brown to medium brown, moist, medium dense to dense, CLAYEY SAND (SC), fine to medium-grained, with occasional gravels and cobbles to 6" in diameter.		▥				
4				▥				
6		Contact at 6½ feet.	Cal	▥	1			
8		Medium brown to olive brown, moist, hard, SANDY CLAY (CL), with slight gravels and cobbles.						
10			Cal* CK		1			
12		Difficult drilling from 12-13 feet. 1' diameter boulder removed at 13 feet.						
14			Cal	▥	2			
16				▥				
18				▥				
20			Cal		1			

Boring continued on Plate No. 4.

* No sample recovery.

CHRISTIAN WHEELER
Engineering

WELLINGTON / ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	3

LOG OF TEST BORING NUMBER B-1 (Continued)

Date Excavated:	January 19-21, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 661 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	0-27' = 3500 lbs. 27'-55'=2400 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
22	▨	**Artificial Fill (Qaf):** Medium brown to olive brown, moist, stiff, SANDY CLAY (CL), with occasional gravels and cobbles up to 6" in diameter.						
24	▨		Cal*		1			
26	▨		CK					
28	▨	Contact at 28½ feet.						
30	▧	Medium brown, moist, dense, CLAYEY SAND (SC), fine to medium-grained, with occasional gravels and cobbles to 6" in diameter.	Cal	▥	3			
32	▨	Medium brown to olive brown, moist, very stiff, SANDY CLAY (CL), with slight gravels and cobbles to 4" in diameter.						
34	▨		Cal		2			
36	▨							
38	▨							
40	▨		Cal		2			

Boring continued on Plate No. 5.

* No sample recovery.

CHRISTIAN WHEELER
Engineering

WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	4

LOG OF TEST BORING NUMBER B-1 (Continued)

Date Excavated:	January 19-21, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 661 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	27'-55'=2400 lbs. 55'-85'=1300 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
42	▨	**<u>Artificial Fill (Qaf):</u>** Medium brown to olive brown, moist, very stiff, SANDY CLAY (CL), with slight gravels and cobbles to 4" in diameter.						
44	▨	Olive brown, moist, dense, CLAYEY SAND (SC), fine to medium-grained.	Cal	▥	2			
46	▨			▥				
48	▨							
50	▨		Cal		1			
52	▨	Medium brown to olive brown, moist to wet, very stiff, SANDY CLAY (CL), with trace gravels and cobbles to 3".						
54	▨		Cal		1			
56	▨							
58	▨	Trace organic debris from 57½ to 58½ feet.						
60	▨	Basal contact of fill at 59.8 feet, horizontal.						

Boring continued on Plate No. 6.

CHRISTIAN WHEELER
Engineering

WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	5

LOG OF TEST BORING NUMBER B-1 (Continued)

Date Excavated:	January 19-21, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 661 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	55'-85'=1300 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
		Friars Formation (Tf): Light grayish-brown, wet, hard, SILTY	Cal		25	16.8	108.9	
62		CLAYESTONE (CL), waxy, fissured. Very minor seepage from 60'-62'.	Bag					
		61': Planar shear N80°E, 41°S, < 1/16" gouge.	Bag					
64		(Gradational contact) Orangish-brown, moist, very dense, CLAYEY						
		SANDSTONE, massive.	Cal		18/6"	19.8	97.0	
66		Light orangish-brown, moist, hard, SANDY CLAYSTONE (CL),						
		massive, portions are waxy.						
68		At 66 feet grades to olive brown in color.	Bag					
		At 68.6 feet: Shear, N54°E, 25°NW, 1/8" - 1/4" soft clay gouge,						
70		well developed on ± ¼" thick hard clacareous. zone. Hard claystone	Cal		14/6"	20.2	103.7	DS
		above and below.						
72		Continued hard, waxy, claystone, blocky fracturing (no waxy fissures).						
74		Grayish-brown, moist, very dense-very hard, CLAYEY	Bag					HA, PI
		SANDSTONE-SANDY CLAYSTONE (SC-CL).	Cal		30/7"	12.8	112.7	
76								
		Gradational contact at 77½ feet.						
78		Light gray to light olive brown, moist, very dense, CLAYEY	Bag					
		SANDSTONE (SC), medium-grained, massive, slight iron staining.						
80		Gray, moist, very hard, CLAYESTONE (CL), waxy fissures, massive.	Cal		20	18.0	109.6	DS

Boring continued on Plate No. 7.

CHRISTIAN WHEELER
Engineering

WELLINGTON / ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	6

LOG OF TEST BORING NUMBER B-1 (Continued)

Date Excavated:	January 19-21, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 661 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	55'-85'=1300 lbs. 85'-105'=1800 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
		<u>Friars Formation (Tf):</u> Gray, moist, very hard, CLAYSTONE (CL), with waxy fissures, massive.						
82								
			Bag					
84								
			Cal		18	16.5	109.6	
86								
88								
90		At 90½ feet: Shear, N30°-40°E, 25°NW (undulatory dip), 1/16" gouge, dies out on north side of boring.	Cal		19	16.9	112.2	DS, HA, PI
92		At 92½ feet: Subhorizontal to steeply dipping fissure, no gouge to 1/16" gouge, pinches out along dip.						
94		Olive brown to grayish-brown, moist, hard, SANDY CLAYSTONE (CL), slight iron staining, non-waxy, massive.	Bag					
			CK			15.5	118.0	
96								
98		Sharp, sub-horizontal contact at 99.4 feet.						
		Orangish-brown, wet to saturated, very dense, CLAYEY SANDSTONE (SC), medium to coarse-grained, well cemented.						
100			Cal		14/1½"	12.9	117.7	DS

Boring continued on Plate No. 8.

CHRISTIAN WHEELER
Engineering

WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	7

LOG OF TEST BORING NUMBER B-1 (Continued)

Date Excavated:	January 19-21, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 661 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	85'-105'=1800 lbs. 105'-125'=2300 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
102 104		**Friars Formation (Tf):** Orangish-brown, wet to saturated, very dense, CLAYEY SANDSTONE (SC), medium to coarse-grained, well cemented. Light seepage from 101-104 feet. Sharp horizontal contact.		▥				
106		Gray, moist, very dense, CLAYEY SANDSTONE (SC),well cemented. (gradational contact)	CK			9.6	129.6	
108 110		Orangish-brown to light grayish-brown, wet, very dense, CLAYEY SANDSTONE (SC), medium to coarse-grained, well cemented, massive. Sharp horizontal contact. <u>Bedding Parallel Shear</u> at base of Sandstone (111'), variable thickness of gouge (1/16" to 1/8"), poorly developed.	Cal		15/4"	15.0	112.8	DS
112 114		Gray, moist, very hard, SANDY CLAYSTONE (CL), highly fissle, waxy.	CK			14.1	118.2	HA, PI
116 118 120			CK	▥		17.1	112.9	

Boring continued on Plate No. 9.

CHRISTIAN WHEELER
Engineering

WELLINGTON / ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	8

LOG OF TEST BORING NUMBER B-1 (Continued)

Date Excavated: January 19-21, 2004
Equipment: Earth Drill 45L
Existing Elevation: ± 661 feet
Finish Elevation:
Logged by: DRR/MH
Project Manager: CHC
Depth to Water: N/A
Drive Weight: 105'-128'=2300 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES SAMPLE TYPE	SAMPLES BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
122	▨	**Friars Formation (Tf):** Gray, moist, very hard, SANDY CLAYSTONE (CL), highly fissle, waxy.						
124	▨		CK					
126	▨							
128		Boring terminated at 128 feet. Geologically logged to 117 feet. Light seepage from 101 to 104 feet. Water surface within base of boring at 120 feet. No caving. Boring properly backfilled with 628 cubic feet of bentonite grout and compacted fill material.						
130								
132								
134								
136								
138								
140								

CHRISTIAN WHEELER
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WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	9

LOG OF TEST BORING NUMBER B-2

Date Excavated:	March 1-3, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 664 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	0-27' = 3500 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
	▨	**Artificial Fill (Qaf):** Medium brown, moist, very stiff to hard, SANDY CLAY (CL), with slight gravels and trace cobbles up to 6" in diameter.						
2	▨			▥				
4	▨			▥				
6	▨		Cal	▥	1			
8	▨							
10	▨	Medium brown to olive brown, moist, dense, CLAYEY SAND (SC), fine to medium-grained, with slight gravels and trace cobbles up to 3" in diameter.	Cal		1			
12	▨							
	▨	Medium brown, moist, hard, SANDY CLAY (CL), with slight gravels.						
14	▨			▥				
16	▨			▥				
18	▨		Cal	▥	1			
20								

Boring continued on Plate No. 11.

CHRISTIAN WHEELER
Engineering

WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO.:	203.988	PLATE NO.:	10

LOG OF TEST BORING NUMBER B-2 (Continued)

Date Excavated:	March 1-3, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 664 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	0-27' = 3500 lbs. 27'-55'=2400 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
22		**Artificial Fill (Qaf):** Medium brown, moist, hard, SANDY CLAY (CL), with slight gravels.						
24		Olive brown, moist, medium dense to dense, CLAYEY SAND (SC), fine to medium-grained. Horizontal contact at 24½ feet.						
26		Olive brown, moist, very stiff to hard, SANDY CLAY (CL), with slight gravels and cobbles up to 5".	Cal		1			
28								
30		At 29 feet becomes medium brown in color.						
32								
34		Increase in cobbles from 34-38 feet.	Cal*		2			
36								
38			Cal		1/12"			
40		Slight organic debris from 39' 6" feet to 39' 8".						

Boring continued on Plate No. 12.

* No sample recovery.

CHRISTIAN WHEELER
Engineering

WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	11

LOG OF TEST BORING NUMBER B-2 (Continued)

Date Excavated: March 1-3, 20
Equipment: Earth Drill 45L
Existing Elevation: ± 664 feet
Finish Elevation:

Logged by: DRR/MH
Project Manager: CHC
Depth to Water: N/A
Drive Weight: 27'-55'=2400 lbs.
55'-85'=1300 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES SAMPLE TYPE	SAMPLES BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
42		**Artificial Fill (Qaf):** Olive brown, moist, very stiff to hard, SANDY CLAY (CL), with slight gravels and cobbles to 5".						
44								
46			Cal		2			
48								
50								
52								
54		At 54 ½ feet becomes light orangish-brown in color, with increasing sand content.	Cal		1			
56		Olive brown, moist, very dense, CLAYEY SAND (SC), fine to coarse-grained, remnant iron staining, appears scarified. ± Horizontal contact.						
58		**Friars Formation (Tf):** Olive brown, moist, hard, SANDY CLAYSTONE (CL), waxy, slightly fractured.						
60								

Boring continued on Plate No. 13.

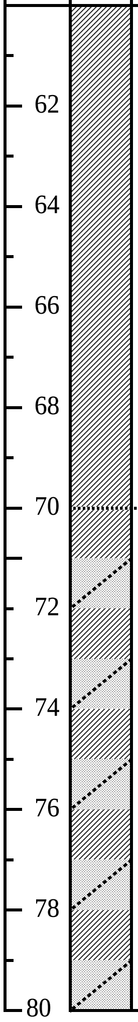
CHRISTIAN WHEELER
Engineering

WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	12

LOG OF TEST BORING NUMBER B-2 (Continued)

Date Excavated: March 1-3, 2004
Equipment: Earth Drill 45L
Existing Elevation: ± 664 feet
Finish Elevation:
Logged by: DRR/MH
Project Manager: CHC
Depth to Water: N/A
Drive Weight: 55'-85'=1300 lbs.



SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
Friars Formation (Tf): Olive brown, moist, hard, SANDY CLAYSTONE (CL), waxy slightly fractured.						
At 60':Shear, ±1/16" planar shear, N80°E, 15°N offset ½ by east dipping shear with ± 1/16" gouge, dipping due east 20°.	Cal		27			DS
At 64 feet becomes reddish-brown to grayish-brown, very hard, slight fissures, locally waxy.		▥				HA PI
At 67 feet: Shear, N70°W, 60°NE, 1/16" gouge within hard claystone.		▥				
Gradational contact.		▥				
Grayish-brown, moist, dense-very hard,CLAYEY SANDSTOTNE-SANDY CLAYSTONE (SC-CL), locally waxy.	Cal	▥	15/4"	14.7	106.0	HA PI
	Cal	▥	30/8"	15.8	111.3	

Boring continued on Plate No. 14.

CHRISTIAN WHEELER
Engineering

WELLINGTON / ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	13

LOG OF TEST BORING NUMBER B-2 (Continued)

Date Excavated:	March 1-3, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 664 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	55'-85'=1300 lbs. 85'-105'=1800 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
81-82	▨	**Friars Formation (Tf):** Grayish-brown, moist, dense-very hard, CLAYEY SANDSTONE-SANDY CLAYSTONE (SC-CL), slightly fissured and waxy.		▥				HA PI
85	▨	At 85 feet: shear, N85°E, 15°NW, 1/4" gouge.		▥				
86	▨	At 86 feet becomes dark gray in color.		▥				
87	▨		Cal	▥	30/11"	17.6	102.6	
90	▨	At 90 feet: Undulatory shear, 1/16" gouge, subhorizontal.		▥				
91	▨	Grades to olive brown, moist, hard to very hard, SILTY CLAYSTONE (CL), slightly fractured.	Cal		19	17.9	107.8	DS
92	▨	At 92 feet: Shear, 1/4" gouge in hard claystone, N20°W, 33E°.						
93	▨	At 93': Shear, 1/8" gouge in very hard claystone, N55°E, 17°NW.						
93½-94	▨	At 93½': minor fissure parallel to shear above. At 94': Shear, N20°W, 30°NE, 1/16" gouge. At 94.6' westerly dipping shears ± 1/16" gouge, subparallel, ±5°-10°. (horizontal contact)						
96	▨		Cal		29/9"	8.4	111.6	
97-100	▨	Light olive brown, moist, very dense, CLAYEY SANDSTONE (SC), fine to medium-grained, with slight iron staining. Contact at 100 feet ± horizontal.						

Boring continued on Plate No. 15.

CHRISTIAN WHEELER
Engineering

WELLINGTON / ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	March 2004
JOB NO. :	203.988	PLATE NO.:	14

LOG OF TEST BORING NUMBER B-2 (Continued)

Date Excavated:	March 1-3, 2004	Logged by:	DRR/MH/AN
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 664 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	85'-105'=1800 lbs. 105'-120'=2300 lbs.

DEPTH (feet)	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
	Friars Formation (Tf): Light grayish-brown, wet to saturated,	Cal		16/2"			
102	very dense, CLAYEY SANDSTONE (SC), medium to coarse-grained,						SA
	generally massive.						
104	Slight seepage from 102 to 108 feet.						
106		Cal		18/3"	10.8	123.1	
	(horizontal contact)						
108	Light brown, moist, hard, SANDY SILTSTONE (ML), generally massive.						
	107½ to 109½ minor fault, 3" offset, <1/8" gouge, dips due north 65°.						
110	Light brown, moist, very dense, CLAYEY SANDSTONE (SC),	Cal		25/5"	9.7	120.6	
	fine to coarse-grained.						
112	At 112': Bedding Parallel Shear, ± 1/8" gouge (soft wet clay),						
	subhorizontal.						
114	Grayish-brown, moist, very hard, CLAYSTONE (CL), locally highly	Cal		25/5"	12.0	118.3	
	fissured.						HA
116	From 114 to 117 feet up to 6 inch wide near vertical fracture, infilled with						PI
	well cemented sands.						
118	At 117 feet: Shear, N20°W, 40°NE, truncates fracture above.						
120							

Boring continued on Plate No. 16.

CHRISTIAN WHEELER
Engineering

WELLINGTON/ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	15

LOG OF TEST BORING NUMBER B-2 (Continued)

Date Excavated:	March 1-3, 2004	Logged by:	DRR/MH
Equipment:	Earth Drill 45L	Project Manager:	CHC
Existing Elevation:	± 664 feet	Depth to Water:	N/A
Finish Elevation:		Drive Weight:	105'-126'=2300 lbs.

DEPTH (feet)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: SAMPLE TYPE	SAMPLES: BULK	PENETRATION (blows/foot)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
122	▨	**Friars Formation (Tf):** Grayish-brown, moist, very hard, CLAYSTONE (CL), highly fissured, waxy.	Cal		22			
124	▨	At 123½ feet becomes medium brown to light grayish-brown.						
126	▨		Cal		10/2"			
128 130 132 134 136 138 140		Boring terminated at 126 feet. Downhole logged to 123 feet. No caving. Light seepage from 102 to 108 feet. Boring properly backfilled with 618 cubic feet of bentonite grout and compacted fill material.						

CHRISTIAN WHEELER
Engineering

WELLINGTON / ZIMMER PROPERTY
Bernardo Center Drive, San Diego, California

BY:	HF	DATE:	May 2004
JOB NO. :	203.988	PLATE NO.:	16

APPENDIX E

APPENDIX E

SLOPE STABILITY ANALYSES

The static and pseudo-static stability of the selected slopes were evaluated using the computer program SLIDE 6.0 (Rocscience, 2016). The slope stability was evaluated for the existing site conditions and the currently proposed site conditions.

A total of seven cross-sections at the site were analyzed using the modified Bishop method of analysis. The locations of the seven sections analyzed, Sections GPI-1 through GPI-7, are shown on the Site Plans, Figures 2 to 4. The geologic cross sections are presented in Figures 6-1 to 6-7. As detailed in the referenced geologic sections, the subsurface materials consist of compacted sandy clay fills, localized landslide deposits, Friars Formation bedrock, and Stadium Conglomerate bedrock. In addition, the subsurface profile includes localized fissured claystone (FCS) and bedding plane shears (BPS) which have notable reduced strengths relative to other bedrock materials. The weaker FCS and BPS lenses are predominantly horizontal (less than a 2-degree inclination).

The stability analyses were based on shear strength parameters obtained by direct shear tests performed by GPI and prior direct shear tests performed by others (see References). In addition, Sections GPI-4, GPI-6, and GPI-7 included tie-back supports, with the tie-back lengths, spacing, inclination, and loading based on referenced reports and plans.

Existing Slope

For static loading conditions on the existing slope, the Factor of Safety against global failure was evaluated for a large number of block (translational) and circular failure surfaces. The failure surfaces with the lowest factor of safety are presented in the enclosed plots, which also present the soil parameters used and the calculated factors of safety. In general, where the factor of safety is calculated to be 1.5 of greater under static conditions, the slope is considered to be stable.

Proposed Slopes

Based on the Proposed and Existing Sections Exhibit dated December 19, 2023 by Latitude 33, the proposed finished grades will result in cuts on the order of 12 feet and fills on the order of 5 feet from the existing grades. For the proposed slopes, we evaluated the stability under both static and pseudo-static (seismic) conditions. Where the static stability of the proposed slopes were calculated to be less than 1.5, we determined the estimated minimum additional lateral restraint force (kips per foot) required to obtain a factor of safety of at least 1.5 (considered to be stable).

For the pseudo-static analyses, we performed parametric analyses to calculate the ground acceleration (lateral seismic force coefficient) associated with a factor of safety of 1.0, typically referred to as the “yield” acceleration. By comparing the yield acceleration and the design peak ground acceleration in accordance with the “Newmark” empirical relationships, we estimated the cumulative slope displacement at each respective slope. The slope displacement chart used to calculate estimated permanent slope displacements, derived using the methods outlined in NCHRP Report 611, is presented in Figure E-1. More detailed discussions on the cumulative displacement analyses is presented in Section 5.0 of this report.

The results of the static and pseudo-static slope stability analyses for the existing and proposed slope conditions are presented in the attached figures and summarized below.

Existing Slopes: Static Conditions

Figure No.	Slope Stability Section	Factor of Safety
01	GPI-1	1.30
05	GPI-2	1.51
09	GPI-3 (upper)	1.33
10	GPI 3 (lower)	1.57
16	GPI-4	1.73
19	GPI-5	1.72
22	GPI-6	1.90
25	GPI-7	1.50

Proposed Slopes: Static Conditions

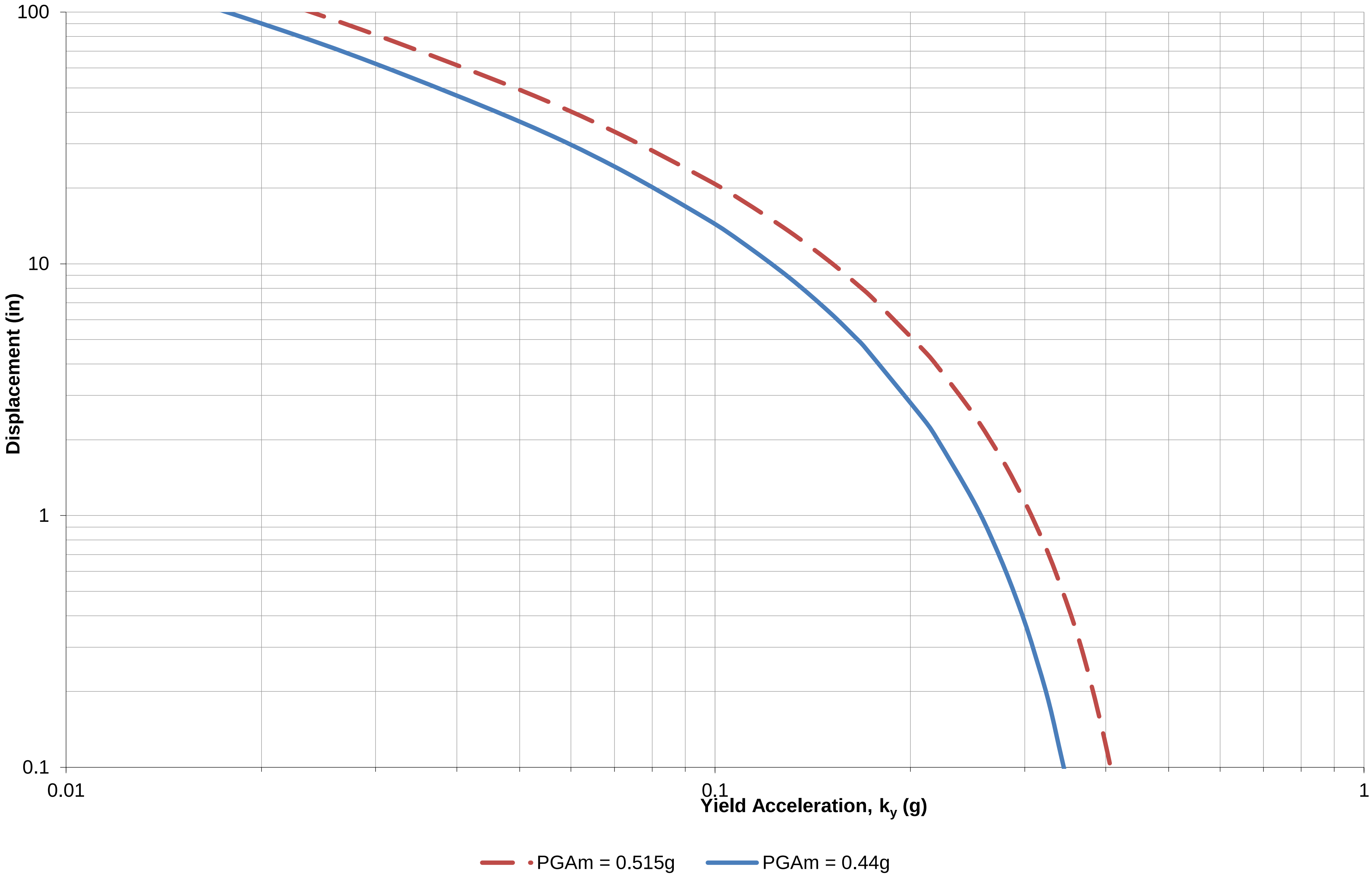
Figure No.	Slope Stability Section	Factor of Safety	Stabilizing Force (kips/foot)
02, 03	GPI-1	1.23	38.9
06, 07	GPI-2	1.46	3.5
11, 13	GPI-3 (upper)	1.18	14.7
12	GPI 3 (lower)	1.56	NA
17	GPI-4	1.71	NA
20	GPI-5	1.69	NA
23	GPI-6	1.91	NA
26, 27	GPI-7	1.30	8.0

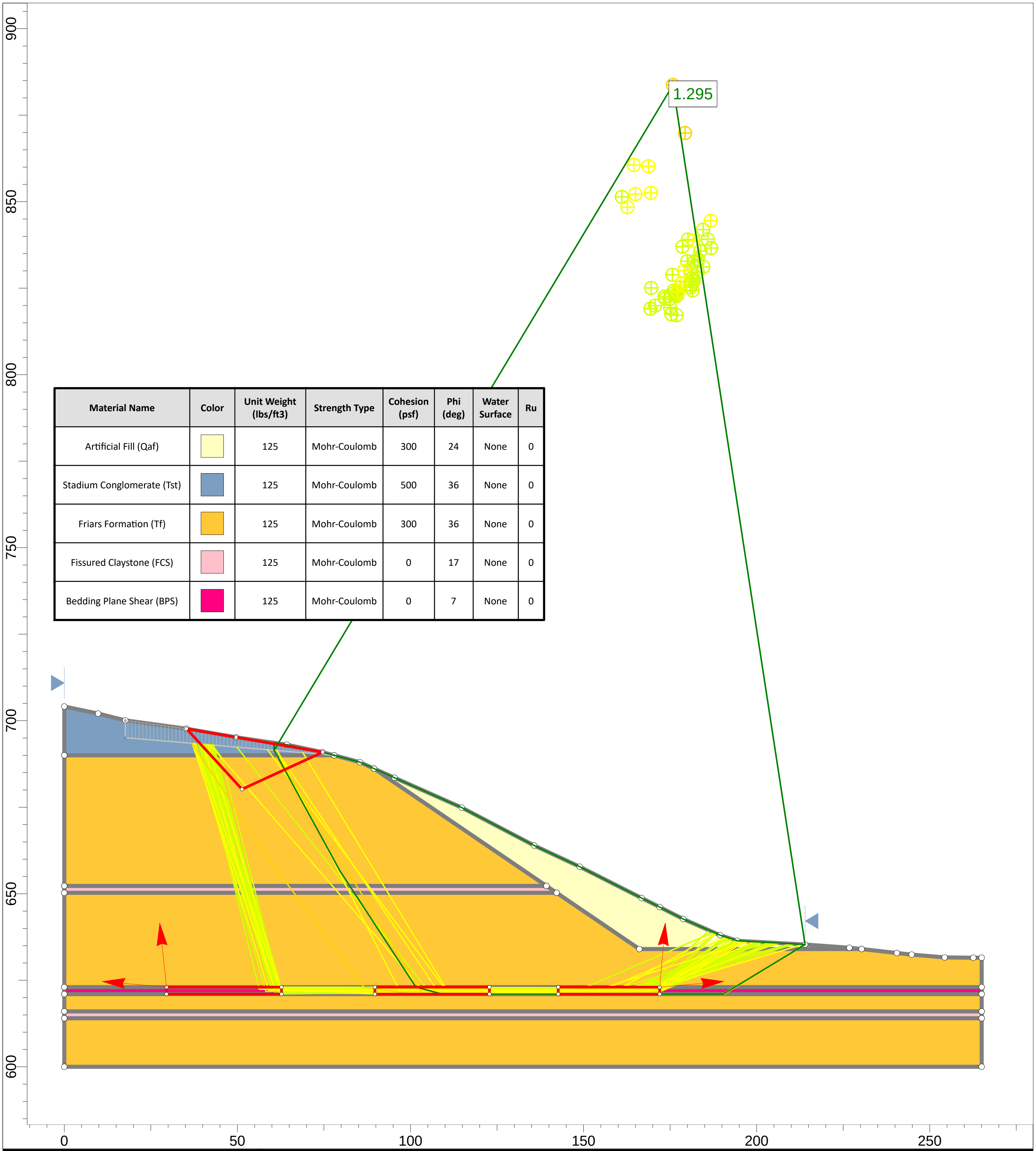
Proposed Slopes: Pseudostatic Conditions

Figure No.	Slope Stability Section	Yield Acceleration, k_y (g)	Estimated Cumulative Slope Displacement (in); PGA_M = 0.44g (code) to 0.52g (SSRS)
04	GPI-1	0.097	15.1 to 21.7
08	GPI-2	0.175	4.3 to 7.3
14	GPI-3 (upper)	0.167	4.9 to 8.1
15	GPI 3 (lower)	0.220	2.0 to 3.9
18	GPI-4	0.29	0.5 to 1.3
21	GPI-5	0.265	0.8 to 2.0
24	GPI-6	0.335	0.1 to 0.6
28	GPI-7	0.275	.0.7 to 1.7

FIGURE E-1: Displacement vs. Yield Acceleration

PMB UCSD Rancho Bernardo 3202.I





Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	▨	125	Mohr-Coulomb	0	17	None	0
Bedding Plane Shear (BPS)	🟥	125	Mohr-Coulomb	0	7	None	0

Project	01 - GPI 1 - Existing Static - Rancho Bernardo 3202.I
Analysis Description	Block - Modified Bishop
Drawn By	DJB
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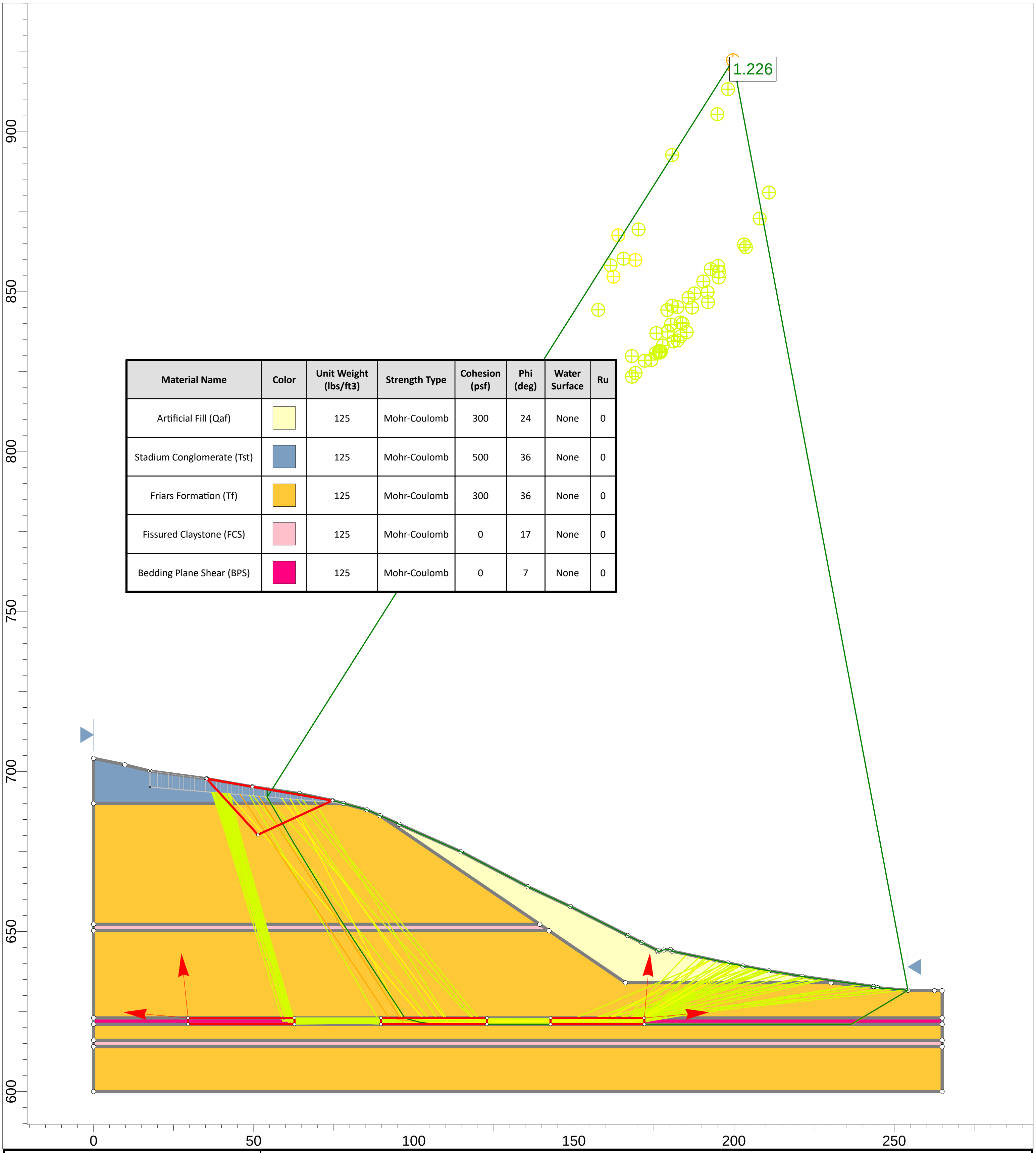
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	01 GPI 1 Existing Static 3202_I.slim

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟪	125	Mohr-Coulomb	0	17	None	0
Bedding Plane Shear (BPS)	🟥	125	Mohr-Coulomb	0	7	None	0

Project	02 - GPI 1 - Proposed Static - Rancho Bernardo 3202.I
Analysis Description	Block - Modified Bishop
Drawn By	DJB
Scale	1:483
Company	GPI
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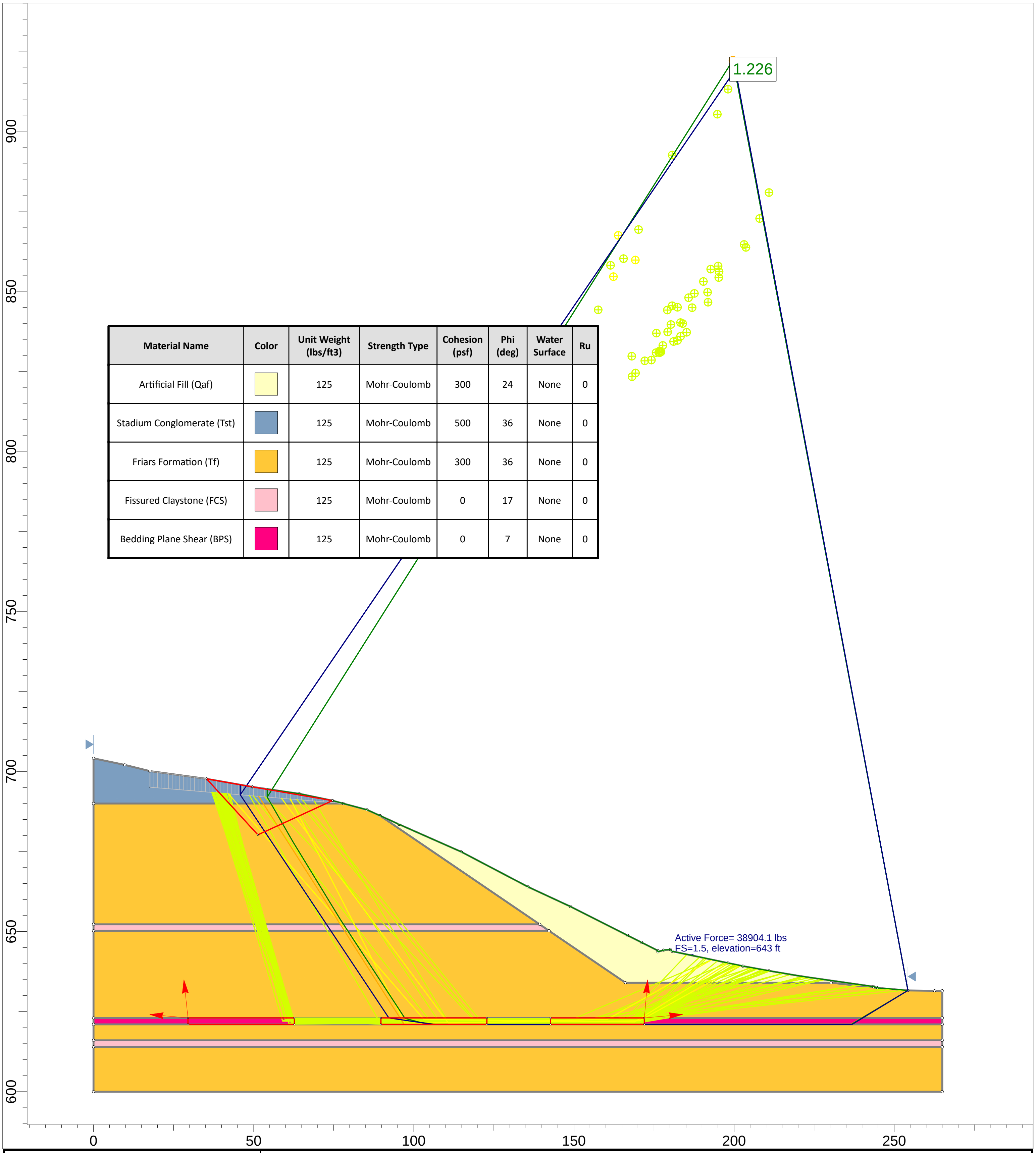
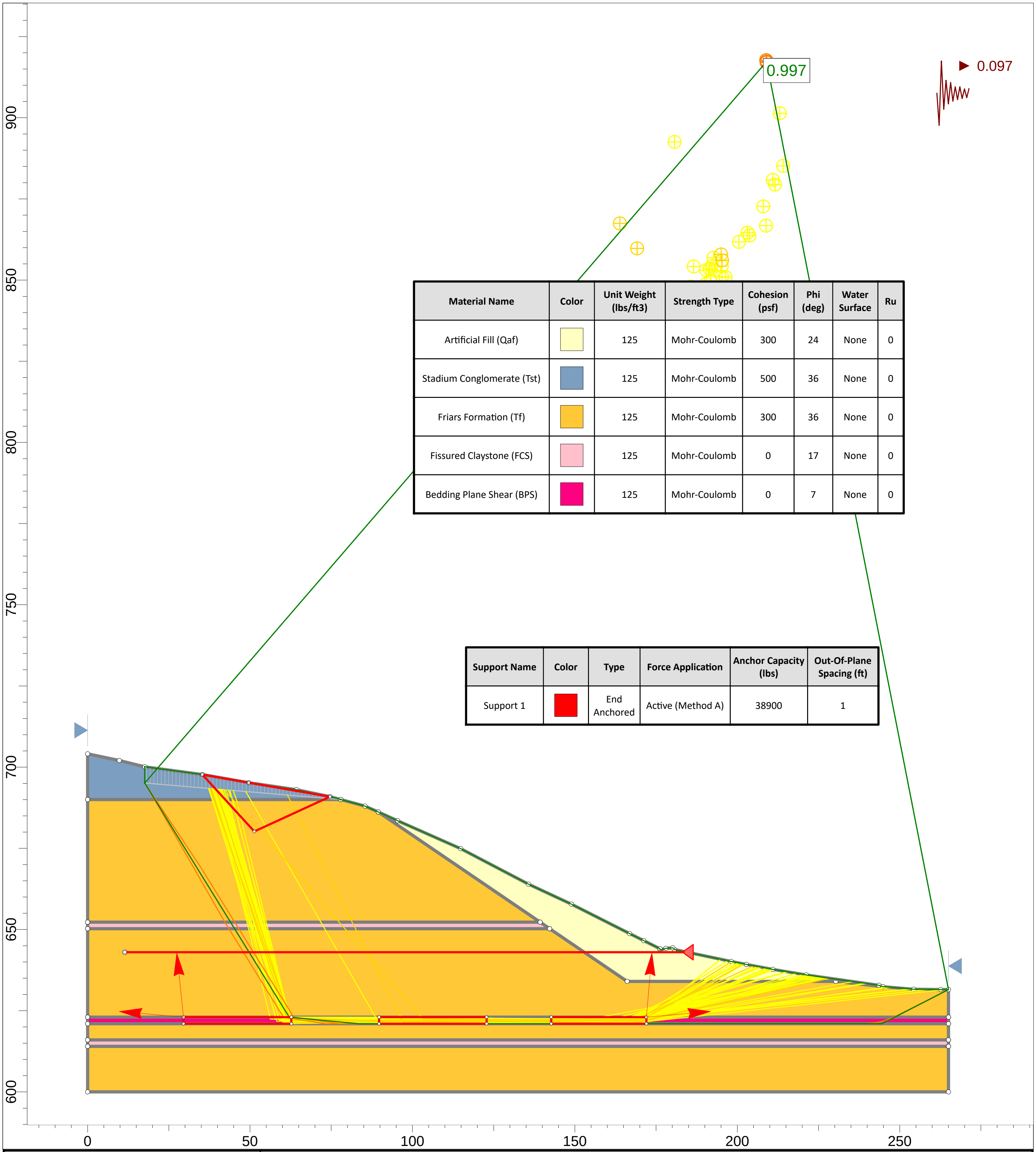
File Name	02 GPI 1 Proposed Static 3202_I.slim

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟪	125	Mohr-Coulomb	0	17	None	0
Bedding Plane Shear (BPS)	🟥	125	Mohr-Coulomb	0	7	None	0

GPI SLIDEINTERPRET 6.039	*Project* 03 - GPI 1 - Proposed Static Stabilized - Rancho Bernardo 3202.I		
	Analysis Description Block - Modified Bishop		
	Drawn By DJB	*Scale* 1:483	*Company* GPI
	Date 10/19/2023, 10:25:01 AM		*File Name* 03 GPI 1 Proposed Static Stablized 3202_I.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟪	125	Mohr-Coulomb	0	17	None	0
Bedding Plane Shear (BPS)	🟥	125	Mohr-Coulomb	0	7	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟥	End Anchored	Active (Method A)	38900	1

Project	04 - GPI 1 - Proposed Pseudostatic - Rancho Bernardo 3202.I
Analysis Description	Block - Modified Bishop
Drawn By	DJB
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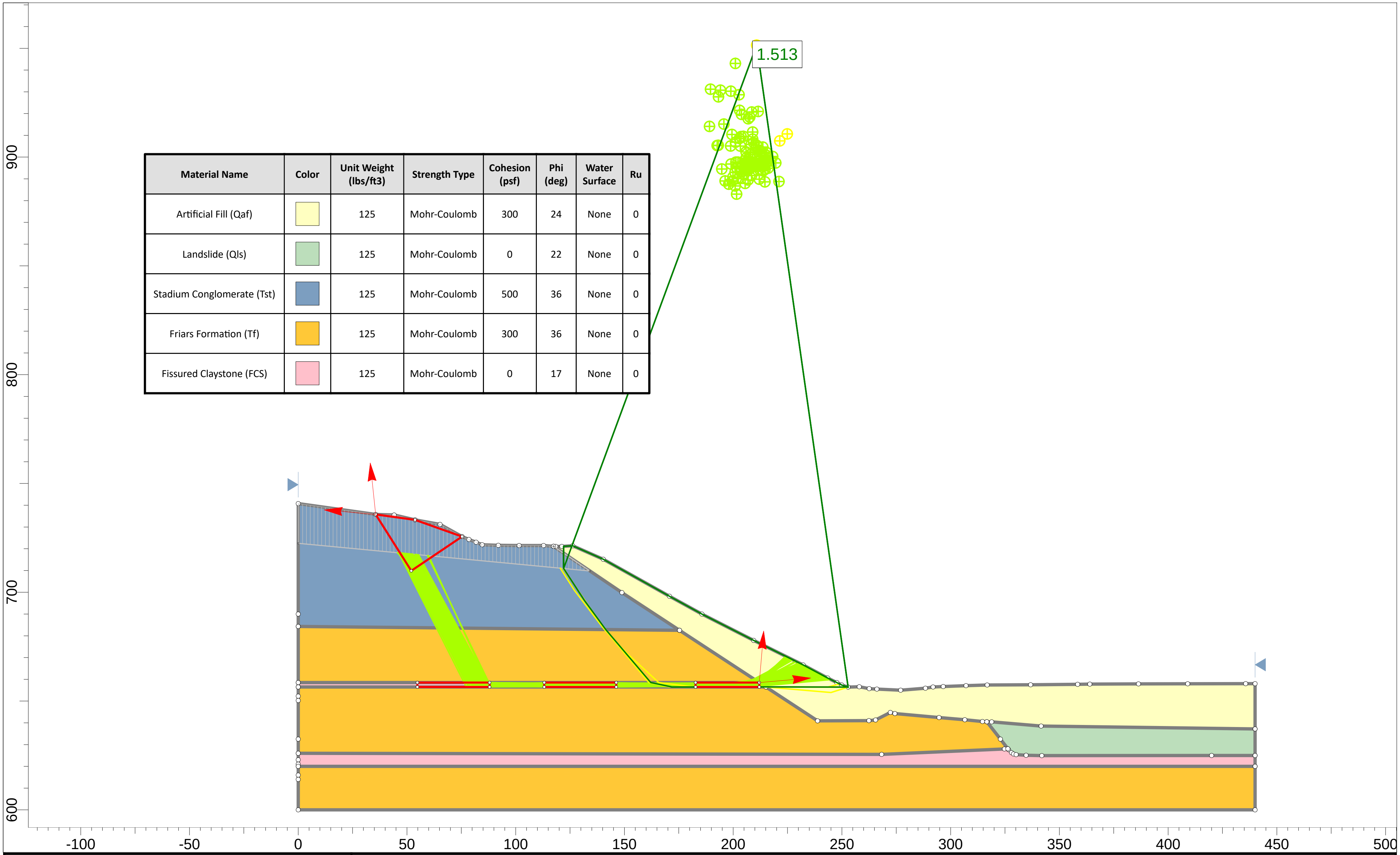
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	04 GPI 1 Proposed Pseudostatic 3202_I.slim

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟥	125	Mohr-Coulomb	0	17	None	0

SLIDEINTERPRET 6.039

Project 05 - GPI 2 - Existing Static - Rancho Bernardo 3202.I

Analysis Description Block - Modified Bishop

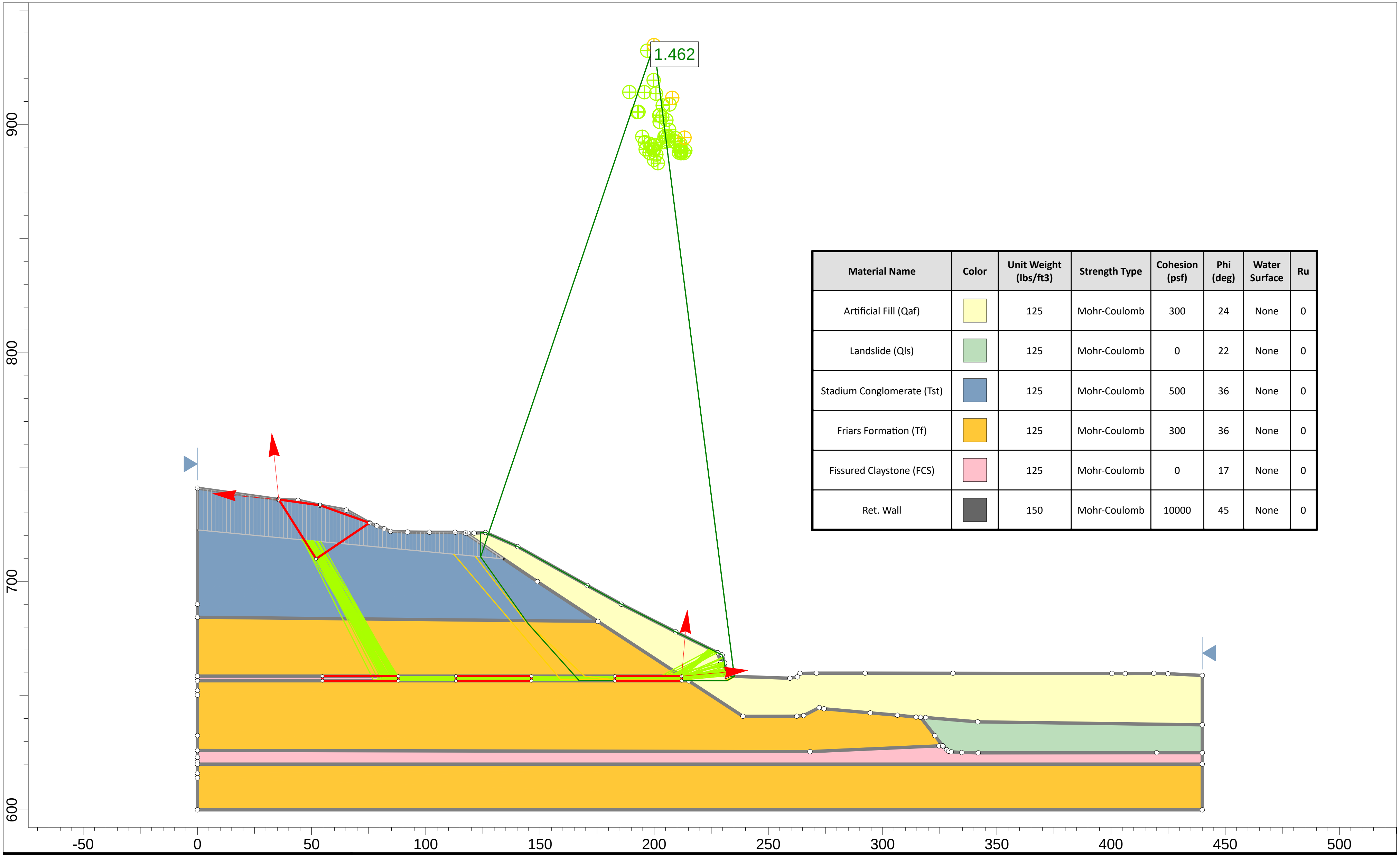
Drawn By DJB

Scale 1:732

Company GPI

Date 10/19/2023, 10:25:01 AM

File Name 05 GPI 2 Existing Static 3202_I.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟥	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	10000	45	None	0

GPI

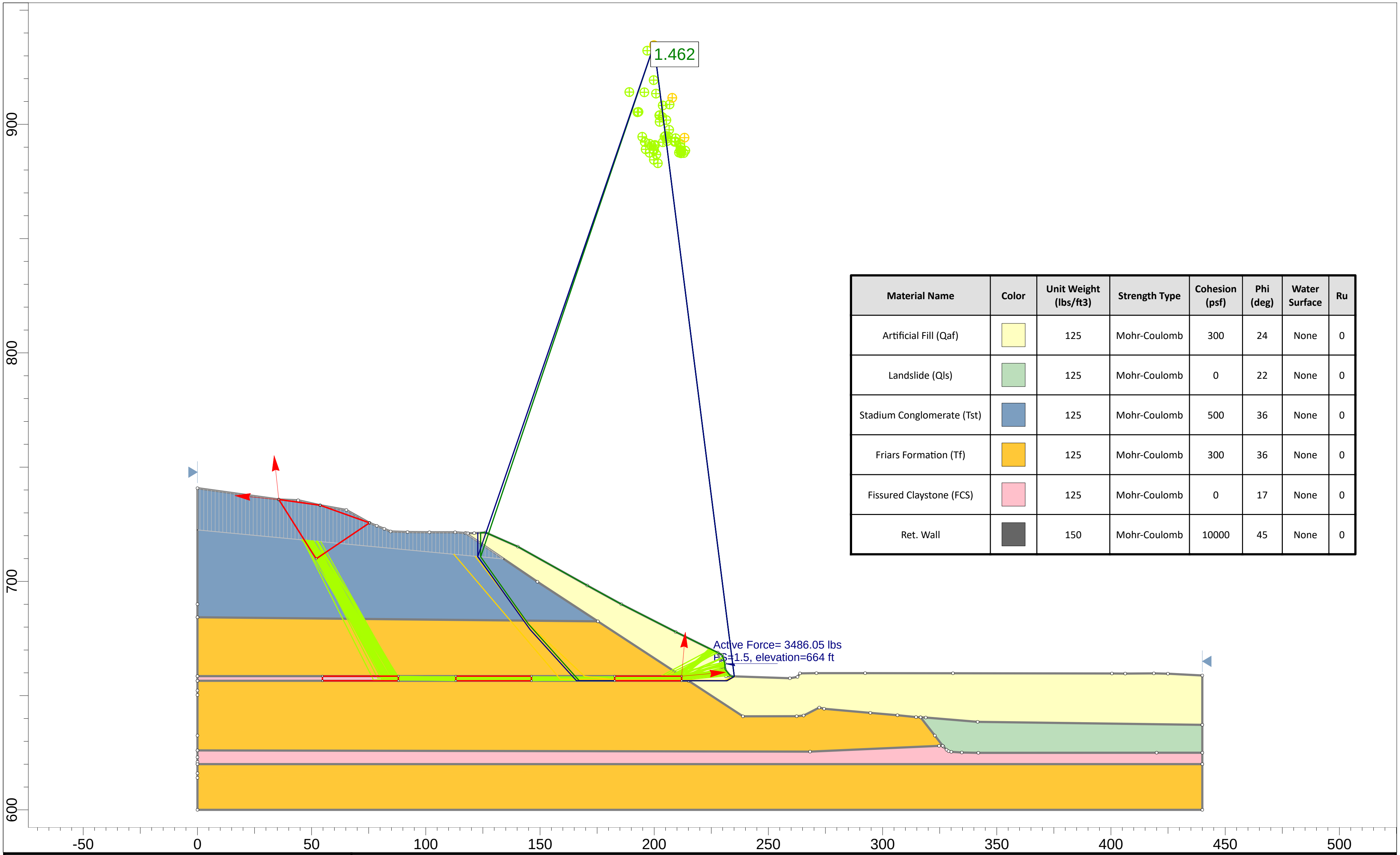
SLIDEINTERPRET 6.039

Project
06 - GPI 2 - Proposed Static - Rancho Bernardo 3202.I

Analysis Description
Block - Modified Bishop

Drawn By DJB
Scale 1:697
Company GPI

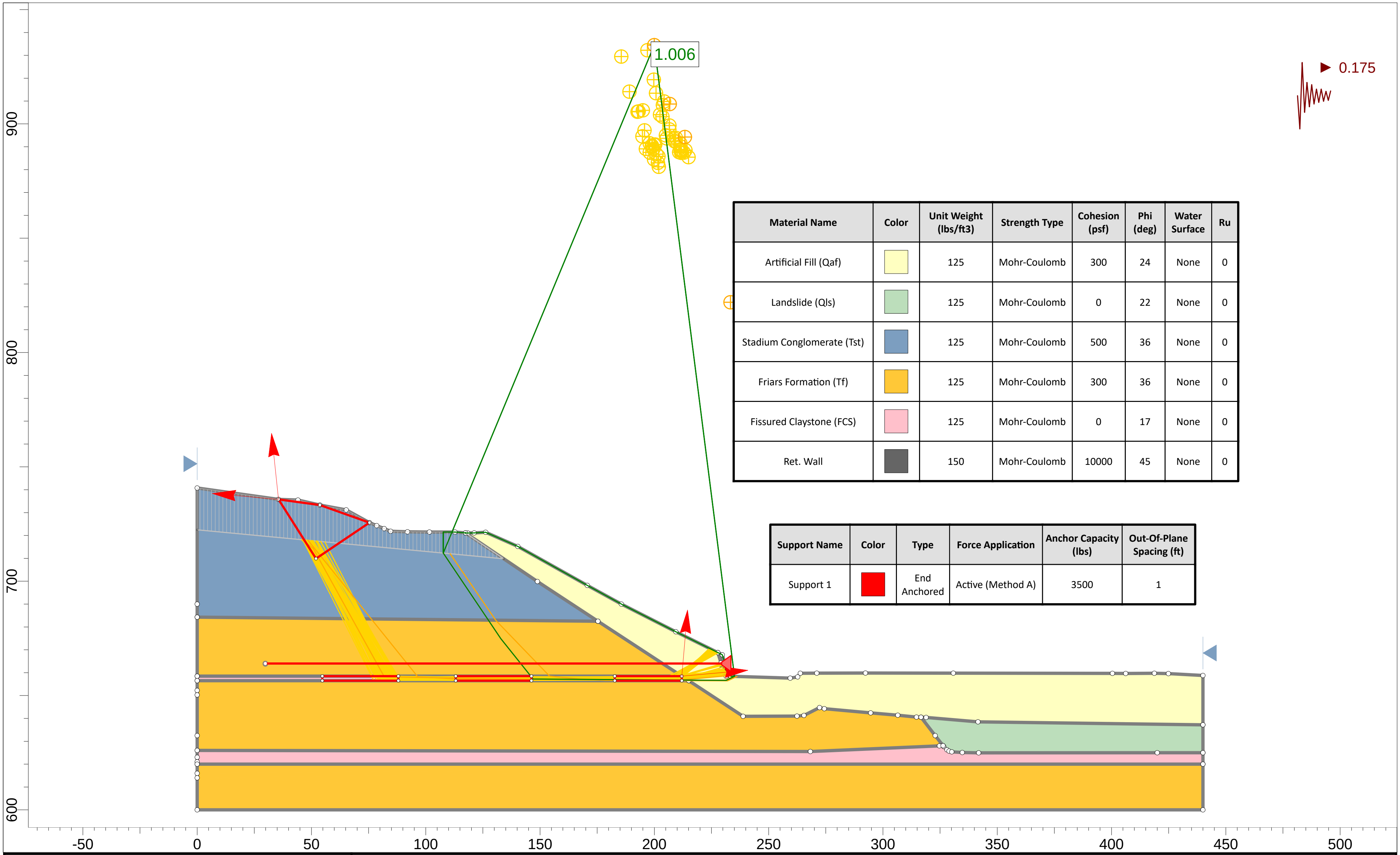
Date 10/19/2023, 10:25:01 AM
File Name 06 GPI 2 Proposed Static 3202_I.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟥	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	10000	45	None	0

Project	07 - GPI 2 - Proposed Static Stabilized - Rancho Bernardo 3202.I		
Analysis Description	Block - Modified Bishop		
Drawn By DJB	*Scale* 1:697	*Company*	GPI
Date	10/19/2023, 10:25:01 AM	*File Name*	07 GPI 2 Proposed Static Stabilized 3202_I.slim

SLIDEINTERPRET 6.039

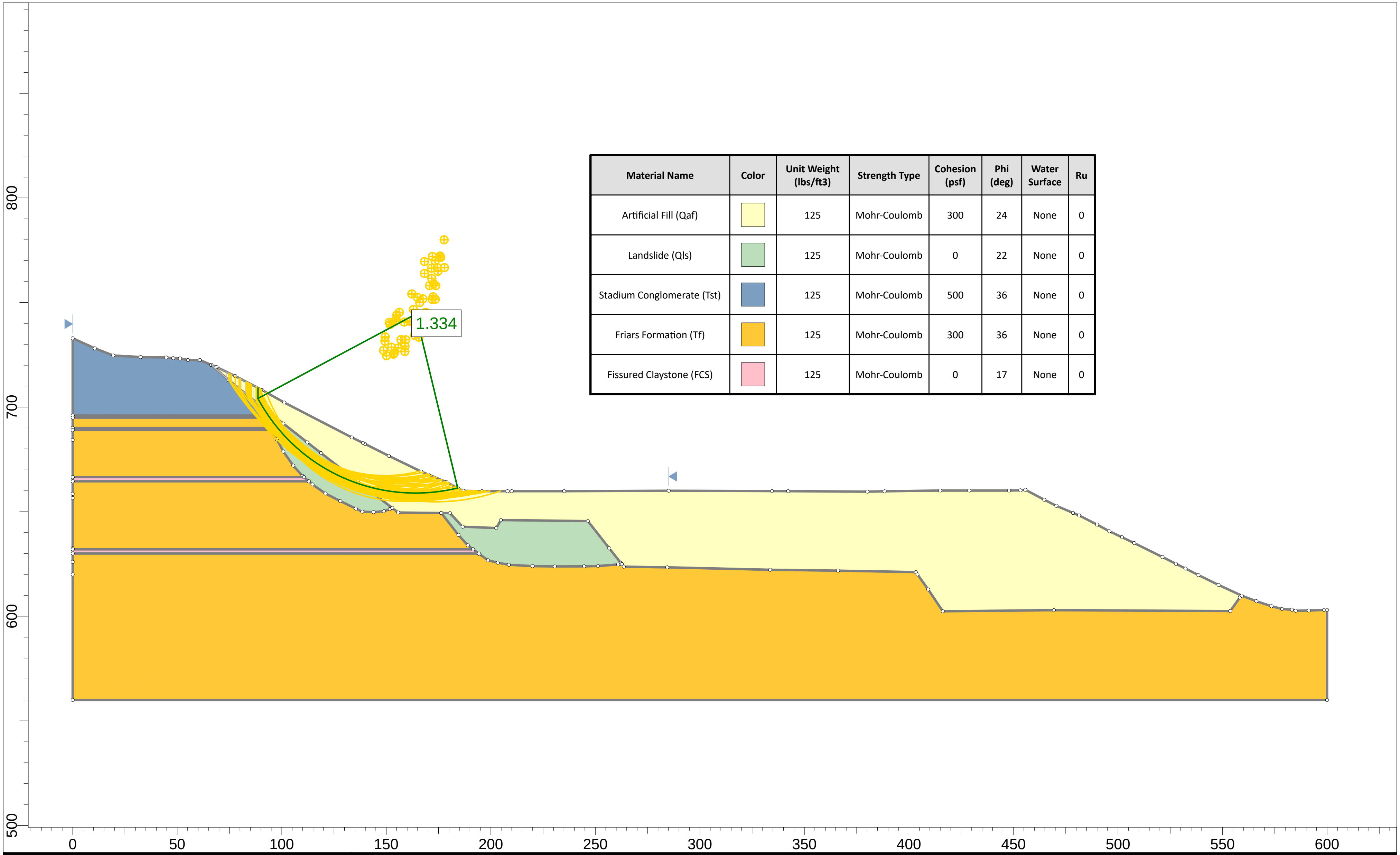


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟪	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	10000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟥	End Anchored	Active (Method A)	3500	1

SLIDEINTERPRET 6.039

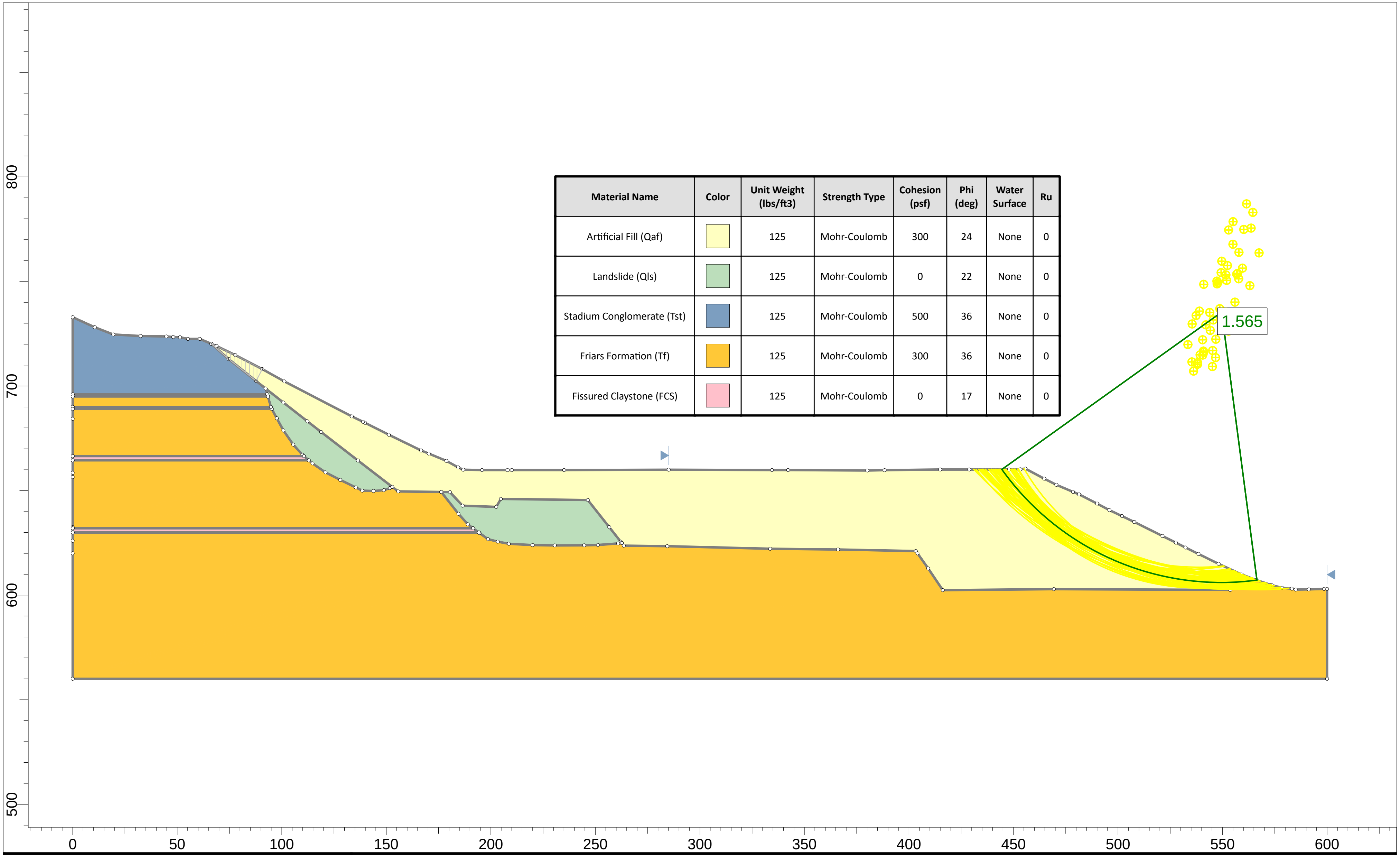
Project	08 - GPI 2 - Proposed Pseudostatic - Rancho Bernardo 3202.I
Analysis Description	Block - Modified Bishop
Drawn By	DJB
Scale	1:697
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	08 GPI 2 Proposed Pseudostatic 3202_I.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟥	125	Mohr-Coulomb	0	17	None	0

Project	09 - GPI 3 Upper - Existing Static - Rancho Bernardo 3202.I
Analysis Description	Circular - Modified Bishop
Drawn By	DJB
Scale	1:762
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	09 GPI 3 Upper Existing Static 3202_I.slim

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟥	125	Mohr-Coulomb	0	17	None	0

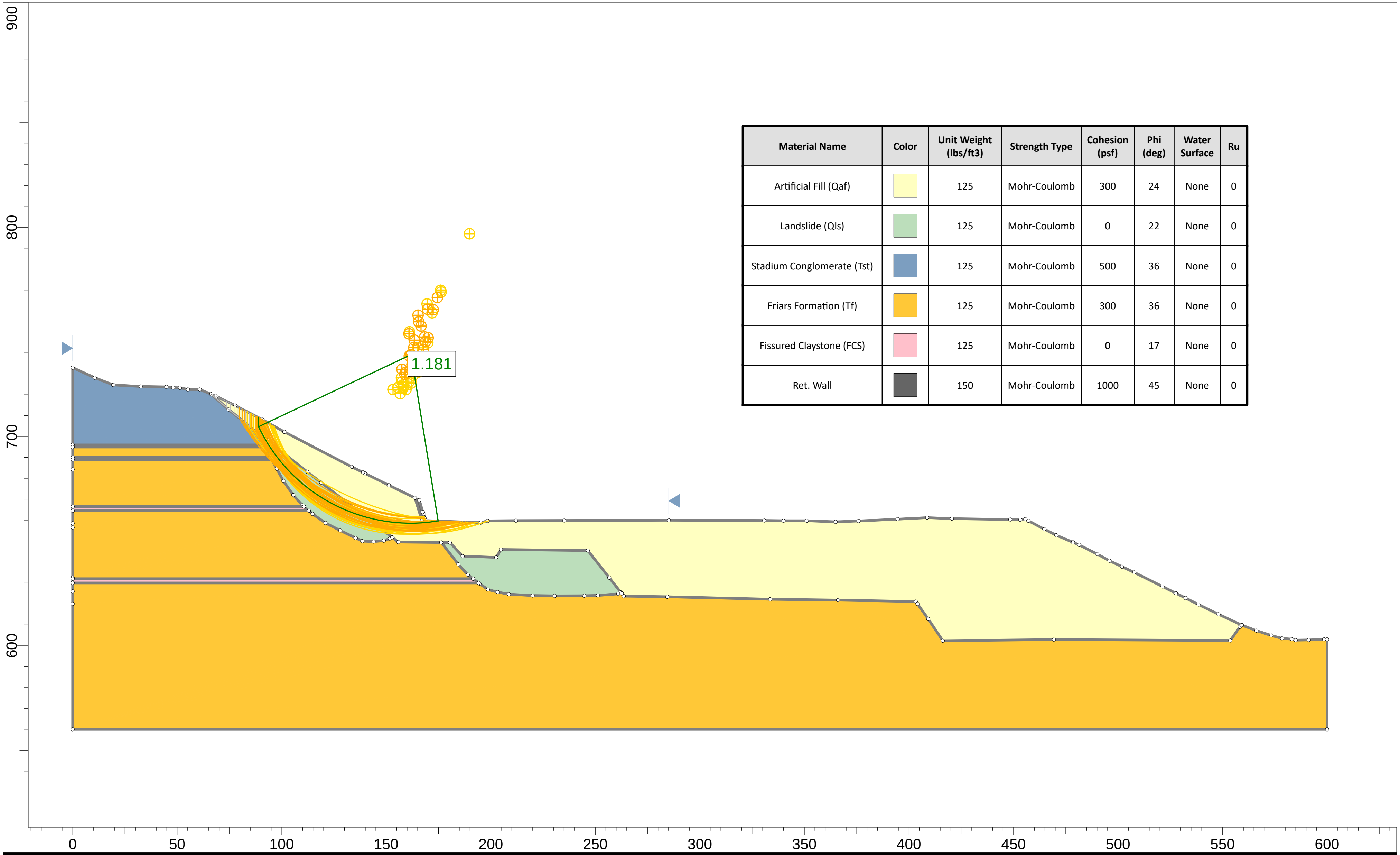
SLIDEINTERPRET 6.039

Project
10 - GPI 3 Lower - Existing Static - Rancho Bernardo 3202.I

Analysis Description
Circular - Modified Bishop

Drawn By DJB
Scale 1:762
Company GPI

Date 10/19/2023, 10:25:01 AM
File Name 10 GPI 3 Lower Existing Static 3202_I.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟪	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

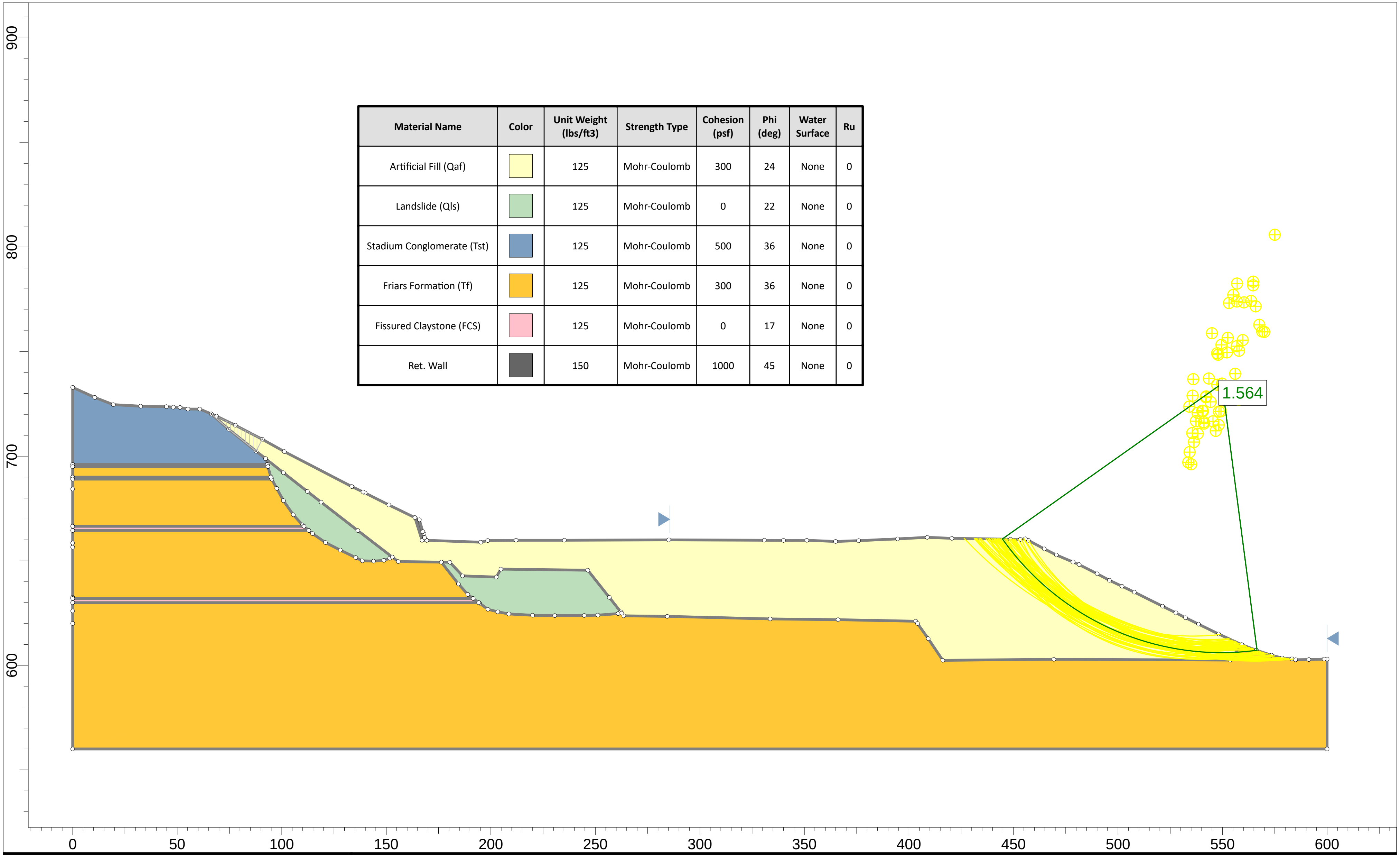
Project
11 - GPI 3 Upper - Proposed Static - Rancho Bernardo 3202.I

Analysis Description
Circular - Modified Bishop

Drawn By DJB
Scale 1:762
Company GPI

Date 10/19/2023, 10:25:01 AM
File Name 11 GPI 3 Upper Proposed Static 3202_I.slim

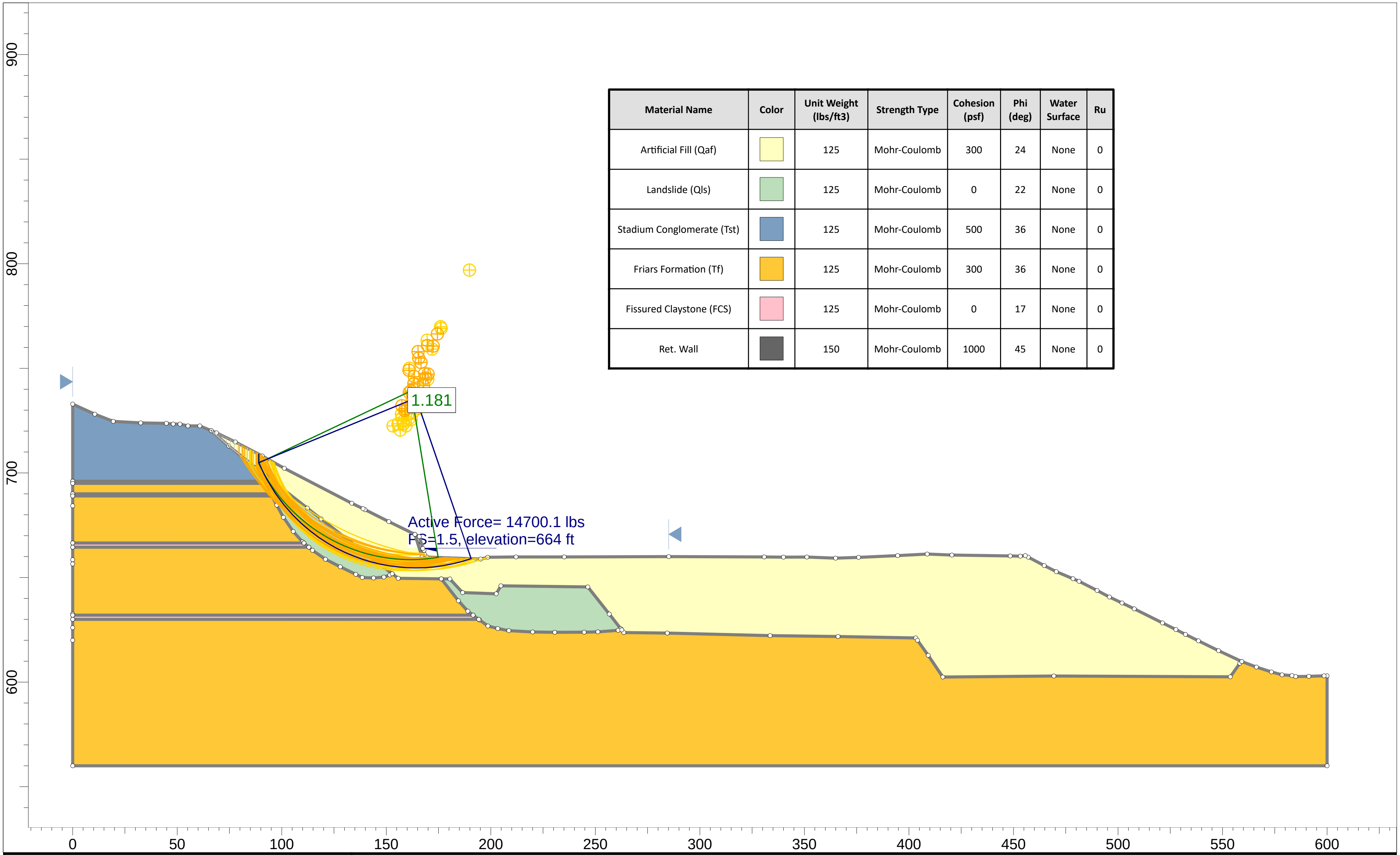
SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟥	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Project	12 - GPI 3 Lower - Proposed Static - Rancho Bernardo 3202.I		
Analysis Description	Circular - Modified Bishop		
Drawn By	DJB	*Scale* 1:762	*Company* GPI
Date	10/19/2023, 10:25:01 AM	*File Name*	12 GPI 3 Lower Proposed Static 3202_I.slim

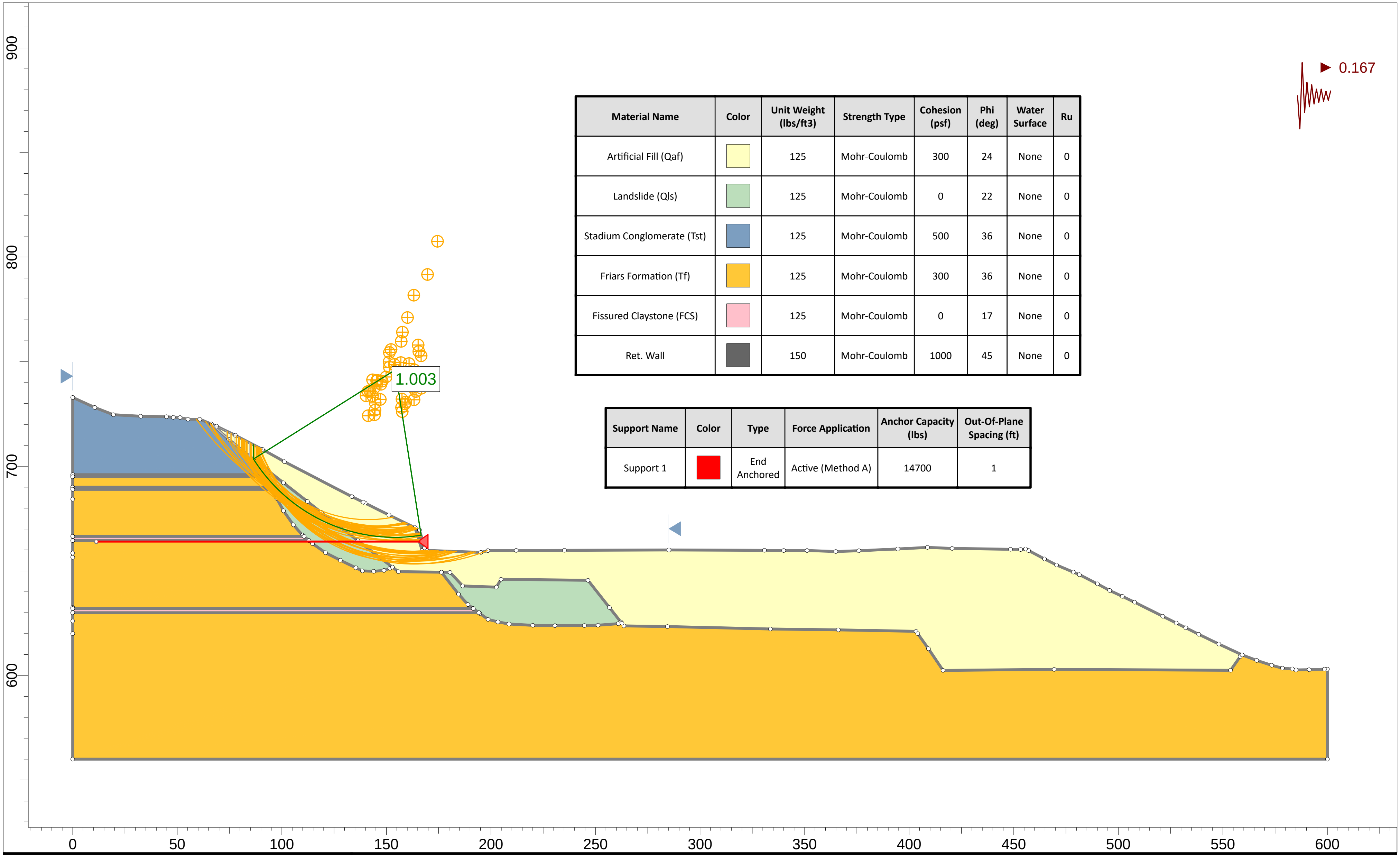
SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟪	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Project	13 - GPI 3 Upper - Proposed Static Stabilized - Rancho Bernardo 3202.I
Analysis Description	Circular - Modified Bishop
Drawn By	DJB
Scale	1:762
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	13 GPI 3 Upper Proposed Static Stabilized 3202_I.slim

SLIDEINTERPRET 6.039

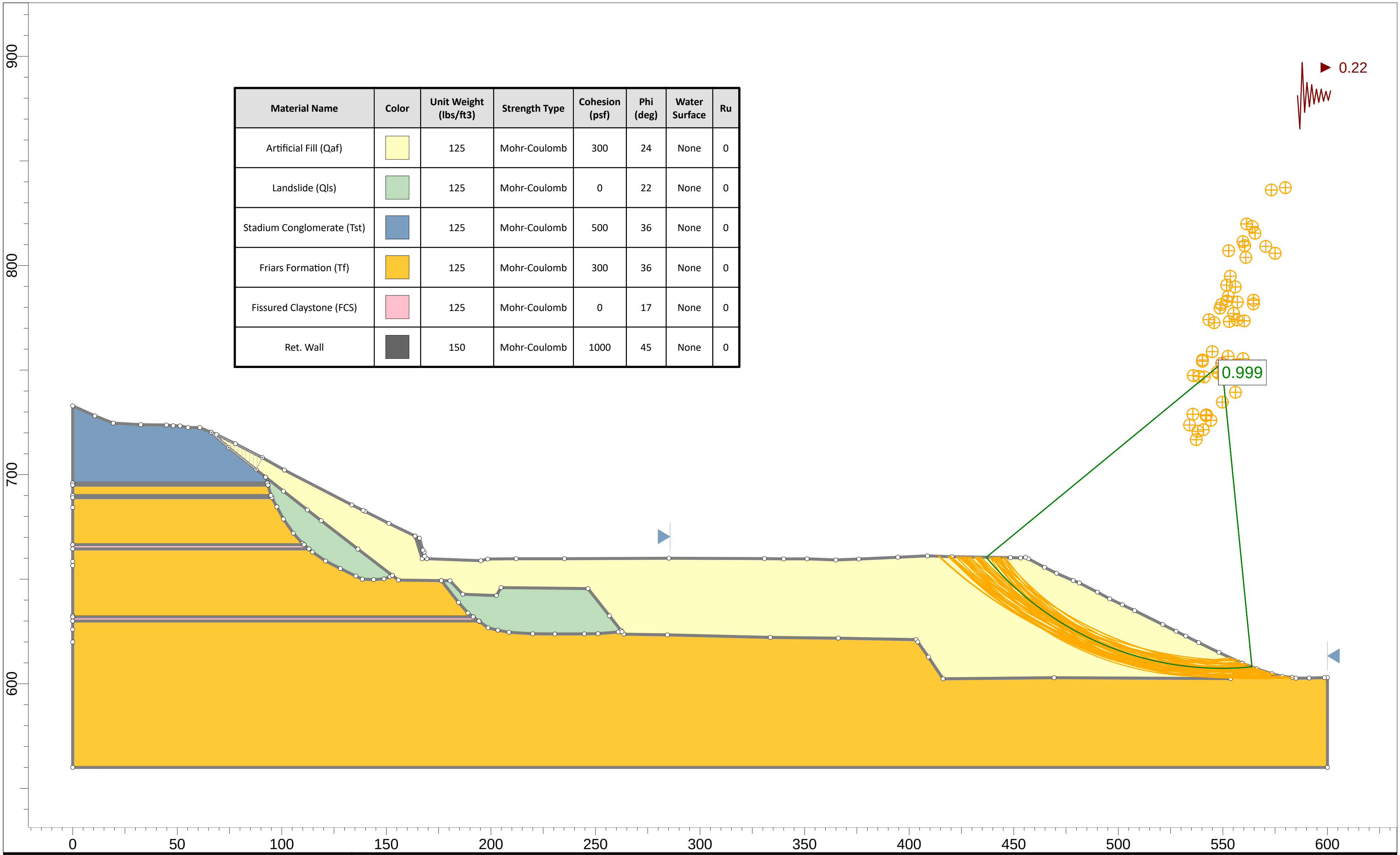


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟪	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟥	End Anchored	Active (Method A)	14700	1

Project	14 - GPI 3 Upper - Proposed Pseudostatic - Rancho Bernardo 3202.I
Analysis Description	Circular - Modified Bishop
Drawn By	DJB
Scale	1:762
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	14 GPI 3 Upper Proposed Pseudostatic 3202_I.slim

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Fissured Claystone (FCS)	🟥	125	Mohr-Coulomb	0	17	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

GPI

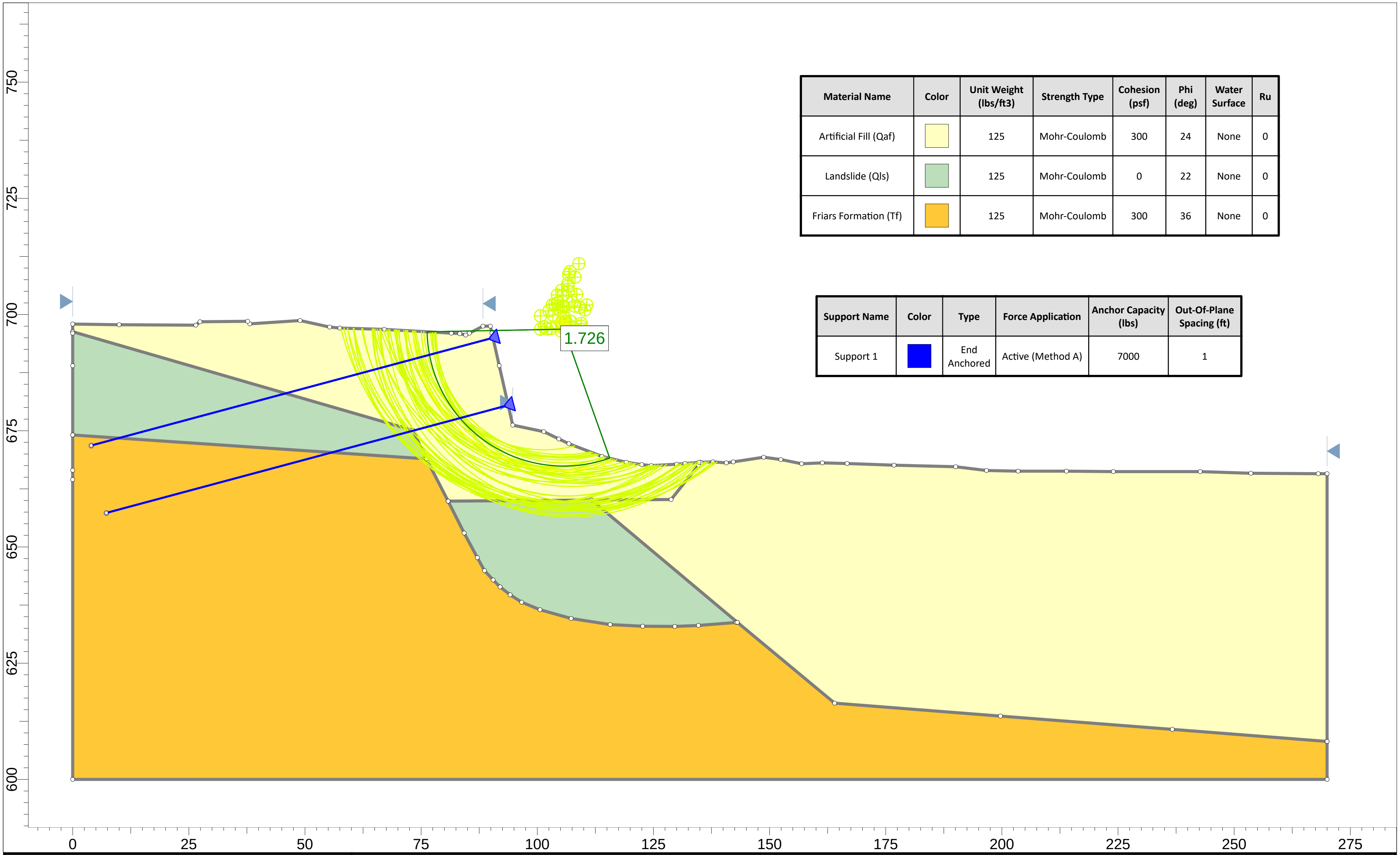
SLIDEINTERPRET 6.039

Project
15 - GPI 3 Lower - Proposed Pseudostatic - Rancho Bernardo 3202.I

Analysis Description
Circular - Modified Bishop

Drawn By DJB
Scale 1:762
Company GPI

Date 10/19/2023, 10:25:01 AM
File Name 15 GPI 3 Lower Proposed Pseudostatic 3202_I.slim

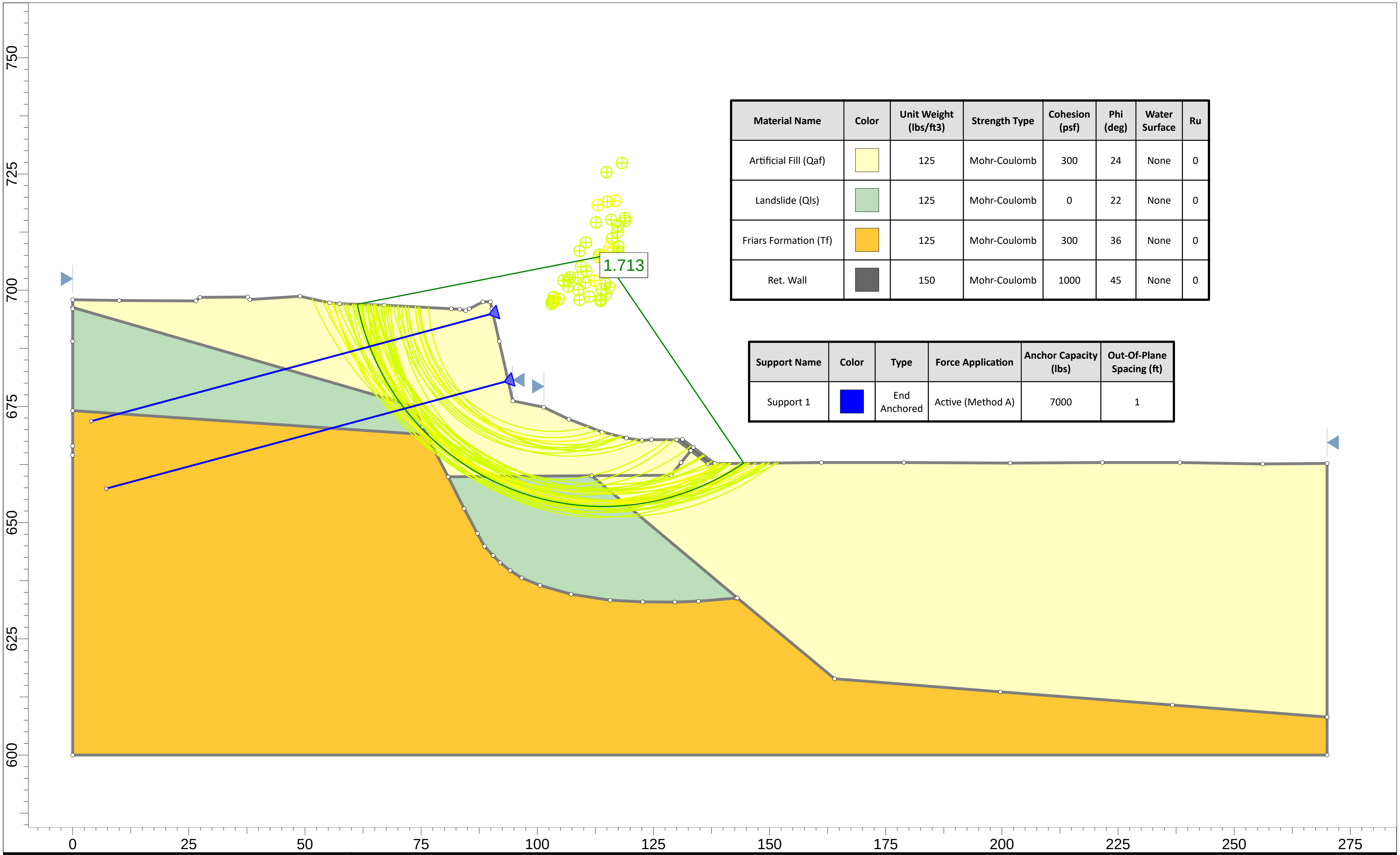


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	7000	1

Project	16 - GPI 4 - Existing Static - Rancho Bernardo 3202.I		
Analysis Description	Circular - Modified Bishop		
Drawn By DJB	*Scale* 1:343	*Company*	GPI
Date	10/19/2023, 10:25:01 AM	*File Name*	16 GPI 4 Existing Static 3202_I.slim

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	7000	1

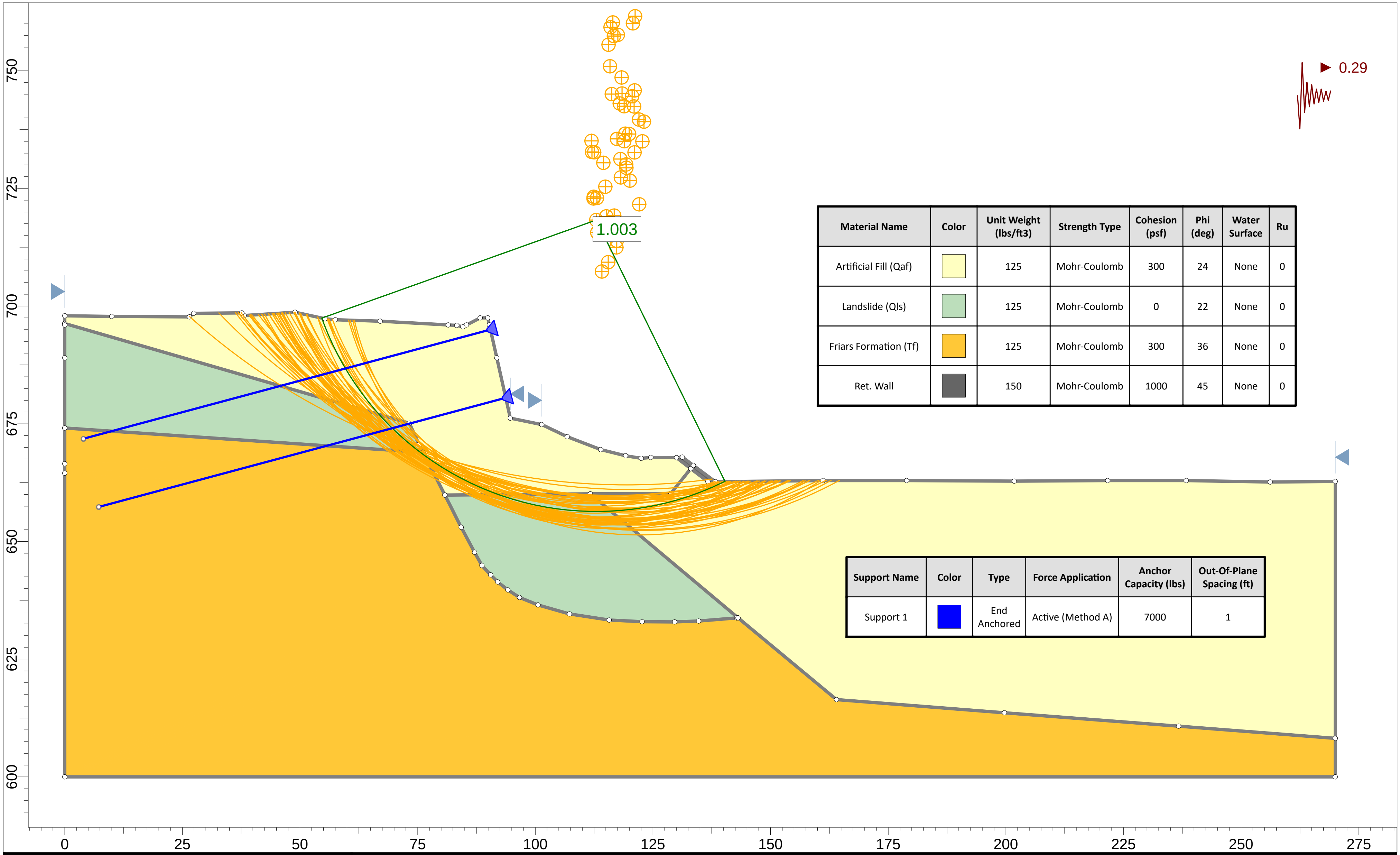
Project
17 - GPI 4 - Proposed Static - Rancho Bernardo 3202.I

Analysis Description
Circular - Modified Bishop

Drawn By DJB
Scale 1:343
Company GPI

Date 10/19/2023, 10:25:01 AM
File Name 17 GPI 4 Proposed Static 3202_I.slim

SLIDEINTERPRET 6.039

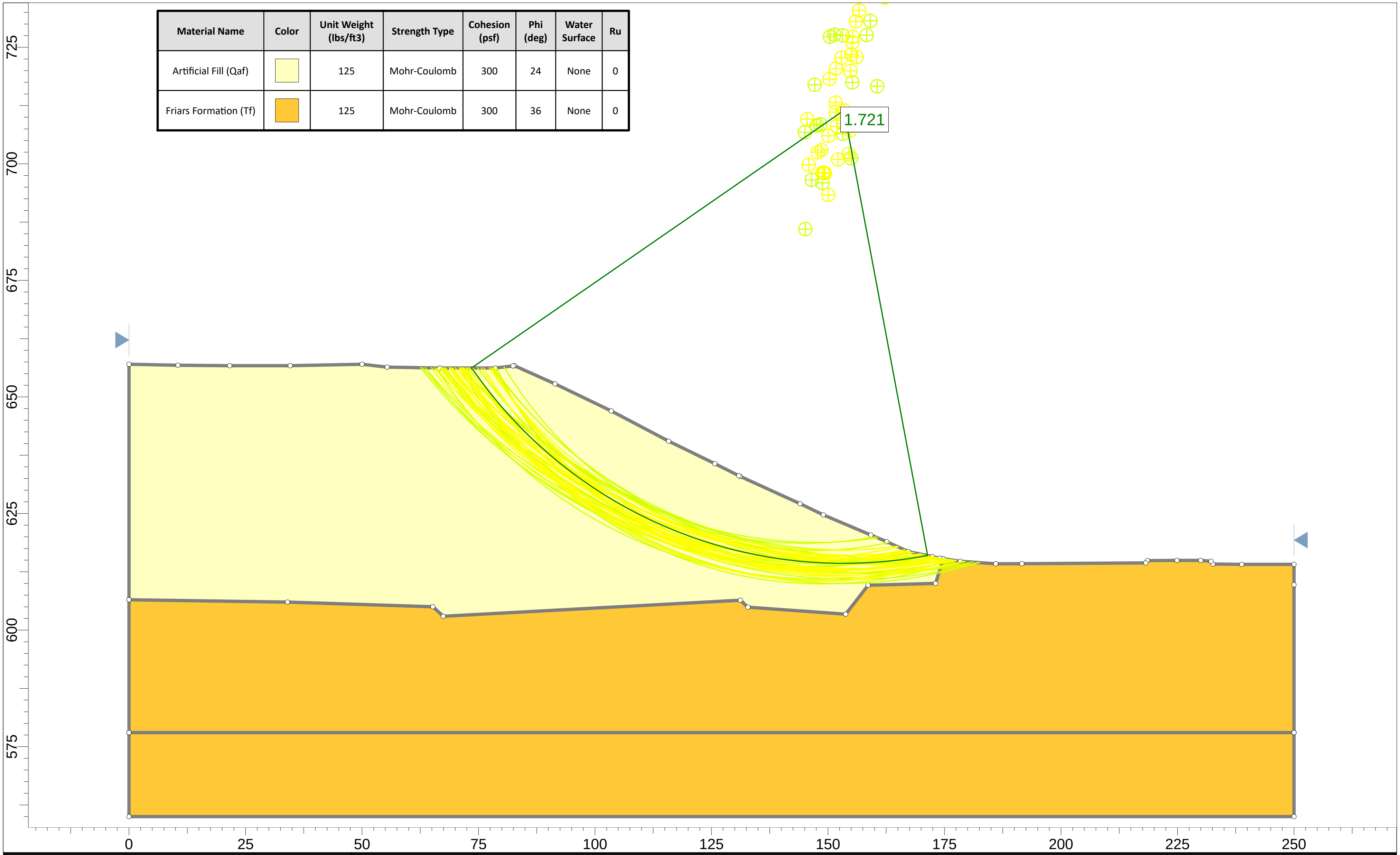


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Landslide (Qls)	🟩	125	Mohr-Coulomb	0	22	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	7000	1

Project	18 - GPI 4 - Proposed Pseudostatic - Rancho Bernardo 3202.I		
Analysis Description	Circular - Modified Bishop		
Drawn By DJB	*Scale* 1:339	*Company* GPI	
Date 10/19/2023, 10:25:01 AM		*File Name* 18 GPI 4 Proposed Pseudostatic 3202_I.slim	

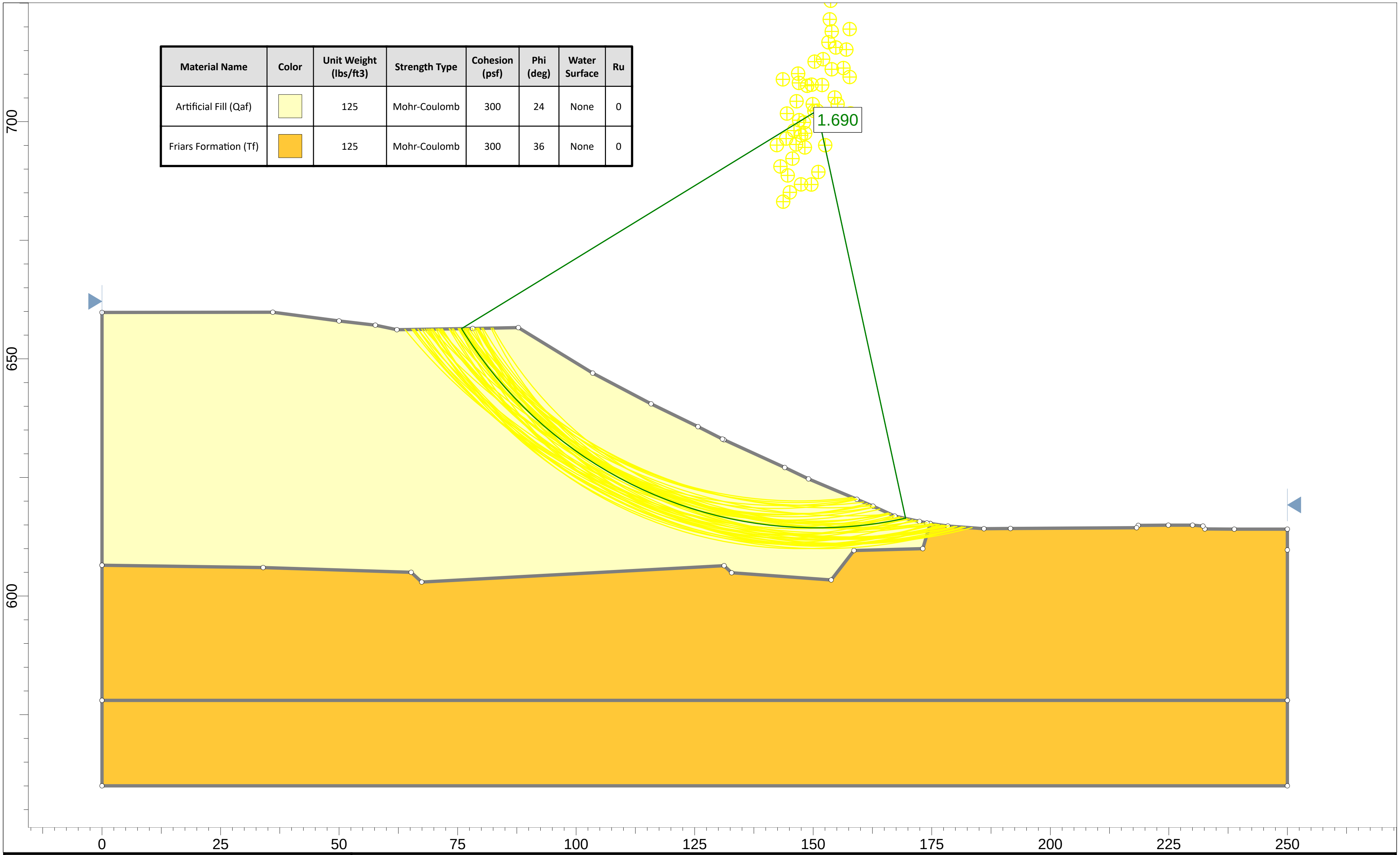
SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0

Project	19 - GPI 5 - Existing Static - Rancho Bernardo 3202.I		
Analysis Description	Circular - Modified Bishop		
Drawn By DJB	*Scale* 1:342	*Company* GPI	
Date 10/19/2023, 10:25:01 AM	*File Name* 19 GPI 5 Existing Static 3202_I.slim		

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0

GPI

SLIDEINTERPRET 6.039

Project 20 - GPI 5 - Proposed Static - Rancho Bernardo 3202.I

Analysis Description Circular - Modified Bishop

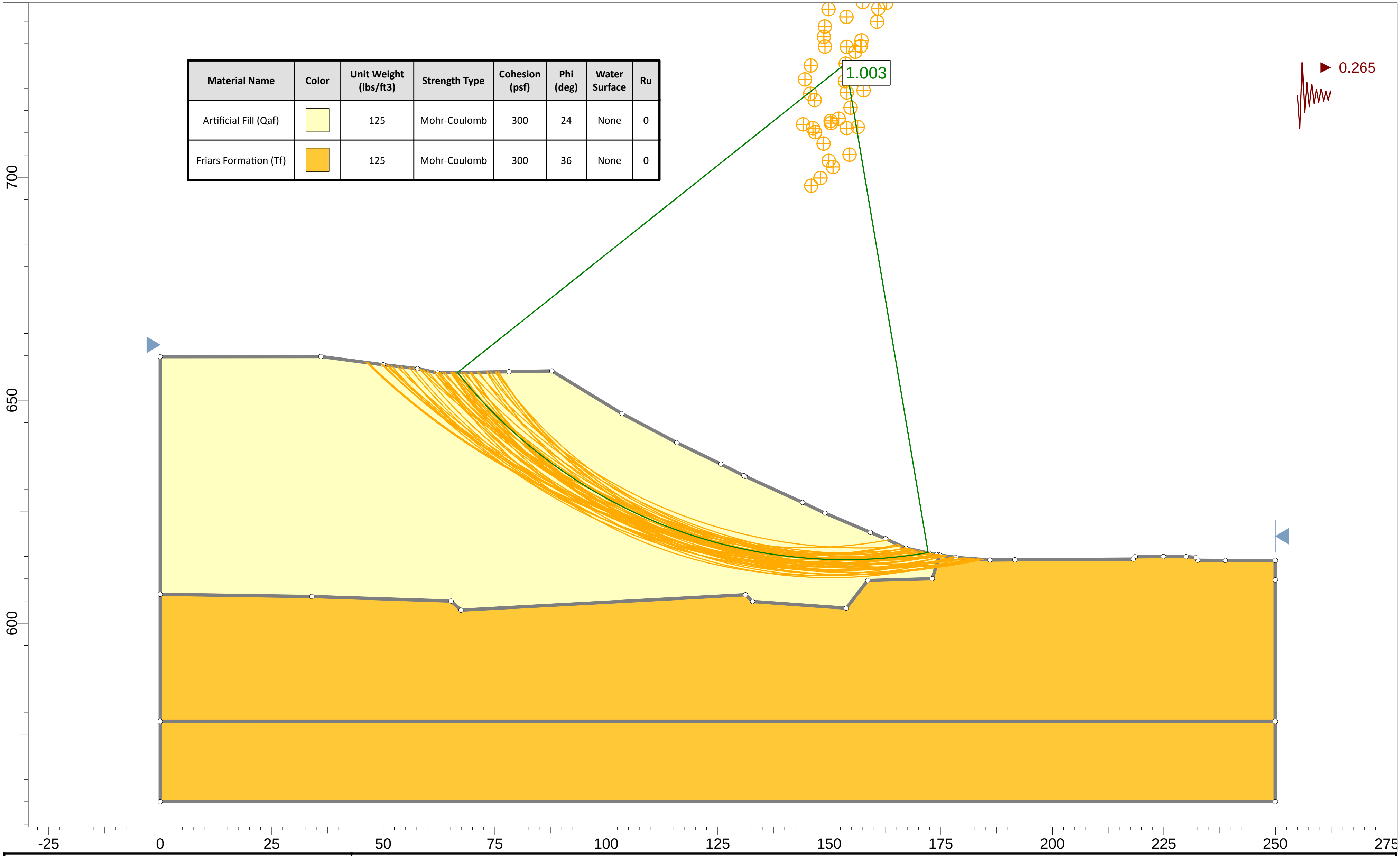
Drawn By DJB

Scale 1:336

Company GPI

Date 10/19/2023, 10:25:01 AM

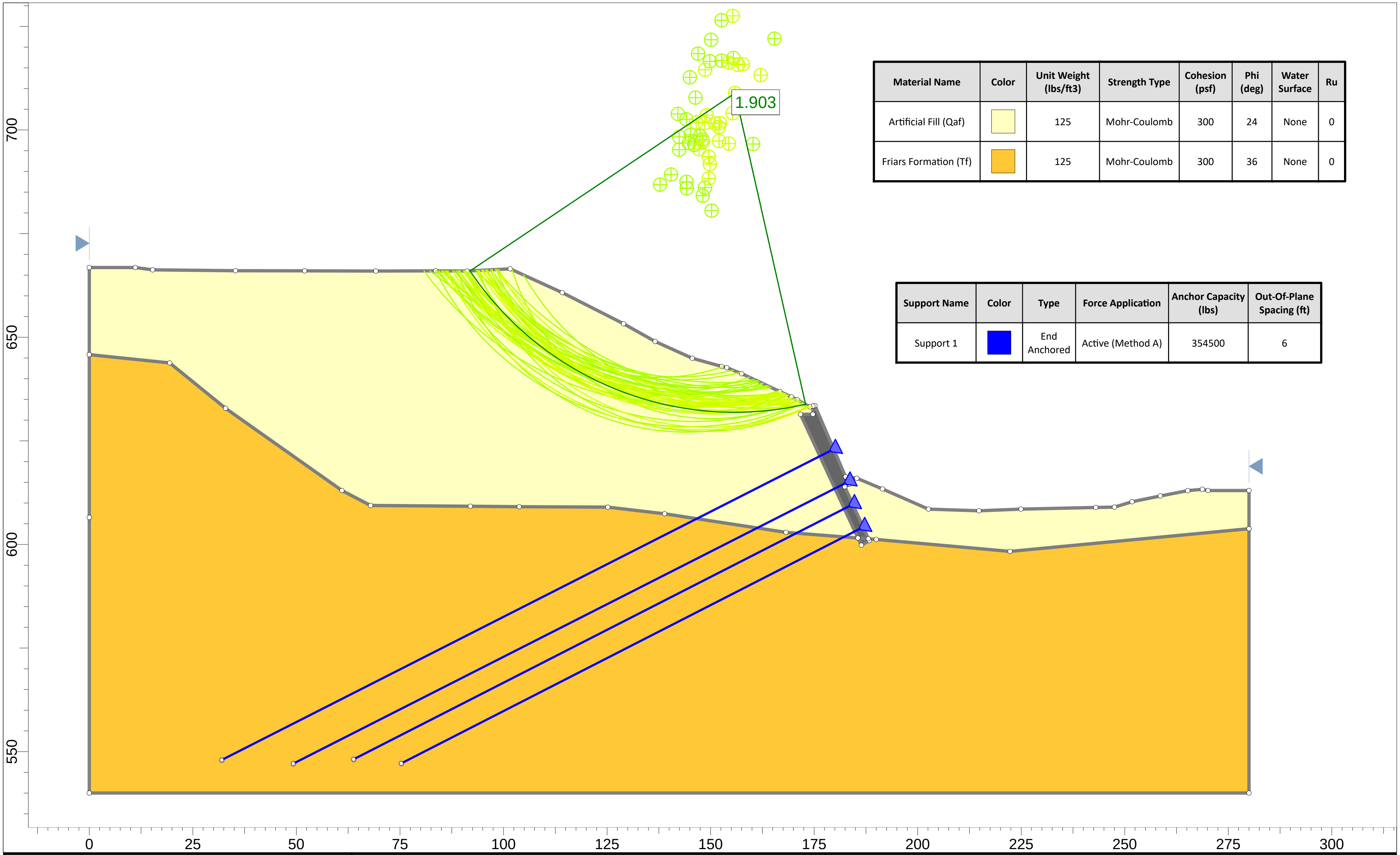
File Name 20 GPI 5 Proposed Static 3202_I.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0

Project	21 - GPI 5 - Proposed Pseudostatic - Rancho Bernardo 3202.I
Analysis Description	Circular - Modified Bishop
Drawn By	DJB
Scale	1:357
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	21 GPI 5 Proposed Pseudostatic 3202_I.slim

SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	354500	6

GPI

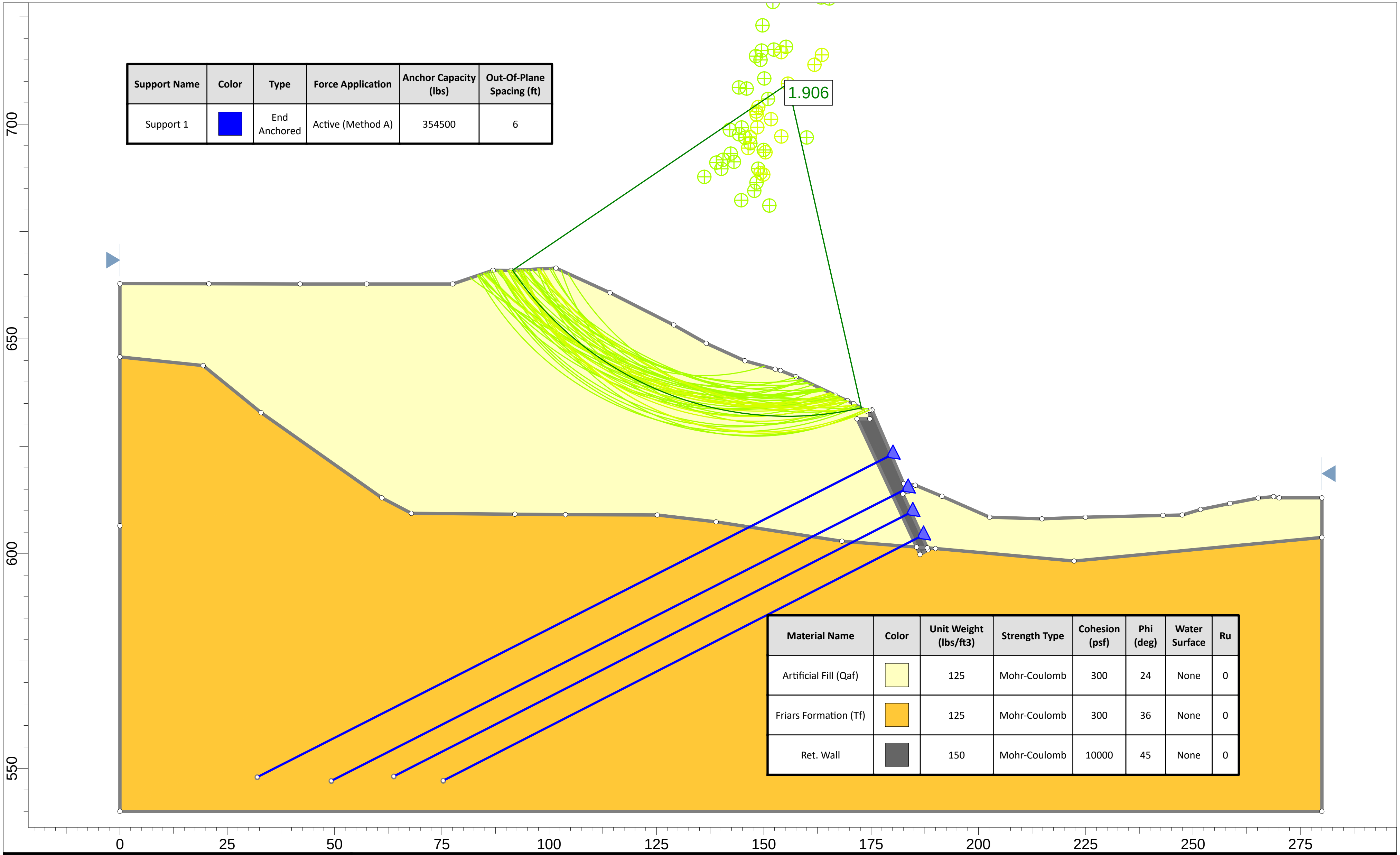
SLIDEINTERPRET 6.039

Project
22 - GPI 6 - Existing Static - Rancho Bernardo 3202.I

Analysis Description
Circular - Modified Bishop

Drawn By DJB
Scale 1:385
Company GPI

Date 10/19/2023, 10:25:01 AM
File Name 22 GPI 6 Existing Static 3202_I.slim



Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	354500	6

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	10000	45	None	0

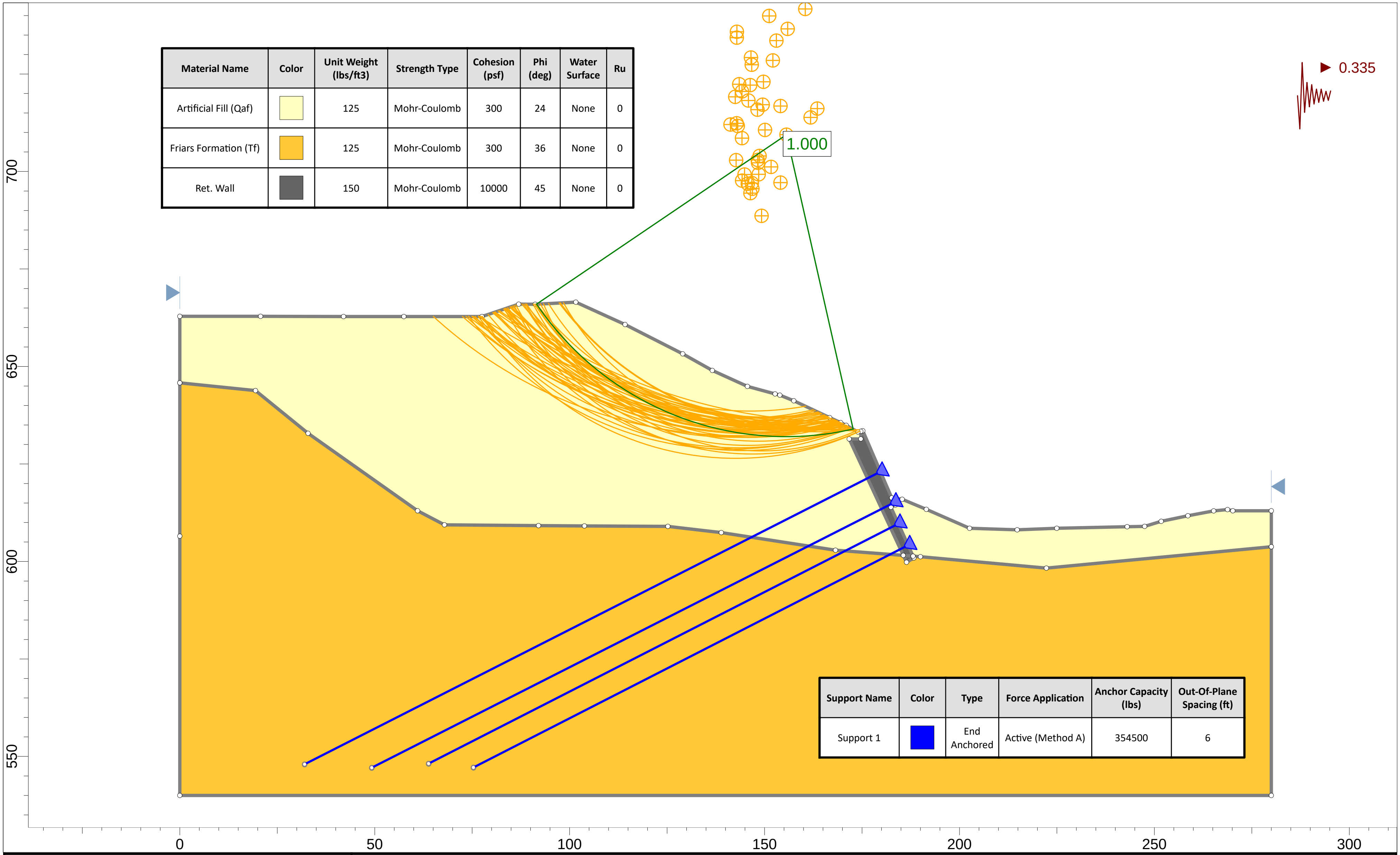
SLIDEINTERPRET 6.039

Project
23 - GPI 6 - Proposed Static - Rancho Bernardo 3202.I

Analysis Description
Circular - Modified Bishop

Drawn By DJB
Scale 1:371
Company GPI

Date 10/19/2023, 10:25:01 AM
File Name 23 GPI 6 Proposed Static 3202_I.slim

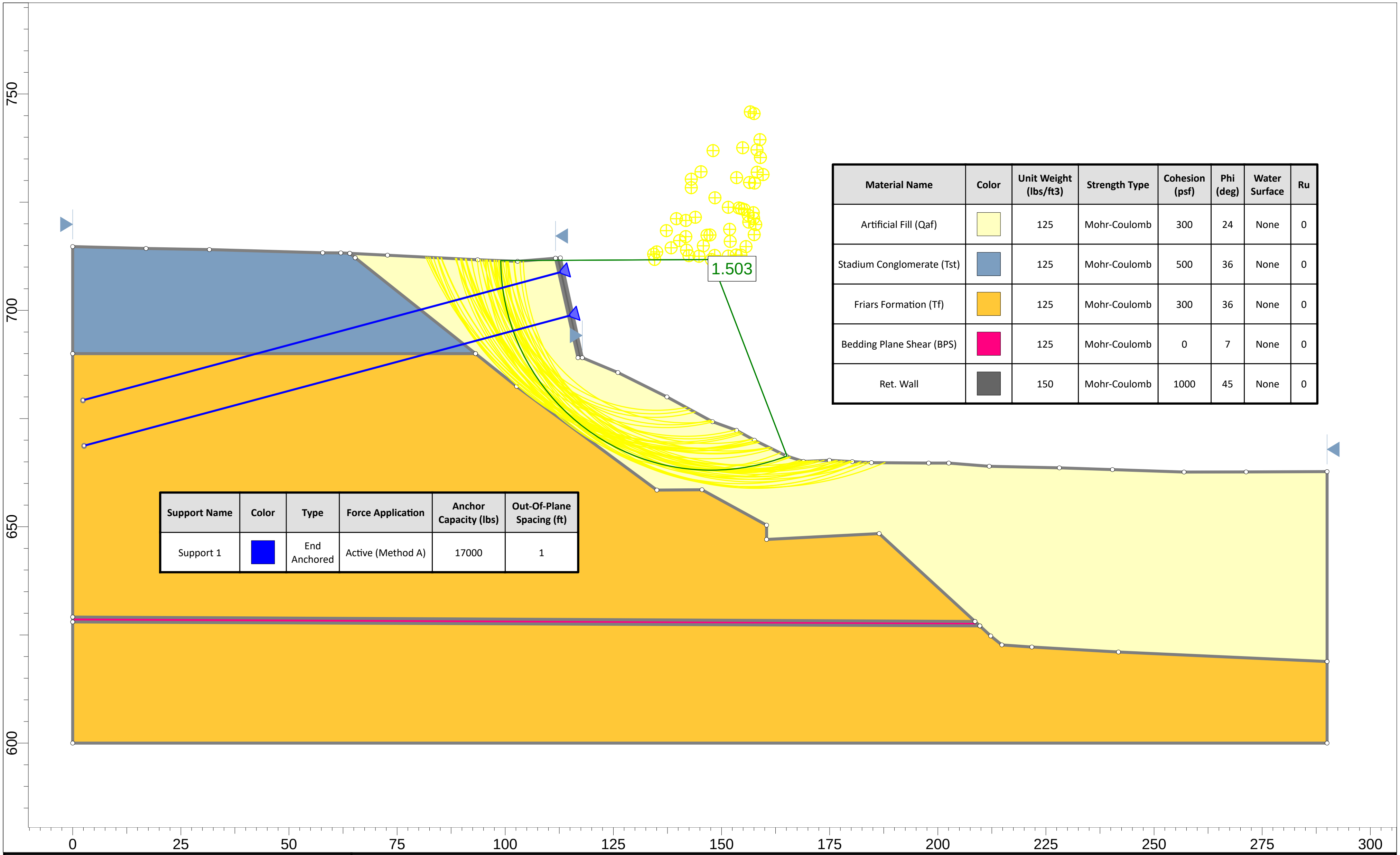


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	10000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	354500	6

Project	24 - GPI 6 - Proposed Pseudostatic - Rancho Bernardo 3202.I
Analysis Description	Circular - Modified Bishop
Drawn By	DJB
Scale	1:409
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	24 GPI 6 Proposed Pseudostatic 3202_I.slim

SLIDEINTERPRET 6.039

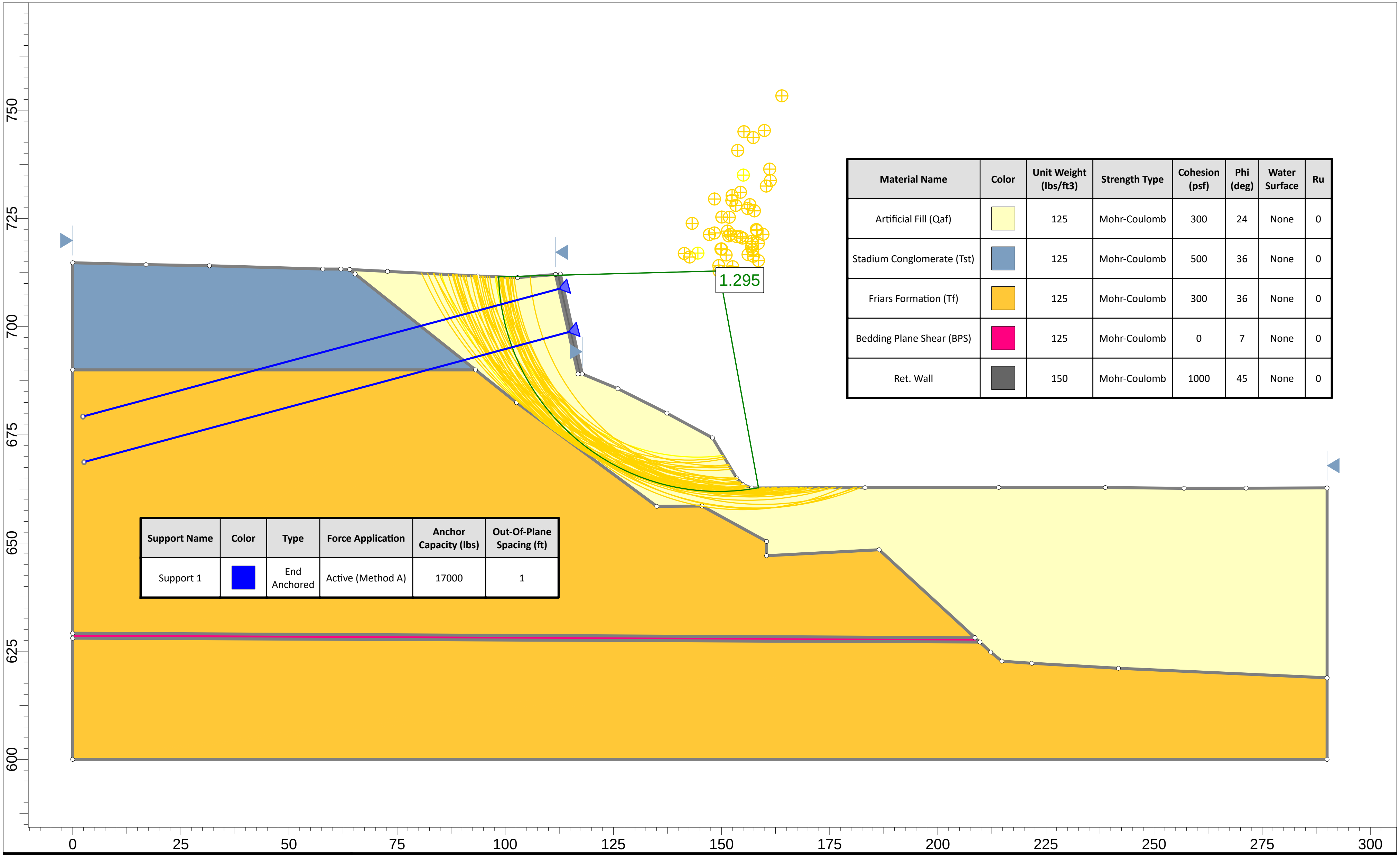


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Bedding Plane Shear (BPS)	🟥	125	Mohr-Coulomb	0	7	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	17000	1

Project	25 - GPI 7 - Existing Static - Rancho Bernardo 3202.I		
Analysis Description	Circular - Modified Bishop		
Drawn By DJB	*Scale* 1:368	*Company* GPI	
Date 10/19/2023, 10:25:01 AM	*File Name* 25 GPI 7 Existing Static 3202_I.slim		

SLIDEINTERPRET 6.039

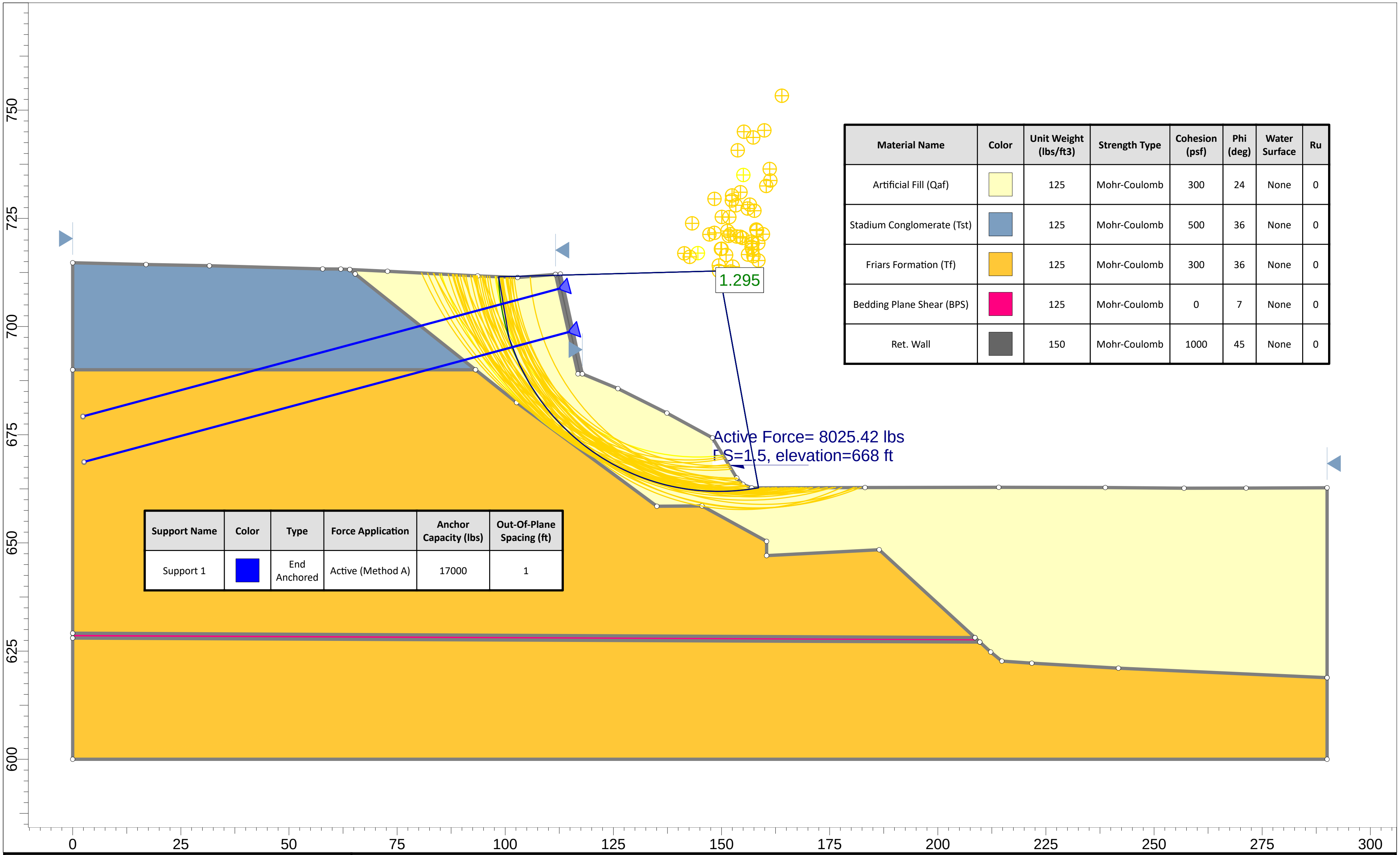


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Bedding Plane Shear (BPS)	🟪	125	Mohr-Coulomb	0	7	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	17000	1

Project	26 - GPI 7 - Proposed Static - Rancho Bernardo 3202.I		
Analysis Description	Circular - Modified Bishop		
Drawn By DJB	*Scale* 1:368	*Company* GPI	
Date 10/19/2023, 10:25:01 AM		*File Name* 26 GPI 7 Proposed Static 3202_I.slim	

SLIDEINTERPRET 6.039



Active Force= 8025.42 lbs
FS=1.5, elevation=668 ft

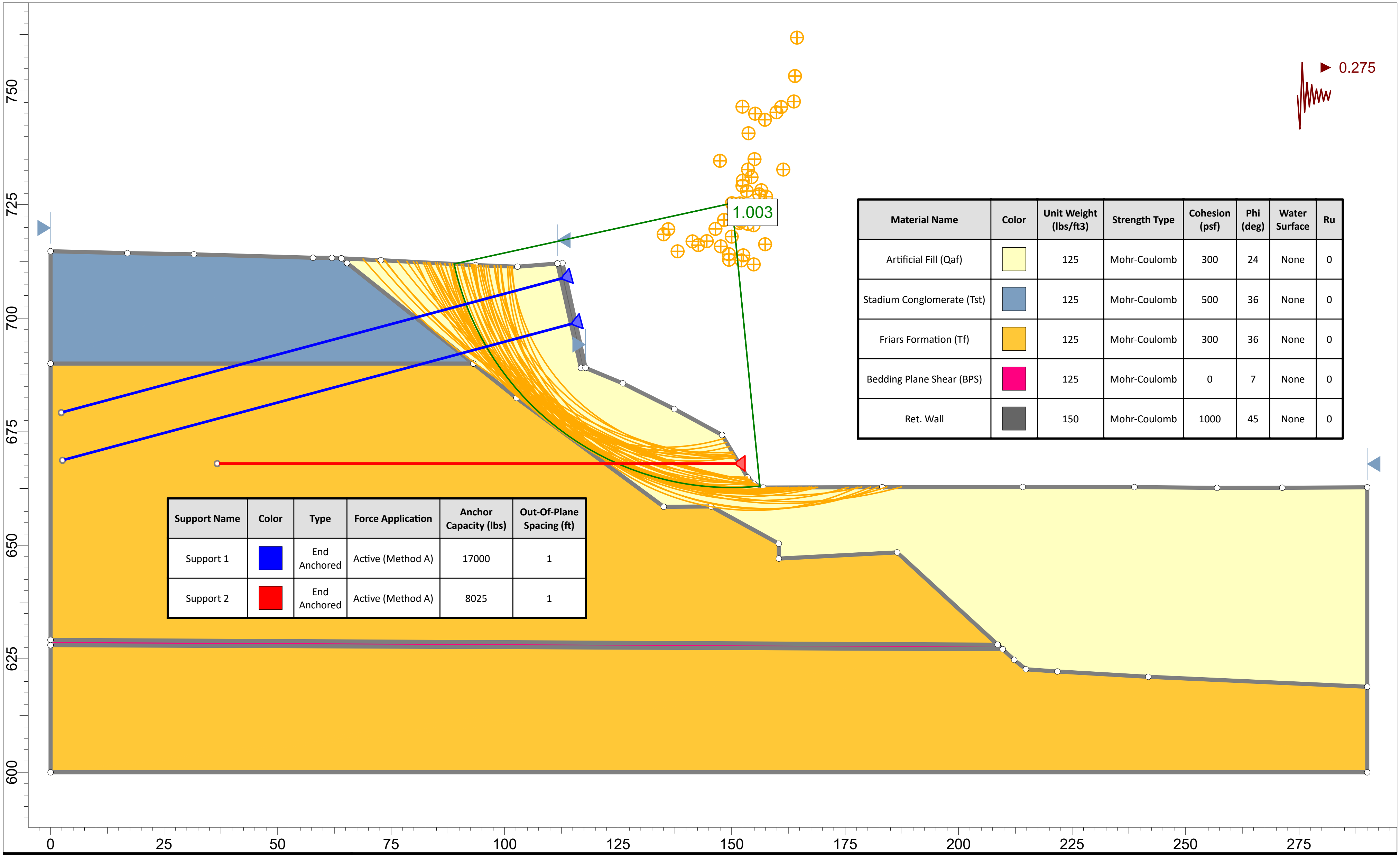
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Bedding Plane Shear (BPS)	🟥	125	Mohr-Coulomb	0	7	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	17000	1

GPI

SLIDEINTERPRET 6.039

Project	27 - GPI 7 - Proposed Static Stabilized - Rancho Bernardo 3202.I
Analysis Description	Circular - Modified Bishop
Drawn By	DJB
Scale	1:368
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	27 GPI 7 Proposed Static Stabilized 3202_I.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Artificial Fill (Qaf)	🟨	125	Mohr-Coulomb	300	24	None	0
Stadium Conglomerate (Tst)	🟦	125	Mohr-Coulomb	500	36	None	0
Friars Formation (Tf)	🟧	125	Mohr-Coulomb	300	36	None	0
Bedding Plane Shear (BPS)	🟥	125	Mohr-Coulomb	0	7	None	0
Ret. Wall	⬛	150	Mohr-Coulomb	1000	45	None	0

Support Name	Color	Type	Force Application	Anchor Capacity (lbs)	Out-Of-Plane Spacing (ft)
Support 1	🟦	End Anchored	Active (Method A)	17000	1
Support 2	🟥	End Anchored	Active (Method A)	8025	1

Project	28 - GPI 7 - Proposed Pseudostatic - Rancho Bernardo 3202.I
Analysis Description	Circular - Modified Bishop
Drawn By	DJB
Scale	1:351
Company	GPI
Date	10/19/2023, 10:25:01 AM
File Name	28 GPI 7 Proposed Pseudostatic 3202_I.slim

SLIDEINTERPRET 6.039

APPENDIX F

APPENDIX F

SITE-SPECIFIC RESPONSE SPECTRA

Site-specific response spectra were generated in accordance with the 2022 California Building Code (CBC) (Section 1613A) and Section 21.2 of ASCE 7-16 (ASCE, 2017), as well as ASCE 7-16 Supplement 1 (2018) and Supplement 3 (2021). Creation of a site-specific response spectrum requires analyzing site-specific deterministic and probabilistic seismic response spectra in order to create the Risk-Targeted (MCE_R) and Design response spectra.

We calculated the deterministic and probabilistic site-response spectra using web-based tools that estimate uniform hazard spectra using faults as earthquake sources. The web tools include geographic and seismic information on known active faults in California based on the 2014 USGS fault model. For both our deterministic and probabilistic analyses, we used four 2014 NGA West 2 attenuation relationships to determine the geometric-mean horizontal component of ground motion: Abrahamson-Silva-Kamai (2014), Boore-Stewart-Seyhan-Atkinson (2014), Campbell-Bozorgnia (2014), and Chiou-Youngs (2014).

For our evaluations using the above selected attenuation relationships, we used shear wave velocities, V_{S30}, of 1002.8 fps (about 305.7 m/s) for the proposed MOB and 1033.7 fps (about 315.1 m/s) for the proposed parking structure. These values correspond to the upper bound of CBC Site Class D (stiff soil) and were determined by a seismic shear-wave survey performed at the site (see Appendix C).

Probabilistic Spectra

The probabilistic (MCE_R) ground motion spectra (per the Method 1 requirements of Section 21.2.1.1, ASCE 7-16) were calculated using the USGS Unified Hazard Tool website. Using inputs of the site coordinates, Site Class, and time horizon (return period), the web tool outputs the Uniform Hazard Response Spectrum (UHRS) for predetermined Site Classes and shear wave velocities. For our analysis, we utilized the *Dynamic: Conterminous U.S. 2014 (update, v4.2.0)* edition of the web tool. We calculated response spectra for 259 m/s (Site Class D) and 360 m/s (C/D Boundary) and then linearly interpolated between those spectra based on our estimated site-specific shear wave velocities of 305.7 and 315.1 m/s.

The MCE_R corresponds to an earthquake ground motion having a 2 percent probability of exceedance within a 50-year period, or an average return period of 2,475 years. The final probabilistic response spectrum was based on the geometric mean horizontal component, scaled by factors to convert the geometric-mean response to the maximum-rotated response, of the spectral response values at 5% damping for the four above noted attenuation relationships. The maximum rotated component (MRC) response factors used were based on the period dependent factors developed by Huang, Whittaker, and Luco (2008) and presented in Section 21.2 of ASCE 7-16. The weighted average, maximum-rotated site-specific probabilistic response for the above predetermined shear wave velocities, as well as the final interpolation based on the site-specific shear wave velocities, are shown on Figure F-1 (proposed MOB) and Figure F-4 (proposed PS).

Deterministic Spectra

Site-specific deterministic MCE response spectra were generated per the requirements of ASCE Section 7-16. The response spectrum was generated for nearby active faults, which were determined based on a combination of proximity and the table of deaggregation contributors developed with the USGS Unified Hazard Tool. Based on the above resources, the controlling deterministic response spectra are based on the Rose Canyon Fault for periods below 0.75 seconds and on the Elsinore Fault for periods above 0.75 seconds.

Spectral acceleration ordinates were calculated utilizing the Pacific Earthquake Engineering Research Center (PEER) ground motion database and the PEER NGA-West2 Spectrum model. We utilized the four previously noted attenuation relationships (equally weighted) and determined the required input fault parameters from USGS web resources (see references). Per the requirements of ASCE 7-16, we utilized an epsilon value of 1.0 for our analysis, which corresponds to the 84th percentile of the geometric-mean component (S_a + one standard deviation) of the spectral acceleration at 5% damping. As with the probabilistic spectrum, the geometric-mean values were scaled by period-dependent factors per Huang et al (2008) to obtain the maximum-rotated response. The site-specific deterministic response spectra are shown on Figure F-2 (proposed MOB) and Figure F-5 (proposed PS).

MCE_R and Design Response Spectra

The above-described analytical steps are presented in the attached Risk-Targeted Site-Specific Seismic Response Worksheets, Table F-1 for the proposed MOB and Table F-2 for the proposed PS.

The site-specific MCE_R response spectrum was generated per the requirements of Section 21.2 of ASCE 7-16 by comparing the spectral response accelerations from the probabilistic MCE_R (Section 21.2.1, see Figures F-1 and F-4) and the deterministic MCE_R (Section 21.2.2, see Figures F-2 and F-5), with the resulting MCE_R response spectrum being the lesser of the spectra accelerations at each period. The ordinates for the MCE_R response spectrum are presented in Tables F-1 and F-2 (Column 11).

The site-specific design response spectrum was generated per the requirements by taking 2/3 of the risk targeted MCE_R response spectrum but confirming that the values are not less than 80 percent of the spectral acceleration determined per Sections 11.4.6 and 21.3 of ASCE 7-16. The ordinates for the site-specific design response spectrum are presented in Tables F-1 and F-2 (Column 12).

The risk targeted site-specific MCE_R and design response spectra, as well as the mapped CBC response spectrum, are shown on Figure F-3 (proposed MOB) and Figure F-6 (proposed PS) and tabulated in Tables F-1 and F-2.

REFERENCES

American Society of Civil Engineers (ASCE) (2017), "Minimum Design Loads and Associated Criteria for Buildings and Other Structures," ASCE/SEI 7-16

American Society of Civil Engineers (2018), "Minimum Design Loads and Associated Criteria for Buildings and Other Structures, Supplement 1" ASCE/SEI 7-16, effective December 12, 2018.

American Society of Civil Engineers (2018), "Minimum Design Loads and Associated Criteria for Buildings and Other Structures, Supplement 3" ASCE/SEI 7-16, effective November 5, 2021.

California Office of Statewide Health Planning and Development (OSHPD), Seismic Design Maps Website, https://seismicmaps.org/

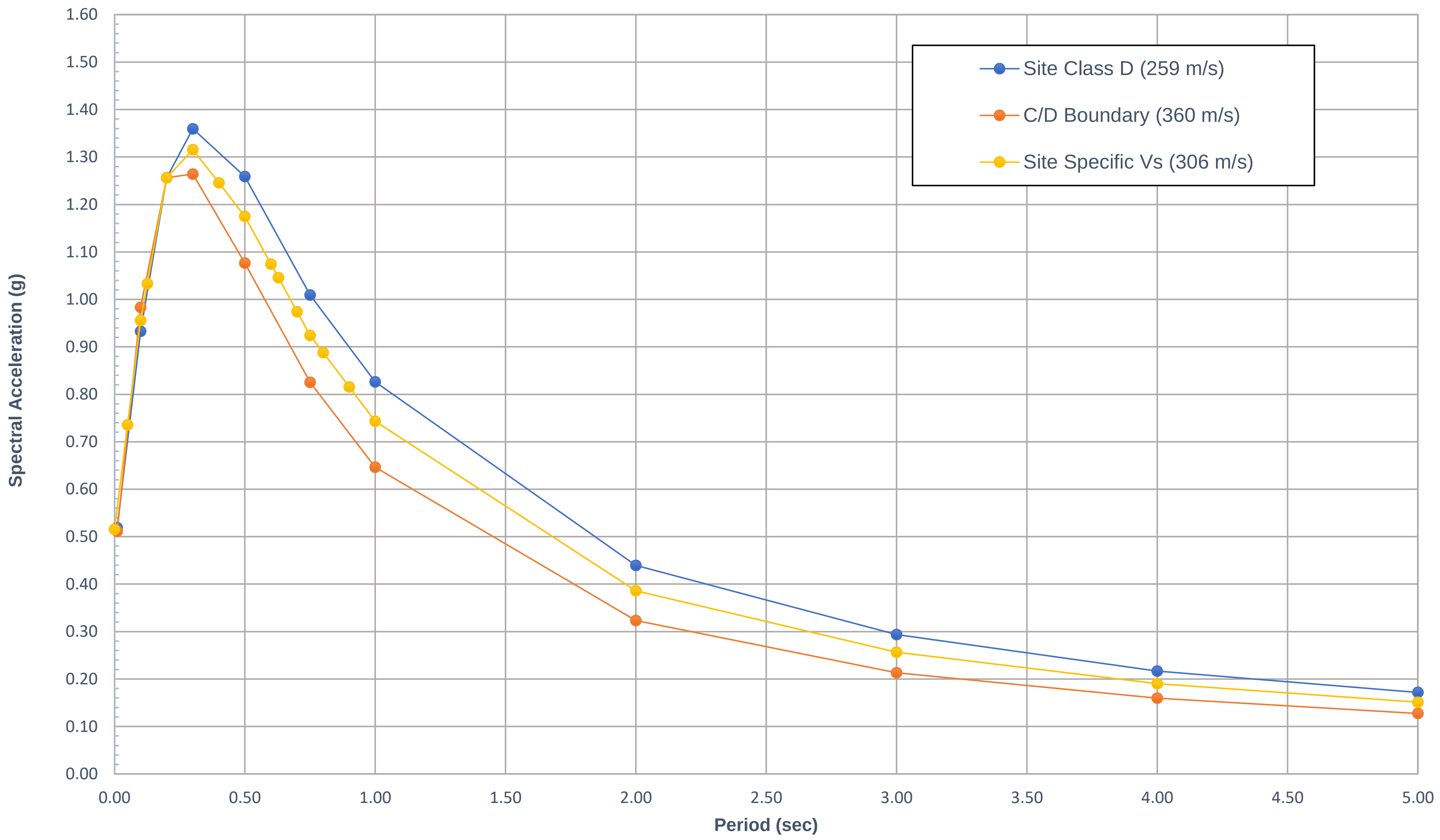
Huang, Y. N., Whittaker, A. S., and Luco, N. (2008). "Maximum spectral demands in the near-fault region." *Earthquake Spectra,* 24(1), 319-341.

Pacific Earthquake Engineering Research Center (PEER) Ground Motion Database, NGA-West2 Shallow Crustal Earthquakes in Active Tectonic Regimes, Target Spectrum (used for deterministic site-specific seismic analysis), accessed November 2023
https://ngawest2.berkeley.edu/spectras/new?sourceDb_flag=1

United States Geological Survey (USGS), 2008 National Seismic Hazard Maps, Source Parameters, accessed November 2023, http://geohazards.usgs.gov/

United States Geologic Survey (USGS), Unified Hazard Tool website, accessed November 2023, https://earthquake.usgs.gov/hazards/interactive/

United States Geologic Survey (USGS), USGS Earthquake Scenario Map website (Building Seismic Safety Council, BSSC 2014), accessed November 2023,
https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=14d2f75c7c4f4619936dac0d14e1e468



Site-Specific Probabilisitic MCE_R Response Spectra @ 5% Damping
per Chapter 21; ASCE 7-16 (2022 CBC)
PMB UCSD Rancho Bernardo - MOB
San Diego, California

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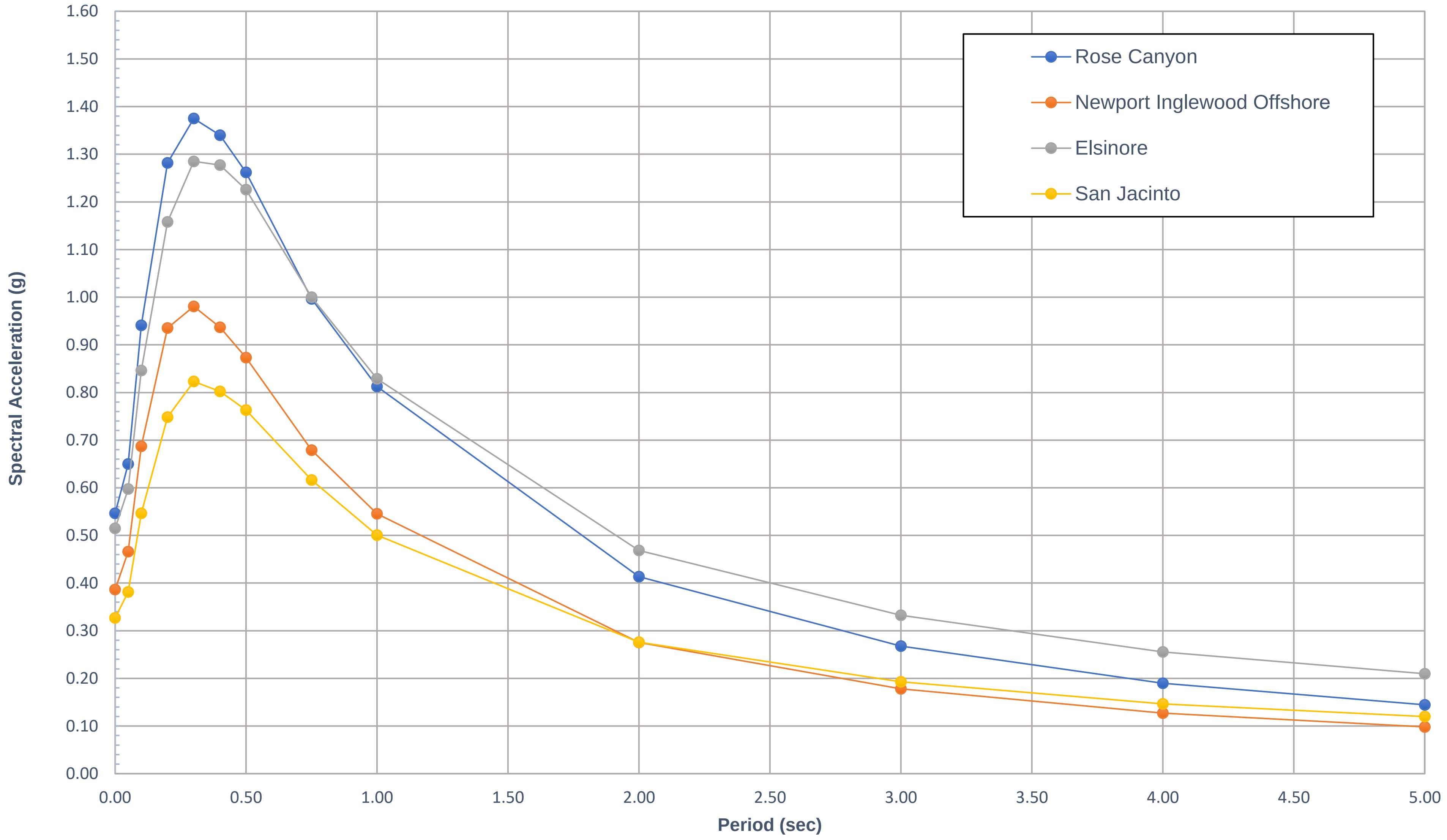
Project No. 3202.I

Figure F-1

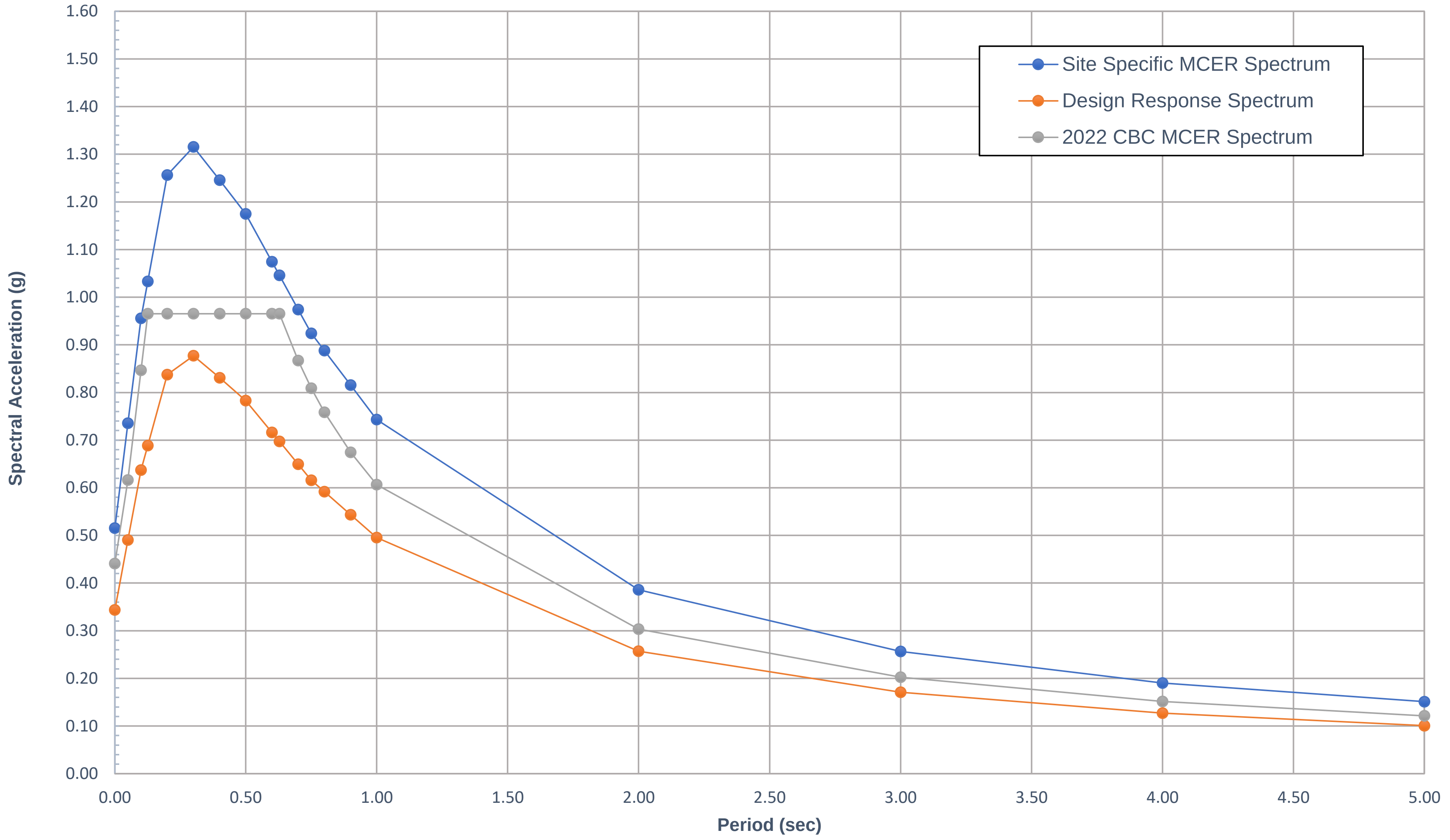


Site-Specific 84th Percentile Deterministic MCE_R Response Spectra
per Chapter 21; ASCE 7-16 (2022 CBC)
PMB UCSD Rancho Bernardo - MOB
San Diego, California

GEOTECHNICAL
PROFESSIONALS, INC.

Project No. 3202.I

Figure F-2



Site-Specific MCE_R and Design Response Spectra @ 5% Damping
per Chapter 21; ASCE 7-16 (2022 CBC)
PMB UCSD Rancho Bernardo - MOB
San Diego, California

GPI GEOTECHNICAL PROFESSIONALS, INC.

Project No. 3202.I

Figure F-3

TABLE F-1

RISK TARGETED SITE-SPECIFIC SEISMIC REPONSE WORKSHEET - MOB

Project	PMB UCSD RB - MOB
Proj. No.	3202.I
Latitude	33.013
Longitude	-117.082

Site Class	D
T_o	0.126 sec
T_s	0.629 sec
T_L	8.0 sec
V_S	1003 ft/sec

2022 CBC Parameters

S_s	0.825	S_1	0.304
F_a	1.170	F_v*	1.996
S_{MS}	0.965	S_{M1}	0.607
S_{DS}	0.644	S_{D1}	0.405
0.08 F_v/F_a	0.136	0.4F_v/F_a	0.682

PGA_M	0.441
C_{RS}	0.926
C_{R1}	0.927

NGA West2 Attentuation Relationships

1) Abrahamson-et al (2014)
2) Boore-et al (2014)
3) Cambell-Bozorgnia (2014)
4) Chiou-Youngs (2014)

SITE-SPECIFIC PARAMETERS

S_{MS}	**1.184**
S_{M1}	**0.772**
S_{DS}	**0.789**
S_{D1}	**0.514**
PGA_M	**0.515**

1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)
Period (sec)	2022 CBC MCE_R Spectrum	2022 CBC Design Response Spectrum	Risk Coefficient C_R	Scaled MCE_R Deterministic Spectrum (if required)	Probabilistic MCE_R Spectrum	Probabilistic w/ Risk Coefficient C_R	84th Percentile Deterministic Spectrum	2/3 Site Specific MCE_R Spectrum	80% of 2022 CBC Design Spectrum	**Site Specific MCE_R Spectrum**	**Design Response Spectrum**
0.000	0.441	0.294	0.926	0.698	0.557	0.515	0.547	0.344	0.235	**0.515**	**0.344**
0.050	0.616	0.411	0.926	0.830	0.794	0.736	0.650	0.490	0.304	**0.736**	**0.490**
0.100	0.847	0.564	0.926	1.201	1.032	0.956	0.941	0.637	0.402	**0.956**	**0.637**
0.126	0.965	0.644	0.926	1.313	1.116	1.033	1.028	0.689	0.453	**1.033**	**0.689**
0.200	0.965	0.644	0.926	1.636	1.357	1.256	1.282	0.838	0.515	**1.256**	**0.838**
0.300	0.965	0.644	0.926	1.755	1.420	1.315	1.375	0.877	0.515	**1.315**	**0.877**
0.400	0.965	0.644	0.926	1.710	1.345	1.246	1.340	0.831	0.515	**1.246**	**0.831**
0.500	0.965	0.644	0.926	1.611	1.268	1.175	1.262	0.783	0.515	**1.175**	**0.783**
0.600	0.965	0.644	0.927	1.477	1.160	1.074	1.157	0.716	0.515	**1.074**	**0.716**
0.629	0.965	0.644	0.927	1.439	1.129	1.046	1.127	0.697	0.515	**1.046**	**0.697**
0.700	0.867	0.578	0.927	1.343	1.051	0.974	1.052	0.649	0.515	**0.974**	**0.649**
0.750	0.809	0.539	0.927	1.276	0.997	0.924	1.000	0.616	0.515	**0.924**	**0.616**
0.800	0.758	0.506	0.927	1.233	0.958	0.888	0.966	0.592	0.507	**0.888**	**0.592**
0.900	0.674	0.449	0.927	1.145	0.880	0.815	0.897	0.544	0.450	**0.815**	**0.544**
1.000	0.607	0.405	0.927	1.058	0.802	0.743	0.829	0.495	0.405	**0.743**	**0.495**
2.000	0.303	0.202	0.927	0.598	0.416	0.386	0.469	0.257	0.203	**0.386**	**0.257**
3.000	0.202	0.135	0.927	0.424	0.277	0.256	0.333	0.171	0.135	**0.256**	**0.171**
4.000	0.152	0.101	0.927	0.326	0.205	0.190	0.255	0.127	0.101	**0.190**	**0.127**
5.000	0.121	0.081	0.927	0.268	0.163	0.151	0.210	0.101	0.081	**0.151**	**0.101**

(Based Upon Chapters 11 and 21 of ASCE 7-16; 04-14-2020 DJB)

TABLE F-1

RISK TARGETED SITE-SPECIFIC SEISMIC REPONSE WORKSHEET - MOB

EXPLANATION: NOTES AND REFERENCES

INPUT BLUE ONLY - RED AND BLACK CALCULATED

Column Descriptions

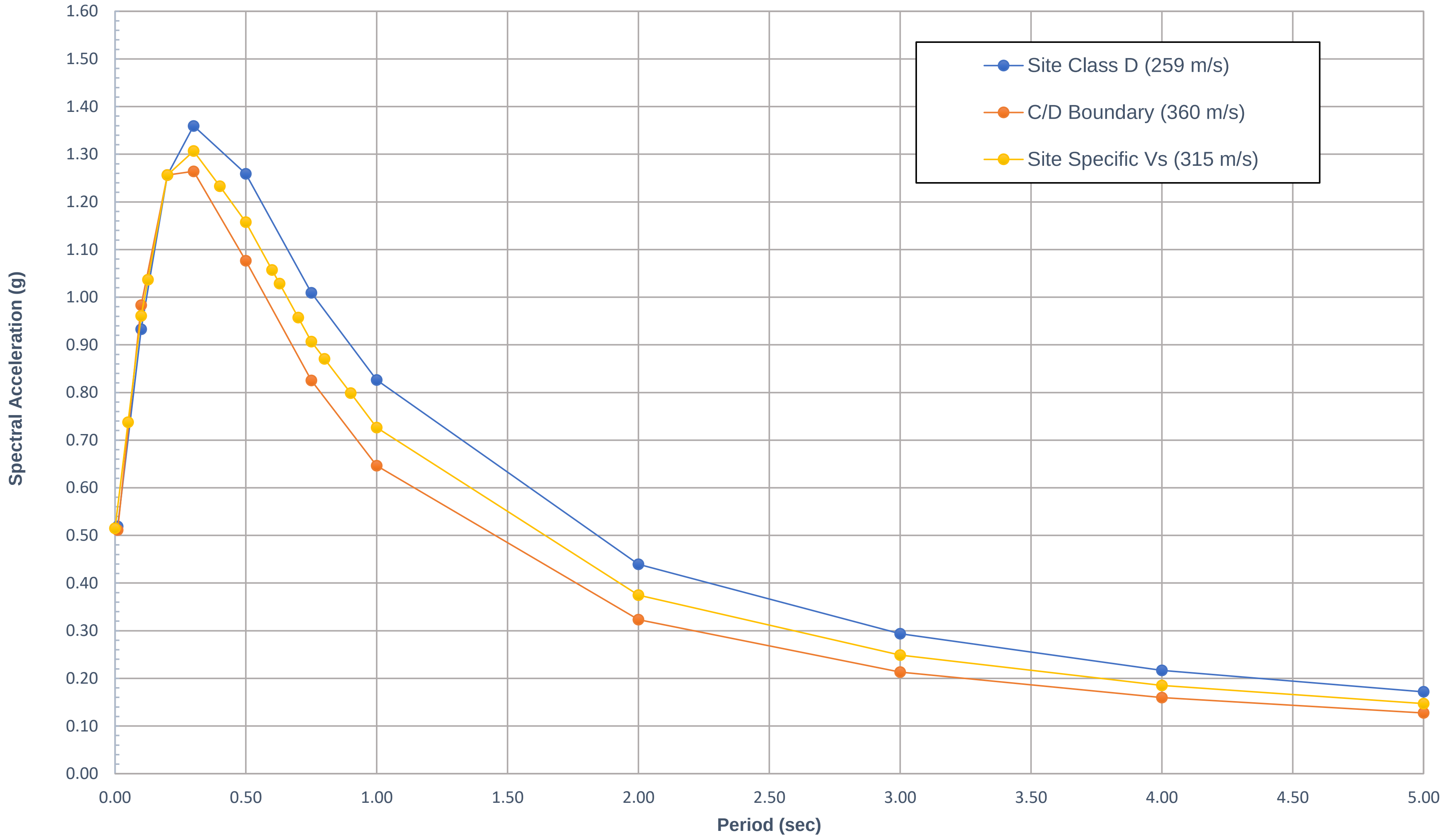
01) Periods including To and Ts calculated from Section 11.4.6 (ASCE 7-16)
02) OSHPD, Seismic Design Maps Web Application - MCE_R Response Spectrum (seismicmaps.org) and Section 11.4.7 (7-16)
03) OSHPD, Seismic Design Maps Web Application - Design Spectrum (2/3 of Column 2) per Section 11.4.6 (7-16)
04) Risk Coefficient, C_R, for 0.2s and 1.0s periods (ASCE 7-16, Section 21.2.1.1); from OSHPD web application
05) Deterministic Lower Limit on MCE_R if required (ASCE 7-16 Supplement 1; Section 21.2.2)
06) USGS Unified Hazard Tool (UHT), 2% in 50 years Probabilistic Spectrum; scaled w/ MRC factors per Huang et al (2008); per ASCE 7-16, Section 21.2.1.1
07) USGS UHT, Probabilistic MCE_R Spectrum: Product of 2% in 50yr Spectrum and Risk Coefficient (Col. 4 * Col. 6); (ASCE 7-16, Section 21.2.1.1)
08) PEER Ground Motion Database, 84th Percentile Deterministic Spectrum; controlling fault source (ASCE 7-16; Section 21.2.2)
09) Uncorrected Design Response Spectrum (ASCE 7-16 Sec. 21.3), 2/3 * Lesser of Col. 7 & Greater of Cols. 5 & 8 (not less than 80% PGAM per Sec. 21.5.3)
10) 80% of 2019 CBC Design Spectra (Column 3), (ASCE 7-16, Section 21.3) Lower Limit of the Design Spectrum
11) Site-Specific MCE_R (ASCE 7-16, Section 21.2.3); 150% of Design Response Spectrum (Column 12)
12) Final Design Response Spectrum (ASCE 7-16, Section 21.3); Greater of Columns 9 and 10
T_L = Figure 22-12 ASCE 7-16 (typically 8 sec Southern California)

MUST CHECK THAT VALUES EXCEED MINIMUMS

Minimum Allowable Value of MCE PGA (Column 9): **0.500**
(80% of PGA_M)
Value of S_{DS}: **0.789**
(Maximum of 90% of Design S_a at any period)
Value of S_{D1}: **0.514**
(Maximum of T*S_a for periods from 1 to 5 seconds)

* = F_V is modified for the deterministic lower limit determinations (Fig. 21.2-1) based on the requirements of Section 11.4.8 and the Site Specific Ground Motion Hazard Analyses as detailed in Section 21.3

(Based Upon Chapters 11 and 21 of ASCE 7-16; 04-14-2020 DJB)

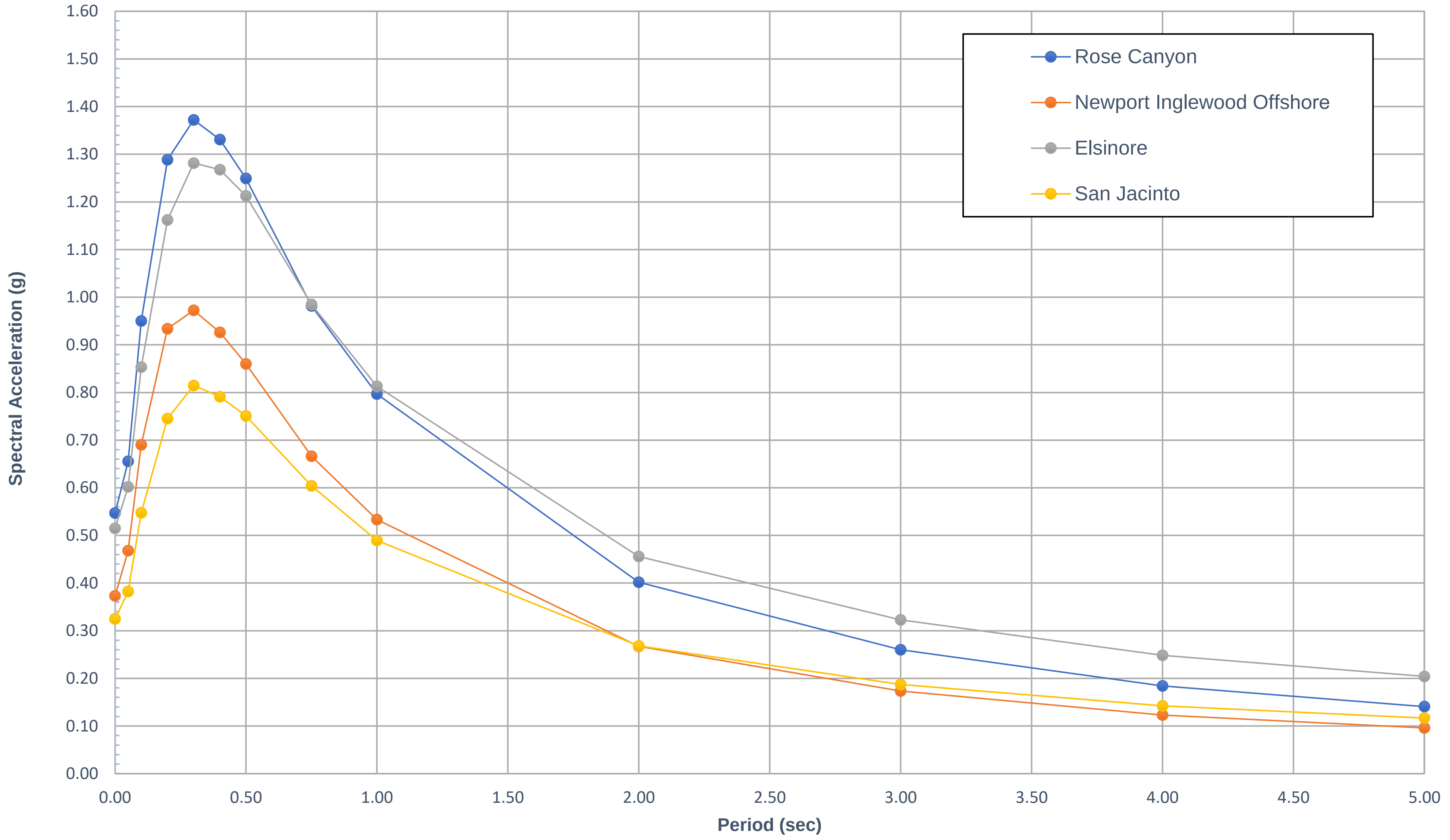


Site-Specific Probabilisitic MCE_R Response Spectra @ 5% Damping
per Chapter 21; ASCE 7-16 (2022 CBC)
PMB UCSD Rancho Bernardo - PS
San Diego, California

GPI GEOTECHNICAL PROFESSIONALS, INC.

Project No. 3202.I

Figure F-4

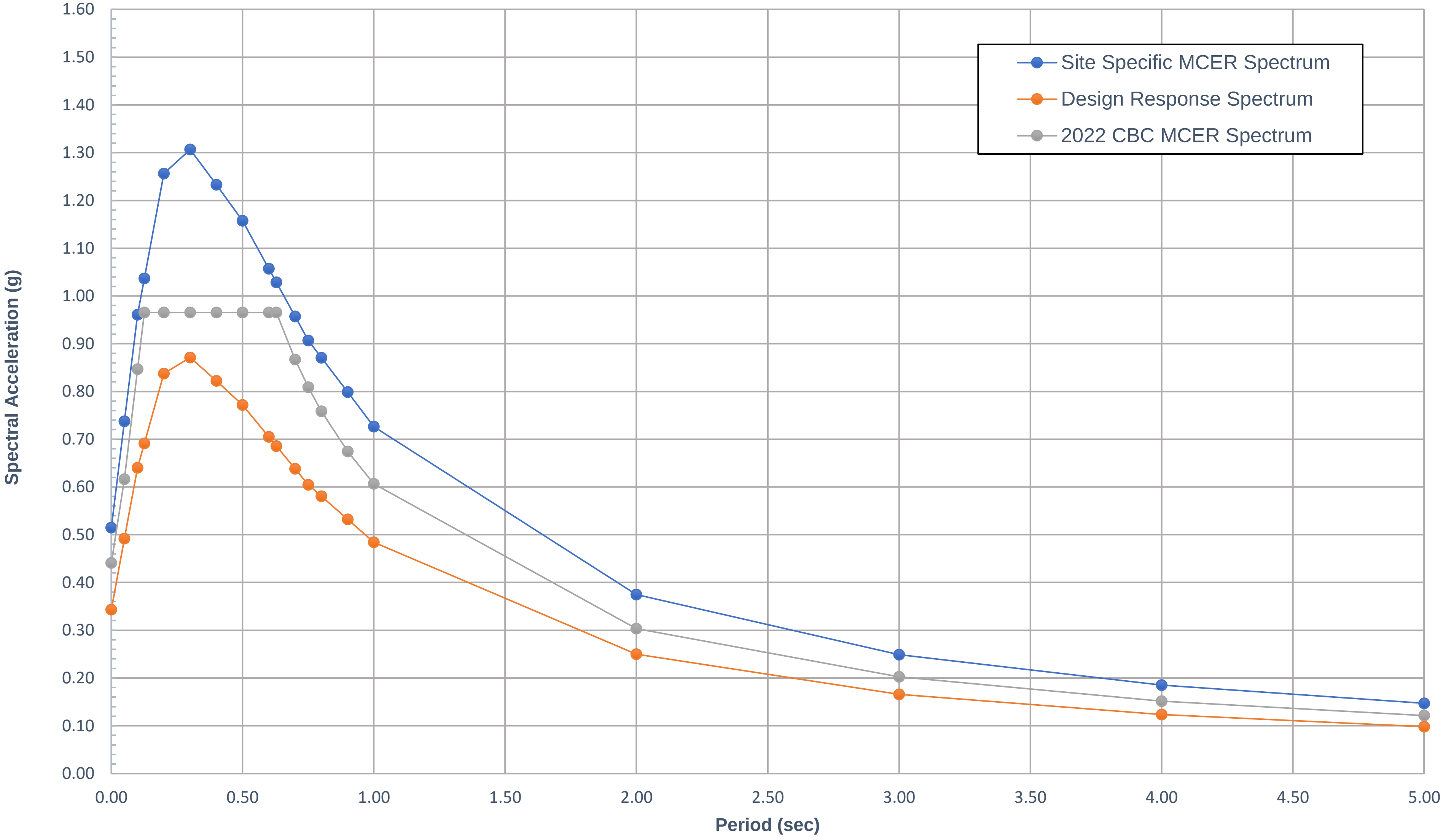


Site-Specific 84th Percentile Deterministic MCE$_R$ Response Spectra
per Chapter 21; ASCE 7-16 (2022 CBC)
PMB UCSD Rancho Bernardo - PS
San Diego, California

GPI GEOTECHNICAL PROFESSIONALS, INC.

Project No. 3202.I

Figure F-5



Site-Specific MCE_R and Design Response Spectra @ 5% Damping
per Chapter 21; ASCE 7-16 (2022 CBC)
PMB UCSD Rancho Bernardo - PS
San Diego, California

GPI GEOTECHNICAL PROFESSIONALS, INC.

Project No. 3202.I

Figure F-6

TABLE F-2

RISK TARGETED SITE-SPECIFIC SEISMIC REPONSE WORKSHEET - PS

Project	**PMB UCSD RB - PS**
Proj. No.	**3202.I**
Latitude	**33.013**
Longitude	**-117.082**

Site Class	**D**
T_o	0.126 sec
T_s	0.629 sec
T_L	8.0 sec
V_S	1034 ft/sec

2022 CBC Parameters

S_s	0.825	S_1	0.304
F_a	1.170	F_v*	1.996
S_{MS}	0.965	S_{M1}	0.607
S_{DS}	0.644	S_{D1}	0.405
$0.08\ F_v/F_a$	0.136	$0.4F_v/F_a$	0.682

PGA_M	0.441
C_{RS}	0.926
C_{R1}	0.927

NGA West2 Attentuation Relationships

1) Abrahamson-et al (2014)
2) Boore-et al (2014)
3) Cambell-Bozorgnia (2014)
4) Chiou-Youngs (2014)

SITE-SPECIFIC PARAMETERS

S_{MS}	**1.176**
S_{M1}	**0.750**
S_{DS}	**0.784**
S_{D1}	**0.500**
PGA_M	**0.515**

1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)
Period (sec)	2022 CBC MCE_R Spectrum	2022 CBC Design Response Spectrum	Risk Coefficient C_R	Scaled MCE_R Deterministic Spectrum (if required)	Probabilistic MCE_R Spectrum	Probabilistic w/ Risk Coefficient C_R	84th Percentile Deterministic Spectrum	2/3 Site Specific MCE_R Spectrum	80% of 2022 CBC Design Spectrum	**Site Specific MCE_R Spectrum**	**Design Response Spectrum**
0.000	0.441	0.294	0.926	0.699	0.556	0.515	0.547	0.343	0.235	**0.515**	**0.343**
0.050	0.616	0.411	0.926	0.839	0.797	0.738	0.656	0.492	0.304	**0.738**	**0.492**
0.100	0.847	0.564	0.926	1.215	1.037	0.961	0.950	0.640	0.402	**0.961**	**0.640**
0.126	0.965	0.644	0.926	1.326	1.120	1.037	1.037	0.691	0.453	**1.037**	**0.691**
0.200	0.965	0.644	0.926	1.648	1.357	1.256	1.288	0.838	0.515	**1.256**	**0.838**
0.300	0.965	0.644	0.926	1.755	1.411	1.307	1.372	0.871	0.515	**1.307**	**0.871**
0.400	0.965	0.644	0.926	1.702	1.331	1.233	1.331	0.822	0.515	**1.233**	**0.822**
0.500	0.965	0.644	0.926	1.598	1.250	1.158	1.249	0.772	0.515	**1.158**	**0.772**
0.600	0.965	0.644	0.927	1.462	1.141	1.057	1.143	0.705	0.515	**1.057**	**0.705**
0.629	0.965	0.644	0.927	1.424	1.110	1.029	1.113	0.686	0.515	**1.029**	**0.686**
0.700	0.867	0.578	0.927	1.327	1.033	0.957	1.038	0.638	0.515	**0.957**	**0.638**
0.750	0.809	0.539	0.927	1.259	0.979	0.907	0.985	0.605	0.515	**0.907**	**0.605**
0.800	0.758	0.506	0.927	1.216	0.940	0.871	0.950	0.581	0.507	**0.871**	**0.581**
0.900	0.674	0.449	0.927	1.128	0.862	0.799	0.882	0.532	0.450	**0.799**	**0.532**
1.000	0.607	0.405	0.927	1.040	0.784	0.726	0.813	0.484	0.405	**0.726**	**0.484**
2.000	0.303	0.202	0.927	0.583	0.404	0.375	0.456	0.250	0.203	**0.375**	**0.250**
3.000	0.202	0.135	0.927	0.413	0.269	0.249	0.323	0.166	0.135	**0.249**	**0.166**
4.000	0.152	0.101	0.927	0.318	0.200	0.185	0.248	0.123	0.101	**0.185**	**0.123**
5.000	0.121	0.081	0.927	0.261	0.159	0.147	0.204	0.098	0.081	**0.147**	**0.098**

(Based Upon Chapters 11 and 21 of ASCE 7-16; 04-14-2020 DJB)

TABLE F-2

RISK TARGETED SITE-SPECIFIC SEISMIC REPONSE WORKSHEET - PS

EXPLANATION: NOTES AND REFERENCES

INPUT BLUE ONLY - RED AND BLACK CALCULATED

Column Descriptions

01) Periods including To and Ts calculated from Section 11.4.6 (ASCE 7-16)
02) OSHPD, Seismic Design Maps Web Application - MCE$_R$ Response Spectrum (seismicmaps.org) and Section 11.4.7 (7-16)
03) OSHPD, Seismic Design Maps Web Application - Design Spectrum (2/3 of Column 2) per Section 11.4.6 (7-16)
04) Risk Coefficient, C$_R$, for 0.2s and 1.0s periods (ASCE 7-16, Section 21.2.1.1); from OSHPD web application
05) Deterministic Lower Limit on MCE$_R$ if required (ASCE 7-16 Supplement 1; Section 21.2.2)
06) USGS Unified Hazard Tool (UHT), 2% in 50 years Probabilistic Spectrum; scaled w/ MRC factors per Huang et al (2008); per ASCE 7-16, Section 21.2.1.1
07) USGS UHT, Probabilistic MCE$_R$ Spectrum: Product of 2% in 50yr Spectrum and Risk Coefficient (Col. 4 * Col. 6); (ASCE 7-16, Section 21.2.1.1)
08) PEER Ground Motion Database, 84th Percentile Deterministic Spectrum; controlling fault source (ASCE 7-16; Section 21.2.2)
09) Uncorrected Design Response Spectrum (ASCE 7-16 Sec. 21.3), 2/3 * Lesser of Col. 7 & Greater of Cols. 5 & 8 (not less than 80% PGAM per Sec. 21.5.3)
10) 80% of 2019 CBC Design Spectra (Column 3), (ASCE 7-16, Section 21.3) Lower Limit of the Design Spectrum
11) Site-Specific MCE$_R$ (ASCE 7-16, Section 21.2.3); 150% of Design Response Spectrum (Column 12)
12) Final Design Response Spectrum (ASCE 7-16, Section 21.3); Greater of Columns 9 and 10

T$_L$ = Figure 22-12 ASCE 7-16 (typically 8 sec Southern California)

MUST CHECK THAT VALUES EXCEED MINIMUMS

Minimum Allowable Value of MCE PGA (Column 9): **0.500**
(80% of PGA$_M$)

Value of S$_{DS}$: **0.784**
(Maximum of 90% of Design S$_a$ at any period)

Value of S$_{D1}$: **0.500**
(Maximum of T*S$_a$ for periods from 1 to 5 seconds)

* = F$_V$ is modified for the deterministic lower limit determinations (Fig. 21.2-1)
based on the requirements of Section 11.4.8 and the Site Specific Ground Motion
Hazard Analyses as detailed in Section 21.3

(Based Upon Chapters 11 and 21 of ASCE 7-16; 04-14-2020 DJB)

APPENDIX G

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition Based on Geotechnical Conditions[9]

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Worksheet C.4-1: Form I-8A[10]
Part 1 - Full Infiltration Feasibility Screening Criteria	
DMA(s) Being Analyzed:	Project Phase:
UCSD MOB and Parking Structure **NWC Rancho Bernardo Drive and Interstate 15**	**Preliminary Design**
Criteria 1: Infiltration Rate Screening	
1A	Is the mapped hydrologic soil group according to the NRCS Web Soil Survey or UC Davis Soil Web Mapper Type A or B and corroborated by available site soil data[11]? ☐ Yes; the DMA may feasibly support full infiltration. Answer "Yes" to Criteria 1 Result or continue to Step 1B if the applicant elects to perform infiltration testing. ☐ No; the mapped soil types are A or B but is not corroborated by available site soil data (continue to Step 1B). ☒ No; the mapped soil types are C, D, or "urban/unclassified" and is corroborated by available site soil data. Answer "No" to Criteria 1 Result. ☐ No; the mapped soil types are C, D, or "urban/unclassified" but is not corroborated by available site soil data (continue to Step 1B).
1B	Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1? ☐ Yes; Continue to Step 1C. ☐ No; Skip to Step 1D.
1C	Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1 greater than 0.5 inches per hour? ☐ Yes; the DMA may feasibly support full infiltration. Answer "Yes" to Criteria 1 Result. ☐ No; full infiltration is not required. Answer "No" to Criteria 1 Result.
1D	**Infiltration Testing Method.** Is the selected infiltration testing method suitable during the design phase (see Appendix D.3)? Note: Alternative testing standards may be allowed with appropriate rationales and documentation. ☐ Yes; continue to Step 1E. ☐ No; select an appropriate infiltration testing method.

---

[9] Note that it is not required to investigate each and every criterion in the worksheet, a single "no" answer in Part 1, Part 2, Part 3, or Part 4 determines a full, partial, or no infiltration condition.

[10] This form must be completed each time there is a change to the site layout that would affect the infiltration feasibility condition. Previously completed forms shall be retained to document the evolution of the site storm water design.

[11] Available data includes site-specific sampling or observation of soil types or texture classes, such as obtained from borings or test pits necessary to support other design elements.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	**Worksheet C.4-1: Form I-8A[10]**
1E	**Number of Percolation/Infiltration Tests.** Does the infiltration testing method performed satisfy the minimum number of tests specified in Table D.3-2? ☐ Yes; continue to Step 1F. ☐ No; conduct appropriate number of tests.
IF	**Factor of Safety.** Is the suitable Factor of Safety selected for full infiltration design? See guidance in D.5; Tables D.5-1 and D.5-2; and Worksheet D.5-1 (Form I-9). ☐ Yes; continue to Step 1G. ☐ No; select appropriate factor of safety.
1G	**Full Infiltration Feasibility.** Is the average measured infiltration rate divided by the Factor of Safety greater than 0.5 inches per hour? ☐ Yes; answer "Yes" to Criteria 1 Result. ☐ No; answer "No" to Criteria 1 Result.
Criteria 1 Result	Is the estimated reliable infiltration rate greater than 0.5 inches per hour within the DMA where runoff can reasonably be routed to a BMP? ☐ Yes; the DMA may feasibly support full infiltration. Continue to Criteria 2. ☒ No; full infiltration is not required. Skip to Part 1 Result.

Summarize infiltration testing methods, testing locations, replicates, and results and summarize estimates of reliable infiltration rates according to procedures outlined in D.5. Documentation should be included in project geotechnical report.

Project site consists of approximately 6.5 to 53 feet of engineered fill materials overlying Landslide Debris and Friars Formation. The fills consist of predominantly clay materials with expansion indices ranging from 79 to 106 (medium to high). Fills extend to 35 to 50 foot high descending fill slopes at eastern limit of the project. No infiltration testing performed at site for the above reasons.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A[10]	
Criteria 2: Geologic/Geotechnical Screening			
2A	If all questions in Step 2A are answered "Yes," continue to Step 2B. For any "No" answer in Step 2A answer "No" to Criteria 2, and submit an "Infiltration Feasibility Condition Letter" that meets the requirements in Appendix C.1.1. The geologic/geotechnical analyses listed in Appendix C.2.1 do not apply to the DMA because one of the following setbacks cannot be avoided and therefore result in the DMA being in a no infiltration condition. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.		
2A-1	Can the proposed full infiltration BMP(s) avoid areas with existing fill materials greater than 5 feet thick below the infiltrating surface?	☐ Yes	☐ No
2A-2	Can the proposed full infiltration BMP(s) avoid placement within 10 feet of existing underground utilities, structures, or retaining walls?	☐ Yes	☐ No
2A-3	Can the proposed full infiltration BMP(s) avoid placement within 50 feet of a natural slope (>25%) or within a distance of 1.5H from fill slopes where H is the height of the fill slope?	☐ Yes	☐ No
2B	When full infiltration is determined to be feasible, a geotechnical investigation report must be prepared that considers the relevant factors identified in Appendix C.2.1. If all questions in Step 2B are answered "Yes," then answer "Yes" to Criteria 2 Result. If there are "No" answers continue to Step 2C.		
2B-1	**Hydroconsolidation.** Analyze hydroconsolidation potential per approved ASTM standard due to a proposed full infiltration BMP. Can full infiltration BMPs be proposed within the DMA without increasing hydroconsolidation risks?	☐ Yes	☐ No
2B-2	**Expansive Soils.** Identify expansive soils (soils with an expansion index greater than 20) and the extent of such soils due to proposed full infiltration BMPs. Can full infiltration BMPs be proposed within the DMA without increasing expansive soil risks?	☐ Yes	☐ No

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A[10]	
2B-3	**Liquefaction**. If applicable, identify mapped liquefaction areas. Evaluate liquefaction hazards in accordance with Section 6.4.2 of the City of San Diego's Guidelines for Geotechnical Reports (2011 or most recent edition). Liquefaction hazard assessment shall take into account any increase in groundwater elevation or groundwater mounding that could occur as a result of proposed infiltration or percolation facilities. Can full infiltration BMPs be proposed within the DMA without increasing liquefaction risks?	☐ Yes	☐ No
2B-4	**Slope Stability**. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required. Can full infiltration BMPs be proposed within the DMA without increasing slope stability risks?	☐ Yes	☐ No
2B-5	**Other Geotechnical Hazards.** Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1). Can full infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?	☐ Yes	☐ No
2B-6	**Setbacks.** Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report. Can full infiltration BMPs be proposed within the DMA using established setbacks from underground utilities, structures, and/or retaining walls?	☐ Yes	☐ No

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Worksheet C.4-1: Form I-8A[10]

2C	**Mitigation Measures.** Propose mitigation measures for each geologic/geotechnical hazard identified in Step 2B. Provide a discussion of geologic/geotechnical hazards that would prevent full infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures. Can mitigation measures be proposed to allow for full infiltration BMPs? If the question in Step 2 is answered "Yes," then answer "Yes" to Criteria 2 Result. If the question in Step 2C is answered "No," then answer "No" to Criteria 2 Result.	☐ Yes	☐ No
Criteria 2 Result	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?	☐ Yes	☐ No

Summarize findings and basis; provide references to related reports or exhibits.

Part 1 Result – Full Infiltration Geotechnical Screening [12]	Result
If answers to both Criteria 1 and Criteria 2 are "Yes", a full infiltration design is potentially feasible based on Geotechnical conditions only. If either answer to Criteria 1 or Criteria 2 is "No", a full infiltration design is not required.	☐ Full infiltration Condition ☒ Complete Part 2

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[12] To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	**Worksheet C.4-1: Form I-8A[10]**
Part 2 – Partial vs. No Infiltration Feasibility Screening Criteria	
DMA(s) Being Analyzed:	Project Phase:
UCSD MOB and Parking Structure **NWC Rancho Bernardo Drive and Interstate 15**	**Preliminary Design**
Criteria 3 : Infiltration Rate Screening	
3A	**NRCS Type C, D, or "urban/unclassified":** Is the mapped hydrologic soil group according to the NRCS Web Soil Survey or UC Davis Soil Web Mapper is Type C, D, or "urban/unclassified" and corroborated by available site soil data? ☐ Yes; the site is mapped as C soils and a reliable infiltration rate of 0.15 in/hr. is used to size partial infiltration BMPS. Answer "Yes" to Criteria 3 Result. ☒ Yes; the site is mapped as D soils or "urban/unclassified" and a reliable infiltration rate of 0.05 in/hr. is used to size partial infiltration BMPS. Answer "Yes" to Criteria 3 Result. ☐ No; infiltration testing is conducted (refer to Table D.3-1), continue to Step 3B.
3B	**Infiltration Testing Result:** Is the reliable infiltration rate (i.e. average measured infiltration rate/2) greater than 0.05 in/hr. and less than or equal to 0.5 in/hr? ☐ Yes; the site may support partial infiltration. Answer "Yes" to Criteria 3 Result. ☐ No; the reliable infiltration rate (i.e. average measured rate/2) is less than 0.05 in/hr., partial infiltration is not required. Answer "No" to Criteria 3 Result.
Criteria 3 Result	Is the estimated reliable infiltration rate (i.e., average measured infiltration rate/2) greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour at any location within each DMA where runoff can reasonably be routed to a BMP? ☒ Yes; Continue to Criteria 4. ☐ No: Skip to Part 2 Result.
Summarize infiltration testing and/or mapping results (i.e. soil maps and series description used for infiltration rate). **Figure C-1 Soils of City of San Diego Storm Water Standards classifies the site as Hydrologic Soils Group D.**	

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A[10]	
Criteria 4: Geologic/Geotechnical Screening			
4A	If all questions in Step 4A are answered "Yes," continue to Step 2B. For any "No" answer in Step 4A answer "No" to Criteria 4 Result, and submit an "Infiltration Feasibility Condition Letter" that meets the requirements in Appendix C.1.1. The geologic/geotechnical analyses listed in Appendix C.2.1 do not apply to the DMA because one of the following setbacks cannot be avoided and therefore result in the DMA being in a no infiltration condition. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.		
4A-1	Can the proposed partial infiltration BMP(s) avoid areas with existing fill materials greater than 5 feet thick?	☐ Yes	☒ No
4A-2	Can the proposed partial infiltration BMP(s) avoid placement within 10 feet of existing underground utilities, structures, or retaining walls?	☒ Yes	☐ No
4A-3	Can the proposed partial infiltration BMP(s) avoid placement within 50 feet of a natural slope (>25%) or within a distance of 1.5H from fill slopes where H is the height of the fill slope?	☐ Yes	☒ No
4B	When full infiltration is determined to be feasible, a geotechnical investigation report must be prepared that considers the relevant factors identified in Appendix C.2.1 If all questions in Step 4B are answered "Yes," then answer "Yes" to Criteria 4 Result. If there are any "No" answers continue to Step 4C.		
4B-1	**Hydroconsolidation.** Analyze hydroconsolidation potential per approved ASTM standard due to a proposed full infiltration BMP. Can partial infiltration BMPs be proposed within the DMA without increasing hydroconsolidation risks?	☒ Yes	☐ No
4B-2	**Expansive Soils.** Identify expansive soils (soils with an expansion index greater than 20) and the extent of such soils due to proposed full infiltration BMPs. Can partial infiltration BMPs be proposed within the DMA without increasing expansive soil risks?	☐ Yes	☒ No

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		**Worksheet C.4-1: Form I-8A[10]**	
4B-3	**Liquefaction**. If applicable, identify mapped liquefaction areas. Evaluate liquefaction hazards in accordance with Section 6.4.2 of the City of San Diego's Guidelines for Geotechnical Reports (2011). Liquefaction hazard assessment shall take into account any increase in groundwater elevation or groundwater mounding that could occur as a result of proposed infiltration or percolation facilities. Can partial infiltration BMPs be proposed within the DMA without increasing liquefaction risks?	☒ Yes	☐ No
4B-4	**Slope Stability**. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required. Can partial infiltration BMPs be proposed within the DMA without increasing slope stability risks?	☐ Yes	☒ No
4B-5	**Other Geotechnical Hazards.** Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1). Can partial infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?	☐ Yes	☒ No
4B-6	**Setbacks.** Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report. Can partial infiltration BMPs be proposed within the DMA using recommended setbacks from underground utilities, structures, and/or retaining walls?	☐ Yes	☐ No
4C	**Mitigation Measures.** Propose mitigation measures for each geologic/geotechnical hazard identified in Step 4B. Provide a discussion on geologic/geotechnical hazards that would prevent partial infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures. Can mitigation measures be proposed to allow for partial infiltration BMPs? If the question in Step 4C is answered "Yes," then answer "Yes" to Criteria 4 Result. If the question in Step 4C is answered "No," then answer "No" to Criteria 4 Result.	☐ Yes	☒ No

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Worksheet C.4-1: Form I-8A[10]		
Criteria 4 Result	Can infiltration of greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour be allowed without increasing the risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?	☐ Yes	☒ No

Summarize findings and basis; provide references to related reports or exhibits.

Geotechnical report address above items.

Part 2 – Partial Infiltration Geotechnical Screening Result[13]	Result
If answers to both Criteria 3 and Criteria 4 are "Yes", a partial infiltration design is potentially feasible based on geotechnical conditions only. If answers to either Criteria 3 or Criteria 4 is "No", then infiltration of any volume is considered to be infeasible within the site.	☐ Partial Infiltration Condition ☒ No Infiltration Condition

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[13] To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Appendix E1. Phase I Environmental Site Assessment

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

Interstate 15 (I-15) and Bernardo Center Drive
San Diego County Assessor's Parcel Number (APN): 678-252-11-00
San Diego, California

Prepared for

University of California, San Diego
9500 Gilman Drive
La Jolla, California 92093

Prepared by

GROUP DELTA CONSULTANTS, INC.
1035 South Milliken Avenue, Suite G
Ontario, California 91761
Group Delta Project No. EN8185

January 25, 2022

GROUP DELTA

University of California, San Diego
9500 Gilman Drive
La Jolla, California 92093

January 25, 2022
Project No. EN8185

Attention: Mr. Michael Heyer

SUBJECT: Phase I Environmental Site Assessment (ESA)
Interstate 15 (I-15) and Bernardo Center Drive
San Diego County Assessor’s Parcel Number (APN): 678-252-11-00
San Diego, California

Dear Mr. Heyer:

Group Delta Consultants, Inc. is pleased to submit to University of California, San Diego, this Phase I Environmental Site Assessment report for the proposed Interstate 15 (I-15) and Bernardo Center Drive development located in San Diego, California. This report discusses our project purpose, scope of work, execution of work, conclusions, and recommendations for the site. This Environmental Site Assessment was performed in general accordance with our proposal submitted on December 6, 2021.

We appreciate your selection of Group Delta Consultants for this project and look forward to assisting you further on this and other projects. If you have any questions, please do not hesitate to contact us.

Should you have any questions regarding this report, please feel free to call us at (949) 450-2100.

Sincerely,
GROUP DELTA CONSULTANTS, INC.

Glenn Burks, Ph.D., P.E.
Principal, Director of Environmental Services
Environmental Professional

Laura Botzong
Staff Environmental Professional

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

University of California, San Diego (herein referred to as Client) has engaged Group Delta Consultants, Inc. (Group Delta) to perform a Phase I Environmental Site Assessment (ESA) for an approximately 9.8-acre site located at the intersection of Interstate 15 (I-15) and Bernardo Center Drive (Site) in San Diego, California. The Site is currently vacant land with no structures. The Site is proposed for redevelopment as medical office buildings and an associated parking structure. The Site is identified by San Diego County Assessor's Parcel Number (APN): 678-252-11-00. The Site has historically been undeveloped.

This Phase I ESA was performed in accordance with the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E1527-21. This version of the ASTM standard complies with the Federal All Appropriate Inquiry (AAI) rule (40 Code of Federal Regulations [CFR] Part 312 – Standards and Practices for All Appropriate Inquiries). The purpose of the Phase I ESA is to review, evaluate, and document present and past land use and practices, and visually examine Site conditions to identify Recognized Environmental Conditions (RECs). The Phase I ESA included a Site reconnaissance, observation of adjacent properties, environmental regulatory agency records review, review of available historic documents, and an interview.

A Site reconnaissance was performed on January 10, 2022 as part of the ESA to observe current conditions throughout the Site.

The Owner interview conducted during this Phase I ESA did not identify any RECs for the Site.

This assessment also included a review of available federal and state data reported by Environmental Data Resources (EDR), available regulatory agency environmental records, and available site history and records. The review did not identify any RECs for the Site. The review also included properties in the vicinity of the Site. Records indicated listed locations within ½ mile of the Site as listed in the EDR report. However, based on type of regulatory listing, regulatory status of the case, and/or location with respect to regional groundwater flow, the likelihood of Site contamination from an off-site source is considered low.

The information procured during this investigation was used to identify, to the extent practical and within the limitations of the Scope, RECs associated with the Site due to current or past land use. This assessment has revealed the following RECs in connection with the Site:

- According to the information provided, approximately 51.5 feet of fill occupies the Site. The fill was reportedly placed on Site during construction of the I-15 off ramp adjoining the Site and construction of the buttress to stabilize the landslide on Site in 1981. Soils used during construction of the off ramp were gathered from areas that adjoined the I-15 from at least 1966 to 1981. The potential exists for aerially deposited lead impacts in the fill soils placed on Site. Therefore, the undocumented fill on Site represents a REC to the Site.

- The adjoining property to the north was historically occupied by aerospace manufacturing facilities, including The Burroughs Corporation and Unisys from circa early 1970s to 1993. In 1983 and 1984, a 3,000-gallon solvent (tetrachloroethene [PCE] and/or trichloroethene [TCE]) underground storage tank (UST) and 4,000-gallon acid UST were removed from the property. Halogenated solvents and acids are typically used in plating activities in the aerospace manufacturing industry. The tanks area, located approximately 440 feet north of the northern Site boundary, was evaluated later in 1987 to determine whether a release had occurred. An unauthorized release of volatile organic compounds (VOCs) that impacted soil and groundwater was discovered, and a remedial excavation of approximately 300 cubic yards of soil was completed in 1988. A portion of the contaminated soil was disposed off site in landfill, but the remainder was remediated via aeration on site and used to backfill the excavation. The case was issued closure by the San Diego County Department of Environmental Health (SDC DEH) on September 28, 1988, with the caveat that further site characterization and mitigation activity may be required if the site use changes from industrial. The property is currently vacant land. Based on the former aerospace manufacturing operations for approximately twenty years and residual contamination left in place at the former facility, the adjoining property to the north represents a REC to the Site.

Additionally, the following out-of-scope concern was identified:

- Concrete construction debris was observed on Site. The presence of asbestos-containing materials (ACM) will need to be investigated prior to removal of the concrete construction debris for development purposes in order to comply with environmental and worker safety regulatory requirements for ACM.

Based upon the findings and conclusions, Group Delta is providing the following recommendation:

- Group Delta recommends a limited soil and soil vapor survey at the Site to assess potential lead impacts to soil and VOC impacts to soil vapor.
- Concrete construction debris was observed on Site. Group Delta recommends ACM sampling of the concrete construction debris prior to development at the Site.

1.0 INTRODUCTION

1.1 Background and Project Description

University of California, San Diego (herein referred to as Client) has engaged Group Delta Consultants, Inc. (Group Delta) to perform a Phase I Environmental Site Assessment (ESA) for an approximately 9.8-acre site located at the intersection of Interstate 15 (I-15) and Bernardo Center Drive (Site) in San Diego, California. The Site is currently vacant land with no structures. The Site is proposed for redevelopment as medical office buildings and an associated parking structure. The Site is identified by San Diego County Assessor's Parcel Number (APN): 678-252-11-00. The Site has historically been undeveloped.

1.2 Purpose

The purpose of the Phase I ESA is to review, evaluate, and document present and past land uses and practices, and visually examine Site conditions to identify Recognized Environmental Conditions (RECs). A REC is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of release to the environment, or; (3) under conditions that pose a material threat of a future release to the environment. The REC term does not include *de minimis* conditions that generally do not present a threat to human health or the environment, and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

1.3 Detailed Scope of Work

Group Delta has interpreted American Society for Testing and Materials (ASTM) E1527-21 as the guidance document and used its provisions to the extent deemed appropriate for this report. In general, the scope of work included:

- Review of available information to describe the general geology and hydrogeology at the Site and adjacent areas;
- Search of regulatory records regarding possible hazardous material handling, spills, storage, or production at the Site or in its vicinity;
- Review of on-line available data including databases maintained by the Department of Toxic Substances Control (DTSC) and the State Water Resources Control Board (SWRCB);
- Perform agency records review of available files from the San Diego County Department of Environmental Health (SDC DEH), San Diego Regional Water Quality Control Board (SDRWQCB), Department of Toxic Substances Control (DTSC), Department of Transportation Pipeline and Hazardous Materials Administration (PHMSA) National Pipeline Mapping System (NPMS), and California Department of Conservation, Geologic Energy Management Division's (CALGEM) online mapping system for onsite wells;

- Review of historic aerial photographs, historic topographic maps, Sanborn® fire maps, City Directories, and a radius map database search provided by Environmental Data Resources, Inc. (EDR);
- Reconnaissance of the Site and the immediately surrounding area to identify indicators of the existence of hazardous materials or RECs;
- Interview of an owner representative for the Site;
- Development of conclusions and findings, and;
- Preparation of a report describing the assessment and presenting the results and findings.

A statement of interpretive limitations is contained in Section 1.5 of the report.

1.4 Significant Assumptions

As stated in the previous section, this ESA was conducted in general accordance with ASTM E1527-21 to the extent deemed appropriate. This was done to identify and analyze environmental conditions that constitute existing, past, or potential environmental risks associated with the Site. Performance in accord with this standard is intended to reduce, but not eliminate uncertainty with respect to the potential for RECs associated with the Site.

1.5 Limitations and Exceptions

This ESA report is intended for the sole use of the Client and on the specific project identified. Our services have been performed under mutually agreed-upon terms and conditions. If other parties wish to rely on this report, please have them contact us so that a mutual understanding and agreement of the terms and conditions for our services can be established prior to their use and reliance of this report and the information it contains.

The findings and opinions presented are relative to the dates of our Site work and should not be relied on to represent conditions at substantially later dates. The opinions included herein are based on information obtained during the study and our experience. If additional information becomes available, which might impact our environmental findings, we request the opportunity to review the information, reassess the potential conditions, and modify our opinions, if warranted.

Although this assessment has attempted to identify the potential for environmental impacts to the Site, potential sources of contamination may have escaped detection due to: (1) the limited scope of this assessment; (2) the inaccuracy of public records, and/or; (3) the presence of undetected or unreported environmental incidents.

It was not within the scope of this assessment to address issues not included in ASTM E1527-21 (such as radon, lead in drinking water, naturally-occurring hazardous materials or vegetation, endangered species, wetlands, etc.). Furthermore, it was not the purpose of this study to determine the degree or extent of contamination, if any, at the Site.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar conditions, by reputable environmental consultants practicing in this or similar localities. No other warranty, expressed or implied, is made regarding the professional information in this report.

1.6 Special Terms and Conditions

All appropriate inquiry (AAI) into the prior uses of the Site was made in accordance with good commercial and customary practices to identify and analyze RECs constituting existing, past or potential environmental conditions in connection with the Site.

There are no special terms and conditions that apply to the preparation of this report.

1.7 User Reliance

This assessment was performed at the request of the Client, utilizing methods and procedures consistent with good commercial or customary practices designed to conform to acceptable industry standards. The assessment and conclusions presented in this report represent the best professional judgment of the Environmental Professional based on the conditions that existed during the assessment and the information and data available to us during the course of this assignment.

Factual information regarding operations and conditions provided by the Client, owner, or their representative has been assumed to be correct and complete.

The report may be distributed and relied upon by the Client, its successors and assigns. Reliance on the information and conclusions presented in this report by any other party or parties is not authorized without the written consent of Group Delta.

2.0 SITE DESCRIPTION

2.1 Location and Legal Description of the Site

The Site is comprised of approximately 9.8 acres of undeveloped land located west of I-15 and north of Bernardo Center Drive in the City of San Diego, San Diego County (Figure 1). The Site is proposed for redevelopment as medical office buildings and an associated parking structure. The Site is bound to the north by light industrial warehouse/office buildings (16780 West Bernardo Drive); to the south by Bernardo Center Drive, followed by undeveloped land; to the west by undeveloped land; and to the east by I-15, followed by commercial retail structures (16440 Bernardo Center Drive). The Site is identified by San Diego County APN: 678-252-11-00.

A complete legal description of the Site is contained in the Preliminary Title Report provided by the Client. The Preliminary Title Report is presented as Appendix A.

2.2 Site and Vicinity General Characteristics

The Site is irregularly shaped and is composed of two (2) adjoining parcels. The Site is vegetated and comprised of undeveloped hills. No structures are located on the Site.

The Site's vicinity is generally characterized by light industrial and commercial developments intermixed with areas of undeveloped land.

2.3 Current Use of the Site

The Site is currently undeveloped land without a specified use.

Photographic documentation of the Site is provided in Appendix B.

2.4 Physical Setting

The Site is located approximately 0.19 mile southwest of Webb Lake. Surface water appears to flow northwest according to the local topography (USGS 7.5 Min Topographic Map, Escondido and Poway Quadrangles). According to information obtained from a nearby leaking underground storage tank (LUST) case (16399 West Bernardo Drive), groundwater in the vicinity of the subject property generally flows to the northwest and is present at approximately 30 to 40 feet below ground surface (bgs).

The Site is located along the western fringe of the Foothills Physiographic Province of San Diego County. A complex matrix of several ancient landslides, some of which have been remediated, characterizes the area of the Site and adjacent lands to the north and south of the Site, portions of Rancho Bernardo to the east of the Site on the east side of I-15, and perhaps to the west of the Site.

2.5 Current Uses of Adjacent Properties

The Site is bound to the north by light industrial warehouse/office buildings (16780 West Bernardo Drive); to the south by Bernardo Center Drive, followed by undeveloped land; to the west by undeveloped land; and to the east by I-15, followed by commercial retail structures (16440 Bernardo Center Drive).

3.0 USER-PROVIDED DOCUMENTS

3.1 Title Records

A Preliminary Title Report for the Site prepared by Chicago Title Company and dated November 21, 2016 was provided by the User. No evidence of environmental concerns was found in the Preliminary Title Report.

3.2 Environmental Liens or Activity and Other Use Limitations (AUL)

No reports of environmental liens or AULs were provided by the User during this ESA or identified in the title report.

3.3 Owner/Occupant Interviews

3.3.1 Current Owners

The owners of the Site are identified as The Regents of the University of California and Caltrans. Group Delta interviewed Mr. Michael Heyer, owner representative, regarding any knowledge about present or past land use at the Site that may be of environmental concern. According to Mr. Heyer, the Site is currently vacant. According to Mr. Heyer, land use at the Site has historically been undeveloped. Mr. Heyer stated that undocumented fill was placed on the Site by Caltrans during construction of the adjoining I-15 freeway. Mr. Heyer stated no other hazardous waste use, illicit dumping, or unauthorized releases have occurred at the Property, to his knowledge.

3.3.2 Previous Owners

The previous owner of the Site was not identified during this assessment.

3.4 Reason for Performing ESA

The purpose of the ESA is to identify apparent and potential sources of contamination for the Site that, by their association or proximity to the Site, could represent an REC. This report can serve to identify environmental conditions at the Site that may impact the proposed project and may permit the User to satisfy one of the requirements to qualify for the bona fide prospective purchaser limitations on Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability (42 U.S.C. §9601). It was not the purpose of this study to determine the degree or extent of contamination, if any, but rather to identify the potential for contamination or environmental concern.

3.5 Review of Existing Site Reports

A Reassessment of Site Stability report at the Wellington Parcel (the Site), San Diego, California was prepared by TerraCosta Consulting Group (TerraCosta) and dated February 28, 2018, revised March 2, 2018. According to the report, the Site is located in an area of mapped landslides, one of which was reactivated during the construction of the Caltrans Interstate 15 offramp in 1981. This reactivated slide was buttressed and monitored and deemed stabilized in October 1981. Subsequently, the site was investigated by Leighton & Associates (L&A) in the late 1980s and by Southern California Soil Testing, Inc. (SCST) in the 1990s and early 2000s. On February 26, 2001, SCST issued an as-built geotechnical report that documented site grading of the property known then as “the Zimmer Property.” This regrading of the site included expansion of the Caltrans buttressing system used in 1981 to stabilize the reactivated slide.

Beginning in 1998, the property (“The Point”) to the north of the Wellington Parcel was developed. Shortly after the development of The Point, surficial expressions of movement were observed, which initiated an extensive geotechnical exploration and site monitoring program by TerraCosta that included all three of The Point’s parcels and the Wellington Parcel. As a result of that extensive exploration, a series of deep-seated failure planes underlying all the parcels were identified. After extensive and intense scrutiny by numerous experts and agencies, a series of tied-back anchor-supported grade beams were installed to stabilize “The Point” parcels, as well as portions of the Wellington Parcel.

A Geotechnical Investigation at Bernardo Center Drive Study Area in San Diego, California was prepared by SCST, Inc. and dated July 13, 2018. Materials encountered in the soil borings included fill to depths up to 51.5 feet below existing ground surface, consisting of loose to very dense clayey sand and very stiff sandy clay with trace gravel and trace cobble. The fill is underlain by the Friars Formation, consisting of silt to clayey sandstone that is moderately to well cemented. Groundwater was encountered in boring SB-1 at 19 feet below the existing ground surface. SCST summarized previous additional geotechnical investigations performed in 2017-2018. As a result of the additional geotechnical investigations, the conclusion by Terra Costa that landslides underlie the site was changed, and the slope stability analysis now concludes that the site is stable, except for the northern portion on the western ascending slope.

A Phase I Due Diligence Inspection Report at Bernardo Center Drive (Plaza 15), Rancho Bernardo, California was prepared by UC San Diego Environment, Health, and Safety (UCSD EH&S) and dated July 23, 2018. UCSD EH&S recommended obtaining soil sampling reports from previous activities, ensuring the removal or abatement of site material debris (noted as mattresses, trash, and construction debris), and working with a contracted Civil Engineering Firm to investigate the retaining walls.

According to the information provided, approximately 51.5 feet of fill occupies the Site. The fill was reportedly placed on Site during construction of the I-15 off ramp adjoining the Site and construction of the buttress to stabilize the landslide on Site in 1981. Soils used during construction of the off ramp were gathered from areas that adjoined the I-15 from at least 1966 to 1981. The potential exists for aerially deposited lead impacts in the fill soils placed on Site. Therefore, the undocumented fill on Site represents a REC to the Site.

No other reports were provided for the Site.

4.0 ENVIRONMENTAL DATA SEARCH

4.1 Database Information on the Site and the Adjacent Properties

4.1.1 Standard Environmental Record Sources for the Site and Vicinity

Group Delta conducted a review of reasonably ascertainable environmental regulatory agency databases to identify known or suspected environmental concerns or RECs that may be associated with the Site. A search of readily available environmental records was obtained from EDR of Shelton, Connecticut (Appendix C). The purpose of the regulatory database report review was to evaluate to the extent possible whether prior activities, processes, operations, or actions on the Site, adjoining properties, and nearby locations have the potential to adversely impact the environmental integrity of the Site, are suspected sources of environmental contamination, or present RECs for the Site. The regulatory database report provides information regarding current operations and prior regulatory listings for the Site and previous owners and/or operators on the Site. The presence or absence of information about the Site does not necessarily mean that there are or are not environmental issues associated with the Site.

The regulatory database report includes a list of government databases searched, a statistical profile listing the number of properties within ASTM Standard Practice specified search radii, selected detailed information from environmental regulatory agency databases, and a map illustrating the identified properties, sites, or facilities of interest.

The regulatory database report provides a mechanism to evaluate a relatively large number of environmental regulatory agency databases and eliminate many properties, sites, operations, and/or facilities that have a low potential of adversely impacting the Site. However, it should be noted that the information included in the regulatory database report is not necessarily all-inclusive and environmental regulatory agency files may have been purged by public officials prior to release to the public. In addition, mapping errors may not reflect actual distances and directions between the Site and the properties, sites, operations, and/or facilities listed in the regulatory database report.

The regulatory database report includes information from federal, state, local, military, and tribal environmental regulatory agency databases.

4.1.2 Site Records

The property was not identified on any databases in the EDR regulatory database report.

4.1.3 Vicinity Records Search

Multiple sites were listed in the EDR database radius search for the project area. The radius search area included the project limits and a one-mile radius from the project limits. Numerous properties within this search area were listed on the EDR database and were found not to pose a hazardous waste impact based on the following criteria, or a combination thereof:

- The regulatory case status of the property is identified as completed and closed;
- The type of media affected was identified as soil only;
- The release was in nominal amounts or concentrations as to not present a hazardous waste impact concern to the project;
- The listing was identified on low-hazardous risk databases (i.e., underground storage tank [UST] HAZNET, small quantity generator databases) with no reported spills, cleanups, or violations;
- The property is identified on a low-hazardous risk database as receiving one or more violations, but the nature of violations received was associated with financial, administrative, or record-keeping practices only;
- The distance of the listing to project limits is great enough that it does not present a hazardous waste impact concern to the project, and/or;
- The listing is down-gradient or cross-gradient from the project limits.

Table 1 provides a summary of properties in the vicinity of the Project area that were further evaluated due to the potential to pose a hazardous waste impact to the Project. These properties were identified on high-hazardous risk databases (including RCRA NONGEN/NLR, UST, HIST UST, LUST, HAZNET, CERS, CERS TANKS, CERS HAZ WASTE, SWEEPS UST, FINDS, ECHO, SWEEP UST). Table 1 includes the operating business name and address associated with the listing; Map ID number indicating the location of the listing relative to the Project; the EDR regulatory database report listing number and associated database(s) on which the listing occurs; and a summary of information pertaining to the listing.

Table 1 **EDR Database Report – Project Vicinity Findings**
Synfast Oil Change/Henley Pacific LLC DBA Valvoline Instant Oil Change GN0155 (16410 Bernardo Center Drive)
Map Key Number(s): 1 and 3
EDR Listing of Concern and Associated Databases: Multiple
The adjacent property to the east is listed on multiple regulatory databases. According to the listings, in 2012 this facility was permitted for the following hazardous materials: antifreeze, motor oil, waste oil, waste antifreeze, used oil filters, and used lead acid batteries. Notices of violation were issued in 2004, 2006, 2008, and 2011 for failure to maintain manifests/receipts on site for 3 years, failure to inspect and/or document daily hazardous waste tank system inspections, failure to maintain personnel training records, failure to establish a hazardous waste business plan, failure to properly label hazardous waste containers, and failure to prepare an Emergency Contingency Plan. All notices of violation were subsequently abated in 2012. This facility was classified as a hazardous waste handler and not a generator in 2015 and 2018. The facility is classified as automotive, mechanical, and electrical repair and maintenance. The facility contains at least one aboveground storage tank (AST). This facility generated hazardous waste annually from 2017 to 2019, including unspecified oil-containing waste and other organic solids, which were disposed via storage, bulking, and/or transfer off-site – no treatment/recovery and other recovery or reclamation for reuse including acid regeneration, organics recovery, etc. No evidence of spills or a release was found in connection with these listings. Based on this information, these listings do not represent a REC to the Site.

Table 1 **EDR Database Report – Project Vicinity Findings**
Swift Corporation (16399 Bernardo Center Drive)
Map Key Number(s): 9 and 10
EDR Listing of Concern and Associated Databases: RCRA NON GEN/NLR
The adjacent property to the east is listed on the RCRA NON GEN/NLR. According to the listings, this facility was classified as a hazardous waste handler and not a generator in 2018 and 2019. The business type is listed as waste management services. No evidence of spills or releases in connection with this listing was found. Based on this information, this listing does not represent a REC to the Project.
SAIC/ Energy Factors, Inc./ Unisys (16701 West Bernardo Drive)
Map Key Number(s): 6-8
EDR Listing of Concern and Associated Databases: Multiple
The adjoining property to the north is listed on multiple regulatory databases. According to the listings and files provided by the San Diego County Department of Public Health (SDC DEH), the adjoining property to the north was historically occupied by aerospace manufacturing facilities, including The Burroughs Corporation and Unisys from circa early 1970s to 1993. In 1983 and 1984, a 3,000-gallon solvent (tetrachloroethene [PCE] and/or trichloroethene [TCE]) underground storage tank (UST) and 4,000-gallon acid UST were removed from the property. The solvent UST was reportedly installed in the early 1970s. Halogenated solvents and acids are typically used in plating activities in the aerospace manufacturing industry. The UST area, located approximately 440 feet north of the northern Site boundary, was evaluated later in 1987 to determine whether a release had occurred. An unauthorized release of volatile organic compounds (VOCs) that impacted soil and groundwater was discovered, and a remedial excavation of approximately 300 cubic yards of soil was completed in 1988. A portion of the contaminated soil was disposed off-site in a landfill, but the remainder was remediated via aeration on site and used to backfill the excavation. No soil vapor sampling was conducted, and confirmation samples collected from the backfilled soil contained detectable concentrations of VOCs, including PCE and TCE, in soil. TRC found that perched groundwater was impacted but opined that a clay layer laterally vertically confined the VOC-contaminated perched groundwater within the property boundaries. It appears no groundwater monitoring was performed subsequent to collecting the contaminated perched groundwater sample. The case was issued closure by the SDC DEH on September 28, 1988, with the caveat that further site characterization and mitigation activity may be required if the site use changes from industrial. The property is currently vacant land. Based on the former aerospace manufacturing operations for approximately twenty years and residual contamination left in place at the former facility, the adjoining property to the north represents a REC to the Site.
National Cash Register (NRC) Corporation Engineering and Manufacturing, Menon International, BAE Systems Missions Solutions, Northrop Grumman Aerospace Systems, Bernardo Summit, LLC, 3D Systems, Crown Bioscience San Diego (16550 West Bernardo Drive)

Table 1 **EDR Database Report – Project Vicinity Findings**
Map Key Number(s): 32-50
EDR Listing of Concern and Associated Databases: Multiple
The property located approximately 0.17 mile northwest of the Site is listed on multiple regulatory databases. According to the listings and information provided on the EnviroStor database, the property was first developed by NCR in 1967, who utilized portions of the property for the fabrication of printed circuit boards from 1968 until 1981. The following potential contaminants of concern were evaluated in connection with historical electronics manufacturing operations at the property: boron, cyanide, lead, nickel, and zinc impacting soil. NCR submitted a Closure Plan for the facility, which was approved by the United States Environmental Protection Agency (USEPA) on July 11, 1989. NCR implemented the approved Closure Plan, which included the removal of the tanks and manufacturing equipment. Contaminated soil was excavated from the property and replaced with clean fill. On December 3, 2015, representatives of Department of Toxic Substances Control and Bernardo Summit (current property owner) conducted a site visit to verify previous investigation sampling locations, and current site conditions. The identified areas of potential concern were the former Hazardous Waste Management areas and Solid Waste Management Units which include, (1) a former UST (2) a former chemical/ hazardous materials bunker (3) a former oil/water separator, and (4) the former vapor degreaser areas. Soil impacts at the Site are limited to sporadic detections of elevated arsenic above the regional background concentration of 21 milligrams per kilogram (mg/kg). The site cleanup status is listed as “active” as of January 1, 2008 under DTSC oversight. A Land Use Restriction (LUC) was recorded at the property on January 23, 2020. Based on regulatory status, this active release case does not represent a REC to the Site at this time.
L&M Tire Company, Inc. DBA Express Tire (16556 Bernardo Center Drive)
Map Key Number(s): 29 and 30
EDR Listing of Concern and Associated Databases: Multiple
The property located approximately 0.17 mile southeast of the Site is listed on multiple regulatory databases. According to the listings and information provided on the GeoTracker database, an unauthorized release of waste oil that impacted soil only was reported on January 3, 1994. The case was issued closure by the SDC DEH on June 14, 1994. Based on regulatory status, this former release does not represent a REC to the Site.
Firestone Complete Auto Care #2246 (16646 Bernardo Center Drive)
Map Key Number(s): 49-51
EDR Listing of Concern and Associated Databases: Multiple
The property located approximately 0.21 mile northeast of the Project is listed on multiple regulatory databases. According to the listings and information provided on the GeoTracker database, an unauthorized release of waste oil that impacted soil and groundwater was discovered on April 1, 1994. The case was issued closure by the SDC DEH on May 22, 1996. Based on regulatory status, this former release does not represent a REC to the Site.

Table 1 EDR Database Report – Project Vicinity Findings
Hewlett Packard Company (16399 West Bernardo Drive)
Map Key Number(s): 52 and 53
EDR Listing of Concern and Associated Databases: Multiple
The property located approximately 0.25 mile southwest of the Project is listed on multiple regulatory databases. According to the listings and information provided on the GeoTracker database, On January 24, 1986, a 1,000-gallon waste oil and solvent UST was removed from the facility, which was used for storage and chemical handling to support ink cartridge manufacturing operations. Approximately 12 cubic yards of soil was removed from the tank excavation. In December 1994, total recoverable petroleum hydrocarbons (TRPH) and chlorinated VOCs were reported in soil samples collected beneath floor drain trenches and piping that were previously connected to the UST. Between December 1994 and April 1995, the UST piping and approximately 392 cubic yards of soil were excavated from former tank vicinity. Additional assessment in the area was conducted after the excavation activities. Soil borings were drilled inside and outside of the building, and soil vapor probes were installed inside the building. The VOCs with the highest detected concentrations identified in both soil and soil vapor samples included 1,1-dichloroethene (1,1-DCE), PCE, TCE, and 1,1,1-trichloroethane (1,1,1-TCA). Between 1995 and 2012, twenty-four on-site groundwater monitoring and remediation wells and six off-site monitoring wells were installed to investigate the nature and extent of contamination. Dissolved VOCs were either not detected or detected at trace concentrations in the off-site monitoring wells. Various remedial actions have been conducted to reduce the VOC mass at the site. Between approximately January 2003 and mid-2006, soil vapor extraction (SVE) was conducted. A total of approximately 310 pounds of VOCs were removed. Supplemental SVE was conducted between June 2013 and June 2014 to address residual contamination. An estimated 683 pounds of VOCs were removed, and the consultant concluded that the SVE vadose zone remediation was effective. From approximately December 2009 to June 2010, an in-situ chemical oxidation (ISCO) pilot test was performed downgradient of the building using chemical injection wells. An estimated 250 pounds of chlorinated VOCs were removed during the pilot test. The case was issued closure by the SDC DEH on October 23, 2017. Based on the regulatory status and hydrogeologic orientation with regard to the Site (cross-gradient), this former release does not represent a REC to the Site.

A copy of the Radius Search Map is provided in Appendix C.

4.2 Historical Use Information on the Site and Adjoining Properties

Group Delta reviewed available historical information to ascertain the historical uses of the Site and the adjoining properties. Reviewed information included Sanborn insurance maps, historic aerial photographs, historic topographic maps, and city directories.

4.2.1 Sanborn Map Review

Group Delta reviewed a certified Sanborn map report prepared by EDR. After a complete search of the Sanborn Library and fire insurance maps by EDR, fire insurance maps of the target property were not found.

A copy of the Sanborn search findings is provided in Appendix C of this report.

4.2.2 Historical Aerial Photography and Topographic Map Review

Aerial photographs and historical topographic maps of the Site and adjoining properties were provided by EDR and reviewed to identify historical land development. Photographs and historical topographic maps dating between 1893 and 2018 were reviewed. Table 2 summarizes the results of the aerial photograph review and Table 3 summarizes the results of the topographic map review. Copies of the aerial photographs and topographic maps provided by EDR are included as Appendix C.

Table 2: Summary of Historical Aerial Photography Review

Table 2 Summary of Historical Aerial Photography Review		
Year	**Source and Scale**	**Summary**
1939, 1947, 1949, 1953, 1964, 1966, 1970, and 1979	Aerial Photographs 1:500	The Site appears to be undeveloped land. The surrounding areas of the Project area appear to be undeveloped land. The Interstate 15 freeway appears to the east of the Site by 1966. A commercial/industrial building appears to be in development at the adjoining property to the north in 1970 and is constructed by 1979.
1985, 1989, 1995, 1996, 2002, 2005, 2009, 2012, and 2016	Aerial Photographs 1:500	The Site appears to be undeveloped land that has been graded. The surrounding areas of the Project area appear to be commercial/industrial buildings to the north and east and undeveloped land to the west and south. The east-adjoining Interstate 15 freeway off ramp is constructed by 1985.

Table 3: Summary of Historical Topographic Map Review

Table 3 Summary of Historical Topographic Map Review		
Year	**Source and Scale**	**Summary**
1893, 1901, and 1947	Topographic Maps 15-minute	The Site is depicted as undeveloped land. The surrounding vicinity appears to be undeveloped land.
1949 and 1967	Topographic Maps 7.5-minute	The Site is depicted as undeveloped land. The surrounding vicinity appears to be undeveloped land.
1975, 1996, 2012, 2015, and 2018	Topographic Maps 7.5-minute	The Site is depicted as undeveloped land. The surrounding vicinity is shaded to indicate dense development to the north and east. The Interstate 15 freeway appears to the east of the Site.

Representative aerial photographs and topographic maps are included in Appendix C.

4.2.3 City Directory Report

The EDR City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. City directories generally include listings of residents or businesses organized both alphabetically and alphanumerically by street names and street addresses and are prepared for many urban and suburban areas of the United States dating back to the early 1900s.

Group Delta reviewed the city directory search prepared by EDR. The search was performed for the Site and the adjacent properties. According to the city directory, addresses in the vicinity of the Site were mainly comprised of various commercial and industrial businesses from as early as 1990 until 2017. For further discussion of adjoining and nearby commercial and industrial businesses, please refer to Section 4.1.3.

The city directory search results prepared by EDR are presented in Appendix C.

5.0 REGULATORY AGENCY RECORDS

5.1 Online Available Records

5.1.1 Department of Toxic Substances Control (DTSC)

Group Delta reviewed available files of the State of California DTSC published on the internet records database Envirostor. The purpose of this search was to identify any evidence of unauthorized releases of hazardous materials to the surface, subsurface soil, and groundwater.

The Site is not listed in the Envirostor database.

No RECs were identified as a result of the Envirostor database review.

5.1.2 State Water Resources Control Board (SWRCB)

Group Delta reviewed available files through the online GeoTracker database maintained by the California SWRCB. GeoTracker maintains files related to UST facilities, LUSTs, site clean-ups, disposal sites, wells, and information related to hazardous materials and/or waste.

The Site is not listed in the GeoTracker database.

No RECs were identified as a result of the GeoTracker database review.

5.1.3 California Department of Conservation, Geologic Energy Management Division (CalGEM)

Group Delta reviewed mapping available on the CalGEM website for oil and gas wells on or in the vicinity of the Project. The mapping did not include any oil and gas wells on, or within 1500 feet of the Site. No RECs were identified as a result of the CalGEM database review.

5.1.4 Office of California State Fire Marshall

Group Delta reviewed available files through the online National Pipeline Mapping System (NPMS) database maintained by the Office of California State Fire Marshal. NPMS is a Geographic Information System (GIS) database of pipeline information for the specific intent of emergency response. The database does not include natural gas lines or liquefied natural gas facilities.

No pipelines were mapped on or within 1500 feet of the Site. No RECs were identified as a result of the NPMS database review.

5.2 San Diego County Department of Environmental Health (SDC DEH) Records

Records provided by SDC DEH include permitting for previous geotechnical borings advanced at the Site. No RECs were identified in the review of SDC DEH files.

6.0 SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

A Site reconnaissance was performed on January 10, 2022 by Allison Bieda of Group Delta.

The purpose of the Site reconnaissance was to observe the present Site use and conditions as they relate to the possible presence of potentially hazardous substances and petroleum products. In addition, adjoining properties and roads were visually observed from the Site to identify land uses and the potential presence of structures, operations, activities, or environmental conditions that may involve the use, treatment, storage, disposal, or generation of hazardous wastes and/or petroleum products that may pose an environmental concern to the Site. Photographic documentation of the reconnaissance is included in Appendix B.

6.2 General Site Setting

The Site is approximately 9.8 acres in size and consists of undeveloped land naturally vegetated with scrub vegetation and grasses. A portion of an asphalt-paved parking lot connected with the industrial business park to the north occupies the northern portion of the Site. The topography of the site consisted of a steep grade from the higher northern elevation to the lower southern elevation, with retaining walls in the center of the Site.

6.3 Adjacent Properties Site Observations

The properties adjacent to the Site were observed from the Site to assess if they had potential to present RECs for the Site.

The Site is bound to the north by light industrial warehouse/office buildings (16780 West Bernardo Drive); to the south by Bernardo Center Drive, followed by undeveloped land; to the west by undeveloped land; and to the east by I-15, followed by commercial retail structures (16440 Bernardo Center Drive). All properties adjacent to the Site were well-maintained and did not appear to be of environmental concern.

6.4 Site Visit Findings

The following observations were made during the site reconnaissance:

- Concrete construction debris was observed in the central portion of the Site

No RECs were identified during the Site reconnaissance.

7.0 SIGNIFICANT DATA GAPS

7.1 Data Gaps

In general, a Data Gap is the inability to gather information as prescribed in the ASTM Standard Practice despite good faith efforts. This may include, but not be limited to, a lack of historical information, inability to interview knowledgeable individuals, or inspect portions of the Site.

No data gaps were identified during the preparation of the report.

7.2 Data Failures

The objective of reviewing historical information is to identify all obvious uses of the Site from first developed use or 1940, whichever is earlier, to identify the likelihood of previous uses resulting in a recognized environmental condition(s). Generally, a Data Failure is when all obvious uses of the site cannot be determined despite gathering and reviewing all of the standard historical sources that are reasonably ascertainable. A historical source is considered reasonably ascertainable if it is (1) publicly available; (2) obtainable within a reasonable period of time and at a reasonable cost, and; (3) practically reviewable.

The Site uses were identified back to 1893. Therefore, data failure was not encountered during the course of this assessment.

8.0 FINDINGS AND CONCLUSIONS

Group Delta has performed a Phase I ESA for a 9.8 acre Site identified by San Diego County APN: 678-252-11-00 in San Diego, California. This ESA was conducted in general accordance with the scope of work, under guidance provided by the ASTM E1527-21 standard, and in a manner generally consistent with the agreement between the Client and Group Delta for this type of report. The information procured during this investigation was used to identify, to the extent practical and within the limitations of the Scope, RECs associated with the Site due to current or past land use.

This assessment has revealed the following RECs in connection with the Site:

- According to the information provided, approximately 51.5 feet of fill occupies the Site. The fill was reportedly placed on Site during construction of the I-15 off ramp adjoining the Site and construction of the buttress to stabilize the landslide on Site in 1981. Soils used during construction of the off ramp were gathered from areas that adjoined the I-15 from at least 1966 to 1981. The potential exists for aerially deposited lead impacts in the fill soils placed on Site. Therefore, the undocumented fill on Site represents a REC to the Site.

- The adjoining property to the north was historically occupied by aerospace manufacturing facilities, including The Burroughs Corporation and Unisys from circa early 1970s to 1993. In 1983 and 1984, a 3,000-gallon solvent (PCE and/or TCE) UST and 4,000-gallon acid UST were removed from the property. Halogenated solvents and acids are typically used in plating activities in the aerospace manufacturing industry. The tanks area, located approximately 440 feet north of the northern Site boundary, was evaluated later in 1987 to determine whether a release had occurred. An unauthorized release of VOCs that impacted soil and groundwater was discovered, and a remedial excavation of approximately 300 cubic yards of soil was completed in 1988. A portion of the contaminated soil was disposed off site in landfill, but the remainder was remediated via aeration on site and used to backfill the excavation. The case was issued closure by the SDC DEH on September 28, 1988, with the caveat that further site characterization and mitigation activity may be required if the site use changes from industrial. The property is currently vacant land. Based on the former aerospace manufacturing operations for approximately twenty years and residual contamination left in place at the former facility, the adjoining property to the north represents a REC to the Site.

Additionally, the following out-of-scope concern was identified:

- Concrete construction debris was observed on Site. The presence of asbestos-containing materials (ACM) will need to be investigated prior to removal of the concrete construction debris for development purposes in order to comply with environmental and worker safety regulatory requirements for ACM.

9.0 OPINIONS

We have performed a Phase I ESA of the subject Site in accordance with the scope of work and limitations of ASTM E1527-21. The information procured during this investigation was used to identify, to the extent practical and within the limitations of the Scope, RECs associated with the Site due to current or past land use.

This assessment has revealed evidence of two (2) RECs at the Site. Based upon the findings and conclusions, Group Delta is providing the following recommendation:

- Group Delta recommends a limited soil and soil vapor survey at the Site to assess potential lead impacts to soil and VOC impacts to soil vapor.

Additionally, the following out-of-scope concern was identified:

- Concrete construction debris was observed on Site. Group Delta recommends ACM sampling of the concrete construction debris prior to development at the Site.

10.0 DEVIATIONS

There were no deviations to the ASTM Standard Practice associated with the preparation and development of this Phase I ESA.

11.0 REFERENCES

California Department of Toxic Substances Control, EnviroStor Database, January 10, 2022. www.envirostor.dtsc.ca.gov.

Department of Transportation, National Pipeline Mapping System, January 10, 2022. https://www.npms.phmsa.dot.gov/PublicViewer/,

Environmental Data Resources, Inc., The EDR Radius Map Report with GeoCheck dated January 4, 2022.

Environmental Data Resources, Inc., Certified Sanborn Map Report dated January 4, 2022.

Environmental Data Resources, Inc., Historical Topographic Map Report dated January 4, 2022.

Environmental Data Resources, Inc., The EDR-City Directory Image Report dated January 4, 2022.

Environmental Data Resources, Inc. Aerial Photo Decade Package dated January 4, 2022.

Google Maps, http://maps.google.com

Office of California State Fire Marshal, January 10, 2022. http://osfm.fire.ca.gov/pipeline/pipeline_mapping.php.

SCST, Inc. Geotechnical Investigation at Bernardo Center Drive Study Area in San Diego, California, dated July 13, 2018.

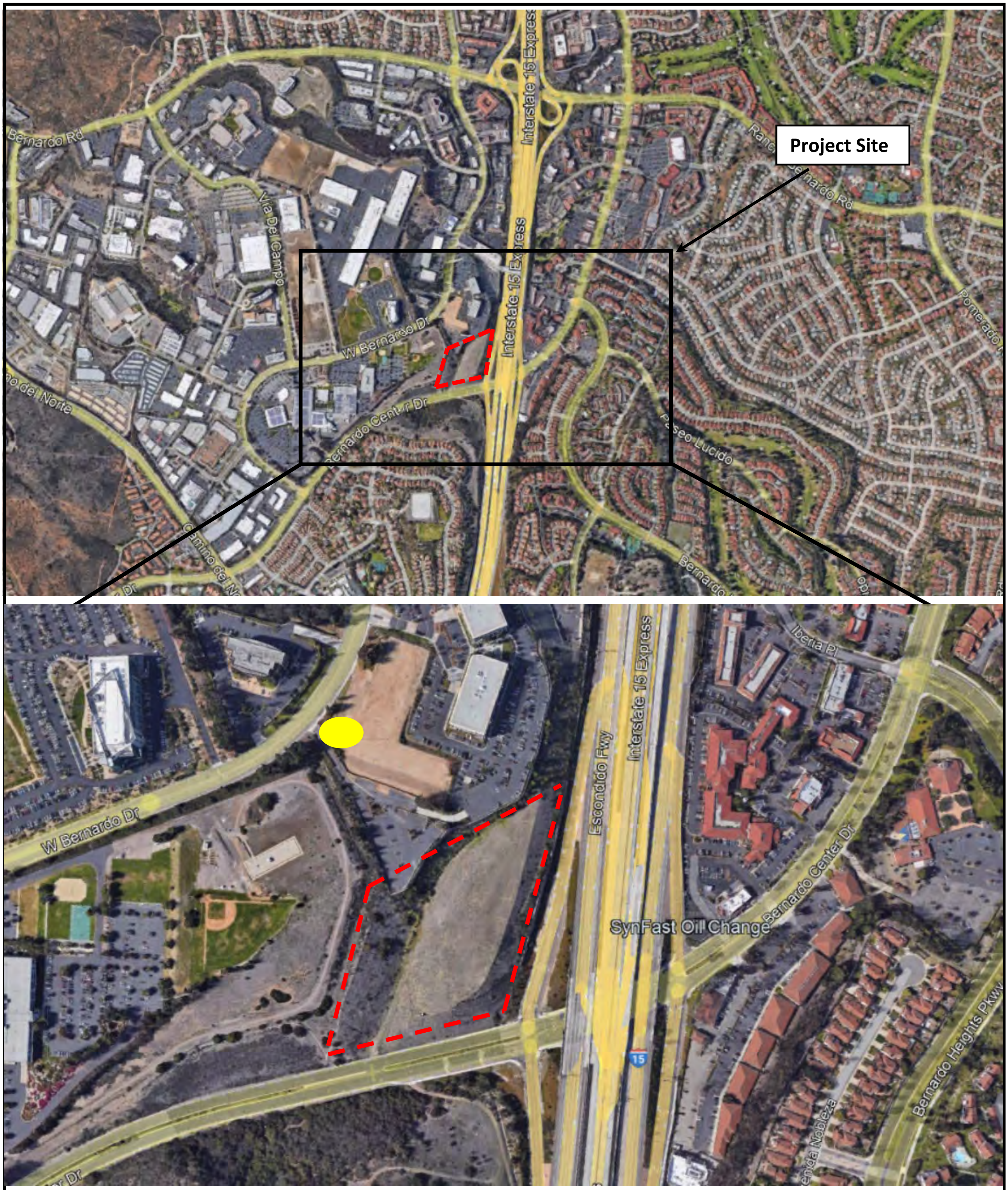
State of California, Department of Conservation, Geologic Energy Management Division, January 10, 2022. http://www.consrv.ca.gov/DOG/index.htm.

State Water Resources Control Board, GeoTracker Database, January 10, 2022. http://geotracker.waterboards.ca.gov/.

TerraCosta Consulting Group. Reassessment of Site Stability report at the Wellington Parcel (the Site), San Diego, California, dated February 28, 2018, revised March 2, 2018.

UC San Diego Environment, Health, and Safety. Phase I Due Diligence Inspection Report at Bernardo Center Drive (Plaza 15), Rancho Bernardo, California, dated July 23, 2018.

FIGURES



Reference: ***Google Maps***

- - - Site boundary

● Approximately location of former solvent UST

N

GROUP DELTA

GDC Project No. EN8185

Project Location Map

Phase I Environmental Site Assessment (ESA)
I-15 and Bernardo Center Drive
San Diego, CA

Figure 1

APPENDIX A
PRELIMINARY TITLE REPORT

Chicago Title Company

2365 Northside Drive, Suite 600, San Diego, CA 92108
Phone: (619) 521-3500 ● Fax: (619) 521-3608

Issuing Policies of Chicago Title Insurance Company

ORDER NO.: **00062077-004-RM1-TVA**

Chicago Title Company
701 B Street, Suite 1120
San Diego, CA 92101
ATTN: Renee Marshall
Email: marshallr@ctt.com

Escrow/Customer Phone: **(619) 233-3000**

Title Officer: **Ken Cyr & Mark Franklin**
Title Officer Phone: **(619) 521-3673**
Title Officer Fax: **(619) 521-3608**
Title Officer Email: **Cyr-Franklin@ctt.com**

PROPERTY: **APN NO. 678-252-11-00, SAN DIEGO, CA**

FIRST AMENDED PRELIMINARY REPORT

In response to the application for a policy of title insurance referenced herein, **Chicago Title 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 herein or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations or Conditions 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 Attachment One. 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 Attachment One. Copies of the policy forms should be read. They are available from the office which issued this report.

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.

The policy(s) of title insurance to be issued hereunder will be policy(s) of Chicago Title Insurance Company, a Nebraska Corporation.

Please read the exceptions shown or referred to herein and the exceptions and exclusions set forth in Attachment One 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.

Chicago Title Company

By: ______________________
Authorized Signature

By
Randy Quirk, President
Attest
Michael Gravelle, Secretary

PRELIMINARY REPORT

EFFECTIVE DATE: **November 21, 2016 at 7:30 a.m.**

ORDER NO.: 00062077-004-RM1-TVA

The form of policy or policies of title insurance contemplated by this report is:

ALTA Extended Owner's Policy (6-17-06)

1. THE ESTATE OR INTEREST IN THE LAND HEREINAFTER DESCRIBED OR REFERRED TO COVERED BY THIS REPORT IS:

   A FEE

2. TITLE TO SAID ESTATE OR INTEREST AT THE DATE HEREOF IS VESTED IN:

   WELLINGTON GROUP, LLC, a California limited liability company

3. THE LAND REFERRED TO IN THIS REPORT IS DESCRIBED AS FOLLOWS:

   See Exhibit A attached hereto and made a part hereof.

EXHIBIT “A”

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF SAN DIEGO, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCELS 1 AND 2 AS SHOWN ON PARCEL MAP NO. 16701, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, DECEMBER 3, 1991.

APN: 678-252-11-00

EXCEPTIONS

AT THE DATE HEREOF, ITEMS TO BE CONSIDERED AND EXCEPTIONS TO COVERAGE IN ADDITION TO THE PRINTED EXCEPTIONS AND EXCLUSIONS IN SAID POLICY FORM WOULD BE AS FOLLOWS:

A. Property taxes, including any personal property taxes and any assessments collected with taxes, are as follows:

Tax Identification No.:	678-252-11-00
Fiscal Year:	2016-2017
1st Installment:	$4,037.20, open (Delinquent after December 10)
Penalty:	$403.72
2nd Installment:	$4,037.20, open (Delinquent after April 10)
Penalty and Cost:	$413.72
Homeowners Exemption:	$None
Code Area:	08262

B. 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.

1. The ownership of said Land does not include rights of access to or from the street, highway, or freeway abutting said Land, such rights having been relinquished by the document,

Recording Date:	July 14, 1948
Recording No.:	Book 2871, Page 297 of Official Records
Affects:	That portion of said land as described in the document attached hereto.

2. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	water mains
Recording Date:	March 12, 1968
Recording No.:	41720 of Official Records
Affects:	said land more particularly described therein

3. Intentionally omitted.

4. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	public highway
Recording Date:	September 29, 1989
Recording No.:	526799 of Official Records
Affects:	said land more particularly described therein

5. Covenants, conditions and restrictions but omitting any covenants or restrictions, if any, including, but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, source of income, gender, gender identity, gender expression, medical condition or genetic information, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable laws, as set forth in the document referred to in the numbered item last above shown.

6. The ownership of said Land does not include rights of access to or from the street, highway, or freeway abutting said Land, such rights having been relinquished by the document,

EXCEPTIONS
(Continued)

Recording Date: September 29, 1989
Recording No.: 89-526799 of Official Records
Affects: That portion of said land as described in the document attached hereto.

7. A deed of trust to secure an indebtedness in the amount shown below,

Amount: $415,000.00
Dated: January 3, 1997
Trustor/Grantor: Wellington Group LLC
Trustee: First American Title Insurance Company, a California Corporation
Beneficiary: Richard L. Anderson, an individual
Loan No.: None shown
Recording Date: February 27, 1997
Recording No: 1997-0087419 of Official Records

If the above-mentioned deed of trust has been paid, or will be paid prior to or at close of escrow, this Company will require the Original Note, Deed of Trust, and a signed Request for Reconveyance, duly acknowledged prior to closing. Any demand for payoff and/or request for full/partial reconveyance must be executed by all beneficiaries or their successors in interest and spouses, if married.

8. Matters contained in that certain document

Entitled: Land Use Agreement
Recording Date: February 3, 1998
Recording No.: 1998-0055558 of Official Records

Reference is hereby made to said document for full particulars

9. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose: ingress, egress for parking and access
Recording Date: February 10, 1998
Recording No.: 1998-0071022 of Official Records

Affects: said land more particularly described therein

An agreement recorded February 10, 1998 as 1998-0071023 of Official Records which states that this instrument was subordinated to the document or interest described in the instrument

Recording Date: February 27, 1997
Recording No.: 1997-0087419 Of Official Records

10. Matters contained in that certain document

Entitled: Agreement Pertaining to Improvements on Realty and Covenants Running With the Land
Recording Date: November 18, 2004
Recording No.: 2004-1094953 of Official Records

Reference is hereby made to said document for full particulars

EXCEPTIONS
(Continued)

Modification(s) of the terms and provisions of said document as therein provided.

Recorded: July 15, 2005 as Instrument No. 2005-600966, of Official Records

11. Water rights, claims or title to water, whether or not disclosed by the public records.

12. Matters which may be disclosed by an inspection and/or by a correct ALTA/NSPS Land Title Survey of said Land that is satisfactory to the Company, and/or by inquiry of the parties in possession thereof.

13. 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.

    The Company will require, for review, a full and complete copy of any unrecorded agreement, contract, license and/or lease, together with all supplements, assignments and amendments thereto, before issuing any policy of title insurance without excepting this item from coverage.

    The Company reserves the right to except additional items and/or make additional requirements after reviewing said documents.

PLEASE REFER TO THE "INFORMATIONAL NOTES" AND "REQUIREMENTS" SECTIONS WHICH FOLLOW FOR INFORMATION NECESSARY TO COMPLETE THIS TRANSACTION.

END OF EXCEPTIONS

REQUIREMENTS SECTION

1. The Company will require the following documents for review prior to the issuance of any title insurance predicated upon a conveyance or encumbrance from the entity named below:

   Limited Liability Company: **WELLINGTON GROUP, LLC, a California limited liability company**

   a) A copy of its operating agreement, if any, and any and all amendments, supplements and/or modifications thereto, certified by the appropriate manager or member

   b) If a domestic Limited Liability Company, a copy of its Articles of Organization and all amendments thereto with the appropriate filing stamps

   c) If the Limited Liability Company is member-managed, a full and complete current list of members certified by the appropriate manager or member

   d) If the Limited Liability Company was formed in a foreign jurisdiction, evidence, satisfactory to the Company, that it was validly formed, is in good standing and authorized to do business in the state of origin

   e) If less than all members, or managers, as appropriate, will be executing the closing documents, furnish evidence of the authority of those signing.

   The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

2. Before issuing its policy of title insurance, the Company will require evidence, satisfactory to the Company, that

   Corporation name: **BR Caster Corporation**

   a) is validly formed on the date when the documents in this transaction are to be signed;

   b) is in good standing and authorized to do business in the state or country where the corporation was formed; and

   c) has complied with the “doing business” laws of the State of Name of State.

END OF REQUIREMENTS

INFORMATIONAL NOTES SECTION

1. None of the items shown in this report will cause the Company to decline to attach CLTA Endorsement Form 100 to an Extended Coverage Loan Policy, when issued.

2. The Company is not aware of any matters which would cause it to decline to attach CLTA Endorsement Form 116 indicating that there is located on said Land Undeveloped Land properties, known as APN NO. 678-252-11-00, located within the city of San Diego, California, , to an Extended Coverage Loan Policy.

3. Note: The policy of title insurance will include an arbitration provision. The Company or the insured may demand arbitration. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. Please ask your escrow or title officer for a sample copy of the policy to be issued if you wish to review the arbitration provisions and any other provisions pertaining to your Title Insurance coverage.

4. Plotted easements

END OF INFORMATIONAL NOTES

Ken Cyr & Mark Franklin/rp

FIDELITY NATIONAL FINANCIAL
PRIVACY NOTICE

At Fidelity National Financial, Inc. and its majority-owned subsidiary companies (collectively, "FNF", "our" or "we"), we value the privacy of our customers. This Privacy Notice explains how we collect, use, and protect your information and explains the choices you have regarding that information. A summary of our privacy practices is below. We also encourage you to read the complete Privacy Notice following the summary.

Types of Information Collected. You may provide us with certain personal information, like your contact information, social security number (SSN), driver's license, other government ID numbers, and/or financial information. We may also receive information from your Internet browser, computer and/or mobile device.	**How Information is Collected.** We may collect personal information directly from you from applications, forms, or communications we receive from you, or from other sources on your behalf, in connection with our provision of products or services to you. We may also collect browsing information from your Internet browser, computer, mobile device or similar equipment. This browsing information is generic and reveals nothing personal about the user.
Use of Your Information. We may use your information to provide products and services to you (or someone on your behalf), to improve our products and services, and to communicate with you about our products and services. We do not give or sell your personal information to parties outside of FNF for their use to market their products or services to you.	**Security Of Your Information**. We utilize a combination of security technologies, procedures and safeguards to help protect your information from unauthorized access, use and/or disclosure. We communicate to our employees about the need to protect personal information.
Choices With Your Information. Your decision to submit personal information is entirely up to you. You can opt-out of certain disclosures or use of your information or choose to not provide any personal information to us.	**When We Share Information.** We may disclose your information to third parties providing you products and services on our behalf, law enforcement agencies or governmental authorities, as required by law, and to parties with whom you authorize us to share your information.
Information From Children. We do not knowingly collect information from children under the age of 13, and our websites are not intended to attract children.	**Privacy Outside the Website.** We are not responsible for the privacy practices of third parties, even if our website links to those parties' websites.
Access and Correction. If you desire to see the information collected about you and/or correct any inaccuracies, please contact us in the manner specified in this Privacy Notice.	**Do Not Track Disclosures.** We do not recognize "do not track" requests from Internet browsers and similar devices.
The California Online Privacy Protection Act. Certain FNF websites collect information on behalf of mortgage loan servicers. The mortgage loan servicer is responsible for taking action or making changes to any consumer information submitted through those websites.	**International Use.** By providing us with your information, you consent to the transfer, processing and storage of such information outside your country of residence, as well as the fact that we will handle such information consistent with this Privacy Notice.
Your Consent To This Privacy Notice. By submitting information to us and using our websites, you are accepting and agreeing to the terms of this Privacy Notice.	**Contact FNF.** If you have questions or wish to contact us regarding this Privacy Notice, please use the contact information provided at the end of this Privacy Notice.

FIDELITY NATIONAL FINANCIAL, INC.
PRIVACY NOTICE

FNF respects and is committed to protecting your privacy. We pledge to take reasonable steps to protect your Personal Information (as defined herein) and to ensure your information is used in compliance with this Privacy Notice.

This Privacy Notice is only in effect for information collected and/or owned by or on behalf of FNF, including collection through any FNF website or online services offered by FNF (collectively, the "Website"), as well as any information collected offline (e.g., paper documents). The provision of this Privacy Notice to you does not create any express or implied relationship, nor create any express or implied duty or other obligation, between FNF and you.

Types of Information Collected

We may collect two types of information: Personal Information and Browsing Information.

Personal Information. The types of personal information FNF collects may include, but are not limited to:

- contact information (*e.g.*, name, address, phone number, email address);
- social security number (SSN), driver's license, and other government ID numbers; and
- financial account or loan information.

Browsing Information. The types of browsing information FNF collects may include, but are not limited to:

- Internet Protocol (or IP) address or device ID/UDID, protocol and sequence information;
- browser language;
- browser type;
- domain name system requests;
- browsing history;
- number of clicks;
- hypertext transfer protocol headers; and
- application client and server banners.

How Information is Collected

In the course of our business, we may collect *Personal Information* about you from the following sources:

- applications or other forms we receive from you or your authorized representative, whether electronic or paper;
- communications to us from you or others;
- information about your transactions with, or services performed by, us, our affiliates or others; and
- information from consumer or other reporting agencies and public records that we either obtain directly from those entities, or from our affiliates or others.

We may collect *Browsing Information* from you as follows:

- Browser Log Files. Our servers automatically log, collect and record certain Browsing Information about each visitor to the Website. The Browsing Information includes only generic information and reveals nothing personal about the user.
- Cookies. From time to time, FNF may send a "cookie" to your computer when you visit the Website. A cookie is a small piece of data that is sent to your Internet browser from a web server and stored on your computer's hard drive. When you visit the Website again, the cookie allows the Website to recognize your computer, with the goal of providing an optimized user experience. Cookies may store user preferences and other information. You can choose not to accept cookies by changing the settings of your Internet browser. If you choose not to accept cookies, then some functions of the Website may not work as intended.

Use of Collected Information

Information collected by FNF is used for three main purposes:

- To provide products and services to you, or to one or more third party service providers who are performing services on your behalf or in connection with a transaction involving you;
- To improve our products and services; and
- To communicate with you and to inform you about FNF's products and services.

When We Share Information

We may share your Personal Information (excluding information we receive from consumer or other credit reporting agencies) and Browsing Information with certain individuals and companies, as permitted by law, without first obtaining your authorization. Such disclosures may include, without limitation, the following:

- to agents, representatives, or others to provide you with services or products you have requested, and to enable us to detect or prevent criminal activity, fraud, or material misrepresentation or nondisclosure;
- to third-party contractors or service providers who provide services or perform other functions on our behalf;
- to law enforcement or other governmental authority in connection with an investigation, or civil or criminal subpoenas or court orders; and/or
- to other parties authorized to receive the information in connection with services provided to you or a transaction involving you.

We may disclose Personal Information and/or Browsing Information when required by law or in the good-faith belief that such disclosure is necessary to:

- comply with a legal process or applicable laws;
- enforce this Privacy Notice;
- investigate or respond to claims that any information provided by you violates the rights of a third party; or
- protect the rights, property or personal safety of FNF, its users or the public.

We make efforts to ensure third party contractors and service providers who provide services or perform functions on our behalf protect your information. We limit use of your information to the purposes for which the information was provided. We do not give or sell your information to third parties for their own direct marketing use.

We reserve the right to transfer your Personal Information, Browsing Information, as well as any other information, in connection with the sale or other disposition of all or part of the

FNF business and/or assets, or in the event of our bankruptcy, reorganization, insolvency, receivership or an assignment for the benefit of creditors. You expressly agree and consent to the use and/or transfer of this information in connection with any of the above-described proceedings. We cannot and will not be responsible for any breach of security by any third party or for any actions of any third party that receives any of the information that is disclosed to us.

Choices With Your Information

Whether you submit your information to FNF is entirely up to you. If you decide not to submit your information, FNF may not be able to provide certain products or services to you. You may choose to prevent FNF from using your information under certain circumstances ("opt out"). You may opt out of receiving communications from us about our products and/or services.

Security And Retention Of Information

FNF is committed to protecting the information you share with us and utilizes a combination of security technologies, procedures and safeguards to help protect it from unauthorized access, use and/or disclosure. FNF trains its employees on privacy practices and on FNF's privacy and information security policies. FNF works hard to retain information related to you only as long as reasonably necessary for business and/or legal purposes.

Information From Children

The Website is meant for adults. The Website is not intended or designed to attract children under the age of thirteen (13). We do not collect Personal Information from any person that we know to be under the age of thirteen (13) without permission from a parent or guardian.

Privacy Outside the Website

The Website may contain links to other websites, including links to websites of third party service providers. FNF is not and cannot be responsible for the privacy practices or the content of any of those other websites.

International Users

Because FNF's headquarters is located in the United States, we may transfer your Personal Information and/or Browsing Information to the United States. By using our website and providing us with your Personal Information and/or Browsing Information, you understand and consent to the transfer, processing and storage of such information outside your country of residence, as well as the fact that we will handle such information consistent with this Privacy Notice.

Do Not Track Disclosures

Currently, our policy is that we do not recognize "do not track" requests from Internet browsers and similar devices.

The California Online Privacy Protection Act

For some websites which FNF or one of its companies owns, such as the Customer CareNet ("CCN"), FNF is acting as a third party service provider to a mortgage loan servicer. In those instances, we may collect certain information on behalf of that mortgage loan servicer, including:

- first and last name;
- property address;
- user name and password;
- loan number;
- social security number - masked upon entry;
- email address;
- security questions and answers; and
- IP address.

The information you submit is then transferred to your mortgage loan servicer by way of CCN. **The mortgage loan servicer is responsible for taking action or making changes to any consumer information submitted through this website. For example, if you believe that your payment or user information is incorrect, you must contact your mortgage loan servicer.**

CCN does not share consumer information with third parties, other than those with which the mortgage loan servicer has contracted to interface with the CCN application. All sections of this Privacy Notice apply to your interaction with CCN, except for the sections titled Choices with Your Information, and Access and Correction. If you have questions regarding the choices you have with regard to your personal information or how to access or correct your personal information, contact your mortgage loan servicer.

Access and Correction

To access your Personal Information in the possession of FNF and correct any inaccuracies, please contact us by email at privacy@fnf.com or by mail at:

Fidelity National Financial, Inc.
601 Riverside Avenue
Jacksonville, Florida 32204
Attn: Chief Privacy Officer

Your Consent To This Privacy Notice

By submitting Personal Information and/or Browsing Information to FNF, you consent to the collection and use of information by FNF in compliance with this Privacy Notice. We reserve the right to make changes to this Privacy Notice. If we change this Privacy Notice, we will post the revised version on the Website.

Contact FNF

Please send questions and/or comments related to this Privacy Notice by email at privacy@fnf.com or by mail at:

Fidelity National Financial, Inc.
601 Riverside Avenue
Jacksonville, Florida 32204
Attn: Chief Privacy Officer

EFFECTIVE AS OF APRIL 1, 2016

Notice of Available Discounts

Pursuant to Section 2355.3 in Title 10 of the California Code of Regulations Fidelity National Financial, Inc. and its subsidiaries ("FNF") must deliver a notice of each discount available under our current rate filing along with the delivery of escrow instructions, a preliminary report or commitment. Please be aware that the provision of this notice does not constitute a waiver of the consumer's right to be charged the field rate. As such, your transaction may not qualify for the below discounts.

You are encouraged to discuss the applicability of one or more of the below discounts with a Company representative. These discounts are generally described below; consult the rate manual for a full description of the terms, conditions and requirements for each discount. These discounts only apply to transaction involving services rendered by the FNF Family of Companies. This notice only applies to transactions involving property improved with a one-to-four family residential dwelling.

FNF Underwritten Title Company	**FNF Underwriter**
CTC - Chicago Title Company	CTIC - Chicago Title Insurance Company

Available Discounts

CREDIT FOR PRELIMINARY REPORTS AND/OR COMMITMENTS ON SUBSEQUENT POLICIES (CTIC)

Where no major change in the title has occurred since the issuance of the original report or commitment, the order may be reopened within 12 months and all or a portion of the charge previously paid for the report or commitment may be credited on a subsequent policy charge within the following time period from the date of the report.

DISASTER LOANS (CTIC)

The charge for a lender's Policy (Standard or Extended coverage) covering the financing or refinancing by an owner of record, within 24 months of the date of a declaration of a disaster area by the government of the United States or the State of California on any land located in said area, which was partially or totally destroyed in the disaster, will be 50% of the appropriate title insurance rate.

CHURCHES OR CHARITABLE NON-PROFIT ORGANIZATIONS (CTIC)

On properties used as a church or for charitable purposes within the scope of the normal activities of such entities, provided said charge is normally the church's obligation the charge for an owner's policy shall be 50% to 70% of the appropriate title insurance rate, depending on the type of coverage selected. The charge for a lender's policy shall be 40% to 50% of the appropriate title insurance rate, depending on the type of coverage selected.

EMPLOYEE RATE (CTC and CTIC)

No charge shall be made to employees (including employees on approved retirement) of the Company or its underwritten, subsidiary title companies for policies or escrow services in connection with financing, refinancing, sale or purchase of the employees' bona fide home property. Waiver of such charges is authorized only in connection with those costs which the employee would be obligated to pay, by established custom, as a party to the transaction.

ATTACHMENT ONE

CALIFORNIA LAND TITLE ASSOCIATION
STANDARD COVERAGE POLICY – 1990

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 or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (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 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 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 claim, which arises out of the transaction vesting in the insured the estate of interest insured by this 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.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

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 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 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, 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.
6. Any lien or right to a lien for services, labor or material not shown by the public records.

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE (12-02-13)
ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE

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; and
   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.
7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.
8. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
9. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

- For 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:	1.00% % of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$ 10,000.00
Covered Risk 18:	1.00% % of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$ 25,000.00
Covered Risk 19:	1.00% of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$ 25,000.00
Covered Risk 21:	1.00% of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$ 5,000.00

2006 ALTA LOAN POLICY (06-17-06)

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).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

(Except as provided in Schedule B - Part II,(t(or T)his policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

(PART I

(The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

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.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

PART II

In addition to the matters set forth in Part I of this Schedule, the Title is subject to the following matters, and the Company insures against loss or damage sustained in the event that they are not subordinate to the lien of the Insured Mortgage:)

2006 ALTA OWNER'S POLICY (06-17-06)

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 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.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

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

(The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

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 in 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 that 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.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.
7. (Variable exceptions such as taxes, easements, CC&R's, etc. shown here.)

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (12-02-13)

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.

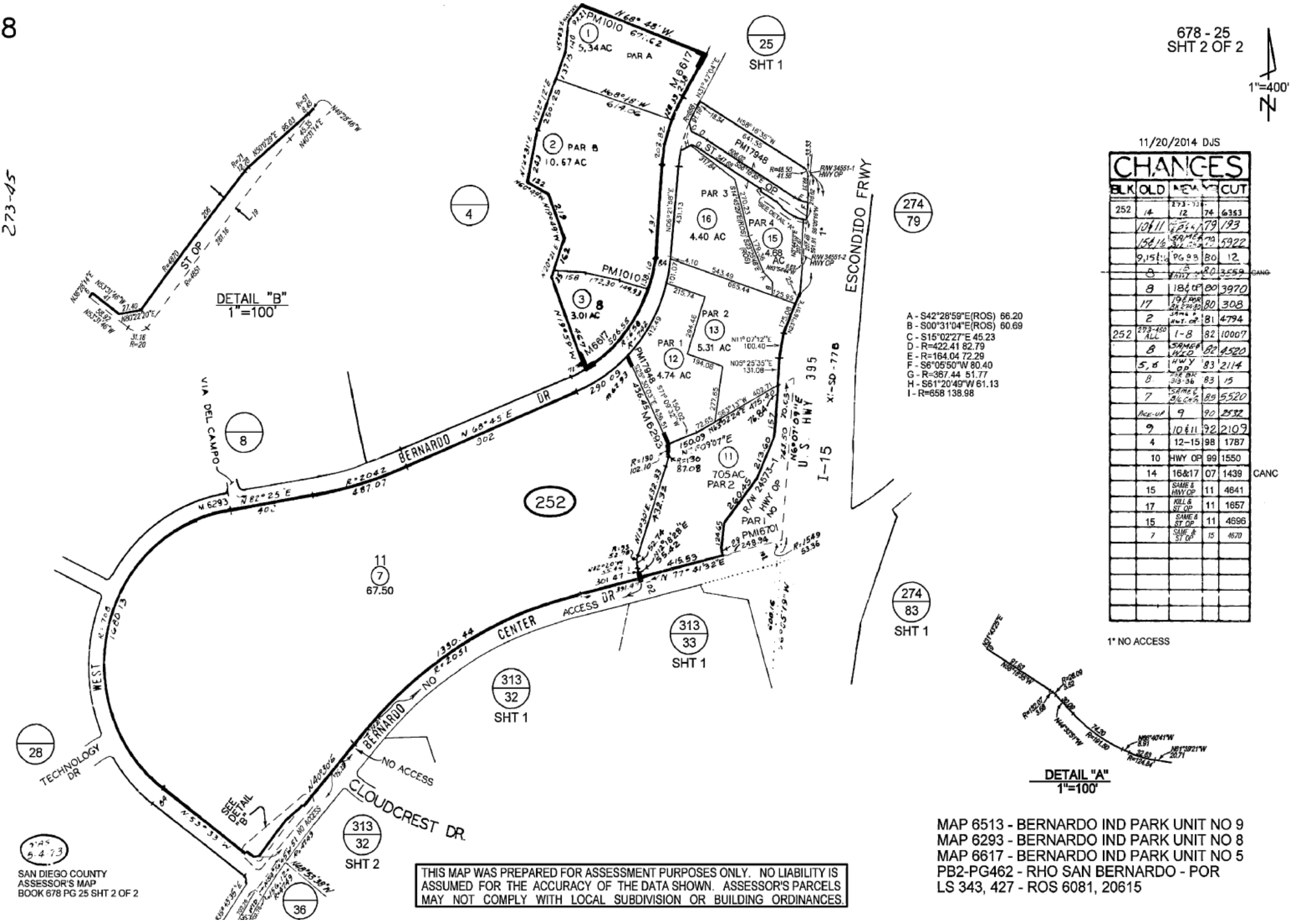
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, 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 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. 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.
9. 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 27(b) of this policy.
10. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
11. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

08

273-45

678 - 25
SHT 2 OF 2

1"=400'



11/20/2014 DJS

CHANGES

BLK	OLD	NEW	YR	CUT	
252	14	273-730-12	74	6353	
	10&11	[illegible]	79	193	
	15&16	SAME & [illegible]	79	5922	
	9,15&16	PG 98	80	12	
	~~8~~	~~18 HWY [illegible]~~	~~80~~	~~3559~~	CANC
	8	18& OP	80	3970	
	17	19& POR BK 274-80	80	308	
	2	SAME & HWY. OP.	81	4794	
252	273-450 ALL	1-8	82	10007	
	8	SAME & WID	82	4520	
	5,6	HWY OP	83	2114	
	8	POR BK 313-36	83	15	
	7	SAME & B/L CHG	85	5520	
	PICK-UP	9	90	2532	
	9	10&11	92	2109	
	4	12–15	98	1787	
	10	HWY OP	99	1550	
	14	16&17	07	1439	CANC
	15	SAME & HWY OP	11	4641	
	17	KILL & ST OP	11	1657	
	15	SAME & ST OP	11	4696	
	7	SAME & ST OP	15	4670	

1* NO ACCESS

A - S42°28'59"E(ROS) 66.20
B - S00°31'04"E(ROS) 60.69
C - S15°02'27"E 45.23
D - R=422.41 82.79
E - R=164.04 72.29
F - S6°05'50"W 80.40
G - R=367.44 51.77
H - S61°20'49"W 61.13
I - R=658 138.98

MAP 6513 - BERNARDO IND PARK UNIT NO 9
MAP 6293 - BERNARDO IND PARK UNIT NO 8
MAP 6617 - BERNARDO IND PARK UNIT NO 5
PB2-PG462 - RHO SAN BERNARDO - POR
LS 343, 427 - ROS 6081, 20615

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL SUBDIVISION OR BUILDING ORDINANCES.

5-4-73

SAN DIEGO COUNTY
ASSESSOR'S MAP
BOOK 678 PG 25 SHT 2 OF 2

This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.

APPENDIX B
SITE PHOTOGRAPHS

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	1	OF	11

PROJECT PHOTOGRAPHIC NUMBER	1		
DESCRIPTION	Looking west toward property boundary		
Caltrans Easement seen from street level			
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	2		
DESCRIPTION	Looking northwest toward property boundary		
Caltrans Easement seen from street level			
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	2	OF	11

PROJECT PHOTOGRAPHIC NUMBER	3		
DESCRIPTION	Site Perimeter looking north at street level		
Caltrans Easement seen from street level			
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	4		
DESCRIPTION	Site Perimeter looking east at street level		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	3	OF	11

PROJECT PHOTOGRAPHIC NUMBER	5		
DESCRIPTION	Looking south from site perimeter at street level		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	6		
DESCRIPTION	Looking southeast from top of parcel slope		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	4	OF	11

PROJECT PHOTOGRAPHIC NUMBER	7		
DESCRIPTION	Looking east from top of parcel slope		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	8		
DESCRIPTION	Looking north from top of parcel slope		
PHOTOGRAPHED BY	AB	DATE	01-10-22

Group Delta Consultants

Site Photographs

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	5	OF	11

PROJECT PHOTOGRAPHIC NUMBER			9
DESCRIPTION	Looking south from center of parcel		
General parcel condition and vegetation			
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER			10
DESCRIPTION	Debris present in northern portion of parcel		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	6	OF	11

PROJECT PHOTOGRAPHIC NUMBER	11
DESCRIPTION	Debris present in western portion of parcel
PHOTOGRAPHED BY	AB
DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	12
DESCRIPTION	Debris present in northwestern portion of parcel
PHOTOGRAPHED BY	AB
DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	7	OF	11

PROJECT PHOTOGRAPHIC NUMBER	13		
DESCRIPTION	Homeless encampment along northern retaining wall		
Tents and other debris present in tree vegetated area			
PHOTOGRAPHED BY	AB	DATE	01-10-22

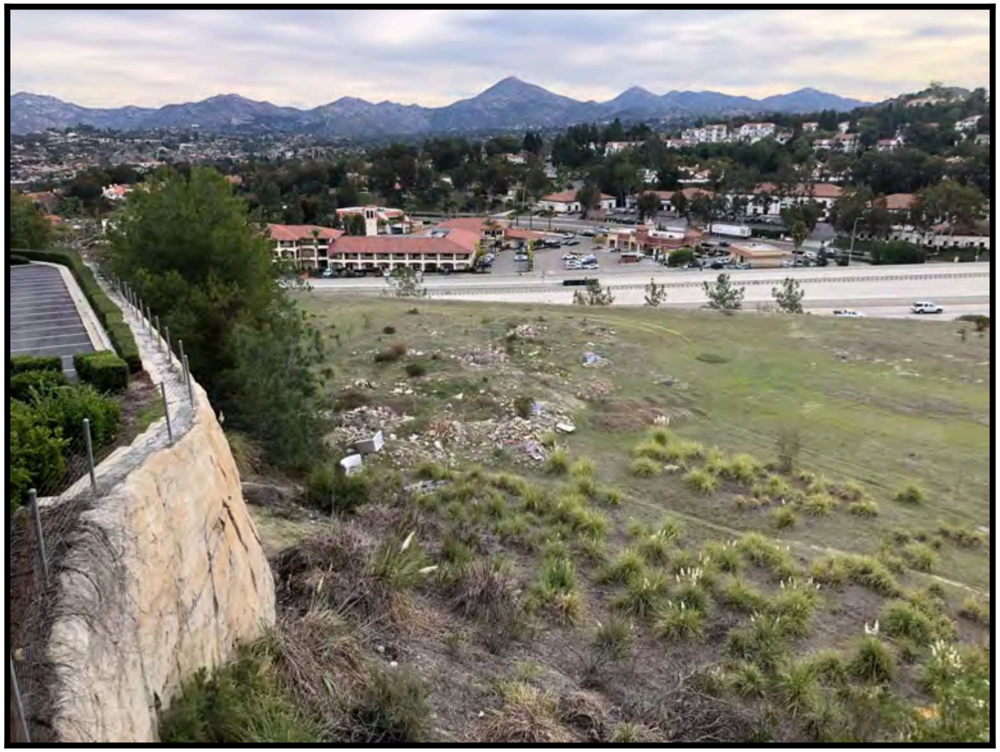
PROJECT PHOTOGRAPHIC NUMBER	14		
DESCRIPTION	Homeless encampment along northern retaining wall		
Tents and other debris present in tree vegetated area			
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	8	OF	11

PROJECT PHOTOGRAPHIC NUMBER	15		
DESCRIPTION	Looking northwest toward tiered retaining wall on site		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	16		
DESCRIPTION	Paved region of site located above retaining wall		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	9	OF	11



PROJECT PHOTOGRAPHIC NUMBER	17
DESCRIPTION	Looking northeast over parcel from top of retaining wall
PHOTOGRAPHED BY	AB
DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	18
DESCRIPTION	Looking southeast over parcel from top of retaining wall
PHOTOGRAPHED BY	AB
DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	10	OF	11

PROJECT PHOTOGRAPHIC NUMBER	19		
DESCRIPTION	Looking west at sloped western property boundary		
Irrigation and draining channels present			
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	20		
DESCRIPTION	Looking southwest at sloped western property boundary		
Irrigation and draining channels present			
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT NAME	Rancho Del Prado Property Phase I ESA	PROJECT No.	EN8185	SHEET	11	OF	11

PROJECT PHOTOGRAPHIC NUMBER	21		
DESCRIPTION	Looking north toward site access from Bernardo Center Dr		
PHOTOGRAPHED BY	AB	DATE	01-10-22

PROJECT PHOTOGRAPHIC NUMBER	22		
DESCRIPTION	Looking east at gated site access on Bernardo Center Dr		
PHOTOGRAPHED BY	AB	DATE	01-10-22

APPENDIX C

ENVIRONMENTAL DATA RESOURCES, INC. REPORT
(RADIUS SEARCH MAP, SANBORN MAPS, AERIAL PHOTOGRAPHS, TOPOGRAPHIC MAPS, & CITY DIRECTORIES)

Bound under separate cover - available upon request.

Appendix E2. Phase II Environmental Site Assessment

LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT
INTERSTATE 15 AND BERNARDO CENTER DRIVE
ASSESSORS PARCEL NUMBER (APN): 678-252-11-00
SAN DIEGO, CALIFORNIA

Prepared for

University of California, San Diego
9500 Gilman Drive
La Jolla, California 92093

Prepared by

GROUP DELTA CONSULTANTS, INC.
9245 Activity Road, Suite 103
San Diego, California 92126

GDC Project No. EN8185A

February 25, 2022

GROUP DELTA

University of California, San Diego
9500 Gilman Drive
La Jolla, CA 92093

February 25, 2022
Project No. EN8185A

Attention: **Mr. Michael Heyer**

SUBJECT: **LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT (ESA)**
Interstate 15 and Bernardo Center Drive
Assessor's Parcel Number (APN): 678-252-11-00
San Diego, California

Dear Mr. Heyer:

Group Delta Consultants, Inc. is pleased to submit this Limited Phase II ESA report for Assessor's Parcel Number (APN): 678-252-11-00 in San Diego, California. The report has been prepared to support due diligence of the site and was performed in general accordance with Group Delta's approved proposal dated January 31, 2022.

This report is intended for the sole use of University of California, San Diego. Our services have been performed under mutually agreed-upon terms and conditions. If other parties wish to rely on this report, please have them contact us so that a mutual understanding and agreement of the terms and conditions for our services can be established prior to their use and reliance of this report and the information it contains.

We appreciate your selection of Group Delta Consultants, Inc. for this project and look forward to assisting you further on this and other projects. If you have any questions, please do not hesitate to contact us.

Sincerely,

GROUP DELTA CONSULTANTS, INC.

Glenn Burks, Ph.D., P.E.
Principal, Director of Environmental Services

9245 Activity Road, San Diego, California 92126 (858) 536-1000
Anaheim – Irvine – Ontario – San Diego – Torrance
www.GroupDelta.com

Limited Phase II ESA
Interstate 15 and Bernardo Center Drive
Assessor's Parcel Number (APN): 678-252-11-00
San Diego, California

A report prepared for:

University of California, San Diego
9500 Gilman Drive
La Jolla, California 92093

Prepared by:

Jay Dasinger
Senior Project Manager

Reviewed and Approved by:

Glenn Burks, Ph.D., P.E.
Principal, Director of Environmental Services

Group Delta Consultants, Inc.
9245 Activity Road Suite, 103
San Diego, California 92126

Group Delta Project No. EN8185A
February 25, 2022

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

1.1 Project Description

The project Site consists of an approximate 3.9-acre property that is currently vacant land with no structures. A site background and description were provided in Group Delta's Phase I Environmental Site Assessment (ESA) (Group Delta, 2022). The Phase I Environmental Site Assessment (ESA) identified three recognized environmental conditions (RECs) as follows:

1. REC #1: Undocumented fill soils from a freeway improvement project placed on the Site that could potentially contain lead concentrations above background levels.
2. REC #2: The adjacent property to the north of the Site was historically occupied by an aerospace manufacturing facility where an unauthorized release of volatile organic compounds (VOCs; particularly TCE/PCE) to soil and groundwater from two former underground storage tanks (USTs) was discovered.
3. REC #3: Potential for Asbestos Containing Material (ACM) in concrete construction debris that will need to be removed prior to development of the Site.

To address these RECs identified in the Phase I ESA, Group Delta recommended a Phase II ESA be performed as presented below.

1.2 Project Objectives and Scope of Work

The objectives of the Phase II ESA are to determine if subsurface soil and/or soil vapor at the Site are impacted with lead (soil) or VOCs (soil vapor) and, based on the results of the investigation, if remediation and/or vapor intrusion mitigation is necessary for the Site prior to redevelopment.

Group Delta's authorized scope of work for this Limited Site Investigation is as follows:

- Boring mark-out and utility clearance.
- Field investigation comprised of direct push borings at specified unpaved locations within the Site.
- Laboratory analysis of soil samples, soil gas samples, and bulk debris samples.
- Review and analysis of collected data.
- Preparation of this Limited Site Investigation report.

UC San Diego, Environmental Health and Safety, Soils Management Policy presents comprehensive pre-construction soil characterization protocol. It is our understanding that the Soils Management Policy does not apply to this investigation based upon the stage of development (due diligence), the Site's off-campus location and/or the nature of the P3 development process. This proposal presents a limited due diligence investigation; It is not the intent of this investigation to meet the rigorous requirements of the Soils Management Policy.

2.0 FIELD ACTIVITIES

Section 2.0 outlines the field procedures employed to collect samples and the laboratory analytical methods utilized. The field investigation consisted of direct push borings and collection of soil samples followed by installation of temporary soil vapor probes and collection of soil vapor samples. Samples of debris located onsite followed by laboratory analyses was also conducted. A description of the field procedures is provided below.

2.1 Utility Clearance

Prior to conducting the Site investigation, an initial site reconnaissance was conducted to ensure accessibility and safety of sampling locations. The locations of the borings were marked in the field with stakes and white paint. The Underground Service Alert of Southern California was notified of the field work at least 48 hours prior to start to identify potential subsurface utility conflicts at the boring locations.

Group Delta also contracted a private utility locating company to perform a subsurface geophysical investigation to locate underground utilities and other subsurface structures. No subsurface utilities, structures, or anomalies were identified at the pre-selected boring locations.

2.2 Soil Sampling

Intrusive field activities at the Site included the use of a truck-mounted direct push drilling rig to advance five soil borings to a maximum depth of 15 feet below ground surface (bgs). This task required 1 day to complete. During advancement of these boreholes, the soil was continuously sampled for lithologic logging purposes and monitored with a photo-ionization detector (PID) for the presence of VOCs. Soil boring locations are presented on Figure 1. A geologic boring log was prepared for each of the borings (Appendix A).

Soil sampling, analysis, and reporting of test results were performed according to U.S. Environmental Protection Agency (EPA) SW-846 "Test Methods for Evaluating Solid Waste." Soil samples were collected from each of the borings during drilling activities at depths of 2, 5, 10, and a total depth of 15 feet bgs and included one duplicate sample; groundwater was not encountered in any of the five borings. Soil samples for laboratory analysis in a fixed laboratory were retained in acetate sleeves and secured with Teflon tape. All soil samples were recorded on the analytical laboratories chain-of custody and submitted for total lead analysis in accordance with Environmental Protection Agency (EPA) Method 6010B.

2.3 Soil Vapor Probe Installation and Sampling

The soil vapor survey investigation was performed by H&P Mobile Geochemistry, Incorporated (H&P) of Carlsbad, California in accordance with the Active Soil Gas Investigations Advisory published by the California Department of Toxic Substances Control (DTSC) in July 2015 (State Advisory). Soil vapor samples were collected from temporary vapor probes set at all five boring locations at depths of approximately 5 and 15 feet bgs. Following boring advancement to a total depth of 15-feet bgs, temporary soil vapor probes were constructed in each borehole at depths of 5 and 15 feet bgs (Figure 1). The soil vapor probes were constructed using temporary air stone filters connected to a 1/8-inch diameter nylon sample tubing (Nylaflow™), and a valve at the termination. A 1-foot thick sand pack was placed around each sampling tip, and the annular space between probes and the surface were sealed using hydrated bentonite. To protect the sand pack against fouling from the hydrated bentonite, a 1-foot thick layer of dry granular bentonite was placed directly above each sand pack.

In accordance with the State Advisory, all soil vapor samples were collected at least two hours after probe installation to allow subsurface conditions to equilibrate (DTSC, 2015). Soil vapor samples were collected following evacuation of three purge volumes as indicated in the State Advisory. The calculated volume to purge considered the volume of the tubing, probe tip, and void space of the sand pack and dry bentonite. Purging was performed utilizing a vacuum pump at flow rates between 100 and 200 milliliters per minute (mL/min) and at an applied vacuum of less than 100 inches of water.

Following the 120-minute equilibration period, soil vapor samples were collected from 400mL passivated summa canisters in general accordance with DTSC guidelines.

Shut-in testing was conducted during soil vapor sampling to verify the integrity of the samples and ensure that they are not diluted with atmospheric air. A leak check compound (e.g., 1,1-DFA) used to test for leaks in the sampling equipment over the course of the test (approximately 60 seconds). The soil vapor samples were analyzed for the presence of the leak check compound; the leak check compound was not detected in any of the samples at a concentration more than or equal to 10 times the VOC reporting limits; therefore, corrective action was not required.

Following collection of representative soil vapor samples, the soil vapor probes were permanently abandoned. The sample tubing and soil vapor probes were removed entirely from the subsurface and the borehole was properly filled to ground surface using hydrated bentonite chips and capped with native fill.

2.4 Debris Sampling

Group Delta utilized Mr. Jerry Sherman, a California Division of Occupational Safety and Health Administration (Cal-OSHA) Certified Asbestos Consultant (CAC), to conduct a site reconnaissance to identify the locations of potential ACMs with a focus on surficial concrete debris on-Site. Bulk samples of suspect accessible materials were collected and submitted to an appropriately certified independent laboratory for analysis. Additionally, one sample of ceramic tile was submitted for lead content analysis to determine if it would be considered as lead-based paint (LBP).

3.0 LABORATORY ANALYSIS

3.1 Soil Sample Analysis

Soil samples collected during the investigation were transported to Orange Coast Analytical, Inc. (OC Analytical) located in Orange, California for laboratory analyses. OC Analytical is a laboratory certified by the State Water Resources Control Board's (SWRCB) Environmental Laboratory Accreditation Program (ELAP). Soil samples were analyzed for lead using EPA Method 6010B.

3.2 Soil Vapor Analysis

Soil vapor samples collected during the investigation were transported to H&Ps fixed analytical laboratory for analyses. H&P is a laboratory certified by the State Water Resources Control Board's (SWRCB) National Environmental Laboratory Accreditation Program (NELAP). Soil vapor samples were analyzed for full list VOCs using EPA Method TO-15. The reporting limits for the target analysis are less than or equal to the State screening levels, except where dilution was required to quantify detected compounds; no dilutions were necessary for any of the samples.

3.3 Debris Sample Analysis

Bulk samples of suspect ACMS and a sample of potential lead-containing ceramic tile collected during the investigation were transported to EMSL Analytical located in San Diego, California for laboratory analyses. EMSL is a laboratory accredited under the National Institute of Standards and Technology (NIST)/National Voluntary Laboratory Accreditation Program (NVLAP) and the California Environmental Laboratory Accreditation Program (Cal-ELAP) for bulk asbestos sample analysis. The samples were submitted for analysis by Polarized Light Microscopy (PLM) utilizing dispersion staining techniques in accordance with the EPA's "Method for the Determination of Asbestos in Bulk Building Materials" U.S. EPA/600/R-93/116, dated July 1993 and adopted by the NVLAP as Test Method Code 18/A01.

The results of the laboratory analyses are presented in the laboratory analytical reports provided as Appendix B, which includes copies of the completed COC forms, laboratory analytical results, the quality control sample (field and laboratory) results, and a narrative of any deviations and corrective actions taken.

3.4 Screening Criteria

The following screening criteria were used to assist with the review of the analytical data for soil and soil vapor and are provided in the results tables for comparison purposes:

- The Regional Screening Levels (RSLs) are screening concentrations of chemicals in soil, water, and gas ambient air below thresholds of concern for risks to human health developed by the EPA. The thresholds of concern used to develop the RSLs for soil are in excess of lifetime cancer risk of one in a million and a hazard quotient of 1.0 for non-cancer health effects. The RSLs were developed using exposure information assumptions combined with EPA toxicity data. The RSLs were most recently updated in May 2021. RSLs were applied to VOC concentrations in soil vapor and lead concentrations in soil.
- The Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO) modified screening levels (DTSC-SLs) are screening concentrations for chemicals in soil, tap water, and ambient air and does not include evaluation of the intrusion of vapors from the subsurface to indoor air. DTSC-SLs are described in HHRA Note Number 3. DTSC-SLs are used to evaluate the exposure risk of chemicals to human health during a human health risk assessment (HHRA). The DTSC-SLs were developed due to differences in screening concentration thresholds between the formerly used Preliminary Remediation Goals (PRGs) and RSLs after adoption of the RSLs by EPA in 2008. The DTSC-SLs were most recently updated in June 2020. DTSC-SLs were applied to VOC concentrations in soil vapor and lead concentrations in soil.
- Lead in soil and debris was also compared to State and Federal criteria for hazardous waste provided in California Code of Regulations (CCR) Title 22, Section 66261.24, to determine the appropriate waste classification and disposal requirements. Total concentrations were compared to the Total Threshold Limit Concentration (TTLC) criteria for California hazardous waste. Total concentrations were also compared to 10 times the Soluble Threshold Limit Concentration (STLC) and 20 times Federal Toxicity Characteristic Leaching Procedure (TCLP) concentration to determine if further waste extraction laboratory analyses were warranted to properly characterize the material as California or Federal hazardous waste. None of the 20 soil samples met this criteria for lead in California.

4.0 RESULTS

4.1 Soil Lithology and Analytical Results

The lithology observed in the continuous cores from the borings advanced during this investigation conformed closely to previous geotechnical borings advanced at the Site by SCST Inc (SCST, 2018). The lithologic descriptions of the encountered geologic unit are provided in soil boring logs B1 through B5 (Appendix A). Lithologies encountered from 0 to 15 feet bgs primarily consisted of homogeneous layers of fine-coarse grained sand, sandy silt, and sandy clay with trace gravel and cobbles, generally consistent with fill material.

Lead was detected in each sample at concentrations ranging from 2.6 milligrams per kilogram (mg/kg) to 6.5 mg/kg. None of the samples contained lead concentrations that exceed the DTSC-SL (320 mg/kg) or EPA RSL (800 mg/kg) for commercial/industrial land uses. In addition, the soil did not meet the criteria for hazardous waste based upon lead content.

Complete lead analysis details are provided in the laboratory analytical report in Appendix B.

4.2 Soil Vapor Analytical Results

VOC laboratory analytical results for the soil vapor monitoring event conducted on February 8, 2022, are summarized in Table 1; RSLs and DTSC-SLs, for all constituents with a SL are also provided . A total of 22 VOCs were detected above laboratory reporting limits in one or more of the samples obtained from temporary soil vapor probes installed at the Site including: benzene, toluene, ethylbenzene, m,p-xylene, o-xylene, chloroethane, chloromethane, 1,1-difluoromethane (LCC), trichlorotrifluoromethane (F11), 1,1,2-trichlorotrifluoroethane (F113), trichloroethene (TCE), tetrachloroethene (PCE), cis-1,2-dichloroethane, vinyl chloride, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 4-ethyltoluene, styrene, carbon disulfide, methylene chloride,4-methyl-2-pentanone (MIBK), and 2-butanone (MEK). A summary of the detections are provided below.

- Benzene was detected in all 10 samples at concentrations ranging from 5.7 to 59 ug/m^3. All detected concentrations are greater than the EPA RSL (1.6 ug/m^3) and seven concentrations are above the DTSC-SL (13 ug/m^3).
- Toluene was detected in all 10 samples at concentrations ranging from 11 to 130 ug/m^3. All detected concentration are less than the EPA RSL (22,000 ug/m^3) and DTSC-SL (1,300 ug/m^3).
- Ethylbenzene was detected in nine of the 10 samples at concentrations ranging from 4.7 to 24 ug/m^3. With one exception (4.7 ug/m^3; sample VS4-15), all detected concentrations are greater than the EPA RSL (4.9 ug/m^3).
- Xylene (m,p-) was detected in all samples at concentrations ranging from 12 to 84 ug/m^3. All detected concentrations are less than the EPA RSL (440 ug/m^3).

- Xylene (o-) was detected in all samples at concentrations ranging from 5.6 to 53 ug/m^3. All detected concentrations are less than the EPA RSL (440 ug/m^3).
- Chloroethane was detected in one of the ten samples at a concentration of 30 ug/m^3. The detected concentration is less than the EPA RSL (18,000 ug/m^3).
- Chloromethane was detected in five of the ten samples at concentrations ranging from 6.8 to 19 ug/m^3. All detected concentrations are less than the EPA RSL (390 ug/m^3).
- 1,1-difluoroethane (LCC) was detected in one of the ten samples at a concentration of 6.0 ug/m^3. The detected concentration is less than the EPA RSL (180,000 ug/m^3).
- Trichlorofluoromethane (F11) was detected in four of the ten samples at concentrations ranging from 7.7 to 43 ug/m^3.
- 1,1,2-trichlorotrifluoroethane (F113) was detected in three of the ten samples at concentrations ranging from 16 to 130 ug/m^3.
- Trichloroethene (TCE) was detected in one of the ten samples at a concentration of 28 ug/m^3. The detected concentration is greater than the EPA RSL (3.0 ug/m^3)
- Tetrachloroethene (PCE) was detected in two of the ten samples at concentrations of 8.5 and 130 ug/m^3. One of the detected concentrations is greater than the EPA RSL (47 ug/m^3) and both concentrations are below the DTSC-SL (180 ug/m^3).
- cis-1,2-dichloroethene was detected in one of the ten samples at a concentration of 6.1 ug/m^3.
- Vinyl chloride was detected in two of the ten samples at concentrations of 4.6 and 7.8 ug/m^3. Both of the detected concentrations are greater than the EPA RSL (2.8 ug/m^3) and both concentrations are below the DTSC-SL (440 ug/m^3).
- 1,2,4-trimethylbenzene was detected in all 10 samples at concentrations ranging from 12 to 160 ug/m^3. All detected concentrations are less than the EPA RSL (260 ug/m^3).
- 1,3,5-trimethylbenzene was detected in three of the 10 samples at concentrations ranging from 6.3 to 46 ug/m^3. All detected concentrations are less than the EPA RSL (260 ug/m^3).
- 4-ethyltoluene was detected in three of the 10 samples at concentrations ranging from 6.0 to 40 ug/m^3.
- Styrene was detected in one of the ten samples at a concentration of 5.9 ug/m^3. The detected concentration is less than both the EPA RSL (4,400 ug/m^3) and DTSC-SL (3,900 ug/m^3).
- Carbon disulfide was detected in three of the 10 samples at concentrations ranging from 8.0 to 36 ug/m^3. All detected concentrations are less than the EPA RSL (3,100 ug/m^3).
- Methylene chloride was detected in six of the 10 samples at concentrations ranging from 7.0 to 12 ug/m^3. All detected concentrations are less than both the EPA RSL (1,200 ug/m^3) and DTSC-SL (1,800 ug/m^3).

- 4-methyl-2-pentanone (MIBK) was detected in all 10 samples at concentrations ranging from 15 to 130 ug/m^3. All detected concentrations are less than the EPA RSL (13,000 ug/m^3).
- 2-Butanone was detected in seven of the 10 samples at concentrations ranging from 30 to 88 ug/m^3. All detected concentrations are less than the EPA RSL (22,000 ug/m^3).

4.3 Debris

Group Delta collected 20 bulk samples of suspect ACM analyzed by PLM analysis and one sample of ceramic tile for lead content analysis. All suspect ACMs and the potential lead-containing ceramic tile sampled during this survey are summarized in Table A1 below.

Table A1 - Bulk Samples for ACM / Lead Analysis

SAMPLE ID	Material Description	Laboratory Analysis Performed	Description	Result
01	Red Brick /Mortar	ACM by EPA 600/R-93/116 by PLM	Red/White	ND
02	Red Brick /Mortar	ACM by EPA 600/R-93/116 by PLM	Red/White	ND
03	Red Brick /Mortar	ACM by EPA 600/R-93/116 by PLM	Red/White	ND
04	Asphalt	ACM by EPA 600/R-93/116 by PLM	Black	ND
05	Asphalt	ACM by EPA 600/R-93/116 by PLM	Black	ND
06	Asphalt	ACM by EPA 600/R-93/116 by PLM	Black	ND
07	Concrete w/Aggregate	ACM by EPA 600/R-93/116 by PLM	Gray	ND
08	Concrete w/Aggregate	ACM by EPA 600/R-93/116 by PLM	Gray	ND
09	Concrete w/Aggregate	ACM by EPA 600/R-93/116 by PLM	Gray	ND
10	Ceramic Tile/Mortar	ACM by EPA 600/R-93/116 by PLM	Blue/Gray	ND
11	Concrete w/Blue Coating	ACM by EPA 600/R-93/116 by PLM	Blue/Gray	ND
12	Concrete w/Blue Coating	ACM by EPA 600/R-93/116 by PLM	Blue/Gray	ND
13	Concrete w/Blue Coating	ACM by EPA 600/R-93/116 by PLM	Blue/Gray	ND
14	Concrete w/Stucco	ACM by EPA 600/R-93/116 by PLM	Tan/Gray	ND
15	Concrete w/Stucco	ACM by EPA 600/R-93/116 by PLM	Tan/Gray	ND
16	Concrete w/Stucco	ACM by EPA 600/R-93/116 by PLM	Tan/Gray	ND
17	Glass block w/Mortar	ACM by EPA 600/R-93/116 by PLM	Clear/White	ND

18	Concrete w/Aggregate	ACM by EPA 600/R-93/116 by PLM	Gray	ND
19	Concrete w/Aggregate	ACM by EPA 600/R-93/116 by PLM	Gray	ND
20	Concrete w/Aggregate	ACM by EPA 600/R-93/116 by PLM	Gray	ND
CT-01	Ceramic Tile/Mortar	Lead TTLC by EPA 7000B	Blue	ND

See Figure 2 for Sample Locations

TTLC = Total Threshold Limit Concentration analyzed by EPA Method 7000B

PLM = Polarized Light Microscopy

ND = Not Detected above laboratory reporting limit or material detected in sample

As shown in Table A1, neither LBP or ACM was detected in any of the samples analyzed.

4.4 Laboratory QA/QC

Upon receipt of the analytical data from the Phase II ESA, Group Delta thoroughly reviewed the data collected for ACM, soil and soil vapor samples and field quality control samples. Field quality control samples for soil included one equipment blank and one field duplicate sample. Field quality control sampling for soil vapor included one field duplicate sample.

Soil Sampling

To evaluate the reproducibility of the soil data, one duplicate soil sample was collected during environmental sample collection: B-1D-2'. The duplicate soil sample was analyzed in an identical manner as the primary sample. The relative percent difference between the primary lead sample concentration and duplicate sample was less than 50% and was considered to have acceptable reproducibility. The results of primary and duplicate soil samples are provided in Appendix B.

An equipment blank sample was collected and analyzed to determine if field decontamination procedures were sufficient and to ensure the reuse of sampling equipment did not impact sample data quality. The equipment blank sample was collected by pouring distilled water over or through the decontaminated sampling equipment (e.g. shoe of drilling rods) used during the environmental sample collection event that day and capturing the fluid in analytical method specific containers. The equipment blank was analyzed for the same analysis as the primary soil samples (lead analysis by EPA 6010B). There were no detections in the equipment blank sample indicating cross-contamination due to contaminated sampling equipment.

Soil Vapor Sampling

One duplicate soil vapor sample was collected during the Phase II ESA, VS1-5-REP. The duplicate soil vapor sample was analyzed in an identical manner as the primary sample. With one exception, the relative percent difference between the primary and duplicate sample was less than 50% and was considered to have acceptable reproducibility. The one exception was a low

MEK concentration (30 ug/m^3) detected in the primary environmental sample, but not detected in the duplicate above a laboratory reporting limit of 8.3 ug/m^3

Additionally, the method blank analyzed as part of H&Ps standard laboratory QA/QC indicated non-detectable concentrations for the full suite of TO-15 VOCs. The soil vapor samples were also analyzed for the presence of the leak check compound (LCC; 1,1-difluoroethane [1,1-DFA]) and the LCC was not detected at a concentration more than or equal to 10 times the LCC reporting limit(s), therefore corrective action was not required.

Group Delta also reviewed laboratory method blanks and laboratory control samples which indicated there was likely no measurable bias introduced by the laboratory methods or sample handling procedures. Given this review, Group Delta has determined that the data is of sufficient quality to evaluate the soil and soil vapor conditions at the Site. Field quality control sample analytical results are provided in Table 1 (soil vapor) and in the laboratory analytical report (soil) along with the environmental sample results.

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5.0 VAPOR INTRUSION HEALTH RISK ASSESSMENT

Vapor intrusion occurs when volatile chemicals migrate from a subsurface source into an overlying building. Future vapor intrusion risks were commonly evaluated by utilizing the DTSC's modified Johnson & Ettinger screening model. The DTSC model estimates indoor air concentrations resulting from subsurface vapor migration into indoor air. The DTSC model (DTSC, 2014) was widely used to evaluate vapor intrusion risks through 2018. However, DTSC is currently revising the model to reflect consistent assumptions across the various State agencies, and an updated model is expected to be republished in 2022. In the interim, the DTSC has archived the current vapor intrusion model pending release of the updated version. In February, 2020, the California Environmental Protection Agency (CalEPA) Vapor Intrusion Workgroup, comprising members from the DTSC, the San Francisco Bay Regional Water Quality Control Board, Santa Ana Regional Water Quality Control Board, State Water Resources Control Board and the Office of Environmental Health Hazard Assessment, released the Supplemental Guidance: Screening and Evaluating Vapor Intrusion (DTSC, California Water Resources Control Boards [CWRCBs], February 2020) for public review and comment. Practitioners are urged to use this supplemental guidance, once formally approved and published, in conjunction with the existing DTSC Vapor Intrusion Guidance (DTSC, 2011).

The attenuation factor (AF) is defined as the ratio between the indoor air and subsurface soil vapor concentrations. Therefore, a larger AF applied to a given subsurface soil vapor concentration will result in a larger estimated indoor air concentration. Furthermore, the updated DTSC model is expected to assume higher AFs between soil vapor and indoor air, which translates to less attenuation of constituents as they migrate in the subsurface and into structures. As described above, this expected increase in the AF will increase the vapor intrusion risks posed by VOC concentrations in soil vapor. Potential future changes in the DTSC model should be considered in evaluating the soil vapor data from the Site. Vapor intrusion risks below the screening threshold cancer risk of one in a million (1.0E-6) under the current model could be greater than the risk threshold under the future updated model.

Rather than using the archived DTSC's modified Johnson & Ettinger screening model for this evaluation, the potential risks to human health from vapor intrusion of VOCs to indoor air was evaluated by applying the USEPA 2012 AF of 0.03 to the soil vapor results and comparing directly with the State and Federal screening levels for commercial/industrial indoor air for cancer risks; The USEPA 2012 AF of 0.03 is the current AF recommended by DTSC for evaluating vapor intrusion to indoor air.

The cancer risk threshold is 1.0E-6. Risks below this threshold do not pose an unacceptable or increased human health risk. According to the DTSC Vapor Intrusion Guidance, cancer risks between 1.0E-6 and 1.0E-4 may require further monitoring and/or mitigation. Cancer risks exceeding 1.0E-4 are considered unacceptable and require mitigation in accordance with regulatory requirements. In addition, non-cancer hazard index (HI) risks exceeding 1.0 are also considered unacceptable and require mitigation.

5.1 Vapor Intrusion

Of the 22 detected VOCs, five were reported at concentrations above DTSC-SLs and/or EPA RSLs: benzene, ethylbenzene, trichloroethene, tetrachloroethene, and vinyl chloride. These VOC concentrations were used to predict indoor air concentrations (Table 2). The results of the predicted indoor air concentrations that were used to evaluate vapor intrusion cancer risk are provided in Table 3. The predicted indoor air concentrations were calculated by multiplying the soil vapor concentrations by the AF (AF) of 0.03. The AF of 0.03 represents the recommended value (and most conservative and likely future standard value) in the recently released Supplemental Guidance: Screening and Evaluating Vapor Intrusion (DTSC and CWRCB, February 2020). The predicted concentrations were compared to the DTSC-SLs and EPA RSLs for commercial and indoor air. The more stringent of the two was used in qualifying a concentration as exceeding the screening levels.

Using the most conservative AF of 0.03, only one exceedance of the EPA RSLs or DTSC-SLs for commercial/industrial air in all ten soil gas samples occurred for benzene. None of the remaining predicted indoor air concentrations for ethylbenzene, trichloroethene, tetrachloroethene, and vinyl chloride exceeded the EPA RSLs or DTSC-SLs for commercial/industrial air.

5.2 Indoor Air Cancer Risk Assessment

Vapor intrusion mitigation may be required for future commercial buildings with estimated cumulative cancer risks exceeding 1E-6. Residential buildings with cancer risks exceeding 1.0E-4 or non-cancer HI risks exceeding 1.0 are considered unacceptable and require mitigation per the DTSC Vapor Intrusion Guidance (DTSC, 2011). Assuming the most conservative AF of 0.03 for the Site which is typically used for sub-slab evaluation and recommended by the CalEPA Vapor Intrusion Workgroup, only one of the predicted indoor air concentrations for the five soil gas sampling locations exceeded a cumulative cancer risk of 1E-6 for the deep probe (VS1-15) installed at 15 feet bgs (Table 4). In addition, while VS1-15 did not exceed a cumulative cancer risk of 1E-4, it did exceed a non-cancer HI risk of 1.0 (Table 5).

6.0 CONCLUSIONS

To evaluate the three RECs identified at the Site during the Phase I ESA, debris sampling was conducted on February 3, 2022 and a soil and soil vapor investigation was conducted on February 8, 2022. Soil samples were collected at five-foot intervals during borehole advancement and temporary soil vapor probes were installed and sampled at 5 feet bgs and at total depth of each boring of 15 feet. Groundwater was not encountered during drilling.

A total of 22 VOCs were detected above laboratory reporting limits in one or more of the soil vapor samples collected from temporary soil vapor probes installed at the Site.

Of the three RECs identified by the Phase I ESA, two of the three required no further action based on the results of this Phase II assessment and the third is addressed below. The identified RECs and the assessment findings were as follows:

1. ***REC #1: Undocumented fill soils from a freeway improvement project placed on the Site that could potentially contain lead concentrations above background levels.***

Lead concentrations in all 20 collected soil samples were non-hazardous and did not exceed DTSC-SL (320 mg/kg) or EPA RSL (800 mg/kg) for commercial/industrial land uses. Soil samples representing imported undocumented fill at the Site did not contain unacceptable levels of lead; therefore, no further action is required.

2. ***REC #2: The adjacent property to the north of the Site was historically occupied by an aerospace manufacturing facility where an unauthorized release of volatile organic compounds (VOCs) to soil and groundwater from two former underground storage tanks (USTs) was discovered.***

VOC concentrations for 22 analytes were detected above laboratory reporting limits in one or more of the collected soil vapor samples and several exceedances of DTSC-SLs and/or RSLs occurred. Using the measured subsurface soil vapor VOC analytical data, Group Delta performed a vapor intrusion health risk assessment to determine whether any of the concentrations presented an unacceptable risk to indoor air of future enclosed structures at the Site. The predicted indoor air concentrations calculated using USEPA AF of 0.03 determined that soil vapor concentrations in only one of the deeper probes (benzene in VS1-15) presents a cancer and non-cancer risk above generally accepted risk values.

However, because shallow soil vapor is not impacted with VOCs across the Site and detected concentrations are relatively low, it appears that there is no onsite source of VOCs. The highest concentration of benzene in soil vapor was detected in the deeper probe, VS1-15, located in the southern portion of the Site (Figure 1). The non-cancer HI risk value of 1.0 was only slightly exceeded at this location (1.32), and the cumulative cancer risk of 1.0E-4 was not exceeded using the most conservative AF of 0.03.

3. ***Potential for ACM in concrete construction debris that will need to be removed prior to development of the Site.***

   None of the 20 bulk samples contained ACM and lead based paint was not present in the one sample of ceramic tile. ACM nor materials containing LBP were found at the Site; therefore, no further action is required.

7.0 RECOMMENDATIONS

Based on the results of the Phase II ESA, Group Delta provides the following recommendations:

1. Based on the previous existence of a VOC source north of the Site and measured onsite shallow VOC concentrations and corresponding cancer and non-cancer health risks, vapor mitigation should be implemented at the Site for all enclosed structures. Although only one soil vapor concentration exhibited unacceptable cancer and non-cancer health risks, the Phase I ESA (Group Delta, 2022) previously noted that residual VOC-impacted soil was allowed to remain in place at the offsite source located north of the Site. The residual source of VOCs could continue to serve as a long-term source of VOCs that could continue to migrate to the Site.

2. Given the relatively low subsurface VOC concentrations and ***lack of a significant*** continuous offsite source of VOCs, the least stringent of vapor mitigation options consisting of an impermeable sub-slab membrane barrier is likely sufficient to mitigate health risks posed by the VOCs.

3. No further Site assessment is warranted.

8.0 REFERENCES

California Code of Regulations (CCR) Title 22, Division 4.5.

California Department of Toxic Substances Control (2014). Vapor Intrusion Screening Model – Soil Gas, December.

California Department of Toxic Substances Control (DTSC, 2015). *Advisory – Active Soil Gas Investigations*, July.

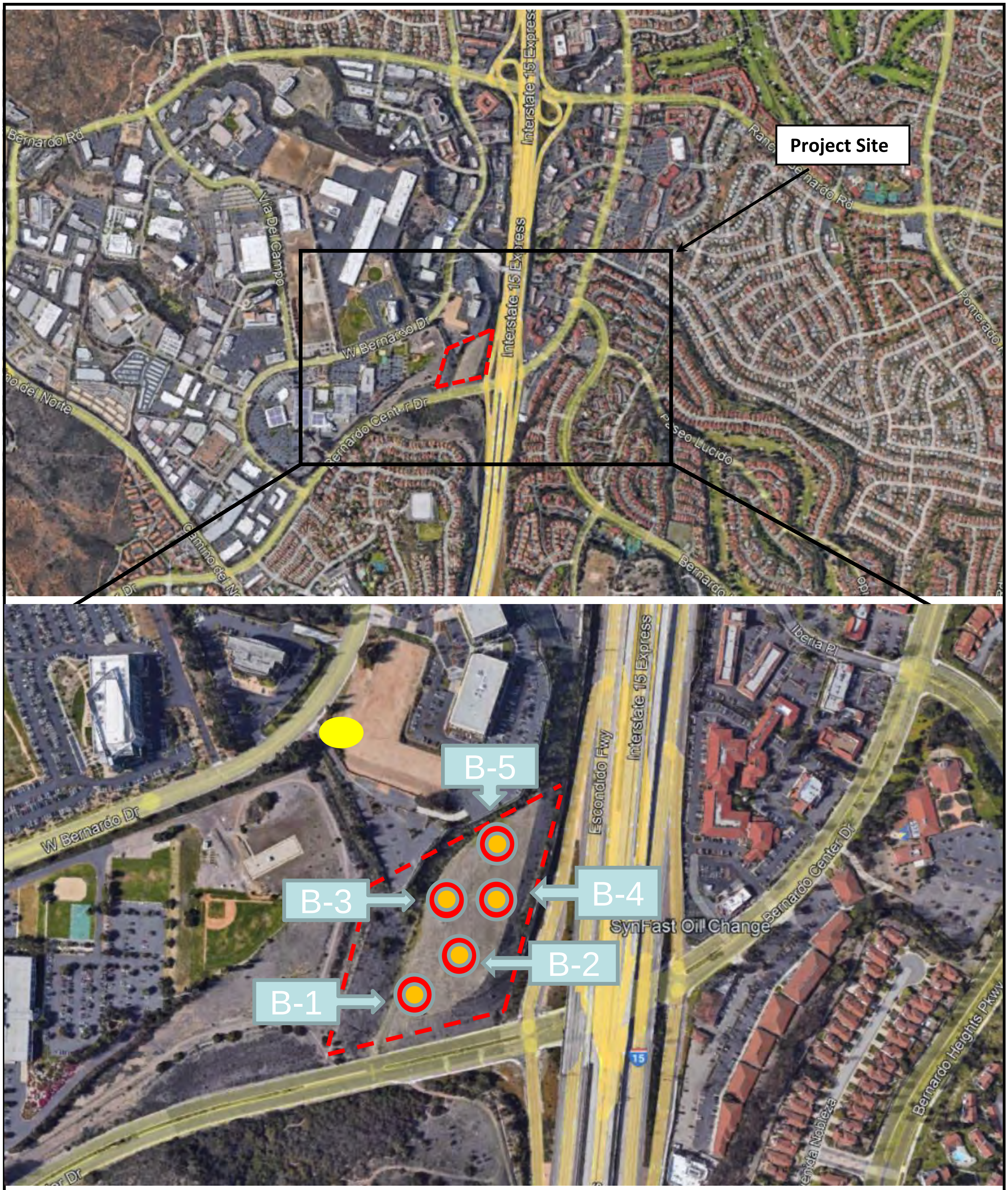
California Department of Toxic Substances Control (2020). Human and Ecological Risk Office (HERO), Human Health Risk Assessment (HHRA) Note 3, DTSC-modified Screening Levels, June.

Environmental Protection Agency, "Regional Screening Levels (RSLs) - Generic Tables", dated May 2021.

Group Delta (2022). *Phase I Environmental Site Assessment, Interstate 15 and Bernardo Center Drive, San Diego, California*, Project No. EN8185, January 22.

SCST, Inc. (2018). *Geotechnical Investigation, Bernardo Center Drive Study, San Diego, California*, July 13.

Figures



Reference: ***Google Maps***

- - - - Site boundary

● Approximately location of former solvent UST

◉ Soil boring & temporary soil vapor probe location

N

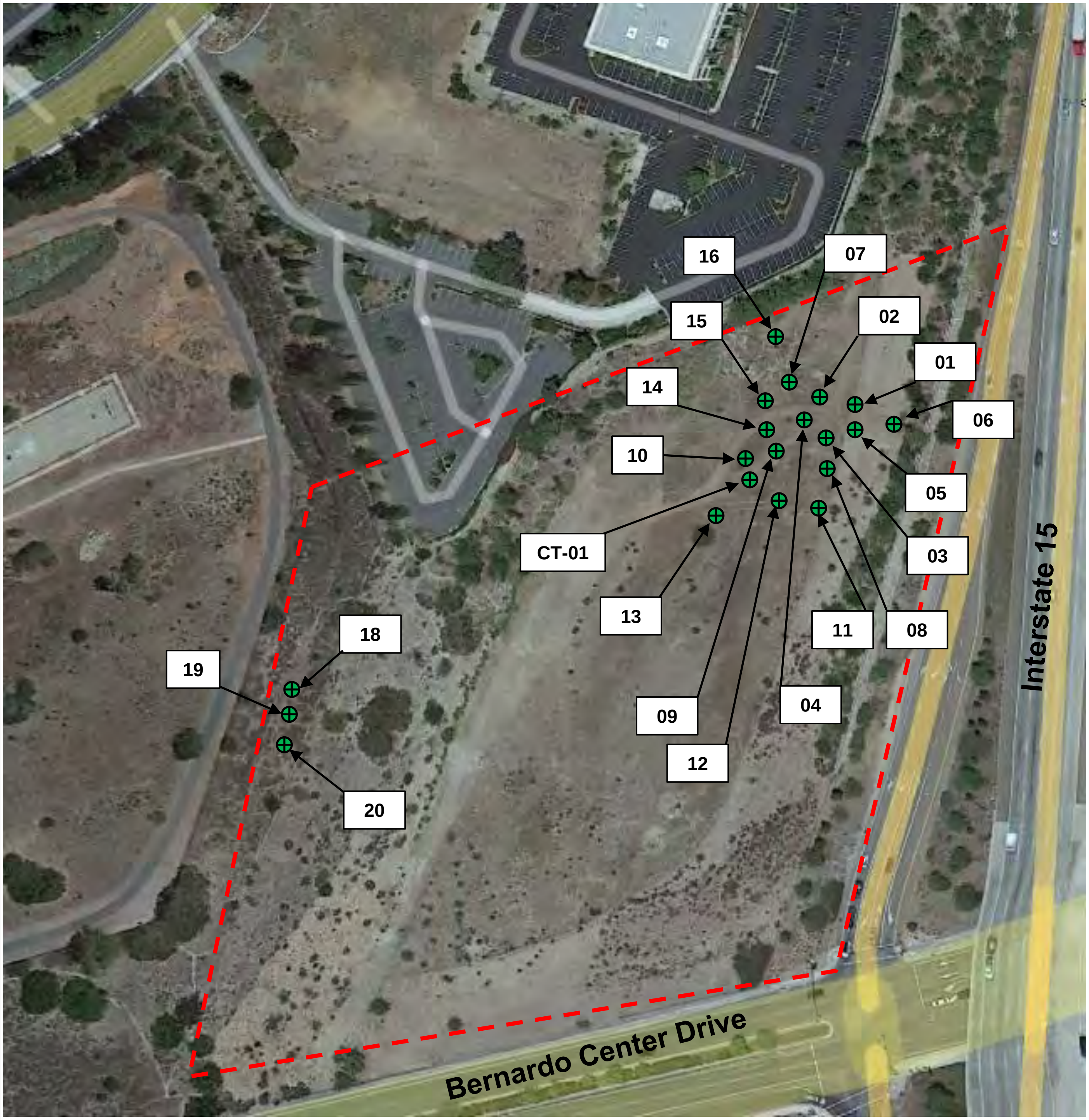
GROUP DELTA

GDC Project No. EN8185A

Soil Boring Location Map

Phase II Environmental Site Assessment (ESA)
I-15 and Bernardo Center Drive
San Diego, CA

Figure 1



LEGEND

⊕ Material Sample Location

01	Sample I.D.

N

Reference: ***Google Earth***

GROUP DELTA

GDC Project No. EN8185A

ACM & LBP Sample Location Map
Interstate 15 and Bernardo Center Drive
San Diego, California

Figure 2

Tables

Table 1
Summary of Soil Vapor Laboratory Analytical Results for Volatile Organic Compounds
UCSD Phase II Environmental Site Assessment
Interstate 15 / Bernardo Center Drive, San Diego, California

Sample Identification	Sample Date	EPA Method TO-15																				
		Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Chloro-ethane	Chloro-methane	1,1-Difluoro-ethane (LCC)	Trichloro-fluoro-methane (F11)	1,1,2-Trichloro-trifluoro-ethane (F113)	Trichloro-ethene (TCE)	Tetra-chloro-ethene (PCE)	cis-1,2-Dichloro-ethene	Vinyl Chloride	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	4-Ethyl-toluene	Styrene	Carbon disulfide	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	2-Butanone (MEK)
		µg/m^3																				
VS1-5	2/8/2022	**13**	84	**11**	39	15	ND <8.0	ND <2.1	ND <5.5	42	ND <7.7	ND <5.5	ND <6.9	ND <4.0	ND <2.6	13	ND <5.0	ND <5.0	ND <4.3	ND <6.3	8.6	30	30
VS1-5 REP	2/8/2022	**14**	89	**11**	46	18	ND <8.0	ND <2.1	ND <5.5	43	ND <7.7	ND <5.5	ND <6.9	ND <4.0	ND <2.6	14	ND <5.0	ND <5.0	ND <4.3	ND <6.3	8.9	31	ND <30
VS1-15	2/8/2022	**59**	130	**21**	66	21	ND <8.0	15	6.0	13	ND <7.7	ND <5.5	ND <6.9	ND <4.0	**7.8**	21	6.6	6.0	5.9	16	8.8	94	81
VS2-5	2/8/2022	**24**	120	**24**	84	53	ND <40	ND <10	ND <27	ND <28	ND <39	ND <27	ND <34	ND <20	ND <13	29	ND <25	ND <25	ND <22	ND <32	ND <18	52	ND <150
VS2-15	2/8/2022	**28**	64	**10**	41	15	ND <8.0	6.8	ND <5.5	21	ND <7.7	ND <5.5	8.5	ND <4.0	ND <2.6	16	ND <5.0	ND <5.0	ND <4.3	8.0	11	55	75
VS3-5	2/8/2022	**7.2**	23	**5.1**	19	9.8	ND <8.0	ND <2.1	ND <5.5	12	17	ND <5.5	ND <6.9	ND <4.0	ND <2.6	13	ND <5.0	ND <5.0	ND <4.3	ND <6.3	ND <3.5	15	ND <30
VS3-15	2/8/2022	**7.8**	11	ND <4.4	12	5.6	ND <8.0	ND <2.1	ND <5.5	ND <5.6	130	**28**	ND <6.9	ND <4.0	ND <2.6	12	ND <5.0	ND <5.0	ND <4.3	ND <6.3	ND <3.5	33	52
VS4-5	2/8/2022	**26**	54	**8.2**	30	18	30	16	ND <5.5	ND <5.6	ND <7.7	ND <5.5	ND <6.9	ND <4.0	ND <2.6	16	6.3	6.1	ND <4.3	ND <6.3	12	39	37
VS4-15	2/8/2022	**17**	24	4.7	17	9.1	ND <8.0	7.9	ND <5.5	ND <5.6	16	ND <5.5	**130**	ND <4.0	ND <2.6	14	ND <5.0	ND <5.0	ND <4.3	ND <6.3	7.0	34	60
VS5-5	2/8/2022	**5.7**	19	**8.7**	39	25	ND <8.0	ND <2.1	ND <5.5	7.7	ND <7.7	ND <5.5	ND <6.9	ND <4.0	ND <2.6	160	46	40	ND <4.3	ND <6.3	ND <3.5	130	ND <30
VS5-15	2/8/2022	**39**	90	**13**	39	16	ND <8.0	19	ND <5.5	ND <5.6	ND <7.7	ND <5.5	ND <6.9	6.1	**4.6**	16	ND <5.0	ND <5.0	ND <4.3	36	9.7	51	88
USEPA Regional Screening Levels (RSLs)		**1.6**	**22,000**	**4.9**	**440**	**440**	**18,000**	**390**	**180,000**	--	--	**3.0**	**47**	--	**2.8**	**260**	**260**	--	**4,400**	**3,100**	**1,200**	**13,000**	**22,000**
California HHRA Note No. 3 DTSC-SLs		**13**	**1,300**	--	--	--	--	--	--	--	--	--	**180**	--	**440**	--	--	--	**3,900**	--	**1,800**	--	--

Notes:

🟥 **Bold** Indicates detection of analyte above USEPA SLs or California DTSC SLs.

All concentrations in micrograms per liter (µg/m^3).

For a complete list of VOCs screened for by EPA Method TO-15 refer to the laboratory summary report (Attachment A/B).

ND< - denotes analyte not detected above the noted laboratory Reporting Limit.

REP - Replicate sample collected.

-- No DTSC-SL or EPA RSL identified.

USEPA-RSL - Value is a United States Environmental Protection Agency (USEPA) Regional Screening Level (RSL) for Industrial Air. Summary Table November 2021.

DTSC-SL - Value is a California Human Health Risk Assessment Note Number 3 Department of Toxic Substances Control (DTSC)-modified Screening Level for Commercial/Industrial Air, Non-cancer Endpoint. Release Date June 2020.

Table 2
Analytical Results for Select Volatile Organic Compounds in Soil Vapor
Phase II Environmental Site Assessment
Interstate 15 / Bernardo Center Drive
San Diego, California

Sample ID	Probe Depth (feet)	Sample Date	Units	Benzene	Ethylbenzene	Trichloroethene	Tetrachloroethene	Vinyl Chloride
SV1-5-5	5.0	2/8/2022	µg/m^3	**13**	**11**	<5.5	<6.9	<2.6
VS1-5 REP	5.0	2/8/2022	µg/m^3	**14**	**11**	<5.5	<6.9	<2.6
VS1-15	15	2/8/2022	µg/m^3	**59**	**21**	<5.5	<6.9	**7.8**
VS2-5	5.0	2/8/2022	µg/m^3	**24**	**24**	<27	<34	<13
VS2-15	15	2/8/2022	µg/m^3	**28**	**10**	<5.5	**8.5**	<2.6
VS3-5	5.0	2/8/2022	µg/m^3	**7.2**	**5.1**	<5.5	<6.9	<2.6
VS3-15	15	2/8/2022	µg/m^3	**7.8**	<4.4	**28**	<6.9	<2.6
VS4-5	5.0	2/8/2022	µg/m^3	**26**	**8.2**	<5.5	<6.9	<2.6
VS4-15	15	2/8/2022	µg/m^3	**17**	**4.7**	<5.5	**130**	<2.6
VS5-5	5.0	2/8/2022	µg/m^3	**5.7**	**8.7**	<5.5	<6.9	<2.6
VS5-15	15	2/8/2022	µg/m^3	**39**	**13**	<5.5	<6.9	**4.6**
DTSC SLs for Industrial Air (µg/m3)			µg/m^3	13	NL	NL	180	440
EPA RSLs for Industrial Air (µg/m^3)			µg/m^3	1.6	4.9	3.0	47	2.8

Notes

Samples analyzed using EPA Method TO-15

µg/m^3 = micrograms per cubic meter

NL = no listed regulatory screening limit for constituent

<X = Less than the laboratory reporting limit, X

Bold = detected concentration at or above the laboratory reporting limit

J = Analyte concentration detected between the laboratory reporting limit and the method detection limit

0.3 Indicates exceedance of DTSC SLs and/or EPA RSLs for Commercial/Industrial Air

Sources:

DTSC, Office of Human and Ecological Risk Office (HERO) Table 3 HHRA (Human Health Risk Assessment) Note No. 3, June 2020, DTSC-

USEPA, November 2021. Regional Screening Level (RSL) Resident Commercial/Industrial Air Table (TR=1E-06, HQ=1)

TR = Target Risk Level

HQ = target Hazard Quotient

Table 3
Predicted Indoor Air Concentrations
Phase II Environmental Site Assessment
Interstate 15/ Bernardo Center Drive
San Diego, California

Soil Vapor Probe ID	Sample Depth (feet)	Sample Date	Attenuation Factor, AF = 0.03				
			Benzene	Ethylbenzene	Trichloroethene	Tetrachloroethene	Vinyl Chloride
SV1-5-5	5.0	2/8/2022	**0.39**	**0.33**	--	--	--
VS1-5 REP	5.0	2/8/2022	**0.42**	**0.33**	--	--	--
VS1-15	15	2/8/2022	**1.77**	**0.63**	--	--	**0.234**
VS2-5	5.0	2/8/2022	**0.72**	**0.72**	--	--	--
VS2-15	15	2/8/2022	**0.84**	**0.30**	--	**0.255**	--
VS3-5	5.0	2/8/2022	**0.216**	**0.153**	--	--	--
VS3-15	15	2/8/2022	**0.234**	--	**0.84**	--	--
VS4-5	5.0	2/8/2022	**0.78**	**0.246**	--	--	--
VS4-15	15	2/8/2022	**0.51**	**0.141**	--	**3.9**	--
VS5-5	5.0	2/8/2022	**0.171**	**0.261**	--	--	--
VS5-15	15	2/8/2022	**1.17**	**0.39**	--	--	**0.138**
DTSC SLs for Commercial/Industrial Air (µg/m^{3})			13	NL	NL	180	440
EPA RSLs for Industrial Air (µg/m^{3})			1.6	4.9	3.0	47	2.8

Notes:

REP	Duplicate Sample
NL	No listed regulatory screening limit for constituent
--	Not calculated, constituent concentration detected below Regional Screening Level.
1.77	Indicates exceedance of DTSC SLs and/or EPA RSLs for Commercial/Industrial Air

Sources:

DTSC, Office of Human and Ecological Risk Office (HERO) Table 3 HHRA (Human Health Risk Assessment) Note No. 3, June 2020, DTSC- Recommended Screening Levels for Ambient Air Analysis

EPA, November 2021. Regional Screening Level (RSL) Resident Ambient Air Table (TR=1E-06, HQ=1)

TR = Target Risk Level

HQ = target Hazard Quotient

All results shown in micrograms per cubic meter (µg/m^{3}).

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Table 4
Indoor Air Cancer Risk Assessment
Phase II Environmental Site Assessment
Interstate 15 / Bernardo Center Drive
San Diego, California

Soil Vapor Probe ID	Sample Depth (feet)	Sample Date	Attenuation Factor, AF=0.03					
			Benzene	**Ethylbenzene**	**Trichloroethene**	**Tetrachloroethene**	**Vinyl Chloride**	**Cumulative Cancer Risk**
SV1-5-5	5.0	44600	2.44E-07	6.73E-08	--	--	--	3.11E-07
VS1-5 REP	5.0	2/8/2022	2.63E-07	6.73E-08	--	--	--	3.30E-07
VS1-15	15.0	2/8/2022	**1.11E-06**	1.29E-07	--	--	8.36E-08	1.32E-06
VS2-5	5.0	2/8/2022	4.50E-07	1.47E-07	--	--	--	5.97E-07
VS2-15	15.0	2/8/2022	5.25E-07	6.12E-08	--	5.43E-09	--	5.92E-07
VS3-5	5.0	2/8/2022	1.35E-07	3.12E-08	--	--	--	1.66E-07
VS3-15	15.0	2/8/2022	1.46E-07	--	2.80E-07	--	--	4.26E-07
VS4-5	5.0	2/8/2022	4.88E-07	5.02E-08	--	--	--	5.38E-07
VS4-15	15.0	2/8/2022	3.19E-07	2.88E-08	--	8.30E-08	--	4.31E-07
VS5-5	5.0	2/8/2022	1.07E-07	5.33E-08	--	--	--	1.60E-07
VS5-15	15.0	2/8/2022	7.31E-07	7.96E-08	--	--	4.93E-08	8.60E-07
DTSC SLs for Commercial/Industrial Air (µg/m^3)			13	NL	NL	180	440	
EPA RSLs for Industrial Air (µg/m^3)			1.6	4.9	3.0	47	2.8	

Notes:

REP	Replicate Sample
NL	No listed regulatory screening limit for constituent.
--	Not calculated, constituent concentration detected below Regional Screening Level.
1.0E-06	Exceeds 1.0E-06 Health Risk Level for Commercial/Industrial Air.
1.0E-04	Exceeds 1.0E-04 Health Risk Level for Commercial/Industrial Air.

Sources:

DTSC, Office of Human and Ecological Risk Office (HERO) Table 3 HHRA (Human Health Risk Assessment) Note No. 3, June 2020, DTSC-

EPA, November 2021. Regional Screening Level (RSL) Resident Ambient Air Table (TR=1E-06, HQ=1)

TR = Target Risk Level

HQ = target Hazard Quotient

Table 5
Indoor Air Hazard Index (Non-Cancer) Risk Assessment
Phase II Environmental Site Assessment
Interstate 15 / Bernardo Center Drive
San Diego, California

Soil Vapor Probe ID	Sample Depth (feet)	Sample Date	Attenuation Factor, AF=0.03					
			Benzene	Ethylbenzene	Trichloroethene	Tetrachloroethene	Vinyl Chloride	Hazard Index
SV1-5-5	5.0	2/8/2022	2.44E-01	6.73E-02	--	--	--	0.31
VS1-5 REP	5.0	2/8/2022	2.63E-01	6.73E-02	--	--	--	0.33
VS1-15	15.0	2/8/2022	1.11E+00	1.29E-01	--	--	8.36E-02	**1.32**
VS2-5	5.0	2/8/2022	4.50E-01	1.47E-01	--	--	--	0.60
VS2-15	15.0	2/8/2022	5.25E-01	6.12E-02	--	5.43E-03	--	0.59
VS3-5	5.0	2/8/2022	1.35E-01	3.12E-02	--	--	--	0.17
VS3-15	15.0	2/8/2022	1.46E-01	--	2.80E-01	--	--	0.43
VS4-5	5.0	2/8/2022	4.88E-01	5.02E-02	--	--	--	0.54
VS4-15	15.0	2/8/2022	3.19E-01	2.88E-02	--	8.30E-02	--	0.43
VS5-5	5.0	2/8/2022	1.07E-01	5.33E-02	--	--	--	0.16
VS5-15	15.0	2/8/2022	7.31E-01	7.96E-02	--	--	4.93E-02	0.86
DTSC SLs for Commercial/Industrial Air (µg/m^3)			13	NL	NL	180	440	
EPA RSLs for Industrial Air (µg/m^3)			1.6	4.9	3.0	47	2.8	

Notes:

REP	Replicate Sample
--	Not detected above the reporting limit.
1.00	Exceeds 1.0 Hazard Index (non-Cancer) for Commercial/Industrial Air.

Sources:

DTSC, Office of Human and Ecological Risk Office (HERO) Table 3 HHRA (Human Health Risk Assessment) Note No. 3, June 2020, DTSC- Recommended Screening Levels
EPA, November 2021. Regional Screening Level (RSL) Resident Ambient Air Table (TR=1E-06, HQ=1)
TR = Target Risk Level
HQ = target Hazard Quotient

Appendix A

Boring Logs

BORING RECORD

PROJECT NAME UCSD Phase II		**HOLE ID** B1	
PROJECT NUMBER EN8185A			
DRILLING COMPANY H&P Mobile Geochemistry	**DRILL RIG** Strataprobe Direct Push	**START DATE** 2/8/2022	**FINISH DATE** 2/8/2022
SHEET NO. 1 of 1			
DRILLING METHOD Direct Push	**BORING DIA. (in)** 2.25	**LOGGED BY** D.Torres	**CHECKED BY** J. Dasinger
NOTES	**TOTAL DEPTH (ft)** 15	**GROUND ELEV (ft)**	**DEPTH/*ELEV.* GW (ft)** ∇ N/A / *NM* DURING DRILLING
BOREHOLE LOCATION (Longitude, Latitude)	**BOREHOLE BACKFILL & COMPLETION** Hydrated Bentonite		▼ / *NM* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	POCKET PEN. (TSF)	RECOVERY (%)	MOISTURE (%)	VOC BACKGROUND (ppm)	VOC HEADSPACE (ppm)	TIME	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
											▨	Surface-Vegetated Soil
		⊤ ⊤	B1-2' B1D-2'					1.5 1.5	0819		▨	2' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
5		⊤	B1-5'					8.4	0822		▨	5' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
10		⊤	B1-10'					1.0	0824		▨	10' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
15		⊤	B1-15'					9.9	0826			15' bgs-SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
20												Boring terminated at 15 feet bgs. Groundwater was not encountered. Temporary soil vapor probes were installed at depths of 5' bgs and 15' bgs. Probes were set within a 1 foot sandpack and dry bentonite transition seal. Hydrated bentonite sealed the sand pack intervals and the boring to the ground surface. Probe abandoned without excavation and backfilled to ground surface with bentonite.
25												

FIGURE

BORING RECORD

PROJECT NAME UCSD Phase II
PROJECT NUMBER EN8185A
HOLE ID B2

DRILLING COMPANY H&P Mobile Geochemistry	**DRILL RIG** Strataprobe Direct Push	**START DATE** 2/8/2022	**FINISH DATE** 2/8/2022	**SHEET NO.** 1 of 1
DRILLING METHOD Direct Push	**BORING DIA. (in)** 2.25	**LOGGED BY** D.Torres	**CHECKED BY** J. Dasinger	
NOTES	**TOTAL DEPTH (ft)** 15	**GROUND ELEV (ft)**	**DEPTH/*ELEV.* GW (ft)** ∇ N/A / *NM* DURING DRILLING	
BOREHOLE LOCATION (Longitude, Latitude)	**BOREHOLE BACKFILL & COMPLETION** Hydrated Bentonite		▼ / *NM* AFTER DRILLING	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	POCKET PEN. (TSF)	RECOVERY (%)	MOISTURE (%)	VOC BACKGROUND (ppm)	VOC HEADSPACE (ppm)	TIME	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												Surface-Vegetated Soil
		T	B2-2'					9.1	0852		▨	2' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
5		T	B2-5'					5.3	0856		▨	5' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
10		T	B2-10'					3.8	0900		▨	10' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
15		T	B2-15'					6.6	0902			15' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
20												Boring terminated at 15 feet bgs. Groundwater was not encountered. Temporary soil vapor probes were installed at depths of 5' bgs and 15' bgs. Probes were set within a 1 foot sandpack and dry bentonite transition seal. Hydrated bentonite sealed the sand pack intervals and the boring to the ground surface. Probe abandoned without excavation and backfilled to ground surface with bentonite.
25												

FIGURE

BORING RECORD

PROJECT NAME UCSD Phase II			**HOLE ID** B3	
PROJECT NUMBER EN8185A				
DRILLING COMPANY H&P Mobile Geochemistry	**DRILL RIG** Strataprobe Direct Push	**START DATE** 2/8/2022	**FINISH DATE** 2/8/2022	**SHEET NO.** 1 of 1
DRILLING METHOD Direct Push	**BORING DIA. (in)** 2.25	**LOGGED BY** D.Torres	**CHECKED BY** J. Dasinger	
NOTES	**TOTAL DEPTH (ft)** 15	**GROUND ELEV (ft)**	**DEPTH/*ELEV.* GW (ft)** ▽ N/A / *NM* DURING DRILLING	
BOREHOLE LOCATION (Longitude, Latitude)	**BOREHOLE BACKFILL & COMPLETION** Hydrated Bentonite		▼ / *NM* AFTER DRILLING	

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	POCKET PEN. (TSF)	RECOVERY (%)	MOISTURE (%)	VOC BACKGROUND (ppm)	VOC HEADSPACE (ppm)	TIME	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												Surface-Vegetated Soil
		T	B3-2'					8.4	0927		▨	2' bgs- SC-Clayey Sand: light brown; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
5		T	B3-5'					9.6	0932		▨	5' bgs- SC-Clayey Sand:grayish red/light brown; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
10		T	B3-10'					8.9	0936		▨	10' bgs- SC-Clayey Sand:grayish red/light brown; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
15		T	B3-15'					9.8	0940			15' bgs- SC-Clayey Sand:grayish red/light brown; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
20												Boring terminated at 15 feet bgs. Groundwater was not encountered. Temporary soil vapor probes were installed at depths of 5' bgs and 15' bgs. Probes were set within a 1 foot sandpack and dry bentonite transition seal. Hydrated bentonite sealed the sand pack intervals and the boring to the ground surface. Probe abandoned without excavation and backfilled to ground surface with bentonite.
25												

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ANAHEIM * IRVINE * ONTARIO * SAN DIEGO * TORRANCE

FIGURE

BORING RECORD

PROJECT NAME UCSD Phase II	**PROJECT NUMBER** EN8185A	**HOLE ID** B4

DRILLING COMPANY H&P Mobile Geochemistry	**DRILL RIG** Strataprobe Direct Push	**START DATE** 2/8/2022	**FINISH DATE** 2/8/2022	**SHEET NO.** 1 of 1
DRILLING METHOD Direct Push	**BORING DIA. (in)** 2.25	**LOGGED BY** D.Torres	**CHECKED BY** J. Dasinger	
NOTES	**TOTAL DEPTH (ft)** 15	**GROUND ELEV (ft)**	**DEPTH/*ELEV.* GW (ft)** ▽ N/A / *NM* DURING DRILLING ▼ / *NM* AFTER DRILLING	
BOREHOLE LOCATION (Longitude, Latitude)	**BOREHOLE BACKFILL & COMPLETION** Hydrated Bentonite			

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	POCKET PEN. (TSF)	RECOVERY (%)	MOISTURE (%)	VOC BACKGROUND (ppm)	VOC HEADSPACE (ppm)	TIME	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												Surface-Vegetated Soil
		T	B4-2'					5.1	0958		▨	2' bgs- SC- Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
5		T	B4-5'					6.4	1001		▨	5' bgs- SC- Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed .
10		T	B4-10'					10.2	1005		▨	10' bgs- SC- Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
15		T	B4-15'					8.0	1006			15' bgs- SC- Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
20												Boring terminated at 15 feet bgs. Groundwater was not encountered. Temporary soil vapor probes were installed at depths of 5' bgs and 15' bgs. Probes were set within a 1 foot sandpack and dry bentonite transition seal. Hydrated bentonite sealed the sand pack intervals and the boring to the ground surface. Probe abandoned without excavation and backfilled to ground surface with bentonite.
25												

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FIGURE

BORING RECORD

PROJECT NAME UCSD Phase II
PROJECT NUMBER EN8185A
HOLE ID B5

DRILLING COMPANY H&P Mobile Geochemistry
DRILL RIG Strataprobe Direct Push
START DATE 2/8/2022
FINISH DATE 2/8/2022
SHEET NO. 1 of 1

DRILLING METHOD Direct Push
BORING DIA. (in) 2.25
LOGGED BY D.Torres
CHECKED BY J. Dasinger

NOTES
TOTAL DEPTH (ft) 15
GROUND ELEV (ft)
DEPTH/*ELEV.* GW (ft) ∇ N/A / *NM* DURING DRILLING

BOREHOLE LOCATION (Longitude, Latitude)
BOREHOLE BACKFILL & COMPLETION Hydrated Bentonite
▼ / *NM* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	POCKET PEN. (TSF)	RECOVERY (%)	MOISTURE (%)	VOC BACKGROUND (ppm)	VOC HEADSPACE (ppm)	TIME	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												Surface-Vegetated Soil
		T	B5-2'					6.2	1034		▨	2' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
5		T	B5-5'					5.3	1037		▨	5' bgs- SC-Clayey Sand: reddish brown; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
10		T	B5-10'					4.9	1041		▨	10' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
15		T	B5-15'					5.3	1044			15' bgs- SC-Clayey Sand: Brownish gray; moist; mostly fine sand; trace medium sand; trace fine gravel; trace red iron oxide staining observed.
20												Boring terminated at 15 feet bgs. Groundwater was not encountered. Temporary soil vapor probes were installed at depths of 5' bgs and 15' bgs. Probes were set within a 1 foot sandpack and dry bentonite transition seal. Hydrated bentonite sealed the sand pack intervals and the boring to the ground surface. Probe abandoned without excavation and backfilled to ground surface with bentonite.
25												

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FIGURE

Appendix B

Laboratory Analytical Reports for ACM, Soil, and Soil Vapor

Bound under separate cover - available upon request.

Appendix F1. Drainage Report

latitude33
PLANNING & ENGINEERING

Memorandum

DATE: April 23, 2024 FILE: 1609.3

TO: Alison Buckley, UCSD
Elizabeth Kim, Harris & Associates
Pietro Martinez, PMB

FROM: Justin R. Giles, Associate/Engineer of Record

SUBJECT: UCSD RBHC – Storm Water Design for CEQA Review

To whom it may concern,

The following memo is being provided to address minor site development changes to the Ranch Bernardo Healthcare Cetner (RBHC) project as compared to the Preliminary Storm Water Quality Management Plan and Drainage Study, both dated December 15th, 2023 that are included for CEQA Review. As Design Development has continued for the project, two minor, off-setting site changes have occurred:

1. The removal of the proposed "Pedestrian Ramp" improvements located in Basin P-7
2. The addition of the proposed "Zen Garden" improvements located in Basin P-8

Note: Please reference the revised "Proposed Hydrology Exhibit" & "Proposed DMA Exhibit" by Latitude 33 Planning & Engineering, both dated 4/16/2024, to see these changes.

Because these improvements are of the same scale and substance as one another, their impact to the storm water design is negligible. Both areas were exempt from treatment requirements as they qualify as "Self-Treating Areas". **The referenced technical studies demonstrate that the project will reduce peak flow in the proposed condition as compared to the existing condition and with these changes, this reduction in peak flow will be maintained.**

Should you have any questions or concerns about the subject matter of this memo, please do not hesitate to contact me by phone at 1.619.985.2740 or email at justin.giles@latitude33.com.

Thank you,

Justin R. Giles, PE C83540
Associate | Latitude 33

JUSTIN
ROBERT
GILES
C 83540
CIVIL

LEGEND

PROPOSED HYDROLOGY BASIN BOUNDARY	▬ ▬ ▬ ▬
EXISTING STORM DRAIN	──
PROPOSED STORM DRAIN	──
DIRECTION OF FLOW	→ →
FLOW PATH NODE	X.X EL:XXX.X
BASIN NUMBER & AREA	BASIN P-X X.XX ACRES

N

0 20 40 80 120
(IN FEET)
1 inch = 40 ft.

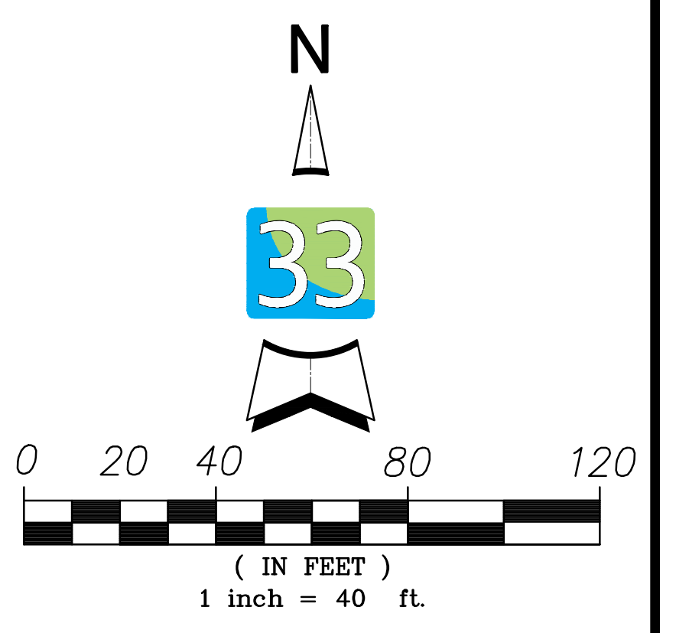
UCSD RBHC
PROPOSED HYDROLOGY EXHIBIT

SCALE: 1" = 40'
DATE: 04/16/2024
JOB NO.: 1609.30
DRAWN BY: DD/EA
CHECKED BY: HRG/JRG

latitude33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

LEGEND

DMA BOUNDARY	▬ ▬ ▬ ▬
EXISTING STORM DRAIN	───
PROPOSED STORM DRAIN	═══
DMA ID AND AREA	DMA P–X X.XX ACRES
PROJECT BOUNDARY	═══
MODULAR WETLANDS SYSTEM	─▣─
UNDERGROUND CONCRETE DETENTION VAULT (LAYOUT TO BE DETERMINED)	▦



UCSD RBHC
PROPOSED DMA EXHIBIT

SCALE: 1" = 40'
DATE: 04/16/2016
JOB NO.: 1609.30
DRAWN BY: DD/EA
CHECKED BY: JRG/HRG/AV

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

UC SAN DIEGO
RBHC
DRAINAGE REPORT

PREPARED BY:

latitude33
PLANNING & ENGINEERING

10731 Treena Street
San Diego, CA 92131
UC San Diego Project #: XXXX
Latitude 33 Job #: 1609.30

DATE: 2023-12-15
REVISED:

JUSTIN R GILES RCE
Registration Expires: 6-30-2025

Prepared By: DD, EA
Checked By: JG, HG, AV

Table of Contents

Appendix List

List of Tables

List of Figures

Abbreviations

ASF	Assignable Square Footage
CPM	Capital Program Management
CFS	Cubic Feet Per Second
Dn	Normal Depth
D	Depth
FPS	Feet per Second
GPD	Gallons per Day
GSF	Gross Square Footage
LRDP	Long Range Development Plan
OSHPD	Office of Statewide Health Planning and Development
MGD	Million Gallons per Day
MPF	Multi-Purpose Facility
PVC	Polyvinyl Chloride
UC	University of California

SECTION 1 – INTRODUCTION

1.1 PURPOSE

The purpose of this Preliminary Drainage Study is to evaluate the existing and proposed drainage conditions for the medical center and parking structure to be located on the undeveloped lot at 16280 Bernardo Center Drive. This technical document has been prepared to identify any potential hydrologic impacts of the development. Preliminary acceptance will be required prior to issuance of final permits.

1.2 SCOPE

The scope of this report includes the following elements:

- Existing site hydrology examination.
- Proposed site hydrological conditions.
- Preservation of existing site flows and flow rates as possible.
- Determination of any flow control structures required for site detention and 100 year flow limiting.

SECTION 2 – EXECUTIVE SUMMARY

This approximately 5.95-acre development project site is located directly west of Highway 15, and north of Bernardo Center Drive, at the undeveloped lot of 16280 Bernardo Center Drive. Refer to the vicinity map labeled as **Figure** 1 below.

The project proposes the construction of a multi-story Medical Office Building (MOB1), surface parking lot, and aboveground Parking Garage (P1), with east and west roads to provide site access. In the proposed conditions, new storm drain piping, curb inlets, Modular Wetlands System units, and detention vaults have been designed to enhance the drainage of the site and ensure the project meets or exceeds all UCSD Design Guidelines.

For conservative site design, drainage C-values have been set to ~0.85, denoting a projected 92% / 8% split of impervious and pervious areas. Drainage is primarily routed through brow ditch structures, roof drains, and curb and gutter installations, and includes bypass for existing slopes. Total drainage area being considered is 5.95-acres.

The project will comply with all guidelines and requirements through design of on-site storm drain infrastructure, implementation of flow-through treatment units, and the construction of two detention vaults in support of maintaining overall existing condition peak flow rates.

Figure 1: Vicinity Map

SECTION 3 – REGULATORY SETTING & PERFORMANCE CRITERIA

3.1 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

UC San Diego is one of ten UC campuses governed and administrated by the Regents of the University of California. As such, UC San Diego is regulated by the Federal Environmental Protection Agency (EPA) Phase II storm water regulations, the Clean Water Act (CWA) and the Small Municipal Separate Storm Sewer System's (MS4's) Order No. 2013-0001-DEG, NPDES No. CAS00004. UC San Diego adopted the revised Phase II Small MS4 General Permit as a Non-Traditional Permitee on July 1st, 2013. In response to section F of said permit, UC San Diego is required to create and maintain a Storm Water Management Plan (SWMP) to govern Storm Water policy on the campus.

As part of the SWMP, design guidelines were created for all new projects on campus requiring drainage reports for any regulated project (those that create/replace 5,000 sq. ft or greater impervious area) that meet the following conditions:

- A development or redevelopment project that would result in an increase or decrease in impervious area
- A project that will install or modify an existing storm drain system
- A project that is in the Coastal Zone and will be reviewed by the Coastal Commission as determined by the University
- A project site area that is one acre or greater and SWPPP is required
- Project-level CEQA analysis is required
- A project or building that will be attaining a LEED Certification
- Projects that create or replace 2,500 sq. ft. or more of impervious area are required to follow the post-construction storm water management program as set by the UC San Diego Storm Water Management Plan and enforced by the EH&S department. These requirements are shown in Table 1 on the next page.

UC San Diego Storm Water BMP Requirements for all Development Projects	
All projects that create or replace more than 2,500 sq. ft.	Complete and submit the "Post-Construction Stormwater Management Checklist" and receive project approval from UC San Diego Civil Engineers as well as Environmental Health and Safety Staff during the planning phase, Design Development Phase, and Construction Document Phase.
All projects that create or replace less than 2,500 sq. ft of impervious surface	Complete page 1 & 2 of the checklist for 2,500 SF -5,000 SF and submit for record.
All projects that create or replace between 2,500 sq. ft. and less than 5,000 sq. ft. of impervious area	Complete Post-Construction Stormwater Management Checklist for 2,500 SF to 5,000 SF. Quantify the runoff reduction using State's Post-Construction Water Balance Calculator, available at http://stormwater.ucsd.edu or request from EH&S Environmental Affair at ehsea@ucsd.edu and attach to the checklist.
All projects that create or replace 5,000 sq. ft. or more of impervious area	Classified as a regulated project. Complete in full the Post-Construction Stormwater Management Checklist for 5,000 sq. ft. or greater. Quantify "Site Design" BMPs using State's Post-Construction Water Balance Calculator and show that post-construction water balance is achieved. If balancing is not possible, see below. "Treatment Control" BMPs are <u>only</u> required if the Site Design BMPs above cannot fully meet Permit requirements. a) Quantify and explain in the Post-Construction Stormwater Management Checklist and include any attachments as needed. b) Design shall be based on the Flow-Based or Volume-Based criteria specified in Section F.5.g.2.b (Numeric Sizing Criteria) of the Phase II Small MS4 Permit c) Bioretention facilities are preferred, however alternative treatment BMPs can be used if proper documentation and supporting calculations prepared by a Registered Civil Engineer are provided and attached to the checklist. d) <u>An Operations and Maintenance Plan (O&M)</u> for each Post-Construction BMP <u>must</u> be included in the checklist.

3.2 UC SAN DIEGO DESIGN GUIDELINES

UC San Diego design guidelines, dated April 1st, 2015, give specific guidelines for both hydrologic and hydraulic requirements per project. These are listed below in greater detail:

Hydrologic Requirements:

UC San Diego guidelines require the use of the 2003 County of San Diego Hydrology Manual for the generation of flow rate for overland flow. Based on the size of the UCSD RBHC project, the rational method was utilized within this report. The rational method is a mathematical formula that calculates the peak rate of runoff (Q) at any given location in a watershed. This is computed using the drainage area (A), the runoff coefficient (C), and rainfall intensity (I) for a duration equal to the time of the concentration (Tc).

$$Q = C * I * A$$

Table 2 shows the criteria for Hydrologic modeling of the Modified Rational Method at UC San Diego:

Table 2

UC San Diego Hydrologic Criteria:

Hydrologic Soil Type:	Soil Type D, unless specified by Geotechnical Engineer
Runoff Coefficients (Based on Land Use)	See Table 3
Rainfall Intensity:	Based on County of San Diego Rainfall Isopluvials
Storm Event:	100 year, 6 - hour storm event

All projects on campus are required to use Soil Type D for poor infiltration unless specified otherwise by the Project Geotechnical Engineer. Runoff coefficients (C) are based on land use per table 3-1 of the 2003 County of San Diego Hydrology Manual, seen in Table 3 of this report. Rainfall intensities are provided by the County of San Diego Rainfall Isopluvial Maps and Section 3.1.3 of the County of San Diego Hydrology Manual and are selected by the storm duration to be modeled.

Table 3						
C-Values						
Land Use		Runoff Coefficient “C”				
		Soil Type				
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.2	0.25	0.3	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.6
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.6	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.8	0.8	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

Hydrologic Criteria:

The modified Rational Method was used to determine the 100-year discharge flows for the design of the site storm drains, treatment measures, and detention measures. The goal of the project hydrology analysis was to:

- Determine existing and design peak 100-year flows for the sizing of the onsite storm drain system inlets, and pipes that convey flow to the discharge locations.
- Verify that the project does not adversely impact existing storm drain improvements or natural drainage. A comparative analysis was performed between the existing peak 100-year and post-project peak 100-year design storms.
- Determine if detention of peak flows is necessary.
- Furthermore, per UC San Diego Design Guidelines, all projects that generate 10,000 sq. ft of new impervious area are required to adhere to pre-project 10 year, 6-hour flow rate per overall discharge.

Description of Hydrologic Modeling Software:

The Modified Rational Method was used to determine the 100-year flows for the design of the storm system. The Advanced Engineering Software (AES) Rational Method Program was used to perform hydrologic calculations.

The AES Rational Method Hydrology Program is a computer-aided design program where the user develops a node link model of the watershed. Developing independent node link models for each interior watershed and linking these sub-models together at confluence points creates the overall node link model. The intensity-duration-frequency relationships are applied to each of the drainage areas in the model to get the peak flow rates at each point of interest.

Hydraulic Requirements:

UC San Diego guidelines require the use of the County of San Diego Drainage Design Manual (2014) for hydraulic design of storm drain systems on campus. Some of these requirements, but not limited to, are shown in Table 4.

Table 4
UC San Diego Hydraulic Requirements
HGL for 100-year 6-hour storm shall maintain a minimum of 1 foot freeboard below ground surface
If 1 foot freeboard is not possible, provide calculations and an exhibit that the overflow damage will not damage any improvements.
Minimum 1% slope*

Concentrated flow in unpaved areas shall be designed with natural swales to convey surface runoff.

* If not achievable, obtain approval from CPM
Civil Engineer

Based on the year this drainage report was written, evaluation of storm drain structures was based on the latest version of the County of San Diego Drainage Design Manual (2014). Future analysis of Storm Drain hydraulics should adhere to the latest version of the County San Diego Drainage Design Manual.

Hydrologic/Hydraulic Modeling Software:

Hydraulic calculations for storm drain pipes, and inlets were sized according to the procedures as outlined in County of San Diego Drainage Design Manual (2014), dated January 2017. The software used to accomplish the hydraulic analyses for peak flow detention is Bentley's Pondpack

Detention Methodology and Criteria:

The detention vaults were designed to attenuate post-project flow rates to or below pre-project levels for the 100-year storm event. For design, the Modified Rational Method hydrologic analyses were performed to determine the 100-year, 6-hour for both the pre- and post-project conditions to provide peak flow rate reduction. Based on the Rational Method analyses, determination was made on sizing of the two detention vaults. The RatHydro program was then used to route the inflow hydrograph through the vaults and their associated stage-storage-discharge curves to produce a flowrate and time of concentration at outfall.

Description of Detention Modeling Software:

The rainfall distribution and related hydrographs were developed using RatHydro program created by Rick Engineering. The ordinates on the hydrograph are calculated based on the County of San Diego Intensity-Duration Chart. The program uses the following equation:

$$Q_N = [(I_{T(N)})\ (T_{T(N)})\ -(I_{T(N-1)})\ (T_{T(N-1)})]CA/T_C$$

Where: Q_N = Peak Discharge for rainfall block N in cfs,

N = number of rainfall blocks,

$T_{T(N)}$ = time of concentration at rainfall block N in minutes (equal to NT_C),

$I_{T(N)}$ = rainfall intensity at time of concentration $T_{T(N)}$ in inches per hour,

C = Rational Method runoff coefficient

A = area of the watershed (acres)

To develop the hydrograph for the 6-hour design storm, a series of triangular hydrographs with ordinates at multiples of the given T_C are created and added to create the hydrograph. The hydrograph has its peak at hours plus ½ of the T_C.

The Pondpack program was used for analyzing post-condition hydrology for detention basin design. Pondpack is able to size ponds, develop outlet rating curves with tailwater effects calculate pond detention times and handles multiple outfalls. The pond routing routine uses a mathematical procedure that models the detention basin response to the given storm event. By routing the storm water hydrograph through the pond the maximum water surface elevation (WSE), outflow flowrates, and the storage volume can be determined.

Detention Basin Routing Methodology:

The inflow hydrograph for the system was entered into the PondPack software and the detention routing was performed with the design of the detention vaults and their proposed outlet structures. The peak-flow attenuation requirements for each vault were developed concurrently with water quality treatment.

The 100-year hydrograph for each system was routed through each vault to demonstrate that the post-development peak flow rate will be less than the pre-development peak flow rate, and that the detention facility will not overfill during the 100-year peak event. For attenuation, the vault design utilizes a weir opening, placed a foot below the vault top, and an exit control orifice, sized at 9” for Vault 1 and 5” for Vault 2. The orifice equation was used to model flow through this exist control orifice, and an orifice coefficient of 0.6 was used per the Hydraulic Design Manual. The hydrograph routing calculations are included in Appendix D.

SECTION 4 – EXISTING CONDITION ASSESSMENT

4.1 EXISTING CONDITION HYDROLOGIC SUMMARY

In the existing condition the 5.95 acre UCSD – RBHC project generally drains overland southward to a single discharge location, located at the Right-Of-Way of Bernardo Center Drive. See the Existing Drainage Exhibit for a more detailed delineation of the existing condition. A description of the drainage basin in further detail is below:

Figures 1 & 2 shows the existing condition of the Hydrology and Storm Drain Routing for the site.

4.2 EXISTING CONDITION MODELING RESULTS

Existing conditions modeling results from the three discharge locations can be seen below in table 5:

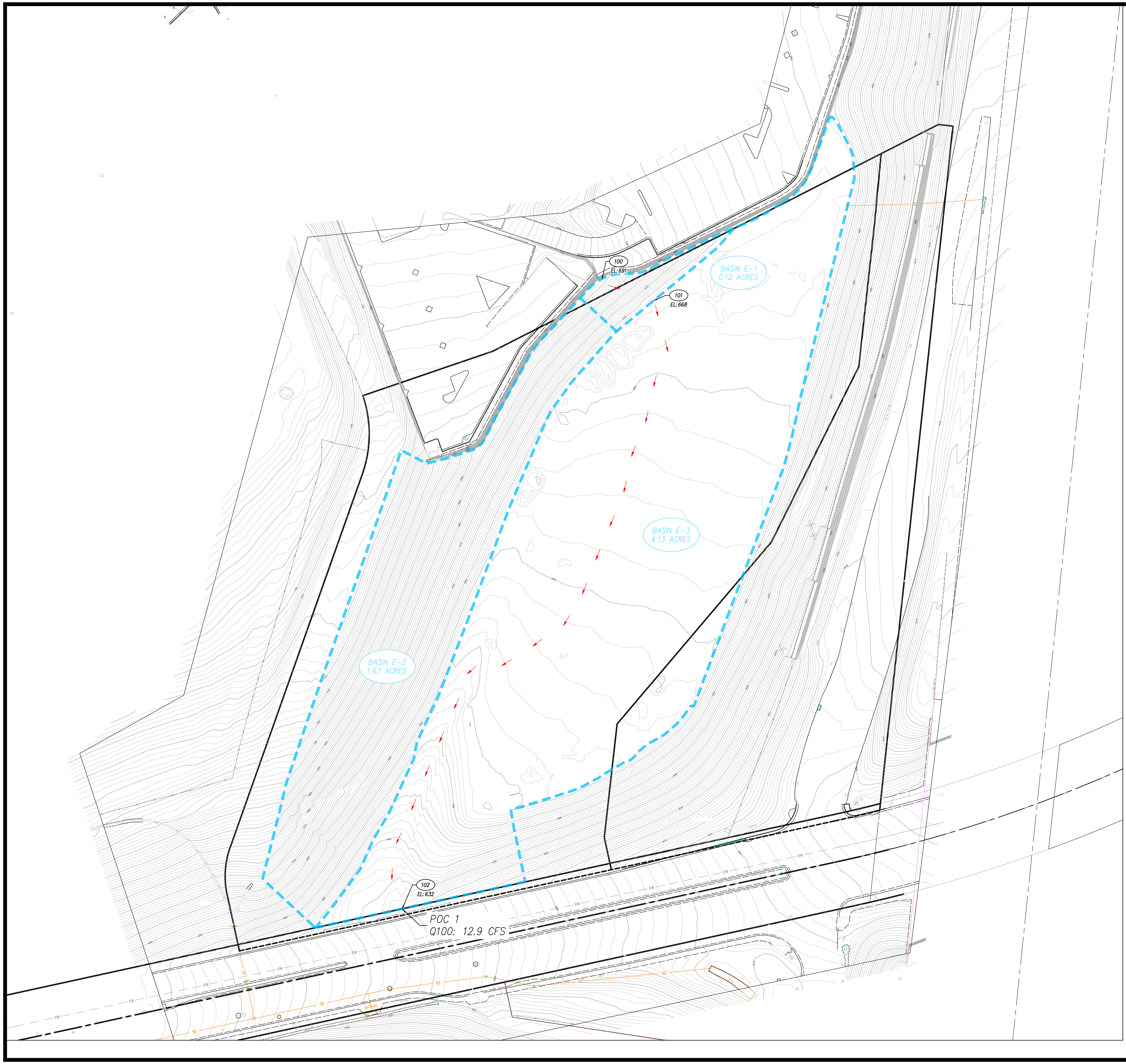
Table 5

Existing Condition Hydrology Results

POC #	100 Year 6-Hour Event (CFS)	Tributary Area (AC)
1	12.9	5.95

More detailed hydrology and hydraulic analysis for the existing condition can be seen in **Appendix A**.

Figure 2 – Existing Condition Hydrology Exhibit



LEGEND

EXISTING HYDROLOGY BASIN BOUNDARY	▬ ▬ ▬ ▬
EXISTING STORM DRAIN	───
DIRECTION OF FLOW	→ →
FLOW PATH NODE	X.X EL: XXX.X
BASIN NUMBER & AREA	BASIN E-X X.XX ACRES

N

0 20 40 80 120

(IN FEET)
1 inch = 40 ft.

UCSD RBHC
EXISTING HYDROLOGY EXHIBIT

SCALE: 1" = 40'
DATE: 12/15/2023
JOB NO.: 1609.30
DRAWN BY: DD/EA
CHECKED BY: JRG/HRG/AV

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

SECTION 5 – PROPOSED CONDITION ASSESSMENT

5.1 PROPOSED CONDITION HYDROLOGIC SUMMARY

This development will entail a redevelopment of the existing graded site, adding a primary multi-story health campus building, surface parking, underground utilities and drainage, and a multi-story parking structure. The site is routed to a singular outfall location, and a description of this discharge location is provided below:

Discharge Locations Description:

Flow from the site is captured in one of 6 on-site drainage Basins (1, 2, 3, 4, 5, 6), and routed through proprietary MWS treatment systems before being integrated into the site backbone storm drain systems, consisting of an upper and lower site system that confluence together at the south end of the site. Offsite flow is bypassed either through brow ditches, slopes, or storm drain pipes, consisting of 3 off-site drainage Basins (7, 8, 9)

The two site vaults are intended to handle the upper and lower sites independently, meeting a confluence further downstream. Flows from Basins 2, 3, and 4 are handled through 12" storm drains leading into Vault 1 (BMP V1), while flows from Basins 1 and 5 are handled through 12" storm drains leading into Vault 2 (BMP V2). Flow out of Vault 1 is conveyed through 18" pipe and junctions with Vault 2 flow towards the south of the site south, then join with treated outfall from Basin 6's MWS, and are eventually outlet through a curb outlet to Bernardo Center Drive, where it flows east to a dual trench and catch basin inlet structure.

Figures 3 shows the Proposed Condition for Hydrology and Storm Drain Routing for the UC San Diego Triton Center project.

5.2 PROPOSED CONDITIONS MODELING RESULTS

Proposed Condition modeling results for the three drainage basins can be seen below in Table 6:

Table 6 Proposed Condition Hydrology Results		
POC #	100 Year 6-Hour Event (CFS)	Tributary Area (AC)
1	12.43	5.95

(*) Detention is provided to attenuate the peak flow to match the pre-project conditions, see attached Bentley PondPack calculations for more information.

Figure 3 – Proposed Condition Hydrology Exhibit

LEGEND

PROPOSED HYDROLOGY BASIN BOUNDARY	▬ ▬ ▬ ▬
EXISTING STORM DRAIN	──
PROPOSED STORM DRAIN	──
DIRECTION OF FLOW	→ →
FLOW PATH NODE	X.X EL: XXX.X
BASIN NUMBER & AREA	BASIN P-X X.XX ACRES

N

0 20 40 80 120
(IN FEET)
1 inch = 40 ft.

UCSD RBHC
PROPOSED HYDROLOGY EXHIBIT

SCALE: 1" = 40'
DATE: 12/15/2023
JOB NO.: 1609.30
DRAWN BY: DD/EA
CHECKED BY: HRG/JRG

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

SECTION 6 – CONCLUSION

This drainage report has been prepared to quantify the hydrology demands associated with the UCSD-RBHC development, and to evaluate the hydraulic capacity of the proposed onsite storm drain system and vault detention systems. The analysis demonstrates that the added demands from the development are accounted for with the on-site detention vaults, creating an equivalence or reduction in peak flow between existing and proposed conditions. Additionally, all on-site storm drain proposed is designed to meet University standards, and will meet or exceed campus design guidelines.

Proposed Vault 1 is sized at 65 by 43 feet, with 5 feet of depth, interior, and proposed Vault 2 is sized at 75 feet by 21 feet, with 5 feet of depth, interior. These volumes combined with site development factors produce an outfall CFS that is equal to or reduced beyond site existing conditions.

Table 7

Results Comparison

POC #	PROP. 100-Year 6-Hr CFS	EX. 100-Year 6-Hr CFS
1	12.43	12.93

Appendix A – Existing Conditions Modeling Results

```
****************************************************************************

             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2016 Advanced Engineering Software (aes)
              Ver. 23.0 Release Date: 07/01/2016  License ID 1523

                            Analysis prepared by:

                     Latitude 33 Planning and Engineering

               9968 Hibert Street 2nd Floor San Diego, CA 92131




  ************************** DESCRIPTION OF STUDY **************************
 * EXISTING CONDITIONS FOR UCSD-RBHC SITE
*
 *
*
 *
*
  **************************************************************************

   FILE NAME: E_1609.DAT
   TIME/DATE OF STUDY: 17:03 12/14/2023

----------------------------------------------------------------------------
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

----------------------------------------------------------------------------
   2003 SAN DIEGO MANUAL CRITERIA

   USER SPECIFIED STORM EVENT(YEAR) = 100.00
   6-HOUR DURATION PRECIPITATION (INCHES) =   3.200
   SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
   SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
   NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
```

```
   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:
MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  =================  ======  ===== ====== =====
=======
   1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.00 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


****************************************************************************
   FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21

----------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

============================================================================
   NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  88
   INITIAL SUBAREA FLOW-LENGTH(FEET) =    61.00
   UPSTREAM ELEVATION(FEET) =    691.00
   DOWNSTREAM ELEVATION(FEET) =    668.00
   ELEVATION DIFFERENCE(FEET) =     23.00
   SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.894
   WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc
CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
   NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
   SUBAREA RUNOFF(CFS) =      0.35
   TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.35


****************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  81

----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
   NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
   NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  88
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
   SUBAREA AREA(ACRES) =    1.67   SUBAREA RUNOFF(CFS) =    4.93
   TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =       5.28
   TC(MIN.) =    4.89


****************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51

----------------------------------------------------------------------------
   >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

============================================================================
   ELEVATION DATA: UPSTREAM(FEET) =    668.00  DOWNSTREAM(FEET) =    630.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =   773.00   CHANNEL SLOPE =  0.0492
   CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =  10.000
   MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.238
   NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  88
   TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.84
   TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.18
   AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   3.08
   Tc(MIN.) =    7.98
   SUBAREA AREA(ACRES) =     4.13       SUBAREA RUNOFF(CFS) =    9.02
   AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
   TOTAL AREA(ACRES) =        5.9         PEAK FLOW RATE(CFS) =      12.93

   END OF SUBAREA CHANNEL FLOW HYDRAULICS:
   DEPTH(FEET) =  0.49   FLOW VELOCITY(FEET/SEC.) =   4.55
   LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =     834.00 FEET.

============================================================================
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)     =        5.9  TC(MIN.) =      7.98
   PEAK FLOW RATE(CFS)   =      12.93

============================================================================
```

```
============================================================================
   END OF RATIONAL METHOD ANALYSIS
```

Appendix B – Proposed Condition Modeling Results

```
****************************************************************************

             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2016 Advanced Engineering Software (aes)
              Ver. 23.0 Release Date: 07/01/2016  License ID 1523

                            Analysis prepared by:









  ************************** DESCRIPTION OF STUDY **************************
 * 100 YEAR FLOW ANALYSIS FOR UCSD-RBHC
*
 *
*
 *
*
  **************************************************************************

   FILE NAME: 1609P.DAT
   TIME/DATE OF STUDY: 18:28 12/14/2023

----------------------------------------------------------------------------
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

----------------------------------------------------------------------------
   2003 SAN DIEGO MANUAL CRITERIA

   USER SPECIFIED STORM EVENT(YEAR) = 100.00
   6-HOUR DURATION PRECIPITATION (INCHES) =   2.800
   SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
   SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
   NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
```

```
   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:
MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  =================  ======  ===== ====== =====
=======
   1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.00 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


****************************************************************************
   FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21

----------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

============================================================================
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
   UPSTREAM ELEVATION(FEET) =    745.33
   DOWNSTREAM ELEVATION(FEET) =    744.33
   ELEVATION DIFFERENCE(FEET) =      1.00
   SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.904
   WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
            THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
            (Reference: Table 3-1B of Hydrology Manual)
            THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
   NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
   SUBAREA RUNOFF(CFS) =      1.33
   TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      1.33


****************************************************************************
   FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  51

----------------------------------------------------------------------------
```

```
   >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

============================================================================
   CHANNEL LENGTH THRU SUBAREA(FEET) =   121.42
   REPRESENTATIVE CHANNEL SLOPE =  0.0100
   CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
   MANNING'S FACTOR = 0.013   MAXIMUM DEPTH(FEET) =   0.50
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
   NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.05
   TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.06
   AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   0.98
   Tc(MIN.) =    4.88
   SUBAREA AREA(ACRES) =     0.57       SUBAREA RUNOFF(CFS) =    3.45
   AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
   TOTAL AREA(ACRES) =        0.8         PEAK FLOW RATE(CFS) =       4.78

   END OF SUBAREA CHANNEL FLOW HYDRAULICS:
   DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   2.46
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    203.00 =     221.42 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    203.00 TO NODE    204.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0770
   FLOW LENGTH(FEET) =    77.76   MANNING'S N =  0.013
   DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  12.25
   GIVEN PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       4.78
   PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    4.99
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    204.00 =     299.18 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    401.00 TO NODE    204.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
   NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.8200
   SUBAREA AREA(ACRES) =    0.82   SUBAREA RUNOFF(CFS) =    4.96
   TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       9.74
   TC(MIN.) =    4.99


****************************************************************************
   FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0100
   FLOW LENGTH(FEET) =    49.50   MANNING'S N =  0.013
   ASSUME FULL-FLOWING PIPELINE
   PIPE-FLOW VELOCITY(FEET/SEC.) =  12.40
   PIPE FLOW VELOCITY = (TOTAL FLOW)/(PIPE CROSS SECTION AREA)
   GIVEN PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       9.74
   PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    5.06
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    205.00 =     348.68 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    301.00 TO NODE    205.00 IS CODE =  81

----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.324
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
```

```
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.8200
   SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    5.41
   TOTAL AREA(ACRES) =        2.5   TOTAL RUNOFF(CFS) =      15.07
   TC(MIN.) =    5.06


****************************************************************************
   FLOW PROCESS FROM NODE    205.00 TO NODE    206.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0100
   FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
   ASSUME FULL-FLOWING PIPELINE
   PIPE-FLOW VELOCITY(FEET/SEC.) =  19.19
   PIPE FLOW VELOCITY = (TOTAL FLOW)/(PIPE CROSS SECTION AREA)
   GIVEN PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      15.07
   PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    5.06
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    206.00 =     358.68 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    207.00 TO NODE    207.00 IS CODE =   7

----------------------------------------------------------------------------
   >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

============================================================================
   USER-SPECIFIED VALUES ARE AS FOLLOWS:
   TC(MIN) =  10.06   RAIN INTENSITY(INCH/HOUR) =  4.70
   TOTAL AREA(ACRES) =     2.51   TOTAL RUNOFF(CFS) =      3.22


****************************************************************************
   FLOW PROCESS FROM NODE    207.00 TO NODE    208.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0200
```

```
   FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.8 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   6.58
   GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       3.22
   PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   10.11
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    208.00 =     378.68 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    801.00 TO NODE    208.00 IS CODE =  81

----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.684
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.3433
   SUBAREA AREA(ACRES) =    0.37   SUBAREA RUNOFF(CFS) =    1.42
   TOTAL AREA(ACRES) =        2.9   TOTAL RUNOFF(CFS) =       4.63
   TC(MIN.) =   10.11


****************************************************************************
   FLOW PROCESS FROM NODE    208.00 TO NODE    209.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0200
   FLOW LENGTH(FEET) =   395.54   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   7.29
   GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       4.63
   PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =   11.02
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    209.00 =     774.22 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    209.00 TO NODE    209.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =   11.02
   RAINFALL INTENSITY(INCH/HR) =   4.43
   TOTAL STREAM AREA(ACRES) =     2.88
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.63


****************************************************************************
   FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  21

----------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

============================================================================
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
   UPSTREAM ELEVATION(FEET) =    660.61
   DOWNSTREAM ELEVATION(FEET) =    659.60
   ELEVATION DIFFERENCE(FEET) =      1.01
   SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.896
   WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
            THE MAXIMUM OVERLAND FLOW LENGTH =    60.15
            (Reference: Table 3-1B of Hydrology Manual)
            THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
   NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
   SUBAREA RUNOFF(CFS) =      0.48
   TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.48


****************************************************************************
   FLOW PROCESS FROM NODE    502.00 TO NODE    503.00 IS CODE =  61

----------------------------------------------------------------------------
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STANDARD CURB SECTION USED)<<<<<

============================================================================
```

```
   REPRESENTATIVE SLOPE =  0.0100
   STREET LENGTH(FEET) =   262.37   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 13.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.83
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.30
     HALFSTREET FLOOD WIDTH(FEET) =    8.73
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.08
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.63
   STREET FLOW TRAVEL TIME(MIN.) =   2.10   Tc(MIN.) =    6.00
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.561
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
   SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    2.69
   TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       3.12

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  10.98
   FLOW VELOCITY(FEET/SEC.) =  2.36   DEPTH*VELOCITY(FT*FT/SEC.) =   0.82
   LONGEST FLOWPATH FROM NODE    501.00 TO NODE    503.00 =     362.37 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    503.00 TO NODE    504.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.1000
   FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  12.0 INCH PIPE IS   4.4 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  12.04
   GIVEN PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       3.12
```

```
   PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.02
   LONGEST FLOWPATH FROM NODE    501.00 TO NODE    504.00 =     382.37 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    101.00 TO NODE    504.00 IS CODE =  81

----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.542
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.8200
   SUBAREA AREA(ACRES) =    0.53   SUBAREA RUNOFF(CFS) =    2.84
   TOTAL AREA(ACRES) =        1.1   TOTAL RUNOFF(CFS) =       5.95
   TC(MIN.) =    6.02


****************************************************************************
   FLOW PROCESS FROM NODE    504.00 TO NODE    505.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0200
   FLOW LENGTH(FEET) =    83.50   MANNING'S N =  0.013
   ASSUME FULL-FLOWING PIPELINE
   PIPE-FLOW VELOCITY(FEET/SEC.) =   7.58
   PIPE FLOW VELOCITY = (TOTAL FLOW)/(PIPE CROSS SECTION AREA)
   GIVEN PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       5.95
   PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    6.21
   LONGEST FLOWPATH FROM NODE    501.00 TO NODE    505.00 =     465.87 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    506.00 TO NODE    506.00 IS CODE =   7

----------------------------------------------------------------------------
   >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
```

```
============================================================================
   USER-SPECIFIED VALUES ARE AS FOLLOWS:
   TC(MIN) =  13.21   RAIN INTENSITY(INCH/HOUR) =  3.94
   TOTAL AREA(ACRES) =     1.11   TOTAL RUNOFF(CFS) =      0.97


****************************************************************************
   FLOW PROCESS FROM NODE    506.00 TO NODE    209.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0200
   FLOW LENGTH(FEET) =    49.30   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.65
   GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       0.97
   PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   13.39
   LONGEST FLOWPATH FROM NODE    501.00 TO NODE    209.00 =     515.17 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    209.00 TO NODE    209.00 IS CODE =   1

----------------------------------------------------------------------------
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =   13.39
   RAINFALL INTENSITY(INCH/HR) =   3.91
   TOTAL STREAM AREA(ACRES) =     1.11
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.97

   ** CONFLUENCE DATA **
   STREAM     RUNOFF       Tc      INTENSITY      AREA
   NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
       1        4.63    11.02        4.432          2.88
       2        0.97    13.39        3.909          1.11

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
   STREAM     RUNOFF      Tc      INTENSITY
   NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
       1        5.43    11.02       4.432
       2        5.05    13.39       3.909

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =       5.43   Tc(MIN.) =   11.02
   TOTAL AREA(ACRES) =        4.0
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    209.00 =     774.22 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0200
   FLOW LENGTH(FEET) =   101.80   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.6 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   7.61
   GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       5.43
   PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   11.24
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =     876.02 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    601.00 TO NODE    210.00 IS CODE =  81

----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.375
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.3315
   SUBAREA AREA(ACRES) =    0.18   SUBAREA RUNOFF(CFS) =    0.65
   TOTAL AREA(ACRES) =        4.2   TOTAL RUNOFF(CFS) =       6.05
```

```
   TC(MIN.) =   11.24


****************************************************************************
   FLOW PROCESS FROM NODE    210.00 TO NODE    211.00 IS CODE =  41

----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<

============================================================================
   REPRESENTATIVE SLOPE =  0.0200
   FLOW LENGTH(FEET) =     2.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.1 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
   GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =       6.05
   PIPE TRAVEL TIME(MIN.) =   0.00    Tc(MIN.) =   11.24
   LONGEST FLOWPATH FROM NODE    201.00 TO NODE    211.00 =     878.02 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    701.00 TO NODE    211.00 IS CODE =  81

----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.374
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.3560
   SUBAREA AREA(ACRES) =    0.22   SUBAREA RUNOFF(CFS) =    0.79
   TOTAL AREA(ACRES) =        4.4   TOTAL RUNOFF(CFS) =       6.84
   TC(MIN.) =   11.24


****************************************************************************
   FLOW PROCESS FROM NODE    901.00 TO NODE    211.00 IS CODE =  81

----------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.374
```

```
   GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
   SOIL CLASSIFICATION IS "D"
   S.C.S. CURVE NUMBER (AMC II) =  95
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.4776
   SUBAREA AREA(ACRES) =    1.56   SUBAREA RUNOFF(CFS) =    5.60
   TOTAL AREA(ACRES) =        5.9   TOTAL RUNOFF(CFS) =      12.43
   TC(MIN.) =   11.24

============================================================================
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)     =        5.9  TC(MIN.) =     11.24
   PEAK FLOW RATE(CFS)   =      12.43

============================================================================

============================================================================
   END OF RATIONAL METHOD ANALYSIS
```

Appendix C – 100-Year Pondpack Detention Routing Results

Bound under separate cover - available upon request.

Appendix D – Hydraulic Grade Line Calculations

To be provided in Final Engineering

Appendix E– Inlet Sizing Calculations

To be provided in Final Engineering

Appendix F2. Water Quality Report

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UC San Diego Project # xxxx

Latitude 33 Project # 1609.30

16280 Bernardo Center Dr.
Water Quality Report

12-15-2023

WATER QUALITY REPORT
FOR UCSD RBHC

UNIVERSITY OF CALIFORNIA - SAN DIEGO

SUBMITTED: December 15th, 2023

Prepared For:

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RCE 835460 Expires 6-30-24

Prepared By: AV/DD/EA

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

1. VICINITY MAP

Figure 1: Vicinity Map

2. EXECUTIVE SUMMARY

The Project site is located within the Rancho Bernardo annex of the University of California, San Diego. This development will entail a redevelopment of the existing graded site, adding a primary multi-story health campus building, surface parking, underground utilities and drainage, and a multi-story parking structure. This water quality study intends to evaluate the pre-project and post-project conditions, and present the LID, source control, and treatment control measures, required to accommodate the post-project condition.

UC San Diego is a Phase II Non-Traditional Small Municipal Separate Storm Sewer System (MS4) as dictated in Water Quality Order No. 2013-0001-DWQ, NPDES General Permit CAS000004. As such, UCSD is required to implement post-construction storm water management for each regulated project per section F.5.G, but is exempt from requirement of hydromodification measures.

The proposed project is located directly west of Highway 15, and north of Bernardo Center Drive. RBHC is a regulated project under the MS4 Phase II permit and must implement post-construction BMP's to ensure stormwater compliance. This will be accomplished flow-through modular wetlands systems for pollutant control. In addition, two underground concrete vaults are proposed for 100-year peak flow detention. See project's Drainage Report for more information.

3. PRE-PROJECT CONDITIONS

In the project's existing condition, the approximately 4-Acre site generally drains south and east, towards Bernardo Center Drive and Interstate 15. Discharge location 1 (POC #1) is located south of the project site, where the project boundary meets Bernardo Center Drive. Flow is projected to gutter flow east to a trench drain / catch basin near the I-15 offramp, from where it enters an existing 24" storm drain channel.

4. POST-PROJECT CONDITIONS

The RBHC project consists of the construction of a medical facility (MOB Building 1) and a parking structure (P1), two private driveways to serve both structures, and a private surface lot for additional parking capacity and access to the medical center. In addition, a park plaza is proposed between the two buildings, which will incorporate green design where possible. The site is divided into 7 distinct DMAs, which are detailed below:

The west portion of the site, DMA 1, includes the west private fire access driveway, MOB building 1 loading dock, trash enclosure, and landscaping elements. DMA 1 drains South to a trench drain which ties to BMP 1, a 4x13 Modular Wetlands System (MWS) unit.

The north building on-site (P1) is DMA 2 and is treated by BMP 2, a 4x17 MWS unit for water quality treatment.

The northeast portion of the site, DMA 3, includes the surface parking lot, central buildings park area, and other landscaping, and will flow south to a cross gutter, leading into BMP 3, a 4x19 MWS unit for water quality treatment.

The south building on-site (MOB Building 1) is DMA 4 and is treated by BMP 2, a 4x17 MWS uni for water quality treatment.

The lower east portion of the site is DMA 5, including roadways, and landscaped pedestrian areas, and flows South to a trench drain tied to BMP 5, a 4x15 MWS unit for water quality treatment.

DMA 6 covers the junction of the access roadways and driveway connection south to the start of the site. This flow is captured in a trench drain and tied to BMP 6, a 4x4 MWS unit for water quality treatment.

DMA 7 covers the south-east slope of the site with a switchback installation, due to the steep slopes being involved, the area is considered as self-retaining, with impervious area dispersion.

4.1 LID Measures & Source Control

Per section F.5.g.1 of the MS4 permit, all regulated projects must implement at least one LID measure to reduce storm water pollution. The RBHC Project implements the following LID measures:

- Tree Planting and Preservation
- Rooftop and impervious area dispersion
- Source Control
- Vegetated Swales

Tree Plant and Preservation
The project was coordinated to protect in place onsite trees, where applicable. New trees will be planted throughout the site.

Rooftop and impervious area dispersion
The project's proposed impervious areas are designed to flow to nearby landscape areas for impervious area dispersion (wherever feasible).

Source Control
The project proposes storm drain stenciling, landscape design minimizes irrigation and runoff, and uses native species that minimize the use of fertilizers and pesticides. This project does not propose any uncovered trash enclosures.

Vegetated Swales
The project proposes vegetated swales to convey water toward inlets and the on-site detention basin. Planting, ground cover and rocky swales will be utilized to convey flow to low points at a controlled rate.

4.2 Storm Water Treatment Measures and Baseline Hydromodification Management

Based on the Post-Construction Stormwater Management Checklist found in Appendix 'A' of this report, requirements for water quality treatment and hydro-modification management are met by section F.5.g.2.b from Phase II small MS4 as described below. Per section F.5.g.2.d of the MS4 permit, all impervious areas after LID measures have been implemented must be directed to the vaults and modular wetland systems. The entire site is treated by a number of Modular Wetlands Systems for water quality treatment. Additionally, underground concrete vaults are proposed to comply with peak flow mitigation requirements.

Flow-through Criteria:
Project treatment flowrates were tabulated using the Rational Method with a 0.2in/hr intensity. See Appendix B for associated calculations.

4.3 DMA results and sizing

DMAs 1 and 5 are routed through an on-site storm drain system to BMPs 1 and 5 for pollutant treatment, and Vault 2 for peak flow detention, then ultimately outlet to POC1.

DMAs 2, 3, and 4 are routed through an on-site storm drain system to BMPs 2, 3, and 4 for pollutant treatment, and Vault 1 for peak flow detention, then ultimately outlet to POC1.

DMA 6 is routed to BMP 6, then ultimately outlets to POC 1.

DMA 7 is modeled as impervious dispersion, ultimately confluencing at POC 1.

The modular wetlands systems sizing is provided in Appendix B for reference, and the project's DMA Exhibit is provided in Appendix C.

5. CONCLUSION AND SUMMARY

UCSD-RBHC is a regulated project under the Phase II MS4 permit which UC San Diego is regulated to. Since the post-project creates more than 5,000 square feet of impervious area, it is required to incorporate Post-Construction BMPs.

Project runoff ultimately drains through San Dieguito River to the San Dieguito Lagoon where the pollutants of concern are heavy metals, particularly Lead and Selenium. Per table B.6-1 of San Diego Storm Water Manual “Anticipated and Potential Pollutants Generated by Land Type Use” (attached in this report) the project does not typically generate this type of pollutants.

The calculations demonstrate that the project would be in compliance with the storm water regulations of UC San Diego.

Appendix A
STORM WATER CHECKLIST

Post-Construction Stormwater Management Checklist* (5,000 SF or Greater)

Applicability: Required for projects that create and/or replace 5,000 square feet or greater of impervious surface (i.e. asphalt roads, concrete structures, building area, sidewalks, etc.). Impervious surfaces are those that water cannot infiltrate/soak into.

To ensure that required site design measures are implemented in accordance with UC San Diego's Phase II Small MS4 General Permit 2013-0001-DWQ, submit working versions of this checklist (electronic or hard copy) to the UC San Diego Project Manager, to Environmental Planning, and to the FD&C Civil Engineering Group for review during the following project design phases (as applicable):

1. Conceptual Design Phase
2. 100% Schematic Design
3. Design Development
4. 100% Construction Drawings
5. At Project Close-out (final and complete version of checklist)
(also submit final and complete version of checklist to EH&S)

Is Project Exempt? ☐ **Yes** ☒ **No**

Exemptions: The following projects are exempt from the Phase II Small MS4 permit storm water site design measures and low impact design requirements:

☐ 1. Regulated projects that have been designed, approved, and funded prior to July 1, 2014.
☐ 2. Interior remodels.
☐ 3. Linear underground/overhead projects (LUPs) that have less than 5,000 square feet of newly constructed contiguous impervious surface.
☐ 4. Routine maintenance or repair projects such as:
  ☐ a. Maintenance, repair, and replacement work on existing underground utilities such as sanitary sewer lines or other utilities.
  ☐ b. Exterior wall surface replacement.
  ☐ c. Roof replacement.
  ☐ d. Pavement or asphalt resurfacing within the existing footprint.
  ☐ e. Sidewalk replacement within an existing footprint to replace concrete that is causing a trip hazard.
  ☐ f. routine replacement/repair of damaged pavement/asphalt such as pothole repair.
☐ 5. Bicycle lanes or pedestrian ramps on existing roads or sidewalks within existing footprint (e.g., no new impervious area).
☐ 6. Sidewalks built as a part of new streets or roads and built to direct storm water runoff to adjacent vegetated areas.
☐ 7. Bicycle lanes that are built as part of new streets or roads that direct storm water runoff to adjacent vegetated areas.
☐ 8. Impervious trails build to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas.
☐ 9. Sidewalks, bicycle lanes or trails constructed with permeable surfaces.

***NOTE: If the project meets the exemption requirements, applicable portions of the checklist must still be completed.**

Project Name: UCSD RBCH	**Project #:**
Street Address: 16280 Bernardo Center Dr.	**Cross Streets:**

Project Watershed (circle): See Attached Map if unsure which watershed your project lies within. Scripps Miramar Reservoir Miramar Other:________________

Post-Construction Stormwater Management Checklist* (5,000 SF or Greater)

Project Type: (Circle) [✓ New Development] Re-Development Road Landscaping Retrofit Utility Other: ____________________

Description of Project:

The Project site is located within the Rancho Bernardo annex of the University of California, San Diego. This development will entail a redevelopment of the existing graded site, adding a primary multi-story health campus building, surface parking, underground utilities and drainage, and a multi-story parking structure.

Total Project Area (in square feet):

Pre-Project Impervious Area: 0 New Impervious: 152,422 Post Project Impervious: 152,422

Does the project result in an increase of more than 50% of the existing impervious surface?* ☒ Yes ☐ No

*If **YES** then runoff from the entire project site including all existing, new, and/or replaced impervious surface must be included in the storm water treatment and design calculations. If **NO** then only runoff from the new and/or replaced impervious surface must be included in the storm water treatment and design calculations.

Post-Construction Stormwater Management Checklist* (5,000 SF or Greater)

PART A - SITE DESIGN MEASURES: Which site design measures have been implemented to reduce project site runoff? Applicant must select one or more of the following options below (check all that apply). In addition, The State Water Board's California Phase II LID Sizing Tool (or equivalent) must be used to quantify the runoff reduction resulting from implementation of any site design measures specified below and attach the calculations to this checklist. If post-construction water balance cannot be achieved with site design measures only, then additional storm water treatment BMPs must be designed for the project as described in PART B below. An electronic copy of the LID Sizing Tool is available at: **http://owp-web1.saclink.csus.edu/LIDTool/Start.aspx** or on the UC San Diego Storm Water Management Program website: **http://stormwater.ucsd.edu**

☐ **Stream Setbacks and Buffers**
(A vegetated area including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake reservoir, or coastal estuarine area)

☐ **Soil Quality Improvement and Maintenance**
(improvements and maintenance through soil amendments and creation of microbial community)

☒ **Tree Planting and Preservation**
(planting and preservation of healthy established trees that include both evergreens and deciduous, as applicable)

☒ **Rooftop and Impervious Area Disconnection**
(Rerouting of rooftop drainage pipes to drain rainwater to rain barrels, cisterns, or permeable areas instead of to the storm water system)

☐ **Porous Pavement**
(Pavement that allows runoff to pass through it, thereby reducing the runoff from a site and surrounding areas and filtering pollutants)

☐ **Green Roofs**
(a vegetative layer grown on a roof (rooftop garden))

☐ **Vegetated Swales**
(A vegetated, open-channel management practice designed specifically to treat and attenuate storm water runoff)

☐ **Rain Barrels and Cisterns**
(system that collects and stores storm water runoff from a roof or other impervious surface)

Description of Site Design Measures Implemented for Project:

Volume of runoff that will be treated:

Size of area that will drain to BMP:

Pollutants that will be captured or treated by BMP (check all that apply):

☐ Non-storm water discharges (e.g. irrigation runoff) ☐ Trash/Litter ☐ Sediment ☐ Petroleum Hydrocarbons ☐ Other:

Post-Construction Stormwater Management Checklist* (5,000 SF or Greater)

PART B - SOURCE CONTROL MEASURES: Projects that will create and/or replace 5,000 square feet or more of impervious surface must implement standard permanent and/or operational source control measures for pollutant generating activities and sources associated with the end use of the project site. This requires an evaluation of the equipment and activities that will be located or implemented at the project site after construction. Source control measures for the following pollutant generating activities shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment (https://www.casqa.org/resources/bmp-handbooks/new-development-redevelopment-bmp-handbook). Please check all pollutant generating activities or sources that apply to this project below.

- ☐ **Accidental spills or leaks**
- ☐ **Interior floor drains**
- ☐ **Parking/Storage area maintenance**
- ☐ **Indoor and structural pest control**
- ☐ **Landscape/outdoor pesticide use**
- ☐ **Pools, spas, ponds, decorative fountains, and other water features**
- ☐ **Outdoor storage of equipment or materials**
- ☐ **Vehicle and equipment repair and maintenance**
- ☐ **Fire sprinkler test water**
- ☐ **Loading docks**
- ☐ **Vehicle and equipment cleaning**
- ☐ **Fuel dispensing areas**
- ☐ **Storage and handling of solid waste**
- ☐ **Restaurants, grocery stores, and other food service operations**
- ☐ **Unauthorized non-storm water discharges**
- ☐ **Building and grounds maintenance**
- ☐ **Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources**

Describe the source control BMPs that will be implemented for the project for all pollutant generating activities checked above:

Post-Construction Stormwater Management Checklist* (5,000 SF or Greater)

PART C - STORM WATER TREATMENT/BASELINE HYDROMODIFICATION MEASURES: Only required if site design measures listed above cannot fully meet Permit requirements (i.e.. Calculations on California Phase II LID Sizing Tool show that post-construction water balance is not achieved). All stormwater treatment BMPs shall be designed based on the flow-based or volume-based criteria specified in Section F.5.g.2.b (Numeric Sizing Criteria) of the Permit. Treatment BMPs must be designed for each Drainage Management Area (DMA). Bioretention facilities are preferred for treatment but alternative treatment BMPs can be used if the proper documentation and supporting calculations are provided and attached to this checklist. If Alternative BMPs are selected then all sizing and calculations should be prepared by a Registered Civil Engineer.

STEP 1: Calculating What is Required for Treatment BMPs:

If you have a concept plan or design drawings for the proposed project which clearly define impervious and pervious areas you will be able to calculate the amount of area, volume, or flow that is required to be treated by stormwater treatment/hydromodification measures. If your project has more than one discharge point then you will need to divide your project into individual drainage management areas (DMA's) and calculate the required treatment for each DMA. If Bioretention is specified as the treatment control BMP of choice then skip to the Step 2 below for sizing BMPs. If alternative BMPs (BMPs other than bioretention) are utilized then depending on the type of BMP that will be designated for each DMA either volume-based or flow-based calculations should be performed to determine the required treatment volumes or rates. These calculations should be performed by a Registered Civil Engineer. The following sizing criteria should be used when determining volumes and rates for BMPs:

Volume-Based BMP Sizing Criteria:
a) The maximized stormwater capture volume for the tributary are based on historical rainfall records and determined in accordance with Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998), pages 175-178 (the 85th percentile, 24-hour storm event) **OR:** b.) The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with CASQA's Stormwater BMP Handbook for New and Redevelopment (2003) using local rainfall.

Flow-Based BMP Sizing Criteria:
a) The flow of runoff produced from a rain event equal to at least 0.2 inches per hour intensity **OR**: b) The flow of runoff produced from a rain event equivalent to at least 2 times the 85th percentile hourly rainfall intensity as determined from local rainfall records.

The California Phase II LID Sizing Tool or equivalent should be used to verify selected site design measures and LID for each drainage area meet permit requirements.
The LID Sizing Tool is available at: http://owp-web1.saclink.csus.edu/LIDTool/Start.aspx

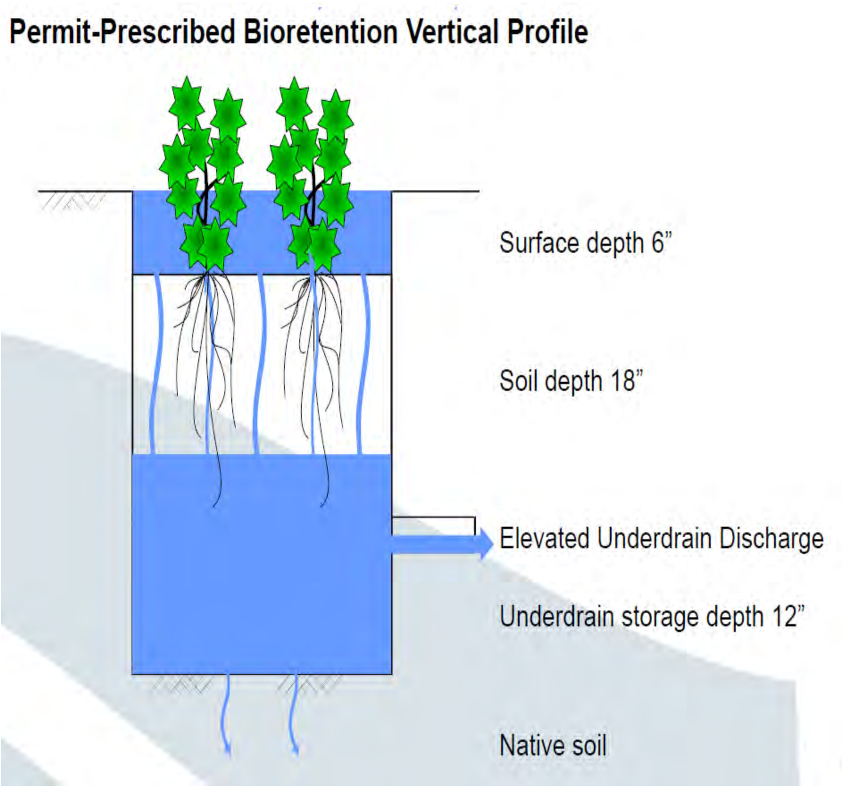
Treatment Rate or Volume Required for Project: (If multiple DMA's please attach additional calculations to this checklist) 0.972 cfs ft^3 or ft./s

Post-Construction Stormwater Management Checklist* (5,000 SF or Greater)

STEP 2: Selecting Treatment/Hydromodification BMPs

☐ **Bioretention Facilities or Flow-Through Planters (Suggested BMP by Permit)**

Vegetated areas that can be designed as swales, basins, or flow-through planters. Bioretention facilities should be sized based on 4% of the total impervious tributary area to the bioretention facility and in accordance with the typical section below:



Additional Design Requirements for Bioretention:

-Bioretention facilities located in areas with highly infiltrative soils or high groundwater tables may omit the underdrain.

-The 18' Soil layer (Planting layer) shall be comprised of blended biofiltration soil media (BSM) consisting of 60% to 80% by volume sand, up to 20% by volume topsoil, and up to 20% by volume compost. Sand, topsoil, and compost used in BSM shall conform to requirements listed in Sections 803-3, 803-4, and 803-5 of the 2019 County of San Diego BMP Design Manual.

-The 12" Storage layer shall be comprised of gravel and underdrain shall be placed near the top of this layer.

- Liners shall be used for Type D Soil areas and liners or other barriers shall be used if there is a structure or other geotechnical hazard located within 10 feet of facility.

- The appropriate plant palette should be selected based on the soil type and be drought tolerant/low water.

<u>NOTE</u>: Please refer to the 2019 County of San Diego BMP Design Manual and to the County of San Diego LID Handbook for guidance.

Total Bioretention Area Required (based on 4% of impervious area) __________ ft^2

Total Bioretention Area Provided: _______ ft^2

If the Total Bioretention Area <u>is less than</u> the area required please explain why in the space below:

☐ **Other BMPs as listed below (check all that apply)**

- ☐ **Extended Detention Basin**
- ☐ **Infiltration Basin or Infiltration Trench**
- ☒ **High-Rate Biofilters (e.g. Tree wells or other)** *(1)*
- ☐ **High-Rate Media Filter (e.g. Vault unit with replaceable cartridges)** *(1)*
- ☐ **Other equally effective as bioretention BMP** ________________________________

(1) High-rate Biofilters or Media Filters are only allowed if bioretention or equivalent facility is proven to be infeasible for the project and if the following conditions apply: 1) project is creating or replacing an acre or less and is located in an area that has at least 85% of the site covered by permanent structures; 2) The proposed facility is receiving runoff solely from existing (pre-project) impervious areas.

Post-Construction Stormwater Management Checklist* (5,000 SF or Greater)

Please attached the completed California Phase II LID Sizing Tool worksheets or equivalent for all Site Design Measures for each drainage area (Part A). The LID Sizing Tool is available at: http://owp-web1.saclink.csus.edu/LIDTool/Start.aspx

☐ Attached ☒ If not attached, how were the calculations submitted to UC San Diego?

Located in Appendix B

Has all documentation for any source control measure that will be implemented on project been attached to this checklist (e.g.. CASQA Fact Sheets)?

☒ Yes ☐ No

Have all calculations for design of Storm water Treatment Facilities (bioretention facilities, etc.) been performed and attached to this report?

☒ Yes ☐ No

PART D - RUNOFF CONTROL

Does the project increase storm water runoff for the 10 year 6 hour storm per discharge point? ([✓ Yes] or No):

If YES, describe the mitigation measures that will be implemented to reduce runoff from pre-development to post-development per discharge point:

Vaults will be implemented.

PART E - POST- CONSTRUCTION BMP FOLLOW-UP (to be completed after construction)

Where was the post-construction storm water treatment system installed (Circle all that apply):	Onsite	Joint storm water treatment facility	Offsite

O&M Responsibility of the Site Design and Treatment BMPs for the life of the project:

☐ **HDH** ☐ **FM** ☐ **Contractor** **Other:** ________________________________

BMP O&M procedures/guidance provided to UC San Diego? ☐ **Yes** ☐ **No**

Date of Installation:

Date of post-construction inspection: **Inspected by:**

Proper Installation? ☐ **Yes** ☐ **No** **Corrective actions needed:**

Appendix B
WATER QUALITY/TREATMENT ANALYSIS

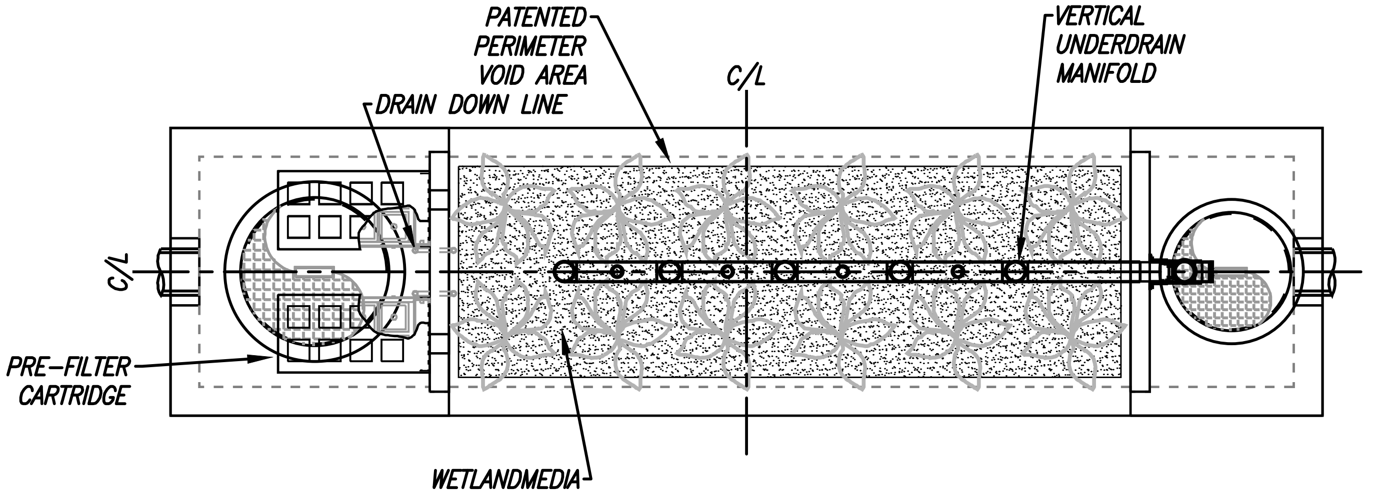
UCSD - RBHC - Flow-based Modular Wetland Sizing

BMP-ID	Node	STREET	A(ac)	A (sf)	C	1.5 x Q (cfs)	Q100 (cfs)	MWS Model	MWS Qdesign	BYPASS CONFIGURATION
BMP 1	1	ON-SITE	0.53	23013	0.8520	0.135		4'X13'	0.144	Flow-By
BMP 2	2	ON-SITE	0.79	34546	0.8520	0.203		4'X17'	0.206	Flow-By
BMP 3	3	ON-SITE	0.9	39366	0.8520	0.231		4'X19'	0.237	Flow-By
BMP 4	4	ON-SITE	0.82	35899	0.8520	0.211		4'X19'	0.237	Flow-By
BMP 5	5	ON-SITE	0.58	25218	0.8520	0.148		4'X15'	0.175	Flow-By
BMP 6	6	ON-SITE	0.18	7634	0.8520	0.045		4'X4'	0.052	Flow-By

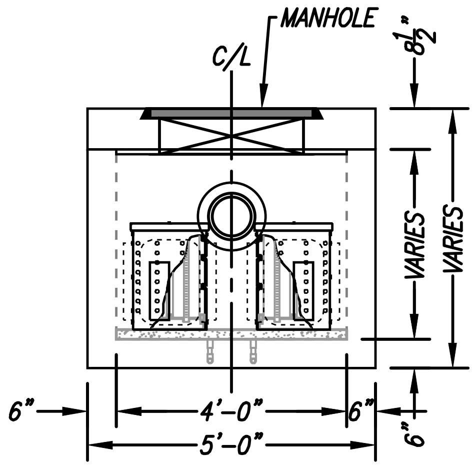
SITE SPECIFIC DATA

PROJECT NUMBER			
PROJECT NAME	UCSD - RBHC		
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.237			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



LEFT END VIEW

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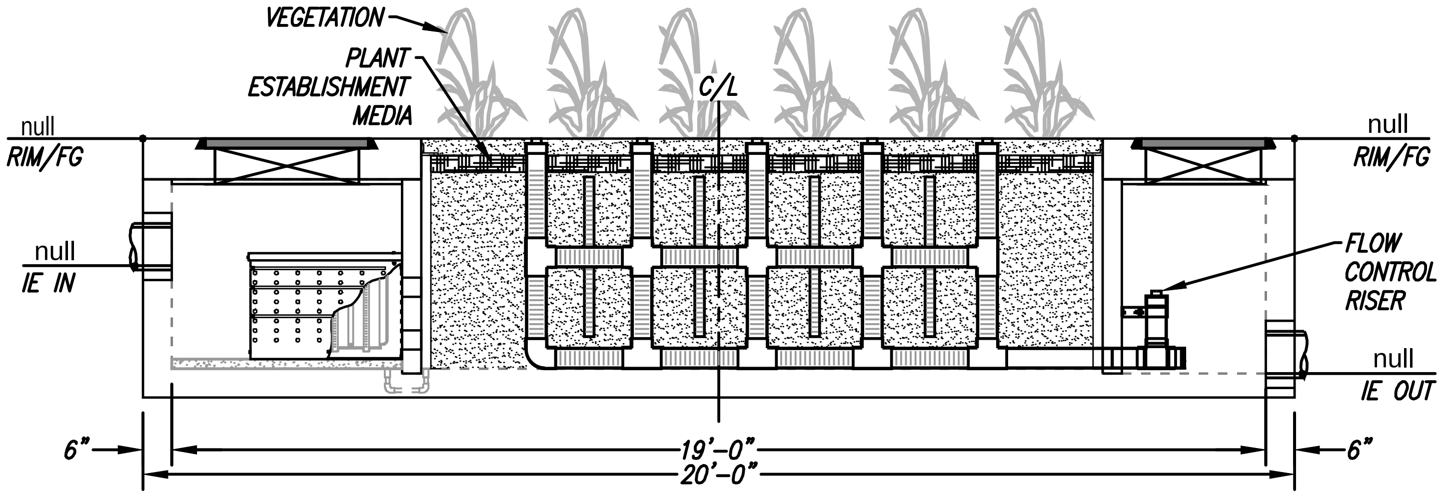
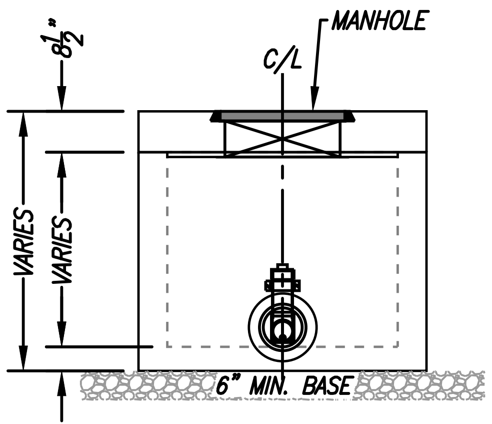


ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.237
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.1
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

GENERAL NOTES

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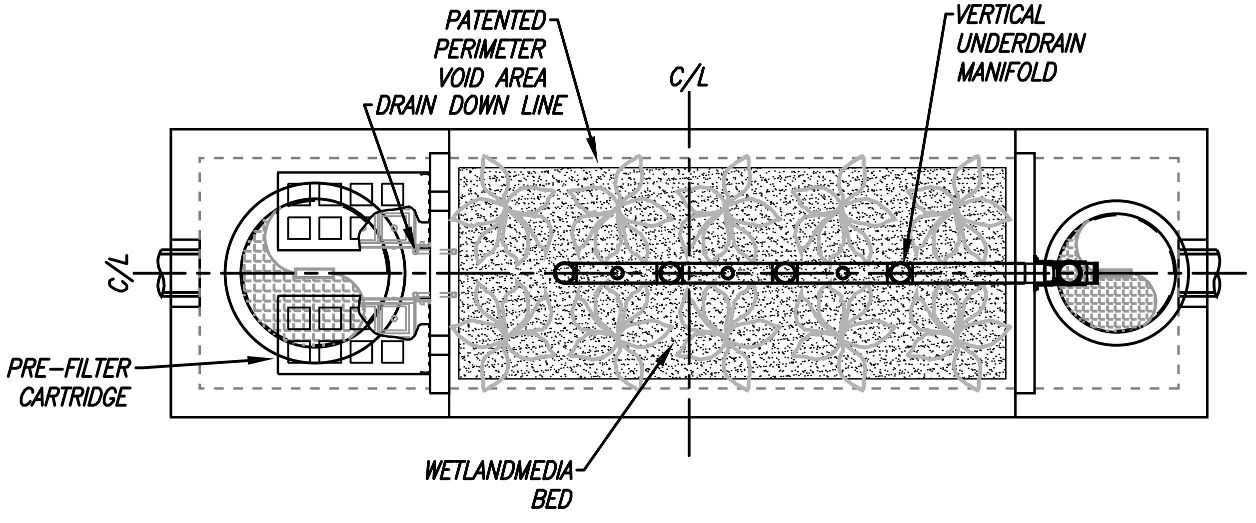
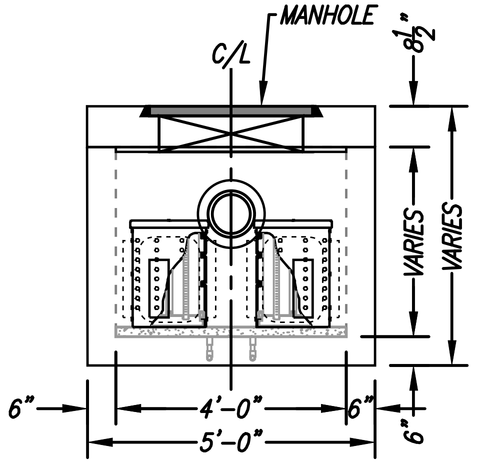
MWS-L-4-19-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME	UCSD - RBHC		
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.206			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



LEFT END VIEW

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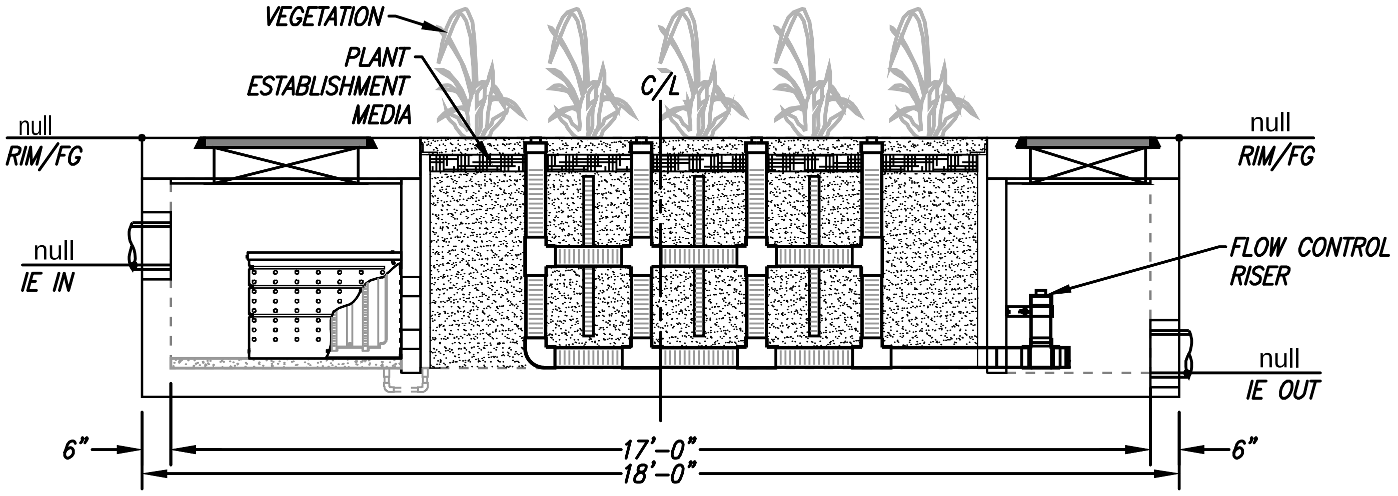
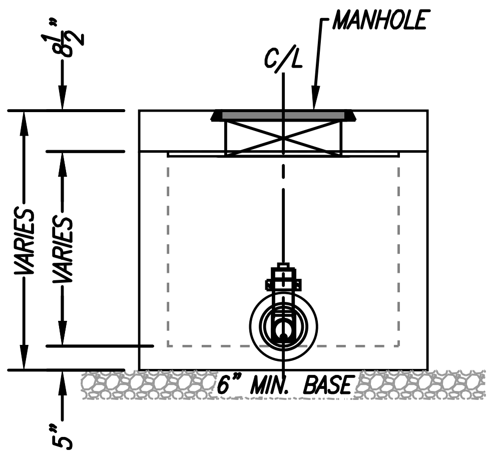


ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.237
OPERATING HEAD (FT)	3.9
PRETREATMENT LOADING RATE (GPM/SF)	2.1
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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MWS-L-4-17-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME	UCSD - RBHC		
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.175			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

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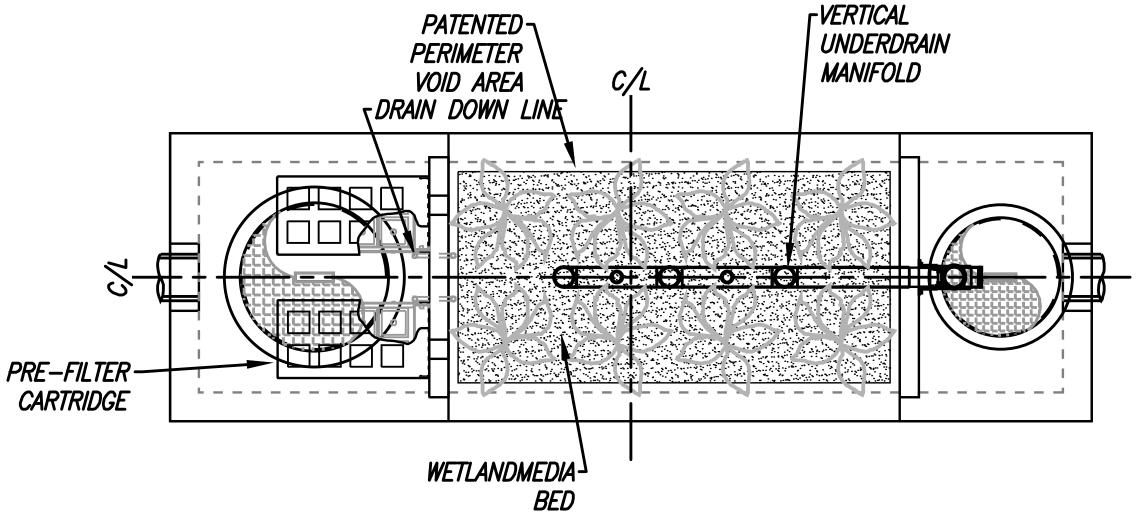
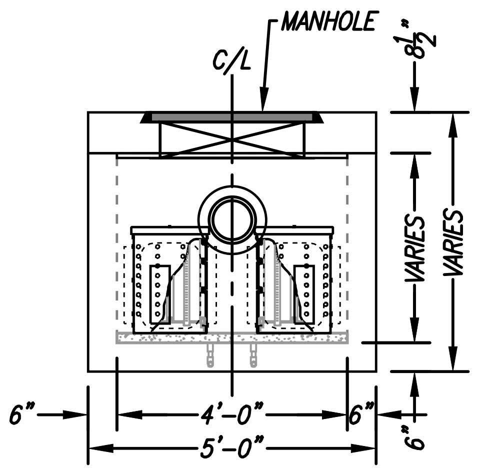


PLAN VIEW



LEFT END VIEW

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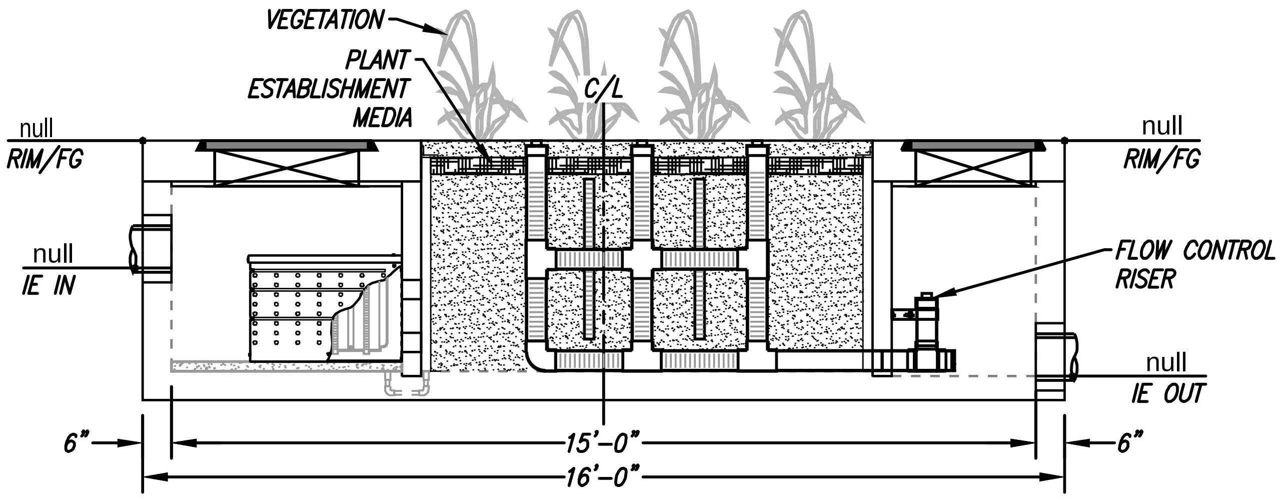
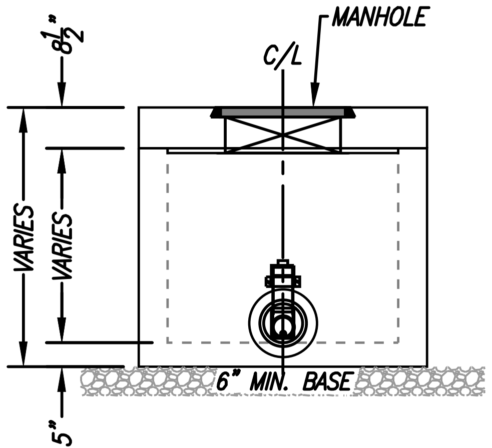


ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.237
OPERATING HEAD (FT)	4.6
PRETREATMENT LOADING RATE (GPM/SF)	2.1
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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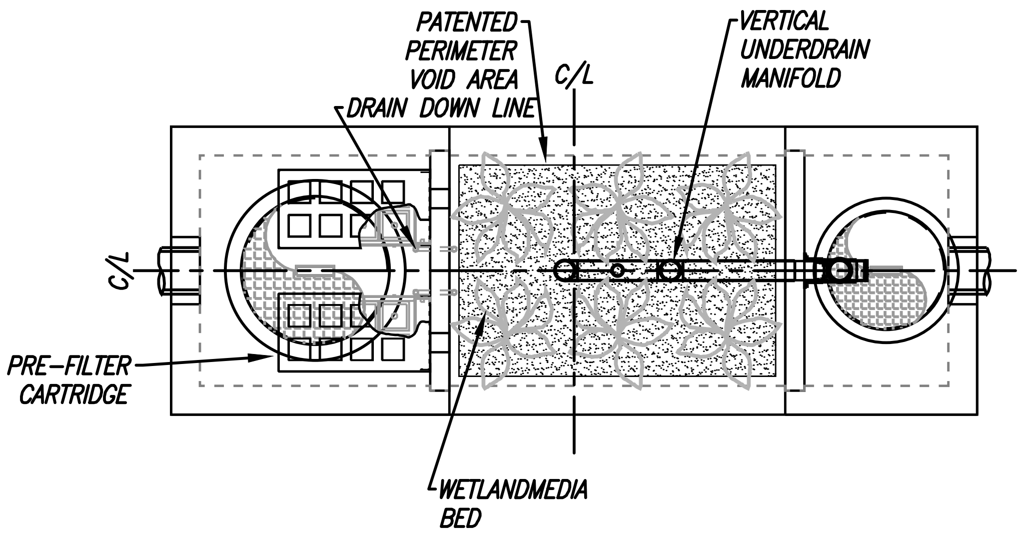
MWS-L-4-15-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

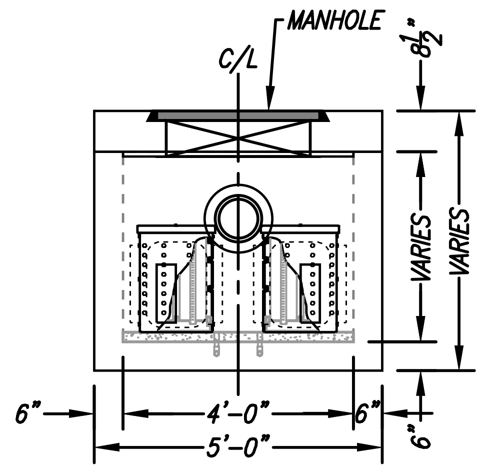
SITE SPECIFIC DATA

PROJECT NUMBER			
PROJECT NAME	UCSD - RBHC		
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.144			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



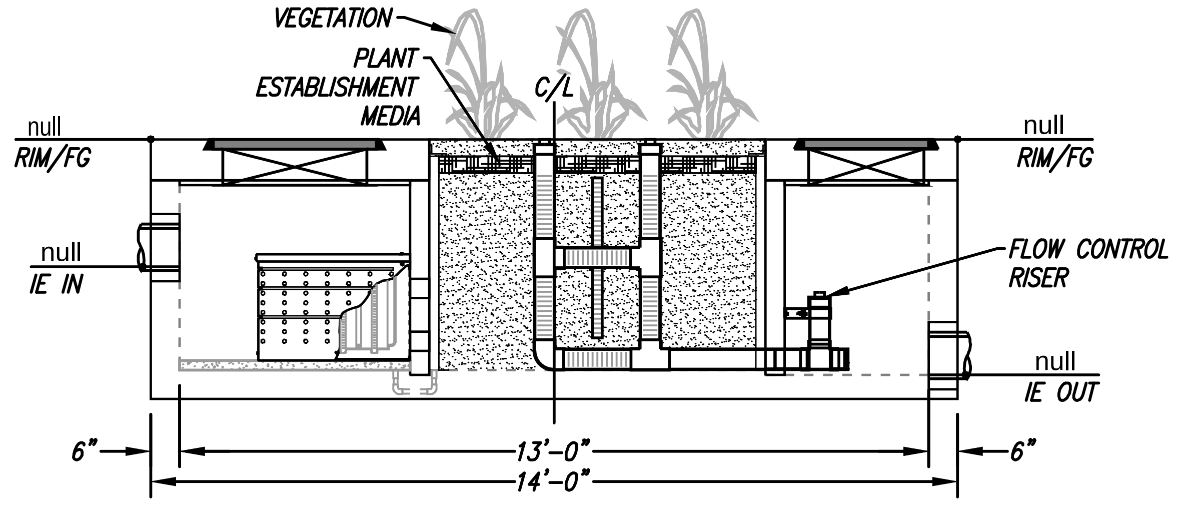
PLAN VIEW



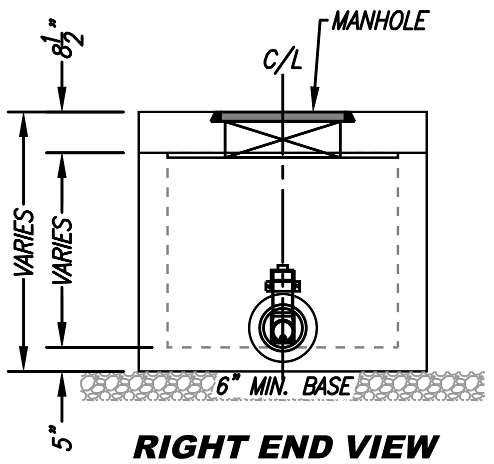
LEFT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.



ELEVATION VIEW



RIGHT END VIEW

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT CONTECH.

TREATMENT FLOW (CFS)	0.237
OPERATING HEAD (FT)	5.6
PRETREATMENT LOADING RATE (GPM/SF)	2.1
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS
FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

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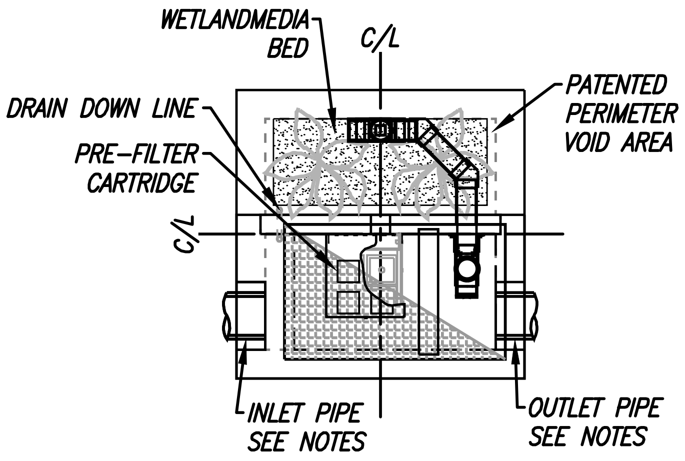
ENGINEERED SOLUTIONS LLC
www.ContechES.com

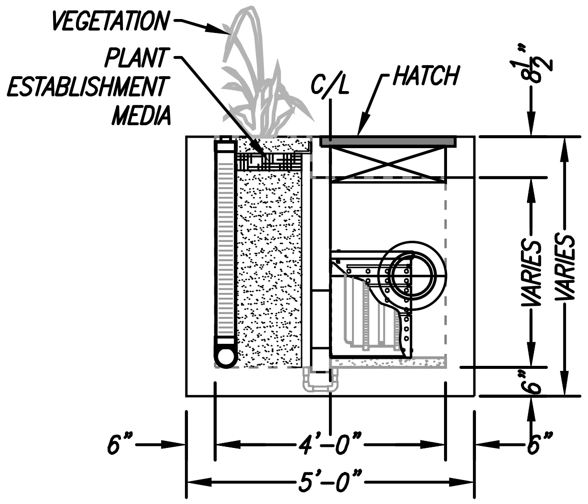
MWS-L-4-13-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME	UCSD - RBHC		
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.052			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



LEFT END VIEW

INSTALLATION NOTES

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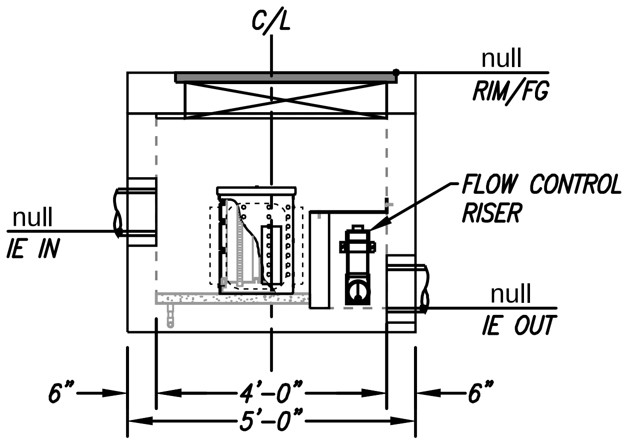
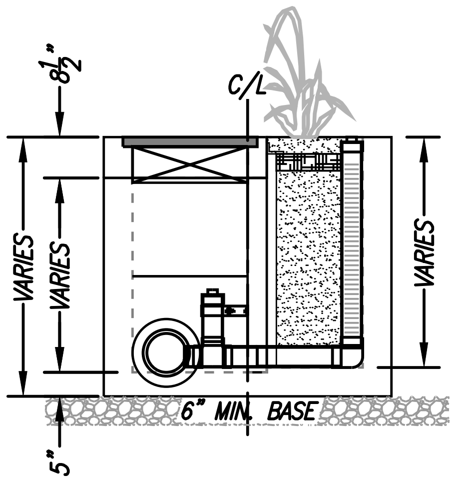


ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.237
OPERATING HEAD (FT)	15.4
PRETREATMENT LOADING RATE (GPM/SF)	8.3
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS
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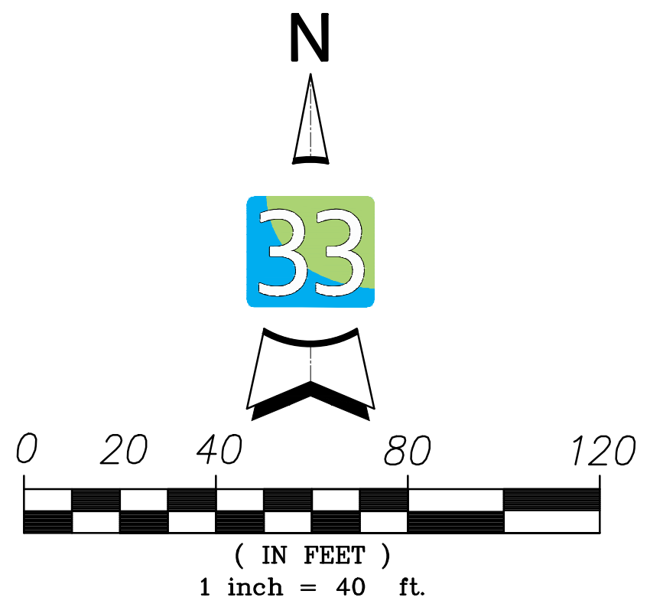
MWS-L-4-4-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

Appendix C
DRAINAGE MANAGEMENT AREA EXHIBIT

LEGEND

DMA BOUNDARY	▬ ▬ ▬ ▬
EXISTING STORM DRAIN	───
PROPOSED STORM DRAIN	═══
DMA ID AND AREA	DMA P–X X.XX ACRES
PROJECT BOUNDARY	═══
MODULAR WETLANDS SYSTEM	─▭─
UNDERGROUND CONCRETE DETENTION VAULT (LAYOUT TO BE DETERMINED)	▦



UCSD RBHC
PROPOSED DMA EXHIBIT

SCALE: 1" = 40'
DATE: 12/15/2023
JOB NO.: 1609.30
DRAWN BY: DD/EA
CHECKED BY: JRG/HRG/AV

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

Appendix D
BMP OPERATION & MAINTENANCE

TO BE PROVIDED IN FINAL ENGINEERING

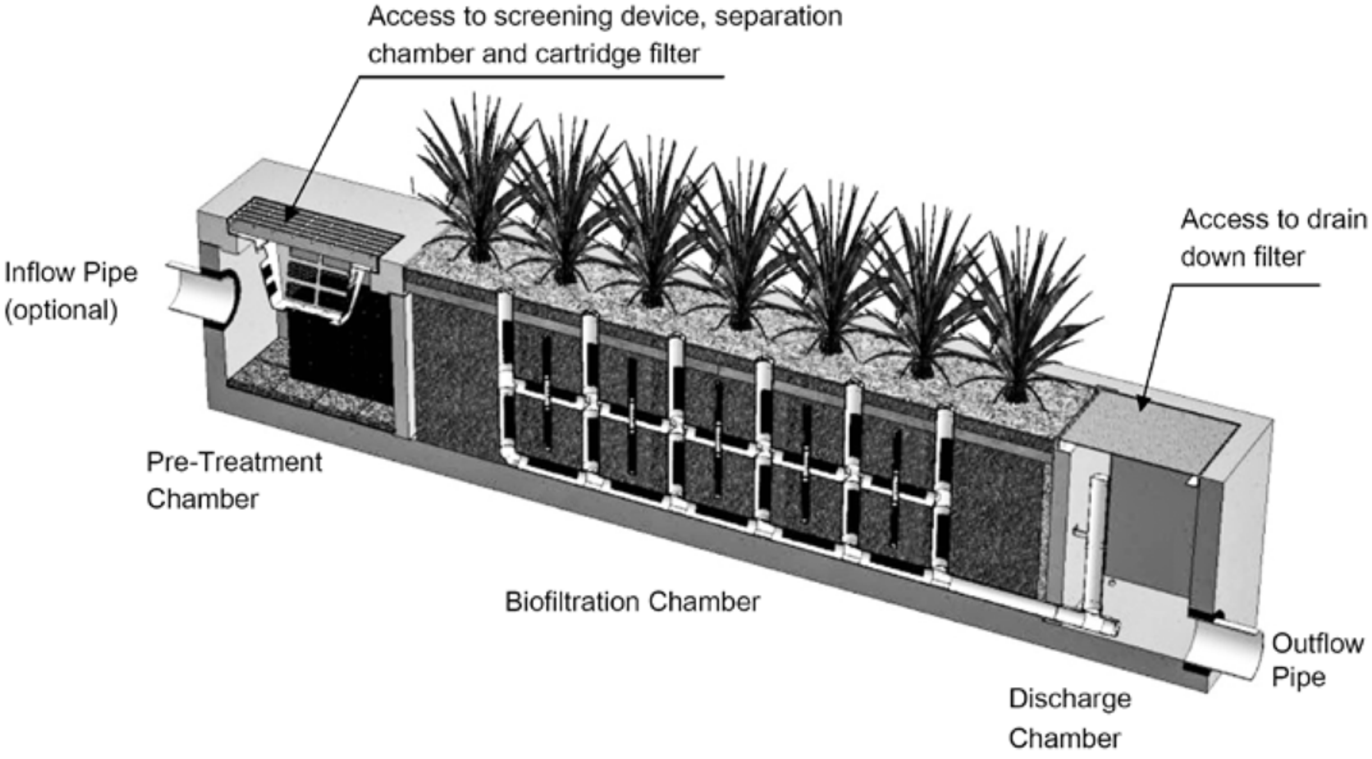
CONTECH®
ENGINEERED SOLUTIONS

Modular Wetlands® Linear Operation & Maintenance Manual

MODULAR WETLANDS®

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
    - *(5 minute average service time).*
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
    - *(10 minute average service time).*
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
    - *(10-15 minute per cartridge average service time).*
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
    - *(5 minute average service time).*
- Trim Vegetation – average maintenance interval is 6 to 12 months.
    - *(Service time varies).*



System Diagram

Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre- Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer, spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber. Entry into chambers may require confined space training based on state and local regulations.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

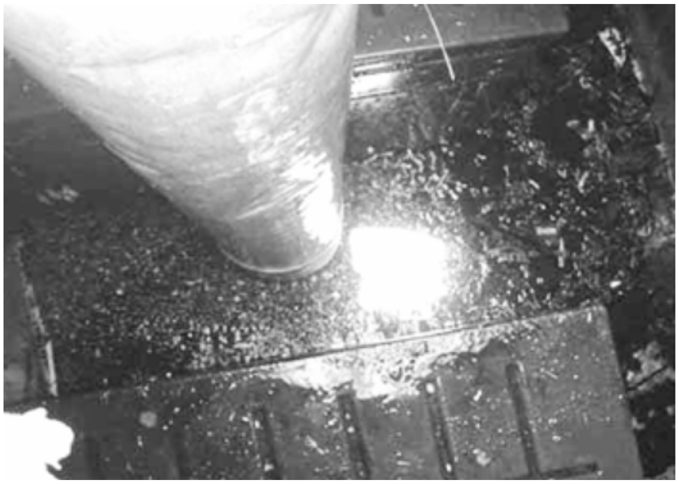
Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.



Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

CONTECH®
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Inspection Report
Modular Wetlands Linear

Project Name ____________________

Project Address ____________________ (city) (Zip Code)

Owner / Management Company ____________________

Contact ____________________ Phone (   )   –

Inspector Name ____________________ Date ___/___/______ Time __________ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition ____________________ Additional Notes ____________________

For Office Use Only
(Reviewed By)
(Date) Office personnel to complete section to the left.

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): ____________ Size (22', 14' or etc.): ____________

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: ____________________

CONTECH®
ENGINEERED SOLUTIONS

Cleaning and Maintenance Report
Modular Wetlands Linear

For Office Use Only
(Reviewed By)
(Date) Office personnel to complete section to the left.

Project Name ____________________

Project Address ____________________ (city) (Zip Code)

Owner / Management Company ____________________

Contact ____________________ Phone ( ) –

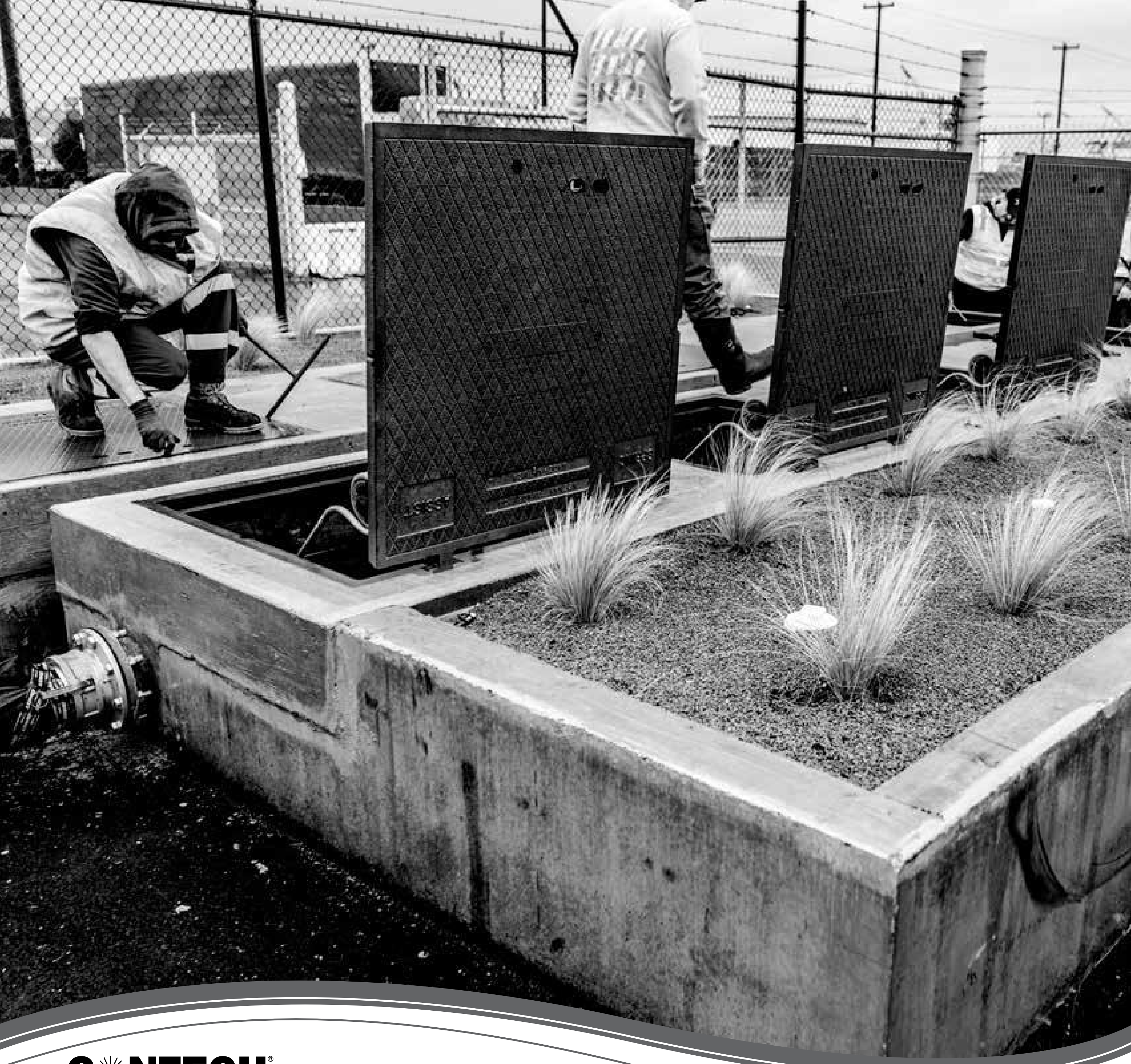
Inspector Name ____________________ Date ___/___/_____ Time _______ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition ____________________ Additional Notes ____________________

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:



800-338-1122

WWW.CONTECHES.COM

CONTECH ENGINEERED SOLUTIONS LLC PROVIDES SITE SOLUTIONS FOR THE CIVIL ENGINEERING INDUSTRY. CONTECH'S PORTFOLIO INCLUDES BRIDGES, DRAINAGE, SANITARY SEWER, STORMWATER AND EARTH STABILIZATION PRODUCTS. FOR INFORMATION ON OTHER CONTECH DIVISION OFFERINGS, VISIT CONTECHES.COM OR CALL 800-338-1122.

SUPPORT

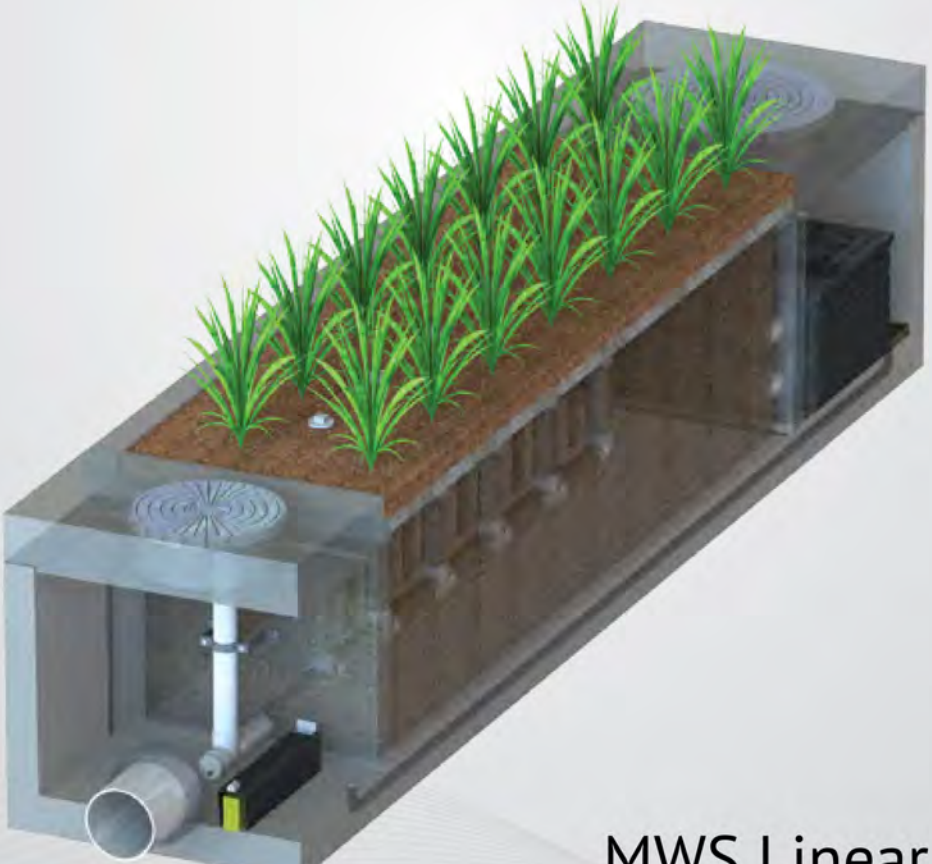
DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

Modular Wetlands Maintenance Guide 08/22

Appendix F
REFERENCE DOCUMENTS

MODULAR WETLANDS™

Advanced **Stormwater** Biofiltration



MWS Linear

Contents

The Urban Impact

For hundreds of years natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as our cities grow and develop, these natural wetlands have perished under countless roads, rooftops, and parking lots.

Plant A Wetland

Without natural wetlands our cities are deprived of water purification, flood control, and land stability. Modular Wetlands and the MWS Linear re-establish nature's presence and rejuvenate water ways in urban areas.

MWS Linear

The Modular Wetland System Linear represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint and higher treatment capacity. While most biofilters use little or no pre-treatment, the MWS Linear incorporates an advanced pre-treatment chamber that includes separation and pre-filter cartridges. In this chamber sediment and hydrocarbons are removed from runoff before it enters the biofiltration chamber, in turn reducing maintenance costs and improving performance.

Applications

The MWS Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

Industrial

Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA mandated effluent limits for dissolved metals and other pollutants.

Residential

Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.

Streets

Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

Parking Lots

Parking lots are designed to maximize space and the MWS Linear's 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

Commercial

Compared to bioretention systems, the MWS Linear can treat far more area in less space - meeting treatment and volume control requirements.

Mixed Use

The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications are available on our website: www.ModularWetlands.com/Applications

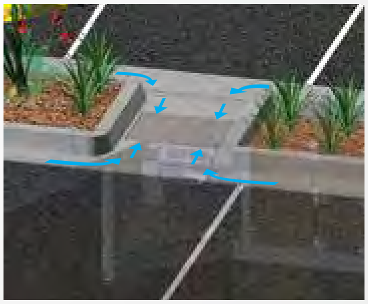
- Agriculture
- Reuse
- Low Impact Development
- Waste Water

Configurations

The MWS Linear is the preferred biofiltration system of Civil Engineers across the country due to its versatile design. This highly versatile system has available “pipe-in” options on most models, along with built-in curb or grated inlets for simple integration into your stormdrain design.

Curb Type

The *Curb Type* configuration accepts sheet flow through a curb opening and is commonly used along road ways and parking lots. It can be used in sump or flow by conditions. Length of curb opening varies based on model and size.



Grate Type

The *Grate Type* configuration offers the same features and benefits as the *Curb Type* but with a grated/drop inlet above the systems pre-treatment chamber. It has the added benefit of allowing for pedestrian access over the inlet. ADA compliant grates are available to assure easy and safe access. The *Grate Type* can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.

Vault Type

The system’s patented horizontal flow biofilter is able to accept inflow pipes directly into the pre-treatment chamber, meaning the MWS Linear can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/bioretention systems. Another benefit of the “pipe in” design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

Downspout Type

The *Downspout Type* is a variation of the *Vault Type* and is designed to accept a vertical downspout pipe from roof top and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

Advantages & Operation

The MWS Linear is the most efficient and versatile biofiltration system on the market, and the only system with horizontal flow which improves performance, reduces footprint, and minimizes maintenance. Figure-1 and Figure-2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

Featured Advantages

- Horizontal Flow Biofiltration
- Greater Filter Surface Area
- Pre-Treatment Chamber
- Patented Perimeter Void Area
- Flow Control
- No Depressed Planter Area

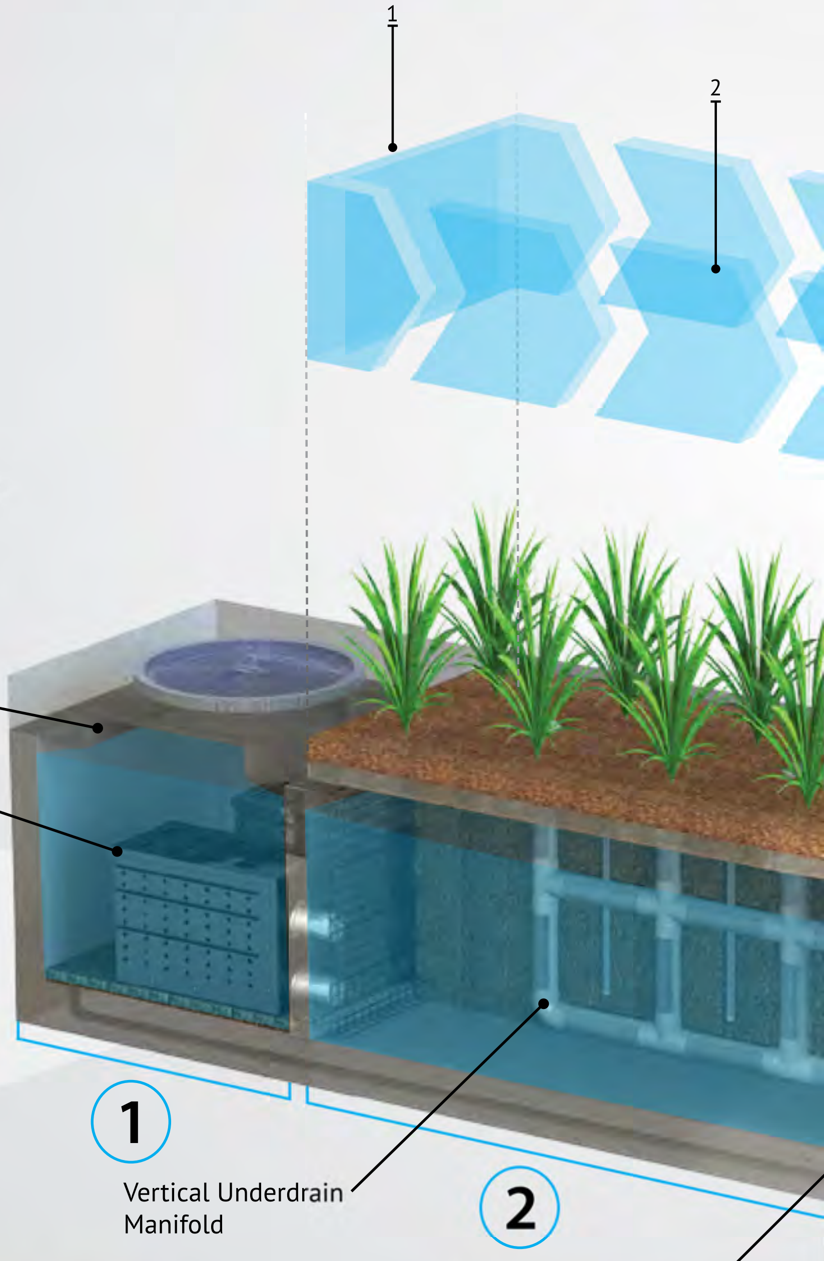
① Pre-Treatment

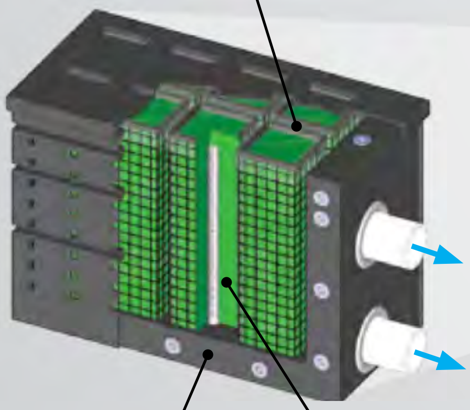
Separation

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

Pre-Filter Cartridges

- Over 25 ft^2 of surface area per cartridge
- Utilizes BioMediaGREEN filter material
- Removes over 80% of TSS & 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber





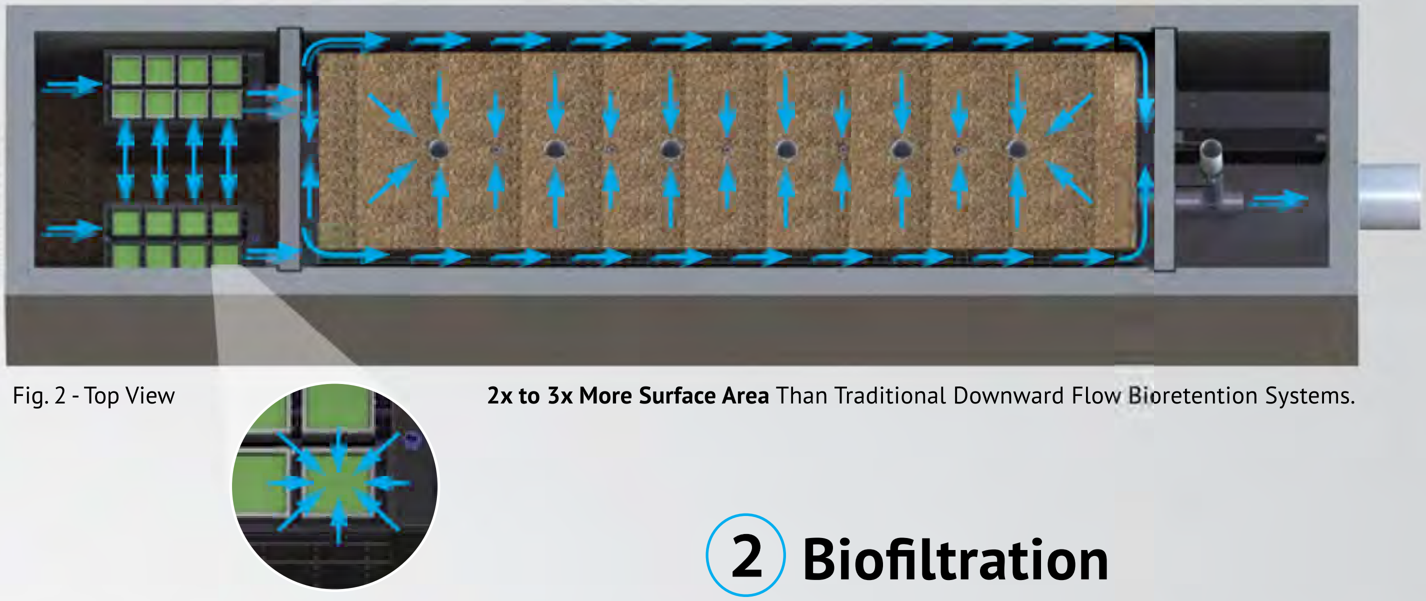


Fig. 2 - Top View

2x to 3x More Surface Area Than Traditional Downward Flow Bioretention Systems.

2 Biofiltration

Horizontal Flow

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

Patented Perimeter Void Area

- Vertically extends void area between the walls and the WetlandMEDIA on all four sides.
- Maximizes surface area of the media for higher treatment capacity

WetlandMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and light weight

3 Discharge

Flow Control

- Orifice plate controls flow of water through WetlandMEDIA to a level lower than the media's capacity.
- Extends the life of the media and improves performance

Drain-Down Filter

- The Drain-Down is an optional feature that completely drains the pre-treatment chamber
- Water that drains from the pre-treatment chamber between storm events will be treated

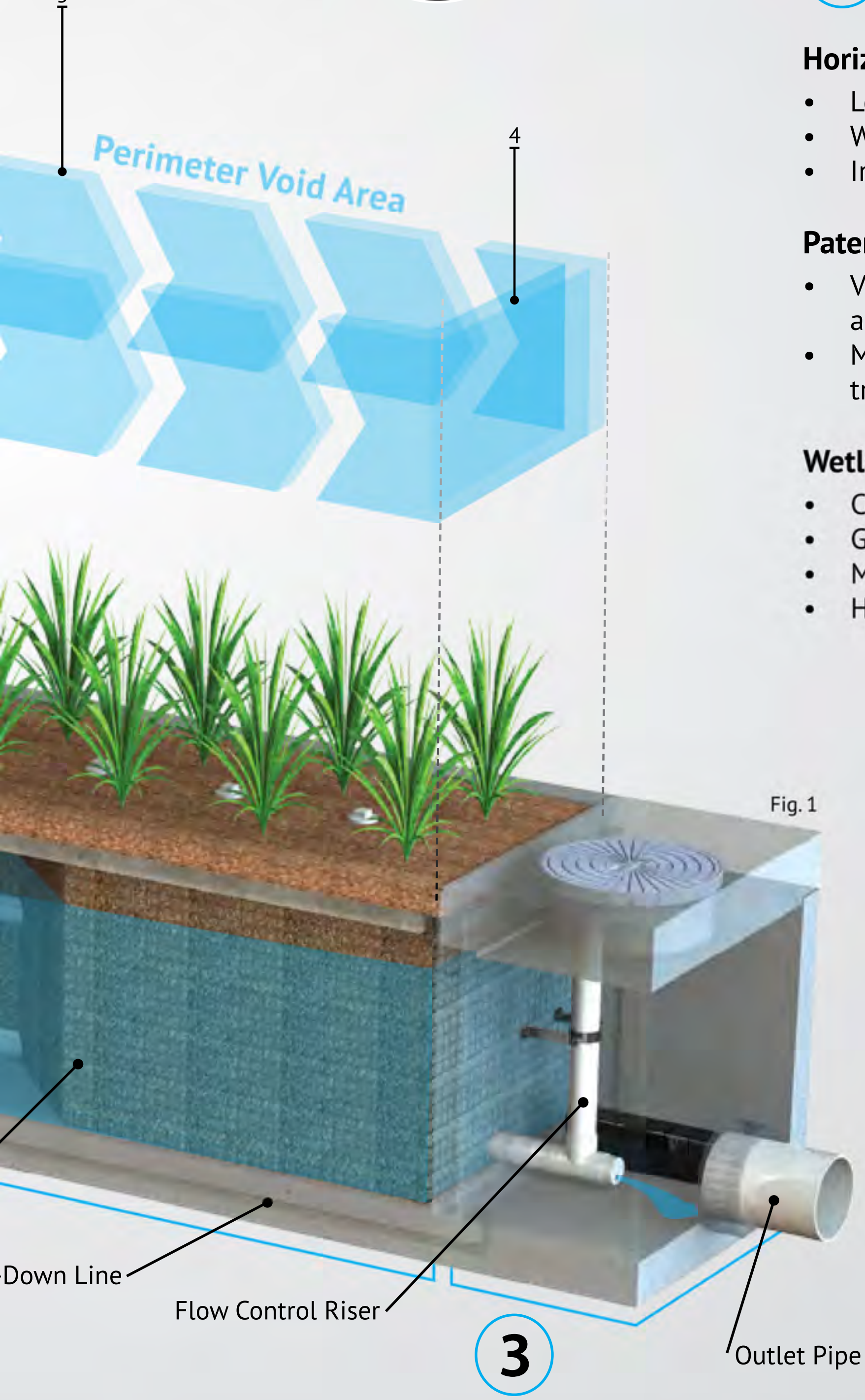


Fig. 1

Orientations

Side-By-Side

The *Side-By-Side* orientation places the pre-treatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

End-To-End

The *End-To-End* orientation places the pre-treatment and discharge chambers on opposite ends of the biofiltration chamber therefore minimizing the width of the system to 5 ft (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is bypass must be external.

Bypass

Internal Bypass Weir (Side-by-Side Only)

The *Side-By-Side* orientation places the pre-treatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pre-treatment chamber directly to the discharge chamber.

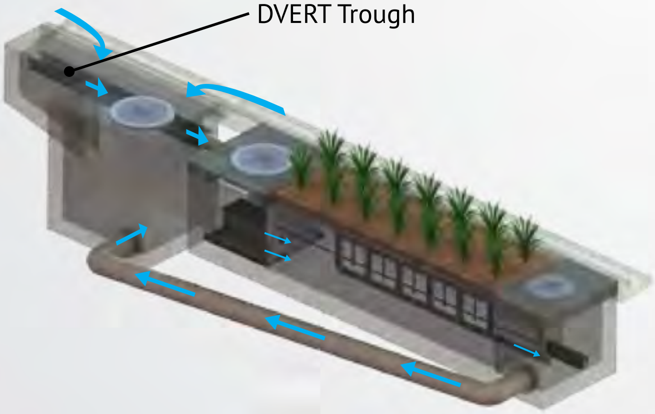
External Diversion Weir Structure

This traditional offline diversion method can be used with the MWS Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

Flow By Design

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT Low Flow Diversion



This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the MWS Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allows the MWS Linear to be installed anywhere space is available.

Performance

The MWS Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country. With it's advanced pre-treatment chamber and innovative horizontal flow biofilter, the system is able to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. With the same biological processes found in natural wetlands, the MWS Linear harnesses natures ability to process, transform, and remove even the most harmful pollutants.

Approvals

The MWS Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation, and perhaps the world.

Washington State DOE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

TSS	Total Phosphorus	Ortho Phosphorus	Nitrogen	Dissolved Zinc	Dissolved Copper	Total Zinc	Total Copper	Motor Oil
85%	64%	67%	45%	66%	38%	69%	50%	95%

DEQ Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear, the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) Technical Criteria.

MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center, issued a technical evaluation report noting removal rates up to 84% TSS, 70% Total Phosphorus, 68.5% Total Zinc, and more.

Rhode Island DEM Approved

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% Pathogens, 30% Total Phosphorus for discharges to freshwater systems, and 30% Total Nitrogen for discharges to saltwater or tidal systems.

Flow Based Sizing

The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

Treatment Flow Sizing Table

Model #	Dimensions	WetlandMedia Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4' x 4'	23 ft^2	0.052
MWS-L-4-6	4' x 6'	32 ft^2	0.073
MWS-L-4-8	4' x 8'	50 ft^2	0.115
MWS-L-4-13	4' x 13'	63 ft^2	0.144
MWS-L-4-15	4' x 15'	76 ft^2	0.175
MWS-L-4-17	4' x 17'	90 ft^2	0.206
MWS-L-4-19	4' x 19'	103 ft^2	0.237
MWS-L-4-21	4' x 21'	117 ft^2	0.268
MWS-L-8-8	8' x 8'	100 ft^2	0.230
MWS-L-8-12	8' x 12'	151 ft^2	0.346
MWS-L-8-16	8' x 16'	201 ft^2	0.462

Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.

Treatment Volume Sizing Table

Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109
MWS-L-8-16	10073	20145

Installation

The MWS Linear is simple, easy to install, and has a space efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles pre-cast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians are available to supervise installations and provide technical support.

Maintenance

Reduce your maintenance costs, man hours, and materials with the MWS Linear. Unlike other biofiltration systems that provide no pre-treatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pre-treatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pre-treatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pre-treatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long term operation and there is absolutely no need to replace expensive biofiltration media.

Plant Selection

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the MWS Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more "contact time" so that pollutants are more successfully decomposed, volatilized and incorporated into the biomass of The MWS Linear's micro/macro flora and fauna.

A wide range of plants are suitable for use in the MWS Linear, but selections vary by location and climate. View suitable plants by selecting the list relative to your project location's hardy zone.

Please visit www.ModularWetlands.com/Plants for more information and various plant lists.

Appendix E
REFERENCE DOCUMENTS

MWS LINEAR 2.0 HGL SIZING CALCULATIONS

MODULAR WETLANDS

			HGL HEIGHT																													
			SHALLOW MODELS																				STANDARD HEIGHT MODEL	HIGH CAPACITY MODELS								
MWS MODEL SIZE	WETLAND PERMITER LENGTH	LOADING RATE GPM/SF	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	**3.4**	3.5	3.6	3.65	3.70	3.75	3.80	3.85	3.90	3.95
MWS-L-4-4	6.70	1.0	0.022	0.023	0.025	0.026	0.028	0.029	0.031	0.032	0.034	0.035	0.037	0.038	0.040	0.042	0.043	0.045	0.046	0.048	0.049	0.051	**0.052**	0.054	0.055	0.056	0.057	0.058	0.058	0.059	0.060	0.061
MWS-L-4-6	9.30	1.0	0.030	0.032	0.034	0.036	0.038	0.041	0.043	0.045	0.047	0.049	0.051	0.053	0.055	0.058	0.060	0.062	0.064	0.066	0.068	0.070	**0.073**	0.075	0.077	0.078	0.079	0.080	0.081	0.082	0.083	0.084
MWS-L-4-8	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	**0.115**	0.119	0.122	0.124	0.126	0.127	0.129	0.131	0.132	0.134
MWS-L-4-13	18.40	1.0	0.059	0.063	0.068	0.072	0.076	0.080	0.084	0.089	0.093	0.097	0.101	0.106	0.110	0.114	0.118	0.122	0.127	0.131	0.135	0.139	**0.144**	0.148	0.152	0.154	0.156	0.158	0.160	0.163	0.165	0.167
MWS-L-4-15	22.40	1.0	0.072	0.077	0.082	0.087	0.093	0.098	0.103	0.108	0.113	0.118	0.123	0.129	0.134	0.139	0.144	0.149	0.154	0.159	0.165	0.170	**0.175**	0.180	0.185	0.188	0.190	0.193	0.195	0.198	0.200	0.203
MWS-L-4-17	26.40	1.0	0.085	0.091	0.097	0.103	0.109	0.115	0.121	0.127	0.133	0.139	0.145	0.151	0.158	0.164	0.170	0.176	0.182	0.188	0.194	0.200	**0.206**	0.212	0.218	0.221	0.224	0.227	0.230	0.233	0.236	0.239
MWS-L-4-19	30.40	1.0	0.098	0.105	0.112	0.119	0.126	0.133	0.140	0.147	0.153	0.160	0.167	0.174	0.181	0.188	0.195	0.202	0.209	0.216	0.223	0.230	**0.237**	0.244	0.251	0.255	0.258	0.262	0.265	0.269	0.272	0.276
MWS-L-4-21	34.40	1.0	0.111	0.118	0.126	0.134	0.142	0.150	0.158	0.166	0.174	0.182	0.189	0.197	0.205	0.213	0.221	0.229	0.237	0.245	0.253	0.261	**0.268**	0.276	0.284	0.288	0.292	0.296	0.300	0.304	0.308	0.312
MWS-L-6-8	18.80	1.0	0.060	0.065	0.069	0.073	0.078	0.082	0.086	0.091	0.095	0.099	0.104	0.108	0.112	0.116	0.121	0.125	0.129	0.134	0.138	0.142	**0.147**	0.151	0.155	0.157	0.160	0.162	0.164	0.166	0.168	0.170
MWS-L-8-8	29.60	1.0	0.095	0.102	0.109	0.115	0.122	0.129	0.136	0.143	0.149	0.156	0.163	0.170	0.177	0.183	0.190	0.197	0.204	0.211	0.217	0.224	**0.231**	0.238	0.245	0.248	0.251	0.255	0.258	0.262	0.265	0.268
MWS-L-8-12	44.40	1.0	0.143	0.153	0.163	0.173	0.183	0.194	0.204	0.214	0.224	0.234	0.245	0.255	0.265	0.275	0.285	0.296	0.306	0.316	0.326	0.336	**0.346**	0.357	0.367	0.372	0.377	0.382	0.387	0.392	0.397	0.402
MWS-L-8-16	59.20	1.0	0.190	0.204	0.217	0.231	0.245	0.258	0.272	0.285	0.299	0.312	0.326	0.340	0.353	0.367	0.380	0.394	0.408	0.421	0.435	0.448	**0.462**	0.476	0.489	0.496	0.503	0.509	0.516	0.523	0.530	0.537
MWS-L-8-20	74.00	1.0	0.238	0.255	0.272	0.289	0.306	0.323	0.340	0.357	0.374	0.391	0.408	0.425	0.442	0.459	0.476	0.493	0.509	0.526	0.543	0.560	**0.577**	0.594	0.611	0.620	0.628	0.637	0.645	0.654	0.662	0.671
MWS-L-10-20 or MWS-L-8-24	88.80	1.0	0.285	0.306	0.326	0.346	0.367	0.387	0.408	0.428	0.448	0.469	0.489	0.509	0.530	0.550	0.571	0.591	0.611	0.632	0.652	0.673	**0.693**	0.713	0.734	0.744	0.754	0.764	0.774	0.785	0.795	0.805
4'x'4 media cage	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	**0.115**	0.119	0.122	0.124						

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

November 2022

GENERAL USE LEVEL DESIGNATION FOR BASIC (TSS) ENHANCED AND PHOSPHORUS TREATMENT

For

Contech Engineered Solutions, LLC (Contech) Modular Wetlands Linear

Ecology's Decision

Based on Modular Wetland Systems, Inc, application submissions, including the Technical Evaluation Report, dated April 1, 2014, Ecology hereby issues the following use level designation:

1. General Use Level Designation (GULD) for the Modular Wetlands Linear Stormwater Treatment System for Basic, Phosphorus, and Enhanced treatment
   - Sized at a hydraulic loading rate of:
     - 1 gallon per minute (gpm) per square foot (sq ft) of Wetland Cell Surface Area
     - Prefilter box (approved at either 22 inches or 33 inches tall)
       - 3.0 gpm/sq ft of prefilter box surface area for moderate pollutant loading rates (low to medium density residential basins).
       - 2.1 gpm/sq ft of prefilter box surface area for high pollutant loading rates (commercial and industrial basins).
2. Ecology approves the Modular Wetlands Linear Stormwater Treatment System units for Basic, Phosphorus, and Enhanced treatment at the hydraulic loading rate listed above. Designers shall calculate the water quality design flow rates using the following procedures:
   - Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology- approved continuous runoff model.

- Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using one of the three methods described in Chapter 2.7.6 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.
- Entire State: For treatment installed downstream of detention, the water quality treatment design flow rate is the full 2-year release rate of the detention facility.

3. These use level designations have no expiration date but may be amended or revoked by Ecology, and are subject to the conditions specified below.

Ecology's Conditions of Use

Applicants shall comply with the following conditions:

1) Design, assemble, install, operate, and maintain the Modular Wetlands Linear Stormwater Treatment System units, in accordance with Contech's. applicable manuals and documents and the Ecology Decision.
2) Each site plan must undergo Contech review and approval before site installation. This ensures that site grading and slope are appropriate for use of a Modular Wetlands Linear Stormwater Treatment System unit.
3) Modular Wetlands Linear Stormwater Treatment System media shall conform to the specifications submitted to and approved by Ecology.
4) The applicant tested the Modular Wetlands Linear Stormwater Treatment System with an external bypass weir. This weir limited the depth of water flowing through the media, and therefore the active treatment area, to below the root zone of the plants. This GULD applies to Modular Wetlands Linear Stormwater Treatment Systems whether plants are included in the final product or not.
5) Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of stormwater treatment technology.
    - Typically, Contech designs Modular Wetland systems for a target prefilter media life of 6 to 12 months.
    - Indications of the need for maintenance include effluent flow decreasing to below the design flow rate or decrease in treatment below required levels.
    - Owners/operators must inspect Modular Wetland systems for a minimum of twelve months from the start of post-construction operation to determine site-specific maintenance schedules and requirements. You must conduct inspections monthly during the wet season, and every other month during the dry season (According to the SWMMWW, the wet season in western Washington is October 1 to April 30. According to the SWMMEW, the wet

season in eastern Washington is October 1 to June 30). After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections.

- Conduct inspections by qualified personnel, follow manufacturer's guidelines, and use methods capable of determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.
- When inspections are performed, the following findings typically serve as maintenance triggers:
  - Standing water remains in the vault between rain events, or
  - Bypass occurs during storms smaller than the design storm.
  - If excessive floatables (trash and debris) are present (but no standing water or excessive sedimentation), perform a minor maintenance consisting of gross solids removal, not prefilter media replacement.
  - Additional data collection will be used to create a correlation between pretreatment chamber sediment depth and pre-filter clogging (see *Issues to be Addressed by the Company* section below)

6) Discharges from the Modular Wetlands Linear Stormwater Treatment System units shall not cause or contribute to water quality standards violations in receiving waters.

Applicant:	Contech Engineered Solutions, LLC
Applicant's Address:	11815 NE Glenn Widing Dr. Portland, OR 97220

Application Documents:

Original Application for Conditional Use Level Designation, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., January 2011

Quality Assurance Project Plan: Modular Wetland System – Linear Treatment System Performance Monitoring Project, draft, January 2011

Revised Application for Conditional Use Level Designation, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., May 2011

Memorandum: Modular Wetland System-Linear GULD Application Supplementary Data, April 2014

Technical Evaluation Report: Modular Wetland System Stormwater Treatment System Performance Monitoring, April 2014

Applicant's Use Level Request:

- General Use Level Designation as a Basic, Enhanced, and Phosphorus treatment device in accordance with Ecology's Guidance for Evaluating Emerging Stormwater Treatment Technologies Technology Assessment Protocol – Ecology (TAPE) January 2011 Revision.

Applicant's Performance Claims:

- The Modular Wetlands Linear is capable of removing a minimum of 80-percent of TSS from stormwater with influent concentrations between 100 and 200 mg/L.
- The Modular Wetlands Linear is capable of removing a minimum of 50-percent of total phosphorus from stormwater with influent concentrations between 0.1 and 0.5 mg/L.
- The Modular Wetlands Linear is capable of removing a minimum 30-percent of dissolved copper from stormwater with influent concentrations between 0.005 and 0.020 mg/L.
- The Modular Wetlands Linear is capable of removing a minimum 60-percent of dissolved zinc from stormwater with influent concentrations between 0.02 and 0.30 mg/L.

Ecology's Recommendations:

- Contech has shown Ecology, through laboratory and field-testing, that the Modular Wetlands Linear Stormwater Treatment System filter system is capable of attaining Ecology's Basic, Phosphorus, and Enhanced treatment goals.

Findings of Fact:

Laboratory Testing

The Modular Wetlands Linear Stormwater Treatment System has the:

- Capability to remove 99 percent of total suspended solids (using Sil-Co-Sil 106) in a quarter-scale model with influent concentrations of 270 mg/L.
- Capability to remove 91 percent of total suspended solids (using Sil-Co-Sil 106) in laboratory conditions with influent concentrations of 84.6 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 93 percent of dissolved Copper in a quarter-scale model with influent concentrations of 0.757 mg/L.
- Capability to remove 79 percent of dissolved Copper in laboratory conditions with influent concentrations of 0.567 mg/L at a flow rate of 3.0 gpm per square foot of media.

- Capability to remove 80.5-percent of dissolved Zinc in a quarter-scale model with influent concentrations of 0.95 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 78-percent of dissolved Zinc in laboratory conditions with influent concentrations of 0.75 mg/L at a flow rate of 3.0 gpm per square foot of media.

Field Testing

- Modular Wetland Systems, Inc. conducted monitoring of an MWS-Linear (Model # MWS-L-4-13) from April 2012 through May 2013, at a transportation maintenance facility in Portland, Oregon. The manufacturer collected flow-weighted composite samples of the system's influent and effluent during 28 separate storm events. The system treated approximately 75 percent of the runoff from 53.5 inches of rainfall during the monitoring period. The applicant sized the system at 1 gpm/sq ft. (wetland media) and 3gpm/sq ft. (prefilter).
- Influent TSS concentrations for qualifying sampled storm events ranged from 20 to 339 mg/L. Average TSS removal for influent concentrations greater than 100 mg/L (n=7) averaged 85 percent. For influent concentrations in the range of 20-100 mg/L (n=18), the upper 95 percent confidence interval about the mean effluent concentration was 12.8 mg/L.
- Total phosphorus removal for 17 events with influent TP concentrations in the range of 0.1 to 0.5 mg/L averaged 65 percent. A bootstrap estimate of the lower 95 percent confidence limit (LCL95) of the mean total phosphorus reduction was 58 percent.
- The lower 95 percent confidence limit of the mean percent removal was 60.5 percent for dissolved zinc for influent concentrations in the range of 0.02 to 0.3 mg/L (n=11). The lower 95 percent confidence limit of the mean percent removal was 32.5 percent for dissolved copper for influent concentrations in the range of 0.005 to 0.02 mg/L (n=14) at flow rates up to 28 gpm (design flow rate 41 gpm). Laboratory test data augmented the data set, showing dissolved copper removal at the design flow rate of 41 gpm (93 percent reduction in influent dissolved copper of 0.757 mg/L).

Issues to be addressed by the Company:

1. Contech should collect maintenance and inspection data for the first year on all installations in the Northwest in order to assess standard maintenance requirements for various land uses in the region. Contech should use these data to establish required maintenance cycles.
2. Contech should collect pre-treatment chamber sediment depth data for the first year of operation for all installations in the Northwest. Contech will use these data to create a correlation between sediment depth and pre-filter clogging.

Technology Description:
Download at https://www.conteches.com/modular-wetlands

Contact Information:

Applicant:	Jeremiah Lehman Contech Engineered Solutions, LLC 11815 NE Glenn Widing Dr. Portland, OR 97220 Jeremiah.Lehman@ContechES.com
Applicant website:	http://www.conteches.com

Ecology web link: http://www.ecy.wa.gov/programs/wg/stormwater/newtech/index.html

Ecology:	Douglas C. Howie, P.E. Department of Ecology Water Quality Program (360) 870-0983 douglas.howie@ecy.wa.gov

Revision History

Date	**Revision**
June 2011	Original use-level-designation document
September 2012	Revised dates for TER and expiration
January 2013	Modified Design Storm Description, added Revision Table, added maintenance discussion, modified format in accordance with Ecology standard
December 2013	Updated name of Applicant
April 2014	Approved GULD designation for Basic, Phosphorus, and Enhanced treatment
December 2015	Updated GULD to document the acceptance of MWS – Linear Modular Wetland installations with or without the inclusion of plants
July 2017	Revised Manufacturer Contact Information (name, address, and email)
December 2019	Revised Manufacturer Contact Address
July 2021	Added additional prefilter sized at 33 inches
August 2021	Changed “Prefilter” to “Prefilter box”
November 2022	Changed Contacts to Contech ES

Appendix G. Noise Data

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Description:

---- Receptor #1 ----

		Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
Residence	Residential	60	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	700	0
Grader	No	40	85		700	0
Dump Truck	No	40		76.5	700	0

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Dozer	58.7	57.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	62.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	53.5	52.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.1	63.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
Office	Commercia	60	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	200	0
Grader	No	40	85		200	0
Dump Truck	No	40		76.5	200	0

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Dozer	69.6	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	73	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	64.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 160-1098
Project Name: UCSD Ranch Bernardo Health Center Medical Office Building Project

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes:	Linscott, Law, and Greenspan, December 2008
Community Noise Descriptor:	L_{dn}: ______ CNEL: X

"-" = contour is located within the roadway right-of-way.
Distance is from the centerline of the roadway segment
to the receptor location.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Analysis Condition				Design		Vehicle Mix		**Distance from Centerline of Roadway**					
		Median	ADT	Speed	Alpha	Medium	Heavy	**CNEL at**	Distance to Contour				Calc
Roadway, Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	**50 Feet**	70 CNEL	65 CNEL	60 CNEL	55 CNEL	Dist
Bernardo Center Drive													
West of Camino del Norte, existing	6	5	18,077	45	0.5	5.0%	3.0%	**72.7**	75	162	350	753	50
West of Camino del Norte, existing + project	6	5	18,157	45	0.5	5.0%	3.0%	**72.7**	76	163	351	756	50
West of Camino del Norte, Opening Day (2027)	6	5	18,797	45	0.5	5.0%	3.0%	**72.8**	77	167	359	773	50
West of Camino del Norte, Opening Day + project	6	5	18,877	45	0.5	5.0%	3.0%	**72.9**	78	167	360	775	50
Bernardo Center Drive													
Camino del Norte to West Bernardo Dr, existing	4	8	23,617	40	0.5	3.0%	2.0%	**70.5**	54	117	252	543	50
Camino del Norte to West Bernardo Dr, existing + project	4	8	23,907	40	0.5	3.0%	2.0%	**70.6**	55	118	254	548	50
Camino del Norte to West Bernardo Dr, Opening Day (2027)	4	8	24,567	40	0.5	3.0%	2.0%	**70.7**	56	120	259	558	50
Camino del Norte to West Bernardo Dr, Opening Day + project	4	8	24,857	40	0.5	3.0%	2.0%	**70.8**	56	121	261	562	50
Bernardo Center Drive													
West Bernardo Drive to Project Driveway, existing	4	14	21,398	45	0.5	3.0%	2.0%	**71.4**	62	134	288	620	50
West Bernardo Drive to Project Driveway, existing + project	4	14	22,898	45	0.5	3.0%	2.0%	**71.7**	65	140	301	648	50
West Bernardo Drive to Project Driveway, Opening Day (2027)	4	14	22,258	45	0.5	3.0%	2.0%	**71.6**	64	137	295	636	50
West Bernardo Drive to Project Driveway, Opening Day + projec	4	14	23,758	45	0.5	3.0%	2.0%	**71.9**	66	143	308	665	50
Bernardo Center Drive													
Project Driveway to I-15, existing	4	14	21,398	45	0.5	3.0%	2.0%	**71.4**	62	134	288	620	50
Project Driveway to I-15, existing + project	4	14	25,898	45	0.5	3.0%	2.0%	**72.2**	70	152	327	704	50
Project Driveway to I-15, Opening Day (2027)	4	14	22,258	45	0.5	3.0%	2.0%	**71.6**	64	137	295	636	50
Project Driveway to I-15, Opening Day+ project	4	14	26,758	45	0.5	3.0%	2.0%	**72.4**	72	155	334	719	50
Bernardo Center Drive													
I-15 to Bernardo Heights Pkwy, existing	4	5	27,031	35	0.5	3.0%	2.0%	**69.9**	49	106	228	492	50
I-15 to Bernardo Heights Pkwy, existing + project	4	5	27,321	35	0.5	3.0%	2.0%	**69.9**	50	107	230	496	50
I-15 to Bernardo Heights Pkwy, Opening Day (2027)	4	5	28,111	35	0.5	3.0%	2.0%	**70.1**	51	109	234	505	50
I-15 to Bernardo Heights Pkwy, Opening Day + project	4	5	28,401	35	0.5	3.0%	2.0%	**70.1**	51	110	236	509	50
Camino Del Norte													
North of Bernardo Center Dr, existing	6	14	35,761	50	0.5	5.0%	3.0%	**77.3**	154	333	716	1,544	50
North of Bernardo Center Dr, existing + project	6	14	35,911	50	0.5	5.0%	3.0%	**77.4**	155	333	718	1,548	50
North of Bernardo Center Dr,Opening Day (2027)	6	14	37,191	50	0.5	5.0%	3.0%	**77.5**	158	341	735	1,584	50
North of Bernardo Center Dr, Opening Day+ project	6	14	37,341	50	0.5	5.0%	3.0%	**77.5**	159	342	737	1,589	50
Camino Del Norte													
South of Bernardo Center Dr, existing	6	3	45,204	50	0.5	5.0%	3.0%	**77.4**	156	337	725	1,563	50
South of Bernardo Center Dr, existing + project	6	3	45,264	50	0.5	5.0%	3.0%	**77.4**	156	337	726	1,564	50
South of Bernardo Center Dr, Opening Day (2027)	6	3	47,014	50	0.5	5.0%	3.0%	**77.6**	160	346	744	1,604	50
South of Bernardo Center Dr, Opening Day + project	6	3	47,074	50	0.5	5.0%	3.0%	**77.6**	161	346	745	1,605	50
Bernardo Heights Parkway													
South of Bernardo Center Dr, existing	4	10	16,476	45	0.5	2.0%	2.0%	**69.7**	-	103	223	480	50
South of Bernardo Center Dr, existing + project	4	10	16,626	45	0.5	2.0%	2.0%	**69.8**	-	104	224	483	50
South of Bernardo Center Dr,Opening Day (2027)	4	10	17,136	45	0.5	2.0%	2.0%	**69.9**	49	106	229	492	50
South of Bernardo Center Dr, Opening Day + project	4	10	17,286	45	0.5	2.0%	2.0%	**69.9**	50	107	230	495	50

Analysis Condition	Traffic Volumes									Ref. Energy Leve			Dist	Ld				Le				Ln				DISTANCE TO CONTOUR (2)			
Roadway, Segment	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total	70 CNEL	65 CNEL	60 CNEL	55 CNEL
Bernardo Center Drive	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
West of Camino del Norte, existing	14,046	2,296	1,735	790	483	46	15	68	44	69.3	77.6	82.1	1.7	69.5	65.7	68.0	72.8	66.7	58.1	57.9	67.7	57.9	56.2	58.8	62.5	75	162	350	753
West of Camino del Norte, existing + project	14,108	2,306	1,743	794	485	46	15	68	44	69.3	77.6	82.1	1.7	69.5	65.7	68.1	72.8	66.7	58.1	57.9	67.7	57.9	56.2	58.8	62.6	76	163	351	756
West of Camino del Norte, Opening Day (2027)	14,605	2,387	1,805	822	502	47	16	71	45	69.3	77.6	82.1	1.7	69.6	65.8	68.2	72.9	66.9	58.2	58.0	67.9	58.1	56.4	59.0	62.7	77	167	359	773
West of Camino del Norte, Opening Day + project	14,667	2,397	1,812	825	505	48	16	71	46	69.3	77.6	82.1	1.7	69.6	65.8	68.2	72.9	66.9	58.3	58.1	67.9	58.1	56.4	59.0	62.7	78	167	360	775
Bernardo Center Drive	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
Camino del Norte to West Bernardo Dr, existing	18,350	2,999	2,267	619	421	36	13	53	38	67.4	76.3	81.2	0.6	68.2	62.7	65.9	70.9	65.3	55.1	55.7	66.1	54.3	53.3	56.6	59.7	54	117	252	543
Camino del Norte to West Bernardo Dr, existing + project	18,576	3,036	2,295	627	426	36	14	54	39	67.4	76.3	81.2	0.6	68.3	62.8	65.9	71.0	65.4	55.2	55.8	66.2	54.3	53.3	56.7	59.8	55	118	254	548
Camino del Norte to West Bernardo Dr, Opening Day (2027)	19,089	3,120	2,358	644	438	37	14	55	40	67.4	76.3	81.2	0.6	68.4	62.9	66.0	71.1	65.5	55.3	55.9	66.3	54.4	53.4	56.8	59.9	56	120	259	558
Camino del Norte to West Bernardo Dr, Opening Day + project	19,314	3,157	2,386	652	443	38	14	56	40	67.4	76.3	81.2	0.6	68.4	62.9	66.1	71.1	65.6	55.3	55.9	66.4	54.5	53.5	56.9	60.0	56	121	261	562
Bernardo Center Drive	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
West Bernardo Drive to Project Driveway, existing	16,626	2,718	2,054	561	381	32	12	48	34	69.3	77.6	82.1	0.8	69.5	63.3	66.2	71.8	66.6	55.7	56.0	67.3	55.5	53.9	56.9	60.4	62	134	288	620
West Bernardo Drive to Project Driveway, existing + project	17,792	2,908	2,198	601	408	35	13	52	37	69.3	77.6	82.1	0.8	69.8	63.6	66.4	72.1	66.9	56.0	56.3	67.6	55.8	54.2	57.2	60.7	65	140	301	648
West Bernardo Drive to Project Driveway, Opening Day (2027)	17,294	2,827	2,137	584	397	34	13	50	36	69.3	77.6	82.1	0.8	69.7	63.5	66.3	72.0	66.8	55.9	56.2	67.5	55.7	54.0	57.1	60.6	64	137	295	636
West Bernardo Drive to Project Driveway, Opening Day + projec	18,460	3,017	2,281	623	423	36	13	54	38	69.3	77.6	82.1	0.8	70.0	63.8	66.6	72.3	67.1	56.2	56.4	67.7	56.0	54.3	57.4	60.8	66	143	308	665
Bernardo Center Drive	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
Project Driveway to I-15, existing	16,626	2,718	2,054	561	381	32	12	48	34	69.3	77.6	82.1	0.8	69.5	63.3	66.2	71.8	66.6	55.7	56.0	67.3	55.5	53.9	56.9	60.4	62	134	288	620
Project Driveway to I-15, existing + project	20,123	3,289	2,486	679	462	39	15	58	42	69.3	77.6	82.1	0.8	70.3	64.1	67.0	72.6	67.4	56.6	56.8	68.1	56.4	54.7	57.7	61.2	70	152	327	704
Project Driveway to I-15, Opening Day (2027)	17,294	2,827	2,137	584	397	34	13	50	36	69.3	77.6	82.1	0.8	69.7	63.5	66.3	72.0	66.8	55.9	56.2	67.5	55.7	54.0	57.1	60.6	64	137	295	636
Project Driveway to I-15, Opening Day+ project	20,791	3,398	2,569	702	477	41	15	60	43	69.3	77.6	82.1	0.8	70.5	64.3	67.1	72.8	67.6	56.7	57.0	68.3	56.5	54.8	57.9	61.4	72	155	334	719
Bernardo Center Drive	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
I-15 to Bernardo Heights Pkwy, existing	21,003	3,433	2,595	709	482	41	15	61	44	65.1	74.8	80.0	0.5	67.0	62.3	65.8	70.2	64.1	54.7	55.7	65.1	53.1	52.8	56.6	59.3	49	106	228	492
I-15 to Bernardo Heights Pkwy, existing + project	21,228	3,470	2,623	717	487	41	16	62	44	65.1	74.8	80.0	0.5	67.1	62.3	65.9	70.3	64.2	54.7	55.7	65.2	53.1	52.9	56.6	59.3	50	107	230	496
I-15 to Bernardo Heights Pkwy, Opening Day (2027)	21,842	3,570	2,699	737	501	43	16	63	45	65.1	74.8	80.0	0.5	67.2	62.5	66.0	70.4	64.3	54.9	55.8	65.3	53.2	53.0	56.8	59.5	51	109	234	505
I-15 to Bernardo Heights Pkwy, Opening Day + project	22,068	3,607	2,726	745	506	43	16	64	46	65.1	74.8	80.0	0.5	67.2	62.5	66.0	70.5	64.4	54.9	55.9	65.3	53.3	53.0	56.8	59.5	51	110	236	509
Camino Del Norte	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
North of Bernardo Center Dr, existing	27,786	4,542	3,433	1,563	956	90	30	134	86	71.1	78.8	83.0	2.5	74.5	70.1	72.2	77.4	71.8	62.5	62.0	72.7	63.0	60.7	63.0	67.1	154	333	716	1544
North of Bernardo Center Dr, existing + project	27,903	4,561	3,447	1,570	960	91	31	135	87	71.1	78.8	83.0	2.5	74.6	70.1	72.2	77.4	71.8	62.6	62.1	72.7	63.0	60.7	63.0	67.1	155	333	718	1548
North of Bernardo Center Dr,Opening Day (2027)	28,897	4,723	3,570	1,626	994	94	32	140	90	71.1	78.8	83.0	2.5	74.7	70.3	72.4	77.6	71.9	62.7	62.2	72.8	63.2	60.8	63.1	67.3	158	341	735	1584
North of Bernardo Center Dr, Opening Day+ project	29,014	4,742	3,585	1,632	998	94	32	140	90	71.1	78.8	83.0	2.5	74.7	70.3	72.4	77.6	72.0	62.7	62.2	72.8	63.2	60.9	63.2	67.3	159	342	737	1589
Camino Del Norte	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
South of Bernardo Center Dr, existing	35,124	5,741	4,340	1,976	1,208	114	39	170	109	71.1	78.8	83.0	1.5	74.6	70.2	72.3	77.5	71.8	62.6	62.1	72.7	63.1	60.7	63.1	67.2	156	337	725	1563
South of Bernardo Center Dr, existing + project	35,170	5,749	4,345	1,979	1,210	114	39	170	109	71.1	78.8	83.0	1.5	74.6	70.2	72.3	77.5	71.9	62.6	62.1	72.7	63.1	60.8	63.1	67.2	156	337	726	1564
South of Bernardo Center Dr, Opening Day (2027)	36,530	5,971	4,513	2,055	1,257	119	40	177	114	71.1	78.8	83.0	1.5	74.8	70.4	72.5	77.7	72.0	62.8	62.3	72.9	63.2	60.9	63.2	67.4	160	346	744	1604
South of Bernardo Center Dr, Opening Day + project	36,576	5,978	4,519	2,058	1,258	119	40	177	114	71.1	78.8	83.0	1.5	74.8	70.4	72.5	77.7	72.0	62.8	62.3	72.9	63.2	60.9	63.2	67.4	161	346	745	1605
Bernardo Heights Parkway	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	0	0	0	0
South of Bernardo Center Dr, existing	12,802	2,092	1,582	288	294	17	9	25	27	69.3	77.6	82.1	0.7	68.3	60.3	64.9	70.3	65.3	52.7	54.7	65.9	52.3	50.8	55.6	58.2	48	103	223	480
South of Bernardo Center Dr, existing + project	12,918	2,112	1,596	291	296	17	9	25	27	69.3	77.6	82.1	0.7	68.3	60.3	64.9	70.4	65.4	52.7	54.7	65.9	52.4	50.8	55.7	58.2	48	104	224	483
South of Bernardo Center Dr,Opening Day (2027)	13,315	2,176	1,645	300	305	17	10	26	28	69.3	77.6	82.1	0.7	68.4	60.4	65.0	70.5	65.5	52.8	54.9	66.1	52.5	51.0	55.8	58.3	49	106	229	492
South of Bernardo Center Dr, Opening Day + project	13,431	2,195	1,659	302	308	17	10	26	28	69.3	77.6	82.1	0.7	68.5	60.5	65.1	70.5	65.5	52.9	54.9	66.1	52.5	51.0	55.8	58.4	50	107	230	495

Appendix H1. Local Mobility Assessment

LINSCOTT
LAW &
GREENSPAN
engineers

LOCAL MOBILITY ANALYSIS

UC SAN DIEGO

RANCHO BERNARDO HEALTHCARE CENTER MEDICAL OFFICE BUILDING PROJECT

January 2024

LLG Ref. 3-23-3839

Prepared by:
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EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers (LLG) has prepared this Local Mobility Analysis (LMA) for the UC San Diego Rancho Bernardo Healthcare Center Medical Office Building Project (hereby referred to as the "Project"). The Project site is located at the northwest quadrant of the intersection of Bernardo Center Drive and I-15, within the Rancho Bernardo Community Plan area in the City of San Diego.

Project Description

The Project proposes to develop an approximately 150,000 gross square foot medical office building with 120,000 square feet of gross leasable area and approximately 675 structured and surface parking stalls on a 3.9-acre site. The site is currently undeveloped. Access is proposed via a full access signalized driveway on Bernardo Center Drive. The anticipated opening year is 2027.

In conformance with Senate Bill 743 (SB 743), under a separate cover, a Vehicle Miles Traveled Assessment was prepared that evaluates the Project's transportation impacts using a Vehicle Miles Traveled (VMT) metric under the California Environmental Quality Act (CEQA), per the City of San Diego's Transportation Study Manual (September 2022), pursuant to guidance from the Governor's Office of Planning and Research (OPR) in December 2018. Consistent with SB 743 and CEQA Guidelines 15064.3, the CEQA significance determination for the Project will be based only on VMT and not on Level of Service (LOS). This report is a Local Mobility Analysis (LMA) that focuses on automobile delay and LOS within the project's study area within the Rancho Bernardo Community Plan and evaluates the effects of the Project on the local transportation system to determine if the Project triggers the need for improvements.

Trip Generation

Based on the City's "driveway" trip rates, the Project is calculated to generate 6,000 average daily trips (ADT) trips with 360 AM peak hour trips (288 inbound / 72 outbound) and 600 PM peak hour trips (180 inbound / 420 outbound) at the Bernardo Center Drive / Future Project Driveway intersection. Based on the City's "cumulative" trip rates, the Project is calculated to generate 1,920 ADT trips with 115 AM peak hour trips (92 inbound / 23 outbound) and 192 PM peak hour trips (58 inbound / 134 outbound) at the remaining study intersections and street segments.

Analysis Results

To determine the potential Opening Year 2027 traffic effects from the Project, traffic volumes for the Opening Year 2027 without Project and Opening Year 2027 with Project scenarios were developed and traffic operations were evaluated. Based on this analysis, the Project is not calculated to result in any substantial transportation related effects, and no transportation related off-site improvements are required. The Project will signalize its driveway as a project feature.

Driveway Operations and Recommendations

A peak hour traffic signal warrant is met at the proposed driveway location under Opening Year 2027 + Project conditions, as detailed in *Section 9.2*. The future driveway is calculated to operate acceptably at LOS B or better during the AM and PM peak hours, as shown on *Table 8-1*.

A 150-foot-long westbound dedicated right-turn lane (with a 120-foot bay taper) should be provided at the Project driveway to ensure no back-ups to the I-15 ramps would occur.

Two outbound lanes from the site should be provided, a dedicated left-turn lane and a 20-foot-wide shared left/right turn lane, such that right-turning vehicles can “sneak by” vehicles waiting to turn left. A westbound right-turn traffic signal phase should be provided.

A 180-foot eastbound left-turn lane currently exists on Bernardo Center Drive at the location where the proposed driveway will be. A queue analysis was conducted for this location. The analysis shows that the existing 180-foot- long turn pocket is of adequate length to accommodate Project traffic without the projected Project queue exceeding the storage length.

Additionally, the Project should construct a paved sidewalk along the north side of Bernardo Center Drive along the Project frontage, connecting to the existing sidewalk that currently ends 425 feet west of the I-15 southbound ramps.

TABLE OF CONTENTS

APPENDICES

APPENDIX

A. City of San Diego’s *Level of Service Roadway Threshold Table*

B. Intersection Manual Count Sheets

C. Bus Schedules

D. Signal Timing Plans

E. Existing Intersection Analysis Calculation Sheets

F. Opening Year 2027 without Project Intersection Analysis Calculation Sheets

G. Opening Year 2027 + Project Intersection Analysis Calculation Sheets

H. Growth Factor Calculations

LIST OF FIGURES

SECTION—FIGURE # **PAGE**

LIST OF TABLES

SECTION—TABLE # **PAGE**

LOCAL MOBILITY ANALYSIS

UC SAN DIEGO RANCHO BERNARDO HEALTHCARE CENTER MEDICAL OFFICE BUILDING

San Diego, California
January 2024

1.0 INTRODUCTION

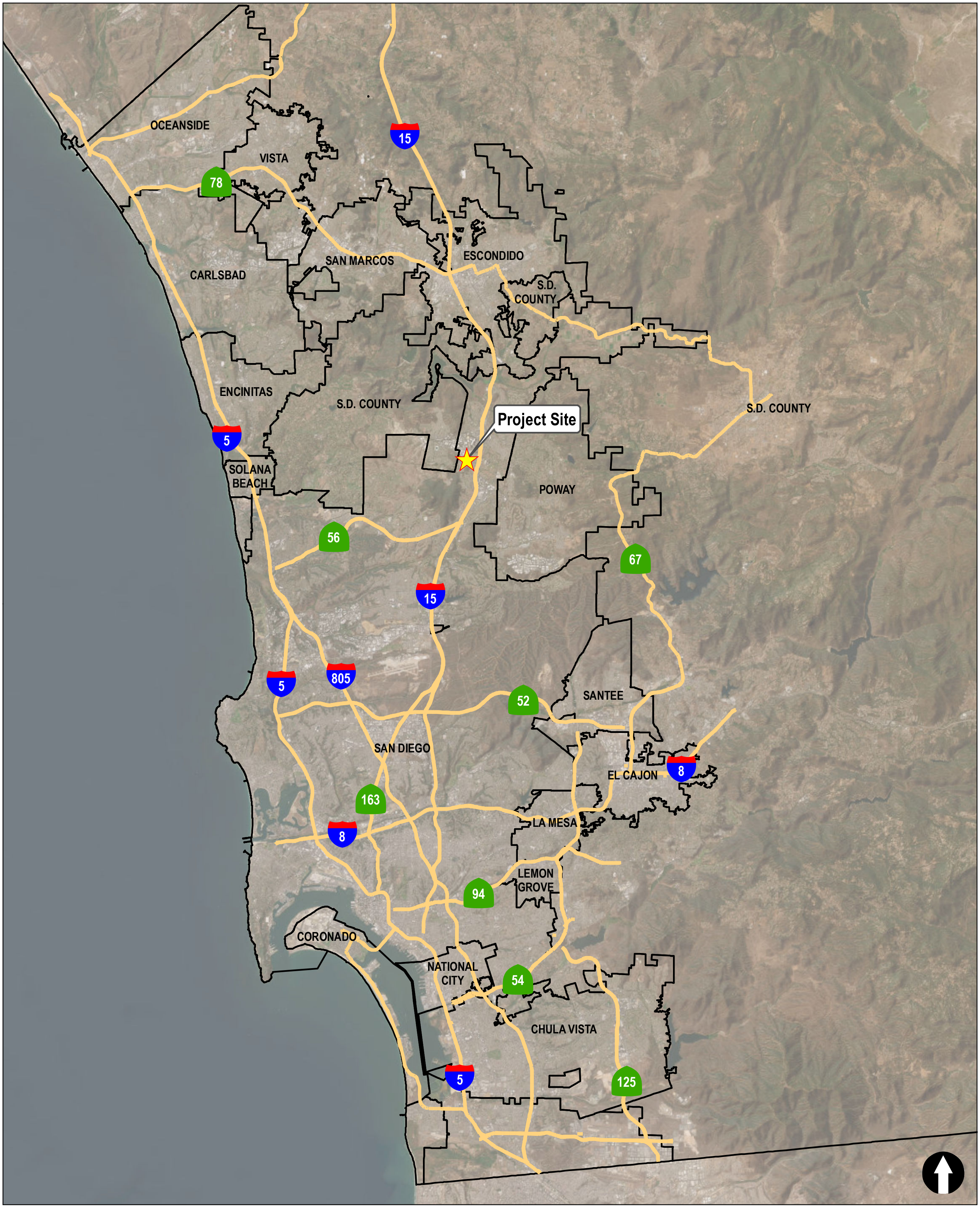
Linscott, Law & Greenspan, Engineers (LLG) has prepared this Local Mobility Analysis (LMA) for the UC San Diego Rancho Bernardo Health Care Medical Office Building Project (hereby referred to as the “Project”). The Project site is located at the northwest quadrant of the intersection of Bernardo Center Drive and I-15 within the Rancho Bernardo Community Plan area of the City of San Diego.

The Project proposes to develop an approximately 150,000 gross square foot medical office building with 120,000 square feet of gross leasable area and approximately 675 structured and surface parking stalls on a 3.9-acre site. The Project site is currently undeveloped. Access is proposed via one full access signalized driveway on Bernardo Center Drive. The anticipated opening year is 2027.

Figure 1–1 includes a Project vicinity map and ***Figure 1-2*** includes a Project area Map.

The following items are included in this transportation study:

- Project Description
- Study Approach and Methodology
- Existing Mobility Conditions
- Existing Analysis
- Trip Generation, Distribution, and Assignment
- Cumulative Projects Discussion
- Opening Year 2027 Analysis
- Site Access / Signal Warrant Analysis
- Conclusions



LINSCOTT LAW & GREENSPAN
engineers

N:\3839\Figures
Date: 12/19/2023
Time: 10:25 AM

Figure 1-1

Vicinity Map

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Figure 1-2

Project Area

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2.0 PROJECT DESCRIPTION

2.1 Project Location

The Project site is located on the western boundary of the I-15 freeway north of Bernardo Center Drive within the Rancho Bernardo Community Plan area in the City of San Diego.

Access to the Project site is proposed via one full access signalized driveway on Bernardo Center Drive.

2.2 Project Description

The Project proposes to develop an approximately 150,000 gross square foot medical office building with 120,000 square feet of gross leasable area and approximately 675 structured and surface parking stalls on a 3.9-acre site. The site is currently undeveloped and there is no existing driveway or traffic signal to the site. Access is proposed via one full access signalized driveway on Bernardo Center Drive as a Project feature. The anticipated opening year is 2027.

UC San Diego currently has a similar health facility in Rancho Bernardo located at 16950 Via Tazon. The current location on Via Tazon is limited in size (58 KSF) and inferior in terms of age, quality, and patient access and visibility. Therefore, upon completion of construction of the new facility, UC San Diego will relocate its existing nearby operations to the new location at Bernardo Center Drive.

Figure 2–1 depicts the proposed site plan.

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Figure 2-1

Proposed Site Plan

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3.0 STUDY APPROACH AND METHODOLOGY

This section discusses the Local Mobility Analysis (LMA) study objectives and the analysis approach and methodology used in the preparation of the study.

3.1 Report Approach

In conformance with Senate Bill 743 (SB 743), under a separate cover, a Vehicle Miles Traveled was prepared that evaluates the Project's transportation impacts using a Vehicle Miles Traveled (VMT) metric under CEQA, per the City of San Diego's Transportation Study Manual (TSM, September 2022), pursuant to guidance from the Governor's Office of Planning and Research (OPR) in December 2018.

This report is a Local Mobility Analysis (LMA) that evaluates the Project's traffic effect on mobility, access, and circulation in the study area. The LMA has the following objectives per the City of San Diego Transportation Study Manual (TSM, September 2022):

- Ensures that the projects proposed improvements will be consistent with those identified in the Community Plan and support multi-modal circulation and access is constructed at a time when the project triggers the need for them.
- Identifies improvements needed to support and promote active transportation and transit modes.
- Ensures the project provides connections to the active transportation network and transit system.

However, it is important to note that the lead agency for this project is the University of California San Diego (UC San Diego), *not* the City of San Diego. Therefore, the City of San Diego Transportation Study Manual (TSM, September 2022) is utilized in this LMA as a reference, but not as a strict guideline.

3.2 Project Study Area

The following study area was determined for this LMA based on areas of anticipated effect.

Intersections

The following intersections are included in the analysis:

1. Camino Del Norte / Bernardo Center Dr
2. Bernardo Center Drive / W Bernardo Dr
3. Bernardo Center Drive / Cloudcrest Dr
4. Bernardo Center Drive / I-15 SB Ramps
5. Bernardo Center Drive / I-15 NB Ramps
6. Bernardo Center Drive / Bernardo Heights Parkway
7. Bernardo Center Drive / Rancho Bernardo Road
8. Bernardo Center Drive / Future Project Driveway

Street Segments

The following segments are included in the analysis:

Bernardo Center Dr
West of Camino Del Norte
Camino Del Norte to West Bernardo Dr
West Bernardo Dr to Project Driveway
Project Driveway to I-15
I-15 to Bernardo Heights Pkwy

Camino Del Norte
North of Bernardo Center Dr
South of Bernardo Center Dr

Bernardo Heights Parkway
South of Bernardo Center Dr

3.3 Study Scenarios

In order to determine potential substantial effects, the following scenarios were analyzed:

- Existing Conditions
- Opening Year 2027
- Opening Year 2027 + Project

3.4 Analysis Methodology

3.4.1 *Intersections*

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 16 of the *Highway Capacity Manual (HCM), 6th Edition* with the assistance of the [*Synchro* (version 11)] computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS). ***Appendix D*** contains the signal timing plans that were input into the Synchro analysis to reflect existing operations.

3.4.2 *Street Segments*

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the City of San Diego's *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The City of San Diego's *Level of Service Roadway Threshold Table* is attached in ***Appendix A***.

3.4.3 *Identifying Off-Site Improvements*

If a project exceeds the thresholds summarized in *Table 3–1*, then the project is considered to have a substantial project effect. An effect can also occur if a project causes the Level of Service to degrade from LOS D to LOS E or F, even if the allowable increases in *Table 3–1* are not exceeded.

TABLE 3–1
TRAFFIC THRESHOLDS

Level of Service with Project[b]	Allowable Increase Due to Project Effects[a]					
	Freeways		Roadway Segments		Intersections	Ramp Metering[c]
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E	0.010	1.0	0.02	1.0	2.0	2.0
F	0.005	0.5	0.01	0.5	1.0	1.0

Footnotes:

a. If a proposed project's traffic causes the values shown in the table to be exceeded, the results are determined to be an effect. The project applicant shall then identify feasible improvements (within the Traffic Study) that will restore/and maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note b), 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 the project's direct effect and/or cumulatively considerable traffic effects.

b. All LOS measurements are based upon Highway Capacity Manual procedures for peak-hour conditions. However, V/C ratios for roadway segments are estimated on an ADT/24-hour traffic volume basis (using Table 2 of the City's Traffic Impact Study Manual). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped locations), and "E" for Downtown San Diego. For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

c. The allowable increase in delay at a ramp meter with more than 15 minutes delay and freeway LOS E is 2 minutes. The allowable increase in delay at a ramp meter with more than 15 minutes delay and freeway LOS F is 1 minute.

General Notes:

1. Delay = Average control delay per vehicle measured in seconds for intersections or minutes for ramp meters
2. LOS = Level of Service
3. V/C = Volume to Capacity ratio
4. Speed = Arterial speed measured in miles per hour

4.0 EXISTING MOBILITY CONDITIONS

This section presents the Project's study area and describes existing roadway conditions within the Project area. ***Figure 4–1*** shows the existing conditions diagram.

4.1 Existing Roadway Network

The following is a description of the existing roadway network in the study area.

Bernardo Center Drive is classified in the *Rancho Bernardo Community Plan* as a 6-lane Major west of West Bernardo Drive and between I-15 and Lomica Drive. Additionally, Bernardo Center Drive is classified as a 4-lane Major between West Bernardo Drive and I-15, and between Lomica Drive and Regalo Lane. Bernardo Center Drive is also classified as a 4-lane Collector between Regalo Lane and I-15. Bernardo Center Drive is constructed as a 6-lane divided roadway west of Camino Del Norte, and a 4-lane divided roadway east of Camino Del Norte. Sidewalks are provided along both sides of the roadway, with the exception of missing sidewalks on the north side of the road between the HP Driveway and approximately 420 feet west of I-15. Class II bike lanes are provided along both sides of the roadway west of I-15. Additionally, Class III bike routes are provided on both sides of the roadway north of Lomica Drive. Parking is prohibited on both sides of the roadway west of I-15 and is permitted intermittently east of I-15. The posted speed limit within the Project vicinity ranges from 35-45 miles per hour (MPH).

Camino Del Norte is classified in the *Rancho Bernardo Community Plan* as a 6-lane Expressway. Camino Del Norte is constructed as a 6-lane divided roadway. Sidewalks are provided along both sides of the roadway north of Bernardo Center Drive and are provided on the south side of the roadway south of Bernardo Center Drive. Sidewalks are missing on the north side of the roadway south of Bernardo Center Drive. Class II bike lanes are provided along both sides of the roadway. Parking is prohibited on both sides of the roadway. The posted speed limit is 50 MPH.

West Bernardo Drive is classified in the *Rancho Bernardo Community Plan* as a 4-lane Major. West Bernardo Drive is constructed as a 4-lane undivided roadway with a two-way left-turn lane. Sidewalks are provided along the south side of the roadway. Sidewalks are missing on the north side of the roadway between Bernardo Center Drive and Technology Drive. Class II bike lanes are provided along both sides of the roadway. Parking is prohibited on both sides of the roadway. The posted speed limit is 40 MPH.

Cloudcrest Drive is classified in the *Rancho Bernardo Community Plan* as a 2-lane Collector. Cloudcrest Drive is constructed as a 2-lane undivided roadway. Sidewalks are provided along both sides of the roadway. There are no bicycle facilities provided on Cloudcrest Drive. Parking is permitted on both sides of the roadway. There is no posted speed limit.

Bernardo Heights Parkway is classified in the *Rancho Bernardo Community Plan* as a 4-lane Major. Bernardo Heights Parkway is constructed as a 4-lane divided roadway. Sidewalks are provided along both sides of the roadway. Class II bike lanes are provided along both sides of the roadway. Parking is prohibited on both sides of the roadway. The posted speed limit is 45 MPH.

Rancho Bernardo Road is classified in the *Rancho Bernardo Community Plan* as a 6-lane Major between West Bernardo Drive and Bernardo Center Drive. Additionally, Rancho Bernardo Road is also classified as a 4-lane Major west of West Bernardo Drive and east of Bernardo Center Drive. Rancho Bernardo Road is constructed as a 6-lane divided roadway west of West Bernardo Drive, and a 4-lane divided roadway east of Bernardo Center Drive. Sidewalks are provided along the entire roadway. A Class II bike lane is provided on the north side of the roadway west of Bernardo Center Drive. Class III bike routes are provided on both sides of the roadway east of Bernardo Center Drive, and on the south side of the roadway west of Bernardo Center Drive. Parking is prohibited on both sides of the roadway west of Bernardo Center Drive and is permitted east of Bernardo Center Drive. The posted speed limit is 40 MPH.

Interstate 15 (I-15) is a freeway. Freeways, which are under the jurisdiction of the State Department of Transportation, have full access control with full grade separation, ramp connections and are usually four lanes or more divided roadways. Their primary purpose is the longer distance movement of traffic. Interstate 15 serves this purpose for the Rancho Bernardo Community. Access to and from I-15 is provided at four freeway interchanges within the community. The most southerly, at Camino Del Norte, provides access to both industrial sites and to the High Country West residential area. The Bernardo Center Drive interchange provides access to the Town Center area. The most central and heavily used interchange is located at Rancho Bernardo Road in the heart of the community. The fourth and most northerly interchange is located at Pomerado Road. This point serves north and southbound traffic.

4.1.1 *Existing Traffic Volumes*

Existing weekday daily street segment counts and AM and PM peak hour (7:00-9:00 AM and 4:00-6:00 PM) intersection counts (including bicycle and pedestrian counts) were conducted on Thursday, November 2, 2023, while area schools were in session.

Appendix B contains the traffic count sheets. ***Figure 4–2*** shows the existing traffic volumes.

4.2 Pedestrian Mobility

This section presents the bicycle network in the Project study area. Sidewalks are generally provided along both sides of Bernardo Center Road, Camino Del Norte, West Bernardo Drive, Cloudcrest Drive, Bernardo Heights Parkway, and Rancho Bernardo Road. However, sidewalks are missing along the following segments:

- Camino Del Norte south of Bernardo Center Drive - north side of the roadway.
- West Bernardo Drive between Technology Drive and Bernardo Center Drive – north side of the roadway.

- Bernardo Center Drive between the HP driveway (located 180 feet east of Cloudcrest Drive) and approximately 420 feet west of I-15 (including the Project frontage) - north side of the roadway.

4.3 Bicycle Mobility

There are four different existing and proposed bicycle facility classifications – Class I, Class II, Class III and Class IV as shown in ***Table 4–1.***

A detailed bicycle network inventory was conducted for the surrounding study area. ***Table 4–2*** summarizes the existing and future bicycle classifications on the study street segments.

As shown in *Table 4-2* the bicycle facilities within the study area are implemented to the Rancho Bernardo Community Plan ultimate classification, and therefore no off-site bicycle improvements are required.

TABLE 4–1
BICYCLE FACILITY CLASSIFICATIONS

Class I refers to exclusive **bike paths**, also termed shared-use or multi-use paths, for exclusive use by bicyclists, pedestrians, and those using non-motorized modes of travel. They are physically separated from vehicular traffic and can be constructed in roadway right-of-way or exclusive right-of-way. Bike paths provide critical connections where roadways are absent or are not conducive to bicycle travel. 	**Class II** refers to **bicycle lanes** defined by pavement striping and signage used to allocate a portion of a roadway for bicycle travel. Bike lanes are one-way facilities on either side of a roadway. A painted buffer can separate bikes from vehicles or parking lanes. Green paint can identify conflict zones. 
Class III refers to bike routes that share use with motor vehicle traffic within the same travel lane. Bike routes are identified with signage and street markings known as “sharrows” or shared lane markings to delineate that the road is a shared-use facility. 	**Class IV** refers to a **Cycle Track**, which is a hybrid type bicycle facility that combines the experience of a separated path with the on-street infrastructure of a conventional bike lane. Cycle tracks are bikeways located in roadway right-of-way but separated from vehicle lanes by physical barriers, flexible posts, on-street parking curbs, or other objects. Cycle tracks provide for one-way or two-way bicycle travel and are exclusively for bicycle use. 

TABLE 4–2
BICYCLE FACILITIES

Street Segment	Existing Classification	Ultimate Classification per Rancho Bernardo CP
Bernardo Center Drive		
West of Camino Del Norte	Class II	Class II
Camino Del Norte to West Bernardo Drive	Class II	Class II
West Bernardo Drive to Proj Dwy	Class II	Class II
Proj Dwy to I-15	Class II	Class II
I-15 to Bernardo Heights Pkwy	None	Class II
Camino Del Norte		
North of Bernardo Center Drive	Class II	Class II
South of Bernardo Center Drive	Class II	Class II
Bernardo Heights Parkway		
South of Bernardo Center Drive	Class II	Class II

4.4 Transit Mobility

This section presents the existing transit conditions in the Project study area. Bus transit service within the City of San Diego is provided by the San Diego Metropolitan Transit System (MTS). Bus routes in the vicinity of the Project site include routes 20, 235, 290, 945. Brief descriptions of the routes are provided below:

Route 20

Route 20 begins at the Rancho Bernardo Transit Center and ends at 10th Ave & Broadway. The route operates Monday through Sunday. Weekday services are at 30-minute frequencies from 5:13 AM to 10:17 PM (Rancho Bernardo Transit Center to 10th Ave & Broadway) and 5:53 AM to 9:04 PM (10th Ave & Broadway to Rancho Bernardo Transit Center). Saturday services are at 60-minute frequencies from 6:12 AM to 9:17 PM (Rancho Bernardo Transit Center to 10th Ave & Broadway) and 7:09 AM to 8:49 PM (10th Ave & Broadway to Rancho Bernardo Transit Center). Sunday services are at 60-minute frequencies from 6:12 AM to 8:18 PM (Rancho Bernardo Transit Center to 10th Ave & Broadway) and 7:39 AM to 8:49 PM (10th Ave & Broadway to Rancho Bernardo Transit Center). There are 36 stops along this route.

Route 235

Route 235 begins at the Escondido Transit Center and ends at Santa Fe Depot Transit Center. This route makes a stop at the Rancho Bernardo Transit Center. The route operates Monday through Sunday. Weekday services are at 15-minute frequencies from 5:00 AM to 11:46 PM (Escondido Transit Center to Santa Fe Depot Transit Center) and 4:43 AM to 11:51 PM (Santa Fe Depot Transit Center to Escondido Transit Center). Weekend services are at 30-minute frequencies from 5:01 AM to 11:16 PM (Escondido Transit Center to Santa Fe Depot Transit Center) and 4:43 AM to 11:21 PM (Santa Fe Depot Transit Center to Escondido Transit Center). There are 14 stops along this route.

Route 290

Route 290 begins at the Rancho Bernardo Transit Center and ends at Grape St & Pacific Highway. The route operates Monday through Friday. Weekday services are at 90-minute frequencies from 5:15 AM to 9:01 PM (Rancho Bernardo Transit Center to Grape St & Pacific Highway) and 3:01 PM to 6:39 PM (Grape St & Pacific Highway to Rancho Bernardo Transit Center). There are 11 stops along this route.

Route 945

Route 945 begins at the Rancho Bernardo Transit Center and ends at Temple St & Midland Rd. The route operates Monday through Saturday. Weekday services are at 30-minute frequencies from 5:52 AM to 8:22 PM (Rancho Bernardo Center to Temple St & Midland Rd) and 5:09 AM to 7:35 PM (Temple St & Midland Rd to Rancho Bernardo Transit Center). Saturday services are at 45-minute from 6:42 AM to 7:34 PM (Rancho Bernardo Center to Temple St & Midland Rd) and 6:41 AM to 6:29 PM (Temple St & Midland Rd to Rancho Bernardo Transit Center). There are 49 stops along this route.

Appendix C contains the bus schedules.

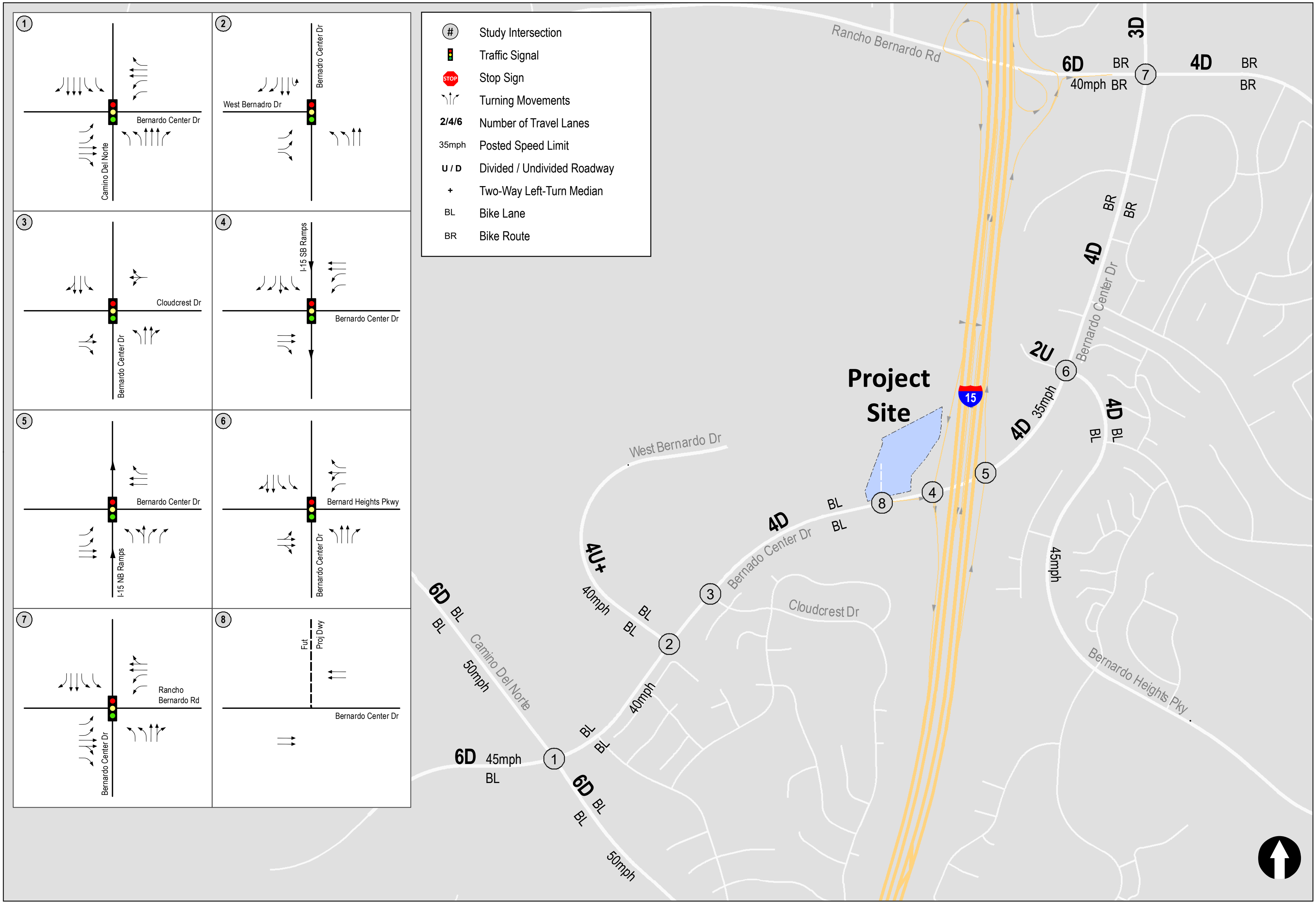

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Figure 4-1

Existing Conditions Diagram

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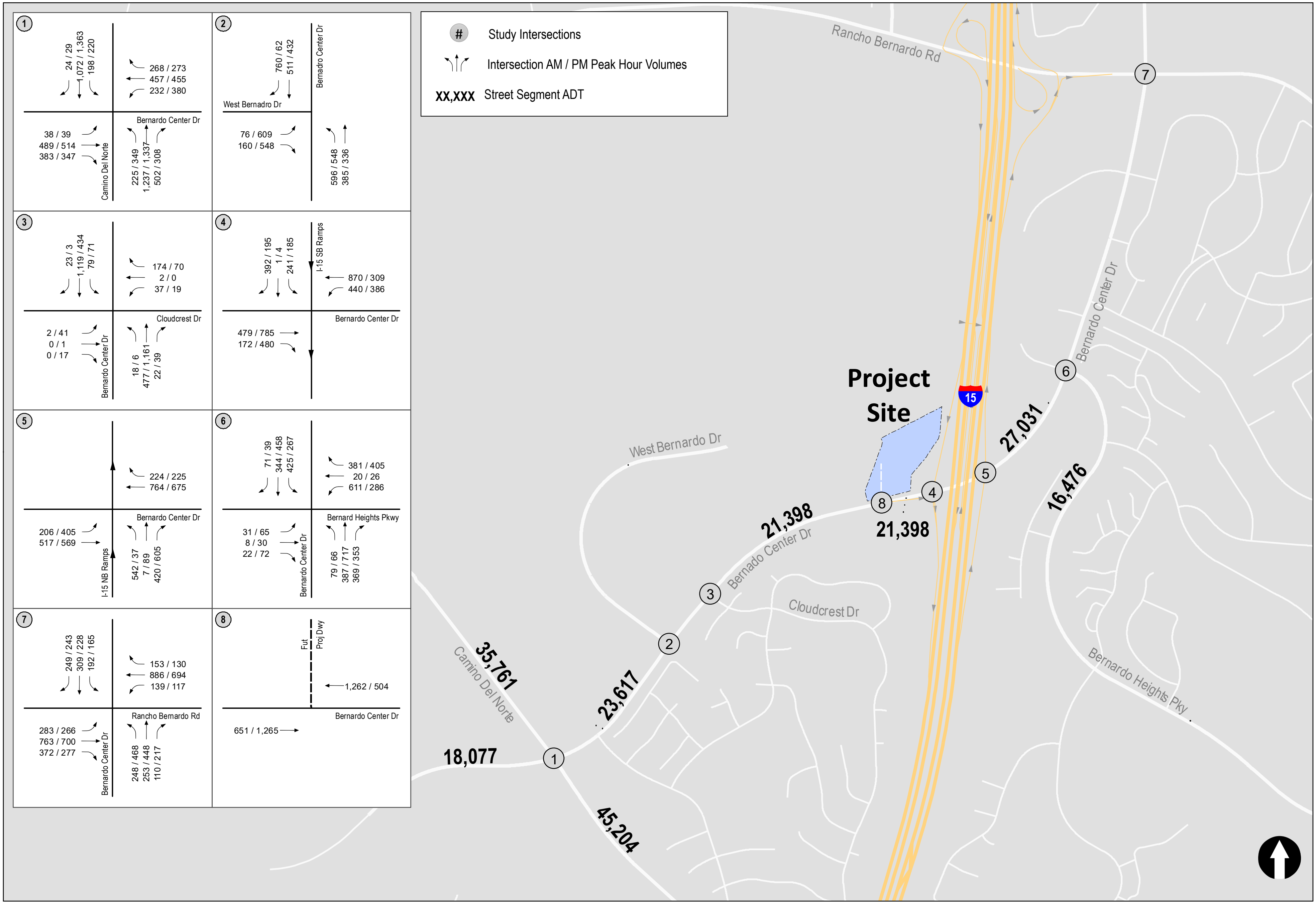

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Figure 4-2

Existing Traffic Volumes

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5.0 EXISTING ANALYSIS

The analysis of existing conditions includes the assessment of the study area intersections using the methodologies described in *Section 3.0*.

5.1 Peak Hour Intersection Operations

Table 5–1 summarizes the existing peak hour intersection operations. As seen in *Table 5–1*, the study intersections are calculated to operate acceptably at LOS D or better with the exception of the following:

- #1: Camino Del Norte / Bernardo Center Drive (LOS E during the PM peak hour)
- #6: Bernardo Center Drive / Bernardo Heights Parkway (LOS F/E during the AM and PM peak hours)

Appendix E contains the intersection analysis worksheets for the Existing scenario.

5.2 Daily Street Segment Levels of Service

Table 5–2 summarizes the existing daily street segment operations. As seen in *Table 5–2*, the study segments are calculated to operate acceptably at LOS C or better.

TABLE 5–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
1. Camino Del Norte / Bernardo Center Dr	Signal	AM PM	44.1 62.1	D E
2. Bernardo Center Dr / W Bernardo Dr	Signal	AM PM	15.5 32.7	B C
3. Bernardo Center Dr / Cloudcrest Dr	Signal	AM PM	20.3 14.9	C B
4. Bernardo Center Dr / I-15 SB	Signal	AM PM	41.4 40.3	D D
5. Bernardo Center Dr / I-15 NB	Signal	AM PM	23.6 25.0	C C
6. Bernardo Center Dr / Bernardo Heights Pkwy	Signal	AM PM	107.6 75.3	F E
7. Bernardo Center Dr / Rancho Bernardo Rd	Signal	AM PM	41.5 45.3	D D
8. Bernardo Center Dr / Future Project Dwy	*DNE*[c]	AM PM	- -	- -

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service.

c. DNE = Does Not Exist

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 5–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Classification	Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]
Bernardo Center Dr					
West of Camino Del Norte	6-Lane Major	50,000	18,077	A	0.362
Camino Del Norte to West Bernardo Dr	4-Lane Major	40,000	23,617	C	0.590
West Bernardo Dr to Project Driveway	4-Lane Major	40,000	21,398	C	0.535
Project Driveway to I-15	4-Lane Major	40,000	21,398	C	0.535
I-15 to Bernardo Heights Pkwy	4-Lane Major	40,000	27,031	C	0.676
Camino Del Norte					
North of Bernardo Center Dr	6-Lane Expressway	80,000	35,761	B	0.447
South of Bernardo Center Dr	6-Lane Expressway	80,000	45,204	C	0.565
Bernardo Heights Parkway					
South of Bernardo Center Dr	4-Lane Major	40,000	16,476	B	0.412

Footnotes:

a. Capacities based on City of San Diego Roadway Classification Table.
b. Average Daily Traffic Volumes.
c. Level of Service.
d. Volume to Capacity.

6.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

The section below provides a detailed description of the Project's trip generation.

6.1 Trip Generation

The Project proposes to develop an approximately 150,000 gross square foot medical office building, with 120,000 square feet of gross leasable floor area. Based on the proposed land use type, the rates for "Medical Office" found in the City of San Diego *Trip Generation Manual (May 2003)* were used to calculate the trip generation for the proposed Project. The City's trip generation manual bases the trip rates for similar commercial office uses on gross leasable area, which is defined as "the total floor area designed for tenant occupancy upon which rent is collected". Therefore, the trip generation calculations were conducted based on the Project's proposed 120,000 square feet of gross leasable floor area.

The City of San Diego *Trip Generation Manual (May 2003)* provides "driveway" trip rates and "cumulative" trip rates. Cumulative trips are defined as *new* vehicle trips added to a community as a direct result of a project. These are trips that are not using the study are intersections and segments under baseline (without Project conditions). Driveway trips are defined as the total number of trips that are generated by a site and include cumulative trips and "pass-by" trips, which are defined as trips made to a site from traffic already "passing by" that site on an adjacent street that contains direct access to the generator.

To calculate the Project's trip generation, LLG utilized driveway trip rates for the Bernardo Center Drive / Future Project Driveway intersection and for the segments of Bernardo Center Drive on either side of the driveway (W Bernardo Dr the Project Driveway and the Project Driveway to I-15). Cumulative trip rates were utilized for the remaining study intersections and street segments.

Table 6–1 summarizes the Project's estimated trip generation using both the driveway trip rates and the cumulative trip rates. Based on the City's "driveway" trip rates, the Project is calculated to add 6,000 ADT with 360 AM peak hour trips (288 inbound / 72 outbound) and 600 PM peak hour trips (180 inbound / 420 outbound) to the Bernardo Center Drive / Future Project Driveway intersection. Based on the City's "cumulative" trip rates, the Project is calculated to add 1,920 ADT with 115 AM peak hour trips (92 inbound / 23 outbound) and 192 PM peak hour trips (58 inbound / 134 outbound) to the remaining study intersections and street segments.

6.2 Trip Distribution/Assignment

The Project trip distribution was developed based on the existing roadway network, existing and anticipated travel patterns, the population area that will be served by the MOB, and the surrounding residential and commercial land uses.

Figure 6–1 shows the Project trip distribution percentages. ***Figure 6–2*** shows the Project traffic volumes.

TABLE 6–1
PROJECT TRIP GENERATION

Land Use	Quantity	Daily Trip Ends (ADT)		AM Peak Hour					PM Peak Hour				
				% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
		Rate [a]	Volume			In	Out	Total			In	Out	Total
Proposed Project – Driveway Rates													
Medical Office Building	120 KSF GLA[b]	50 /KSF	6,000	6%	80:20	288	72	360	10%	30:70	180	420	600
Proposed Project – Cumulative Rates													
Medical Office Building	120 KSF GLA[b]	16 /KSF	1,920	6%	80:20	92	23	115	10%	30:70	58	134	192

Footnotes:

a. Trip rates from *Trip Generation Manual*, City of San Diego, May 2003.

b. Gross Leasable Area

General Notes:

1. KSF - 1,000 Square Feet.

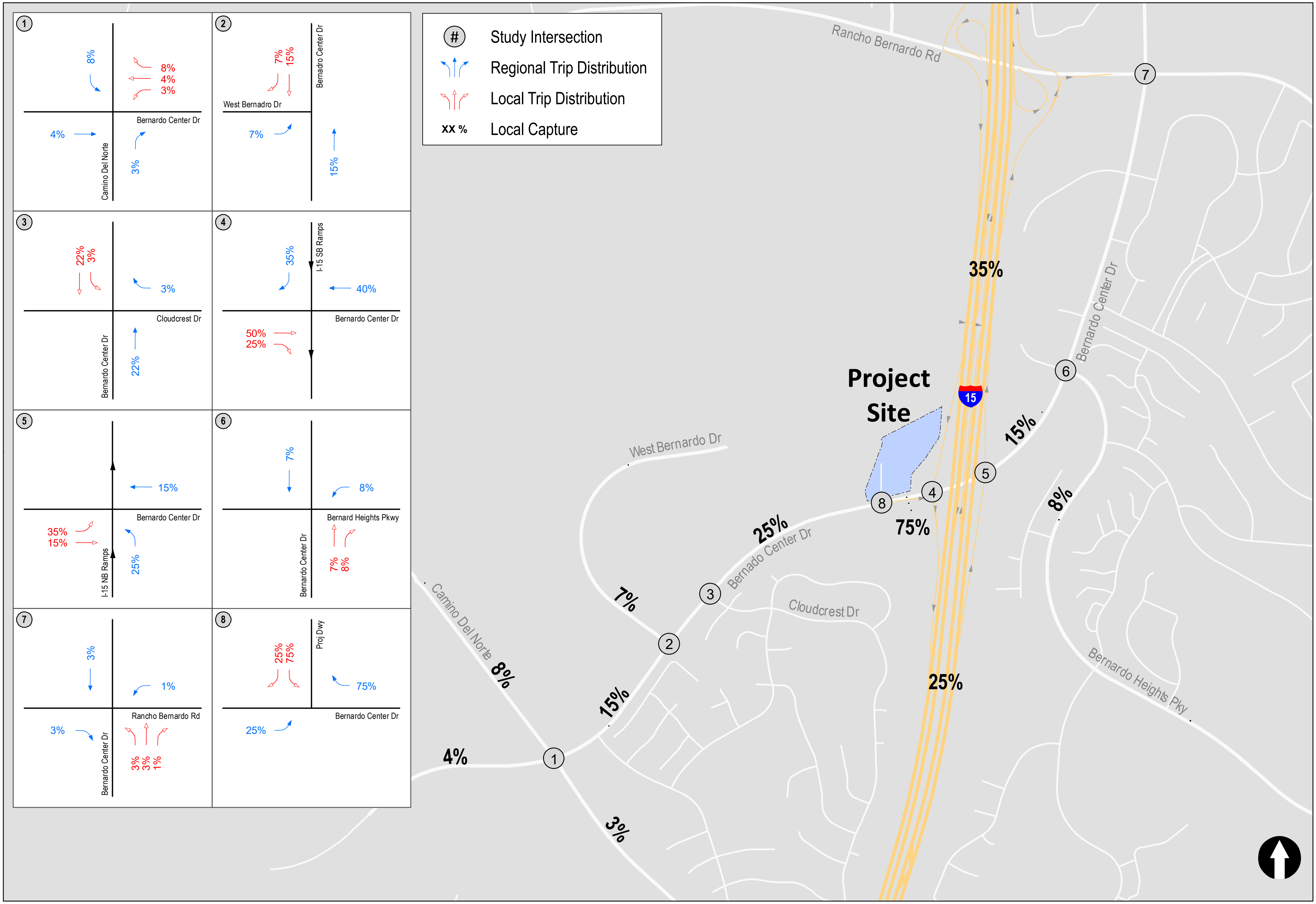

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Figure 6-1

Project Traffic Distribution

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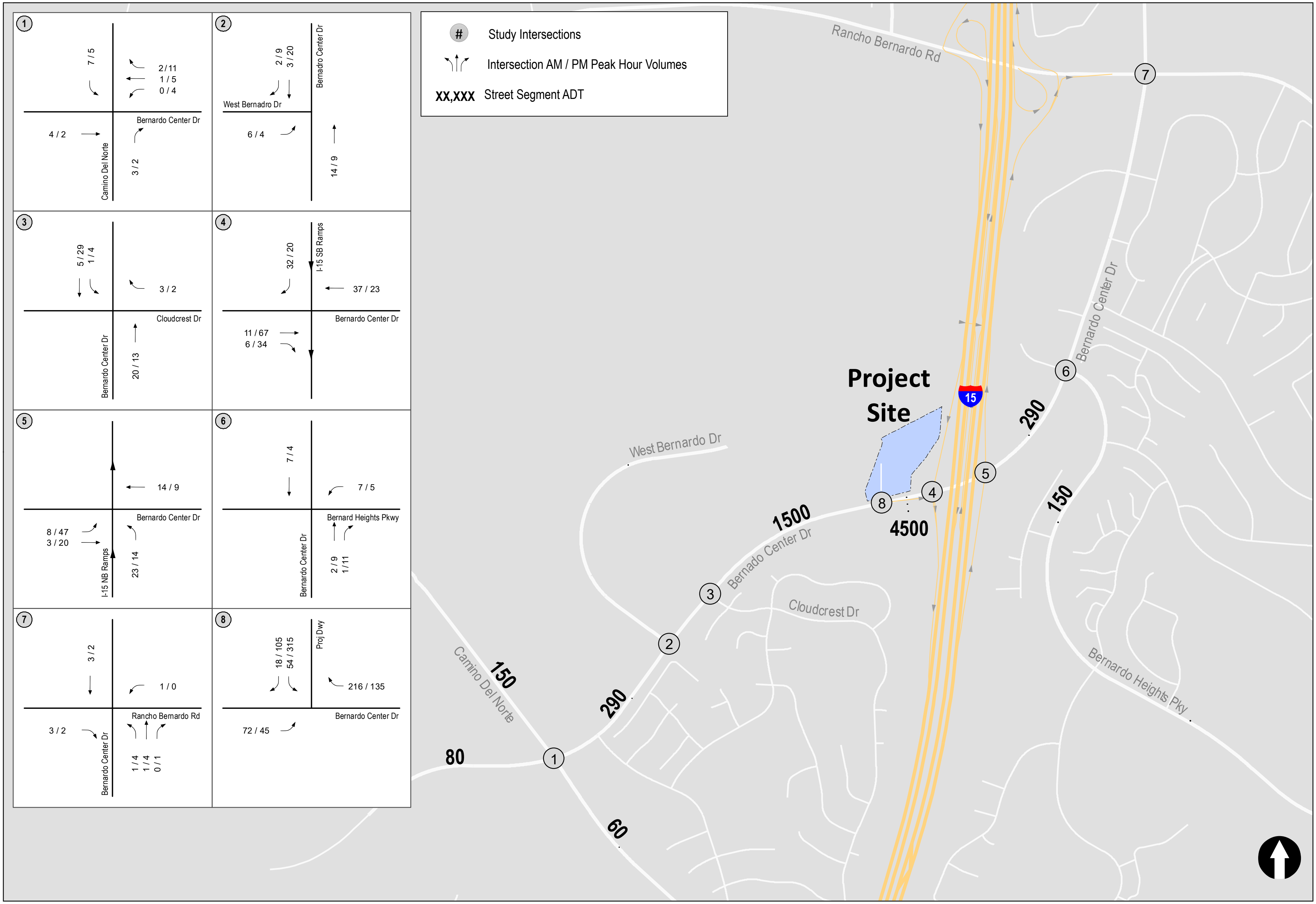

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Figure 6-2

Project Traffic Volumes

UCSD RB MOB

7.0 CUMULATIVE PROJECTS

"Cumulative" projects are other projects in the study area that are expected to be constructed and occupied by the Project's expected Opening Year in Year 2027, thus adding traffic to the local circulation system. Utilizing the City of San Diego OpenDSD website, LLG researched ongoing cumulative projects in the study area that could be constructed and generating traffic in the study area vicinity by the expected Opening Year of the Project in Year 2027. Based on this research, no cumulative projects are planned nearby that would add traffic to study area intersections.

Since zero cumulative projects were identified in the study area vicinity, an ambient growth was added to the existing traffic to account for the potential growth in traffic between 2023 and the near-term study year of 2027.

To forecast future traffic volumes for the Opening Year 2027 condition, a calculated annual growth factor of 1% per year for four (4) years (**4% total**) was applied to the Existing (November 2023) traffic counts. This growth rate was calculated based on a comparison of Year 2016 and Year 2025 traffic volumes along the study area intersections and segments from the SANDAG Series 14 ABM2+ traffic models (provided in ***Appendix H)***.

8.0 OPENING YEAR 2027 ANALYSIS

The following section presents the analysis of the study area locations under Opening Year 2027 conditions.

8.1 Opening Year 2027 without Project

For the purposes of this study, no roadway network changes were assumed under Opening Year 2027 conditions. Similarly, no changes were assumed to the available pedestrian, bike, and transit facilities between Existing and Opening Year 2027 conditions.

The Opening Year 2027 without Project forecast volumes were calculated by adding the volumes calculated to represent the growth in traffic discussed in *Section 7.0* to the existing traffic volumes.

Figure 8–1 shows the Opening Year 2027 traffic volumes. ***Figure 8–2*** shows the Opening Year 2027 + Project traffic volumes.

8.1.1 *Peak Hour Intersection Operations*

Table 8–1 summarizes the peak hour intersection operations for the Opening Year 2027 Without Project condition. As seen in *Table 8–1*, the following intersections are calculated to operate at LOS E or F:

- #1: Camino Del Norte / Bernardo Center Drive (LOS E during the PM peak hour)
- #6: Bernardo Center Drive / Bernardo Heights Parkway (LOS F during the AM and PM peak hours)

Appendix F contains the intersection analysis worksheets for the Opening Year 2027 scenario.

8.1.2 *Segment Operations*

Table 8–2 summarizes the Opening Year 2027 Without Project daily street segment operations. As seen in *Table 8–2*, the study segments are calculated to operate at LOS C or better.

8.2 Opening Year 2027 + Project

For the purposes of this study, no changes to the roadway, pedestrian, bicycle, and transit networks were assumed in the Opening Year 2027 + Project analysis. However, it was assumed that a traffic signal was installed at the future project driveway.

8.2.1 *Peak Hour Intersection Operations*

Table 8–1 summarizes the peak hour intersection operations for the Opening Year 2026 With Project condition. As seen in *Table 8–1*, with the addition of Project traffic, the following intersections are calculated to continue to operate at LOS E or F:

- #1: Camino Del Norte / Bernardo Center Dr (LOS E during the PM peak hour)
- #6: Bernardo Center Dr / Bernardo Heights Pkwy (LOS F during the AM and PM peak hours)

Based on the established significance criteria outlined in *Section 3.4.3*, the Project induced increase in delay at these locations does not exceed the allowable threshold, and therefore no substantial LOS effects are anticipated.

8.2.2 *Segment Operations*

Table 8–2 summarizes the existing daily street segment operations. As seen in *Table 8–2*, the study segments are calculated to continue to operate acceptably at LOS C or better.

Appendix G contains the intersection analysis worksheets for the Opening Year 2027 + Project scenario.

TABLE 8–1
OPENING YEAR 2027 INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Opening Year 2027		Opening Year 2027 + Project		Δ[c]
			Delay[a]	LOS[b]	Delay[a]	LOS[b]	
1. Camino Del Norte / Bernardo Center Dr	Signal	AM	47.2	D	47.5	D	0.3
		PM	64.2	E	64.4	E	0.2
2. Bernardo Center Dr / W Bernardo Dr	Signal	AM	16.4	B	16.4	B	0.0
		PM	37.0	D	37.8	D	0.8
3. Bernardo Center Dr / Cloudcrest Dr	Signal	AM	21.0	C	21.1	C	0.1
		PM	15.6	B	15.9	B	0.3
4. Bernardo Center Dr / I-15 SB Ramps	Signal	AM	44.4	D	52.3	D	7.9
		PM	43.4	D	48.1	D	4.7
5. Bernardo Center Dr / I-15 NB Ramps	Signal	AM	23.7	C	23.8	C	0.1
		PM	25.7	C	25.9	C	0.2
6. Bernardo Center Dr / Bernardo Heights Pkwy	Signal	AM	113.8	F	114.4	F	0.6
		PM	82.4	F	882.5	F	0.1
7. Bernardo Center Dr / Rancho Bernardo Rd	Signal	AM	45.5	D	45.6	D	0.1
		PM	50.5	D	51.1	D	0.6
8. Bernardo Center Dr / Future Project Dwy	Signal	AM	-	-	8.0	A	-
		PM	-	-	10.4	B	-

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes the project-induced increase in delay.
.

SIGNAL

DELAY/LOS THRESHOLDS

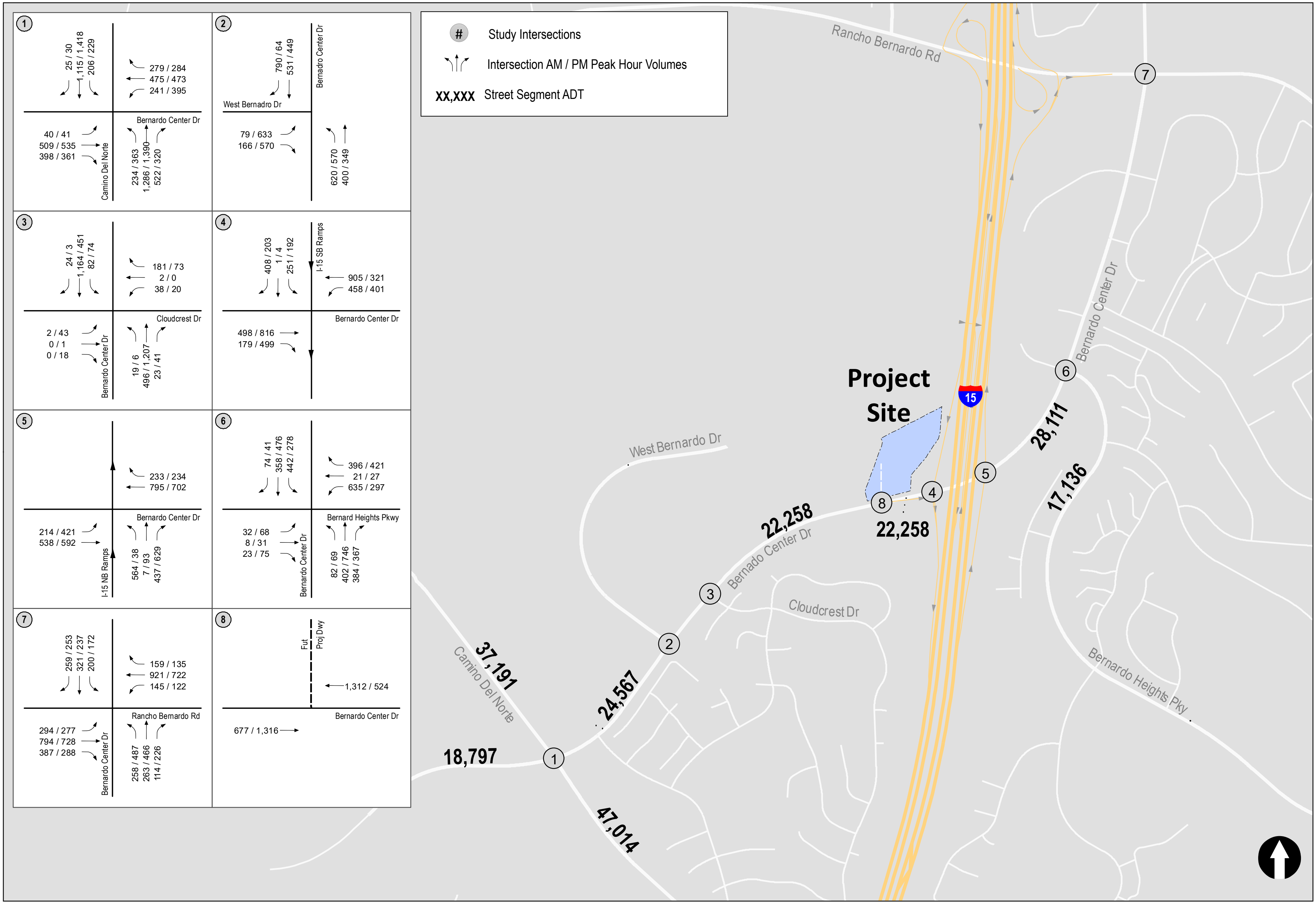
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 8–2
OPENING YEAR 2027 STREET SEGMENT OPERATIONS

Street Segment	**Existing Capacity (LOS E)**[a]	**Opening Year 2027**			**Opening Year 2027 + Project**			**Δ**[e]
		ADT	**V/C**	**LOS**	**ADT**	**V/C**	**LOS**	
Bernardo Center Dr								
West of Camino Del Norte	50,000	18,797	A	0.376	18,877	A	0.378	0.002
Camino Del Norte to West Bernardo Dr	40,000	24,567	C	0.614	24,857	C	0.621	0.007
West Bernardo Dr to Project Driveway	40,000	22,258	C	0.556	23,758	C	0.594	0.038
Project Driveway to I-15	40,000	22,258	C	0.556	26,758	C	0.669	0.113
I-15 to Bernardo Heights Pkwy	40,000	28,111	C	0.703	28,401	C	0.710	0.007
Camino Del Norte								
North of Bernardo Center Dr	80,000	37,191	B	0.465	37,341	B	0.467	0.002
South of Bernardo Center Dr	80,000	47,014	C	0.588	47,074	C	0.588	0.000
Bernardo Heights Parkway								
South of Bernardo Center Dr	40,000	17,136	B	0.428	17,286	B	0.432	0.004

Footnotes:

a. Capacities based on City of San Diego Roadway Classification & LOS table
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio



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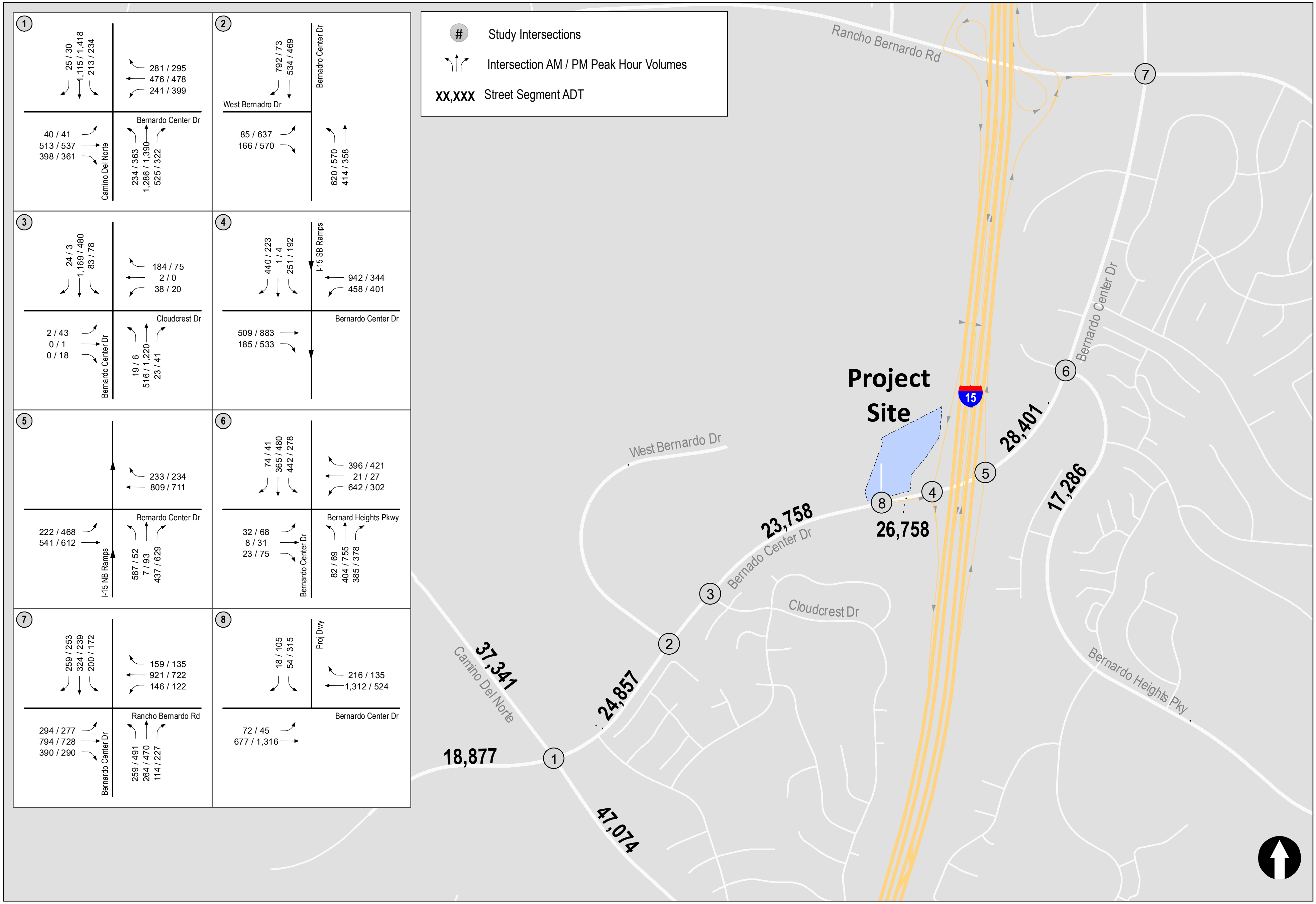
N:\3839\Figures
Date: 12/22/2023
Time: 11:08 AM

Figure 8-1

Opening Year 2027 without Project Traffic Volumes

UCSD RB MOB



LINSCOTT LAW & GREENSPAN
engineers

N:\3839\Figures
Date: 12/22/2023
Time: 11:11 AM

Figure 8-2

Opening Year 2027 + Project Traffic Volumes

UCSD RB MOB

9.0 SITE ACCESS / SIGNAL WARRANT

9.1 Site Access Discussion

Access to the site is proposed via one full access driveway on Bernardo Center Drive. The driveway should be built to City standards with appropriate sight distance, curb returns, spacing, permitting turn movements, and accommodation of delivery vehicles. The access point is calculated to operate acceptably at LOS A/B or better during the AM and PM peak hours, as shown in *Table 8-1*.

A 150-foot-long westbound dedicated right-turn lane with a 120-foot bay taper should be provided at the Project driveway to ensure no back-ups to the I-15 ramps would occur.

Two outbound lanes from the site should be provided, a dedicated left-turn lane and a 20-foot-wide shared left/right lane, such that right-turning vehicles can "sneak by" vehicles waiting to turn left.

A 180-foot eastbound left-turn lane currently exists on Bernardo Center Drive at the location where the proposed driveway will be. A queue analysis was conducted for this location. The analysis, summarized in ***Table 9-1***, shows that the existing 180-foot- long turn pocket is of adequate length to accommodate Project traffic without the projected Project queue exceeding the storage length. .

Additionally, the Project should construct a paved sidewalk along the north side of Bernardo Center along the Project frontage, connecting to the existing sidewalk that currently ends 425 feet west of the I-15 southbound ramps.

TABLE 9–1
OPENING YEAR 2027 + PROJECT QUEUE ANALYSIS

Intersection	Movement	Storage Length	Queue Length	
			AM	PM
8. Bernardo Center Dr / Future Project Dwy	EBL WBR	180' 150'	125' 56'	55' 38'

9.2 Signal Warrant

Under existing conditions, the Project site is vacant and undeveloped. Currently, there is no driveway constructed where the Project site access is planned.

LLG performed a peak hour signal warrant analysis to determine if a traffic signal is warranted based on the forecasted Opening Day 2027 with Project traffic volumes at the Bernardo Center Drive / Future Project Driveway intersection.

The following page depicts the peak hour warrant plot at this intersection under Opening Day 2027 with Project conditions. As seen in the plot, the warrant is met at this intersection during the PM peak hour since the plot point falls above the curve.

Intersection #8
Project Driveway / Bernardo Center Drive

Opening Year + Project Traffic Volumes

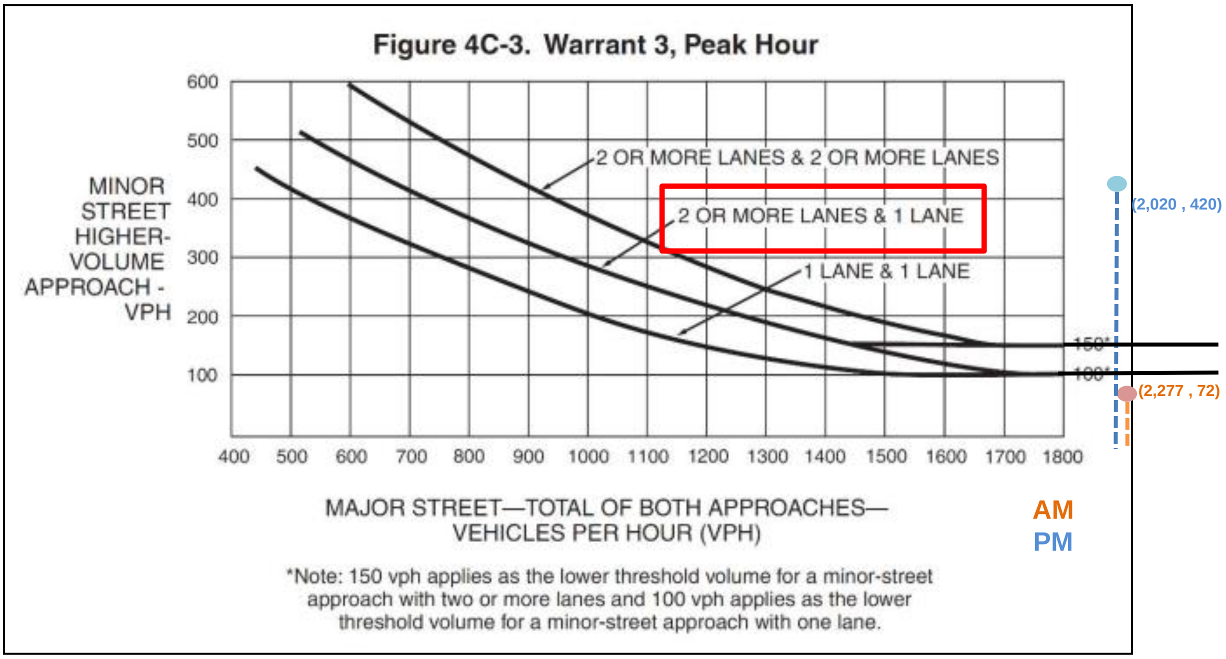


Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Opening Year + Project

AM Peak Hour

Minor Street:	72
Major Street:	2,277

PM Peak Hour

Minor Street:	420
Major Street:	2,020

RESULT: SIGNAL WARRANTED IN THE PM PEAK HOUR

10.0 CONCLUSIONS

The Project proposes to develop an approximately 150,000 gross square foot medical office building, with 120,000 square feet of gross leasable area and approximately 675 structured and surface parking stalls on a 3.9-acre site. The Project site is currently undeveloped and there is no existing driveway or traffic signal to the site. Access is proposed via one full access signalized driveway on Bernardo Center Drive. The peak hour traffic signal warrant is met at this location under Opening Year 2027 + Project conditions, as detailed in *Section 9.2*. The future driveway is calculated to operate acceptably at LOS B or better during the AM and PM peak hours, as shown on *Table 8-1*.

To determine the potential traffic effects from the Project, traffic volumes for the Opening Year 2027 without Project and Opening Year 2027 with Project scenarios were developed and traffic operations were evaluated. Based on this analysis, the Project is not calculated to result in any substantial transportation related effects, and no transportation related off-site improvements are required. The Project will signalize its driveway as a project feature.

10.1 Driveway Operations and Recommendations

A peak hour traffic signal warrant is met at the proposed driveway location under Opening Year 2027 + Project conditions, as detailed in *Section 9.2*. The future driveway is calculated to operate acceptably at LOS B or better during the AM and PM peak hours, as shown on *Table 8-1*.

A 150-foot-long westbound dedicated right-turn lane (with a 120-foot bay taper) should be provided at the Project driveway to ensure no back-ups to the I-15 ramps would occur.

Two outbound lanes from the site should be provided, a dedicated left-turn lane and a 20-foot-wide shared left/right turn lane, such that right-turning vehicles can “sneak by” vehicles waiting to turn left. A westbound right-turn traffic signal phase should be provided.

A 180-foot eastbound left-turn lane currently exists on Bernardo Center Drive at the location where the proposed driveway will be. A queue analysis was conducted for this location. The analysis shows that the existing 180-foot- long turn pocket is of adequate length to accommodate Project traffic without the projected Project queue exceeding the storage length.

Additionally, the Project should construct a paved sidewalk along the north side of Bernardo Center Drive along the Project frontage, connecting to the existing sidewalk that currently ends 425 feet west of the I-15 southbound ramps.

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engineers

TECHNICAL APPENDICES TO THE LMA REPORT

UCSD RANCHO BERNARDO MEDICAL OFFICE BUILDING PROJECT

December 2023

LLG Ref. 3-23-3839

**Linscott, Law &
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APPENDICES

APPENDIX

A. City of San Diego's *Level of Service Roadway Threshold Table*

B. Intersection Manual Count Sheets

C. Bus Schedules

D. Signal Timing Plans

E. Existing Intersection Analysis Calculation Sheets

F. Opening Year 2027 without Project Intersection Analysis Calculation Sheets

G. Opening Year 2027 + Project Intersection Analysis Calculation Sheets

H. Growth Factor Calculations

APPENDIX A

CITY OF SAN DIEGO'S LEVEL OF SERVICE ROADWAY THRESHOLD TABLE

Table 3–3
Level of Service (LOS) Thresholds for Roadway Segments

Classification	Lanes	Level of Service (LOS)				
		A	B	C	D	E
Expressway	8 Lanes	40,000	56,000	80,000	93,500	107,000
Expressway	7 Lanes	35,000	49,000	70,000	82,000	93,500
Expressway	6 Lanes	30,000	42,000	60,000	70,000	80,000
Prime Arterial [1]	8 Lanes	35,000	50,000	70,000	75,000	80,000
Prime Arterial [1]	7 Lanes	30,000	42,500	60,000	65,000	70,000
Prime Arterial	6 Lanes	25,000	35,000	50,000	55,000	60,000
Prime Arterial [10]	5 Lanes	20,000	28,000	40,000	45,000	50,000
Prime Arterial [11]	4 Lanes	17,500	24,500	35,000	40,000	45,000
Major Arterial [2]	7 Lanes	22,500	31,500	45,000	50,000	55,000
Major Arterial	6 Lanes	20,000	28,000	40,000	45,000	50,000
Major Arterial [3]	5 Lanes	17,500	24,500	35,000	40,000	45,000
Major Arterial	4 Lanes	15,000	21,000	30,000	35,000	40,000
Major Arterial	3 Lanes	11,250	15,750	22,500	26,250	30,000
Major Arterial	2 Lanes	7,500	10,500	15,000	17,500	20,000
Major Arterial (one-way) [4]	3 Lanes	12,500	16,500	22,500	25,000	27,500
Major Arterial (one-way) [5]	2 Lanes	10,000	13,000	17,500	20,000	22,500
Collector (with two-way left-turn lane)	5 Lanes	12,500	17,500	25,000	30,750	37,500
Collector (with two-way left-turn lane)	4 Lanes	10,000	14,000	20,000	25,000	30,000
Collector (with two-way left-turn lane)	3 Lanes	7,500	10,500	12,500	18,750	22,500
Collector (with two-way left-turn lane)	2 Lanes	5,000	7,000	10,000	13,000	15,000
Collector (without two-way left-turn lane)	4 Lanes	5,000	7,000	10,000	13,000	15,000
Collector (without two-way left-turn lane) [6]	3 Lanes	4,000	5,000	7,500	10,000	11,000
Collector (without two-way left-turn lane)	2 Lanes	2,500	3,500	5000	6,500	8,000
Collector (with no fronting property)	2 Lanes	4,000	5,500	7,500	9,000	10,000
Collector (one-way) [7]	3 Lanes	11,000	14,000	19,000	22,500	26,000
Collector (one-way) [8]	2 Lanes	7,500	9,500	12,500	15,000	17,500
Collector (one-way) [9]	1 Lane	2.5	3,500	5,000	6,500	7,500
Sub-Collector (Single-family)	2 Lanes	—	—	2,200	—	—

Notes:

The volumes and the average daily level of service listed above are only intended as a general planning guideline.

Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic.

Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

1. Calculated assuming that each additional lane above a 6-Ln arterial adds 5,000 ADT for LOS A, 7.500 ADT for LOS B, 10,000 ADT for LOS C, D and E
2. Calculated assuming the ADT is ½ way between steps of a 6-Ln Major Arterial and 6 Ln Prime Arterial
3. Calculated assuming the ADT is ½ way between steps of a 4-Ln Major Arterial and 6 Ln Major Arterial
4. Calculated using: Capacity = 0.5 (6-Ln Major (2-way) + Added Capacity of 2,500 ADT)
5. Calculated using: Capacity = 0.5 (4-Ln Major (2-way) + Added Capacity of 2,500 ADT)
6. Calculated using: Capacity = 4-Ln Collector (no center lane) * ¾
7. Calculated using: Capacity = 2-Ln Collector (one-way) * 3/2
8. Calculated using: Capacity = 0.5 (4-Ln Collector w/continuous left turn lane) + Added Capacity of 2,500 ADT)
9. Calculated using: Capacity = 0.5 (2-Ln Collector w/continuous left turn lane). Capacity took into account parking friction from both sides of roadway
10. Calculated by applying same differences between 8-Ln Prime & 7-Ln Prime & 7-Ln Prime & 6-Ln Prime
11. Calculated assuming ratio between 6-Ln Prime & 6-Ln Major applied to 4-Ln Major

APPENDIX B

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of San Diego
Bernardo Center Drive
E/ Camino Del Norte
24 Hour Directional Volume Count

SDG003
Site Code: 057-231050

Start	11/2/23	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	194			9	244				
12:15		13	172			10	189				
12:30		7	200			6	178				
12:45		8	203	35	769	13	155	38	766	73	1535
01:00		11	186			10	166				
01:15		7	201			12	150				
01:30		8	232			6	185				
01:45		4	187	30	806	7	234	35	735	65	1541
02:00		4	178			3	147				
02:15		5	150			5	181				
02:30		10	180			3	196				
02:45		10	213	29	721	3	164	14	688	43	1409
03:00		14	236			8	172				
03:15		25	251			5	173				
03:30		20	**310**			3	202				
03:45		19	**261**	78	1058	8	222	24	769	102	1827
04:00		16	**338**			17	238				
04:15		29	**299**			23	229				
04:30		23	234			19	**274**				
04:45		46	291	114	1162	25	**253**	84	994	198	2156
05:00		30	273			17	**298**				
05:15		19	301			26	**318**				
05:30		57	228			30	272				
05:45		93	249	199	1051	46	234	119	1122	318	2173
06:00		72	213			54	206				
06:15		105	200			60	206				
06:30		101	165			90	153				
06:45		143	142	421	720	111	164	315	729	736	1449
07:00		161	129			159	146				
07:15		232	149			**209**	117				
07:30		**336**	102			**289**	130				
07:45		**309**	77	1038	457	**273**	99	930	492	1968	949
08:00		**303**	70			**219**	94				
08:15		**272**	72			192	86				
08:30		271	68			177	72				
08:45		284	78	1130	288	172	66	760	318	1890	606
09:00		221	61			145	60				
09:15		229	46			133	51				
09:30		182	56			112	40				
09:45		163	34	795	197	129	43	519	194	1314	391
10:00		180	38			130	38				
10:15		153	26			140	23				
10:30		133	28			121	30				
10:45		155	19	621	111	132	18	523	109	1144	220
11:00		156	17			164	23				
11:15		145	12			145	13				
11:30		189	9			186	12				
11:45		177	23	667	61	231	8	726	56	1393	117
Total		5157	7401	5157	7401	4087	6972	4087	6972	9244	14373
Combined Total		12558		12558		11059		11059		23617	
AM Peak	-	07:30	-	-	-	07:15	-	-	-	-	-
Vol.	-	1220	-	-	-	990	-	-	-	-	-
P.H.F.		0.908				0.856					
PM Peak	-	-	03:30	-	-	-	04:30	-	-	-	-
Vol.	-	-	1208	-	-	-	1143	-	-	-	-
P.H.F.			0.893				0.899				
Percentage		41.1%	58.9%			37.0%	63.0%				
ADT/AADT		ADT 23,617		AADT 23,617							

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of San Diego
Bernardo Center Drive
E/ Interstate 15 Northbound Ramps
24 Hour Directional Volume Count

SDG006
Site Code: 057-231050

Start	11/2/23	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		9	225			8	**264**				
12:15		10	254			4	**271**				
12:30		12	301			15	**289**				
12:45		19	260	50	1040	11	**269**	38	1093	88	2133
01:00		8	189			3	237				
01:15		8	206			8	237				
01:30		11	260			5	272				
01:45		10	259	37	914	9	222	25	968	62	1882
02:00		10	235			6	238				
02:15		10	203			6	242				
02:30		5	220			4	276				
02:45		6	298	31	956	9	245	25	1001	56	1957
03:00		10	285			9	219				
03:15		5	294			4	195				
03:30		7	295			8	225				
03:45		8	315	30	1189	3	246	24	885	54	2074
04:00		4	285			9	241				
04:15		12	288			11	211				
04:30		11	**295**			12	233				
04:45		19	**316**	46	1184	25	225	57	910	103	2094
05:00		24	**288**			25	280				
05:15		26	**297**			32	228				
05:30		36	280			40	240				
05:45		52	289	138	1154	57	225	154	973	292	2127
06:00		50	249			82	220				
06:15		72	210			84	215				
06:30		83	223			92	186				
06:45		101	172	306	854	123	165	381	786	687	1640
07:00		134	153			151	181				
07:15		156	160			212	141				
07:30		235	141			**256**	156				
07:45		**267**	108	792	562	**271**	156	890	634	1682	1196
08:00		**238**	116			**272**	128				
08:15		**227**	110			**258**	94				
08:30		**238**	99			229	133				
08:45		250	106	953	431	195	116	954	471	1907	902
09:00		234	66			221	74				
09:15		218	78			214	59				
09:30		212	62			223	50				
09:45		235	45	899	251	189	55	847	238	1746	489
10:00		210	55			187	53				
10:15		199	40			179	26				
10:30		190	34			205	29				
10:45		186	30	785	159	201	18	772	126	1557	285
11:00		210	14			209	29				
11:15		225	31			209	19				
11:30		222	14			252	12				
11:45		280	21	937	80	249	22	919	82	1856	162
Total		5004	8774	5004	8774	5086	8167	5086	8167	10090	16941
Combined Total		13778		13778		13253		13253		27031	
AM Peak	-	07:45	-	-	-	07:30	-	-	-	-	-
Vol.	-	970	-	-	-	1057	-	-	-	-	-
P.H.F.		0.908				0.972					
PM Peak	-	-	04:30	-	-	-	12:00	-	-	-	-
Vol.	-	-	1196	-	-	-	1093	-	-	-	-
P.H.F.			0.946				0.946				
Percentage		36.3%	63.7%			38.4%	61.6%				
ADT/AADT		ADT 27,031		AADT 27,031							

Counts Unlimited, Inc.

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City of San Diego
Bernardo Center Drive
W/ Camino Del Norte
24 Hour Directional Volume Count

SDG004
Site Code: 057-231050

Start	11/2/23	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	177			6	172				
12:15		6	101			10	84				
12:30		2	180			7	110				
12:45		4	133	16	591	7	110	30	476	46	1067
01:00		7	112			8	98				
01:15		4	129			3	99				
01:30		8	140			6	133				
01:45		1	174	20	555	3	149	20	479	40	1034
02:00		1	165			2	121				
02:15		2	129			1	114				
02:30		2	147			2	113				
02:45		2	208	7	649	2	114	7	462	14	1111
03:00		2	164			3	109				
03:15		1	197			1	169				
03:30		4	220			3	140				
03:45		6	**242**	13	823	0	144	7	562	20	1385
04:00		5	**258**			7	183				
04:15		11	**253**			11	164				
04:30		2	**225**			12	176				
04:45		11	226	29	962	13	**215**	43	738	72	1700
05:00		21	214			13	**204**				
05:15		17	211			18	**238**				
05:30		26	249			25	**194**				
05:45		47	226	111	900	31	196	87	832	198	1732
06:00		56	199			50	184				
06:15		61	157			38	157				
06:30		75	160			74	146				
06:45		85	123	277	639	80	148	242	635	519	1274
07:00		132	113			110	144				
07:15		175	124			**200**	129				
07:30		**256**	92			**211**	121				
07:45		**263**	65	826	394	**184**	71	705	465	1531	859
08:00		**205**	72			**159**	113				
08:15		**186**	64			152	93				
08:30		203	57			153	74				
08:45		181	74	775	267	146	60	610	340	1385	607
09:00		146	40			108	72				
09:15		158	48			94	51				
09:30		145	44			81	49				
09:45		126	36	575	168	93	54	376	226	951	394
10:00		135	58			87	36				
10:15		136	34			93	26				
10:30		113	21			97	30				
10:45		142	12	526	125	97	20	374	112	900	237
11:00		114	12			101	23				
11:15		94	3			100	18				
11:30		106	11			118	16				
11:45		106	8	420	34	166	5	485	62	905	96
Total		3595	6107	3595	6107	2986	5389	2986	5389	6581	11496
Combined Total		9702		9702		8375		8375		18077	
AM Peak	-	07:30	-	-	-	07:15	-	-	-	-	-
Vol.	-	910	-	-	-	754	-	-	-	-	-
P.H.F.		0.865				0.893					
PM Peak	-	-	03:45	-	-	-	04:45	-	-	-	-
Vol.	-	-	978	-	-	-	851	-	-	-	-
P.H.F.			0.948				0.894				
Percentage		37.1%	62.9%			35.7%	64.3%				
ADT/AADT		ADT 18,077		AADT 18,077							

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City of San Diego
Bernardo Center Drive
W/ Interstate 15 Southbound Ramps
24 Hour Directional Volume Count

SDG005
Site Code: 057-231050

Start Time	11/2/23 Thu	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		14	214			6	**155**				
12:15		6	188			7	**159**				
12:30		8	193			3	**173**				
12:45		7	154	35	749	13	**164**	29	651	64	1400
01:00		16	144			9	144				
01:15		8	146			6	152				
01:30		7	169			7	182				
01:45		7	214	38	673	9	133	31	611	69	1284
02:00		7	203			10	126				
02:15		1	181			10	142				
02:30		5	251			9	140				
02:45		9	233	22	868	8	114	37	522	59	1390
03:00		9	238			12	104				
03:15		2	288			30	128				
03:30		12	334			34	119				
03:45		6	286	29	1146	29	143	105	494	134	1640
04:00		20	**361**			26	137				
04:15		41	**332**			47	114				
04:30		30	**308**			37	125				
04:45		13	**314**	104	1315	49	117	159	493	263	1808
05:00		12	330			40	134				
05:15		24	291			50	141				
05:30		29	283			69	158				
05:45		37	273	102	1177	132	144	291	577	393	1754
06:00		33	222			86	113				
06:15		44	231			115	114				
06:30		59	170			115	127				
06:45		63	150	199	773	178	108	494	462	693	1235
07:00		93	115			191	105				
07:15		120	119			261	84				
07:30		**183**	89			286	80				
07:45		**177**	74	573	397	309	81	1047	350	1620	747
08:00		**160**	81			**314**	75				
08:15		**144**	70			**333**	74				
08:30		116	67			**328**	80				
08:45		128	71	548	289	**358**	83	1333	312	1881	601
09:00		117	50			257	44				
09:15		143	38			234	57				
09:30		109	49			218	45				
09:45		109	41	478	178	200	35	909	181	1387	359
10:00		108	27			175	29				
10:15		127	26			165	27				
10:30		125	24			132	23				
10:45		119	13	479	90	135	16	607	95	1086	185
11:00		154	16			129	17				
11:15		126	14			159	11				
11:30		193	12			175	10				
11:45		149	13	622	55	163	5	626	43	1248	98
Total		3229	7710	3229	7710	5668	4791	5668	4791	8897	12501
Combined Total		10939		10939		10459		10459		21398	
AM Peak	-	07:30	-	-	-	08:00	-	-	-	-	-
Vol.	-	664	-	-	-	1333	-	-	-	-	-
P.H.F.		0.907				0.931					
PM Peak	-	-	04:00	-	-	-	12:00	-	-	-	-
Vol.	-	-	1315	-	-	-	651	-	-	-	-
P.H.F.			0.911				0.941				
Percentage		29.5%	70.5%			54.2%	45.8%				
ADT/AADT		ADT 21,398		AADT 21,398							

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City of San Diego
Bernardo Heights Parkway
S/ Bernardo Center Drive
24 Hour Directional Volume Count

SDG007
Site Code: 057-231050

Start	11/2/23	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	123			6	110				
12:15		5	112			3	108				
12:30		4	126			7	129				
12:45		2	139	13	500	6	138	22	485	35	985
01:00		7	137			8	96				
01:15		3	122			2	105				
01:30		6	157			5	137				
01:45		8	147	24	563	9	140	24	478	48	1041
02:00		4	173			6	148				
02:15		4	140			5	173				
02:30		1	280			0	151				
02:45		5	156	14	749	6	147	17	619	31	1368
03:00		2	157			1	151				
03:15		2	166			2	144				
03:30		4	161			4	**206**				
03:45		2	**261**	10	745	3	**221**	10	722	20	1467
04:00		3	**209**			1	**133**				
04:15		12	**177**			5	**169**				
04:30		5	**173**			3	156				
04:45		16	169	36	728	6	174	15	632	51	1360
05:00		13	175			5	187				
05:15		17	157			3	167				
05:30		17	131			9	156				
05:45		31	135	78	598	17	191	34	701	112	1299
06:00		55	123			23	148				
06:15		53	131			39	124				
06:30		68	102			30	108				
06:45		80	94	256	450	58	94	150	474	406	924
07:00		126	83			95	102				
07:15		167	75			120	97				
07:30		**262**	69			**195**	86				
07:45		**323**	44	878	271	**213**	65	623	350	1501	621
08:00		**268**	61			**196**	86				
08:15		**262**	31			**182**	60				
08:30		218	61			116	67				
08:45		129	41	877	194	122	70	616	283	1493	477
09:00		132	38			86	38				
09:15		110	24			96	56				
09:30		144	24			87	37				
09:45		126	25	512	111	91	26	360	157	872	268
10:00		115	29			104	27				
10:15		114	15			99	30				
10:30		91	17			87	19				
10:45		128	7	448	68	92	26	382	102	830	170
11:00		117	20			120	9				
11:15		115	15			113	11				
11:30		155	8			99	12				
11:45		147	8	534	51	141	7	473	39	1007	90
Total		3680	5028	3680	5028	2726	5042	2726	5042	6406	10070
Combined Total		8708		8708		7768		7768		16476	
AM Peak	-	07:30	-	-	-	07:30	-	-	-	-	-
Vol.	-	1115	-	-	-	786	-	-	-	-	-
P.H.F.		0.863				0.923					
PM Peak	-	-	03:45	-	-	-	03:30	-	-	-	-
Vol.	-	-	820	-	-	-	729	-	-	-	-
P.H.F.			0.785				0.825				
Percentage		42.3%	57.7%			35.1%	64.9%				
ADT/AADT		ADT 16,476		AADT 16,476							

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City of San Diego
Camino Del Norte
N/ Bernardo Center Drive
24 Hour Directional Volume Count

SDG001
Site Code: 057-231050

Start	11/2/23	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		22	300			13	281				
12:15		17	251			8	258				
12:30		16	283			13	272				
12:45		18	304	73	1138	10	278	44	1089	117	2227
01:00		11	261			8	274				
01:15		10	242			5	285				
01:30		5	247			13	304				
01:45		11	271	37	1021	8	298	34	1161	71	2182
02:00		8	249			8	318				
02:15		11	277			6	340				
02:30		7	273			11	345				
02:45		11	283	37	1082	9	302	34	1305	71	2387
03:00		8	302			6	331				
03:15		33	281			23	360				
03:30		19	298			7	**420**				
03:45		19	322	79	1203	10	**403**	46	1514	125	2717
04:00		22	335			11	**427**				
04:15		26	355			27	**414**				
04:30		31	333			22	390				
04:45		71	366	150	1389	25	352	85	1583	235	2972
05:00		50	**392**			28	398				
05:15		85	**381**			35	390				
05:30		95	**418**			58	401				
05:45		124	**397**	354	1588	58	392	179	1581	533	3169
06:00		113	365			75	355				
06:15		145	310			95	297				
06:30		156	247			128	304				
06:45		254	280	668	1202	151	262	449	1218	1117	2420
07:00		246	273			205	255				
07:15		259	231			285	267				
07:30		340	233			317	169				
07:45		**454**	227	1299	964	296	154	1103	845	2402	1809
08:00		**343**	178			**342**	176				
08:15		**342**	192			**306**	131				
08:30		**393**	155			**382**	138				
08:45		303	126	1381	651	**335**	124	1365	569	2746	1220
09:00		276	125			323	115				
09:15		242	127			298	91				
09:30		212	119			254	96				
09:45		230	80	960	451	256	65	1131	367	2091	818
10:00		201	77			241	56				
10:15		168	64			245	47				
10:30		181	62			233	54				
10:45		218	32	768	235	244	40	963	197	1731	432
11:00		214	47			229	32				
11:15		223	25			246	26				
11:30		264	19			250	19				
11:45		236	32	937	123	288	19	1013	96	1950	219
Total		6743	11047	6743	11047	6446	11525	6446	11525	13189	22572
Combined Total		17790		17790		17971		17971		35761	
AM Peak	-	07:45	-	-	-	08:00	-	-	-	-	-
Vol.	-	1532	-	-	-	1365	-	-	-	-	-
P.H.F.		0.844				0.893					
PM Peak	-	-	05:00	-	-	-	03:30	-	-	-	-
Vol.	-	-	1588	-	-	-	1664	-	-	-	-
P.H.F.			0.950				0.974				
Percentage		37.9%	62.1%			35.9%	64.1%				
ADT/AADT		ADT 35,761		AADT 35,761							

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City of San Diego
Camino Del Norte
S/ Bernardo Center Drive
24 Hour Directional Volume Count

SDG002
Site Code: 057-231050

Start	11/2/23	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		22	309			14	347				
12:15		24	312			10	333				
12:30		22	307			13	347				
12:45		21	344	89	1272	16	288	53	1315	142	2587
01:00		9	315			8	326				
01:15		13	321			12	314				
01:30		11	323			18	343				
01:45		3	334	36	1293	5	386	43	1369	79	2662
02:00		5	292			5	386				
02:15		11	347			4	394				
02:30		15	337			6	495				
02:45		19	365	50	1341	14	367	29	1642	79	2983
03:00		29	399			9	438				
03:15		26	359			9	382				
03:30		32	418			15	525				
03:45		35	384	122	1560	17	488	50	1833	172	3393
04:00		32	456			16	530				
04:15		47	448			46	518				
04:30		48	443			28	507				
04:45		87	486	214	1833	33	471	123	2026	337	3859
05:00		66	**481**			41	**502**				
05:15		96	**546**			50	**568**				
05:30		128	**463**			70	**516**				
05:45		190	**504**	480	1994	88	**504**	249	2090	729	4084
06:00		158	445			110	445				
06:15		196	423			122	421				
06:30		169	318			162	340				
06:45		327	346	850	1532	182	294	576	1500	1426	3032
07:00		302	307			290	286				
07:15		365	315			334	290				
07:30		491	304			**443**	253				
07:45		**540**	267	1698	1193	**436**	190	1503	1019	3201	2212
08:00		**478**	231			**412**	223				
08:15		**455**	239			**396**	167				
08:30		**495**	192			418	152				
08:45		433	165	1861	827	395	153	1621	695	3482	1522
09:00		341	173			371	137				
09:15		330	167			348	131				
09:30		276	157			314	107				
09:45		301	119	1248	616	332	81	1365	456	2613	1072
10:00		265	95			302	97				
10:15		221	76			299	69				
10:30		257	81			306	54				
10:45		260	49	1003	301	320	53	1227	273	2230	574
11:00		255	59			305	47				
11:15		277	45			286	29				
11:30		335	27			309	31				
11:45		326	43	1193	174	341	19	1241	126	2434	300
Total		8844	13936	8844	13936	8080	14344	8080	14344	16924	28280
Combined Total		22780		22780		22424		22424		45204	
AM Peak	-	07:45	-	-	-	07:30	-	-	-	-	-
Vol.	-	1968	-	-	-	1687	-	-	-	-	-
P.H.F.		0.911				0.952					
PM Peak	-	-	05:00	-	-	-	05:00	-	-	-	-
Vol.	-	-	1994	-	-	-	2090	-	-	-	-
P.H.F.			0.913				0.920				
Percentage		38.8%	61.2%			36.0%	64.0%				
ADT/AADT		ADT 45,204		AADT 45,204							

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City of San Diego
N/S: Camino del Norte
E/W: Bernardo Center Drive
Weather: Clear

File Name : 01_SDG_Cm D N_Ber Ctr AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

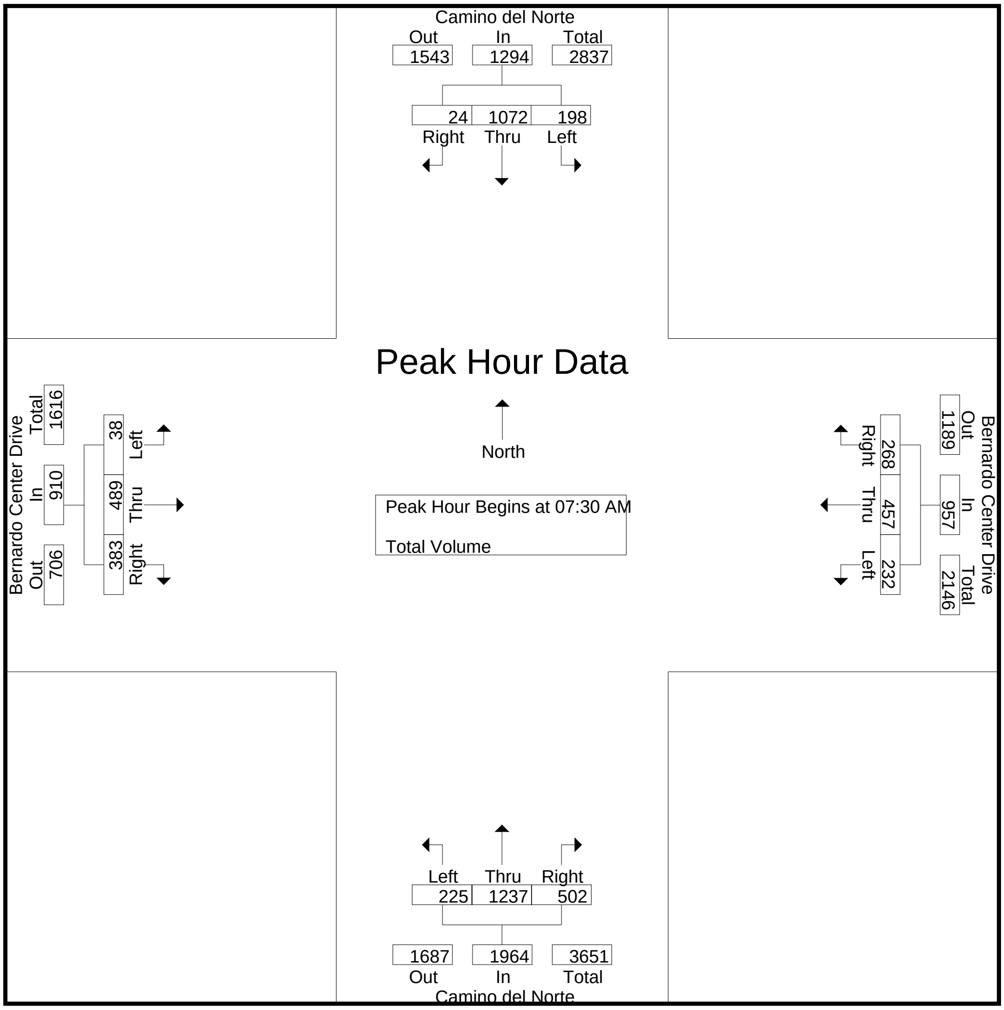
Groups Printed- Total Volume

	Camino del Norte Southbound				Bernardo Center Drive Westbound				Camino del Norte Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	21	189	2	212	36	78	37	151	30	203	69	302	4	63	65	132	797
07:15 AM	29	217	4	250	37	137	32	206	59	203	103	365	4	91	80	175	996
07:30 AM	49	263	6	318	68	140	56	264	65	270	156	491	7	137	112	256	1329
07:45 AM	47	255	10	312	70	123	90	283	51	367	122	540	14	138	111	263	1398
Total	146	924	22	1092	211	478	215	904	205	1043	450	1698	29	429	368	826	4520
08:00 AM	57	275	6	338	51	97	74	222	56	304	118	478	10	109	86	205	1243
08:15 AM	45	279	2	326	43	97	48	188	53	296	106	455	7	105	74	186	1155
08:30 AM	49	299	6	354	30	101	53	184	46	333	116	495	6	108	89	203	1236
08:45 AM	67	295	5	367	35	90	43	168	51	275	107	433	9	107	65	181	1149
Total	218	1148	19	1385	159	385	218	762	206	1208	447	1861	32	429	314	775	4783
Grand Total	364	2072	41	2477	370	863	433	1666	411	2251	897	3559	61	858	682	1601	9303
Apprch %	14.7	83.6	1.7		22.2	51.8	26		11.5	63.2	25.2		3.8	53.6	42.6		
Total %	3.9	22.3	0.4	26.6	4	9.3	4.7	17.9	4.4	24.2	9.6	38.3	0.7	9.2	7.3	17.2	

	Camino del Norte Southbound				Bernardo Center Drive Westbound				Camino del Norte Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	49	263	6	318	68	**140**	56	264	**65**	270	**156**	491	7	137	**112**	256	1329
07:45 AM	47	255	**10**	312	**70**	123	**90**	**283**	51	**367**	122	**540**	**14**	**138**	111	**263**	**1398**
08:00 AM	**57**	275	6	**338**	51	97	74	222	56	304	118	478	10	109	86	205	1243
08:15 AM	45	**279**	2	326	43	97	48	188	53	296	106	455	7	105	74	186	1155
Total Volume	198	1072	24	1294	232	457	268	957	225	1237	502	1964	38	489	383	910	5125
% App. Total	15.3	82.8	1.9		24.2	47.8	28		11.5	63	25.6		4.2	53.7	42.1		
PHF	.868	.961	.600	.957	.829	.816	.744	.845	.865	.843	.804	.909	.679	.886	.855	.865	.916

City of San Diego
N/S: Camino del Norte
E/W: Bernardo Center Drive
Weather: Clear

File Name : 01_SDG_Cm D N_Ber Ctr AM
Site Code : 231050
Start Date : 11/2/2023



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:15 AM				07:45 AM				07:30 AM			
+0 mins.	57	275	**6**	338	37	137	32	206	51	**367**	**122**	**540**	7	137	**112**	256
+15 mins.	45	279	2	326	68	**140**	56	264	**56**	304	118	478	**14**	**138**	111	**263**
+30 mins.	49	**299**	6	354	**70**	123	**90**	**283**	53	296	106	455	10	109	86	205
+45 mins.	**67**	295	5	**367**	51	97	74	222	46	333	116	495	7	105	74	186
Total Volume	218	1148	19	1385	226	497	252	975	206	1300	462	1968	38	489	383	910
% App. Total	15.7	82.9	1.4		23.2	51	25.8		10.5	66.1	23.5		4.2	53.7	42.1	
PHF	.813	.960	.792	.943	.807	.888	.700	.861	.920	.886	.947	.911	.679	.886	.855	.865

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City of San Diego
N/S: Camino del Norte
E/W: Bernardo Center Drive
Weather: Clear

File Name : 01_SDG_Cm D N_Ber Ctr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

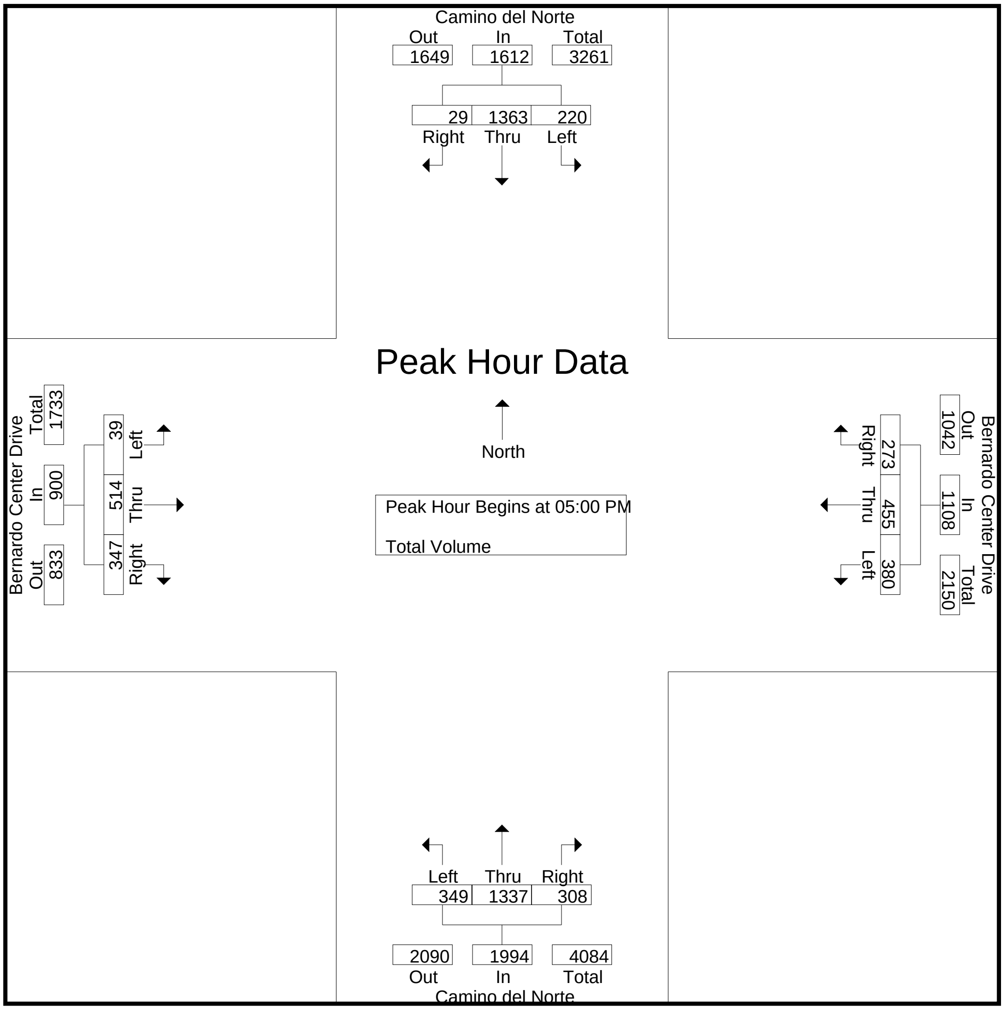
Groups Printed- Total Volume

	Camino del Norte Southbound				Bernardo Center Drive Westbound				Camino del Norte Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	45	372	6	423	79	101	61	241	76	299	81	456	4	175	79	258	1378
04:15 PM	63	365	7	435	68	91	71	230	66	310	72	448	4	164	85	253	1366
04:30 PM	39	348	5	392	84	102	54	240	69	293	81	443	4	146	75	225	1300
04:45 PM	49	309	10	368	94	109	67	270	96	293	97	486	7	151	68	226	1350
Total	196	1394	28	1618	325	403	253	981	307	1195	331	1833	19	636	307	962	5394
05:00 PM	41	324	4	369	108	126	56	290	74	330	77	481	7	137	70	214	1354
05:15 PM	58	369	12	439	124	131	80	335	95	348	103	546	16	120	75	211	1531
05:30 PM	47	338	8	393	76	106	72	254	80	320	63	463	8	138	103	249	1359
05:45 PM	74	332	5	411	72	92	65	229	100	339	65	504	8	119	99	226	1370
Total	220	1363	29	1612	380	455	273	1108	349	1337	308	1994	39	514	347	900	5614
Grand Total	416	2757	57	3230	705	858	526	2089	656	2532	639	3827	58	1150	654	1862	11008
Apprch %	12.9	85.4	1.8		33.7	41.1	25.2		17.1	66.2	16.7		3.1	61.8	35.1		
Total %	3.8	25	0.5	29.3	6.4	7.8	4.8	19	6	23	5.8	34.8	0.5	10.4	5.9	16.9	

	Camino del Norte Southbound				Bernardo Center Drive Westbound				Camino del Norte Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	41	324	4	369	108	126	56	290	74	330	77	481	7	137	70	214	1354
05:15 PM	58	**369**	**12**	**439**	**124**	**131**	**80**	**335**	95	**348**	**103**	**546**	**16**	120	75	211	**1531**
05:30 PM	47	338	8	393	76	106	72	254	80	320	63	463	8	**138**	**103**	**249**	1359
05:45 PM	**74**	332	5	411	72	92	65	229	**100**	339	65	504	8	119	99	226	1370
Total Volume	220	1363	29	1612	380	455	273	1108	349	1337	308	1994	39	514	347	900	5614
% App. Total	13.6	84.6	1.8		34.3	41.1	24.6		17.5	67.1	15.4		4.3	57.1	38.6		
PHF	.743	.923	.604	.918	.766	.868	.853	.827	.873	.960	.748	.913	.609	.931	.842	.904	.917

City of San Diego
N/S: Camino del Norte
E/W: Bernardo Center Drive
Weather: Clear

File Name : 01_SDG_Cm D N_Ber Ctr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				05:00 PM				04:00 PM			
+0 mins.	45	**372**	6	423	94	109	67	270	74	330	77	481	4	**175**	79	**258**
+15 mins.	**63**	365	7	**435**	108	126	56	290	95	**348**	**103**	**546**	4	164	**85**	253
+30 mins.	39	348	5	392	**124**	**131**	**80**	**335**	80	320	63	463	4	146	75	225
+45 mins.	49	309	**10**	368	76	106	72	254	**100**	339	65	504	**7**	151	68	226
Total Volume	196	1394	28	1618	402	472	275	1149	349	1337	308	1994	19	636	307	962
% App. Total	12.1	86.2	1.7		35	41.1	23.9		17.5	67.1	15.4		2	66.1	31.9	
PHF	.778	.937	.700	.930	.810	.901	.859	.857	.873	.960	.748	.913	.679	.909	.903	.932

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City of San Diego
N/S: Bernardo Center Drive
E/W: W Bernardo Drive
Weather: Clear

File Name : 02_SDG_Ber Ctr_Ber Dr AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

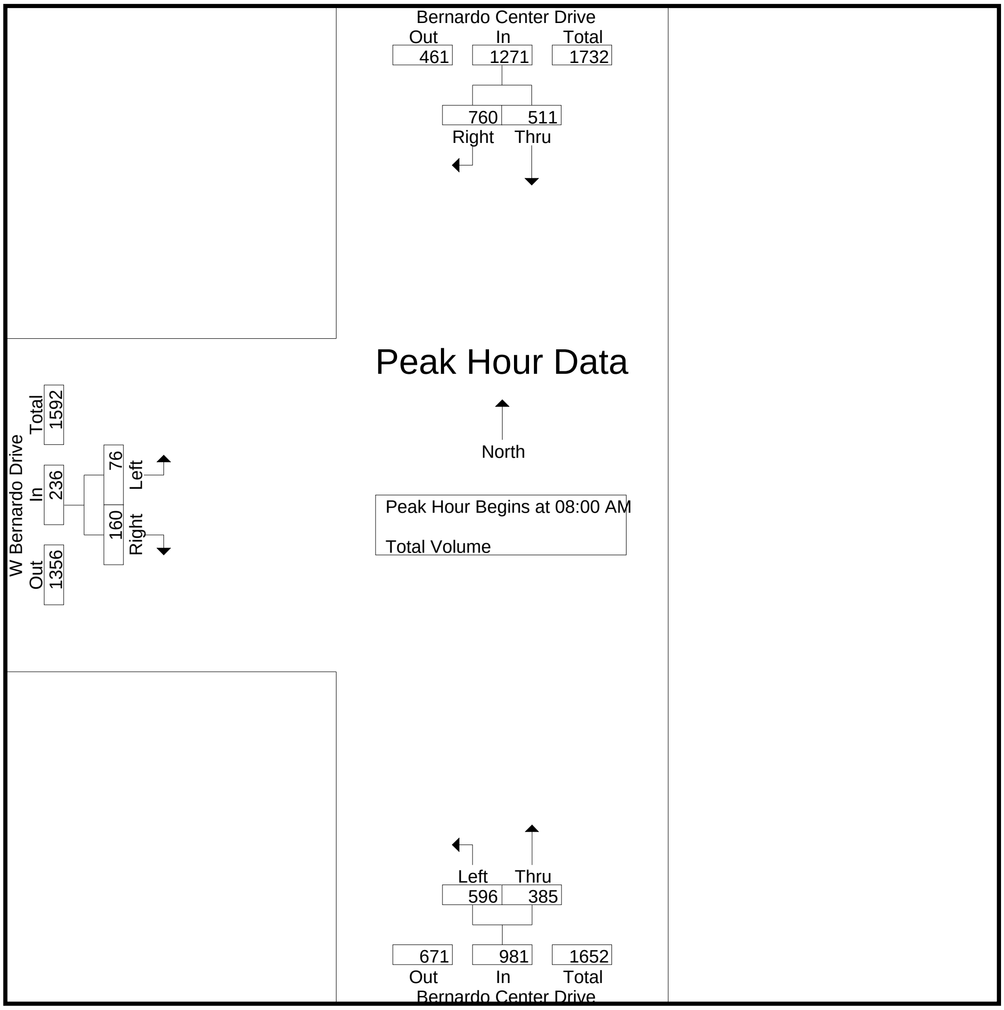
Groups Printed- Total Volume

	Bernardo Center Drive Southbound			Bernardo Center Drive Northbound			W Bernardo Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	75	104	179	72	58	130	8	34	42	351
07:15 AM	116	108	224	92	64	156	20	57	77	457
07:30 AM	139	140	279	123	108	231	24	58	82	592
07:45 AM	115	145	260	176	132	308	14	59	73	641
Total	445	497	942	463	362	825	66	208	274	2041
08:00 AM	134	175	309	139	99	238	17	46	63	610
08:15 AM	128	189	317	145	95	240	16	46	62	619
08:30 AM	125	176	301	155	85	240	26	36	62	603
08:45 AM	124	220	344	157	106	263	17	32	49	656
Total	511	760	1271	596	385	981	76	160	236	2488
Grand Total	956	1257	2213	1059	747	1806	142	368	510	4529
Apprch %	43.2	56.8		58.6	41.4		27.8	72.2		
Total %	21.1	27.8	48.9	23.4	16.5	39.9	3.1	8.1	11.3	

	Bernardo Center Drive Southbound			Bernardo Center Drive Northbound			W Bernardo Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	**134**	175	309	139	99	238	17	**46**	**63**	610
08:15 AM	128	189	317	145	95	240	16	46	62	619
08:30 AM	125	176	301	155	85	240	**26**	36	62	603
08:45 AM	124	**220**	**344**	**157**	**106**	**263**	17	32	49	**656**
Total Volume	511	760	1271	596	385	981	76	160	236	2488
% App. Total	40.2	59.8		60.8	39.2		32.2	67.8		
PHF	.953	.864	.924	.949	.908	.933	.731	.870	.937	.948

City of San Diego
N/S: Bernardo Center Drive
E/W: W Bernardo Drive
Weather: Clear

File Name : 02_SDG_Ber Ctr_Ber Dr AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:45 AM			07:15 AM		
+0 mins.	**134**	175	309	**176**	**132**	**308**	20	57	77
+15 mins.	128	189	317	139	99	238	**24**	58	**82**
+30 mins.	125	176	301	145	95	240	14	**59**	73
+45 mins.	124	**220**	**344**	155	85	240	17	46	63
Total Volume	511	760	1271	615	411	1026	75	220	295
% App. Total	40.2	59.8		59.9	40.1		25.4	74.6	
PHF	.953	.864	.924	.874	.778	.833	.781	.932	.899

City of San Diego
N/S: Bernardo Center Drive
E/W: W Bernardo Drive
Weather: Clear

File Name : 02_SDG_Ber Ctr_Ber Dr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

Groups Printed- Total Volume

	Bernardo Center Drive Southbound			Bernardo Center Drive Northbound			W Bernardo Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	109	18	127	74	173	247	153	94	247	621
04:15 PM	97	15	112	84	168	252	126	96	222	586
04:30 PM	109	18	127	69	150	219	141	142	283	629
04:45 PM	100	12	112	85	139	224	145	115	260	596
Total	415	63	478	312	630	942	565	447	1012	2432
05:00 PM	100	18	118	82	122	204	179	149	328	650
05:15 PM	123	14	137	100	137	237	144	142	286	660
05:30 PM	119	29	148	65	134	199	125	119	244	591
05:45 PM	107	27	134	56	141	197	99	111	210	541
Total	449	88	537	303	534	837	547	521	1068	2442
Grand Total	864	151	1015	615	1164	1779	1112	968	2080	4874
Apprch %	85.1	14.9		34.6	65.4		53.5	46.5		
Total %	17.7	3.1	20.8	12.6	23.9	36.5	22.8	19.9	42.7	

	Bernardo Center Drive Southbound			Bernardo Center Drive Northbound			W Bernardo Drive Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	109	**18**	127	69	**150**	219	141	142	283	629
04:45 PM	100	12	112	85	139	224	145	115	260	596
05:00 PM	100	18	118	82	122	204	**179**	**149**	**328**	650
05:15 PM	**123**	14	**137**	**100**	137	**237**	144	142	286	**660**
Total Volume	432	62	494	336	548	884	609	548	1157	2535
% App. Total	87.4	12.6		38	62		52.6	47.4		
PHF	.878	.861	.901	.840	.913	.932	.851	.919	.882	.960

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City of San Diego
N/S: Bernardo Center Drive
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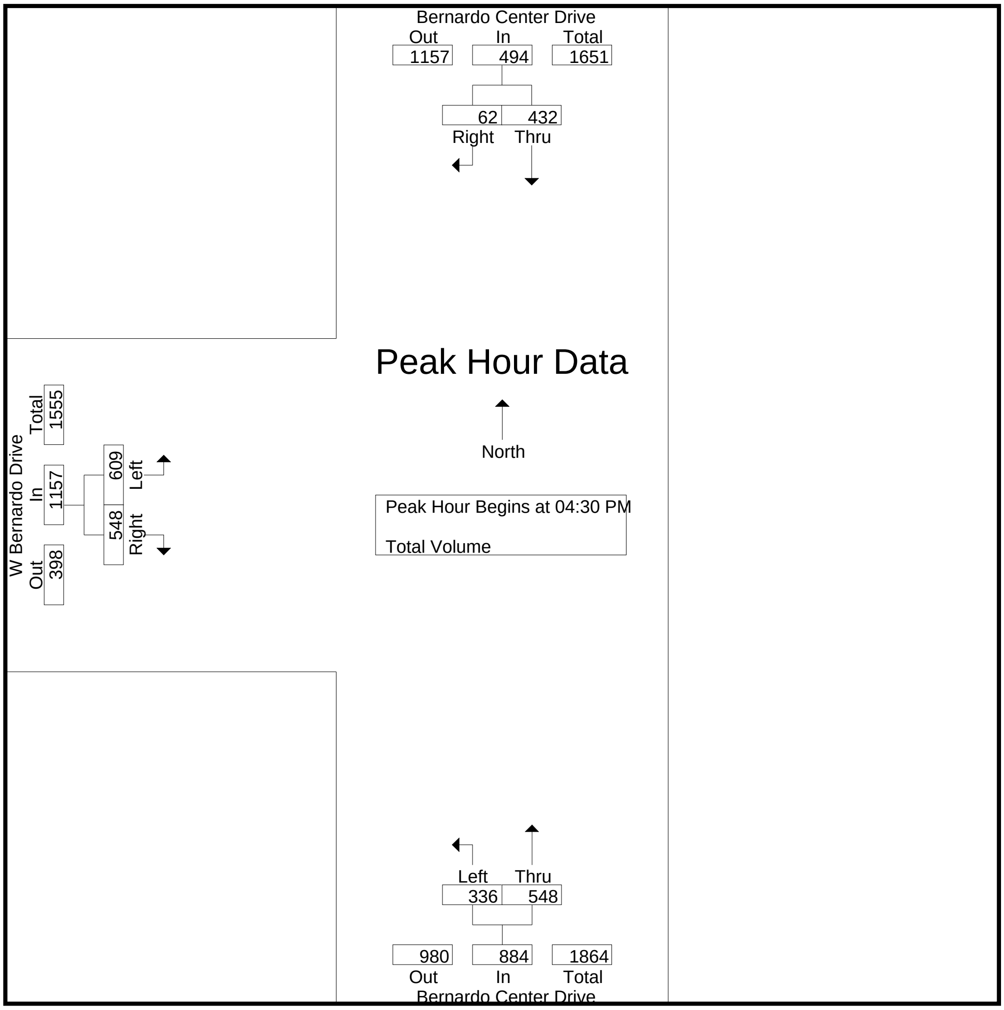
Weather: Clear

File Name : 02_SDG_Ber Ctr_Ber Dr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:00 PM			04:30 PM		
+0 mins.	100	18	118	74	**173**	247	141	142	283
+15 mins.	**123**	14	137	84	168	**252**	145	115	260
+30 mins.	119	**29**	**148**	69	150	219	**179**	**149**	**328**
+45 mins.	107	27	134	**85**	139	224	144	142	286
Total Volume	449	88	537	312	630	942	609	548	1157
% App. Total	83.6	16.4		33.1	66.9		52.6	47.4	
PHF	.913	.759	.907	.918	.910	.935	.851	.919	.882

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City of San Diego
N/S: Bernardo Center Drive
E/W: Cloudcrest Drive
Weather: Clear

File Name : 03_SDG_Ber Ctr_Cloud AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

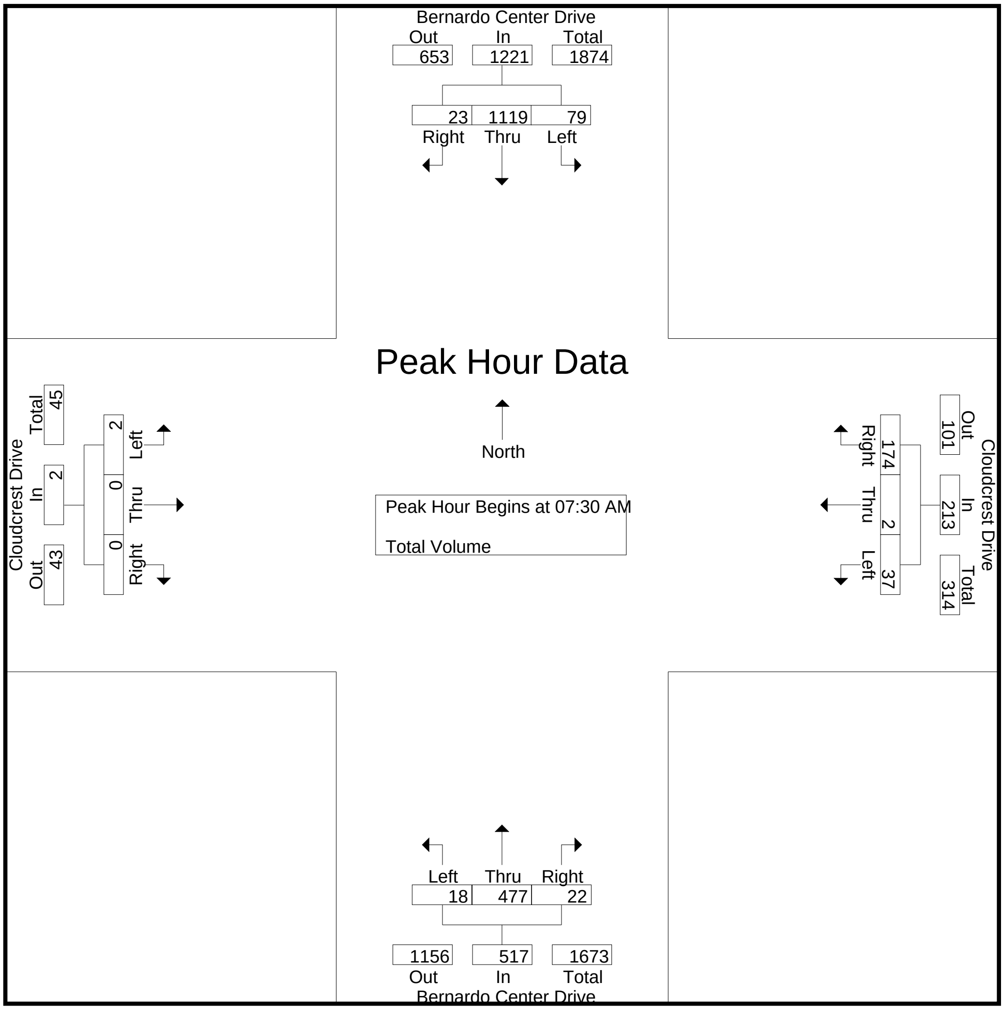
Groups Printed- Total Volume

	Bernardo Center Drive Southbound				Cloudcrest Drive Westbound				Bernardo Center Drive Northbound				Cloudcrest Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	10	178	4	192	3	0	26	29	0	67	0	67	0	0	0	0	288
07:15 AM	16	225	7	248	5	1	34	40	0	74	6	80	0	0	0	0	368
07:30 AM	33	264	5	302	13	1	59	73	4	125	7	136	0	0	0	0	511
07:45 AM	17	266	7	290	11	1	42	54	8	133	6	147	1	0	0	1	492
Total	76	933	23	1032	32	3	161	196	12	399	19	430	1	0	0	1	1659
08:00 AM	15	285	7	307	8	0	31	39	3	114	5	122	1	0	0	1	469
08:15 AM	14	304	4	322	5	0	42	47	3	105	4	112	0	0	0	0	481
08:30 AM	20	289	8	317	4	0	10	14	4	103	3	110	0	0	0	0	441
08:45 AM	13	328	15	356	6	1	21	28	9	104	4	117	1	0	0	1	502
Total	62	1206	34	1302	23	1	104	128	19	426	16	461	2	0	0	2	1893
Grand Total	138	2139	57	2334	55	4	265	324	31	825	35	891	3	0	0	3	3552
Apprch %	5.9	91.6	2.4		17	1.2	81.8		3.5	92.6	3.9		100	0	0		
Total %	3.9	60.2	1.6	65.7	1.5	0.1	7.5	9.1	0.9	23.2	1	25.1	0.1	0	0	0.1	

	Bernardo Center Drive Southbound				Cloudcrest Drive Westbound				Bernardo Center Drive Northbound				Cloudcrest Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**33**	264	5	302	**13**	**1**	**59**	**73**	4	125	**7**	136	0	0	0	0	**511**
07:45 AM	17	266	**7**	290	11	1	42	54	**8**	**133**	6	**147**	**1**	0	0	**1**	492
08:00 AM	15	285	7	307	8	0	31	39	3	114	5	122	1	0	0	1	469
08:15 AM	14	**304**	4	**322**	5	0	42	47	3	105	4	112	0	0	0	0	481
Total Volume	79	1119	23	1221	37	2	174	213	18	477	22	517	2	0	0	2	1953
% App. Total	6.5	91.6	1.9		17.4	0.9	81.7		3.5	92.3	4.3		100	0	0		
PHF	.598	.920	.821	.948	.712	.500	.737	.729	.563	.897	.786	.879	.500	.000	.000	.500	.955

City of San Diego
N/S: Bernardo Center Drive
E/W: Cloudcrest Drive
Weather: Clear

File Name : 03_SDG_Ber Ctr_Cloud AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:30 AM				07:15 AM			
+0 mins.	15	285	7	307	**13**	**1**	**59**	**73**	4	125	**7**	136	0	0	0	0
+15 mins.	14	304	4	322	11	1	42	54	**8**	**133**	6	**147**	0	0	0	0
+30 mins.	**20**	289	8	317	8	0	31	39	3	114	5	122	**1**	0	0	**1**
+45 mins.	13	**328**	**15**	**356**	5	0	42	47	3	105	4	112	1	0	0	1
Total Volume	62	1206	34	1302	37	2	174	213	18	477	22	517	2	0	0	2
% App. Total	4.8	92.6	2.6		17.4	0.9	81.7		3.5	92.3	4.3		100	0	0	
PHF	.775	.919	.567	.914	.712	.500	.737	.729	.563	.897	.786	.879	.500	.000	.000	.500

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City of San Diego
N/S: Bernardo Center Drive
E/W: Cloudcrest Drive
Weather: Clear

File Name : 03_SDG_Ber Ctr_Cloud PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

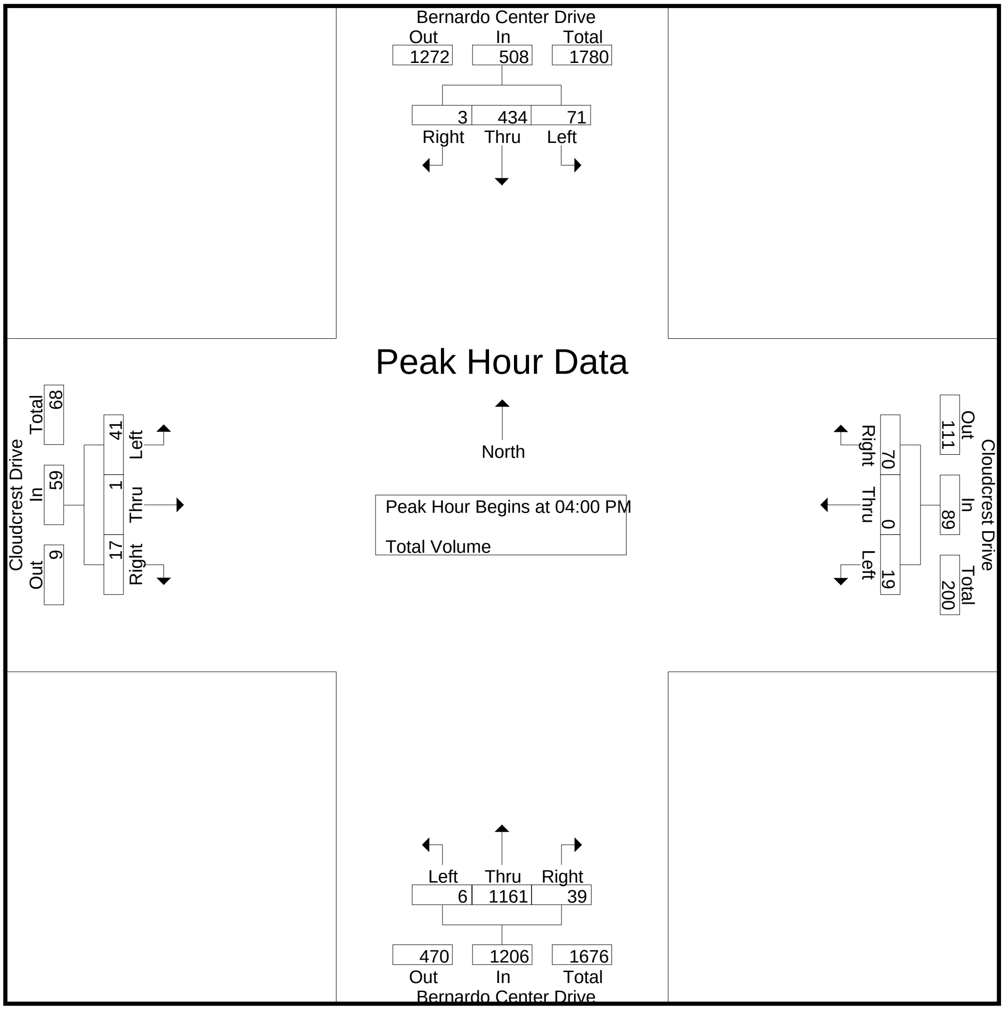
Groups Printed- Total Volume

	Bernardo Center Drive Southbound				Cloudcrest Drive Westbound				Bernardo Center Drive Northbound				Cloudcrest Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	29	106	2	137	7	0	19	26	1	329	12	342	10	0	5	15	520
04:15 PM	16	106	0	122	4	0	21	25	2	277	11	290	10	0	3	13	450
04:30 PM	17	121	0	138	6	0	14	20	2	281	6	289	14	0	5	19	466
04:45 PM	9	101	1	111	2	0	16	18	1	274	10	285	7	1	4	12	426
Total	71	434	3	508	19	0	70	89	6	1161	39	1206	41	1	17	59	1862
05:00 PM	17	115	0	132	5	0	23	28	0	296	5	301	9	0	3	12	473
05:15 PM	15	127	0	142	5	0	10	15	1	276	10	287	6	0	5	11	455
05:30 PM	21	141	1	163	7	0	14	21	0	249	11	260	10	1	5	16	460
05:45 PM	26	126	0	152	2	0	19	21	1	225	9	235	4	0	2	6	414
Total	79	509	1	589	19	0	66	85	2	1046	35	1083	29	1	15	45	1802
Grand Total	150	943	4	1097	38	0	136	174	8	2207	74	2289	70	2	32	104	3664
Apprch %	13.7	86	0.4		21.8	0	78.2		0.3	96.4	3.2		67.3	1.9	30.8		
Total %	4.1	25.7	0.1	29.9	1	0	3.7	4.7	0.2	60.2	2	62.5	1.9	0.1	0.9	2.8	

	Bernardo Center Drive Southbound				Cloudcrest Drive Westbound				Bernardo Center Drive Northbound				Cloudcrest Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**29**	106	**2**	137	**7**	0	19	**26**	1	**329**	**12**	**342**	10	0	**5**	15	**520**
04:15 PM	16	106	0	122	4	0	**21**	25	**2**	277	11	290	10	0	3	13	450
04:30 PM	17	**121**	0	**138**	6	0	14	20	2	281	6	289	**14**	0	5	**19**	466
04:45 PM	9	101	1	111	2	0	16	18	1	274	10	285	7	**1**	4	12	426
Total Volume	71	434	3	508	19	0	70	89	6	1161	39	1206	41	1	17	59	1862
% App. Total	14	85.4	0.6		21.3	0	78.7		0.5	96.3	3.2		69.5	1.7	28.8		
PHF	.612	.897	.375	.920	.679	.000	.833	.856	.750	.882	.813	.882	.732	.250	.850	.776	.895

City of San Diego
N/S: Bernardo Center Drive
E/W: Cloudcrest Drive
Weather: Clear

File Name : 03_SDG_Ber Ctr_Cloud PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	17	115	0	132	4	0	21	25	1	**329**	**12**	**342**	10	0	**5**	15
+15 mins.	15	127	0	142	**6**	0	14	20	**2**	277	11	290	10	0	3	13
+30 mins.	21	**141**	**1**	**163**	2	0	16	18	2	281	6	289	**14**	0	5	**19**
+45 mins.	**26**	126	0	152	5	0	**23**	**28**	1	274	10	285	7	**1**	4	12
Total Volume	79	509	1	589	17	0	74	91	6	1161	39	1206	41	1	17	59
% App. Total	13.4	86.4	0.2		18.7	0	81.3		0.5	96.3	3.2		69.5	1.7	28.8	
PHF	.760	.902	.250	.903	.708	.000	.804	.813	.750	.882	.813	.882	.732	.250	.850	.776

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City of San Diego
N/S: I-15 Southbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 04_SDG_15S_Ber Ctr AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

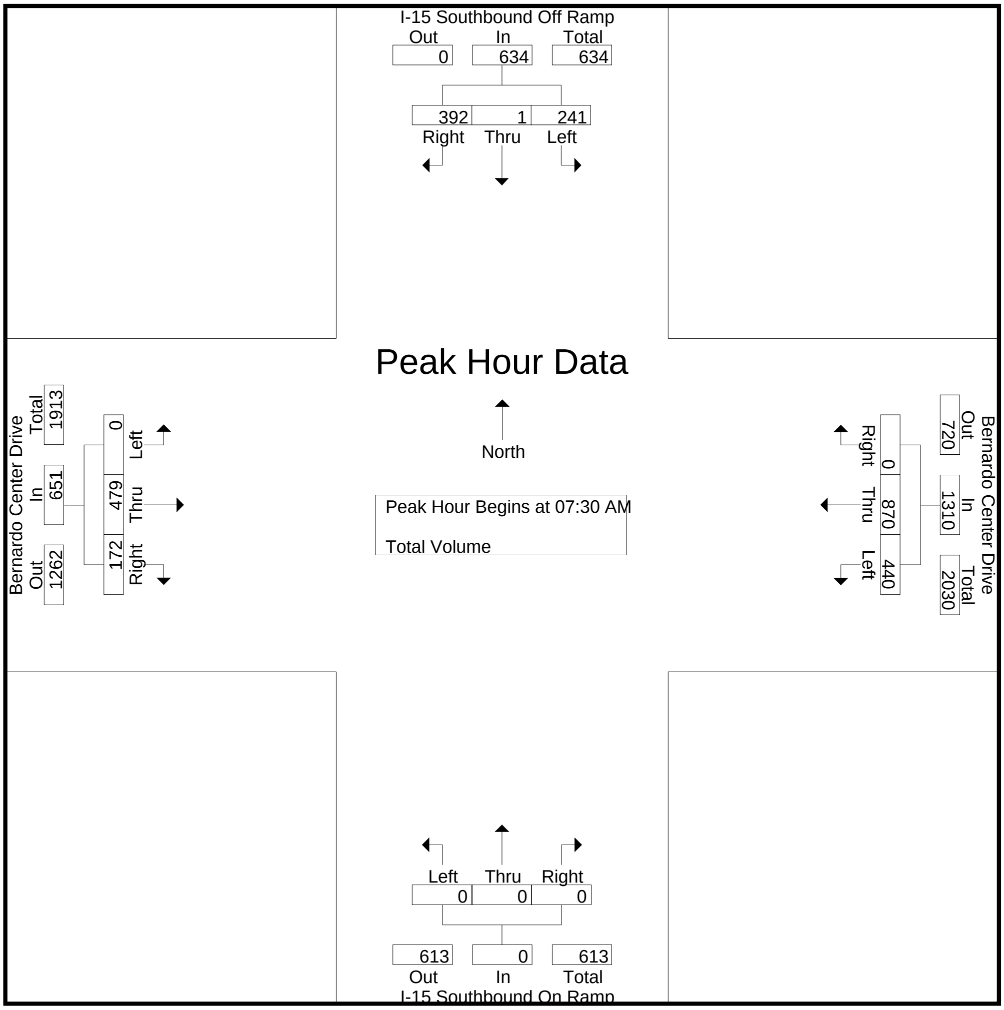
Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Bernardo Center Drive Westbound				I-15 Southbound On Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	47	2	86	135	76	110	0	186	0	0	0	0	0	67	21	88	409
07:15 AM	45	0	95	140	81	158	0	239	0	0	0	0	0	90	25	115	494
07:30 AM	54	1	97	152	107	201	0	308	0	0	0	0	0	111	51	162	622
07:45 AM	55	0	91	146	110	213	0	323	0	0	0	0	0	147	46	193	662
Total	201	3	369	573	374	682	0	1056	0	0	0	0	0	415	143	558	2187
08:00 AM	69	0	102	171	125	211	0	336	0	0	0	0	0	100	47	147	654
08:15 AM	63	0	102	165	98	245	0	343	0	0	0	0	0	121	28	149	657
08:30 AM	59	1	118	178	93	209	0	302	0	0	0	0	0	98	22	120	600
08:45 AM	65	0	129	194	79	242	0	321	0	0	0	0	0	113	17	130	645
Total	256	1	451	708	395	907	0	1302	0	0	0	0	0	432	114	546	2556
Grand Total	457	4	820	1281	769	1589	0	2358	0	0	0	0	0	847	257	1104	4743
Apprch %	35.7	0.3	64		32.6	67.4	0		0	0	0		0	76.7	23.3		
Total %	9.6	0.1	17.3	27	16.2	33.5	0	49.7	0	0	0	0	0	17.9	5.4	23.3	

	I-15 Southbound Off Ramp Southbound				Bernardo Center Drive Westbound				I-15 Southbound On Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	54	**1**	97	152	107	201	0	308	0	0	0	0	0	111	**51**	162	622
07:45 AM	55	0	91	146	110	213	0	323	0	0	0	0	0	**147**	46	**193**	**662**
08:00 AM	**69**	0	**102**	**171**	**125**	211	0	336	0	0	0	0	0	100	47	147	654
08:15 AM	63	0	102	165	98	**245**	0	**343**	0	0	0	0	0	121	28	149	657
Total Volume	241	1	392	634	440	870	0	1310	0	0	0	0	0	479	172	651	2595
% App. Total	38	0.2	61.8		33.6	66.4	0		0	0	0		0	73.6	26.4		
PHF	.873	.250	.961	.927	.880	.888	.000	.955	.000	.000	.000	.000	.000	.815	.843	.843	.980

City of San Diego
N/S: I-15 Southbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 04_SDG_15S_Ber Ctr AM
Site Code : 231050
Start Date : 11/2/2023



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	**69**	0	102	171	107	201	0	308	0	0	0	0	0	111	**51**	162
+15 mins.	63	0	102	165	110	213	0	323	0	0	0	0	0	**147**	46	**193**
+30 mins.	59	**1**	118	178	**125**	211	0	336	0	0	0	0	0	100	47	147
+45 mins.	65	0	**129**	**194**	98	**245**	0	**343**	0	0	0	0	0	121	28	149
Total Volume	256	1	451	708	440	870	0	1310	0	0	0	0	0	479	172	651
% App. Total	36.2	0.1	63.7		33.6	66.4	0		0	0	0		0	73.6	26.4	
PHF	.928	.250	.874	.912	.880	.888	.000	.955	.000	.000	.000	.000	.000	.815	.843	.843

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City of San Diego
N/S: I-15 Southbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 04_SDG_15S_Ber Ctr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Bernardo Center Drive Westbound				I-15 Southbound On Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	47	0	54	101	100	84	0	184	0	0	0	0	0	192	133	325	610
04:15 PM	43	3	48	94	96	76	0	172	0	0	0	0	0	227	110	337	603
04:30 PM	39	1	49	89	92	77	0	169	0	0	0	0	0	201	126	327	585
04:45 PM	56	0	44	100	98	72	0	170	0	0	0	0	0	165	111	276	546
Total	185	4	195	384	386	309	0	695	0	0	0	0	0	785	480	1265	2344
05:00 PM	34	1	44	79	121	79	0	200	0	0	0	0	0	182	148	330	609
05:15 PM	38	0	70	108	117	81	0	198	0	0	0	0	0	167	126	293	599
05:30 PM	28	0	60	88	91	102	0	193	0	0	0	0	0	161	116	277	558
05:45 PM	38	0	59	97	96	92	0	188	0	0	0	0	0	184	83	267	552
Total	138	1	233	372	425	354	0	779	0	0	0	0	0	694	473	1167	2318
Grand Total	323	5	428	756	811	663	0	1474	0	0	0	0	0	1479	953	2432	4662
Apprch %	42.7	0.7	56.6		55	45	0		0	0	0		0	60.8	39.2		
Total %	6.9	0.1	9.2	16.2	17.4	14.2	0	31.6	0	0	0	0	0	31.7	20.4	52.2	

	I-15 Southbound Off Ramp Southbound				Bernardo Center Drive Westbound				I-15 Southbound On Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	47	0	**54**	**101**	**100**	**84**	0	**184**	0	0	0	0	0	192	**133**	325	**610**
04:15 PM	43	**3**	48	94	96	76	0	172	0	0	0	0	0	**227**	110	**337**	603
04:30 PM	39	1	49	89	92	77	0	169	0	0	0	0	0	201	126	327	585
04:45 PM	**56**	0	44	100	98	72	0	170	0	0	0	0	0	165	111	276	546
Total Volume	185	4	195	384	386	309	0	695	0	0	0	0	0	785	480	1265	2344
% App. Total	48.2	1	50.8		55.5	44.5	0		0	0	0		0	62.1	37.9		
PHF	.826	.333	.903	.950	.965	.920	.000	.944	.000	.000	.000	.000	.000	.865	.902	.938	.961

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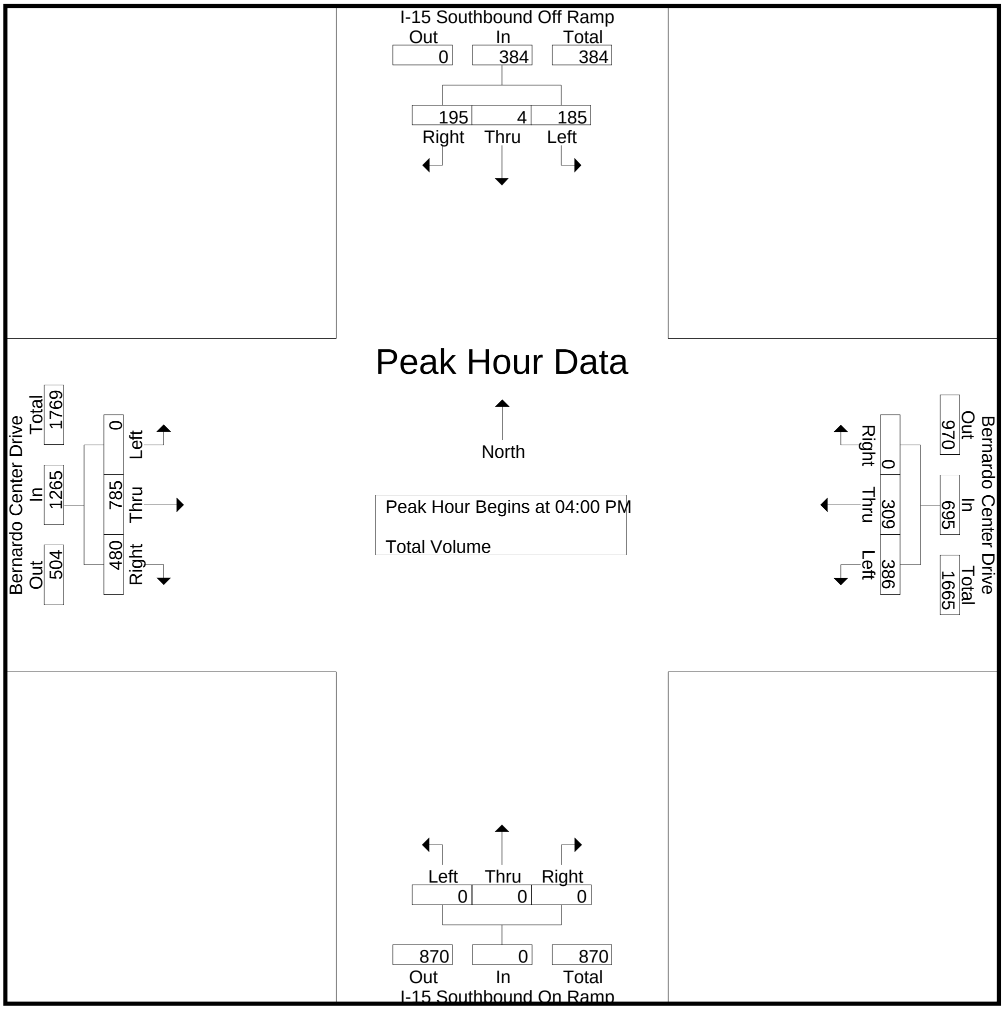
City of San Diego
N/S: I-15 Southbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 04_SDG_15S_Ber Ctr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:00 PM				04:15 PM			
+0 mins.	47	0	**54**	**101**	**121**	79	0	**200**	0	0	0	0	0	**227**	110	**337**
+15 mins.	43	**3**	48	94	117	81	0	198	0	0	0	0	0	201	126	327
+30 mins.	39	1	49	89	91	**102**	0	193	0	0	0	0	0	165	111	276
+45 mins.	**56**	0	44	100	96	92	0	188	0	0	0	0	0	182	**148**	330
Total Volume	185	4	195	384	425	354	0	779	0	0	0	0	0	775	495	1270
% App. Total	48.2	1	50.8		54.6	45.4	0		0	0	0		0	61	39	
PHF	.826	.333	.903	.950	.878	.868	.000	.974	.000	.000	.000	.000	.000	.854	.836	.942

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City of San Diego
N/S: I-15 Northbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 05_SDG_15N_Ber Ctr AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

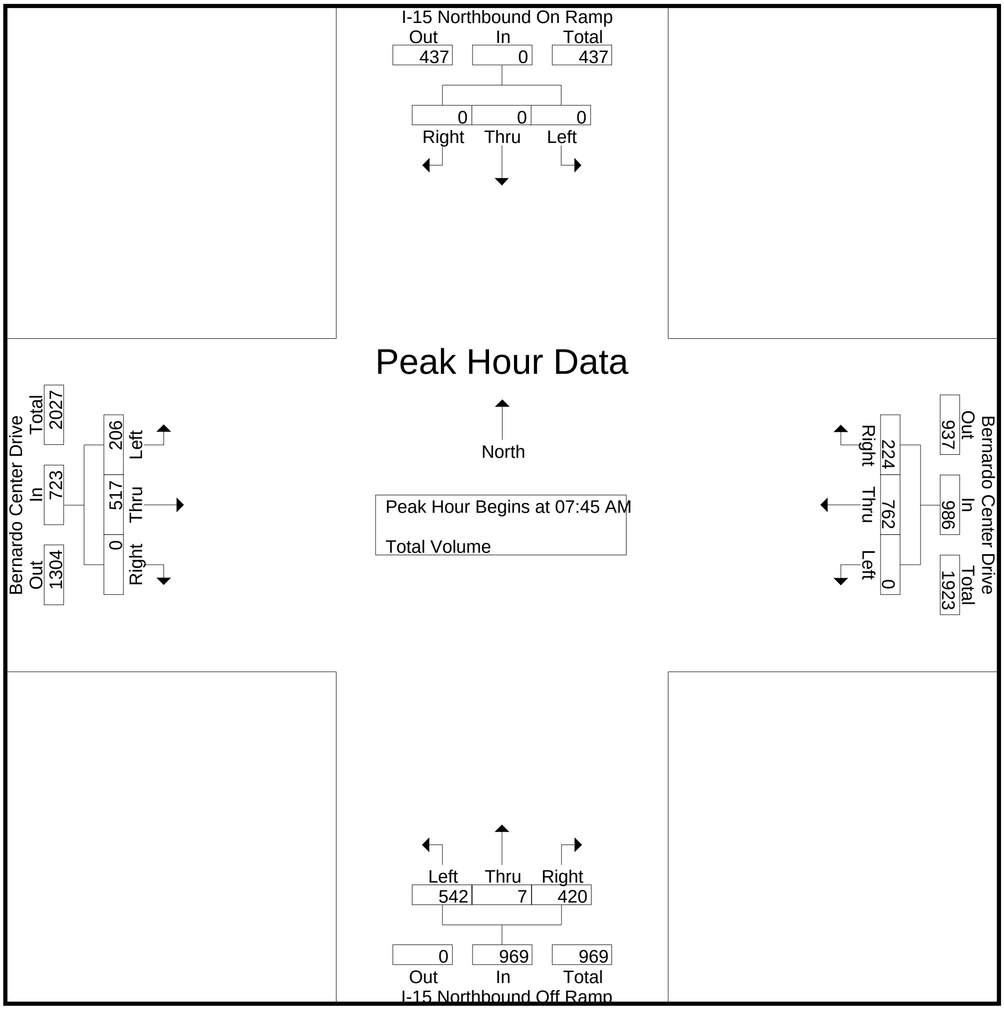
Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Bernardo Center Drive Westbound				I-15 Northbound Off Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	108	33	141	73	0	56	129	41	68	0	109	379
07:15 AM	0	0	0	0	0	154	49	203	86	4	64	154	43	95	0	138	495
07:30 AM	0	0	0	0	0	193	54	247	112	0	98	210	45	116	0	161	618
07:45 AM	0	0	0	0	0	190	52	242	130	2	120	252	66	141	0	207	701
Total	0	0	0	0	0	645	188	833	401	6	338	745	195	420	0	615	2193
08:00 AM	0	0	0	0	0	208	62	270	129	0	95	224	41	134	0	175	669
08:15 AM	0	0	0	0	0	192	58	250	149	4	96	249	52	129	0	181	680
08:30 AM	0	0	0	0	0	172	52	224	134	1	109	244	47	113	0	160	628
08:45 AM	0	0	0	0	0	143	32	175	170	2	114	286	41	137	0	178	639
Total	0	0	0	0	0	715	204	919	582	7	414	1003	181	513	0	694	2616
Grand Total	0	0	0	0	0	1360	392	1752	983	13	752	1748	376	933	0	1309	4809
Apprch %	0	0	0		0	77.6	22.4		56.2	0.7	43		28.7	71.3	0		
Total %	0	0	0	0	0	28.3	8.2	36.4	20.4	0.3	15.6	36.3	7.8	19.4	0	27.2	

	I-15 Northbound On Ramp Southbound				Bernardo Center Drive Westbound				I-15 Northbound Off Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	190	52	242	130	2	**120**	**252**	**66**	**141**	0	**207**	**701**
08:00 AM	0	0	0	0	0	**208**	**62**	**270**	129	0	95	224	41	134	0	175	669
08:15 AM	0	0	0	0	0	192	58	250	**149**	**4**	96	249	52	129	0	181	680
08:30 AM	0	0	0	0	0	172	52	224	134	1	109	244	47	113	0	160	628
Total Volume	0	0	0	0	0	762	224	986	542	7	420	969	206	517	0	723	2678
% App. Total	0	0	0		0	77.3	22.7		55.9	0.7	43.3		28.5	71.5	0		
PHF	.000	.000	.000	.000	.000	.916	.903	.913	.909	.438	.875	.961	.780	.917	.000	.873	.955

City of San Diego
N/S: I-15 Northbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 05_SDG_15N_Ber Ctr AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				08:00 AM				07:30 AM			
+0 mins.	0	0	0	0	0	193	54	247	129	0	95	224	45	116	0	161
+15 mins.	0	0	0	0	0	190	52	242	149	**4**	96	249	**66**	**141**	0	**207**
+30 mins.	0	0	0	0	0	**208**	**62**	**270**	134	1	109	244	41	134	0	175
+45 mins.	0	0	0	0	0	192	58	250	**170**	2	**114**	**286**	52	129	0	181
Total Volume	0	0	0	0	0	783	226	1009	582	7	414	1003	204	520	0	724
% App. Total	0	0	0		0	77.6	22.4		58	0.7	41.3		28.2	71.8	0	
PHF	.000	.000	.000	.000	.000	.941	.911	.934	.856	.438	.908	.877	.773	.922	.000	.874

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City of San Diego
N/S: I-15 Northbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 05_SDG_15N_Ber Ctr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

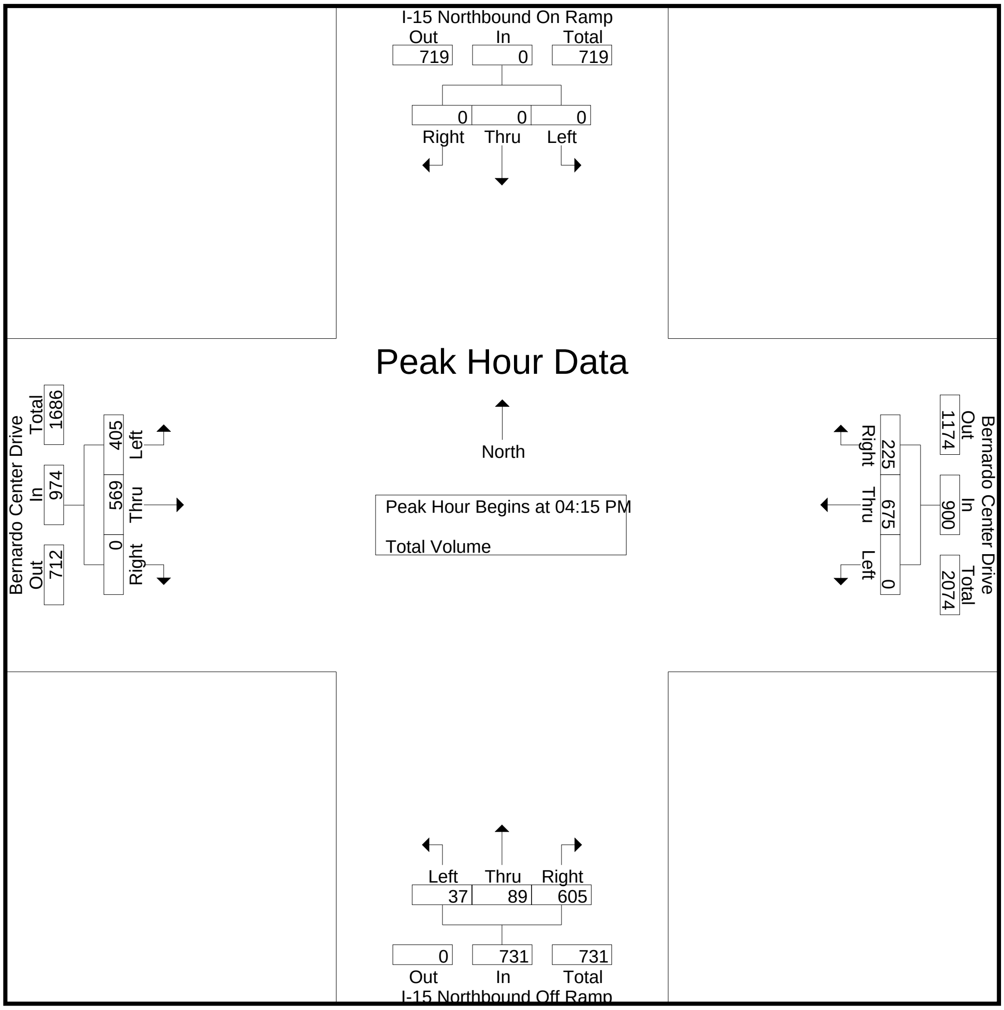
Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Bernardo Center Drive Westbound				I-15 Northbound Off Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	173	60	233	13	17	143	173	103	136	0	239	645
04:15 PM	0	0	0	0	0	167	55	222	11	20	143	174	109	161	0	270	666
04:30 PM	0	0	0	0	0	153	54	207	8	24	154	186	110	135	0	245	638
04:45 PM	0	0	0	0	0	168	51	219	9	26	158	193	83	146	0	229	641
Total	0	0	0	0	0	661	220	881	41	87	598	726	405	578	0	983	2590
05:00 PM	0	0	0	0	0	187	65	252	9	19	150	178	103	127	0	230	660
05:15 PM	0	0	0	0	0	179	66	245	19	17	157	193	81	123	0	204	642
05:30 PM	0	0	0	0	0	177	40	217	21	9	150	180	82	107	0	189	586
05:45 PM	0	0	0	0	0	173	41	214	22	2	137	161	77	140	0	217	592
Total	0	0	0	0	0	716	212	928	71	47	594	712	343	497	0	840	2480
Grand Total	0	0	0	0	0	1377	432	1809	112	134	1192	1438	748	1075	0	1823	5070
Apprch %	0	0	0		0	76.1	23.9		7.8	9.3	82.9		41	59	0		
Total %	0	0	0	0	0	27.2	8.5	35.7	2.2	2.6	23.5	28.4	14.8	21.2	0	36	

	I-15 Northbound On Ramp Southbound				Bernardo Center Drive Westbound				I-15 Northbound Off Ramp Northbound				Bernardo Center Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	167	55	222	**11**	20	143	174	109	**161**	0	**270**	**666**
04:30 PM	0	0	0	0	0	153	54	207	8	24	154	186	**110**	135	0	245	638
04:45 PM	0	0	0	0	0	168	51	219	9	**26**	**158**	**193**	83	146	0	229	641
05:00 PM	0	0	0	0	0	**187**	**65**	**252**	9	19	150	178	103	127	0	230	660
Total Volume	0	0	0	0	0	675	225	900	37	89	605	731	405	569	0	974	2605
% App. Total	0	0	0		0	75	25		5.1	12.2	82.8		41.6	58.4	0		
PHF	.000	.000	.000	.000	.000	.902	.865	.893	.841	.856	.957	.947	.920	.884	.000	.902	.978

City of San Diego
N/S: I-15 Northbound Ramps
E/W: Bernardo Center Drive
Weather: Clear

File Name : 05_SDG_15N_Ber Ctr PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:30 PM				04:00 PM			
+0 mins.	0	0	0	0	0	168	51	219	8	24	154	186	103	136	0	239
+15 mins.	0	0	0	0	0	**187**	65	**252**	9	**26**	**158**	**193**	109	**161**	0	**270**
+30 mins.	0	0	0	0	0	179	**66**	245	9	19	150	178	**110**	135	0	245
+45 mins.	0	0	0	0	0	177	40	217	**19**	17	157	193	83	146	0	229
Total Volume	0	0	0	0	0	711	222	933	45	86	619	750	405	578	0	983
% App. Total	0	0	0		0	76.2	23.8		6	11.5	82.5		41.2	58.8	0	
PHF	.000	.000	.000	.000	.000	.951	.841	.926	.592	.827	.979	.972	.920	.898	.000	.910

City of San Diego
N/S: Bernardo Center Drive
E/W: Iberia Pl/ Bernardo Heights Parkway
Weather: Clear

File Name : 06_SDG_Ber Ctr_Ber Hts AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

Groups Printed- Total Volume

	Bernardo Center Drive Southbound				Bernardo Heights Parkway Westbound				Bernardo Center Drive Northbound				Iberia Place Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	41	59	7	107	71	5	31	107	14	38	46	98	4	5	1	10	322
07:15 AM	51	72	2	125	114	3	43	160	18	59	59	136	4	0	2	6	427
07:30 AM	109	87	10	206	151	3	78	232	19	83	71	173	7	3	4	14	625
07:45 AM	103	77	28	208	174	5	113	292	25	107	113	245	7	1	4	12	757
Total	304	295	47	646	510	16	265	791	76	287	289	652	22	9	11	42	2131
08:00 AM	107	103	15	225	142	6	90	238	14	96	103	213	10	2	6	18	694
08:15 AM	106	77	18	201	144	6	100	250	21	101	82	204	7	2	8	17	672
08:30 AM	47	91	14	152	109	7	90	206	26	97	64	187	5	5	7	17	562
08:45 AM	45	88	18	151	73	13	53	139	31	115	66	212	7	8	14	29	531
Total	305	359	65	729	468	32	333	833	92	409	315	816	29	17	35	81	2459
Grand Total	609	654	112	1375	978	48	598	1624	168	696	604	1468	51	26	46	123	4590
Apprch %	44.3	47.6	8.1		60.2	3	36.8		11.4	47.4	41.1		41.5	21.1	37.4		
Total %	13.3	14.2	2.4	30	21.3	1	13	35.4	3.7	15.2	13.2	32	1.1	0.6	1	2.7	

	Bernardo Center Drive Southbound				Bernardo Heights Parkway Westbound				Bernardo Center Drive Northbound				Iberia Place Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**109**	87	10	206	151	3	78	232	19	83	71	173	7	**3**	4	14	625
07:45 AM	103	77	**28**	208	**174**	5	**113**	**292**	**25**	**107**	**113**	**245**	7	1	4	12	**757**
08:00 AM	107	**103**	15	**225**	142	**6**	90	238	14	96	103	213	**10**	2	6	**18**	694
08:15 AM	106	77	18	201	144	6	100	250	21	101	82	204	7	2	**8**	17	672
Total Volume	425	344	71	840	611	20	381	1012	79	387	369	835	31	8	22	61	2748
% App. Total	50.6	41	8.5		60.4	2	37.6		9.5	46.3	44.2		50.8	13.1	36.1		
PHF	.975	.835	.634	.933	.878	.833	.843	.866	.790	.904	.816	.852	.775	.667	.688	.847	.908

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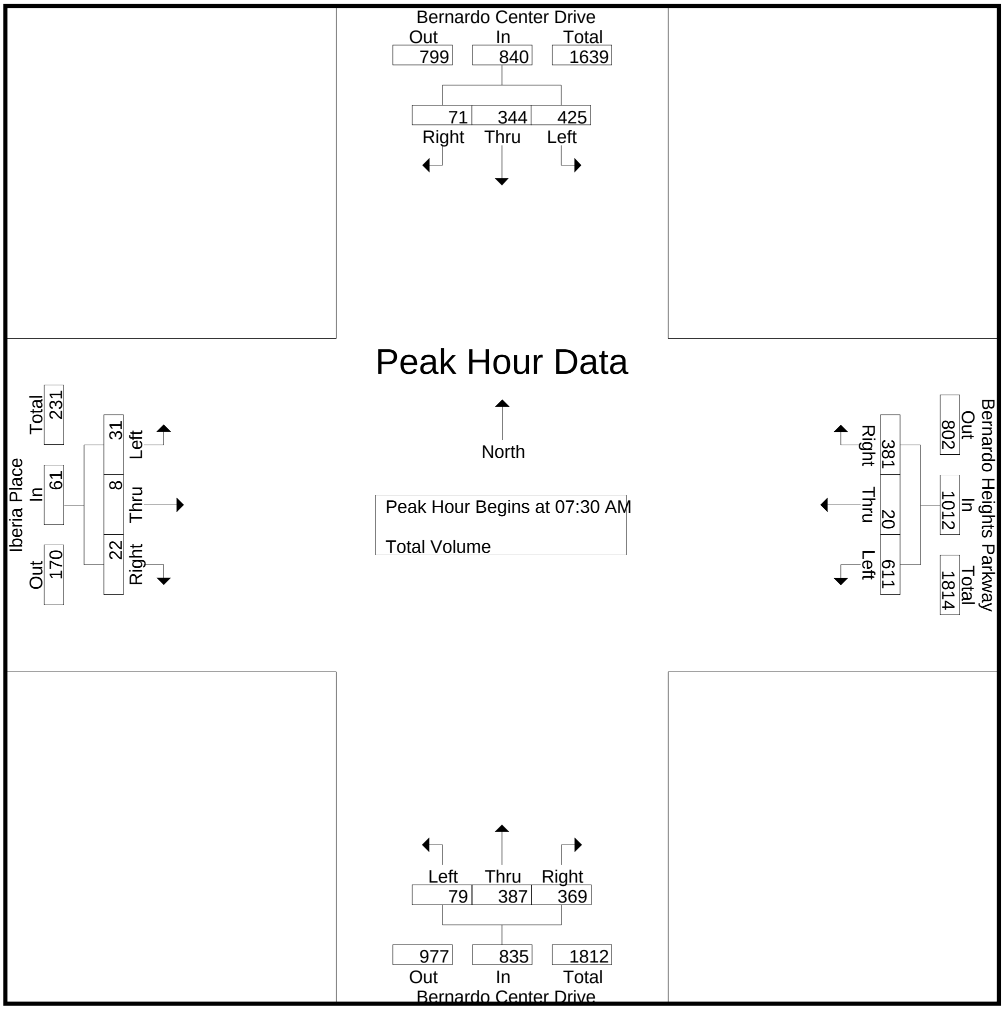
City of San Diego
N/S: Bernardo Center Drive
E/W: Iberia Pl/ Bernardo Heights Parkway
Weather: Clear

File Name : 06_SDG_Ber Ctr_Ber Hts AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:45 AM				08:00 AM			
+0 mins.	**109**	87	10	206	151	3	78	232	25	**107**	**113**	**245**	**10**	2	6	18
+15 mins.	103	77	**28**	208	**174**	5	**113**	**292**	14	96	103	213	7	2	8	17
+30 mins.	107	**103**	15	**225**	142	**6**	90	238	21	101	82	204	5	5	7	17
+45 mins.	106	77	18	201	144	6	100	250	**26**	97	64	187	7	**8**	**14**	**29**
Total Volume	425	344	71	840	611	20	381	1012	86	401	362	849	29	17	35	81
% App. Total	50.6	41	8.5		60.4	2	37.6		10.1	47.2	42.6		35.8	21	43.2	
PHF	.975	.835	.634	.933	.878	.833	.843	.866	.827	.937	.801	.866	.725	.531	.625	.698

Counts Unlimited, Inc.
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Corona, CA 92878
(951) 268-6268

City of San Diego
N/S: Bernardo Center Drive
E/W: Iberia Pl/ Bernardo Heights Parkway
Weather: Clear

File Name : 06_SDG_Ber Ctr_Ber Hts PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

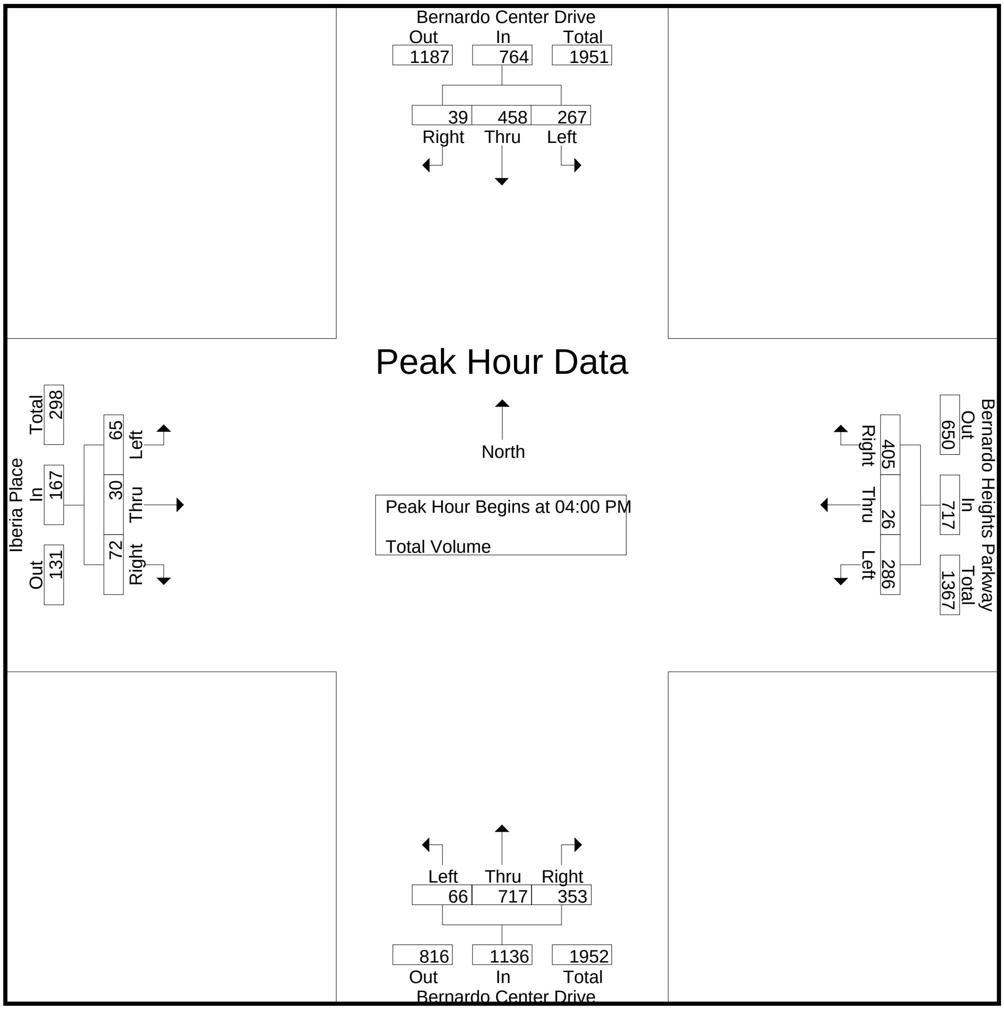
Groups Printed- Total Volume

	Bernardo Center Drive				Bernardo Heights Parkway				Bernardo Center Drive				Iberia Place				
	Southbound				Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	43	125	7	175	80	6	143	229	19	164	99	282	12	4	19	35	721
04:15 PM	80	113	9	202	67	6	87	160	23	186	85	294	11	6	11	28	684
04:30 PM	67	107	11	185	72	7	81	160	9	193	75	277	15	11	19	45	667
04:45 PM	77	113	12	202	67	7	94	168	15	174	94	283	27	9	23	59	712
Total	267	458	39	764	286	26	405	717	66	717	353	1136	65	30	72	167	2784
05:00 PM	80	121	10	211	65	5	82	152	11	174	99	284	18	10	35	63	710
05:15 PM	77	119	6	202	75	2	86	163	14	164	90	268	15	5	12	32	665
05:30 PM	68	135	1	204	55	5	70	130	15	161	86	262	10	5	11	26	622
05:45 PM	79	110	7	196	54	2	82	138	12	137	107	256	12	5	5	22	612
Total	304	485	24	813	249	14	320	583	52	636	382	1070	55	25	63	143	2609
Grand Total	571	943	63	1577	535	40	725	1300	118	1353	735	2206	120	55	135	310	5393
Apprch %	36.2	59.8	4		41.2	3.1	55.8		5.3	61.3	33.3		38.7	17.7	43.5		
Total %	10.6	17.5	1.2	29.2	9.9	0.7	13.4	24.1	2.2	25.1	13.6	40.9	2.2	1	2.5	5.7	

	Bernardo Center Drive				Bernardo Heights Parkway				Bernardo Center Drive				Iberia Place				
	Southbound				Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	43	**125**	7	175	**80**	6	**143**	**229**	19	164	**99**	282	12	4	19	35	**721**
04:15 PM	**80**	113	9	**202**	67	6	87	160	**23**	186	85	**294**	11	6	11	28	684
04:30 PM	67	107	11	185	72	**7**	81	160	9	**193**	75	277	15	**11**	19	45	667
04:45 PM	77	113	**12**	202	67	7	94	168	15	174	94	283	**27**	9	**23**	**59**	712
Total Volume	267	458	39	764	286	26	405	717	66	717	353	1136	65	30	72	167	2784
% App. Total	34.9	59.9	5.1		39.9	3.6	56.5		5.8	63.1	31.1		38.9	18	43.1		
PHF	.834	.916	.813	.946	.894	.929	.708	.783	.717	.929	.891	.966	.602	.682	.783	.708	.965

City of San Diego
N/S: Bernardo Center Drive
E/W: Iberia Pl/ Bernardo Heights Parkway
Weather: Clear

File Name : 06_SDG_Ber Ctr_Ber Hts PM
Site Code : 231050
Start Date : 11/2/2023



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				04:15 PM				04:30 PM			
+0 mins.	77	113	**12**	202	**80**	6	**143**	**229**	**23**	186	85	**294**	15	**11**	19	45
+15 mins.	**80**	121	10	**211**	67	6	87	160	9	**193**	75	277	**27**	9	23	59
+30 mins.	77	119	6	202	72	**7**	81	160	15	174	94	283	18	10	**35**	**63**
+45 mins.	68	**135**	1	204	67	7	94	168	11	174	**99**	284	15	5	12	32
Total Volume	302	488	29	819	286	26	405	717	58	727	353	1138	75	35	89	199
% App. Total	36.9	59.6	3.5		39.9	3.6	56.5		5.1	63.9	31		37.7	17.6	44.7	
PHF	.944	.904	.604	.970	.894	.929	.708	.783	.630	.942	.891	.968	.694	.795	.636	.790

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City of San Diego
N/S: Bernardo Center Drive
E/W: Rancho Bernardo Road
Weather: Clear

File Name : 07_SDG_Ber Ctr_Ran Bern AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

Groups Printed- Total Volume

	Bernardo Center Drive Southbound				Rancho Bernardo Road Westbound				Bernardo Center Drive Northbound				Rancho Bernardo Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	8	35	45	88	16	183	15	214	29	8	15	52	18	108	61	187	541
07:15 AM	28	57	55	140	24	200	12	236	45	23	13	81	30	113	75	218	675
07:30 AM	31	102	62	195	31	233	11	275	54	39	19	112	42	144	82	268	850
07:45 AM	38	100	62	200	44	245	39	328	53	77	23	153	78	185	113	376	1057
Total	105	294	224	623	115	861	77	1053	181	147	70	398	168	550	331	1049	3123
08:00 AM	34	91	51	176	34	229	40	303	56	64	24	144	65	216	73	354	977
08:15 AM	61	70	59	190	29	205	27	261	58	45	29	132	69	200	100	369	952
08:30 AM	59	48	77	184	32	207	47	286	81	67	34	182	71	162	86	319	971
08:45 AM	34	45	48	127	36	250	47	333	49	54	34	137	66	179	108	353	950
Total	188	254	235	677	131	891	161	1183	244	230	121	595	271	757	367	1395	3850
Grand Total	293	548	459	1300	246	1752	238	2236	425	377	191	993	439	1307	698	2444	6973
Apprch %	22.5	42.2	35.3		11	78.4	10.6		42.8	38	19.2		18	53.5	28.6		
Total %	4.2	7.9	6.6	18.6	3.5	25.1	3.4	32.1	6.1	5.4	2.7	14.2	6.3	18.7	10	35	

	Bernardo Center Drive Southbound				Rancho Bernardo Road Westbound				Bernardo Center Drive Northbound				Rancho Bernardo Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	38	**100**	62	**200**	**44**	**245**	39	**328**	53	**77**	23	153	**78**	185	**113**	**376**	**1057**
08:00 AM	34	91	51	176	34	229	40	303	56	64	24	144	65	**216**	73	354	977
08:15 AM	**61**	70	59	190	29	205	27	261	58	45	29	132	69	200	100	369	952
08:30 AM	59	48	**77**	184	32	207	**47**	286	**81**	67	**34**	**182**	71	162	86	319	971
Total Volume	192	309	249	750	139	886	153	1178	248	253	110	611	283	763	372	1418	3957
% App. Total	25.6	41.2	33.2		11.8	75.2	13		40.6	41.4	18		20	53.8	26.2		
PHF	.787	.773	.808	.938	.790	.904	.814	.898	.765	.821	.809	.839	.907	.883	.823	.943	.936

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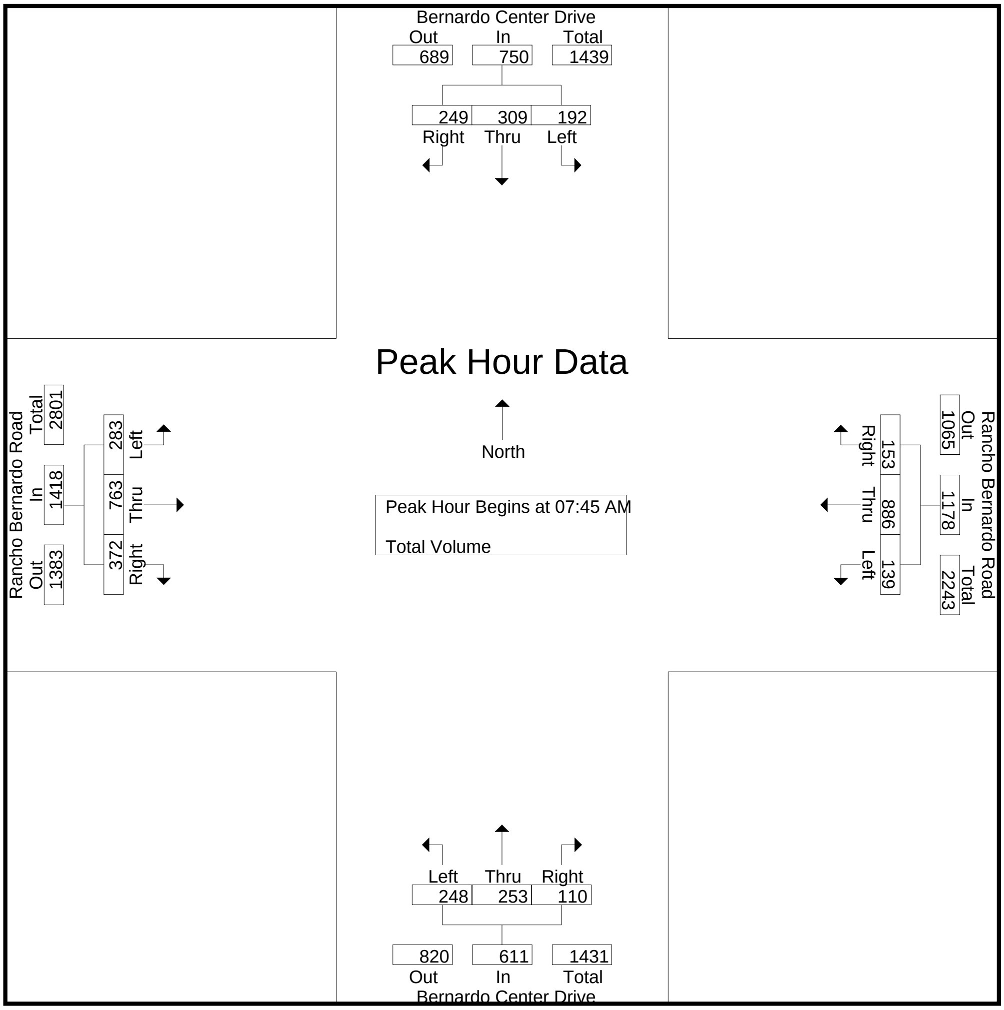
City of San Diego
N/S: Bernardo Center Drive
E/W: Rancho Bernardo Road
Weather: Clear

File Name : 07_SDG_Ber Ctr_Ran Bern AM
Site Code : 231050
Start Date : 11/2/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				08:00 AM				07:45 AM				07:45 AM			
+0 mins.	31	**102**	**62**	195	34	229	40	303	53	**77**	23	153	**78**	185	**113**	**376**
+15 mins.	38	100	62	**200**	29	205	27	261	56	64	24	144	65	**216**	73	354
+30 mins.	34	91	51	176	32	207	**47**	286	58	45	29	132	69	200	100	369
+45 mins.	**61**	70	59	190	**36**	**250**	47	**333**	**81**	67	**34**	**182**	71	162	86	319
Total Volume	164	363	234	761	131	891	161	1183	248	253	110	611	283	763	372	1418
% App. Total	21.6	47.7	30.7		11.1	75.3	13.6		40.6	41.4	18		20	53.8	26.2	
PHF	.672	.890	.944	.951	.910	.891	.856	.888	.765	.821	.809	.839	.907	.883	.823	.943

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City of San Diego
N/S: Bernardo Center Drive
E/W: Rancho Bernardo Road
Weather: Clear

File Name : 07_SDG_Ber Ctr_Ran Bern PM
Site Code : 231050
Start Date : 11/2/2023
Page No : 1

Groups Printed- Total Volume

	Bernardo Center Drive Southbound				Rancho Bernardo Road Westbound				Bernardo Center Drive Northbound				Rancho Bernardo Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	43	47	67	157	23	195	40	258	133	137	48	318	61	151	74	286	1019
04:15 PM	43	56	61	160	36	161	32	229	110	101	57	268	63	176	73	312	969
04:30 PM	29	62	51	142	36	180	28	244	104	113	56	273	73	182	66	321	980
04:45 PM	50	63	64	177	22	158	30	210	121	97	56	274	69	191	64	324	985
Total	165	228	243	636	117	694	130	941	468	448	217	1133	266	700	277	1243	3953
05:00 PM	39	64	76	179	29	177	28	234	118	104	62	284	68	171	59	298	995
05:15 PM	38	56	58	152	38	192	33	263	108	84	62	254	63	178	65	306	975
05:30 PM	30	56	62	148	25	169	34	228	74	92	54	220	67	189	53	309	905
05:45 PM	43	51	46	140	27	160	23	210	79	67	37	183	84	211	71	366	899
Total	150	227	242	619	119	698	118	935	379	347	215	941	282	749	248	1279	3774
Grand Total	315	455	485	1255	236	1392	248	1876	847	795	432	2074	548	1449	525	2522	7727
Apprch %	25.1	36.3	38.6		12.6	74.2	13.2		40.8	38.3	20.8		21.7	57.5	20.8		
Total %	4.1	5.9	6.3	16.2	3.1	18	3.2	24.3	11	10.3	5.6	26.8	7.1	18.8	6.8	32.6	

	Bernardo Center Drive Southbound				Rancho Bernardo Road Westbound				Bernardo Center Drive Northbound				Rancho Bernardo Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	43	47	**67**	157	23	**195**	**40**	**258**	**133**	**137**	48	**318**	61	151	**74**	286	**1019**
04:15 PM	43	56	61	160	**36**	161	32	229	110	101	**57**	268	63	176	73	312	969
04:30 PM	29	62	51	142	36	180	28	244	104	113	56	273	**73**	182	66	321	980
04:45 PM	**50**	**63**	64	**177**	22	158	30	210	121	97	56	274	69	**191**	64	**324**	985
Total Volume	165	228	243	636	117	694	130	941	468	448	217	1133	266	700	277	1243	3953
% App. Total	25.9	35.8	38.2		12.4	73.8	13.8		41.3	39.5	19.2		21.4	56.3	22.3		
PHF	.825	.905	.907	.898	.813	.890	.813	.912	.880	.818	.952	.891	.911	.916	.936	.959	.970

City of San Diego
N/S: Bernardo Center Drive
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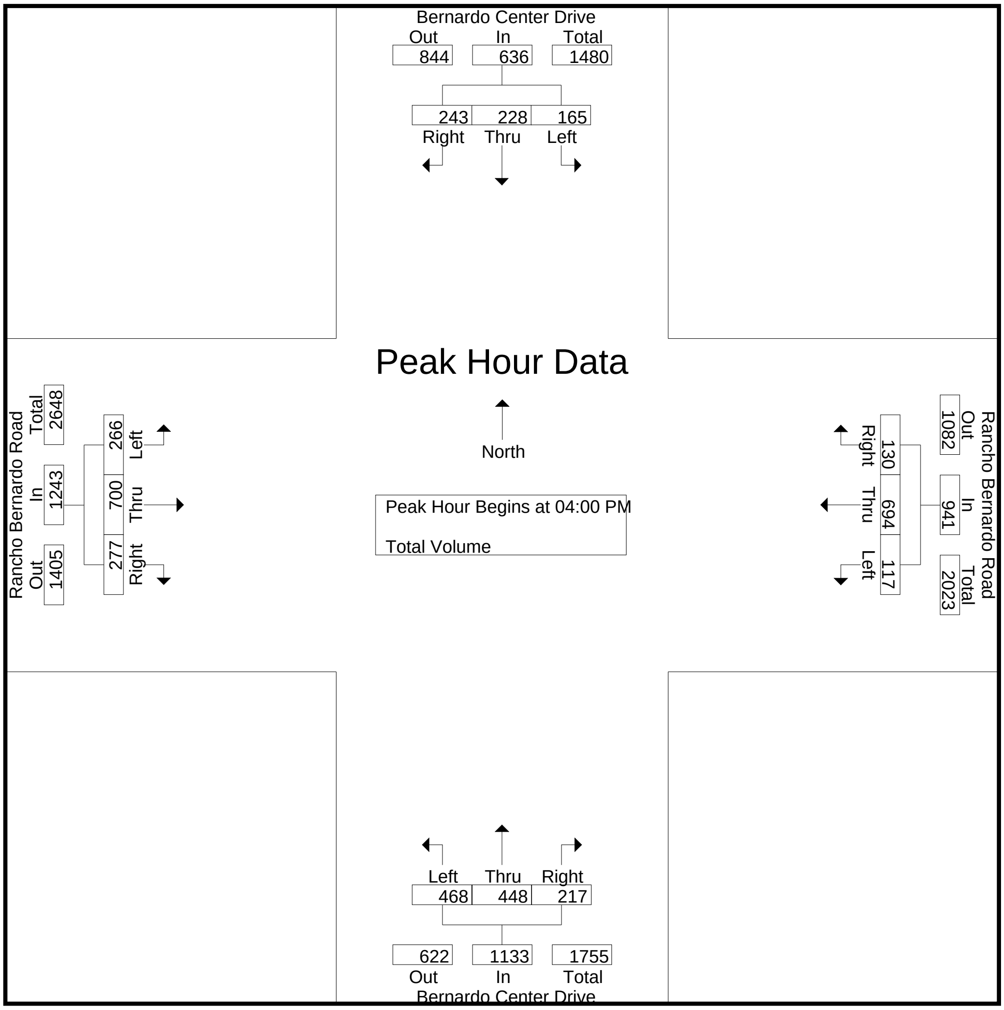

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:30 PM				04:00 PM				05:00 PM			
+0 mins.	43	56	61	160	36	180	28	244	**133**	**137**	48	**318**	68	171	59	298
+15 mins.	29	62	51	142	22	158	30	210	110	101	**57**	268	63	178	65	306
+30 mins.	**50**	63	64	177	29	177	28	234	104	113	56	273	67	189	53	309
+45 mins.	39	**64**	**76**	**179**	**38**	**192**	**33**	**263**	121	97	56	274	**84**	**211**	**71**	**366**
Total Volume	161	245	252	658	125	707	119	951	468	448	217	1133	282	749	248	1279
% App. Total	24.5	37.2	38.3		13.1	74.3	12.5		41.3	39.5	19.2		22	58.6	19.4	
PHF	.805	.957	.829	.919	.822	.921	.902	.904	.880	.818	.952	.891	.839	.887	.873	.874

APPENDIX C

BUS SCHEDULES

Fare Information
Información de tarifas
sdmts.com/fares

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MTS sdmts.com

MTS Security *MTS Seguridad*	**619-595-4960**
MTS Information & Trip Planning *MTS Información y planeo de viaje*	**619-233-3004**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**619-557-4555**
Lost and Found *Objetos extraviados*	**619-233-3004**
Transit Store 12th & Imperial Transit Center M–F / *L–V* 8am–5pm	**619-234-1060**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**619-234-5005** **888-722-4889**

Buses on all MTS routes are accessible via lift or ramp.
Autobuses en todas las rutas de MTS son accesibles mediante un ascensor o rampa.

Alternative formats available upon request. Call: (619) 231-1466.
Formato alternativo disponible al preguntar. Llamar: (619) 231-1466.

Effective June 30, 2023

20

Downtown San Diego ↔ Rancho Bernardo Station
via Fashion Valley

110

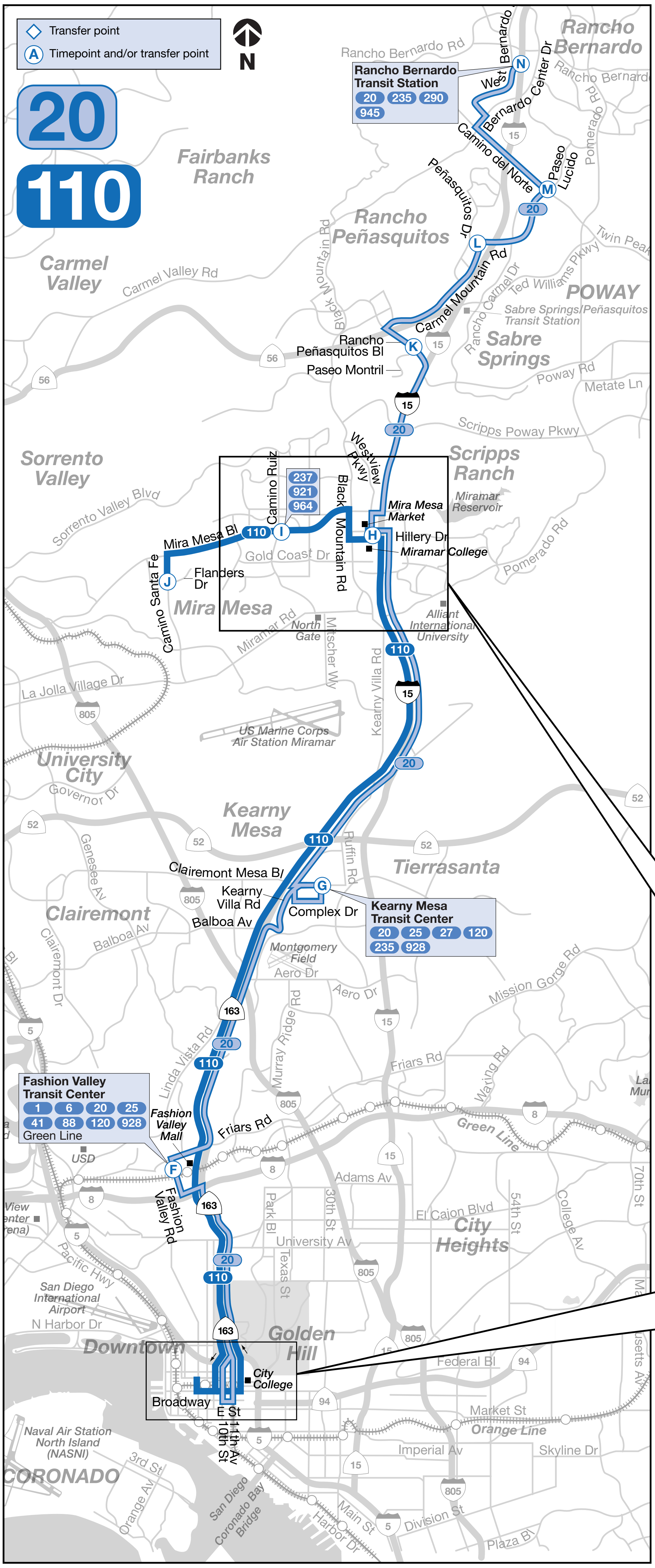
Downtown San Diego ↔ Mira Mesa Express
via I-15 / Hwy 163

Bus Routes

Destinations
- City College
- Downtown Courthouse (110)
- Fashion Valley Mall (20)
- Miramar College
- Mira Mesa Market

Trolley Connections
- City College
- Fashion Valley (20)

Subject to change without notice
Sujeto a cambios sin previo aviso



110 Monday through Friday / *lunes a viernes*

Morning Only

Mira Mesa → Downtown San Diego

Ⓙ Camino Santa Fe & Flanders Dr. DEPART	Ⓘ Mira Mesa Bl. & Camino Ruiz	Ⓗ Miramar College Transit Station	Ⓓ 10th Av. & B St.	Ⓒ Broadway & 5th Av.	Ⓑ Broadway & Union St. ARRIVE
6:02a	6:07a	6:15a	6:33a	6:37a	6:41a
6:22	6:27	6:35	6:53	6:57	7:01
6:41	6:46	6:55	7:14	7:18	7:23
7:04	7:10	7:20	7:41	7:45	7:51

110 Monday through Friday / *lunes a viernes*

Afternoon Only

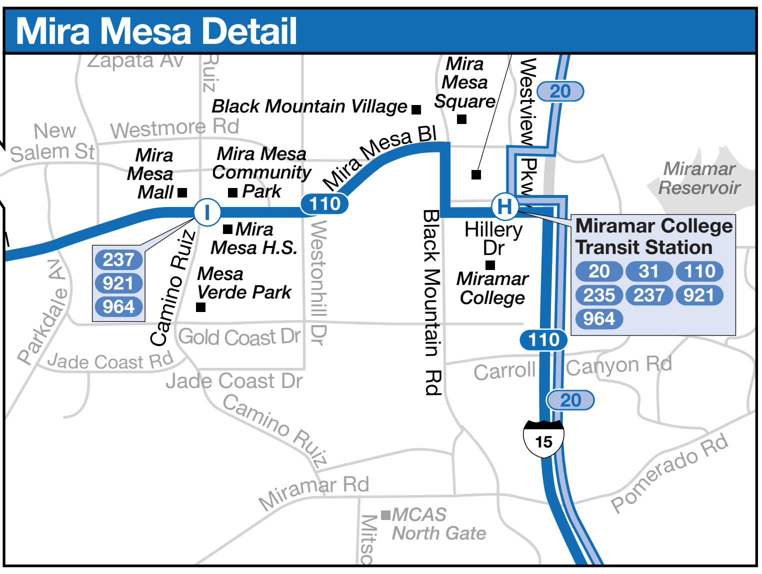
Downtown San Diego → Mira Mesa

Ⓐ Front St. & B St. DEPART	Ⓒ Broadway & 3rd Av.	Ⓔ City College Transit Center (11th & B)	Ⓗ Miramar College Transit Station	Ⓘ Mira Mesa Bl. & Camino Ruiz	Ⓙ Camino Santa Fe & Flanders Dr. ARRIVE
4:01p	**4:05p**	**4:12p**	**4:35p**	**4:46p**	**4:55p**
4:26	**4:30**	**4:37**	**5:00**	**5:11**	**5:20**
4:51	**4:55**	**5:02**	**5:26**	**5:37**	**5:47**
5:21	**5:25**	**5:32**	**5:56**	**6:07**	**6:17**

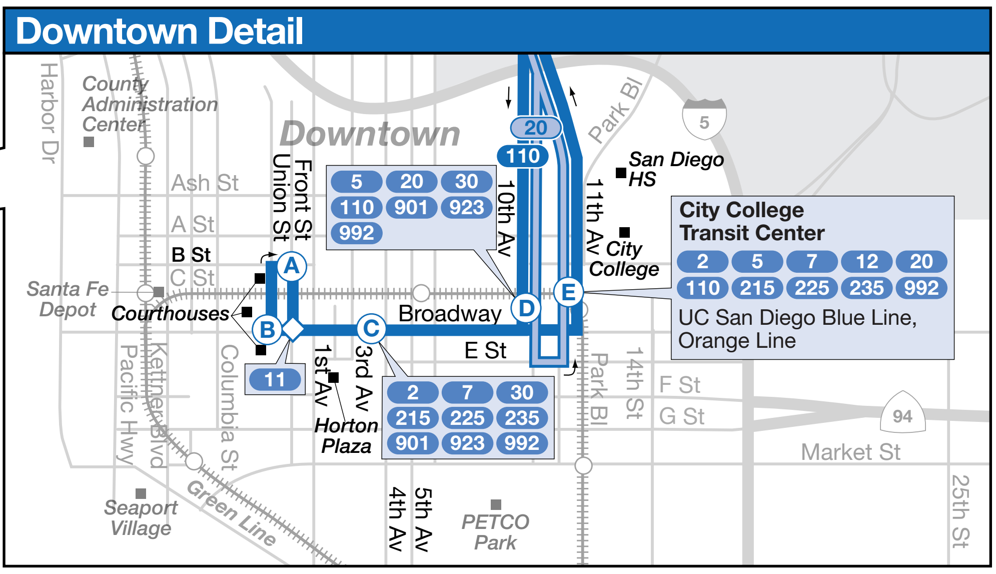
Gray-shaded times are approximate; trip may run earlier than scheduled. / *Los tiempos sombreados en gris son aproximados; los viajes pueden operar más temprano de lo que se indica.*

Route 110 does not operate on weekends or on the following holidays and observed holidays:
La ruta 110 no ofrece servicio durante el fin de semana ó durante los siguientes días festivos y feriados observados: **New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas**

Mira Mesa Detail



Downtown Detail



20 Monday through Friday • *lunes a viernes*

Downtown San Diego → Rancho Bernardo

D 10th Av. & Broadway **DEPART**	E City College Transit Center (11th & C)	F Fashion Valley Transit Center **ARRIVE**	F Fashion Valley Transit Center **DEPART**	G Kearny Mesa Transit Center	H Miramar College Transit Station	K Rancho Peñasquitos Bl. & Paseo Montril	L Carmel Mtn. Rd. & Peñasquitos Dr.	M Camino Del Norte & Paseo Lucido	N Rancho Bernardo Transit Station **ARRIVE**
—	4:56a	5:06a	5:08a	5:21a	5:32a	5:39a	5:47a	5:53a	6:01a
—	5:26	5:36	5:38	5:52	6:03	6:10	6:18	6:25	6:34
—	5:41	5:51	5:53	6:08	—	—	—	—	—
5:53a	5:56	6:06	6:08	6:23	6:34	6:42	6:50	6:57	7:07
6:08	6:11	6:21	6:23	6:38	—	—	—	—	—
6:23	6:26	6:36	6:38	6:54	7:06	7:14	7:23	7:30	7:40
6:38	6:41	6:51	6:53	7:09	—	—	—	—	—
6:53	6:56	7:06	7:08	7:24	7:36	7:44	7:53	8:00	8:10
7:08	7:11	7:21	7:23	7:39	—	—	—	—	—
7:23	7:26	7:36	7:38	7:54	8:06	8:14	8:23	8:30	8:41
7:38	7:41	7:51	7:53	8:09	—	—	—	—	—
7:53	7:56	8:06	8:08	8:24	8:36	8:44	8:53	9:00	9:11
8:08	8:11	8:21	8:23	8:39	—	—	—	—	—
8:23	8:26	8:36	8:38	8:54	9:06	9:14	9:23	9:30	9:41
8:38	8:41	8:51	8:53	9:08	—	—	—	—	—
8:53	8:56	9:06	9:08	9:23	9:34	9:42	9:51	9:58	10:08
9:23	9:26	9:36	9:38	9:53	10:04	10:12	10:21	10:28	10:38
9:53	9:56	10:06	10:08	10:23	10:34	10:42	10:51	10:58	11:08
10:23	10:26	10:36	10:38	10:53	11:04	11:12	11:21	11:28	11:38
10:53	10:56	11:06	11:08	11:23	11:34	11:42	11:51	11:58	**12:08p**
11:23	11:26	11:36	11:38	11:53	**12:04p**	**12:12p**	**12:21p**	**12:28p**	**12:38**
11:53	11:56	**12:07p**	**12:09p**	**12:24p**	**12:35**	**12:44**	**12:53**	**1:00**	**1:10**
12:23p	**12:26p**	**12:37**	**12:39**	**12:54**	**1:05**	**1:14**	**1:23**	**1:30**	**1:40**
12:53	**12:56**	**1:07**	**1:09**	**1:24**	**1:35**	**1:44**	**1:53**	**2:00**	**2:10**
1:23	**1:26**	**1:37**	**1:39**	**1:55**	**2:06**	**2:15**	**2:25**	**2:32**	**2:42**
1:53	**1:56**	**2:07**	**2:09**	**2:26**	**2:37**	**2:46**	**2:56**	**3:03**	**3:13**
2:23	**2:26**	**2:37**	**2:39**	**2:56**	**3:08**	**3:18**	**3:29**	**3:36**	**3:47**
2:52	**2:55**	**3:06**	**3:08**	**3:25**	**3:37**	**3:47**	**3:58**	**4:05**	**4:16**
3:07	**3:10**	**3:21**	**3:23**	**3:40**	—	—	—	—	—
3:22	**3:25**	**3:36**	**3:38**	**3:55**	**4:08**	**4:18**	**4:29**	**4:36**	**4:47**
3:37	**3:40**	**3:51**	**3:53**	**4:10**	—	—	—	—	—
3:52	**3:55**	**4:06**	**4:08**	**4:25**	**4:38**	**4:48**	**4:59**	**5:06**	**5:17**
4:07	**4:10**	**4:21**	**4:23**	**4:40**	—	—	—	—	—
4:22	**4:25**	**4:36**	**4:38**	**4:55**	**5:08**	**5:18**	**5:29**	**5:36**	**5:47**
4:37	**4:40**	**4:51**	**4:53**	**5:10**	—	—	—	—	—
4:52	**4:55**	**5:06**	**5:08**	**5:25**	**5:38**	**5:48**	**5:59**	**6:06**	**6:17**
5:07	**5:10**	**5:21**	**5:23**	**5:40**	—	—	—	—	—
5:23	**5:26**	**5:37**	**5:39**	**5:55**	**6:08**	**6:18**	**6:28**	**6:35**	**6:45**
5:53	**5:56**	**6:07**	**6:09**	**6:24**	**6:36**	**6:45**	**6:54**	**7:01**	**7:10**
6:23	**6:26**	**6:37**	**6:39**	**6:54**	**7:06**	**7:15**	**7:24**	**7:31**	**7:40**
6:54	**6:57**	**7:07**	**7:09**	**7:23**	**7:35**	**7:44**	**7:53**	**8:00**	**8:08**
7:24	**7:27**	**7:37**	**7:39**	**7:53**	**8:04**	**8:12**	**8:20**	**8:26**	**8:34**
7:54	**7:57**	**8:07**	**8:09**	**8:23**	**8:34**	**8:42**	**8:50**	**8:56**	**9:04**
8:54	**8:57**	**9:07**	**9:09**	**9:23**	—	—	—	—	—

Rancho Bernardo → Downtown San Diego

N Rancho Bernardo Transit Station **DEPART**	M Carmel Mtn. Rd. & Camino Del Norte	L Carmel Mtn. Rd. & Peñasquitos Dr.	K Rancho Peñasquitos Bl. & Paseo Montril	H Miramar College Transit Station	G Kearny Mesa Transit Center	F Fashion Valley Transit Center **ARRIVE**	F Fashion Valley Transit Center **DEPART**	D 10th Av. & Broadway **ARRIVE**
5:13a	5:21a	5:27a	5:36a	5:45a	5:55a	6:08a	6:10a	6:21a
5:42	5:50	5:57	6:06	6:15	6:25	6:38	6:40	6:51
—	—	—	—	—	6:54	7:08	7:10	7:21
6:19	6:28	6:35	6:46	6:58	7:09	7:23	7:25	7:36
—	—	—	—	—	7:24	7:38	7:40	7:52
6:47	6:57	7:04	7:16	7:28	7:39	7:53	7:55	8:07
—	—	—	—	—	7:54	8:08	8:10	8:22
7:17	7:27	7:34	7:46	7:58	8:09	8:23	8:25	8:37
—	—	—	—	—	8:25	8:39	8:41	8:53
7:49	7:59	8:06	8:17	8:29	8:40	8:54	8:56	9:08
8:19	8:29	8:36	8:47	8:59	9:10	9:24	9:26	9:37
8:50	9:00	9:07	9:17	9:28	9:39	9:53	9:55	10:06
9:24	9:33	9:40	9:49	9:58	10:09	10:23	10:25	10:36
9:54	10:03	10:10	10:19	10:28	10:39	10:53	10:55	11:06
10:24	10:33	10:40	10:49	10:58	11:09	11:23	11:25	11:36
10:50	10:59	11:07	11:16	11:26	11:38	11:53	11:55	**12:06p**
11:20	11:29	11:37	11:46	11:56	**12:08p**	**12:23p**	**12:25p**	**12:36**
11:50	11:59	**12:07p**	**12:16p**	**12:26p**	**12:38**	**12:53**	**12:55**	**1:06**
12:20p	**12:29p**	**12:37**	**12:46**	**12:56**	**1:08**	**1:23**	**1:25**	**1:36**
12:50	**12:59**	**1:07**	**1:16**	**1:26**	**1:38**	**1:53**	**1:55**	**2:06**
1:20	**1:29**	**1:37**	**1:46**	**1:56**	**2:08**	**2:23**	**2:25**	**2:36**
—	—	—	—	—	**2:23**	**2:38**	**2:40**	**2:51**
1:50	**1:59**	**2:07**	**2:16**	**2:26**	**2:38**	**2:53**	**2:55**	**3:06**
—	—	—	—	—	**2:52**	**3:07**	**3:09**	**3:20**
2:15	**2:25**	**2:33**	**2:43**	**2:53**	**3:05**	**3:21**	**3:23**	**3:36**
—	—	—	—	—	**3:20**	**3:36**	**3:38**	**3:51**
2:42	**2:52**	**3:00**	**3:10**	**3:21**	**3:34**	**3:51**	**3:53**	**4:07**
—	—	—	—	—	**3:49**	**4:06**	**4:08**	**4:22**
3:09	**3:20**	**3:28**	**3:38**	**3:49**	**4:02**	**4:21**	**4:23**	**4:37**
—	—	—	—	—	**4:17**	**4:36**	**4:38**	**4:52**
3:39	**3:50**	**3:58**	**4:08**	**4:19**	**4:32**	**4:51**	**4:53**	**5:07**
—	—	—	—	—	**4:47**	**5:06**	**5:08**	**5:22**
4:09	**4:20**	**4:28**	**4:38**	**4:49**	**5:02**	**5:21**	**5:23**	**5:37**
—	—	—	—	—	**5:17**	**5:36**	**5:38**	**5:52**
4:39	**4:50**	**4:58**	**5:08**	**5:19**	**5:32**	**5:51**	**5:53**	**6:07**
—	—	—	—	—	**5:47**	**6:06**	**6:08**	**6:22**
5:12	**5:23**	**5:31**	**5:41**	**5:51**	**6:03**	**6:20**	**6:22**	**6:36**
5:44	**5:55**	**6:03**	**6:13**	**6:23**	**6:35**	**6:50**	**6:52**	**7:05**
6:18	**6:28**	**6:36**	**6:45**	**6:55**	**7:06**	**7:20**	**7:22**	**7:34**
6:51	**7:00**	**7:07**	**7:16**	**7:25**	**7:36**	**7:50**	**7:52**	**8:04**
7:22	**7:31**	**7:38**	**7:47**	**7:56**	**8:06**	**8:20**	**8:22**	**8:33**
8:11	**8:19**	**8:25**	**8:33**	**8:42**	**8:52**	**9:05**	**9:07**	**9:18**
9:12	**9:20**	**9:26**	**9:34**	**9:43**	**9:53**	**10:05**	**10:07**	**10:17**

20 Saturday • *sábado*

Downtown San Diego → Rancho Bernardo

D 10th Av. & Broadway **DEPART**	E City College Transit Center (11th & C)	F Fashion Valley Transit Center **ARRIVE**	F Fashion Valley Transit Center **DEPART**	G Kearny Mesa Transit Center	H Miramar College Transit Station	K Rancho Peñasquitos Bl. & Paseo Montril	L Carmel Mtn. Rd. & Peñasquitos Dr.	M Camino Del Norte & Paseo Lucido	N Rancho Bernardo Transit Station **ARRIVE**
—	5:41a	5:51a	5:53a	6:06a	6:17a	6:24a	6:32a	6:38a	6:46a
—	6:11	6:21	6:23	6:36	6:47	—	—	—	—
—	6:41	6:51	6:53	7:07	7:18	7:26	7:34	7:40	7:48
7:09a	7:12	7:22	7:24	7:38	7:49	—	—	—	—
7:39	7:42	7:52	7:54	8:08	8:19	8:27	8:35	8:41	8:49
8:09	8:12	8:22	8:24	8:38	8:49	—	—	—	—
8:39	8:42	8:52	8:54	9:08	9:19	9:27	9:36	9:43	9:51
9:09	9:12	9:22	9:24	9:38	9:49	—	—	—	—
9:39	9:42	9:52	9:54	10:08	10:19	10:27	10:36	10:43	10:51
10:08	10:11	10:22	10:24	10:38	10:49	—	—	—	—
10:38	10:41	10:52	10:54	11:08	11:19	11:28	11:37	11:44	11:53
11:08	11:11	11:22	11:24	11:38	11:49	—	—	—	—
11:38	11:41	11:52	11:54	**12:08p**	**12:19p**	**12:28p**	**12:37p**	**12:44p**	**12:53p**
12:08p	**12:11p**	**12:22p**	**12:24p**	**12:39**	**12:50**	—	—	—	—
12:38	**12:41**	**12:52**	**12:54**	**1:09**	**1:20**	**1:29**	**1:38**	**1:45**	**1:55**
1:08	**1:11**	**1:22**	**1:24**	**1:39**	**1:50**	—	—	—	—
1:38	**1:41**	**1:52**	**1:54**	**2:09**	**2:20**	**2:29**	**2:38**	**2:45**	**2:55**
2:08	**2:11**	**2:22**	**2:24**	**2:39**	**2:50**	—	—	—	—
2:38	**2:41**	**2:52**	**2:54**	**3:09**	**3:20**	**3:29**	**3:38**	**3:45**	**3:55**
3:08	**3:11**	**3:22**	**3:24**	**3:39**	**3:50**	—	—	—	—
3:38	**3:41**	**3:52**	**3:54**	**4:09**	**4:20**	**4:29**	**4:38**	**4:45**	**4:55**
4:08	**4:11**	**4:22**	**4:24**	**4:39**	**4:50**	—	—	—	—
4:38	**4:41**	**4:52**	**4:54**	**5:09**	**5:20**	**5:29**	**5:38**	**5:45**	**5:55**
5:08	**5:11**	**5:22**	**5:24**	**5:39**	**5:50**	—	—	—	—
5:39	**5:42**	**5:53**	**5:55**	**6:09**	**6:20**	**6:29**	**6:38**	**6:45**	**6:54**
6:09	**6:12**	**6:23**	**6:25**	**6:39**	**6:50**	—	—	—	—
6:39	**6:42**	**6:53**	**6:55**	**7:09**	**7:20**	**7:29**	**7:38**	**7:45**	**7:54**
7:39	**7:42**	**7:52**	**7:54**	**8:07**	**8:18**	**8:26**	**8:34**	**8:41**	**8:49**

Rancho Bernardo → Downtown San Diego

N Rancho Bernardo Transit Station **DEPART**	M Carmel Mtn. Rd. & Camino Del Norte	L Carmel Mtn. Rd. & Peñasquitos Dr.	K Rancho Peñasquitos Bl. & Paseo Montril	H Miramar College Transit Station	G Kearny Mesa Transit Center	F Fashion Valley Transit Center **ARRIVE**	F Fashion Valley Transit Center **DEPART**	D 10th Av. & Broadway **ARRIVE**
—	—	—	—	6:12a	6:23a	6:35a	6:37a	6:47a
6:12a	6:20a	6:26a	6:34a	6:42	6:53	7:05	7:07	7:17
—	—	—	—	7:12	7:23	7:35	7:37	7:47
7:10	7:18	7:25	7:34	7:42	7:53	8:05	8:07	8:17
—	—	—	—	8:12	8:23	8:35	8:37	8:48
8:08	8:16	8:23	8:33	8:42	8:53	9:05	9:07	9:18
—	—	—	—	9:12	9:23	9:35	9:37	9:48
9:08	9:16	9:23	9:33	9:42	9:53	10:05	10:07	10:18
—	—	—	—	10:12	10:23	10:35	10:37	10:48
10:06	10:15	10:23	10:33	10:42	10:53	11:05	11:07	11:18
—	—	—	—	11:12	11:23	11:36	11:38	11:50
11:05	11:15	11:23	11:33	11:42	11:53	**12:06p**	**12:08p**	**12:20p**
—	—	—	—	**12:12p**	**12:23p**	**12:36**	**12:38**	**12:50**
12:05p	**12:15p**	**12:23p**	**12:33p**	**12:42**	**12:53**	**1:06**	**1:08**	**1:20**
—	—	—	—	**1:12**	**1:23**	**1:36**	**1:38**	**1:50**
1:05	**1:15**	**1:23**	**1:33**	**1:42**	**1:53**	**2:06**	**2:08**	**2:20**
—	—	—	—	**2:12**	**2:23**	**2:36**	**2:38**	**2:50**
2:05	**2:15**	**2:23**	**2:33**	**2:42**	**2:53**	**3:06**	**3:08**	**3:20**
—	—	—	—	**3:12**	**3:23**	**3:36**	**3:38**	**3:50**
3:05	**3:15**	**3:23**	**3:33**	**3:42**	**3:53**	**4:06**	**4:08**	**4:20**
—	—	—	—	**4:12**	**4:23**	**4:36**	**4:38**	**4:50**
4:05	**4:15**	**4:23**	**4:33**	**4:42**	**4:53**	**5:06**	**5:08**	**5:20**
—	—	—	—	**5:12**	**5:23**	**5:36**	**5:38**	**5:50**
5:05	**5:15**	**5:23**	**5:33**	**5:42**	**5:53**	**6:06**	**6:08**	**6:20**
—	—	—	—	**6:11**	**6:22**	**6:35**	**6:37**	**6:48**
6:06	**6:15**	**6:23**	**6:32**	**6:41**	**6:52**	**7:05**	**7:07**	**7:18**
—	—	—	—	**7:11**	**7:22**	**7:35**	**7:37**	**7:48**
7:06	**7:15**	**7:23**	**7:32**	**7:41**	**7:52**	**8:05**	**8:07**	**8:18**
8:13	**8:21**	**8:27**	**8:35**	**8:43**	**8:53**	**9:05**	**9:07**	**9:17**

20 Sunday • *domingo*

Downtown San Diego → Rancho Bernardo

D 10th Av. & Broadway **DEPART**	E City College Transit Center (11th & C)	F Fashion Valley Transit Center **ARRIVE**	F Fashion Valley Transit Center **DEPART**	G Kearny Mesa Transit Center	H Miramar College Transit Station	K Rancho Peñasquitos Bl. & Paseo Montril	L Carmel Mtn. Rd. & Peñasquitos Dr.	M Camino Del Norte & Paseo Lucido	N Rancho Bernardo Transit Station **ARRIVE**
—	5:41a	5:51a	5:53a	6:06a	6:17a	6:24a	6:32a	6:38a	6:46a
—	6:41	6:51	6:53	7:07	7:18	7:26	7:34	7:40	7:48
7:39a	7:42	7:52	7:54	8:08	8:19	8:27	8:35	8:41	8:49
8:39	8:42	8:52	8:54	9:08	9:19	9:27	9:36	9:43	9:51
9:39	9:42	9:52	9:54	10:08	10:19	10:27	10:36	10:43	10:51
10:38	10:41	10:52	10:54	11:08	11:19	11:28	11:37	11:44	11:53
11:38	11:41	11:52	11:54	**12:08p**	**12:19p**	**12:28p**	**12:37p**	**12:44p**	**12:53p**
12:38p	**12:41p**	**12:52p**	**12:54p**	**1:09**	**1:20**	**1:29**	**1:38**	**1:45**	**1:55**
1:38	**1:41**	**1:52**	**1:54**	**2:09**	**2:20**	**2:29**	**2:38**	**2:45**	**2:55**
2:38	**2:41**	**2:52**	**2:54**	**3:09**	**3:20**	**3:29**	**3:38**	**3:45**	**3:55**
3:38	**3:41**	**3:52**	**3:54**	**4:09**	**4:20**	**4:29**	**4:38**	**4:45**	**4:55**
4:38	**4:41**	**4:52**	**4:54**	**5:09**	**5:20**	**5:29**	**5:38**	**5:45**	**5:55**
5:39	**5:42**	**5:53**	**5:55**	**6:09**	**6:20**	**6:29**	**6:38**	**6:45**	**6:54**
6:39	**6:42**	**6:53**	**6:55**	**7:09**	**7:20**	**7:29**	**7:38**	**7:45**	**7:54**
7:39	**7:42**	**7:52**	**7:54**	**8:07**	**8:18**	**8:26**	**8:34**	**8:41**	**8:49**

Rancho Bernardo → Downtown San Diego

N Rancho Bernardo Transit Station **DEPART**	M Carmel Mtn. Rd. & Camino Del Norte	L Carmel Mtn. Rd. & Peñasquitos Dr.	K Rancho Peñasquitos Bl. & Paseo Montril	H Miramar College Transit Station	G Kearny Mesa Transit Center	F Fashion Valley Transit Center **ARRIVE**	F Fashion Valley Transit Center **DEPART**	D 10th Av. & Broadway **ARRIVE**
6:12a	6:20a	6:26a	6:34a	6:42a	6:53a	7:05a	7:07a	7:17a
7:10	7:18	7:25	7:34	7:42	7:53	8:05	8:07	8:17
8:08	8:16	8:23	8:33	8:42	8:53	9:05	9:07	9:18
9:08	9:16	9:23	9:33	9:42	9:53	10:05	10:07	10:18
10:06	10:15	10:23	10:33	10:42	10:53	11:05	11:07	11:18
11:05	11:15	11:23	11:33	11:42	11:53	**12:06p**	**12:08p**	**12:20p**
12:05p	**12:15p**	**12:23p**	**12:33p**	**12:42p**	**12:53p**	**1:06**	**1:08**	**1:20**
1:05	**1:15**	**1:23**	**1:33**	**1:42**	**1:53**	**2:06**	**2:08**	**2:20**
2:05	**2:15**	**2:23**	**2:33**	**2:42**	**2:53**	**3:06**	**3:08**	**3:20**
3:05	**3:15**	**3:23**	**3:33**	**3:42**	**3:53**	**4:06**	**4:08**	**4:20**
4:05	**4:15**	**4:23**	**4:33**	**4:42**	**4:53**	**5:06**	**5:08**	**5:20**
5:05	**5:15**	**5:23**	**5:33**	**5:42**	**5:53**	**6:06**	**6:08**	**6:20**
6:06	**6:15**	**6:23**	**6:32**	**6:41**	**6:52**	**7:05**	**7:07**	**7:18**
7:06	**7:15**	**7:23**	**7:32**	**7:41**	**7:52**	**8:05**	**8:07**	**8:18**

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays / *Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados*
New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Fare Information
Información de tarifas
sdmts.com/fares

PRONTO

Easy transit fare. Get a card or download the app.

¡Tarifa de transporte fácil! Obtén una tarjeta o descarga la aplicación.

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All timetables are available online

Todos los horarios están disponibles en línea.

sdmts.com/timetables

Real Time Arrivals

Download the free **OneBusAway** app.

*Llegadas en tiempo real. Descarga la aplicación gratuita **OneBusAway**.*

sdmts.com/oba

MTS sdmts.com

MTS Security *MTS Seguridad*	619-595-4960
MTS Information & Trip Planning *MTS Información y planeo de viaje*	619-233-3004
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	619-557-4555
Lost and Found *Objetos extraviados*	619-233-3004
Transit Store 12th & Imperial Transit Center M–F / *L-V* 8am–5pm	619-234-1060
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	619-234-5005 888-722-4889

Buses on all MTS routes are accessible via lift or ramp.
Autobuses en todas las rutas de MTS son accesibles mediante un ascensor o rampa.

Alternative formats available upon request. Call: (619) 231-1466.
Formato alternativo disponible al preguntar. Llamar: (619) 231-1466.

Effective September 3, 2023

Rapid 235

Bus Route

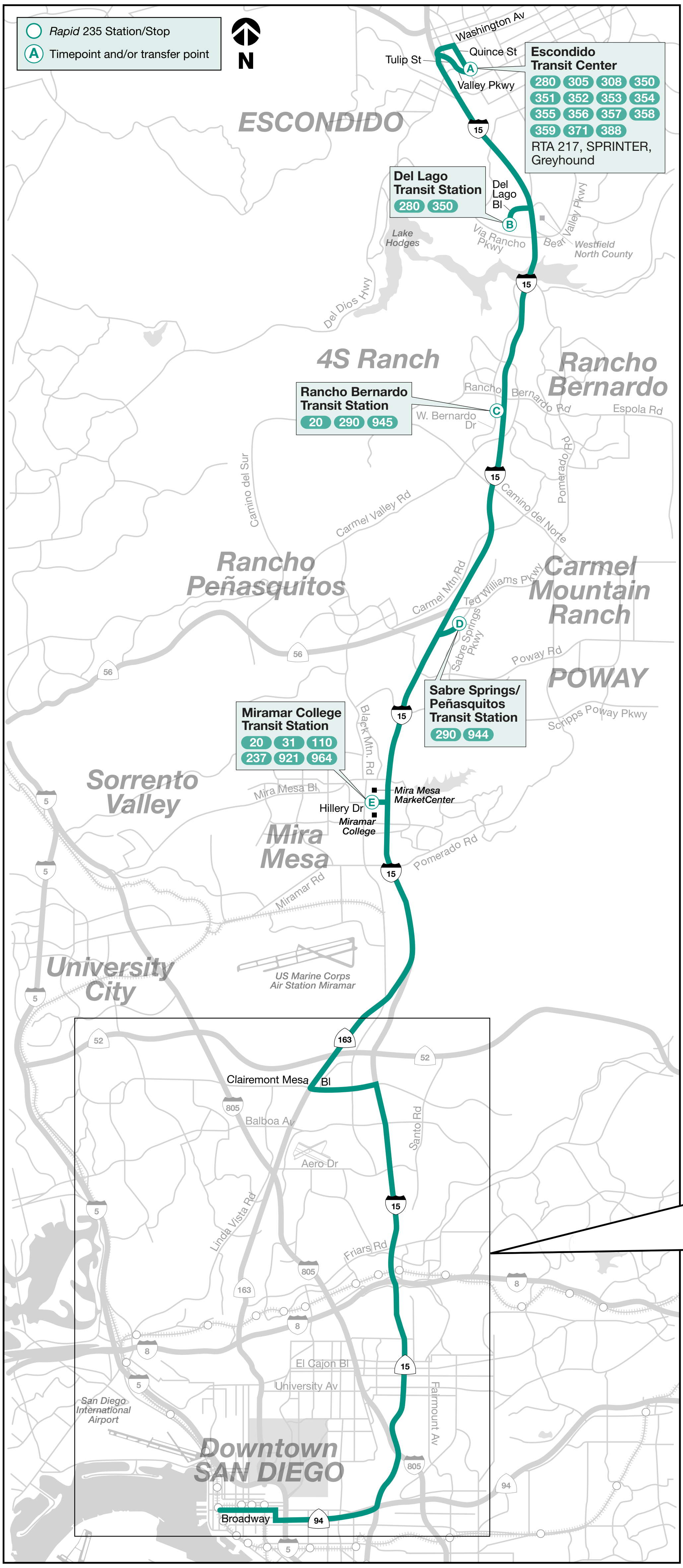
Escondido Transit Center ↔ Downtown San Diego

via I-15

Destinations
- Boulevard Transit Plaza
- City Heights Transit Plaza
- Del Lago Transit Station
- Kearny Mesa Transit Center
- Miramar College Transit Station
- Rancho Bernardo Transit Station
- Sabre Springs/Peñasquitos Transit Station

Trolley Connections
- City College
- America Plaza
- Santa Fe Depot

Subject to change without notice
Sujeto a cambios sin previo aviso



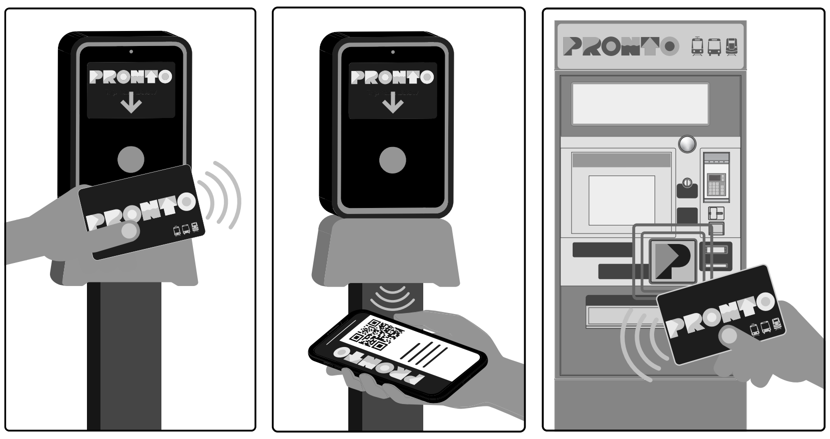
PRONTO

TAP or SCAN -

Required Before Boarding

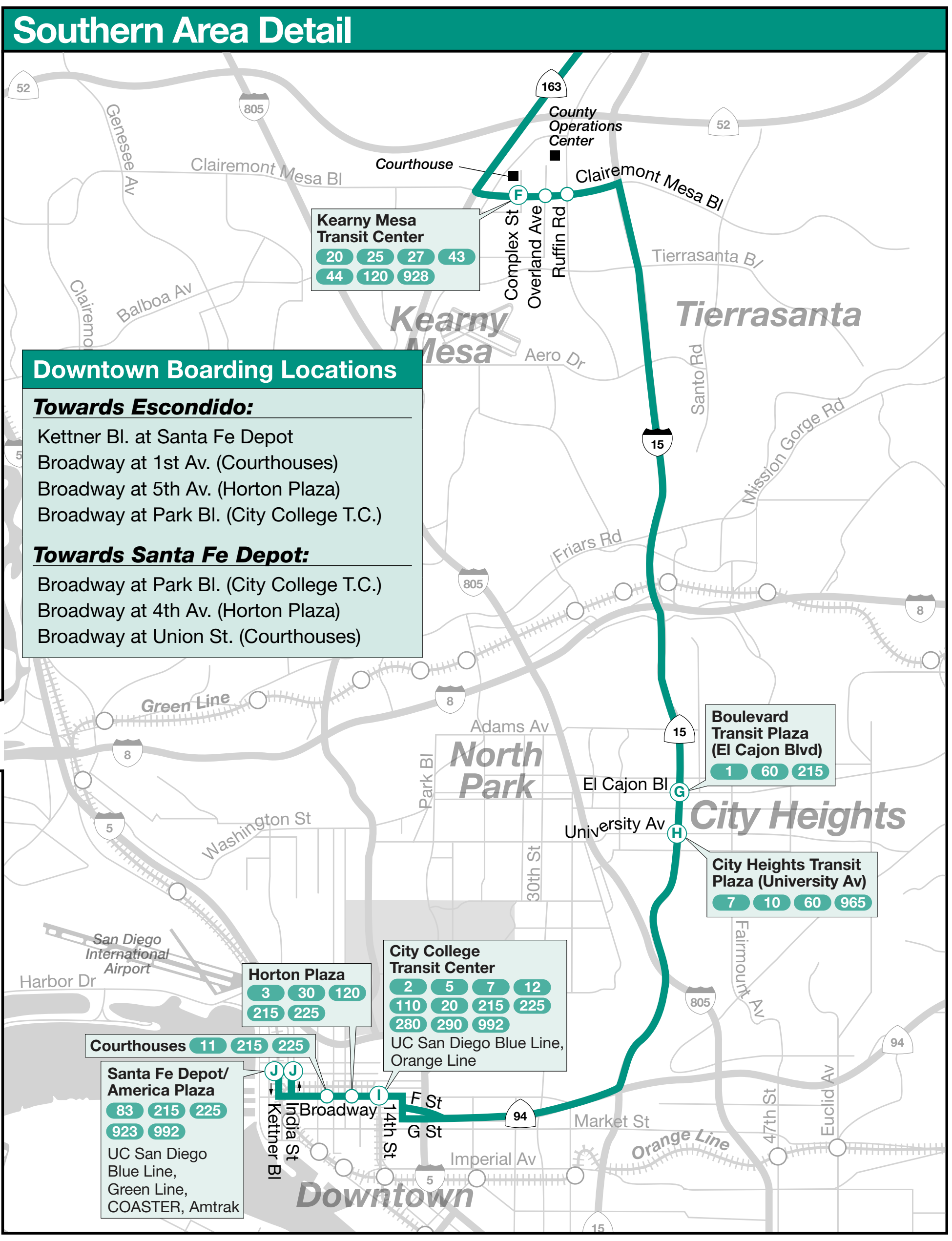
TOCA o ESCANEA -

Se requiere antes de abordar



619-595-5636
RidePRONTO.com

Southern Area Detail



Downtown Boarding Locations

Towards Escondido:
Kettner Bl. at Santa Fe Depot
Broadway at 1st Av. (Courthouses)
Broadway at 5th Av. (Horton Plaza)
Broadway at Park Bl. (City College T.C.)

Towards Santa Fe Depot:
Broadway at Park Bl. (City College T.C.)
Broadway at 4th Av. (Horton Plaza)
Broadway at Union St. (Courthouses)

235 Monday through Friday • *lunes a viernes*

Escondido Transit Center → Downtown San Diego

A Escondido Transit Center **DEPART**	B Del Lago Transit Station	C Rancho Bernardo Transit Station	D Sabre Springs/ Peñasquitos T.S.	E Miramar College Transit Station	F Kearny Mesa Transit Center	G Boulevard Transit Plaza (El Cajon Bl.)	H City Heights Transit Plaza (Univ. Av.)	I City College Transit Center (Broadway)	J America Plaza Trolley Station **ARRIVE**
—	—	—	—	—	4:58a	5:08a	5:10a	5:19a	5:26a
—	—	—	—	—	5:13	5:23	5:25	5:34	5:41
—	—	—	—	5:18a	5:28	5:38	5:40	5:49	5:56
5:00a	5:09a	5:17a	5:24a	5:33	5:43	5:53	5:55	6:04	6:11
—	—	—	—	5:48	5:59	6:09	6:11	6:21	6:28
5:33	5:42	5:50	5:57	6:06	6:17	6:27	6:29	6:40	6:47
—	—	—	—	6:21	6:32	6:43	6:45	6:57	7:05
6:03	6:12	6:20	6:27	6:36	6:47	6:58	7:00	7:12	7:20
6:18	6:27	6:35	6:42	6:51	7:02	7:13	7:15	7:27	7:35
6:30	6:40	6:48	6:55	7:04	7:15	7:26	7:28	7:41	7:50
6:46	6:56	7:04	7:11	7:20	7:31	7:42	7:44	7:57	8:06
7:01	7:11	7:19	7:26	7:35	7:46	7:57	7:59	8:12	8:21
7:16	7:26	7:34	7:41	7:50	8:01	8:12	8:14	8:27	8:36
7:31	7:41	7:49	7:56	8:05	8:16	8:27	8:29	8:42	8:51
7:46	7:56	8:04	8:11	8:20	8:31	8:42	8:44	8:57	9:06
8:01	8:11	8:19	8:26	8:35	8:46	8:57	8:59	9:11	9:20
8:17	8:26	8:34	8:41	8:50	9:01	9:12	9:14	9:26	9:35
8:33	8:42	8:50	8:57	9:06	9:17	9:28	9:30	9:41	9:50
8:48	8:57	9:05	9:12	9:21	9:32	9:43	9:45	9:56	10:05
9:03	9:12	9:20	9:27	9:36	9:47	9:58	10:00	10:11	10:20
9:18	9:27	9:35	9:42	9:51	10:02	10:13	10:15	10:26	10:35
9:33	9:42	9:50	9:57	10:06	10:17	10:28	10:30	10:41	10:50
9:48	9:57	10:05	10:12	10:21	10:32	10:43	10:45	10:56	11:05
10:03	10:12	10:20	10:27	10:36	10:47	10:58	11:00	11:11	11:20
10:18	10:27	10:35	10:42	10:51	11:02	11:13	11:15	11:26	11:35
10:32	10:41	10:49	10:56	11:05	11:16	11:28	11:30	11:41	11:50
10:47	10:56	11:04	11:11	11:20	11:31	11:43	11:45	11:56	12:05p
11:02	11:11	11:19	11:26	11:35	11:46	11:58	12:00p	12:11p	12:20
11:17	11:26	11:34	11:41	11:50	12:01p	12:13p	12:15	12:26	12:35
11:32	11:41	11:49	11:56	12:05p	12:16	12:28	12:30	12:41	12:50
11:47	11:56	12:04p	12:11p	12:20	12:31	12:43	12:45	12:56	1:05
12:02p	12:11p	12:19	12:26	12:35	12:46	12:58	1:00	1:11	1:20
12:17	12:26	12:34	12:41	12:50	1:01	1:13	1:15	1:26	1:35
12:32	12:41	12:49	12:56	1:05	1:16	1:28	1:30	1:41	1:50
12:47	12:56	1:04	1:11	1:20	1:31	1:43	1:45	1:56	2:05
1:02	1:11	1:19	1:26	1:35	1:46	1:58	2:00	2:11	2:20
1:17	1:26	1:34	1:41	1:50	2:01	2:13	2:15	2:26	2:35
1:32	1:41	1:49	1:56	2:05	2:16	2:28	2:30	2:41	2:50
1:47	1:56	2:04	2:11	2:20	2:31	2:43	2:45	2:56	3:05
2:02	2:11	2:19	2:26	2:35	2:46	2:58	3:00	3:11	3:20
2:16	2:25	2:33	2:40	2:49	3:00	3:12	3:14	3:25	3:34
2:29	2:38	2:46	2:53	3:02	3:13	3:26	3:28	3:40	3:49
2:42	2:52	3:00	3:07	3:16	3:28	3:42	3:44	3:57	4:06
2:55	3:05	3:13	3:20	3:29	3:41	3:56	3:58	4:12	4:21
3:10	3:20	3:28	3:35	3:44	3:56	4:11	4:13	4:27	4:36
3:23	3:33	3:41	3:48	3:57	4:10	4:26	4:28	4:43	4:52
3:39	3:49	3:57	4:04	4:13	4:26	4:42	4:44	4:59	5:08
3:54	4:04	4:12	4:19	4:28	4:41	4:58	5:00	5:15	5:24
4:09	4:19	4:27	4:34	4:43	4:56	5:13	5:15	5:30	5:39
4:24	4:34	4:42	4:49	4:58	5:11	5:28	5:30	5:45	5:54
4:39	4:49	4:57	5:04	5:13	5:26	5:43	5:45	6:00	6:09
4:54	5:04	5:12	5:19	5:28	5:41	5:58	6:00	6:15	6:23
5:10	5:20	5:28	5:35	5:44	5:57	6:12	6:14	6:29	6:37
5:27	5:37	5:45	5:52	6:01	6:13	6:27	6:29	6:43	6:51
5:46	5:55	6:03	6:10	6:19	6:30	6:43	6:45	6:58	7:06
6:02	6:11	6:19	6:26	6:35	6:46	6:58	7:00	7:11	7:19
6:17	6:26	6:34	6:41	6:50	7:01	7:13	7:15	7:26	7:34
6:32	6:41	6:49	6:56	7:05	7:16	7:28	7:30	7:41	7:49
6:47	6:56	7:04	7:11	7:20	7:31	7:43	7:45	7:56	8:04
7:06	7:15	7:23	7:30	7:39	7:49	8:00	8:02	8:12	8:20
7:36	7:45	7:53	8:00	8:09	8:19	8:30	8:32	8:42	8:50
8:05	8:14	8:22	8:29	8:38	8:48	8:59	9:01	9:11	9:19
8:35	8:44	8:52	8:59	9:08	9:18	9:29	9:31	9:40	9:47
9:05	9:14	9:22	9:29	9:38	9:48	9:59	10:01	10:10	10:17
9:35	9:44	9:52	9:59	10:08	10:18	10:29	10:31	10:40	10:47
10:05	10:14	10:22	10:29	10:38	10:48	10:58	11:00	11:09	11:16
10:35	10:44	10:52	10:59	11:08	11:18	11:28	11:30	11:39	11:46

Downtown San Diego → Escondido Transit Center

J Santa Fe Depot Transit Center **DEPART**	I City College Transit Center (Broadway)	H City Heights Transit Plaza (Univ. Av.)	G Boulevard Transit Plaza (El Cajon Bl.)	F Kearny Mesa Transit Center	E Miramar College Transit Station	D Sabre Springs/ Peñasquitos T.S.	C Rancho Bernardo Transit Station	B Del Lago Transit Station	A Escondido Transit Center **ARRIVE**
4:43a	4:50a	5:00a	5:02a	5:13a	5:24a	5:31a	5:39a	5:46a	5:57a
5:03	5:10	5:20	5:22	5:33	5:44	5:51	5:59	6:06	6:17
5:18	5:25	5:35	5:37	5:49	6:00	6:07	6:15	6:22	6:34
5:33	5:40	5:50	5:52	6:04	6:15	6:22	6:30	6:37	6:49
5:46	5:53	6:03	6:05	6:17	6:28	6:35	6:43	6:50	7:02
5:59	6:06	6:16	6:18	6:30	6:41	6:48	6:56	7:03	7:15
6:12	6:19	6:29	6:31	6:44	6:55	7:02	7:10	7:17	7:29
6:26	6:34	6:44	6:46	7:00	7:12	7:19	7:27	7:34	7:46
6:41	6:49	6:59	7:01	7:15	7:27	7:34	7:42	7:49	8:01
6:55	7:03	7:14	7:16	7:32	7:44	7:51	7:59	8:06	8:18
7:10	7:18	7:29	7:31	7:47	7:59	8:06	8:14	8:21	8:33
7:25	7:33	7:44	7:46	8:02	8:14	8:21	8:29	8:36	8:48
7:40	7:48	7:59	8:01	8:17	8:29	8:36	8:44	8:51	9:03
7:55	8:03	8:14	8:16	8:32	8:44	8:51	8:59	9:06	9:18
8:10	8:18	8:29	8:31	8:47	8:59	9:06	9:14	9:21	9:33
8:25	8:33	8:43	8:45	9:00	9:12	9:19	9:27	9:34	9:46
8:40	8:48	8:58	9:00	9:14	9:26	9:33	9:41	9:48	10:00
8:55	9:03	9:13	9:15	9:28	9:39	9:46	9:54	10:01	10:13
9:10	9:18	9:28	9:30	9:43	9:54	10:01	10:09	10:16	10:28
9:23	9:31	9:41	9:43	9:56	10:07	10:14	10:22	10:29	10:41
9:38	9:46	9:56	9:58	10:11	10:22	10:29	10:37	10:44	10:56
9:53	10:01	10:11	10:13	10:26	10:37	10:44	10:52	10:59	11:11
10:08	10:16	10:26	10:28	10:41	10:52	10:59	11:07	11:14	11:26
10:23	10:31	10:41	10:43	10:56	11:07	11:14	11:22	11:29	11:41
10:38	10:46	10:56	10:58	11:11	11:22	11:29	11:37	11:44	11:56
10:53	11:01	11:11	11:13	11:26	11:37	11:44	11:52	11:59	12:11p
11:08	11:16	11:26	11:28	11:41	11:52	11:59	12:07p	12:14p	12:26
11:23	11:31	11:41	11:43	11:56	12:07p	12:14p	12:22	12:29	12:41
11:38	11:46	11:56	11:58	12:11p	12:22	12:29	12:37	12:44	12:56
11:52	12:01p	12:11p	12:13p	12:26	12:37	12:44	12:52	12:59	1:11
12:07p	12:16	12:26	12:28	12:41	12:52	12:59	1:07	1:14	1:26
12:22	12:31	12:41	12:43	12:56	1:07	1:14	1:22	1:29	1:41
12:37	12:46	12:56	12:58	1:11	1:22	1:29	1:37	1:44	1:56
12:52	1:01	1:11	1:13	1:26	1:37	1:44	1:52	1:59	2:11
1:07	1:16	1:26	1:28	1:41	1:52	1:59	2:07	2:14	2:26
1:22	1:31	1:41	1:43	1:56	2:07	2:14	2:22	2:29	2:41
1:37	1:46	1:56	1:58	2:11	2:22	2:29	2:37	2:44	2:56
1:52	2:01	2:11	2:13	2:26	2:37	2:44	2:52	2:59	3:11
2:07	2:16	2:26	2:28	2:41	2:53	3:00	3:08	3:15	3:28
2:24	2:33	2:43	2:45	2:58	3:10	3:17	3:25	3:32	3:45
2:41	2:50	3:00	3:02	3:15	3:27	3:34	3:42	3:49	4:02
2:56	3:05	3:16	3:18	3:31	3:43	3:50	3:58	4:05	4:18
3:10	3:19	3:31	3:33	3:46	3:59	4:06	4:14	4:21	4:34
3:24	3:34	3:47	3:49	4:02	4:15	4:22	4:30	4:37	4:50
3:39	3:49	4:02	4:04	4:17	4:30	4:37	4:45	4:52	5:05
3:54	4:04	4:17	4:19	4:32	4:45	4:52	5:00	5:07	5:20
4:09	4:19	4:32	4:34	4:47	5:00	5:07	5:15	5:22	5:35
4:25	4:35	4:48	4:50	5:03	5:16	5:23	5:31	5:38	5:51
4:40	4:50	5:03	5:05	5:17	5:30	5:37	5:45	5:52	6:05
4:55	5:05	5:18	5:20	5:32	5:45	5:52	6:00	6:07	6:20
5:10	5:20	5:33	5:35	5:47	6:00	6:07	6:15	6:22	6:35
5:26	5:35	5:48	5:50	6:02	6:15	6:22	6:30	6:37	6:50
5:41	5:50	6:02	6:04	6:16	6:28	6:35	6:43	6:50	7:02
5:57	6:05	6:16	6:18	6:30	6:42	6:49	6:57	7:04	7:15
6:12	6:20	6:31	6:33	6:45	6:57	7:04	7:12	7:19	7:30
6:27	6:35	6:46	6:48	7:00	7:12	7:19	7:27	7:34	7:45
6:42	6:50	7:01	7:03	7:15	7:27	7:34	7:42	7:49	8:00
7:08	7:16	7:26	7:28	7:39	7:50	7:57	8:05	8:12	8:23
7:38	7:46	7:56	7:58	8:09	8:20	8:27	8:35	8:42	8:53
8:07	8:15	8:25	8:27	8:38	8:49	8:56	9:04	9:11	9:22
8:37	8:45	8:55	8:57	9:08	9:19	9:26	9:34	9:41	9:52
9:08	9:15	9:25	9:27	9:38	9:49	9:56	10:04	10:11	10:21
9:38	9:45	9:55	9:57	10:08	10:19	10:26	10:34	10:41	10:51
10:08	10:15	10:25	10:27	10:38	10:49	10:56	11:04	11:11	11:21
10:38	10:45	10:55	10:57	11:08	11:19	11:26	11:34	11:41	11:51

235 Saturday and Sunday • *sábado y domingo*

Escondido Transit Center → Downtown San Diego

A Escondido Transit Center **DEPART**	B Del Lago Transit Station	C Rancho Bernardo Transit Station	D Sabre Springs/ Peñasquitos T.S.	E Miramar College Transit Station	F Kearny Mesa Transit Center	G Boulevard Transit Plaza (El Cajon Bl.)	H City Heights Transit Plaza (Univ. Av.)	I City College Transit Center (Broadway)	J America Plaza Trolley Station **ARRIVE**
—	—	—	—	—	5:14a	5:23a	5:25a	5:34a	5:41a
5:01a	5:10a	5:18a	5:25a	5:34a	5:44	5:53	5:55	6:04	6:11
5:30	5:39	5:47	5:54	6:03	6:13	6:22	6:24	6:34	6:41
6:00	6:09	6:17	6:24	6:33	6:43	6:52	6:54	7:04	7:11
6:30	6:39	6:47	6:54	7:03	7:14	7:24	7:26	7:36	7:44
7:00	7:09	7:17	7:24	7:33	7:44	7:54	7:56	8:06	8:14
7:30	7:39	7:47	7:54	8:03	8:14	8:24	8:26	8:36	8:44
8:00	8:09	8:17	8:24	8:33	8:44	8:54	8:56	9:06	9:14
8:30	8:39	8:47	8:54	9:03	9:14	9:24	9:26	9:36	9:44
9:04	9:13	9:21	9:28	9:37	9:48	9:58	10:00	10:11	10:19
9:34	9:43	9:51	9:58	10:07	10:18	10:28	10:30	10:41	10:49
10:04	10:13	10:21	10:28	10:37	10:48	10:58	11:00	11:11	11:19
10:33	10:42	10:50	10:57	11:06	11:17	11:28	11:30	11:41	11:49
11:03	11:12	11:20	11:27	11:36	11:47	11:58	12:00p	12:11p	12:19p
11:33	11:42	11:50	11:57	12:06p	12:17p	12:28p	12:30	12:41	12:49
12:03p	12:12p	12:20p	12:27p	12:36	12:47	12:58	1:00	1:11	1:19
12:33	12:42	12:50	12:57	1:06	1:17	1:28	1:30	1:41	1:49
1:03	1:12	1:20	1:27	1:36	1:47	1:58	2:00	2:11	2:19
1:33	1:42	1:50	1:57	2:06	2:17	2:28	2:30	2:41	2:49
2:03	2:12	2:20	2:27	2:36	2:47	2:58	3:00	3:11	3:19
2:33	2:42	2:50	2:57	3:06	3:17	3:28	3:30	3:41	3:49
3:03	3:12	3:20	3:27	3:36	3:47	3:58	4:00	4:11	4:19
3:33	3:42	3:50	3:57	4:06	4:17	4:28	4:30	4:41	4:49
4:03	4:12	4:20	4:27	4:36	4:47	4:58	5:00	5:11	5:19
4:33	4:42	4:50	4:57	5:06	5:17	5:28	5:30	5:41	5:49
5:03	5:12	5:20	5:27	5:36	5:47	5:58	6:00	6:11	6:19
5:31	5:40	5:48	5:55	6:04	6:15	6:25	6:27	6:37	6:45
6:01	6:10	6:18	6:25	6:34	6:45	6:55	6:57	7:07	7:15
6:31	6:40	6:48	6:55	7:04	7:15	7:25	7:27	7:37	7:45
7:01	7:10	7:18	7:25	7:34	7:44	7:54	7:56	8:06	8:14
7:34	7:43	7:51	7:58	8:07	8:17	8:27	8:29	8:39	8:47
8:05	8:14	8:22	8:29	8:38	8:48	8:58	9:00	9:10	9:18
8:35	8:44	8:52	8:59	9:08	9:18	9:28	9:30	9:40	9:47
9:05	9:14	9:22	9:29	9:38	9:48	9:57	9:59	10:09	10:16
9:35	9:44	9:52	9:59	10:08	10:18	10:27	10:29	10:39	10:46
10:05	10:14	10:22	10:29	10:38	10:48	10:57	10:59	11:09	11:16

Downtown San Diego → Escondido Transit Center

J Santa Fe Depot Transit Center **DEPART**	I City College Transit Center (Broadway)	H City Heights Transit Plaza (Univ. Av.)	G Boulevard Transit Plaza (El Cajon Bl.)	F Kearny Mesa Transit Center	E Miramar College Transit Station	D Sabre Springs/ Peñasquitos T.S.	C Rancho Bernardo Transit Station	B Del Lago Transit Station	A Escondido Transit Center **ARRIVE**
4:43a	4:50a	5:00a	5:02a	5:13a	5:24a	5:31a	5:39a	5:46a	5:56a
5:10	5:17	5:27	5:29	5:40	5:51	5:58	6:06	6:13	6:23
5:40	5:47	5:57	5:59	6:10	6:21	6:28	6:36	6:43	6:53
6:10	6:17	6:27	6:29	6:40	6:51	6:58	7:06	7:13	7:23
6:40	6:47	6:57	6:59	7:10	7:21	7:28	7:36	7:43	7:53
7:10	7:18	7:28	7:30	7:41	7:52	7:59	8:07	8:14	8:24
7:40	7:48	7:58	8:00	8:11	8:22	8:29	8:37	8:44	8:54
8:09	8:17	8:27	8:29	8:40	8:51	8:58	9:06	9:13	9:23
8:39	8:47	8:57	8:59	9:11	9:22	9:29	9:37	9:44	9:55
9:10	9:18	9:28	9:30	9:42	9:53	10:00	10:08	10:15	10:26
9:40	9:48	9:58	10:00	10:12	10:23	10:30	10:38	10:45	10:56
10:11	10:19	10:29	10:31	10:43	10:54	11:01	11:09	11:16	11:27
10:41	10:49	10:59	11:01	11:13	11:24	11:31	11:39	11:46	11:57
11:11	11:19	11:29	11:31	11:43	11:54	12:01p	12:09p	12:16p	12:27p
11:41	11:49	11:59	12:01p	12:13p	12:24p	12:31	12:39	12:46	12:57
12:11p	12:19p	12:29p	12:31	12:43	12:54	1:01	1:09	1:16	1:27
12:41	12:49	12:59	1:01	1:13	1:24	1:31	1:39	1:46	1:57
1:11	1:19	1:29	1:31	1:43	1:54	2:01	2:09	2:16	2:27
1:41	1:49	1:59	2:01	2:13	2:24	2:31	2:39	2:46	2:57
2:11	2:19	2:29	2:31	2:43	2:54	3:01	3:09	3:16	3:28
2:41	2:49	2:59	3:01	3:13	3:24	3:31	3:39	3:46	3:58
3:09	3:18	3:29	3:31	3:43	3:54	4:01	4:09	4:16	4:28
3:39	3:48	3:59	4:01	4:13	4:24	4:31	4:39	4:46	4:58
4:09	4:18	4:29	4:31	4:43	4:54	5:01	5:09	5:16	5:28
4:40	4:49	5:00	5:02	5:13	5:24	5:31	5:39	5:46	5:58
5:10	5:19	5:30	5:32	5:43	5:54	6:01	6:09	6:16	6:28
5:39	5:48	5:59	6:01	6:12	6:23	6:30	6:38	6:45	6:57
6:10	6:18	6:29	6:31	6:42	6:53	7:00	7:08	7:15	7:27
6:41	6:49	6:59	7:01	7:12	7:23	7:30	7:38	7:45	7:56
7:09	7:17	7:27	7:29	7:40	7:51	7:58	8:06	8:13	8:24
7:39	7:47	7:57	7:59	8:10	8:21	8:28	8:36	8:43	8:54
8:07	8:15	8:25	8:27	8:38	8:49	8:56	9:04	9:11	9:22
8:38	8:45	8:55	8:57	9:08	9:19	9:26	9:34	9:41	9:52
9:08	9:15	9:25	9:27	9:38	9:49	9:56	10:04	10:11	10:21
9:38	9:45	9:55	9:57	10:08	10:19	10:26	10:34	10:41	10:51
10:08	10:15	10:25	10:27	10:38	10:49	10:56	11:04	11:11	11:21

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays / *Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados*
New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Fare Information
Información de tarifas

sdmts.com/fares

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MTS sdmts.com

MTS Security *MTS Seguridad*	**619-595-4960**
MTS Information & Trip Planning *MTS Información y planeo de viaje*	**619-233-3004**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**619-557-4555**
Lost and Found *Objetos extraviados*	**619-233-3004**
Transit Store 12th & Imperial Transit Center M–F / *L-V* 8am–5pm	**619-234-1060**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**619-234-5005** **888-722-4889**

Buses on all MTS routes are accessible via lift or ramp.
Autobuses en todas las rutas de MTS son accesibles mediante un ascensor o rampa.

Alternative formats available upon request. Call: (619) 231-1466.
Formato alternativo disponible al preguntar. Llamar: (619) 231-1466.

Effective June 30, 2023

Rapid Express

280 | 290

Escondido / Del Lago ↔ Downtown San Diego

Rancho Bernardo / Sabre Springs ↔ Downtown San Diego

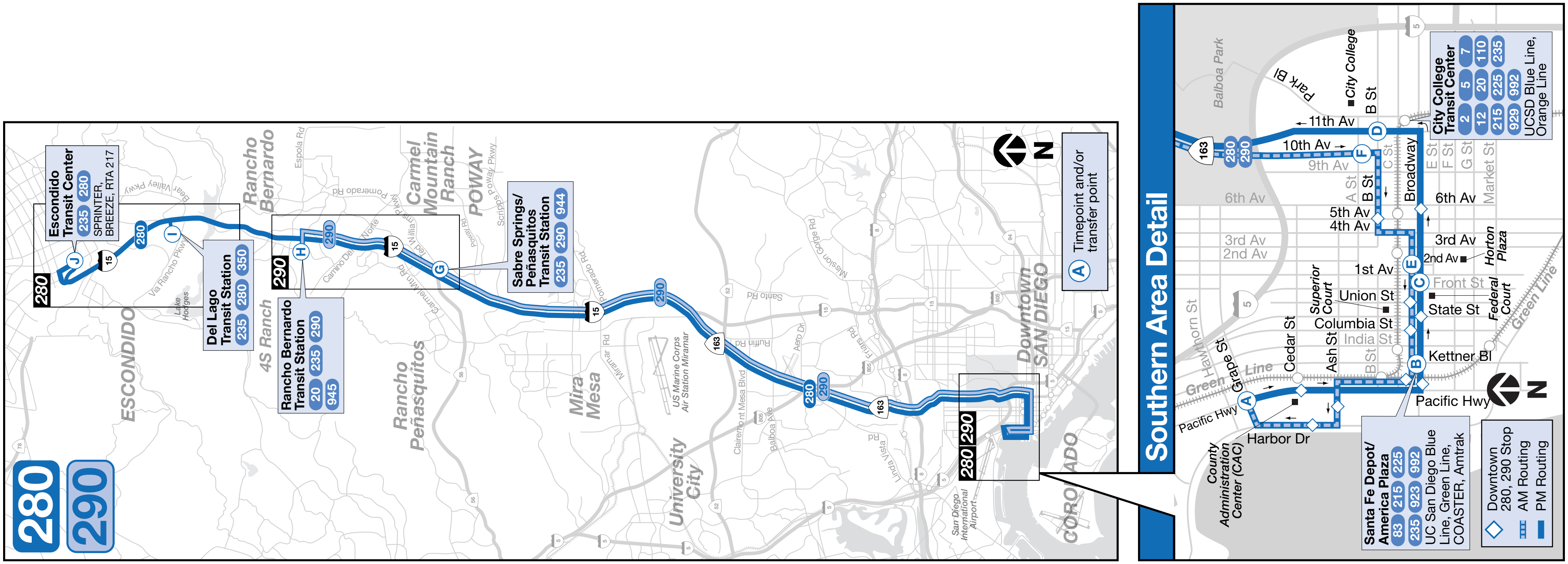
Bus Routes

Destinations
- I-15 Service

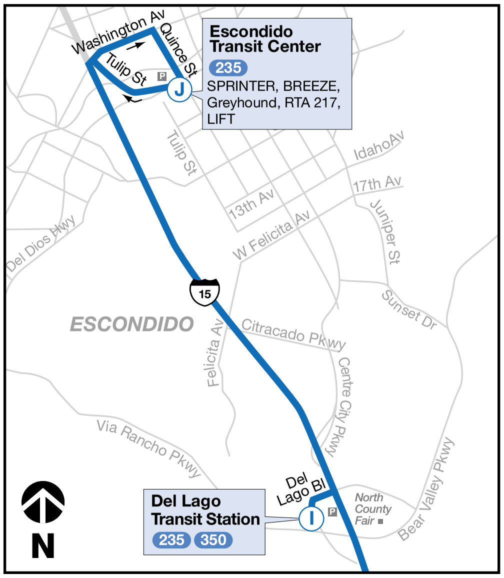
Trolley Connections
- City College
- America Plaza
- Santa Fe Depot

MTS

Subject to change without notice
Sujeto a cambios sin previo aviso



280 Monday through Friday / *lunes a viernes*



Escondido → Downtown San Diego

J Escondido Transit Center DEPART	I Del Lago Transit Station	F 10th Ave. & B St.	E Broadway & 2nd Ave.	B Broadway & Kettner Blvd.	A Grape St. & Pacific Hwy. ARRIVE
5:03a	5:14a	5:43a	5:48a	5:53a	5:58a
5:33	5:44	6:13	6:18	6:23	6:28
6:03	6:14	6:43	6:48	6:53	6:58
6:33	6:45	7:15	7:21	7:26	7:31
7:03	7:16	7:48	7:54	8:00	8:06
7:33	7:46	8:18	8:24	8:30	8:36
8:03	8:16	8:48	8:54	9:00	9:06

Downtown San Diego → Escondido

A Pacific Hwy. & Grape St. DEPART	B Broadway & Kettner Blvd.	C Broadway & 1st Ave.	D 11th Ave. & B St.	I Del Lago Transit Station	J Escondido Transit Center ARRIVE
2:59p	**3:05p**	**3:09p**	**3:17p**	**3:48p**	**3:59p**
3:29	**3:35**	**3:39**	**3:47**	**4:18**	**4:29**
3:59	**4:05**	**4:09**	**4:17**	**4:49**	**5:01**
4:29	**4:35**	**4:39**	**4:47**	**5:19**	**5:31**
4:59	**5:05**	**5:09**	**5:17**	**5:49**	**6:01**
5:29	**5:35**	**5:39**	**5:47**	**6:18**	**6:29**
5:59	**6:05**	**6:09**	**6:17**	**6:48**	**6:59**

Gray-shaded times are approximate; trip may run earlier than scheduled. / *Los tiempos sombreados en gris son aproximados; los viajes pueden operar más temprano de lo que se indica.*

290 Monday through Friday / *lunes a viernes*

Rancho Bernardo → Downtown San Diego

H Rancho Bernardo Transit Station DEPART	G Sabre Springs / Peñas. Transit Station	F 10th Ave. & B St.	E Broadway & 2nd Ave.	B Broadway & Kettner Blvd.	A Grape St. & Pacific Hwy. ARRIVE
5:15a	5:22a	5:44a	5:49a	5:54a	5:59a
5:45	5:52	6:14	6:19	6:24	6:29
6:15	6:22	6:44	6:50	6:55	7:00
6:45	6:52	7:14	7:20	7:25	7:30
7:15	7:22	7:46	7:52	7:58	8:04
7:45	7:52	8:18	8:24	8:30	8:36
8:10	8:17	8:43	8:49	8:55	9:01

Downtown San Diego → Rancho Bernardo

A Pacific Hwy. & Grape St. DEPART	B Broadway & Kettner Blvd.	C Broadway & 1st Ave.	D 11th Ave. & B St.	G Sabre Springs / Peñas. Transit Station	H Rancho Bernardo Transit Station ARRIVE
3:01p	**3:07p**	**3:11p**	**3:19p**	**3:42p**	**3:49p**
3:31	**3:37**	**3:41**	**3:49**	**4:12**	**4:19**
4:01	**4:07**	**4:11**	**4:19**	**4:42**	**4:49**
4:31	**4:37**	**4:41**	**4:49**	**5:12**	**5:19**
5:01	**5:07**	**5:11**	**5:19**	**5:42**	**5:49**
5:21	**5:27**	**5:31**	**5:39**	**6:02**	**6:09**
5:51	**5:57**	**6:01**	**6:09**	**6:32**	**6:39**

Gray-shaded times are approximate; trip may run earlier than scheduled. / *Los tiempos sombreados en gris son aproximados; los viajes pueden operar más temprano de lo que se indica.*

Routes 280 and 290 do not operate on weekends or on the observation of the following holidays: **New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas.** A limited schedule may be operated the day after Thanksgiving. Information will be provided on buses and at sdmts.com.

Las rutas 280 y 290 no ofrecen servicio durante el fin de semana ó durante los siguientes días festivos: ***Año Nuevo, Presidents' Day, Memorial Day, Día de la Independencia (E.E.U.U.), Labor Day, Día de Acción de Gracias y Navidad.*** *Se podría operar un horario limitado el día después del Día de Acción de Gracias. Se proporcionará información en los autobuses y sdmts.com.*

Guaranteed Ride Home

Commuters who ride *Rapid* Express have a safety net with the SANDAG iCommute Guaranteed Ride Home Program (GRH). Participants must pre-register online in order to redeem up to three rides per fiscal year in the event of an emergency and other qualifying situations. For more information, including full eligibility details, visit https://icommutesd.com/commuters/guaranteed-ride-home

Transporte Garantizado a Casa

Los viajeros frecuentes que se trasladan en Rapid Express cuentan con la seguridad que les brinda el Programa de Transporte Garantizado a Casa de SANDAG (GRH, por sus siglas en inglés). Los participantes deben estar previamente inscritos en línea para poder canjear hasta tres viajes por año fiscal en caso de emergencia y de otras situaciones que reúnan los requisitos. Para obtener más información, incluidos todos los detalles de elegibilidad, visite https://icommutesd.com/commuters/guaranteed-ride-home

Effective SEPTEMBER 4, 2022

944 Sabre Springs – Poway

via Poway Road

945 Rancho Bernardo – Old Poway Park

via Pomerado Road / Poway Road

Exact fare, please *Favor de pagar la cantidad exacta*

Fares *Tarifas*	**Adult** *Adulto*	**Senior/Disabled/ Medicare/Youth*** *Personas Mayores/con Discapacidades/Medicare/Jóvenes**
ONE-WAY FARES *Tarifas Sencillas*	**$2.50**	**$1.25**
EARNED DAY PASS *Pase del Día Ganado*	**$6.00**	**$3.00**
MONTH PASS *Pase mensual*	**$72.00**	**$23.00**

Load money into your PRONTO account to earn Day Passes and Month Passes. Tap your PRONTO card ($2) or scan your PRONTO mobile app (free) to ride. *Carga dinero a tu cuenta de PRONTO para ganar Pases del Día y Pases Mensuales. Toca tu tarjeta PRONTO ($2) o escanea tu aplicación móvil PRONTO (gratis) para viajar.*

- **One-ways with PRONTO receive free transfers for two hours. No free transfers for cash.** *Los viajes de ida con PRONTO reciben transbordes gratuitos por dos horas. No se permiten transbordes gratuitos con pagos en efectivo.*
- **Day Passes not sold in advance. Earned with PRONTO.** *Los pases diarios no se venden por adelantado. Se obtienen con PRONTO.*
- **A month pass can be purchased in advanced or earned with PRONTO. Good from first day to last day of the month.** *El Pase Mensual se puede comprar por adelantado o se obtiene mientras viaja con PRONTO. Válido desde el primer día hasta el último día del mes.*

*Proof of eligibility required. Senior Eligibility: Age 65+ or born on or before September 1, 1959. Youth Eligibility: Ages 6-18
**Se requiere verificación de elegibilidad. Elegibilidad para Personas Mayores: Edad 65+ o nacido en o antes del 1 de septiembre, 1959. Elegibilidad para Jóvenes: edades 6-18*

For more information, visit: / *Para más información, visite:* **sdmts.com/fares**

DIRECTORY / *Directorio*

MTS Information & Trip Planning *MTS Información y planeo de viaje*	(619) 233-3004
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	(619) 234-5005 or/ó (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	(619) 685-4900
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	(619) 557-4555
MTS Security *MTS Seguridad*	(619) 595-4960
Lost & Found *Objetos extraviados*	(619) 233-3004
Transit Store	(619) 234-1060 12th & Imperial Transit Center M–F 8am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	sdmts.com

For more information on riding MTS services, pick up a Rider's Guide on a bus or at the Transit Store, or visit **sdmts.com.**

Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en la Transit Store, o visita a ***sdmts.com.***

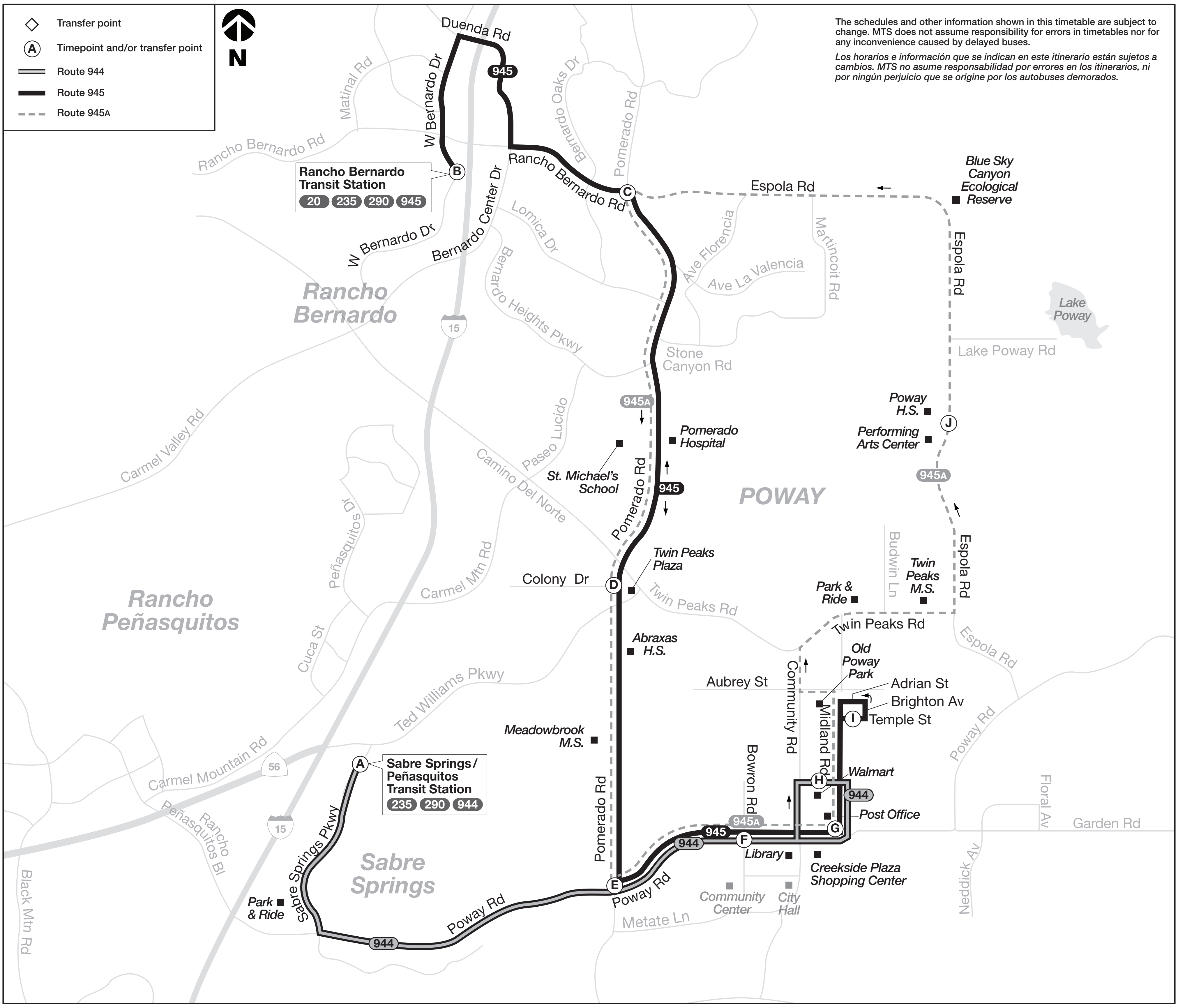
Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

DESTINATIONS

- Abraxas High School (945)
- Meadowbrook Middle School (945)
- Pomerado Hospital (945)
- Poway Library
- Poway High School (945A)
- Rancho Bernardo Transit Station (945)
- Twin Peaks Plaza (945)
- Sabre Springs / Peñasquitos Transit Station (944)

09/22

sdmts.com
Route Alerts, Updated Schedules,
Connections & More



The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.

Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

Alternative formats available upon request. Please call: (619) 557-4555 / ***Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555***

Route 945A – Monday through Friday / *lunes a viernes*

Morning only

Pomerado ➡ Poway ➡ Espola Loop

Ⓒ Pomerado Rd. & R. Bernardo Rd. **DEPART**	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd.	Ⓙ Poway High School	Ⓒ Pomerado Rd. & R. Bernardo Rd. **ARRIVE**
6:30a	6:37a	6:44a	6:53a	7:06a	7:16a
7:35	7:42	7:49	7:58	8:15	8:25

Afternoon only

Poway ➡ Espola ➡ Pomerado Loop

Ⓖ Midland Rd. & Poway Rd. **DEPART**	Ⓙ Poway High School	Ⓒ Pomerado Rd. & R. Bernardo Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd. **ARRIVE**
3:46p	**4:00p**	**4:09p**	**4:18p**	**4:27p**	**4:36p**
5:03	**5:15**	**5:24**	**5:32**	**5:40**	**5:48**

Route 945A does not operate on weekends or on the following holidays and observed holidays
La ruta 945A no ofrece servicio durante el fin de semana ó durante los siguientes días festivos y feriados observados
\>>>
New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Route 944 – Monday through Friday / *lunes a viernes*

Sabre Springs ➡ Poway

Ⓐ Sabre Springs/Peñasquitos Transit Station **DEPART**	Ⓔ Poway Rd. & Pomerado Rd.	Ⓕ Poway Rd. & Bowron Rd.	Ⓗ Hilleary Pl. (Walmart) **ARRIVE**
5:34a	5:42a	5:46a	5:50a
6:00	6:08	6:12	6:16
6:31	6:39	6:43	6:47
7:07	7:16	7:20	7:25
7:39	7:48	7:52	7:57
8:09	8:18	8:22	8:27
8:39	8:48	8:52	8:57
9:09	9:18	9:22	9:27
9:39	9:48	9:52	9:57
10:09	10:18	10:22	10:27
10:34	10:43	10:47	10:52
11:04	11:13	11:17	11:22
11:34	11:43	11:47	11:52
12:19p	**12:28p**	**12:32p**	**12:37p**
12:49	**12:58**	**1:02**	**1:07**
1:19	**1:28**	**1:32**	**1:37**
1:49	**1:59**	**2:04**	**2:09**
2:19	**2:29**	**2:34**	**2:39**
2:48	**2:58**	**3:03**	**3:08**
3:12	**3:22**	**3:27**	**3:32**
3:42	**3:52**	**3:57**	**4:02**
4:12	**4:22**	**4:27**	**4:32**
4:42	**4:52**	**4:57**	**5:02**
5:12	**5:22**	**5:27**	**5:32**
5:42	**5:52**	**5:57**	**6:02**
6:12	**6:21**	**6:25**	**6:30**
6:45	**6:53**	**6:57**	**7:01**
7:15	**7:23**	**7:27**	**7:31**

Poway ➡ Sabre Springs

Ⓗ Hilleary Pl. (Walmart) **DEPART**	Ⓕ Poway Rd. & Bowron Rd.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓐ Sabre Springs/Peñasquitos Transit Station **ARRIVE**
5:04a	5:07a	5:10a	5:19a
5:34	5:37	5:40	5:49
6:04	6:07	6:10	6:19
6:37	6:40	6:43	6:52
7:04	7:08	7:12	7:22
7:34	7:38	7:42	7:52
8:05	8:09	8:13	8:23
8:35	8:39	8:43	8:53
9:04	9:08	9:12	9:22
9:34	9:38	9:42	9:52
10:04	10:08	10:12	10:22
10:34	10:38	10:42	10:52
11:04	11:08	11:12	11:22
11:34	11:38	11:42	11:52
12:19p	**12:23p**	**12:27p**	**12:37p**
12:49	**12:53**	**12:57**	**1:07**
1:19	**1:23**	**1:27**	**1:37**
1:49	**1:53**	**1:57**	**2:07**
2:15	**2:19**	**2:24**	**2:35**
2:45	**2:49**	**2:54**	**3:05**
3:12	**3:16**	**3:21**	**3:32**
3:38	**3:42**	**3:47**	**3:58**
4:08	**4:12**	**4:17**	**4:28**
4:41	**4:45**	**4:50**	**5:01**
5:11	**5:15**	**5:20**	**5:31**
5:43	**5:47**	**5:51**	**6:01**
6:15	**6:19**	**6:23**	**6:33**
6:44	**6:48**	**6:52**	**7:02**

Route 944 does not operate on Sundays, and Saturday service is temporarily suspended due to staffing shortages. For more information, visit **www.sdmts.com** or call (619) 233-3004. / *La ruta 944 no opera los domingos y el servicio de los sábados está temporalmente suspendido por falta de personal. Para obtener más información, visite* ***www.sdmts.com*** *o llame al (619) 233-3004.*

Route 945 – Monday through Friday / *lunes a viernes*

Rancho Bernardo ➡ Old Poway

Ⓑ Rancho Bernardo Transit Station **DEPART**	Ⓒ Pomerado Rd. & R. Bernardo Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd.	Ⓘ Temple St. & Midland Rd. **ARRIVE**
5:52a	6:01a	6:08a	6:15a	6:24a	6:27a
6:22	6:31	6:38	6:45	6:54	6:57
6:51	7:00	7:07	7:14	7:23	7:26
7:21	7:31	7:38	7:46	7:56	7:59
7:51	8:01	8:08	8:16	8:26	8:29
8:21	8:31	8:38	8:46	8:56	8:59
8:52	9:02	9:09	9:17	9:27	9:30
9:22	9:32	9:39	9:47	9:57	10:00
9:57	10:07	10:14	10:22	10:32	10:35
10:27	10:37	10:44	10:52	11:02	11:05
10:56	11:06	11:13	11:21	11:31	11:34
11:26	11:36	11:43	11:51	**12:01p**	**12:04p**
11:56	**12:06p**	**12:13p**	**12:21p**	**12:31**	**12:34**
12:26p	**12:36**	**12:43**	**12:51**	**1:01**	**1:04**
12:57	**1:07**	**1:14**	**1:22**	**1:32**	**1:35**
1:27	**1:37**	**1:44**	**1:52**	**2:02**	**2:05**
1:57	**2:07**	**2:14**	**2:22**	**2:32**	**2:35**
2:27	**2:37**	**2:44**	**2:52**	**3:02**	**3:05**
3:02	**3:12**	**3:19**	**3:27**	**3:37**	**3:40**
3:32	**3:42**	**3:49**	**3:57**	**4:07**	**4:10**
4:02	**4:12**	**4:19**	**4:27**	**4:37**	**4:40**
4:34	**4:44**	**4:51**	**4:59**	**5:09**	**5:12**
5:04	**5:14**	**5:21**	**5:29**	**5:39**	**5:42**
5:34	**5:44**	**5:51**	**5:59**	**6:09**	**6:12**
6:04	**6:14**	**6:21**	**6:29**	**6:39**	**6:42**
6:37	**6:47**	**6:54**	**7:02**	**7:12**	**7:15**
7:07	**7:16**	**7:23**	**7:30**	**7:39**	**7:42**
7:47	**7:56**	**8:03**	**8:10**	**8:19**	**8:22**

Old Poway ➡ Rancho Bernardo

Ⓘ Temple St. & Midland Rd. **DEPART**	Ⓖ Midland Rd. & Poway Rd.	Ⓔ Pomerado Rd. & Poway Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓒ R. Bernardo Rd. & Pomerado Rd.	Ⓑ Rancho Bernardo Transit Station **ARRIVE**
5:09a	5:12a	5:19a	5:25a	5:32a	5:42a
5:39	5:42	5:49	5:55	6:02	6:12
6:05	6:08	6:15	6:21	6:28	6:38
6:35	6:38	6:45	6:51	6:58	7:08
7:06	7:09	7:17	7:23	7:31	7:41
7:36	7:39	7:47	7:53	8:01	8:11
8:06	8:09	8:17	8:23	8:31	8:41
8:36	8:39	8:47	8:53	9:01	9:11
9:10	9:13	9:21	9:27	9:35	9:45
9:40	9:43	9:51	9:57	10:05	10:15
10:10	10:13	10:21	10:27	10:35	10:45
10:41	10:44	10:52	10:58	11:06	11:16
11:11	11:14	11:22	11:28	11:36	11:46
11:39	11:43	11:51	11:57	**12:05p**	**12:16p**
12:09p	**12:13p**	**12:21p**	**12:27p**	**12:35**	**12:46**
12:39	**12:43**	**12:51**	**12:57**	**1:05**	**1:16**
1:09	**1:13**	**1:21**	**1:27**	**1:35**	**1:46**
1:43	**1:47**	**1:55**	**2:01**	**2:09**	**2:20**
2:13	**2:17**	**2:25**	**2:31**	**2:39**	**2:50**
2:44	**2:48**	**2:56**	**3:02**	**3:10**	**3:21**
3:14	**3:18**	**3:26**	**3:32**	**3:40**	**3:51**
3:44	**3:48**	**3:56**	**4:02**	**4:10**	**4:21**
4:16	**4:20**	**4:28**	**4:34**	**4:42**	**4:53**
4:46	**4:50**	**4:58**	**5:04**	**5:12**	**5:23**
5:18	**5:22**	**5:30**	**5:36**	**5:44**	**5:55**
5:48	**5:52**	**6:00**	**6:06**	**6:14**	**6:25**
6:18	**6:22**	**6:30**	**6:36**	**6:44**	**6:55**
7:02	**7:05**	**7:12**	**7:18**	**7:25**	**7:35**

Route 945 – Saturday / *sábado*

Rancho Bernardo ➡ Old Poway

Ⓑ Rancho Bernardo Transit Station **DEPART**	Ⓒ Pomerado Rd. & R. Bernardo Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓔ Poway Rd. & Pomerado Rd.	Ⓖ Midland Rd. & Poway Rd.	Ⓘ Temple St. & Midland Rd. **ARRIVE**
6:42a	6:52a	6:59a	7:06a	7:14a	7:18a
7:27	7:37	7:44	7:52	8:01	8:05
8:12	8:22	8:29	8:37	8:46	8:50
8:57	9:07	9:14	9:22	9:31	9:35
9:42	9:52	9:59	10:07	10:16	10:20
10:27	10:37	10:44	10:52	11:01	11:05
11:12	11:22	11:29	11:37	11:46	11:50
11:57	**12:07p**	**12:14p**	**12:22p**	**12:31p**	**12:35p**
12:42p	**12:52**	**12:59**	**1:07**	**1:16**	**1:20**
1:27	**1:37**	**1:44**	**1:52**	**2:01**	**2:05**
2:12	**2:22**	**2:29**	**2:37**	**2:46**	**2:50**
2:57	**3:07**	**3:14**	**3:22**	**3:31**	**3:35**
3:43	**3:53**	**4:00**	**4:08**	**4:17**	**4:21**
4:28	**4:38**	**4:45**	**4:53**	**5:02**	**5:06**
5:13	**5:23**	**5:30**	**5:38**	**5:47**	**5:51**
5:58	**6:08**	**6:15**	**6:23**	**6:32**	**6:36**
6:58	**7:08**	**7:15**	**7:22**	**7:30**	**7:34**

Old Poway ➡ Rancho Bernardo

Ⓘ Temple St. & Midland Rd. **DEPART**	Ⓖ Midland Rd. & Poway Rd.	Ⓔ Pomerado Rd. & Poway Rd.	Ⓓ Pomerado Rd. & Colony Dr.	Ⓒ R. Bernardo Rd. & Pomerado Rd.	Ⓑ Rancho Bernardo Transit Station **ARRIVE**
6:41a	6:44a	6:50a	6:56a	7:03a	7:12a
7:26	7:29	7:35	7:41	7:48	7:57
8:09	8:12	8:18	8:25	8:32	8:42
8:56	8:59	9:05	9:12	9:19	9:29
9:41	9:44	9:50	9:57	10:04	10:14
10:26	10:29	10:35	10:42	10:49	10:59
11:10	11:13	11:19	11:26	11:34	11:44
11:55	11:58	**12:04p**	**12:11p**	**12:19p**	**12:29p**
12:40p	**12:43p**	**12:49**	**12:56**	**1:04**	**1:14**
1:25	**1:28**	**1:34**	**1:41**	**1:49**	**1:59**
2:10	**2:13**	**2:19**	**2:26**	**2:34**	**2:44**
2:55	**2:58**	**3:04**	**3:11**	**3:19**	**3:29**
3:40	**3:43**	**3:49**	**3:56**	**4:04**	**4:14**
4:25	**4:28**	**4:34**	**4:41**	**4:49**	**4:59**
5:10	**5:13**	**5:19**	**5:26**	**5:34**	**5:44**
5:55	**5:58**	**6:04**	**6:11**	**6:19**	**6:29**

Route 945 does not operate on Sundays or on holidays that run a Sunday schedule. To determine which holidays run on a Sunday schedule, visit **www.sdmts.com** or call (619) 233-3004. / *La ruta 945 no ofrece servicio en los domingos ó los días festivos que operan con servicio de domingo. Para detalles sobre los días festivos que operan con servicio de domingo, visite* ***www.sdmts.com*** *o llame (619) 233-3004.*

APPENDIX D

SIGNAL TIMING PLANS

Location: 15 NB @ Bernardo Center Dr
System:
District: 11
Master At: 15 SB @ Bernardo Center D
I/C: Yes
Designed By:
Installed By:
Service Info:

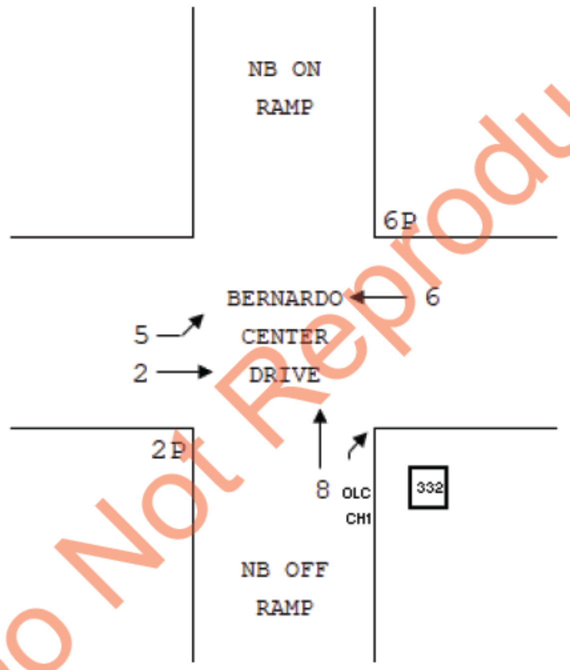
Timing Change:	Date Start:	Date End:	Designed:	Installed:
1/30/2022				

FLASH

PHASE
1) NB 15 Off Ramp Right Turn OLC [ ]
2) EB Bernardo Center Dr [ ]
3) [ ]
4) [ ]
5) EB Bernardo Center Dr Left Turn [ ]
6) WB Bernardo Center Dr [ ]
7) [ ]
8) NB 15 Off Ramp [ ]

OVERLAP
A) [ ]
B) [ ]
C) OLC = FZ 1 [ ]
D) [ ]
E) [ ]
F) [ ]

Intersection Layout



Comments and Notes:

PHASES	1	2	3	4	5	6	7	8
3.5 PED FT	-	73	-	-	-	56	-	-
Bike xing FT	-	92	-	-	-	60	-	-

RAM Checksum

Page 2:	7305	Page 8:	F8F9
Page 3:	87E8	Page 9:	D2FD
Page 4:	7E75	Page 10:	D4D6
Page 5:	191A	Page 11:	03FC
Page 6:	191A	Page 12:	D68F
Page 7:	6EEC	Page 13:	84E7

CONFIGURATION PHASE FLAGS

Cabinet (9-3)
332
Configuration
CALTRANS

Phases (2-1-1-1)	
Permitted	1 2 . . 5 6 . 8
Restricted	. . . .

Phase Features (2-1-1-4)	
Double Entry	. . . .
Rest In Walk	. . . .
Rest In Red	. . . .
Walk 2	. 2 . . . 6 . .
Max Green 2	. . . .
Max Green 3	. . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . .
Vehicle Calls	1 2 . . 5 6 . 8
Pedestrian Calls	. 2 . . . 6 . .
Yellow Start Overlaps	. . . . . .
Startup All-Red	6.0

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . .
Pedestrian	. . . .
Bicycle	. . . .

Phase Locks (2-1-1-3)	
Red	. . . . 5 . . 8
Yellow	. . . .
Force/Max	. . . .

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . .	1	. . . .
2	. . . .	2	. . . .
3	. . . .	3	. . . .
4	. . . .	4	. . . .
5	. . . .	5	. . . .
6	. . . .	6	. . . .
7	. . . .	7	. . . .
8	. . . .	8	. . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . .
Yellow Flash Overlap	. . . . . .
Flash In Red Phases	. . . .
Flash In Red Overlap	. . . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . .
Driveway Signal Phases	. . . .
Driveway Signal Overlaps	. . . . . .
Leading Ped Phases	. . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . .

Pedestrian (2-1-3)	
P1	. . . .
P2	. 2 . . . . . .
P3	. . . .
P4	. . . .
P5	. . . .
P6	. . . . . 6 . .
P7	. . . .
P8	. . . .

Overlap (2-1-4)

Overlap	Parent	Omit	No Start	Not
A	. . . .	. . . .	. . . .	. . . .
B	. . . .	. . . .	. . . .	. . . .
C	. . . . 5 6 . 8	. . . .	. . . .	. 2 . . . . . .
D	. . . .	. . . .	. . . .	. . . .
E	. . . .	. . . .	. . . .	. . . .
F	. . . .	. . . .	. . . .	. . . .

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	7	0	10	0	7	0	0
Flash Don't Walk	0	16	0	10	0	11	0	0
Minimum Green	5	8	10	10	5	6	10	5
Det Limit	0	0	10	10	0	0	10	0
Max Initial	0	0	10	10	0	0	10	0
Max Green 1	15	35	50	50	25	35	50	35
Max Green 2	0	0	50	50	0	0	50	0
Max Green 3	0	0	50	50	0	0	50	0
Extension	2.0	2.0	5.0	5.0	2.0	2.0	5.0	2.0
Maximum Gap	2.0	2.0	5.0	5.0	2.0	2.0	5.0	2.0
Minimum Gap	2.0	2.0	5.0	5.0	2.0	2.0	5.0	2.0
Add Per Vehicle	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Reduce Gap By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Yellow	4.1	4.4	5.0	5.0	3.7	4.4	5.0	4.1
All-Red	2.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0

Ped/Bike (2-3)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 2 ---	0	16	0	0	0	11	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	0	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	4.1	5.0	5.0	5.0
Red	0.0	0.0	2.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	OFF

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

					[Offsets]			Green Factors or Press [F] to Select Force-Off							
		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	75		....				10	15			10	15		30
Plan 2	Green Factor	95		....				10	22			13	22		40
Plan 3	Green Factor	75		....				10	25			15	25		15
Plan 4	Green Factor	75		....				10	20			20	20		15
Plan 5	Green Factor	85		....				10	30			23	30		12
Plan 6	Green Factor			....											
Plan 7	Green Factor			....											
Plan 8	Green Factor			....											
Plan 9	Green Factor			....											

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	1..45..8	.2...6..	....	....	....5..8	....	....	....
Plan 2	1..45..8	.2...6..	....	....	....5..8	....	....	....
Plan 3	1..45..8	.2...6..	....	....	....5..8	....	....	....
Plan 4	1..45..8	.2...6..	....	....	....5..8	....	....	....
Plan 5	1..45..8	.2...6..	....	....	....5..8	....	....	....
Plan 6	....	....	....	....	....	....	....	....
Plan 7	....	....	....	....	....	....	....	....
Plan 8	....	....	....	....	....	....	....	....
Plan 9	....	....	....	....	....	....	....	....

Master Timer Sync (7-A)	
Enable in Plans	
1-9	....
11-19	....
21-29	....

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
.2.4.6.8	....
Veh Min	Veh Max
.2...6..	....
Ped	Bike
....	....
Cond	Cond Grn
....	10

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-29
254 = Flash
255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

					[Offsets]			Green Factors or Press [F] to Select Force-Off							
		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor			....											
Plan 12	Green Factor			....											
Plan 13	Green Factor			....											
Plan 14	Green Factor			....											
Plan 15	Green Factor			....											
Plan 16	Green Factor			....											
Plan 17	Green Factor			....											
Plan 18	Green Factor			....											
Plan 19	Green Factor			....											

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	....	....	....	....	....	....	....	....
Plan 12	....	....	....	....	....	....	....	....
Plan 13	....	....	....	....	....	....	....	....
Plan 14	....	....	....	....	....	....	....	....
Plan 15	....	....	....	....	....	....	....	....
Plan 16	....	....	....	....	....	....	....	....
Plan 17	....	....	....	....	....	....	....	....
Plan 18	....	....	....	....	....	....	....	....
Plan 19	....	....	....	....	....	....	....	....

Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor			....											
Plan 22	Green Factor			....											
Plan 23	Green Factor			....											
Plan 24	Green Factor			....											
Plan 25	Green Factor			....											
Plan 26	Green Factor			....											
Plan 27	Green Factor			....											
Plan 28	Green Factor			....											
Plan 29	Green Factor			....											

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	....	....	....	....	....	....	....	....
Plan 22	....	....	....	....	....	....	....	....
Plan 23	....	....	....	....	....	....	....	....
Plan 24	....	....	....	....	....	....	....	....
Plan 25	....	....	....	....	....	....	....	....
Plan 26	....	....	....	....	....	....	....	....
Plan 27	....	....	....	....	....	....	....	....
Plan 28	....	....	....	....	....	....	....	....
Plan 29	....	....	....	....	....	....	....	....

TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
0630	1	A
0720	2	A
0900	3	A
1500	5	A
1800	4	A
1830	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 2 (8-2-2)		
Time	Plan	OS
0900	3	A
1830	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 3 (8-2-3)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 4 (8-2-4)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 5 (8-2-5)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 6 (8-2-6)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			....	
2			....	
3			....	
4			....	
5			....	
6			....	
7			....	
8			....	
9			....	
10			....	
11			....	
12			....	
13			....	
14			....	
15			....	
16			....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			....	
2			....	
3			....	
4			....	
5			....	
6			....	
7			....	
8			....	
9			....	
10			....	
11			....	
12			....	
13			....	
14			....	
15			....	
16			....	

Daylight Saving (8-1)

Enabl	YES

	Month	Sunday
Start	MAR	2nd
End	NOV	1st

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	....
Holiday	....

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			....		....
2			....		....
3			....		....
4			....		....
5			....		....
6			....		....
7			....		....
8			....		....
9			....		....
10			....		....
11			....		....
12			....		....
13			....		....
14			....		....
15			....		....
16			....		....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11.Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. 2 . . 5 . . .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
Clear 2		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Clear 3		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Hold		. . . .	. . . .	1 2 3 4 5 6 7 8	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	A B C D E F
Exit	5									
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . .	. . . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)			
PR 1	PR 2	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. . . 4 . . 7 .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
Clear 2		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Clear 3		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Hold		1 2 3 . . 6 . .	. . . .	. . . .	. 2 . . . 6 . .	. . . .	. . . 4 . . . 8	. . . . . .	. . . . . .	. . . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . .	. . . . . .	. . . 4 . . 7 .	. . . .

Configuration (3-2-6)			
PR 1	PR 2	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	2 . . 5 . . .	. . . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	. . . .	. . . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	. . . . . 6 . .	. . . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	 8	. . C . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

INPUTS

		7 Wire I/C (2-1-5-1)			
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Y-Coordination (2-1-5-6)	
Port C	Port D
6.1	2.8

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7

51-57 Special Functions
71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6
Channel 9 and 10

TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	....	0.0	NONE	0	0
Plan 11-19	....	0.0	NONE	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	....
	....

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	....

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													.2...6..	.2.4.6.8	....	....
Plan D													.2...6..	.2.4.6.8	....	....

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					....	0.0	0.0	0.0	0	0.0	0

2070 Controller TSCP Timing Chart

TSCP: 2.23

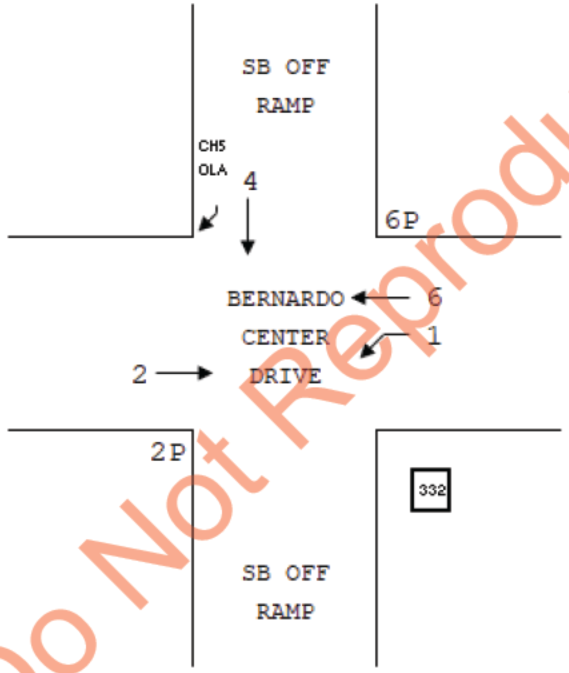
Location: 15 SB @ Bernardo Center Dr
System:
Master At: 15 SB @ Bernardo Center D
District: 11
I/C: Yes
Designed By:
Installed By:
Service Info:

Timing Change:	Date Start:	Date End:	Designed:	Installed:
1/30/2022				

PHASE		FLASH
1)	WB Bernardo Center Dr Left Turn	[ ]
2)	EB Bernardo Center Dr	[ ]
3)		[ ]
4)	SB 15 Off Ramp	[ ]
5)		[ ]
6)	WB Bernardo Center Dr	[ ]
7)		[ ]
8)		[ ]

OVERLAP		
A)		[ ]
B)		[ ]
C)		[ ]
D)		[ ]
E)		[ ]
F)		[ ]

Intersection Layout



Comments and Notes:

PHASES	1	2	3	4	5	6	7	8
3.5 PED FT	-	56	-	-	-	47	-	-
Bike xing FT	-	60	-	-	-	70	-	-

RAM Checksum

Page 2:	BB3E	Page 8:	F8F9
Page 3:	3F5D	Page 9:	D2FD
Page 4:	ED1A	Page 10:	3ED4
Page 5:	191A	Page 11:	AFB0
Page 6:	191A	Page 12:	D68F
Page 7:	DF08	Page 13:	84E7

Post Mile: RTE 15 P22.935: 15 SB @ Bernardo Center Dr

Printed: 12/7/2023

CONFIGURATION PHASE FLAGS

Cabinet (9-3)
332
Configuration
CALTRANS

Phases (2-1-1-1)	
Permitted	12.4.6..
Restricted	....

Phase Recalls (2-1-1-2)	
Vehicle Min	.2...6..
Vehicle Max	....
Pedestrian	....
Bicycle	....

Phase Locks (2-1-1-3)	
Red	1.......
Yellow	....
Force/Max	....

Phase Features (2-1-1-4)	
Double Entry	....
Rest In Walk	....
Rest In Red	....
Walk 2	.2......
Max Green 2	....
Max Green 3	....

Startup (2-1-1-5)	
First Green Phases	.2...6..
Yellow Start Phases	....
Vehicle Calls	12.4.6..
Pedestrian Calls	.2...6..
Yellow Start Overlaps	......
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	....	1	....
2	....	2	....
3	....	3	....
4	....	4	....
5	....	5	....
6	....	6	....
7	....	7	....
8	....	8	....

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	....
Yellow Flash Overlap	......
Flash In Red Phases	....
Flash In Red Overlap	......

Special Operation (2-1-2-3)	
Single Exit Phase	....
Driveway Signal Phases	....
Driveway Signal Overlaps	......
Leading Ped Phases	....

Protected Permissive (2-1-2-4)	
Protected Permissive	....

Pedestrian (2-1-3)	
P1	....
P2	.2......
P3	....
P4	....
P5	....
P6	.....6..
P7	....
P8	....

Overlap (2-1-4)

Overlap	Parent	Omit	No Start	Not
A	....	....	....	....
B	....	....	....	....
C	....	....	....	....
D	....	....	....	....
E	....	....	....	....
F	....	....	....	....

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	7	0	0	0	7	0	10
Flash Don't Walk	0	11	0	0	0	10	0	10
Minimum Green	5	6	10	5	10	7	10	10
Det Limit	0	0	10	0	10	0	10	10
Max Initial	0	0	10	0	10	0	10	10
Max Green 1	25	35	50	15	50	35	50	50
Max Green 2	0	0	50	0	50	0	50	50
Max Green 3	0	0	50	0	50	0	50	50
Extension	2.5	2.0	5.0	2.0	5.0	2.0	5.0	5.0
Maximum Gap	6.0	2.0	5.0	2.0	5.0	2.0	5.0	5.0
Minimum Gap	2.5	2.0	5.0	2.0	5.0	2.0	5.0	5.0
Add Per Vehicle	0.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0
Reduce Gap By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Yellow	3.7	4.4	5.0	4.1	5.0	4.4	5.0	5.0
All-Red	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Ped/Bike (2-3)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 2 ---	0	11	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	0	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	OFF

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	75		....	70	70	70	22	23		12		51		
Plan 2	Green Factor	95		....	85	85	85	30	29		18		65		
Plan 3	Green Factor	75		....	60	60	60	28	14		15		48		
Plan 4	Green Factor	75		....	70	70	70	25	17		15		48		
Plan 5	Green Factor	85		....	70	70	70	32	19		16		57		
Plan 6	Green Factor			....											
Plan 7	Green Factor			....											
Plan 8	Green Factor			....											
Plan 9	Green Factor			....											

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	1..4.6..	.2...6..	....	....	1..4....	....	....	....
Plan 2	1..4.6..	.2...6..	....	....	1..4....	....	....	....
Plan 3	1..4.6..	.2...6..	....	....	1..4....	....	....	....
Plan 4	1..4.6..	.2...6..	....	....	1..4....	....	....	....
Plan 5	1..4.6..	.2...6..	....	....	1..4....	....	....	....
Plan 6	....	....	....	....	....	....	....	....
Plan 7	....	....	....	....	....	....	....	....
Plan 8	....	....	....	....	....	....	....	....
Plan 9	....	....	....	....	....	....	....	....

Master Timer Sync (7-A)	
Enable in Plans	
1-9	....
11-19	....
21-29	....

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
.2.4.6.8	....
Veh Min	Veh Max
.2...6..	....
Ped	Bike
....	....
Cond	Cond Grn
....	10

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-29
254 = Flash
255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

					[Offsets]			Green Factors or Press [F] to Select Force-Off							
		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor			....											
Plan 12	Green Factor			....											
Plan 13	Green Factor			....											
Plan 14	Green Factor			....											
Plan 15	Green Factor			....											
Plan 16	Green Factor			....											
Plan 17	Green Factor			....											
Plan 18	Green Factor			....											
Plan 19	Green Factor			....											

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	....	....	....	....	....	....	....	....
Plan 12	....	....	....	....	....	....	....	....
Plan 13	....	....	....	....	....	....	....	....
Plan 14	....	....	....	....	....	....	....	....
Plan 15	....	....	....	....	....	....	....	....
Plan 16	....	....	....	....	....	....	....	....
Plan 17	....	....	....	....	....	....	....	....
Plan 18	....	....	....	....	....	....	....	....
Plan 19	....	....	....	....	....	....	....	....

Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

					[Offsets]			Green Factors or Press [F] to Select Force-Off							
		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor			....											
Plan 22	Green Factor			....											
Plan 23	Green Factor			....											
Plan 24	Green Factor			....											
Plan 25	Green Factor			....											
Plan 26	Green Factor			....											
Plan 27	Green Factor			....											
Plan 28	Green Factor			....											
Plan 29	Green Factor			....											

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	....	....	....	....	....	....	....	....
Plan 22	....	....	....	....	....	....	....	....
Plan 23	....	....	....	....	....	....	....	....
Plan 24	....	....	....	....	....	....	....	....
Plan 25	....	....	....	....	....	....	....	....
Plan 26	....	....	....	....	....	....	....	....
Plan 27	....	....	....	....	....	....	....	....
Plan 28	....	....	....	....	....	....	....	....
Plan 29	....	....	....	....	....	....	....	....

TOD SCHEDULE

Table 1 (8-2-1)		
Time	**Plan**	**OS**
0630	1	A
0720	2	A
0900	3	A
1500	5	A
1800	4	A
1830	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 2 (8-2-2)		
Time	**Plan**	**OS**
0900	3	A
1830	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 3 (8-2-3)		
Time	**Plan**	**OS**
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 4 (8-2-4)		
Time	**Plan**	**OS**
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 5 (8-2-5)		
Time	**Plan**	**OS**
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 6 (8-2-6)		
Time	**Plan**	**OS**
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**	**Sun**
1	1	1	1	1	2	2

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			....	
2			....	
3			....	
4			....	
5			....	
6			....	
7			....	
8			....	
9			....	
10			....	
11			....	
12			....	
13			....	
14			....	
15			....	
16			....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			....	
2			....	
3			....	
4			....	
5			....	
6			....	
7			....	
8			....	
9			....	
10			....	
11			....	
12			....	
13			....	
14			....	
15			....	
16			....	

Daylight Saving (8-1)

Enabl	YES	Month	Sunday
	Start	MAR	2nd
	End	NOV	1st

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	....
Holiday	....

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			....		....
2			....		....
3			....		....
4			....		....
5			....		....
6			....		....
7			....		....
8			....		....
9			....		....
10			....		....
11			....		....
12			....		....
13			....		....
14			....		....
15			....		....
16			....		....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11.Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Delay										
Clear 1	10	. 2 . . 5 . . .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
Clear 2		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Clear 3		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Hold		. . . .	. . . .	1 2 3 4 5 6 7 8	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	A B C D E F
Exit	5									
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . .	. . . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)			
PR 1	PR 2	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Delay										
Clear 1	10	. . . 4 . . 7 .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
Clear 2		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Clear 3		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Hold		1 2 3 . . 6 . .	. . . .	. . . .	. 2 . . . 6 . .	. . . .	. . . 4 . . . 8	. . . . . .	. . . . . .	. . . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . .	. . . . . .	. . . 4 . . 7 .	. . . .

Configuration (3-2-6)			
PR 1	PR 2	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	2	. . . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	. . . 4	. . . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	1 . . . . 6 . .	. . . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)	Preempt Timers			Phase Green	Overlap Green
	Delay	Clear	Max		
		5	255	. . . .	. . . . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

INPUTS

		7 Wire I/C (2-1-5-1)			
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6)	
Port C	Port D
6.1	2.8

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0	Unused (no output)
1-8	Vehicle 1-8
9-14	Overlap A-F
21-28	Ped 1-8
41-47	Special Functions
51-57	Special Functions
71-72	Seven Wire I/C

41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7

+ middle output of loadswitches 3 and 6
Channel 9 and 10

TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	. . . .	0.0	NONE	0	0
Plan 11-19	. . . .	0.0	NONE	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	. . . .
	. . . .

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	. . . .

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													. 2 . . . 6 . .	. 2 . 4 . 6 . 8	. . . .	. . . .
Plan D													. 2 . . . 6 . .	. 2 . 4 . 6 . 8	. . . .	. . . .

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					. . . .	0.0	0.0	0.0	0	0.0	0

INTERSECTION: BERNARDO CENTER DR @ BERNARDO HEIGHTS PKWY/IBERIA PL

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street Name: BERNARDO CENTER
E/W Street Name: BERNARDO HTS/IBERIA

Last Database Change:

Implementation Date:- 12/23/15

Change Record		
Timing Sheet By	Approved By	Date
M2S	M2S	12/9/2015

Free Lag <C/1+F+0>: _2_4_6__

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	2	<C/0+0+0>
Zone Number	2	<C/0+0+1>
Area Number	3	<C/0+0+2>
Area Address	171	<C/0+0+3>
QuicNet Channel	COM 98	(QuicNet)

Communication Addresses

Manual Plan	0	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	0.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

		BERNARDO CENTER	IBERIA	BERNARDO HTS		BERNARDO CENTER		
		Phase						
	Column Numbers --->	1	2	3	4	5	6	7	8
Row				2+3					
0	Ped Walk		7				7		
1	Ped FDW		23	22			11		
2	Min Green	4	10	4	4	4	10		
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.3	3.5	2.0	2.0	4.1		
6	Max Gap	2.0	4.3	3.5	2.0	2.0	4.1		
7	Min Gap	2.0	0.2	3.5	2.0	2.0	0.2		
8	Max Limit	30	60	40	40	30	60		
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW	1	1	1	1	1	1		
C	Cond Serv Check								
D	Reduce Every		0.7				0.8		
E	Yellow Change	3.4	4.1	5.5	3.9	3.4	3.9		
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0		

Phase Timing - Bank 1 <F/1+Phase+Row>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
	Max Initial	Alternate Walk	Alternate FDW	Alternate Initial	Alternate Extension

Alternate Timing <F/1+Column+Phase>

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing <F/1+E+Row>

	F	Row
Permit	123456__	0
Red Lock		1
Yellow Lock		2
Min Recall	_2__6__	3
Ped Recall		4
View Set Peds	_23__6__	5
Rest In Walk		6
Red Rest		7
Dual Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond. Service		C
Man Cntrl Calls	12345678	D
Yellow Start	_2__6__	E
First Phases	__3____	F

Phase Functions <F/1+F+Row>

How to Set Page Access Code: F/1 -- C + 0 + F = 1

INTERSECTION: BERNARDO CENTER DR @ BERNARDO HEIGHTS PKWY/IBERIA PL

Row	Column Numbers --->	1	2	3	4	5	6	7	8
		Overlap							
	Overlap Name --->								
0	Load Switch Number								
1	Veh Set 1 - Phases	3							
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases	12 456							
5	Neg Ped Phases	2 6							
6	Green Omit Phases	2							
7	Green Clear Omit Phs.								
8	Overlap Recall								
9	Queue Jump Phase								
A	Queue Jump Time								
B	Minimum Green								
C	Maximum Green								
D	Green Clear								
E	Yellow Change	3.4							
F	Red Clear	1.0							

Overlap Assignments <E/29+Column+Row>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	0	0
EV-B	0	1
EV-C	0	2
EV-D	0	3
RR-1 *	- - -	4
RR-2 *	- - -	5
SE-1	0	6
SE-2	0	7
		8
		9
		A
		B
		C
		D
		E
		F

Preempt Priority
<E/125+C+Row>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers --->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	
C	EV-C Phases	1 6
D	EV-D Phases	3
E	Extra 1 Config. Bits	1 34
F	IC Select (Interconnect)	2

Configuration <E/125+E+Row>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	
Ped for 8P Output	3
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	3

Configuration <E/125+F+Row>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	12345678
Start-up Ped Calls	12345678

Specials <F/2+F+Row>

Flash to PE & PE Non-Lock

1 = EV A	5 = RR 1
2 = EV B	6 = RR 2
3 = EV C	7 = SE 1
4 = EV D	8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	10	1
Phase 2	10	2
Phase 3	10	3
Phase 4	10	4
Phase 5	10	5
Phase 6	10	6
Phase 7	10	7
Phase 8	10	8
		9
		A
		B
		C
		D
		E
		F

Coordination Transition Minimums
<C/5+2+Row>

INTERSECTION: BERNARDO CENTER DR @ BERNARDO HEIGHTS PKWY/IBERIA PL

	Column Numbers --->	0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0	2I2U	39	45_7	2	123		1.8
1	6I2U	40	45_7	6	123		1.8
2		41	45_7	4	123		
3		42	45_7	8	123		
4		43	45_7	2	123		
5		44	45_7	6	123		
6		45	45_7	4	123		
7		46	45_7	8	123		
8		47	67	2	123		
9		48	67	6	123		
A		49	67	4	123		
B		50	67	8	123		
C		55	45_7	5	123		
D		56	45_7	1	123		
E		57	45_7	7	123		
F		58	45_7	3	123		

		4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	45_7	5	123		
1		60	45_7	1	123		
2		61	45_7	7	123		
3	3I9L	62	45_7	3	123	10.0	
4		63	45_7	2	123		
5		64	45_7	6	123		
6		65	45_7	4	123		
7		66	45_7	8	123		
8		67	2	2	123		
9		68	2	6	123		
A		69	2	4	123		
B	Phase 3 Ped	70	2	3	123		
C		76	45_7	2	123		
D		77	45_7	6	123		
E		78	45_7	4	123		
F		79	45_7	8	123		

Detector Assignments <E/126+Column+Row> **<D/0+Column+Row>**

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers --->	1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green	35								5
Overlap Yellow	36								6
Overlap Red									7

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	30	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	20	<D/0+0+1>
Max ON (minutes)	7	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<D/0+B+Row> (seconds)

INTERSECTION: BERNARDO CENTER DR @ BERNARDO HEIGHTS PKWY/IBERIA PL

Row	Time	Plan	Offset	Day of Week
0	07 : 45	3	A	_23456_
1	10 : 00	6	A	_23456_
2	15 : 00	7	A	_23456_
3	19 : 00	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <9/0.1+Row>
(Bank 1)

Time	Funct.	Day of Week

Column 4
Phases/Bits

TOD Function <7/0.1+Row> <E/27+4+Row>

Day	Year	Month	Holiday Type

Holiday Dates <8/1.1+Row>
(Bank 1)

Time	Plan	Offset	Holiday Type

Holiday Events <9/1.1+Row>
(Bank 1)

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type

Column 4
Phases/Bits

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

		Plan									
	Column Numbers --->	1	2	3	4	5	6	7	8	9	
Row	*Plan Name --->*						MID	PM	AM		Row
0	Cycle Length						95	90	90		0
1	Phase 1 - ForceOff						69	59	59		1
2	Phase 2 - ForceOff						0	0	0		2
3	Phase 3 - ForceOff						54	24	27		3
4	Phase 4 - ForceOff						20	41	44		4
5	Phase 5 - ForceOff						69	56	59		5
6	Phase 6 - ForceOff						0	0	0		6
7	Phase 7 - ForceOff										7
8	Phase 8 - ForceOff										8
9	Ring Offset										9
A	Offset 1						10	89	25		A
B	Offset 2										B
C	Offset 3										C
D	Perm 1 - End						10	10	10		D
E	Hold Release						255	255	80		E
F	Reserved										F

Coordination - Bank 1 <C/1+Plan+Row>

	E	Row
		0
Plan 1 - Sync		1
Plan 2 - Sync		2
Plan 3 - Sync		3
Plan 4 - Sync		4
Plan 5 - Sync		5
Plan 6 - Sync	_2___6__	6
Plan 7 - Sync	_2___6__	7
Plan 8 - Sync	_2___6__	8
Plan 9 - Sync		9
NEMA Sync		A
NEMA Hold		B
		C
		D
Coord Extra		E
		F

Sync Phases <C/1+E+Row>

Row		1	2	3	4	5	6	7	8	9	Row
0	Ped Adjustment						0	0	0		0
1	Perm 2 - Start										1
2	Perm 2 - End										2
3	Perm 3 - Start										3
4	Perm 3 - End										4
5	Reservice Time										5
6	Reservice Phases										6
7											7
8	Pretimed Phases										8
9	Max Recall										9
A	Perm 1 Veh Phase										A
B	Perm 1 Ped Phase										B
C	Perm 2 Veh Phase										C
D	Perm 2 Ped Phase										D
E	Perm 3 Veh Phase										E
F	Perm 3 Ped Phase										F

Coordination - Bank 2 <C/2+Plan+Row>

	F	Row
Free Lag		0
Plan 1 - Lag		1
Plan 2 - Lag		2
Plan 3 - Lag		3
Plan 4 - Lag		4
Plan 5 - Lag		5
Plan 6 - Lag	_23__6__	6
Plan 7 - Lag	_2_4_6__	7
Plan 8 - Lag	_2_4_6__	8
Plan 9 - Lag		9
External Lag		A
Lag Hold		B
		C
		D
		E
		F

Lag Phases <C/1+F+Row>

Coordination Timing By: LEM
Date: 8/5/2014

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer		Latch 1 Set		NOT-3		Max 2		Pretimed		Set Monday		Dial 2 (7-Wire)		Sim Term	0	0
1	AND-5 (a)		Latch 1 Reset		NOT-4		Reserved		Plan 1		Ext. Perm 1		Dial 3 (7-Wire)		EV-A	71	1
2	AND-5 (b)		Latch 2 Set		OR-4 (a)		Reserved		Plan 2		Ext. Perm 2		Offset 1 (7-Wire)		EV-B	72	2
3	AND-6 (a)		Latch 2 Reset		OR-4 (b)		Reserved		Plan 3		Gate Down		Offset 2 (7-Wire)		EV-C	73	3
4	AND-6 (b)		NAND-3 (a)		OR-5 (a)		Reserved		Plan 4		Set Clock		Offset 3 (7-Wire)		EV-D	74	4
5	Reserved		NAND-3 (b)		OR-5 (b)		Reserved		Plan 5		Stop Time	82	Free (7-Wire)		RR-1	51	5
6	Reserved		NAND-4 (a)		OR-6 (a)		Reserved		Plan 6		Flash Sense	81	Flash (7-Wire)		RR-2	52	6
7	Reserved		NAND-4 (b)		OR-6 (b)		Reserved		Plan 7		Manual Enable		Excl. Ped Omit		Spec. Event 1		7
8	Spec. Funct. 1		OR-7 (a)		EXTMR		Reserved		Plan 8		Man. Advance		NOT-1		Spec. Event 2		8
9	Spec. Funct. 2		OR-7 (b)		Reserved		Max Inhibit (nema)		Plan 9		External Alarm		NOT-2		External Lag		9
A	Spec. Funct. 3		OR-7 (c)		AND-4 (a)		Force A (nema)		DELAY-A		Phase Bank 2		OR-1 (a)		AND-1 (a)		A
B	Spec. Funct. 4		OR-7 (d)		AND-4 (b)		Force B (nema)		DELAY-B		Phase Bank 3		OR-1 (b)		AND-1 (b)		B
C	Reserved		OR-8 (a)		NAND-1 (a)		C.N.A. (nema)		DELAY-C		Overlap Set 2		OR-2 (a)		AND-2 (a)		C
D	Reserved		OR-8 (b)		NAND-1 (b)		Hold (nema)		DELAY-D		Overlap Set 3		OR-2 (b)		AND-2 (b)		D
E	Reserved		OR-8 (c)		NAND-2 (a)		Max Recall		DELAY-E		Detector Set 2		OR-3 (a)		AND-3 (a)		E
F	Reserved		OR-8 (d)		NAND-2 (b)		Min Recall		DELAY-F		Detector Set 3		OR-3 (b)		AND-3 (b)		F

Assignable Inputs <E/126+Column+Row>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1		Preempt Fail		Flasher 0		Free		NOT-1		TOD Out 1		Dial 2 (7-Wire)		0
1	Reserved		Phase ON - 2		Sp Evnt Out 1		Flasher 1		Plan 1		OR-1		TOD Out 2		Dial 3 (7-Wire)		1
2	Reserved		Phase ON - 3		Sp Evnt Out 2		Fast Flasher		Plan 2		OR-2		TOD Out 3		Offset 1 (7-Wire)		2
3	Reserved		Phase ON - 4		Sp Evnt Out 3		EXTMR		Plan 3		OR-3		TOD Out 4		Offset 2 (7-Wire)		3
4	Reserved		Phase ON - 5		Sp Evnt Out 4		One-Shot Timer		Plan 4		AND-1		TOD Out 5		Offset 3 (7-Wire)		4
5	Reserved		Phase ON - 6		Sp Evnt Out 5		Reserved		Plan 5		AND-2		TOD Out 6		Free (7-Wire)		5
6	Reserved		Phase ON - 7		Sp Evnt Out 6		Latch 1		Plan 6		AND-3		TOD Out 7		Flash (7-Wire)		6
7	Reserved		Phase ON - 8		Sp Evnt Out 7		Latch 2		Plan 7		NOT-2		TOD Out 8		Preempt		7
8	Flh Yell Arrow 1		Ph. Check - 1		Sp Evnt Out 8		NOT-3		Plan 8		EV-A		Adv. Warn - 1		Low Priority A		8
9	Green 1		Ph. Check - 2		Coord On		NOT-4		Plan 9		EV-B		Adv. Warn - 2		Low Priority B		9
A	Flh Yell Arrow 3		Ph. Check - 3		Detector Fail		OR-4		Spec. Funct. 3		EV-C		DELAY-A		Low Priority C		A
B	Green 3		Ph. Check - 4		Spec. Funct. 1		OR-5		Spec. Funct. 4		EV-D		DELAY-B		Low Priority D		B
C	Flh Yell Arrow 5		Ph. Check - 5		Spec. Funct. 2		OR-6		NAND-3		RR-1		DELAY-C		AND-5		C
D	Green 5		Ph. Check - 6		Central Control		AND-4		NAND-4		RR-2		DELAY-D		AND-6		D
E	Flh Yell Arrow 7		Ph. Check - 7		Excl. Ped DW		NAND-1		OR-7		Spec. Event 1		DELAY-E		Reserved		E
F	Green 7		Ph. Check - 8		Excl. Ped WK		NAND-2		OR-8		Spec. Event 2		DELAY-F		Reserved		F

Assignable Outputs <E/127+Column+Row>

INTERSECTION: Bernardo Center Dr @ Camino Del Norte

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **1141**

N/S Street Name: Camino Del Norte
E/W Street Name: Bernardo Center Dr

Last Database Change:

Change Record		
Timing Sheet By	Approved By	Date
MSCHMIDT	AL3	1/15/18

Free Lag
<C/1+F+0> _2_4_6_8

Notes: *DWG 31963-28-D*

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	3	<C/0+0+0>
Zone Number	3	<C/0+0+1>
Area Number	3	<C/0+0+2>
Area Address	185	<C/0+0+3>
QuicNet Channel	COM99:	(QuicNet)

Communication Addresses

Manual Plan	0	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	0.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable
Outputs at E/127+A+E & F)

		Bernardo Center Dr		Camino Del Norte		Bernardo Center Dr		Camino Del Norte	
		Phase							
	Column Numbers --->	1	2	3	4	5	6	7	8
Row	Phase Names --->	↓ ↱ 1+8 OLA	→	↰	↓	↑	←	↳	↑
0	Ped Walk				7		7		7
1	Ped FDW				32		37		27
2	Min Green	4	7	4	10	4	7	4	10
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	6.3	2.0	5.5	2.0	5.7	2.0	5.3
6	Max Gap	2.0	6.3	2.0	5.5	2.0	5.7	2.0	5.3
7	Min Gap	2.0	0.2	2.0	0.2	2.0	0.2	2.0	0.2
8	Max Limit	60	40	30	60	30	40	30	60
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW				1		1		1
C	Cond Serv Check								
D	Reduce Every		0.5		0.6		0.5		0.6
E	Yellow Change	3.4	5.1	3.4	5.5	3.4	4.6	3.4	5.4
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 1 <F/1+Phase+Row>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing <F/1+Column+Phase>

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing <F/1+E+Row>

	F	Row
Permit		0
Red Lock		1
Yellow Lock		2
Min Recall	___4___8	3
Ped Recall		4
View Set Peds	▨	5
Rest In Walk		6
Red Rest		7
Dual Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond. Service		C
Man Cntrl Calls		D
Yellow Start	___4___8	E
First Phases	_2___6__	F

Phase Functions <F/1+F+Row>

How to Set Page Access Code: F/1 -- C + 0 + F = 1

INTERSECTION: Bernardo Center Dr @ Camino Del Norte

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ---->	OLA							
0	Load Switch Number								
1	Veh Set 1 - Phases	1_______							
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases	_2____7_							
5	Neg Ped Phases	_______8							
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8	Overlap Recall								
9	Queue Jump Phase								
A	Queue Jump Time								
B	Minimum Green								
C	Maximum Green								
D	Green Clear								
E	Yellow Change	3.4							
F	Red Clear	1.0							

Overlap Assignments <E/29+Column+Row>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	0	0
EV-B	0	1
EV-C	0	2
EV-D	0	3
RR-1 *	- - -	4
RR-2 *	- - -	5
SE-1	0	6
SE-2	0	7
		8
		9
		A
		B
		C
		D
		E
		F

Preempt Priority
<E/125+C+Row>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	_2__5___
B	EV-B Phases	___4__7_
C	EV-C Phases	1____6__
D	EV-D Phases	__3____8
E	Extra 1 Config. Bits	1_345__
F	IC Select (Interconnect)	_2_____

Configuration <E/125+E+Row>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	________
Ped for 6P Output	_____6__
Ped for 4P Output	___4____
Ped for 8P Output	_______8
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	__3_____

Configuration <E/125+F+Row>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	12345678
Start-up Ped Calls	___4_6_8

Specials <F/2+F+Row>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	10	1
Phase 2	10	2
Phase 3	10	3
Phase 4	10	4
Phase 5	10	5
Phase 6	10	6
Phase 7	10	7
Phase 8	10	8
		9
		A
		B
		C
		D
		E
		F

Coordination Transition Minimums
<C/5+2+Row>

INTERSECTION: Bernardo Center Dr @ Camino Del Norte

	Column Numbers ---->	0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0	2I2U - ADV	39	___45_7_	_2______	123____8		1.8
1	6J2U - ADV	40	___45_7_	_____6__	123____8		1.8
2	4I6U - ADV	41	___45_7_	___4____	123____8		1.8
3	8J6U - ADV	42	___45_7_	_______8	123____8		1.8
4	2I2L - BIKE	43	___45_7_	_2______	123____8		
5	6J2L - BIKE	44	___45_7_	_____6__	123____8		
6	4I6L - BIKE	45	___45_7_	___4____	123____8		2.0
7	8J6L - BIKE	46	___45_7_	_______8	123____8		2.0
8	2I4	47	_____67_	_2______	123_____		
9	6J4	48	_____67_	_____6__	123_____		
A	4I8 - THRU	49	___45_7_	___4____	123____8		
B	8J8 - THRU	50	___45_7_	_______8	123____8		
C	5J1	55	___45_7_	____5___	123____8		
D	1I1	56	___45_7_	1_______	123____8		
E	7J5	57	___45_7_	______7_	123____8		
F	3I5	58	___45_7_	__3_____	123____8		

		4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0	5J9U	59	___45_7_	____5___	123_____		
1	1I9U	60	___45_7_	1_______	123_____		
2	7J9L	61	___45_7_	______7_	123_____		
3	3I9L	62	___45_7_	__3_____	123_____		
4	2I3U - RT	63	___45_7_	_2______	123____8	10.0	
5	6J3U - RT	64	___45_7_	_____6__	123____8	10.0	
6	4I7U - RT	65	___45_7_	___4____	123____8		
7	8J7U - RT	66	___45_7_	_______8	123____8		
8	2 PPB	67	_2______	_2______	123_____		
9	6 PPB	68	_2______	_____6__	123_____		
A	4 PPB	69	_2______	___4____	123_____		
B	8 PPB	70	_2______	_______8	123_____		
C	2I3L - THRU	76	___45_7_	_2______	123____8		
D	6J3L - THRU	77	___45_7_	_____6__	123____8		
E	4I7L - THRU	78	___45_7_	___4____	123____8		
F	8J7L - THRU	79	___45_7_	_______8	123____8		

Detector Assignments <E/126+Column+Row> **<D/0+Column+Row>**

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers ---->	1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green	35								5
Overlap Yellow	37								6
Overlap Red									7

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	30	<E/125+D+0>

Enable Redirection

(Enable Redirection = 30)

Max OFF (minutes)	5	<D/0+0+1>
Max ON (minutes)	60	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times

<D/0+B+Row> (seconds)

INTERSECTION: Bernardo Center Dr @ Camino Del Norte

Row	Time	Plan	Offset	Day of Week
0	16 : 15	3	A	_23456_
1	18 : 30	E	A	_23456_
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <9/0.1+Row>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits

TOD Function <7/0.1+Row> <E/27+4+Row>

Day	Year	Month	Holiday Type

Holiday Dates <8/1.1+Row>
(Bank 1)

Time	Plan	Offset	Holiday Type

Holiday Events <9/1.1+Row>
(Bank 1)

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
  Bit 4 - Disable Detector OFF Monitor
  Bit 5 - Disable Low Priority Preempt
  Bit 6 - FYA Inhibit
  Bit 7 - Detector Count Monitor
  Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

INTERSECTION: Bernardo Center Dr @ Camino Del Norte

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row		Plan									Row
	Column Numbers ---->	1	2	3	4	5	6	7	8	9	
	Plan Name ---->			PM							
0	Cycle Length			180							0
1	Phase 1 - ForceOff			58							1
2	Phase 2 - ForceOff			91							2
3	Phase 3 - ForceOff			118							3
4	Phase 4 - ForceOff			0							4
5	Phase 5 - ForceOff			22							5
6	Phase 6 - ForceOff			91							6
7	Phase 7 - ForceOff			118							7
8	Phase 8 - ForceOff			0							8
9	Ring Offset										9
A	Offset 1			0							A
B	Offset 2										B
C	Offset 3										C
D	Perm 1 - End			18							D
E	Hold Release			255							E
F	Reserved										F

Coordination - Bank 1 <C/1+Plan+Row>

Row		E	Row
0			0
1	Plan 1 - Sync		1
2	Plan 2 - Sync		2
3	Plan 3 - Sync	___4___8	3
4	Plan 4 - Sync		4
5	Plan 5 - Sync		5
6	Plan 6 - Sync		6
7	Plan 7 - Sync		7
8	Plan 8 - Sync		8
9	Plan 9 - Sync		9
A	NEMA Sync		A
B	NEMA Hold		B
C			C
D			D
E	Coord Extra		E
F			F

Sync Phases <C/1+E+Row>

Row											Row
0	Ped Adjustment										0
1	Perm 2 - Start										1
2	Perm 2 - End										2
3	Perm 3 - Start										3
4	Perm 3 - End										4
5	Reservice Time										5
6	Reservice Phases										6
7											7
8	Pretimed Phases										8
9	Max Recall										9
A	Perm 1 Veh Phase			12345678							A
B	Perm 1 Ped Phase			12345678							B
C	Perm 2 Veh Phase										C
D	Perm 2 Ped Phase										D
E	Perm 3 Veh Phase										E
F	Perm 3 Ped Phase										F

Coordination - Bank 2 <C/2+Plan+Row>

Row		F	Row
0	Free Lag		0
1	Plan 1 - Lag		1
2	Plan 2 - Lag		2
3	Plan 3 - Lag	_2_4_6_8	3
4	Plan 4 - Lag		4
5	Plan 5 - Lag		5
6	Plan 6 - Lag		6
7	Plan 7 - Lag		7
8	Plan 8 - Lag		8
9	Plan 9 - Lag		9
A	External Lag		A
B	Lag Hold		B
C			C
D			D
E			E
F			F

Lag Phases <C/1+F+Row>

Coordination Timing By: MSCHMIDT
Date: 10/23/2018

INTERSECTION: Bernardo Center Dr @ Camino Del Norte

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer		Latch 1 Set		NOT-3		Max 2		Pretimed		Set Monday		Dial 2 (7-Wire)		Sim Term	0	0
1	AND-5 (a)		Latch 1 Reset		NOT-4		Reserved		Plan 1		Ext. Perm 1		Dial 3 (7-Wire)		EV-A	71	1
2	AND-5 (b)		Latch 2 Set		OR-4 (a)		Reserved		Plan 2		Ext. Perm 2		Offset 1 (7-Wire)		EV-B	72	2
3	AND-6 (a)		Latch 2 Reset		OR-4 (b)		Reserved		Plan 3		Gate Down		Offset 2 (7-Wire)		EV-C	73	3
4	AND-6 (b)		NAND-3 (a)		OR-5 (a)		Reserved		Plan 4		Set Clock		Offset 3 (7-Wire)		EV-D	74	4
5	Reserved		NAND-3 (b)		OR-5 (b)		Reserved		Plan 5		Stop Time	82	Free (7-Wire)		RR-1	51	5
6	Reserved		NAND-4 (a)		OR-6 (a)		Reserved		Plan 6		Flash Sense	81	Flash (7-Wire)		RR-2	52	6
7	Reserved		NAND-4 (b)		OR-6 (b)		Reserved		Plan 7		Manual Enable		Excl. Ped Omit		Spec. Event 1		7
8	Spec. Funct. 1		OR-7 (a)		EXTMR		Reserved		Plan 8		Man. Advance		NOT-1		Spec. Event 2		8
9	Spec. Funct. 2		OR-7 (b)		Reserved		Max Inhibit (nema)		Plan 9		External Alarm		NOT-2		External Lag		9
A	Spec. Funct. 3		OR-7 (c)		AND-4 (a)		Force A (nema)		DELAY-A		Phase Bank 2		OR-1 (a)		AND-1 (a)		A
B	Spec. Funct. 4		OR-7 (d)		AND-4 (b)		Force B (nema)		DELAY-B		Phase Bank 3		OR-1 (b)		AND-1 (b)		B
C	Reserved		OR-8 (a)		NAND-1 (a)		C.N.A. (nema)		DELAY-C		Overlap Set 2		OR-2 (a)		AND-2 (a)		C
D	Reserved		OR-8 (b)		NAND-1 (b)		Hold (nema)		DELAY-D		Overlap Set 3		OR-2 (b)		AND-2 (b)		D
E	Reserved		OR-8 (c)		NAND-2 (a)		Max Recall		DELAY-E		Detector Set 2		OR-3 (a)		AND-3 (a)		E
F	Reserved		OR-8 (d)		NAND-2 (b)		Min Recall		DELAY-F		Detector Set 3		OR-3 (b)		AND-3 (b)		F

Assignable Inputs <E/126+Column+Row>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1		Preempt Fail		Flasher 0		Free		NOT-1		TOD Out 1		Dial 2 (7-Wire)		0
1	Reserved		Phase ON - 2		Sp Evnt Out 1		Flasher 1		Plan 1		OR-1		TOD Out 2		Dial 3 (7-Wire)		1
2	Reserved		Phase ON - 3		Sp Evnt Out 2		Fast Flasher		Plan 2		OR-2		TOD Out 3		Offset 1 (7-Wire)		2
3	Reserved		Phase ON - 4		Sp Evnt Out 3		EXTMR		Plan 3		OR-3		TOD Out 4		Offset 2 (7-Wire)		3
4	Reserved		Phase ON - 5		Sp Evnt Out 4		One-Shot Timer		Plan 4		AND-1		TOD Out 5		Offset 3 (7-Wire)		4
5	Reserved		Phase ON - 6		Sp Evnt Out 5		Reserved		Plan 5		AND-2		TOD Out 6		Free (7-Wire)		5
6	Reserved		Phase ON - 7		Sp Evnt Out 6		Latch 1		Plan 6		AND-3		TOD Out 7		Flash (7-Wire)		6
7	Reserved		Phase ON - 8		Sp Evnt Out 7		Latch 2		Plan 7		NOT-2		TOD Out 8		Preempt		7
8	Flh Yell Arrow 1		Ph. Check - 1		Sp Evnt Out 8		NOT-3		Plan 8		EV-A		Adv. Warn - 1		Low Priority A		8
9	Green 1		Ph. Check - 2		Coord On		NOT-4		Plan 9		EV-B		Adv. Warn - 2		Low Priority B		9
A	Flh Yell Arrow 3		Ph. Check - 3		Detector Fail		OR-4		Spec. Funct. 3		EV-C		DELAY-A		Low Priority C		A
B	Green 3		Ph. Check - 4		Spec. Funct. 1		OR-5		Spec. Funct. 4		EV-D		DELAY-B		Low Priority D		B
C	Flh Yell Arrow 5		Ph. Check - 5		Spec. Funct. 2		OR-6		NAND-3		RR-1		DELAY-C		AND-5		C
D	Green 5		Ph. Check - 6		Central Control		AND-4		NAND-4		RR-2		DELAY-D		AND-6		D
E	Flh Yell Arrow 7		Ph. Check - 7		Excl. Ped DW		NAND-1		OR-7		Spec. Event 1		DELAY-E		Reserved		E
F	Green 7		Ph. Check - 8		Excl. Ped WK		NAND-2		OR-8		Spec. Event 2		DELAY-F		Reserved		F

Assignable Outputs <E/127+Column+Row>

		Phase							
	Column Numbers ---->	1	2	3	4	5	6	7	8
Row	*Phase Names ---->*								
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Row		1	2	3	4	5	6	7	8
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	<F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	3	<C/5+2+A>
Begin Week	2	<C/5+2+B>
End Month	11	<C/5+2+C>
End Week	1	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	<F/1+D+E>
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	20	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	#NAME?

Local Alarm Disable <C/5+F+0>

IEN Status	1	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

	6	7	8	9	A	B	C	D	E	F
Row	Clear	Time	Ped Call	Hold	Advance	Force Off	Vehicle Call	Permit Phases	Ped Omit	Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 1

<C+0+E=27>

Notes:

☐ <E/27+5+F>

Limited Service Interval

	6	7	8	9	A	B	C	D	E	F
Row	Clear	Time	Ped Call	Hold	Advance	Force Off	Vehicle Call	Permit Phases	Ped Omit	Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 2

<C+0+E=28>

Notes:

☐ <E/28+5+F>

Limited Service Interval

Min Time (seconds)	4	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	255	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	0	<F/1+0+A>

Min Time Between Same Preempts

(Does Not Apply To Railroad Preempt)

Low Pri. Channel	#NAME?	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	0
D	Bus Delay	0
E	Max Early Grn	0
F	Max Grn Ext.	0

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

INTERSECTION: BERNARDO CENTER & CLOUDCRES 22 rogram

Group Assignment:
Field Master Assignment:

Street Name: BERNARDO CENTER
E/W Street Name: CLOUDCREST

Timing Sheet By: MBF
Approved By: MM

Last Database Change:
System Ref. Number:
Drawing Number: 20281-3-D
Timing Implemented On: 12/07/01

N

		BERNARDO CTR		PRIVATE DWY		BERNARDO CTR		CLOUDCREST
Row	Column # / Phase # ---->	1	2	3	4	5	6	7	8
0	Ped Walk		7		7		7		7
1	Ped FDW		17		21		17		20
2	Min Green	4	10		7	4	10		7
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	4.3		2.0	2.0	3.8		2.0
6	Max Gap	2.0	4.3		2.0	2.0	3.8		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		0.2
8	Max Limit	30	60		30	30	60		30
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		0.1
D	Every		0.7				0.8		1.7
E	Yellow	3.0	3.9		4.0	3.0	4.5		3.8
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 <F Page>
F + Phase + Row

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	
EV-B Clear	
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing
F + E + Row

	F	Row
Permit	12_456_8	0
Red Lock		1
Yellow Lock		2
Min Recall		3
Ped Recall		4
Peds (View)	_2_4_6_8	5
Rest In Walk		6
Red Rest		7
Dbl Entry	___4___8	8
Max Recall		9
Soft Recall	_2___6__	A
Max 2		B
Cond Serv		C
Ped Lock	12345678	D
Yellow Start	_2___6__	E
1st Phases	___4___8	F

Phase Functions <F Page>
F + F + Row

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number		C + 0 + 0
Zone Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
QuicNet Channel		(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A				
B	Overlap B				
C	Overlap C				
D	Overlap D				

Overlap Timing <F Page> <D Page>
F + COLOR + D + 0 + OVERLAP

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Manual Plan	0	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan	Manual Offset
0 = Automatic	0 = Automatic
1-9 = Plan 1-9	1 = Offset A
14 = Free	2 = Offset B
15 = Flash	3 = Offset C

Disable Ports	_234___

Disable Communication Ports
D + D + 9

4

INTERSECTION: BERNARDO CENTER & CLOUDCREST

223 Program

Row	Time	Functio	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function <D Page>

7 + ROW D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	_2______
6	Ped 6P	_____6__
7	Ped 4P	___4____
8	Ped 8P	_______8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration <E Page>

E + F + ROW

Day of Week

1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	_2__5___
B	EV-B Phases	
C	EV-C Phases	1____6__
D	EV-D Phases	________8
E	Extra 1 Config. Bits	1_34____
F	IC Select (Interconnect)	_2______

Configuration

For access, set F + 9 + E = 1 E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date

8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0	D+B+0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -255
w/ E + E + E bit 5 on

INTERSECTION: BERNARDO CENTER & CLOU REST 223 Program

	1	3
Row	Delay	Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

	2	4
Row	Delay	Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		1.8
8	5.0	
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

		0
Row		Detector #
0		
1	System Det. # 1	
2	System Det. # 2	
3	System Det. # 3	
4	System Det. # 4	
5	System Det. # 5	
6	System Det. # 6	
7	System Det. # 7	
8	System Det. # 8	

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number		F+C+1
Time Before Yellow		F+C+3

Advance Warning Beacon - Sign 1

Phase Number		F+D+1
Time Before Yellow		F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

INTERSECTION: BERNARDO CENTER & CLOUDCREST

223 Program

Coordination Timing By: MBF
Implemented On: 12/7/01

		Plan								
	Column #	1	2	3	4	5	6	7	8	9
Row	Plan Name --->									
0	Cycle Length	115	120							
1	Phase 1 - ForceOff	50	59							
2	Phase 2 - ForceOff									
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff	35	35							
5	Phase 5 - ForceOff	50	50							
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff	35	35							
9	Ring Offset									
A	Offset A	98	0							
B	Offset B									
C	Offset C									
D	Permissive	10	10							
E	Hold Release	255	255							
F	Ped Shift	0	0							

Coordination <C Page>

C + Plan + ROW

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 0
Ring A Cycle	C + B + 0
Ring B Cycle	C + D + 0
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Time	Plan	Offset	Day of Week
0	06 : 30	1	A	_23456_
1	08 : 30	E	A	1234567
2	16 : 15	2	A	_23456_
3	18 : 00	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination

<9 Key with C+0+9=1>

Plan Select
1 thru 9 = Coordination
Plan 1 thru 9
14 or E = Free
15 or F = Flash

	E	Row		F
		0	Free Lag	_2_4_6_8
Plan 1	_2___6__	1	Plan 1 - Lag	_2_4_6_8
Plan 2	_2___6__	2	Plan 2 - Lag	_2_4_6_8
Plan 3		3	Plan 3 - Lag	
Plan 4		4	Plan 4 - Lag	
Plan 5		5	Plan 5 - Lag	
Plan 6		6	Plan 6 - Lag	
Plan 7		7	Plan 7 - Lag	
Plan 8		8	Plan 8 - Lag	
Plan 9		9	Plan 9 - Lag	
Coord Ped*		A	Coord Max *	
NEMA Hold		B	Coord Lag *	
		C		
		D		
		E		
		F		

Sync Phases

C + E + FUNCTION #

Lag Phases <C Page>

C + F + FUNCTION #

Transition Type	0

TBC Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Lengthen

NTERSECTION: BERNARDO CENTER & RANCHO BERNA[illegible]O RD

223 P[illegible]gram

Group Assignment:
Field Master Assignment:

N/S Street Name: BERNARDO CTR
E/W Street Name: RANCHO BERNARDO

Last Database Change:
System Ref. Number:

N

Row	Column # ----> / Phase # ---->	1	2	3	4	5	6	7	8
		↓	→	←	↓	OVLP A ←↑	←	→	↑
0	Ped Walk		7		7		7		7
1	Ped FDW		24		① 33 ~~32~~		26		① 23 ~~22~~
2	Min Green	4	10	4	7	4	10	4	7
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	4.1	2.0	2.0	2.0	2.0	2.0	2.0
6	Max Gap	2.0	4.1	2.0	2.0	2.0	2.0	2.0	2.0
7	Min Gap	2.0	0.2	2.0	2.0	2.0	0.2	2.0	2.0
8	Max Limit	30	60	30	40	30	60	30	40
9	Max Limit 2				30			40	30
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.8				1.7		
E	Yellow	3.4	5.2	3.4	4.9	3.4	① 4.3 ~~4.2~~	3.4	4.3
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

① MAS 2/26/15

Phase Timing - Bank 1 <F Page>

F + Phase + Row

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing

F + E + Row

	F	Row
Permit	12345678	0
Red Lock		1
Yellow Lock		2
Min Recall	_2___6__	3
Ped Recall		4
Peds (View)	_2_4_6_8	5
Rest In Walk		6
Red Rest		7
Dbl Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond Serv		C
Ped Lock	12345678	D
Yellow Start	_2___6__	E
1st Phases	___4___8	F

Phase Functions <F Page>

F + F + Row

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number	7	C + 0 + 0
Zone Number	7	C + 0 + 1
Area Number	3	C + 0 + 2
Area Address	176	C + 0 + 3
QuicNet Channel	COM98:	(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Overlap Timing

	Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page> <D Page>

F + COLOR + D + 0 + OVERLAP

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash

F + 0 +8

Disable Ports	234

Disable Communication Ports

D + D + 9

Timing Sheet By: LEM
Approved By: EFF
Drawing Number:
Timing Implemented On: 7/24/13

Printed on 11/14/2013 2:14 PM

City of San Diego

INTERSECTION: BERNARDO CENTER & RANCHO BERNARDO RD

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0	07 : 00	B	1_____	_____7_
1	18 : 00	B	1_____	
2	15 : 30	B	_23456_	___4___8
3	19 : 00	B	_23456_	
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function

7 + ROW

<D Page>

D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	_2_____
6	Ped 6P	_____6__
7	Ped 4P	___4____
8	Ped 8P	_______8
9	Yellow Flash Phases	
A	Overlap A - Phases	___45___
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	1_______

Configuration

<E Page>

E + F + ROW

Day of Week

1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Row		G
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	___4_____
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	_2__5____
B	EV-B Phases	____4__7_
C	EV-C Phases	1____6__
D	EV-D Phases	__3_____8
E	Extra 1 Config. Bits	1__45____
F	IC Select (Interconnect)	_2_______

For access, set F + 9 + E = 1

Configuration

E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Time and Date

8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0	D+B+0

Dial-Up Telephone Communications

(If set to a non-zero value, parity will be disabled)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -255
w/ E + E + E bit 5 on

NTERSECTION: BERNARDO CENTER & RANCHO RNARDO RD 223 Program

Row	1 Delay	3 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7	10.0	
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		1.8
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

INTERSECTION: Bernardo Center Dr @ W Bernardo Dr

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **1143**

N/S Street Name: W. Bernardo Dr
E/W Street Name: Bernardo Center Dr

Last Database Change:

Change Record		
Timing Sheet By	Approved By	Date
MSCHMIDT	AL 3	12/18/18

Free Lag **<C/1+F+0>** _2___6_8

Notes: *DWG 20233-2-D*
DWG 37316-7-D (signal mod)

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	5	<C/0+0+0>
Zone Number	5	<C/0+0+1>
Area Number	3	<C/0+0+2>
Area Address	187	<C/0+0+3>
QuicNet Channel	COM99:	(QuicNet)

Communication Addresses

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	0.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

BERNARDO CENTER DR | BERNARDO CENTER DR | W. BERNARDO DR

		Phase							
	Column Numbers ---->	1	2	3	4	5	6	7	8
Row	*Phase Names ---->*	1+8 OLB ↲ ↑	←			↳	→		↓ ↰ 2+8 OLA
0	Ped Walk		7						7
1	Ped FDW		23						26
2	Min Green	4	10			4	10		8
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.4			2.0	4.9		4.6
6	Max Gap	2.0	4.4			2.0	4.9		4.6
7	Min Gap	2.0	0.2			2.0	0.2		0.2
8	Max Limit	30	60			30	60		40
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW		1						1
C	Cond Serv Check								
D	Reduce Every		0.7				0.6		0.7
E	Yellow Change	3.4	4.5			3.4	3.9		3.9
F	Red Clear	1.0	1.0			1.0	1.0		1.0

Phase Timing - Bank 1 <F/1+Phase+Row>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing <F/1+Column+Phase>

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing <F/1+E+Row>

	F	Row
Permit	12__56_8	0
Red Lock		1
Yellow Lock		2
Min Recall	_2___6__	3
Ped Recall		4
View Set Peds		5
Rest In Walk		6
Red Rest		7
Dual Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond. Service		C
Man Cntrl Calls		D
Yellow Start	_2___6__	E
First Phases	_______8	F

Phase Functions <F/1+F+Row>

How to Set Page Access Code: F/1 -- C + 0 + F = 1

INTERSECTION: Bernardo Center Dr @ W Bernardo Dr

N/S Street Name: W Bernardo Dr

Row	Column Numbers --->	1	2	3	4	5	6	7	8
	Overlap Name --->	OLA	OLB						
0	Load Switch Number								
1	Veh Set 1 - Phases	_______8	1_______						
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases	1_______	_2_____8						
5	Neg Ped Phases	_2______	_2_____8						
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8	Overlap Recall								
9	Queue Jump Phase								
A	Queue Jump Time								
B	Minimum Green								
C	Maximum Green								
D	Green Clear								
E	Yellow Change	3.9	3.4						
F	Red Clear	1.0	1.0						

Overlap Assignments <E/29+Column+Row>

DWG 20233-2-D

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	0	0
EV-B	0	1
EV-C	0	2
EV-D	0	3
RR-1 *	- - -	4
RR-2 *	- - -	5
SE-1	0	6
SE-2	0	7

Preempt Priority <E/125+C+Row>

(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers --->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	_2__5___
B	EV-B Phases	
C	EV-C Phases	1____6__
D	EV-D Phases	_______8
E	Extra 1 Config. Bits	1_345___
F	IC Select (Interconnect)	_2______

Configuration <E/125+E+Row>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	_2______
Ped for 6P Output	
Ped for 4P Output	
Ped for 8P Output	_______8
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	__3_____

Configuration <E/125+F+Row>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	12__56_8
Start-up Ped Calls	_2_____8

Specials <F/2+F+Row>

Flash to PE & PE Non-Lock

1 = EV A	5 = RR 1
2 = EV B	6 = RR 2
3 = EV C	7 = SE 1
4 = EV D	8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	10	1
Phase 2	10	2
Phase 3	10	3
Phase 4	10	4
Phase 5	10	5
Phase 6	10	6
Phase 7	10	7
Phase 8	10	8
		9
		A
		B
		C
		D
		E
		F

Coordination Transition Minimums <C/5+2+Row>

INTERSECTION: Bernardo Center Dr @ W Bernardo Dr

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
	Column Numbers ---->	0	1	2	3	1	3
0	2I2U - ADV	39	___45_7_	_2______	123____8		1.8
1	6J2U - ADV	40	___45_7_	_____6__	123____8		1.8
2	4I6U	41	___45_7_	___4____	123_____		
3	8J6U - ADV	42	___45_7_	_______8	123____8		1.8
4	2I2L - ADV	43	___45_7_	_2______	123____8		1.8
5	6J2L - ADV	44	___45_7_	_____6__	123____8		1.8
6	4I6L	45	___45_7_	___4____	123_____		
7	8J6L - ADV	46	___45_7_	_______8	123____8		1.8
8	2I4	47	___45_7_	_2______	123____8		
9	6J4	48	_____67_	_____6__	123_____		
A	4I8	49	_____67_	___4____	123_____		
B	8J8	50	___45_7_	_______8	123____8		
C	5J1	55	___45_7_	____5___	123____8		
D	1I1	56	___45_7_	1_______	123____8		
E	7J5	57	___45_7_	______7_	123_____		
F	3I5	58	___45_7_	__3_____	123_____		

Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
		4	5	6	7	2	4
0	5J9U	59	___45_7_	____5___	123_____		
1	1I9U	60	___45_7_	1_______	123____8		
2	7J9L	61	___45_7_	______7_	123_____		
3	3I9L	62	___45_7_	__3_____	123_____		
4	2I3U - BIKE	63	___45_7_	_2______	123____8		2.0
5	6J3U - BIKE	64	___45_7_	_____6__	123____8		2.0
6	4I7U	65	___45_7_	___4____	123_____		
7	8J7U	66	___45_7_	_______8	123____8		
8	2 PPB	67	_2______	_2______	123_____		
9	6 PPB	68	_2______	_____6__	123_____		
A	4 PPB	69	_2______	___4____	123_____		
B	8 PPB	70	_2______	_______8	123_____		
C	2I3L - RIGHT	76	___45_7_	_2______	123____8		
D	6J3L	77	___45_7_	_____6__	123____8		
E	4I7L	78	___45_7_	___4____	123_____		
F	8J7L - BIKE	79	___45_7_	_______8	123____8		2.0

Detector Assignments <E/126+Column+Row> **<D/0+Column+Row>**

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Column Numbers ---->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green	35	36							5
Overlap Yellow	37	38							6
Overlap Red									7

Redirect Phase Outputs <E/127+Column+Row>

Cabinet Type	30	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	60	<D/0+0+1>
Max ON (minutes)	5	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<D/0+B+Row> (seconds)

INTERSECTION: Bernardo Center Dr @ W Bernardo Dr

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <9/0.1+Row>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits

TOD Function **<7/0.1+Row>** **<E/27+4+Row>**

Day	Year	Month	Holiday Type

Holiday Dates <8/1.1+Row>
(Bank 1)

Time	Plan	Offset	Holiday Type

Holiday Events <9/1.1+Row>
(Bank 1)

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
    Bit 4 - Disable Detector OFF Monitor
    Bit 5 - Disable Low Priority Preempt
    Bit 6 - FYA Inhibit
    Bit 7 - Detector Count Monitor
    Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

INTERSECTION: Bernardo Center Dr @ W Bernardo Dr

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

		Plan									
	Column Numbers --->	1	2	3	4	5	6	7	8	9	
Row	Plan Name --->										Row
0	Cycle Length										0
1	Phase 1 - ForceOff										1
2	Phase 2 - ForceOff										2
3	Phase 3 - ForceOff										3
4	Phase 4 - ForceOff										4
5	Phase 5 - ForceOff										5
6	Phase 6 - ForceOff										6
7	Phase 7 - ForceOff										7
8	Phase 8 - ForceOff										8
9	Ring Offset										9
A	Offset 1										A
B	Offset 2										B
C	Offset 3										C
D	Perm 1 - End										D
E	Hold Release										E
F	Reserved										F

Coordination - Bank 1 <C/1+Plan+Row>

	E	Row
		0
Plan 1 - Sync		1
Plan 2 - Sync		2
Plan 3 - Sync		3
Plan 4 - Sync		4
Plan 5 - Sync		5
Plan 6 - Sync		6
Plan 7 - Sync		7
Plan 8 - Sync		8
Plan 9 - Sync		9
NEMA Sync		A
NEMA Hold		B
		C
		D
Coord Extra		E
		F

Sync Phases <C/1+E+Row>

Row											Row
0	Ped Adjustment										0
1	Perm 2 - Start										1
2	Perm 2 - End										2
3	Perm 3 - Start										3
4	Perm 3 - End										4
5	Reservice Time										5
6	Reservice Phases										6
7											7
8	Pretimed Phases										8
9	Max Recall										9
A	Perm 1 Veh Phase										A
B	Perm 1 Ped Phase										B
C	Perm 2 Veh Phase										C
D	Perm 2 Ped Phase										D
E	Perm 3 Veh Phase										E
F	Perm 3 Ped Phase										F

Coordination - Bank 2 <C/2+Plan+Row>

	F	Row
Free Lag		0
Plan 1 - Lag		1
Plan 2 - Lag		2
Plan 3 - Lag		3
Plan 4 - Lag		4
Plan 5 - Lag		5
Plan 6 - Lag		6
Plan 7 - Lag		7
Plan 8 - Lag		8
Plan 9 - Lag		9
External Lag		A
Lag Hold		B
		C
		D
		E
		F

Lag Phases <C/1+F+Row>

Coordination Timing By:

Date:

INTERSECTION: Bernardo Center Dr @ W Bernardo Dr

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer		Latch 1 Set		NOT-3		Max 2		Pretimed		Set Monday		Dial 2 (7-Wire)		Sim Term	0	0
1	AND-5 (a)		Latch 1 Reset		NOT-4		Reserved		Plan 1		Ext. Perm 1		Dial 3 (7-Wire)		EV-A	71	1
2	AND-5 (b)		Latch 2 Set		OR-4 (a)		Reserved		Plan 2		Ext. Perm 2		Offset 1 (7-Wire)		EV-B	72	2
3	AND-6 (a)		Latch 2 Reset		OR-4 (b)		Reserved		Plan 3		Gate Down		Offset 2 (7-Wire)		EV-C	73	3
4	AND-6 (b)		NAND-3 (a)		OR-5 (a)		Reserved		Plan 4		Set Clock		Offset 3 (7-Wire)		EV-D	74	4
5	Reserved		NAND-3 (b)		OR-5 (b)		Reserved		Plan 5		Stop Time	82	Free (7-Wire)		RR-1	51	5
6	Reserved		NAND-4 (a)		OR-6 (a)		Reserved		Plan 6		Flash Sense	81	Flash (7-Wire)		RR-2	52	6
7	Reserved		NAND-4 (b)		OR-6 (b)		Reserved		Plan 7		Manual Enable		Excl. Ped Omit		Spec. Event 1		7
8	Spec. Funct. 1		OR-7 (a)		EXTMR		Reserved		Plan 8		Man. Advance		NOT-1		Spec. Event 2		8
9	Spec. Funct. 2		OR-7 (b)		Reserved		Max Inhibit (nema)		Plan 9		External Alarm		NOT-2		External Lag		9
A	Spec. Funct. 3		OR-7 (c)		AND-4 (a)		Force A (nema)		DELAY-A		Phase Bank 2		OR-1 (a)		AND-1 (a)		A
B	Spec. Funct. 4		OR-7 (d)		AND-4 (b)		Force B (nema)		DELAY-B		Phase Bank 3		OR-1 (b)		AND-1 (b)		B
C	Reserved		OR-8 (a)		NAND-1 (a)		C.N.A. (nema)		DELAY-C		Overlap Set 2		OR-2 (a)		AND-2 (a)		C
D	Reserved		OR-8 (b)		NAND-1 (b)		Hold (nema)		DELAY-D		Overlap Set 3		OR-2 (b)		AND-2 (b)		D
E	Reserved		OR-8 (c)		NAND-2 (a)		Max Recall		DELAY-E		Detector Set 2		OR-3 (a)		AND-3 (a)		E
F	Reserved		OR-8 (d)		NAND-2 (b)		Min Recall		DELAY-F		Detector Set 3		OR-3 (b)		AND-3 (b)		F

Assignable Inputs <E/126+Column+Row>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1		Preempt Fail		Flasher 0		Free		NOT-1		TOD Out 1		Dial 2 (7-Wire)		0
1	Reserved		Phase ON - 2		Sp Evnt Out 1		Flasher 1		Plan 1		OR-1		TOD Out 2		Dial 3 (7-Wire)		1
2	Reserved		Phase ON - 3		Sp Evnt Out 2		Fast Flasher		Plan 2		OR-2		TOD Out 3		Offset 1 (7-Wire)		2
3	Reserved		Phase ON - 4		Sp Evnt Out 3		EXTMR		Plan 3		OR-3		TOD Out 4		Offset 2 (7-Wire)		3
4	Reserved		Phase ON - 5		Sp Evnt Out 4		One-Shot Timer		Plan 4		AND-1		TOD Out 5		Offset 3 (7-Wire)		4
5	Reserved		Phase ON - 6		Sp Evnt Out 5		Reserved		Plan 5		AND-2		TOD Out 6		Free (7-Wire)		5
6	Reserved		Phase ON - 7		Sp Evnt Out 6		Latch 1		Plan 6		AND-3		TOD Out 7		Flash (7-Wire)		6
7	Reserved		Phase ON - 8		Sp Evnt Out 7		Latch 2		Plan 7		NOT-2		TOD Out 8		Preempt		7
8	Flh Yell Arrow 1		Ph. Check - 1		Sp Evnt Out 8		NOT-3		Plan 8		EV-A		Adv. Warn - 1		Low Priority A		8
9	Green 1		Ph. Check - 2		Coord On		NOT-4		Plan 9		EV-B		Adv. Warn - 2		Low Priority B		9
A	Flh Yell Arrow 3		Ph. Check - 3		Detector Fail		OR-4		Spec. Funct. 3		EV-C		DELAY-A		Low Priority C		A
B	Green 3		Ph. Check - 4		Spec. Funct. 1		OR-5		Spec. Funct. 4		EV-D		DELAY-B		Low Priority D		B
C	Flh Yell Arrow 5		Ph. Check - 5		Spec. Funct. 2		OR-6		NAND-3		RR-1		DELAY-C		AND-5		C
D	Green 5		Ph. Check - 6		Central Control		AND-4		NAND-4		RR-2		DELAY-D		AND-6		D
E	Flh Yell Arrow 7		Ph. Check - 7		Excl. Ped DW		NAND-1		OR-7		Spec. Event 1		DELAY-E		Reserved		E
F	Green 7		Ph. Check - 8		Excl. Ped WK		NAND-2		OR-8		Spec. Event 2		DELAY-F		Reserved		F

Assignable Outputs <E/127+Column+Row>

INTERSECTION: Bernardo Center Dr @ W Bernardo Dr

Row	Column Numbers ---->	1	2	3	4	5	6	7	8
	Phase Names ---->								
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Row		1	2	3	4	5	6	7	8
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	<F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	3	<C/5+2+A>
Begin Week	2	<C/5+2+B>
End Month	11	<C/5+2+C>
End Week	1	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	<F/1+D+E>
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	20	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	#NAME?

Local Alarm Disable <C/5+F+0>

IEN Status	1	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

	6	7	8	9	A	B	C	D	E	F
Row	Clear	Time	Ped Call	Hold	Advance	Force Off	Vehicle Call	Permit Phases	Ped Omit	Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 1 <C+0+E=27>

Notes:

☐ <E/27+5+F>

Limited Service Interval

	6	7	8	9	A	B	C	D	E	F
Row	Clear	Time	Ped Call	Hold	Advance	Force Off	Vehicle Call	Permit Phases	Ped Omit	Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 2 <C+0+E=28>

Notes:

☐ <E/28+5+F>

Limited Service Interval

Min Time (seconds)	4	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	255	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	0	<F/1+0+A>

Min Time Between Same Preempts

(Does Not Apply To Railroad Preempt)

Low Pri. Channel	#NAME?	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	0
D	Bus Delay	0
E	Max Early Grn	0
F	Max Grn Ext.	0

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

APPENDIX E

EXISTING INTERSECTION ANALYSIS CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑	↱	↰↰	↑↑	↱	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱
Traffic Volume (veh/h)	38	489	383	232	457	268	225	1237	502	198	1072	24
Future Volume (veh/h)	38	489	383	232	457	268	225	1237	502	198	1072	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	44	562	440	273	538	315	247	1359	552	206	1117	25
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	92	1045	457	342	1302	566	207	1673	662	267	1761	532
Arrive On Green	0.03	0.30	0.30	0.10	0.37	0.37	0.06	0.33	0.33	0.08	0.35	0.35
Sat Flow, veh/h	3428	3526	1542	3428	3526	1532	3428	5066	1529	3428	5066	1530
Grp Volume(v), veh/h	44	562	440	273	538	315	247	1359	552	206	1117	25
Grp Sat Flow(s),veh/h/ln	1714	1763	1542	1714	1763	1532	1714	1689	1529	1714	1689	1530
Q Serve(g_s), s	1.4	14.6	30.7	8.5	12.4	17.9	6.6	26.8	35.2	6.4	20.2	1.2
Cycle Q Clear(g_c), s	1.4	14.6	30.7	8.5	12.4	17.9	6.6	26.8	35.2	6.4	20.2	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	1045	457	342	1302	566	207	1673	662	267	1761	532
V/C Ratio(X)	0.48	0.54	0.96	0.80	0.41	0.56	1.19	0.81	0.83	0.77	0.63	0.05
Avail Cap(c_a), veh/h	125	1045	457	489	1435	623	207	1673	662	301	1807	546
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	32.2	37.9	48.1	25.7	27.4	51.4	33.5	27.8	49.5	29.8	23.7
Incr Delay (d2), s/veh	3.8	0.6	32.6	6.0	0.2	0.9	124.5	3.2	9.0	10.5	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	0.6	6.0	15.0	3.8	5.1	6.2	6.3	10.7	13.3	3.0	7.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	32.7	70.5	54.1	25.9	28.3	175.9	36.7	36.8	60.0	30.6	23.7
LnGrp LOS	E	C	E	D	C	C	F	D	D	E	C	C
Approach Vol, veh/h		1046			1126			2158			1348	
Approach Delay, s/veh		49.6			33.4			52.6			34.9	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	38.5	11.0	44.5	7.3	46.5	12.9	42.6
Change Period (Y+Rc), s	4.4	6.1	4.4	6.5	4.4	* 6.1	4.4	* 6.5
Max Green Setting (Gmax), s	15.6	32.4	6.6	39.0	4.0	* 45	9.6	* 36
Max Q Clear Time (g_c+I1), s	10.5	32.7	8.6	22.2	3.4	19.9	8.4	37.2
Green Ext Time (p_c), s	0.4	0.0	0.0	6.6	0.0	4.7	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱					↰↰	↑↑		↰	↑↑	↱↱
Traffic Volume (veh/h)	76	0	160	0	0	0	596	385	0	0	511	760
Future Volume (veh/h)	76	0	160	0	0	0	596	385	0	0	511	760
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		1.00	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				1856	1856	0	1856	1856	1856
Adj Flow Rate, veh/h	81	0	170				641	414	0	0	555	826
Peak Hour Factor	0.94	0.94	0.94				0.93	0.93	0.93	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				3	3	0	3	3	3
Cap, veh/h	545	0	239				783	2358	0	3	1297	1414
Arrive On Green	0.16	0.00	0.16				0.23	0.67	0.00	0.00	0.37	0.37
Sat Flow, veh/h	3428	0	1503				3428	3618	0	1767	3526	2648
Grp Volume(v), veh/h	81	0	170				641	414	0	0	555	826
Grp Sat Flow(s),veh/h/ln	1714	0	1503				1714	1763	0	1767	1763	1324
Q Serve(g_s), s	1.2	0.0	6.5				10.7	2.7	0.0	0.0	7.1	13.0
Cycle Q Clear(g_c), s	1.2	0.0	6.5				10.7	2.7	0.0	0.0	7.1	13.0
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	545	0	239				783	2358	0	3	1297	1414
V/C Ratio(X)	0.15	0.00	0.71				0.82	0.18	0.00	0.00	0.43	0.58
Avail Cap(c_a), veh/h	1872	0	821				970	2555	0	117	1756	1759
HCM Platoon Ratio	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	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	24.1				22.1	3.8	0.0	0.0	14.3	9.8
Incr Delay (d2), s/veh	0.1	0.0	3.9				4.6	0.0	0.0	0.0	0.2	0.4
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	0.5	0.0	2.3				4.3	0.5	0.0	0.0	2.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	0.0	28.0				26.7	3.8	0.0	0.0	14.6	10.2
LnGrp LOS	C	A	C				C	A	A	A	B	B
Approach Vol, veh/h		251						1055			1381	
Approach Delay, s/veh		26.1						17.7			12.0	
Approach LOS		C						B			B	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	0.0	45.9		14.5	18.2	27.7
Change Period (Y+Rc), s	4.4	* 5.5		4.9	4.4	5.5
Max Green Setting (Gmax), s	4.0	* 44		33.0	17.1	30.1
Max Q Clear Time (g_c+I1), s	0.0	4.7		8.5	12.7	15.0
Green Ext Time (p_c), s	0.0	2.8		1.3	1.1	6.6

Intersection Summary			
HCM 6th Ctrl Delay			15.5
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		✥		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	2	0	0	37	2	174	18	477	22	79	1119	23
Future Volume (veh/h)	2	0	0	37	2	174	18	477	22	79	1119	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		0.96	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	4	0	0	51	3	238	20	542	25	83	1178	24
Peak Hour Factor	0.50	0.50	0.50	0.73	0.73	0.73	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	189	0	346	81	17	272	29	2034	94	106	2250	46
Arrive On Green	0.22	0.00	0.00	0.22	0.22	0.22	0.02	0.59	0.59	0.06	0.64	0.64
Sat Flow, veh/h	574	0	1572	201	79	1233	1767	3426	158	1767	3531	72
Grp Volume(v), veh/h	4	0	0	292	0	0	20	278	289	83	588	614
Grp Sat Flow(s),veh/h/ln	574	0	1572	1513	0	0	1767	1763	1821	1767	1763	1840
Q Serve(g_s), s	0.0	0.0	0.0	15.5	0.0	0.0	1.3	8.8	8.8	5.3	20.9	20.9
Cycle Q Clear(g_c), s	0.8	0.0	0.0	21.4	0.0	0.0	1.3	8.8	8.8	5.3	20.9	20.9
Prop In Lane	1.00		1.00	0.17		0.82	1.00		0.09	1.00		0.04
Lane Grp Cap(c), veh/h	189	0	346	370	0	0	29	1047	1081	106	1123	1172
V/C Ratio(X)	0.02	0.00	0.00	0.79	0.00	0.00	0.69	0.27	0.27	0.78	0.52	0.52
Avail Cap(c_a), veh/h	264	0	451	472	0	0	77	1047	1081	215	1123	1172
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	0.00	0.00	0.99	0.99	0.99	0.90	0.90	0.90
Uniform Delay (d), s/veh	35.3	0.0	0.0	43.2	0.0	0.0	56.3	11.3	11.3	53.3	11.4	11.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	6.8	0.0	0.0	25.0	0.6	0.6	10.8	1.6	1.5
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	0.1	0.0	0.0	8.7	0.0	0.0	0.8	3.4	3.5	2.6	7.8	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	0.0	0.0	50.0	0.0	0.0	81.2	11.9	11.9	64.2	12.9	12.9
LnGrp LOS	D	A	A	D	A	A	F	B	B	E	B	B
Approach Vol, veh/h		4			292			587			1285	
Approach Delay, s/veh		35.3			50.0			14.2			16.2	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.9	73.8		30.3	5.9	78.8		30.3
Change Period (Y+Rc), s	4.0	* 5.5		5.0	4.0	5.5		* 5
Max Green Setting (Gmax), s	14.0	* 54		33.0	5.0	62.5		* 33
Max Q Clear Time (g_c+I1), s	7.3	10.8		2.8	3.3	22.9		23.4
Green Ext Time (p_c), s	0.1	3.5		0.0	0.0	9.5		1.3

Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↰	↱↱
Traffic Volume (veh/h)	0	479	172	440	870	0	0	0	0	241	1	392
Future Volume (veh/h)	0	479	172	440	870	0	0	0	0	241	1	392
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	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	1856	1856	1856	1856	0				530	530	530
Adj Flow Rate, veh/h	0	570	205	458	906	0				260	0	422
Peak Hour Factor	0.84	0.84	0.84	0.96	0.96	0.96				0.93	0.93	0.93
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1173	509	683	2075	0				371	0	330
Arrive On Green	0.00	0.33	0.33	0.40	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3618	1529	3428	3618	0				1010	0	899
Grp Volume(v), veh/h	0	570	205	458	906	0				260	0	422
Grp Sat Flow(s),veh/h/ln	0	1763	1529	1714	1763	0				505	0	449
Q Serve(g_s), s	0.0	12.2	9.8	10.4	0.0	0.0				20.8	0.0	34.9
Cycle Q Clear(g_c), s	0.0	12.2	9.8	10.4	0.0	0.0				20.8	0.0	34.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1173	509	683	2075	0				371	0	330
V/C Ratio(X)	0.00	0.49	0.40	0.67	0.44	0.00				0.70	0.00	1.28
Avail Cap(c_a), veh/h	0	1173	509	683	2075	0				371	0	330
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.98	0.98	0.79	0.79	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	25.2	24.4	26.0	0.0	0.0				25.6	0.0	30.0
Incr Delay (d2), s/veh	0.0	1.4	2.3	2.0	0.5	0.0				5.8	0.0	146.5
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	5.1	3.7	3.6	0.2	0.0				2.7	0.0	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.6	26.8	28.0	0.5	0.0				31.4	0.0	176.6
LnGrp LOS	A	C	C	C	A	A				C	A	F
Approach Vol, veh/h		775			1364						682	
Approach Delay, s/veh		26.7			9.8						121.2	
Approach LOS		C			A						F	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.3	37.0		40.0		61.3
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	13.3	* 32		34.9		49.6
Max Q Clear Time (g_c+I1), s	12.4	14.2		36.9		2.0
Green Ext Time (p_c), s	0.2	4.0		0.0		7.7

Intersection Summary			
HCM 6th Ctrl Delay			41.4
HCM 6th LOS			D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰	↱↱			
Traffic Volume (veh/h)	206	517	0	0	764	224	542	7	420	0	0	0
Future Volume (veh/h)	206	517	0	0	764	224	542	7	420	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	237	594	0	0	840	246	570	0	438			
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.96	0.96	0.96			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	777	2358	0	0	1358	590	743	0	661			
Arrive On Green	0.45	1.00	0.00	0.00	0.39	0.39	0.21	0.00	0.21			
Sat Flow, veh/h	3428	3618	0	0	3618	1533	3534	0	3145			
Grp Volume(v), veh/h	237	594	0	0	840	246	570	0	438			
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1763	1533	1767	0	1572			
Q Serve(g_s), s	4.2	0.0	0.0	0.0	18.3	11.2	14.4	0.0	12.1			
Cycle Q Clear(g_c), s	4.2	0.0	0.0	0.0	18.3	11.2	14.4	0.0	12.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	777	2358	0	0	1358	590	743	0	661			
V/C Ratio(X)	0.31	0.25	0.00	0.00	0.62	0.42	0.77	0.00	0.66			
Avail Cap(c_a), veh/h	777	2358	0	0	1358	590	1112	0	990			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.95	0.95	0.00	0.00	0.84	0.84	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.2	0.0	0.0	0.0	23.6	21.4	35.3	0.0	34.4			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	1.8	1.8	1.8	0.0	1.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.6	0.1	0.0	0.0	7.7	4.2	6.3	0.0	4.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.4	0.2	0.0	0.0	25.4	23.2	37.2	0.0	35.6			
LnGrp LOS	C	A	A	A	C	C	D	A	D			
Approach Vol, veh/h		831			1086			1008				
Approach Delay, s/veh		6.3			24.9			36.5				
Approach LOS		A			C			D				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		68.9			26.9	42.0		26.1				
Change Period (Y+Rc), s		5.4			5.4	* 5.4		6.1				
Max Green Setting (Gmax), s		53.6			12.3	* 37		29.9				
Max Q Clear Time (g_c+I1), s		2.0			6.2	20.3		16.4				
Green Ext Time (p_c), s		4.7			0.4	6.3		3.5				

Intersection Summary		
HCM 6th Ctrl Delay		23.6
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↱		↰	↰	↱	↰	↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	31	8	22	611	20	381	79	387	369	425	344	71
Future Volume (veh/h)	31	8	22	611	20	381	79	387	369	425	344	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.97	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	36	9	26	718	0	438	93	455	434	457	370	76
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.85	0.85	0.85	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	63	15	44	1104	0	477	119	1257	1037	213	1017	206
Arrive On Green	0.04	0.04	0.04	0.31	0.00	0.31	0.07	0.36	0.36	0.06	0.35	0.35
Sat Flow, veh/h	1698	417	1201	3534	0	1528	1767	3526	1531	3428	2894	587
Grp Volume(v), veh/h	38	0	33	718	0	438	93	455	434	457	223	223
Grp Sat Flow(s),veh/h/ln	1771	0	1546	1767	0	1528	1767	1763	1531	1714	1763	1718
Q Serve(g_s), s	1.9	0.0	1.9	15.8	0.0	24.9	4.7	8.6	11.8	5.6	8.5	8.7
Cycle Q Clear(g_c), s	1.9	0.0	1.9	15.8	0.0	24.9	4.7	8.6	11.8	5.6	8.5	8.7
Prop In Lane	0.96		0.78	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	65	0	57	1104	0	477	119	1257	1037	213	619	603
V/C Ratio(X)	0.57	0.00	0.59	0.65	0.00	0.92	0.78	0.36	0.42	2.14	0.36	0.37
Avail Cap(c_a), veh/h	79	0	69	1139	0	492	204	1257	1037	213	619	603
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	1.00	1.00	0.00	1.00	0.95	0.95	0.95	0.87	0.87	0.87
Uniform Delay (d), s/veh	42.6	0.0	42.7	26.7	0.0	29.8	41.3	21.4	6.9	42.2	21.7	21.8
Incr Delay (d2), s/veh	7.7	0.0	9.2	1.3	0.0	21.9	10.1	0.8	1.2	527.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.9	6.6	0.0	11.7	2.3	3.5	8.2	17.9	3.4	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	0.0	51.9	28.0	0.0	51.8	51.4	22.2	8.1	569.7	22.0	22.1
LnGrp LOS	D	A	D	C	A	D	D	C	A	F	C	C
Approach Vol, veh/h		71			1156			982			903	
Approach Delay, s/veh		51.1			37.0			18.7			299.2	
Approach LOS		D			D			B			F	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	10.0	37.2	8.2	10.5	36.7	34.6
Change Period (Y+Rc), s	4.4	5.1	4.9	4.4	* 5.1	6.5
Max Green Setting (Gmax), s	5.6	30.5	4.0	10.4	* 26	29.0
Max Q Clear Time (g_c+I1), s	7.6	13.8	3.9	6.7	10.7	26.9
Green Ext Time (p_c), s	0.0	4.3	0.0	0.1	2.3	1.1

Intersection Summary	
HCM 6th Ctrl Delay	107.6
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
7: Bernardo Center Dr & Rancho Bernardo Rd

Existing AM
12/19/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↱	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑	↱
Traffic Volume (veh/h)	283	763	372	139	886	153	248	253	110	192	309	249
Future Volume (veh/h)	283	763	372	139	886	153	248	253	110	192	309	249
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	301	812	396	154	984	170	295	301	131	204	329	265
Peak Hour Factor	0.94	0.94	0.94	0.90	0.90	0.90	0.84	0.84	0.84	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	342	1431	591	219	1055	182	332	619	262	276	858	522
Arrive On Green	0.10	0.39	0.39	0.06	0.35	0.35	0.10	0.26	0.26	0.08	0.24	0.24
Sat Flow, veh/h	3534	3711	1533	3428	2992	516	3428	2387	1011	3428	3526	1521
Grp Volume(v), veh/h	301	812	396	154	579	575	295	220	212	204	329	265
Grp Sat Flow(s),veh/h/ln	1767	1856	1533	1714	1763	1746	1714	1763	1635	1714	1763	1521
Q Serve(g_s), s	8.3	17.1	21.3	4.4	31.4	31.5	8.4	10.5	11.0	5.8	7.7	13.8
Cycle Q Clear(g_c), s	8.3	17.1	21.3	4.4	31.4	31.5	8.4	10.5	11.0	5.8	7.7	13.8
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	342	1431	591	219	622	616	332	457	424	276	858	522
V/C Ratio(X)	0.88	0.57	0.67	0.70	0.93	0.93	0.89	0.48	0.50	0.74	0.38	0.51
Avail Cap(c_a), veh/h	342	1431	591	269	636	630	332	673	624	425	1420	765
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.3	24.0	25.3	45.5	31.0	31.0	44.3	31.1	31.3	44.6	31.3	26.2
Incr Delay (d2), s/veh	22.3	0.5	2.9	6.1	20.4	20.9	24.3	0.8	0.9	3.8	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	7.2	7.9	2.0	16.0	16.0	4.6	4.5	4.3	2.6	3.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	24.5	28.2	51.7	51.4	51.9	68.7	31.9	32.2	48.4	31.6	26.9
LnGrp LOS	E	C	C	D	D	D	E	C	C	D	C	C
Approach Vol, veh/h		1509			1308			727			798	
Approach Delay, s/veh		33.9			51.6			46.9			34.4	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	44.5	14.0	30.1	14.0	41.2	12.4	31.7
Change Period (Y+Rc), s	4.4	6.2	4.4	5.9	4.4	* 6.2	4.4	* 5.9
Max Green Setting (Gmax), s	7.8	36.7	9.6	40.0	9.6	* 36	12.3	* 38
Max Q Clear Time (g_c+I1), s	6.4	23.3	10.4	15.8	10.3	33.5	7.8	13.0
Green Ext Time (p_c), s	0.1	5.7	0.0	3.2	0.0	1.5	0.3	2.6

Intersection Summary	
HCM 6th Ctrl Delay	41.5
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: Bernardo Center Dr & Future Proj Dwy

Existing AM
12/19/2023

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰↑	↑↱		↰	↱
Traffic Volume (veh/h)	0	651	1262	0	0	0
Future Volume (veh/h)	0	651	1262	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	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	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	0	708	1372	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	0	2637	2637	0	9	8
Arrive On Green	0.00	0.75	0.75	0.00	0.00	0.00
Sat Flow, veh/h	0	3711	3711	0	1767	1572
Grp Volume(v), veh/h	0	708	1372	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1763	1763	0	1767	1572
Q Serve(g_s), s	0.0	1.3	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.3	3.2	0.0	0.0	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2637	2637	0	9	8
V/C Ratio(X)	0.00	0.27	0.52	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	4086	4086	0	2850	2536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.8	1.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	0.8	1.2	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		708	1372		0	
Approach Delay, s/veh		0.8	1.2		0.0	
Approach LOS		A	A			

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		19.8		0.0		19.8
Change Period (Y+Rc), s		5.0		5.0		5.0
Max Green Setting (Gmax), s		23.0		32.0		23.0
Max Q Clear Time (g_c+I1), s		3.3		0.0		5.2
Green Ext Time (p_c), s		4.5		0.0		9.2

Intersection Summary		
HCM 6th Ctrl Delay		1.1
HCM 6th LOS		A

HCM 6th Signalized Intersection Summary
1: Camino Del Norte & Bernardo Center Dr

Existing PM
12/19/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑	↱	↰↰	↑↑	↱	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱
Traffic Volume (veh/h)	39	514	347	380	455	273	349	1337	308	220	1363	29
Future Volume (veh/h)	39	514	347	380	455	273	349	1337	308	220	1363	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	43	571	386	458	548	329	384	1469	338	239	1482	32
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	71	1018	445	504	1462	636	426	1842	788	280	1627	491
Arrive On Green	0.02	0.29	0.29	0.15	0.41	0.41	0.12	0.36	0.36	0.08	0.32	0.32
Sat Flow, veh/h	3428	3526	1542	3428	3526	1534	3428	5066	1531	3428	5066	1529
Grp Volume(v), veh/h	43	571	386	458	548	329	384	1469	338	239	1482	32
Grp Sat Flow(s),veh/h/ln	1714	1763	1542	1714	1763	1534	1714	1689	1531	1714	1689	1529
Q Serve(g_s), s	2.2	24.7	42.8	23.7	19.4	28.8	19.9	46.8	24.9	12.4	50.5	2.6
Cycle Q Clear(g_c), s	2.2	24.7	42.8	23.7	19.4	28.8	19.9	46.8	24.9	12.4	50.5	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	71	1018	445	504	1462	636	426	1842	788	280	1627	491
V/C Ratio(X)	0.60	0.56	0.87	0.91	0.37	0.52	0.90	0.80	0.43	0.85	0.91	0.07
Avail Cap(c_a), veh/h	109	1018	445	583	1462	636	488	1874	798	373	1703	514
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	1.00	1.00	0.79	0.79	0.79	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	87.4	54.3	60.8	75.6	36.5	39.2	77.7	51.3	27.7	81.6	58.6	42.4
Incr Delay (d2), s/veh	7.9	2.2	19.9	14.0	0.6	2.4	18.2	2.5	0.4	13.4	7.6	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	1.1	11.2	18.8	11.4	8.5	11.1	9.7	19.8	9.0	5.9	22.2	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.3	56.6	80.6	89.5	37.1	41.6	95.9	53.8	28.0	95.0	66.2	42.4
LnGrp LOS	F	E	F	F	D	D	F	D	C	F	E	D
Approach Vol, veh/h		1000			1335			2191			1753	
Approach Delay, s/veh		67.5			56.2			57.2			69.7	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.9	58.1	26.8	64.3	8.2	80.8	19.1	72.0
Change Period (Y+Rc), s	4.4	6.1	4.4	6.5	4.4	* 6.1	4.4	* 6.5
Max Green Setting (Gmax), s	30.6	41.9	25.6	60.5	5.7	* 67	19.6	* 67
Max Q Clear Time (g_c+I1), s	25.7	44.8	21.9	52.5	4.2	30.8	14.4	48.8
Green Ext Time (p_c), s	0.8	0.0	0.5	5.3	0.0	5.2	0.3	10.3

Intersection Summary	
HCM 6th Ctrl Delay	62.1
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱					↰↰	↑↑		↰	↑↑	↱↱
Traffic Volume (veh/h)	609	0	548	0	0	0	548	336	0	0	432	62
Future Volume (veh/h)	609	0	548	0	0	0	548	336	0	0	432	62
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		1.00	1.00		0.94
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	1856	1856	1856				1856	1856	0	1856	1856	1856
Adj Flow Rate, veh/h	692	0	623				589	361	0	0	480	69
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3				3	3	0	3	3	3
Cap, veh/h	1410	0	631				671	1618	0	2	734	1680
Arrive On Green	0.41	0.00	0.41				0.20	0.46	0.00	0.00	0.21	0.21
Sat Flow, veh/h	3428	0	1534				3428	3618	0	1767	3526	2599
Grp Volume(v), veh/h	692	0	623				589	361	0	0	480	69
Grp Sat Flow(s),veh/h/ln	1714	0	1534				1714	1763	0	1767	1763	1300
Q Serve(g_s), s	11.9	0.0	32.3				13.4	5.0	0.0	0.0	10.0	0.8
Cycle Q Clear(g_c), s	11.9	0.0	32.3				13.4	5.0	0.0	0.0	10.0	0.8
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	1410	0	631				671	1618	0	2	734	1680
V/C Ratio(X)	0.49	0.00	0.99				0.88	0.22	0.00	0.00	0.65	0.04
Avail Cap(c_a), veh/h	1410	0	631				710	1925	0	88	1345	2130
HCM Platoon Ratio	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	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	23.4				31.3	13.1	0.0	0.0	29.1	6.0
Incr Delay (d2), s/veh	0.3	0.0	32.5				11.6	0.1	0.0	0.0	1.0	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
%ile BackOfQ(50%),veh/ln	4.3	0.0	16.0				6.3	1.8	0.0	0.0	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	0.0	55.9				42.9	13.1	0.0	0.0	30.1	6.0
LnGrp LOS	B	A	E				D	B	A	A	C	A
Approach Vol, veh/h		1315						950			549	
Approach Delay, s/veh		35.8						31.6			27.1	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	0.0	42.3		37.9	20.1	22.2
Change Period (Y+Rc), s	4.4	* 5.5		4.9	4.4	5.5
Max Green Setting (Gmax), s	4.0	* 44		33.0	16.6	30.6
Max Q Clear Time (g_c+I1), s	0.0	7.0		34.3	15.4	12.0
Green Ext Time (p_c), s	0.0	2.4		0.0	0.3	3.1

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↰↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	41	1	17	19	0	70	6	1161	39	71	434	3
Future Volume (veh/h)	41	1	17	19	0	70	6	1161	39	71	434	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.98		0.95	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	53	1	22	22	0	81	7	1319	44	77	472	3
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.88	0.88	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	198	3	193	60	16	144	12	2414	80	98	2667	17
Arrive On Green	0.13	0.13	0.13	0.13	0.00	0.13	0.01	0.69	0.69	0.06	0.74	0.74
Sat Flow, veh/h	1069	25	1492	182	121	1115	1767	3477	116	1767	3591	23
Grp Volume(v), veh/h	54	0	22	103	0	0	7	668	695	77	232	243
Grp Sat Flow(s),veh/h/ln	1094	0	1492	1417	0	0	1767	1763	1830	1767	1763	1851
Q Serve(g_s), s	0.0	0.0	1.6	1.9	0.0	0.0	0.5	22.4	22.5	5.2	4.7	4.7
Cycle Q Clear(g_c), s	6.5	0.0	1.6	8.4	0.0	0.0	0.5	22.4	22.5	5.2	4.7	4.7
Prop In Lane	0.98		1.00	0.21		0.79	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	201	0	193	220	0	0	12	1224	1271	98	1310	1375
V/C Ratio(X)	0.27	0.00	0.11	0.47	0.00	0.00	0.57	0.55	0.55	0.78	0.18	0.18
Avail Cap(c_a), veh/h	336	0	348	374	0	0	59	1224	1271	177	1310	1375
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	1.00	1.00	0.00	0.00	0.85	0.85	0.85	0.99	0.99	0.99
Uniform Delay (d), s/veh	48.3	0.0	46.2	48.9	0.0	0.0	59.4	9.0	9.0	56.0	4.6	4.6
Incr Delay (d2), s/veh	0.7	0.0	0.3	1.6	0.0	0.0	30.9	1.5	1.4	12.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.6	3.0	0.0	0.0	0.3	7.9	8.2	2.6	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.0	0.0	46.4	50.5	0.0	0.0	90.3	10.5	10.5	68.6	4.9	4.8
LnGrp LOS	D	A	D	D	A	A	F	B	B	E	A	A
Approach Vol, veh/h		76			103			1370			552	
Approach Delay, s/veh		48.3			50.5			10.9			13.7	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	88.8		20.5	4.8	94.7		20.5				
Change Period (Y+Rc), s	4.0	* 5.5		5.0	4.0	5.5		* 5				
Max Green Setting (Gmax), s	12.0	* 66		28.0	4.0	73.5		* 28				
Max Q Clear Time (g_c+I1), s	7.2	24.5		8.5	2.5	6.7		10.4				
Green Ext Time (p_c), s	0.1	11.9		0.3	0.0	2.8		0.5				

Intersection Summary			
HCM 6th Ctrl Delay			14.9
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↰	↱↱
Traffic Volume (veh/h)	0	785	480	386	309	0	0	0	0	185	4	195
Future Volume (veh/h)	0	785	480	386	309	0	0	0	0	185	4	195
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1856	1856	1856	1856	0				530	530	530
Adj Flow Rate, veh/h	0	835	511	411	329	0				198	0	205
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1518	661	670	2431	0				189	0	168
Arrive On Green	0.00	0.43	0.43	0.33	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3618	1535	3428	3618	0				1010	0	899
Grp Volume(v), veh/h	0	835	511	411	329	0				198	0	205
Grp Sat Flow(s),veh/h/ln	0	1763	1535	1714	1763	0				505	0	449
Q Serve(g_s), s	0.0	15.0	24.2	8.6	0.0	0.0				15.9	0.0	15.9
Cycle Q Clear(g_c), s	0.0	15.0	24.2	8.6	0.0	0.0				15.9	0.0	15.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1518	661	670	2431	0				189	0	168
V/C Ratio(X)	0.00	0.55	0.77	0.61	0.14	0.00				1.05	0.00	1.22
Avail Cap(c_a), veh/h	0	1518	661	698	2431	0				189	0	168
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.90	0.90	0.87	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.1	20.7	25.9	0.0	0.0				34.6	0.0	34.5
Incr Delay (d2), s/veh	0.0	1.3	7.8	1.3	0.1	0.0				78.7	0.0	140.5
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	5.8	9.2	3.2	0.0	0.0				4.0	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.4	28.4	27.3	0.1	0.0				113.2	0.0	175.0
LnGrp LOS	A	B	C	C	A	A				F	A	F
Approach Vol, veh/h		1346			740						403	
Approach Delay, s/veh		22.8			15.2						144.7	
Approach LOS		C			B						F	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	22.0	42.0	21.0	64.0
Change Period (Y+Rc), s	5.4	* 5.4	5.1	5.4
Max Green Setting (Gmax), s	17.3	* 37	15.9	58.6
Max Q Clear Time (g_c+I1), s	10.6	26.2	17.9	2.0
Green Ext Time (p_c), s	0.9	5.3	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	40.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰↑	↱↱			
Traffic Volume (veh/h)	405	569	0	0	675	225	37	89	605	0	0	0
Future Volume (veh/h)	405	569	0	0	675	225	37	89	605	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	450	632	0	0	758	253	39	94	637			
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.95	0.95	0.95			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	779	2252	0	0	1228	533	399	419	710			
Arrive On Green	0.30	0.85	0.00	0.00	0.35	0.35	0.23	0.23	0.23			
Sat Flow, veh/h	3428	3618	0	0	3618	1530	1767	1856	3145			
Grp Volume(v), veh/h	450	632	0	0	758	253	39	94	637			
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1763	1530	1767	1856	1572			
Q Serve(g_s), s	9.4	3.0	0.0	0.0	15.2	11.0	1.5	3.5	16.7			
Cycle Q Clear(g_c), s	9.4	3.0	0.0	0.0	15.2	11.0	1.5	3.5	16.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	779	2252	0	0	1228	533	399	419	710			
V/C Ratio(X)	0.58	0.28	0.00	0.00	0.62	0.47	0.10	0.22	0.90			
Avail Cap(c_a), veh/h	779	2252	0	0	1228	533	414	434	736			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.87	0.87	0.00	0.00	0.89	0.89	1.00	1.00	1.00			
Uniform Delay (d), s/veh	26.2	2.5	0.0	0.0	23.0	21.6	26.0	26.8	31.9			
Incr Delay (d2), s/veh	0.9	0.3	0.0	0.0	2.1	2.7	0.1	0.3	13.5			
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	3.6	0.9	0.0	0.0	6.4	4.2	0.6	1.6	7.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.1	2.8	0.0	0.0	25.1	24.3	26.2	27.1	45.4			
LnGrp LOS	C	A	A	A	C	C	C	C	D			
Approach Vol, veh/h		1082			1011			770				
Approach Delay, s/veh		12.9			24.9			42.2				
Approach LOS		B			C			D				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.7			24.7	35.0		25.3				
Change Period (Y+Rc), s		5.4			5.4	* 5.4		6.1				
Max Green Setting (Gmax), s		53.6			19.3	* 30		19.9				
Max Q Clear Time (g_c+I1), s		5.0			11.4	17.2		18.7				
Green Ext Time (p_c), s		5.1			1.1	5.0		0.5				

Intersection Summary			
HCM 6th Ctrl Delay			25.0
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↱		↰	↰	↱	↰	↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	65	30	72	286	26	405	66	717	353	267	458	39
Future Volume (veh/h)	65	30	72	286	26	405	66	717	353	267	458	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.97	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	92	42	101	391	0	519	68	739	364	281	482	41
Peak Hour Factor	0.71	0.71	0.71	0.78	0.78	0.78	0.97	0.97	0.97	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	59	27	64	1139	0	493	88	1191	1023	213	1148	97
Arrive On Green	0.05	0.05	0.05	0.32	0.00	0.32	0.05	0.34	0.34	0.06	0.35	0.35
Sat Flow, veh/h	1289	588	1409	3534	0	1529	1767	3526	1530	3428	3276	278
Grp Volume(v), veh/h	128	0	107	391	0	519	68	739	364	281	258	265
Grp Sat Flow(s),veh/h/ln	1791	0	1494	1767	0	1529	1767	1763	1530	1714	1763	1790
Q Serve(g_s), s	4.1	0.0	4.1	7.6	0.0	29.0	3.4	15.8	9.6	5.6	10.0	10.1
Cycle Q Clear(g_c), s	4.1	0.0	4.1	7.6	0.0	29.0	3.4	15.8	9.6	5.6	10.0	10.1
Prop In Lane	0.72		0.94	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	82	0	68	1139	0	493	88	1191	1023	213	618	627
V/C Ratio(X)	1.57	0.00	1.57	0.34	0.00	1.05	0.78	0.62	0.36	1.32	0.42	0.42
Avail Cap(c_a), veh/h	82	0	68	1139	0	493	179	1191	1023	213	618	627
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	1.00	1.00	0.00	1.00	0.85	0.85	0.85	0.92	0.92	0.92
Uniform Delay (d), s/veh	43.0	0.0	43.0	23.2	0.0	30.5	42.3	25.0	6.8	42.2	22.2	22.3
Incr Delay (d2), s/veh	306.0	0.0	317.2	0.2	0.0	55.4	11.7	2.1	0.8	169.9	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	7.5	3.1	0.0	17.8	1.7	6.6	6.7	7.3	4.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	349.0	0.0	360.2	23.4	0.0	85.9	54.0	27.0	7.6	212.1	22.7	22.7
LnGrp LOS	F	A	F	C	A	F	D	C	A	F	C	C
Approach Vol, veh/h		235			910			1171			804	
Approach Delay, s/veh		354.1			59.1			22.6			88.9	
Approach LOS		F			E			C			F	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	10.0	35.5	9.0	8.9	36.6	35.5
Change Period (Y+Rc), s	4.4	5.1	4.9	4.4	* 5.1	6.5
Max Green Setting (Gmax), s	5.6	30.4	4.1	9.1	* 27	29.0
Max Q Clear Time (g_c+I1), s	7.6	17.8	6.1	5.4	12.1	31.0
Green Ext Time (p_c), s	0.0	5.1	0.0	0.0	2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	75.3
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↱	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑	↱
Traffic Volume (veh/h)	266	700	277	117	694	130	468	448	217	165	228	243
Future Volume (veh/h)	266	700	277	117	694	130	468	448	217	165	228	243
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	277	729	289	129	763	143	526	503	244	183	253	270
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.89	0.89	0.89	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	282	1240	511	193	916	172	489	720	347	256	872	502
Arrive On Green	0.08	0.33	0.33	0.06	0.31	0.31	0.14	0.32	0.32	0.07	0.25	0.25
Sat Flow, veh/h	3534	3711	1529	3428	2947	552	3428	2282	1101	3428	3526	1521
Grp Volume(v), veh/h	277	729	289	129	456	450	526	388	359	183	253	270
Grp Sat Flow(s),veh/h/ln	1767	1856	1529	1714	1763	1737	1714	1763	1620	1714	1763	1521
Q Serve(g_s), s	7.5	15.5	14.8	3.5	22.9	22.9	13.6	18.4	18.6	5.0	5.5	13.8
Cycle Q Clear(g_c), s	7.5	15.5	14.8	3.5	22.9	22.9	13.6	18.4	18.6	5.0	5.5	13.8
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	282	1240	511	193	548	540	489	556	511	256	872	502
V/C Ratio(X)	0.98	0.59	0.57	0.67	0.83	0.83	1.07	0.70	0.70	0.71	0.29	0.54
Avail Cap(c_a), veh/h	282	1317	543	241	625	616	489	796	731	403	1480	764
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	26.3	26.0	44.1	30.5	30.5	40.8	28.6	28.7	43.1	29.1	26.2
Incr Delay (d2), s/veh	48.6	0.6	1.2	4.9	8.5	8.6	62.3	1.6	1.8	3.7	0.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	6.6	5.3	1.6	10.5	10.3	9.8	7.7	7.2	2.2	2.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.4	26.9	27.3	49.0	39.0	39.2	103.1	30.2	30.5	46.8	29.2	27.1
LnGrp LOS	F	C	C	D	D	D	F	C	C	D	C	C
Approach Vol, veh/h		1295			1035			1273			706	
Approach Delay, s/veh		41.0			40.3			60.4			33.0	
Approach LOS		D			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	38.0	18.0	29.5	12.0	35.8	11.5	35.9
Change Period (Y+Rc), s	4.4	6.2	4.4	5.9	4.4	* 6.2	4.4	* 5.9
Max Green Setting (Gmax), s	6.7	33.8	13.6	40.0	7.6	* 34	11.2	* 43
Max Q Clear Time (g_c+I1), s	5.5	17.5	15.6	15.8	9.5	24.9	7.0	20.6
Green Ext Time (p_c), s	0.0	5.3	0.0	2.6	0.0	3.6	0.2	4.8

Intersection Summary	
HCM 6th Ctrl Delay	45.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: Bernardo Center Dr & Future Proj Dwy

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰↑	↑↱		↰	↱
Traffic Volume (veh/h)	0	1265	504	0	0	0
Future Volume (veh/h)	0	1265	504	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	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	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	0	1375	548	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	0	2620	2620	0	9	8
Arrive On Green	0.00	0.74	0.74	0.00	0.00	0.00
Sat Flow, veh/h	0	3711	3711	0	1767	1572
Grp Volume(v), veh/h	0	1375	548	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1763	1763	0	1767	1572
Q Serve(g_s), s	0.0	3.2	0.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.2	0.9	0.0	0.0	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2620	2620	0	9	8
V/C Ratio(X)	0.00	0.52	0.21	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	4167	4167	0	2906	2586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	1.1	0.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	1.2	0.8	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		1375	548		0	
Approach Delay, s/veh		1.2	0.8		0.0	
Approach LOS		A	A			

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		19.5		0.0		19.5
Change Period (Y+Rc), s		5.0		5.0		5.0
Max Green Setting (Gmax), s		23.0		32.0		23.0
Max Q Clear Time (g_c+I1), s		5.2		0.0		2.9
Green Ext Time (p_c), s		9.3		0.0		3.3

Intersection Summary						
HCM 6th Ctrl Delay			1.1			
HCM 6th LOS			A			

APPENDIX F

OPENING YEAR 2027 WITHOUT PROJECT INTERSECTION ANALYSIS CALCULATION SHEETS

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑	↱	↰↰	↑↑	↱	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱
Traffic Volume (veh/h)	40	509	398	241	475	279	234	1286	522	206	1115	25
Future Volume (veh/h)	40	509	398	241	475	279	234	1286	522	206	1115	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	585	457	284	559	328	257	1413	574	215	1161	26
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	94	1038	454	353	1304	567	206	1662	663	275	1764	533
Arrive On Green	0.03	0.29	0.29	0.10	0.37	0.37	0.06	0.33	0.33	0.08	0.35	0.35
Sat Flow, veh/h	3428	3526	1542	3428	3526	1532	3428	5066	1529	3428	5066	1530
Grp Volume(v), veh/h	46	585	457	284	559	328	257	1413	574	215	1161	26
Grp Sat Flow(s),veh/h/ln	1714	1763	1542	1714	1763	1532	1714	1689	1529	1714	1689	1530
Q Serve(g_s), s	1.5	15.4	32.4	8.9	13.1	18.9	6.6	28.6	36.1	6.8	21.3	1.2
Cycle Q Clear(g_c), s	1.5	15.4	32.4	8.9	13.1	18.9	6.6	28.6	36.1	6.8	21.3	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	1038	454	353	1304	567	206	1662	663	275	1764	533
V/C Ratio(X)	0.49	0.56	1.01	0.81	0.43	0.58	1.25	0.85	0.87	0.78	0.66	0.05
Avail Cap(c_a), veh/h	125	1038	454	486	1426	619	206	1662	663	299	1795	542
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	32.8	38.8	48.3	26.0	27.8	51.7	34.5	28.5	49.7	30.3	23.8
Incr Delay (d2), s/veh	3.9	0.7	43.9	6.8	0.2	1.1	146.1	4.4	11.5	11.8	0.9	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	0.7	6.4	17.0	4.1	5.3	6.6	6.9	11.6	14.6	3.2	8.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	33.5	82.7	55.1	26.2	28.9	197.8	38.9	40.1	61.4	31.2	23.8
LnGrp LOS	E	C	F	E	C	C	F	D	D	E	C	C
Approach Vol, veh/h		1088			1171			2244			1402	
Approach Delay, s/veh		55.2			34.0			57.4			35.7	
Approach LOS		E			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	38.5	11.0	44.8	7.4	46.8	13.2	42.6
Change Period (Y+Rc), s	4.4	6.1	4.4	6.5	4.4	* 6.1	4.4	* 6.5
Max Green Setting (Gmax), s	15.6	32.4	6.6	39.0	4.0	* 45	9.6	* 36
Max Q Clear Time (g_c+I1), s	10.9	34.4	8.6	23.3	3.5	20.9	8.8	38.1
Green Ext Time (p_c), s	0.4	0.0	0.0	6.7	0.0	4.9	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	47.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱					↰↰	↑↑		↰	↑↑	↱↱
Traffic Volume (veh/h)	79	0	166	0	0	0	620	400	0	0	531	790
Future Volume (veh/h)	79	0	166	0	0	0	620	400	0	0	531	790
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		1.00	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				1856	1856	0	1856	1856	1856
Adj Flow Rate, veh/h	84	0	177				667	430	0	0	577	859
Peak Hour Factor	0.94	0.94	0.94				0.93	0.93	0.93	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				3	3	0	3	3	3
Cap, veh/h	558	0	245				796	2369	0	3	1305	1430
Arrive On Green	0.16	0.00	0.16				0.23	0.67	0.00	0.00	0.37	0.37
Sat Flow, veh/h	3428	0	1504				3428	3618	0	1767	3526	2648
Grp Volume(v), veh/h	84	0	177				667	430	0	0	577	859
Grp Sat Flow(s),veh/h/ln	1714	0	1504				1714	1763	0	1767	1763	1324
Q Serve(g_s), s	1.3	0.0	7.0				11.7	2.9	0.0	0.0	7.8	14.1
Cycle Q Clear(g_c), s	1.3	0.0	7.0				11.7	2.9	0.0	0.0	7.8	14.1
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	558	0	245				796	2369	0	3	1305	1430
V/C Ratio(X)	0.15	0.00	0.72				0.84	0.18	0.00	0.00	0.44	0.60
Avail Cap(c_a), veh/h	1797	0	789				931	2453	0	112	1686	1717
HCM Platoon Ratio	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	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	25.0				23.0	3.9	0.0	0.0	14.9	10.2
Incr Delay (d2), s/veh	0.1	0.0	4.0				6.0	0.0	0.0	0.0	0.2	0.4
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	0.5	0.0	2.5				4.8	0.6	0.0	0.0	2.7	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.7	0.0	29.0				29.1	3.9	0.0	0.0	15.2	10.6
LnGrp LOS	C	A	C				C	A	A	A	B	B
Approach Vol, veh/h		261						1097			1436	
Approach Delay, s/veh		27.0						19.2			12.4	
Approach LOS		C						B			B	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	0.0	47.8		15.1	19.0	28.8
Change Period (Y+Rc), s	4.4	* 5.5		4.9	4.4	5.5
Max Green Setting (Gmax), s	4.0	* 44		33.0	17.1	30.1
Max Q Clear Time (g_c+I1), s	0.0	4.9		9.0	13.7	16.1
Green Ext Time (p_c), s	0.0	2.9		1.3	0.9	6.5

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↰↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	2	0	0	38	2	181	19	496	23	82	1164	24
Future Volume (veh/h)	2	0	0	38	2	181	19	496	23	82	1164	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	4	0	0	52	3	248	22	564	26	86	1225	25
Peak Hour Factor	0.50	0.50	0.50	0.73	0.73	0.73	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	187	0	355	81	17	279	31	2009	92	109	2227	45
Arrive On Green	0.23	0.00	0.00	0.23	0.23	0.23	0.02	0.59	0.59	0.06	0.63	0.63
Sat Flow, veh/h	553	0	1572	198	77	1239	1767	3426	158	1767	3530	72
Grp Volume(v), veh/h	4	0	0	303	0	0	22	290	300	86	611	639
Grp Sat Flow(s),veh/h/ln	553	0	1572	1513	0	0	1767	1763	1820	1767	1763	1840
Q Serve(g_s), s	0.0	0.0	0.0	16.3	0.0	0.0	1.4	9.4	9.4	5.5	22.5	22.6
Cycle Q Clear(g_c), s	0.8	0.0	0.0	22.2	0.0	0.0	1.4	9.4	9.4	5.5	22.5	22.6
Prop In Lane	1.00		1.00	0.17		0.82	1.00		0.09	1.00		0.04
Lane Grp Cap(c), veh/h	187	0	355	378	0	0	31	1034	1068	109	1112	1161
V/C Ratio(X)	0.02	0.00	0.00	0.80	0.00	0.00	0.71	0.28	0.28	0.79	0.55	0.55
Avail Cap(c_a), veh/h	256	0	451	473	0	0	77	1034	1068	215	1112	1161
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	0.00	0.00	0.99	0.99	0.99	0.89	0.89	0.89
Uniform Delay (d), s/veh	34.8	0.0	0.0	43.0	0.0	0.0	56.2	11.8	11.8	53.2	12.0	12.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	7.8	0.0	0.0	25.3	0.7	0.7	10.5	1.7	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	9.1	0.0	0.0	0.8	3.6	3.7	2.7	8.5	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.8	0.0	0.0	50.8	0.0	0.0	81.5	12.4	12.4	63.7	13.7	13.7
LnGrp LOS	C	A	A	D	A	A	F	B	B	E	B	B
Approach Vol, veh/h		4			303			612			1336	
Approach Delay, s/veh		34.8			50.8			14.9			16.9	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	73.0		30.9	6.0	78.1		30.9
Change Period (Y+Rc), s	4.0	* 5.5		5.0	4.0	5.5		* 5
Max Green Setting (Gmax), s	14.0	* 54		33.0	5.0	62.5		* 33
Max Q Clear Time (g_c+I1), s	7.5	11.4		2.8	3.4	24.6		24.2
Green Ext Time (p_c), s	0.1	3.6		0.0	0.0	10.1		1.3

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
4: Bernardo Center Dr & I-15 SB Ramp

Opening Year AM
12/19/2023

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↰	↱↱
Traffic Volume (veh/h)	0	498	179	458	905	0	0	0	0	251	1	408
Future Volume (veh/h)	0	498	179	458	905	0	0	0	0	251	1	408
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	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	1856	1856	1856	1856	0				530	530	530
Adj Flow Rate, veh/h	0	593	213	477	943	0				271	0	439
Peak Hour Factor	0.84	0.84	0.84	0.96	0.96	0.96				0.93	0.93	0.93
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1173	509	740	2134	0				371	0	330
Arrive On Green	0.00	0.33	0.33	0.43	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3618	1529	3428	3618	0				1010	0	899
Grp Volume(v), veh/h	0	593	213	477	943	0				271	0	439
Grp Sat Flow(s),veh/h/ln	0	1763	1529	1714	1763	0				505	0	449
Q Serve(g_s), s	0.0	12.8	10.3	10.4	0.0	0.0				22.0	0.0	34.9
Cycle Q Clear(g_c), s	0.0	12.8	10.3	10.4	0.0	0.0				22.0	0.0	34.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1173	509	740	2134	0				371	0	330
V/C Ratio(X)	0.00	0.51	0.42	0.64	0.44	0.00				0.73	0.00	1.33
Avail Cap(c_a), veh/h	0	1173	509	740	2134	0				371	0	330
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.98	0.98	0.77	0.77	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	25.4	24.6	24.1	0.0	0.0				26.0	0.0	30.0
Incr Delay (d2), s/veh	0.0	1.5	2.5	1.5	0.5	0.0				7.2	0.0	167.7
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	5.3	3.9	3.5	0.2	0.0				2.9	0.0	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	27.0	27.1	25.6	0.5	0.0				33.1	0.0	197.8
LnGrp LOS	A	C	C	C	A	A				C	A	F
Approach Vol, veh/h		806			1420						710	
Approach Delay, s/veh		27.0			8.9						134.9	
Approach LOS		C			A						F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.9	37.0		40.0		62.9						
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4						
Max Green Setting (Gmax), s	13.3	* 32		34.9		49.6						
Max Q Clear Time (g_c+I1), s	12.4	14.8		36.9		2.0						
Green Ext Time (p_c), s	0.2	4.2		0.0		8.1						

Intersection Summary			
HCM 6th Ctrl Delay			44.4
HCM 6th LOS			D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰	↱↱			
Traffic Volume (veh/h)	214	538	0	0	795	233	564	7	437	0	0	0
Future Volume (veh/h)	214	538	0	0	795	233	564	7	437	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	246	618	0	0	874	256	593	0	455			
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.96	0.96	0.96			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	753	2333	0	0	1358	590	767	0	683			
Arrive On Green	0.44	1.00	0.00	0.00	0.39	0.39	0.22	0.00	0.22			
Sat Flow, veh/h	3428	3618	0	0	3618	1533	3534	0	3145			
Grp Volume(v), veh/h	246	618	0	0	874	256	593	0	455			
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1763	1533	1767	0	1572			
Q Serve(g_s), s	4.5	0.0	0.0	0.0	19.2	11.7	15.0	0.0	12.6			
Cycle Q Clear(g_c), s	4.5	0.0	0.0	0.0	19.2	11.7	15.0	0.0	12.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	753	2333	0	0	1358	590	767	0	683			
V/C Ratio(X)	0.33	0.26	0.00	0.00	0.64	0.43	0.77	0.00	0.67			
Avail Cap(c_a), veh/h	753	2333	0	0	1358	590	1112	0	990			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.94	0.94	0.00	0.00	0.82	0.82	1.00	0.00	1.00			
Uniform Delay (d), s/veh	22.0	0.0	0.0	0.0	23.9	21.5	35.0	0.0	34.0			
Incr Delay (d2), s/veh	0.2	0.3	0.0	0.0	1.9	1.9	2.1	0.0	1.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	0.1	0.0	0.0	8.1	4.4	6.6	0.0	4.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	0.3	0.0	0.0	25.8	23.4	37.1	0.0	35.2			
LnGrp LOS	C	A	A	A	C	C	D	A	D			
Approach Vol, veh/h		864			1130			1048				
Approach Delay, s/veh		6.5			25.3			36.2				
Approach LOS		A			C			D				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		68.3			26.3	42.0		26.7				
Change Period (Y+Rc), s		5.4			5.4	* 5.4		6.1				
Max Green Setting (Gmax), s		53.6			12.3	* 37		29.9				
Max Q Clear Time (g_c+I1), s		2.0			6.5	21.2		17.0				
Green Ext Time (p_c), s		5.0			0.4	6.4		3.6				

Intersection Summary	
HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱		↰	↰↑	↱	↰	↑↑	↱	↰↰	↑↑↱	
Traffic Volume (veh/h)	32	8	23	635	21	396	82	402	384	442	358	74
Future Volume (veh/h)	32	8	23	635	21	396	82	402	384	442	358	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.97	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	38	9	27	747	0	455	96	473	452	475	385	80
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.85	0.85	0.85	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	64	15	45	1124	0	486	123	1234	1036	213	990	203
Arrive On Green	0.04	0.04	0.04	0.32	0.00	0.32	0.07	0.35	0.35	0.06	0.34	0.34
Sat Flow, veh/h	1718	400	1198	3534	0	1528	1767	3526	1531	3428	2887	592
Grp Volume(v), veh/h	39	0	35	747	0	455	96	473	452	475	233	232
Grp Sat Flow(s),veh/h/ln	1770	0	1546	1767	0	1528	1767	1763	1531	1714	1763	1716
Q Serve(g_s), s	2.0	0.0	2.0	16.4	0.0	26.0	4.8	9.1	12.5	5.6	9.0	9.2
Cycle Q Clear(g_c), s	2.0	0.0	2.0	16.4	0.0	26.0	4.8	9.1	12.5	5.6	9.0	9.2
Prop In Lane	0.97		0.77	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	66	0	58	1124	0	486	123	1234	1036	213	604	588
V/C Ratio(X)	0.59	0.00	0.60	0.66	0.00	0.94	0.78	0.38	0.44	2.23	0.39	0.39
Avail Cap(c_a), veh/h	79	0	69	1139	0	492	204	1234	1036	213	604	588
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	1.00	1.00	0.00	1.00	0.95	0.95	0.95	0.86	0.86	0.86
Uniform Delay (d), s/veh	42.6	0.0	42.7	26.5	0.0	29.8	41.2	22.0	7.0	42.2	22.4	22.5
Incr Delay (d2), s/veh	8.1	0.0	10.1	1.4	0.0	25.4	9.9	0.9	1.3	564.9	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.9	6.9	0.0	12.6	2.4	3.7	8.8	19.0	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	0.0	52.8	28.0	0.0	55.1	51.1	22.8	8.3	607.1	22.7	22.8
LnGrp LOS	D	A	D	C	A	E	D	C	A	F	C	C
Approach Vol, veh/h		74			1202			1021			940	
Approach Delay, s/veh		51.7			38.3			19.0			318.1	
Approach LOS		D			D			B			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	36.6		8.3	10.6	36.0		35.1
Change Period (Y+Rc), s	4.4	5.1		4.9	4.4	* 5.1		6.5
Max Green Setting (Gmax), s	5.6	30.5		4.0	10.4	* 26		29.0
Max Q Clear Time (g_c+I1), s	7.6	14.5		4.0	6.8	11.2		28.0
Green Ext Time (p_c), s	0.0	4.4		0.0	0.1	2.3		0.6

Intersection Summary	
HCM 6th Ctrl Delay	113.8
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↱	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑	↱
Traffic Volume (veh/h)	294	794	387	145	921	159	258	263	114	200	321	259
Future Volume (veh/h)	294	794	387	145	921	159	258	263	114	200	321	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	313	845	412	161	1023	177	307	313	136	213	341	276
Peak Hour Factor	0.94	0.94	0.94	0.90	0.90	0.90	0.84	0.84	0.84	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	336	1427	589	225	1062	183	326	620	263	284	873	526
Arrive On Green	0.10	0.38	0.38	0.07	0.35	0.35	0.10	0.26	0.26	0.08	0.25	0.25
Sat Flow, veh/h	3534	3711	1533	3428	2992	517	3428	2387	1011	3428	3526	1521
Grp Volume(v), veh/h	313	845	412	161	602	598	307	229	220	213	341	276
Grp Sat Flow(s),veh/h/ln	1767	1856	1533	1714	1763	1746	1714	1763	1635	1714	1763	1521
Q Serve(g_s), s	8.9	18.3	22.8	4.6	33.7	33.9	9.0	11.1	11.6	6.1	8.1	14.7
Cycle Q Clear(g_c), s	8.9	18.3	22.8	4.6	33.7	33.9	9.0	11.1	11.6	6.1	8.1	14.7
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	336	1427	589	225	626	620	326	458	425	284	873	526
V/C Ratio(X)	0.93	0.59	0.70	0.72	0.96	0.97	0.94	0.50	0.52	0.75	0.39	0.52
Avail Cap(c_a), veh/h	336	1427	589	265	626	620	326	662	614	418	1398	753
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	24.7	26.1	46.2	31.9	31.9	45.4	31.8	31.9	45.2	31.6	26.6
Incr Delay (d2), s/veh	31.7	0.7	3.7	7.3	26.7	27.6	34.6	0.8	1.0	4.2	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	7.7	8.6	2.2	18.1	18.1	5.3	4.7	4.6	2.8	3.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.0	25.4	29.8	53.5	58.6	59.5	80.0	32.6	32.9	49.4	31.9	27.4
LnGrp LOS	E	C	C	D	E	E	E	C	C	D	C	C
Approach Vol, veh/h		1570			1361			756			830	
Approach Delay, s/veh		36.8			58.4			51.9			34.9	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	45.0	14.0	30.9	14.0	42.0	12.8	32.1
Change Period (Y+Rc), s	4.4	6.2	4.4	5.9	4.4	* 6.2	4.4	* 5.9
Max Green Setting (Gmax), s	7.8	36.7	9.6	40.0	9.6	* 36	12.3	* 38
Max Q Clear Time (g_c+I1), s	6.6	24.8	11.0	16.7	10.9	35.9	8.1	13.6
Green Ext Time (p_c), s	0.1	5.5	0.0	3.3	0.0	0.0	0.3	2.7

Intersection Summary	
HCM 6th Ctrl Delay	45.5
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: Bernardo Center Dr & Future Proj Dwy

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰↑	↑↱		↰	↱
Traffic Volume (veh/h)	0	677	1312	0	0	0
Future Volume (veh/h)	0	677	1312	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	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	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	0	736	1426	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	0	2660	2660	0	9	8
Arrive On Green	0.00	0.75	0.75	0.00	0.00	0.00
Sat Flow, veh/h	0	3711	3711	0	1767	1572
Grp Volume(v), veh/h	0	736	1426	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1763	1763	0	1767	1572
Q Serve(g_s), s	0.0	1.3	3.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.3	3.4	0.0	0.0	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2660	2660	0	9	8
V/C Ratio(X)	0.00	0.28	0.54	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	3981	3981	0	2776	2470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.8	1.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	0.8	1.2	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		736	1426		0	
Approach Delay, s/veh		0.8	1.2		0.0	
Approach LOS		A	A			

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		20.4		0.0		20.4
Change Period (Y+Rc), s		5.0		5.0		5.0
Max Green Setting (Gmax), s		23.0		32.0		23.0
Max Q Clear Time (g_c+I1), s		3.3		0.0		5.4
Green Ext Time (p_c), s		4.7		0.0		9.6

Intersection Summary			
HCM 6th Ctrl Delay			1.1
HCM 6th LOS			A

1: Camino Del Norte & Bernardo Center Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑	↱	↰↰	↑↑	↱	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱
Traffic Volume (veh/h)	41	535	361	395	473	284	363	1390	320	229	1418	30
Future Volume (veh/h)	41	535	361	395	473	284	363	1390	320	229	1418	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	594	401	476	570	342	399	1527	352	249	1541	33
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	75	964	421	520	1422	618	440	1880	807	290	1659	501
Arrive On Green	0.02	0.27	0.27	0.15	0.40	0.40	0.13	0.37	0.37	0.08	0.33	0.33
Sat Flow, veh/h	3428	3526	1541	3428	3526	1534	3428	5066	1532	3428	5066	1529
Grp Volume(v), veh/h	46	594	401	476	570	342	399	1527	352	249	1541	33
Grp Sat Flow(s),veh/h/ln	1714	1763	1541	1714	1763	1534	1714	1689	1532	1714	1689	1529
Q Serve(g_s), s	2.4	26.5	46.0	24.6	20.7	30.8	20.7	48.8	25.6	12.9	52.9	2.7
Cycle Q Clear(g_c), s	2.4	26.5	46.0	24.6	20.7	30.8	20.7	48.8	25.6	12.9	52.9	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	75	964	421	520	1422	618	440	1880	807	290	1659	501
V/C Ratio(X)	0.61	0.62	0.95	0.91	0.40	0.55	0.91	0.81	0.44	0.86	0.93	0.07
Avail Cap(c_a), veh/h	109	964	421	583	1422	618	488	1880	807	373	1703	514
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	1.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	87.3	57.1	64.2	75.2	38.2	41.2	77.4	50.9	26.6	81.3	58.5	41.6
Incr Delay (d2), s/veh	7.7	2.9	33.2	14.7	0.7	2.7	19.5	2.8	0.4	14.6	9.3	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	1.1	12.1	21.5	11.9	9.1	11.9	10.2	20.6	9.3	6.2	23.5	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.0	60.1	97.5	89.9	38.9	44.0	96.9	53.8	27.0	95.9	67.8	41.6
LnGrp LOS	F	E	F	F	D	D	F	D	C	F	E	D
Approach Vol, veh/h		1041			1388			2278			1823	
Approach Delay, s/veh		76.0			57.6			57.2			71.2	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.7	55.3	27.5	65.5	8.4	78.7	19.6	73.3
Change Period (Y+Rc), s	4.4	6.1	4.4	6.5	4.4	* 6.1	4.4	* 6.5
Max Green Setting (Gmax), s	30.6	41.9	25.6	60.5	5.7	* 67	19.6	* 67
Max Q Clear Time (g_c+I1), s	26.6	48.0	22.7	54.9	4.4	32.8	14.9	50.8
Green Ext Time (p_c), s	0.7	0.0	0.4	4.0	0.0	5.4	0.3	9.8

Intersection Summary	
HCM 6th Ctrl Delay	64.2
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱					↰↰	↑↑		↰	↑↑	↱↱
Traffic Volume (veh/h)	633	0	570	0	0	0	570	349	0	0	449	64
Future Volume (veh/h)	633	0	570	0	0	0	570	349	0	0	449	64
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		1.00	1.00		0.94
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	1856	1856	1856				1856	1856	0	1856	1856	1856
Adj Flow Rate, veh/h	719	0	648				613	375	0	0	499	71
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3				3	3	0	3	3	3
Cap, veh/h	1390	0	622				687	1646	0	2	750	1675
Arrive On Green	0.41	0.00	0.41				0.20	0.47	0.00	0.00	0.21	0.21
Sat Flow, veh/h	3428	0	1534				3428	3618	0	1767	3526	2601
Grp Volume(v), veh/h	719	0	648				613	375	0	0	499	71
Grp Sat Flow(s),veh/h/ln	1714	0	1534				1714	1763	0	1767	1763	1301
Q Serve(g_s), s	12.8	0.0	33.0				14.2	5.2	0.0	0.0	10.6	0.9
Cycle Q Clear(g_c), s	12.8	0.0	33.0				14.2	5.2	0.0	0.0	10.6	0.9
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	1390	0	622				687	1646	0	2	750	1675
V/C Ratio(X)	0.52	0.00	1.04				0.89	0.23	0.00	0.00	0.67	0.04
Avail Cap(c_a), veh/h	1390	0	622				699	1897	0	87	1325	2099
HCM Platoon Ratio	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	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	24.2				31.7	12.9	0.0	0.0	29.4	6.1
Incr Delay (d2), s/veh	0.3	0.0	47.6				13.7	0.1	0.0	0.0	1.0	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
%ile BackOfQ(50%),veh/ln	4.7	0.0	18.8				6.8	1.8	0.0	0.0	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.6	0.0	71.8				45.4	13.0	0.0	0.0	30.4	6.1
LnGrp LOS	B	A	F				D	B	A	A	C	A
Approach Vol, veh/h		1367						988			570	
Approach Delay, s/veh		43.8						33.1			27.4	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	0.0	43.5		37.9	20.7	22.8
Change Period (Y+Rc), s	4.4	* 5.5		4.9	4.4	5.5
Max Green Setting (Gmax), s	4.0	* 44		33.0	16.6	30.6
Max Q Clear Time (g_c+I1), s	0.0	7.2		35.0	16.2	12.6
Green Ext Time (p_c), s	0.0	2.5		0.0	0.1	3.2

Intersection Summary			
HCM 6th Ctrl Delay			37.0
HCM 6th LOS			D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		✥		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	43	1	18	20	0	73	6	1207	41	74	451	3
Future Volume (veh/h)	43	1	18	20	0	73	6	1207	41	74	451	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.98		0.95	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	1	23	23	0	85	7	1372	47	80	490	3
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.88	0.88	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	197	3	202	60	16	146	12	2384	82	102	2646	16
Arrive On Green	0.14	0.14	0.14	0.14	0.00	0.14	0.01	0.69	0.69	0.06	0.74	0.74
Sat Flow, veh/h	1013	23	1495	172	120	1076	1767	3473	119	1767	3592	22
Grp Volume(v), veh/h	56	0	23	108	0	0	7	695	724	80	240	253
Grp Sat Flow(s),veh/h/ln	1036	0	1495	1367	0	0	1767	1763	1829	1767	1763	1851
Q Serve(g_s), s	0.0	0.0	1.6	2.1	0.0	0.0	0.5	24.5	24.6	5.4	5.0	5.0
Cycle Q Clear(g_c), s	7.3	0.0	1.6	9.4	0.0	0.0	0.5	24.5	24.6	5.4	5.0	5.0
Prop In Lane	0.98		1.00	0.21		0.79	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	200	0	202	221	0	0	12	1210	1256	102	1299	1364
V/C Ratio(X)	0.28	0.00	0.11	0.49	0.00	0.00	0.57	0.57	0.58	0.79	0.19	0.19
Avail Cap(c_a), veh/h	326	0	349	367	0	0	59	1210	1256	177	1299	1364
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	1.00	1.00	0.00	0.00	0.85	0.85	0.85	0.99	0.99	0.99
Uniform Delay (d), s/veh	48.0	0.0	45.6	48.5	0.0	0.0	59.4	9.8	9.8	55.8	4.8	4.8
Incr Delay (d2), s/veh	0.8	0.0	0.2	1.7	0.0	0.0	30.9	1.7	1.6	12.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.6	3.2	0.0	0.0	0.3	8.8	9.1	2.7	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.7	0.0	45.8	50.2	0.0	0.0	90.3	11.4	11.4	68.2	5.1	5.1
LnGrp LOS	D	A	D	D	A	A	F	B	B	E	A	A
Approach Vol, veh/h		79			108			1426			573	
Approach Delay, s/veh		47.9			50.2			11.8			13.9	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	87.9		21.2	4.8	93.9		21.2				
Change Period (Y+Rc), s	4.0	* 5.5		5.0	4.0	5.5		* 5				
Max Green Setting (Gmax), s	12.0	* 66		28.0	4.0	73.5		* 28				
Max Q Clear Time (g_c+I1), s	7.4	26.6		9.3	2.5	7.0		11.4				
Green Ext Time (p_c), s	0.1	12.6		0.3	0.0	3.0		0.5				

Intersection Summary			
HCM 6th Ctrl Delay			15.6
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↰	↱↱
Traffic Volume (veh/h)	0	816	499	401	321	0	0	0	0	192	4	203
Future Volume (veh/h)	0	816	499	401	321	0	0	0	0	192	4	203
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1856	1856	1856	1856	0				530	530	530
Adj Flow Rate, veh/h	0	868	531	427	341	0				205	0	214
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1518	661	670	2431	0				189	0	168
Arrive On Green	0.00	0.43	0.43	0.33	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3618	1535	3428	3618	0				1010	0	899
Grp Volume(v), veh/h	0	868	531	427	341	0				205	0	214
Grp Sat Flow(s),veh/h/ln	0	1763	1535	1714	1763	0				505	0	449
Q Serve(g_s), s	0.0	15.8	25.6	9.0	0.0	0.0				15.9	0.0	15.9
Cycle Q Clear(g_c), s	0.0	15.8	25.6	9.0	0.0	0.0				15.9	0.0	15.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1518	661	670	2431	0				189	0	168
V/C Ratio(X)	0.00	0.57	0.80	0.64	0.14	0.00				1.08	0.00	1.27
Avail Cap(c_a), veh/h	0	1518	661	698	2431	0				189	0	168
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.89	0.89	0.84	0.84	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.3	21.1	26.1	0.0	0.0				34.6	0.0	34.5
Incr Delay (d2), s/veh	0.0	1.4	9.0	1.5	0.1	0.0				90.0	0.0	160.9
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	6.1	9.8	3.3	0.0	0.0				4.3	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.7	30.1	27.6	0.1	0.0				124.5	0.0	195.4
LnGrp LOS	A	B	C	C	A	A				F	A	F
Approach Vol, veh/h		1399			768						419	
Approach Delay, s/veh		23.6			15.4						160.7	
Approach LOS		C			B						F	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	22.0	42.0		21.0		64.0
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	17.3	* 37		15.9		58.6
Max Q Clear Time (g_c+I1), s	11.0	27.6		17.9		2.0
Green Ext Time (p_c), s	0.9	5.0		0.0		2.4

Intersection Summary	
HCM 6th Ctrl Delay	43.4
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰↑	↱↱			
Traffic Volume (veh/h)	421	592	0	0	702	234	38	93	629	0	0	0
Future Volume (veh/h)	421	592	0	0	702	234	38	93	629	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	468	658	0	0	789	263	40	98	662			
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.95	0.95	0.95			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	761	2234	0	0	1228	533	408	429	726			
Arrive On Green	0.30	0.84	0.00	0.00	0.35	0.35	0.23	0.23	0.23			
Sat Flow, veh/h	3428	3618	0	0	3618	1530	1767	1856	3145			
Grp Volume(v), veh/h	468	658	0	0	789	263	40	98	662			
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1763	1530	1767	1856	1572			
Q Serve(g_s), s	10.0	3.3	0.0	0.0	16.0	11.5	1.5	3.6	17.4			
Cycle Q Clear(g_c), s	10.0	3.3	0.0	0.0	16.0	11.5	1.5	3.6	17.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	761	2234	0	0	1228	533	408	429	726			
V/C Ratio(X)	0.62	0.29	0.00	0.00	0.64	0.49	0.10	0.23	0.91			
Avail Cap(c_a), veh/h	778	2234	0	0	1228	533	414	434	736			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.85	0.85	0.00	0.00	0.87	0.87	1.00	1.00	1.00			
Uniform Delay (d), s/veh	26.8	2.7	0.0	0.0	23.3	21.8	25.7	26.5	31.8			
Incr Delay (d2), s/veh	1.2	0.3	0.0	0.0	2.3	2.8	0.1	0.3	15.4			
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	3.9	1.0	0.0	0.0	6.7	4.4	0.6	1.6	8.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	3.0	0.0	0.0	25.5	24.6	25.8	26.8	47.3			
LnGrp LOS	C	A	A	A	C	C	C	C	D			
Approach Vol, veh/h		1126			1052			800				
Approach Delay, s/veh		13.4			25.3			43.7				
Approach LOS		B			C			D				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.3			24.3	35.0		25.7				
Change Period (Y+Rc), s		5.4			5.4	* 5.4		6.1				
Max Green Setting (Gmax), s		53.6			19.3	* 30		19.9				
Max Q Clear Time (g_c+I1), s		5.3			12.0	18.0		19.4				
Green Ext Time (p_c), s		5.3			1.1	5.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay			25.7
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
6: Bernardo Center Dr & Bernardo Heights Pkwy

Opening Year PM
12/19/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	31	75	297	27	421	69	746	367	278	476	41
Future Volume (veh/h)	68	31	75	297	27	421	69	746	367	278	476	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.97	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	96	44	106	406	0	540	71	769	378	293	501	43
Peak Hour Factor	0.71	0.71	0.71	0.78	0.78	0.78	0.97	0.97	0.97	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	58	27	64	1139	0	493	91	1191	1023	213	1140	97
Arrive On Green	0.05	0.05	0.05	0.32	0.00	0.32	0.05	0.34	0.34	0.06	0.35	0.35
Sat Flow, veh/h	1283	588	1414	3534	0	1529	1767	3526	1530	3428	3273	280
Grp Volume(v), veh/h	134	0	112	406	0	540	71	769	378	293	269	275
Grp Sat Flow(s),veh/h/ln	1791	0	1493	1767	0	1529	1767	1763	1530	1714	1763	1790
Q Serve(g_s), s	4.1	0.0	4.1	7.9	0.0	29.0	3.6	16.6	10.0	5.6	10.6	10.6
Cycle Q Clear(g_c), s	4.1	0.0	4.1	7.9	0.0	29.0	3.6	16.6	10.0	5.6	10.6	10.6
Prop In Lane	0.72		0.95	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	82	0	68	1139	0	493	91	1191	1023	213	614	623
V/C Ratio(X)	1.64	0.00	1.65	0.36	0.00	1.10	0.78	0.65	0.37	1.37	0.44	0.44
Avail Cap(c_a), veh/h	82	0	68	1139	0	493	179	1191	1023	213	614	623
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	1.00	1.00	0.00	1.00	0.84	0.84	0.84	0.92	0.92	0.92
Uniform Delay (d), s/veh	43.0	0.0	43.0	23.4	0.0	30.5	42.2	25.2	6.9	42.2	22.6	22.6
Incr Delay (d2), s/veh	337.6	0.0	347.0	0.2	0.0	69.4	11.2	2.3	0.9	193.0	0.5	0.5
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	9.4	0.0	8.1	3.2	0.0	19.7	1.8	7.0	7.0	8.0	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	380.5	0.0	390.0	23.5	0.0	99.9	53.3	27.5	7.8	235.2	23.0	23.0
LnGrp LOS	F	A	F	C	A	F	D	C	A	F	C	C
Approach Vol, veh/h		246			946			1218			837	
Approach Delay, s/veh		384.8			67.1			22.9			97.3	
Approach LOS		F			E			C			F	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	10.0	35.5	9.0	9.1	36.4	35.5
Change Period (Y+Rc), s	4.4	5.1	4.9	4.4	* 5.1	6.5
Max Green Setting (Gmax), s	5.6	30.4	4.1	9.1	* 27	29.0
Max Q Clear Time (g_c+I1), s	7.6	18.6	6.1	5.6	12.6	31.0
Green Ext Time (p_c), s	0.0	5.1	0.0	0.0	2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	82.4
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
7: Bernardo Center Dr & Rancho Bernardo Rd

Opening Year PM
12/19/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↱	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑	↱
Traffic Volume (veh/h)	277	728	288	122	722	135	487	466	226	172	237	253
Future Volume (veh/h)	277	728	288	122	722	135	487	466	226	172	237	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	289	758	300	134	793	148	547	524	254	191	263	281
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.89	0.89	0.89	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	277	1244	513	198	928	173	480	718	347	263	887	506
Arrive On Green	0.08	0.34	0.34	0.06	0.31	0.31	0.14	0.31	0.31	0.08	0.25	0.25
Sat Flow, veh/h	3534	3711	1530	3428	2950	551	3428	2281	1101	3428	3526	1522
Grp Volume(v), veh/h	289	758	300	134	474	467	547	404	374	191	263	281
Grp Sat Flow(s),veh/h/ln	1767	1856	1530	1714	1763	1738	1714	1763	1619	1714	1763	1522
Q Serve(g_s), s	7.6	16.6	15.7	3.7	24.5	24.5	13.6	19.8	19.9	5.3	5.9	14.7
Cycle Q Clear(g_c), s	7.6	16.6	15.7	3.7	24.5	24.5	13.6	19.8	19.9	5.3	5.9	14.7
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	277	1244	513	198	555	547	480	555	510	263	887	506
V/C Ratio(X)	1.04	0.61	0.59	0.68	0.85	0.85	1.14	0.73	0.73	0.73	0.30	0.56
Avail Cap(c_a), veh/h	277	1293	533	237	614	605	480	781	718	396	1453	750
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	26.9	26.7	44.8	31.2	31.2	41.7	29.6	29.6	43.8	29.4	26.7
Incr Delay (d2), s/veh	66.1	0.8	1.5	5.9	10.5	10.7	84.9	2.1	2.4	3.8	0.2	1.0
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	5.8	7.1	5.7	1.7	11.4	11.3	11.3	8.4	7.8	2.4	2.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.8	27.7	28.2	50.7	41.7	41.9	126.6	31.6	32.0	47.6	29.6	27.7
LnGrp LOS	F	C	C	D	D	D	F	C	C	D	C	C
Approach Vol, veh/h		1347			1075			1325			735	
Approach Delay, s/veh		45.7			42.9			71.0			33.5	
Approach LOS		D			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	38.7	18.0	30.3	12.0	36.7	11.9	36.5
Change Period (Y+Rc), s	4.4	6.2	4.4	5.9	4.4	* 6.2	4.4	* 5.9
Max Green Setting (Gmax), s	6.7	33.8	13.6	40.0	7.6	* 34	11.2	* 43
Max Q Clear Time (g_c+I1), s	5.7	18.6	15.6	16.7	9.6	26.5	7.3	21.9
Green Ext Time (p_c), s	0.0	5.4	0.0	2.7	0.0	3.3	0.2	5.0

Intersection Summary	
HCM 6th Ctrl Delay	50.5
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: Bernardo Center Dr & Future Proj Dwy

Opening Year PM
12/19/2023

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰↑	↑↱		↰	↱
Traffic Volume (veh/h)	0	1316	524	0	0	0
Future Volume (veh/h)	0	1316	524	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	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	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	0	1430	570	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	0	2645	2645	0	9	8
Arrive On Green	0.00	0.75	0.75	0.00	0.00	0.00
Sat Flow, veh/h	0	3711	3711	0	1767	1572
Grp Volume(v), veh/h	0	1430	570	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1763	1763	0	1767	1572
Q Serve(g_s), s	0.0	3.4	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.4	1.0	0.0	0.0	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2645	2645	0	9	8
V/C Ratio(X)	0.00	0.54	0.22	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	4051	4051	0	2825	2514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	1.1	0.7	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	1.2	0.8	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h		1430	570		0	
Approach Delay, s/veh		1.2	0.8		0.0	
Approach LOS		A	A			

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		20.0		0.0		20.0
Change Period (Y+Rc), s		5.0		5.0		5.0
Max Green Setting (Gmax), s		23.0		32.0		23.0
Max Q Clear Time (g_c+I1), s		5.4		0.0		3.0
Green Ext Time (p_c), s		9.6		0.0		3.5

Intersection Summary			
HCM 6th Ctrl Delay			1.1
HCM 6th LOS			A

APPENDIX G

OPENING YEAR 2027 + PROJECT INTERSECTION ANALYSIS CALCULATION SHEETS

HCM 6th Signalized Intersection Summary
1: Camino Del Norte & Bernardo Center Dr

12/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑	↱	↰↰	↑↑	↱	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱
Traffic Volume (veh/h)	40	513	398	241	476	281	234	1286	525	213	1115	25
Future Volume (veh/h)	40	513	398	241	476	281	234	1286	525	213	1115	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	590	457	284	560	331	257	1413	577	222	1161	26
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	94	1036	453	353	1302	566	205	1658	662	281	1770	535
Arrive On Green	0.03	0.29	0.29	0.10	0.37	0.37	0.06	0.33	0.33	0.08	0.35	0.35
Sat Flow, veh/h	3428	3526	1542	3428	3526	1532	3428	5066	1529	3428	5066	1531
Grp Volume(v), veh/h	46	590	457	284	560	331	257	1413	577	222	1161	26
Grp Sat Flow(s),veh/h/ln	1714	1763	1542	1714	1763	1532	1714	1689	1529	1714	1689	1531
Q Serve(g_s), s	1.5	15.7	32.4	8.9	13.1	19.2	6.6	28.7	36.1	7.0	21.3	1.2
Cycle Q Clear(g_c), s	1.5	15.7	32.4	8.9	13.1	19.2	6.6	28.7	36.1	7.0	21.3	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	1036	453	353	1302	566	205	1658	662	281	1770	535
V/C Ratio(X)	0.49	0.57	1.01	0.81	0.43	0.59	1.25	0.85	0.87	0.79	0.66	0.05
Avail Cap(c_a), veh/h	124	1036	453	485	1423	618	205	1658	662	298	1791	541
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	33.0	38.9	48.4	26.1	28.0	51.8	34.6	28.8	49.7	30.3	23.7
Incr Delay (d2), s/veh	3.9	0.7	44.5	6.9	0.2	1.2	147.3	4.5	12.1	12.7	0.9	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	0.7	6.5	17.1	4.1	5.4	6.8	6.9	11.7	14.9	3.4	8.3	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	33.8	83.5	55.3	26.3	29.2	199.1	39.1	40.9	62.4	31.1	23.8
LnGrp LOS	E	C	F	E	C	C	F	D	D	E	C	C
Approach Vol, veh/h		1093			1175			2247			1409	
Approach Delay, s/veh		55.5			34.1			57.9			35.9	
Approach LOS		E			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	38.5	11.0	45.0	7.4	46.8	13.4	42.6
Change Period (Y+Rc), s	4.4	6.1	4.4	6.5	4.4	* 6.1	4.4	* 6.5
Max Green Setting (Gmax), s	15.6	32.4	6.6	39.0	4.0	* 45	9.6	* 36
Max Q Clear Time (g_c+I1), s	10.9	34.4	8.6	23.3	3.5	21.2	9.0	38.1
Green Ext Time (p_c), s	0.4	0.0	0.0	6.7	0.0	4.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	47.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bernardo Center Dr & W Bernardo Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱					↰↰	↑↑		↰	↑↑	↱↱
Traffic Volume (veh/h)	85	0	166	0	0	0	620	414	0	0	534	792
Future Volume (veh/h)	85	0	166	0	0	0	620	414	0	0	534	792
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		1.00	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856				1856	1856	0	1856	1856	1856
Adj Flow Rate, veh/h	90	0	177				667	445	0	0	580	861
Peak Hour Factor	0.94	0.94	0.94				0.93	0.93	0.93	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				3	3	0	3	3	3
Cap, veh/h	559	0	245				795	2369	0	3	1306	1432
Arrive On Green	0.16	0.00	0.16				0.23	0.67	0.00	0.00	0.37	0.37
Sat Flow, veh/h	3428	0	1505				3428	3618	0	1767	3526	2648
Grp Volume(v), veh/h	90	0	177				667	445	0	0	580	861
Grp Sat Flow(s),veh/h/ln	1714	0	1505				1714	1763	0	1767	1763	1324
Q Serve(g_s), s	1.4	0.0	7.0				11.7	3.0	0.0	0.0	7.8	14.2
Cycle Q Clear(g_c), s	1.4	0.0	7.0				11.7	3.0	0.0	0.0	7.8	14.2
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	559	0	245				795	2369	0	3	1306	1432
V/C Ratio(X)	0.16	0.00	0.72				0.84	0.19	0.00	0.00	0.44	0.60
Avail Cap(c_a), veh/h	1794	0	787				930	2448	0	112	1683	1715
HCM Platoon Ratio	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	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	25.0				23.1	3.9	0.0	0.0	15.0	10.2
Incr Delay (d2), s/veh	0.1	0.0	4.0				6.1	0.0	0.0	0.0	0.2	0.4
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	0.5	0.0	2.5				4.9	0.6	0.0	0.0	2.7	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	29.0				29.2	3.9	0.0	0.0	15.2	10.6
LnGrp LOS	C	A	C				C	A	A	A	B	B
Approach Vol, veh/h		267						1112			1441	
Approach Delay, s/veh		26.9						19.1			12.4	
Approach LOS		C						B			B	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	0.0	47.9		15.2	19.0	28.9
Change Period (Y+Rc), s	4.4	* 5.5		4.9	4.4	5.5
Max Green Setting (Gmax), s	4.0	* 44		33.0	17.1	30.1
Max Q Clear Time (g_c+I1), s	0.0	5.0		9.0	13.7	16.2
Green Ext Time (p_c), s	0.0	3.0		1.3	0.9	6.6

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		✣		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	2	0	0	38	2	184	19	516	23	83	1169	24
Future Volume (veh/h)	2	0	0	38	2	184	19	516	23	83	1169	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	4	0	0	52	3	252	22	586	26	87	1231	25
Peak Hour Factor	0.50	0.50	0.50	0.73	0.73	0.73	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	0	358	81	17	282	31	2005	89	110	2221	45
Arrive On Green	0.23	0.00	0.00	0.23	0.23	0.23	0.02	0.58	0.58	0.06	0.63	0.63
Sat Flow, veh/h	545	0	1572	195	76	1243	1767	3432	152	1767	3531	72
Grp Volume(v), veh/h	4	0	0	307	0	0	22	301	311	87	614	642
Grp Sat Flow(s),veh/h/ln	545	0	1572	1514	0	0	1767	1763	1822	1767	1763	1840
Q Serve(g_s), s	0.0	0.0	0.0	16.5	0.0	0.0	1.4	9.8	9.9	5.6	22.8	22.8
Cycle Q Clear(g_c), s	0.8	0.0	0.0	22.6	0.0	0.0	1.4	9.8	9.9	5.6	22.8	22.8
Prop In Lane	1.00		1.00	0.17		0.82	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	186	0	358	381	0	0	31	1030	1064	110	1109	1157
V/C Ratio(X)	0.02	0.00	0.00	0.81	0.00	0.00	0.71	0.29	0.29	0.79	0.55	0.55
Avail Cap(c_a), veh/h	253	0	451	473	0	0	77	1030	1064	215	1109	1157
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	0.00	0.00	0.99	0.99	0.99	0.74	0.74	0.74
Uniform Delay (d), s/veh	34.6	0.0	0.0	42.9	0.0	0.0	56.2	12.0	12.0	53.2	12.1	12.2
Incr Delay (d2), s/veh	0.0	0.0	0.0	8.1	0.0	0.0	25.3	0.7	0.7	8.8	1.5	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	9.2	0.0	0.0	0.8	3.8	4.0	2.7	8.5	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	0.0	0.0	51.1	0.0	0.0	81.5	12.7	12.7	62.0	13.6	13.6
LnGrp LOS	C	A	A	D	A	A	F	B	B	E	B	B
Approach Vol, veh/h		4			307			634			1343	
Approach Delay, s/veh		34.7			51.1			15.1			16.7	
Approach LOS		C			D			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.2	72.7		31.1	6.0	77.8		31.1				
Change Period (Y+Rc), s	4.0	* 5.5		5.0	4.0	5.5		* 5				
Max Green Setting (Gmax), s	14.0	* 54		33.0	5.0	62.5		* 33				
Max Q Clear Time (g_c+I1), s	7.6	11.9		2.8	3.4	24.8		24.6				
Green Ext Time (p_c), s	0.1	3.8		0.0	0.0	10.1		1.3				

Intersection Summary			
HCM 6th Ctrl Delay			20.9
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
4: Bernardo Center Dr & I-15 SB Ramp

12/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↰↑	↱↱
Traffic Volume (veh/h)	0	509	185	458	942	0	0	0	0	251	1	440
Future Volume (veh/h)	0	509	185	458	942	0	0	0	0	251	1	440
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	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	1856	1856	1856	1856	0				530	530	530
Adj Flow Rate, veh/h	0	606	220	477	981	0				271	0	473
Peak Hour Factor	0.84	0.84	0.84	0.96	0.96	0.96				0.93	0.93	0.93
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1173	509	740	2134	0				371	0	330
Arrive On Green	0.00	0.33	0.33	0.43	1.00	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	3618	1529	3428	3618	0				1010	0	899
Grp Volume(v), veh/h	0	606	220	477	981	0				271	0	473
Grp Sat Flow(s),veh/h/ln	0	1763	1529	1714	1763	0				505	0	449
Q Serve(g_s), s	0.0	13.2	10.7	10.4	0.0	0.0				22.0	0.0	34.9
Cycle Q Clear(g_c), s	0.0	13.2	10.7	10.4	0.0	0.0				22.0	0.0	34.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1173	509	740	2134	0				371	0	330
V/C Ratio(X)	0.00	0.52	0.43	0.64	0.46	0.00				0.73	0.00	1.43
Avail Cap(c_a), veh/h	0	1173	509	740	2134	0				371	0	330
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.97	0.97	0.75	0.75	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	25.5	24.7	24.1	0.0	0.0				26.0	0.0	30.0
Incr Delay (d2), s/veh	0.0	1.6	2.6	1.5	0.5	0.0				7.2	0.0	211.3
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	5.5	4.0	3.5	0.2	0.0				2.9	0.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	27.1	27.3	25.6	0.5	0.0				33.1	0.0	241.3
LnGrp LOS	A	C	C	C	A	A				C	A	F
Approach Vol, veh/h		826			1458						744	
Approach Delay, s/veh		27.2			8.7						165.5	
Approach LOS		C			A						F	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.9	37.0		40.0		62.9
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4
Max Green Setting (Gmax), s	13.3	* 32		34.9		49.6
Max Q Clear Time (g_c+I1), s	12.4	15.2		36.9		2.0
Green Ext Time (p_c), s	0.2	4.2		0.0		8.6

Intersection Summary	
HCM 6th Ctrl Delay	52.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
5: I-15 NB Ramp & Bernardo Center Dr

12/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰	↱↱			
Traffic Volume (veh/h)	222	541	0	0	809	233	587	7	437	0	0	0
Future Volume (veh/h)	222	541	0	0	809	233	587	7	437	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	255	622	0	0	889	256	616	0	455			
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.96	0.96	0.96			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	732	2311	0	0	1358	590	789	0	702			
Arrive On Green	0.43	1.00	0.00	0.00	0.39	0.39	0.22	0.00	0.22			
Sat Flow, veh/h	3428	3618	0	0	3618	1533	3534	0	3145			
Grp Volume(v), veh/h	255	622	0	0	889	256	616	0	455			
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1763	1533	1767	0	1572			
Q Serve(g_s), s	4.8	0.0	0.0	0.0	19.7	11.7	15.6	0.0	12.5			
Cycle Q Clear(g_c), s	4.8	0.0	0.0	0.0	19.7	11.7	15.6	0.0	12.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	732	2311	0	0	1358	590	789	0	702			
V/C Ratio(X)	0.35	0.27	0.00	0.00	0.65	0.43	0.78	0.00	0.65			
Avail Cap(c_a), veh/h	732	2311	0	0	1358	590	1112	0	990			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.94	0.94	0.00	0.00	0.81	0.81	1.00	0.00	1.00			
Uniform Delay (d), s/veh	22.8	0.0	0.0	0.0	24.0	21.5	34.7	0.0	33.5			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	2.0	1.9	2.4	0.0	1.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.8	0.1	0.0	0.0	8.3	4.4	6.8	0.0	4.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.0	0.3	0.0	0.0	26.0	23.4	37.1	0.0	34.5			
LnGrp LOS	C	A	A	A	C	C	D	A	C			
Approach Vol, veh/h		877			1145			1071				
Approach Delay, s/veh		6.9			25.4			36.0				
Approach LOS		A			C			D				

Timer - Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		67.7			25.7	42.0		27.3
Change Period (Y+Rc), s		5.4			5.4	* 5.4		6.1
Max Green Setting (Gmax), s		53.6			12.3	* 37		29.9
Max Q Clear Time (g_c+I1), s		2.0			6.8	21.7		17.6
Green Ext Time (p_c), s		5.0			0.4	6.4		3.6

Intersection Summary			
HCM 6th Ctrl Delay			23.8
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
6: Bernardo Center Dr & Bernardo Heights Pkwy

12/22/2023

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱		↰	↰↑	↱	↰	↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	32	8	23	642	21	396	82	404	385	442	365	74
Future Volume (veh/h)	32	8	23	642	21	396	82	404	385	442	365	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.97	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	38	9	27	755	0	455	96	475	453	475	392	80
Peak Hour Factor	0.85	0.85	0.85	0.87	0.87	0.87	0.85	0.85	0.85	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	64	15	45	1124	0	486	110	1234	1036	213	1014	204
Arrive On Green	0.04	0.04	0.04	0.32	0.00	0.32	0.06	0.35	0.35	0.06	0.35	0.35
Sat Flow, veh/h	1718	400	1198	3534	0	1528	1767	3526	1531	3428	2897	584
Grp Volume(v), veh/h	39	0	35	755	0	455	96	475	453	475	237	235
Grp Sat Flow(s),veh/h/ln	1770	0	1546	1767	0	1528	1767	1763	1531	1714	1763	1718
Q Serve(g_s), s	2.0	0.0	2.0	16.7	0.0	26.0	4.8	9.1	12.6	5.6	9.1	9.3
Cycle Q Clear(g_c), s	2.0	0.0	2.0	16.7	0.0	26.0	4.8	9.1	12.6	5.6	9.1	9.3
Prop In Lane	0.97		0.77	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	66	0	58	1124	0	486	110	1234	1036	213	617	601
V/C Ratio(X)	0.59	0.00	0.60	0.67	0.00	0.94	0.87	0.38	0.44	2.23	0.38	0.39
Avail Cap(c_a), veh/h	79	0	69	1139	0	492	110	1234	1036	213	617	601
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	1.00	1.00	0.00	1.00	0.95	0.95	0.95	0.86	0.86	0.86
Uniform Delay (d), s/veh	42.6	0.0	42.7	26.6	0.0	29.8	41.8	22.0	7.0	42.2	22.0	22.0
Incr Delay (d2), s/veh	8.1	0.0	10.1	1.5	0.0	25.3	47.0	0.9	1.3	564.9	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.9	7.0	0.0	12.6	3.5	3.8	8.8	19.0	3.7	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	0.0	52.8	28.1	0.0	55.1	88.8	22.8	8.3	607.1	22.3	22.4
LnGrp LOS	D	A	D	C	A	E	F	C	A	F	C	C
Approach Vol, veh/h		74			1210			1024			947	
Approach Delay, s/veh		51.7			38.3			22.6			315.6	
Approach LOS		D			D			C			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	36.6		8.3	10.0	36.6		35.1				
Change Period (Y+Rc), s	4.4	5.1		4.9	4.4	* 5.1		6.5				
Max Green Setting (Gmax), s	5.6	30.5		4.0	5.6	* 31		29.0				
Max Q Clear Time (g_c+I1), s	7.6	14.6		4.0	6.8	11.3		28.0				
Green Ext Time (p_c), s	0.0	4.4		0.0	0.0	2.6		0.6				

Intersection Summary			
HCM 6th Ctrl Delay			114.4
HCM 6th LOS			F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↱	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑	↱
Traffic Volume (veh/h)	294	794	390	146	921	159	259	264	114	200	324	259
Future Volume (veh/h)	294	794	390	146	921	159	259	264	114	200	324	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	313	845	415	162	1023	177	308	314	136	213	345	276
Peak Hour Factor	0.94	0.94	0.94	0.90	0.90	0.90	0.84	0.84	0.84	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	336	1425	589	226	1062	183	326	621	262	284	873	526
Arrive On Green	0.10	0.38	0.38	0.07	0.35	0.35	0.10	0.26	0.26	0.08	0.25	0.25
Sat Flow, veh/h	3534	3711	1533	3428	2992	517	3428	2389	1009	3428	3526	1521
Grp Volume(v), veh/h	313	845	415	162	602	598	308	230	220	213	345	276
Grp Sat Flow(s),veh/h/ln	1767	1856	1533	1714	1763	1746	1714	1763	1635	1714	1763	1521
Q Serve(g_s), s	8.9	18.3	23.1	4.7	33.8	33.9	9.0	11.2	11.6	6.1	8.2	14.7
Cycle Q Clear(g_c), s	8.9	18.3	23.1	4.7	33.8	33.9	9.0	11.2	11.6	6.1	8.2	14.7
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	336	1425	589	226	625	620	326	458	425	284	873	526
V/C Ratio(X)	0.93	0.59	0.71	0.72	0.96	0.97	0.94	0.50	0.52	0.75	0.40	0.52
Avail Cap(c_a), veh/h	336	1425	589	265	625	620	326	662	614	418	1398	753
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	24.8	26.2	46.2	31.9	31.9	45.4	31.8	31.9	45.2	31.6	26.6
Incr Delay (d2), s/veh	31.8	0.7	3.8	7.4	26.8	27.6	35.4	0.8	1.0	4.2	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	7.8	8.7	2.2	18.1	18.2	5.4	4.8	4.6	2.8	3.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.1	25.4	30.1	53.6	58.7	59.6	80.7	32.6	32.9	49.5	31.9	27.4
LnGrp LOS	E	C	C	D	E	E	F	C	C	D	C	C
Approach Vol, veh/h		1573			1362			758			834	
Approach Delay, s/veh		36.9			58.5			52.3			34.9	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	44.9	14.0	30.9	14.0	42.0	12.8	32.1
Change Period (Y+Rc), s	4.4	6.2	4.4	5.9	4.4	* 6.2	4.4	* 5.9
Max Green Setting (Gmax), s	7.8	36.7	9.6	40.0	9.6	* 36	12.3	* 38
Max Q Clear Time (g_c+I1), s	6.7	25.1	11.0	16.7	10.9	35.9	8.1	13.6
Green Ext Time (p_c), s	0.1	5.5	0.0	3.3	0.0	0.0	0.3	2.7

Intersection Summary	
HCM 6th Ctrl Delay	45.6
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
8: Bernardo Center Dr & Future Proj Dwy

12/22/2023

	↗	→	←	↖	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑	↱	↰ ↰↱	
Traffic Volume (veh/h)	72	677	1312	216	54	18
Future Volume (veh/h)	72	677	1312	216	54	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	1.00
Parking Bus, Adj	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	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	78	736	1426	235	40	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	115	2515	1978	851	165	146
Arrive On Green	0.07	0.71	0.56	0.56	0.09	0.09
Sat Flow, veh/h	1767	3618	3618	1517	1767	1572
Grp Volume(v), veh/h	78	736	1426	235	40	41
Grp Sat Flow(s),veh/h/ln	1767	1763	1763	1517	1767	1572
Q Serve(g_s), s	2.2	3.9	15.4	4.2	1.1	1.3
Cycle Q Clear(g_c), s	2.2	3.9	15.4	4.2	1.1	1.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	115	2515	1978	851	165	146
V/C Ratio(X)	0.68	0.29	0.72	0.28	0.24	0.28
Avail Cap(c_a), veh/h	171	3276	2627	1131	1095	974
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	2.7	8.4	5.9	21.7	21.8
Incr Delay (d2), s/veh	6.8	0.1	0.7	0.2	0.8	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.4	3.7	0.9	0.4	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.4	2.7	9.0	6.1	22.5	22.8
LnGrp LOS	C	A	A	A	C	C
Approach Vol, veh/h		814	1661		81	
Approach Delay, s/veh		5.4	8.6		22.7	
Approach LOS		A	A		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.8		9.8	7.9	34.0
Change Period (Y+Rc), s		5.0		5.0	4.5	5.0
Max Green Setting (Gmax), s		48.0		32.0	5.0	38.5
Max Q Clear Time (g_c+I1), s		5.9		3.3	4.2	17.4
Green Ext Time (p_c), s		5.5		0.2	0.0	11.6

Intersection Summary			
HCM 6th Ctrl Delay			8.0
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑	↱	↰↰	↑↑	↱	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱
Traffic Volume (veh/h)	41	537	361	399	478	295	363	1390	322	234	1418	30
Future Volume (veh/h)	41	537	361	399	478	295	363	1390	322	234	1418	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	597	401	481	576	355	399	1527	354	254	1541	33
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	75	960	419	525	1422	618	440	1873	807	295	1659	501
Arrive On Green	0.02	0.27	0.27	0.15	0.40	0.40	0.13	0.37	0.37	0.09	0.33	0.33
Sat Flow, veh/h	3428	3526	1541	3428	3526	1534	3428	5066	1532	3428	5066	1529
Grp Volume(v), veh/h	46	597	401	481	576	355	399	1527	354	254	1541	33
Grp Sat Flow(s),veh/h/ln	1714	1763	1541	1714	1763	1534	1714	1689	1532	1714	1689	1529
Q Serve(g_s), s	2.4	26.7	46.1	24.9	21.0	32.4	20.7	48.9	25.8	13.2	52.9	2.7
Cycle Q Clear(g_c), s	2.4	26.7	46.1	24.9	21.0	32.4	20.7	48.9	25.8	13.2	52.9	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	75	960	419	525	1422	618	440	1873	807	295	1659	501
V/C Ratio(X)	0.61	0.62	0.96	0.92	0.41	0.57	0.91	0.82	0.44	0.86	0.93	0.07
Avail Cap(c_a), veh/h	109	960	419	583	1422	618	488	1874	807	373	1703	514
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	1.00	1.00	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	87.3	57.4	64.4	75.1	38.3	41.7	77.4	51.2	26.6	81.2	58.5	41.6
Incr Delay (d2), s/veh	7.7	3.0	34.2	14.7	0.6	2.9	19.5	2.9	0.4	15.2	9.3	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	1.1	12.2	21.7	12.0	9.3	12.5	10.2	20.7	9.3	6.4	23.5	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.0	60.4	98.7	89.8	39.0	44.6	96.9	54.1	27.0	96.4	67.8	41.6
LnGrp LOS	F	E	F	F	D	D	F	D	C	F	E	D
Approach Vol, veh/h		1044			1412			2280			1828	
Approach Delay, s/veh		76.6			57.7			57.4			71.3	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	55.1	27.5	65.5	8.4	78.7	19.9	73.1
Change Period (Y+Rc), s	4.4	6.1	4.4	6.5	4.4	* 6.1	4.4	* 6.5
Max Green Setting (Gmax), s	30.6	41.9	25.6	60.5	5.7	* 67	19.6	* 67
Max Q Clear Time (g_c+I1), s	26.9	48.1	22.7	54.9	4.4	34.4	15.2	50.9
Green Ext Time (p_c), s	0.7	0.0	0.4	4.0	0.0	5.5	0.3	9.8

Intersection Summary	
HCM 6th Ctrl Delay	64.4
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bernardo Center Dr & W Bernardo Dr

12/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱					↰↰	↑↑		↰	↑↑	↱↱
Traffic Volume (veh/h)	637	0	570	0	0	0	570	358	0	0	469	73
Future Volume (veh/h)	637	0	570	0	0	0	570	358	0	0	469	73
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		1.00	1.00		0.94
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	1856	1856	1856				1856	1856	0	1856	1856	1856
Adj Flow Rate, veh/h	724	0	648				613	385	0	0	521	81
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3				3	3	0	3	3	3
Cap, veh/h	1377	0	616				684	1663	0	2	771	1681
Arrive On Green	0.40	0.00	0.40				0.20	0.47	0.00	0.00	0.22	0.22
Sat Flow, veh/h	3428	0	1534				3428	3618	0	1767	3526	2604
Grp Volume(v), veh/h	724	0	648				613	385	0	0	521	81
Grp Sat Flow(s),veh/h/ln	1714	0	1534				1714	1763	0	1767	1763	1302
Q Serve(g_s), s	13.2	0.0	33.0				14.3	5.3	0.0	0.0	11.1	1.0
Cycle Q Clear(g_c), s	13.2	0.0	33.0				14.3	5.3	0.0	0.0	11.1	1.0
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	1377	0	616				684	1663	0	2	771	1681
V/C Ratio(X)	0.53	0.00	1.05				0.90	0.23	0.00	0.00	0.68	0.05
Avail Cap(c_a), veh/h	1377	0	616				693	1879	0	86	1313	2081
HCM Platoon Ratio	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	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	24.6				32.0	12.9	0.0	0.0	29.4	6.1
Incr Delay (d2), s/veh	0.4	0.0	50.7				14.2	0.1	0.0	0.0	1.0	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
%ile BackOfQ(50%),veh/ln	4.8	0.0	19.3				6.9	1.9	0.0	0.0	4.5	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	0.0	75.3				46.3	12.9	0.0	0.0	30.5	6.1
LnGrp LOS	B	A	F				D	B	A	A	C	A
Approach Vol, veh/h		1372						998			602	
Approach Delay, s/veh		45.6						33.4			27.2	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	0.0	44.3		37.9	20.8	23.5
Change Period (Y+Rc), s	4.4	* 5.5		4.9	4.4	5.5
Max Green Setting (Gmax), s	4.0	* 44		33.0	16.6	30.6
Max Q Clear Time (g_c+I1), s	0.0	7.3		35.0	16.3	13.1
Green Ext Time (p_c), s	0.0	2.5		0.0	0.1	3.3

Intersection Summary	
HCM 6th Ctrl Delay	37.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Bernardo Center Dr & Cloudcrest Dr

12/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬑	↱		✣		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	43	1	18	20	0	75	6	1220	41	78	480	3
Future Volume (veh/h)	43	1	18	20	0	75	6	1220	41	78	480	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.98		0.95	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	1	23	23	0	87	7	1386	47	85	522	3
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.88	0.88	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	196	3	204	59	16	147	12	2369	80	107	2643	15
Arrive On Green	0.14	0.14	0.14	0.14	0.00	0.14	0.01	0.68	0.68	0.06	0.74	0.74
Sat Flow, veh/h	1000	22	1495	167	118	1078	1767	3475	118	1767	3593	21
Grp Volume(v), veh/h	56	0	23	110	0	0	7	702	731	85	256	269
Grp Sat Flow(s),veh/h/ln	1022	0	1495	1363	0	0	1767	1763	1830	1767	1763	1851
Q Serve(g_s), s	0.0	0.0	1.6	2.2	0.0	0.0	0.5	25.3	25.4	5.7	5.4	5.4
Cycle Q Clear(g_c), s	7.4	0.0	1.6	9.6	0.0	0.0	0.5	25.3	25.4	5.7	5.4	5.4
Prop In Lane	0.98		1.00	0.21		0.79	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	199	0	204	223	0	0	12	1202	1247	107	1297	1361
V/C Ratio(X)	0.28	0.00	0.11	0.49	0.00	0.00	0.57	0.58	0.59	0.79	0.20	0.20
Avail Cap(c_a), veh/h	324	0	349	366	0	0	59	1202	1247	177	1297	1361
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	1.00	1.00	0.00	0.00	0.85	0.85	0.85	0.95	0.95	0.95
Uniform Delay (d), s/veh	47.9	0.0	45.4	48.5	0.0	0.0	59.4	10.1	10.1	55.6	4.9	4.9
Incr Delay (d2), s/veh	0.8	0.0	0.2	1.7	0.0	0.0	30.9	1.8	1.7	11.6	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.6	3.2	0.0	0.0	0.3	9.1	9.4	2.8	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.7	0.0	45.7	50.2	0.0	0.0	90.3	11.9	11.8	67.2	5.2	5.2
LnGrp LOS	D	A	D	D	A	A	F	B	B	E	A	A
Approach Vol, veh/h		79			110			1440			610	
Approach Delay, s/veh		47.8			50.2			12.2			13.9	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.3	87.3		21.4	4.8	93.8		21.4
Change Period (Y+Rc), s	4.0	* 5.5		5.0	4.0	5.5		* 5
Max Green Setting (Gmax), s	12.0	* 66		28.0	4.0	73.5		* 28
Max Q Clear Time (g_c+I1), s	7.7	27.4		9.4	2.5	7.4		11.6
Green Ext Time (p_c), s	0.1	12.8		0.3	0.0	3.2		0.5

Intersection Summary			
HCM 6th Ctrl Delay			15.8
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

4: Bernardo Center Dr & I-15 SB Ramp

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↰	↱↱
Traffic Volume (veh/h)	0	883	533	401	344	0	0	0	0	192	4	223
Future Volume (veh/h)	0	883	533	401	344	0	0	0	0	192	4	223
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1856	1856	1856	1856	0				530	530	530
Adj Flow Rate, veh/h	0	939	567	427	366	0				205	0	235
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1518	661	670	2431	0				189	0	168
Arrive On Green	0.00	0.43	0.43	0.33	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3618	1535	3428	3618	0				1010	0	899
Grp Volume(v), veh/h	0	939	567	427	366	0				205	0	235
Grp Sat Flow(s),veh/h/ln	0	1763	1535	1714	1763	0				505	0	449
Q Serve(g_s), s	0.0	17.6	28.4	9.0	0.0	0.0				15.9	0.0	15.9
Cycle Q Clear(g_c), s	0.0	17.6	28.4	9.0	0.0	0.0				15.9	0.0	15.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1518	661	670	2431	0				189	0	168
V/C Ratio(X)	0.00	0.62	0.86	0.64	0.15	0.00				1.08	0.00	1.40
Avail Cap(c_a), veh/h	0	1518	661	698	2431	0				189	0	168
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.67	0.67	0.83	0.83	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.8	21.9	26.1	0.0	0.0				34.6	0.0	34.5
Incr Delay (d2), s/veh	0.0	1.3	9.6	1.5	0.1	0.0				90.0	0.0	210.9
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	6.7	10.8	3.3	0.0	0.0				4.3	0.0	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	20.1	31.4	27.6	0.1	0.0				124.5	0.0	245.5
LnGrp LOS	A	C	C	C	A	A				F	A	F
Approach Vol, veh/h		1506			793						440	
Approach Delay, s/veh		24.3			14.9						189.1	
Approach LOS		C			B						F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	22.0	42.0		21.0		64.0						
Change Period (Y+Rc), s	5.4	* 5.4		5.1		5.4						
Max Green Setting (Gmax), s	17.3	* 37		15.9		58.6						
Max Q Clear Time (g_c+I1), s	11.0	30.4		17.9		2.0						
Green Ext Time (p_c), s	0.9	4.0		0.0		2.6						

Intersection Summary		
HCM 6th Ctrl Delay		48.1
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
5: I-15 NB Ramp & Bernardo Center Dr

12/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↑	↱	↰	↰	↱↱			
Traffic Volume (veh/h)	468	612	0	0	711	234	52	93	629	0	0	0
Future Volume (veh/h)	468	612	0	0	711	234	52	93	629	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	520	680	0	0	799	263	55	98	662			
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.95	0.95	0.95			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	761	2234	0	0	1228	533	408	429	727			
Arrive On Green	0.30	0.84	0.00	0.00	0.35	0.35	0.23	0.23	0.23			
Sat Flow, veh/h	3428	3618	0	0	3618	1530	1767	1856	3145			
Grp Volume(v), veh/h	520	680	0	0	799	263	55	98	662			
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1763	1530	1767	1856	1572			
Q Serve(g_s), s	11.4	3.5	0.0	0.0	16.2	11.5	2.1	3.6	17.4			
Cycle Q Clear(g_c), s	11.4	3.5	0.0	0.0	16.2	11.5	2.1	3.6	17.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	761	2234	0	0	1228	533	408	429	727			
V/C Ratio(X)	0.68	0.30	0.00	0.00	0.65	0.49	0.13	0.23	0.91			
Avail Cap(c_a), veh/h	778	2234	0	0	1228	533	414	434	736			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.82	0.82	0.00	0.00	0.90	0.90	1.00	1.00	1.00			
Uniform Delay (d), s/veh	27.3	2.7	0.0	0.0	23.3	21.8	25.9	26.5	31.8			
Incr Delay (d2), s/veh	2.0	0.3	0.0	0.0	2.4	2.9	0.1	0.3	15.4			
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	4.4	1.0	0.0	0.0	6.9	4.4	0.9	1.6	8.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.3	3.0	0.0	0.0	25.8	24.7	26.1	26.8	47.3			
LnGrp LOS	C	A	A	A	C	C	C	C	D			
Approach Vol, veh/h		1200			1062			815				
Approach Delay, s/veh		14.4			25.5			43.4				
Approach LOS		B			C			D				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.3			24.3	35.0		25.7				
Change Period (Y+Rc), s		5.4			5.4	* 5.4		6.1				
Max Green Setting (Gmax), s		53.6			19.3	* 30		19.9				
Max Q Clear Time (g_c+I1), s		5.5			13.4	18.2		19.4				
Green Ext Time (p_c), s		5.6			1.1	5.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay			25.9
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱		↰	↰	↱	↰	↑↑	↱	↰↰	↑↱	
Traffic Volume (veh/h)	68	31	75	302	27	421	69	755	378	278	480	41
Future Volume (veh/h)	68	31	75	302	27	421	69	755	378	278	480	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97	1.00		0.97	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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	96	44	106	412	0	540	71	778	390	293	505	43
Peak Hour Factor	0.71	0.71	0.71	0.78	0.78	0.78	0.97	0.97	0.97	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	58	27	64	1139	0	493	90	1191	1023	213	1143	97
Arrive On Green	0.05	0.05	0.05	0.32	0.00	0.32	0.05	0.34	0.34	0.06	0.35	0.35
Sat Flow, veh/h	1283	588	1414	3534	0	1529	1767	3526	1530	3428	3275	278
Grp Volume(v), veh/h	134	0	112	412	0	540	71	778	390	293	271	277
Grp Sat Flow(s),veh/h/ln	1791	0	1493	1767	0	1529	1767	1763	1530	1714	1763	1790
Q Serve(g_s), s	4.1	0.0	4.1	8.0	0.0	29.0	3.6	16.9	10.5	5.6	10.6	10.7
Cycle Q Clear(g_c), s	4.1	0.0	4.1	8.0	0.0	29.0	3.6	16.9	10.5	5.6	10.6	10.7
Prop In Lane	0.72		0.95	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	82	0	68	1139	0	493	90	1191	1023	213	615	625
V/C Ratio(X)	1.64	0.00	1.65	0.36	0.00	1.10	0.79	0.65	0.38	1.37	0.44	0.44
Avail Cap(c_a), veh/h	82	0	68	1139	0	493	90	1191	1023	213	619	629
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	1.00	1.00	0.00	1.00	0.84	0.84	0.84	0.92	0.92	0.92
Uniform Delay (d), s/veh	43.0	0.0	43.0	23.4	0.0	30.5	42.2	25.3	7.0	42.2	22.5	22.6
Incr Delay (d2), s/veh	337.6	0.0	347.0	0.2	0.0	69.4	30.9	2.4	0.9	193.0	0.5	0.5
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	9.4	0.0	8.1	3.3	0.0	19.7	2.3	7.1	7.3	8.0	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	380.5	0.0	390.0	23.6	0.0	99.9	73.2	27.7	7.9	235.2	23.0	23.0
LnGrp LOS	F	A	F	C	A	F	E	C	A	F	C	C
Approach Vol, veh/h		246			952			1239			841	
Approach Delay, s/veh		384.8			66.8			24.1			96.9	
Approach LOS		F			E			C			F	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	10.0	35.5	9.0	9.0	36.5	35.5
Change Period (Y+Rc), s	4.4	5.1	4.9	4.4	* 5.1	6.5
Max Green Setting (Gmax), s	5.6	30.4	4.1	4.6	* 32	29.0
Max Q Clear Time (g_c+I1), s	7.6	18.9	6.1	5.6	12.7	31.0
Green Ext Time (p_c), s	0.0	5.2	0.0	0.0	3.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	82.3
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
7: Bernardo Center Dr & Rancho Bernardo Rd

12/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱	↱	↰↰	↑↱		↰↰	↑↱		↰↰	↑↑	↱
Traffic Volume (veh/h)	277	728	290	122	722	135	491	470	227	172	239	253
Future Volume (veh/h)	277	728	290	122	722	135	491	470	227	172	239	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	289	758	302	134	793	148	552	528	255	191	266	281
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.89	0.89	0.89	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	277	1244	513	198	928	173	480	719	346	263	887	506
Arrive On Green	0.08	0.34	0.34	0.06	0.31	0.31	0.14	0.31	0.31	0.08	0.25	0.25
Sat Flow, veh/h	3534	3711	1530	3428	2950	551	3428	2284	1099	3428	3526	1522
Grp Volume(v), veh/h	289	758	302	134	474	467	552	407	376	191	266	281
Grp Sat Flow(s),veh/h/ln	1767	1856	1530	1714	1763	1738	1714	1763	1620	1714	1763	1522
Q Serve(g_s), s	7.6	16.6	15.9	3.7	24.5	24.5	13.6	20.0	20.1	5.3	5.9	14.7
Cycle Q Clear(g_c), s	7.6	16.6	15.9	3.7	24.5	24.5	13.6	20.0	20.1	5.3	5.9	14.7
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	277	1244	513	198	555	547	480	555	510	263	887	506
V/C Ratio(X)	1.04	0.61	0.59	0.68	0.85	0.85	1.15	0.73	0.74	0.73	0.30	0.56
Avail Cap(c_a), veh/h	277	1292	533	237	614	605	480	781	718	396	1453	750
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	27.0	26.7	44.8	31.2	31.2	41.7	29.6	29.7	43.8	29.4	26.7
Incr Delay (d2), s/veh	66.2	0.8	1.6	5.9	10.5	10.7	88.9	2.2	2.5	3.8	0.2	1.0
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	5.8	7.1	5.8	1.7	11.4	11.3	11.5	8.5	7.9	2.4	2.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.9	27.7	28.3	50.7	41.7	41.9	130.6	31.8	32.1	47.6	29.6	27.7
LnGrp LOS	F	C	C	D	D	D	F	C	C	D	C	C
Approach Vol, veh/h		1349			1075			1335			738	
Approach Delay, s/veh		45.7			42.9			72.8			33.5	
Approach LOS		D			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	38.7	18.0	30.3	12.0	36.7	11.9	36.5
Change Period (Y+Rc), s	4.4	6.2	4.4	5.9	4.4	* 6.2	4.4	* 5.9
Max Green Setting (Gmax), s	6.7	33.8	13.6	40.0	7.6	* 34	11.2	* 43
Max Q Clear Time (g_c+I1), s	5.7	18.6	15.6	16.7	9.6	26.5	7.3	22.1
Green Ext Time (p_c), s	0.0	5.4	0.0	2.8	0.0	3.3	0.2	5.0

Intersection Summary	
HCM 6th Ctrl Delay	51.1
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

8: Bernardo Center Dr & Future Proj Dwy

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑	↱	↰↰↱	
Traffic Volume (veh/h)	45	1316	524	135	315	105
Future Volume (veh/h)	45	1316	524	135	315	105
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	1.00
Parking Bus, Adj	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	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	49	1430	570	147	228	236
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	90	1975	1440	616	382	340
Arrive On Green	0.05	0.56	0.41	0.41	0.22	0.22
Sat Flow, veh/h	1767	3618	3618	1508	1767	1572
Grp Volume(v), veh/h	49	1430	570	147	228	236
Grp Sat Flow(s),veh/h/ln	1767	1763	1763	1508	1767	1572
Q Serve(g_s), s	1.2	13.4	5.1	2.9	5.2	6.2
Cycle Q Clear(g_c), s	1.2	13.4	5.1	2.9	5.2	6.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	90	1975	1440	616	382	340
V/C Ratio(X)	0.54	0.72	0.40	0.24	0.60	0.70
Avail Cap(c_a), veh/h	226	2606	1800	770	1266	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	7.3	9.3	8.7	15.8	16.1
Incr Delay (d2), s/veh	5.0	0.7	0.2	0.2	1.5	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.7	1.4	0.7	2.0	5.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.7	8.0	9.5	8.9	17.3	18.7
LnGrp LOS	C	A	A	A	B	B
Approach Vol, veh/h		1479	717		464	
Approach Delay, s/veh		8.6	9.4		18.0	
Approach LOS		A	A		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.0		14.6	6.8	23.2
Change Period (Y+Rc), s		5.0		5.0	4.5	5.0
Max Green Setting (Gmax), s		33.0		32.0	5.7	22.8
Max Q Clear Time (g_c+I1), s		15.4		8.2	3.2	7.1
Green Ext Time (p_c), s		9.6		1.5	0.0	3.7

Intersection Summary			
HCM 6th Ctrl Delay			10.4
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

8: Bernardo Center Dr & Future Proj Dwy

	↗	→	←	↖	↘
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	78	736	1426	235	79
v/c Ratio	0.56	0.28	0.63	0.23	0.14
Control Delay	52.3	5.6	14.4	3.6	19.3
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	52.3	5.6	14.6	3.6	19.3
Queue Length 50th (ft)	31	37	180	6	11
Queue Length 95th (ft)	#125	163	#558	56	25
Internal Link Dist (ft)		1838	387		422
Turn Bay Length (ft)	180			200	
Base Capacity (vph)	139	2639	2201	1010	1685
Starvation Cap Reductn	0	0	215	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.28	0.72	0.23	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Bernardo Center Dr & Future Proj Dwy

	↱	→	←	↰	↳
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	49	1430	570	147	456
v/c Ratio	0.26	0.74	0.33	0.18	0.50
Control Delay	31.0	14.5	12.4	4.3	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	14.5	12.4	4.3	16.0
Queue Length 50th (ft)	15	137	38	0	56
Queue Length 95th (ft)	55	#469	163	38	88
Internal Link Dist (ft)		1838	387		422
Turn Bay Length (ft)	180			200	
Base Capacity (vph)	191	2214	1730	811	2043
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.65	0.33	0.18	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX H

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 Norte / Bernardo Center Dr	Sb	North	47,000	46,300	-1.49%	-0.17%
	Wb	East	29,700	33,300	12.12%	1.35%
	Nb	South	56,900	57,400	0.88%	0.10%
	Eb	West	19,500	20,800	6.67%	0.74%
2. Bernardo Center Dr / W Bernardo Dr	Sb	North	19,000	19,900	4.74%	0.53%
	Wb	East				
	Nb	South	21,100	25,000	18.48%	2.05%
	Eb	West	17,400	20,500	17.82%	1.98%
3. Bernardo Center Dr / Cloudcrest Dr	Sb	North	23,500	23,600	0.43%	0.05%
	Wb	East	4,600	4,000	-13.04%	-1.45%
	Nb	South	19,000	19,900	4.74%	0.53%
	Eb	West	4,600	4,200	-8.70%	-0.97%
4. Bernardo Center Dr / I-15 SB	Sb	North	8,600	8,500	-1.16%	-0.13%
	Wb	East	25,100	24,500	-2.39%	-0.27%
	Nb	South	7,100	6,300	-11.27%	-1.25%
	Eb	West	23,500	23,600	0.43%	0.05%
5. Bernardo Center Dr / I-15 NB	Sb	North	7,000	9,900	41.43%	4.60%
	Wb	East	29,800	27,700	-7.05%	-0.78%
	Nb	South	9,100	8,500	-6.59%	-0.73%
	Eb	West	25,100	24,500	-2.39%	-0.27%
6. Bernardo Center Dr / Bernardo Heights Pkwy	Sb	North	17,700	17,700	0.00%	0.00%
	Wb	East	18,400	17,300	-5.98%	-0.66%
	Nb	South	27,700	25,700	-7.22%	-0.80%
	Eb	West	6,700	5,400	-19.40%	-2.16%
7. Bernardo Center Dr / Rancho Bernardo Rd	Sb	North	16,500	16,100	-2.42%	-0.27%
	Wb	East	24,800	24,900	0.40%	0.04%
	Nb	South	18,700	18,700	0.00%	0.00%
	Eb	West	36,700	36,300	-1.09%	-0.12%

AVERAGE GROWTH	0.66%	0.07%
AVERAGE GROWTH USING ONLY DATA SETS WITH POSITIVE GROWTH	8.32%	0.92%

END OF APPENDICES

Appendix H2. Vehicle Miles Traveled Assessment

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VEHICLE MILES TRAVELED ASSESSMENT

UC SAN DIEGO

RANCHO BERNARDO HEALTHCARE CENTER MEDICAL OFFICE BUILDING PROJECT

April 2024

LLG Ref. 3-23-3839

Prepared by:
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EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers has prepared this Vehicle Miles Traveled (VMT) Assessment for the UC San Diego Rancho Bernardo Healthcare Center Medical Office Building Project (hereby referred to as the "Project"). The Project site is located at the northwest quadrant of the intersection of Bernardo Center Drive and I-15, within the Rancho Bernardo Community Plan area in the City of San Diego.

For the purpose of the VMT analysis, the City of San Diego Transportation Study Manual (September 2022) was utilized as the basis to analyze the proposed Project transportation impacts under the California Environmental Quality Act (CEQA) using a VMT metric, pursuant to guidance from the Governor's Office of Planning and Research in December 2018 (*Technical Advisory on Evaluating Transportation Impacts in CEQA*).

For VMT analysis purposes, the proposed Project is considered a "Commercial Employment" project-type and therefore, the baseline SANDAG Series 14 ABM 2+, Base Year 2016, Commute VMT per Employee data was reviewed. Per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the Commute VMT per Employee for Census Tract 170.32 is shown as 23.8 and the regional average commute VMT per employee for comparison is 18.9. Therefore, the Project site is approximately 125.6% of the regional average. Using this data, the Project does not screen out from a VMT analysis.

Since the Project did not satisfy the above screening criterion, it must evaluate the VMT produced by the Project. The Project falls under the "Commercial Employment" land use type. Therefore, per the City of San Diego Transportation Manual (TSM) standards, the Project's Commute VMT per Employee will be considered the same as the Commute VMT per Employee of the census tract in which it is located (i.e. Census Tract 170.32).

As stated above, the Project is in a census tract with a 23.8 Commute VMT per Employee, or 125.6% of the regional mean. The Project would have a significant VMT impact based on the significance threshold for a "Commercial Employment" project of 15% below the regional mean Commute VMT per Employee. Therefore, mitigation is required to reduce the Project's VMT impact to the greatest extent feasible.

The Project will mitigate the significant VMT impact through participation in in the City of San Diego's Complete Communities: Mobility Choices Program (approved by the City Council on November 9, 2020). The Project is located in Mobility Zone 2. Mitigation will be a provision of VMT Reduction Measures totaling at least 8 points per the City of San Diego's Land Development Manual Appendix T, which is required of projects located within Mobility Zone 2 under the Complete Communities: Mobility Choices program and ordinance. The Project will provide the following VMT Reduction Measures:

- The Project will provide an on-site bicycle repair station (1.5 points)
- The Project will install five (5) electric bicycle charging stations (2 points)
- The Project will provide short-term bicycle parking spaces, at least 10% beyond minimum requirements (1.5 points)
- The Project will provide long-term bicycle parking spaces, at least 10% beyond minimum requirements (1.5 points)
- The Project will provide carpool parking spaces 10% beyond minimum requirements (1.5 points)

The Project's proposed VMT Reduction Measures total 8 points, which meets the City of San Diego's Complete Communities Mobility Choices Program requirements.

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

VEHICLE MILES TRAVELED ASSESSMENT

UC SAN DIEGO RANCHO BERNARDO HEALTHCARE CENTER MEDICAL OFFICE BUILDING PROJECT

April 2024

1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this Vehicle Miles Traveled (VMT) Assessment for the UC San Diego Rancho Bernardo Healthcare Center Medical Office Building Project (hereby referred to as the "Project"). The Project site is located at the northwest quadrant of the intersection of Bernardo Center Drive and I-15, within the Rancho Bernardo Community Plan area in the City of San Diego.

This VMT Assessment has been prepared to evaluate the effects of the Project using VMT, as proposed by the California Governor's Office of Planning and Research (OPR) to implement California State Law Senate Bill (SB) 743. The analysis methodology contained in this report utilizes the City of San Diego's latest Transportation Study Manual (TSM) (September 2022).

The report is organized as follows:

Section 1.0	Introduction
Section 2.0	Project Description and Trip Generation
Section 3.0	Report Approach
Section 4.0	VMT Significance Criteria & Methodology
Section 5.0	Project VMT Assessment
Section 6.0	VMT Impact Summary and Implementation

2.0 REPORT APPROACH

2.1 VMT Background

VMT is defined as the “amount and distance of automobile travel attributable to a project” per CEQA Guidelines Section 15064.3. VMT is a measure of the use and efficiency of the transportation network as well land uses in a region. VMT is calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (roundtrip) travel and is estimated for a typical weekday for the purposes of measuring transportation impacts.

2.2 Vehicle Miles Traveled

The potential transportation impacts of the proposed Project are based on VMT to satisfy the CEQA guidelines through SB 743. Public Resources Code section 20199, enacted pursuant to SB 743, identifies VMT as an appropriate metric for measuring transportation impacts along with the elimination of auto delay/ Level of Service (LOS) for CEQA purposes statewide, effective July 1, 2020. The justification for this paradigm shift is that auto delay/LOS impacts may lead to improvements that increase roadway capacity and therefore sometimes induce more traffic and greenhouse gas emissions. In contrast, constructing projects in VMT-efficient locations assists California in meeting greenhouse gas emissions targets. Therefore, consistent with SB 743 and CEQA Guidelines 15064.3, the CEQA significance determination for the Project is based only on VMT and not on LOS.

3.0 PROJECT DESCRIPTION

3.1 Project Location

The Project site is located on the western boundary of the I-15 freeway along Bernardo Center Drive within the Rancho Bernardo Community Plan area in the City of San Diego.

Access to the Project site is proposed via one full access signalized driveway on Bernardo Center Drive. There is no existing signal at the Project site.

Figure 3–1 shows the vicinity map. ***Figure 3–2*** shows a more detailed Project area map.

3.2 Project Description

The Project proposes to develop an approximately 150,000 gross square foot medical office building with 120,000 square feet of gross leasable area and approximately 675 structured and surface parking stalls on a 3.9-acre site. The Project site is currently undeveloped and there is no existing driveway or traffic signal to the Project site. Access is proposed via one full access signalized driveway on Bernardo Center Drive. The anticipated opening year is 2027.

UC San Diego currently has a similar health facility in Rancho Bernardo located at 16950 Via Tazon. The current location on Via Tazon is limited in size (58 KSF) and inferior in terms of age, quality, and patient access and visibility. Therefore, upon completion of construction of the new facility, UC San Diego will relocate its existing nearby operations to the new location at Bernardo Center Drive.

Figure 3–3 depicts the conceptual site plan.

3.3 Project Trip Generation

The City of San Diego *Trip Generation Manual (May 2003)* provides “driveway” trip rates and “cumulative” trip rates. Cumulative trips are defined as *new* vehicle trips added to a community as a direct result of a project. These are trips that are not using the study area intersections and segments under baseline (without Project conditions). Driveway trips are defined as the total number of trips that are generated by a site and include cumulative trips and “pass-by” trips, which are defined as trips made to a site from traffic already "passing by" that site on an adjacent street that contains direct access to the generator.

Table 3–1 summarizes the Project’s estimated trip generation using both the driveway trip rates and the cumulative trip rates. Based on the City’s “driveway” trip rates, the Project is calculated to add 6,000 average daily traffic (ADT) trips with 360 AM peak hour trips (288 inbound / 72 outbound) and 600 PM peak hour trips (180 inbound / 420 outbound) to the Bernardo Center Drive / Future Project Driveway intersection. Based on the City’s “cumulative” trip rates, the Project is calculated to add 1,920 ADT trips with 115 AM peak hour trips (92 inbound / 23 outbound) and 192 PM peak hour trips (58 inbound / 134 outbound) to the remaining study intersections and street segments.

TABLE 3–1
PROJECT TRIP GENERATION

Land Use	Quantity	Daily Trip Ends (ADT)		AM Peak Hour					PM Peak Hour				
				% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
		Rate [a]	Volume			In	Out	Total			In	Out	Total
Proposed Project – Driveway Rates													
Medical Office Building	120 KSF GLA[b]	50 /KSF	6,000	6%	80:20	288	72	360	10%	30:70	180	420	600
Proposed Project – Cumulative Rates													
Medical Office Building	120 KSF GLA[b]	16 /KSF	1,920	6%	80:20	92	23	115	10%	30:70	58	134	192

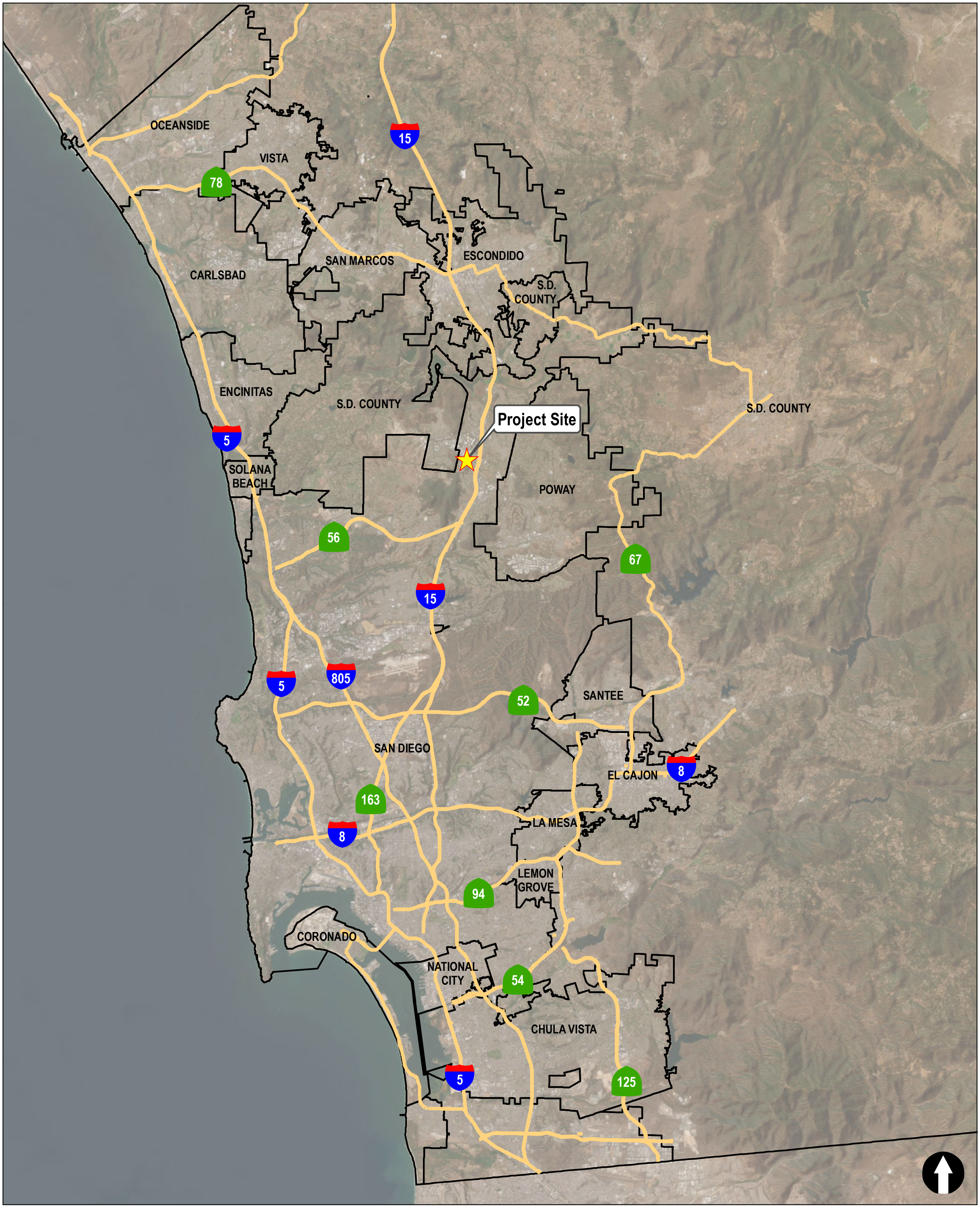
Footnotes:

a. Trip rates from *Trip Generation Manual*, City of San Diego, May 2003.

b. Gross Leasable Area

General Notes:

1. KSF - 1,000 Square Feet.



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Date: 12/19/2023
Time: 10:25 AM

Figure 3-1

Vicinity Map

UCSD RB MOB

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Date: 12/18/2023
Time: 5:12 PM

Figure 3-2

Project Area

UCSD RB MOB

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engineers

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Date: 01/15/24

Figure 3-3

Proposed Site Plan

UCSD RB MOB

4.0 VMT SIGNIFICANCE CRITERIA & METHODOLOGY

4.1 Local / Regional Agency Transition to SB743

The City of San Diego Transportation Study Manual (TSM, current version dated September 19, 2022) was adopted by City Council on November 9, 2020 as part of the Complete Communities: Mobility Choices program. Given that the City of San Diego has developed significance thresholds and technical methodologies, and that the Project site is located within the City of San Diego, the TSM was utilized for this report.

4.2 Significance Criteria

According to the City of San Diego's TSM, the transportation VMT thresholds of significance are shown in ***Table 4–1***. Since this proposed Project is considered 100% commercial employment, the Commute VMT/Employee threshold applies as shown below.

TABLE 4–1
VMT SIGNIFICANCE THRESHOLDS

Land Use Type[1]	Thresholds for Determination of a Significant Transportation VMT Impact[2]
Commercial Employment	15% below regional average[3] Commute VMT/Employee

Source: Table 3: Transportation VMT Thresholds of Significance by Land Use per the TSM, September 2022

Footnotes:

1. See *Appendix B* of the TSM for specific land use designations.
2. Projects that exceed these thresholds would have a significant impact.
3. The regional average and total regional VMT are determined using the SANDAG Regional Travel Demand Model.

4.3 Project-Specific Significance Threshold

The project-specific significance threshold for the Project is comprised of the following two components, and each are explained in detail below.

- City of San Diego Screening Criteria
- VMT Analysis Methodology

4.3.1 *City of San Diego Screening Criteria*

According to the TSM, a project that meets at least one of the following screening criteria would have less than significant VMT impact due to project characteristics and/or location.

1. **Residential or Commercial Project Located in a VMT Efficient Area:** The project is a residential or commercial employment project located in a VMT efficient area (15% or more below the base year average household VMT/capita or VMT/employee) based on the applicable location-based screening map produced by SANDAG.

2. **Industrial Project Located in a VMT Efficient Area:** The project is an industrial employment project located in VMT efficient area (in an area with average or below average

base year VMT/employee) based on the applicable location-based screening map produced by SANDAG.

3. **Small Project:** The project is a small project defined as generating less than 300 daily unadjusted driveway trips using the City of San Diego trip generation rates/procedures.

4. **Locally Serving Retail/Recreational Project:** The project is a locally serving retail/recreational project defined as having 100,000 square feet gross floor area or less and demonstrates through a market area study that the market capture area for the project is approximately three miles (or less) and serves a population of roughly 25,000 people or less. Locally serving retail is consistent with the definitions of Neighborhood Shopping Center in the San Diego Municipal Code Land Development Code Trip Generation Manual. Locally serving recreation is consistent with the land uses listed in Appendix B of the TSM, given that it meets the square footage and market capture area above. Adding retail/recreation square footage (even if it is 100,000 square feet gross floor area or less) to an existing regional retail shopping area is **not** screened out.

5. **Locally Serving Public Facility:** The project is a locally serving public facility defined as a public facility that serves the surrounding community or a public facility that is a passive use. The following are considered locally serving public facilities: transit centers, public schools, libraries, post offices, park-and-ride lots, police and fire facilities, and government offices. Passive public uses include communication and utility buildings, water sanitation, and waste management.

6. **Affordable Housing:** The project has access to transit* and is wholly or has a portion that meets one of the following criteria: is affordable to persons with a household income equal to or less than 50% of the area median income (as defined by California Health and Safety Code Section 50093), housing for senior citizens [as defined in Section 143.0720I], housing for transitional foster youth, disabled veterans, or homeless persons [as defined in 143.0720(f)]. The units shall remain deed restricted for a period of at least 55 years. The project shall provide no more than the minimum amount of parking per unit, per San Diego Municipal Code Section 143.0744. Only the portion of the project that meets the above criteria is screened out. For example, if the project is 100 units with ten deed-restricted affordable housing units, transportation VMT analysis would not be necessary for the ten affordable units but would be necessary for the remaining 90 units (unless they meet one of the other screening criteria). For purposes of applying the small project screening criteria, the applicant would only include the trip generation for the non-affordable housing portion of the project (since the affordable housing portion is screened out).

   *Access to transit is defined as transit being located within a reasonable walking distance (1/2 mile) from the project driveway.

7. **Mixed-Use Project Screening Considerations:** The project's individual land uses should be compared to the screening criteria above. It is possible for some of the mixed-use project's land uses to be screened out and some to require further analysis. For purposes of applying

the small project screening criteria, the applicant would only include the trip generation for portions of the project that are not screened out based on other screening criteria. For example, if a project includes residential and retail, and the retail component was screened out because it is locally serving; only the trip generation of the residential portion would be used to determine if the project meets the definition of a small project.

8. **Redevelopment Project Screening Considerations:** The project is a redevelopment project that demonstrates that the proposed project's total project VMT is less than the existing land use's total VMT. Exception: If a project replaces affordable housing (either deed restricted or other types of affordable housing) with a smaller number of moderate-income or high-income residential units, the project is not screened out and must analyze VMT impacts per *Table 3* of the TSM.

4.3.2 *Analysis Methodology*

If a project is not screened out using City criteria, the following methodology for completing the VMT analysis should be performed. Per the TSM, the project can use the SANDAG Regional Travel Demand Model to calculate the project's Commute VMT per Employee. By utilizing the SANDAG screening map, the Commute VMT per Employee can be observed at both the regional and census tract level. Definitions of these efficiency metrics are described below per the TSM:

Commute VMT per Employee: Includes all vehicle-based employee trips grouped and summed to the work location of individuals on the trip. This includes all work-related trips. The VMT for each work location is then summed for all work locations in a particular census tract and divided by the number of employees of that census tract to arrive at Commute VMT per employee.

5.0 PROJECT VMT ASSESSMENT

5.1 TSM Screening Criteria

Based on the screening criteria described in *Section 4.3.1*, the Project does not screen out from a VMT analysis as detailed below. ***Table 5–1*** summarizes the Project applicability of the TSM screening criteria.

TABLE 5–1
VMT SCREENING CRITERIA – PROJECT APPLICABILITY

Screening Criteria[1]	**Applicable to the Project?**	**Project Screen out?**
1. Residential or Commercial Project Located in a VMT Efficient Area	Yes	No
2. Industrial Project Located in a VMT Efficient Area	No	—
3. Small Project	No	—
4. Locally Serving Retail/Recreational Project	No	—
5. Locally Serving Public Facility	No	—
6. Affordable Housing	No	—
7. Mixed-Use Project Screening Considerations	No	—
8. Redevelopment Project Screening Considerations	No	—

Footnotes:

1. According to the TSM, September 2022.

Screening Criteria 1:

<u>Residential or Commercial Project Located in a VMT Efficient Area:</u> "The project is a residential or commercial employment project located in a VMT efficient area (15% or more below the base year average household VMT/capita or VMT/employee) based on the applicable location-based screening map produced by SANDAG."

Result:

The proposed Project is a commercial employment project, however, per the SANDAG Series 14 ABM 2+ (Base Year 2016) screening map, the Commute VMT per Employee for Census Tract 170.32 is shown as 23.8 and the regional average commute VMT per employee for comparison is 18.9. Therefore, the Project site is approximately 125.6% of the regional average. Using this data, the Project does not screen out from a VMT analysis. ***Appendix A*** contains excerpts of the SANDAG screening map.

5.2 Project VMT Assessment

Since the Project did not satisfy the above screening criterion, it must evaluate the VMT produced by the Project. The Project falls under the "Commercial Employment" land use type. Therefore, per the TSM standards, the Project's Commute VMT per Employee will be considered the same as the Commute VMT per Employee of the census tract in which it is located (i.e. Census Tract 170.32).

Per the SANDAG Series 14 ABM 2+ Model Base Year 2016 available on the website[1], the Project site is located in Census Tract 125.6 with a Commute VMT per Employee of 23.8. The regional average Commute VMT per Employee is 18.9 miles and the 85% regional VMT threshold is calculated as 16.07 miles. The Project's Commute VMT per Employee shown to be 125.6% of the regional average, which is higher than the 85% significance threshold. Therefore, based on the significance criteria, the Project is calculated to result in a significant transportation impact.

Table 5–2 shows the results of the VMT assessment comparison.

TABLE 5–2
PROJECT VMT FINDINGS

Scenario	**Regional Baseline VMT (miles)**	**Significance Threshold (miles)**	**Project Commute VMT per Employee (miles)**	**Percentage of Regional Average**	**Transportation Impact? (Over Threshold)**
Proposed Project	18.9	16.1	23.8	125.6%	Yes

6.0 VMT ASSESSMENT SUMMARY AND MITIGATION

6.1 VMT Assessment Summary

The Project was determined to have a significant VMT impact using the methodology applied from the City of San Diego TSM, September 2022. The Project's Commute VMT per Employee was determined to be 23.8, which is 125.6% of the regional average Commute VMT per Employee of 18.9 miles.

6.2 Mitigation

The Project will mitigate the significant VMT impact through participation in the City of San Diego's Complete Communities: Mobility Choices Program (approved by the City Council on November 9, 2020).

The San Diego Municipal Code Ordinance Number O-21274, adopted on December 9, 2020, provides the development regulations for the Mobility Choices portion of the Complete Communities program. According to the ordinance, the Project is located in Mobility Zone 2, which means it is located either partially or entirely within a Transit Priority Area. The Project's location on the City's Complete Communities Mobility Zones map is included in ***Appendix B***.

City of San Diego Municipal Code (SDMC) Section 143.1103(b) states that all development located within Mobility Zone 2 is required to provide VMT Reduction Measures in accordance with the City of San Diego's Land Development Manual Appendix T (included in ***Appendix*** C). The City of San Diego's Land Development Manual Appendix T includes a list of VMT Reduction Measures, each of which are given an assigned point value per unit of measure. Per SDMC Section 143.1103(b), developments in Mobility Zone 2 are required to provide VMT Reduction Measures totaling at least 8 points or may pay the Active Transportation In Lieu Fee instead of providing the VMT Reduction Measures.

The Project will provide measures as required by the ordinance that add up to at least 8 points as identified in the City of San Diego's Land Development Manual Appendix T. The Project will provide the following measures described in ***Table 6–1*** below. As shown in *Table 6–1*, the Project's proposed VMT Reduction Measures meet the 8 points minimum requirement. Therefore, the Project will mitigate its significant VMT transportation impact by participating in the City of San Diego's Complete Communities Mobility Choices Program.

TABLE 6–1
MOBILITY CHOICES VMT REDUCTION MEASURES

Category	Measures	Points
Bicycle Supportive Measures	The Project will provide an on-site bicycle repair station	1.5
	The Project will install five (5) electric bicycle charging stations.	2
	The Project will provide short-term bicycle parking spaces, at least 10% beyond minimum requirements.	1.5
	The Project will provide long-term bicycle parking spaces, at least 10% beyond minimum requirements.	1.5
Other Measures	The Project will provide carpool parking spaces 10% beyond minimum requirements.	1.5

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TECHNICAL APPENDICES TO THE VMT REPORT

UCSD RANCHO BERNARDO MEDICAL OFFICE BUILDING PROJECT

April 2024

LLG Ref. 3-23-3839

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APPENDICES

APPENDIX

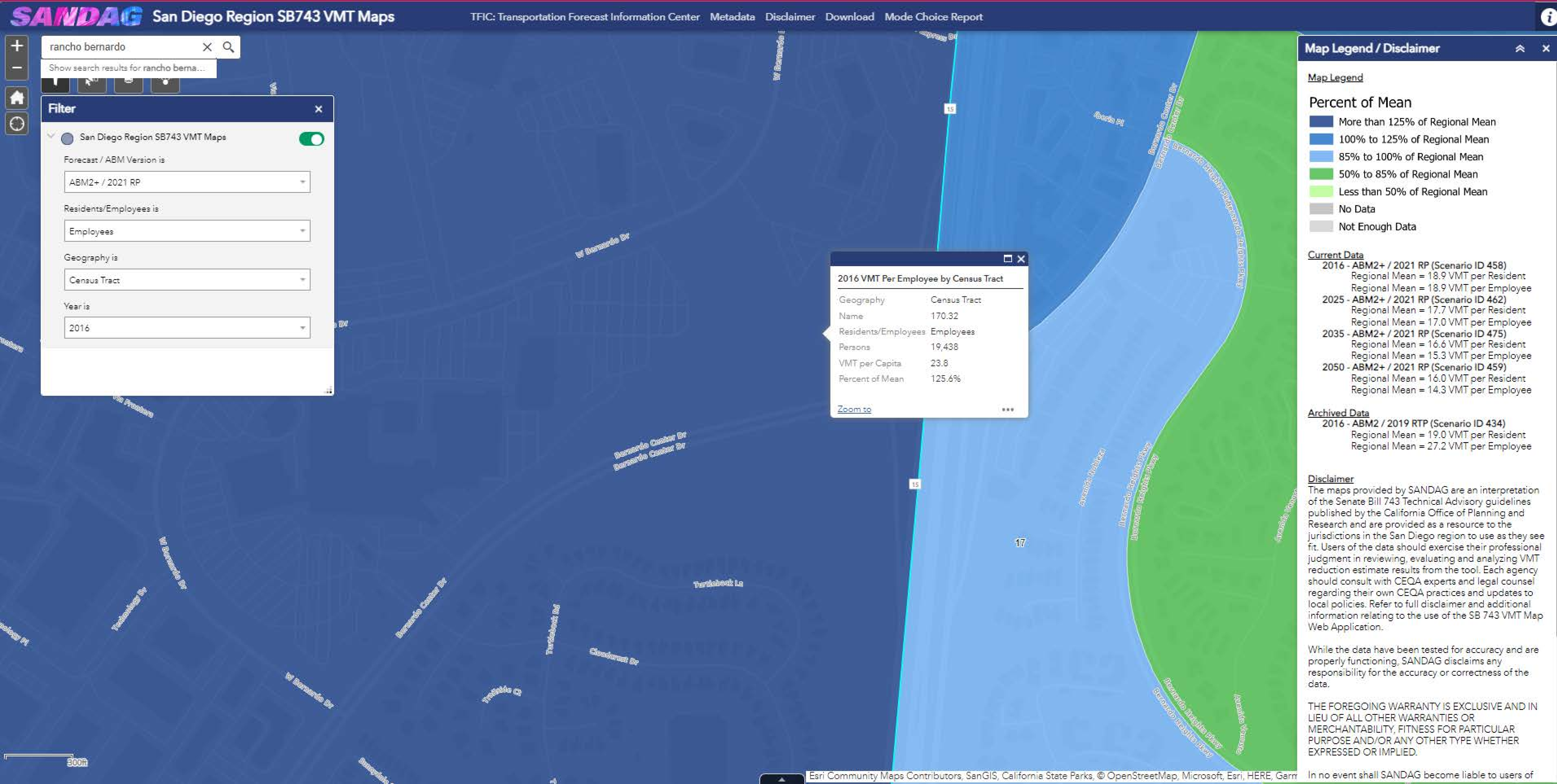
A. Excerpt from SANDAG SB 743 Series 14 ABM 2+ Base Year 2016 VMT Map

B. Excerpt from City of San Diego's Complete Communities Mobility Zones Map

C. City of San Diego's Land Development Manual Appendix T: Mobility Choices Regulations: Implementation Guidelines

APPENDIX A

EXCERPT FROM SANDAG SB 743 SERIES 14 ABM 2+ BASE YEAR 2016 VMT MAP



Filter

● San Diego Region SB743 VMT Maps

Forecast / ABM Version is: ABM2+ / 2021 RP

Residents/Employees is: Employees

Geography is: Census Tract

Year is: 2016

2016 VMT Per Employee by Census Tract

Geography	Census Tract
Name	170.32
Residents/Employees	Employees
Persons	19,438
VMT per Capita	23.8
Percent of Mean	125.6%

Zoom to

Map Legend / Disclaimer

Map Legend

Percent of Mean

🟦	More than 125% of Regional Mean
🟦	100% to 125% of Regional Mean
🟦	85% to 100% of Regional Mean
🟩	50% to 85% of Regional Mean
🟩	Less than 50% of Regional Mean
⬜	No Data
⬜	Not Enough Data

Current Data

2016 - ABM2+ / 2021 RP (Scenario ID 458)
  Regional Mean = 18.9 VMT per Resident
  Regional Mean = 18.9 VMT per Employee
2025 - ABM2+ / 2021 RP (Scenario ID 462)
  Regional Mean = 17.7 VMT per Resident
  Regional Mean = 17.0 VMT per Employee
2035 - ABM2+ / 2021 RP (Scenario ID 475)
  Regional Mean = 16.6 VMT per Resident
  Regional Mean = 15.3 VMT per Employee
2050 - ABM2+ / 2021 RP (Scenario ID 459)
  Regional Mean = 16.0 VMT per Resident
  Regional Mean = 14.3 VMT per Employee

Archived Data

2016 - ABM2 / 2019 RTP (Scenario ID 434)
  Regional Mean = 19.0 VMT per Resident
  Regional Mean = 27.2 VMT per Employee

Disclaimer

The maps provided by SANDAG are an interpretation of the Senate Bill 743 Technical Advisory guidelines published by the California Office of Planning and Research and are provided as a resource to the jurisdictions in the San Diego region to use as they see fit. Users of the data should exercise their professional judgment in reviewing, evaluating and analyzing VMT reduction estimate results from the tool. Each agency should consult with CEQA experts and legal counsel regarding their own CEQA practices and updates to local policies. Refer to full disclaimer and additional information relating to the use of the SB 743 VMT Map Web Application.

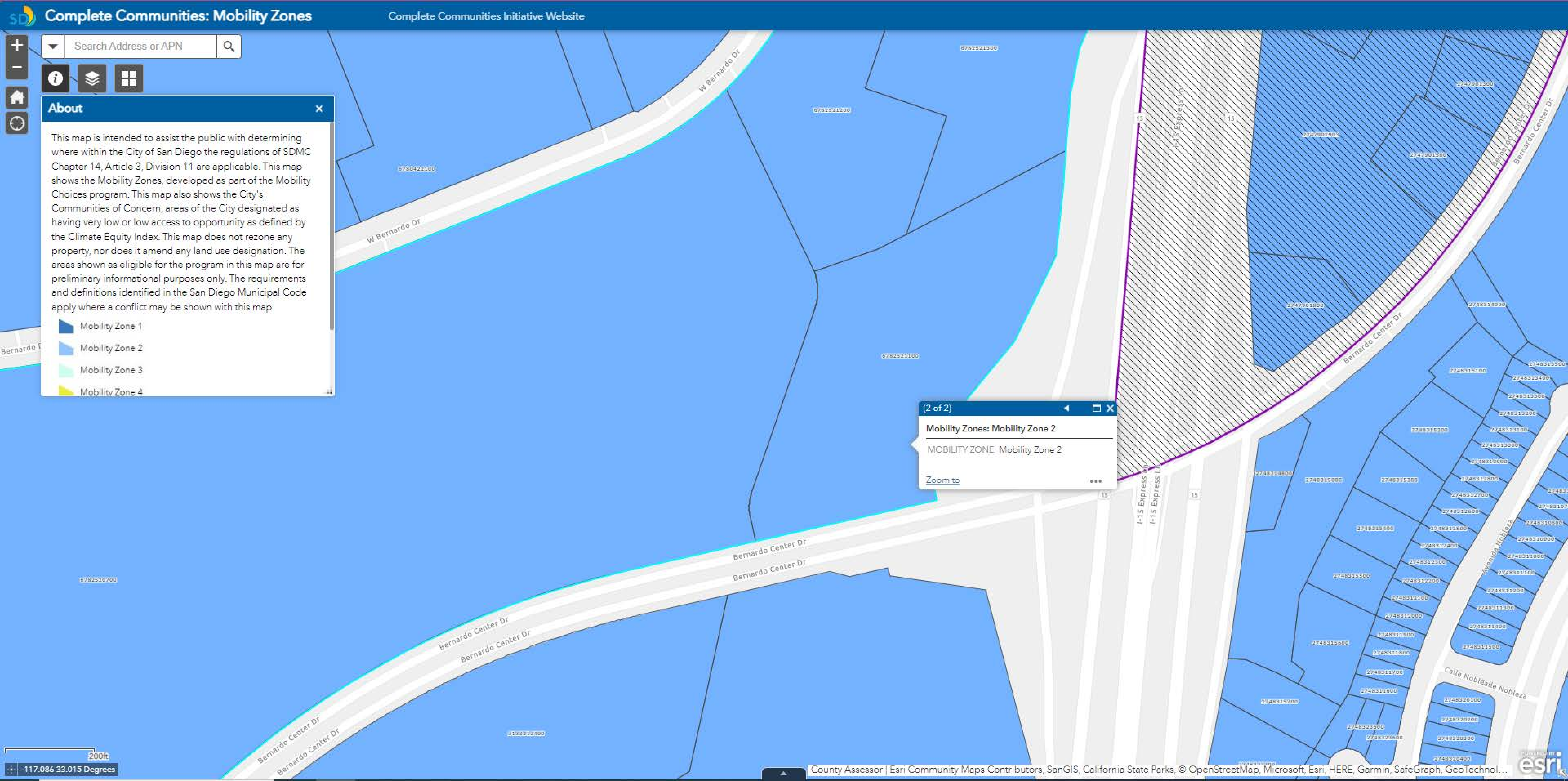
While the data have been tested for accuracy and are properly functioning, SANDAG disclaims any responsibility for the accuracy or correctness of the data.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OR MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND/OR ANY OTHER TYPE WHETHER EXPRESSED OR IMPLIED.

In no event shall SANDAG become liable to users of

APPENDIX B

EXCERPT FROM CITY OF SAN DIEGO'S COMPLETE COMMUNITIES MOBILITY ZONES MAP



About

This map is intended to assist the public with determining where within the City of San Diego the regulations of SDMC Chapter 14, Article 3, Division 11 are applicable. This map shows the Mobility Zones, developed as part of the Mobility Choices program. This map also shows the City's Communities of Concern, areas of the City designated as having very low or low access to opportunity as defined by the Climate Equity Index. This map does not rezone any property, nor does it amend any land use designation. The areas shown as eligible for the program in this map are for preliminary informational purposes only. The requirements and definitions identified in the San Diego Municipal Code apply where a conflict may be shown with this map

- Mobility Zone 1
- Mobility Zone 2
- Mobility Zone 3
- Mobility Zone 4

(2 of 2)

Mobility Zones: Mobility Zone 2

MOBILITY ZONE Mobility Zone 2

Zoom to

APPENDIX C

CITY OF SAN DIEGO'S LAND DEVELOPMENT MANUAL APPENDIX T: MOBILITY CHOICES REGULATIONS: IMPLEMENTATION GUIDELINES

APPENDIX T:

Mobility Choices Regulations: Implementation Guidelines

The Mobility Choices Regulations aim to connect every San Diegan with safe and convenient mobility alternatives that can reliably connect them to jobs, shopping, services, neighborhood parks, open spaces, and other amenities. The Mobility Choices Regulations support implementation of Senate Bill 743 (SB 743) by reducing Citywide vehicle miles traveled (VMT) and support implementation of the City's Climate Action Plan (CAP) by strategically planning the mobility network to support infill development, promote active transportation modes and transit use, reducing GHG emissions and supporting public health goals. The purpose of this appendix is to support implementation of the Mobility Choices Regulations, as set forth in San Diego Municipal Code (SDMC) Chapter 14, Article 3, Division 11.

Appendix T includes the following guidelines to implement the Mobility Choices Regulations: a list of VMT Reducing Measures and corresponding point values to satisfy the requirements set forth in SDMC section 143.1103(b), a template Notice of VMT Reducing Measures to be posted in accordance with SDMC section 143.1103(b)(3), identification of land uses that are subject to payment of the Active Transportation In Lieu Fee in accordance with SDMC section 143.1103(c), and guidelines for calculating VMT and applicable requirements under the regulations.

Appendix T Table of Contents:

Section A: VMT Reduction Measures and Points

Section A: In accordance with SDMC sections 143.1101, 143.1102, and 143.110, development that is required to provide VMT reduction measures, shall satisfy those requirements by implementing the measures identified below.

The measures shall be located on-site or adjacent to the development site such that the measure can be shown on a site plan. On-site measures shall be privately maintained in perpetuity. Any measure that is on-site for public use shall ensure public access. Any measure that is off-site, but to be maintained by the property owner shall be subject to an Encroachment Maintenance and Removal Agreement (EMRA). Measures within the right-of-way shall comply with the City of San Diego Street Design Manual, Land Development Code, San Diego Municipal Code, and applicable Council Policies.

TABLE 1: VMT REDUCTION MEASURES AND POINTS

	VMT Reduction Measure	Unit	Points Per Unit	Included as a Parking Standard in TPAS Transportation Measure?
Pedestrian Measures				
1	Pedestrian scale lighting adjacent to public pedestrian walkways along the entire development frontage.	Yes/no	0.5	**Yes**
2	Installing pop-outs at adjacent intersections or curb extensions at adjacent mid-block crosswalks. Installation shall comply with the Street Design Manual Traffic Calming Chapter. Coordination with City Fire-Rescue Department staff and/or San Diego Metropolitan Transit System/North County Transit District may be required.	Full Intersection[1]	2.5	
3	Installing high-visibility crosswalk striping at adjacent intersection (if not otherwise required).	Full Intersection[1]	1.5	
4	Installing enhanced crosswalk paving at adjacent intersection.	Full Intersection[1]	2.5	
5	Installing pedestrian enhancing amenities at adjacent intersections (hardscape): Median refuges, raised crosswalks	Each measure	2.5	
6	Signal pedestrian countdown heads (if not otherwise required).	Each Intersection	2	

VMT Reduction Measure		Unit	Points Per Unit	Included as a Parking Standard in TPAS Transportation Measure?
7	Planting shade trees adjacent to a public pedestrian walkway beyond minimum standards (shall be consistent with Land Development Code Landscape Standards and be maintained by the property owner). Minimum spacing between trees is 20 feet.	Each Tree	0.20[2]	
8	Installing pedestrian resting area/recreation node on-site, adjacent to public pedestrian walkway (with signage designating the space as publicly available). The resting area/recreation node shall be maintained by the property owner.	Each resting area (multiple of 250 square feet)	2.5 (Partial Points Available)	
9	Widening sidewalk within the existing public right-of-way to Street Design Manual standards. The reduction of parkway/landscape buffer to less than the width required by the Street Design Manual standards to widen sidewalk width is not permitted. Requires replacement of existing sidewalk.	Each mile of widening	3 points per mile of widening to standard (Partial Points Available)	**Yes**
10	Widening an urban parkway through dedication of private property in accordance with the Street Design Manual Standards. This requires replacement of existing sidewalk.	Each mile of widening	3 points per mile of widening to standard (Partial Points Available)	
Bicycle Supportive Measures				
11	Providing on-site shared bicycle fleet. The number of bicycles provided shall be equal to the number of bicycle parking spaces that would otherwise be required by SDMC Table 142-05C, or five bicycles, whichever is greater.	Yes/No	1.5	**Yes**
12	Providing on-site bicycle repair station	Yes/No	1.5	**Yes**

VMT Reduction Measure		Unit	Points Per Unit	Included as a Parking Standard in TPAS Transportation Measure?
13	Installing new bicycle infrastructure (Class I, II, IV) that is part of the City's planned bikeway network that closes or incrementally closes an existing gap between two existing bikeways.	Each mile	3	
14	Upgrading bicycle infrastructure adjacent to the development (along roadway and at intersections, i.e. signage, green paint, upgrade to a protected bicycle facility, etc. above required minimum bicycle infrastructure standards).	Each upgraded feature	2.5	
15	Installing electric bicycle charging stations/micro-mobility charging stations that are available to the public.	Each multiple of 5 charging stations	2	**Yes**
16	Providing short-term bicycle parking spaces that are available to the public, at least 10% beyond minimum requirements.	Each multiple of 10% beyond the minimum	1.5	
17	Providing long-term bicycle parking spaces at least 10% beyond minimum requirements.	Each multiple of 10% beyond the minimum	2	
18	Providing on-site showers/lockers at least 10% beyond minimum requirement.	Yes/No	2	
Transit Supportive Measures				
19	Providing high cost amenities/upgraded features to an existing transit stop (above existing condition), i.e., addition of shelter, real time bus information monitors.	Each upgraded feature	2.5	**Yes**
20	Providing low cost amenities/upgraded features to an existing transit stop (above existing condition), i.e., addition of bench, public art, static schedule and route display, trash receptacle.	Each upgraded feature	1	**Yes**
Other Measures				
21	Providing on-site multi-modal information kiosks (above minimum kiosk requirement to serve a larger site). *Not applicable to small development sites.	Yes/No	2	**Yes**
22	Providing on-site car share vehicles spaces that are available to the public with designated parking shown on a site plan.	Each car-share vehicle space	2	

VMT Reduction Measure		Unit	Points Per Unit	Included as a Parking Standard in TPAS Transportation Measure?
23	Providing on-site designated micro-mobility (e.g. bicycles, Ebikes, electric scooters, shared bicycles, and electric pedal assisted bicycle) parking area) that is available to the public.	Yes/No	1.5	
24	Providing on-site passenger loading zones and delivery vehicle space (above minimum loading space requirements).	Per passenger loading zone space	0.5	**Yes**
25	Installing a traffic calming measure, such as speed feedback signs, median slow points (chokers), and speed table/raised crosswalk. Installation shall comply with the Street Design Manual Traffic Calming Chapter. Coordination with City Fire-Rescue Department staff and/or MTS/NCTD may be required.	Each traffic calming feature	2.5	
26	Providing carpool parking spaces 10% beyond the minimum number of carpool spaces required (for non-residential projects).	Each multiple of 10% beyond the minimum	1.5	
27	Number of parking spaces provided does not exceed the parking requirements contained in the SDMC and a permit system is provided (or other parking management such as time limited or metered spaces) to control off-site parking.	Yes/No	2	

[1] Measures shall be provided on each leg of the adjacent intersection (four-legged intersection, T-intersection, etc.). If the applicant only installs the measure on a portion of the adjacent intersection legs, the total number of points assigned to this measure shall be divided by the number of legs of the intersection and the resulting number of points shall be assigned to each individual measure included. For example, if the applicant constructs one pop-out at a T-intersection, the total number of points assigned to a pop-out intersection (2.5) would be divided by the number of intersection legs (3) equaling 0.83 and the total number of points the development would receive for this measure would be 0.83 points.

[2] Points for this measure are given this relatively higher value (compared to VMT reducing effectiveness) to support implementation of Climate Action Plan Strategy 5.

Section B: Notice of VMT Reduction Measures Form (SDMC section 143.1103(b)(3))

The notice shall include contact information regarding the VMT Reduction Measures, as well as a statement that the measures are required pursuant to the San Diego Municipal Code. The notice shall be provided to the satisfaction of the Development Services Department. The notice shall be in substantially the same form as below.

Notice of VMT Reduction Measure(s)

The Notice for Mobility Choices VMT Reduction measures, required for a development, shall be posted in a prominent and accessible common area where it can easily be viewed by residents and the public. The notice shall include the responsible party contact information and a statement regarding the measures which are required pursuant to SDMC Sections 143.1101, 143.1102, and 143.1103.

Owner: Contact Information:

Mobility Choices VMT Reduction Measure(s):

Signature: **Date:**

Print Name & Title:

Company/Organization Name:

Section C: Active Transportation In Lieu Fee Land Use Exemptions

Table 2 provides a list of land use types that are subject to or exempt from payment of the Active Transportation In Lieu Fee in accordance with SDMC Section 143.1103(c). The table details, by land use type, which development as required by Division 11, Sections 143.1101, 143.1102, and 143.110 of the SDMC, is exempt from payment of the Active Transportation In Lieu Fee. In accordance with SDMC Section 143.1103(c)(2), locally serving development that is exempt from the Active Transportation In Lieu Fee shall provide VMT Reduction Measures totaling at least 8 points.

TABLE 2: ACTIVE TRANSPORTATION IN LIEU FEE LAND USE EXEMPTIONS

Type	Land Uses	Exempt from Fee
Residential	Single Family Residential	No
	Multi-Family Residential	No
	Senior Housing	Yes
	Single Room Occupancy Units (SRO's)	No
	Mobile Home Park	No
Employee	Clinic	No
	Congregate Care Facility	No
	Convalescent/Nursing Facility	No
	Corporate Headquarters/Single Tenant Office	No
	Extended Stay Hotel	No
	Extractive Industry	No[1]
	Government Office (greater than 100,000 SF)	Yes
	Government Office (less or equal to 100,000 SF)	Yes
	Government Office/Civic Center	Yes
	Heavy Industry	No[1]
	Hospital - General	No
	Hotel (High-Rise)	No
	Hotel (Low-Rise) (Motel)	No
	Industrial Park	No
	Light Industry - General	No[1]
	Medical Office	No
	Office (High-Rise - greater than 100,000 SF)	No
	Office (Low-Rise -less than 100,000)	No
	Other Health Care	No
	Public Storage	No[1]
	Resort	No
	School District Office	Yes

Type	Land Uses	Exempt from Fee
	Scientific Research and Development	No
	Warehousing	No[1]
Recreation	Public/Community Meeting Room Facility (Other Public Services)	Yes
	Racquetball/Tennis/Health Club	No
Retail	Arterial Commercial	No[2]
	Automobile Parts Sale	No
	Automobile Rental Service	No
	Automobile Repair Shop	No
	Automobile Tire Store	No
	Building Material and lumber store (less or equal to 30,000 SF)	Yes
	Carwash (Full service)	Yes
	Carwash (Self service)	Yes
	Community Shopping Center (100,000 SF or more)	No
	Convenience Market Chain (Open 24 Hours)	Yes
	Convenience Market Chain (Open Up to 16 Hours Per Day)	Yes
	Discount Store/Discount Club	No[2]
	Drinking Place/Bar Entertainment (Night and Day)	No[2]
	Drinking Place/Bar Entertainment (Night Only)	No[2]
	Drugstore (Stand alone)	Yes
	Financial Institution (with a drive-through)	Yes
	Financial Institution (without a drive-through)	Yes
	Furniture Store	No
	Golf Course Clubhouse	No
	Home Improvement Super Store	No
	Major Automobile Dealership	No
	Minor Automobile Dealership	No
	Movie Theater	No
	Neighborhood Shopping Center (30,000 SF or more)	Yes
	Nursery	No
	Regional Shopping Center (300,000 SF or more)	No
	Restaurant (Fast Food with or without drive-through)	Yes
	Restaurant (High Turnover sit-down)	Yes
	Restaurant (Quality)	No
	Service Station	Yes
	Service Station (with automated carwash)	Yes
	Service Station (with food mart and automated carwash)	Yes
	Service Station (with food mart)	Yes

Type	Land Uses	Exempt from Fee
	Supermarket (Standalone)	Yes
	Wholesale Trade	No
School	Elementary School (Public)	Yes
	Junior High School or Middle School (Public)	Yes
	Senior High School (Public)	Yes
	Elementary School (Private)	No
	Junior High School or Middle School (Private)	No
	Senior High School (Private)	No

[1] Impact is based on Regional VMT/Employee mean, not 85% of the mean. Industrial Uses defined in TSM Table Appendix B-1 located in Prime industrial areas are exempt from the fee.

[2] Pays for the full project size if it developed retail over 100,000sf, existing or planned, within the same develop project.

Section D. Active Transportation In Lieu Fee Calculator Tool

The Active Transportation In Lieu Fee is based upon a unit cost per vehicle mile traveled reduced ($/VMT reduced). The Active Transportation In Lieu Fee is calculated per project for the amount of additional VMT generated over the threshold. Industrial Uses are required to reduce VMT to the regional average VMT/capita or VMT/employee; all other projects are required to reduce VMT to 85% of the VMT/capita or VMT/employee in the region.

To implement the Mobility Choices Regulations, assist in calculating project VMT, and to easily identify project requirements under the Mobility Choices Regulations, the Active Transportation In Lieu Fee Calculator (Calculator) was developed. The Calculator is an Excel based program that allows project applicants, developers, and City staff to calculate the Active Transportation In Lieu Fee associated with a specific project based on its location, land use, and size. For more information on the functions, inputs, data sources, methodology, and assumptions used in the Calculator, please see the Active Transportation In Lieu Fee Calculator Tool – User Manual.

Although the Calculator is based on the most current available and accurate data, if substantial evidence shows that a project's VMT would be less than the amount identified in the Calculator, the Development Services Department may use such information provided by the applicant in place of the Calculator.

END OF APPENDICES

Appendix I. Will Serve Letter

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The City of SAN DIEGO
Development Services Department
Engineering Division, Water & Sewer Section
November 20, 2023

Mr. Justin Giles
Latitude 33 Planning and Engineering
10731 Treena Street
San Diego, CA 92131

Dear Mr. Giles,

Subject: **Will Serve Letter –**
UCSD Rancho Bernardo Healthcare Center
16280 Bernardo Center Drive, San Diego CA 92128

The legal description of the property is:

PARCELS 1 AND 2 OF PARCEL MAP NO. 16701.

This letter is to confirm that the subject property is within the City of San Diego water and sewer service area.

New water service connections and sewer lateral connections are available as noted below. New connections are permitted in accordance with the required demand.

WATER:

There is an existing 12" AC (HGL 793) water distribution main in a public water easement, west side of the project site, as shown on City improvement drawing 12916-D. There is an existing 20" SCRW (HGL 920) water transmission main in Bernardo Center Drive as shown on City improvement drawing 12864-D. There is an existing 27" SCRW (HGL 793) water transmission main in Bernardo Center Drive as shown on City improvement drawing 11372-D. There is an existing 27" SCRW (HGL 793) water transmission main in Bernardo Center Drive as shown on City improvement drawing 22904-D. Water and fire service connections will not be permitted on water transmission mains.

SEWER:

There is an existing 12" PVC sewer main in Bernardo Center Drive as shown on City improvement drawing 17727-D.

A hydraulic analysis and condition assessment of the existing utilities may be required to determine the availability of water service and sewer laterals. These connections are requested based upon the required demand/flow of the project. All services are governed by city ordinances and regulations concerning connections, constructions, charges/permit fees and matters pertaining thereto.

If you have any additional questions or concerns, please contact me at (619) 446-5454.

Sincerely,

Gary Nguyen
Assistant Engineer - Civil