CLIMATE ACTION PLAN CONSISTENCY CHECKLIST INTRODUCTION

In December 2015, the City adopted a Climate Action Plan (CAP) that outlines the actions that City will undertake to achieve its proportional share of State greenhouse gas (GHG) emission reductions. The purpose of the Climate Action Plan Consistency Checklist (Checklist) is to, in conjunction with the CAP, provide a streamlined review process for proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to the California Environmental Quality Act (CEQA).[1]

Analysis of GHG emissions and potential climate change impacts from new development is required under CEQA. The CAP is a plan for the reduction of GHG emissions in accordance with CEQA Guidelines Section 15183.5. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP.

This Checklist is part of the CAP and contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP are achieved. Implementation of these measures would ensure that new development is consistent with the CAP's assumptions for relevant CAP strategies toward achieving the identified GHG reduction targets. Projects that are consistent with the CAP as determined through the use of this Checklist may rely on the CAP for the cumulative impacts analysis of GHG emissions. Projects that are not consistent with the CAP must prepare a comprehensive project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in this Checklist to the extent feasible. Cumulative GHG impacts would be significant for any project that is not consistent with the CAP.

The Checklist may be updated to incorporate new GHG reduction techniques or to comply with later amendments to the CAP or local, State, or federal law.

[1] Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.

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CAP CONSISTENCY CHECKLIST SUBMITTAL APPLICATION

- The Checklist is required only for projects subject to CEQA review.[2]
- If required, the Checklist must be included in the project submittal package. Application submittal procedures can be found in Chapter 11: Land Development Procedures of the City's Municipal Code.
- The requirements in the Checklist will be included in the project's conditions of approval.
- The applicant must provide an explanation of how the proposed project will implement the requirements described herein to the satisfaction of the Planning Department.

Application Information

Contact Information

Project No./Name: Logan Arts Building

Property Address: 2142 Logan Avenue, San Diego, CA 92113

Applicant Name/Co.: w.rksh.p, LLC

Contact Phone: 619.985.4070 Contact Email: 78siavash@gmail.com

Was a consultant retained to complete this checklist? ■ Yes ☐ No If Yes, complete the following

Consultant Name: Tyler Wallace, AIA Contact Phone: 619.485.0887

Company Name: TFWA Contact Email: tyler@tfw-a.com

Project Information

1. What is the size of the project (acres)? 0.1034 acres (4,503 sq. ft.)
2. Identify all applicable proposed land uses:
   - ☐ Residential (indicate # of single-family units):
   - ☐ Residential (indicate # of multi-family units):
   - ■ Commercial (total square footage): 4,503 sf
   - ☐ Industrial (total square footage):
   - ☐ Other (describe):
3. Is the project or a portion of the project located in a Transit Priority Area? ■ Yes ☐ No
4. Provide a brief description of the project proposed:

The proposed Commercial building would be constructed as eleven (11) Artists' Studios (4 on the 1st floor, 7 on the 2nd floor) , Retail Sales / gallery and Eating/drinking at the first floor frontage at Logan Avenue, and a Professional/business Office in the basement level below grade. The lot is vacant and relatively flat.

[2] Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.

CAP CONSISTENCY CHECKLIST QUESTIONS

Step 1: Land Use Consistency

The first step in determining CAP consistency for discretionary development projects is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

Step 1: Land Use Consistency		
Checklist Item (Check the appropriate box and provide explanation and supporting documentation for your answer)	Yes	No
A. Is the proposed project consistent with the existing General Plan and Community Plan land use and zoning designations?;[3] OR,		
B. If the proposed project is not consistent with the existing land use plan and zoning designations, and includes a land use plan and/or zoning designation amendment, would the proposed amendment result in an increased density within a Transit Priority Area (TPA)[4] and implement CAP Strategy 3 actions, as determined in Step 3 to the satisfaction of the Development Services Department?; OR,	☑	☐
C. If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?		

If "***Yes***," proceed to Step 2 of the Checklist. For question B above, complete Step 3. For question C above, provide estimated project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation and the maximum buildout of the proposed designation.

If "***No***," in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must nonetheless incorporate each of the measures identified in Step 2 to mitigate cumulative GHG emissions impacts unless the decision maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. Proceed and complete Step 2 of the Checklist.

Land Use Consistency (item A) - YES
The project is consistent with existing General Plan and Community Plan land use and zoning designations and is within the Barrio Logan Planned District. Further defined, and according to the official City of San Diego Zoning Map, it falls within the "Barrio Logan Planned District Redevelopment Subdistrict" (BLPD-REDEVLP-SUBD) zoning designation. The project site has a land use designation of "Commercial Use" in the Barrio Logan Community Plan as per Figure 2 of SDMC Ch. 15, Article 2, Division 4 (page 12) . All proposed uses are defined within the "Commercial Use" Land Use Classification of SDMC Table 152-03A, and therefore the project would meet the zoning development regulations.

[3] This question may also be answered in the affirmative if the project is consistent with SANDAG Series 12 growth projections, which were used to determine the CAP projections, as determined by the Planning Department.

[4] This category applies to all projects that answered in the affirmative to question 3 on the previous page: Is the project or a portion of the project located in a transit priority area.

Step 2: CAP Strategies Consistency

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable strategies and actions of the CAP. Step 2 only applies to development projects that involve permits that would require a certificate of occupancy from the Building Official or projects comprised of one and two family dwellings or townhouses as defined in the California Residential Code and their accessory structures.[5] All other development projects that would not require a certificate of occupancy from the Building Official shall implement Best Management Practices for construction activities as set forth in the Greenbook (for public projects).

Step 2: CAP Strategies Consistency			
Checklist Item (Check the appropriate box and provide explanation for your answer)	Yes	No	N/A
Strategy 1: Energy & Water Efficient Buildings			
1. *Cool/Green Roofs*. • Would the project include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code (Attachment A)?; OR • Would the project roof construction have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot as specified in the voluntary measures under California Green Building Standards Code?; OR • Would the project include a combination of the above two options? Check "N/A" only if the project does not include a roof component. Cool/Green Roofs - YES The proposed project would have roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code.	☑	☐	☐

[5] Actions that are not subject to Step 2 would include, for example: 1) discretionary map actions that do not propose specific development, 2) permits allowing wireless communication facilities, 3) special events permits, 4) use permits or other permits that do not result in the expansion or enlargement of a building (e.g., decks, garages, etc.), and 5) non-building infrastructure projects such as roads and pipelines. Because such actions would not result in new occupancy buildings from which GHG emissions reductions could be achieved, the items contained in Step 2 would not be applicable.

2. *Plumbing fixtures and fittings* With respect to plumbing fixtures or fittings provided as part of the project, would those low-flow fixtures/appliances be consistent with each of the following: Residential buildings: • Kitchen faucets: maximum flow rate not to exceed 1.5 gallons per minute at 60 psi; • Standard dishwashers: 4.25 gallons per cycle; • Compact dishwashers: 3.5 gallons per cycle; and • Clothes washers: water factor of 6 gallons per cubic feet of drum capacity? Nonresidential buildings: • Plumbing fixtures and fittings that do not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code (See Attachment A); and • Appliances and fixtures for commercial applications that meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards Code (See Attachment A)? Check "N/A" only if the project does not include any plumbing fixtures or fittings. Plumbing fixtures and fittings - YES The project is a nonresidential building that would include plumbing fixtures such as toilets and utility and bathroom sinks. The flow rate of these fixtures would not exceed the maximum flow rate defined in Table 2 of Attachment A of the CAP Consistency Checklist.	☑	☐	☐

Strategy 3: Bicycling, Walking, Transit & Land Use			
3. *Electric Vehicle Charging* • Multiple-family projects of 17 dwelling units or less: Would 3% of the total parking spaces required, or a minimum of one space, whichever is greater, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official, to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents? • Multiple-family projects of more than 17 dwelling units: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents? • Non-residential projects: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use? Check "N/A" only if the project is a single-family project or would not require the provision of listed cabinets, boxes, or enclosures connected to a conduit linking the parking spaces with electrical service, e.g., projects requiring fewer than 10 parking spaces. Electric Vehicle Charging - N/A There is no alley access and the lot is less than 10,000 square feet. Therefore the project is exempt from parking requirements per SDMC 142.0540 (a).	☐	☐	☑

Strategy 3: Bicycling, Walking, Transit & Land Use (Complete this section if project includes non-residential or mixed uses)			
4. *Bicycle Parking Spaces* Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (Chapter 14, Article 2, Division 5)?[6] Check "N/A" only if the project is a residential project. Bicycle Parking Spaces - YES According to SDMC 142.0530 (e), 0.1 short term spaces are required per 1,000 sq. ft. of building floor area. This would result in 0.45 short term spaces required. The required long-term spaces per the same code section would be 1.0. The project will provide not less than 1 space above the minimum required. (The project currently proposes a total of 14 spaces which will exceed those requirements by 965%)	☑	☐	☐

[6] Non-portable bicycle corrals within 600 feet of project frontage can be counted towards the project's bicycle parking requirements.

5. *Shower facilities*

If the project includes nonresidential development that would accommodate over 10 tenant occupants (employees), would the project include changing/shower facilities in accordance with the voluntary measures under the California Green Building Standards Code as shown in the table below?

Number of Tenant Occupants (Employees)	Shower/Changing Facilities Required	Two-Tier (12" X 15" X 72") Personal Effects Lockers Required
0-10	0	0
11-50	1 shower stall	2
51-100	1 shower stall	3
101-200	1 shower stall	4
Over 200	1 shower stall plus 1 additional shower stall for each 200 additional tenant-occupants	1 two-tier locker plus 1 two-tier locker for each 50 additional tenant-occupants

Check "N/A" only if the project is a residential project, or if it does not include nonresidential development that would accommodate over 10 tenant occupants (employees).

Shower Facilities - YES
The project includes nonresidential development that would accommodate thirteen (13) Tenant-Occupants. The project would include a minimum of 1 shower stall and 2 two-tier personal effects lockers in accordance with the voluntary measures under the California Green Building Standards Code.

☑	☐	☐

6. *Designated Parking Spaces*

If the project includes a nonresidential use in a TPA, would the project provide designated parking for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles in accordance with the following table?

Number of Required Parking Spaces	Number of Designated Parking Spaces
0-9	0
10-25	2
26-50	4
51-75	6
76-100	9
101-150	11
151-200	18
201 and over	At least 10% of total

This measure does not cover electric vehicles. See Question 4 for electric vehicle parking requirements.

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces. The required designated parking spaces are to be provided within the overall minimum parking requirement, not in addition to it.

Check "N/A" only if the project is a residential project, or if it does not include nonresidential use in a TPA.

Designated Parking Spaces - N/A
There is no alley access and the lot is less than 10,000 square feet. Therefore the project is exempt from parking requirements per SDMC 142.0540 (a).

☐ ☐ ☑

7. *Transportation Demand Management Program* If the project would accommodate over 50 tenant-occupants (employees), would it include a transportation demand management program that would be applicable to existing tenants and future tenants that includes: At least one of the following components: • Parking cash out program • Parking management plan that includes charging employees market-rate for single-occupancy vehicle parking and providing reserved, discounted, or free spaces for registered carpools or vanpools • Unbundled parking whereby parking spaces would be leased or sold separately from the rental or purchase fees for the development for the life of the development And at least three of the following components: • Commitment to maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees • On-site carsharing vehicle(s) or bikesharing • Flexible or alternative work hours • Telework program • Transit, carpool, and vanpool subsidies • Pre-tax deduction for transit or vanpool fares and bicycle commute costs • Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, gyms, or childcare, either onsite or within 1,320 feet (1/4 mile) of the structure/use? Check "N/A" only if the project is a residential project or if it would not accommodate over 50 tenant-occupants (employees). Transportation Demand Management Program - N/A The project would accommodate less than 50 employees	☐	☐	☑

Step 3: Project CAP Conformance Evaluation (if applicable)

not applicable

The third step of the CAP consistency review only applies if Step 1 is answered in the affirmative under option B. The purpose of this step is to determine whether a project that is located in a TPA but that includes a land use plan and/or zoning designation amendment is nevertheless consistent with the assumptions in the CAP because it would implement CAP Strategy 3 actions. In general, a project that would result in a reduction in density inside a TPA would not be consistent with Strategy 3.The following questions must each be answered in the affirmative and fully explained.

1. **Would the proposed project implement the General Plan's City of Villages strategy in an identified Transit Priority Area (TPA) that will result in an increase in the capacity for transit-supportive residential and/or employment densities?**
   Considerations for this question:
   - Does the proposed land use and zoning designation associated with the project provide capacity for transit-supportive residential densities within the TPA?
   - Is the project site suitable to accommodate mixed-use village development, as defined in the General Plan, within the TPA?
   - Does the land use and zoning associated with the project increase the capacity for transit-supportive employment intensities within the TPA?

2. **Would the proposed project implement the General Plan's Mobility Element in Transit Priority Areas to increase the use of transit?**
   Considerations for this question:
   - Does the proposed project support/incorporate identified transit routes and stops/stations?
   - Does the project include transit priority measures?

3. **Would the proposed project implement pedestrian improvements in Transit Priority Areas to increase walking opportunities?**
   Considerations for this question:
   - Does the proposed project circulation system provide multiple and direct pedestrian connections and accessibility to local activity centers (such as transit stations, schools, shopping centers, and libraries)?
   - Does the proposed project urban design include features for walkability to promote a transit supportive environment?

4. **Would the proposed project implement the City of San Diego's Bicycle Master Plan to increase bicycling opportunities?**
   Considerations for this question:
   - Does the proposed project circulation system include bicycle improvements consistent with the Bicycle Master Plan?
   - Does the overall project circulation system provide a balanced, multimodal, "complete streets" approach to accommodate mobility needs of all users?

5. **Would the proposed project incorporate implementation mechanisms that support Transit Oriented Development?**
   Considerations for this question:
   - Does the proposed project include new or expanded urban public spaces such as plazas, pocket parks, or urban greens in the TPA?
   - Does the land use and zoning associated with the proposed project increase the potential for jobs within the TPA?
   - Do the zoning/implementing regulations associated with the proposed project support the efficient use of parking through mechanisms such as: shared parking, parking districts, unbundled parking, reduced parking, paid or time-limited parking, etc.?

6. **Would the proposed project implement the Urban Forest Management Plan to increase urban tree canopy coverage?**
   Considerations for this question:
   - Does the proposed project provide at least three different species for the primary, secondary and accent trees in order to accommodate varying parkway widths?
   - Does the proposed project include policies or strategies for preserving existing trees?
   - Does the proposed project incorporate tree planting that will contribute to the City's 20% urban canopy tree coverage goal?

CLIMATE ACTION PLAN CONSISTENCY CHECKLIST
ATTACHMENT A

This attachment provides performance standards for applicable Climate Action Pan (CAP) Consistency Checklist measures.

Table 1 Roof Design Values for Question 1: Cool/Green Roofs supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan

Land Use Type	Roof Slope	Minimum 3-Year Aged Solar Reflectance	Thermal Emittance	Solar Reflective Index
Low-Rise Residential	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16
High-Rise Residential Buildings, Hotels and Motels	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16
Non-Residential	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 residential and non-residential voluntary measures shown in Tables A4.106.5.1 and A5.106.11.2.2, respectively. Roof installation and verification shall occur in accordance with the CALGreen Code.

CALGreen does not include recommended values for low-rise residential buildings with roof slopes of ≤ 2:12 for San Diego's climate zones (7 and 10). Therefore, the values for climate zone 15 that covers Imperial County are adapted here.

Solar Reflectance Index (SRI) equal to or greater than the values specified in this table may be used as an alternative to compliance with the aged solar reflectance values and thermal emittance.

Table 2	Fixture Flow Rates for Non-Residential Buildings related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan
Fixture Type	**Maximum Flow Rate**
Showerheads	1.8 gpm @ 80 psi
Lavatory Faucets	0.35 gpm @60 psi
Kitchen Faucets	1.6 gpm @ 60 psi
Wash Fountains	1.6 [rim space(in.)/20 gpm @ 60 psi]
Metering Faucets	0.18 gallons/cycle
Metering Faucets for Wash Fountains	0.18 [rim space(in.)/20 gpm @ 60 psi]
Gravity Tank-type Water Closets	1.12 gallons/flush
Flushometer Tank Water Closets	1.12 gallons/flush
Flushometer Valve Water Closets	1.12 gallons/flush
Electromechanical Hydraulic Water Closets	1.12 gallons/flush
Urinals	0.5 gallons/flush

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Tables A5.303.2.3.1 and A5.106.11.2.2, respectively. See the California Plumbing Code for definitions of each fixture type.

Where complying faucets are unavailable, aerators rated at 0.35 gpm or other means may be used to achieve reduction.

Acronyms:
gpm = gallons per minute
psi = pounds per square inch (unit of pressure)
in. = inch

Table 3	**Standards for Appliances and Fixtures for Commercial Application related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan**	
Appliance/Fixture Type	**Standard**	
Clothes Washers	Maximum Water Factor (WF) that will reduce the use of water by 10 percent below the California Energy Commissions' WF standards for commercial clothes washers located in Title 20 of the *California Code of Regulations*.	
Conveyor-type Dishwashers	0.70 maximum gallons per rack (2.6 L) (High-Temperature)	0.62 maximum gallons per rack (4.4 L) (Chemical)
Door-type Dishwashers	0.95 maximum gallons per rack (3.6 L) (High-Temperature)	1.16 maximum gallons per rack (2.6 L) (Chemical)
Undercounter-type Dishwashers	0.90 maximum gallons per rack (3.4 L) (High-Temperature)	0.98 maximum gallons per rack (3.7 L) (Chemical)
Combination Ovens	Consume no more than 10 gallons per hour (38 L/h) in the full operational mode.	
Commercial Pre-rinse Spray Valves (manufactured on or after January 1, 2006)	Function at equal to or less than 1.6 gallons per minute (0.10 L/s) at 60 psi (414 kPa) and • Be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate. • Be equipped with an integral automatic shutoff. • Operate at static pressure of at least 30 psi (207 kPa) when designed for a flow rate of 1.3 gallons per minute (0.08 L/s) or less.	

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Section A5.303.3. See the California Plumbing Code for definitions of each appliance/fixture type.

Acronyms:
L = liter
L/h = liters per hour
L/s = liters per second
psi = pounds per square inch (unit of pressure)
kPa = kilopascal (unit of pressure)

COAST GEOTECHNICAL
CONSULTING ENGINEERS AND GEOLOGISTS

July 26th, 2017

Siavash Ghamaty
1027 Meade Avenue
San Diego, CA 92116

RE: PRELIMINARY GEOTECHNICAL INVESTIGATION AND EVALUATION OF ONSITE FAULTING
Project No. P-670517
Proposed Multistory Structure and Residence
2142 Logan Ave
San Diego, California

Dear Mr. Ghamaty:

In response to your request and in accordance with out Agreement dated May 8, 2017, we have conducted a preliminary geotechnical investigation and an evaluation for the potential of onsite faulting for 2142 Logan Avenue, San Diego, California. The findings of the investigation, laboratory test results, and recommendations for the foundation design are presented in this report.

From a geologic and soils engineering point of view, it is our opinion that the site is suitable for the proposed development, provided the recommendations in this report are implemented during the design and construction phases. However, certain geotechnical condition will require special consideration during the design and construction phases, as indicated by the following:

- Temporary slopes are recommended at a gradient of 1:1 (horizontal to vertical), due to the nature and characteristics of the underlying Paralic Deposits. Where the basement walls are in close proximity to the adjacent building, shoring or basement relocation should be considered.

- Remedial grading is recommended for foundation areas (outside the basement) at or near the present grade.

Based on the results of our literature review, aerial photographic analysis, and subsurface fault study, it is also our professional opinion that no active or potentially active faults are present, and the site is situated to receive the proposed improvements at the site. The accompanying report presents the results of our fault study.

If you have any questions regarding our report, please do not hesitate to contact us at (858) 755-8622. This opportunity to be of service is appreciated.

Respectfully Submitted,

COAST GEOTECHNICAL

Elizabeth White
Project Geologist

Vithaya Singhanet, P.E.
Geotechnical Engineer

Mark Burwell, C.E.G.
Engineering Geologist

PRELIMINARY GEOTECHNICAL INVESTIGATION AND EVALUATION OF ONSITE FAULTING

Proposed Two-Story Structure
2142 Logan Avenue
San Diego, California

Prepared for:
SIAVASH GHAMATY
1027 Meade Avenue
San Diego, CA 92116

Prepared by:
COAST GEOTECHNICAL
P.O. Box 230163
Encinitas, California 92023

July 26th, 2017
W.O. P-672517

TABLE OF CONTENTS

1. INTRODUCTION

This report presents the results of our background review, subsurface investigation, laboratory testing, geotechnical analyses, conclusions regarding the conditions at 2142 Logan Avenue, San Diego (Figure 1), and recommendations for design and construction. The purpose of this study is to evaluate the nature and characteristics of the earth materials underlying the property, the engineering properties of the surficial deposits and their influence on the proposed two-story structure.

1.1 Purpose of Fault Rupture Investigation

This report also presents the results of our fault study at the subject property, as required by the City of San Diego for all sites located within the bounds of the Downtown Special Fault Zone (Hazard Category 13). The purpose of our fault study was to evaluate the possible presence of onsite faulting and to provide conclusions and recommendations related to onsite faulting.

2. SCOPE OF SERVICES

The scope of services provided included a review of background data, reconnaissance of the site geology, and engineering analysis with regard to the proposed. The performed tasks specifically included the following:

- Review of pertinent geologic and hazard (seismic, landslide, and tsunami) maps, geotechnical literature regarding the seismic potential of nearby faults, and a site plan for the project. All background data is listed in the References portion of this report.

- Performing a site reconnaissance, including the observation of geologic conditions and other hazards, which may impact the proposed project.

- Excavation and logging two (2) fault trenches (a total of 80 linear feet) diagonally across the entire site. The approximate locations of the trenches are indicated on

Figure 2, and the trench logs presented on Plates C through F. Subsequent to excavation and logging, the trenches were backfilled with native soils to original grade.

- Photo documentation of the trench was recorded. Figures 4 - 8 contains photographs of the trench.

- Performing geotechnical laboratory testing of recovered soil samples.

- Analyzing data obtained from our research, subsurface exploration, and laboratory testing.

- Preparing this preliminary report presenting our findings, conclusions, and geotechnical recommendations with regard to our fault investigation.

3. Site Description and Proposed Development

3.1 Site Description

The site is undeveloped parking lot located north of Logan Avenue in Barrio Logan area in the City of San Diego. Topographically, the site is relatively flat with an approximate 1 percent descent towards the southwest in the direction of Logan Avenue. The elevation of the area for proposed construction is at approximately 70.8 feet. A graded 2:1 (horizontal to vertical) slope extends down to Interstate 5 along the northeast side of the property. The subject site is bounded to the southeast and northwest by multistory structures, and by the northwest by Logan Avenue.

Site is located in the Downtown Special Fault Zone, Hazard Category 13 as specified by the City of San Diego (San Diego Seismic Safety Study). Sites located within this zone have a moderate to high risk of ground rupture.

3.2 Proposed Development

We understand that site development will include construction of a two-story structure across the site with a basement. Concept plans for the development were prepared by TFWA Architecture.

4. Site Investigations and Laboratory Testing

4.1 Site and Subsurface Investigation

Prior to trench excavation, Underground Service Alert was contacted to coordinate locations and identification of nearby underground facilities.

Site exploration was performed on June 23rd, 2017. It included a visual reconnaissance of the site and the excavation of two (2) exploratory fault trenches that were logged in detail by a geologist from our firm. Two trenches were necessary in order to avoid contaminated soils, as determined by a Limited Phase II Environmental Site Assessment conducted by GDS Inc. (see Figure 2 for locations of contaminated soils).

The Trench No. 1 (T-1) and Trench No. 2 (T-2) were excavated across the proposed development area to a maximum depth of 9.8 feet and 7.5 feet, respectively. The trenches were oriented in an approximately east-west direction across the site in order to intercept any strands of the nearby Rose Canyon Fault Zone which more or less trends towards northerly near the area. This allowed for a complete assessment of the site with regard to possible faults that may cross the site. Four logs of the trenches are presented in Appendix B of this report. Photographs of the trench are included as Figures 3-6.

Trench No.1 was excavated 24-inches wide to depths from 9.8 to 6 feet below the ground surface for 30 linear feet. Trench No. 2 was excavated 24-inches wide to depths from 7.5 to 7 feet below the ground surface for 35 linear feet. The trenches were excavated using a tractor mounted Caterpillar backhoe with a 24-inch bucket. The trench walls of each trench were scraped using taping knives to remove soil smears and gouge marks left by the backhoe. A level line and 5-foot interval grid were

established on the north and south walls of each trench using string, nails, and a carpenter's level. The grid was used to prepare 1-inch to 5-foot scale graphic logs of the northern and southern exposures of each trench. The trench locations were surveyed using a Brunton compass and measured using a tape measure and plotted on the Site Plans (Figure 2).

Subsequent to logging, the trenches were backfilled. Future development of the site should consider the backfill of this trench as uncompacted.

4.2 Laboratory Testing and Analysis

The laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. All lab descriptions and results can be found in the Laboratory Test Results section of Appendix B of this report.

The following tests were preformed:

- Classification of Soils
- Grain Size Distribution
- Moisture/Density
- Maximum Dry Density and Optimum Moisture Content
- Expansion Index Test
- Sulfate Ion Content
- Shear Test

5. GEOLOGIC CONDITIONS

The geologic conditions at the site are based on our field exploration and the review of available geologic and geotechnical literature.

5.1 Geologic Setting

The subject property is located in the Coastal Plains subdivision of the Peninsular Ranges geomorphic province of San Diego. The coastal plain area is characterized by Pleistocene marine terrace landforms. These surfaces are relatively flat erosional platforms that were shaped by wave action along the former coastlines. The step-like elevation of the marine terraces was caused by changes in sea level throughout the Pleistocene and by seismic activity along the Rose Canyon Fault Zone located 2.0 miles west of the subject site. The Rose Canyon Fault Zone is one of many northwest trending, sub-parallel faults and fault zones that traverse Southern California.

Further discussion of faulting in regards to the site is discussed in the Geologic Hazards section of this report.

5.2 Site Geology

Previously published geologic maps conducted by Kennedy and Tan (2008) indicate that the subject property is underlain at depth by the San Diego Formation (Tsd). Overlying the rocks are Old Paralic Deposits, Unit 6 (Qop6), which were formerly known as the Bay Point Formation on previous maps. The Old Paralic Deposits are overlain by loose sand commonly found interbedded with paralic deposits (Qop_{sand}) located at the surface of the property site in Trench 1. The general geologic conditions are depicted on cross-sections A-A' and B-B' enclosed on Plate A and Plate B, respectively. A brief description of the earth materials encountered on the site follows:

- **Old Paralic Deposits, Sand (Qop_{sand})**

  Overlying the units in Trench 1 is a 3.0 to 4.0 foot layer of loose sand that appears to be natural. The sand is tan, medium and fine-grained, and is in a dry and loose condition. The sand has little to no cohesion, and shielding was required on the southern wall of Trench 1. While no loose sand was encountered in Trench 2, the possibility of the sand underlying the site elsewhere should not be ruled out.

- **Old Paralic Deposits, Unit 6 (Qop_6)**

  Underlying the surficial materials, Pleistocene Old Paralic Deposits was encountered underlying the entire site at depth. The paralic deposits are composed of two distinctive subunits; 1) a reddish-brown, silty medium and fine-grained sand with interbedded lenses of silt and clay that is in a slightly moist and moderately dense condition, and 2) a light brown to light orange brown, silty fine sandstone in a moist and very dense condition. The upper 1-2 inches of the subunit contained a well-formed, reddish brown paleosol.

5.3 Expansive Soil

Based on our experience in the area and laboratory testing of selected samples, the two subunits of the Old Paralic Deposits reflect expansion potentials in the very low range.

5.4 Groundwater Conditions

No evidence of perched or high groundwater tables were encountered to the depth explored. However, it should be noted that seepage problems can develop after completion of construction. These seepage problems most often result from drainage alterations, landscaping, and over-irrigation. In the event that seepage or saturated ground does occur, it has been our experience that they are most effectively handled on an individual basis.

6. Geologic Hazards: Faulting and Seismicity

6.1 Regional Faulting

The subject site is located within the seismically active Southern California region, which is generally characterized by northwest trending, right-lateral strike-slip faults and fault zones. Several of these fault segments and zones are classified as active by the California Geologic Survey (Alquist-Priolo Earthquake Fault Zoning Act.) As a result, ground shaking is a potential hazard throughout the region.

6.2 Local Faulting

Local faulting in San Diego is largely due to the Rose Canyon Fault Zone and the La Nacion fault. The Rose Canyon Fault zone is comprised of many individual fault segments that bisect the City of San Diego from Coronado through La Jolla; although, not all of these faults are active. Many of these segments have been previously mapped as individual structures. These are the Rose Canyon, Mount Soledad and Country Club faults in the La Jolla to Mission Valley segment of the zone; the Old Town fault south of Mission Valley to downtown; and the Silver Strand, Coronado, and Spanish Bight faults in San Diego Bay and on Coronado Island. The downtown zone of active faults, which is still in the process of being delineated, provides the connection between the onshore Rose Canyon fault zone of active faults and the offshore faulting in San Diego Bay, Coronado, and areas to the south. The relationship of the site to mapped faults within the San Diego Bay is shown on Figure 7. Based on our research of maps and reports in the area, the predominate trend for faults in the downtown special zone is generally in the north-south direction with a slight northwest or slight northeast component.

Based on a review of published geologic maps, no known faults traverse the site (Figure 7). Thus, ground surface rupture is not likely to occur as a result of an earthquake or seismic event. The nearest active fault to the site is the Rose Canyon Fault Zone (offshore), located approximately 2.0 miles west of the site. It should be noted that the Rose Canyon Fault is one of four main fault strands that make up the Newport-Inglewood/Rose Canyon (NIRC) fault system (Treiman, 1984). The four strands form a series of right-stepping en echelon faults situated along the Southern California coastline. A recent study by Sahakian et al. (2017) concluded that the geometry of the NIRC fault system may enable rupture along the entire length of the fault zone. The study also modeled several rupture scenarios in light of the newly defined geometry which suggest earthquake ruptures up to magnitudes (M) of 7.4 are possible along the NIRC system. While the models are intriguing, the paper recommends further research and modeling on the NIRC fault geometry to improve our understanding of potential hazards and ground shaking along the Southern California coast. Therefore, the modeled rupture magnitude of M = 7.4 on the Rose Canyon Fault was not used for the recommendations for this investigation.

Other nearby faults that may affect the site include the Newport-Inglewood fault (offshore), the Coronado Bank fault, and the Julian and Temecula segments of the Elsinore fault. The proximity of major faults to the site, and their estimated maximum earthquake magnitudes and peak site accelerations are enclosed on Table 1 and were determined by EQFAULT version 3.00 software (Blake, 2000).

Table 1: Principal Active Faults

Fault Name	Approximate Distance from site (mi)	Maximum EQ Magnitude (Mmax)	Peak Site Accel. (g)
Rose Canyon	2.0	6.9	0.488
Coronado Bank	13.5	7.4	0.225
Newport-Inglewood (offshore)	35.9	6.9	0.062
Elsinore (Julian)	41.9	7.1	0.061
Earthquake Valley	46.6	6.5	0.036
Elsinore (Temecula)	47.5	6.8	0.043
Elsinore (Coyote Mountain)	48.9	6.8	0.042
Palos Verdes	61.5	7.1	0.041
San Jacinto (Coyote Creek)	63.2	6.8	0.032

The Rose Canyon Fault is capable of generating a magnitude earthquake which would cause strong ground motions at the subject site. Further analysis on seismicity and the site specific seismic parameters are discussed in the Recommendations chapter of this report.

6.3. Other Geologic Hazards

- **Landslide Potential**

  A landslide is the displacement of a mass of rock, debris, or earth down a slope caused by topographic, geological, geotechnical and/or subsurface water conditions. Potential

landslide hazards for the site were assessed using the review of published geologic and topographic maps for the area.

According to the Landslide Hazards map, Point Loma Quadrangle (Tan and Giffen, 1995), the site is located within Susceptibility Area 2 where slopes are marginally susceptible. Most slopes in this area are typically gentle to moderate with slope degrees generally less than 15 degrees.

Owing to the relatively flat topography at the site, the potential for landslide failure at the subject site is considered very low.

- **Liquefaction Potential**

  Liquefaction is a process by which a sand mass loses its shearing strength completely and flows. The temporary transformation of the material into a fluid mass is often associated with ground motion resulting from an earthquake, and high groundwater conditions.

  Owing to the moderately dense nature of the Very Old Paralic Deposits and anticipated depth of groundwater seismically-induced liquefaction and soil instability is considered low.

- **Tsunami Potential**

  Tsunamis are large sea waves generated by earthquakes, volcanic eruptions, or landslides that potentially cause the displacement of substantial volumes of water. The Tsunami Inundation Map for Emergency Planning: Point Loma Quadrangle (California Emergency Management Agency, 2009) suggests that the site is not susceptible to flooding from tsunamis.

7. CONCLUSIONS

We have reviewed readily available reports, maps, and aerial photographs and performed a subsurface fault study of the subject site to evaluate the potential for surface faulting at the site. No active or potentially active faulting was found to transect the subject site. Based on the results from our evaluation of the site, construction of the proposed structures is feasible, provided the recommendations within this report are incorporated in the design and construction of the project. The following geotechnical considerations for the project site include:

- Based on our literature and map review no evidence of active or potentially active faults have been reported on or directly adjacent to the site.

- No geomorphic evidence of on-site faulting, such as a break in slope or lineament, was observed during our aerial photographic review nor during our field study at the site.

- No evidence of on-site faulting was encountered in our trenches crossing the site.

- The site is underlain by unfaulted Old Paralic Deposits.

- Groundwater was not encountered on the site and is not anticipated to be a significant factor during site grading and subsequent development.

- Geotechnical conditions encountered during the excavation and backfill operations were generally as anticipated.

- The existing fill, debris and loose Paralic Deposits are not suitable for the support of structural footings, concrete flatwork, and exterior improvements in their present condition. These surficial deposits should be removed and replaced as properly compacted fill deposits in areas outside the proposed subterranean walls.

- Disturbed soils resulting from the demolition of structures and utility lines should be removed and replaced as properly compacted fill.

- It is anticipated that the subterranean parking excavation will extend through the loose surficial deposits encountered on the site and into moderately dense Paralic Deposits. However, if loose materials are encountered in the area of the proposed basement slab they should be compacted. All retaining wall footing should penetrate loose or weathered materials and founded the design depth into competent Paralic Deposits.

8. RECOMMENDATIONS

8.1 Grading: Contaminated Soils

Contaminated soils within the areas of excavations for the underground portion of the proposed structures should be removed. It is our understanding that GDS, the project environmental consultant, has been retained to provide specific recommendations on how to handle and dispose of contaminated materials encountered during the grading phase.

8.2 Removals and Recompaction

In areas where structural footings are planned outside the proposed subterranean walls, the existing surficial deposits should be removed and replaced as properly compacted fill. The depth of removals are anticipated to be on the order of 3.0 to 3.5 feet. Most of the existing earth deposits are generally suitable for reuse, provided they are cleared of all vegetation, debris, and thoroughly mixed. Prior to placement of fill, the base of the removal should be observed by a representative of this firm. Additional overexcavation and recommendations may be necessary at that time. The exposed bottom should be scarified to a minimum depth of 6.0 inches, moistened as required, and compacted to a minimum of 90 percent the laboratory maximum dry density. Fill should be placed in 6.0 to 8.0 inch lifts, moistened to approximately 1.0-2.0 percent above optimum moisture content and compaction to a minimum of 90 percent the laboratory maximum dry density. Loose surficial deposits in areas of proposed concrete flatwork, exterior improvements, and driveways should be removed and

replaced as properly compacted fill. Imported fill, if necessary, should consist of non-expansive granular deposits approved by the geotechnical engineer.

8.3 Proposed Grading

Remedial grading will be necessary for foundations and concrete flatwork constructed at or near the existing grade, as recommended above. It is anticipated that the subterranean parking excavation will extend through the surficial deposits encountered on the site and into moderately dense Paralic Deposits. However, it should be anticipated that the basement slab subgrade soils should be scarified to a depth of 8.0 inches, moistened as required, and compacted to a minimum of 90 percent of the laboratory maximum density in order to provide more uniform support for the proposed slab. All retaining wall footings should penetrate loose or weathered materials and founded the design depth into competent terrace deposits.

8.4 Temporary Slopes and Excavation Characteristics

Temporary excavations, up to 10 feet, should be trimmed to a gradient of 1:1 (horizontal to vertical) or less depending upon conditions encountered during grading. The Paralic Deposits are generally weakly cemented with little or no cohesion and some degree of sloughing may occur along the temporary slope face. Where property lines, structures or other constraints prevent the temporary slope, shoring will be required. It should be noted that adjacent structures appear to be constructed along or near property lines. Based on our experience in the area, the Paralic Deposits are rippable with conventional heavy earth moving equipment in good working order.

8.5 Foundations

The following design parameters are based on footings founded into non-expansive approved compacted fill deposits or competent old paralic deposits. Footings for the proposed structure should be a minimum of 12 inches and 15 inches wide and founded a minimum of 12 inches and 18 inches below the lower most adjacent subgrade at the time of foundation construction for single-story and two-story structures, respectively. A 12 inch by 12 inch grade beam or footing should be placed

across the garage opening. Footings should be reinforced with a minimum of four No. 4 bars, two along the top of the footing and two along the base. Where parallel wall footings occur, the upper footing should be deepened below a 45 degree plane projected up from the base of the lower footing, or the lower wall should be designed for the additional surcharge load from the upper wall. Footing recommendations provided herein are based upon underlying soil conditions and are not intended to be in lieu of the project structural engineer's design.

The base of footings should be maintained a minimum horizontal distance of 10 lateral feet to the face of the nearest slope.

For design purposes, an allowable bearing value of 1700 pounds per square foot and 2000 pounds per square foot may be used for foundations at the recommended footing depths for single and two story structures, respectively. Basement wall footings may use an allowable bearing value of 2500 pounds per square foot.

For footings deeper than 18 inches, the bearing value may be increased by 250 pounds per square foot for each additional 6.0 inches of embedment to a maximum of 3000 pounds per square foot. The bearing value may be increased by one-third for the short durations of loading, which includes the effects of wind and seismic forces.

The bearing value indicated above is for the total dead and frequently applied live loads. This value may be increased by 33 percent for short durations of loading, including the effects of wind and seismic forces.

8.6 Slabs on Grade (Interior and Exterior)

Slab on grade should be a minimum of 5.0 inches thick and reinforced in both directions with No. 4 bars placed 18 inches on center in both directions. Exterior slabs on grade should be a minimum of 4.5 inches thick and reinforced with No. 3 placed 18 inches on center in both directions. The slab

should be underlain by a minimum 2.0-inch coarse sand blanket (S.E. greater than 30). Where moisture sensitive floors are used, a minimum 10.0-mil Visqueen, Stego, or equivalent moisture barrier should be placed over the sand blanket and covered by an additional two inches of sand (S.E. greater than 30). Utility trenches underlying the slab may be backfilled with on-site materials, compacted to a minimum of 90 percent of the laboratory maximum dry density. Slabs should be reinforced as indicated above the provided with saw cuts/expansion joints, as recommended by the project structural engineer. All slabs should be cast over dense compacted subgrades. At a minimum, interior slabs should be provided with softcut contraction/control joints consisting of sawcuts spaced 10 feet on center maximum each way. Cut as soon as the slab will support the weight of the saw, and operate without disturbing the final finish, which is normally within 2 hours after final finish at each control joint location or 150 psi to 800 psi. The softcuts should be a minimum of 3/4 inch in depth, but should not exceed 1 inch deep maximum. Anti-ravel skid plates should be used and replaced with each blade to avoid spalling and raveling. Avoid wheeled equipment across cuts for at least 24 hours. Provide re-entrant corner (270 degrees corners) reinforced for all interior slabs consisting of minimum two, 10-feet long No. 3 bars at 12 inches on center with the first bat placed 3 inches from re-entrant corner (see Plate G). Re-entrant corners will depend on slab geometry and/or interior column locations. Exterior slabs should be provided with weakened plane joints at frequent intervals in accordance with the American Concrete Institute (ACI) guidelines. Our experience indicates that the use of reinforcement in slabs and foundations can reduce the potential for drying and shrinkage cracking. However, some minor cracking is considered normal and should be expected as the concrete cures. Moisture barriers can retard, but not eliminate moisture vapor movement from the underlying soils up through the slab.

8.7 Sulfate Content

Based on selective testing, the soluble sulfate content in negligible.

8.8 Lateral Resistance

Resistance to lateral load may be provided by friction acting at the base foundations and by passive earth pressure. A coefficient of friction of 0.35 may be used with dead-load forces. Design passive earth resistance may be calculated from a lateral pressure corresponding to an equivalent fluid density of 300 pounds per cubic foot with a maximum of 2500 pounds per square foot.

8.9 Retaining Walls

Cantilever walls (yielding) retaining nonexpansive granular soils may be designed for an active-equivalent fluid pressure of 37 pounds per cubic foot for a level surcharge. Restrained walls (nonyielding) should be designed for an "at-rest" equivalent fluid pressure of 58 pounds per cubic foot. Wall footings should be designed in accordance with the foundation design recommendations. All retaining walls should be provided with adequate backdrainage system. A geocomposite blanket drain such as Miradrain 6000 or equivalent is recommended behind walls. The soil parameters assume a level nonexpansive select granular backfill compacted to a minimum of 90 percent of the laboratory maximum dry density.

8.10 Dynamic (Seismic) Lateral Earth Pressures

For proposed restrained walls (non-yielding), potential seismic loading should be considered. For smooth rigid walls, Wood (1973) expressed the dynamic thrust in the following form:

$$Pe = k_h YH^2 \text{ (nonyielding)}$$

where kh is ½ peak ground acceleration equal to 50 percent of the design spectral response acceleration coefficient (Sds) divided by 2.5 per C.B.C. (2007), Y is equal to the unit weight of backfill, and H is equal to the height of the wall.

The pressure diagram for this dynamic component can be approximated as an inverted trapezoid with stress decreasing with depth. The point of application of the dynamic thrust is at a height of 0.6 above the base of the wall. The magnitude of the resultant is:

$$Pe = 20.5\ H^2 \text{ (nonyielding)}$$

This dynamic component should be added to the at-rest static pressure for seismic loading conditions.

For cantilever walls (yielding), Seed and Whitman (1970) developed the dynamic thrust as:

$$Pe = 3/8\ k_h Y H^2 \text{ (yielding)}$$

The pressure diagram for this dynamic component can be approximated as an inverted trapezoid with stress decreasing with depth and the resultant at a height of 0.6 above the base of the wall. The magnitude of the resultant is:

$$Pe = 7.7\ H^2 \text{ (yielding)}$$

This dynamic component should be added to the static pressure for seismic loading conditions.

8.11 Settlement Characteristics

Estimated total and differential settlement over a horizontal distance of 30 feet is expected to be on the order of 1.0 inch and ¾ inch, respectively. It should also be noted that long term secondary settlement due to irrigation and loads imposed by structures is anticipated to be ¼ inch.

8.12 Seismic Considerations

Although the likelihood of ground rupture on the site is remote, the property will be exposed to moderate to high levels of ground motion resulting from the release of energy should an earthquake occur along the numerous known and unknown faults in the region. The Rose Canyon (offshore) Fault Zone located approximately 3.2 miles west of the property is the nearest known active fault, and is considered the design fault for the site. In addition to the Rose Canyon fault, several other active faults may affect the subject site.

Seismic design parameters were determined as part of this investigation in accordance with Chapter 16, Section 1613 of the 2016 California Building Code (CBC) and ASCE 7-10 Standard using the web-based United States Geological Survey (USGS) Seismic Design Tool. The generated results for the parameters are presented on Table 2.

Table 2: Seismic Design Parameters

Factors	Values
Site Class	D
Seismic Design Category	D
Site Coefficient, F_a	1.015
Site Coefficient, F_v	1.533
Mapped Short Period Spectral Acceleration, S_S	1.212
Mapped One-Period Spectral Acceleration, S_1	0.467
Short Period Spectral Acceleration Adjusted for Site Class, S_{MS}	1.230
One-Second Period Spectral Acceleration Adjusted for Site, S_{M1}	0.716
Design Short Period Spectral Acceleration, S_{DS}	0.820
Design One-Second Period Spectral Acceleration, S_{D1}	0.477

8.13 Preliminary Pavement Design

The following preliminary pavement section is recommended for proposed driveways:

- 4.0 inches of asphaltic concrete on
- 6.0 inches of select base (Class 2) on
- 12 inches of compacted subgrade soils or
- 5.5 inches of concrete on
- 12 inches of compacted subgrade soils

Subgrade soils should be compacted to the thickness indicated in the structural section and left in a condition to receive base materials. Class 2 base materials should have a minimum R-value of 78 and a minimum sand equivalent of 30. Subgrade soils and base materials should be compacted to a minimum of 95 percent of their laboratory maximum dry density. Concrete should be reinforced with No. 3 bars placed 18 inches on center in both directions.

The pavement section should be protected from water sources. Migration of water into subgrade deposits and base materials could result in pavement failure. Additional recommendations will be necessary is permeable pavers are proposed.

8.14 Permeable Interlocking Concrete Pavers (PICP)

Permeable Interlocking Concrete Pavers (PICP) are feasible from a geotechnical viewpoint, however, several design aspects should be considered. Foundations adjacent to or in close proximity to PICP should be protected by an impervious membrane extending a minimum of 3.0 lateral feet from the foundation under the pavement section. The intent is to reduce lateral migration of infiltrated drainage and potential impaction on footings. However, this approach is considered less desirable from a geotechnical viewpoint than lining the section with an impervious liner.

Pavement underdrains are recommended and should be incorporated in the design for proper collection and disposal of filtrated storm water. If subdrains are not allowed for storm water infiltration by reviewing agencies, the long term effects of infiltrated water on structural foundations cannot be predicted with any degree of certainty.

PICP pavement structural section (Driveways) should consist of 3 1/8-inch PICP, over a minimum of 2.0 inches of ASTM No. 8 bedding course/choke stone, over a minimum of 8.0 inches of ASTM No. 57 stone base course, over a minimum of 12 inches of 95 percent compacted subgrade. Bedding course/choke stone and base course stone should also be well compacted, consolidated, and interlocked (avoid crushing the underdrain pipes) with heavy construction equipment. ASTM No. 8, No. 9, or No. 89 should be used for joint materials, depending on the joint size and per manufacturer recommendations. The above stone base section may be reduced from 12 inches to a minimum of 6.o inches for walkways and patios, if desired. The gradational requirements are summarized in Table 3.

Table 3: Gradational Requirements for ASTM No. 57, No. 8, No. 89, and No. 9

Sieve Size	Percent Passing			
	No. 57	No. 8	No. 89	No. 9
1 ½"	100			
1"	95 to 100			
½"	25 to 60	100	100	
3/8"		85 to 100	90 to 100	100
No. 4	0 to 10	10 to 300	20 to 55	85 to 100
No.8	0 to 5	0 to 10	5 to 30	10 to 40
No.16		0 to 5	0 to 10	0 to 10
No.50			0 to 5	0 to 5

8.15 Utility Trench

We recommend that all utilities be bedded in clean sand to at least one foot above the top of the conduit. The bedding should be flooded in place to fill all the voids around the conduit. Imported or on-site granular material compacted to at least 90 percent relative compaction may be utilized for backfill above the bedding.

The invert of subsurface utility excavations paralleling footings should be located above the zone of influence of these adjacent footings. This zone of influence is defined as the area below a 45 degree plane projected down from the nearest bottom edge of an adjacent footing. This can be accomplished by either deepening the footing, raising the invert elevation of the utility, or moving the utility or the footing away from one another.

8.16 Drainage

Specific drainage patterns should be designated by the project architect or engineer. However, in general, pad water should be directed away from foundations and around the structure to the street. Roof water should be collected and conducted to the street via non-erodible devices. Pad water should not be allowed to pond. Vegetation adjacent to foundations should be avoided. If vegetation in these areas is desired, sealed planter boxes or drought resistant plants should be considered. Other alternative may be available, however, the intent is to reduce moisture from migrating into foundation subsoils. Irrigation should be limited to that amount necessary to sustain plant life. All drainage systems should be inspected and cleaned annually, prior to winter rains.

8.17 Geotechnical Observations

Structural footing excavations should be observed by a representative of this firm prior to the placement of steel and forms. All fill should be placed while a representative of the geotechnical engineering is present to observe and test.

8.18 Plan Review

A copy of the final plans should be submitted to this office for review prior to the initiation of constructions. Additional recommendations may be necessary at that time.

9. LIMITATIONS

This report is presented with the provision that it is the responsibility of the owner or the owner's representative to bring the information and recommendations given herein to the attention of the project's architects and/or engineers so that they may be incorporated into the plans.

If conditions encountered during construction appear to differ from those described in this report, our office should be notified so that we may consider whether modifications are needed. No responsibility for construction compliance with design concepts, specifications, or recommendations given in this report is assumed unless on-site review is performed during the course of construction.

The subsurface conditions, excavation characteristics, and geologic structure described herein are based on individual exploratory excavations made on the subject property. The subsurface conditions, excavation characteristics, and geologic structures discussed should in no way be construed to reflect any variations which may occur among the exploratory excavations.

Please note that fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors not evident at the time measurements were made and reported herein. Coast Geotechnical assumes no responsibility for variations which may occur across the sire.

The conclusions and recommendations of this report apply as of the current date. In time, however, changes can occur on a property whether caused by acts of man or nature on this or adjoining properties. Additionally, changes in professional standards may be brought about by legislation or the expansion of knowledge. Consequently, the conclusions and recommendations of this report may be rendered wholly or partially invalid by event beyond our control. This report is therefore subject to review and should not be relied upon after the passage of two years.

The professional judgements presented herein are founded partly on our assessment of the technical data gathered, partly on our understanding of the proposed construction, and partly on our general experience in the geotechnical field. However, in no respect do we guarantee the outcome of the project.

This study has been provided solely for the benefit of the client, and is in no way intended to benefit or extend any right or interest to any third party. This report is not to be used on other projects or extensions to this project except by agreement in writing with Coast Geotechnical.

REFERENCES

Blake, T. F. (2000). EQFAULT: A Computer Program for the Deterministic Estimation of Peak Acceleration using Three-Dimensional California Faults as Earthquake Sources, Version 3.0, Thomas F. Blake Computer Services and Software, Thousand Oaks, CA.

California Building Standards Commission. (January 1, 2016). 2016 California Building Code, California Code of Regulations.

California Geologic Survey, (1994), Fault Activity Map of California, Map Scale 1"=750,00'.

City of San Diego (2008). San Diego Seismic Safety Study: Geologic Hazards and Faults. Development Services Department. Grid Tile 17. Grid Scale: 800.

Kennedy, M. P., and Tan, S. S. (2008). California Geological Survey, Regional Geologic Map No. 3, 1:100,000 scale.

Sahakian, V., et al. (2017). Seismic Constraints on the Architecture of the Newport-Inglewood/Rose Canyon Fault: Implications for the Length and Magnitude of Future Earthquake Ruptures. American Geophysical Union (In progress). DOI: 10.1002/2016JB013467

Seed, H.B., and Whitman, R.V. (1970). Design of earth retaining structures for dynamic loads. In Proceedings of the ASCE Special Conference on Lateral Stresses, Ground Displacement and Earth Retaining Structure, Ithaca, N.Y., pp. 103–147.

Tan, S. S., (1995). Landslide Hazards in the Southern Part of the San Diego Metropolitan Area, San Diego County, California, OFR 95-03, Plate 33D.

REFERENCES (CONT.)

TFWA Architecture and Design. (2017). Logan Arts Building Preliminary Drawings: 2142 Logan Avenue, San Diego, California, Scale 1" = 10'.

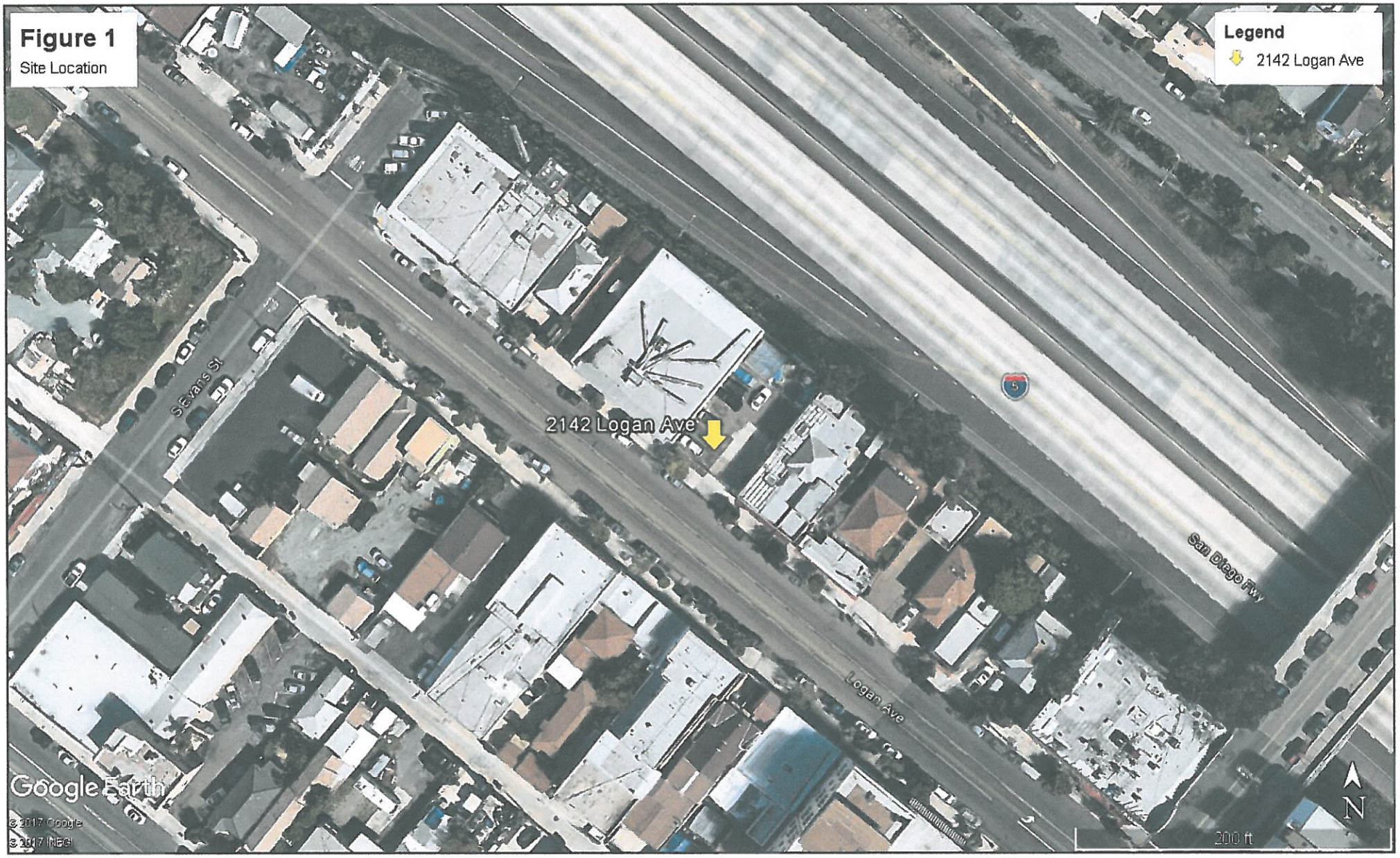
Treiman, J. A. (1984). The Rose Canyon Fault Zone: A Review and Analysis, California Division of Mines and Geology, Fault Evaluation Report 216.

Wood, J.H. (1973). Earthquake-induced soil pressures on structures. Ph.D. thesis, the California Institute of Technology, Pasadena, Calif.

USGS, U. S. Seismic Design Maps, Scale = Variable.
https://earthquake.usgs.gov/designmaps/us/application.php

APPENDIX A

Site Location: 2142 Logan Ave, San Diego, California



COAST GEOTECHNICAL
5931 Sea Lion Place, Suite 109
Carlsbad, CA 92010

Site Plans with Trench and Sample Locations

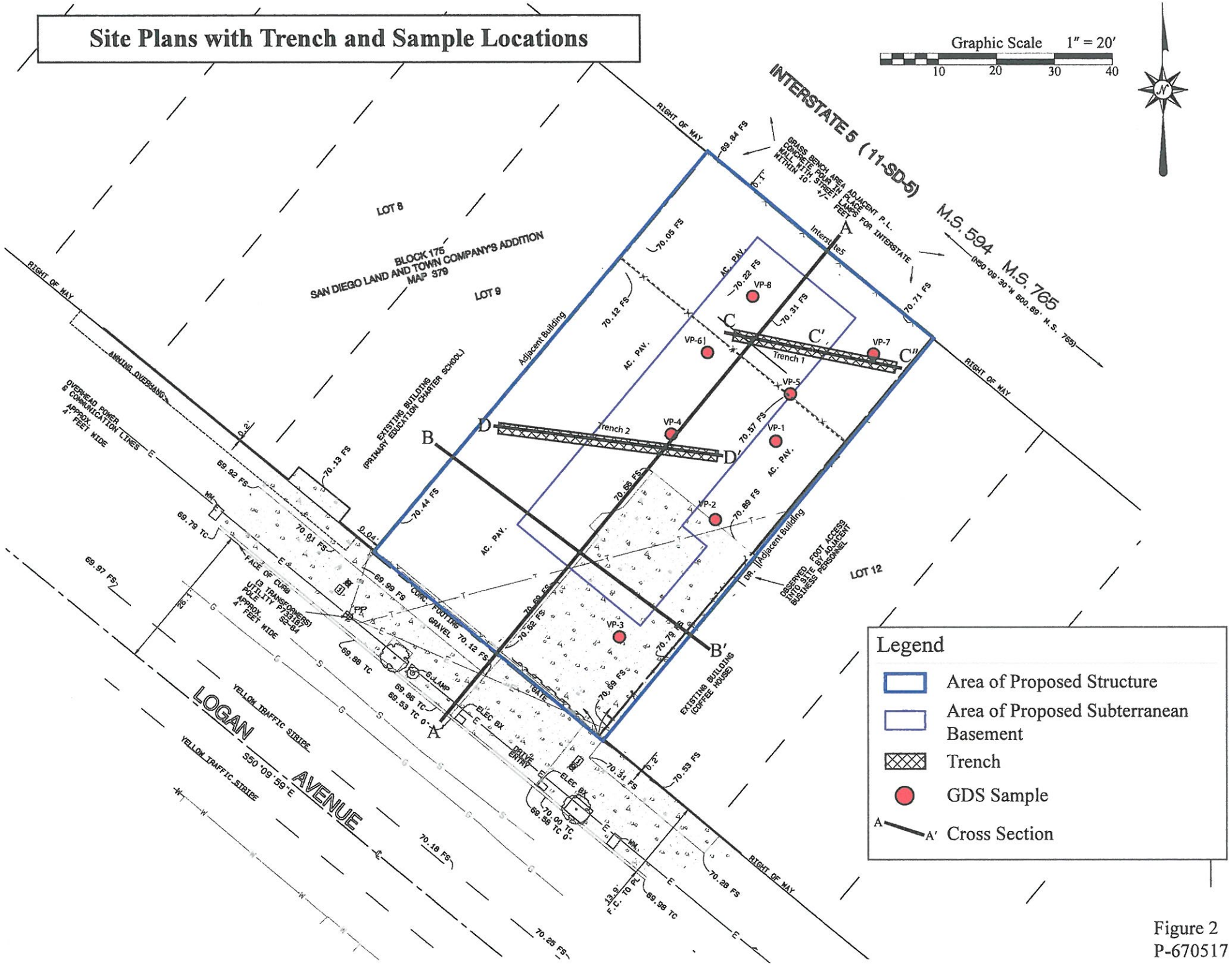


Figure 2
P-670517

Figure 3: Trench 1 (facing west). Note Cistern on north face (right).

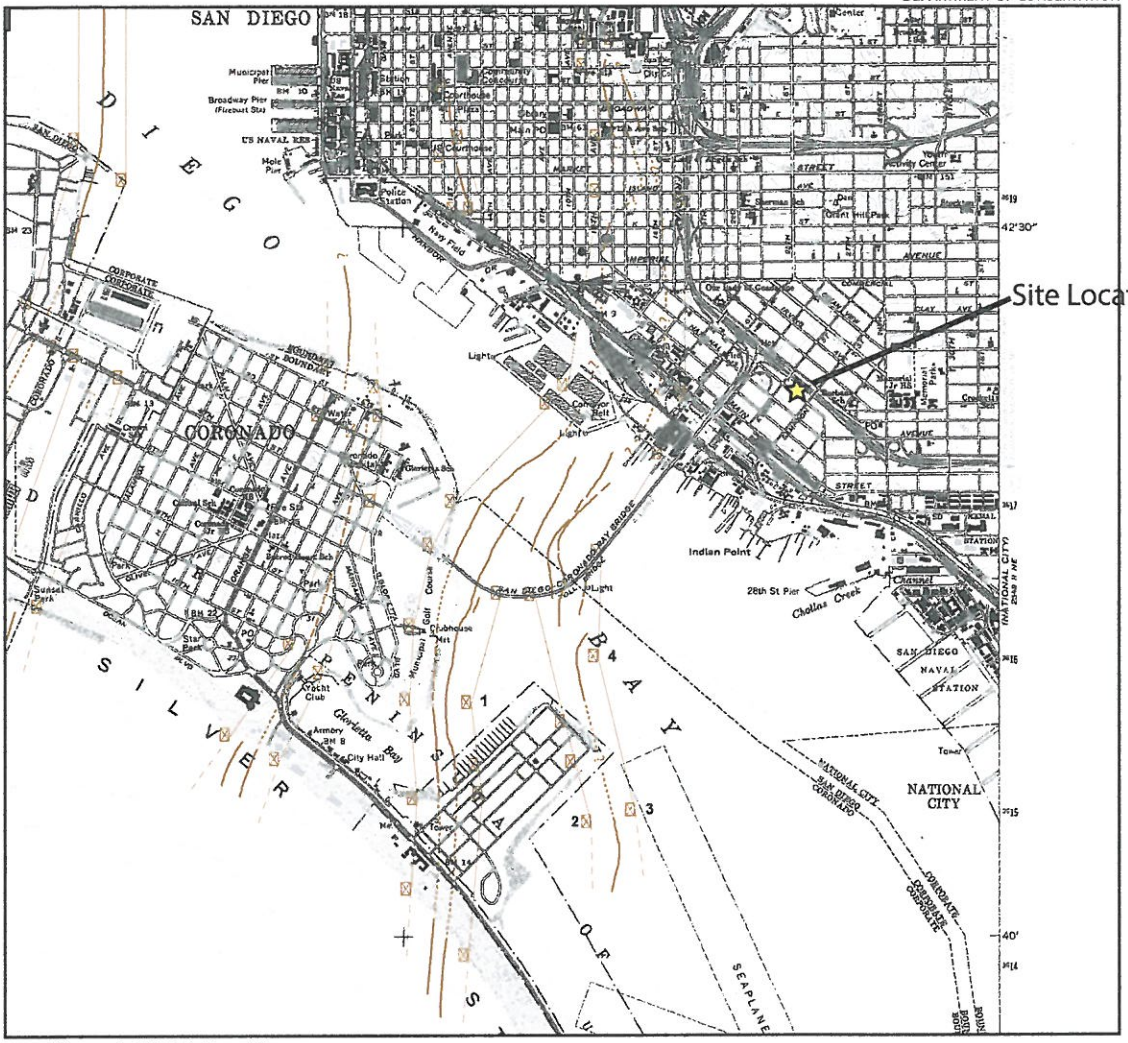
Figure 4: Trench 1. Cistern details.

Figure 5: Trench 2 (facing west). Old Paralic Deposits.

Figure 6: Trench 2 (facing east). Old Paralic Deposits.

CALIFORNIA GEOLOGICAL SURVEY
JAMES F. DAVIS, STATE GEOLOGIST

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION



Topographic base map by U.S. Geological Survey 1994

STATE OF CALIFORNIA
EARTHQUAKE FAULT ZONES

Delineated in compliance with
Chapter 7.5, Division 2 of the California Public Resources Code
(Alquist-Priolo Earthquake Fault Zoning Act)

POINT LOMA QUADRANGLE
REVISED OFFICIAL MAP

Effective May 1, 2003

MAP EXPLANATION

Active Faults

1906 C

Faults considered to have been active during Holocene time and have potential for surface rupture; solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by fault creep.

Earthquake Fault Zone Boundaries

These are delineated as straight-line segments that connect encircled turning points so as to define Earthquake Fault Zone segments.

Turning point located in water and delineated by geographic coordinates.

Seaward projection of zone boundary.

Figure 7
P-670517

APPENDIX B

LABORATORY TESTING AND RESULTS

Earth materials encountered in the exploratory test pits were closely examined and sampled for laboratory testing. The laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures.

Classification: The field classification was verified through laboratory examination, in accordance with the Unified Soil Classification System. The final classification is shown on the enclosed Exploratory Logs in Appendix A.

Grain Size Distribution: The grain size distribution of selected soil samples was determined in accordance with ASTM D6913-04. The test result is presented on Table 4.

TABLE 4

Sieve Size		1"	¾"	½"	#4	#10	#20	#40	#100	#200
Location	Soil Type	Percentage Passing								
T-1 @ 5'	1	100	100	100	100	88	57	30	13	10
T-1 @ 8-9'	2	100	100	100	99	87	62	40	22	17

Expansion Index Test: An Expansion Test was performed on the selected sample. The test procedure were conducted in accordance with the Uniform Building Code, Standard No. 29-2 and AMST D-4829. The classification of expansive soil, based on the expansion index, are as indicated in Table 29-C of the Uniform Building Code. The test result is presented on Table 5.

TABLE 5

Location	Soil Type	Expansion Reading	Degree of Saturation	Uncorrected Expansion Index (EI)	Corrected EI for 50% Saturation
T-1 @ 5'	1	0	40.6	0	0
T-1 @ 8-9'	2	0.001	57.1	1	3.88

Maximum Dry Density and Optimum Moisture Content: The maximum dry density and optimum moisture content were determined for selected samples of earth materials taken from the site. The laboratory standard tests were in accordance with ASTM D-1557-12. The test result is presented on Table 6.

TABLE 6

Location	Soil Type	Maximum Dry Density (γm-pcf)	Optimum Moisture Content (ωopt-%)
T-1 @ 5'	1	124.5	11.5
T-1 @ 8-9'	2	129.5	9.5

Moisture/Density: The field moisture content and dry unit weight were determined for each of the undisturbed soil samples. Test procedures were conducted in accordance with ASTM D7263-09 (Method A), respectively. This information is useful in providing a gross picture of the soil consistency or variation among exploratory excavation. The field moisture content was determined as a percentage of the dry unit weight. The dry unit weight was determined in pounds per cubic foot (pcf). The test results are presented on Table 7.

TABLE 7

Sample Location	Soil Type	Field Moisture Content (%)	Field Dry Density (γd-pcf)	Max. Dry Density (γm-pcf)	In-place Relative Compaction (%)	Degree of Saturation (%)
T-1 @ 1'	1	9.9	106.3	116.9	85.4	46.0
T-1 @ 4'	1	8.5	107.3	116.5	86.2	40.2
T-1 @ 5'	1	7.5	118.2	127.1	94.9	48.0
T-1 @ 10.5'	2	13.0	106.4	120.3	82.2	62.0
T-2 @ 4'	1	8.9	121.6	132.4	97.6	62.0
T-2 @ 6'	2	13.9	113.7	129.5	87.8	81.0
T-2 @ 7.5'	2	14.0	112.3	128.0	86.7	79.0

Sulfate Test: A sulfate test was performed on a selected sample in accordance with California Test Method (CTM) 417. The test result is presented on Table 8.

TABLE 8

Sample ID	Sulfate Content (mg/kg)	Sulfate Content (% by wgt)
TP-1 @ 5 ft	10	0.001

Shear Test: Shear tests were performed in a strain-control type direct shear machine. The laboratory standard tests were in accordance with ASTM D3080. The rate of deformation was approximately 0.025 inches per minute. Each sample was sheared under varying confining loads in order to determine the Coulomb shear strength parameters, cohesion, and angle of internal friction. Samples were tested in a saturated condition.

DIRECT SHEAR
ASTM D 3080

Coast Geotechnical
Project: P-670517 Ghamaty Sample ID: TP-2 @ 7.5 ft.

Soil Description: (SM) Brown, Lightly Cemented, Silty Fine to Medium Sand

Displacement Rate: 0.050 in/m Box Gap: 0.025 in Max Data: —

Remold Target Data: — % = 98.3 pcf — %Mc(-No.10) 2.65 Gs(assumed)

*As Received Mc: 0.7 Adjusted Mc: — % .**After Shear Mc: — %

*Existing Gradation for undisturbed specimens, -No.10 fraction for remolded specimens

**Test 1 Specimen (Highest Normal Stress)

■ Undisturbed

❑ Remolded

	Test 1		Test 2		Test 3	
SHEAR RECORD:	Prov. Ring	Vert. Dial	Prov. Ring	Vert. Dial	Prov. Ring	Vert. Dial
Displacement (in): 0.020	148	101	73	100	53	101
0.040	177	103	94	102	68	103
0.060	201	106	107	105	76	108
0.080	212	109	**110**	107	**78**	110
0.100	**215**	110	108	108	77	112
0.120	215	110	101	109	69	112
0.140	204	111	90	108		
0.160	183	111				
0.180	162	111				
0.200						
0.220						
0.240						
0.260						
0.280						
0.300						
0.320						
0.340						
0.360						
0.380						
0.400						
0.420						
0.440						
0.460						
0.480						
0.500						

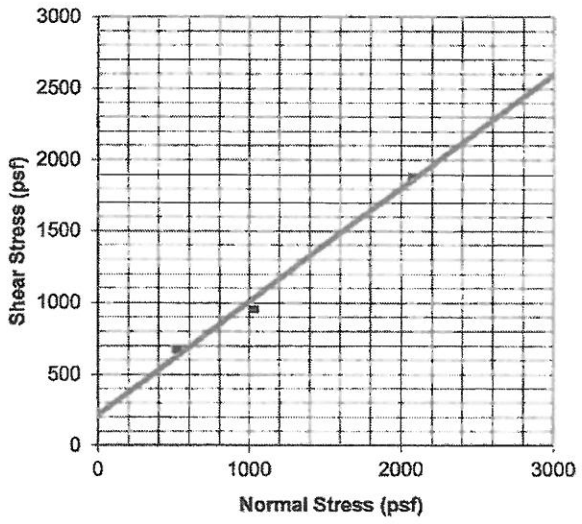
*SHEAR STRESS:	Divisions	Pounds	psf
Test 1:	215	64.19	1883
Test 2:	110	32.59	956
Test 3:	78	23.01	675

*Peak Values

NORMAL STRESS (psf):	
Test 1:	2070
Test 2:	1035
Test 3:	517

Ø=	**38.5°**
C=	**212 psf**

Proving Ring
SN: 6927
Callbrated 30-August-16



USGS Design Maps Summary Report

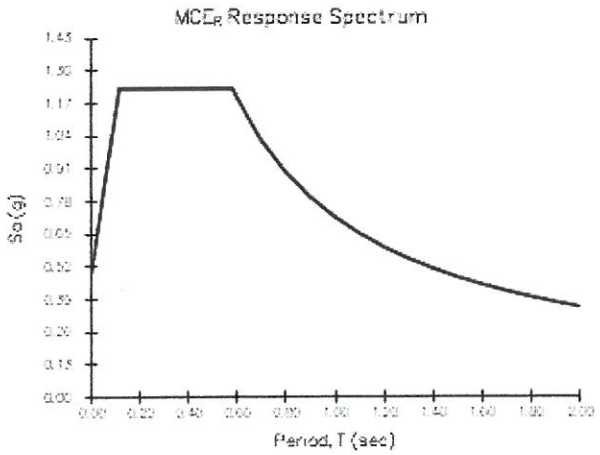
User-Specified Input

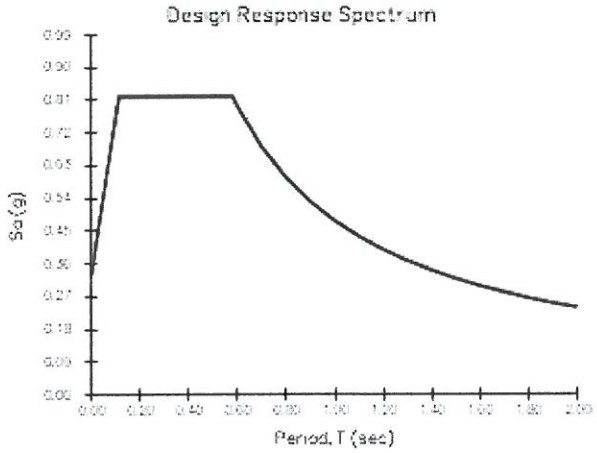
Report Title	P-673517 Thu July 6, 2017 19:08:59 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	32.6988°N, 117.1401°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS-Provided Output

S_S =	1.212 g	S_{MS} =	1.230 g	S_{DS} =	0.820 g
S_1 =	0.467 g	S_{M1} =	0.716 g	S_{D1} =	0.477 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (32.6988°N, 117.1401°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] $S_S = 1.212$ g

From Figure 22-2 [2] $S_1 = 0.467$ g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 1.212 g, F_a = 1.015

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.467 g, F_v = 1.533

Equation (11.4–1): $S_{MS} = F_a S_S = 1.015 \times 1.212 = 1.230$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.533 \times 0.467 = 0.716$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

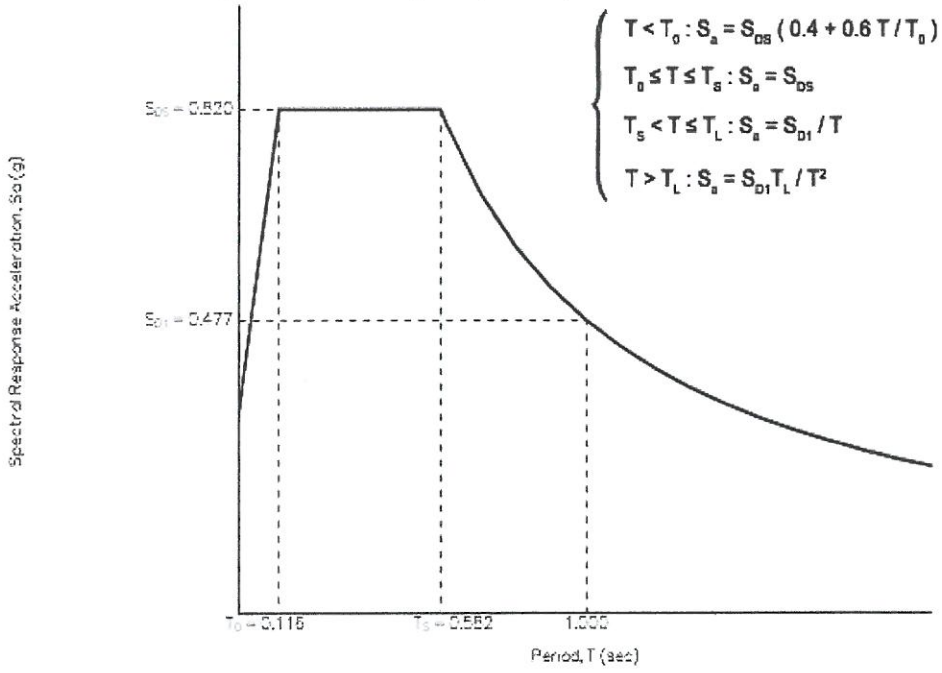
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.230 = 0.820$ g

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.716 = 0.477$ g

Section 11.4.5 — Design Response Spectrum

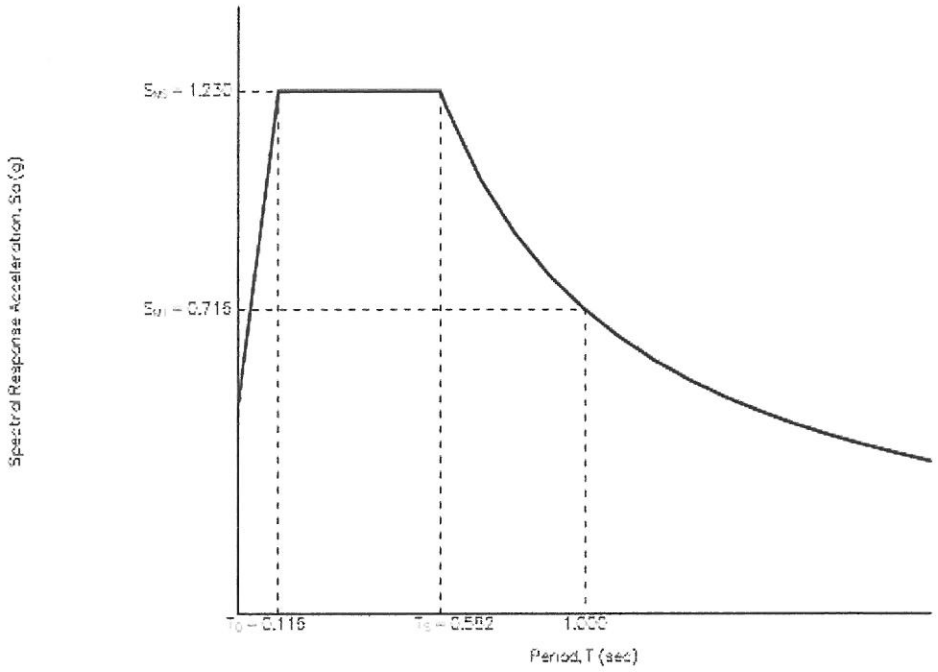
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.543

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.543 = 0.543$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.543 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.847

From Figure 22-18 [6] C_{R1} = 0.880

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 0.820 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.477 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

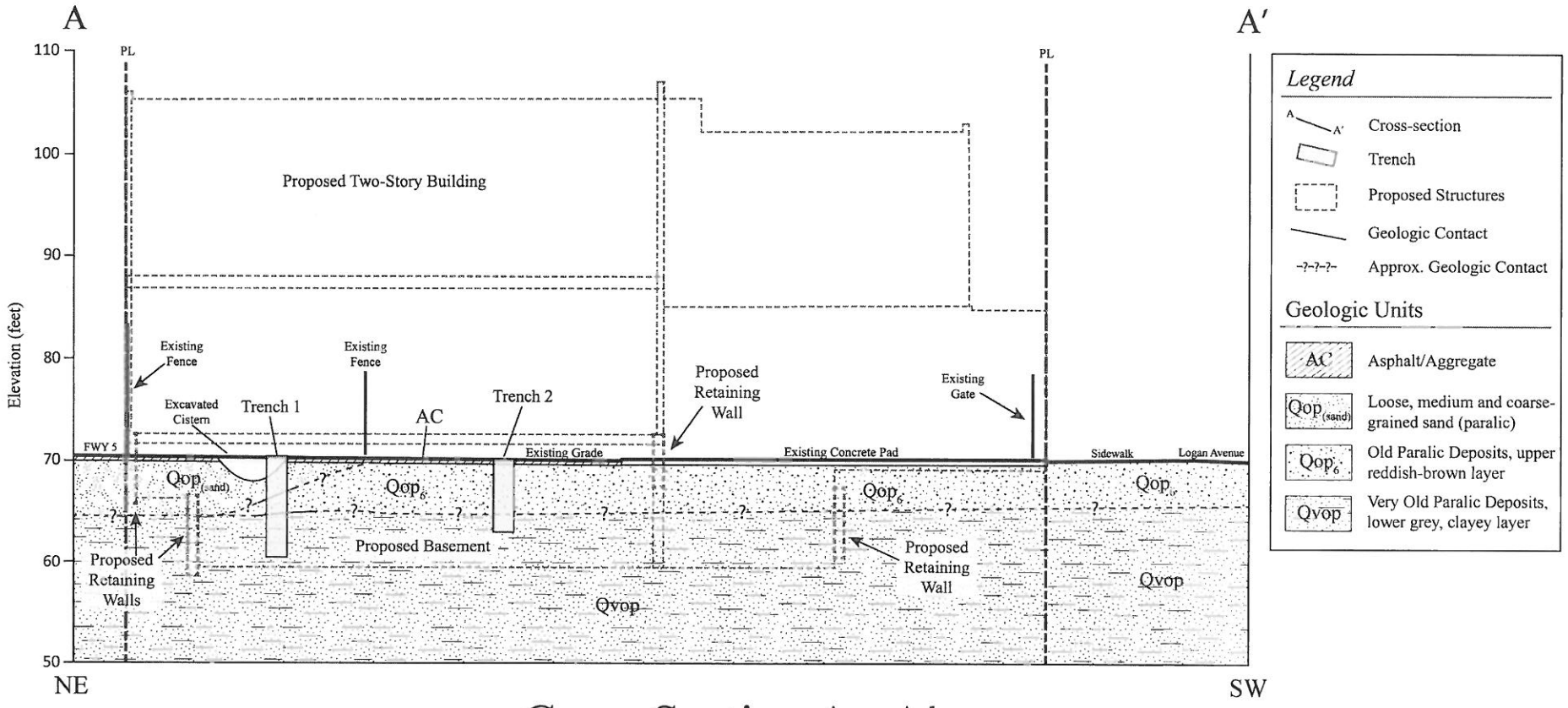
Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

2142 Logan Ave, San Diego



Cross Section A - A′

Scale: 1″ = 10′

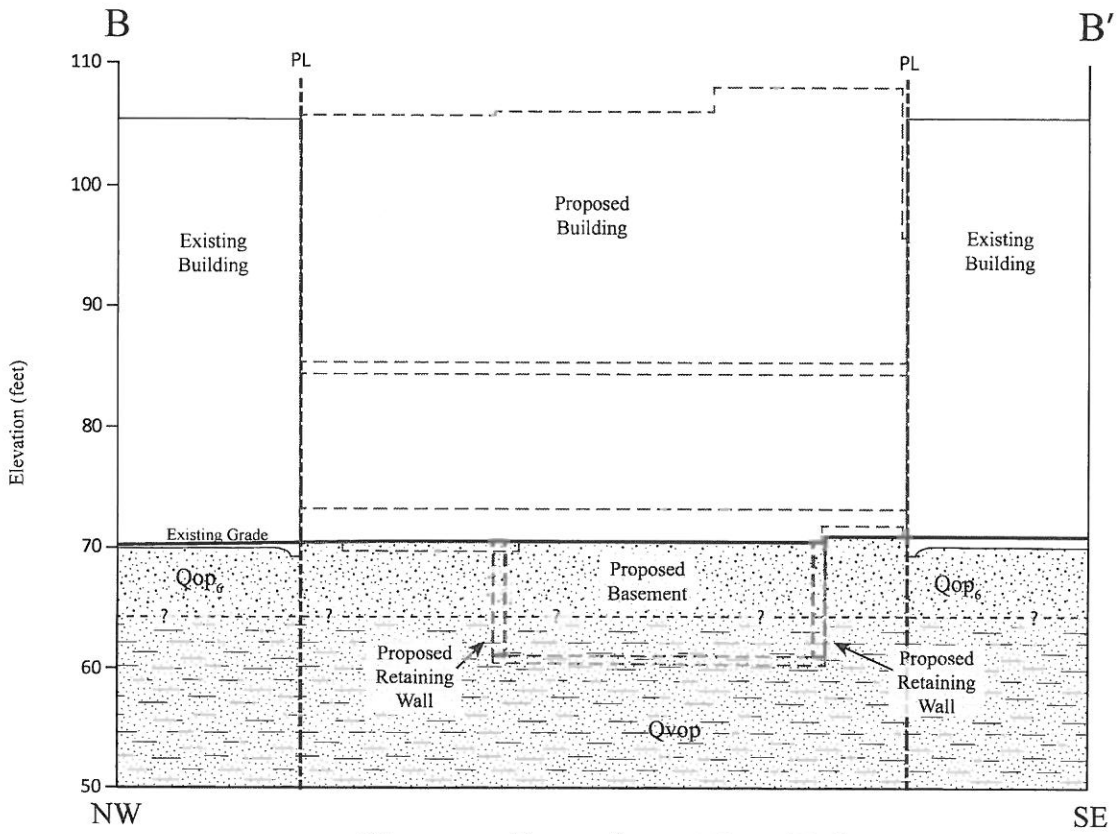
0 5 10 20 30 40

Feet

COAST GEOTECHNICAL
5931 Sea Lion Place, Suite 109
Carlsbad, CA 92010

Plate A
W.O. P-670517

2142 Logan Ave, San Diego



Cross Section B - B′

Scale: 1″ = 10′

0 5 10 20 30 40
Feet

Legend

- B — B′ Cross-section
- Proposed Structures
- Geologic Contact
- -?-?-?- Approx. Geologic Contact

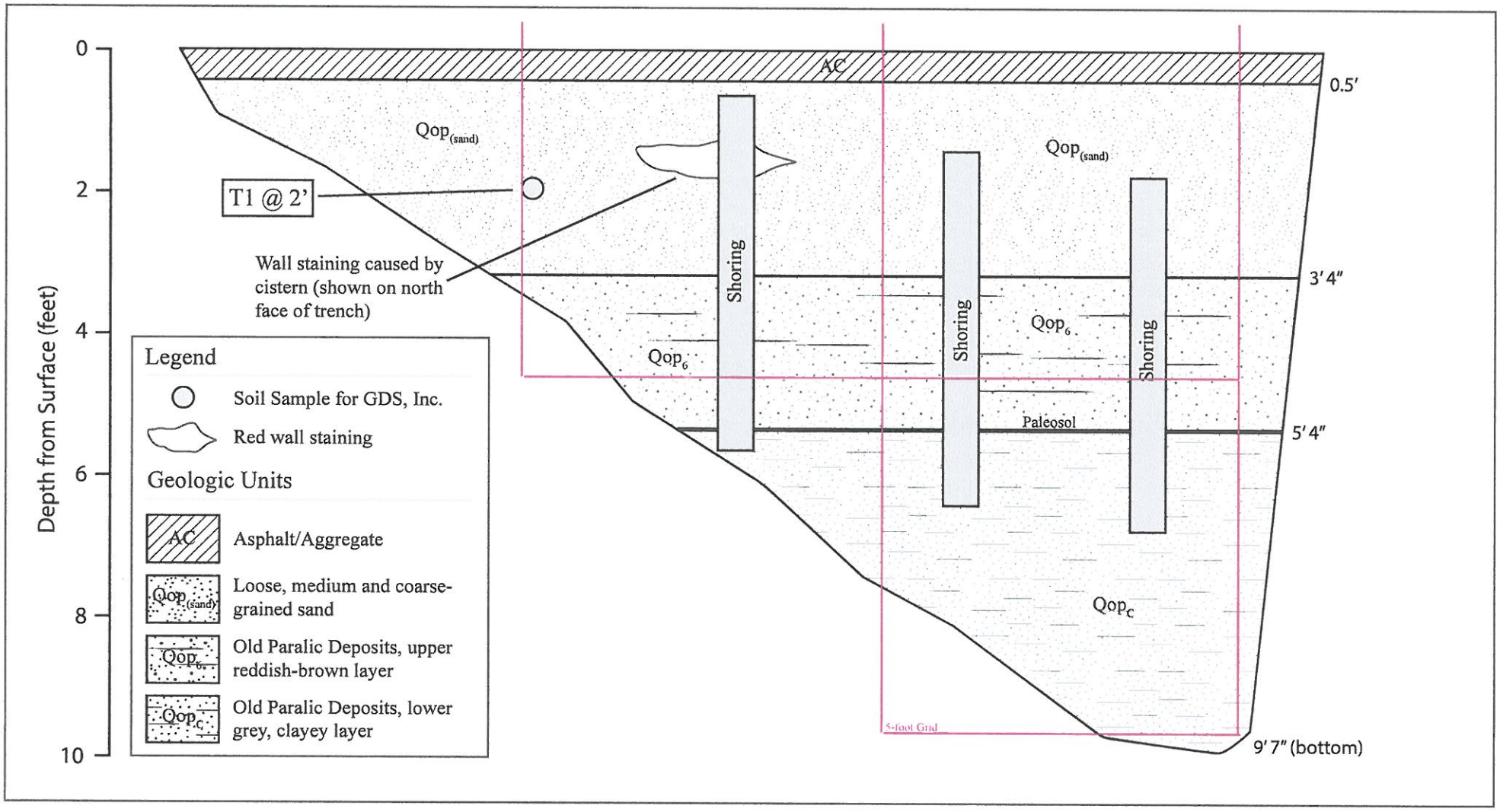
Geologic Units

- Qop6 — Old Paralic Deposits, upper reddish-brown layer
- Qvop — Very Old Paralic Deposits, lower grey, clayey layer

COAST GEOTECHNICAL
5931 Sea Lion Place, Suite 109
Carlsbad, CA 92010

Plate B
W.O. P-670517

Trench 1 - South Face (western side)



Cross Section of Trench 1: C to C′

Scale: 1″ = 2′

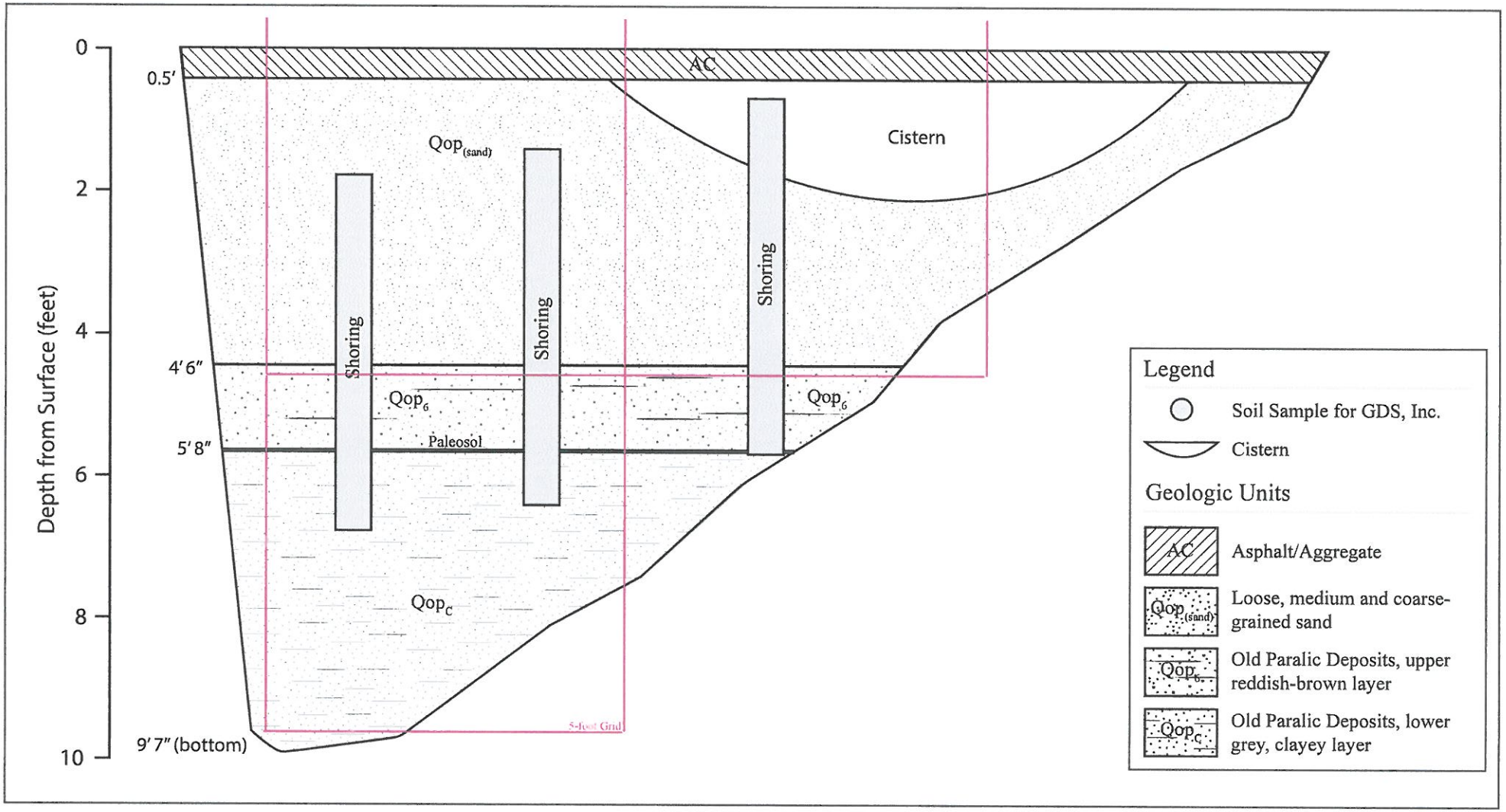
0 2 4 6

Feet

COAST GEOTECHNICAL
5931 Sea Lion Pl, Suite 109
Carlsbad, CA 92010

Plate C
W.O. P-670517

Trench 1 - North Face (western side)



Cross Section of Trench 1: C to C′

Scale: 1″ = 2′

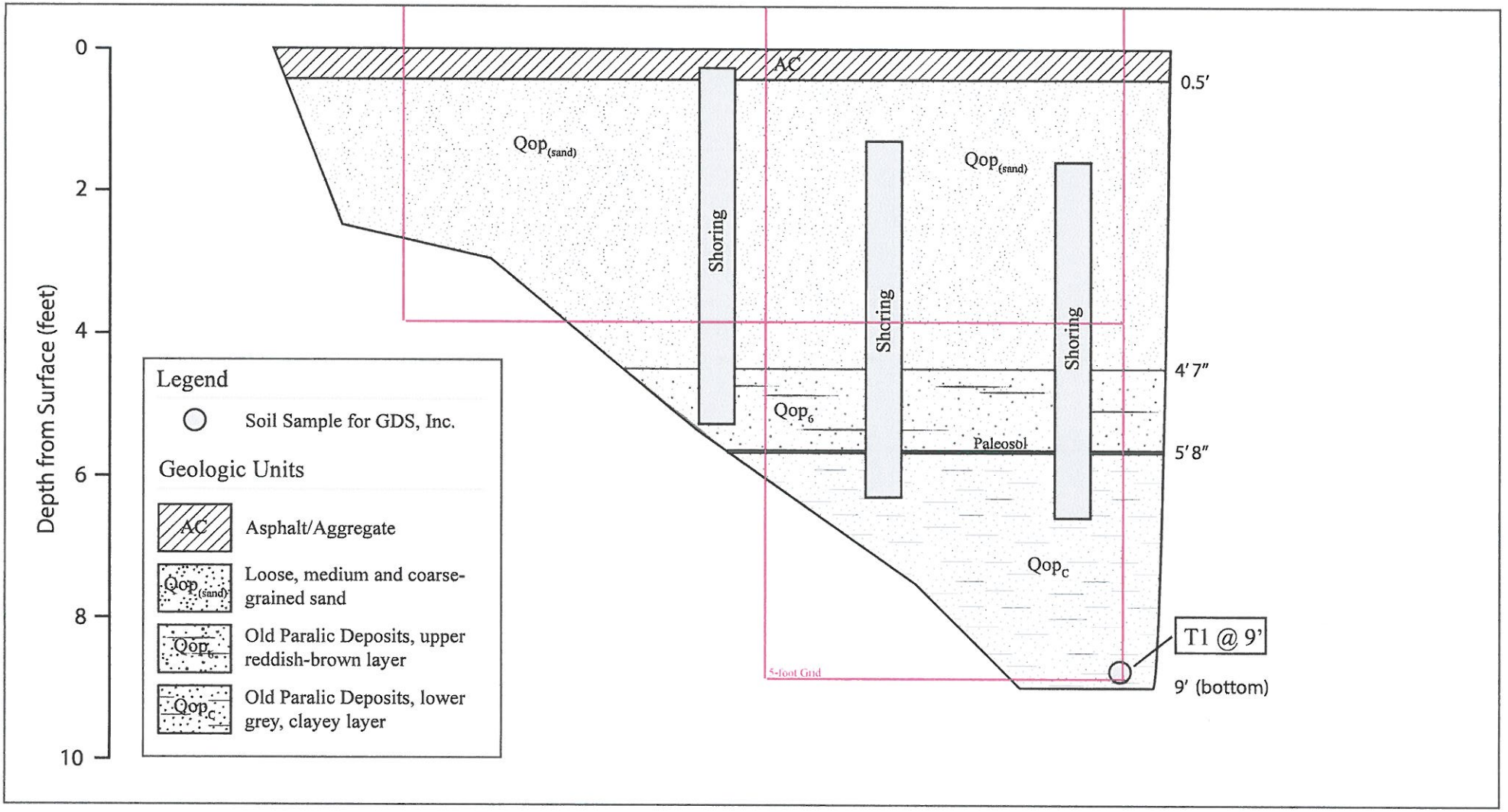
0 2 4 6

Feet

COAST GEOTECHNICAL
5931 Sea Lion Pl, Suite 109
Carlsbad, CA 92010

Plate D
W.O. P-670517

Trench 1 - North Face (eastern side)



Cross Section of Trench 1: C′ to C″

Scale: 1″ = 2′

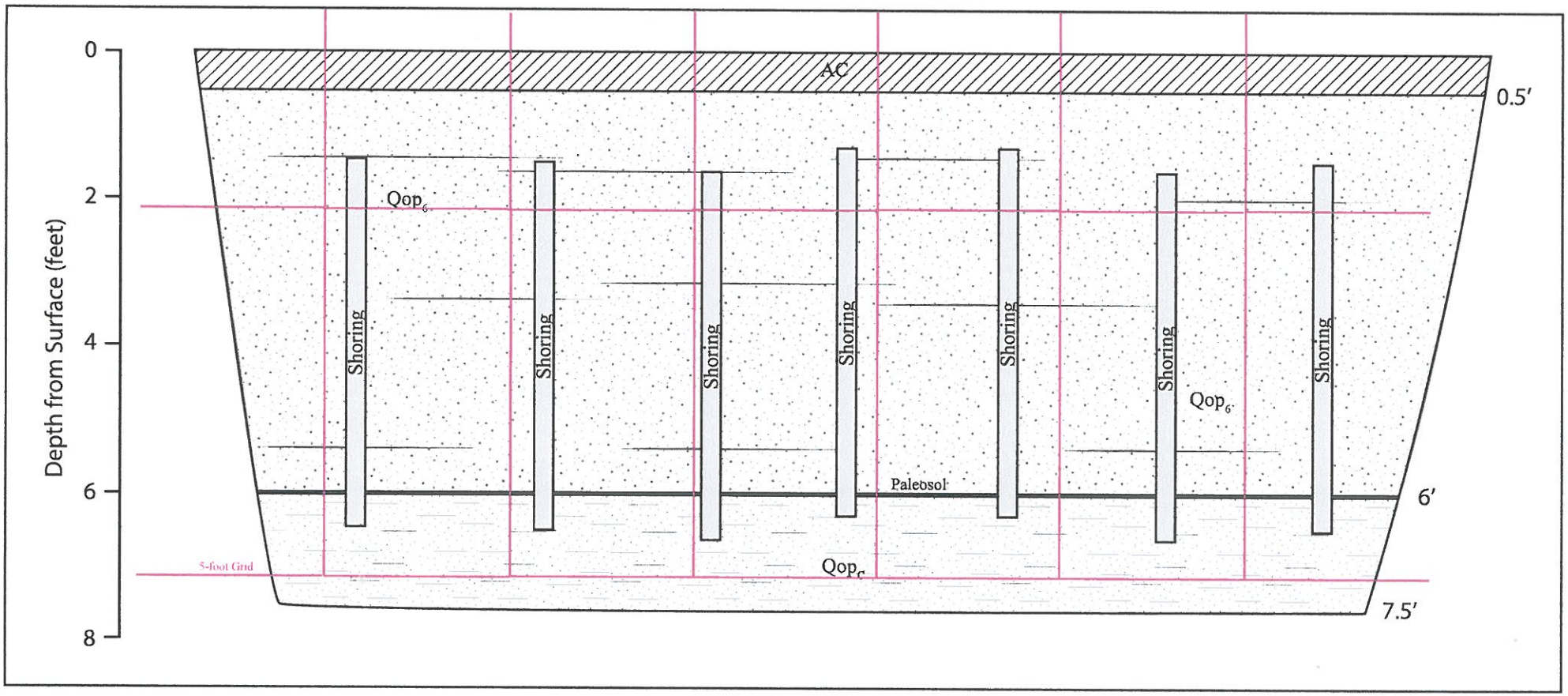
0 2 4 6

Feet

COAST GEOTECHNICAL
5931 Sea Lion Pl, Suite 109
Carlsbad, CA 92010

Plate E
W.O. P-670517

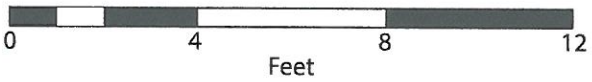
Trench 2 - South Face



Cross Section of Trench 1: D to D′

Vertical Scale: 1″ = 2′

Horizontal Scale: 1″ = 4′



Legend

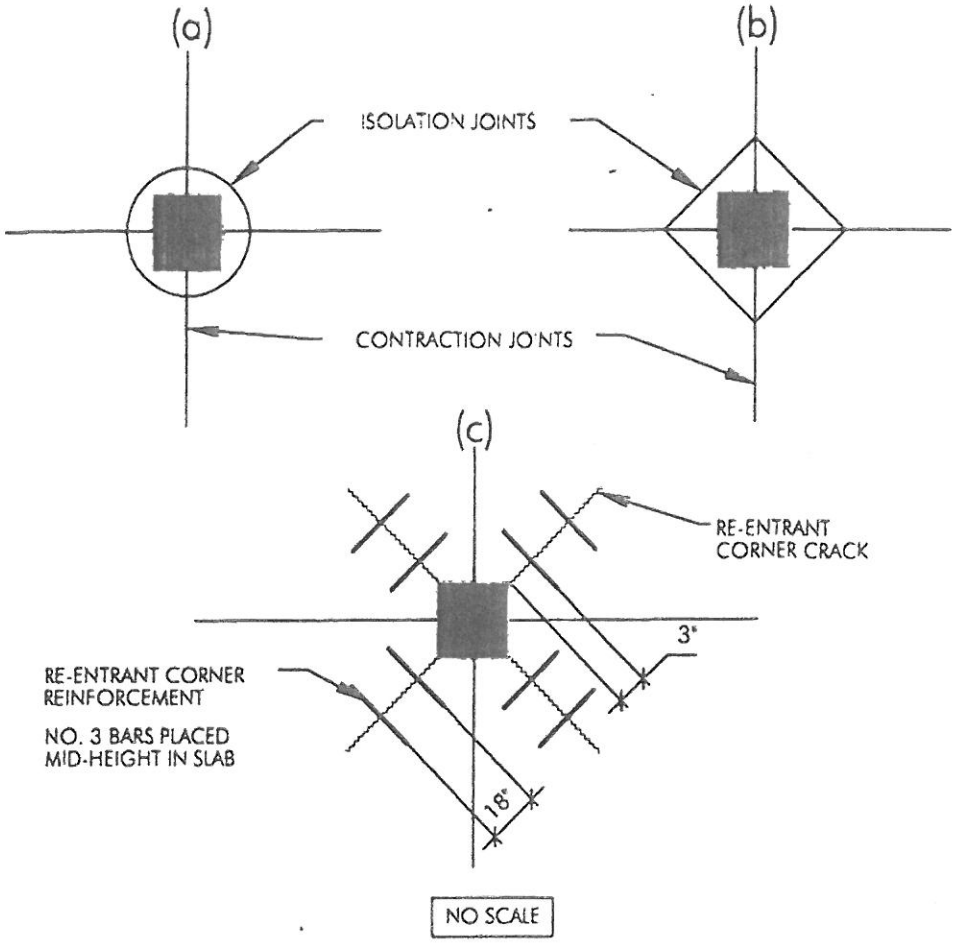
- Soil Sample for GDS, Inc.

Geologic Units

- AC — Asphalt/Aggregate
- Qop$_c$ — Old Paralic Deposits, upper reddish-brown layer
- Qop$_c$ — Old Paralic Deposits, lower grey, clayey layer

COAST GEOTECHNICAL
5931 Sea Lion Pl, Suite 109
Carlsbad, CA 92010

Plate F
W.O. P-670517



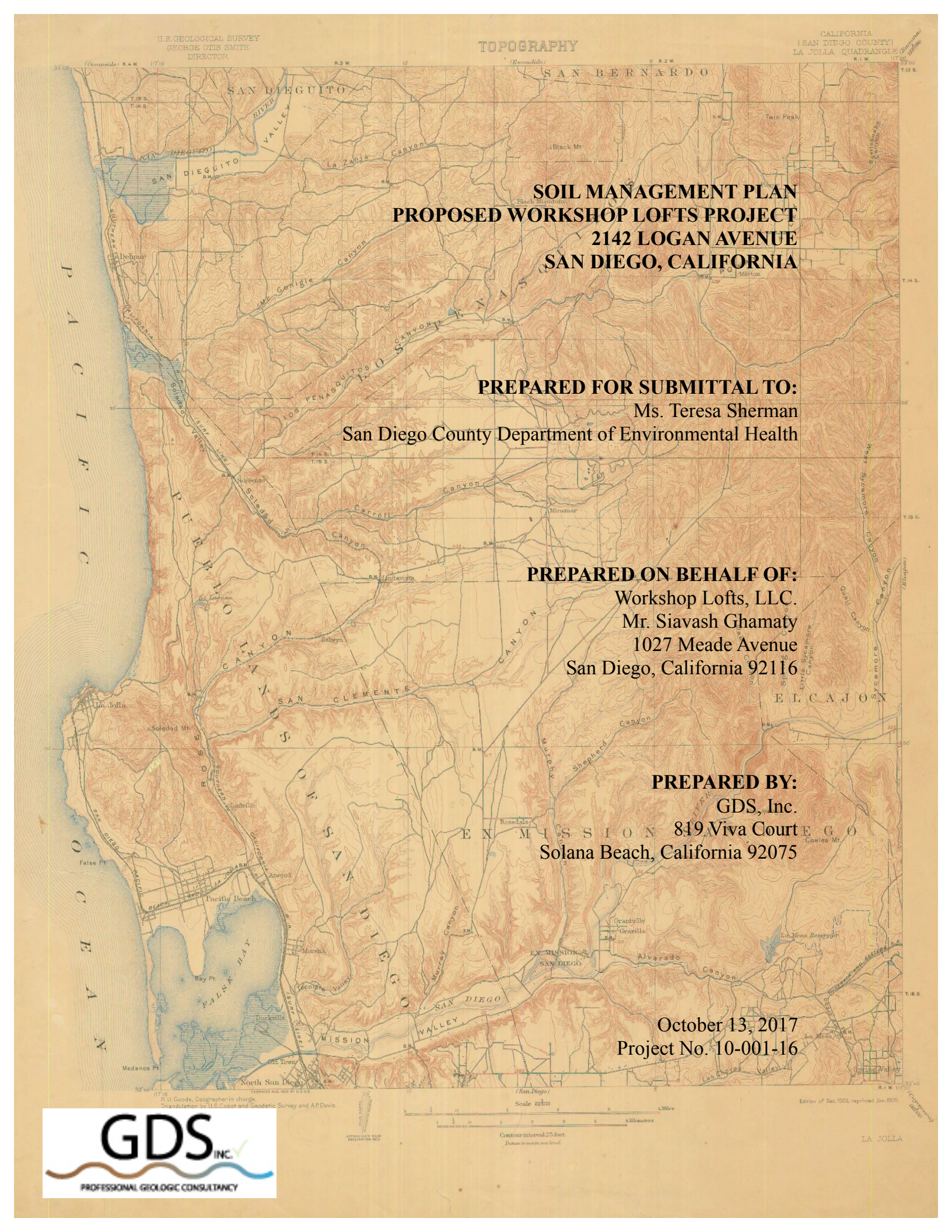
NOTES:

1. Isolation joints around the columns should be either circular as shown in (a) or diamond shaped as shown in (b). if no isolation joints are used around columns, or if the corners of the isolation joints do not meet the contraction joints, radial cracking as shown in (c) may occur (reference ACI).

2. In order to control cracking at the re-entant corners (+/-270 degree corners), provide reinforcement as shown in (c).

3. Re-entrant corner reinforcement shown herein is herein is provided as a general guideline only and is subject to verification and changes by the project architect and /or structural engineer based upon slab geometry, location, and other engineering and construction factors.

TYPICAL ISOLATION JOINTS AND RE-ENTRANT CORNER REINFORCEMENT



SOIL MANAGEMENT PLAN
PROPOSED WORKSHOP LOFTS PROJECT
2142 LOGAN AVENUE
SAN DIEGO, CALIFORNIA

PREPARED FOR SUBMITTAL TO:
Ms. Teresa Sherman
San Diego County Department of Environmental Health

PREPARED ON BEHALF OF:
Workshop Lofts, LLC.
Mr. Siavash Ghamaty
1027 Meade Avenue
San Diego, California 92116

PREPARED BY:
GDS, Inc.
819 Viva Court
Solana Beach, California 92075

October 13, 2017
Project No. 10-001-16

GDS INC.
PROFESSIONAL GEOLOGIC CONSULTANCY

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Appendices

1. INTRODUCTION AND BACKGROUND

Goodmacher Development Services, Inc. (GDS) submits this Soil Management Plan (SMP) for use during construction of the Workshop Lofts development in the Barrio Logan neighborhood of San Diego. The proposed commercial structure will include two-stories above-ground and a partial basement and will be used for artist's studios. Presented in Appendix A are architectural renderings of the proposed development. Per recommendations in the project geotechnical report (Coast Geotechnical, 2017) excavations (outside of the proposed basement areas) will extend a minimum of three feet deep to accommodate the proposed construction. This Soil Management Plan (SMP) is being submitted on behalf of the developer of the project, Workshop Lofts, LLC.

In July 2016 GDS prepared a Limited Phase II Environmental Site Assessment (ESA; GDS, Inc., 2016) for the site. The ESA discussed the results of two rounds of soil vapor sampling conducted onsite during which benzene and volatile organic compounds (VOCs) were detected, and recommended preparation of a SMP to address the removal of petroleum hydrocarbon-affected soil during grading for the proposed development. In February 2017, the client entered into the DEH's Voluntary Assistance Program (VAP) for regulatory oversight on the proposed development.

In a letter from the DEH (2017a), Ms. Teresa Sherman of the DEH indicated that a workplan outlining additional soil sampling would be required. The purpose would be to assess the location and depth of benzene vapors detected during the soil vapor sampling and to identify potential soil impacts related to releases of VOCs. However, prior to responding to the DEH letter an opportunity arose to perform limited soil sampling during the geotechnical evaluation by Coast Geotechnical. GDS sought and obtained approval for the limited soil sampling on May 1, 2017 (DEH, 2017b). The limited soil sampling occurred in June and was reported on the requested workplan, (GDS, 2017) outlining the requested additional soil sampling and analysis. Following review of that document, DEH requested a meeting to discuss the workplan. That meeting occurred on September 18, 2017. The results of that meeting was summarized in an email from the DEH (2017c) indicating conditional approval. The conditions included: 1. Sampling soils at four locations to further delineate the extent of hydrocarbon-affected soils; 2. Analyzing the sampled soils for lead and total petroleum hydrocarbons (TPH).

This work plan addresses the additional delineation of hydrocarbon-affected soil and its removal, and provides protocols for excavation, stockpiling, confirmation sampling, community health and safety monitoring, and public notifications to facilitate the management of hydrocarbon-affected soils in accordance with local, state, and federal statutes and regulations.

1.1. Purpose of Work

The intent of this SMP is to minimize impacts to human health and the environment during the site development process. The primary project objective is to mitigate hydrocarbon-affected soil by excavation and removal to levels below human health risk screening levels for commercial land use (cleanup goal). Potential impacts to human health are associated with volatile organic compounds from releases of petroleum hydrocarbons onsite and dry cleaning chemicals from the former dry cleaner on the adjacent property. This SMP provides protocols for management (temporary stockpiling, handling, and disposal) of that soil.

1.2. Site Location and Description

The site consists of a rectangular parcel of land with a reported area of approximately 0.10 acres. It is bounded by Logan Avenue (to the southwest), Interstate Highway I-5 (to the northeast), and commercial properties on the remaining sides. Other development in the site vicinity includes a mix of commercial and residential uses with commercial uses dominating the immediate vicinity. The San Diego County Assessor's Office designation for the site is 538-560-49-00.

1.3. Current Site Conditions

Currently, the site is vacant of structures. It is used to store a wide variety of items including apparently inoperable cars, appliances, tools, lumber, and building materials. Fences bound the site on the sides next to Interstate Highway I-5 and to Logan Avenue. The other two property boundaries consist of the sides of the adjacent structures. A portion of the site is fenced off from the remainder of the site. The majority of the site is paved with asphaltic and Portland cement concrete. Figure 2 shows the layout of the site.

2. PHYSICAL SETTING

2.1. Topography

Based on the most recent United States Geological Survey topographic map (USGS, 2012), the site elevation is approximately 70 feet above mean sea level (MSL). Topographically, the area of the site slopes to the west-southwest toward San Diego Bay (approximately 1/2 mile away).

2.2. Geology

Based on the most recent geologic mapping (Kennedy and Tan, 2008), native soils at the site consist of Old Paralic Deposits, Unit 6.

2.3. Groundwater

According to the San Diego Regional Water Quality Control Board (RWQCB) the site is located in the Chollas Hydrologic Subarea (908.22), San Diego Mesa Hydrologic Area, of the Pueblo San Diego Hydrologic Unit (RWQCB, 2011). Groundwater in this subarea does not have beneficial or potentially beneficial uses.

Groundwater was not detected to the depths explored by Coast Geotechnical (approximately 10 feet below the surface). Based on a report for a nearby site (2190 Main Street, San Diego, [Equipoise, 2014]) groundwater is present in the vicinity at depths of greater than 30 fbg. Per that same report, the groundwater gradient and flow direction is generally directed west to San Diego Bay.

3. SUMMARY OF PREVIOUS ENVIRONMENTAL EVALUATIONS

As discussed in GDS, Inc.'s Limited Phase II ESA report (GDS, 2016) a dry cleaner had been located on an adjacent southern parcel in the past. As a consequence, GDS recommended soil vapor sampling to assess the potential for volatile organic compounds (VOCs) to be present on the site.

3.1. Vapor Studies

The soil vapor sampling was conducted and documented in GDS' 2016 report. The conclusions of that report were:

- VOCs (TCE, PCE, toluene, and benzene) were detected in several of the soil vapor probes. Based on reviewed historical data, releases appear to have been associated with the past use of the adjacent property by dry cleaners and possibly surface spills of volatile compounds at the site.
- Based on the risk assessment model the Estimated Cancer Risk was determined to be $1.35x10^{-5}$ and the HI was determined to be $3.67x10^{-2}$. The estimated cancer risk exceeds the $1x10^{-6}$ threshold and therefore, there is a human health risk due to vapor intrusion into the proposed structure.

3.2. Soil Sampling

As part of the development process a geotechnical and fault hazard evaluation was conducted by others (Coast, 2017). That scope of work included the excavation of two, trenches (up to 9.8 feet deep and up to 35 feet long) across the site (Figure 2). On June 23, 2017, GDS, Inc. visited the site to assess environmental conditions exposed in excavations by Coast Geotechnical and to collect soil samples for environmental analysis. Four soil samples were collected; two from of each of the two trenches at locations shown on Figure 2. The samples were collected using hand-operated equipment and placed into clean, unused, laboratory supplied, 8-ounce sample jars. Following collection, the samples were placed in an iced cooler for storage until they could be delivered to the analytical laboratory. The State of California-certified H&P Mobile Geochemistry received the samples under appropriate chain-of-custody protocol. The samples were analyzed for a range of volatile organic constituents (VOCs). Specifically, they were analyzed using EPA Method 8260 for:

- Vinyl Chloride.
- cis-1,2-Dichloroethene (cis-1,2-DCE)
- Benzene
- Trichloroethene (TCE)
- Toluene
- Tetrachloroethene (PCE)
- Ethylbenzene
- m,p-Xylene
- o-Xylene

None of the listed constituents were detected in the samples (at the laboratory detection limits presented on the analytical reports). Further, no evidence of petroleum hydrocarbon

contamination was observed or noted by both Coast Geotechnical and GDS, Inc. in the trenches.

4. KNOWN AND POTENTIAL ENVIRONMENTAL CONCERNS

4.1. Known and Potential Areas of Petroleum Hydrocarbon-Affected Soil

Based on the soil vapor and soil sampling results and observations it appears that the petroleum hydrocarbon-affected soils are confined to the southern portion of the property (the area adjacent to to the formerly present dry cleaner; see Figure 3). However, in addition to the known areas of petroleum hydrocarbon-affected soil discussed, there is the potential for additional affected soils to be encountered.

4.2. Unanticipated Contaminants

As a result of uncertainties associated with any assessment of subsurface conditions, it should be expected that the extent and concentrations of contaminants will vary from what is described in the previous environmental reports. The general contractor and the grading contractor will have the primary responsibility for supervising construction activities. The Contractor will assist GDS by advising the construction workers involved in earthwork activities on the recognition of releases of hazardous substances. The workers will be instructed to immediately report indications of such releases to the construction site supervisor or manager. The Contractor's site supervisor or manager will redirect or halt construction activities in that area and immediately notify GDS. If GDS believes that the suspect soil needs assessment, attempts will be made to segregate the soil so that construction activities in the affected area can resume as soon as possible. If hazardous conditions that present an immediate threat of injury to construction workers, human health, or the environment are encountered, "911" will be called by the appropriate Contractor's personnel to summon the County's Hazardous Incident Response Team (HIRT).

Construction contractors (foundations, fine grading, utilities, etc.) will be notified that some volumes of petroleum hydrocarbon-affected soils may be remaining onsite and that they may be encountered during construction operations. If encountered they will be required to follow similar procedures.

5. REMEDIAL ACTION PLAN

5.1. Public Notification

In accordance with agency requirements, a public notice will be mailed to the adjacent property owners detailing any grading activities that will cause disturbance, exposure, or displacement of hydrocarbon-affected soils. Additionally, public notification signs will be posted on perimeter fencing around the site. The public notice will include a list of site safety manager and emergency contact numbers, grading permit number, brief description of activities, and dates of work. An example public notice is included in the Community Health and Safety Plan (CHSP; Appendix B).

5.2. Permits and Regulatory Notifications

Before beginning excavations, necessary permits and approvals will be obtained from the City of San Diego. The DEH will also be notified prior to commencement of work.

5.3. Site Health and Safety

Existing fences will secure the site, and access to the site will be restricted to authorized personnel only. Subsurface utilities that are within the construction excavation envelope (CEE) will be disconnected from the site and Underground Service Alert (USA) will be notified, as required by state law.

Based on an analysis of the identified contaminants the principal health and safety issue associated with the implementation of this SMP is the proper control of dust and volatile compounds from petroleum hydrocarbons during excavation and stockpiling.

If volatile compounds are present in soil, a flammable or explosive hazard could exist. Concentrations of metals may present a potential hazard to the onsite construction workers through inhalation of dust or ingestion through direct contact with the affected soil. GDS will prepare a site-specific health and safety plan (HASP) to address these issues for GDS personnel and our subcontractors. GDS's HASP will be available for review during excavation activities.

Contractors not working directly for GDS will be required to have and follow their own HASP. The contractor's HASP should be prepared in accordance with regulations found in 29 Code of Federal Regulations (CFR) Part 1910.120 and CCR, Title 8, Section 5192.A. The contractor's HASP should include an outline of potential chemical and physical hazards that may be encountered during the excavation, loading, sampling, and handling of soils containing hazardous substances. The appropriate personal protective equipment and emergency response procedures for the anticipated site-specific chemical and physical hazards should be detailed in this plan.

5.4. Community Health and Safety (CHSP)

A CHSP was developed in accordance with the County of San Diego's Site Assessment and Mitigation Manual and is included in Appendix B. The intent of the CHSP is to protect the public and site vicinity from potential health hazards during remedial activities.

5.5. Additional Delineation

The DEH requested additional delineation to address areas near the adjacent former drycleaner. The additional characterization will be performed during the excavation activities. The soil samples will be collected at the approximate locations shown on Figure 3. Soil samples will be collected in new, laboratory-supplied wide-mouth jars at approximate depths of 4, 8 and 12 feet below existing grade. The samples will be identified by location and depth. The samples will be stored and transported in iced coolers under chain-of-custody protocol. Collected soil samples will be submitted to H&P Mobile Geochemistry, Inc. (H&P), a State of California-certified environmental laboratory, in Carlsbad, California. Soil samples collected will be analyzed for the presence of VOCs using Environmental Protection Agency (EPA) Method 8260, TPH using EPA Method 8021, lead using EPA Method 6010B.

An integral part of sampling and analysis is quality assurance/quality control (QA/QC) procedures to ensure the reliability and compatibility of all data generated during the evaluation. The chemical data to be collected for this effort will be used to determine that the extent of contamination is properly evaluated. As such, it is critical that the chemical data

be the highest confidence and quality. Consequently, QA/QC procedures will be adhered to. The procedures include:

- Adherence to strict protocols for field sampling and decontamination procedures;
- Collection of a replicate sample to evaluate field precision and accuracy. The replicate sample will be designated using "REP" on the chains-of-custody;
- Laboratory analysis of matrix spike and matrix spike duplicate samples to evaluate analytical precision and accuracy; and

5.6. Site Preparation

Prior to implementation of the remedial action plan, site preparation activities may include inspections, surveying, sampling, demarcation of remediation areas, and utility clearance.

5.7. Dust Control and Monitoring

During remedial excavation activities, the Contractor shall use water spray as a dust control method to mitigate impacts to nearby sensitive receptors (e.g., residences and general public). The excavation and work areas will be sprayed daily prior to field work, during excavation of the impacted areas, stockpiling, and truck loading, as needed.

Visual and quantitative dust monitoring will be performed during soil disturbance activities to ensure potentially-impacted dust is not affecting the surrounding community. Field readings from an aerosol dust monitor will be collected along the perimeter of the site at intervals by GDS. If visible dust at the site perimeter is noted or quantitative dust readings are greater than 2 parts per million (ppm) above background (perimeter action level), GDS will notify the Contractor so that appropriate dust control actions can be implemented to reduce the potential hazard or nuisance to acceptable levels.

Onsite work will be stopped during high wind conditions or when the use of engineering controls cannot effectively control dust at levels below the perimeter action levels. GDS will record the time, location, and results of the above activities on a daily report of field observations. The dust monitoring is further discussed in the CHSP (Appendix B).

5.8. Construction Excavation and Monitoring

The Contractor shall be responsible for excavation, handling, and temporary stockpiling of soils/materials in accordance with the approved permits/plans, the worker HASP, this work plan, and all applicable local, state, and federal statutes, regulations, and guidelines (e.g., current SAM Manual, RWQCB waivers and Waste Discharge Requirements [WDRs]). Excavation, handling, and temporary stockpiling of materials will be performed in a manner that prevents the release of contamination to onsite and offsite areas.

GDS will be the environmental consultant performing the monitoring of the construction excavation activities. Based on conditions at similar sites, it is anticipated that it will be permissible to leave petroleum hydrocarbon-affected soil below the CEE in place. Following sections discuss confirmation sampling procedures.

GDS will monitor the construction-related excavation activities that will result in the export of soil from the site. GDS will also be responsible for judging which soils can be exported off site as "clean".

Once suspect soil materials have been identified, GDS will use a photoionization detector (PID) or other applicable field-screening techniques to screen for indications of potentially hazardous substances. If immediate determination of the material cannot be made using on-site screening methods, GDS will collect material samples and have them analyzed by a State-certified environmental laboratory. Immediately upon confirmation of a release of a potentially hazardous substance, GDS will notify the Contractor and the developer. In addition, the regulatory authorities will be notified if the release is an immediate threat to public health

Regarding petroleum hydrocarbon-affected soil, during excavation activities, the removed soil and excavations will be monitored with a PID. If the PID detects VOCs or obvious petroleum/solvent odors are noted, the associated soil will be included with the affected soil and disposed of at an appropriate disposal facility (see following sections).

Based on the data collected by Coast Geotechnical (2017), it appears that not all of the materials to be excavated at the site contains elevated concentrations of petroleum hydrocarbons. As a consequence, some of the soil to be removed and exported will be suitable for unrestricted reuse off-site.

Soil to be exported as "clean" fill soil suitable for unrestricted reuse must be shown to contain less than 15 mg/kg lead. This is per Tier 1 Soil Screening Levels (SSLs) presented in San Diego County Regional Water Quality Control Board Resolution No. R9-2014-0041, Conditional Waiver No. 10 (Waiver). Clean soil also must meet the other requirements of RWQCB's Resolution No. R9-2014-0041, Conditional Waiver No. 10. Soil that does not meet these criteria is considered to be a regulated waste and, therefore, requires waste classification prior to transportation and disposal/reuse at an appropriate facility.

5.9. Confirmation Sampling

Exposed soils will be examined visually and with a PID for evidence of petroleum hydrocarbons. If isolated and discrete pockets of affected soils are identified during the excavation activities, confirmation samples will be collected from the sidewalls and bottoms of any such areas (as necessary). Confirmation samples will be collected using procedures outlined previously for the DEH requested additional delineation. Confirmation soil samples collected will be analyzed for the presence of VOCs using Environmental Protection Agency (EPA) Method 8260, TPH using EPA Method 8021, lead using EPA Method 6010B.

It may be necessary to collect and analyze additional soil samples in order to complete waste profiles for disposal purposes. The additional samples will be collected during excavation activities. The number of additional samples to be collected will be dependent upon the requirements of the disposal facility.

5.10. Documentation

During the monitoring of the excavation and soil export activities, the Contractor will provide daily logs of the soil export. At the conclusion of the construction excavation activities, GDS will submit a Property Closure Report documenting the following information:

- A description of the monitoring activities including frequency of observation and field-screening techniques used (if any).
- If any soil sampling or other assessment activities were conducted (either before or during excavation activities), documentation of those activities will be included.
- The final estimated volumes and off-site destination of petroleum hydrocarbon-affected soils and the date on which these soils were exported from the site.
- The report will include a summary of field observations, soil sampling, field screening, soil waste characterization, and soil disposal activities.

- Discoveries of any unanticipated hazardous substances and/or USTs during excavations will also be reported.
- The report will include laboratory reports, chain-of-custody records, soil sample locations, tabulated analytical results, and appropriate support documentation.
- An assessment of Human Health risks from any petroleum hydrocarbon-affected soils remaining onsite will be included.
- Conclusions and recommendations regarding the activities documented.

6. MANAGEMENT OF PETROLEUM HYDROCARBON-AFFECTED SOIL

Excavated hydrocarbon-affected soils will be temporarily stockpiled separately from non-affected soils in accordance with the following recommendations.

- Excavated materials will be placed on an impermeable membrane (e.g. visqueen).
- Temporary stockpiles will be covered with plastic sheeting or tarps.
- A berm will be installed around the stockpile to prevent runoff from leaving the area.
- Temporary stockpiles will be placed away from storm drains.

7. TRANSPORT AND DISPOSAL

The Contractor will manage the loading, transportation, and disposal of wastes to an appropriate treatment, disposal or recycling facility. Vehicles entering or leaving the site for loading of hydrocarbon-affected soils and/or materials slated for offsite disposal or reuse shall be tracked and documented by the Contractor. Vehicles shall be decontaminated, as necessary, prior to their departure from the site. Care shall be taken to avoid spillage of hydrocarbon-affected materials and/or tracking such materials offsite. The Contractor shall maintain a daily log of hydrocarbon-affected substances, hazardous substances, or hazardous wastes removed from the site for disposal. The logs shall include a description of the truck, the date and time the truck left the site, and the destination. The logs shall be accompanied by copies of waste manifests and truck tickets that document receipt of the waste at the permitted facility and the weight of each load.

Hazardous wastes transported offsite for disposal shall be performed in accordance with Department of Transportation (DOT) Hazardous Material Transportation regulations 49 CFR Parts 171 and 180, 40 CFR Part 262, Subpart B, and Title 22 CCR Section 66262, which involve

packaging, placarding, labeling, and manifesting requirements. Hazardous wastes transported offsite shall also have appropriate certification notices per 40 CFR Par 268 and Title 22 CCR Section 66268. Personnel having the required DOT-training shall perform DOT-related functions, if required.

Trucks carrying hydrocarbon-affected substances, hazardous substances, or hazardous wastes shall be enclosed such that there are no odor or dust emissions during transportation along the haul route identified in the project specifications/Contractor's transportation plan.

8. CLOSURE REPORT

A closure report is to be submitted to the DEH for review within four weeks from receipt of all final analytical data. As recommended by the DEH, the California Department of Toxic Substances Control (DTSC) vapor intrusion model will be used to assess the potential human-health risks due to impacts of PCE and TCE vapor migration of soil samples collected just below the anticipated depth of the proposed basement.

The final report will be submitted summarizing the field activities and the health risk evaluation and conclusions. The report format will follow standard site evaluation completion report formats, which includes Executive Summary, Summary of Site Background, Sampling Activities and Results, Quality Assurance/Quality Control Procedures Implementation, Health and Safety Plan Implementation, Field Variances, Conclusions and Recommendations, and References. The final report will be reviewed, signed, and approved by a California Professional Geologist and will be submitted electronically to the DEH when completed in accordance with Geotracker requirements.

9. LIMITATIONS AND EXCEPTIONS

This workplan includes the compilation and summarization of historical environmental assessments at the site by third parties as they relate to the areas to be investigated. GDS reviewed these documents in good faith and relies on the information in the documents to be true and accurate for the subject property. Additionally, much of the background information of site activities and environmental conditions were presented by various sources, including the regula-

tory authorities and prior consultants. GDS has made an effort to reconcile these sources in this document; however, the data quality ultimately relies on information provided to GDS.

The site evaluation will be limited by the availability of information at the time of the fieldwork outlined herein. It is possible that unreported conditions impairing the environmental status of the site may have occurred which could not be identified. GDS 's opinions cannot be extended to portions of the site that were unavailable for direct observation reasonably beyond the control of GDS. Evaluating compliance of past or future owners with applicable local, provincial and federal government laws and regulations was not conducted. Although sampling plans are developed in an attempt to provide what is interpreted as sufficient coverage within the assessment area, no extent of sampling can guarantee all environmental conditions, chemicals of concern (man-made or naturally occurring) and concentrations at which they occur can be identified and quantified.

10. REFERENCES

Coast Geotechnical, 2017, Preliminary Geotechnical Investigation and Evaluation of Onsite Faulting, dated July 26.

County of San Diego, Department of Environmental Health, 2017a, Response to Report, Voluntary Assistance Program (VAP), File #DEH2017-LSAM-000426, Workshop Lofts, 2142 Logan Avenue, San Diego 92113, dated March 16.

County of San Diego, Department of Environmental Health, 2017b, email: RE: VAP Case DEH2017-LSAM-000426, Workshop Lofts, dated May 1 at 8:35 PM

County of San Diego, Department of Environmental Health, 2017C, email: Response to Workplan, Proposed Workshop Lofts, Voluntary Assistance Program (VAP) Case #DEH2017-LSAM-000426, dated September 18 at 4:43 PM

GDS, Inc., 2016, Limited Phase II Environmental Site Assessment, 2142 Logan Avenue, San Diego, California, dated July 29, 2016.

GDS, Inc., 2017, email: Re: VAP Case DEH2017-LSAM-000426, Workshop Lofts, dated April 28 at 12:05

Equipoise, 2014, First Semester 2014, Groundwater Monitoring and Bio-Slurping Implementation Report, dated August 5.

Kennedy, M.P. and Tan, S.S., 2008, Geologic Map of the San Diego 30' x 60' Quadrangle, California, California Geological Survey, Regional Geologic Map Series, No. 3.

United States Geological Survey, 2012, Point Loma Quadrangle, California, 7.5-Minute Series (Topographic): Scale 1:24,000.

Source:GoogleEarth, 2016
Site location is approximate.
Directions are as shown.
NTS

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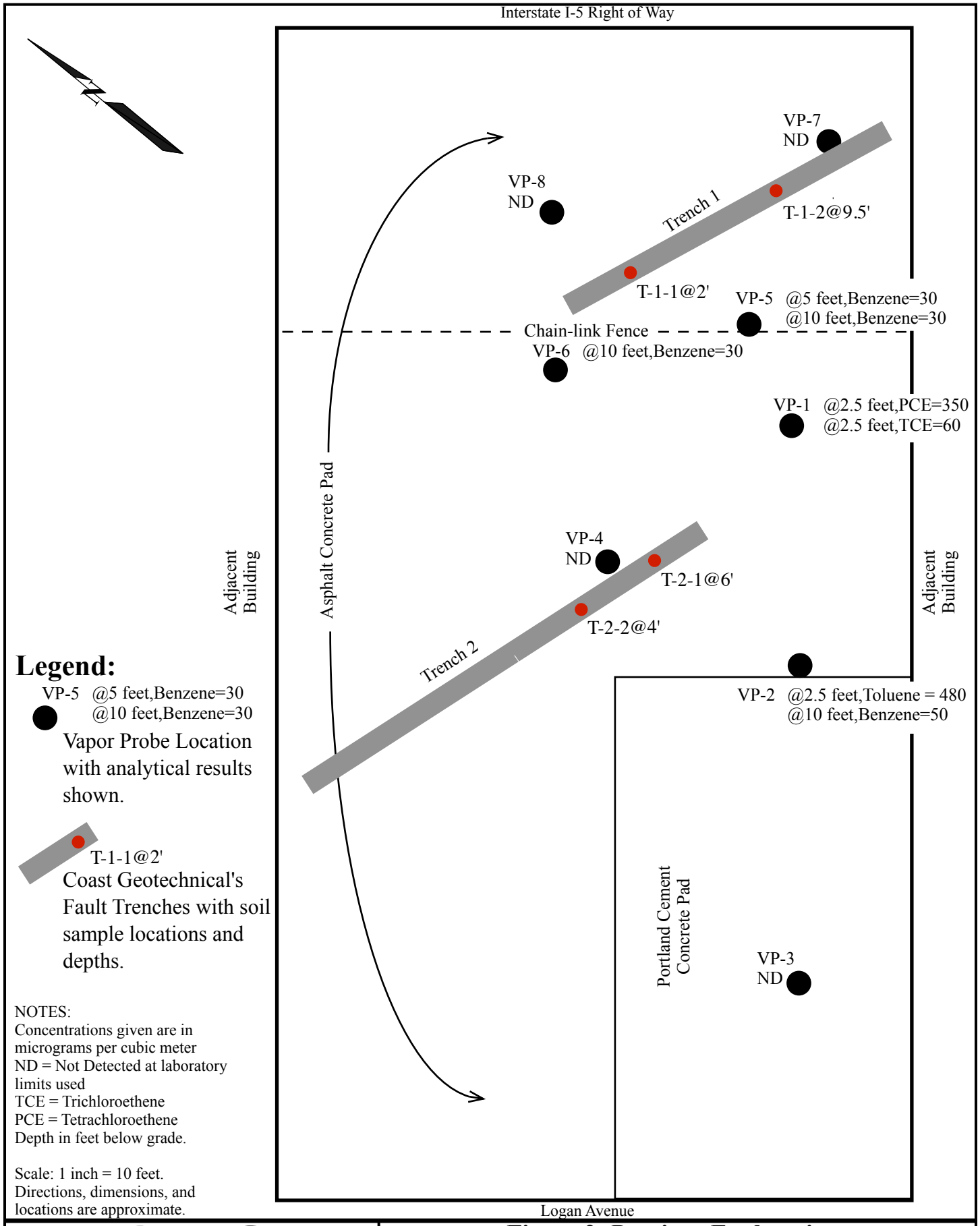
PROFESSIONAL GEOLOGIC CONSULTANCY

Figure 1: Site Index
2142 Logan Avenue
San Diego, California



Legend:

VP-5 @5 feet,Benzene=30
@10 feet,Benzene=30
Vapor Probe Location with analytical results shown.

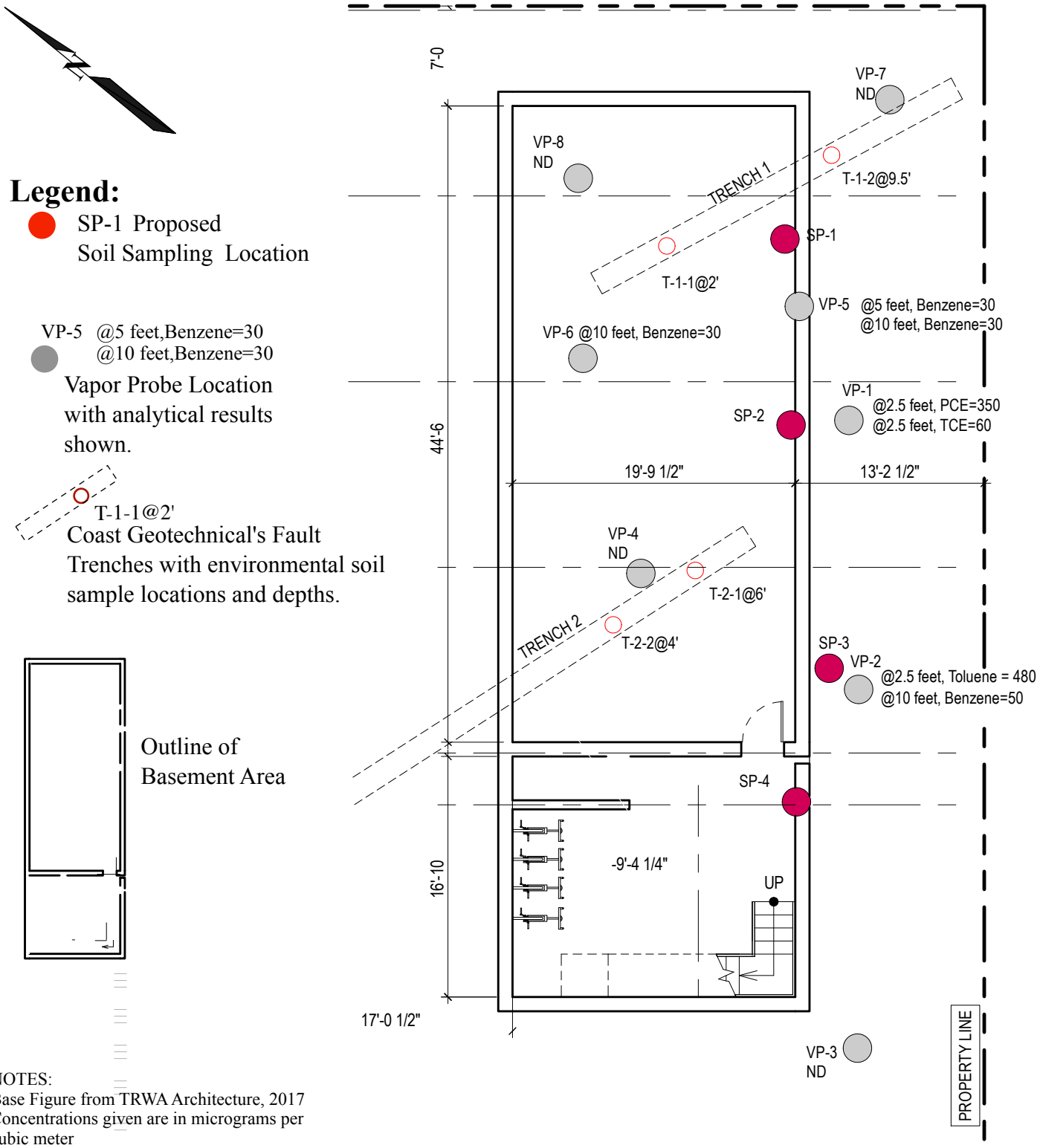
T-1-1@2'
Coast Geotechnical's Fault Trenches with soil sample locations and depths.

NOTES:
Concentrations given are in micrograms per cubic meter
ND = Not Detected at laboratory limits used
TCE = Trichloroethene
PCE = Tetrachloroethene
Depth in feet below grade.

Scale: 1 inch = 10 feet.
Directions, dimensions, and locations are approximate.

GDS INC.
PROFESSIONAL GEOLOGIC CONSULTANCY

Figure 2: Previous Explorations
2142 Logan Avenue
San Diego, California



NOTES:
Base Figure from TRWA Architecture, 2017
Concentrations given are in micrograms per cubic meter
ND = Not Detected at laboratory limits used
TCE = Trichloroethene
PCE = Tetrachloroethene
Depth in feet below grade.

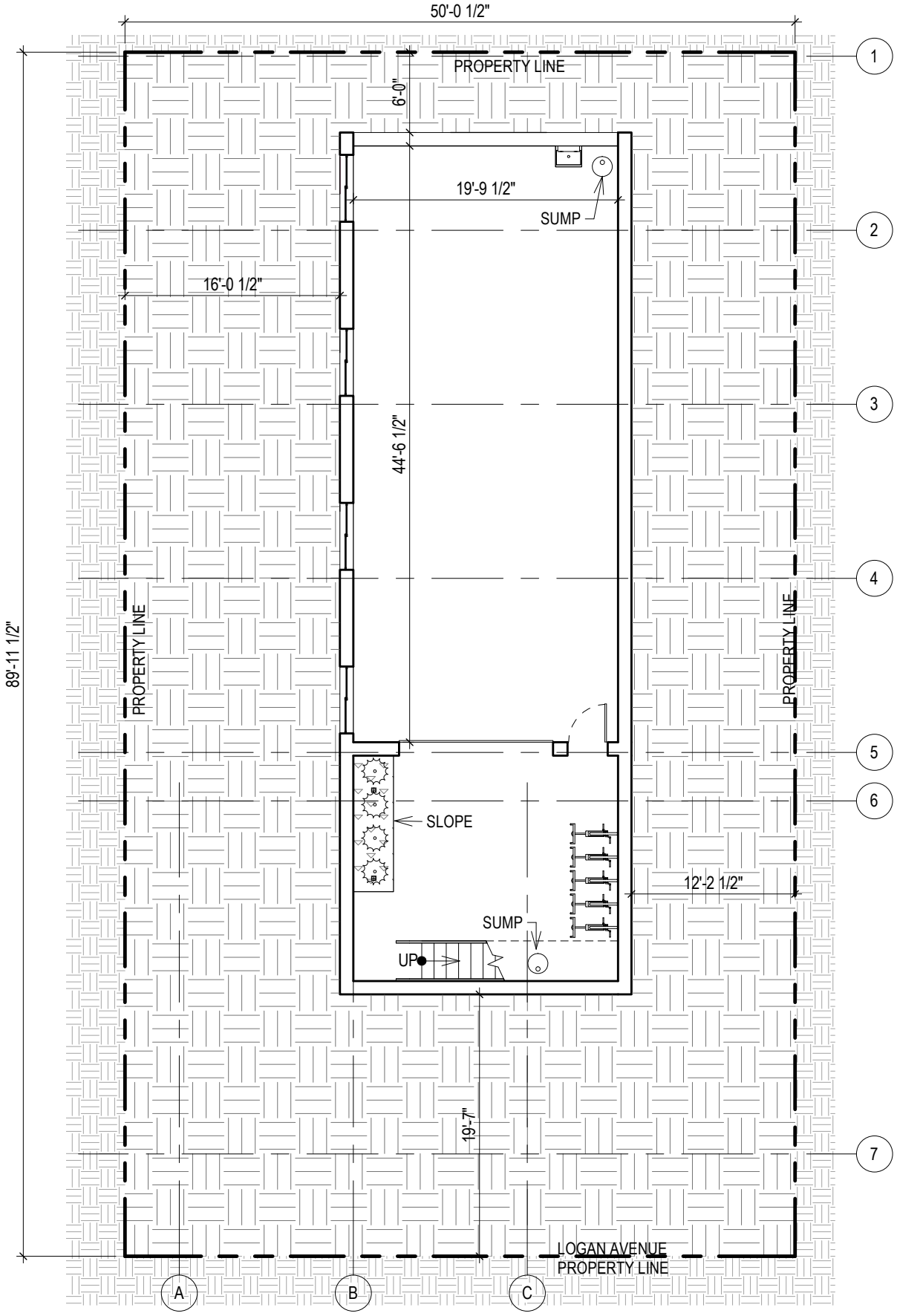
Scale: 1 inch = 10 feet.
Directions, dimensions, and locations are approximate.

GDS INC.
PROFESSIONAL GEOLOGIC CONSULTANCY

Figure 3: Proposed Delineation Sampling Locations
2142 Logan Avenue
San Diego, California

APPENDIX A

ARCHITECTURAL RENDERINGS



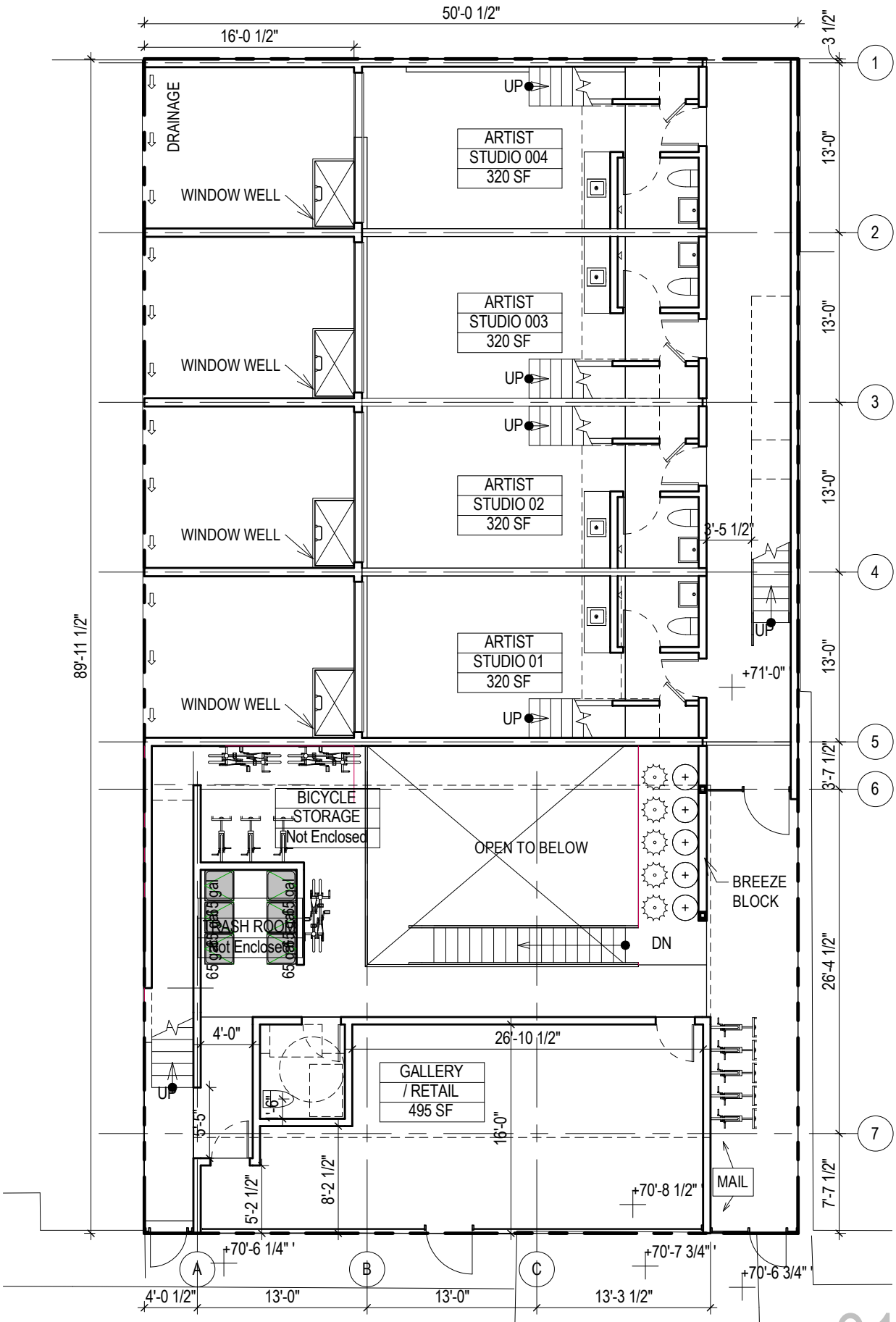
01 BASEMENT
SCALE [3/32" = 1'-0"]

SKA-002.0 // LOGAN ARTS BUILDING

BASEMENT

TFWA
ARCHITECTURE + DESIGN
2305 Historic Decatur Rd. Ste 100
San Diego, CA 92106
v: 619.930.5445
f: 619.930.5401

SCALE [AS NOTED]
DATE [09/15/17]



LOGAN AVE SIDEWALK

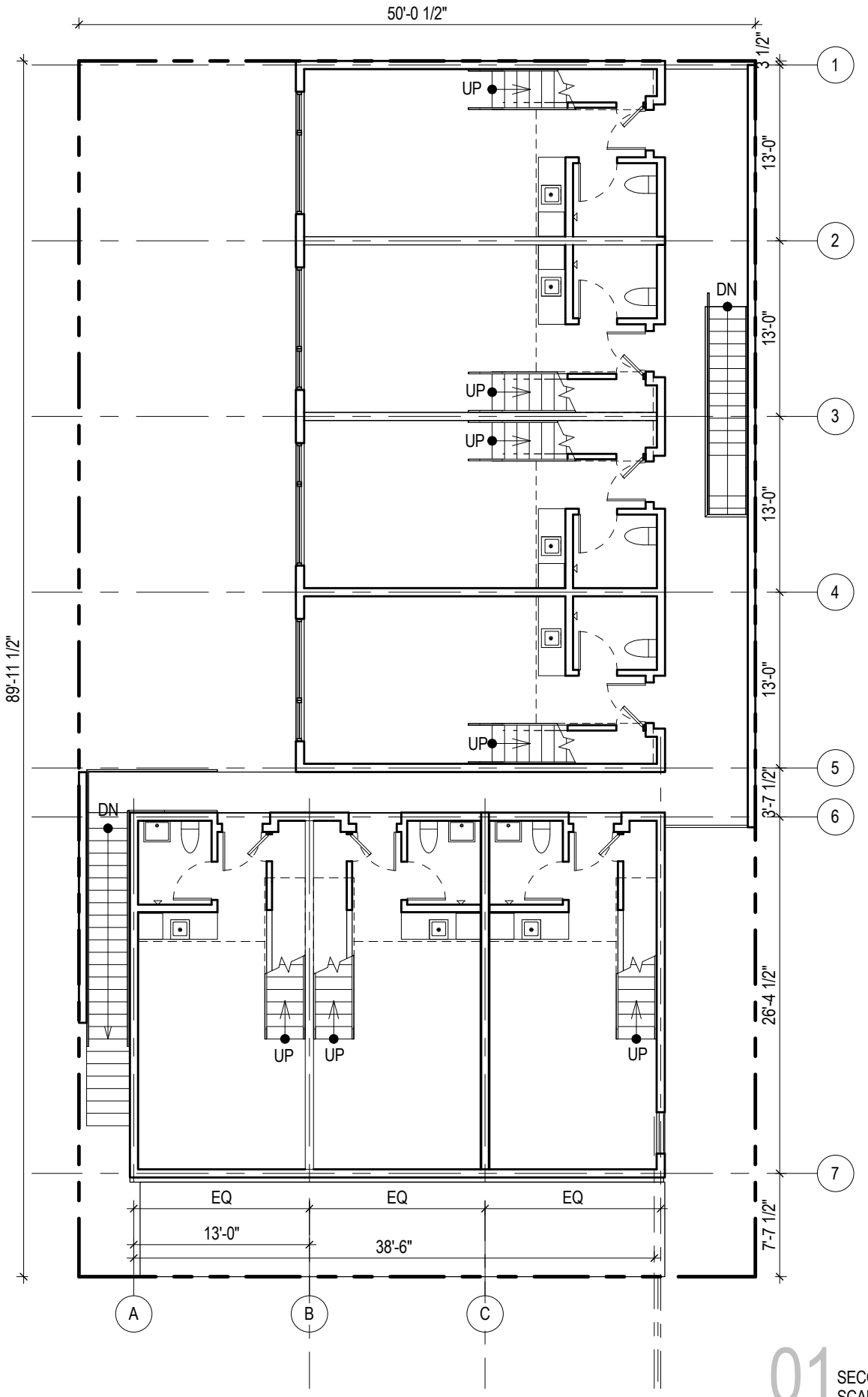
SKA-002.1 // LOGAN ARTS BUILDING

FIRST FLOOR

01 FIRST FLOOR
SCALE [3/32" = 1'-0"]

TFWA
ARCHITECTURE + DESIGN
2305 Historic Decatur Rd. Ste 100
San Diego, CA 92106
v: 619.930.5445
f: 619.930.5401

SCALE [AS NOTED]
DATE [09/15/17]



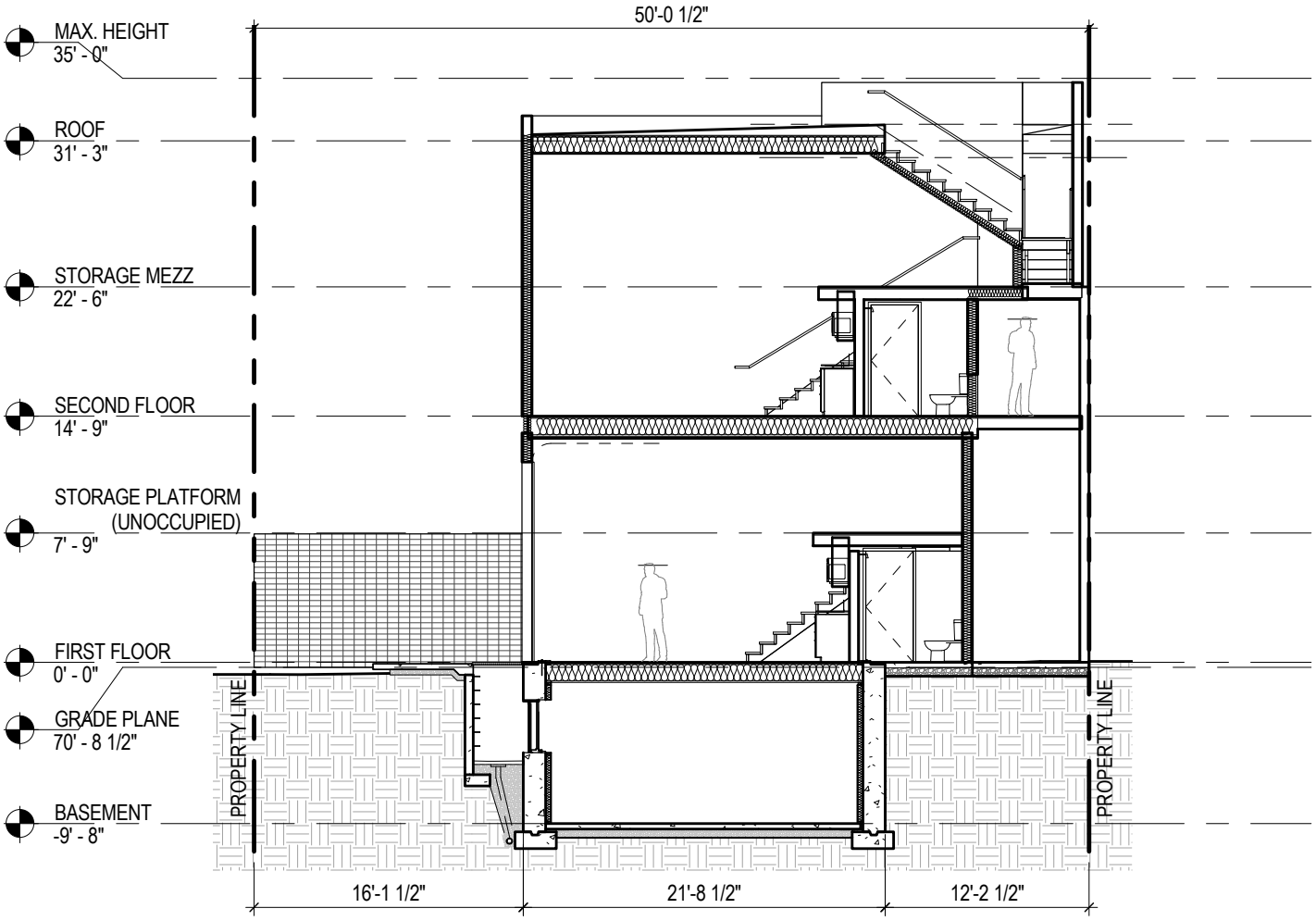
01 SECOND FLOOR
SCALE [3/32" = 1'-0"]

SKA-002.2 // LOGAN ARTS BUILDING

SECOND FLOOR

TFWA
ARCHITECTURE + DESIGN
2305 Historic Decatur Rd. Ste 100
San Diego, CA 92106
v: 619.930.5445
f: 619.930.5401

SCALE [AS NOTED]
DATE [09/15/17]



01 CROSS SECTION
SCALE [3/32" = 1'-0"]

SKA-002.3 // LOGAN ARTS BUILDING

CROSS SECTION

TFWA
ARCHITECTURE + DESIGN
2305 Historic Decatur Rd. Ste 100
San Diego, CA 92106
v: 619.930.5445
f: 619.930.5401

SCALE [AS NOTED]
DATE [09/15/17]

APPENDIX B

COMMUNITY HEALTH AND SAFETY PLAN

1. INTRODUCTION AND BACKGROUND

Goodmacher Development Services, Inc. (GDS) submits this Community Health and Safety (CHSP) for use during construction of the Workshop Lofts development in the Barrio Logan neighborhood of San Diego. The proposed commercial structure will include two-stories above-ground and a partial basement and will be used for artist's studios. Per recommendations in the project geotechnical report (Coast Geotechnical, 2017) excavations (outside of the proposed basement areas) will extend a minimum of three feet deep to accommodate the proposed construction.

In July 2016 GDS prepared a Limited Phase II Environmental Site Assessment (ESA; GDS, Inc., 2016) for the site. The ESA discussed the results of two rounds of soil vapor sampling conducted onsite during which benzene and volatile organic compounds (VOCs) were detected, and recommended preparation of a SMP to address the removal of petroleum hydrocarbon-affected soil during grading for the proposed development. In February 2017, the client entered into the DEH's Voluntary Assistance Program (VAP) for regulatory oversight on the proposed development.

In a letter from the DEH (2017a), Ms. Teresa Sherman of the DEH indicated that a workplan outlining additional soil sampling would be required. The purpose would be to assess the location and depth of benzene vapors detected during the soil vapor sampling and to identify potential soil impacts related to releases of VOCs. However, prior to responding to the DEH letter an opportunity arose to perform limited soil sampling during the geotechnical evaluation by Coast Geotechnical. GDS sought and obtained approval for the limited soil sampling on May 1, 2017 (DEH, 2017b). The limited soil sampling occurred in June and was reported on the requested workplan, (GDS, 2017) outlining the requested additional soil sampling and analysis. Following review of that document, DEH requested a meeting to discuss the workplan. That meeting occurred on September 18, 2017. The results of that meeting was summarized in an email from the DEH (2017c) indicating conditional approval. The conditions included: 1. Sampling soils at four locations to further delineate the extent of hydrocarbon-affected soils; 2. Analyzing the sampled soils for lead and total petroleum hydrocarbons (TPH).

The CHSP was developed in accordance with the County of San Diego's Site Assessment and Mitigation (SAM) Manual. The intent of the CHSP is to protect the public and surrounding community from potential health hazards during remedial excavation activities. This plan will be used in addition to the Contractor's site-specific Health and Safety Plan (HASP) which is intended specifically to protect onsite workers from hazards during such activities, and the Soil Management Plan, which outlines procedures to be followed during the removal and petroleum hydrocarbon-affected soils in accordance with local, state, and federal statutes and regulations.

2. PROJECT TEAM

2.1. Project Environmental Consultant

GDS, Inc. (hereafter GDS) has been retained by the property owner to monitor excavation activities, provide guidance to the Contractor on segregation of waste, collect soil confirmation samples for waste characterization / profiling, and perform community health and safety monitoring.

GDS will perform excavation monitoring, sampling and analysis, and document the stockpiling, transportation of petroleum hydrocarbon-affected soil, and perform community health and safety monitoring. GDS will perform visual and quantitative dust monitoring during remedial excavation activities to ensure potentially-impacted dust is not affecting the surrounding community

2.2. Contractor

The Contractor shall be responsible for Project construction in accordance with Project documents. The Contractor's scope of work, subject to the project documents, includes excavation, temporary stockpiling, material reuse, offsite disposal, and providing measures to protect worker and public health and the environment from impacts related to the Contractor's activities. The Contractor shall be responsible for assigning experienced and qualified personnel to execute the activities described herein, and for selecting and supervising the work of subcontractors assigned to the Project.

3. SUMMARY OF PREVIOUS ENVIRONMENTAL EVALUATIONS

As discussed in GDS, Inc.'s Limited Phase II ESA report a dry cleaner had been located on an adjacent southern parcel in the past. As a consequence, GDS recommended soil vapor sampling to assess the potential for volatile organic compounds (VOCs) to be present on the site.

3.1. Vapor Studies

The soil vapor sampling was conducted and documented in GDS' 2016 report. The conclusions of that report were:

- VOCs (TCE, PCE, toluene, and benzene) were detected in several of the soil vapor probes. Based on reviewed historical data, releases appear to have been associated with the past use of the adjacent property by dry cleaners and possibly surface spills of volatile compounds at the site.
- Based on the risk assessment model the Estimated Cancer Risk was determined to be $1.35x10^{-5}$ and the HI was determined to be $3.67x10^{-2}$. The estimated cancer risk exceeds the $1x10^{-6}$ threshold and therefore, there is a human health risk due to vapor intrusion into the proposed structure.

3.2. Soil Sampling

As part of the development process a geotechnical and fault hazard evaluation was conducted by others (Coast, 2017). That scope of work included the excavation of two, trenches (up to 9.8 feet deep and up to 35 feet long) across the site. On June 23, 2017, GDS, Inc. visited the site to assess environmental conditions exposed in excavations by Coast Geotechnical and to collect soil samples for environmental analysis. Four soil samples were collected; two from of each of the two trenches. The samples were collected using hand-operated equipment and placed into clean, unused, laboratory supplied, 8-ounce sample jars. Following collection, the samples were placed in an iced cooler for storage until they could be delivered to the analytical laboratory. The State of California-certified H&P Mobile Geochemistry received the samples under appropriate chain-of-custody protocol. The samples were analyzed for a range of volatile organic constituents (VOCs). Specifically, they were analyzed using EPA Method 8260 for:

- Vinyl Chloride.

- cis-1,2-Dichloroethene (cis-1,2-DCE)
- Benzene
- Trichloroethene (TCE)
- Toluene
- Tetrachloroethene (PCE)
- Ethylbenzene
- m,p-Xylene
- o-Xylene

None of the listed constituents were detected in the samples (at the laboratory detection limits presented on the analytical reports). Further, no evidence of petroleum hydrocarbon contamination was observed or noted by both Coast Geotechnical and GDS, Inc. in the trenches.

4. POTENTIAL PUBLIC HAZARDS

Hazards and Chemicals of Potential Concerns (COPCs) that may be encountered include:

- Airborne contaminant particles and dust
- Organic vapors
- Odors
- Noise

COPCs in vapors that could migrate offsite include petroleum hydrocarbons and volatile organic compounds (VOCs).

Properties and anticipated concentrations of the COPCs are described in the following sections. Occupational exposure limits, where available, are given for informational purposes. The perimeter monitoring, action levels, and the required notifications and control measures if action levels are exceeded, are described in later sections.

4.1. Petroleum Hydrocarbons

Total petroleum hydrocarbon (TPH) is a generic term used to represent analytical test procedures for the range of hydrocarbon materials from gasoline through heavier fuel oils. These materials typically consist of n-paraffins, isoparaffins, naphthenes, and aromatic compounds in the boiling point range from approximately 50 to 250 degrees Fahrenheit (°F). In fuel mixtures such as gasoline and fuel oils, at high concentrations, TPH can be expected to typically act as a central nervous system depressant, resulting in slurred speech and mental confusion. Higher doses can result in unconsciousness and possibly death from respiratory failure. Skin contact can result in irritation, dermatitis, and defatting. Liver and kidney damage can also result following acute or chronic exposure. No permissible exposure level (PEL) has been established for TPH to occupational workers. For comparison, the PEL-time-weighted average (TWA) for gasoline is 300 parts per million (ppm) or 900 milligrams per cubic meter (mg/m3, with 500 ppm or 1,500 mg/m3 as a 15-minute short-term exposure limit (STEL).

Toxicity data for petroleum fuels is readily available for gasoline. Based on hydrocarbon fuel content (aromatics and naphthenes) and flammability, gasoline is generally considered to be a health risk. Therefore, gasoline toxicity properties will be used as a model to set community health and safety standards for petroleum fuel hydrocarbon exposure. This approach is considered conservative as the proportion of aromatics (such as benzene) and other volatile components are relatively higher in gasoline, compared to other typical fuel mixtures. It is also considered conservative in that the gasoline releases occurred some time ago and it is anticipated that they have undergone a degree of degradation since that time. When gasoline vapors are released to the atmosphere, individuals downwind of a release could be exposed. The common constituents of gasoline are colorless liquids with strong aromatic petroleum hydrocarbon-type odors that are moderately volatile but highly noxious. These vapors are typically heavier than air, but some constituents have a specific gravity less than air and are easily volatilized into the atmosphere. They have low to moderate solubility in water.

4.2. Volatile Organic Compounds

Since VOCs are the primary hazardous constituents of TPH and because VOCs are known to be present at the site, VOCs will be monitored using a photoionization detector (PID) at the site perimeter. The perimeter action level for VOCs is 5 ppm above ambient levels; considered sufficiently conservative to monitor off- site impacts. Ambient levels will be established by collecting air samples prior to the start of site activities.

5. EVALUATING POTENTIAL HAZARDOUS PUBLIC EXPOSURE

A summary of the potential public exposure hazards, routes of exposure, and potential targets is presented below:

Table 1 – Potential Hazards

Potential Hazard	Hazard Duration	Exposure Route	Potential Target	Methods to Prevent Exposure	Likelihood
Petroleum vapors arising from an excavation	Immediate and long term	Migration through the air. Exposure of lungs, eyes, and skin to vapors.	Those working at the site and in its vicinity.	Enforcement of exclusion zone. Monitoring vapors downwind of excavation, stopping excavation if "action" levels are exceeded, and covering newly excavated areas with visqueen, or misting excavated soils and excavation with water until acceptable levels are achieved.	Very Low
Vapors arising from stockpile	Immediate and long term	Migration through the air. Exposure of lungs, eyes, and skin to vapors.	Those working at the site and in its vicinity.	Covering stockpiles with visqueen outside hours of operation, or when stockpile is not being used. Monitoring vapors downwind of stockpile and covering if "action" levels are exceeded, or misting excavated soils and excavation with water.	Very Low

Table 1 – Potential Hazards

Potential Hazard	Hazard Duration	Exposure Route	Potential Target	Methods to Prevent Exposure	Likelihood
Generation of lead-bearing dust	Immediate and long term	Dispersal by air. Exposure of lungs, eyes, and skin to particulate matter.	Those working at the site and in its vicinity.	The frequent use of water to provide dust control. Stop excavation if water does not control dust generation.	High
Generation of lead-bearing dust in stockpile	Immediate and long term	Dispersal by air. Exposure of lungs, eyes, and skin to particulate matter.	Those working at the site and in its vicinity.	Keeping stockpile covered when not in active use. The frequent use of water to provide dust control.	High
Discovery of USTs	Immediate	Migration through air, dermal contact, potential explosive conditions	Those working at the site and in its vicinity.	Create a specific exclusion zone (with signs, delineators, temporary fencing, and/or caution tape) around USTs.	Low

6. AIR MONITORING

GDS will be the environmental consultant performing the monitoring of the construction excavation activities. Air monitoring will be performed during activities that could potentially generate off-site impacts, including excavation, loading, transportation, and uncovered stockpiles. Air monitoring will be performed to evaluate the extent and concentrations of airborne COPCs identified earlier and dust. The objective of the air monitoring program is to evaluate if the monitored COPCs and dust are detected in quantities exceeding the prescribed action levels and to trigger the appropriate control measures and notifications discussed elsewhere.

Air monitoring equipment will include direct-reading instruments such as photoionization detectors (PIDs). Calibration of the instruments will be performed in accordance with the manufacturer 's specifications.

Air monitoring locations will be established at the site perimeter (fence line) for the duration of remedial excavation work. The locations will be selected to evaluate potential impacts to the public. These locations will be adjusted to account for variations in the location of the progressing excavation face, waste stockpiling, and loading areas, and meteorological conditions (i.e., wind direction, wind speed, temperature, and precipitation) during project work. The stations will be set up such that the equipment will be located at a height of approximately 5 feet above the ground surface.

6.1. Dust

Visual and quantitative dust monitoring will be performed during soil disturbance activities to ensure potentially-impacted dust is not affecting the surrounding community. Field readings from an aerosol dust monitor will be collected along the perimeter of the site at intervals by GDS. If visible dust at the site perimeter is noted or quantitative dust readings are greater than 2 parts per million (ppm) above background (perimeter action level), GDS will notify the Contractor so that appropriate dust control actions can be implemented to reduce the potential hazard or nuisance to acceptable levels.

Onsite work will be stopped during high wind conditions or when the use of engineering controls cannot effectively control dust at levels below the perimeter action levels. GDS will record the time, location, and results of the above activities on a daily report of field observations.

The frequent use of water to control dust is considered sufficient to minimize the risk of exposure to lead-impacted dust. GDS will be on site during all mitigation activities and will monitor the activities in regards to the generation of dust emissions. GDS will direct the use of water to control fugitive dust emissions, as necessary, to minimize the amount of dust that leaves the site. If the generation of dust cannot be controlled with water, excavation will be stopped. Once all of the COPC-bearing soil has been removed from the site, the control of dust will become the responsibility of the grading contractor.

6.2. Petroleum Hydrocarbons and VOCs

A PID will be kept at the site and will be used to monitor the site and any new discoveries of suspected releases of hazardous substances.

- The PID will be calibrated prior to commencing work.
- If obvious indications of a release of VOCs are noted, the downwind boundary of the site will be immediately monitored by GDS with a PID. If VOCs are detected at the site boundary, then mitigation measures will be implemented at the source area. Upwind PID readings may be recorded if off-site sources of VOCs are suspected.
- The time and range of concentrations and the locations of each PID reading will be recorded. The frequency of the readings will be determined by the conditions at the site and whether or not changes to the source area are occurring (e.g., the excavation of additional material would trigger the need for additional monitoring events).
- A source of water (i.e., water truck or hose to fire hydrant or water main) will be kept on site during excavation activities. Vapors will be suppressed by spraying with water during excavation, stockpiling, and loading activities and keeping stockpiles be covered as much as possible.

7. CONTROL METHODOLOGY

Presented in this section are methods intended to protect the public from the outlined hazards.

7.1. Site Security

Existing metal and chain-link fences will secure the site, and access to the site will be restricted to authorized personnel only. Subsurface utilities that are within the CEE will be disconnected from the site and Underground Service Alert (USA) will be notified, as required by state law.

7.2. Dust

As outlined above, dust emissions will be controlled by spraying soil with water as excavation activities are conducted to reduce dust emissions, and by keeping stockpiles covered as much as possible.

7.3. Vapors

If, during the mitigation of a release containing detectable VOCs in the air, a sustained reading of 25 ppm is observed, then excavation activities will be stopped, and the point source(s) of the vapor will be identified. Vapor emissions will be reduced by covering the source(s) of the vapor with sheeting or soil, reducing the area being worked on at any time, or misting the soil being excavated.

7.4. Soil Stockpiles

Soil will be stockpiled on and covered with plastic sheeting. The stockpiles will either be "burrito-wrapped", or berms will be constructed around each pile in order to minimize stormwater runoff. At the end of each day, or when not being actively added to, the stockpile will be secured on all four sides.

7.5. Noise

To minimize the impact caused by the operation of heavy equipment to the community, the local noise ordinance in accordance with the City of San Diego's Municipal Code Section 59.5.01 will be strictly enforced.

7.6. Stockpiled Soil

Stockpiled soil shall be maintained by the Contractor in accordance with the Soil Management Plant, project specifications, Contractor's Excavation and Transportation Plan and construction Storm Water Pollution Prevention Plan (SWPPP), and all local state and federal regulations and requirements.

7.7. Best Management Practices

To minimize or prevent the discharge of hazardous or potentially hazardous materials from the subject site, best management practices will be implemented by the Contractor, and all local, state, and federal regulations regarding the handling, storage, transportation, and disposal of hazardous or potentially hazardous materials will be adhered to.

Vehicles entering and/or exiting the site for loading of wastes and contaminated material slated for disposal shall be tracked by the Contractor through documentation and decontaminated (where applicable), prior to their departure from the site. Care shall be exercised to avoid spillage of contaminated materials from vehicles leaving the site.

In addition, the Contractor will provide water pollution control systems for the site to contain, collect, treat, detain, test, and release site storm water and/or groundwater in accordance with the Contractor's SWPPP and National Pollutant Discharge Elimination System and project specifications

8. EMERGENCY PLANNING

In the event of an emergency situation, work at the site will be stopped immediately. An exclusion zone will be maintained, with only authorized site workers and emergency services personnel being allowed into the zone. In the event of a fire, no attempt will be made to fight the fire; however, any potentially flammable materials will be moved from the path of the fire to an area judged to be safe and 911 will be called.

9. MONITORING AND REPORTING

During activities that may create large quantities of dust, such as excavation and loading of trucks, implementation of strict dust control (e.g., watering or procedural change) will be undertaken by the Contractor. Perimeter action levels for dust are based on one-tenth of the Threshold Limit Value for total dust (particles not otherwise specified). The Contractor will mitigate dust with water, applied by water trucks or hoses, in the active work areas.

9.1. Action Plan to Reduce Airborne Concentrations

If a Table 1 action level is exceeded, project activities will immediately cease until engineering controls are implemented to reduce airborne concentrations to below the above-mentioned action limits. Engineering controls and best management practices discussed in Section 3 of this document will be used by the Contractor to prevent exposure to the public. Field personnel trained in proper calibration, use, and maintenance will calibrate air monitoring equipment in accordance with the manufacturer's specifications.

Instrument readings and analytical results collected for monitoring purposes will be recorded in a daily log by GDS and the Contractor. The log will include, at a minimum:

- Diagram indicating site boundaries, the areas of material disturbance, and the perimeter monitoring locations.
- Direct reading instruments used, including equipment make and model, serial number, and calibration record.
- Table of direct reading results including collection time and collection location.
- Weather observations including time, wind direction, wind speed, temperature, and precipitation.
- Other conditions or circumstances that may influence monitoring readings.

9.2. Quality Assurance and Control Measures

Quality control and assurance measures will be implemented to ensure proper calibration of instrumentation, confirm that appropriate sample collection and handling procedures are used, and assess if additional air monitoring and sampling is necessary.
All real-time instrumentation will be calibrated according to the manufacturer's specifications prior to use each day. A record of this calibration will be logged on an appropriate form

and this information will include: equipment manufacturer and model, serial number, factory calibration date and time, methodology, and results of the daily field calibration.

Air sampling *may* be performed at GDS' discretion sing an approved OSHA or NIOSH method. Prior to sampling each day, the air sampling pumps will be properly calibrated to collect an adequate volume of air. A record of the calibration will be maintained and the information will include: equipment manufacturer, pump or instrument identification number, calibrator type, time of calibration, and pre-and post calibration results to assure the flow was maintained.

If collected, the air samples will be submitted to a laboratory using proper chain-of-custody procedures. Analysis of the samples will be performed by a laboratory accredited by the American Industrial Hygiene Association for OCPs.

9.3. Reporting

The activities/information discussed above will be compiled and included in the closure report prepared by GDS.

10. EMERGENCY PLANNING

In the event of a release, which causes a sudden hazard to life or the environment, the Contractor's Site Health and Safety Officer (SHSO), Contractor's Project Manager and GDS must be immediately notified of the health and/or environmental risk. These individuals have the knowledge and integrated authorities to cease any activity or condition contributing to the hazard. The Contractor's SHSO is responsible for notifying the appropriate emergency response agencies. The Contractor's SHSO will be determined prior to commencement of construction activities, and the applicable contact names and numbers will be posted to report any hazards at the project site.

Project Contacts:

Contractor Project Manager: TBD
Contractor Site Health and Safety Officer (SHSO): TBD
Project Environmental Consultant: Jonathan Goodmacher, GDS, Inc.

Emergency Contacts:

POLICE, FIRE, AMBULANCE 911
HOSPITAL Sharp Rees-Stealy, Downtown
300 Fir Street
San Diego, California
(858) 499-2600
Poison Control Center (800) 222-1222
City of San Diego Hazardous Incident Response Team (858) 505-6700

11. PUBLIC NOTIFICATION

The Contractor shall draft a public notification sheet that will be posted in and around the work area, at all egress entrances and exiting positions. The public notification sheet shall include:

- Description of the proposed site activities;

- Project commencement and expected completion dates;
- All required Proposition 65 warnings; and
- 24-hour contact names and telephone numbers to report hazards to health or environment

An example is public notification sheet is provided on following page.

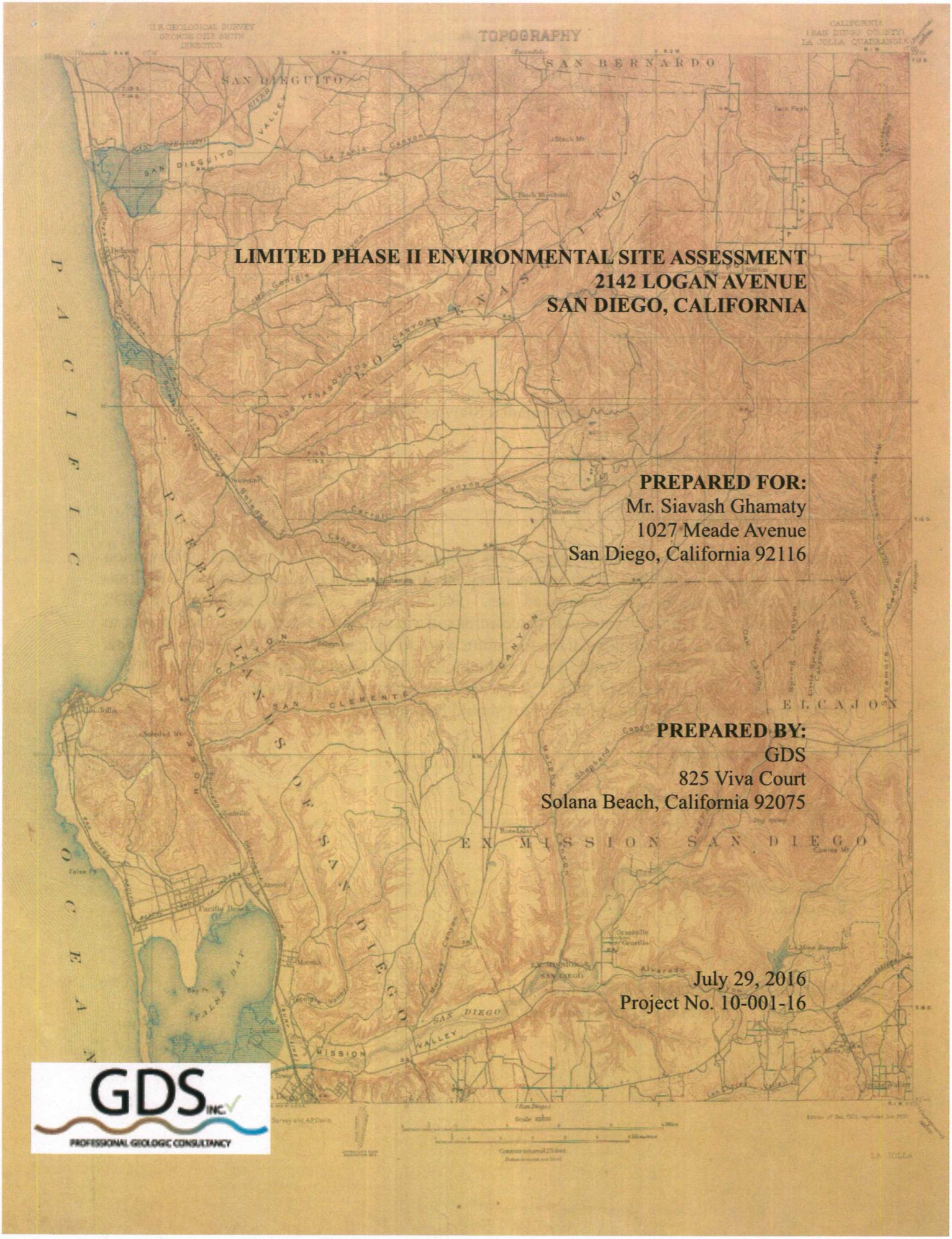
PUBLIC NOTIFICATION (PROPOSITION 65 WARNING)

Project activities include the remediation of petroleum hydrocarbon-affected soil. Project activities are scheduled to commence from (TBD). Scheduled work hours will be from 7 am to 5 pm. The remediation activities include excavation of soil, which may generate noise, dust, and odors.

Potential or documented contaminants at this site include petroleum hydrocarbons and volatile organic compounds, known or suspected to cause cancer. This Proposition 65 Warning is required under Section 25249.6 of the State of California Health and Safety Code.

Project contact names and numbers are provided below.

Contact Name / Role	Company	Phone
TBD *General Contractor*	TBD	TBD
Jonathan Goodmacher *Project Environmental Consultant*	GDS, Inc.	(858) 254-5611 (24 Hour Contact)
Teresa Sherman *Case Manager*	County of San Diego Department of Environmental Health	(858) 505-6797



LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT
2142 LOGAN AVENUE
SAN DIEGO, CALIFORNIA

PREPARED FOR:
Mr. Siavash Ghamaty
1027 Meade Avenue
San Diego, California 92116

PREPARED BY:
GDS
825 Viva Court
Solana Beach, California 92075

July 29, 2016
Project No. 10-001-16

GDS INC.
PROFESSIONAL GEOLOGIC CONSULTANCY

GDS INC.
PROFESSIONAL GEOLOGIC CONSULTANCY

June 29, 2016
Project No. 10-001-16

Mr. Siavash Ghamaty
1027 Meade Avenue
San Diego, California 92116

Subject: Limited Phase II Environmental Site Assessment
2142 Logan Avenue
San Diego, California

Dear Mr. Ghamaty:

In accordance with the proposed scopes of work transmitted to your office and your authorization GDS is pleased to submit this report summarizing the findings from our limited Phase II environmental site assessment at the referenced site. Based on the assessment activities by GDS documented in this report, constituents detected in soil vapors could pose a human health risk to future development. Recommendations for future work to mitigate that risk are presented in this report. A copy of this report should be submitted to the San Diego County Department of Environmental Health to be reviewed with a Voluntary Action Program application. The concurrence of the agency with the findings of this report should be requested.

Respectfully submitted,

Jonathan Goodmacher, PG 6173
Principal

JG/bhs

Distribution: (1) Addressee (electronic)
(1) Rammy Cortez (electronic)

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Appendices

1. INTRODUCTION AND SCOPE

This Limited Phase II Environmental Site Assessment (ESA) report is submitted by Goodmacher Development Services, Inc. (GDS) to Siavash Ghamaty for the proposed re-development at 2142 Logan Avenue, San Diego, California (Figure 1). This evaluation began as a Phase I ESA as part of the due diligence process regarding acquisition and development of the property. The primary purpose of a Phase I ESA is to identify potential environmental concerns, or "recognized environmental conditions" (REC) and "controlled recognized environmental conditions" (CREC) as defined by ASTM E1527-13 (Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process), the Environmental Protection Agency 40 Code of Federal Regulations (CFR) Part 312 (Standards and Practices for All Appropriate Inquiries, Final Rule, November 1, 2005), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, 42 U.S.C. §9601), including known and potential past and present RECs.

However, in the course of reviewing the information obtained it became clear that a dry cleaner had been located on the adjacent site in the past. As a result of this finding the Limited Phase II ESA documented in this report was conducted. This report presents background information on the site and the adjacent area and includes a summary of the field evaluations conducted. The limited Phase II ESA evaluation was conducted in general accordance with the requirements of the San Diego County Department of Environmental Health (DEH) and accepted practices for similar evaluations in the area.

1.1. Site Location and Description

The site consists of a rectangular parcel of land with a reported area of approximately 0.10 acres. It is bounded by Logan Avenue (to the southwest), Interstate Highway I-5 (to the northeast), and commercial properties on the remaining sides. Other development in the site vicinity includes a mix of commercial and residential uses with commercial uses dominating in the immediate vicinity. The San Diego County Assessor's Office designation for the site is 538-560-49-00.

1.2. Future Development

Present plans for the development include a mixed-use structure with live-work lofts. Some portions of the proposed development (including parking) may be constructed below the existing ground surface elevation. However, at this time specific development plans have not been developed.

1.3. Scope of Services

GDS' scope of work for this Limited Phase II ESA included the activities listed below.

- Review of physical setting and background information (e.g., topographic and geologic maps, etc.).
- Performance of a site reconnaissance to document potential hazardous materials handling, storage, and disposal practices, areas of possibly contaminated surficial soil or surface water, possible sources of polychlorinated biphenyls (PCBs), underground and aboveground storage tanks (USTs and ASTs, respectively), and possible sources of contamination from activities at the site and other properties in the vicinity.
- Review of federal, state, tribal, and local regulatory agency databases for the site and for properties located within a specified radius of the site. The reviewed databases list the locations of known hazardous waste sites, landfills, leaking underground storage tanks, permitted facilities that use USTs, and permitted facilities that use, store, or dispose of hazardous materials and wastes.
- Review of reasonably ascertainable local regulatory agency files for the site, as applicable.
- Review of historical information for the site. The reviewed information included Sanborn® fire insurance maps, reverse city directories, historical aerial photographs, and historical topographic maps.
- Review of the real estate listing information provided by the user.
- Questioning the current owner regarding past uses of the property and adjacent properties.
- Preparing a site-specific health and safety plan for the limited field evaluations performed.
- Mark-out of the site for utility clearance through USA Markout.
- Installation of eight soil vapor probes (four on June 2, 2016 and four more on June 16, 2016) to depths of approximately 10 feet below ground surface.

- Acquisition of soil vapor samples from the soil vapor probes. Samples collected on June 2 were transported under appropriate protocol to a State of California-certified environmental laboratory for analysis. Samples collected on June 16 were given to an onsite a State of California-certified mobile environmental laboratory for analysis.

- Analysis of acquired soil vapor samples for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Test Method 8260SV.

- Compilation and analysis of the recently obtained data from background, field and laboratory evaluations.

- Creation of this report summarizing the field and laboratory data acquired. This report contains documentation of past uses of the site and adjacent properties, field activities, tabulated analytical data, analytical reports accompanied with chain of custody and quality assurance/quality control documentation, appropriate figures and tables, and provides conclusions and recommendations.

2. CURRENT SITE CONDITIONS

A reconnaissance evaluation of the site was conducted in May 2016. At that time Recognized Environmental Conditions e.g. storage of hazardous materials, above ground or underground storage tanks, etc. were not observed with the exception of oil or hydrocarbon staining on pavements.

Currently, the site is vacant of structures. However, it is used to store a wide variety of items including apparently inoperable cars, appliances, tools, lumber, and building materials. Fences bound the site on the sides next to Interstate Highway I-5 and to Logan Avenue. The other two property boundaries consist of the sides of the adjacent structures. A portion of the site is fenced off from the remainder of the site. The majority of the site is paved with asphaltic and Portland cement concrete. Figure 2 shows the layout of the site.

3. BACKGROUND RECORDS REVIEW

3.1. Searches of Environmental Databases

A computerized, environmental information database search was requested from EDR on May 19, 2016 (EDR, 2016a). The search included federal, state, tribal, and local databases. The review was conducted to evaluate whether the site or properties within the vicinity of the site have been documented as having experienced significant unauthorized releases of

hazardous substances or other events with potentially adverse environmental effects. A copy of the EDR database search report is presented in Appendix A.

The potential for off-site properties/facilities listed in the EDR report to impact soil and/or groundwater beneath the site was evaluated. Searches of State Water Resources Control Board (SWRCB) Geotracker database were used to supplement the information in the EDR report. Although a number of sites were identified as potential environmental concerns the use of the adjacent site (2146 or 2148 Logan Avenue) for a laundry and dry cleaners was identified as being of the greatest concern.

3.2. Historical Use Information

Various historical sources, such as Sanborn Fire Insurance Maps (Sanborn), aerial photographs, reverse city directories and topographic maps, were reviewed to evaluate historical usage of the site and the surrounding area. Based on the review of the outlined documents development in the site area pre-dates the earliest review data. Per the reviewed Sanborn maps, the site itself was occupied by a single-family dwelling by 1906. However, that use changed sometime in the mid-1950s when it was used for parking. Based on the reviewed reverse city directories Bees Cleaners were located on the adjacent property (2146 Logan Avenue) in 1966 and 1970. Copies of the reviewed historical sources are presented in Appendix A.

In addition to the resources listed above, a questionnaire regarding past uses of the site and nearby properties was transmitted to the current property owner. Per the returned questionnaire the adjacent property to the southeast was used by a dry cleaner in the past. A copy of the returned questionnaire is presented in Appendix A.

4. PHYSICAL SETTING

4.1. Topography

Based on the most recent United States Geological Survey topographic map (USGS, 2012), the site elevation is approximately 65 feet above mean sea level (MSL). Topographically, the area of the site slopes to the west-southwest toward San Diego Bay (approximately 1/2 mile away).

4.2. Geology

Based on the most recent geologic mapping (Kennedy and Tan, 2008), native soils at the site consist of Old Paralic Deposits, Unit 6.

4.3. Groundwater

According to the San Diego Regional Water Quality Control Board (RWQCB) the site is located in the Chollas Hydrologic Subarea (908.22), San Diego Mesa Hydrologic Area, of the Pueblo San Diego Hydrologic Unit (RWQCB, 2011). Groundwater in this subarea does not have beneficial or potentially beneficial uses.

Based on a report for a nearby site (2190 Main Street, San Diego, [Equipoise, 2014]) groundwater is present in the vicinity at depths of greater than 30 fbg. Per that same report, the groundwater gradient and flow direction is generally directed west to San Diego Bay.

5. CURRENT ACTIVITIES

Presented below is a summary of the field explorations conducted on June 2 and June 16, 2016 and environmental laboratory analyses.

5.1. Preparation for Fieldwork

This section presents fieldwork preparation activities that were completed prior to the on-site drilling and soil sampling activities.

5.1.1. Pre-Sampling Inspection and Access

Prior to sampling, GDS conducted a site reconnaissance to locate and mark proposed soil vapor probe locations. Vapor probe locations were inspected for site accessibility, underground utilities, and to identify additional potential issues encountered during fieldwork (e.g. overhead constraints, access for equipment and personnel, etc.).

5.1.2. Underground Utility Clearance

Underground Surface Alert was contacted to provide utility clearance.

5.1.3. Health and Safety Plan

A site- and scope-specific Health and Safety Plan was prepared for the proposed subsurface evaluation and implemented during field activities. A safety meeting ("Tailgate Meeting") was conducted before each sampling event. The sampling area was secured from unauthorized entry during sampling activities to ensure the safety of personnel within and around the sampling area.

5.1.4. Equipment Decontamination

Prior to soil vapor probe installation activities equipment was cleaned and air dried.

5.2. Soil Vapor Sampling

For the June 2 and June 16, 2016 sampling events, the soil vapor probe installation, leak testing procedures, determination of purge time/volumes, purge rates, and sample collection methodologies were conducted in general accordance with Cal/EPA's Advisory – Active Soil Gas Investigation (Cal/EPA, 2015). H&P Mobile Geochemistry was retained as a subcontractor to perform the installation and sampling of the subslab soil vapor probes. The soil vapor probes were constructed with temporary airstone filters, 1/8-inch Nylaflow tubing, and a valve at the termination. The probe tip was set within a sand pack and topped with dry bentonite, per DTSC Guidelines. The dry bentonite was overlain by a seal of hydrated bentonite, which extended to the surface. Where feasible the probes were installed using a truck-mounted hydraulic-push rig. However, due to access restrictions Soil Vapor Probes VP-7 and VP-8 were installed using a manually-operated drill rig fitted with a soil auger. Listed below are the approximate depths (in feet below grade) sampled for each soil vapor probe.

- VP-1 sampled at 2.5, 5, and 10 feet.
- VP-2 sampled at 2.5, 5, and 10 feet.
- VP-3 sampled at 2.5, 5, and 10 feet.
- VP-4 sampled at 2.5, 5, and 10 feet.
- VP-5 sampled at 2.5, 5, and 10 feet.
- VP-6 sampled at 2.5, 5, and 10 feet.
- VP-7 sampled at 2.5 and 5 feet.
- VP-8 sampled at 2.5 and 5 feet.

Prior to purging and sampling at each probe location, a shut-in test was conducted on the sampling train to check for leaks in the above-ground fittings. The shut-in test was conduct-

ed by attaching the sample train assembly to the termination valve on the soil vapor probe. With the valve on the probe in the "off" position, a purge syringe was used to evacuate the sample train of air to a minimum measured vacuum of approximately 60 inches of water. The vacuum was observed on an in-line vacuum gauge positioned prior to the syringe. The vacuum gauge was observed for one minute and all above ground connections were considered "air-tight."

At each probe location, a leak test was conducted to evaluate the adequacy of the surface seal. 1,1-DFA was released near the ground surface and used as a leak check compound. The leak check compound was not detected and the surface seal was deemed to be adequate.

For the June 2, 2016 sampling event, after purging at least 500 ml, the soil vapor samples were collected in 200 ml Summa canisters for transportation to the fixed-based environmental laboratory. For the June 16, 2016 sampling event, after purging at least 500 ml, the soil vapor samples were collected from a three-way valve at the surface end of the vapor tubing with dedicated syringes. Purge volumes were noted on the field sheets by field personnel (Appendix B).

Upon completion of investigative activities, all probes were properly abandoned. All probes were backfilled with hydrated bentonite pellets or bentonite slurry. The probe holes were patched with either asphalt or concrete to match the existing cover.

5.3. Analytical Program and Results

Soil vapor samples collected were submitted to H&P Mobile Geochemistry, Inc. (H&P), a State of California-certified environmental laboratory, in Carlsbad, California. Soil vapor samples collected were analyzed for the presence of VOCs using Environmental Protection Agency (EPA) Method 8260SV. The certified analytical results and chain-of-custody documentation are included in Appendix B. As noted, soil vapor samples collected on June 2, 2016 were transported to the H&P Mobile Geochemistry fixed-base lab for analysis and the soil vapor samples collected on June 16, 2016 were immediately transferred to a mobile laboratory for direct injection into a gas chromatograph/purge and trap for analysis.

One replicate sample per sampling date was collected. These replicate samples were designated using "REP" on the chains-of-custody. The mobile laboratory in the field performed all QA/QC for the soil vapor analysis. Copies of the final laboratory reports are presented in Appendix B and the detected constituents are presented on Table 1 below. Presented on Figure 2 are the locations of the soil vapor probes and the constituents detected.

Table 1 – Detected Constituents

Soil Vapor Probe	Approximate Sample Depth (feet)	Detected Constituent(s) and Concentration(s)
VP-1	2.5	Trichloroethene 60µg/m^3 Tetrachloroethene 350µg/m^3
VP-2	2.5	Toluene 480µg/m^3
VP-2	10	Benzene 50µg/m^3
VP-5	5	Benzene 20µg/m^3
VP-5	10	Benzene 30µg/m^3
VP-6	10	Benzene 30µg/m^3
VP-6REP	10	Benzene 30µg/m^3

5.4. Field Documentation

5.4.1. Daily Field Reports

Daily field reports documented where, when, how, and from whom project information was obtained. Report entries were sufficiently accurate to permit reconstruction of field activities.

5.4.2. Chain-of-Custody

Chain-of-Custody documentation for all samples collected were prepared in the field and maintained with the samples from collection time through relinquishment to the analytical laboratory. The project number/name, consultant information, sampler name, sample number/designation, sample depth, date and time of collection, sample matrix, sample containers (number and type), requested analysis and signatures of all parties retaining and/or relinquishing possession of the samples (including date and time of transfer) was included in the documentation.

5.4.3. Photographs

Photographs were taken during field activities. Photographs serve to verify information entered in the field logbook.

6. POTENTIAL HUMAN HEALTH RISK

When evaluating cancer screening risks for decision-making purposes, an acceptable excess cancer risk is equal to or less than one in one million ($1x10^{-06}$). This threshold is recognized by both the DTSC and the United States EPA and represents a probability of one in one million that an individual could develop cancer from exposure to a carcinogen (or group of carcinogens) under various exposure assumptions. If the Hazard Index ([HI] a measure of the potential for noncarcinogenic risks) is less than 1.0, the chemical is considered unlikely to pose significant noncarcinogenic adverse health effects to individuals under the exposure conditions. This approach is also considered to be cumulative and conservative.

As the site will be developed and capped with a structure the risks of dermal absorption and ingestion were not calculated. Instead the risks to occupants from soil vapors were evaluated. The most recent version of the risk assessment model developed by DEH (VAPRISK 2000; DEH, 2016) was downloaded and used in calculating the risks. As noted at this time the proposed development includes underground parking. Therefore, the assumption has been made that the upper approximately 10 feet of soil will be removed from the site to accommodate the underground parking and thus only those constituents detected at a depth of approximately 10 feet below grade were deemed of concern to future residents and workers of the structure. Although trichloroethene, tetrachloroethene, and toluene were detected at the site these constituents we only detected in samples collected above that anticipated excavation depth of 10 feet. As benzene was the only constituent detected in samples collected at a depth of approximately 10 feet, only benzene was used to calculate human health risks. In calculating the results, the maximum benzene concentration of $50\mu g/m^3$ was input. In addition, where applicable, parameters (e.g. chemical properties, soil properties, outdoor air components, exposure scenarios, and health risk factors) were set to default values.

Based on the risk assessment model the Estimated Cancer Risk was determined to be $1.35x10^{-5}$ and the HI was determined to be $3.67x10^{-2}$. The HI is less than 1.0 and the potential for non-

carcinogenic health effects is low. However, the estimated cancer risk exceeds the $1x10^{-6}$ threshold and therefore, there is a human health risk due to vapor intrusion into the proposed structure. Presented in Appendix C are the outputs of the models ran for these analyses.

It should be noted that the procedures used in any quantitative risk assessment are conditional estimates given the many assumptions that must be made about exposure and toxicity. The primary factors that contribute to uncertainty in this assessment are limited information about patterns of exposure and uncertainty in toxicity estimates.

Conservative assumptions were made in this analysis including the assumption that chemical conditions remain constant across the site and that degradation will not occur over time. This general assumption of steady-state conditions also applies to sources and chemical release mechanisms and may result in a conservative estimation of long-term exposure concentrations. To summarize, as a risk evaluation contains multiple sources of uncertainty, simplifying assumptions are made so that health risks can be estimated quantitatively. Since the exact amount of uncertainty cannot be quantified, the risk assessment is intended to overestimate rather than underestimate probable health risk and hazards.

7. FINDINGS AND CONCLUSIONS

Based upon the results of this limited Phase II ESA, the following findings are provided.

- Groundwater beneath the site is expected to be present at depths exceeding 30 feet bgs. Based on data from past evaluations the groundwater flow direction is generally to the west. Groundwater is exempt for municipal uses and there are no drinking water wells located within the site vicinity.
- Soil units at the site consist of fills and native soils of the Quaternary Old Paralic Deposits (Unit 6).
- VOCs (TCE, PCE, toluene, and benzene) were detected in several of the soil vapor probes. Based on reviewed historical data, releases appear to have been associated with the past use of the adjacent property by dry cleaners and possibly surface spills of volatile compounds at the site.
- Based on the risk assessment model the Estimated Cancer Risk was determined to be $1.35x10^{-5}$ and the HI was determined to be $3.67x10^{-2}$. The estimated cancer risk exceeds the

$1x10^{-6}$ threshold and therefore, there is a human health risk due to vapor intrusion into the proposed structure.

8. RECOMMENDATIONS

As noted, based on the assessment activities completed at the site, there is the potential that the residual benzene detected at the site would pose a human health risk. However, no additional assessment work is recommended at this time. Instead, the following recommendations are provided with respect to the proposed development.

- As the site is proposed to undergo a change in use (from commercial to mixed commercial: residential) the client should file an application for the Voluntary Assistance Program (VAP) with the County of San Diego DEH. This report should be submitted along with that application and the concurrence of the agency with the conclusions of this report should be requested.

- A Soil Management Plan (SMP) should be implemented for use during grading and trenching activities at the site. The SMP should provide protocols for management (temporary stockpiling, handling, and disposal) of any contaminated soil encountered. It should also present protocols to be followed in the event that any USTs are encountered during site operations.

- Additional soil vapor sampling should be conducted at the base of the excavations (once complete) and the potential risks to human health re-evaluated at that time. If warranted based on that evaluation mitigation measures can be recommended and emplaced (e.g. subslab vapor barriers or a subslab depressurization system).

9. SIGNIFICANT ASSUMPTIONS AND LIMITATIONS

This report includes the compilation and summarization of historical environmental assessments at the site by prior consultants and third parties as they relate to the areas to be investigated. GDS reviewed these documents in good faith and relies on the information in the documents to be true and accurate for the subject property. Additionally, much of the background information of site activities and environmental conditions were presented by various sources, including the regulatory authorities and prior consultants. GDS has made an effort to reconcile these sources in this document; however, the data quality ultimately relies on information provided to GDS.

The site evaluation is limited by the availability of information at the time of the assessment. It is possible that unreported conditions impairing the environmental status of the site may have

occurred which could not be identified. GDS 's opinions cannot be extended to portions of the site that were unavailable for direct observation reasonably beyond the control of GDS. Evaluating compliance of past or future owners with applicable local, provincial and federal government laws and regulations was not conducted. Although sampling plans are developed in an attempt to provide what is interpreted as sufficient coverage within the assessment area, no extent of sampling can guarantee all environmental conditions, chemicals of concern (man-made or naturally occurring) and concentrations at which they occur can be identified and quantified.

10. REFERENCES

California Regional Water Quality Control Board, San Diego Region, 1994 (with amendments effective on or before April 4, 2011), Water Quality Control Plan For The San Diego Basin (9).

California State Office of Environmental Health Hazard Assessment, 2015, Risk Assessment – Soil and Soil Gas: http://oehha.ca.gov/risk/chhsltable.html; accessed September.

California State Water Resources Control Board, 2016, Geotracker: www.geotracker.swrcb.ca.gov; accessed in May.

Environmental Data Resources, Inc. (EDR), 2016a, The Radius Map™ Report with Geocheck®: dated May 19.

Environmental Data Resources, Inc. (EDR), 2016c, Certified Sanborn Map Report: dated May 19.

Environmental Data Resources, Inc. (EDR), 2016d, Aerial Photo Decade Package: dated May 20.

Environmental Data Resources, Inc. (EDR), 2016e, EDR-City Directory Image Report: May 19.

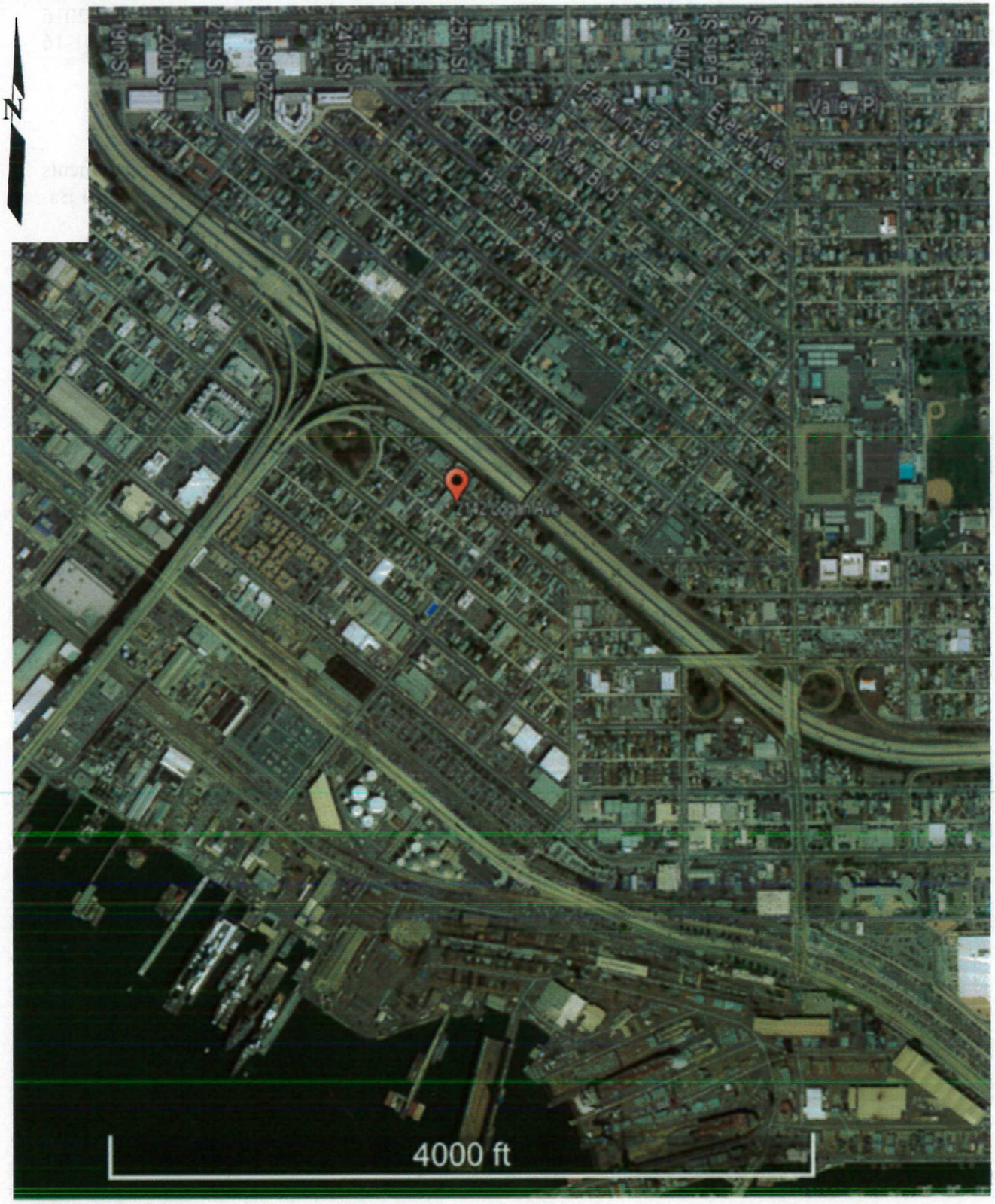
Equipoise, 2014, First Semester 2014, Groundwater Monitoring and Bio-Slurping Implementation Report, dated August 5.

Google Earth, 2016, accessed May.

County of San Diego, Department of Environmental Health, 2016, VAPRISK 2000 Model, http://www.sdcounty.gov.deh/water/sam_vapor_risk_assessment_2000.html: accessed July.

Kennedy, M.P. and Tan, S.S., 2008, Geologic Map of the San Diego 30' x 60' Quadrangle, California, California Geological Survey, Regional Geologic Map Series, No. 3.

United States Geological Survey, 2012, Point Loma Quadrangle, California, 7.5-Minute Series (Topographic): Scale 1:24,000.



Source:GoogleEarth, 2016
Site location is approximate.
Directions are as shown.
NTS

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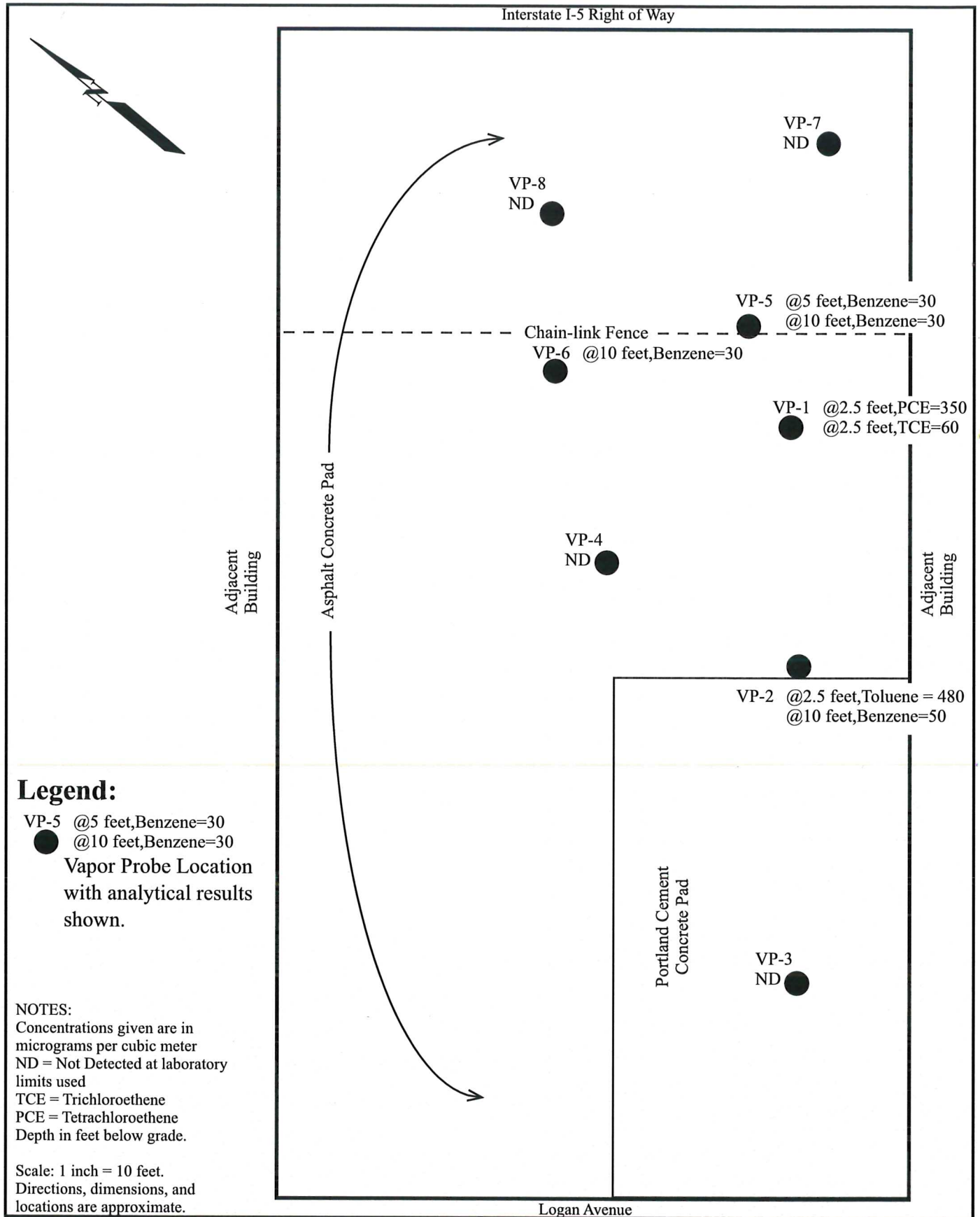
Figure 1: Site Index
2142 Logan Avenue
San Diego, California



Legend:

VP-5 @5 feet,Benzene=30
@10 feet,Benzene=30
Vapor Probe Location with analytical results shown.

NOTES:
Concentrations given are in micrograms per cubic meter
ND = Not Detected at laboratory limits used
TCE = Trichloroethene
PCE = Tetrachloroethene
Depth in feet below grade.

Scale: 1 inch = 10 feet.
Directions, dimensions, and locations are approximate.

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Figure 2: Exploration Locations
2142 Logan Avenue
San Diego, California