6. SCREENING AND SELECTION OF CLEAN-UP ALTERNATIVES

6.1 Screening and Selection of Soil Clean-up Alternatives

A screening evaluation was conducted to assess remedial technologies and process options for remediating the impacted soil and mitigating the impacted soil vapor present at the Site. Based on the target levels for soil presented in Section 4, the following alternatives were identified and developed for the proposed remedial alternative (RA) at the Site. Most of the identified remedial alternatives were considered for application at this Site but were screened out immediately without detailed evaluation. The screen-out decision was made based on professional experience at other similar residential sites and on scientific consideration and engineering judgment that indicated that they would either be ineffective in achieving target levels, inappropriate technologies for remediating the elevated PCOCs, or could not be implemented in a cost-effective manner.

6.1.1 No Action

The "No Action" alternative does not meet the criteria of effectiveness. While the "No Action" alternative was not considered, it was evaluated as a baseline to which the relative benefits of the other alternatives could be compared.

6.1.2 Excavation with Off-Site Disposal

Excavation involves the physical removal of impacted soil. Excavation includes using loaders, backhoes, large diameter augers, and/or other appropriate equipment. Confirmation soil sampling and analysis will be conducted to verify that target levels are met at the excavation bottom and sidewalls. Excavation may require additional areas for soil stockpiling, prior to transporting off-Site for treatment or disposal. Off-Site disposal involves removing impacted soil from the Site and transporting it to an appropriate permitted, off-Site facility for disposal.

Excavation would be an effective means for removing impacted soil from the Site and would be used in conjunction with appropriate disposal options.

6.1.3 Excavation with On-Site Strategic Placement/Encapsulation

Under this alternative, identified impacted soil would be placed within strategically placed soil management cells (engineered containment cells). The engineered containment cell would consist of a cap, consisting of gravel and asphalt/concrete pavement. The cap would be constructed over the burial cells. The cap, as constructed, would provide a physical barrier to mitigate potential exposure to the impacted soils to future Site users. The engineered containment cell would also consist of several low permeability layers, liners, and leachate collection systems.

The capping alternative by itself was considered and determined to be unacceptable due to the anticipated volume of impacted soil that may be encountered and the limited volume available for the containment cell after the engineering considerations and Site constraints were taken into consideration.

6.2 Screening and Selection of Vapor Mitigation Alternatives

A range of building controls technologies were identified to eliminate potentially complete exposure pathways for VOCs to reach indoor air via vapor intrusion. The contaminant source

and concentrations are the key considerations for selection of a building control. The most common building control design and installation are:

- Sealing building leaks;
- Sub-slab depressurization system;
- Sub-membrane depressurization system;
- Passive barrier system;
- Pressurization and ventilation (using heating, ventilation or air conditioning); and
- Indoor air cleaners.

Supplemental building control technologies include:

- Block wall depressurization;
- Drain tile pressurization; and
- Sealing Building Leaks.

Common building locations where leaks and openings can occur include: foundation and basement wall cracks, floor sumps, floor drains, floor or wall slab joints, cinder blocks and mortar joints, and penetrations from piping, wiring, and ducts. If such entry points are identified for the direct entry of vapors into the structure, the entry points should be sealed by:

- Using VOC resistant caulk or expanding foam
- Repairing damaged concrete slabs
- Covering and sealing areas of exposed earth or pits with VOC resistant materials
- Placing airtight sump covers on existing sumps and venting to the exterior of the structure

Though sealing a building is not a stand-alone measure to mitigate a structure, the implementation of these measures have been shown to increase the effectiveness of many mitigation techniques described below. Sealing of leaks can be especially important when considering the use of active sub-slab depressurization systems since building leaks, depending on their location, can reduce their effectiveness. Leaks in building foundations and floor slabs can often be identified during a physical building inspection or by conducting pre-mitigation diagnostic pressure field extension tests.

Sub-Slab Depressurization System

Sub-Slab Depressurization (SSD) systems prevent soil vapor from entering into buildings by lowering the air pressure in the soils directly beneath the building's floor slabs relative to indoor air pressure. The typical residential SSD consists of vertical piping installed into a cavity (known as a suction pit) that is dug below the lower level floor slab. The collected vapors are exhausted to the atmosphere above the building's roof line by using a mechanical means (*i.e.*, a low wattage fan).

SSD is considered among the most effective vapor intrusion mitigation strategies for existing buildings and have been documented to achieve high vapor concentration reductions. The

SSD can be used to mitigate both residential as well as larger commercial/industrial buildings where a concrete slab directly overlies soil. The SSD system can be installed as a passive system and turned active if conditions warrant.

A sub-slab diagnostic test should be conducted prior to installing the SSD on an existing building to document the operational design needed to successfully mitigate the building. The primary purpose of sub-slab diagnostic testing is to simulate a completed SSD to determine the number and location of suction pits required to obtain sufficient pressure field extension beneath the slab.

Sub-Membrane Depressurization System

The Sub-Membrane Depressurization (SMD) system utilizes a membrane as a surrogate for a slab to allow depressurization of the soil. The SMD has been demonstrated to be the most effective mitigation method in existing buildings where earthen floors, such as crawlspaces, provide a vapor entry location. An impermeable membrane covers the exposed dirt surface of a crawlspace while the depressurization system withdraws soil gas from beneath the membrane and prevents its intrusion into the space above. Properly installed SMDs have resulted in vapor concentration reductions similar to SSD.

Like the SSD, the SMD typically requires a continuously-operated fan to vent vapors from beneath the installed membrane to the atmosphere. Due to the difficulties of sealing the openings and potential for tearing and damage to the membrane, permanently sealing the earthen floor or crawlspaces with a more permanent covering may be a better alternative to the SMD. Membranes installed must be well maintained to ensure effectiveness and therefore the SMD may require more long-term maintenance than an SSD.

Building Pressurization and Ventilation using Heating, Ventilation or Air Conditioning

The heating, ventilation, and air conditioning (HVAC) systems in commercial and industrial buildings can help minimize or prevent VI into buildings by providing positive pressure and ventilation. Building pressurization is achieved by having greater air inflow than outflow, resulting in positive pressure differential of the indoor environment relative to the sub-slab environment. This can assist in preventing VI from the subsurface if this pressure differential between indoor air and the sub-slab environment can be established and maintained for interior spaces. Because it is extremely hard to document and verify the effectiveness of positive pressure and is only possible when the HVAC is in operation, sole use of positive building pressure as a mitigation method is not recommended. Modification of any HVAC system to maintain a positive pressure within the structure can be a valuable component to supplement any active or passive mitigation system.

Indoor Air Cleaners

Indoor air can also be directed to air pollution control equipment (e.g., activated carbon treatment systems) to remove air contaminants from the building interior. It can be an effective interim response action to address immediate risks that have been identified until a longer more permanent measure can be designed and employed. This technique is dependent on the treatment system's uninterrupted performance to protect receptors. During the use of these short- term interim systems, there must be an indoor air sampling program to confirm the effectiveness of the operation.

Activated carbon filters are able to remove the VOCs in the indoor air to below detection limits; however, a carbon filter alone may not be effective. Other factors that need to be considered are proper operation and maintenance, inadequate airflow, unit size relative to the size of the room being treated, contaminant concentrations, and contaminant distribution. In addition, capital costs, annual operating expenses, and waste disposal concerns can be a drawback to using this technology. Nevertheless, there may be circumstances in which this type of mitigation can be useful, i.e., high water and wet soils.

Supplemental Building Controls for Mitigation: Block wall and Drain Tile Depressurization

Block wall depressurization is a mitigation technique that mechanically depressurizes the void network within a block wall foundation by drawing air from inside the wall. It uses an electric fan and vents the collected vapors to the outside. As with other depressurization systems, diagnostic testing should be conducted to ensure uniform depressurization can be achieved.

Drain tile depressurization is a mitigation technique that can be used at a building that has perforated drain tile installed along the inside or outside of its foundation. If the drain piping discharges to a sump pit, the negative pressure field should be applied to the sealed sump pit. Alternatively, if the drain piping discharges to an outdoor location, the negative pressure field should be applied to the terminal end.

Passive Barrier System

A passive barrier system is a combination of one or more synthetic membranes coupled with a passive or active venting system beneath the liner. This system prevents the migration of subsurface vapors into the building by providing a vapor resistant material to prevent the upward migration. The venting system is designed to allow pressure relief and venting of contaminant vapors collected beneath the liner to the atmosphere above the roof line.

Fluid-applied membranes are spray-applied directly to substrates, fabric layers, and building penetrations. These membranes can result in a well adhered and seamless membrane when installed properly by a contractor who has been trained and approved by the membrane provider. Sheet membrane comes in rolls of varying materials and sizes. However, sheet membranes are rarely employed due to the difficulty in sealing penetrations from subsurface utilities.

Care must be taken during installation of a passive barrier system as damage will render the barrier ineffective. Small tears, punctures, gaps, or defects in a membrane can create a pathway for vapor entry into buildings and they must be properly sealed. Penetrations through the membrane for utility conduits piping, etc. must also be properly sealed. When evaluating the performance and effectiveness of various vapor barrier products, the following factors need to be considered: the membrane's ability to inhibit diffusion or vapor permeation, puncturing and tearing, and the chemical resistance of the membrane.

Appropriate testing methods must be incorporated as part of the project's quality control procedures. The use of a smoke test on a synthetic membrane is an effective method to test for the presence of leaks. A smoke test involves the use of a generator or blower to introduce an inert, nontoxic smoke with sufficient pressure beneath a membrane to visually identify leaks.

7. SELECTED CLEAN-UP ALTERNATIVES

The selected clean-up alternative for soil at the Site is excavation with off-Site disposal, in conjunction with a LUC to address impacted soils left in place at the Site as well as activity and use limitations that prevent future residents from exposure to soil concentrations that may be present above residential screening levels. Under this alternative, impacted soils identified as exceeding the target levels in Table 10, within PAOCs or other areas identified during implementation of the SMP will be temporarily stockpiled, profiled and transported to a licensed disposal facility (See Section 8.7.3 and 8.7.4). Procedures for identification, segregating and profiling of soils for off-Site disposal are provided in the DTSC approved SMP.

The selected mitigation alternative for soil vapor at the Site is a VIMS consisting of a passive SSD coupled with a vapor barrier system. The VIMS will be installed under the proposed residences (including garage areas) and the retail building on-Site. The SSD system can be made active if conditions warrant (See section 9.4).

8. SOIL REMEDIAL ACTIVITIES

8.1 General Overview

As presented in Section 7, the selected clean-up alternative for soil at the Site is excavation with off-Site disposal. This section presents the scope and methodology for implementing the soil remediation activities through excavation of the known impacted soil areas.

All remedial field activities will be conducted under the supervision of a California-registered Professional Geologist and/or Engineer, and in accordance with applicable Cal/EPA and DTSC regulations and guidance.

8.2 Pre-Field Activities

8.2.1 Health and Safety Plan

The existing site-specific Health and Safety Plan (HASP) will be updated to inform all Ramboll personnel of known or reasonably anticipated potential hazards and safety concerns associated with the remedial action implementations. All Ramboll personnel will follow the guidelines, rules, and procedures contained in the site-specific HASP during all on-Site and off-Site activities.

At a minimum, the HASP will include identification of key personnel, an evaluation of hazards and associated controls, personnel training requirements, medical surveillance and recordkeeping requirements, personal protective equipment (PPE) requirements, air monitoring/sampling procedures, spill response procedures, decontamination requirements, and an emergency response plan (ERP). Ramboll will submit a copy of the HASP to the DTSC prior to commencement of any Site activities. Copies of the HASP will be kept on-Site for review and reference during all Site activities.

In addition, Ramboll subcontractors will each be responsible for preparing their own Site-specific HASP to protect the health and safety of their employees.

8.2.2 QAPP

A revised quality assurance project plan (QAPP) was submitted to the DTSC on February 4, 2019 to address quality assurance (QA) and quality control (QC) policies associated with the collection of environmental data during implementation of the SMP/RP. The revised QAPP was conditionally approved by the DTSC on February 27, 2019.

8.2.3 Underground Utilities

Soil excavation activities will only commence following all Site demolition activities. Ramboll will confirm with the property owner that all utilities in connection with the Site have been disconnected and confirmed "dead". Ramboll will contact Underground Service Alert of Southern California or Dig Alert prior to any excavation activities to mark utilities at the Site boundary. Dig Alert and ALTA Survey information will be reviewed to confirm no on-Site easements for private or public utilities are present on-Site.

8.2.4 Permitting

The permitting requirements to be satisfied prior to performing the excavation activities outlined herein are detailed in the SMP, provided under separate cover. These include permitting requirements under the SCAQMD for Rule 1166 (VOC emissions) and Rule 1466 (toxic air contaminants). Additionally, detailed procedures applying to the management of

excavated soil, including fugitive dust emissions and compliance with these rules, are provided in the SMP.

8.3 SMP Implementation

A SMP was issued for DTSC review in December 2019 and approved on January 22, 2019. The DTSC-approved SMP will be implemented during demolition and grading activities, as well as the removal of the known impacted soil areas. Therefore, the SMP is intended as a companion document to this Response Plan since it outlines the procedures for identification, screening and handling of impacted soils or suspected impacted soils encountered. The procedures also include the profiling of soil stockpiles and arrangement for disposal of impacted soil.

8.3.1 Soil Sampling Beneath\Near Former Building Footprints and Former Parts Wash Station

The DTSC has expressed concern regarding the area beneath the footprints of the two former main structures, mainly the office building previously located in the southwest corner of the Site and the commercial building previously located in the northwest corner of the Site. More specifically, the DTSC has expressed concern regarding the former paint booth, former steam cleaning bay, former body shop, former waste oil tank, AST, and compressor located adjacent to, and west of the former commercial building. The DTSC has also expressed concern regarding the former parts wash location.

During SMP implementation, Ramboll is proposing to collect an additional 9 soil samples from beneath the building footprints and 1 additional soil sample from the former waste oil tank, AST, and compressor area. The soil samples will be analyzed for VOCs, metals, PCBs and TPH. Ramboll is also proposing to collect 1 soil sample from beneath the former parts wash station and analyze the soil sample for metals, PCBs and TPH. The sampling locations are depicted on Figures 6, 7 and 8. Sampling locations will be adjusted in the field based on field observations (e.g. soil staining or elevated PID readings).

8.4 Volume of Impacted Soil

Approximately 1,600 cubic yards of known impacted soil have been identified at the Site for off-Site removal, based on comparison to target levels (Figure 10). The primary contaminants of concern in soil at the Site consist of lead, PCBs, and TPH. The lead, PCBs, and TPH soil impacts are commingled, and significantly overlap each other. Therefore, the total estimated volume of known impacted soil reflects the commingled nature of the soil impacts. Ramboll would like to note that the estimate provided above is for the known amount of impacted soil that has been identified to date (as shown on Figure 10). However, the final extent of the excavations shown on Figure 10 will be determined based on a combination of field screening results and confirmation soil sampling. Therefore, the extent of the excavations will vary depending on the confirmation soil sampling results.

It should also be noted that additional excavations may be performed in response to newly identified impacted soil areas that may be encountered during grading activities as part of the SMP/RP implementation.

8.5 Excavation Activities

The areal limits of excavation of the known impacted soil areas were delineated based on the data collected from the Site to date as presented in the SSI. The areas to be excavated shall

be called the "excavation areas" and they will be marked in the field by the contractor with stakes and/or high visibility paint (as the exclusion zones). The actual lateral and vertical limits of the excavations may be larger or smaller than the estimated areas indicated below and will be determined based on a combination of field screening results and confirmation soil sampling. Additional excavation in each area may be required based on field screening of soils and/or receipt of confirmation soil sampling results in each of the areas. It should also be noted that additional excavations may be performed in response to new impacted soil areas that may be encountered during grading activities as part of the SMP implementation (Section 7.3).

In accordance with the grading plan, the maximum depth of impacted soil removal will be 5 feet bgs, unless otherwise determined and discussed with DTSC at the time impacted soils are 5 feet depth are discovered. As previously discussed with DTSC, any soils left "in place" above target levels at a depth of 5 feet or below 5 feet will be recorded on a deed restriction. If significantly elevated concentrations of VOCs are detected in soil (i.e., indicative of source material) in the vicinity of the bailing shaft (PAOC 5) or other portions of the Site, Rosecrans Place will consult with DTSC to determine whether additional source removal (i.e., below 5 feet bgs) is warranted.

Ramboll proposes to initiate the excavations at the approximate impacted boundaries depicted in Figure 10, collect and analyze confirmation samples, and continue to excavate until the results of confirmation sampling are below the target levels for soil provided in Table 10. The locations of the proposed excavations for TPH, PCBs, lead, and other metals are illustrated in Figures 6 through 9, respectively. A summary of the proposed excavations is provided in Figure 10. Table 11 presents a summary of the excavation areas and a rationale for the confirmation sampling.

Excavation EX-1

Proposed Excavation Area EX-1 is located in the northern portion of the Site. EX-1 will target PCB impacted soil at SB31. The initial dimensions of EX-1 are estimated at approximately 25 feet by 25 feet. The vertical extent of EX-1 is 2.5 feet bgs based on the soil samples collected from SB31. Confirmation sampling will be conducted to verify the lateral distribution of EX-1.

Excavation EX-2

Proposed Excavation Area EX-2 is located in the northern portion of the Site. EX-2 will target PCB impacted soil in SB33. The initial dimension of EX-2 are estimated at approximately 25 feet by 25 feet. The vertical extent of EX-2 is 5.5 feet based on the soil samples collected from SB32 and SB33. Confirmation sampling will be conducted to verify the lateral distribution of EX-2.

Excavation EX-3

Proposed Excavation Area EX-3 is located in the northern portion of the Site. EX-3 will target PCB and TPH-d impacted soil in LA-SB5. The initial dimension of EX-3 are estimated at approximately 25 feet by 12.5 feet. The vertical extent of EX-3 is 2.5 feet based on the soil samples collected from LA-SB5. Confirmation sampling will be conducted to verify the lateral distribution of EX-3.

Excavation EX-4

Proposed Excavation Area EX-4 is located in the central portion of the Site. EX-4 will target PCB impacted soil at LA-SB3. The initial dimension of EX-4 are estimated at approximately 25 feet by 25 feet. The vertical extent of EX-4 is 2.5 feet based on the soil samples collected from LA-SB3. Confirmation sampling will be conducted to verify the lateral distribution of EX-4.

Excavation EX-5

Proposed Excavation Area EX-5 is located in the central portion of the Site. EX-5 will target PCB, lead and copper impacted soil in SB-16. The initial dimension of EX-5 are estimated at approximately 25 feet by 25 feet and a depth of 4 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-5.

Excavation EX-6

Proposed Excavation Area EX-6 is located in the central portion of the Site. EX-6 will target lead and arsenic impacted soil at LA-SB-1. The initial dimension of EX-6 are estimated at approximately 25 feet by 25 feet and a depth of 3.5 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-6.

Excavation EX-7

Proposed Excavation Area EX-7 is located in the central portion of the Site. EX-7 will target lead impacted soil at RMW-3. The initial dimension of EX-7 are estimated at approximately 25 feet by 25 feet and a depth of 3 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-7.

Excavation EX-8

Proposed Excavation Area EX-8 is located in the central portion of the Site. EX-8 will target lead, arsenic, hexavalent chromium, and nickel impacted soil in SB42. The initial dimension of EX-8 are estimated at approximately 25 feet by 25 feet and a depth of 3.5 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-8

Excavation EX-9

Proposed Excavation Area EX-9 is located in the southern portion of the Site. EX-9 will target PCB impacted soil in SB-20. The initial dimension of EX-9 are estimated at approximately 25 feet by 25 feet and a depth of 5.5 feet bgs. The vertical extent of EX-5 is 5.5 feet based on the soil samples collected from SB20 and SB44. Confirmation sampling will be conducted to verify the lateral distribution of EX-9.

Excavation EX-10

Proposed Excavation Area EX-10 is located in the southern portion of the Site. EX-10 will target PCB impacted soil in SB39 and SB52. The initial dimension of EX-10 are estimated at approximately 25 feet by 25 feet and a depth of 2 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-10.

Excavation EX-11

Proposed Excavation Area EX-11 is located in the southern portion of the Site. EX-11 will target PCB and nickel impacted soil in LA-SB10. The initial dimension of EX-11 are estimated

at approximately 25 feet by 25 feet by 5.5 feet bgs. Confirmation sampling will be conducted to verify the lateral distribution of EX-11.

Excavation EX-12

Proposed Excavation Area EX-12 is located in the southern portion of the Site. EX-12 will target lead, PCBs and TPH-d impacted soil in LA-SB9. The initial dimension of EX-12 are estimated at approximately 25 feet by 25 feet and a depth of 3.5 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-12.

Excavation EX-13

Proposed Excavation Area EX-13 is located in the southern portion of the Site. EX-13 will target lead, PCBs, cadmium and nickel impacted soil in SB22. The initial dimension of EX-13 are estimated at approximately 15 feet by 25 feet and a depth of 4 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-13.

Excavation EX-14

Proposed Excavation Area EX-14 is located in the southern portion of the Site. EX-14 will target lead impacted soil in SB-56 and SB-58, and cadmium impacted soil in SB-51. The initial dimension of EX-14 are estimated at approximately 50 feet by 25 feet and a depth of 3 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-14.

Excavation EX-15

Proposed Excavation Area EX-15 is located in the southern portion of the Site. EX-15 will target lead impacted soil in LA-SB8. The initial dimension of EX-15 are estimated at approximately 25 feet by 25 feet. The vertical extent of EX-4 is 2.5 feet based on the soil samples collected from LA-SB8. Confirmation sampling will be conducted to verify the lateral distribution of EX-15.

Excavation EX-16

Proposed Excavation Area EX-16 is located at the former bailing shaft location in the southern portion of the Site. EX-16 will target PCB, VOCs, arsenic and TPH-d impacted soil in LA-SB7. Although VOCs were not detected in soil above target levels in LA-SB7, the former bailing shaft area has been identified as a potential TCE source area, and therefore VOC confirmation sampling will be conducted. As discussed above, additional excavation may be conducted at depths below 5 feet bgs at the former bailing shaft area in the event VOC-impacted soils are discovered during excavation that are indicative of source material. The initial dimensions of EX-16 are irregular, but are estimated at approximately 37.5 feet by 25 feet and 2.5 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-16.

Excavation EX-17

Proposed Excavation Area EX-17 is located in the southern portion of the Site. EX-17 will target lead impacted soil in RMW-5. The initial dimension of EX-17 are approximately 25 feet by 25 feet. The vertical extent of EX-17 is 5.5 feet. Confirmation sampling will be conducted to verify the lateral distribution of EX-17.

Excavation EX-18

Proposed Excavation Area EX-18 is located in the central portion of the Site. EX-18 will target vanadium impacted soil in LA-SB4. The initial dimension of EX-18 is estimated at approximately 25 feet by 25 feet. The vertical extent of EX-18 is 2.5 feet based on the soil samples collected from LA-SB4. Confirmation sampling will be conducted to verify the lateral distribution of EX-18.

Excavation EX-19

Proposed Excavation Area EX-19 is located in the central portion of the Site. EX-19 will target PCB impacted soil in SB41. The initial dimension of EX-19 is estimated at approximately 25 feet by 25 feet and a depth of 4 feet bgs. Confirmation sampling will be conducted to verify the lateral and vertical distribution of EX-19.

8.6 Arsenic in Soil

For arsenic, DTSC has established an upper-bound ambient soil level for Southern California of 12 mg/kg (Chernoff et al. 2008). The calculation of 12 mg/kg is based on over 1,000 samples collected at 19 school properties in Los Angeles County. DTSC determined that the regional upper-bound background soil concentration for arsenic was 12 mg/kg for Southern California, which is the 95% UCL on the 99th quantile of the arsenic dataset. The arsenic concentrations for the whole background dataset ranged from 0.15 mg/kg to 20 mg/kg. The upper-bound ambient soil level of 12 mg/kg was used as the Alternative SL to evaluate the arsenic concentrations in on-Site soil.

Approximately 170 soil samples have been analyzed on-Site for arsenic from depths ranging from 0.5 to 25 feet bgs. Arsenic concentrations in soil at the Site ranged from non-detect to 19.5 mg/kg. Arsenic was detected in four samples (approximately 2%) at a concentration exceeding the arsenic Southern California background level of 12 mg/kg. The 95% UCL mean arsenic concentration was calculated using the ProUCL software (Version 5.1). The 95% UCL mean was calculated at 2.6 mg/kg. Accordingly, the arsenic concentrations are well within the naturally-occurring background range of Southern California soil at the Site.

Arsenic was detected in four samples (LA-SB1, SB42, SB-23 and SB27) at the Site above the alternative screening level of 12 mg/kg. Arsenic was detected in LA-SB1, SB42, SB-23 and SB27 at concentrations of 14.0 mg/kg, 14.1 mg/kg, 19.5 mg/kg and 12.2 mg/kg, respectively. Arsenic in soil at LA-SB1 and SB42 will be remediated via excavation (EX-6 and EX-8) due to other compounds of concern in this area. Arsenic in soil at SB-23 will be targeted for excavation (EX-16) due to its proximity to the bailing shaft area. Because arsenic at the Site is likely naturally-occurring and was detected in SB-17 at a concentration (12.2 mg/kg) only slightly exceeding the alternative screening level (12 mg/kg), SB-17 will not be targeted for excavation. Ramboll does not consider arsenic a chemical of concern at the Site.

8.7 General Conditions and Procedures

The following sub-sections discuss the general conditions and procedures to be followed during soil remediation activities at the Site, as further detailed in the SMP.

8.7.1 Confirmation Sampling of Excavations

Confirmation sampling will be conducted to verify contaminant removal and to confirm that chemical compounds exceeding the target levels do not extend deeper or horizontally

beyond the excavation boundaries. In certain instances, the lateral and vertical extents of the excavations were based on soil samples collected from historical borings advanced at the Site. As excavations extended to locations (both lateral and vertical) where soil analytical results are known to be below target levels, soil excavation confirmation samples will not be collected at these locations.

Confirmation soil sampling will be conducted in accordance with the procedures specified in the SMP. Unless otherwise confirmed with DTSC at the time of sampling, one sidewall sample will be collected for every 25 linear feet per sidewall and one bottom sample will be collected for every 1,000 square feet. As indicated above, in some excavations, existing soil sampling data may be used to substitute confirmation sampling.

The exact sample locations will be determined in the field. Additional confirmation sampling will be implemented if any visually impacted soil is encountered during excavating. Confirmation samples will be collected using a clean trowel and/or transferred directly into sampling jars thereby reducing the sampling equipment required, which will significantly reduce the possibility of cross contamination. The final confirmation samples will be properly covered, labeled and stored on-Site in a cooled chest prior to delivery to a California-state certified laboratory. Equipment blanks will be collected for all non-dedicated equipment, such as a hand trowel, used to collect confirmation samples.

Samples will be delivered to the laboratory on the same day collected, if time permits, and no later than the day following collection. In the event the samples are delivered the day after they are collected, the samples will be secured under proper chain-of-custody documentation at the contractor office until delivery. Confirmation soil samples will selectively be analyzed for the following:

- Metals by USEPA Method 6010/7000 series;
- TPH by USEPA Method 8105M;
- PCBs by USEPA Method 8082 or and/or USEPA Method 3540C; and
- VOCs by USEPA Method 5035/8260B.

Confirmation soil samples will be compared to the target levels on a dry-weight basis. Analytical results from confirmation samples exceeding target levels will result in further excavation and confirmation sampling. The excavation of each additional five-foot grid or one foot depth lift will proceed until the target levels are met (from any outward-facing sidewall sample and/or final bottom sample).

8.7.2 Import Material

Clean fill material may be brought to the Site to backfill excavated areas. Imported fill material would be accompanied by certificates, analytical data, and/or other supporting documents that indicate the fill material is in conformance with DTSC's Advisory for Clean Import Fill, dated 2001. Import soil materials would be limited to supplementing any soils for purpose of Site balance, and to provide clean fill for greenspace areas (top 2 feet, per discussion with HERO).

8.7.3 Waste Soil Classification and Management

Based on available data, the impacted soil excavated during the excavation activities will primarily be classified as non-hazardous waste. A component of the lead impacted soil

excavated may be classified as non-Resource Conservation and Recovery Act (RCRA) waste/California Hazardous waste (Cal-Haz). A summary of waste disposal soil sampling results is presented in Table 12. If any of the excavated soil is classified as non-RCRA waste/California Hazardous waste (Cal-Haz), RCRA hazardous and/or TSCA-hazardous waste, the excavated soil will be segregated prior to stockpiling/staging, to the extent possible, to avoid any mixture of hazardous and non-hazardous soils. This segregation will minimize the amount of hazardous soils generated and the associated disposal costs. The soil segregation will be based upon criteria for hazardous and non-hazardous soils and the available sampling data. If encountered, RCRA hazardous soils will be transported to a licensed Class 1 landfill and non-RCRA soils will be transported to a licensed Class 1 landfill or a properly permitted in-state or out-of-state disposal or treatment facility. Non-hazardous soils will be transported to an approved recycling or disposal facility or a Class 3 landfill.

An acceptance letter or approval form from each selected disposal facility will be obtained before any excavation activities commence. Upon request, additional documentation will be provided to DTSC pertaining to waste disposal profiles and waste disposal acceptance prior to any off-Site shipments of waste.

8.7.4 Loading, Transportation and Disposal Procedures

Soil will be transported to an appropriate disposal facility by appropriate registered waste haulers in compliance with State and Federal requirements for the safe handling and transportation of waste. Trucks transporting soil off-Site will not be loaded above the side boards. Truck loads will be covered with a tarp prior to leaving the Site to prevent particulate emissions to the atmosphere.

Prior to entering public roadways, trucks hauling PCB-affected soil will undergo appropriate decontamination (tires, loose soil, etc.). PCB-affected soil removed from trucks will be managed to prevent tracking of potentially PCB-contaminated soils into public roadways.

The quantity of soil removed from the Site during implementation of clean-up activities will be documented in the field, tonnage will be confirmed with truck tickets, and soil disposal will be documented with appropriate manifests and bills of lading.

8.7.5 Air Monitoring Activities (Dust)

Because the Site is located adjacent to properties with businesses frequented by the public, real-time perimeter air monitoring will be conducted continuously during activities where soil disturbance at the Site is anticipated.

California Air Resources Board's (CARB's) ambient air quality standards for dust (PM10) will be applied to an 8-hour work day. The air standard is 0.050 mg/cubic meter and will be used as the total dust standard. A 0.250 mg/cubic meter of dust will be used as the maximum 10-minute average concentration not to be exceeded. If exceeded, dust suppression measures will be increased and/or other measures taken to keep the dust levels at, or below, that average concentration.

During work within the clean-up area where impacted soils are anticipated (at or below 2 feet bgs), upwind background monitors will be installed at a reasonable distance from the clean-up work area. Dust levels at the downwind station are not to exceed CARB's standard.

A visible dust standard is to be applied during remediation activities at the Site. The visual dust standard applies to dust at the remediation area and dust leaving the perimeter of the Site.

Dust control measures will be used to control dust from activities that may cause fugitive dust emissions. These measures may include one or more of the following techniques:

- If bulk transfer operations are required, spray handling and transfer points with water at least 15 minutes before use;
- Cover haul truck loads, or maintain at least 6 inches of freeboard space in each cargo compartment;
- Ensure that haul truck cargo compartments are constructed and maintained to minimize spillage and loss of materials;
- Clean or wash each cargo compartment at the delivery Site after removal of the bulk materials;
- Minimize the soil drop height from the excavator's bucket onto the soil pile or into the transport trucks;
- After the soil is loaded into the transport trucks, cover the soil to minimize dust generation during transport.

Windbreaks may be attached to fencing installed around the property as an additional dust control measure. If precipitation is anticipated during excavation activities, stockpiled soil and open excavations will be protected with plastic sheeting or similar material to minimize erosion of stockpiled soil and ponding of storm water.

8.7.6 Noise and Runoff Control

Noise is a potential hazard associated with the operation of heavy equipment during demolition, excavation and construction activities. Suspected high noise operations will be evaluated to determine if protective measures are warranted. Hearing protection for nearby workers is highly recommended. The Site activities likely to create an impact include:

- Excavation of impacted soil;
- Backfilling with clean soil;
- Project-related vehicle traffic on-Site.

The following noise control measures will be implemented:

- Contractors will muffle and shield intakes and exhausts, shroud or shield impact tools, sand use electric-powered rather than diesel-powered construction equipment.
- All Stationary noise-generating equipment will be located as far away as possible from neighboring property lines.
- All Construction equipment will be maintained and operated according to manufacturer's maintenance schedules and recommendations to minimize noise and exhaust emissions (particularly nitrogen oxides).

There are no potential threats to the environment other than the potential for wind and surface water runoff to cause the migration of impacted soils from the Site to other areas.

Covering the impacted soils impedes wind- or surface runoff-induced erosion of impacted soils. Soil stockpiles will be constructed with plastic sheeting beneath (unless the ground surface is paved) and above the soil to prevent runon/runoff and fugitive dust and/or odor emissions. Stockpiled soil will be covered and secured at the end of each day.

9. VAPOR INTRUSION MITIGATION SYSTEMS

In accordance with the DTSC, "Vapor Intrusion Mitigation Advisory" (the "Advisory"- DTSC, 2011a), these specifications and details for VIMS have been developed to mitigate elevated concentrations of VOCs, such as TCE and PCE, which may be present beneath future residential and/or commercial structures within the Rosecrans Place development in Gardena, California (the "Site"). Rosecrans Place, LLC will contract will a specialized VIMs contractor to provide final engineering designs, install the VIMs, and provide an operation and maintenance plan.

9.1 Design Criteria and Specifications

The preliminary specifications and details of the VIMS included herein are intended to meet the requirements for passive sub-slab venting systems in the Advisory as to those locations. These specifications and details assume that groundwater is present at depths of 20 feet below ground surface (bgs) or greater, no subfloor or basement levels are planned, and estimated vapor intrusion cancer risk is not in excess of 1 x 10-4. The VIMS are designed such that they can be retrofitted to "active" systems or SSD systems if required, based on the implementation of the operation and maintenance (O&M) plan (Section 9.4). The monitoring and notification requirements for the VIMS will be discussed in the O&M Plan. The VMS layout in regard to the proposed development plan is presented on Figure 11A. Standard specifications, details and schematics for the VIMs are attached in Appendix C.

This section is organized as follows to reflect the three product types that will be constructed at the Site. Accordingly, the VIMS for single family detached homes ("Garden Court"), single family attached homes ("Livework" and "New AA Product") and retail building ("Building A") are summarized below. Rosecrans Place, LLC will contract will a specialized VIMs contractor to provide final engineering designs to the DTSC for review prior to installation.

9.1.1 Garden Court (Residential Land Use: Single Family Dwelling – Slab-on-Grade Construction Detached Homes)

- For single family, detached residential dwellings with slab-on-grade foundations, each vapor mitigation system would consist of the following components:
- Trench dams and utility conduit seals to prevent and reduce vapor migration into the buildings along the trench backfill or inside of utility conduits;
- Gas tight seals at all pipe or conduit penetrations through the impervious membrane and where the impervious membrane attaches to interior and perimeter footings; and
- A sub-slab venting (SSV) system installed underneath the entire building floor slab including the garage. The design of the SSV system assumes that the garage is considered livable space.
- The SSV system consists of an impervious membrane (which provides a barrier to both moisture and subsurface vapors); perforated horizontal pipes; a protective sand layer under the impervious membrane and around the perforated horizontal pipes; and, a solid vent riser pipe, which provides a pathway for the vapors from the perforated pipes to migrate above the roofline of the structure. The solid vent riser will be equipped with a sampling port or valve which extends through an outside wall of the building. If future monitoring of the vapor mitigation system is needed, the sampling port will allow samples of soil gas to be collected without having to enter the interior of the building.

9.1.2 Livework, New AA Product and Retail "Building A" (Mixed Land Use: Single Family Attached Homes and/or Retail)

For residential buildings (attached) and/or a commercial building where the first level consists of either commercial or residential occupants, each vapor mitigation system will consist of the following components:

- Trench dams and utility conduit seals to prevent and reduce vapor migration into the buildings along the trench backfill or inside of utility conduits;
- An SSV system installed underneath the entire building foundation where commercial or residential occupants are present. (Buildings which are entirely used for parking and are not connected to buildings with full-time occupants may not need an SSV; this would need to be evaluated by an engineer).
- The SSV system consists of an impervious membrane (which provides a barrier to both moisture and subsurface vapors); perforated horizontal pipes; a protective sand layer under the impervious membrane and around the perforated horizontal pipes; and, a solid vent riser pipe, which provides a pathway for the vapors from the perforated pipes to migrate above the roofline of the structure. The solid vent riser will be equipped with a sampling port or valve to allow samples of soil gas to be collected if monitoring is required; and
- Impervious membrane installed around elevator shafts, pistons and sump pits.

9.2 VIMS Final Design

Once additional foundation design details become available, a final engineering design will be prepared by a specialized VIMs contractor on behalf of Rosecrans Place, LLC. The final engineering designs will be submitted by Rosecrans Place, LLC to DTSC under separate cover. The Detailed Design Document will provide details pertaining to the vapor barrier installation for each residential structure layout, as well as the commercial structure layout.

9.3 VIMS Installation and Inspection

The VIMS installer is expected to conduct and document testing (i.e., smoke testing of the membrane) to ensure that each vapor barrier system is installed in accordance with the design and product specifications.

Several factors will determine the frequency of testing and inspections during installation. State or local regulations can determine the frequency of inspections. The minimum requirements include verifying the thickness and observing a smoke test to verify the system integrity at the time of installation. It is the responsibility of the certified applicator to coordinate with the inspector as to the time of the inspection. To ensure the installation and inspection runs smoothly, the applicator should consult the inspector prior to starting work on the Site to coordinate schedules and time allowances.

9.4 VIMS O&M Program

An O&M plan will be prepared by a specialized VIMs contractor on behalf of Rosecrans Place to monitor a) vapor concentrations beneath the Site and b) performance of the VIMS to monitor effectiveness against vapor intrusion and to evaluate whether the VIMS would need to be turned "active" at any point in the future based on the results of the monitoring. The

following criteria will be considered to determine the need to evaluate whether the VIMS would need to be turned "active":

1. In the event that DTSC identifies an imminent threat to human health at particular residential and/or commercial units.
2. Results of indoor air sampling indicate that a vapor intrusion risk (cancer risk greater than 10-4 or hazard index >1) exists in a particular portion of the Site or on a Site-wide basis. Recognizing that the development will consist largely of single family residential properties, indoor air sampling would only be necessitated by one or more of the following conditions:
    a. Results of soil vapor monitoring – if soil vapor concentrations within the vadose zone increase significantly over time either at a particular location or on a Site-wide basis. This would be evidenced by an order of magnitude (10 times) increase – over current "baseline" conditions as documented in the SAR/SSI, and observed over three consecutive soil vapor monitoring events; and
    b. Results of soil gas monitoring from the systems sample ports reveal an increasing trend of VOC concentrations over time, based on a minimum of three consecutive quarters of monitoring.
3. The decision on which buildings will be converted to active systems will be predicated on the location(s) of indoor air exceedances and will be discussed with DTSC prior to implementation.

    Ramboll recognizes that soil vapor guidelines are evolving. Ramboll will develop the above criteria further with input from DTSC as part of the approval process for the O&M Program.

    The details of the O&M Program will be presented in an O&M Manual, which will be submitted by Rosecrans Place, LLC for DTSC review and approval in advance of building occupancy.

9.4.1 Installation of Soil Vapor Monitoring Well Network

After development of the roadway infrastructure at the Site, Ramboll proposes to install 11 (VP-1 through VP-11) permanent dual-nested soil vapor probes at the locations depicted on Figure 12 to monitor VOCs in soil vapor following Site development and installation of the VIMS. The purpose of the vapor monitoring wells is to allow for long-term monitoring of vapors of the Site in connection with off-gassing from the underlying VOC-impacted groundwater. A proposed sampling frequency for the soil vapor monitoring network will be presented to the DTSC under separate future submittals.

The borings will be advanced using a Geoprobe® 6600 or similar direct-push drilling rig. Soil will be continuously collected from the borings using macro-core or dual tube sampling systems. Soil characteristics will be recorded in the field, logged in accordance with the USCS and screened for total VOCs by a PID utilizing a 10.6 eV lamp.

Dual-nested soil vapor probes will be installed at each boring at depths of approximately 5 and 15 feet bgs. The depth of the probes may vary slightly, depending on the lithology encountered. A typical nested vapor well construction diagram is included as Appendix E. Each probe will consist of a stainless steel 6-inch vapor probe placed in a sand pack

extending approximately 6-inches above and below the probe. The probes will be connected to the surface with Nylaflow tubing. Neat cement grout and bentonite will be used to create a seal above each of the sand packs.

Soil vapor probes will be installed and collected in general accordance with the guidelines set forth by the DTSC, Los Angeles Regional Water Quality Control Board (LARWQCB), and San Francisco Regional Water Quality Control Board (SFRWQCB) Advisory - Active Soil Gas Investigations, dated July 2015 (the "Advisory"). An appropriate leak detection compound will be selected and applied prior to sampling. Soil vapor samples will be analyzed for VOCs using USEPA Method 8260B and/or USEPA Method TO-15 using a California-certified laboratory. QC samples will also be collected per the Advisory. Ramboll's soil vapor sampling protocol is described in detail in Appendix A of the revised SSI Work Plan.

Soil Vapor Probe Contingency Plan

The soil vapor probe contingency plan will ensure the permanent soil vapor monitoring well network functions properly and provides high quality data. The contingency plan specifies that any malfunctioning permanent soil vapor probes (e.g. if any no flow conditions are encountered, or if leak detected compounds are detected at concentrations more than 10 times greater than the respective laboratory RLs) will be replaced within a reasonable time period, following the procedures described above.

10. GROUNDWATER MONITORING PROGRAM

10.1 Description of Monitoring Program

Ramboll recently installed five (MW-1 through MW-5) groundwater monitoring wells at the Site in order to verify the groundwater flow direction and the distribution of chemicals in groundwater, as requested by the DTSC (Figure 13). The results of the groundwater sampling are documented in the SSI Report. A well protection program will be implemented during the Site grading activities in order to preserve the existing monitoring wells. The wells will be inspected for damage, and repaired or replaced as necessary. The well locations were selected based on contaminant distribution and to facilitate future access (i.e., installed in roadways of the development).

A groundwater monitoring program was requested by DTSC to monitor the groundwater impacts at the Site. The primary source of the impacted groundwater at the Site can be contributed to an off-Site and hydrologically upgradient source located to the north of the Site. The monitoring well network, including the additional well proposed in Section 10.2, will be monitored on a quarterly basis for a minimum of two years following installation of the original well network.

10.2 Installation of Additional Groundwater Monitoring Well

DTSC requested the installation of an additional groundwater monitoring well to the southeast of the existing commercial building at the Site to establish hydraulic control. The proposed well location is depicted in Figure 13.

The monitoring well network can detect significant changes in groundwater chemistry indicative of impacted groundwater migration and assess seasonal variability. Sampling will be performed on a quarterly basis. The monitoring well network and sampling schedule may be reevaluated and modified based on future groundwater analytical results.

Consistent with the other monitoring wells installed at the Site, monitoring well (MW-06) will be completed using a hollow stem auger drill rig in accordance with Ramboll Standard Operating Procedures for installation of monitoring wells included as an attachment in the SSI Work Plan. The boring will be completed to a total depth of approximately 33 to 35 feet bgs, depending on the depth of encountered groundwater. Soil samples for purposes of lithologic description will be collected at 5 feet intervals and will be logged in accordance with the USCS and screened for total VOCs by a PID utilizing a 10.6 eV lamp.

Upon completion of soil sampling and boring advancement, a monitoring well (MW-6) will be constructed. The monitoring well will be constructed with 4-inch diameter flush-threaded schedule 40 PVC casing and well screen with 0.01-inch slots. Based on Ramboll's review of available lithology at, and near the Site, the shallow groundwater-bearing zone consists of primarily fine-grained material. Therefore, 0.01-inch slot screen sizes and #2/12 sand will be used. The Ramboll field geologist will log and screen the soil at the Site, however, and will communicate the lithologic observations to Ramboll's professional geologist. If, based on those observations, modifications are required, then the well construction details will be adjusted accordingly.

The well screen will be 10 feet long and will extend approximately 8 feet into groundwater with 2 feet of exposed screen. The depth of the screen may vary depending on where groundwater is first encountered, which is anticipated to be encountered at approximately

25 feet bgs based on recent groundwater observations at the Site by Ramboll. A filter pack consisting of No. 3 sand or equivalent will be placed surrounding the well screen from the bottom of the screen to approximately two feet above the top of the screen. A minimum of a 2 foot layer of hydrated bentonite will be placed above the filter pack. The remainder of the annular space will be sealed to the surface with Portland cement/bentonite grout. A typical groundwater monitoring well construction diagram is included as Appendix E.

The newly installed monitoring well will be developed after installation using a combination of bailing, pumping, and surging techniques. The monitoring well will be developed in accordance with the procedures outlined in the revised SSI Work Plan. The monitoring well location and ground surface elevations will be surveyed by a California-licensed surveyor.

The monitoring schedule is provided in Section 10.3 below. The groundwater sampling event will include measuring the depth to water at each of the newly installed monitoring wells (MW-1 through MW-6). Each newly installed monitoring well will then be purged and sampled using standard low-flow sampling methodology. Groundwater samples will be analyzed for VOCs by USEPA Method 8260B; 1,4-Dioxane by EPA Method 8260SIM, TPH by USEPA Method 8015B; filtered dissolved metals by USEPA Method 6020/7000 Series; and hexavalent chromium by USEPA 7199. As requested by the USEPA, during the first groundwater sampling event, the groundwater samples will also be analyzed for PCBs by USEPA method 8082. If PCBs are not detected in groundwater above applicable screening levels, PCB sampling in groundwater will be discontinued. If PCBs are detected in groundwater above applicable screening levels, PCB sampling will be incorporated into the ongoing groundwater monitoring plan. Chain-of-custody procedures will be followed during sample storage, transportation, and delivery. Groundwater samples will be delivered to a California-state certified fixed laboratory within 24 hours of collection.

10.3 Monitoring Schedule

After the soil remediation and grading activities are completed at the Site, Ramboll is proposing to conduct quarterly groundwater monitoring events.

Data collected during the quarterly groundwater monitoring events will be incorporated into quarterly data submittals, and an annual comprehensive groundwater monitoring report, which will be submitted to the DTSC.

11. ACTIVITY AND USE LIMITATIONS

It is anticipated that a local or state agency (e.g., DTSC) will prepare a draft restrictive LUC specific to the Site limiting certain uses at the Site. Upon submittal of the Remedial Action Completion Report, a signed LUC will be recorded by the property owner with the Los Angeles County Recorder. Any impacted soils remaining "in place" above the commercial screening levels shall be surveyed and documented as part of the LUC.

At a minimum, it is anticipated that the LUC will impose the following post-redevelopment requirements:

- All areas within the backyards of residential properties will be covered in concrete and may not be penetrated without approval by DTSC; the concrete will serve as a "final cap", as referenced further below. The final cap must be inspected, maintained, and repaired in perpetuity;
- Vapor intrusion mitigation systems will be installed at all structures (residential and commercial) at the property and will need to maintained in accordance with DTSC requirements;
- Periodic reports documenting the inspection, maintenance, and repair activities must be submitted to DTSC;
- The Site will not be used for a, hospital, school for persons under 21 years of age, or a day care center for children;
- The cap shall not be altered except in compliance with the SMP and LUC; and
- Drilling for any water, oil or gas will not be permitted without prior written approval by the DTSC.

12. REMEDIAL ACTION COMPLETION REPORT

Within 60 days after completion of the field activities, a Remedial Action Completion Report (RACR) will be submitted to DTSC. The RACR will provide documentation of implementation of the clean-up plan, and present confirmation soil data, as applicable. The RACR will also include, as applicable:

- Detailed summary of the excavation and clean-up activities completed;
- Confirmation soil sampling data and associated survey data;
- Waste characterization analytical data; and
- Copies of waste manifests and supporting waste disposal information.

13. IMPLEMENTATION SCHEDULE

A conceptual schedule for remedial action to be performed at the Site is provided below. This schedule projects the estimated duration of each phase of the RP scope of work. A more detailed schedule, which will be used for forecasting and project management, will be prepared after the RP is finalized and approved by the DTSC.

Work Element	Start Date	Completion Date
Draft Final RP Issued for Public Comment	March, 2020	March, 2020
Public Comment Period	March, 2020	April, 2020
Address Public Comments on RP	April, 2020	April, 2020
Approval of RP	May, 2020	May, 2020
SMP Implementation	May, 2020	July, 2020
RAP Implementation – Excavation, confirmation sampling and off-Site disposal	May, 2020	July, 2020
RACR submitted, DTSC/USEPA Review	July, 2020	September, 2020
RAP Implementation – Groundwater monitoring	September, 2020	September 2022
RAP Implementation – VIMS installation	December, 2020	March, 2021
VIMS Long-Term O&M	March, 2021	December, 2026

14. PUBLIC PARTICIPATION

The following public participation activities and opportunities for public involvement will occur to comply with regulatory requirements for public involvement:

- A public notice will be published in a newspaper such as the Los Angeles Times or the Gardena Daily Breeze.
- A copy of the RP report will be available at the following proposed repositories prior to the first day of the public comment period:

Gardena Mayme Dear Library, 1731 West Gardena Blvd, Gardena, CA 90247,

DTSC Regional Records Office, 5796 Corporate Avenue, Cypress, CA 90630-4732,

DTSC, Envirostor Database Website, https://www.envirostor.dtsc.ca.gov/public/

- A Fact Sheet will be prepared to provide historical information, describe the current Site conditions and provide information on the remedial action. The Fact Sheet may be provided in both English and Spanish. It will be distributed to nearby residents, the key contacts list, and the DTSC mandatory mailing list.
- A public meeting or open house may be scheduled if requested by community members or if required by DTSC.

Additional community outreach activities may be required as specified by DTSC public outreach coordinator.

15. ADMINISTRATIVE RECORD

Completed and current project activities/documents include the following:

Activity/Document	Activity/Document Date	Approval Date
Soil Removal Report – Cal Science Engineering	1991	1992
Underground Storage Tank Removal and Closure Report	2005	2006
Phase II ESA – Fulcrum Resources Environmental	2017	NA
Phase II ESA – Leighton & Associates	2018	NA
Supplemental Phase II ESA – Fulcrum Resources Environmental	2018	NA
Phase I ESA and supplemental subsurface Investigation – Ramboll	March, 2019	NA
Site Assessment Report – Ramboll	April, 2019	NA
Fully Executed California Land Reuse and Revitalization Agreement	May 22, 2019	May 22, 2019
Revised SSI Work Plan – Ramboll	October 2019	October 2019
SSI Report/Amended SSI Report – Ramboll	November 2019/March 2020	Pending agency review
Soil Management Plan – Ramboll	December 2019	January 2020
Revised QAPP – Ramboll	February 2019	February 2019
Management of and reuse of hardscape during demolition – Ramboll	February 2019	March 2019

NA: Document finalized prior to agency involvement or approval not necessary.

16. REPORT LIMITATIONS

This report has been prepared for the exclusive use of Rosecrans Place, LLC and may not be relied upon by any other person or entity without Ramboll's prior express written permission.

This report has been prepared in conformance with generally accepted standards of practice in the fields of environmental sciences and engineering at the time the services were rendered. Ramboll makes no other warranty or representation, either express or implied, with respect to its services.

The report findings are based in part on information/data provided by our client and/or other third parties and conditions identified as a result of Ramboll's investigations as of the date of the report. Ramboll has not attempted to verify information/data provided to it by our client or other third parties, except as explicitly noted in our report, and makes no express representations to the accuracy of such information/data by the inclusion of it in our report.

It is Ramboll's opinion that the level of detail provided in the report is appropriate to meet the study objectives; however, there is no warranty or guarantee, expressed or implied, that this investigation has uncovered all potential environmental liabilities associated with the Site. In the event of any conflict between the terms and conditions of this report and the terms and conditions of the Master Services Agreement between Ramboll and Rosecrans Place, LLC (the "MSA"), the MSA shall control.

17. REFERENCES

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USEPA. 2019. Regional Screening Levels. November.

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TABLES

Table 1. Chemical-Specific Potential ARARs and TBCs
2101 and 2129 West Rosecrans Avenue
Gardena, California

Requirement or Guideline	Agency	Reference	Description	Comment	ARAR or TBC
National Primary Drinking Water Regulations – MCLs and MCLGs	USEPA	40 CFR 141.11 – 141.16; 141.50 – 141.55; 141.60 – 141.62	National Primary Drinking Water Standards – enforceable standards for specified contaminants in drinking water.	To be considered for setting water quality objectives for groundwater as State MCLs are more stringent than federal MCLs.	TBC
National Secondary Drinking Water Regulations - SMCLs	USEPA	40 CFR 143.3	National Secondary Drinking Water Standards are regulations for the aesthetic qualities of public water systems – Secondary Maximum Contaminant Levels (SMCLs).	To be considered for setting water quality objectives as SMCLs are guidelines and not enforceable.	TBC
National Recommended Water Quality Criteria	USEPA	33 CFR 1314(a) and 42 CFR 9621(d)(2)	National Recommended Water Quality Criteria (NRWQC) are suggested water quality standards for groundwater in the absence of formally established MCLs.	Relevant and appropriate if MCLs are not available for compounds of potent5ial concern connected to the site.	ARAR
California Safe Drinking Water Act - MCLs	DHS	22 CCR 64444; 64473	California drinking water standards; primary and secondary MCLs for specified contaminants in drinking water.	Relevant and appropriate for setting water quality objectives for groundwater to the extent that State MCLs are more stringent than federal MCLs.	ARAR
Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	OEHHA	27 CCR 25102	Warning requirements/prohibition of discharge or release of any chemical listed by the State as a carcinogen or reproductive hazard to water or land.	Relevant and appropriate for discharges that may impact a source of drinking water.	ARAR
A Compilation of Water Quality Goals	SWRCB	RWQCB, October 2017	Defines a procedure for selection of appropriate concentrations of chemical constituents and water quality parameters.	To be considered in selecting appropriate numerical values to establish cleanup levels and discharge limits.	TBC
Health Advisories and Water Quality Advisories	USEPA	USEPA Office of Water	Short- and long-term and life-time exposure health advisories for non-carcinogens and possible human carcinogens.	To be considered in selecting appropriate numerical cleanup values and discharge limits.	TBC
Hazardous Waste – Land Disposal Restriction	USEPA/ DTSC	40 CFR 268 / 22 CCR 66268	Sets LDR constituent concentrations and treatment standards.	Applicable to all hazardous wastes generated during site activities.	ARAR
Hazardous Waste Identification	USEPA/ DTSC	40 CFR 261 / 22 CCR 66261	Sets standards for classification of hazardous waste. Establishes constituent levels for characteristic wastes and lists of waste considered to be hazardous.	Applicable to all wastes generated during remedial action at the site.	ARAR
Non-Hazardous Waste Identification	DTSC	27 CCR 20210, 20220, 20230	Definition of non-hazardous waste. Also contains definitions of designated waste, nonhazardous waste and inert waste.	Applicable to non-hazardous wastes generated during remedial action at the site.	ARAR
Modified Screening Levels	Cal/EPA /DTSC	HERO HHRA – April 2019	Note Number 3. Sets SLs for potential industrial uses for a variety of compounds in soil.	To be considered for general risk screening purposes.	TBC
Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities	Cal/EPA	HERO HHRA - April 2019	Note Number 1. Recommends default exposure factors for risk assessments.	To be considered for general human health risk assessments.	TBC
Guidance for Screening Level Human Health Risk Assessments	Cal/EPA	HERO HHRA – May 2019	Note Number 4. Sets guidance for SLs for human health risk assessments.	To be considered for general human health risk assessments.	TBC
Risk Assessment Guidance for Superfund	USEPA	Dec 1989	Sets guidance for human health evaluation.	To be considered for general human health risk assessments.	TBC
Risk Assessment Guidance	USEPA	Office of Emergency and Remedial Response - 2004	Part E, Supplemental Guidance for Dermal Risk Assessment.	To be considered for general human health risk assessments.	TBC
Risk Assessment Guidance	USEPA	Office of Emergency and Remedial Response – January 2004	Part F, Supplemental Guidance for Inhalation Risk Assessment.	To be considered for general human health risk assessments.	TBC
Regional Screening Levels	USEPA Region 9	RSL Tables – November 2019	Sets RSLs for potential industrial uses for a variety of compounds in soil.	To be considered for general risk screening purposes.	TBC
California Human Health Screening Levels	OEHHA	CHHSLs Tables – September 2010	The California Human Health Screening Levels (CHHSLs) list concentrations for 54 chemicals in soil or soil gas that the California Environmental Protection Agency (Cal/EPA) considers to be below thresholds of concern for risks to human health.	Established by OEHHA. Are not regulatory in nature and represent non-mandatory goals.	TBC

Notes:
ARAR = Applicable or Relevant and Appropriate Requirement
CCR = California Code of Regulations
Cal/EPA = California Environmental Protection Agency
CFR = Code of Federal Regulations
CHHL = California Human Health Screening Level
DHS = Department of Health Services
DTSC = Department of Toxic Substances Control Act
HERO = Human and Ecological Risk Office
HHRA = Human Health Risk Assessment
LDR = Land Disposal Restrictions
MCL = Maximum Contaminant Level
NRWQC = National Recommended Water Quality Criteria
OEHHA = California EPA Office of Environmental Health Hazard Assessment
RWQCB = Regional Water Quality Control Board
RSL = Regional Screening Level
SMCLs = Secondary Maximum Contaminant Levels
SLs = Screening Levels
SWRCB = State Water Resources Control Board
TBC = To Be Considered

Table 2. Summary of VOCs and TPH Groundwater Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Location	Well Type	Date Sampled	TPH			VOCs									
			GRO	DRO	ORO	Acetone	Chloroform	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	1,4-Dioxane
USEPA MCL			**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**7.0**	**70.0**	**100.0**	**5.0**	**5.0**	**2.0**	**NE**
California MCL			**NE**	**NE**	**NE**	**NE**	**NE**	**5.0**	**6.0**	**6.0**	**10.0**	**5.0**	**5.0**	**0.5**	**NE**
San Francisco Bay RWQCB ESLs			**100**	**100**	**NE**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Ramboll															
TW-1	Temporary Well	1/29/2019	--	--	--	< 80	< 4.0	< 4.0	< 4.0	**8.0**	< 4.0	**410**	**25**	< 2.0	**--**
TW-2		1/29/2019	--	--	--	< 20	**1.3**	< 1.0	**1.0**	**11 J**	**4.4**	**2,400**	**55**	< 0.50	**--**
TW-3		1/29/2019	--	--	--	< 20	< 1.0	< 1.0	< 1.0	**1.0 J**	< 1.0	**200**	**5.6**	< 0.50	**--**
TW-4		1/29/2019	--	--	--	< 80	< 4.0	**13**	< 4.0	**47 J**	< 4.0	**82**	**73**	< 2.0	**--**
TW-5		3/11/2019	--	--	--	< 200	<10	<10	<10	**28**	<10	**960**	**58**	< 5.0	**--**
RMW-1	Monitoring Well	10/7/2019	**630 Z J**	< 49	<250	< 200	< 10	< 10	< 10	**11**	< 10	**6,700**	**82**	< 5.0	< 1.0
RMW-1		*10/7/2019*	***1,300 Z J***	*< 49*	*<250*	*< 200*	*< 10*	*< 10*	*< 10*	***11***	*< 10*	***6,900***	***79***	*< 5.0*	*< 1.0*
RMW-2		10/7/2019	**240 Z**	< 50	<250 Z	< 20	< 1.0	< 1.0	< 1.0	**12**	**3.2**	**1,400**	**68**	< 0.50	< 1.0
RMW-3		10/7/2019	**350**	**58 Z**	<250	< 100	< 5.0	**25**	< 5.0	**24**	< 5.0	**2,700**	**51**	< 2.5	**16**
RMW-4		10/7/2019	**130 Z**	**130 Z**	<250	< 20	< 1.0	**9.2**	< 1.0	**47**	< 1.0	**390**	**64**	**3.5**	**1.7**
RMW-5		10/7/2019	**130 Z**	**64 Z**	<250	< 20	< 1.0	**11**	**1.9**	**33**	**2.0**	**260**	**230**	**0.50**	< 5.0
Fulcrum															
SB26-GW	Temporary Well	10/24/2018	--	--	--	< 5.00	<1.00	**2.72**	<0.10	<0.10	<1.00	<0.10	<0.10	< 3.00	--
SB30-GW		10/24/2018	--	--	--	< 5.00	<1.00	<0.10	<0.10	<0.10	<1.00	**14.4**	<0.10	< 3.00	--
SB32-GW		10/24/2018	--	--	--	< 25.0	<5.00	<0.10	<0.10	<0.10	<5.00	**270**	**15.7**	< 15.0	**--**
SB33-GW		10/25/2018	--	--	--	< 250	<50.0	<0.10	<0.10	<0.10	<50.0	**2,560**	<0.10	< 150	--
SB36-GW		10/25/2018	--	--	--	< 100	<20.0	<0.10	<0.10	<0.10	<20.0	**1,220**	**20.4**	< 60.0	**--**
SB39-GW		10/26/2018	--	--	--	**23.8**	<1.00	<0.10	<0.10	<0.10	<1.00	**19.5**	<0.10	< 3.00	--
SB38-NW-GW		10/26/2018	--	--	--	**42.4**	<5.00	**11.2**	<0.10	**217**	<5.00	**7.95**	**155**	< 15.0	**--**
Leighton															
LA-SB3	Temporary Well	8/7/2018	<200	**380**	**--**	**--**	<0.50	<0.50	<0.50	**12**	**1.3**	**250**	**11**	< 0.5	**--**
LA-SB7		8/7/2018	<200	**610**	**--**	**--**	<0.50	**28**	**1.6**	**33**	**1.0**	**87**	**43**	**1.1**	**--**
LA-SB107		*8/7/2018*	*<200*	***590***	**--**	**--**	*<0.50*	***31***	***1.5***	***44***	***1.4***	***85***	***78***	***1.0***	**--**

Notes:

DRO - Diesel range organics

GRO - gasoline range organics

J - A "J-flagged" result represents an estimated concentration that is above the Method Detection Limit (MDL; the concentration at which laboratory equipment can detect the presence of the specific chemical), but below the laboratory RL (RL; the lowest concentration at which the laboratory can provide precise quantification).

NA - not applicable

NE - not established

ORO - Oil range organics

RWQCB ESL - Regional Water Quality Control Board Environmental Screening Levels

TPH - Total Petroleum Hydrocarbons

UJ - Reporting limits estimated

VOC - volatile organic compounds

USEPA - United States Environmental Protection Agency MCL, Groundwater and Drinking Program, updated March 13, 2019.

Z - the chromatographic response does not resemble a typical fuel pattern.

-- - not analyzed

<X - not detected above the laboratory reporting limits

Only VOCs reported above laboratory reporting limits are presented.

Duplicate samples are italicized

California MCL - California's Maximum Contaminant Levels, California State Water Resources Control Board, MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants, updated March 13, 2019.

Groundwater samples were selectively analyzed for TPH and VOCs in accordance with USEPA Methods 8015 and 8260B, respectively.

If concentrations exceed both MCL screening levels, the analyte is highlighted reflecting the lower screening level

Results and screening levels are reported in micrograms per Liter (µg/L)

Value exceeds California MCL screening criteria

Value exceeds USEPA MCL screening criteria

Value exceeds San Francisco Bay RWQCB ESL screening criteria

Table 3. Summary of Metal Groundwater Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Location	Well Type	Date Sampled	6010B Antimony	6010B Arsenic	6020 Arsenic	6010B Barium	6010B Beryllium	6010B Cadmium	6010B Chromium (total)	7199 Hexavalent (VI) Chromium	6010B Cobalt	6010B Copper	6010B Lead	6020 Lead	7470A Mercury	6010B Molybdenum	6010B Nickel	6010B Selenium	6010B Silver	6010B Thallium	6010B Vanadium	6010B Zinc
USEPA MCL			**6**	**10**	**10**	**2,000**	**4**	**5**	**100**	**NE**	**NE**	**1,300**	**15**	**15**	**2**	**NE**	**NE**	**50**	**NE**	**2**	**NE**	**NE**
California MCL			**6**	**10**	**10**	**1,000**	**4**	**5**	**50**	**NE**	**NE**	**1,000**	**15**	**15**	**2**	**NE**	**100**	**50**	**100**	**2**	**NE**	**5,000**
Ramboll																						
TW-1	Temporary Well	1/29/2019	< 100	< 100	--	**133**	< 10.0	< 10.0	< 50.0	--	< 50.0	< 50.0	< 50.0	--	< 0.500	**78.8**	< 50.0	< 100	< 10.0	< 50.0	< 10.0	< 250
TW-2		1/29/2019	< 100	< 100	--	**185**	< 10.0	< 10.0	< 50.0	--	< 50.0	< 50.0	< 50.0	--	< 0.500	< 50.0	< 50.0	< 100	< 10.0	< 50.0	< 10.0	< 250
TW-3		1/29/2019	< 100	< 100	--	**276**	< 10.0	< 10.0	< 50.0	< 2.0	< 50.0	< 50.0	< 50.0	--	< 0.500	< 50.0	< 50.0	< 100	< 10.0	< 50.0	< 10.0	< 250
TW-4		1/29/2019	< 100	< 100	--	**355**	< 10.0	< 10.0	< 50.0	< 2.0	< 50.0	< 50.0	< 50.0	--	< 0.500	< 50.0	< 50.0	< 100	< 10.0	< 50.0	< 10.0	< 250
TW-5		3/11/2019	< 100	< 100	--	**157**	< 10.0	< 10.0	< 50.0	< 2.0	< 50.0	< 50.0	< 50.0	--	< 0.500	< 50.0	< 50.0	< 100	< 10.0	< 50.0	< 10.0	< 250
RMW-1	Monitoring Well	10/7/2019	<33	<18	<10	**287**	<2.5	<2	**9.47 J**	**4.3**	< 50.0	< 50.0	**24.0 J**	<10	< 0.500	**8.98 J**	< 50.0	<24	< 10.0	<16	< 10.0	< 250
RMW-1		*10/7/2019*	*<33*	<18	*<10*	***286***	*<2.5*	*<2*	***9.54 J***	***4.1***	*< 50.0*	*< 50.0*	***22.9 J***	*<10*	*< 0.500*	***9.24 J***	*< 50.0*	*<24*	*< 10.0*	*<16*	*< 10.0*	*< 250*
RMW-2		10/7/2019	<33	<18	<10	**61.0**	<2.5	<2	**8.45 J**	**3.2**	< 50.0	< 50.0	**22.9 J**	<10	< 0.500	**9.72 J**	< 50.0	<24	< 10.0	<16	< 10.0	< 250
RMW-3		10/7/2019	<33	<18	<10	**149**	<2.5	<2	<6.9	< 2.0	< 50.0	< 50.0	**23.0 J**	<10	< 0.500	**22.5 J**	< 50.0	<24	< 10.0	<16	**3.87 J**	< 250
RMW-4		10/7/2019	<33	<18	<10	**186**	<2.5	<2	<6.9	< 2.0	< 50.0	< 50.0	**20.5 J**	<10	< 0.500	**10.2 J**	< 50.0	<24	**3.25 U J B**	<16	< 10.0	< 250
RMW-5		10/7/2019	<33	<18	<10	**323**	<2.5	<2	<6.9	< 2.0	< 50.0	< 50.0	**21.4 J**	<10	< 0.500	**9.67 J**	< 50.0	<24	< 10.0	<16	< 10.0	< 250
Fulcrum																						
SB26-GW	Temporary Well	10/24/2018	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
SB30-GW		10/24/2018	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
SB32-GW		10/24/2018	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
SB33-GW		10/25/2018	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
SB36-GW		10/25/2018	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
SB39-GW		10/26/2018	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
SB38-NW-GW		10/26/2018	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
-- - not analyzed.
Samples collected from RMW-1 through RMW-5 were analyzed for arsenic and lead using USEPA method 6010 and USEPA 6020, therefore both results are presented.
B = Compound was found in the blank and sample
J - A "J-flagged" result represents an estimated concentration that is above the Method Detection Limit (MDL; the concentration
at which laboratory equipment can detect the presence of the specific chemical), but below the laboratory RL (RL; the lowest concentration at which the laboratory can provide precise quantification).
U - Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
<X - not detected above the specified laboratory reporting limits and/or method detection limits.
USEPA - United States Environmental Protection Agency MCL, Groundwater and Drinking Program, updated December 2018.
Groundwater samples were selectively analyzed for metals including hexavalent chromium in accordance with USEPA Methods 6010/6020/7470 and 7199, respectively.
Results and screening levels are reported in micrograms per Liter (µg/L).
Duplicate samples are italicized.
California MCL - California's Maximum Contaminant Levels, California State Water Resources Control Board, MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants, updated December 26, 2018.
Value exceeds California MCL screening criteria
Value exceeds USEPA MCL screening criteria

Table 4. Summary of Ramboll Soil Vapor Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Number	Date Sampled	Depth (feet bgs)	Zoning of Soil Vapor Probe Locations	Acetone	Acrolein	Bromodichloromethane	Bromoform	1,3-Butadiene	2-Butanone (MEK)	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chloroform	Carbon Disulfide	Cyclohexane	Dibromochloromethane	1,2-Dibromoethane (EDB)	1,4-Dioxane	1,2-Dichloroethane	Ethylbenzene	Freon 11	2-Hexanone (MBK)	Isopropanol	Isopropylbenzene	4-Isopropyltoluene	4-Methyl-2-pentanone (MIBK)	Methylene chloride	Methylmethacrylate	n-Propylbenzene	n-Pentane	Propylene	Styrene	Toluene	Tetrahydrofuran
Soil Gas Residential Future Building				**32,000**	**0.021**	**0.076**	**2.6**	**0.017**	**5,200**	**420**	**420**	**0.47**	**0.12**	**730**	**6,300**	**NE**	**0.0047**	**0.56**	**0.11**	**1.1**	**NE**	**31**	**210**	**NE**	**NE**	**NE**	**1.0**	**NE**	**1,000**	**NE**	**3,100**	**940**	**310**	**NE**
Soil Gas Commercial Future Building				**280,000**	**0.176**	**0.66**	**22**	**0.188**	**44,000**	**3,600**	**3,600**	**4**	**1.06**	**6,200**	**52,000**	**NE**	**0.04**	**5**	**0.94**	**9.8**	**NE**	**260**	**1,760**	**NE**	**NE**	**NE**	**24**	**NE**	**8,600**	**NE**	**26,000**	**7,800**	**2,600**	**NE**
SV1	1/28/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV2	1/28/2019	6.5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV3	1/28/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		14.5		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV4	1/28/2019	5.5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		**No sample collected, no flow conditions.**																														
SV5	1/28/2019	4.5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		13		**No sample collected, no flow conditions.**																														
SV6	1/28/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV7	1/28/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV8	1/28/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV9	1/29/2019	5	Residential	**No sample collected, no flow conditions.**																														
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV10	1/29/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		12		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV11	1/29/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV12	1/29/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		15		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV13	1/29/2019	5	*Commercial*	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		13		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV14	1/29/2019	5	Residential	<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
		12		<1.00	NR	NR	NR	NR	<0.200	NR	NR	<0.0150	<0.0250	NR	<0.100	<0.0250	NR	<0.0250	<0.0150	<0.0150	<0.0250	NR	NR	NR	NR	<0.0500	<0.100	NR	NR	NR	NR	NR	<0.200	NR
SV15	10/3/2019	4.5	Residential	**0.301**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.151**	**0.193**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	**0.06**	< 0.001	**0.0218**	< 0.001	< 0.001	NR	**3.74 E**	< 0.001	**0.100**	**0.0855**
		15		**0.223**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.152**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.101	< 0.01	< 0.001	< 0.001	**0.676**	< 0.001	< 0.001	< 0.001	NR	**0.668**	< 0.001	< 0.001	0.094
SV16	10/3/2019	5	Residential	**0.0979**	**0.002**	**0.0012**	< 0.001	< 0.001	**0.0085**	< 0.001	< 0.001	< 0.001	**0.0014**	**0.0077**	**0.0081**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0035**	**0.0032**	< 0.001	**0.0027**	**0.0019**	< 0.001	**0.0015**	**0.0063**	< 0.001	**0.0018**	NR	**0.012**	**0.0018**	**0.0123**	**0.0036**
		15		**0.0744**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0562**	< 0.001	< 0.001	< 0.001	< 0.001	**0.038**	**0.163**	< 0.001	< 0.001	< 0.001	< 0.001	0.0246	< 0.001	< 0.001	< 0.01	< 0.001	**0.0992**	< 0.001	< 0.001	< 0.001	< 0.001	NR	**1.33**	< 0.001	**0.165**	**0.0933**
SV17	10/3/2019	5	Residential	**0.684** [1]	< 0.001	**0.0089**	**0.0072**	< 0.001	**0.062**	< 0.001	**0.0013**	< 0.001	**0.0345**	**0.0464**	**0.0782**	**0.0089**	**0.002**	< 0.001	< 0.001	**0.0062**	< 0.001	**0.0096**	**0.0078**	**0.0046**	**0.0082**	**0.0244**	**0.0078**	< 0.001	< 0.001	NR	**0.684** [1]	**0.0024**	**0.023**	**0.0055**
		15		**No sample collected, no flow conditions.**																														
SV18	10/9/2019	4.5	Residential	**No sample collected, no flow conditions.**																														
	10/3/2019	15																																
SV19	10/9/2019	4.5	Residential	**No sample collected, no flow conditions.**																														
	10/3/2019	15		**0.155**	< 0.001	< 0.001	< 0.001	< 0.001	**0.114**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**1.86**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	**0.175**	< 0.001	**1.66**	< 0.001	NR	**1.35**	< 0.001	**0.049**	**0.126**
SV20	10/9/2019	5	Residential	< 0.01	< 0.001	**0.0253**	< 0.001	< 0.001	**0.0308**	< 0.001	< 0.001	**0.0277**	**0.035**	**0.0218**	**0.021**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.203**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NR	< 0.001	< 0.001	< 0.001	**0.0245**
	10/3/2019	15		**0.107**	< 0.001	**0.0254**	< 0.001	< 0.001	**0.0492**	< 0.001	< 0.001	< 0.001	**0.0534**	**0.0242**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0766**	< 0.001	< 0.01	< 0.001	**0.204**	**0.0204**	**0.0364**	< 0.001	< 0.001	NR	**0.405**	< 0.001	**0.103**	**0.0664**
SV20 REP	10/3/2019	15	Residential	**0.0765**	< 0.001	**0.0331**	< 0.001	**0.0262**	**0.0431**	< 0.001	< 0.001	< 0.001	**0.0684**	**0.0273**	< 0.001	**0.0531**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0918**	< 0.001	< 0.01	< 0.001	**0.248**	**0.0285**	**0.0411**	< 0.001	< 0.001	NR	**0.409**	< 0.001	**0.117**	**0.0457**
SV21	10/9/2019	5	Residential	**0.395**	**0.111**	**0.224**	< 0.001	< 0.001	**0.143**	< 0.001	< 0.001	< 0.001	**0.0485**	**0.17**	**0.29**	< 0.001	< 0.001	**0.0235**	< 0.001	**0.0482**	< 0.001	< 0.001	< 0.01	< 0.001	**0.0406**	**0.0223**	**0.043**	**0.212**	< 0.001	NR	**4.13 E**	< 0.001	**0.275**	**0.0238**
		15		**No sample collected, no flow conditions.**																														
SV22	10/9/2019	4.5	Residential	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.092**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NR	< 0.001	< 0.001	< 0.001	**0.0254**
		15		**No sample collected, no flow conditions.**																														
SV22 REP	10/9/2019	4.5	Residential	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0814**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NR	< 0.001	< 0.001	< 0.001	< 0.001

Table 4. Summary of Ramboll Soil Vapor Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Number	Date Sampled	Depth (feet bgs)	Zoning of Soil Vapor Probe Locations	1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	m,p-Xylene	o-Xylene	Methyl tert-butyl ether (MTBE)	Di-isopropylether	tert-amylmethylether	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Difluoroethane	Benzene	cis-1,2-Dichloroethene	Dichlorodifluoromethane	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	vinyl chloride	n-Pentane	n-Hexane	n-Heptane	1,1-Difluoroethane (DFA)
Soil Gas Residential Future Building				**1,000**	**63**	**63**	**100**	**100**	**11**	**730**	**NE**	**1.8**	**73**	**NE**	**0.097**	**8.3**	**100**	**0.46**	**83**	**0.48**	**0.0095**	**NE**	**NE**	**NE**	**NE**
Soil Gas Commercial Future Building				**8,800**	**520**	**520**	**880**	**880**	**94**	**6,200**	**NE**	**15.4**	**620**	**NE**	**0.84**	**70**	**880**	**4**	**700**	**6**	**0.32**	**NE**	**NE**	**NE**	**NE**
SV1	1/28/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.0340**	**0.0661**	< 0.150	< 0.0250	**0.0536**	**0.0735**	**9.17**	**0.0288**	**1.05**	**0.0579**	NR	NR	NR	<0.0250
SV2	1/28/2019	6.5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	**0.240**	**0.0297**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
SV3	1/28/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.0215**	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	**0.138**	NR	NR	NR	<0.0250
		14.5		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.505**	< 0.0250	< 0.150	**0.0291**	**0.317**	< 0.0300	**0.0593**	< 0.0150	< 0.0150	**0.514**	NR	NR	NR	<0.0250
SV4	1/28/2019	5.5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
		15		**No sample collected, no flow conditions.**																					
SV5	1/28/2019	4.5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	**0.0253**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	**0.0188**	NR	NR	NR	<0.0250
		13		**No sample collected, no flow conditions.**																					
SV6	1/28/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.0253**	< 0.0250	< 0.150	**0.0260**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	**0.0177**	NR	NR	NR	<0.0250
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
SV7	1/28/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.0772**	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
SV8	1/28/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.0248**	< 0.0250	< 0.150	**0.0254**	< 0.0150	< 0.0300	**0.110**	< 0.0150	**0.0344**	< 0.0100	NR	NR	NR	<0.0250
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
SV9	1/29/2019	5	Residential	**No sample collected, no flow conditions.**																					
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	**0.0278**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
SV10	1/29/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	**0.0317**	**0.175**	< 0.0300	< 0.0250	< 0.0150	**0.875**	< 0.0100	NR	NR	NR	<0.0250
		12		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	**0.955**	< 0.0300	< 0.0250	**0.0295**	**2.84**	< 0.0100	NR	NR	NR	<0.0250
SV11	1/29/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	**0.0355**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.0203**	< 0.0250	< 0.150	**0.0433**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	**0.0609**	< 0.0100	NR	NR	NR	<0.0250
SV12	1/29/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**0.262**	< 0.0250	< 0.150	**0.0294**	**0.334**	< 0.0300	**0.0286**	**0.0300**	**3.95**	< 0.0100	NR	NR	NR	<0.0250
		15		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	**2.09**	0.191	< 0.150	**0.0399**	**2.32**	< 0.0300	**0.167**	**0.190**	**19.60**	**0.0209**	NR	NR	NR	<0.0250
SV13	1/29/2019	5	*Commercial*	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	< 0.0250	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
		13		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	**0.0341**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	< 0.0150	< 0.0100	NR	NR	NR	<0.0250
SV14	1/29/2019	5	Residential	<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	**0.0480**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	**0.0328**	< 0.0100	NR	NR	NR	<0.0250
		12		<0.0150	NR	NR	<0.200	<0.150	<0.0150	<0.0150	<0.150	< 0.0150	< 0.0250	< 0.150	**0.0492**	< 0.0150	< 0.0300	< 0.0250	< 0.0150	**0.0342**	< 0.0100	NR	NR	NR	<0.0250
SV15	10/3/2019	4.5	Residential	< 0.001	**0.0272**	< 0.001	< 0.001	**0.0203**	< 0.001	< 0.001	**0.0268**	**0.0549**	**0.280**	NA	**0.156**	**1.62**	< 0.001	< 0.001	**0.559**	**0.133**	**1.65** (2)	**1,560**	<10.0	<10.0	NR
		15		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.132**	**0.5900**	NA	< 0.001	**2.5** (2)	< 0.001	**26.9** (2)	**2.27** (2)	**11.9** (2)	**2.75** (2)	**266**	<10.0	<10.0	NR
SV16	10/3/2019	5	Residential	< 0.001	**0.0051**	< 0.001	**0.0131**	**0.0047**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA	**0.0041**	< 0.001	**0.0030**	**0.0554**	< 0.001	**0.0017**	< 0.001	<10.0	<10.0	<10.0	NR
		15		< 0.001	< 0.001	< 0.001	**0.0877**	**0.0207**	< 0.001	< 0.001	< 0.001	**0.0205**	< 0.001	NA	**0.0335**	**0.0368**	< 0.001	**1.95** (2)	< 0.001	**0.0770**	< 0.001	**221**	<10.0	<10.0	NR
SV17	10/3/2019	5	Residential	< 0.001	**0.0111**	**0.0021**	**0.0193**	**0.006**	**0.0396**	< 0.001	< 0.001	**0.0815**	< 0.001	NA	**0.0082**	**0.0597**	**0.0018**	**0.0181**	**0.0029**	< 0.001	**0.0045**	**326** (1)	<10.0	<10.0	NR
		15		**No sample collected, no flow conditions.**																					
SV18	10/9/2019	4.5	Residential	**No sample collected, no flow conditions.**																					
	10/3/2019	15																							
SV19	10/9/2019	4.5	Residential	**No sample collected, no flow conditions.**																					
	10/3/2019	15		< 0.001	< 0.001	< 0.001	**0.035**	< 0.001	**3.239**	**0.0222**	**0.12**	**0.0677**	**0.7190**	NA	**0.0854**	**3,79** (2)	**0.1530**	**12.0** (2)	**1.75**	**9.71** (2)	**0.941**	**239**	**322**	<10.0	NR
SV20	10/9/2019	5	Residential	**0.0216**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 0.001	< 0.001	< 0.001	**4.72** (2)	< 0.001	**0.0746**	< 0.001	<10.0	<10.0	<10.0	NR
	10/3/2019	15		< 0.001	**0.0581**	< 0.001	**0.0479**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 0.001	< 0.001	< 0.001	**15.2** (2)	< 0.001	**0.0444**	< 0.001	<10.0	<10.0	<10.0	NR
SV20 REP	10/3/2019	15	Residential	< 0.001	**0.071**	< 0.001	**0.0526**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 0.001	< 0.001	< 0.001	**18.5** (2)	< 0.001	**0.0490**	< 0.001	<10.0	<10.0	<10.0	NR
SV21	10/9/2019	5	Residential	< 0.001	**0.0436**	< 0.001	**0.121**	**0.0398**	< 0.001	< 0.001	< 0.001	**27.3** (2)	**4.69**	NA	**0.4820**	**6.85** (2)	< 0.001	**0.0773**	**0.4940**	**1.90**	**4.88** (2)	<10.0	<10.0	<10.0	NR
		15		**No sample collected, no flow conditions.**																					
SV22	10/9/2019	4.5	Residential	**0.0353**	**0.0308**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 0.001	< 0.001	< 0.001	**2.07** (2)	< 0.001	**0.1910**	< 0.001	<10.0	<10.0	<10.0	NR
		15		**No sample collected, no flow conditions.**																					
SV22 REP	10/9/2019	4.5	Residential	**0.0247**	**0.0235**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 0.001	< 0.001	< 0.001	**1.83** (2)	< 0.001	**0.1870**	< 0.001	<10.0	<10.0	<10.0	NR

Table 4. Summary of Ramboll Soil Vapor Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Number	Date Sampled	Depth (feet bgs)	Zoning of Soil Vapor Probe Locations	Acetone	Acrolein	Bromodichloromethane	Bromoform	1,3-Butadiene	2-Butanone (MEK)	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chloroform	Carbon Disulfide	Cyclohexane	Dibromochloromethane	1,2-Dibromoethane (EDB)	1,4-Dioxane	1,2-Dichloroethane	Ethylbenzene	Freon 11	2-Hexanone (MBK)	Isopropanol	Isopropylbenzene	4-Isopropyltoluene	4-Methyl-2-pentanone (MIBK)	Methylene chloride	Methylmethacrylate	n-Propylbenzene	n-Pentane	Propylene	Styrene	Toluene	Tetrahydrofuran
Soil Gas Residential Future Building				**32,000**	**0.021**	**0.076**	**2.6**	**0.017**	**5,200**	**420**	**420**	**0.47**	**0.12**	**730**	**6,300**	**NE**	**0.0047**	**0.56**	**0.11**	**1.1**	**NE**	**31**	**210**	**NE**	**NE**	**NE**	**1.0**	**NE**	**1,000**	**NE**	**3,100**	**940**	**310**	**NE**
Soil Gas Commercial Future Building				**280,000**	**0.176**	**0.66**	**22**	**0.188**	**44,000**	**3,600**	**3,600**	**4**	**1.06**	**6,200**	**52,000**	**NE**	**0.04**	**5**	**0.94**	**9.8**	**NE**	**260**	**1,760**	**NE**	**NE**	**NE**	**24**	**NE**	**8,600**	**NE**	**26,000**	**7,800**	**2,600**	**NE**
SV23	10/9/2019	6	Residential	**No sample collected, no flow conditions.**																														
		15		**0.232**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0369**	**0.0355**	< 0.001	< 0.001	< 0.001	< 0.001	**0.023**	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NR	**2.08 E**	< 0.001	**0.0875**	< 0.001
SV24	10/9/2019	4	Residential	**0.112** (1)	< 0.001	**0.121**	< 0.001	**0.0839**	**0.0114**	**0.0018**	< 0.001	< 0.001	**0.114** (1)	**0.0219**	**0.336** (1)	< 0.001	< 0.001	**0.0028**	**0.0023**	**0.0385**	**0.0015**	**0.0436**	**0.0058**	**0.0164**	**0.0658**	**0.107**	**0.0289**	< 0.001	0.0049	**0.0374**	**1.54** (1)	< 0.001	**0.112**	**0.0273** (1)
		15		**0.261**	< 0.001	< 0.001	< 0.001	**0.0481**	**0.0537**	< 0.001	< 0.001	< 0.001	**0.0437**	< 0.001	**0.0293**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0574**	< 0.001	< 0.001	< 0.01	< 0.001	**0.132**	< 0.001	< 0.001	< 0.001	< 0.001	NR	**1.56**	< 0.001	**0.131**	< 0.001
SV25	10/9/2019	4.5	Residential	**0.0213**	**0.0036**	**0.005**	**0.0027**	< 0.001	**0.0105**	< 0.001	< 0.001	< 0.001	**0.0394**	**0.0157**	**0.0035**	**0.0045**	< 0.001	< 0.001	< 0.001	**0.0087**	**0.0036**	< 0.001	< 0.01	**0.0017**	< 0.001	**0.0046**	**0.005**	< 0.001	**0.0019**	NR	**0.152** (1)	**0.0034**	**0.0231**	**0.0023**
		15		**0.163**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.754**	< 0.001	< 0.001	< 0.001	< 0.001	**5.14 E**	< 0.001	< 0.001	< 0.001	< 0.001	**3.14** (2)	< 0.001	**4.63 E**	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	**2.46**	**0.425**	NR	**0.754**	< 0.001	**0.162**	**0.0234**
SV26	10/9/2019	5	Residential	**0.0502**	**0.0043**	**0.0229**	**0.0076**	**0.001**	**0.0095**	< 0.001	< 0.001	< 0.001	**0.0385**	**0.0114**	**0.0014**	**0.0208**	< 0.001	< 0.001	< 0.001	**0.0019**	**0.0048**	< 0.001	**0.0036**	< 0.001	< 0.001	**0.0011**	**0.0042**	< 0.001	< 0.001	NR	**0.0144**	**0.002**	**0.0028**	**0.0018**
		15		**No sample collected, no flow conditions.**																														
SV26 REP	10/9/2019	5		**0.0407**	**0.0046**	**0.0233**	**0.0078**	< 0.001	**0.0104**	< 0.001	< 0.001	< 0.001	**0.0354**	**0.0095**	**0.0012**	**0.0215**	< 0.001	< 0.001	< 0.001	**0.0019**	**0.0052**	**0.0018**	**0.002**	< 0.001	< 0.001	**0.0019**	**0.0025**	< 0.001	< 0.001	NR	**0.0089**	**0.0021**	**0.0024**	**0.0019**
SV27	10/9/2019	5	Residential	< 0.01	< 0.001	**0.0284**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0231**	< 0.001	< 0.001	**0.0245**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NR	< 0.001	< 0.001	< 0.001	< 0.001
		15		< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	**0.0288**	< 0.001	< 0.001	< 0.001	**0.129**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NR	**0.0243**	< 0.001	< 0.001	< 0.001
SV28	10/9/2019	5	Commercial	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	**0.0276**	< 0.001	< 0.001	< 0.001	**0.034**	**0.026**	< 0.001	< 0.001	< 0.001	**0.426**	< 0.001	**0.0371**	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NR	**0.103**	< 0.001	**0.129**	< 0.001
		15		< 0.01	< 0.001	< 0.001	< 0.001	**0.0942**	< 0.001	< 0.001	< 0.001	< 0.001	**0.131**	**0.0422**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	**0.0403**	< 0.001	< 0.001	**0.307**	**2.34 E**	< 0.001	**0.0616**	**0.0229**

Table 4. Summary of Ramboll Soil Vapor Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Number	Date Sampled	Depth (feet bgs)	Zoning of Soil Vapor Probe Locations	1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	m,p-Xylene	o-Xylene	Methyl tert-butyl ether (MTBE)	Di-isopropylether	tert-amylmethylether	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Difluoroethane	Benzene	cis-1,2-Dichloroethene	Dichlorodifluoromethane	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	vinyl chloride	n-Pentane	n-Hexane	n-Heptane	1,1-Difluoroethane (DFA)
Soil Gas Residential Future Building				**1,000**	**63**	**63**	**100**	**100**	**11**	**730**	**NE**	**1.8**	**73**	**NE**	**0.097**	**8.3**	**100**	**0.46**	**83**	**0.48**	**0.0095**	**NE**	**NE**	**NE**	**NE**
Soil Gas Commercial Future Building				**8,800**	**520**	**520**	**880**	**880**	**94**	**6,200**	**NE**	**15.4**	**620**	**NE**	**0.84**	**70**	**880**	**4**	**700**	**6**	**0.32**	**NE**	**NE**	**NE**	**NE**
SV23	10/9/2019	6	Residential	**No sample collected, no flow conditions.**																					
		15		< 0.001	< 0.001	< 0.001	**0.073**	**0.0298**	< 0.001	< 0.001	< 0.001	**1.46** [2]	**0.5180**	NA	**0.0439**	**0.8670**	< 0.001	**4.59** [2]	**0.0575**	**0.2130**	**3.15** [2]	<10.0	<10.0	<10.0	NR
SV24	10/9/2019	4	Residential	< 0.001	**0.0398**	**0.0067**	**0.168** [1]	**0.047**	**3.23 E** [1]	< 0.001	0.0204	**0.0205** [1]	**0.0072**	NA	**0.2380**	**0.0856**	**0.0017**	**0.071** [2]	< 0.001	< 0.001	**0.0389**	<10.0	<10.0	<10.0	NR
		15		< 0.001	**0.0665**	< 0.001	**0.217**	**0.116**	**0.32**	< 0.001	< 0.001	**0.0253**	**0.0456**	NA	**0.0439**	< 0.001	**0.0252**	**8.9** [2]	< 0.001	**0.3670**	< 0.001	<10.0	<10.0	<10.0	NR
SV25	10/9/2019	4.5	Residential	< 0.001	**0.0101**	**0.0025**	**0.02**	**0.0089**	**0.0083**	< 0.001	< 0.001	**0.0028**	< 0.001	NA	**0.0060**	< 0.001	**0.0029**	**0.0034**	< 0.001	**0.0020**	< 0.001	**37.4**	**11.0**	<10.0	NR
		15		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0998**	**0.0814**	< 0.001	**0.8240**	**0.0325**	NA	**0.26**	**1.5700**	**0.2230**	**0.8280**	**1.5300**	**0.81**	**0.851**	<10.0	**337**	**7,290**	NR
SV26	10/9/2019	5	Residential	**0.0103**	**0.009**	**0.0022**	**0.0087**	**0.0048**	< 0.001	< 0.001	< 0.001	**0.0266**	< 0.001	NA	**0.0012**	**0.0968**	**0.0032**	**0.0678**	**0.0036**	**0.95** [1]	< 0.001	<10.0	<10.0	<10.0	NR
		15		**No sample collected, no flow conditions.**																					
SV26 REP	10/9/2019	5		**0.0111**	**0.0087**	**0.0013**	**0.0082**	**0.0044**	< 0.001	< 0.001	< 0.001	**0.0122**	< 0.001	NA	< 0.001	**0.0745**	**0.0034**	**0.0718**	**0.0028**	**0.715** [1]	< 0.001	<10.0	<10.0	<10.0	NR
SV27	10/9/2019	5	Residential	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.1850**	**0.0213**	NA	< 0.001	**0.0764**	< 0.001	< 0.001	< 0.001	**1.17**	< 0.001	<10.0	<10.0	<10.0	NR
		15		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.4040**	**0.1840**	NA	< 0.001	**0.6350**	< 0.001	**0.4420**	**0.1110**	**19.8**	< 0.001	<10.0	<10.0	<10.0	NR
SV28	10/9/2019	5	Commercial	**0.0653**	**0.0749**	**0.0315**	**0.173**	**0.0457**	< 0.001	< 0.001	< 0.001	**3.45** [1,2]	**0.103**	NA	**0.0356**	**4.07** [2]	< 0.001	**0.4070**	**0.7870**	**43.0** [2]	**0.109**	<10.0	<10.0	<10.0	NR
		15		< 0.001	< 0.001	< 0.001	**0.0565**	< 0.001	< 0.001	< 0.001	< 0.001	**14.9** [1,2]	**0.94** [2]	NA	**0.1010**	**12.1** [2]	< 0.001	**1.37**	**1.5500**	**124.0** [1,2]	**0.120**	**307**	<10.0	<10.0	NR

Notes:
-- not analyzed, no flow
< - not detected above the laboratory reporting limit
bgs - below ground surface
E - estimated concentration; concentration exceeds calibration range
NA - not analyzed
ND - not detected
NE - not established
NR - not reported
[1] - refer to lab report for dilution factor
[2] - samples were analyzed using USEPA Method 8260B as a result of VOC detections above equipment limits while analyzing samples using the TO-15 Method
Results and screening levels are reported in micrograms per Liter (µg/L)
Result exceed the soil gas residential screening levels for future buildings
Result exceed the soil gas commercial screening levels for future buildings
Leak detect compound value greater than or equal to 10 times the reporting limit for the target analyte(s)
Leak detect compounds included n-pentane, n-hexane, n-heptane and 1,1-DFA.
Soil gas samples were analyzed for volatile organic compounds (VOCs) by USEPA 8260B or USEPA Method TO-15.
USEPA - United States Environmental Protection Agency

References:
Cal/EPA. 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air - Final. October.
Cal/EPA. 2015. Preliminary Endangerment Assessment Guidance Manual. October.
Cal/EPA. 2019. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). April.
USEPA. 2019. Regional Screening Levels Summary Table. November.

Table 5. Summary of Fulcrum and Leighton Soil Vapor Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Number	Date Sampled	Depth (feet bgs)	Zoning of Soil Vapor Probe Locations	1,1-Dichloroethane	1,1-Dichloroethene	Benzene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	vinyl chloride
Soil Gas Residential Future Building				**1.8**	**73**	**0.097**	**8.3**	**0.46**	**83**	**0.48**	**0.0095**
Soil Gas Commercial Future Building				**15.4**	**620**	**0.84**	**70**	**4**	**700**	**6**	**0.32**
Fulcrum											
SB1-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB2-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB3-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB4-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB5-SV	11/01/17	5	Residential	**3.63**	0.617	<0.10	1.69	<0.10	<0.10	<0.10	**17.8**
SB6-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB7-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB8-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB9-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB10-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB11-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB12-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB13-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB14-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB15-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB16-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB17-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB18-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**1.23**	<0.10
SB19-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB20-SV	11/01/17	5	Commercial	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB21-SV	11/01/17	5	Commercial	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB22-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB23-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB24-SV	11/01/17	5	*Commercial*	0.763	<0.10	<0.10	0.730	<0.10	<0.10	**7.19**	<0.10
SB25-SV	11/01/17	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB26-SV5	10/25/18	5	Commercial	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB26-SV15	10/25/18	15		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB26-SV22	10/25/18	22		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB30-SV5	10/25/18	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB30-SV15	10/25/18	15		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB30-SV22	10/25/18	22		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SB32-SV5	10/25/18	5	Residential	<0.10	<0.10	<0.10	<0.10	0.146	<0.10	<0.10	<0.10
SB32-SV15	10/25/18	15		<0.10	<0.10	<0.10	<0.10	0.325	<0.10	0.020	<0.10
SB32-SV22	10/25/18	22		<0.10	<0.10	0.02	<0.10	**2.94**	<0.10	0.195	<0.10
SB33-SV5	10/25/18	5	Residential	0.07	<0.10	<0.10	<0.10	**2.02**	<0.10	0.258	<0.10
SB33-SV15	10/25/18	15		0.10	0.081	0.011	<0.10	**26.5**	<0.10	**4.75**	<0.10
SB33-SV22	10/25/18	22		0.12	0.088	<0.10	0.034	**55.2**	0.071	**4.64**	<0.10
SB36-SV5	10/25/18	5	Residential	<0.10	<0.10	<0.10	<0.10	**0.54**	<0.10	0.015	<0.10
SB36-SV15	10/25/18	15		<0.10	<0.10	<0.10	<0.10	**1.51**	<0.10	0.054	<0.10
SB36-SV22	10/25/18	22		<0.10	<0.10	<0.10	<0.10	**1.51**	<0.10	0.054	<0.10
SB37-SV5	10/25/18	5	Commercial	1.44	<0.10	<0.10	0.968	0.111	0.072	**11.1**	<0.10
SB37-SV15	10/25/18	15		1.26	0.031	<0.10	0.739	0.221	0.073	**10.4**	<0.10
SB37-SV22	10/25/18	22		0.95	0.064	<0.10	0.542	0.176	0.07	**6.45**	<0.10
SB38-SV5	10/25/18	5	Residential	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.018	<0.10
SB38-SV15	10/25/18	15		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.258	<0.10
SB38-SV22	10/25/18	22		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.431	<0.10
SB39-SV5	10/25/18	5	Residential	<0.10	<0.10	<0.10	<0.10	0.069	<0.10	0.047	<0.10
SB39-SV15	10/25/18	15		<0.10	<0.10	<0.10	<0.10	0.055	<0.10	0.070	<0.10
SB39-SV22	10/25/18	22		<0.10	<0.10	<0.10	<0.10	0.096	<0.10	0.176	<0.10

Table 5. Summary of Fulcrum and Leighton Soil Vapor Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample Number	Date Sampled	Depth (feet bgs)	Zoning of Soil Vapor Probe Locations	1,1-Dichloroethane	1,1-Dichloroethene	Benzene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	vinyl chloride
Soil Gas Residential Future Building				**1.8**	**73**	**0.097**	**8.3**	**0.46**	**83**	**0.48**	**0.0095**
Soil Gas Commercial Future Building				**15.4**	**620**	**0.84**	**70**	**4**	**700**	**6**	**0.32**
Leighton											
LA-SB1-5'	08/18/18	5	Residential	0.996	0.022	0.083	0.030	0.444	<0.008	0.243	<0.008
LA-SB1-15'	08/18/18	15		**22.7***	1.06	0.076	1.27	0.367	0.033	**2.11**	<0.008
LA-SB3-5'	08/18/18	5	Residential	**9.36**	0.30	<0.008	7.26	0.179	0.457	**0.683**	**19.1***
LA-SB3-15'	08/18/18	15		**18.0**	2.27	**0.16**	**13.8**	**2.71**	0.505	**2.68**	**20.3***
LA-SB5-5'	08/18/18	5	Residential	0.012	<0.008	0.009	0.018	<0.008	<0.008	<0.008	<0.008
LA-SB5-15'	08/18/18	15		0.012	<0.008	<0.008	0.038	0.259	<0.008	0.098	<0.008
LA-SB6-5'	08/18/18	5	Residential	<0.008	<0.008	<0.008	0.028	0.038	<0.008	0.011	<0.008
LA-SB6-15'	08/18/18	15		<0.008	<0.008	<0.008	0.011	0.327	<0.008	0.093	<0.008
LA-SB7-5'	08/18/18	5	Commercial	3.62	0.281	0.070	2.41	0.217	0.401	**31.8***	<0.008
LA-SB7-5' REP	08/18/18	5		3.33	0.280	0.072	2.27	0.196	0.394	**27.8***	<0.008
LA-SB7-15'	08/18/18	15		7.73	0.948	0.060	<0.008	0.203	0.660	**30.0***	<0.008
LA-SB8-5'	08/18/18	5	Residential	0.027	<0.008	0.022	<0.008	0.188	<0.008	**1.82**	<0.008
LA-SB8-15'	08/18/18	15		0.253	0.018	<0.008	<0.008	**0.614**	0.02	**4.24**	<0.008

Notes:

* - value processed with D1-080818-HL01 per the laboratory report

< - not detected above the laboratory reporting limit

bgs - below ground surface

NA - Not Analyzed

ND - not detected

NE - Not established

NR - not reported

Only compounds reported above the laboratory reporting limit are shown

Results and screening levels are reported in micrograms per Liter (µg/L)

Result exceed the soil gas residential screening levels for future buildings

Result exceed the soil gas commercial screening levels for future buildings

Soil gas samples were analyzed for volatile organic compounds (VOCs) by USEPA Method 8260B

USEPA - United States Environmental Protection Agency

References:

Cal/EPA. 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air - Final. October.

Cal/EPA. 2015. Preliminary Endangerment Assessment Guidance Manual. October.

Cal/EPA. 2019. Human and Ecological Risk Office, Human Health Risk assessment, Note Number 3, Issue: DTSC-Modified Screening Levels. April.

USEPA. 2019. Regional Screening Levels Summary Table. April.

Table 6. Summary of TPH and PCB Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	TPH by USEPA Method 8015B (mg/kg)			PCBs by USEPA Method 8082 (µg/kg)			
			TPH - GRO	TPH - DRO	TPH - ORO	Aroclor-1248	Aroclor-1254	Aroclor-1260	Aroclor-1262
Soil Target Levels			**1,800**	**1,100**	**54,000**	**940**	**970**	**990**	**3,500**
Ramboll									
SB1-2	1/29/2019	2	< 0.49	< 5.2	< 5.2	< 50	< 50	< 50	< 50
SB2-2	1/22/2019	2	< 0.49	22 J	42	< 50	< 50	< 50	< 50
SB2-5	1/22/2019	5	--	900 J	1,900 J	< 49	< 49	< 49	< 49
SB3-2	1/29/2019	2	< 0.50	8.0 J	23 J	< 50	< 50	< 50	< 50
SB3-5	1/29/2019	5	--	< 5.2	--	--	580	--	--
SB4-0.5	1/24/2019	0.5	< 0.52	180 J	450 J	--	--	--	--
SB4-2	1/24/2019	2	--	--	--	110	92	< 50	< 50
SB4-5	1/24/2019	5	< 0.48	570 J	1,200 J	--	--	--	--
SB4-10	1/28/2019	10	--	< 5.0	--	--	--	--	--
SB5-0.5	1/22/2019	0.5	< 0.50	< 5.0	5.1 J	--	--	--	--
SB5-2	1/22/2019	2	--	--	--	< 49	< 49	< 49	< 49
SB5-5	1/22/2019	5	--	--	--	< 50	280	< 50	< 50
SB6-0.5	1/24/2019	0.5	< 0.48 UJ	81 J	200 J	--	--	--	--
SB7-2	1/24/2019	2	< 0.50 UJ	690 J	930 J	--	--	--	--
SB7-5	1/24/2019	5	-- UJ	34 J	--	--	--	--	--
SB8-2	1/24/2019	2	< 0.50	6.8 J	13 J	< 49	76	< 49	< 49
SB8-5	1/24/2019	5	--	< 5.1	--	< 50	< 50	< 50	< 50
SB9-0.5	1/22/2019	0.5	< 0.52	80 J	160 J	--	--	--	--
SB9-5	1/22/2019	5	< 0.49	320 J	360 J	--	--	--	--
SB10-0.5	1/22/2019	0.5	< 0.53	11 J	24 J	--	--	--	--
SB10-2	1/22/2019	2	--	--	--	< 50	< 50	< 50	< 50
SB11-2	1/22/2019	2	< 0.49 UJ	< 5.0	6.6 J	--	--	--	--
SB12-2	1/24/2019	2	< 0.50	150 J	480 J	< 50	640	< 50	< 50
SB12-5	1/24/2019	5	--	20 J	--	< 50	< 50	< 50	< 50
SB13-0.5	1/22/2019	0.5	< 0.51	830 J	1,200 J	--	--	--	--
SB13-2	1/22/2019	2	--	220 J	--	810	500	< 49	< 49
SB14-0.5	1/22/2019	0.5	< 0.50	230 J	340 J	760	630	550	< 50
SB14-2	1/22/2019	2	--	25 J	--	--	--	--	--
SB14-5	1/22/2019	5	--	12 J	27 J	< 49	< 49	< 49	< 49
SB15-2	1/22/2019	2	< 0.52	5.2 J	14 J	--	--	--	--
SB16-3	1/22/2019	3	< 0.52	830 J	1,100 J	< 5,000	**40,000**	< 5,000	< 5,000
SB16-5	1/22/2019	5	--	< 5.2	--	< 50	< 50	< 50	< 50
SB17-0.5	1/22/2019	0.5	< 0.50	< 5.0	< 5.0	--	--	--	--
SB18-2	1/22/2019	2	< 0.50	29 J	43 J	< 49	310	< 49	< 49
SB18-5	1/22/2019	5	--	11 J	34 J	< 50	< 50	< 50	< 50
SB19-2	1/23/2019	2	< 0.49	210 J	440 J	--	--	--	--
SB19-5	1/23/2019	5	< 0.52	92 J	160 J	--	--	--	--
SB20-2	1/23/2019	2	< 0.53	10 J	18 J	**1,400**	< 49	110	< 49
SB20-5	1/23/2019	5	--	--	--	**1,700**	< 49	140	< 49
SB21-2	1/23/2019	2	< 0.48	55 J	230 J	630	880	< 50	< 50
SB21-5	1/23/2019	5	--	< 5.2	--	200	330	< 49	< 49
SB22-0.5	1/23/2019	0.5	< 0.51	140 J	320 J	--	--	--	--
SB22-2	1/23/2019	2	--	7.5 J	--	170	280	< 49	< 49
SB22-4.5	1/23/2019	4.5	--	--	--	< 50	80	< 50	< 50
SB23-2	1/23/2019	2	< 0.50	14 J	29 J	< 50	160	< 50	< 50
SB23-5	1/23/2019	5	--	< 5.0	--	< 50	< 50	< 50	< 50
SB24-2	1/23/2019	2	< 0.53	630 J	1,600 J	370	800	340	< 49
SB24-4.5	1/23/2019	4.5	--	21 J	--	50	68	< 50	< 50
SB25-2	1/23/2019	2	< 0.50	82 J	160 J	< 50	< 50	< 50	< 50
SB25-5	1/23/2019	5	--	< 4.9	--	< 50	< 50	< 50	< 50
SB26-2	1/23/2019	2	< 0.51	6.6 J	12 J	140	150	< 49	< 49
DUP3	1/23/2019	2	< 0.51	< 5.0	< 5.0	< 50	< 50	< 50	< 50
SB27-2	1/23/2019	2	< 0.51	< 5.0	< 5.0	< 50	< 50	< 50	< 50
SB27-5	1/23/2019	5	--	6.2 J	--	--	--	--	--
SB28-2	1/23/2019	2	< 0.51	29 J	55 J	--	--	--	--
SB29-2	1/24/2019	2	< 0.50	< 5.0	< 5.0	--	--	--	--
SB30-0.5	1/23/2019	0.5	--	--	--	< 50	< 50	< 50	< 50
SB30-2	1/23/2019	2	< 0.51	< 5.0	9.1 J	< 50	< 50	< 50	< 50
SB31-6	3/4/2019	6	--	--	--	< 50	< 50	< 50	< 50
SB32-6	3/4/2019	6	--	--	--	320	< 50	< 50	< 50
SB32-7	3/4/2019	7	--	--	--	< 50	< 50	< 50	< 50
SB33-6	3/4/2019	6	--	610 J	--	--	--	--	--
SB33-7	3/4/2019	7	--	150 J	--	--	--	--	--
SB33-8	3/4/2019	8	--	36 J	--	--	--	--	--
SB34-12	3/11/2019	12	--	--	< 25	--	--	--	--
SB35-6	3/5/2019	6	--	< 5.0	--	--	--	--	--
SB37-3	3/5/2019	3	--	370 J	--	< 50	< 50	< 50	< 50
SB37-4	3/5/2019	4	--	7.8 J	--	--	--	--	--
SB39-3	3/4/2019	3	--	--	--	160	700	200	< 50
SB39-5	3/4/2019	5	--	--	--	< 50	< 50	< 50	< 50
SB40-3	3/4/2019	3	--	--	--	< 50	< 50	< 50	< 50
SB41-3	3/4/2019	3	--	--	--	**8,800**	**7,300**	**3,800**	< 50
SB41-5	3/4/2019	5	--	--	--	< 50	< 50	< 50	< 50
SB42-3	3/4/2019	3	--	--	--	210	960	< 50	< 50

Table 6. Summary of TPH and PCB Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	TPH by USEPA Method 8015B (mg/kg)			PCBs by USEPA Method 8082 (µg/kg)			
			TPH - GRO	TPH - DRO	TPH - ORO	Aroclor-1248	Aroclor-1254	Aroclor-1260	Aroclor-1262
Soil Target Levels			**1,800**	**1,100**	**54,000**	**940**	**970**	**990**	**3,500**
SB42-5	3/4/2019	5	--	--	--	< 50	< 50	< 50	< 50
SB44-6	3/4/2019	6	--	--	--	< 50	< 50	< 50	< 50
SB45-3	3/4/2019	3	--	--	--	< 50	< 50	< 50	< 50
SB46-3	3/11/2019	3	--	--	--	< 50	< 50	< 50	< 50
SB48-6	3/4/2019	6	--	--	--	< 50	< 50	< 50	< 50
SB49-3	3/4/2019	3	--	--	--	< 50	57 J	< 50	< 50
SB50-11	3/11/2019	11	--	< 5.0	--	< 50	< 50	< 50	< 50
SB52-1	3/4/2019	1	--	--	--	**22,000**	**11,000**	< 50	< 50
SB52-3	3/4/2019	3	--	--	--	< 50	< 50	< 50	< 50
Fulcrum									
SB1-10	10/31/17	10	< 0.5	< 10	< 50	--	--	--	--
SB2-10	10/31/17	10	< 0.5	< 10	< 50	--	--	--	--
SB3-3	10/31/17	3	--	--	--	< 33	< 33	< 33	NR
SB4-3	10/31/17	3	--	--	--	< 33	< 33	< 33	NR
SB5-3	10/31/17	3	--	--	--	< 33	< 33	< 33	NR
SB6-3	10/31/17	3	< 0.5	< 10	< 50	--	--	--	--
SB7-3	10/31/17	3	--	--	--	< 33	< 33	< 33	NR
SB8-3	10/31/17	3	--	--	--	< 33	< 33	< 33	NR
SB9-3	10/31/17	3	< 0.5	< 10	< 50	--	--	--	--
SB10-3	10/31/17	3	< 0.5	380	2,650	--	--	--	--
SB10-5	10/31/17	5	< 0.5	< 10	< 50	--	--	--	--
SB10-10	10/31/17	10	< 0.5	< 10	2,980	--	--	--	--
SB11-3	10/31/17	3	< 0.5	< 10	< 50	--	--	--	--
SB12-10	10/31/17	10	< 0.5	< 10	< 50	--	--	--	--
SB13-10	10/31/17	10	< 0.5	< 10	< 50	--	--	--	--
SB14-3	10/31/17	3	< 0.5	< 10	< 50	--	--	--	--
SB15-3	10/31/17	3	< 0.5	< 10	120	--	--	--	--
SB16-3	10/31/17	3	< 0.5	< 10	< 50	--	--	--	--
SB17-20	10/31/17	20	< 0.5	< 10	< 50	--	--	--	--
SB18-15	10/31/17	15	< 0.5	< 10	< 50	--	--	--	--
SB19-15	10/31/17	15	< 0.5	< 10	< 50	--	--	--	--
SB20-15	10/31/17	15	< 0.5	< 10	< 50	--	--	--	--
SB21-15	10/31/17	15	< 0.5	< 10	< 50	--	--	--	--
SB22-3	10/31/17	3	--	--	--	< 33.0	**16,000**	< 33.0	< 33.0
SB23-3	10/31/17	3	--	--	--	< 33.0	36.4	< 33.0	< 33.0
SB24-3	10/31/17	3	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB25-20	10/31/17	20	< 0.5	< 10	< 50	--	--	--	--
SB26-1	10/24/18	1	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB26-2	10/24/18	2	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB26-5	10/24/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB27-1	10/24/18	1	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB27-2	10/24/18	2	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB27-5	10/24/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB28-1	10/24/18	1	--	< 10	378	57.4	< 33.0	< 33.0	NR
SB28-2	10/24/18	2	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB28-5	10/24/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB29-1	10/24/18	1	--	< 10	2,160	< 33.0	< 33.0	< 33.0	NR
SB29-2	10/24/18	2	--	< 10	75	< 33.0	< 33.0	< 33.0	NR
SB29-5	10/24/18	5	--	--	--	27.5	< 33.0	27.0	NR
SB30-1	10/24/18	1	--	< 10	86.9	< 33.0	< 33.0	66.6	NR
SB30-2	10/24/18	2	--	< 10	148	125	< 33.0	< 33.0	NR
SB30-5	10/24/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB31-1	10/24/18	1	--	< 10	6,110	**5,930**	< 33.0	< 33.0	NR
SB31-2	10/24/18	2	--	< 10	613	< 33.0	< 33.0	< 33.0	NR
SB31-5	10/24/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB32-1	10/24/18	1	--	< 10	164	< 33.0	40.0	< 33.0	NR
SB32-2.5	10/24/18	2.5	--	< 10	1,030	< 33.0	41.7	< 33.0	NR
SB32-5	10/24/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB33-1	10/24/18	1	--	< 10	1,190	< 33.0	289	< 33.0	NR
SB33-2	10/24/18	2	--	< 10	196	< 33.0	< 33.0	< 33.0	NR
SB33-5	10/24/18	5	--	--	--	**4,530**	< 33.0	< 33.0	NR
SB34-1	10/25/18	1	--	< 10	239	< 33.0	< 33.0	< 33.0	NR
SB34-2	10/25/18	2	--	< 10	411	233	< 33.0	< 33.0	NR
SB34-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB35-1	10/25/18	1	--	< 10	51	< 33.0	< 33.0	< 33.0	NR
SB35-2	10/25/18	2	--	< 10	424	< 33.0	222	< 33.0	NR
SB35-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB36-1	10/25/18	1	--	< 10	< 50	< 33.0	273	< 33.0	NR
SB36-2	10/25/18	2	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB36-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB37-1	10/25/18	1	--	< 10	100	< 33.0	255	< 33.0	NR
SB37-2	10/25/18	2	--	< 10	560	< 33.0	128	< 33.0	NR
SB37-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB38-1	10/25/18	1	--	< 10	188	< 33.0	< 33.0	< 33.0	NR
SB38-2	10/25/18	2	--	< 10	202	< 33.0	< 33.0	< 33.0	NR

Table 6. Summary of TPH and PCB Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	TPH by USEPA Method 8015B (mg/kg)			PCBs by USEPA Method 8082 (µg/kg)			
			TPH - GRO	TPH - DRO	TPH - ORO	Aroclor-1248	Aroclor-1254	Aroclor-1260	Aroclor-1262
Soil Target Levels			**1,800**	**1,100**	**54,000**	**940**	**970**	**990**	**3,500**
SB38-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB39-1	10/25/18	1	--	< 10	2,890	**17,700**	< 33.0	< 33.0	NR
SB39-2	10/25/18	2	--	< 10	< 50	193	< 33.0	< 33.0	NR
SB39-5	10/25/18	5	--	--	--	434	< 33.0	< 33.0	NR
SB40-1	10/25/18	1	--	< 10	148	< 33.0	< 33.0	< 33.0	NR
SB40-2	10/25/18	2	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB40-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB41-1	10/25/18	1	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB41-2	10/25/18	2	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB41-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB42-1	10/25/18	1	--	< 10	754	< 33.0	824	< 33.0	NR
SB42-2	10/25/18	2	--	< 10	152	< 33.0	143	< 33.0	NR
SB42-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB43-1	10/25/18	1	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB43-2	10/25/18	2	--	< 10	< 50	< 33.0	117	< 33.0	NR
SB43-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB44-1	10/25/18	1	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB44-2	10/25/18	2	--	< 10	< 50	< 33.0	< 33.0	< 33.0	NR
SB44-5	10/25/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
SB45-1	10/30/18	1	--	284	497	< 33.0	< 33.0	< 33.0	NR
SB45-2	10/30/18	2	--	< 10	356	< 33.0	< 33.0	< 33.0	NR
SB45-5	10/30/18	5	--	--	--	< 33.0	< 33.0	< 33.0	NR
Leighton									
LA-SB1-1	8/7/2018	1	< 1	630	--	< 16	< 16	< 16	160
LA-SB1-2.5	8/7/2018	2.5	< 1	430	--	< 160	920	< 160	< 160
LA-SB1-5	8/7/2018	5	< 0.97	< 10	--	< 16	< 16	< 16	< 16
LA-SB1-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB1-15	8/7/2018	15	< 0.85	< 10	--	< 16	< 16	< 16	< 16
LA-SB2-1	8/7/2018	1	< 1	440	--	< 16	160	< 16	< 16
LA-SB2-2.5	8/7/2018	2.5	< 1	110	--	< 16	< 16	< 16	< 16
LA-SB2-5	8/7/2018	5	< 0.88	< 10	--	< 16	< 16	< 16	< 16
LA-SB2-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB3-1	8/7/2018	1	< 1	750	--	< 400	**1,400**	< 400	< 400
LA-SB3-2.5	8/7/2018	2.5	< 0.92	< 10	--	< 16	< 16	< 16	< 16
LA-SB3-5	8/7/2018	5	< 0.82	< 10	--	< 16	< 16	< 16	< 16
LA-SB3-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB3-15	8/7/2018	15	< 0.99	< 10	--	< 16	< 16	< 16	< 16
LA-SB3-20	8/7/2018	20	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB3-25	8/7/2018	25	< 0.84	< 10	--	< 16	< 16	< 16	< 16
LA-SB3-30	8/7/2018	30	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB4-1	8/7/2018	1	< 1	100	--	< 16	40	< 16	< 16
LA-SB4-2.5	8/7/2018	2.5	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB4-5	8/7/2018	5	< 0.92	110	--	< 16	< 16	< 16	< 16
LA-SB4-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB5-1	8/7/2018	1	< 1	**2,500**	--	< 800	**1,200**	< 800	< 800
LA-SB5-2.5	8/7/2018	2.5	< 1	110	--	< 16	< 16	< 16	< 16
LA-SB5-5	8/7/2018	5	< 0.8	98	--	< 16	< 16	< 16	< 16
LA-SB5-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB5-15	8/7/2018	15	< 0.99	< 10	--	< 16	< 16	< 16	< 16
LA-SB105-15 (1)	8/7/2018	15	< 0.83	< 10	--	< 16	< 16	< 16	< 16
LA-SB6-1	8/7/2018	1	< 1	93	--	< 16	< 16	< 16	< 16
LA-SB6-2.5	8/7/2018	2.5	< 1	89	--	< 16	< 16	< 16	< 16
LA-SB6-5	8/7/2018	5	< 0.93	240	--	< 16	< 16	< 16	< 16
LA-SB6-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB6-15	8/7/2018	15	< 0.85	< 10	--	< 16	< 16	< 16	< 16
LA-SB7-1	8/7/2018	1	< 1	**4,100**	--	< 320	**1,600**	< 320	< 320
LA-SB7-2.5	8/7/2018	2.5	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB7-5	8/7/2018	5	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB7-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB7-15	8/7/2018	15	< 0.89	< 10	--	< 16	< 16	< 16	< 16
LA-SB7-20	8/7/2018	20	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB7-25	8/7/2018	25	< 0.86	< 10	--	< 16	< 16	< 16	< 16
LA-SB107-25 (1)	8/7/2018	25	< 0.82	< 10	--	< 16	< 16	< 16	< 16
LA-SB8-1	8/7/2018	1	< 1	300	--	< 80	< 80	< 80	< 80
LA-SB8-2.5	8/7/2018	2.5	< 1	< 10	--	< 160	790	< 160	< 160
LA-SB8-5	8/7/2018	5	< 1.1	< 10	--	< 16	< 16	< 16	< 16
LA-SB108-5 (1)	8/7/2018	5	< 1.2	30	--	< 16	< 16	< 16	< 16
LA-SB8-10	8/7/2018	10	< 1	< 10	--	< 16	< 16	< 16	< 16
LA-SB8-15	8/7/2018	15	< 0.98	< 10	--	< 16	41	< 16	< 16

Table 6. Summary of TPH and PCB Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	TPH by USEPA Method 8015B (mg/kg)			PCBs by USEPA Method 8082 (µg/kg)			
			TPH - GRO	TPH - DRO	TPH - ORO	Aroclor-1248	Aroclor-1254	Aroclor-1260	Aroclor-1262
Soil Target Levels			**1,800**	**1,100**	**54,000**	**940**	**970**	**990**	**3,500**
LA-SB9-1	8/7/2018	1	< 1	**3,100**	--	< 320	**1,500**	< 320	< 320
LA-SB9-2.5	8/7/2018	2.5	< 1	**1,100**	--	< 16	< 16	< 16	< 16
LA-SB9-5	8/7/2018	5	< 1.1	440	--	< 16	110	< 16	< 16
LA-SB9-10	8/7/2018	10	< 1	**1,100**	--	< 800	**3,000**	< 800	< 800
LA-SB10-1	8/7/2018	1	< 1	310	--	< 160	490	< 160	< 160
LA-SB10-2.5	8/7/2018	2.5	< 1	110	--	**12,000**	< 1,600	< 1,600	< 1,600
LA-SB10-5	8/7/2018	5	< 0.96	50	--	< 16	66	< 16	< 16
LA-SB10-10	8/7/2018	10	< 1	20	--	< 16	24	< 16	< 16

Notes:
(1) - duplicate sample reported below its primary sample
DRO - diesel range organics
DTSC - Toxic Substances Control Department
ft bgs - feet below ground surface
GRO - gasoline range organics
ID - identification
J - Results are estimated
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
NE - not established
NR - not reported
ORO - oil range organics
PCBs - Polychlorinated biphenyls
R - results unusable
TPH - total petroleum hydrocarbons
UJ - Reporting limits estimated
USEPA - United States Environmental Protection Agency
See table 10 and appendix A for additional details regarding the site specific soil target levels.
<X - concentration was not detected above laboratory reporting limit
-- - not analyzed
Duplicate sample is listed immediately below its respective primary sample result
Commercial zoning in italics
Result exceeds the site specific soil target levels.
Result exceed the USEPA/DTSC screening levels for commercial/industrial soil
Result exceed the USEPA/DTSC screening levels for residential soil

Table 7: Summary of Metal Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Title 22 Metals by USEPA Method 6010/7471A and Chromium VI by USEPA Method 7199/3060A (mg/kg)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Target Levels			**140**	**12**	**17,000**	**30**	**33**	**21,000**	**3.9**	**68**	**3,500**	**4.4**	**1,800**	**780**	**1,700**	**1,800**	**12**	**390**	**110,000**
Ramboll																			
SB1-2	1/29/2019	2	< 0.754	< 0.754	109	0.515	< 0.503	8.16	--	4.63	7.27	< 0.0833	< 0.251	6.95	< 0.754	< 0.251	< 0.754	15.2	28.2
SB1-5	1/29/2019	5	< 0.739	< 0.739	233	0.96	< 0.493	18.1	--	11.6	17.8	< 0.0877	< 0.246	15.5	< 0.739	< 0.246	< 0.739	37.9	48.8
SB2-2	1/22/2019	2	< 0.746	5.83	132	0.648	< 0.498	19.9	--	9.08	23.1	< 0.0820	< 0.249	17.6	< 0.746	< 0.249	< 0.746 UJ	29.4	60.2
SB2-5	1/22/2019	5	< 0.750	< 0.750	145	0.611	< 0.500	14.4	--	11.5	13.4	< 0.0877	< 0.250	19.2	< 0.750	< 0.250	< 0.750 UJ	30.0	27.7
SB3-2	1/29/2019	2	< 0.732	< 0.732	73.4	0.3	< 0.488	6.75	--	5.45	7.06	0.503	< 0.244	6.76	< 0.732	< 0.244	< 0.732	14.3	30.7
SB3-5	1/29/2019	5	< 0.750	< 0.750	174	0.902	< 0.500	15.6	--	8.36	16.5	< 0.0820	< 0.250	14.4	< 0.750	< 0.250	< 0.750	21.5	48.6
SB4-2	1/24/2019	2	< 0.758	3.49	165	0.739	1.97	27.2	--	10.8	80.6	< 0.0794	1.07	27.5	< 0.758	< 0.253	< 0.758	30.5	248
SB4-5	1/24/2019	5	< 0.746	< 0.746	154	0.793	< 0.498	17.3	--	9.06	16.7	< 0.0877	< 0.249	14.7	< 0.746	< 0.249	< 0.746	29.8	50.0
SB5-2	1/22/2019	2	< 0.754	0.865	83.5	0.324	< 0.503	8.25	--	4.64	10.5	< 0.0833	< 0.251	10.9	< 0.754	< 0.251	< 0.754 UJ	15.9	30.5
SB5-5	1/22/2019	5	< 0.732	< 0.732	162	0.776	< 0.488	18.3	--	8.08	19.4	< 0.0862	< 0.244	13.7	< 0.732	< 0.244	< 0.732 UJ	26.2	56.4
SB6-2	1/24/2019	2	< 0.725	< 0.725	105	0.605	< 0.483	19.3	--	7.54	12.3	< 0.0806	< 0.242	13.0	< 0.725	< 0.242	< 0.725	20.3	41.1
SB6-5	1/24/2019	5	< 0.761	< 0.761	90.5	0.756	< 0.508	16.7	--	5.53	15.2	< 0.0794	< 0.254	11.6	< 0.761	< 0.254	< 0.761	31.5	37.0
SB7-0.5	1/24/2019	0.5	< 0.735	< 0.735	142	0.676	8.70	55.4	--	9.81	353	0.524	4.95	149	< 0.735	0.265	< 0.735	26.4	377
SB7-2	1/24/2019	2	--	--	--	--	--	--	1.8	--	--	--	--	--	--	--	--	--	--
SB7-5	1/24/2019	5	< 0.743	2.86	242	0.801	0.846	20.9	0.70	13.9	31.7	< 0.0862	0.814	22.1	< 0.743	< 0.248	< 0.743	29.2	77.2
SB8-0.5	1/24/2019	0.5	< 0.761	2.67	119	0.669	0.655	23.3	--	9.57	79.0	< 0.0862	1.15	36.1	< 0.761	< 0.254	< 0.761	30.0	119
SB8-2	1/24/2019	2	--	--	--	--	--	--	< 0.40	--	--	--	--	--	--	--	--	--	--
SB8-5	1/24/2019	5	< 0.750	< 0.750	308	0.842	< 0.500	17.9	< 0.40	8.31	16.4	< 0.0794	< 0.250	13.1	< 0.750	< 0.250	< 0.750	28.5	45.3
SB9-2	1/22/2019	2	< 0.718	< 0.718	104	0.67	< 0.478	12.7	--	9.59	12.3	< 0.0794	< 0.239	10.8	< 0.718	< 0.239	< 0.718 UJ	25.7	37.0
SB9-5	1/22/2019	5	< 0.732	6.54	201	0.99	11.4	110	--	18.5	733	0.452	8.27	322	< 0.732	0.370	< 0.732	54.5	390
SB10-2	1/22/2019	2	< 0.769	< 0.769	118	0.599	< 0.513	13	--	6.91	8.71	< 0.0862	< 0.256	9.46	< 0.769	< 0.256	< 0.769 UJ	22.4	36.0
SB10-5	1/22/2019	5	< 0.758	< 0.758	78	0.396	< 0.505	10.2	--	6.18	8.88	< 0.0862	< 0.253	6.88	< 0.758	< 0.253	< 0.758 UJ	18.2	29.3
SB11-2	1/22/2019	2	< 0.769	< 0.769	176	0.554	< 0.513	11.3	--	5.39	8.19	< 0.0794	< 0.256	7.58	< 0.769	< 0.256	< 0.769 UJ	21.1	30.6
SB11-5	1/22/2019	5	< 0.765	1.92	107	0.637	0.7	19.9	--	7.74	54.6	0.127	< 0.255	20.3	< 0.765	< 0.255	< 0.765 UJ	27.6	136
SB12-2	1/24/2019	2	< 0.777	3.98	147	0.709	2.07	25.2	0.9 J	9.95	71.4	< 0.0806	0.622	19.1	< 0.777	< 0.259	< 0.777	32.7	106
SB12-5	1/24/2019	5	< 0.750	2.42	171	0.726	< 0.500	14.7	< 0.40	7.68	14.7	< 0.0806	< 0.250	10.4	< 0.750	< 0.250	< 0.750	27.4	43.2
SB13-2	1/22/2019	2	< 0.758	2.85	151	0.678	3.3	41.4	--	9.96	253	0.0930	1.79	60.0	< 0.758	< 0.253	< 0.758 UJ	31.2	268
SB13-5	1/22/2019	5	< 0.732	< 0.732	191	0.941	< 0.488	18	--	10.7	19.4	< 0.0862	< 0.244	14.0	< 0.732	< 0.244	< 0.732 UJ	32.9	54.7
DUP1	1/22/2019	5	< 0.765	< 0.765	174	0.903	< 0.510	18	--	8.72	18.9	< 0.0862	< 0.255	13.8	< 0.765	< 0.255	< 0.765 UJ	30.1	53.7
SB14-2	1/22/2019	2	< 0.735	< 0.735	145	0.835	< 0.490	19.1	--	7.94	20.2	< 0.0862	< 0.245	12.7	< 0.735	< 0.245	< 0.735 UJ	28.6	56.3

Table 7: Summary of Metal Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Title 22 Metals by USEPA Method 6010/7471A and Chromium VI by USEPA Method 7199/3060A (mg/kg)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Target Levels			**140**	**12**	**17,000**	**30**	**33**	**21,000**	**3.9**	**68**	**3,500**	**4.4**	**1,800**	**780**	**1,700**	**1,800**	**12**	**390**	**110,000**
SB14-5	1/22/2019	5	< 0.728	< 0.728	177	0.899	< 0.485	19.3	--	8.43	19.9	< 0.0862	< 0.243	14.7	< 0.728	< 0.243	< 0.728 UJ	30.0	60.9
SB15-2	1/22/2019	2	< 0.785	< 0.785	107	0.582	< 0.524	14.4	--	5.75	8.37	< 0.0833	< 0.262	8.73	< 0.785	< 0.262	< 0.785	19.3	36.5
SB15-5	1/22/2019	5	< 0.758	1.11	127	0.493	1.06	26.8	--	7.28	27.5	< 0.0877	1.10	19.0	< 0.758	< 0.253	< 0.758	24.2	105
SB16-3	1/22/2019	3	< 0.714	10.3	179	1.1	17.3	195	--	11.7	**4,000**	1.89	20.3	244	< 0.714	3.75	< 0.714	27.7	3110
SB16-5	1/22/2019	5	< 0.746	< 0.746	135	0.84	< 0.498	17.1	--	7.36	16.8	< 0.0833	< 0.249	12.9	< 0.746	< 0.249	< 0.746	24.8	52.1
DUP2	1/22/2019	5	< 0.765	< 0.765	100	0.698	< 0.510	13.3	--	6.13	14.2	< 0.0806	< 0.255	11.1	< 0.765	< 0.255	< 0.765	18.5	42.3
SB17-2	1/22/2019	2	< 0.743	< 0.743	123	0.673	< 0.495	14.8	--	7.77	14.5	< 0.0820	< 0.248	11.3	< 0.743	< 0.248	< 0.743	25.8	48.4
SB17-5	1/22/2019	5	< 0.746	8.26	179	0.808	3.62	85.8	--	12.9	88.4	< 0.0862	11.1	47.9	< 0.746	< 0.249	< 0.746	29.6	175
SB18-2	1/22/2019	2	< 0.785	3.63	99.9	0.494	0.706	17.7	--	6.86	69.7	< 0.0833	0.856	16.3	< 0.785	< 0.262	< 0.785	24.6	91.1
SB18-5	1/22/2019	5	< 0.777	< 0.777	124	0.499	< 0.518	12.7	--	7.43	16.1	< 0.0820	< 0.259	11.2	< 0.777	< 0.259	< 0.777	26.8	50.2
SB19-2	1/23/2019	2	< 0.721	< 0.721	143	0.657	0.871	21.1	--	8.07	136	0.272	< 0.240	17.2	< 0.721	< 0.240	< 0.721	29.2	141
SB19-5	1/23/2019	5	< 0.714	< 0.714	132	0.780	1.04	20.7	--	7.43	23.2	< 0.0833	< 0.238	15.5	< 0.714	< 0.238	< 0.714	39.1	77.6
SB20-2	1/23/2019	2	61.7	1.78	160	0.909	8.94	21.8	--	8.02	49.7	0.170	1.21	19.2	< 0.773	< 0.258	< 0.773	29.2	177
SB20-5	1/23/2019	5	< 0.761	< 0.761	92.8	0.654	4.92	19.6	--	8.68	91.2	< 0.0820	0.796	19.2	< 0.761	< 0.254	< 0.761	27.9	79.8
SB21-0.5	1/23/2019	0.5	< 0.750	< 0.750	128	0.569	1.46	17.2	--	9.85	24.3	0.268	0.488	15.9	< 0.750	< 0.250	< 0.750	24.2	53.4
SB21-2	1/23/2019	2	--	--	--	--	--	--	0.51	--	--	--	--	--	--	--	--	--	--
SB21-5	1/23/2019	5	< 0.769	< 0.769	123	1.04	1.07	28.5	0.67 J	8.07	42.7	< 0.0833	< 0.256	18.2	< 0.769	< 0.256	< 0.769	32.8	80.9
SB22-2	1/23/2019	2	< 0.773	< 0.773	129	0.789	0.891	19.1	< 0.40	8.32	34.3	< 0.0877	< 0.258	15.6	< 0.773	< 0.258	< 0.773	23.4	79.7
SB22-4.5	1/23/2019	4.5	< 0.769	< 0.769	209	1.05	< 0.513	70.9	--	10.5	30.3	< 0.0862	0.479	41.8	< 0.769	< 0.256	< 0.769	36.9	73.9
SB23-2	1/23/2019	2	< 0.758	**19.5**	183	0.786	2.15	32.6	1.3 J	11.8	894	< 0.0833	0.827	32.3	< 0.758	< 0.253	< 0.758	38.1	289
SB23-5	1/23/2019	5	< 0.743	1.55	203	0.839	0.556	17.8	0.41 J	20.4	17.8	< 0.0820	0.299	20.6	< 0.743	< 0.248	< 0.743	35.2	52.1
SB24-2	1/23/2019	2	2.32	9.58	233	0.623	3.82	56.5	0.96	10.3	779	0.348	10.5	97.4	< 0.761	6.04	< 0.761	30.7	400
SB24-4.5	1/23/2019	4.5	< 0.714	< 0.714	162	0.888	0.927	33.3	0.46	7.95	142	< 0.0847	1.24	24.9	< 0.714	< 0.238	< 0.714	29.0	169
SB25-2	1/23/2019	2	< 0.714	< 0.714	159	0.796	< 0.476	24.3	--	7.17	69.7	< 0.0794	0.443	20.1	< 0.714	< 0.238	< 0.714	26.2	86.6
SB25-5	1/23/2019	5	< 0.785	*< 0.785*	95.9	0.514	< 0.524	12.0	--	13.1	16.1	< 0.0806	0.553	14.0	< 0.785	< 0.262	< 0.785	20.6	41.2
SB26-2	1/23/2019	2	< 0.769	< 0.769	124	0.692	1.25	24.5	--	7.33	46.9	< 0.0806	4.15	21.2	< 0.769	< 0.256	< 0.769	26.2	76.0
DUP3	1/23/2019	2	< 0.743	< 0.743	146	0.780	< 0.495	17.9	--	7.08	16.5	< 0.0820	< 0.248	12.9	< 0.743	< 0.248	< 0.743	26.9	45.5
SB26-5	1/23/2019	5	< 0.718	0.826	140	0.814	0.632	19.4	--	11.9	20.3	< 0.0877	< 0.239	18.6	< 0.718	< 0.239	< 0.718	35.0	55.9
SB27-0.5	1/23/2019	0.5	< 0.728	< 0.728	147	0.692	3.95	46.3	--	11.6	138	< 0.0862	3.69	39.4	< 0.728	< 0.243	< 0.728	30.7	389
SB27-5	1/23/2019	5	< 0.765	**12.2**	527	0.931	1.04	18.7	--	32.7	24.3	< 0.0862	0.851	20.9	< 0.765	< 0.255	< 0.765	40.6	70.3
SB28-2	1/23/2019	2	< 0.781	< 0.781	137	0.662	14.3	19.1	--	8.39	51.3	< 0.0877	< 0.260	16.3	< 0.781	< 0.260	< 0.781	30.4	89.9

Table 7: Summary of Metal Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Title 22 Metals by USEPA Method 6010/7471A and Chromium VI by USEPA Method 7199/3060A (mg/kg)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Target Levels			**140**	**12**	**17,000**	**30**	**33**	**21,000**	**3.9**	**68**	**3,500**	**4.4**	**1,800**	**780**	**1,700**	**1,800**	**12**	**390**	**110,000**
SB28-5	1/23/2019	5	< 0.754	< 0.754	118	0.855	< 0.503	19.5	--	8.47	17.5	< 0.0794	< 0.251	15.2	< 0.754	< 0.251	< 0.754	40.6	48.0
SB29-2	1/24/2019	2	< 0.765	< 0.765	177	0.772	< 0.510	13.6	--	9.07	14.8	< 0.0877	< 0.255	12.7	< 0.765	< 0.255	< 0.765	20.0	37.3
SB29-5	1/24/2019	5	< 0.761	< 0.761	88.2	0.765	< 0.508	17.5	--	10.0	18.7	< 0.0847	< 0.254	15.3	< 0.761	< 0.254	< 0.761	31.0	51.8
SB30-2	1/23/2019	2	< 0.746	< 0.746	182	0.671	< 0.498	15.0	--	8.24	14.9	< 0.0833	< 0.249	13.1	< 0.746	< 0.249	< 0.746	25.3	38.6
SB30-5	1/23/2019	5	< 0.721	< 0.721	155	0.671	< 0.481	20.5	--	8.98	17.3	< 0.0794	< 0.240	15.0	< 0.721	< 0.240	< 0.721	27.5	62.8
SB32-6	3/4/2019	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB35-6	3/5/2019	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB36-6	3/5/2019	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB38-6	3/5/2019	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB43-6	3/5/2019	6	--	--	--	--	--	--	<0.4	--	--	--	--	--	--	--	--	--	--
SB46-3	3/11/2019	3	--	--	--	--	--	--	--	7.75	--	--	--	--	--	--	--	--	--
SB47-4	3/4/2019	4	--	--	--	--	--	--	0.65 J	6.79	--	--	--	--	--	--	--	--	--
SB47-5	3/4/2019	5	--	--	--	--	--	--	<0.4	--	--	--	--	--	--	--	--	--	--
SB48-6	3/4/2019	6	--	--	--	--	--	--	<0.4 UJ	--	--	--	--	--	--	--	--	--	--
SB50-11	3/11/2019	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB51-2	3/4/2019	2	<0.743	3.98	144	0.747	**36.3**	49.4	--	11.3	2,020	0.375	17.1	390	<0.743	1.22	0.794	16.4	468
SB51-4	3/4/2019	4	--	--	--	--	--	--	--	10.2	--	--	--	--	--	--	<0.746	--	--
SB56-2	3/5/2019	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB56-10	3/5/2019	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB57-2	3/5/2019	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB57-10	3/5/2019	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB58-2	3/5/2019	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB58-10	3/5/2019	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fulcrum																			
SB1-10	10/31/2017	10	<0.5	1.17	54.7	<0.5	0.666	11.4	--	6.57	12	<0.05	<0.5	7.07	<0.5	<0.5	<0.5	30.6	34.8
SB2-10	10/31/2017	10	<0.5	1.09	56.4	<0.5	0.698	11.8	--	8.48	13.5	<0.05	<0.5	8.88	<0.5	<0.5	<0.5	30.4	36.7
SB3-3	10/31/2017	3	<0.5	0.722	102	0.502	0.849	14.8	--	7.29	13.5	<0.05	<0.5	10.5	<0.5	<0.5	<0.5	22.4	87.8
SB4-3	10/31/2017	3	<0.5	0.942	146	<0.5	0.731	11	--	8.77	16.5	<0.05	<0.5	15.9	<0.5	<0.5	<0.5	23.6	41.3
SB5-3	10/31/2017	3	<0.5	1.38	157	0.589	1.04	20	--	8.41	18.7	<0.05	<0.5	12.3	<0.5	<0.5	<0.5	35.2	57.6
SB7-3	10/31/2017	3	<0.5	1.45	141	<0.5	1.5	23.4	--	7.69	18.7	0.0765	4.81	13.7	<0.5	<0.5	<0.5	28.8	47.7
SB8-3	10/31/2017	3	<0.5	0.558	156	0.593	0.971	20	--	8.2	17.4	<0.05	<0.5	12.2	<0.5	<0.5	<0.5	34.3	48.8
SB12-10	10/31/2017	10	<0.5	0.86	47.8	<0.5	0.677	14.9	--	6.26	12.5	<0.05	<0.5	8.61	<0.5	<0.5	<0.5	33.1	38.5
SB13-10	10/31/2017	10	<0.5	0.781	38	<0.5	0.502	11.6	--	5.87	8.05	<0.05	<0.5	6.72	<0.5	<0.5	<0.5	26.6	29.1
SB22-3	10/31/2017	3	3.72	3.26	187	0.701	**37.3**	653	1.5	18	962	0.575	16.2	**799**	<0.5	<0.5	<0.5	56	785
SB22-5	10/31/2017	5	<0.5	0.964	74.3	0.686	1.04	25.5	<0.5	6.68	23.4	<0.05	0.542	16	<0.5	<0.5	<0.5	28.5	66.6

Table 7: Summary of Metal Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Title 22 Metals by USEPA Method 6010/7471A and Chromium VI by USEPA Method 7199/3060A (mg/kg)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Target Levels			**140**	**12**	**17,000**	**30**	**33**	**21,000**	**3.9**	**68**	**3,500**	**4.4**	**1,800**	**780**	**1,700**	**1,800**	**12**	**390**	**110,000**
SB22-10	10/31/2017	10	0.578	2.13	90.1	<0.5	0.999	15	<0.5	13	14.6	0.893	<0.5	9.49	<0.5	<0.5	<0.5	31	37.6
SB23-3	10/31/2017	3	<0.5	4.87	309	0.55	1.92	24.7	--	25.5	29	0.898	<0.5	25.2	<0.5	<0.5	<0.5	41.6	60.4
SB24-3	10/31/2017	3	<0.5	2.77	485	0.519	1.59	17.5	--	17.3	16	<0.05	0.724	12.4	<0.5	<0.5	<0.5	32.1	55.3
SB26-1	10/24/2018	1	<0.5	0.533	94.8	0.659	1.26	20.4	--	6.6	17.2	<0.5	<0.5	12.4	<0.5	<0.5	<0.5	38.5	51.5
SB26-2.5	10/24/2018	2.5	<0.5	1.21	146	0.633	1.18	19.5	--	13.6	32.2	<0.5	<0.5	13.4	<0.5	<0.5	<0.5	36.6	50.2
SB26-5	10/24/2018	5	--	--	--	--	--	19.9	--	--	13.6	--	--	--	--	--	--	--	--
SB27-1	10/24/2018	1	<0.5	0.944	125	<0.5	0.985	18.2	--	6.05	13.5	<0.5	<0.5	10.4	<0.5	<0.5	<0.5	34.5	37.4
SB27-2.5	10/24/2018	2.5	<0.5	1.04	112	0.575	1.14	20.7	--	6.91	15.5	<0.5	<0.5	12.1	<0.5	<0.5	<0.5	38.5	43.7
SB27-5	10/24/2018	5	--	--	--	--	--	19.4	--	--	17.3	--	--	--	--	--	--	--	--
SB28-1	10/24/2018	1	<0.5	0.762	122	<0.5	1.74	23	--	6.96	35.8	0.105	<0.5	14.9	<0.5	<0.5	<0.5	36.2	88.3
SB28-2.5	10/24/2018	2.5	<0.5	0.796	93.2	<0.5	0.989	17.1	--	5.35	14.6	<0.5	<0.5	9.97	<0.5	<0.5	<0.5	35.6	43.1
SB28-5	10/24/2018	5	--	--	--	--	--	12	--	--	9.18	--	--	--	--	--	--	--	--
SB29-1	10/24/2018	1	<0.5	1.53	<0.5	<0.5	0.577	9.76	--	3.63	12.8	<0.5	0.831	13.2	<0.5	<0.5	<0.5	32.5	28.9
SB29-3	10/24/2018	3	<0.5	1.77	128	<0.5	2.24	21.2	--	9.04	30.5	0.0585	<0.5	15.5	<0.5	<0.5	<0.5	42.5	91.8
SB29-5	10/24/2018	5	--	--	--	--	--	16.6	--	--	15.9	--	--	--	--	--	--	--	--
SB30-1	10/24/2018	1	<0.5	1.05	102	0.514	1.87	41.3	--	7.56	21.5	0.0666	<0.5	16.2	<0.5	<0.5	<0.5	48.2	93.2
SB30-2.5	10/24/2018	2.5	<0.5	2.01	102	<0.5	2.06	24.4	--	8.03	36.5	0.114	4.74	18.2	<0.5	<0.5	<0.5	35.8	179
SB30-5	10/24/2018	5	--	--	--	--	--	16.3	--	--	13.9	--	--	--	--	--	--	--	--
SB31-1	10/24/2018	1	1.36	6.25	105	<0.5	22.7	149	<0.5	17.3	509	0.407	15.3	178	<0.5	<0.5	<0.5	43.1	500
SB31-2.5	10/24/2018	2.5	<0.5	1.32	139	<0.5	1.24	18.9	--	6.96	21.1	<0.5	<0.5	11.3	<0.5	<0.5	<0.5	41.3	56.5
SB31-5	10/24/2018	5	--	--	--	--	--	22.8	--	--	17.8	--	--	--	--	--	--	--	--
SB32-1	10/24/2018	1	0.888	1.64	133	<0.5	2.66	30.5	--	7.84	48.6	0.0603	0.916	19.6	<0.5	<0.5	<0.5	40.9	209
SB32-2.5	10/24/2018	2.5	0.993	2.79	124	<0.5	3.78	110	<0.5	9.5	84.6	0.103	24.7	164	<0.5	<0.5	<0.5	41.2	276
SB32-5	10/24/2018	5	--	--	--	--	--	30.2	--	--	28.3	--	--	--	--	--	--	--	--
SB33-1	10/24/2018	1	<0.5	5.51	115	<0.5	1.74	66.6	--	8.07	39.2	0.131	1.39	40	<0.5	<0.5	<0.5	34.2	83.2
SB33-2.5	10/24/2018	2.5	0.51	0.674	120	<0.5	1.18	19.6	--	6	16.3	<0.5	<0.5	11.8	<0.5	<0.5	<0.5	30.6	49.5
SB33-5	10/24/2018	5	--	--	--	--	--	1470	--	--	1,000	--	--	--	--	--	--	--	--
SB34-1	10/25/2018	1	<0.5	0.811	102	<0.5	0.718	31.7	--	5.36	13.2	<0.5	<0.5	10.3	<0.5	<0.5	<0.5	25.6	40.7
SB34-2.5	10/25/2018	2.5	<0.5	1.56	113	<0.5	1	19.5	--	5.85	18.9	<0.5	0.82	11.5	<0.5	<0.5	<0.5	33.2	46.3
SB34-5	10/25/2018	5	--	--	--	--	--	29.8	--	--	25.2	--	--	--	--	--	--	--	--
SB35-1	10/25/2018	1	<0.5	1.23	53.4	<0.5	<0.5	9.11	--	3.36	7.14	<0.5	<0.5	5.67	<0.5	<0.5	<0.5	18.3	33.6
SB35-2.5	10/25/2018	2.5	1.87	1.97	105	<0.5	2.87	60.4	<0.5	7.3	141	0.775	2.95	44	<0.5	<0.5	<0.5	30.2	233
SB35-5	10/25/2018	5	--	--	--	--	--	27.1	--	--	53.5	--	--	--	--	--	--	--	--
SB36-1	10/25/2018	1	0.564	2.76	268	0.513	9.96	38	--	13.2	856	0.146	4.63	44.7	0.596	<0.5	<0.5	44.4	433
SB36-2.5	10/25/2018	2.5	<0.5	0.426	73.1	<0.5	0.798	11.1	--	5.72	10.5	<0.5	<0.5	7.32	<0.5	<0.5	<0.5	31.9	33.6

Table 7: Summary of Metal Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Title 22 Metals by USEPA Method 6010/7471A and Chromium VI by USEPA Method 7199/3060A (mg/kg)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Target Levels			**140**	**12**	**17,000**	**30**	**33**	**21,000**	**3.9**	**68**	**3,500**	**4.4**	**1,800**	**780**	**1,700**	**1,800**	**12**	**390**	**110,000**
SB36-5	10/25/2018	5	--	--	--	--	--	20.4	--	--	17.5	--	--	--	--	--	--	--	--
SB37-1	10/25/2018	1	4.03	1.82	153	<0.5	3.06	91.7	<0.5	5.15	107	0.0881	6.77	35.2	<0.5	<0.5	<0.5	22.8	213
SB37-2.5	10/25/2018	2.5	<0.5	0.52	83.3	<0.5	0.699	9.83	--	5.63	9.57	<0.5	<0.5	10.9	<0.5	<0.5	<0.5	29.3	112
SB37-5	10/25/2018	5	--	--	--	--	--	14.9	--	--	15.7	--	--	--	--	--	--	--	--
SB38-1	10/25/2018	1	<0.5	1.45	99.8	0.662	1.35	22.4	--	9.75	18.1	<0.5	<0.5	14.2	<0.5	<0.5	<0.5	39.2	57.2
SB38-2.5	10/25/2018	2.5	<0.5	1.24	184	0.664	1.38	22.1	--	7.71	18	<0.5	<0.5	12.6	<0.5	<0.5	<0.5	38.3	56.7
SB38-5	10/25/2018	5	--	--	--	--	--	15.4	--	--	14.2	--	--	--	--	--	--	--	--
SB39-1	10/25/2018	1	0.684	1.63	92.7	<0.5	3.43	36.2	<0.5	8.2	137	0.189	3.94	30.2	<0.5	<0.5	<0.5	36.4	163
SB39-2.5	10/25/2018	2.5	<0.5	1.66	124	0.508	1.14	20.5	<0.5	7.95	15.3	<0.5	<0.5	11.9	<0.5	<0.5	<0.5	35.5	44.9
SB39-5	10/25/2018	5	--	--	--	--	--	17.2	--	--	14.9	--	--	--	--	--	--	--	--
SB40-1	10/25/2018	1	<0.5	1.14	146	0.684	1.56	24	--	10.7	23.7	<0.5	<0.5	19.2	<0.5	<0.5	<0.5	37.1	60.2
SB40-2.5	10/25/2018	2.5	<0.5	1.05	154	0.642	1.54	23.6	--	10.3	20.9	<0.5	<0.5	16.4	<0.5	<0.5	<0.5	38.8	56.6
SB40-5	10/25/2018	5	--	--	--	--	--	13.3	--	--	15.8	--	--	--	--	--	--	--	--
SB41-1	10/25/2018	1	<0.5	0.663	154	0.613	1.13	21.1	--	6.6	17.4	<0.5	<0.5	11.2	<0.5	<0.5	<0.5	34.3	52.1
SB41-2.5	10/25/2018	2.5	0.824	0.744	76.9	<0.5	0.67	12.6	--	4.4	11.2	<0.5	<0.5	7.29	<0.5	<0.5	<0.5	23.1	33.6
SB41-5	10/25/2018	5	--	--	--	--	--	11.2	--	--	11.3	--	--	--	--	--	--	--	--
SB42-1	10/25/2018	1	12.2	7.25	299	<0.5	27.4	306	**15.3**	21.1	520	1.96	57.3	**1,070**	<0.5	1.23	<0.5	40.7	1,450
SB42-2.5	10/25/2018	2.5	1.58	**14.1**	138	<0.5	11.6	84.5	**14.3**	32.6	275	0.199	21.5	135	<0.5	<0.5	<0.5	17.8	1,690
SB42-5	10/25/2018	5	--	--	--	--	--	15.2	--	--	12.4	--	--	--	--	--	--	--	--
SB43-1	10/25/2018	1	<0.5	0.739	159	0.64	2.87	26.1	--	5.93	53.6	<0.5	0.732	11	<0.5	<0.5	<0.5	28.3	126
SB43-2.5	10/25/2018	2.5	<0.5	3.77	254	0.693	2.32	22.4	--	13.9	27.5	<0.5	<0.5	14.1	<0.5	<0.5	<0.5	44.8	77.7
SB43-5	10/25/2018	5	--	--	--	--	--	11.2	--	--	18.5	--	--	--	--	--	--	--	--
SB44-1	10/25/2018	1	<0.5	0.391	91.2	<0.5	0.678	12.5	--	5.01	12.9	<0.5	<0.5	7.94	<0.5	<0.5	<0.5	21.6	38.7
SB44-2.5	10/25/2018	2.5	0.883	0.631	120	0.584	0.838	14.8	--	7.83	15.4	<0.5	<0.5	12	<0.5	<0.5	<0.5	26	43.7
SB44-5	10/25/2018	5	--	--	--	--	--	13.9	--	--	14.2	--	--	--	--	--	--	--	--
SB45-1	10/30/2018	1	<0.5	1.92	282	<0.5	2.55	25.5	--	7.88	167	0.336	4.39	17.8	<0.5	<0.5	<0.5	29.4	260
SB45-2.5	10/30/2018	2.5	5.4	1.33	148	<0.5	15.3	53.6	--	7.98	31.1	0.22	<0.5	14.6	2.71	<0.5	<0.5	30.4	130
SB45-5	10/30/2018	5	--	--	--	--	--	16.6	--	--	16	--	--	--	--	--	--	--	--
Leighton																			
LA-SB1-1	8/7/2018	1	2.1	1.1	110	< 1	4.8	54	--	7.1	100	< 0.1	2.7	54	< 1	< 1	< 1	21	220
LA-SB1-2.5	8/7/2018	2.5	12	**14**	130	< 1	14	170	--	16	820	0.7	18	140	1.1	< 1	< 1	22	810
LA-SB1-5	8/7/2018	5	< 2	2.4	210	< 1	< 1	20	--	12	24	< 0.1	< 1	15	1.3	< 1	< 1	48	57
LA-SB1-10	8/7/2018	10	< 2	1.5	50	< 1	< 1	10	--	6.1	14	< 0.1	< 1	9.5	< 1	< 1	< 1	30	40
LA-SB1-15	8/7/2018	15	< 2	< 1	66	< 1	< 1	15	--	7.6	14	< 0.1	< 1	10	< 1	< 1	< 1	32	44
LA-SB2-1	8/7/2018	1	< 2	< 1	100	< 1	1.8	54	--	7.8	53	< 0.1	1.4	21	< 1	< 1	< 1	31	100

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2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Title 22 Metals by USEPA Method 6010/7471A and Chromium VI by USEPA Method 7199/3060A (mg/kg)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Target Levels			**140**	**12**	**17,000**	**30**	**33**	**21,000**	**3.9**	**68**	**3,500**	**4.4**	**1,800**	**780**	**1,700**	**1,800**	**12**	**390**	**110,000**
LA-SB2-2.5	8/7/2018	2.5	< 2	1.3	150	< 1	< 1	21	--	10	27	< 0.1	< 1	16	< 1	< 1	< 1	35	45
LA-SB2-5	8/7/2018	5	< 2	< 1	180	< 1	< 1	19	--	9.7	17	< 0.1	< 1	14	< 1	< 1	< 1	38	51
LA-SB2-10	8/7/2018	10	< 2	< 1	45	< 1	< 1	10	--	5.4	10	< 0.1	< 1	6.9	1.2	< 1	< 1	30	29
LA-SB3-1	8/7/2018	1	< 2	1	40	< 1	< 1	8.7	--	4.6	9.2	< 0.1	< 1	14	< 1	< 1	< 1	23	19
LA-SB3-2.5	8/7/2018	2.5	< 2	2.9	130	< 1	2.7	66	--	8.5	91	0.26	1.6	46	< 1	< 1	< 1	31	210
LA-SB3-5	8/7/2018	5	< 2	< 1	110	< 1	< 1	19	--	8.4	16	< 0.1	< 1	13	< 1	< 1	< 1	37	50
LA-SB3-10	8/7/2018	10	< 2	< 1	80	< 1	< 1	15	--	8.5	13	< 0.1	< 1	11	< 1	< 1	< 1	35	42
LA-SB3-15	8/7/2018	15	< 2	< 1	130	< 1	< 1	18	--	10	17	< 0.1	< 1	13	< 1	< 1	< 1	37	50
LA-SB3-20	8/7/2018	20	< 2	< 1	120	< 1	< 1	22	--	13	30	< 0.1	< 1	20	1.4	< 1	< 1	43	67
LA-SB3-25	8/7/2018	25	< 2	1.1	120	< 1	< 1	19	--	10	22	< 0.1	< 1	15	< 1	< 1	< 1	41	48
LA-SB3-30	8/7/2018	30	< 2	1.4	75	< 1	< 1	11	--	7.3	12	< 0.1	< 1	11	< 1	< 1	< 1	30	36
LA-SB4-1	8/7/2018	1	14	< 1	240	< 1	< 1	1,100	--	7.5	66	< 0.1	1.3	19	13	< 1	< 1	**830**	190
LA-SB4-2.5	8/7/2018	2.5	< 2	1.9	100	< 1	8.8	110	--	12	460	1.2	14	94	1.8	< 1	< 1	28	300
LA-SB4-5	8/7/2018	5	< 2	< 1	130	< 1	< 1	32	--	9.3	59	< 0.1	< 1	18	1.2	< 1	< 1	36	130
LA-SB4-10	8/7/2018	10	< 2	< 1	56	< 1	< 1	12	--	6.6	11	< 0.1	< 1	9	< 1	< 1	< 1	22	37
LA-SB5-1	8/7/2018	1	< 2	< 1	110	< 1	3.1	27	--	8.5	89	< 0.1	1.7	35	< 1	< 1	< 1	28	390
LA-SB5-2.5	8/7/2018	2.5	< 2	< 1	73	< 1	< 1	19	--	6.8	14	< 0.1	< 1	11	< 1	< 1	< 1	33	43
LA-SB5-5	8/7/2018	5	< 2	< 1	73	< 1	< 1	16	--	6.2	13	< 0.1	< 1	10	< 1	< 1	< 1	37	38
LA-SB5-10	8/7/2018	10	< 2	2	57	< 1	< 1	15	--	8.2	15	0.57	< 1	10	1	< 1	< 1	43	40
LA-SB5-15	8/7/2018	15	< 2	1.1	43	< 1	< 1	12	--	6.4	12	< 0.1	< 1	8	1.1	< 1	< 1	31	35
LA-SB105-15 [2]	8/7/2018	15	< 2	< 1	48	< 1	< 1	14	--	7.3	12	< 0.1	< 1	9.2	< 1	< 1	< 1	29	35
LA-SB6-1	8/7/2018	1	< 2	< 1	100	< 1	< 1	18	--	8	18	< 0.1	< 1	13	< 1	< 1	< 1	33	160
LA-SB6-2.5	8/7/2018	2.5	< 2	< 1	94	< 1	1.8	18	--	8.6	24	< 0.1	< 1	18	< 1	< 1	< 1	33	110
LA-SB6-5	8/7/2018	5	< 2	< 1	140	< 1	1.1	20	--	7.3	18	< 0.1	< 1	14	< 1	< 1	< 1	32	60
LA-SB6-10	8/7/2018	10	< 2	< 1	420	< 1	< 1	16	--	5.2	13	0.12	< 1	8.4	< 1	< 1	< 1	30	35
LA-SB6-15	8/7/2018	15	< 2	< 1	66	< 1	< 1	20	--	8.3	20		< 1	13	< 1	< 1	< 1	35	50
LA-SB7-1	8/7/2018	1	4.8	< 1	140	< 1	3.8	190	--	11	600	0.53	19	180	< 1	< 1	< 1	32	440
LA-SB7-2.5	8/7/2018	2.5	< 2	< 1	110	< 1	< 1	18	--	7.8	17	< 0.1	< 1	13	< 1	< 1	< 1	29	48
LA-SB7-5	8/7/2018	5	< 2	2.1	180	< 1	< 1	13	--	14	13	< 0.1	< 1	13	1.5	< 1	< 1	30	42
LA-SB7-10	8/7/2018	10	< 2	< 1	61	< 1	< 1	13	--	9.7	12	< 0.1	< 1	11	1	< 1	< 1	30	39
LA-SB7-15	8/7/2018	15	< 2	< 1	67	< 1	< 1	17	--	10	19	< 0.1	< 1	12	1.1	< 1	< 1	37	50
LA-SB7-20	8/7/2018	20	< 2	2.4	110	< 1	< 1	21	--	11	24	< 0.1	< 1	17	< 1	< 1	< 1	43	53
LA-SB7-25	8/7/2018	25	< 2	1.5	74	< 1	< 1	11	--	7.3	12	< 0.1	< 1	11	< 1	< 1	< 1	27	34
LA-SB107-25 [2]	8/7/2018	25	< 2	1.4	71	< 1	< 1	9.9	--	6.4	11	< 0.1	< 1	10	< 1	< 1	< 1	25	32
LA-SB8-1	8/7/2018	1	16	< 1	310	< 1	9.7	710	--	17	490	< 0.1	12	380	2.6	< 1	< 1	45	1,000

Table 7: Summary of Metal Soil Sampling Results
2101 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Title 22 Metals by USEPA Method 6010/7471A and Chromium VI by USEPA Method 7199/3060A (mg/kg)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Target Levels			**140**	**12**	**17,000**	**30**	**33**	**21,000**	**3.9**	**68**	**3,500**	**4.4**	**1,800**	**780**	**1,700**	**1,800**	**12**	**390**	**110,000**
LA-SB8-2.5	8/7/2018	2.5	< 2	1.1	120	< 1	1.5	30	--	9.8	52	< 0.1	< 1	20	1	< 1	< 1	35	120
LA-SB8-5	8/7/2018	5	< 2	4.1	380	< 1	1.2	22	--	33	46	< 0.1	< 1	31	2	< 1	< 1	44	80
LA-SB108-5 (2)	8/7/2018	5	< 2	2.0	200	< 1	<1.0	150	--	18	27	< 0.1	< 1	230	1.5	< 1	< 1	35	59
LA-SB8-10	8/7/2018	10	< 2	< 1	130	< 1	< 1	19	--	12	22	< 0.1	< 1	15	1.3	< 1	< 1	39	58
LA-SB8-15	8/7/2018	15	< 2	< 1	150	< 1	1.2	32	--	10	56	0.1	< 1	22	< 1	< 1	< 1	28	110
LA-SB9-1	8/7/2018	1	20	3.7	190	< 1	29	160	--	14	1,900	0.65	12	110	3	< 1	< 1	49	2,800
LA-SB9-2.5	8/7/2018	2.5	6	1.5	100	< 1	1.6	47	--	8.5	110	0.12	< 1	23	< 1	< 1	< 1	32	270
LA-SB9-5	8/7/2018	5	< 2	2	180	< 1	1.7	72	--	16	85	< 0.1	9.7	27	< 1	< 1	< 1	36	180
LA-SB9-10	8/7/2018	10	12	2.6	200	< 1	15	190	--	19	930	0.59	19	230	1.4	< 1	< 1	41	1,200
LA-SB10-1	8/7/2018	1	4.2	2.2	540	< 1	3	91	--	8.1	3,100	0.57	20	130	1	< 1	< 1	19	310
LA-SB10-2.5	8/7/2018	2.5	35	< 1	110	< 1	8.9	2,200	--	43	280	0.68	300	**2,600**	< 1	< 1	< 1	31	490
LA-SB10-5	8/7/2018	5	21	< 1	460	< 1	< 1	1,800	--	35	59	< 0.1	130	**3,300**	1.2	< 1	< 1	68	70
LA-SB10-10	8/7/2018	10	< 2	1.9	270	< 1	< 1	23	--	26	25	< 0.1	< 1	29	1.3	< 1	< 1	29	54

Notes:
[1] - value based on study "Determination of a Southern California Regional Background Arsenic Concentration in soil" by DTSC
(2) - duplicate sample reported below its primary sample
DTSC - Toxic Substances Control Department
ft bgs - feet below ground surface
ID- identification
mg/kg - milligrams per kilogram
NE - not established
* - non-cancer endpoint value
-- - not analyzed
<X - concentration was not detected above the laboratory reporting limit
Duplicate sample is listed immediately below its respective primary sample result
Commercial zoning in italics
Result exceed the site specific soil target levels.
See table 10 and appendix A for additional details regarding the site specific soil target levels.
USEPA - United States Environmental Protection Agency

Table 8. Summary of Lead Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Lead (mg/kg)
Soil Target Levels			**320**
Ramboll			
SB1-2	1/29/2019	2	2.52
SB1-5	1/29/2019	5	1.53
SB2-2	1/22/2019	2	25.9
SB2-5	1/22/2019	5	3.98
SB3-2	1/29/2019	2	1.38
SB3-5	1/29/2019	5	4.13
SB4-2	1/24/2019	2	56.6
SB4-5	1/24/2019	5	4.21
SB5-2	1/22/2019	2	14.1
SB5-5	1/22/2019	5	23.1
SB6-2	1/24/2019	2	6.97
SB6-5	1/24/2019	5	< 0.508
SB7-0.5	1/24/2019	0.5	88.8
SB7-5	1/24/2019	5	7.13
SB8-0.5	1/24/2019	0.5	43.7
SB8-5	1/24/2019	5	1.27
SB9-2	1/22/2019	2	0.744
SB9-5	1/22/2019	5	140
SB10-2	1/22/2019	2	5.63
SB10-5	1/22/2019	5	2.03
SB11-2	1/22/2019	2	7.17
SB11-5	1/22/2019	5	175
SB12-2	1/24/2019	2	82.9
SB12-5	1/24/2019	5	< 0.500
SB13-2	1/22/2019	2	109
SB13-5	1/22/2019	5	0.936
DUP1	1/22/2019	5	0.760
SB14-2	1/22/2019	2	5.64
SB14-5	1/22/2019	5	3.47
SB15-2	1/22/2019	2	1.06
SB15-5	1/22/2019	5	79.6
SB16-3	1/22/2019	3	**401**
SB16-5	1/22/2019	5	< 0.498
DUP2	1/22/2019	5	1.56
SB17-2	1/22/2019	2	2.13
SB17-5	1/22/2019	5	180
SB18-2	1/22/2019	2	59.0
SB18-5	1/22/2019	5	12.6
SB19-2	1/23/2019	2	55.1
SB19-5	1/23/2019	5	31.5
SB20-2	1/23/2019	2	124
SB20-5	1/23/2019	5	23.3
SB21-0.5	1/23/2019	0.5	16.3
SB21-5	1/23/2019	5	7.05
SB22-2	1/23/2019	2	22.6
SB22-4.5	1/23/2019	4.5	5.87
SB23-2	1/23/2019	2	89.7
SB23-5	1/23/2019	5	< 0.495
SB24-2	1/23/2019	2	239
SB24-4.5	1/23/2019	4.5	34.6
SB25-2	1/23/2019	2	20.2
SB25-5	1/23/2019	5	< 0.524
SB26-2	1/23/2019	2	25.4
DUP3	1/23/2019	2	1.15
SB26-5	1/23/2019	5	0.949

Table 8. Summary of Lead Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Lead (mg/kg)
Soil Target Levels			**320**
SB27-0.5	1/23/2019	0.5	144
SB27-5	1/23/2019	5	3.83
SB28-2	1/23/2019	2	68.2
SB28-5	1/23/2019	5	1.72
SB29-2	1/24/2019	2	0.892
SB29-5	1/24/2019	5	< 0.508
SB30-2	1/23/2019	2	2.05
SB30-5	1/23/2019	5	11.9
SB32-6	3/4/2019	6	3.22
SB35-6	3/5/2019	6	2.27
SB36-6	3/5/2019	6	1.75
SB38-6	3/5/2019	6	1.14
SB50-11	3/11/2019	11	<0.510
SB51-2	3/4/2019	2	95.9
SB51-4	3/4/2019	4	7.96
SB56-2	3/5/2019	2	**352**
SB56-10	3/5/2019	10	<0.493
SB57-2	3/5/2019	2	188
SB57-10	3/5/2019	10	<0.495
SB58-2	3/5/2019	2	**389**
SB58-10	3/5/2019	10	<0.485
RMW-1	9/25/2019	2	4.19
RMW-1	9/25/2019	5	1.76
RMW-2	9/25/2019	2	133
RMW-2	9/25/2019	5	1.80
DUP01	9/25/2019	5	2.06
RMW-3	9/26/2019	2	**566**
RMW-3	9/26/2019	5	113
RMW-3	9/26/2019	10	< 0.508
RMW-4	9/27/2019	2	119
RMW-4	9/27/2019	5	0.511
RMW-4	9/27/2019	10	0.777 J
DUP03	9/27/2019	10	2.46 J
RMW-4	9/27/2019	15	3.17
RMW-4	9/27/2019	20	2.93
RMW-5	9/26/2019	2	10.2
RMW-5	9/26/2019	5	**430**
RMW-5	9/26/2019	10	< 0.505
RSB-59	10/7/2019	2	39.9
RSB-59	10/7/2019	5	4.37
RSB-59	10/7/2019	10	4.87
RSB-59	10/7/2019	12	4.71
RSB-60	10/7/2019	2	25.9
RSB-60	10/7/2019	5	4.38
RSB-60	10/7/2019	10	4.20
RSB-60	10/7/2019	12	6.37
RSB-61	10/7/2019	2	26.1
RSB-61	10/7/2019	5	4.68
RSB-61	10/7/2019	10	3.29
DUP13	10/7/2019	10	4.26
RSB-61	10/7/2019	12	8.08
RSB-62	10/7/2019	2	25.8
RSB-62	10/7/2019	5	6.21
RSB-62	10/7/2019	10	4.41 J
DUP11	10/7/2019	10	< 0.490 UJ
RSB-62	10/7/2019	12	6.23 J
DUP12	10/7/2019	12	< 0.503 UJ
RSB-63	10/7/2019	2	13.9
RSB-63	10/7/2019	5	5.98
RSB-63	10/7/2019	10	4.52
RSB-63	10/7/2019	12	0.528

Table 8. Summary of Lead Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Lead (mg/kg)
Soil Target Levels			**320**
Fulcrum			
SB1-10	10/31/2017	10	2.67
SB2-10	10/31/2017	10	2.53
SB3-3	10/31/2017	3	4.79
SB4-3	10/31/2017	3	16.1
SB5-3	10/31/2017	3	8.89
SB7-3	10/31/2017	3	10.2
SB8-3	10/31/2017	3	5.16
SB12-10	10/31/2017	10	2.96
SB13-10	10/31/2017	10	2.2
SB22-3	10/31/2017	3	**361**
SB22-5	10/31/2017	5	10.9
SB22-10	10/31/2017	10	14.4
SB23-3	10/31/2017	3	7.12
SB24-3	10/31/2017	3	4.2
SB26-1	10/24/2018	1	6.15
SB26-2.5	10/24/2018	2.5	5.67
SB26-5	10/24/2018	5	2.76
SB27-1	10/24/2018	1	3.39
SB27-2.5	10/24/2018	2.5	4.14
SB27-5	10/24/2018	5	3
SB28-1	10/24/2018	1	41.7
SB28-2.5	10/24/2018	2.5	3.74
SB28-5	10/24/2018	5	1.89
SB29-1	10/24/2018	1	7.28
SB29-3	10/24/2018	3	32.6
SB29-5	10/24/2018	5	19.9
SB30-1	10/24/2018	1	31.9
SB30-2.5	10/24/2018	2.5	74
SB30-5	10/24/2018	5	3.78
SB31-1	10/24/2018	1	121
SB31-2.5	10/24/2018	2.5	5.84
SB31-5	10/24/2018	5	4.48
SB32-1	10/24/2018	1	93.7
SB32-2.5	10/24/2018	2.5	119
SB32-5	10/24/2018	5	49.3
SB33-1	10/24/2018	1	30.5
SB33-2.5	10/24/2018	2.5	11.8
SB33-5	10/24/2018	5	183
SB34-1	10/25/2018	1	30.9
SB34-2.5	10/25/2018	2.5	14.3
SB34-5	10/25/2018	5	8.69
SB35-1	10/25/2018	1	19.7
SB35-2.5	10/25/2018	2.5	75.9
SB35-5	10/25/2018	5	20.7
SB36-1	10/25/2018	1	114
SB36-2.5	10/25/2018	2.5	2.69
SB36-5	10/25/2018	5	4.2
SB37-1	10/25/2018	1	118
SB37-2.5	10/25/2018	2.5	9.04
SB37-5	10/25/2018	5	3.75
SB38-1	10/25/2018	1	5.77
SB38-2.5	10/25/2018	2.5	4.75
SB38-5	10/25/2018	5	3.89
SB39-1	10/25/2018	1	91
SB39-2.5	10/25/2018	2.5	6.71
SB39-5	10/25/2018	5	3.56
SB40-1	10/25/2018	1	11.1
SB40-2.5	10/25/2018	2.5	8.36
SB40-5	10/25/2018	5	3.21
SB41-1	10/25/2018	1	4.64
SB41-2.5	10/25/2018	2.5	2.97
SB41-5	10/25/2018	5	2.52

Table 8. Summary of Lead Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Lead (mg/kg)
Soil Target Levels			**320**
SB42-1	10/25/2018	1	**569**
SB42-2.5	10/25/2018	2.5	174
SB42-5	10/25/2018	5	3.5
SB43-1	10/25/2018	1	16.7
SB43-2.5	10/25/2018	2.5	9.13
SB43-5	10/25/2018	5	4.02
SB44-1	10/25/2018	1	10.3
SB44-2.5	10/25/2018	2.5	8.24
SB44-5	10/25/2018	5	3.4
SB45-1	10/30/2018	1	156
SB45-2.5	10/30/2018	2.5	52.3
SB45-5	10/30/2018	5	5.01
Leighton			
LA-SB1-1	8/7/2018	1	**320**
LA-SB1-2.5	8/7/2018	2.5	**540**
LA-SB1-5	8/7/2018	5	8.3
LA-SB1-10	8/7/2018	10	2.1
LA-SB1-15	8/7/2018	15	1.9
LA-SB2-1	8/7/2018	1	100
LA-SB2-2.5	8/7/2018	2.5	6.8
LA-SB2-5	8/7/2018	5	5.6
LA-SB2-10	8/7/2018	10	1.5
LA-SB3-1	8/7/2018	1	1.4
LA-SB3-2.5	8/7/2018	2.5	90
LA-SB3-5	8/7/2018	5	8
LA-SB3-10	8/7/2018	10	2.1
LA-SB3-15	8/7/2018	15	2
LA-SB3-20	8/7/2018	20	5.6
LA-SB3-25	8/7/2018	25	2.4
LA-SB3-30	8/7/2018	30	1.9
LA-SB4-1	8/7/2018	1	70
LA-SB4-2.5	8/7/2018	2.5	130
LA-SB4-5	8/7/2018	5	94
LA-SB4-10	8/7/2018	10	1.8
LA-SB5-1	8/7/2018	1	37
LA-SB5-2.5	8/7/2018	2.5	2.5
LA-SB5-5	8/7/2018	5	2.3
LA-SB5-10	8/7/2018	10	2.9
LA-SB5-15	8/7/2018	15	1.9
LA-SB105-15 (1)	8/7/2018	15	2.3
LA-SB6-1	8/7/2018	1	19
LA-SB6-2.5	8/7/2018	2.5	46
LA-SB6-5	8/7/2018	5	12
LA-SB6-10	8/7/2018	10	1.3
LA-SB6-15	8/7/2018	15	2.7
LA-SB7-1	8/7/2018	1	210
LA-SB7-2.5	8/7/2018	2.5	4.1
LA-SB7-5	8/7/2018	5	2
LA-SB7-10	8/7/2018	10	2.4
LA-SB7-15	8/7/2018	15	2.3
LA-SB7-20	8/7/2018	20	2.3
LA-SB7-25	8/7/2018	25	1.6
LA-SB107-25 (1)	8/7/2018	25	1.3
LA-SB8-1	8/7/2018	1	**520**
LA-SB8-2.5	8/7/2018	2.5	10
LA-SB8-5	8/7/2018	5	5.4
LA-SB108-5 (1)	8/7/2018	5	3.9
LA-SB8-10	8/7/2018	10	4
LA-SB8-15	8/7/2018	15	17
LA-SB9-1	8/7/2018	1	**470**
LA-SB9-2.5	8/7/2018	2.5	130
LA-SB9-5	8/7/2018	5	32
LA-SB9-10	8/7/2018	10	**960**

Table 8. Summary of Lead Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Lead (mg/kg)
Soil Target Levels			**320**
LA-SB10-1	8/7/2018	1	120
LA-SB10-2.5	8/7/2018	2.5	240
LA-SB10-5	8/7/2018	5	14
LA-SB10-10	8/7/2018	10	7.3

Notes:
(1) - duplicate sample reported below its primary sample
* - non-cancer end point value
-- - not analyzed
<X - concentration was not detected above the laboratory reporting limit
Commercial zoning in italics
DTSC - Toxic Substances Control Department
Duplicate sample is listed immediately below its respective primary sample result
ft bgs - feet below ground surface
ID - identification
mg/kg - milligrams per kilogram
Result exceeds the site specific soil target level
See table 10 and appendix A for additional details regarding the site specific soil target levels.
USEPA - United States Environmental Protection Agency

Table 9. Summary of VOC Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

				Benzene	Toluene	Ethyl Benzene	m,p-xylene	MTBE	ortho-xylene	Acetone	Bromoform	Chloroethane	Chloromethane	1,1-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	2-Butanone	1,2,4-Trichlorobenzene	Isopropylbenzene	Methylene Chloride	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene
Soil Target Levels				**1,400**	**5,300,000**	**25,000**	**2,400,000**	**210,000**	**2,800,000**	**670,000,000**	**86,000**	**57,000,000**	**460,000**	**16,000**	**84,000**	**2,700**	**6,000**	**150**	**190,000,000**	**35,000**	**9,900,000**	**26,000**	**18,000,000**	**24,000,000**	**12,000,000**
Sample ID	**Date**	**Depth**	**USEPA Method**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**ug/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Ramboll																									
RMW-1	9/25/2019	2	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	< 0.74	< 0.74	< 1.5	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
RMW-1	9/25/2019	5	5035/8260B	< 0.67	< 0.67	< 0.67	< 1.3	< 1.3	< 0.67	< 33	< 3.3	< 1.3	< 13	< 0.67	**1.2**	< 0.67	< 1.3	< 0.67	< 13	< 1.3	< 0.67	< 6.7	< 0.67	< 1.3	< 0.67
RMW-1	9/25/2019	10	5035/8260B	< 0.76	< 0.76	< 0.76	< 1.5	< 1.5	< 0.76	< 38	< 3.8	< 1.5	< 15	< 0.76	< 0.76	**2.0**	< 1.5	< 0.76	< 15	< 1.5	< 0.76	< 7.6	< 0.76	< 1.5	< 0.76
RMW-1	9/25/2019	15	5035/8260B	< 0.72	< 0.72	< 0.72	< 1.4	< 1.4	< 0.72	< 36	< 3.6	< 1.4	< 14	< 0.72	< 0.72	**0.89**	< 1.4	< 0.72	< 14	< 1.4	< 0.72	< 7.2	< 0.72	< 1.4	< 0.72
RMW-1	9/25/2019	20	5035/8260B	< 0.84	< 0.84	< 0.84	< 1.7	< 1.7	< 0.84	< 42	< 4.2	< 1.7	< 17	< 0.84	< 0.84	**46**	< 1.7	< 0.84	< 17	< 1.7	< 0.84	< 8.4	< 0.84	< 1.7	< 0.84
RMW-2	9/25/2019	2	5035/8260B	< 0.84	< 0.84	< 0.84	< 1.7	< 1.7	< 0.84	< 42	< 4.2	< 1.7	< 17	< 0.84	< 0.84	< 0.84	< 1.7	< 0.84	< 17	< 1.7	< 0.84	< 8.4	< 0.84	< 1.7	< 0.84
RMW-2	9/25/2019	5	5035/8260B	< 0.66	< 0.66	< 0.66	< 1.3	< 1.3	< 0.66	< 33	< 3.3	< 1.3	< 13	< 0.66	< 0.66	**3.1**	**1.8**	< 0.66	< 13	< 1.3	< 0.66	< 6.6	< 0.66	< 1.3	< 0.66
DUP01	9/25/2019	5	5035/8260B	< 0.66	< 0.66	< 0.66	< 1.3	< 1.3	< 0.66	< 33	< 3.3	< 1.3	< 13	< 0.66	< 0.66	**4.0**	**1.9**	< 0.66	< 13	< 1.3	< 0.66	< 6.6	< 0.66	< 1.3	< 0.66
RMW-2	9/25/2019	10	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	< 0.74	< 0.74	< 1.5	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
RMW-2	9/25/2019	15	5035/8260B	< 0.72	< 0.72	< 0.72	< 1.4	< 1.4	< 0.72	< 36	< 3.6	< 1.4	< 14	< 0.72	< 0.72	**1.6**	< 1.4	< 0.72	< 14	< 1.4	< 0.72	< 7.2	< 0.72	< 1.4	< 0.72
RMW-2	9/25/2019	20	5035/8260B	< 0.66	< 0.66	< 0.66	< 1.3	< 1.3	< 0.66	< 33	**7.6**	< 1.3	< 13	< 0.66	< 0.66	**9.2**	< 1.3	< 0.66	< 13	< 1.3	< 0.66	< 6.6	< 0.66	< 1.3	< 0.66
RMW-3	9/26/2019	2	5035/8260B	< 0.66	< 0.66	< 0.66	< 1.3	< 1.3	< 0.66	< 33	< 3.3	< 1.3	< 13	< 0.66	< 0.66	**1.2**	< 1.3	< 0.66	< 13	< 1.3	< 0.66	< 6.6	< 0.66	< 1.3	< 0.66
RMW-3	9/26/2019	5	5035/8260B	< 0.84	< 0.84	< 0.84	< 1.7	< 1.7	< 0.84	< 42	< 4.2	< 1.7	< 17	< 0.84	< 0.84	< 0.84	< 1.7	< 0.84	< 17	< 1.7	< 0.84	< 8.4	< 0.84	< 1.7	< 0.84
DUP02	9/26/2019	10	5035/8260B	< 0.76	< 0.76	< 0.76	< 1.5	< 1.5	< 0.76	< 38	< 3.8	< 1.5	< 15	< 0.76	< 0.76	< 0.76	< 1.5	< 0.76	< 15	< 1.5	< 0.76	< 7.6	< 0.76	< 1.5	< 0.76
RMW-3	9/26/2019	10	5035/8260B	< 0.84	< 0.84	< 0.84	< 1.7	< 1.7	< 0.84	< 42	< 4.2	< 1.7	< 17	< 0.84	< 0.84	< 0.84	< 1.7	< 0.84	< 17	< 1.7	< 0.84	< 8.4	< 0.84	< 1.7	< 0.84
RMW-3	9/26/2019	15	5035/8260B	< 0.68	< 0.68	< 0.68	< 1.4	< 1.4	< 0.68	< 34	< 3.4	< 1.4	< 14	< 0.68	< 0.68	**0.83**	< 1.4	< 0.68	< 14	< 1.4	< 0.68	< 6.8	< 0.68	< 1.4	< 0.68
RMW-3	9/26/2019	20	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	< 0.74	**0.94**	< 1.5	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
RMW-4	9/27/2019	2	5035/8260B	< 0.78	< 0.78	< 0.78	< 1.6	< 1.6	< 0.78	**44**	< 3.9	< 1.6	< 16	< 0.78	< 0.78	< 0.78	**3.7**	< 0.78	< 16	< 1.6	< 0.78	< 7.8	< 0.78	< 1.6	< 0.78
RMW-4	9/27/2019	5	5035/8260B	< 0.76	< 0.76	< 0.76	< 1.5	< 1.5	< 0.76	< 38	< 3.8	< 1.5	< 15	< 0.76	< 0.76	< 0.76	**1.9**	< 0.76	< 15	< 1.5	< 0.76	< 7.6	< 0.76	< 1.5	< 0.76
RMW-4	9/27/2019	10	5035/8260B	< 1.0	< 1.0	< 1.0	< 2.1	< 2.1	< 1.0	< 52	< 5.2	< 2.1	< 21	< 1.0	< 1.0	< 1.0	< 2.1	< 1.0	< 21	< 2.1	< 1.0	< 10	< 1.0	< 2.1	< 1.0
DUP03	9/27/2019	10	5035/8260B	< 0.85	< 0.85	< 0.85	< 1.7	< 1.7	< 0.85	**43**	< 4.3	< 1.7	< 17	< 0.85	< 0.85	< 0.85	< 1.7	< 0.85	< 17	< 1.7	< 0.85	< 8.5	< 0.85	< 1.7	< 0.85
RMW-4	9/27/2019	15	5035/8260B	< 0.77	< 0.77	< 0.77	< 1.5	< 1.5	< 0.77	< 39	< 3.9	< 1.5	< 15	**4.3**	**5.5**	< 0.77	**22**	< 0.77	< 15	< 1.5	< 0.77	< 7.7	< 0.77	< 1.5	< 0.77
RMW-4	9/27/2019	20	5035/8260B	< 0.78	< 0.78	< 0.78	< 1.6	< 1.6	< 0.78	< 39	< 3.9	< 1.6	< 16	**2.8**	**3.6**	< 0.78	**13**	< 0.78	< 16	< 1.6	< 0.78	< 7.8	< 0.78	< 1.6	< 0.78
RMW-5	9/26/2019	2	5035/8260B	< 0.85	< 0.85	< 0.85	< 1.7	< 1.7	< 0.85	**66**	< 4.2	< 1.7	< 17	< 0.85	< 0.85	< 0.85	< 1.7	< 0.85	< 17	< 1.7	< 0.85	< 8.5	< 0.85	< 1.7	< 0.85
RMW-5	9/26/2019	5	5035/8260B	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 1.0	**53**	< 5.1	< 2.0	< 20	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 20	< 2.0	< 1.0	< 10	< 1.0	< 2.0	< 1.0
RMW-5	9/26/2019	10	5035/8260B	< 0.82	< 0.82	< 0.82	< 1.6	< 1.6	< 0.82	< 41	< 4.1	< 1.6	< 16	< 0.82	< 0.82	< 0.82	< 1.6	< 0.82	< 16	< 1.6	< 0.82	< 8.2	< 0.82	< 1.6	< 0.82
RMW-5	9/26/2019	15	5035/8260B	< 0.91	< 0.91	< 0.91	< 1.8	< 1.8	< 0.91	< 45	< 4.5	< 1.8	< 18	< 0.91	**3.7**	< 0.91	**13**	< 0.91	< 18	< 1.8	< 0.91	< 9.1	< 0.91	< 1.8	< 0.91
RMW-5	9/26/2019	20	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	**3.3**	< 0.74	**7.8**	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
SB-53	3/5/2019	1	5030C/8260B	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 130	< 5.0	< 5.0	< 25	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 5.0
SB-54	3/5/2019	1	5030C/8260B	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1	< 130	< 5.1	< 5.1	< 25	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1	< 51	< 5.1	< 5.1	< 51	< 5.1	< 5.1	< 5.1
SB-55	3/5/2019	1	5030C/8260B	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1	< 130	< 5.1	< 5.1	< 26	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1	< 51	< 5.1	< 5.1	< 51	< 5.1	< 5.1	< 5.1
SV-15	10/1/2019	2	5035/8260B	< 0.82	< 0.82	< 0.82	< 1.6	< 1.6	< 0.82	< 41	< 4.1	< 1.6	< 16	< 0.82	< 0.82	< 0.82	< 1.6	< 0.82	< 16	< 1.6	< 0.82	< 8.2	< 0.82	< 1.6	< 0.82
SV-15	10/1/2019	5	5035/8260B	< 0.89	< 0.89	< 0.89	< 1.8	< 1.8	< 0.89	< 45	< 4.5	< 1.8	< 18	< 0.89	**1.5**	< 0.89	< 1.8	< 0.89	< 18	< 1.8	< 0.89	< 8.9	< 0.89	< 1.8	< 0.89
SV-15	10/1/2019	10	5035/8260B	< 0.88	< 0.88	< 0.88	< 1.8	< 1.8	< 0.88	< 44	< 4.4	< 1.8	< 18	< 0.88	**1.8**	**2.5**	**2.8**	< 0.88	< 18	< 1.8	< 0.88	< 8.8	< 0.88	< 1.8	< 0.88
DUP04	10/1/2019	10	5035/8260B	< 0.90	< 0.90	< 0.90	< 1.8	< 1.8	< 0.90	< 45	< 4.5	< 1.8	< 18	< 0.90	< 0.90	**0.94**	< 1.8	< 0.90	< 18	< 1.8	< 0.90	< 9.0	< 0.90	< 1.8	< 0.90
SV-15	10/1/2019	12	5035/8260B	< 0.81	< 0.81	< 0.81	< 1.6	< 1.6	< 0.81	< 41	< 4.1	< 1.6	< 16	< 0.81	**1.2**	**2.1**	**1.9**	< 0.81	< 16	< 1.6	< 0.81	< 8.1	< 0.81	< 1.6	< 0.81
SV-15	10/1/2019	15	5035/8260B	< 0.81	< 0.81	< 0.81	< 1.6	< 1.6	< 0.81	< 40	< 4.0	< 1.6	< 16	< 0.81	**2.4**	**7.6**	**3.6**	< 0.81	< 16	< 1.6	< 0.81	< 8.1	< 0.81	< 1.6	< 0.81
SV-16	10/1/2019	2	5035/8260B	< 0.69	< 0.69	< 0.69	< 1.4	< 1.4	< 0.69	< 35	< 3.5	< 1.4	< 14	< 0.69	< 0.69	< 0.69	< 1.4	< 0.69	< 14	< 1.4	< 0.69	< 6.9	< 0.69	< 1.4	< 0.69
SV-16	10/1/2019	5	5035/8260B	< 0.92	< 0.92	< 0.92	< 1.8	< 1.8	< 0.92	< 46	< 4.6	< 1.8	< 18	< 0.92	< 0.92	< 0.92	< 1.8	< 0.92	< 18	< 1.8	< 0.92	< 9.2	< 0.92	< 1.8	< 0.92
SV-16	10/1/2019	10	5035/8260B	< 1.3	< 1.3	< 1.3	< 2.5	< 2.5	< 1.3	< 64	< 6.4	< 2.5	< 25	< 1.3	< 1.3	< 1.3	< 2.5	< 1.3	< 25	< 2.5	< 1.3	**15**	< 1.3	< 2.5	< 1.3
SV-16	10/1/2019	12	5035/8260B	< 0.98	< 0.98	< 0.98	< 2.0	< 2.0	< 0.98	< 49	< 4.9	< 2.0	< 20	< 0.98	< 0.98	< 0.98	< 2.0	< 0.98	< 20	< 2.0	< 0.98	< 9.8	< 0.98	< 2.0	< 0.98
SV-16	10/1/2019	15	5035/8260B	< 0.98	< 0.98	< 0.98	< 2.0	< 2.0	< 0.98	< 49	< 4.9	< 2.0	< 20	< 0.98	< 0.98	< 0.98	< 2.0	< 0.98	< 20	< 2.0	< 0.98	< 9.8	< 0.98	< 2.0	< 0.98
SV-17	10/1/2019	2	5035/8260B	< 0.89	< 0.89	< 0.89	< 1.8	< 1.8	< 0.89	< 45	< 4.5	< 1.8	< 18	< 0.89	< 0.89	< 0.89	< 1.8	< 0.89	< 18	< 1.8	< 0.89	< 8.9	< 0.89	< 1.8	< 0.89
SV-17	10/1/2019	5	5035/8260B	< 0.87	< 0.87	< 0.87	< 1.7	< 1.7	< 0.87	< 43	< 4.3	< 1.7	< 17	< 0.87	< 0.87	< 0.87	< 1.7	< 0.87	< 17	< 1.7	< 0.87	< 7.5	< 0.87	< 1.7	< 0.87
DUP05	10/1/2019	5	5035/8260B	< 0.87	< 0.87	< 0.87	< 1.7	< 1.7	< 0.87	< 44	< 4.4	< 1.7	< 17	< 0.87	< 0.87	< 0.87	< 1.7	< 0.87	< 17	< 1.7	< 0.87	< 8.7	< 0.87	< 1.7	< 0.87
SV-17	10/1/2019	10	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	< 0.74	< 0.74	< 1.5	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
SV-17	10/1/2019	12	5035/8260B	< 0.87	< 0.87	< 0.87	< 1.7	< 1.7	< 0.87	< 44	< 4.4	< 1.7	< 17	< 0.87	< 0.87	< 0.87	< 1.7	< 0.87	< 17	< 1.7	< 0.87	< 8.7	< 0.87	< 1.7	< 0.87
SV-17	10/1/2019	15	5035/8260B	< 0.91	< 0.91	< 0.91	< 1.8	< 1.8	< 0.91	< 46	< 4.6	< 1.8	< 18	< 0.91	< 0.91	< 0.91	< 1.8	< 0.91	< 18	< 1.8	< 0.91	< 9.1	< 0.91	< 1.8	< 0.91
SV-18	10/1/2019	2	5035/8260B	< 0.88	< 0.88	< 0.88	< 1.8	< 1.8	< 0.88	< 44	< 4.4	< 1.8	< 18	< 0.88	< 0.88	< 0.88	< 1.8	< 0.88	< 18	< 1.8	< 0.88	< 8.8	< 0.88	< 1.8	< 0.88
DUP06	10/1/2019	2	5035/8260B	< 0.85	< 0.85	< 0.85	< 1.7	< 1.7	< 0.85	< 43	< 4.3	< 1.7	< 17	< 0.85	< 0.85	< 0.85	< 1.7	< 0.85	< 17	< 1.7	< 0.85	< 8.5	< 0.85	< 1.7	< 0.85
SV-18	10/1/2019	5	5035/8260B	< 0.76	< 0.76	< 0.76	< 1.5	< 1.5	< 0.76	< 38	< 3.8	< 1.5	< 15	< 0.76	< 0.76	< 0.76	< 1.5	< 0.76	< 15	< 1.5	< 0.76	< 7.6	< 0.76	< 1.5	< 0.76

Table 9. Summary of VOC Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

				Benzene	Toluene	Ethyl Benzene	m,p-xylene	MTBE	ortho-xylene	Acetone	Bromoform	Chloroethane	Chloromethane	1,1-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	2-Butanone	1,2,4-Trichlorobenzene	Isopropylbenzene	Methylene Chloride	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene
Soil Target Levels				**1,400**	**5,300,000**	**25,000**	**2,400,000**	**210,000**	**2,800,000**	**670,000,000**	**86,000**	**57,000,000**	**460,000**	**16,000**	**84,000**	**2,700**	**6,000**	**150**	**190,000,000**	**35,000**	**9,900,000**	**26,000**	**18,000,000**	**24,000,000**	**12,000,000**
Sample ID	**Date**	**Depth**	**USEPA Method**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**ug/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
SV-18	10/1/2019	10	5035/8260B	< 0.94	< 0.94	< 0.94	< 1.9	< 1.9	< 0.94	< 47	< 4.7	< 1.9	< 19	< 0.94	< 0.94	< 0.94	< 1.9	< 0.94	< 19	< 1.9	< 0.94	< 9.4	< 0.94	< 1.9	< 0.94
SV-18	10/1/2019	12	5035/8260B	< 0.80	< 0.80	< 0.80	< 1.6	< 1.6	< 0.80	< 40	< 4.0	< 1.6	< 16	< 0.80	< 0.80	**1.6**	< 1.6	< 0.80	< 16	< 1.6	< 0.80	< 8.0	< 0.80	< 1.6	< 0.80
SV-18	10/1/2019	15	5035/8260B	< 0.83	< 0.83	< 0.83	< 1.7	< 1.7	< 0.83	< 42	< 4.2	< 1.7	< 17	< 0.83	< 0.83	**3.9**	< 1.7	< 0.83	< 17	< 1.7	< 0.83	< 8.3	< 0.83	< 1.7	< 0.83
SV-19	10/1/2019	2	5035/8260B	< 0.72	< 0.72	< 0.72	< 1.4	**8.1**	< 0.72	< 36	< 3.6	< 1.4	< 14	< 0.72	**3.8**	< 0.72	< 1.4	< 0.72	< 14	< 1.4	< 0.72	**13**	< 0.72	< 1.4	< 0.72
SV-19	10/1/2019	5	5035/8260B	< 0.79	< 0.79	< 0.79	< 1.6	**7.3**	< 0.79	< 40	< 4.0	< 1.6	< 16	< 0.79	**5.3**	< 0.79	< 1.6	< 0.79	< 16	< 1.6	< 0.79	< 7.9	< 0.79	< 1.6	< 0.79
SV-19	10/1/2019	10	5035/8260B	< 0.75	< 0.75	< 0.75	< 1.5	**2.3**	< 0.75	< 37	< 3.7	< 1.5	< 15	< 0.75	**0.82**	< 0.75	< 1.5	< 0.75	< 15	< 1.5	< 0.75	< 7.5	< 0.75	< 1.5	< 0.75
SV-19	10/1/2019	12	5035/8260B	< 0.75	< 0.75	< 0.75	< 1.5	**1.5**	< 0.75	< 37	< 3.7	< 1.5	< 15	< 0.75	< 0.75	< 0.75	< 1.5	< 0.75	< 15	< 1.5	< 0.75	< 7.5	< 0.75	< 1.5	< 0.75
SV-19	10/1/2019	15	5035/8260B	< 0.81	< 0.81	< 0.81	< 1.6	**3.2**	< 0.81	< 40	< 4.0	< 1.6	< 16	< 0.81	< 0.81	**0.92**	< 1.6	< 0.81	< 16	< 1.6	< 0.81	< 8.1	< 0.81	< 1.6	< 0.81
SV-20	10/1/2019	2	5035/8260B	< 1.0	< 1.0	< 1.0	< 2.1	< 2.1	< 1.0	**62**	< 5.2	< 2.1	< 21	< 1.0	< 1.0	**6.1**	< 2.1	< 1.0	< 21	< 2.1	< 1.0	< 10	< 1.0	< 2.1	< 1.0
SV-20	10/1/2019	5	5035/8260B	< 0.87	< 0.87	< 0.87	< 1.7	< 1.7	< 0.87	< 43	< 4.3	< 1.7	< 17	< 0.87	< 0.87	**7.8**	< 1.7	< 0.87	< 17	< 1.7	< 0.87	< 8.7	< 0.87	< 1.7	< 0.87
SV-20	10/1/2019	10	5035/8260B	< 0.95	< 0.95	< 0.95	< 1.9	< 1.9	< 0.95	< 48	< 4.8	< 1.9	< 19	< 0.95	< 0.95	< 0.95	< 1.9	< 0.95	< 19	< 1.9	< 0.95	< 9.5	< 0.95	< 1.9	< 0.95
SV-20	10/1/2019	12	5035/8260B	< 0.96	< 0.96	< 0.96	< 1.9	< 1.9	< 0.96	< 48	< 4.8	< 1.9	< 19	< 0.96	< 0.96	< 0.96	< 1.9	< 0.96	< 19	< 1.9	< 0.96	< 9.6	< 0.96	< 1.9	< 0.96
SV-20	10/1/2019	15	5035/8260B	< 0.78	< 0.78	< 0.78	< 1.6	< 1.6	< 0.78	< 39	< 3.9	< 1.6	< 16	< 0.78	< 0.78	**1.3**	< 1.6	< 0.78	< 16	< 1.6	< 0.78	< 7.8	< 0.78	< 1.6	< 0.78
SV-21	10/2/2019	2	5035/8260B	< 0.96	< 0.96	< 0.96	< 1.9	< 1.9	< 0.96	**150**	< 4.8	< 1.9	< 19	< 0.96	< 0.96	< 0.96	< 1.9	< 0.96	**30**	< 1.9	< 0.96	< 9.6	< 0.96	< 1.9	< 0.96
SV-21	10/2/2019	5	5035/8260B	< 0.73	< 0.73	< 0.73	< 1.5	< 1.5	< 0.73	< 36	< 3.6	< 1.5	< 15	**17**	**4.2**	< 0.73	< 1.5	< 0.73	< 15	< 1.5	< 0.73	< 7.3	< 0.73	< 1.5	< 0.73
SV-21	10/2/2019	10	5035/8260B	< 0.83	< 0.83	< 0.83	< 1.7	< 1.7	< 0.83	< 42	< 4.2	< 1.7	< 17	**4.2**	< 0.83	< 0.83	< 1.7	< 0.83	< 17	< 1.7	< 0.83	< 8.3	< 0.83	< 1.7	< 0.83
SV-21	10/2/2019	12	5035/8260B	< 0.90	< 0.90	< 0.90	< 1.8	< 1.8	< 0.90	< 45	< 4.5	< 1.8	< 18	**4.8**	< 0.90	< 0.90	< 1.8	< 0.90	< 18	< 1.8	< 0.90	< 9.0	< 0.90	< 1.8	< 0.90
SV-21	10/2/2019	15	5035/8260B	< 0.84	< 0.84	< 0.84	< 1.7	< 1.7	< 0.84	< 42	< 4.2	< 1.7	< 17	**13**	**1.8**	< 0.84	< 1.7	< 0.84	< 17	< 1.7	< 0.84	< 8.4	< 0.84	< 1.7	< 0.84
SV-22	10/2/2019	2	5035/8260B	< 0.99	< 0.99	< 0.99	< 2.0	< 2.0	< 0.99	< 49	< 4.9	< 2.0	< 20	< 0.99	< 0.99	< 0.99	< 2.0	< 0.99	< 20	< 2.0	< 0.99	< 9.9	< 0.99	< 2.0	< 0.99
DUP07	10/2/2019	2	5035/8260B	< 0.81	< 0.81	< 0.81	< 1.6	< 1.6	< 0.81	< 41	< 4.1	< 1.6	< 16	< 0.81	< 0.81	**0.91**	< 1.6	< 0.81	< 16	< 1.6	< 0.81	< 8.1	< 0.81	< 1.6	< 0.81
SV-22	10/2/2019	5	5035/8260B	< 0.82	< 0.82	< 0.82	< 1.6	< 1.6	< 0.82	**67**	< 4.1	< 1.6	< 16	< 0.82	< 0.82	**1.8**	< 1.6	< 0.82	< 16	< 1.6	< 0.82	< 8.2	< 0.82	< 1.6	< 0.82
SV-22	10/2/2019	10	5035/8260B	< 0.80	< 0.80	< 0.80	< 1.6	< 1.6	< 0.80	< 40	< 4.0	< 1.6	< 16	< 0.80	< 0.80	< 0.80	< 1.6	< 0.80	< 16	< 1.6	< 0.80	< 8.0	< 0.80	< 1.6	< 0.80
SV-22	10/2/2019	12	5035/8260B	< 1.1	< 1.1	< 1.1	< 2.3	< 2.3	< 1.1	< 57	< 5.7	< 2.3	< 23	< 1.1	< 1.1	< 1.1	< 2.3	< 1.1	< 23	< 2.3	< 1.1	< 11	< 1.1	< 2.3	< 1.1
SV-22	10/2/2019	15	5035/8260B	< 0.87	< 0.87	< 0.87	< 1.7	< 1.7	< 0.87	< 44	< 4.4	< 1.7	< 17	< 0.87	< 0.87	< 0.87	< 1.7	< 0.87	< 17	< 1.7	< 0.87	< 8.7	< 0.87	< 1.7	< 0.87
SV-23	10/2/2019	2	5035/8260B	< 0.73	< 0.73	< 0.73	< 1.5	< 1.5	< 0.73	**37**	< 3.7	< 1.5	< 15	**0.91**	< 0.73	< 0.73	< 1.5	**1.1**	< 15	**2.4**	< 0.73	< 7.3	< 0.73	< 1.5	< 0.73
DUP08	10/2/2019	2	5035/8260B	< 0.90	< 0.90	< 0.90	< 1.8	< 1.8	< 0.90	**47**	< 4.5	< 1.8	< 18	**1.5**	< 0.90	< 0.90	< 1.8	**1.6**	< 18	**6.1**	< 0.90	< 9.0	< 0.90	< 1.8	< 0.90
SV-23	10/2/2019	5	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	< 0.74	< 0.74	< 1.5	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
SV-23	10/2/2019	10	5035/8260B	< 0.75	< 0.75	< 0.75	< 1.5	< 1.5	< 0.75	< 38	< 3.8	< 1.5	< 15	< 0.75	< 0.75	< 0.75	< 1.5	< 0.75	< 15	< 1.5	< 0.75	< 7.5	< 0.75	< 1.5	< 0.75
SV-23	10/2/2019	12	5035/8260B	< 1.1	< 1.1	< 1.1	< 2.2	< 2.2	< 1.1	< 54	< 5.4	< 2.2	< 22	< 1.1	< 1.1	< 1.1	< 2.2	< 1.1	< 22	< 2.2	< 1.1	< 11	< 1.1	< 2.2	< 1.1
SV-23	10/2/2019	15	5035/8260B	< 0.73	< 0.73	< 0.73	< 1.5	< 1.5	< 0.73	< 36	< 3.6	< 1.5	< 15	< 0.73	< 0.73	**0.99**	< 1.5	< 0.73	< 15	< 1.5	< 0.73	< 7.3	< 0.73	< 1.5	< 0.73
SV-24	10/2/2019	2	5035/8260B	< 0.73	< 0.73	< 0.73	< 1.5	**3.4**	< 0.73	< 36	< 3.6	< 1.5	< 15	< 0.73	< 0.73	< 0.73	< 1.5	< 0.73	< 15	< 1.5	< 0.73	< 7.3	< 0.73	< 1.5	< 0.73
SV-24	10/2/2019	5	5035/8260B	< 1.3	< 1.3	< 1.3	< 2.6	**14**	< 1.3	< 66	< 6.6	< 2.6	< 26	< 1.3	< 1.3	< 1.3	< 2.6	< 1.3	< 26	< 2.6	< 1.3	< 13	< 1.3	< 2.6	< 1.3
DUP09	10/2/2019	5	5035/8260B	< 0.75	< 0.75	< 0.75	< 1.5	**7.9**	< 0.75	**39**	< 3.8	< 1.5	< 15	< 0.75	< 0.75	< 0.75	< 1.5	< 0.75	< 15	< 1.5	< 0.75	< 7.5	< 0.75	< 1.5	< 0.75
SV-24	10/2/2019	10	5035/8260B	< 0.88	< 0.88	< 0.88	< 1.8	< 1.8	< 0.88	< 44	< 4.4	< 1.8	< 18	< 0.88	< 0.88	< 0.88	< 1.8	< 0.88	< 18	< 1.8	< 0.88	< 8.8	< 0.88	< 1.8	< 0.88
SV-24	10/2/2019	12	5035/8260B	< 0.92	< 0.92	< 0.92	< 1.8	< 1.8	< 0.92	< 46	< 4.6	< 1.8	< 18	< 0.92	< 0.92	< 0.92	< 1.8	< 0.92	< 18	< 1.8	< 0.92	< 9.2	< 0.92	< 1.8	< 0.92
SV-24	10/2/2019	15	5035/8260B	< 0.83	< 0.83	< 0.83	< 1.7	< 1.7	< 0.83	< 42	< 4.2	< 1.7	< 17	< 0.83	< 0.83	**1.8**	< 1.7	< 0.83	< 17	< 1.7	< 0.83	< 8.3	< 0.83	< 1.7	< 0.83
SV-25	10/2/2019	2	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	< 0.74	< 0.74	< 1.5	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
SV-25	10/2/2019	5	5035/8260B	< 39	< 39	**54**	< 79	< 79	< 39	< 2,000	< 200	< 79	< 790	< 39	< 39	< 39	< 79	< 39	< 790	< 79	< 39	< 390	**40**	< 79	< 39
SV-25	10/2/2019	10	5035/8260B	< 45	< 45	**1,100**	< 89	< 89	< 45	< 2,200	< 220	< 89	< 890	< 45	< 45	< 45	< 89	< 45	< 890	< 89	**110**	< 450	**520**	**270**	**330**
DUP10	10/2/2019	10	5035/8260B	< 73	< 73	**1,900**	< 150	< 150	< 73	< 3,700	< 370	< 150	< 1500	< 73	< 73	< 73	< 150	< 73	< 1,500	< 150	**200**	< 730	**970**	**420**	**610**
SV-25	10/2/2019	12	5035/8260B	< 0.71	< 0.71	**2.5**	< 1.4	< 1.4	< 0.71	< 36	< 3.6	< 1.4	< 14	< 0.71	< 0.71	< 0.71	< 1.4	< 0.71	< 14	< 1.4	< 0.71	< 7.1	< 0.71	< 1.4	< 0.71
SV-25	10/2/2019	15	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	< 0.74	< 0.74	< 0.74	< 1.5	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
SV-26	10/2/2019	2	5035/8260B	< 1.5	< 1.5	< 1.5	< 3.1	< 3.1	< 1.5	< 77	< 7.7	< 3.1	< 31	< 1.5	< 1.5	< 1.5	< 3.1	< 1.5	< 31	< 3.1	< 1.5	< 15	< 1.5	< 3.1	< 1.5
SV-26	10/2/2019	5	5035/8260B	< 1.5	< 1.5	< 1.5	< 3.0	< 3.0	< 1.5	< 75	< 7.5	< 3.0	< 30	< 1.5	**1.6**	< 1.5	< 3.0	< 1.5	< 30	< 3.0	< 1.5	< 15	< 1.5	< 3.0	< 1.5
SV-26	10/2/2019	10	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	**0.93**	**11**	< 0.74	**5.3**	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
SV-26	10/2/2019	12	5035/8260B	< 0.68	< 0.68	< 0.68	< 1.4	< 1.4	< 0.68	< 34	< 3.4	< 1.4	< 14	**1.4**	**19**	< 0.68	**6.9**	< 0.68	< 14	< 1.4	< 0.68	< 6.8	< 0.68	< 1.4	< 0.68
SV-26	10/2/2019	15	5035/8260B	< 0.74	< 0.74	< 0.74	< 1.5	< 1.5	< 0.74	< 37	< 3.7	< 1.5	< 15	**3.7**	**47**	< 0.74	**14**	< 0.74	< 15	< 1.5	< 0.74	< 7.4	< 0.74	< 1.5	< 0.74
SV-27	10/2/2019	2	5035/8260B	< 2.0	< 2.0	< 2.0	< 3.9	< 3.9	< 2.0	< 99	< 9.9	< 3.9	< 39	< 2.0	< 2.0	< 2.0	< 3.9	< 2.0	< 39	< 3.9	< 2.0	< 20	< 2.0	< 3.9	< 2.0
SV-27	10/2/2019	5	5035/8260B	< 1.7	< 1.7	< 1.7	< 3.4	< 3.4	< 1.7	< 86	< 8.6	< 3.4	< 34	< 1.7	< 1.7	< 1.7	< 3.4	< 1.7	< 34	< 3.4	< 1.7	< 17	< 1.7	< 3.4	< 1.7
SV-27	10/2/2019	10	5035/8260B	< 1.8	< 1.8	< 1.8	< 3.6	< 3.6	< 1.8	**160**	< 8.9	< 3.6	< 36	< 1.8	< 1.8	< 1.8	< 3.6	< 1.8	< 36	< 3.6	< 1.8	< 18	< 1.8	< 3.6	< 1.8
SV-27	10/2/2019	12	5035/8260B	< 1.5	< 1.5	< 1.5	< 3.0	< 3.0	< 1.5	< 75	< 7.5	< 3.0	< 30	< 1.5	< 1.5	< 1.5	< 3.0	< 1.5	< 30	< 3.0	< 1.5	< 15	< 1.5	< 3.0	< 1.5
SV-27	10/2/2019	15	5035/8260B	< 1.8	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8	< 91	< 9.1	< 3.7	< 37	< 1.8	< 1.8	< 1.8	**17**	< 1.8	< 37	< 3.7	< 1.8	< 18	< 1.8	< 3.7	< 1.8

Table 9. Summary of VOC Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

				Benzene	Toluene	Ethyl Benzene	m,p-xylene	MTBE	ortho-xylene	Acetone	Bromoform	Chloroethane	Chloromethane	1,1-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	2-Butanone	1,2,4-Trichlorobenzene	Isopropylbenzene	Methylene Chloride	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene
Soil Target Levels				**1,400**	**5,300,000**	**25,000**	**2,400,000**	**210,000**	**2,800,000**	**670,000,000**	**86,000**	**57,000,000**	**460,000**	**16,000**	**84,000**	**2,700**	**6,000**	**150**	**190,000,000**	**35,000**	**9,900,000**	**26,000**	**18,000,000**	**24,000,000**	**12,000,000**
Sample ID	**Date**	**Depth**	**USEPA Method**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**ug/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
SV-28	10/7/2019	2	5035/8260B	< 1.8	< 1.8	< 1.8	< 3.5	< 3.5	< 1.8	< 88	< 8.8	< 3.5	< 35	< 1.8	< 1.8	< 1.8	**8.0**	< 1.8	< 35	< 3.5	< 1.8	< 18	< 1.8	< 3.5	< 1.8
SV-28	10/7/2019	5	5035/8260B	< 1.5	< 1.5	< 1.5	< 3.0	< 3.0	< 1.5	**500**	< 7.6	< 3.0	< 30	**4.8**	**4.5**	< 1.5	**11**	< 1.5	< 30	< 3.0	< 1.5	< 15	< 1.5	< 3.0	< 1.5
SV-28	10/7/2019	10	5035/8260B	< 2.0	< 2.0	< 2.0	< 4.0	< 4.0	< 2.0	**130**	< 9.9	< 4.0	< 40	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 40	< 4.0	< 2.0	< 20	< 2.0	< 4.0	< 2.0
SV-28	10/7/2019	12	5035/8260B	< 1.8	< 1.8	< 1.8	< 3.5	< 3.5	< 1.8	**320**	< 8.8	< 3.5	< 35	**2.8**	**2.0**	< 1.8	**4.7**	< 1.8	< 35	< 3.5	< 1.8	< 18	< 1.8	< 3.5	< 1.8
SV-28	10/7/2019	15	5035/8260B	< 1.7	< 1.7	< 1.7	< 3.3	< 3.3	< 1.7	**170**	< 8.3	< 3.3	< 33	**20**	**15**	< 1.7	**50**	< 1.7	< 33	< 3.3	< 1.7	< 17	< 1.7	< 3.3	< 1.7
DUP14	10/7/2019	15	5035/8260B	< 1.5	< 1.5	< 1.5	< 3.1	< 3.1	< 1.5	< 77	< 7.7	< 3.1	< 31	**10**	**8.0**	< 1.5	**25**	< 1.5	< 31	< 3.1	< 1.5	< 15	< 1.5	< 3.1	< 1.5
SV-28	10/7/2019	15	5035/8260B	< 1.7	< 1.7	< 1.7	< 3.3	< 3.3	< 1.7	**170**	< 8.3	< 3.3	< 33	**20**	**15**	< 1.7	**50**	< 1.7	< 33	< 3.3	< 1.7	< 17	< 1.7	< 3.3	< 1.7
Leighton																									
LA-SB1	8/7/2018	5	5035/8260B	< 5.3	< 5.3	< 5.3	< 11	< 5.3	< 5.3	---	< 5.3	< 5.3	< 5.3	**8.9**	< 5.3	< 5.3	< 5.3	< 5.3	---	< 5.3	< 5.3	< 5.3	< 5.3	< 5.3	< 5.3
LA-SB1	8/7/2018	15	5035/8260B	< 5.1	< 5.1	< 5.1	< 10	< 5.1	< 5.1	---	< 5.1	< 5.1	< 5.1	**11**	< 5.1	< 5.1	< 5.1	< 5.1	---	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1	< 5.1
LA-SB10	8/7/2018	5	5035/8260B	< 4.9	< 4.9	< 4.9	< 9.7	< 4.9	< 4.9	---	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	---	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9
LA-SB2	8/7/2018	5	5035/8260B	< 4.3	< 4.3	< 4.3	< 8.6	< 4.3	< 4.3	---	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	---	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3
LA-SB3	8/7/2018	2.5	5035/8260B	< 3.8	< 3.8	< 3.8	< 7.6	< 3.8	< 3.8	---	< 3.8	**6.2**	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	**4.0**	---	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
LA-SB3	8/7/2018	5	5035/8260B	< 4.5	< 4.5	< 4.5	< 9.1	< 4.5	< 4.5	---	< 4.5	< 4.5	< 4.5	**16**	**23**	< 4.5	< 4.5	< 4.5	---	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5
LA-SB3	8/7/2018	15	5035/8260B	< 4.8	< 4.8	< 4.8	< 9.5	< 4.8	< 4.8	---	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	---	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8
LA-SB3	8/7/2018	25	5035/8260B	< 4.1	< 4.1	< 4.1	< 8.3	< 4.1	< 4.1	---	< 4.1	< 4.1	< 4.1	**7.5**	< 4.1	**6.3**	< 4.1	< 4.1	---	< 4.1	< 4.1	< 4.1	< 4.1	< 4.1	< 4.1
LA-SB4	8/7/2018	5	5035/8260B	< 4.4	< 4.4	< 4.4	< 8.7	< 4.4	< 4.4	---	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	---	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4
LA-SB5	8/7/2018	5	5035/8260B	< 5.7	< 5.7	< 5.7	< 11	< 5.7	< 5.7	---	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	---	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7
LA-SB5	8/7/2018	15	5035/8260B	< 4.4	< 4.4	< 4.4	< 8.9	< 4.4	< 4.4	---	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	---	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4
LA-SB6	8/7/2018	5	5035/8260B	< 4.3	< 4.3	< 4.3	< 8.6	< 4.3	< 4.3	---	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	---	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3
LA-SB6	8/7/2018	15	5035/8260B	< 4.5	< 4.5	< 4.5	< 9.0	< 4.5	< 4.5	---	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	---	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5
LA-SB7	8/7/2018	5	5035/8260B	< 4.2	< 4.2	< 4.2	< 8.3	< 4.2	< 4.2	---	**4.9**	< 4.2	< 4.2	< 4.2	< 4.2	< 4.2	**5**	< 4.2	---	< 4.2	< 4.2	< 4.2	< 4.2	< 4.2	< 4.2
LA-SB7	8/7/2018	15	5035/8260B	< 4.4	< 4.4	< 4.4	< 8.8	< 4.4	< 4.4	---	< 4.4	< 4.4	< 4.4	**11**	**9.1**	< 4.4	**41**	< 4.4	---	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4
LA-SB7	8/7/2018	25	5035/8260B	< 3.8	< 3.8	< 3.8	< 7.7	< 3.8	< 3.8	---	< 3.8	< 3.8	< 3.8	**7.2**	**10**	**13**	**45**	< 3.8	---	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
LA-SB8	8/7/2018	5	5035/8260B	< 6.4	< 6.4	< 6.4	< 13	< 6.4	< 6.4	---	< 6.4	< 6.4	< 6.4	< 6.4	< 6.4	< 6.4	< 6.4	< 6.4	---	< 6.4	< 6.4	< 6.4	< 6.4	< 6.4	< 6.4
LA-SB8	8/7/2018	15	5035/8260B	< 4.3	< 4.3	< 4.3	< 8.6	< 4.3	< 4.3	---	< 4.3	< 4.3	< 4.3	< 4.3	**5.3**	< 4.3	**21**	< 4.3	---	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3
LA-SB9	8/7/2018	5	5035/8260B	< 7.5	< 7.5	< 7.5	< 15	< 7.5	< 7.5	---	< 7.5	< 7.5	**30**	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	---	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5
Fulcrum																									
SB1-10	10/31/2017	10	5030A/8260B	< 2.00	< 2.00	< 2.00	< 2.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB2-10	10/31/2017	10	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB6-3	10/31/2017	3	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	**11.5**	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB9-3	10/31/2017	3	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB10-3	10/31/2017	3	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**90.3**	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB10-5	10/31/2017	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB10-10	10/31/2017	10	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB11-3	10/31/2017	3	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB12-10	10/31/2017	10	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB13-10	10/31/2017	10	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB14-3	10/31/2017	3	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB15-3	10/31/2017	3	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB16-3	10/31/2017	3	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB17-20	10/31/2017	20	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB18-15	10/31/2017	15	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB19-15	10/31/2017	15	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB20-15	10/31/2017	15	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB21-15	10/31/2017	15	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB25-20	10/31/2017	20	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	<30.0	<30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	---	---	---	---	---	---	---
SB26	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB27	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB28	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB29	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**25.8**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB30	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0

Table 9. Summary of VOC Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

				Benzene	Toluene	Ethyl Benzene	m,p-xylene	MTBE	ortho-xylene	Acetone	Bromoform	Chloroethane	Chloromethane	1,1-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride	2-Butanone	1,2,4-Trichlorobenzene	Isopropylbenzene	Methylene Chloride	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene
Soil Target Levels				**1,400**	**5,300,000**	**25,000**	**2,400,000**	**210,000**	**2,800,000**	**670,000,000**	**86,000**	**57,000,000**	**460,000**	**16,000**	**84,000**	**2,700**	**6,000**	**150**	**190,000,000**	**35,000**	**9,900,000**	**26,000**	**18,000,000**	**24,000,000**	**12,000,000**
Sample ID	**Date**	**Depth**	**USEPA Method**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**ug/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
SB31	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**33.5**	< 50.0	< 30.0	< 30.0	< 10.0	**27.5**	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB32	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**85.0**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB33	10/24/2018	5	5030A/8260B	**1.00**	**2.70**	**2.50**	**4.60**	< 5.00	**2.65**	**138**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB34	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**55.4**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB35	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB36	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**18.8**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	**9.85**	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB37	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**14.0**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB38	10/24/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB39	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**13.2**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB40	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB41	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**14.3**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB42	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**12.9**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB43	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	**12.7**	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB44	10/25/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0
SB45	10/30/2018	5	5030A/8260B	< 2.00	< 2.00	< 2.00	< 4.00	< 5.00	< 2.00	< 50.0	< 50.0	< 30.0	< 30.0	< 10.0	< 10.0	< 10.0	< 10.0	< 30.0	< 50.0	< 10.0	< 10.0	< 50.0	< 10.0	< 10.0	< 10.0

Notes:
DTSC - Toxic Substances Control Department
ft bgs - feet below ground surface
ID - identification
µg/kg - micrograms per kilogram
NE - not established
VOCs - volatile organic compounds
USEPA - United States Environmental Protection Agency
-- - not analyzed
Duplicate sample is listed immediately below its respective primary sample result
<X - concentration was not detected above laboratory reporting limit
See Table 10 and Appendix A for additional details regarding the site specific soil target levels.

Table 10

Summary for Soil Target levels

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	$RBTC_{Soil}$ (mg/kg)	Soil DTSC-SL (mg/kg)	USEPA Soil RSL (mg/kg)	SFBRWQCB ESL (mg/kg)		Alternative Soil Screening Levels [a] (mg/kg)	Soil Target Level [b] (mg/kg)
		Construction Worker	Commericial	Commericial	Commercial: Shallow Soil Exposure	Construction Worker		
VOC	Benzene	--	1.4E+00	5.1E+00	--	--	--	1.4E+00
VOC	1,1-Dichloroethane	--	1.6E+01	1.6E+01	--	--	--	1.6E+01
VOC	cis-1,2-Dichloroethene	--	8.4E+01	2.3E+03	--	--	--	8.4E+01
VOC	Tetrachloroethene	--	2.7E+00	1.0E+02	--	--	--	2.7E+00
VOC	Trichloroethene	--	--	6.0E+00	--	--	--	6.0E+00
VOC	Vinyl Chloride	--	1.5E-01	1.7E+00	--	--	--	1.5E-01
VOC	Acetone	--	--	6.7E+05	--	--	--	6.7E+05
VOC	Bromoform	--	8.6E+01	8.6E+01	--	--	--	8.6E+01
VOC	Chloroethane	--	--	5.7E+04	--	--	--	5.7E+04
VOC	Chloromethane	--	--	4.6E+02	--	--	--	4.6E+02
VOC	Ethyl Benzene	--	--	2.5E+01	--	--	--	2.5E+01
VOC	Methyl tert-Butyl Ether	--	--	2.1E+02	--	--	--	2.1E+02
VOC	Toluene	--	5.3E+03	4.7E+04	--	--	--	5.3E+03
VOC	m,p-Xylene	--	--	2.4E+03	--	--	--	2.4E+03
VOC	ortho-Xylene	--	--	2.8E+03	--	--	--	2.8E+03
VOC	2-Butanone (MEK)	--	--	1.9E+05	--	--	--	1.9E+05
VOC	n-Butylbenzene	--	1.8E+04	5.8E+04	--	--	--	1.8E+04
VOC	sec-Butylbenzene	--	1.2E+04	1.2E+05	--	--	--	1.2E+04
VOC	Isopropylbenzene	--	--	9.9E+03	--	--	--	9.9E+03
VOC	n-Propylbenzene	--	--	2.4E+04	--	--	--	2.4E+04
VOC	Methylene Chloride	--	2.6E+01	1.0E+03	--	--	--	2.6E+01
VOC	1,2,4-Trichlorobenzene	--	3.5E+01	1.1E+02	--	--	--	3.5E+01
TPH	TPH as Diesel	--	--	--	1.2E+03	1.1E+03	--	1.1E+03
TPH	TPH as Gasoline	--	--	--	2.0E+03	1.8E+03	--	1.8E+03
PDIST	TPH as Motor Oil	--	--	--	1.8E+05	5.4E+04	--	5.4E+04
PCB	Aroclor-1248	3.5E+00	5.8E-01	9.4E-01	--	--	--	9.4E-01
PCB	Aroclor-1254	3.5E+00	5.9E-01	9.7E-01	--	--	--	9.7E-01
PCB	Aroclor-1260	3.5E+00	6.0E-01	9.9E-01	--	--	--	9.9E-01
PCB	Aroclor-1262	3.5E+00	--	--	--	--	--	3.5E+00
INORG	Antimony	1.4E+02	--	4.7E+02	--	--	--	1.4E+02
INORG	Arsenic	--	3.6E-01	3.0E+00	--	--	1.2E+01	1.2E+01
INORG	Barium	1.7E+04	--	2.2E+05	--	--	--	1.7E+04
INORG	Beryllium	3.0E+01	2.3E+02	2.3E+03	--	--	--	3.0E+01
INORG	Cadmium	3.3E+01	--	9.8E+02	--	--	--	3.3E+01
INORG	Chromium	2.1E+04	--		--	--	--	2.1E+04
INORG	Chromium VI	3.9E+00	6.2E+00	6.3E+00	--	--	--	3.9E+00
INORG	Cobalt	6.8E+01	--	3.5E+02	--	--	--	6.8E+01
INORG	Copper	3.5E+03	--	4.7E+04	--	--	--	3.5E+03
INORG	Lead	--	3.2E+02	8.0E+02	--	--	--	3.2E+02
INORG	Mercury	1.1E+02	4.4E+00	4.6E+01	--	--	--	4.4E+00
INORG	Molybdenum	1.8E+03	--	5.8E+03	--	--	--	1.8E+03
INORG	Nickel	7.8E+02	1.1E+04	2.2E+04	--	--	--	7.8E+02
INORG	Selenium	1.7E+03	--	5.8E+03	--	--	--	1.7E+03
INORG	Silver	1.8E+03	--	5.8E+03	--	--	--	1.8E+03
INORG	Thallium	1.4E+01	--	1.2E+01	--	--	--	1.2E+01
INORG	Vanadium	3.9E+02	--	5.8E+03	--	--	--	3.9E+02
INORG	Zinc	1.1E+05	--	3.5E+05	--	--	--	1.1E+05

Notes:

a. Alternative screening level for Arsenic is background concentration from Chernoff (2008).

b. The target levels are the minimum of calculated construction worker RBTCs and soil screening levels from Cal/EPA (2019) and USEPA (2019) for INORG (except arsenic and lead), the minimum soil screening levels from Cal/EPA (2019) and USEPA (2019) for VOC and lead, the minimum commercial and construction worker soil ESLs from SFBRWQCB (2019) for TPH, the minimum of calculated construction worker RBTCs and soil screening levels from USEPA (2019) for PCB, and the California background level for arsenic (Chernoff, 2008).

-- = Not calculated
Cal/EPA = California Environmental Protection Agency
DTSC = Department of Toxic Substances Control
ESL - Environmental Screening Level
ft = feet
INORG = Inorganic
mg/kg = milligram per kilogram
PCB = Polychlorinated Biphenyl
TPH = Total Petroleum Hydrocarbon
$RBTC_{Soil}$ = Risk-Based Target Concentration for soil
RSL = Regional screening level
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
SL = Screening level
TPH = Total Petroleum Hydrocarbons
USEPA = United States Environmental Protection Agency
VOC = Volatile Organic Compound

Sources:

Cal/EPA. 2019. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs
Chernoff G, Bosan W, Oudiz D. 2008. Determination of a Southern California Regional Background Arsenic Concentration in Soil.
SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. January
USEPA. 2019. Regional Screening Levels. November.

Table 11. Summary of Excavation Areas
2101 and 2129 West Rosecrans Avenue
Gardena, California

Excavation Area	Sample ID	Sample Depth (feet)	Excavation: Dimensions: Length (in feet)	Excavation: Dimensions: Width (in feet)	Excavation: Dimensions: Depth (in feet)	Excavation: Area: square feet	Excavation: Volume: in cubic feet	Excavation: Volume: in cubic yards	Estimated Number of Confirmation Samples: Side wall	Estimated Number of Confirmation Samples: Excavation Bottom	COC	TPH mg/kg: TPH-D	PCBs µg/kg: Aroclor-1248	PCBs µg/kg: Aroclor-1254	PCBs µg/kg: Aroclor-1260	Metals mg/kg: Lead	Metals mg/kg: Cadmium	Metals mg/kg: Copper	Metals mg/kg: Nickel	Metals mg/kg: Vanadium	Metals mg/kg: Hexavalent Chromium
Soil Target Levels												**1,100**	**940**	**970**	**990**	**320**	**33**	**3,500**	**780**	**390**	**3.9**
EX-1	SB31	1	25	25	2.5	625	1563	58	4	0	PCBs	NA	**5,930**	<33	<33	NA	NA	NA	NA	NA	NA
		2										NA	<33	<33	<33	NA	NA	NA	NA	NA	NA
EX-2	SB33	1	25	25	5.5	625	3438	127	4	0	PCBs	NA	<33	**289**	<33	NA	NA	NA	NA	NA	NA
		2										NA	<33	<33	<33	NA	NA	NA	NA	NA	NA
		5										NA	**4,530**	<33	<33	NA	NA	NA	NA	NA	NA
	SB32	6										NA	**320**	<33	<33	NA	NA	NA	NA	NA	NA
		7										NA	<50	<50	<50	NA	NA	NA	NA	NA	NA
EX-3	LA-SB5	1	25	12.5	2.5	312.5	781	29	4	0	PCB, TPH-D	**2,500**	<800	**1,200**	<800	NA	NA	NA	NA	NA	NA
		2.5										**110**	<16	<16	<16	NA	NA	NA	NA	NA	NA
		5										**98**	<16	<16	<16	NA	NA	NA	NA	NA	NA
		10										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
		15										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
EX-4	LA-SB3	1	25	25	2.5	625	1563	58	4	0	PCBs	NA	<400	**1,400**	<400	NA	NA	NA	NA	NA	NA
		2.5										NA	<16	<16	<16	NA	NA	NA	NA	NA	NA
		5										NA	<16	<16	<16	NA	NA	NA	NA	NA	NA
		10										NA	<16	<16	<16	NA	NA	NA	NA	NA	NA
		15										NA	<16	<16	<16	NA	NA	NA	NA	NA	NA
		20										NA	<16	<16	<16	NA	NA	NA	NA	NA	NA
		25										NA	<16	<16	<16	NA	NA	NA	NA	NA	NA
		30										NA	<16	<16	<16	NA	NA	NA	NA	NA	NA
EX-5	SB-16	3	25	25	4	625	2500	93	4	1	PCBs, Lead, copper	NA	<5,000	**40,000**	<5,000	**401**	NA	**4,000**	NA	NA	NA
		5										NA	<50	<50	<50	<0.498	NA	**16.8**	NA	NA	NA
EX-6*	LA-SB-1	1	25	25	3.5	625	2188	81	4	1	Lead	NA	NA	NA	NA	**320**	NA	NA	NA	NA	NA
		2.5										NA	NA	NA	NA	**540**	NA	NA	NA	NA	NA
		5										NA	NA	NA	NA	**8.3**	NA	NA	NA	NA	NA
		10										NA	NA	NA	NA	**2.1**	NA	NA	NA	NA	NA
		15										NA	NA	NA	NA	**1.9**	NA	NA	NA	NA	NA
EX-7	RMW-3	2	25	25	3	625	1875	69	4	1	Lead	NA	NA	NA	NA	**566**	NA	NA	NA	NA	NA
		5										NA	NA	NA	NA	**113**	NA	NA	NA	NA	NA
		10										NA	NA	NA	NA	<0.508	NA	NA	NA	NA	NA
EX-8*	SB42	1	25	25	3.5	625	2188	81	4	1	Lead, Hex Chrome, Nickel	NA	NA	NA	NA	**569**	NA	NA	**1070**	NA	**15.3**
		2.5										NA	NA	NA	NA	**174**	NA	NA	**135**	NA	**14.3**
		5										NA	NA	NA	NA	**3.5**	NA	NA	N/A	NA	N/A
EX-9	SB-20	2	25	25	5.5	625	3438	127	4	0	PCBs	NA	**1,400**	<49	**110**	NA	NA	NA	NA	NA	NA
		5										NA	**1,700**	<49	**140**	NA	NA	NA	NA	NA	NA
	SB-44	6										NA	<50	<50	<50	NA	NA	NA	NA	NA	NA

Table 11. Summary of Excavation Areas
2101 and 2129 West Rosecrans Avenue
Gardena, California

Excavation Area	Sample ID	Sample Depth (feet)	Excavation: Dimensions: Length (in feet)	Excavation: Dimensions: Width (in feet)	Excavation: Dimensions: Depth (in feet)	Excavation: Area: square feet	Excavation: Volume: in cubic feet	Excavation: Volume: in cubic yards	Estimated Number of Confirmation Samples: Side wall	Estimated Number of Confirmation Samples: Excavation Bottom	COC	TPH mg/kg: TPH-D	PCBs µg/kg: Aroclor-1248	PCBs µg/kg: Aroclor-1254	PCBs µg/kg: Aroclor-1260	Metals mg/kg: Lead	Metals mg/kg: Cadmium	Metals mg/kg: Copper	Metals mg/kg: Nickel	Metals mg/kg: Vanadium	Metals mg/kg: Hexavalent Chromium
EX-10	SB-39	1	25	25	2	625	1250	46	4	1	PCBs	NA	**17,700**	<33	<33	NA	NA	NA	NA	NA	NA
		2										NA	**193**	<33	<33	NA	NA	NA	NA	NA	NA
		5										NA	**434**	<33	<33	NA	NA	NA	NA	NA	NA
	SB-52	1										NA	**22,000**	**11,000**	<50	NA	NA	NA	NA	NA	NA
		3										NA	<50	<50	<50	NA	NA	NA	NA	NA	NA
EX-11	LA-SB10	1	25	25	5.5	625	3438	127	4	0	PCBs, Nickel	NA	<160	**490**	<160	NA	NA	NA	**130**	NA	NA
		2.5										NA	**12,000**	<1,600	<1,600	NA	NA	NA	**2,600**	NA	NA
		5										NA	<16	**66**	<16	NA	NA	NA	**3,300**	NA	NA
		10										NA	<16	**24**	<16	NA	NA	NA	**29**	NA	NA
EX-12	LA-SB9	1	25	25	3.5	625	2188	81	4	1	Lead, PCBs, TPH-D	**3,100**	<320	**1,500**	<320	**470**	NA	NA	NA	NA	NA
		2.5										**1,100**	<16	<16	<16	**130**	NA	NA	NA	NA	NA
		5										**440**	<16	**110**	<16	**32**	NA	NA	NA	NA	NA
		10										**1,100**	<800	**3,000**	<800	**960**	NA	NA	NA	NA	NA
EX-13	SB22	3	15	25	4	375	1500	56	4	1	Lead, PCBs, Cadmium, Nickel	NA	<33	**16,000**	<33	**361**	**37.3**	NA	**799**	NA	NA
		5										NA	N/A	N/A	N/A	**10.9**	**1.04**	NA	**16**	NA	NA
EX-14	SB58	2	50	25	3	1250	3750	139	4	2	Lead, Cadmium	NA	NA	NA	NA	**389**	NA	NA	NA	NA	NA
		10										NA	NA	NA	NA	<0.485	NA	NA	NA	NA	NA
	SB56	2										NA	NA	NA	NA	**352**	NA	NA	NA	NA	NA
		10										NA	NA	NA	NA	<0.493	NA	NA	NA	NA	NA
	SB-51	2										NA	NA	NA	NA	NA	**36.3**	NA	NA	NA	NA
	SB23	3										NA	NA	NA	NA	NA	**1.92**	NA	NA	NA	NA
EX-15	LA-SB8	1	25	25	2.5	625	1563	58	4	0	Lead	NA	NA	NA	NA	**520**	NA	NA	NA	NA	NA
		2.5										NA	NA	NA	NA	**10**	NA	NA	NA	NA	NA
		5										NA	NA	NA	NA	**5.4**	NA	NA	NA	NA	NA
		10										NA	NA	NA	NA	**4**	NA	NA	NA	NA	NA
		15										NA	NA	NA	NA	**17**	NA	NA	NA	NA	NA
EX-16*	LA-SB7	1	37.5	25	2.5	937.5	2344	87	4	1	PCBs, TPH-d, VOCs	**4,100**	<320	**1,600**	<320	NA	NA	NA	NA	NA	NA
		2.5										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
		5										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
		10										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
		15										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
		20										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
		25										<10	<16	<16	<16	NA	NA	NA	NA	NA	NA
EX-17	RMW-5	2	25	25	5.5	625	3438	127	4	0	Lead	NA	NA	NA	NA	**10.2**	NA	NA	NA	NA	NA
		5										NA	NA	NA	NA	**430**	NA	NA	NA	NA	NA
		10										NA	NA	NA	NA	<0.505	NA	NA	NA	NA	NA
EX-18	LA-SB4	1	25	25	2.5	625	1563	58	4	0	Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	**830**	NA
		2.5										NA	NA	NA	NA	NA	NA	NA	NA	**28**	NA
		5										NA	NA	NA	NA	NA	NA	NA	NA	**36**	NA
		10										NA	NA	NA	NA	NA	NA	NA	NA	**22**	NA

Table 11. Summary of Excavation Areas
2101 and 2129 West Rosecrans Avenue
Gardena, California

			Excavation						Estimated Number of Confirmation Samples			TPH	PCBs			Metals					
			Dimensions			Area	Volume					mg/kg	µg/kg			mg/kg					
Excavation Area	Sample ID	Sample Depth (feet)	Length (in feet)	Width (in feet)	Depth (in feet)	square feet	in cubic feet	in cubic yards	Side wall	Excavation Bottom	COC	TPH-D	Aroclor-1248	Aroclor-1254	Aroclor-1260	Lead	Cadmium	Copper	Nickel	Vanadium	Hexavalent Chromium
EX-19	SB-41	3	25	25	4	625	2500	93	4	1	PCBs	NA	**8,800**	**7,300**	**3,800**	NA	NA	N/A	NA	NA	NA
		5										NA	<50	<50	<50	NA	NA	N/A	NA	NA	NA

Notes:
ID = identification
COC = Chemicals of Concern
Proposed excavation dimensions and depths are approximate. The actual depth and lateral extent will vary depending on confirmation soil sampling results.
At some excavation locations, existing samples below target levels are used for vertical delineation and bottom samples are not being proposed.
TPH-D = total petroleum hydrocarbons as diesel, carbon range
VOCs = volatile organic compounds
PCBs = Polychlorinated biphenyls
NA = not applicable, only compounds targeted for specific excavation are presented.
N/A = not available
ND<X = not detected (ND) at the specified laboratory reporting limit (RL)
Analytical results above the laboratory RLs are shown in **BOLD**
The maximum depth of impacted soil removal/excavation will be approximately 5 feet bgs. Any impacted soils left "in place" above target levels at a depth of 5 feet or below 5 feet will be recorded on a deed restriction.
The exception to the maximum excavation depth of 5 feet bgs is at EX-16. If VOC impacts are found at EX-16 deeper then 5 feet bgs, the excavation will extend deeper to remove VOC impacted soil.
Colored analytical results at LA-SB9 indicate the results are above the soil target levels, but will not be targeted for excavation
*Arsenic in soil above 12 mg/kg will be removed from excavations EX-6, EX-8 and EX-16. However, arsenic is not considered a COC at the site and confirmation sampling for arsenic will not be conducted.
Highlighted analytical results are above the soil target levels and are targeted for excavation/remediation.

Table 12. Summary of Waste Disposal Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Zoning of Soil Boring Locations	TPH		PCBs						Title 22 Metals and VI Chromium					
				DRO (mg/kg)	DRO STLC (mg/l)	Aroclor-1248(µg/kg)	Aroclor-1248 STLC (mg/l)	Aroclor-1248 TCLP (mg/l)	Aroclor-1254 (µg/kg)	Aroclor 1254-STLC (mg/l)	Aroclor 1254-TCLP (mg/l)	VI Chromium (mg/kg)	VI Chromium STLC (mg/l)	VI Chromium TCLP (mg/l)	Lead (mg/kg)	Lead STLC (mg/l)	Lead TCLP (mg/l)
Regulatory Screening Levels																	
Residential USEPA Region 9 Screening Levels				**96**	**NA**	**230**	**NA**	**NA**	**240**	**NA**	**NA**	**0.3**	**NA**	**NA**	**400**	**NA**	**NA**
Residential DTSC Hero Note 3 Screening Levels				**NE**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**80***	**NA**	**NA**
Commercial/Industrial USEPA Region 9 Screening Levels				**440**	**NA**	**950**	**NA**	**NA**	**950**	**NA**	**NA**	**6.3**	**NA**	**NA**	**800**	**NA**	**NA**
Commercial/Industrial DTSC Hero Note 3 Screening Levels				**NE**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**320***	**NA**	**NA**
Waste Criteria																	
STLC (mg/l)				**NA**	**NE**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**
TCLP (mg/l)				**NA**	**NE**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**5.0**	**5.0**	**5.0**
TTLC (mg/kg)				**NA**	**NE**	**50**	**50**	**50**	**50**	**50**	**50**	**500**	**500**	**500**	**1,000**	**1,000**	**1,000**
Ramboll																	
SB33-6	3/4/2019	6	Residential	**610**	<0.500	--	--	--	--	--	--	--	--	--		--	--
SB33-7	3/4/2019	7		**150**	--	--	--	--	--	--	--	--	--	--	--	--	--
SB33-8	3/4/2019	8		**36**	--	--	--	--	--	--	--	--	--	--	--	--	--
SB47-4	3/4/2019	4	Residential	--	--	--	--	--	--	--	--	**0.65**	<0.002	<0.001	**--**	--	--
SB47-5	3/4/2019	5		--	--	--	--	--	--	--	--	<0.4	--	--	**--**		
SB51-2	3/4/2019	2	Residential	--	--	--	--	--	--	--	--	--	--	--	**95.9**	**6.75**	<0.500
SB51-4	3/4/2019	4		--	--	--	--	--	--	--	--	--	--	--	**7.96**	--	--
SB52-1	3/4/2019	1	Residential	--	--	**22,000**	<0.01	<0.01	**11,000**	<0.01	<0.01	--	--	--	--	--	--
SB52-3	3/4/2019	3		--	--	<50	--	--	<50	--	--	--	--	--	--	--	--
RMW2-2	9/25/2019	2	Residential	--	--	--	--	--	--	--	--	--	--	--	**133**	**6.06**	<0.500
RMW2-5	9/25/2019	5		--	--	--	--	--	--	--	--	--	--	--	**1.80**	--	--
RMW3-2	9/26/2019	2	Residential	--	--	--	--	--	--	--	--	--	--	--	**566**	<0.500	<0.500
RMW3-5	9/26/2019	5		--	--	--	--	--	--	--	--	--	--	--	**113**	<0.500	<0.500
RMW3-10	9/26/2019	10		--	--	--	--	--	--	--	--	--	--	--	<0.508	--	--
RMW4-2	9/27/2019	2	Commercial	--	--	--	--	--	--	--	--	--	--	--	**119**	**4.37**	<0.500
RMW4-5	9/27/2019	5		--	--	--	--	--	--	--	--	--	--	--	**0.511**	--	--
RMW5-5	9/26/2019	5	Residential	--	--	--	--	--	--	--	--	--	--	--	**430**	**4.25**	<0.500
RMW5-10	9/26/2019	10		--	--	--	--	--	--	--	--	--	--	--	<0.505	--	--

Table 12. Summary of Waste Disposal Soil Sampling Results
2101 and 2129 Rosecrans Avenue
Gardena, California

Sample ID	Date	Depth (ft bgs)	Zoning of Soil Boring Locations	TPH		PCBs						Title 22 Metals and VI Chromium					
				DRO (mg/kg)	DRO STLC (mg/l)	Aroclor-1248(µg/kg)	Aroclor-1248 STLC (mg/l)	Aroclor-1248 TCLP (mg/l)	Aroclor-1254 (µg/kg)	Aroclor 1254-STLC (mg/l)	Aroclor 1254-TCLP (mg/l)	VI Chromium (mg/kg)	VI Chromium STLC (mg/l)	VI Chromium TCLP (mg/l)	Lead (mg/kg)	Lead STLC (mg/l)	Lead TCLP (mg/l)
Regulatory Screening Levels																	
Residential USEPA Region 9 Screening Levels				**96**	**NA**	**230**	**NA**	**NA**	**240**	**NA**	**NA**	**0.3**	**NA**	**NA**	**400**	**NA**	**NA**
Residential DTSC Hero Note 3 Screening Levels				**NE**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**80***	**NA**	**NA**
Commercial/Industrial USEPA Region 9 Screening Levels				**440**	**NA**	**950**	**NA**	**NA**	**950**	**NA**	**NA**	**6.3**	**NA**	**NA**	**800**	**NA**	**NA**
Commercial/Industrial DTSC Hero Note 3 Screening Levels				**NE**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**NE**	**NA**	**NA**	**320***	**NA**	**NA**
Waste Criteria																	
STLC (mg/l)				**NA**	**NE**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**
TCLP (mg/l)				**NA**	**NE**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**NL**	**5.0**	**5.0**	**5.0**
Fulcrum																	
SB22-3	10/31/2017	3	Residential	--	--	<33.0	--	--	**16,000**	--	--	**1.50**	--	--	**361**	**38.7**	--
SB31-1	10/24/2018	1	Residential	<10	--	**5,930**	--	--	< 33.0	--	--	<0.5	--	--	**121**	**4.11**	--
SB32-2.5	10/24/2018	2.5	Residential	<10	--	<33.0	--	--	**41.7**	--	--	<0.5	--	--	**119**	**3.64**	--

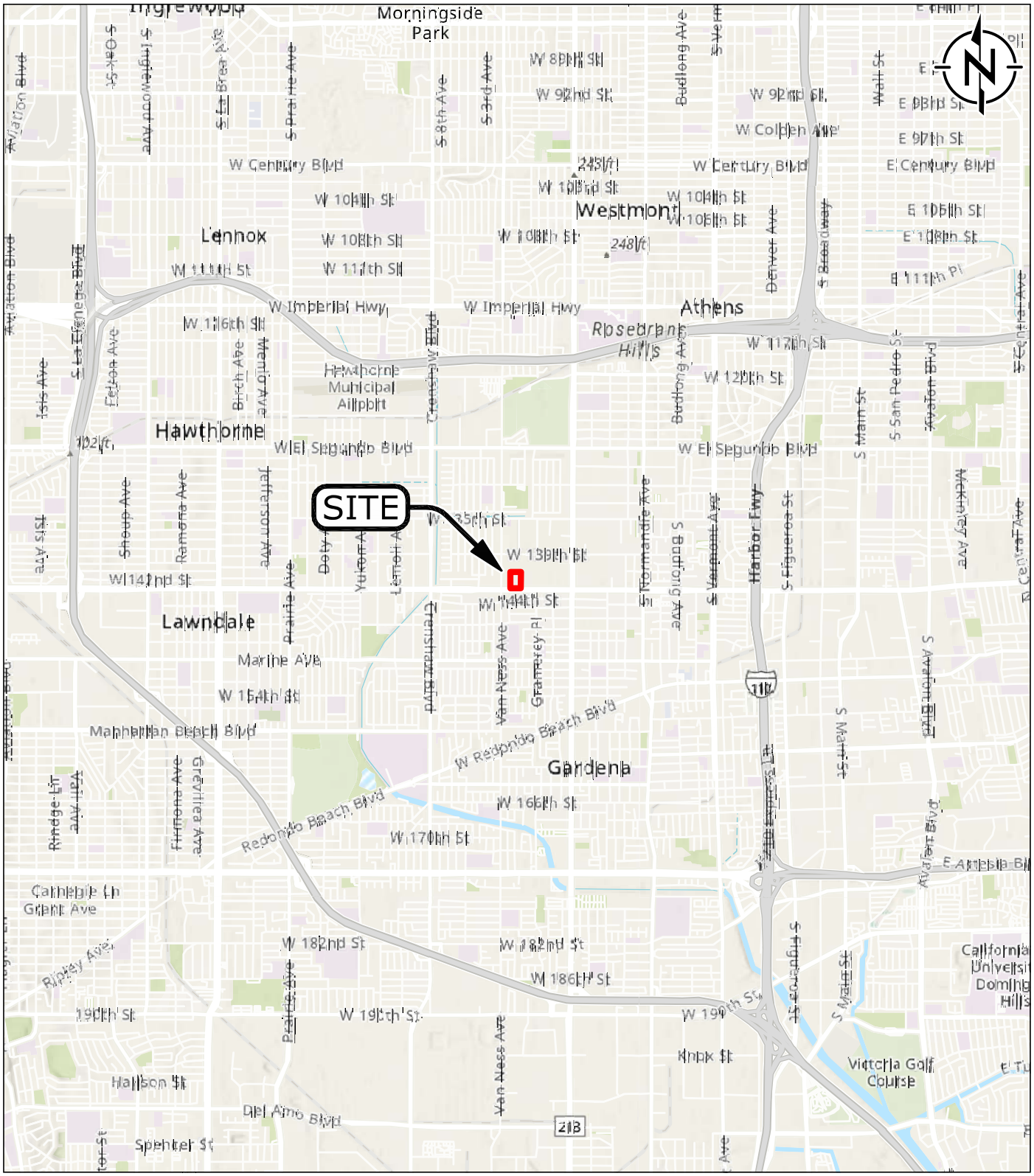
Notes:
DTSC - Toxic Substances Control Department
ft bgs - feet below ground surface
ID - identification
µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
mg/l - milligrams per liter
NA - not applicable
NE - not established
NL - not listed

PCBs- Polychlorinated biphenyls
STLC - Soluble Threshold Limit Concentration
TCLP - Toxicity characteristic leaching procedure
TPH - Total Petroleum Hydrocarbons
TTLC - Total threshold limit concentration
USEPA - United States Environmental Protection Agency
VI Chromium - Hexavalent Chromium
-- - not analyzed
<X - concentration was not detected above the laboratory reporting limit

The listed screening levels are the USEPA Region IX Regional Screening Levels (RSLs) for industrial/commercial land use (April 2019) and/or DTSC-modified human health Risk Assessment Note 3 - Screening levels (SLs) for industrial/commercial land use (April 2019). Results are compared to the most conservative screening level.

Result exceed the USEPA/DTSC screening levels for commercial/industrial soil
Result exceed the USEPA/DTSC screening levels for residential soil
Result exceeds the Waste Criteria

FIGURES



Source: Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
Map Scale: 1: Spatial Reference: NAD 1983 StatePlane California V FIPS 0405 Feet; Map Center: 118°18'57"W 33°54'7"N

C:\Projects\G3 Urban\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 01 - Site Location Map

RAMBOLL

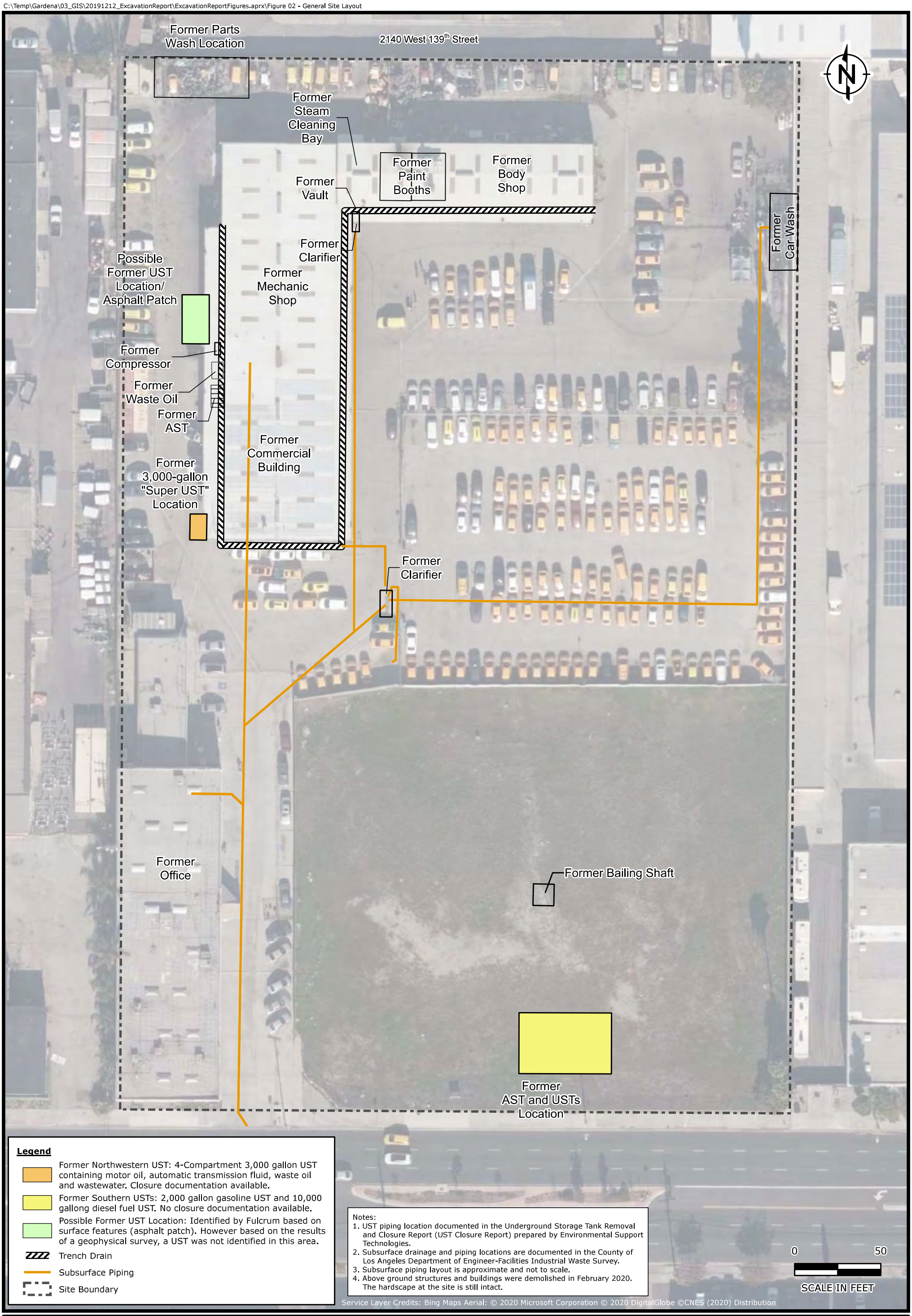
Site Location Map

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
1

DRAFTED BY: AHIGGINS | DATE: 3/20/2020 | PROJECT: 1690012501

C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 02 - General Site Layout



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DRAFTED BY: MKNEALE | DATE: 3/24/2020

General Site Layout and Features

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
2

PROJECT: 1690012501

C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 3 - Surrounding Properties

RAMBOLL

Surrounding Properties

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
3

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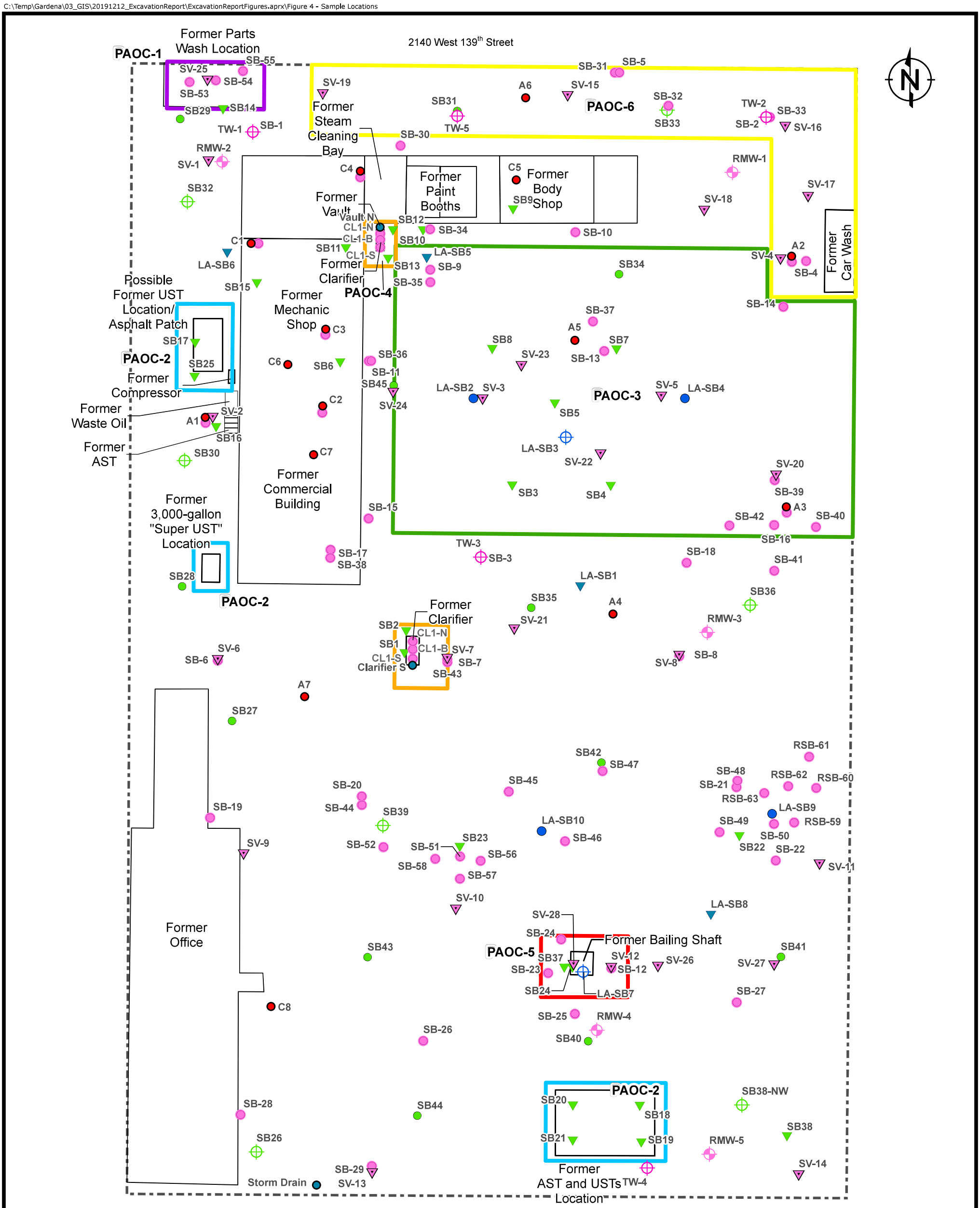
C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 4 - Sample Locations



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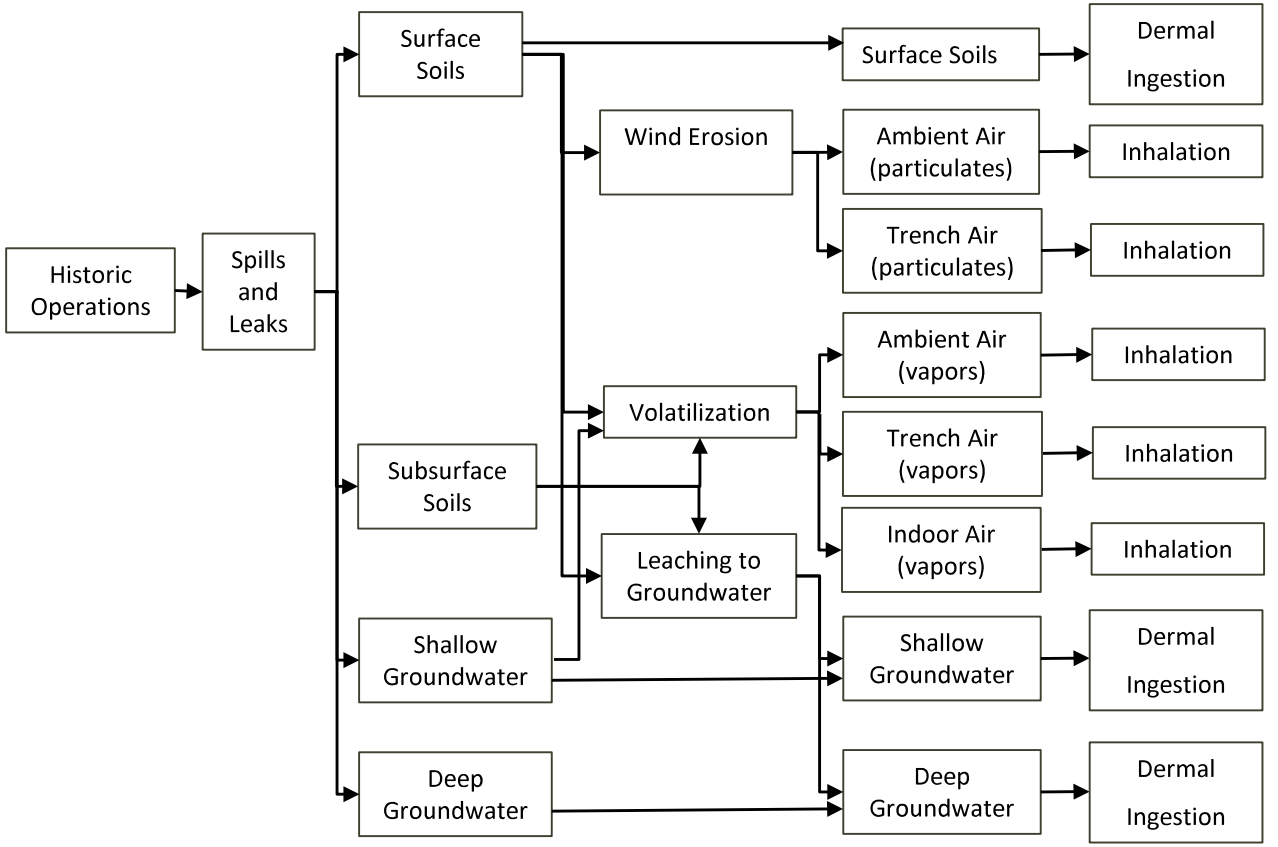
Site Exploration Plan and Potential Areas of Concern

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
4

PROJECT: 1690012501

Z:\01_Projects\G3 Urban\03_GIS\20191212_ExcavationReport\Figure 5 - Gardena CSM.pptx



Primary Source	Primary Release Mechanism	Potential Secondary Source	Secondary Release Mechanism	Exposure Media	Exposure Route	Residents	Commercial Composite Worker	Construction Trench Worker
Historic Operations	Spills and Leaks	Surface Soils		Surface Soils	Dermal Ingestion	O	X	X
			Wind Erosion	Ambient Air (particulates)	Inhalation	O	X	X
				Trench Air (particulates)	Inhalation	O	X	O
		Subsurface Soils	Volatilization	Ambient Air (vapors)	Inhalation	O	O	X
				Trench Air (vapors)	Inhalation	X	X	O
				Indoor Air (vapors)	Inhalation	O	O	X
			Leaching to Groundwater	Shallow Groundwater	Dermal Ingestion	X	X	O
		Shallow Groundwater				O	O	O
		Deep Groundwater		Deep Groundwater	Dermal Ingestion	O	O	O

Notes:

X = Potentially Complete Exposure Pathway

O = Incomplete Exposure Pathway

RAMBOLL

DRAFTED BY: Y ZHUANG | DATE: 3/20/2020

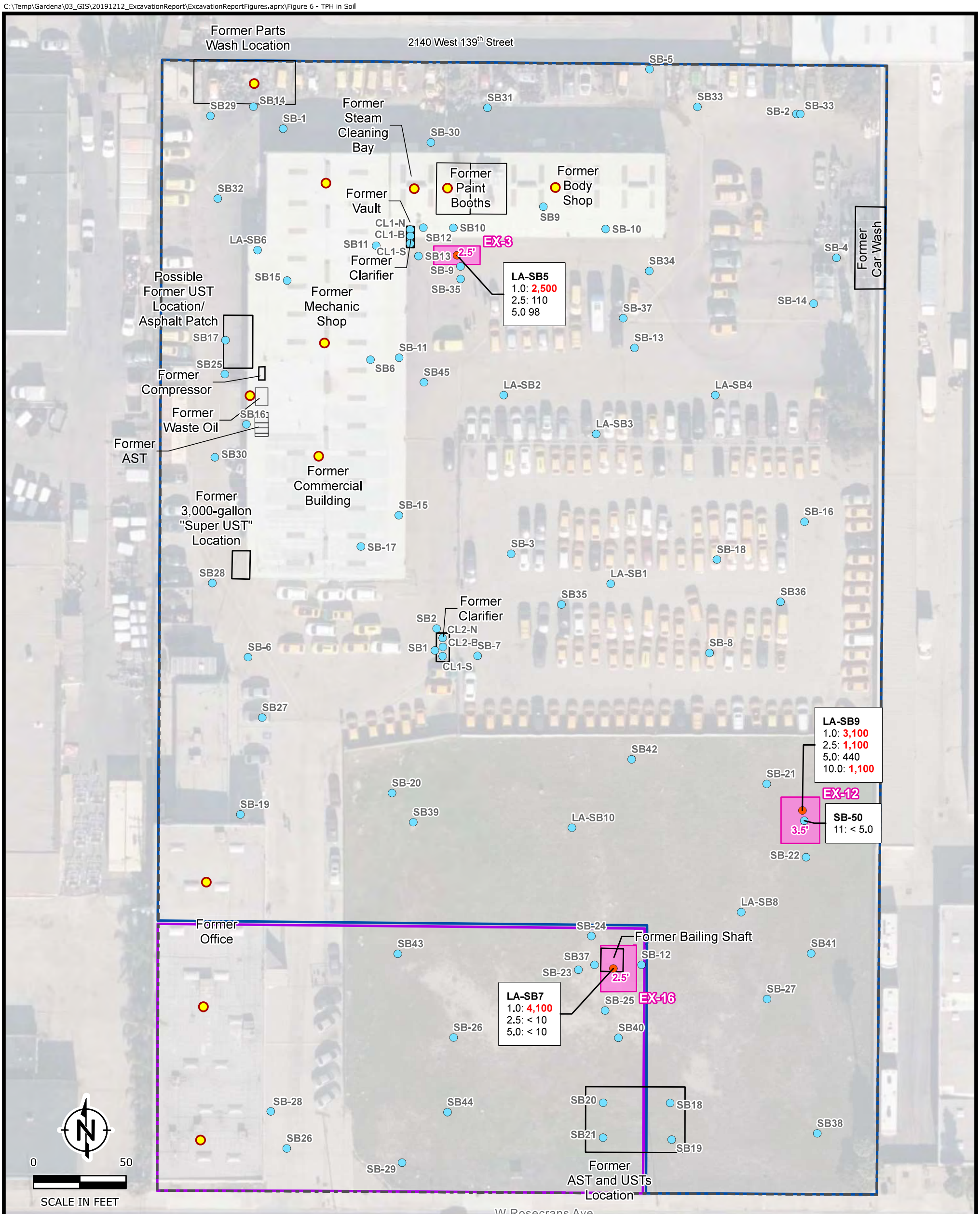
Conceptual Site Model

2101& 2129 West Rosecrans Avenue
Gardena, California

FIGURE
5

PROJECT: 1690012501

C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 6 - TPH in Soil



Legend

- 2' Proposed Excavation Area and Depth (ft bgs)

Proposed Sampling Locations

- Soil Sampling Location

Historical Sampling Locations

- Soil Sample Location with TPH Exceedance
- Soil Sample Location with no TPH Exceedance
- Proposed Commercial Boundary
- Proposed Residential Boundary
- Site Boundary

Label Explanation:
Sample ID
Depth (ft bgs): TPH DRO (mg/kg)

Notes:
1. Excavation depth and lateral extent may vary depending on confirmation soil sampling results.
2. 1,200: Exceedance of Commercial screening level
3. < x: Not detected above the laboratory reporting limit.
4. DRO: Diesel Range Organics
5. ft bgs: feet below ground surface
6. TPH: Total Petroleum Hydrocarbons
7. Results are in milligrams per kilogram (mg/kg)
8. Commercial San Francisco Bay Regional Water Quality Control Board (SFRWQCB) screening levels (SLs) for TPH DRO are 1,100 mg/kg.
9. Ramboll is proposing to collect 11 soil samples for TPH DRO analysis from beneath/adjacent to the footprints of the two main buildings and from the former parts wash station during grading activities at the site. The sampling locations and depths will be adjusted based on field observations during grading.

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Proposed TPH DRO Soil Sampling Locations and Excavation Layout

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
6

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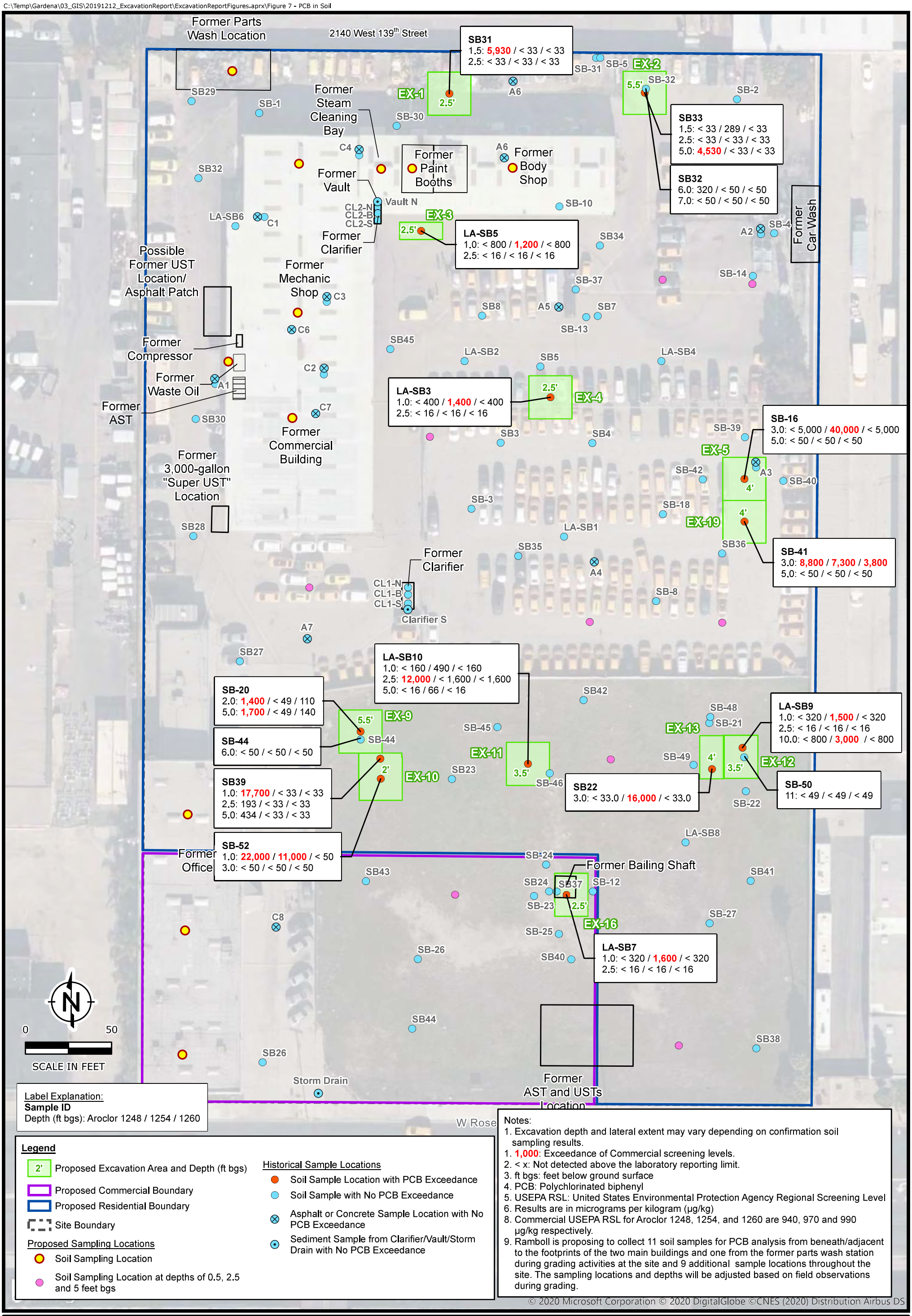
C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 7 - PCB in Soil



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Proposed PCB Soil Sampling Locations and Excavation Layout

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
7

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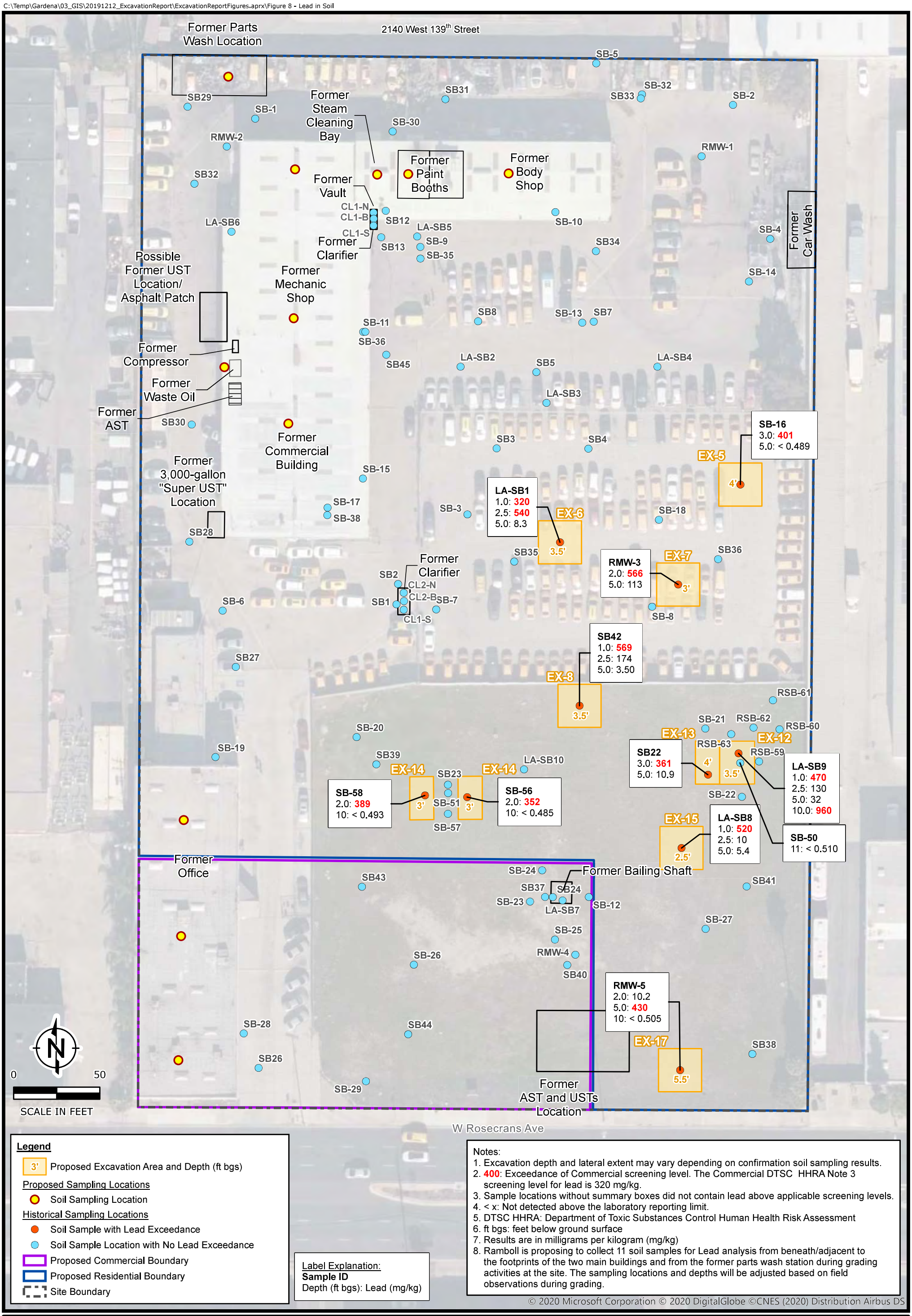
C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 8 - Lead in Soil



Legend

- 3' — Proposed Excavation Area and Depth (ft bgs)

Proposed Sampling Locations

- Soil Sampling Location

Historical Sampling Locations

- Soil Sample with Lead Exceedance
- Soil Sample Location with No Lead Exceedance
- Proposed Commercial Boundary
- Proposed Residential Boundary
- Site Boundary

Label Explanation:
Sample ID
Depth (ft bgs): Lead (mg/kg)

Notes:
1. Excavation depth and lateral extent may vary depending on confirmation soil sampling results.
2. 400: Exceedance of Commercial screening level. The Commercial DTSC HHRA Note 3 screening level for lead is 320 mg/kg.
3. Sample locations without summary boxes did not contain lead above applicable screening levels.
4. < x: Not detected above the laboratory reporting limit.
5. DTSC HHRA: Department of Toxic Substances Control Human Health Risk Assessment
6. ft bgs: feet below ground surface
7. Results are in milligrams per kilogram (mg/kg)
8. Ramboll is proposing to collect 11 soil samples for Lead analysis from beneath/adjacent to the footprints of the two main buildings and from the former parts wash station during grading activities at the site. The sampling locations and depths will be adjusted based on field observations during grading.

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Proposed Lead Soil Sampling Locations and Excavation Layout

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
8

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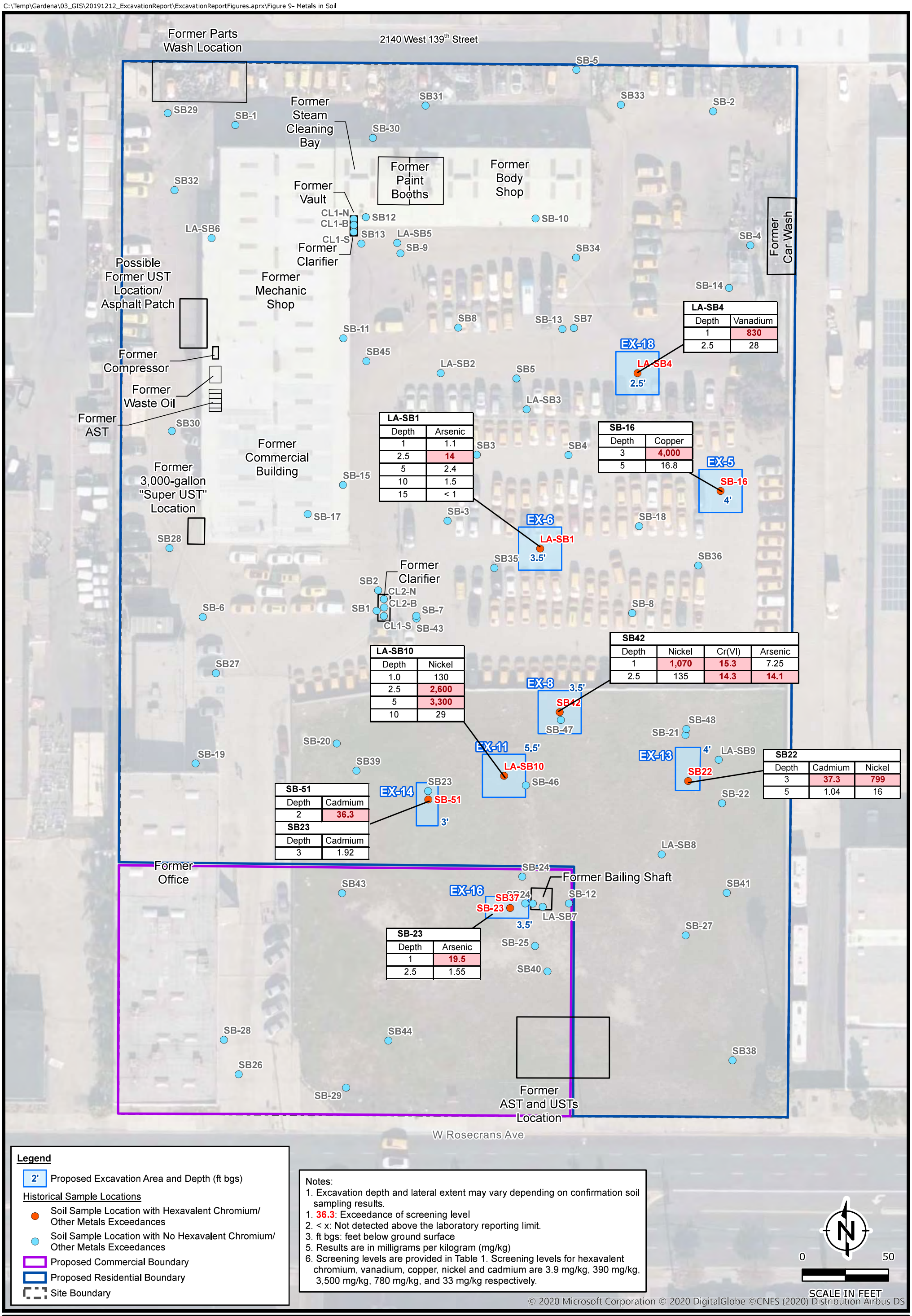
C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 9- Metals in Soil



Legend

- 2' Proposed Excavation Area and Depth (ft bgs)

Historical Sample Locations

- Soil Sample Location with Hexavalent Chromium/ Other Metals Exceedances
- Soil Sample Location with No Hexavalent Chromium/ Other Metals Exceedances
- Proposed Commercial Boundary
- Proposed Residential Boundary
- Site Boundary

Notes:

1. Excavation depth and lateral extent may vary depending on confirmation soil sampling results.
1. 36.3: Exceedance of screening level
2. < x: Not detected above the laboratory reporting limit.
3. ft bgs: feet below ground surface
5. Results are in milligrams per kilogram (mg/kg)
6. Screening levels are provided in Table 1. Screening levels for hexavalent chromium, vanadium, copper, nickel and cadmium are 3.9 mg/kg, 390 mg/kg, 3,500 mg/kg, 780 mg/kg, and 33 mg/kg respectively.

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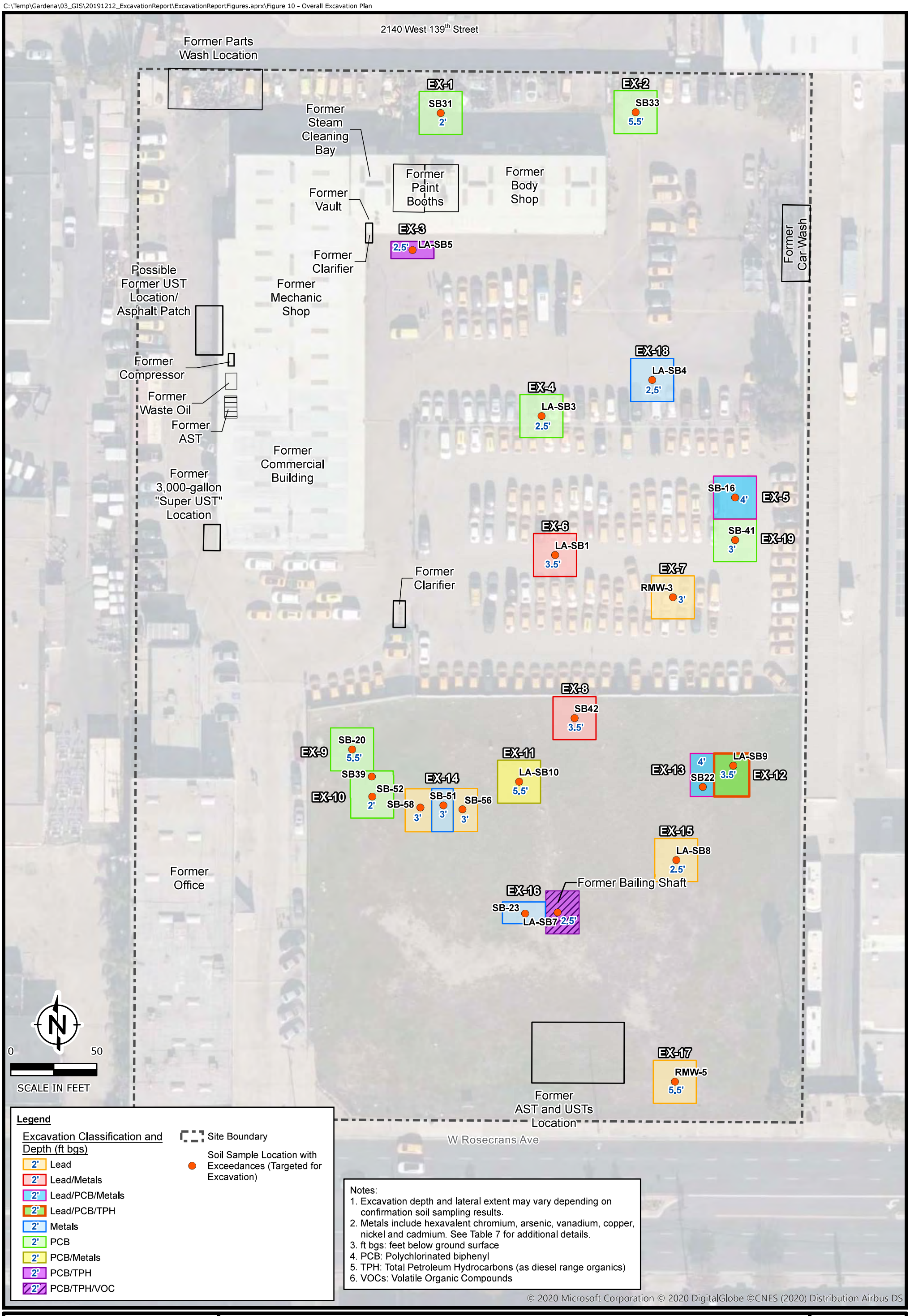
Proposed Hexavalent Chromium and Other Metals Excavation Layout

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
9

PROJECT: 1690012501

C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 10 - Overall Excavation Plan



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Summary of Proposed Excavations

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
10

PROJECT: 1690012501

C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 11A - VIMS Layout

Legend
- Vapor Mitigation System
- Site Boundary
- Proposed Commercial Boundary
- Proposed Residential Boundary

Rosecrans Ave

Source: Angeleno Associates, Inc. 2019

0 50
SCALE IN FEET

RAMBOLL

Proposed Development Plan and Proposed Vapor Intrusion Mitigation System Layout

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
11A

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C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 11B - VIMS Layout1

Source: Angeleno Associates, Inc. 2019

RAMBOLL

Proposed Development Plan and Proposed Clean Fill and Hardscape Layout

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
11B

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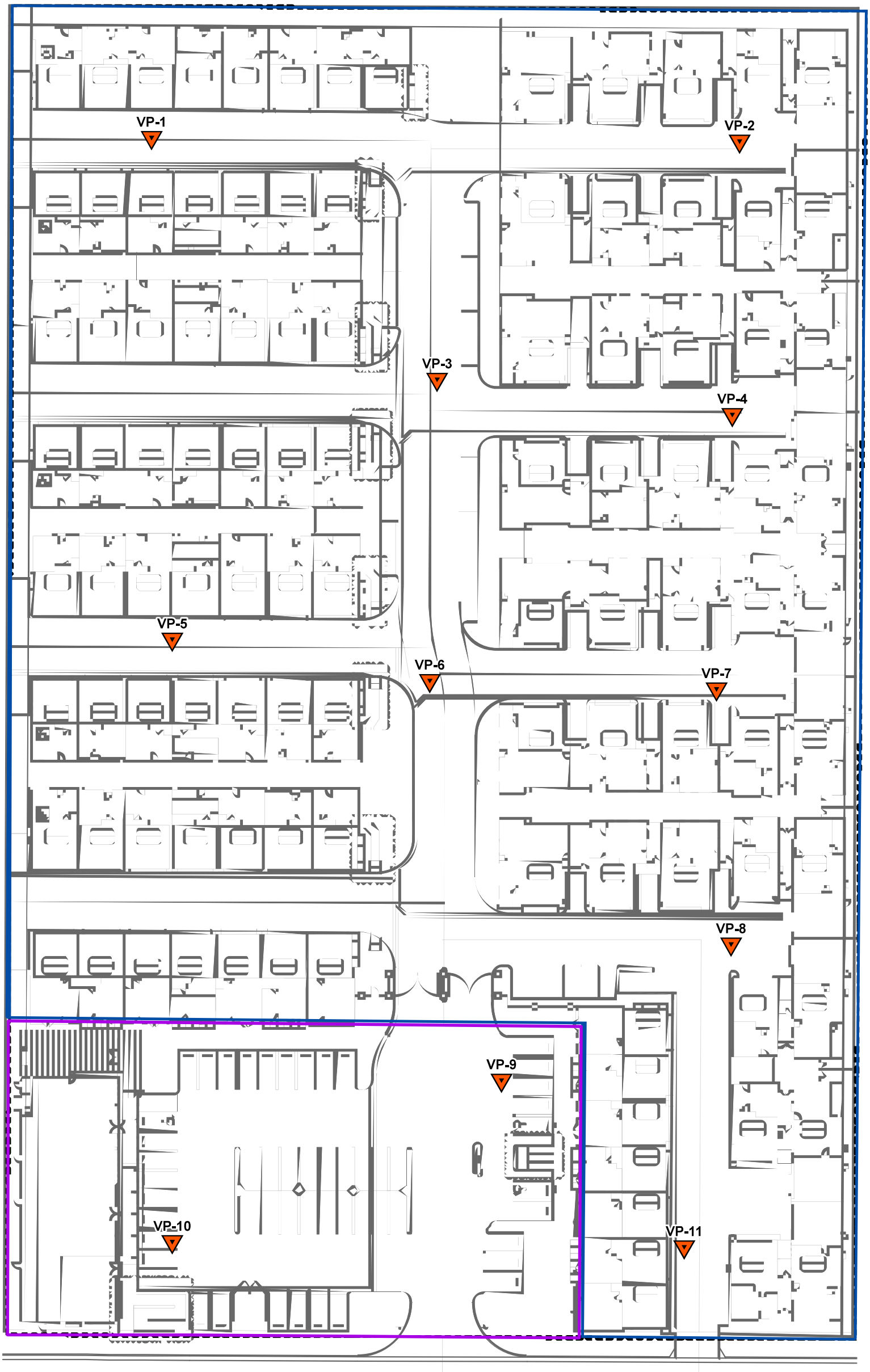
C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 12 - Proposed Soil Vapor Probes



Legend

- Proposed Soil Vapor Probe Location
- Proposed Commercial Boundary
- Proposed Residential Boundary
- Site Boundary

Source: Angeleno Associates, Inc. 2019

N

0 50

SCALE IN FEET

RAMBOLL

Proposed Development Plan and Proposed Soil Vapor Monitoring Well Network

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
12

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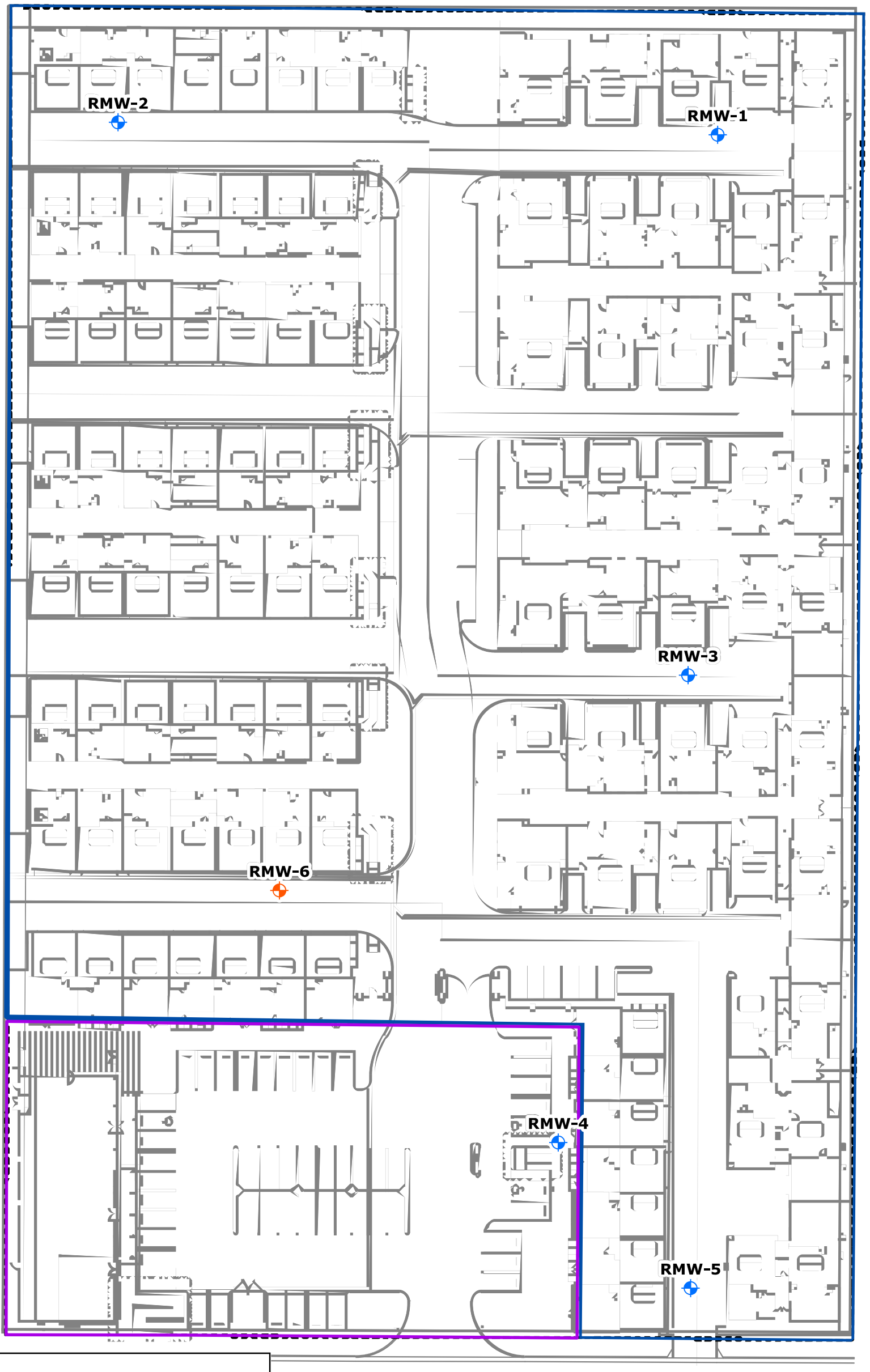
C:\Temp\Gardena\03_GIS\20191212_ExcavationReport\ExcavationReportFigures.aprx\Figure 13 - Proposed Monitoring Wells



Legend

- Proposed Groundwater Monitoring Well Location
- Existing Groundwater Monitoring Well Location
- Site Boundary
- Proposed Commercial Boundary
- Proposed Residential Boundary

Source: Angeleno Associates, Inc. 2019

N

0 50

SCALE IN FEET

RAMBOLL

Proposed Development Plan and Proposed Groundwater Monitoring Well Network

2101 & 2129 West Rosecrans Avenue
Gardena, California

FIGURE
13

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APPENDIX A
DEVELOPMENT OF RISK BASED TARGET CONCENTRATIONS

APPENDIX A – DEVELOPMENT OF RISK BASED TARGET CONCENTRATIONS PREPARED BY

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Managing Consultant

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Appendix A

Development of RISK-BASED TARGET CONCENTRATIONS

This appendix describes the derivation of Risk-Based Target Concentrations (RBTCs) which are developed for chemicals of potential concern (COPCs) at the Site. RBTCs were developed following the recommended methodologies from DTSC (Cal/EPA 2011, 2019a, 2019b, and 2019c) and USEPA (1989, 2004, 2009, and 2019) with consideration of site-specific information.

The RBTC represents the concentration of a chemical that is protective of human health. As a conservative measure, the RBTCs were calculated to correspond to a target cancer risk of one in a million (1×10^{-6}) and a target non-cancer hazard quotient (HQ) of one. The National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] § 300) is commonly cited as the basis for target risk and hazard levels. According to the NCP, lifetime incremental cancer risks posed by a site should not exceed 1×10^{-6} to one hundred in a million (1×10^{-4}), and noncarcinogenic chemicals should not be present at levels expected to cause adverse health effects (i.e., HQ greater than one). As a risk management policy, the Cal/EPA generally considers 1×10^{-6} to be a point of departure for purposes of making risk management decisions, with most approved remediation achieving incremental risk levels of ten in a million (1×10^{-5}) or lower.

Chemicals detected at least once in groundwater, soil vapor samples and soil samples collected in 2017-2019 on Site are shown in Table A-1. RBTCs were developed for all volatile chemicals detected in soil vapor and groundwater and all chemicals detected in soil listed in Table A-1. For all chemicals detected in soil, the regulatory screening levels (Regulatory SLs) or alternative screening levels (Alternative SLs) were considered to evaluate on-Site soil concentrations.

RBTCs were developed under potential future uses for residents, commercial/industrial composite workers, and construction trench workers. The following sections discuss the steps and components required for developing RBTCs for the on-site populations.

1. CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) was developed for the Site to describe the relationships among chemical sources, exposure pathways, and potentially exposed populations and is presented in Figure 5. Based on the planned future use of the Site, the CSM identified three potential future on-site populations (residents, commercial/industrial composite workers, and construction trench workers) and associated potential exposure routes.

As reflected on Figure 5, groundwater exposure through groundwater dermal contact and ingestion is incomplete because use of drinking water will be precluded by a deed restriction. Soil direct contact pathways for residents is incomplete because the Site will be covered with clean fill or concrete.

During redevelopment, construction workers may be exposed to COPCs during excavation activities. After redevelopment, commercial/industrial composite workers may be exposed to COPCs via the vapor intrusion pathways from soil vapor and groundwater (i.e., both indoor and outdoor pathways) and direct contact with impacted soil. Residents (typical residential adult and child) may be exposed to COPCs via the vapor intrusion pathways from soil vapor and groundwater.

RBTCs will be developed for each of the three identified environmental media (i.e., soil vapor, groundwater and soil) for corresponding hypothetical exposed population consistent with the CSM shown on Figure 5.

2. EXPOSURE ASSESSMENT

To evaluate the human health risks posed by a site, it is necessary to identify the populations that may potentially be exposed to the chemicals present and to determine the pathways by which these exposures may occur. A CSM describing the potentially exposed populations and exposure pathways identified for the Site is presented in Section 1. The CSM is included as Figure 5.

2.1 Potentially Exposed Human Populations

Based on the planned future use of the Site, the CSM identified three potential future on-site populations and associated potential exposure routes as discussed below:

2.1.1 Residents

The hypothetical future on-site residents may be exposed to contamination through inhalation of vapors in indoor or ambient air migrated from groundwater, soil and soil vapor at any depth.

2.1.2 Commercial/Industrial Composite Workers

The hypothetical future on-site commercial/industrial composite workers may be exposed to contamination through dermal contact and ingestion of surface soils, inhalation of windblown particulates in ambient air of surface soils, and inhalation of vapors in indoor or ambient air migrated from groundwater, soil and soil vapor at any depth.

2.1.3 Construction Workers

A hypothetical future on-site construction worker scenario was added based on-site redevelopment. The construction worker scenario includes activities in a trench. The construction workers may be exposed to contamination through dermal contact and ingestion of soils during excavation activities, inhalation of windblown particulates of soils, and inhalation of vapors in the trench air migrated from groundwater, soil and soil vapor at any depth.

2.2 Exposure Pathways

Based on the CSM, the on-site potential exposure media included in this analysis include soil vapor and soil. Each of these media is discussed separately below.

2.2.1 Soil Vapor

Future on-site populations, including residents, commercial composite workers and construction trench workers, may potentially be exposed to chemicals in soil vapor as a result of migration of vapors from the subsurface to indoor air, outdoor air and trench air. The construction worker was conservatively assumed to be exposed in a trench setting, placing them closer to the potential source.

2.2.2 Groundwater

Future on-site populations, including residents, commercial composite workers and construction trench workers, may potentially be exposed to chemicals in groundwater as a result of migration of vapors from the subsurface to indoor air, outdoor air and trench air. The construction worker was conservatively assumed to be exposed in a trench setting, placing them closer to the potential source.

2.2.3 Soil

Future on-site commercial composite workers and construction trench workers may be exposed to chemicals in soil by means of direct contact with soil (incidental ingestion and dermal contact) and inhalation (windblown particulates and vapor).

2.3 Intake Estimation

For residents or commercial composite workers exposed to air migrating from soil vapor or groundwater, Regulatory SLs for residential air or commercial air were applied in concert with an appropriate attenuation factor. For commercial composite workers exposed to soil, Regulatory SLs for commercial soil were applied. Thus, exposures were not quantified to calculate soil vapor, groundwater and soil RBTCs for residents and commercial composite workers.

Exposures were quantified for construction trench workers. The methodology to calculate the intake factors (IF) are from DTSC (Cal/EPA 2019a) and USEPA (USEPA 1989, 2004, and 2009). The exposure assumptions used to develop and calculate the intake factors are presented in Table A-2. The assumptions used to develop the intake factors are based on default assumptions from DTSC (Cal/EPA 2019a) or USEPA (USEPA 2019) unless otherwise noted in Table A-2.

2.3.1 Soil Ingestion

The intake factor for soil ingestion was calculated using the following equation (USEPA 1989):

$$IF_{soil.ing_c} = \frac{EF \times ED \times IR \times CF}{AT_c \times BW}$$

$$IF_{soil.ing_nc} = \frac{EF \times ED \times IR \times CF}{AT_{nc} \times BW}$$

$IF_{soil.ing_c}$ = Intake Factor for soil ingestion, carcinogenic endpoint (kg_{soil}/kg_{BW}/day)

$IF_{soil.ing_nc}$ = Intake Factor for soil ingestion, noncarcinogenic endpoint (kg_{soil}/kg_{BW}/day)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (years)

IR = Soil Ingestion Rate (mg_{soil}/day)

BW = Body Weight (kg_{BW})

AT_c = Averaging Time for Cancinogens (days)

AT_{nc} = Averaging Time for Noncancinogens (days)

CF = Conversion Factor (10^{-6} kg_{soil}/mg_{soil})

2.3.2 Soil Dermal Contact

The intake factor for dermal contact with soil was calculated using the following equation (USEPA 2004):

$$IF_{soil.derm_c} = \frac{EF \times ED \times SA \times AF \times CF}{AT_c \times BW}$$

$$IF_{soil.derm_nc} = \frac{EF \times ED \times SA \times AF \times CF}{AT_{nc} \times BW}$$

$IF_{soil.derm_c}$ = Intake Factor for soil dermal contact, carcinogenic endpoint (kg_{soil}/kg_{BW}/day)

$IF_{soil.derm_nc}$ = Intake Factor for soil dermal contact, noncarcinogenic endpoint (kg_{soil}/kg_{BW}/day)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (years)

SA = Skin Surface Area for Soil Contact (cm^2/day)

AF = Adherence Factor (mg_{soil}/cm^2)

AT_c = Averaging Time for Cancinogens (days)

AT_{nc} = Averaging Time for Noncancinogens (days)

CF = Conversion Factor (10^{-6} kg_{soil}/mg_{soil})

2.3.3 Soil Inhalation

The intake factor for inhalation of windblown particulates or volatile chemicals migrating from soil, groundwater or soil vapor to trench air was calculated using the following equation (USEPA 2009):

$$IF_{inh_c} = \frac{ET \times EF \times ED}{AT_c \times CF}$$

$$IF_{inh_nc} = \frac{ET \times EF \times ED}{AT_{nc} \times CF}$$

IF_{inh_c} = Intake Factor for soil particulate inhalation, carcinogenic endpoint (unitless)

IF_{inh_nc} = Intake Factor for soil particulate inhalation, noncarcinogenic endpoint (unitless)

ET = Exposure Time (hours/day)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (years)

AT_c = Averaging Time for Cancinogens (days)

AT_{nc} = Averaging Time for Noncancinogens (days)

CF = Conversion Factor (24 hours/day)

3. FATE AND TRANSPORT MODELING

3.1 Vapor

Volatile compounds detected in soil vapor, groundwater and soil can potentially migrate through the unsaturated zone to indoor air, ambient air, or trench air. This migration is quantified for the purposes of this assessment through an estimated intermedia transfer factor (TF). When the TF is multiplied by the source concentration of a chemical in soil, groundwater, or soil vapor, the product is the resulting steady-state concentration that is predicted in indoor, outdoor or trench air.

For future residents and commercial composite workers, only inhalation of volatile chemicals migrating from soil vapor or groundwater to indoor air was evaluated, since outdoor air concentrations will be lower than indoor air concentrations due to higher mixing in the ambient environment. Based on Cal/EPA guidance (2019c), DTSC recommends use of default attenuation factors (AFs) for preliminary screening evaluations found in Table 2 of DTSC's 2011 Vapor Intrusion Guidance (Cal/EPA, 2011), and also recommends that screening assessments evaluate the default AF of 0.03 for sub-slab soil gas and "near-source" exterior soil gas, released in 2015 by USEPA (2015). Soil vapor to air TF is same as soil vapor to air AF. Groundwater to air TF is calculated as groundwater vapor to air AF multiplying with corresponding unitless Henry's Law constant. Ramboll calculated transfer factors based on default AFs for volatile compounds from soil vapor or groundwater to indoor air for the following scenarios:

- Transport of soil vapor into residential or commercial indoor air for resident or commercial composite worker exposure with default AF of 0.03 (USEPA 2015).
- Transport of soil vapor into future residential indoor air for resident exposure with default AF of 0.001 (Cal/EPA 2011).
- Transport of soil vapor into future commercial indoor air for commercial worker exposure with default AF of 0.0005 (Cal/EPA 2011).

- Transport of soil vapor into existing commercial indoor air for commercial worker exposure with default AF of 0.001 (Cal/EPA 2011).
- Transport of groundwater vapor into future residential indoor air for resident exposure with default AF of 0.001 (Cal/EPA 2011).
- Transport of groundwater vapor into future commercial indoor air for commercial worker exposure with default AF of 0.0005 (Cal/EPA 2011).
- Transport of groundwater vapor into existing commercial indoor air for commercial worker exposure with default AF of 0.001 (Cal/EPA 2011).

As requested by DTSC during a teleconference on December 9, 2019, the Virginia Unified Risk-Assessment Model (VURAM) developed by Virginia Department of Environmental Quality (VDEP, 2019) was used to develop attenuation factor for construction trench scenario. Ramboll developed transfer factors for volatile compounds from soil vapor or groundwater to trench air for construction trench worker exposure using VURAM model.

The model is conservative because: 1) it assumes that the chemical source has infinite mass, 2) it does not include other attenuation processes that typically would reduce the amount of vapor migration, such as biodegradation, leaching from infiltration, and lateral diffusion, 3) it assumes a conservative box model with reduced airflow in the breathing zone of the construction workers inside the trench, 4) it assumes the soil vapor source is only 1 cm from the trench bottom, and 5) chemicals were assumed to migrate from trench walls in addition to the base of the trench.

The construction worker trench model parameters, including trench dimensions, source parameters, and vadose zone soil parameters, applied in VURAM are summarized in Table A-3. The physical-chemical properties, including Henry's Law constant, and diffusivity in air used in above calculations are from USEPA (2019) for volatile organic compounds (VOCs) and San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) for total petroleum hydrocarbons (TPHs). Only chemicals that readily volatilize were included in the evaluation of vapor intrusion pathway. These include chemicals with a Henry's Law constant of greater than 1 x 10^{-5} atmosphere-cubic meter per mole (atm-m^3/mol) or a vapor pressure of greater than 1 millimeter of mercury (mm Hg).

The TFs for chemicals migrating from soil vapor and groundwater to trench air are presented in Tables A-5C and A-7C, respectively.

3.2 Windblown Dust

It was assumed that the potential future on-site commercial/industrial composite workers may be exposed to windblown dust on a daily basis under regular Site conditions. For commercial composite workers exposed to soil, Regulatory SLs for commercial soil were applied. Thus, windblown dust exposures were not quantified and soil RBTCs were not calculated for commercial composite workers.

It was assumed that the construction workers may be exposed to airborne particulates due to either traffic or excavation activities while performing construction-related tasks at the Site. Consistent with Cal/EPA recommendations (Cal/EPA 2014), a PEF of 1.0 x 10^6 m^3/kg was used to estimate airborne concentrations of a chemical from corresponding soil concentrations for the construction workers. This PEF reflects an airborne concentration of dust of approximately 1,000 µg/m^3. The default PEFs were derived based on conservative assumptions and tend to overestimate the particulate concentrations in the air.

4. TOXICITY ASSESSMENT

The toxicity assessment (also referred to as the dose-response assessment) examines the potential for a chemical to cause adverse health effects in exposed individuals. Toxicity values (toxicity criteria) that were used to estimate the likelihood of adverse effects from the chemicals present at the Site were identified in this component of the RBTC development process. The RBTCs were developed to evaluate the theoretical exposures to chemicals for two categories of potential health effects, carcinogenic and noncarcinogenic. In general, chemicals are capable of inducing noncarcinogenic adverse health effects when human exposure occurs at sufficiently high exposure point concentrations over a certain period of time (chronic or subchronic). Some, but not all, chemicals may also induce a carcinogenic health effect.

The toxicity values used in the development of RBTCs are summarized in Table A-4. The general hierarchy of sources used for the chronic toxicity values are as below:

- Cal/EPA DTSC Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 10, Issue: Toxicity Criteria. February. (Cal/EPA 2019d)
- Cal/EPA DTSC Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). April. (Cal/EPA 2019b)
- United States Environmental Protection Agency (USEPA). Regional Screening Levels. November. (USEPA 2019)

In addition, toxicity values from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) Environmental Screening Levels (ESLs) Workbook for TPHs were used (SFBRWQCB 2019).

For construction workers, who were assumed to be present on-Site for six months, subchronic toxicity values were used whenever available for the evaluation of adverse non-cancer effects in accordance with recommendations by USEPA (2019). The subchronic toxicity values table from USEPA (2019) is generally used for the subchronic toxicity values. In the absence of subchronic toxicity values, chronic toxicity values were used as a surrogate.

5. CALCULATION OF RBTCS

As a conservative measure, the RBTCs were developed to correspond to a target cancer risk of $1x10^{-6}$ and a target noncancer HQ of one. Since the RBTCs correspond to the low end of the target risk range considered by USEPA and Cal/EPA to be protective of human health, the presence of a chemical at a concentration in excess of the RBTC does not indicate that adverse impacts to human health are occurring or will occur but suggests that further evaluation may be warranted.

For chemicals that have both carcinogenic and noncarcinogenic effects, the RBTCs were calculated separately for both health effect endpoints. The more stringent (i.e., lowest and most conservative) value was selected as RBTC and used for comparison with Site data.

This section provides the equations and assumptions used to calculate the RBTCs for each medium for the potential future on-site populations evaluated for the Site.

5.1 Soil Vapor RBTCs

The soil vapor RBTCs for residents, commercial composite workers and construction trench workers are presented in Table A-5A, Table A-5B and Table A-5C, respectively. The most stringent (i.e., lowest and most conservative) RBTCs out of the three RBTCs calculated using DTSC-recommended default attenuation factors and the VURAM-derived attenuation factor were selected as soil vapor evaluation thresholds and summarized in Tables A-6.

5.1.1 Residents

The Regulatory air SLs are used for screening volatile chemicals in soil vapor data when used in concert with an appropriate attenuation factor. For VOCs, the DTSC-modified SLs (Cal/EPA 2019b) when available or USEPA RSLs (USEPA 2019) for residential air are applied as Regulatory air SLs. To be consistent with TPH fraction grouping, the ESLs from SFBRWQCB for residential air are applied as Regulatory air SLs (SFBRWQCB, 2019).

The soil vapor RBTCs for residents exposed to soil vapor migrating to indoor air through inhalation were calculated based on the Regulatory SLs for residential air, which were divided by a DTSC-recommended default attenuation factor of 0.001 for future residential building from contaminant source (Cal/EPA 2011) or default screening attenuation factor of 0.03 (USEPA, 2015).

5.1.2 Commercial/Industrial Composite Workers

The Regulatory air SLs are used for screening volatile chemicals in soil vapor data when used in concert with an appropriate attenuation factor. For VOCs, the DTSC-modified SLs (Cal/EPA 2019b) when available or USEPA RSLs (USEPA 2019) for commercial air are applied as Regulatory air SLs. To be consistent with TPH fraction grouping, the ESLs from SFBRWQCB for commercial air are applied as Regulatory air SLs (SFBRWQCB, 2019).

The soil vapor RBTCs for commercial composite workers exposed to soil vapor migrating to indoor air through inhalation were calculated based on the Regulatory SLs for commercial air, which were

divided by a DTSC-recommended default attenuation factor of 0.0005 for future commercial building from contaminant source (Cal/EPA, 2011) or default screening attenuation factor of 0.03 (USEPA, 2015). The soil vapor RBTCs for commercial composite workers were also calculated by a DTSC-recommended default attenuation factor of 0.001 for existing commercial building from contaminant source (Cal/EPA, 2011) for reference.

5.1.3 Construction Workers

The equation used to calculate soil vapor RBTCs for carcinogenic volatile compounds in soil vapor migrating from the subsurface to trench air is as follows:

$$RBTC_{SG.c} = \frac{TR}{IF_{vapor.inh} * \alpha * IUR * CF}$$

Where:

$RBTC_{SG.c}$	=	Risk-Based Target Concentration, soil vapor (microgram per liter [µg/L]), carcinogenic endpoint
TR	=	Target Risk (unitless, 1×10^{-6})
$IF_{vapor.inh}$	=	Intake Factor for vapor inhalation (unitless)
IUR	=	Inhalation Unit Risk $(\mu g/m^3)^{-1}$
α	=	Transfer Factor for soil vapor migrating to trench air (µg/L per µg/L)
CF	=	Conversion Factor (1000 L/m^3)

The equation used to calculate soil vapor RBTCs for non-carcinogenic volatile compounds in soil vapor migrating from the subsurface to outdoor air or trench air is as follows:

$$RBTC_{SG.nc} = \frac{THQ * RfC_{inh}}{IF_{vapor.inh} * \alpha * CF}$$

Where:

$RBTC_{SG.nc}$	=	Risk-Based Target Concentration, soil vapor (µg/L), noncarcinogenic endpoint
THQ	=	Target Hazard Quotient (unitless, 1)
$IF_{vapor.inh}$	=	Intake Factor for vapor inhalation (unitless)
RfC_{inh}	=	Inhalation Reference Concentration $(\mu g/m^3)$
α	=	Transfer Factor for soil vapor migrating to trench air (µg/L per µg/L)
CF	=	Conversion Factor (1000 L/m^3)

The TF for soil vapor migrating to trench air is calculated based on VURAM model as described in Section 3.1.

5.2 Groundwater RBTCs

The groundwater RBTCs for residents, commercial composite workers and construction trench workers are presented in Table A-7A, Table A-7B and Table A-7C, respectively. The most stringent (i.e., lowest and most conservative) RBTCs out of the three RBTCs calculated using DTSC-recommended default

attenuation factors and the VURAM-derived attenuation factor were selected as groundwater evaluation thresholds and summarized in Tables A-8.

5.2.1 Residents

The Regulatory air SLs are used for screening volatile chemicals in groundwater data when used in concert with an appropriate attenuation factor. For VOCs, the DTSC-modified SLs (Cal/EPA 2019b) when available or USEPA RSLs (USEPA 2019) for residential air are applied as Regulatory air SLs. To be consistent with TPH fraction grouping, the ESLs from SFBRWQCB (2019) for residential air are applied as Regulatory air SLs.

The groundwater RBTCs for residents exposed to groundwater migrating to indoor air through inhalation were calculated based on the Regulatory SLs for residential air, which were divided by a DTSC-recommended default attenuation factor of 0.001 for future residential building from contaminant source (Cal/EPA, 2011) and Henry's Law constant for the chemicals.

5.2.2 Commercial/Industrial Composite Workers

The Regulatory air SLs are used for screening volatile chemicals in groundwater data when used in concert with an appropriate attenuation factor. For VOCs, the DTSC-modified SLs (Cal/EPA 2019b) when available or USEPA RSLs (USEPA 2019) for commercial air are applied as Regulatory air SLs. To be consistent with TPH fraction grouping, the ESLs from SFBRWQCB (2019) for commercial air are applied as Regulatory air SLs.

The groundwater RBTCs for commercial composite workers exposed to groundwater migrating to indoor air through inhalation were calculated based on the Regulatory SLs for commercial air, which were divided by a DTSC-recommended default attenuation factor of 0.0005 for future commercial building from contaminant source (Cal/EPA, 2011) and Henry's Law constant for the chemicals. The groundwater RBTCs for commercial composite workers were also calculated by a DTSC-recommended default attenuation factor of 0.001 for existing commercial building from contaminant source (Cal/EPA, 2011) for reference.

5.2.3 Construction Workers

The equation used to calculate groundwater RBTCs for carcinogenic volatile compounds in groundwater migrating from the subsurface to trench air is as follows:

$$RBTC_{GW.c} = \frac{TR}{IF_{vapor.inh} * \alpha * IUR * CF}$$

Where:

$RBTC_{GW.c}$	=	Risk-Based Target Concentration, groundwater (µg/L), carcinogenic endpoint
TR	=	Target Risk (unitless, 1×10^{-6})
$IF_{vapor.inh}$	=	Intake Factor for vapor inhalation (unitless)
IUR	=	Inhalation Unit Risk $(\mu g/m^3)^{-1}$

α	=	Transfer Factor for groundwater migrating to trench air (µg/L per µg/L)
CF	=	Conversion Factor (1000 L/m^3)

The equation used to calculate groundwater RBTCs for non-carcinogenic volatile compounds in groundwater migrating from the subsurface to outdoor air or trench air is as follows:

$$RBTC_{GW.nc} = \frac{THQ * RfC_{inh}}{IF_{vapor.inh} * \alpha * CF}$$

Where:

$RBTC_{GW.nc}$	=	Risk-Based Target Concentration, groundwater (µg/L), noncarcinogenic endpoint
THQ	=	Target Hazard Quotient (unitless, 1)
$IF_{vapor.inh}$	=	Intake Factor for vapor inhalation (unitless)
RfC_{inh}	=	Inhalation Reference Concentration (µg/m^3)
α	=	Transfer Factor for groundwater migrating to trench air (µg/L per µg/L)
CF	=	Conversion Factor (1000 L/m^3)

The TF for groundwater migrating to trench air is calculated based on VURAM model as described in Section 3.1.

5.3 Soil RBTCs

For commercial composite workers, soil RBTCs were not calculated in this analysis and Regulatory SLs for commercial soil were applied. For construction trench workers, soil RBTCs are not calculated for VOCs, TPHs, arsenic and lead, and are calculated for PCBs and metals (except arsenic and lead) using the following equations and are presented in Table A-9.

The equation used to calculate the soil RBTCs for PCBs and Metals for construction trench workers for the carcinogenic endpoint due to exposure via ingestion, dermal contact, and inhalation of soil particulates is as follows:

$$RBTC_{soil.c} = \frac{TR}{(IF_{soil.ing} * RBA_{oral} + ABS/GIABS * IF_{soil.derm}) * CSF_{oral} + (IF_{part.inh}/PEF) * IUR * CF}$$

Where:

$RBTC_{soil.c}$	=	Risk-Based Target Concentration, soil direct contact, carcinogenic endpoint (mg/kg)
TR	=	Target Risk (unitless, 10^{-6})
$IF_{soil.ing}$	=	Intake Factor for soil ingestion (kg of soil/kg body weight-day)
$IF_{soil.derm}$	=	Intake Factor for dermal contact with soil (kg of soil/kg body weight-day)
$IF_{part.inh}$	=	Intake Factor for soil particulate inhalation (unitless)
CSF_{oral}	=	Oral Cancer Slope Factor (mg/kg body weight-day)$^{-1}$
IUR	=	Inhalation Unit Risk (µg/m^3)$^{-1}$
RBA_{oral}	=	Oral Relative Bioavailability

ABS	=	Soil Absorption Factor (unitless)
GIABS	=	Fraction of contaminant absorbed in gastrointestinal tract (unitless)
PEF	=	Particulate Emission Factor, resident (m^3/kg of soil)
CF	=	Conversion Factor (1000 µg/mg)

The equation used to calculate soil RBTCs for PCBs and Metals for construction trench workers for the noncarcinogenic endpoint due to exposure via ingestion, dermal contact, and inhalation of soil particulates is as follows:

$$RBTC_{soil.nc} = \frac{THQ}{(IF_{soil.ing} * RBA_{oral} + ABS/GIABS * IF_{soil.derm})/RfD_{oral} + (\frac{IF_{part.inh}}{PEF})/RfC_{inh} * CF}$$

Where:

$RBTC_{soil.nc}$	=	Risk-Based Target Concentration, soil direct contact, noncarcinogenic endpoint (mg/kg)
THQ	=	Target Hazard Quotient (unitless, 1)
$IF_{soil.ing}$	=	Intake Factor for soil ingestion (kg of soil/kg body weight-day)
$IF_{soil.derm}$	=	Intake Factor for dermal contact with soil (kg of soil/kg body weight-day)
$IF_{part.inh}$	=	Intake Factor for soil particulate inhalation (unitless)
RfD_{oral}	=	Oral Reference Dose (mg/kg body weight-day)
RfC_{inh}	=	Inhalation Reference Concentration (µg/m^3)
RBA_{oral}	=	Oral Relative Bioavailability
ABS	=	Soil Absorption Factor (unitless)
GIABS	=	Fraction of contaminant absorbed in gastrointestinal tract (unitless)
PEF	=	Particulate Emission Factor, resident (m^3/kg of soil)
CF	=	Conversion Factor (1000 µg/mg)

Oral relative bioavailability (RBAoral), soil absorption factors (ABSsoil), and fraction of contaminant absorbed in gastrointestinal tract (GIABS) are presented in Table A-4.

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Table A-1
Summary of Chemicals Detected in Site Media
2101-2129 Rosecrans Avenue
Gardena, California

Chemical Group	Chemical	Soil Vapor		Groundwater		Soil		
		Detected	RBTC Calculated	Detected	RBTC Calculated	Detected	RBTC Calculated	Regulatory or Alternative Screening Levels
VOC	Benzene	X	X			X		X
VOC	1,1-Dichloroethane	X	X	X	X	X		X
VOC	1,1-Dichloroethene	X	X	X	X			
VOC	Dichlorodifluoromethane	X	X					
VOC	cis-1,2-Dichloroethene	X	X	X	X	X		X
VOC	trans-1,2-Dichloroethene	X	X	X	X			
VOC	Tetrachloroethene	X	X	X	X	X		X
VOC	Trichloroethene	X	X	X	X	X		X
VOC	Vinyl Chloride	X	X	X	X	X		X
VOC	Acetone	X	X	X	X	X		X
VOC	Bromoform	X	X			X		X
VOC	Chloroethane					X		X
VOC	Chloroform	X	X	X	X			
VOC	Chloromethane					X		X
VOC	Ethyl Benzene	X	X			X		X
VOC	Methyl tert-Butyl Ether	X	X			X		X
VOC	Toluene	X	X			X		X
VOC	m,p-Xylene	X	X			X		X
VOC	ortho-Xylene	X	X			X		X
VOC	Acrolein	X	X					
VOC	Bromodichloromethane	X	X					
VOC	1,3-Butadiene	X	X					
VOC	2-Butanone (MEK)	X	X			X		X
VOC	n-Butylbenzene					X		X
VOC	sec-Butylbenzene	X	X			X		X
VOC	tert-Butylbenzene	X	X					
VOC	Carbon Tetrachloride	X	X					
VOC	Carbon Disulfide	X	X					
VOC	Cyclohexane	X	X					
VOC	1,2-Dibromoethane (EDB)	X	X					
VOC	1,2-Dichloroethane	X	X					
VOC	1,1-Difluoroethane	X	X					
VOC	1,4-Dioxane	X	X	X	X			
VOC	Freon 11	X	X					
VOC	2-Hexanone (MBK)	X	X					
VOC	Isopropanol	X	X					
VOC	4-Isopropyltoluene	X	X					
VOC	Isopropylbenzene					X		X
VOC	n-Propylbenzene	X	X			X		X
VOC	Methylene Chloride	X	X			X		X
VOC	Methyl methacrylate	X	X					
VOC	4-Methyl-2-pentanone (MIBK)	X	X					
VOC	1,2,4-Trichlorobenzene					X		X
VOC	n-Pentane	X	X					
VOC	Propylene	X	X					
VOC	Tetrahyrofuran	X	X					
VOC	1,1,1-Trichloroethane	X	X					
VOC	1,2,4-Trimethylbenzene	X	X					
VOC	1,3,5-Trimethylbenzene	X	X					
VOC	Styrene	X	X					
VOC	Di-Isoproylether	X	X					
VOC	tert-amylmethylether	X	X					
TPH	TPH - GRO	X	X	X	X	X		X
TPH	TPH - DRO			X	X	X		X
TPH	TPH - ORO					X		X
PCB	Aroclor-1248					X	X	X
PCB	Aroclor-1254					X	X	X
PCB	Aroclor-1260					X	X	X
PCB	Aroclor-1262					X	X	X
INORG	Antimony					X	X	X
INORG	Arsenic					X		X
INORG	Barium			X		X	X	X
INORG	Beryllium					X	X	X
INORG	Cadmium					X	X	X
INORG	Chromium			X		X	X	X
INORG	Hexavalent Chromium			X		X	X	X
INORG	Cobalt					X	X	X
INORG	Copper					X	X	X
INORG	Lead			X		X		X

Table A-1
Summary of Chemicals Detected in Site Media
2101-2129 Rosecrans Avenue
Gardena, California

Chemical Group	Chemical	Soil Vapor		Groundwater		Soil		
		Detected	RBTC Calculated	Detected	RBTC Calculated	Detected	RBTC Calculated	Regulatory or Alternative Screening Levels
INORG	Mercury					X	X	X
INORG	Molybdenum			X		X	X	X
INORG	Nickel					X	X	X
INORG	Selenium					X	X	X
INORG	Silver			X		X	X	X
INORG	Thallium					X	X	X
INORG	Vanadium			X		X	X	X
INORG	Zinc					X	X	X

Notes:
X = Indicate a chemical was detected in a specific medium.
INORG = Inorganic
PCB = Polychlorinated Biphenyl
TPH = Total Petroleum Hydrocarbons
VOC = Volatile organic compound

Table A-2
Exposure Assumptions for Construction Trench Workers
2101-2129 Rosecrans Avenue
Gardena, California

Exposure Factors	Units	Symbol	Construction Trench Worker	
			Value	Source
Receptor-Specific Exposure Factors				
Target Risk	unitless	TR	1E-06	--
Target Hazard Quotient	unitless	THQ	1	--
Population-Specific Exposure Assumptions				
Exposure Time	hours/day	ET	8	Cal/EPA 2019
Exposure Frequency	days/year	EF	250	Cal/EPA 2019
Exposure Duration	years	ED	0.5	site-specific
Body Weight	kg_{BW}	BW	80	Cal/EPA 2019
Averaging Time for Cancinogens	days	AT_c	25,550	Cal/EPA 2019
Averaging Time for Noncarcinogens	days	AT_{nc}	183	Cal/EPA 2019
Soil Ingestion				
Soil Ingestion Rate	mg_{soil}/day	IR_s	330	Cal/EPA 2019
Conversion Factor	kg_{soil}/mg_{soil}	CF	1E-06	--
Intake Factor for Soil Ingestion, cancer	kg_{soil}/kg_{BW}/day	$IF_{soil.ing_c}$	2.0E-08	USEPA 1989
Intake Factor for Soil Ingestion, noncancer	kg_{soil}/kg_{BW}/day	$IF_{soil.ing_nc}$	2.8E-06	USEPA 1989
Soil Dermal Contact				
Skin Surface Area for Soil Contact	cm^2/day	SAs	6,032	Cal/EPA 2019
Adherence Factor	mg_{soil}/cm^2	AF	0.8	Cal/EPA 2019
Conversion Factor	kg_{soil}/mg_{soil}	CF	1E-06	--
Intake Factor for Soil Dermal Contact, cancer	kg_{soil}/kg_{BW}/day	$IF_{soil.derm_c}$	3.0E-07	USEPA 2004
Intake Factor for Soil Dermal Contact, noncancer	kg_{soil}/kg_{BW}/day	$IF_{soil.derm_nc}$	4.1E-05	USEPA 2004
Inhalation of Soil Particulates or Vapor				
Particulate Emission Factor	m^3/kg_{soil}	PEF	1.0E+06	Cal/EPA 2019
Conversion Factor	hour/day	CF	24	--
Intake Factor for Soil Inhalation, cancer	unitless	$IF_{soil.inh_c}$	1.6E-03	USEPA 2009
Intake Factor for Soil Inhalation, noncancer	unitless	$IF_{soil.inh_nc}$	2.3E-01	USEPA 2009

Notes:
-- = Not applicable
Cal/EPA = California Environmental Protection Agency
USEPA = United States Environmental Protection Agency
cm^2 = square centimeter
cm^2/day = square centimeter per day
cm^2-event/kgBW/day = square centimeter-event per kilogram of body weight per day

Sources:
Cal/EPA. 2019. Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note Number 1, Issue: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities. April.

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Table A-3
Construction Worker Trench Model Parameters
2101-2129 Rosecrans Avenue
Gardena, California

Parameter	Value	Units	Notes
Source/Receptor Parameters			
Depth to groundwater	25	feet	Site-specific estimate
Depth of trench, Dtrench	15	feet	Default value (VDEP 2019)
Length of trench	2.44	m	Default value (VDEP 2019)
Width of trench	0.91	m	Default value (VDEP 2019)
Area of trench, A	17.54	m^2	Calculated from default value, including walls and bottom (VDEP 2019)
Volume of trench, V	10.15	m^3	Calculated from default value (VDEP 2019)
Depth between trench bottom to groundwater, Ld	10	feet	Site-specific estimate
Depth between trench bottom to soil gas source	1	cm	Default value (VDEP 2019)
Fraction of floor through which contaminant can enter	1	unitless	Default value (VDEP 2019)
Air changes per hour, ACH	2	/hr	Default value (VDEP 2019)
Vadose Zone Soil Parameters			
Bulk density	1.5	g/cm^3	Default value (VDEP 2019)
Total porosity	0.440	unitless	Default value (VDEP 2019)
Water-filled porosity	0.306	unitless	Default value (VDEP 2019)
Air-filled porosity	0.134	unitless	Default value (VDEP 2019)
Soil temperature	298.15	K	Default value (VDEP 2019)

Notes:
-- =Not applicable
cm = centimeter
g/cm^3 = gram per cubic centimeter
VDEP = Virginia Department of Environemntal Quality

Sources:
VDEQ. 2019. Virginia Unified Risk Assessment Model - VURAM User Guide for Risk Assessors. July.

Table A-4
Toxicity Values
2101-2129 Rosecrans Avenue
Gardena, California

Chemical Group	Chemical	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$		Inhalation Unit Risk $(\mu g/m^3)^{-1}$		Oral Subchronic RfD (mg/kg-day)		Inhalation Subchronic RfC $(\mu g/m^3)$		GIABS	Soil Dermal Absorption Factor ABS_{soil}		Relative Bio-Availability (unitless)
VOC	Benzene	0.1	Cal/EPA 2019b	0.000029	Cal/EPA 2019b	0.01	USEPA 2019	80	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	1,1-Dichloroethane	0.0057	Cal/EPA 2019b	1.6E-06	Cal/EPA 2019b	2	USEPA 2019	7,000	USEPA 2019[a]	1	--	Cal/EPA 2019a	1
VOC	1,1-Dichloroethene	--	--	--	--	0.009	USEPA 2019	79	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	Dichlorodifluoromethane	--	--	--	--	0.05	USEPA 2019	1000	USEPA 2019	1	--	USEPA 2019	1
VOC	cis-1,2-Dichloroethene	--	--	--	--	0.02	USEPA 2019	70	USEPA 2019[a]	1	--	Cal/EPA 2019a	1
VOC	trans-1,2-Dichloroethene	--	--	--	--	0.2	USEPA 2019	793	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	Tetrachloroethene	0.54	Cal/EPA 2019b	6.1E-06	Cal/EPA 2019b	0.008	USEPA 2019	41	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	Trichloroethene	0.046	Cal/EPA 2019b	4.1E-06	Cal/EPA 2019b	0.0005	USEPA 2019	2.15	USEPA 2019	1	--	USEPA 2019	1
VOC	Vinyl Chloride	0.72	Cal/EPA 2019b	0.000078	Cal/EPA 2019b	0.022	USEPA 2019[a]	77	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	Acetone	--	--	--	--	2	USEPA 2019	30900	USEPA 2019	1	--	USEPA 2019	1
VOC	Bromoform	0.0079	Cal/EPA 2019b	1.1E-06	Cal/EPA 2019b	0.03	USEPA 2019	105	USEPA 2019[a]	1	--	Cal/EPA 2019a	1
VOC	Chloroform	0.031	Cal/EPA 2019b	0.000023	Cal/EPA 2019b	0.1	USEPA 2019	244	USEPA 2019	1	--	USEPA 2019	1
VOC	Ethyl Benzene	0.011	Cal/EPA 2019b	2.5E-06	Cal/EPA 2019b	0.05	USEPA 2019	9000	USEPA 2019	1	--	USEPA 2019	1
VOC	Methyl tert-Butyl Ether	0.0018	Cal/EPA 2019b	2.6E-07	Cal/EPA 2019b	0.3	USEPA 2019	2524	USEPA 2019	1	--	USEPA 2019	1
VOC	Toluene	--	--	--	--	0.8	USEPA 2019	5000	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	m,p-Xylene	--	--	--	--	0.4	USEPA 2019	400	USEPA 2019	1	--	USEPA 2019	1
VOC	ortho-Xylene	--	--	--	--	0.4	USEPA 2019	400	USEPA 2019	1	--	USEPA 2019	1
VOC	Acrolein	--	--	--	--	0.004	USEPA 2019	0.09	USEPA 2019	1	--	USEPA 2019	1
VOC	Bromodichloromethane	0.062	Cal/EPA 2019b	0.000037	Cal/EPA 2019b	0.008	USEPA 2019	20	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	1,3-Butadiene	0.6	Cal/EPA 2019b	0.00017	Cal/EPA 2019b	0.0006	Cal/EPA 2019b[ab]	2	Cal/EPA 2019b[b]	1	--	Cal/EPA 2019a	1
VOC	2-Butanone (MEK)	--	--	--	--	2	USEPA 2019	1000	USEPA 2019	1	--	USEPA 2019	1
VOC	sec-Butylbenzene	--	--	--	--	0.1	USEPA 2019	400	Cal/EPA 2019b[b]	1	--	Cal/EPA 2019a	1
VOC	tert-Butylbenzene	--	--	--	--	0.1	USEPA 2019	400	Cal/EPA 2019b[b]	1	--	Cal/EPA 2019a	1
VOC	Carbon Tetrachloride	0.07	Cal/EPA 2019b	0.000006	Cal/EPA 2019b	0.007	USEPA 2019	189	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	Carbon Disulfide	--	--	--	--	0.1	USEPA 2019	700	USEPA 2019	1	--	USEPA 2019	1
VOC	Cyclohexane	--	--	--	--	5.1	USEPA 2019[a]	18000	USEPA 2019	1	--	USEPA 2019	1
VOC	1,2-Dibromoethane (EDB)	2	Cal/EPA 2019b	0.0006	Cal/EPA 2019b	0.0006	USEPA 2019[a]	2	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	1,2-Dichloroethane	0.091	Cal/EPA 2019b	0.000026	Cal/EPA 2019b	0.02	USEPA 2019	70	USEPA 2019	1	--	USEPA 2019	1
VOC	1,1-Difluoroethane	--	--	--	--	11.4	Cal/EPA 2019b[ab]	40000	Cal/EPA 2019b[b]	1	--	USEPA 2019	1
VOC	1,4-Dioxane	0.1	Cal/EPA 2019b	0.000005	Cal/EPA 2019b	0.5	USEPA 2019	720	USEPA 2019	1	--	USEPA 2019	1
VOC	Freon 11	--	--	--	--	0.3	USEPA 2019[a]	1000	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	2-Hexanone (MBK)	--	--	--	--	0.005	Cal/EPA 2019b[b]	30	Cal/EPA 2019b[b]	1	--	USEPA 2019	1
VOC	Isopropanol	--	--	--	--	2	USEPA 2019	7000	USEPA 2019	1	--	USEPA 2019	1
VOC	4-Isopropyltoluene	--	--	--	--	--	--	--	--	1	--	--	1
VOC	n-Propylbenzene	--	--	--	--	0.1	USEPA 2019	1000	USEPA 2019	1	--	USEPA 2019	1
VOC	Methylene Chloride	0.002	Cal/EPA 2019b	0.000001	Cal/EPA 2019b	0.06	USEPA 2019	1042	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	Methyl methacrylate	--	--	--	--	0.08	USEPA 2019	700	Cal/EPA 2019b[b]	1	--	USEPA 2019	1
VOC	4-Methyl-2-pentanone (MIB	--	--	--	--	0.8	USEPA 2019	800	USEPA 2019	1	--	USEPA 2019	1
VOC	n-Pentane	--	--	--	--	2.9	USEPA 2019[a]	10000	USEPA 2019	1	--	USEPA 2019	1
VOC	Propylene	--	--	--	--	0.9	Cal/EPA 2019b[ab]	3000	Cal/EPA 2019b[b]	1	--	USEPA 2019	1
VOC	Tetrahyrofuran	--	--	--	--	0.9	Cal/EPA 2019b[b]	2000	Cal/EPA 2019b[b]	1	--	Cal/EPA 2019a	1
VOC	1,1,1-Trichloroethane	--	--	--	--	7	USEPA 2019	5000	USEPA 2019	1	--	Cal/EPA 2019a	1
VOC	1,2,4-Trimethylbenzene	--	--	--	--	0.04	USEPA 2019	200	USEPA 2019	1	--	USEPA 2019	1
VOC	1,3,5-Trimethylbenzene	--	--	--	--	0.04	USEPA 2019	200	USEPA 2019	1	--	USEPA 2019	1
VOC	Styrene	--	--	--	--	0.2	Cal/EPA 2019b[b]	3000	USEPA 2019	1	--	USEPA 2019	1
VOC	Di-Isoproylether	--	--	--	--	0.2	USEPA 2019[a]	700	USEPA 2019	1	--	USEPA 2019	1
VOC	tert-amylmethylether	--	--	--	--	--	--	--	--	1	--	--	1
TPH	TPH as Diesel	--	--	--	--	0.03	SFBRWQCB 2019[b,c]	260	SFBRWQCB 2019[b,c]	1	--	SFBRWQCB 2019	1
TPH	TPH as Gasoline	--	--	--	--	0.3	SFBRWQCB 2019[b,c]	570	SFBRWQCB 2019[b,c]	1	--	SFBRWQCB 2019	1
PCB	Aroclor-1248	2	Cal/EPA 2019b	0.000571	Cal/EPA 2019b	0.00003	USEPA 2019[d]	--	--	1	0.14	Cal/EPA 2019a	1
PCB	Aroclor-1254	2	Cal/EPA 2019b	0.00057	Cal/EPA 2019b	0.00003	USEPA 2019	0.11	USEPA 2019[a]	1	0.14	Cal/EPA 2019a	1
PCB	Aroclor-1260	2	Cal/EPA 2019b	0.000571	Cal/EPA 2019b	0.00003	USEPA 2019[d]	--	--	1	0.14	Cal/EPA 2019a	1
PCB	Aroclor-1262	2	Cal/EPA 2019b[d]	0.00057	Cal/EPA 2019b[d]	0.00003	USEPA 2019[d]	--	--	1	0.14	Cal/EPA 2019a[d]	1
INORG	Antimony	--	--	--	--	0.0004	USEPA 2019	--	--	0.15	--	USEPA 2019	1
INORG	Barium	--	--	--	--	0.2	USEPA 2019	5	USEPA 2019	0.07	--	USEPA 2019	1

Table A-4
Toxicity Values
2101-2129 Rosecrans Avenue
Gardena, California

Chemical Group	Chemical	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$		Inhalation Unit Risk $(\mu g/m^3)^{-1}$		Oral Subchronic RfD (mg/kg-day)		Inhalation Subchronic RfC $(\mu g/m^3)$		GIABS	Soil Dermal Absorption Factor ABS_{soil}		Relative Bio-Availability (unitless)
INORG	Beryllium	--	--	0.0024	Cal/EPA 2019b	0.005	USEPA 2019	0.007	Cal/EPA 2019b[e]	1	--	Cal/EPA 2019a	1
INORG	Cadmium	--	--	0.0042	Cal/EPA 2019b	0.0005	USEPA 2019	0.01	Cal/EPA 2019b[e]	0.05	0.001	USEPA 2019	1
INORG	Chromium	--	--	--	--	1.5	USEPA 2019[e]	5	USEPA 2019[e]	0.013	--	USEPA 2019[e]	1
INORG	Chromium VI	0.5	Cal/EPA 2019b	0.15	Cal/EPA 2019b	0.005	USEPA 2019	0.3	USEPA 2019	0.025	--	Cal/EPA 2019a	1
INORG	Cobalt	--	--	0.009	Cal/EPA 2019b	0.003	USEPA 2019	0.02	USEPA 2019	1	--	USEPA 2019	1
INORG	Copper	--	--	--	--	0.01	USEPA 2019	--	--	1	--	USEPA 2019	1
INORG	Mercury	--	--	--	--	0.002	USEPA 2019[f]	0.03	Cal/EPA 2019b[b, f]	0.07	--	Cal/EPA 2019a[f]	1
INORG	Molybdenum	--	--	--	--	0.005	USEPA 2019	--	--	1	--	USEPA 2019	1
INORG	Nickel	--	--	0.00026	Cal/EPA 2019b	0.02	USEPA 2019	0.2	USEPA 2019	0.04	--	Cal/EPA 2019a	1
INORG	Selenium	--	--	--	--	0.005	USEPA 2019	20	Cal/EPA 2019b[b]	1	--	USEPA 2019	1
INORG	Silver	--	--	--	--	0.005	USEPA 2019	--	--	0.04	--	USEPA 2019	1
INORG	Thallium	--	--	--	--	0.00004	USEPA 2019	--	--	1	--	USEPA 2019	1
INORG	Vanadium	--	--	--	--	0.01	USEPA 2019	0.1	Cal/EPA 2019b[b]	0.026	--	USEPA 2019	1
INORG	Zinc	--	--	--	--	0.3	USEPA 2019	--	--	1	--	USEPA 2019	1

Notes:

-- = Not available
mg/kg-day = milligram per kilogram per day
$\mu g/m^3$ = microgram per cubic meter
ABS_{soil} = Soil Dermal Absorption Factor
Cal/EPA = California Environmental Protection Agency
DTSC = Department of Toxic Substances Control
GIABS = Fraction of contaminant absorbed in gastrointestinal tract
INORG = Inorganic
PCB = Polychlorinated Biphenyl
TPH = Total Petroleum Hydrocarbons
RfD = Reference Dose
RfC = Reference Concentration
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
USEPA = United States Environmental Protection Agency
VOC = Volatile Organic Compound

a. Route to route extrapolation.
b. Chronic value was used as a subchronic surrogate.
c. Used the toxicity values for TPH in water.
d. Used the toxicity values for aroclor 1254 as surrogate.
e. Used the toxicity values for Chromium (III) as surrogate.
f. Use the toxicity values for Mercuric Chloride as surrogate.

Sources:

Cal/EPA. 2019a. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). April.

Cal/EPA. 2019b. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 10, Issue: Toxicity Criteria. February.

SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. Table IP-2: Toxicity Values. January.

USEPA. 2019. Regional Screening Levels. November.

Table A-5A

Risk-Based Target Concentrations -- Residents Exposed to Soil Vapor Migrating to Indoor Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Residential Air Screening Level		Residential Soil Vapor RBTC (µg/L)	
		Value ($\mu g/m^3$)	Source	Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011)
VOC	Benzene	0.097	Cal/EPA 2019	3.2E-03	9.7E-02
VOC	1,1-Dichloroethane	1.8	Cal/EPA 2019	6.0E-02	1.8E+00
VOC	1,1-Dichloroethene	73	Cal/EPA 2019	2.4E+00	7.3E+01
VOC	Dichlorodifluoromethane	100	USEPA 2019	3.3E+00	1.0E+02
VOC	cis-1,2-Dichloroethene	8.3	Cal/EPA 2019	2.8E-01	8.3E+00
VOC	trans-1,2-Dichloroethene	83	Cal/EPA 2019	2.8E+00	8.3E+01
VOC	Tetrachloroethene	0.46	Cal/EPA 2019	1.5E-02	4.6E-01
VOC	Trichloroethene	0.48	USEPA 2019	1.6E-02	4.8E-01
VOC	Vinyl Chloride	0.0095	Cal/EPA 2019	3.2E-04	9.5E-03
VOC	Acetone	32000	USEPA 2019	1.1E+03	3.2E+04
VOC	Bromoform	2.6	Cal/EPA 2019	8.7E-02	2.6E+00
VOC	Chloroform	0.12	USEPA 2019	4.0E-03	1.2E-01
VOC	Ethyl Benzene	1.1	USEPA 2019	3.7E-02	1.1E+00
VOC	Methyl tert-Butyl Ether	11	USEPA 2019	3.7E-01	1.1E+01
VOC	Toluene	310	Cal/EPA 2019	1.0E+01	3.1E+02
VOC	m,p-Xylene	100	USEPA 2019	3.3E+00	1.0E+02
VOC	ortho-Xylene	100	USEPA 2019	3.3E+00	1.0E+02
VOC	Acrolein	0.021	USEPA 2019	7.0E-04	2.1E-02
VOC	Bromodichloromethane	0.076	Cal/EPA 2019	2.5E-03	7.6E-02
VOC	1,3-Butadiene	0.017	Cal/EPA 2019	5.7E-04	1.7E-02
VOC	2-Butanone (MEK)	5200	USEPA 2019	1.7E+02	5.2E+03
VOC	sec-Butylbenzene	420	Cal/EPA 2019	1.4E+01	4.2E+02
VOC	tert-Butylbenzene	420	Cal/EPA 2019	1.4E+01	4.2E+02
VOC	Carbon Tetrachloride	0.47	Cal/EPA 2019	1.6E-02	4.7E-01
VOC	Carbon Disulfide	730	USEPA 2019	2.4E+01	7.3E+02
VOC	Cyclohexane	6300	USEPA 2019	2.1E+02	6.3E+03
VOC	1,2-Dibromoethane (EDB)	0.0047	Cal/EPA 2019	1.6E-04	4.7E-03
VOC	1,2-Dichloroethane	0.11	USEPA 2019	3.7E-03	1.1E-01
VOC	1,1-Difluoroethane	42000	USEPA 2019	1.4E+03	4.2E+04
VOC	1,4-Dioxane	0.56	USEPA 2019	1.9E-02	5.6E-01
VOC	Freon 11	1300	Cal/EPA 2019	4.3E+01	1.3E+03
VOC	2-Hexanone (MBK)	31	USEPA 2019	1.0E+00	3.1E+01
VOC	Isopropanol	210	USEPA 2019	7.0E+00	2.1E+02
VOC	4-Isopropyltoluene	NA	--	--	--
VOC	n-Propylbenzene	1000	USEPA 2019	3.3E+01	1.0E+03
VOC	Methylene Chloride	1	Cal/EPA 2019	3.3E-02	1.0E+00
VOC	Methyl methacrylate	730	USEPA 2019	2.4E+01	7.3E+02
VOC	4-Methyl-2-pentanone (MIBK	3100	USEPA 2019	1.0E+02	3.1E+03
VOC	n-Pentane	1000	USEPA 2019	3.3E+01	1.0E+03
VOC	Propylene	3100	USEPA 2019	1.0E+02	3.1E+03
VOC	Tetrahyrofuran	2100	USEPA 2019	7.0E+01	2.1E+03
VOC	1,1,1-Trichloroethane	1000	Cal/EPA 2019	3.3E+01	1.0E+03
VOC	1,2,4-Trimethylbenzene	63	USEPA 2019	2.1E+00	6.3E+01
VOC	1,3,5-Trimethylbenzene	63	USEPA 2019	2.1E+00	6.3E+01
VOC	Styrene	940	Cal/EPA 2019	3.1E+01	9.4E+02

Table A-5A

Risk-Based Target Concentrations -- Residents Exposed to Soil Vapor Migrating to Indoor Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Residential Air Screening Level		Residential Soil Vapor RBTC (µg/L)	
		Value ($\mu g/m^3$)	Source	Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011)
VOC	Di-Isoproylether	730	USEPA 2019	2.4E+01	7.3E+02
VOC	tert-amylmethylether	NA	--	--	--
TPH	TPH as Gasoline	600	SFBRWQCB 2019	2.0E+01	6.0E+02

Notes:

$\mu g/m^3$ = microgram per cubic meter
µg/L = microgram per liter
AF = Attenuation Factor
Cal/EPA = California Environmental Protection Agency
NA = not available
TPH = Total Petroleum Hydrocarbons
RBTC = Risk-Based Target Concentration
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
VOC = Volatile Organic Compound
USEPA = United States Environmental Protection Agency

Sources:

Cal/EPA. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

Cal/EPA. 2019. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). April.

SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. January.

USEPA. 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. June.

USEPA. 2019. Regional Screening Levels. November.

Table A-5B

Risk-Based Target Concentrations -- Commercial/Industrial Composite Workers Exposed to Soil Vapor Migrating to Indoor Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Commercial/Industrial Air Screening Level		Commercial/Industrial Soil Vapor RBTC (µg/L)		
		Value (µg/m^3)	Source	Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011[a])	Default AF = 0.0005 (Cal/EPA 2011[b])
VOC	Benzene	0.42	Cal/EPA 2019	1.4E-02	4.2E-01	8.4E-01
VOC	1,1-Dichloroethane	7.7	Cal/EPA 2019	2.6E-01	7.7E+00	1.5E+01
VOC	1,1-Dichloroethene	310	Cal/EPA 2019	1.0E+01	3.1E+02	6.2E+02
VOC	Dichlorodifluoromethane	440	USEPA 2019	1.5E+01	4.4E+02	8.8E+02
VOC	cis-1,2-Dichloroethene	35	Cal/EPA 2019	1.2E+00	3.5E+01	7.0E+01
VOC	trans-1,2-Dichloroethene	350	Cal/EPA 2019	1.2E+01	3.5E+02	7.0E+02
VOC	Tetrachloroethene	2	Cal/EPA 2019	6.7E-02	2.0E+00	4.0E+00
VOC	Trichloroethene	3	USEPA 2019	1.0E-01	3.0E+00	6.0E+00
VOC	Vinyl Chloride	0.16	Cal/EPA 2019	5.3E-03	1.6E-01	3.2E-01
VOC	Acetone	140000	USEPA 2019	4.7E+03	1.4E+05	2.8E+05
VOC	Bromoform	11	Cal/EPA 2019	3.7E-01	1.1E+01	2.2E+01
VOC	Chloroform	0.53	USEPA 2019	1.8E-02	5.3E-01	1.1E+00
VOC	Ethyl Benzene	4.9	USEPA 2019	1.6E-01	4.9E+00	9.8E+00
VOC	Methyl tert-Butyl Ether	47	USEPA 2019	1.6E+00	4.7E+01	9.4E+01
VOC	Toluene	1300	Cal/EPA 2019	4.3E+01	1.3E+03	2.6E+03
VOC	m,p-Xylene	440	USEPA 2019	1.5E+01	4.4E+02	8.8E+02
VOC	ortho-Xylene	440	USEPA 2019	1.5E+01	4.4E+02	8.8E+02
VOC	Acrolein	0.088	USEPA 2019	2.9E-03	8.8E-02	1.8E-01
VOC	Bromodichloromethane	0.33	Cal/EPA 2019	1.1E-02	3.3E-01	6.6E-01
VOC	1,3-Butadiene	0.072	Cal/EPA 2019	2.4E-03	7.2E-02	1.4E-01
VOC	2-Butanone (MEK)	22000	USEPA 2019	7.3E+02	2.2E+04	4.4E+04
VOC	sec-Butylbenzene	1800	Cal/EPA 2019	6.0E+01	1.8E+03	3.6E+03
VOC	tert-Butylbenzene	1800	Cal/EPA 2019	6.0E+01	1.8E+03	3.6E+03
VOC	Carbon Tetrachloride	2	Cal/EPA 2019	6.7E-02	2.0E+00	4.0E+00
VOC	Carbon Disulfide	3100	USEPA 2019	1.0E+02	3.1E+03	6.2E+03
VOC	Cyclohexane	26000	USEPA 2019	8.7E+02	2.6E+04	5.2E+04
VOC	1,2-Dibromoethane (EDB)	0.02	Cal/EPA 2019	6.7E-04	2.0E-02	4.0E-02
VOC	1,2-Dichloroethane	0.47	USEPA 2019	1.6E-02	4.7E-01	9.4E-01
VOC	1,1-Difluoroethane	180000	USEPA 2019	6.0E+03	1.8E+05	3.6E+05
VOC	1,4-Dioxane	2.5	USEPA 2019	8.3E-02	2.5E+00	5.0E+00
VOC	Freon 11	5300	Cal/EPA 2019	1.8E+02	5.3E+03	1.1E+04
VOC	2-Hexanone (MBK)	130	USEPA 2019	4.3E+00	1.3E+02	2.6E+02
VOC	Isopropanol	880	USEPA 2019	2.9E+01	8.8E+02	1.8E+03
VOC	4-Isopropyltoluene	NA	--	--	--	--
VOC	n-Propylbenzene	4400	USEPA 2019	1.5E+02	4.4E+03	8.8E+03
VOC	Methylene Chloride	12	Cal/EPA 2019	4.0E-01	1.2E+01	2.4E+01
VOC	Methyl methacrylate	3100	USEPA 2019	1.0E+02	3.1E+03	6.2E+03
VOC	4-Methyl-2-pentanone (MIBK	13000	USEPA 2019	4.3E+02	1.3E+04	2.6E+04
VOC	n-Pentane	4400	USEPA 2019	1.5E+02	4.4E+03	8.8E+03
VOC	Propylene	13000	USEPA 2019	4.3E+02	1.3E+04	2.6E+04
VOC	Tetrahyrofuran	8800	USEPA 2019	2.9E+02	8.8E+03	1.8E+04
VOC	1,1,1-Trichloroethane	4400	Cal/EPA 2019	1.5E+02	4.4E+03	8.8E+03
VOC	1,2,4-Trimethylbenzene	260	USEPA 2019	8.7E+00	2.6E+02	5.2E+02
VOC	1,3,5-Trimethylbenzene	260	USEPA 2019	8.7E+00	2.6E+02	5.2E+02
VOC	Styrene	3900	Cal/EPA 2019	1.3E+02	3.9E+03	7.8E+03
VOC	Di-Isoproylether	3100	USEPA 2019	1.0E+02	3.1E+03	6.2E+03
VOC	tert-amylmethylether	NA	--	--	--	--
TPH	TPH as Gasoline	2500	SFBRWQCB 2019	8.3E+01	2.5E+03	5.0E+03

Notes:

a. Default attenuation factor for existing commercial/industrial workers (Cal/EPA, 2011).

Table A-5B

Risk-Based Target Concentrations -- Commercial/Industrial Composite Workers Exposed to Soil Vapor Migrating to Indoor Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Commercial/Industrial Air Screening Level		Commercial/Industrial Soil Vapor RBTC (µg/L)		
		Value ($\mu g/m^3$)	Source	Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011[a])	Default AF = 0.0005 (Cal/EPA 2011[b])

b. Default attenuation factor for future commercial/industrial workers (Cal/EPA, 2011).
-- = Not calculated
$\mu g/m^3$ = microgram per cubic meter
µg/L = microgram per liter
AF = Attenuation Factor
Cal/EPA = California Environmental Protection Agency
NA = not available
TPH = Total Petroleum Hydrocarbons
RBTC = Risk-Based Target Concentration
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
VOC = Volatile Organic Compound
USEPA = United States Environmental Protection Agency

Sources:

Cal/EPA. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

Cal/EPA. 2019. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). April.

SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. January.

USEPA. 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. June.

USEPA. 2019. Regional Screening Levels. November.

Table A-5C

Risk-Based Target Concentrations -- Construction Trench Workers Exposed to Soil Vapor Migrating to Trench Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Construction Trench Worker Trench Air RBTC			Soil Gas to Trench Air Transfer Factor [a] (µg/L per µg/L)	Construction Trench Soil Vapor RBTC (µg/L)
		$RBTC_C$ (µg/L)	$RBTC_{NC}$ (µg/L)	Minimum RBTC (µg/L)		
VOC	Benzene	2.1E-02	3.5E-01	2.1E-02	1.78E-02	1.2E+00
VOC	1,1-Dichloroethane	3.8E-01	3.1E+01	3.8E-01	1.66E-02	2.3E+01
VOC	1,1-Dichloroethene	--	3.5E-01	3.5E-01	1.72E-02	2.0E+01
VOC	Dichlorodifluoromethane	--	4.4E+00	4.4E+00	1.51E-02	2.9E+02
VOC	cis-1,2-Dichloroethene	--	3.1E-01	3.1E-01	1.76E-02	1.7E+01
VOC	trans-1,2-Dichloroethene	--	3.5E+00	3.5E+00	1.74E-02	2.0E+02
VOC	Tetrachloroethene	1.0E-01	1.8E-01	1.0E-01	1.00E-02	1.0E+01
VOC	Trichloroethene	1.5E-01	9.4E-03	9.4E-03	1.37E-02	6.9E-01
VOC	Vinyl Chloride	7.9E-03	3.4E-01	7.9E-03	2.13E-02	3.7E-01
VOC	Acetone	--	1.4E+02	1.4E+02	2.11E-02	6.4E+03
VOC	Bromoform	5.6E-01	4.6E-01	4.6E-01	7.11E-03	6.5E+01
VOC	Chloroform	2.7E-02	1.1E+00	2.7E-02	1.53E-02	1.7E+00
VOC	Ethyl Benzene	2.5E-01	3.9E+01	2.5E-01	1.36E-02	1.8E+01
VOC	Methyl tert-Butyl Ether	2.4E+00	1.1E+01	2.4E+00	1.50E-02	1.6E+02
VOC	Toluene	--	2.2E+01	2.2E+01	1.55E-02	1.4E+03
VOC	m,p-Xylene	--	1.8E+00	1.8E+00	1.36E-02	1.3E+02
VOC	ortho-Xylene	--	1.8E+00	1.8E+00	1.37E-02	1.3E+02
VOC	Acrolein	--	4.0E-04	4.0E-04	2.22E-02	1.8E-02
VOC	Bromodichloromethane	1.7E-02	8.8E-02	1.7E-02	1.12E-02	1.5E+00
VOC	1,3-Butadiene	3.6E-03	8.8E-03	3.6E-03	2.00E-02	1.8E-01
VOC	2-Butanone (MEK)	--	4.4E+00	4.4E+00	1.82E-02	2.4E+02
VOC	sec-Butylbenzene	--	1.8E+00	1.8E+00	1.05E-02	1.7E+02
VOC	tert-Butylbenzene	--	1.8E+00	1.8E+00	1.05E-02	1.7E+02
VOC	Carbon Tetrachloride	1.0E-01	8.3E-01	1.0E-01	1.14E-02	9.0E+00
VOC	Carbon Disulfide	--	3.1E+00	3.1E+00	2.12E-02	1.4E+02
VOC	Cyclohexane	--	7.9E+01	7.9E+01	1.59E-02	5.0E+03
VOC	1,2-Dibromoethane (EDB)	1.0E-03	8.8E-03	1.0E-03	8.56E-03	1.2E-01
VOC	1,2-Dichloroethane	2.4E-02	3.1E-01	2.4E-02	1.70E-02	1.4E+00
VOC	1,1-Difluoroethane	--	1.8E+02	1.8E+02	2.03E-02	8.6E+03
VOC	1,4-Dioxane	1.2E-01	3.2E+00	1.2E-01	1.74E-02	7.1E+00
VOC	Freon 11	--	4.4E+00	4.4E+00	1.30E-02	3.4E+02
VOC	2-Hexanone (MBK)	--	1.3E-01	1.3E-01	1.40E-02	9.4E+00
VOC	Isopropanol	--	3.1E+01	3.1E+01	2.05E-02	1.5E+03
VOC	4-Isopropyltoluene	--	--	--	--	--
VOC	n-Propylbenzene	--	4.4E+00	4.4E+00	1.20E-02	3.7E+02
VOC	Methylene Chloride	6.1E-01	4.6E+00	6.1E-01	1.99E-02	3.1E+01
VOC	Methyl methacrylate	--	3.1E+00	3.1E+00	1.49E-02	2.1E+02
VOC	4-Methyl-2-pentanone (MIBK	--	3.5E+00	3.5E+00	1.39E-02	2.5E+02
VOC	n-Pentane	--	4.4E+01	4.4E+01	1.63E-02	2.7E+03
VOC	Propylene	--	1.3E+01	1.3E+01	2.18E-02	6.0E+02
VOC	Tetrahyrofuran	--	8.8E+00	8.8E+00	1.98E-02	4.4E+02
VOC	1,1,1-Trichloroethane	--	2.2E+01	2.2E+01	1.29E-02	1.7E+03
VOC	1,2,4-Trimethylbenzene	--	8.8E-01	8.8E-01	1.21E-02	7.3E+01
VOC	1,3,5-Trimethylbenzene	--	8.8E-01	8.8E-01	1.20E-02	7.3E+01

Table A-5C

Risk-Based Target Concentrations -- Construction Trench Workers Exposed to Soil Vapor Migrating to Trench Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Construction Trench Worker Trench Air RBTC			Soil Gas to Trench Air Transfer Factor [a] (µg/L per µg/L)	Construction Trench Soil Vapor RBTC (µg/L)
		$RBTC_C$ (µg/L)	$RBTC_{NC}$ (µg/L)	Minimum RBTC (µg/L)		
VOC	Styrene	--	1.3E+01	1.3E+01	1.41E-02	9.3E+02
VOC	Di-Isoproylether	--	3.1E+00	3.1E+00	1.30E-02	2.4E+02
VOC	tert-amylmethylether	--	--	--	--	--
TPH	TPH as Gasoline	--	2.5E+00	2.5E+00	1.45E-02	1.7E+02

Notes:

a. Soil Gas to Trench Air Transfer Factor is calculated using Equation 2-13 in VDEQ (2019) and relevant chemical properties from USEPA RSL (2019) for VOC and SFBRWQCB ESL (2019) for PDIST.

-- = Not calculated
µg/L = microgram per liter
ft bgs= feet below ground surface
TPH = Total Petroleum Hydrocarbons
RBTC = Risk-Based Target Concentration
VDEQ = Virginia Department of Environmental Quality
VOC = Volatile Organic Compound

Sources:

SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. January.

USEPA. 2019. Regional Screening Levels. November.

VDEQ. 2019. Virginia Unified Risk Assessment Model - VURAM User Guide. July.

Table A-6

Summary for Soil Vapor Evaluation Thresholds

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Residential Soil Vapor RBTC (µg/L)		Commercial/Industrial Soil Vapor RBTC (µg/L)			Construction Trench Soil Vapor RBTC (µg/L)	Soil Vapor Evaluation Threshold [a] (µg/L)
		Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011) [b]	Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011)[c]	Default AF = 0.0005 (Cal/EPA 2011)[b]		
VOC	Benzene	3.2E-03	9.7E-02	1.4E-02	4.2E-01	8.4E-01	1.2E+00	9.7E-02
VOC	1,1-Dichloroethane	6.0E-02	1.8E+00	2.6E-01	7.7E+00	1.5E+01	2.3E+01	1.8E+00
VOC	1,1-Dichloroethene	2.4E+00	7.3E+01	1.0E+01	3.1E+02	6.2E+02	2.0E+01	2.0E+01
VOC	Dichlorodifluoromethane	3.3E+00	1.0E+02	1.5E+01	4.4E+02	8.8E+02	2.9E+02	1.0E+02
VOC	cis-1,2-Dichloroethene	2.8E-01	8.3E+00	1.2E+00	3.5E+01	7.0E+01	1.7E+01	8.3E+00
VOC	trans-1,2-Dichloroethene	2.8E+00	8.3E+01	1.2E+01	3.5E+02	7.0E+02	2.0E+02	8.3E+01
VOC	Tetrachloroethene	1.5E-02	4.6E-01	6.7E-02	2.0E+00	4.0E+00	1.0E+01	4.6E-01
VOC	Trichloroethene	1.6E-02	4.8E-01	1.0E-01	3.0E+00	6.0E+00	6.9E-01	4.8E-01
VOC	Vinyl Chloride	3.2E-04	9.5E-03	5.3E-03	1.6E-01	3.2E-01	3.7E-01	9.5E-03
VOC	Acetone	1.1E+03	3.2E+04	4.7E+03	1.4E+05	2.8E+05	6.4E+03	6.4E+03
VOC	Bromoform	8.7E-02	2.6E+00	3.7E-01	1.1E+01	2.2E+01	6.5E+01	2.6E+00
VOC	Chloroform	4.0E-03	1.2E-01	1.8E-02	5.3E-01	1.1E+00	1.7E+00	1.2E-01
VOC	Ethyl Benzene	3.7E-02	1.1E+00	1.6E-01	4.9E+00	9.8E+00	1.8E+01	1.1E+00
VOC	Methyl tert-Butyl Ether	3.7E-01	1.1E+01	1.6E+00	4.7E+01	9.4E+01	1.6E+02	1.1E+01
VOC	Toluene	1.0E+01	3.1E+02	4.3E+01	1.3E+03	2.6E+03	1.4E+03	3.1E+02
VOC	m,p-Xylene	3.3E+00	1.0E+02	1.5E+01	4.4E+02	8.8E+02	1.3E+02	1.0E+02
VOC	ortho-Xylene	3.3E+00	1.0E+02	1.5E+01	4.4E+02	8.8E+02	1.3E+02	1.0E+02
VOC	Acrolein	7.0E-04	2.1E-02	2.9E-03	8.8E-02	1.8E-01	1.8E-02	1.8E-02
VOC	Bromodichloromethane	2.5E-03	7.6E-02	1.1E-02	3.3E-01	6.6E-01	1.5E+00	7.6E-02
VOC	1,3-Butadiene	5.7E-04	1.7E-02	2.4E-03	7.2E-02	1.4E-01	1.8E-01	1.7E-02
VOC	2-Butanone (MEK)	1.7E+02	5.2E+03	7.3E+02	2.2E+04	4.4E+04	2.4E+02	2.4E+02
VOC	sec-Butylbenzene	1.4E+01	4.2E+02	6.0E+01	1.8E+03	3.6E+03	1.7E+02	1.7E+02
VOC	tert-Butylbenzene	1.4E+01	4.2E+02	6.0E+01	1.8E+03	3.6E+03	1.7E+02	1.7E+02
VOC	Carbon Tetrachloride	1.6E-02	4.7E-01	6.7E-02	2.0E+00	4.0E+00	9.0E+00	4.7E-01
VOC	Carbon Disulfide	2.4E+01	7.3E+02	1.0E+02	3.1E+03	6.2E+03	1.4E+02	1.4E+02
VOC	Cyclohexane	2.1E+02	6.3E+03	8.7E+02	2.6E+04	5.2E+04	5.0E+03	5.0E+03
VOC	1,2-Dibromoethane (EDB)	1.6E-04	4.7E-03	6.7E-04	2.0E-02	4.0E-02	1.2E-01	4.7E-03
VOC	1,2-Dichloroethane	3.7E-03	1.1E-01	1.6E-02	4.7E-01	9.4E-01	1.4E+00	1.1E-01
VOC	1,1-Difluoroethane	1.4E+03	4.2E+04	6.0E+03	1.8E+05	3.6E+05	8.6E+03	8.6E+03
VOC	1,4-Dioxane	1.9E-02	5.6E-01	8.3E-02	2.5E+00	5.0E+00	7.1E+00	5.6E-01
VOC	Freon 11	4.3E+01	1.3E+03	1.8E+02	5.3E+03	1.1E+04	3.4E+02	3.4E+02
VOC	2-Hexanone (MBK)	1.0E+00	3.1E+01	4.3E+00	1.3E+02	2.6E+02	9.4E+00	9.4E+00
VOC	Isopropanol	7.0E+00	2.1E+02	2.9E+01	8.8E+02	1.8E+03	1.5E+03	2.1E+02
VOC	4-Isopropyltoluene	--	--	--	--	--	--	--
VOC	n-Propylbenzene	3.3E+01	1.0E+03	1.5E+02	4.4E+03	8.8E+03	3.7E+02	3.7E+02
VOC	Methylene Chloride	3.3E-02	1.0E+00	4.0E-01	1.2E+01	2.4E+01	3.1E+01	1.0E+00
VOC	Methyl methacrylate	2.4E+01	7.3E+02	1.0E+02	3.1E+03	6.2E+03	2.1E+02	2.1E+02

Table A-6

Summary for Soil Vapor Evaluation Thresholds

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Residential Soil Vapor RBTC (µg/L)		Commercial/Industrial Soil Vapor RBTC (µg/L)			Construction Trench Soil Vapor RBTC (µg/L)	Soil Vapor Evaluation Threshold [a] (µg/L)
		Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011) [b]	Default AF = 0.03 (USEPA 2015)	Default AF = 0.001 (Cal/EPA 2011)[c]	Default AF = 0.0005 (Cal/EPA 2011)[b]		
VOC	4-Methyl-2-pentanone (MIBK	1.0E+02	3.1E+03	4.3E+02	1.3E+04	2.6E+04	2.5E+02	2.5E+02
VOC	n-Pentane	3.3E+01	1.0E+03	1.5E+02	4.4E+03	8.8E+03	2.7E+03	1.0E+03
VOC	Propylene	1.0E+02	3.1E+03	4.3E+02	1.3E+04	2.6E+04	6.0E+02	6.0E+02
VOC	Tetrahyrofuran	7.0E+01	2.1E+03	2.9E+02	8.8E+03	1.8E+04	4.4E+02	4.4E+02
VOC	1,1,1-Trichloroethane	3.3E+01	1.0E+03	1.5E+02	4.4E+03	8.8E+03	1.7E+03	1.0E+03
VOC	1,2,4-Trimethylbenzene	2.1E+00	6.3E+01	8.7E+00	2.6E+02	5.2E+02	7.3E+01	6.3E+01
VOC	1,3,5-Trimethylbenzene	2.1E+00	6.3E+01	8.7E+00	2.6E+02	5.2E+02	7.3E+01	6.3E+01
VOC	Styrene	3.1E+01	9.4E+02	1.3E+02	3.9E+03	7.8E+03	9.3E+02	9.3E+02
VOC	Di-Isoproylether	2.4E+01	7.3E+02	1.0E+02	3.1E+03	6.2E+03	2.4E+02	2.4E+02
VOC	tert-amylmethylether	--	--	--	--	--	--	--
TPH	TPH as Gasoline	2.0E+01	6.0E+02	8.3E+01	2.5E+03	5.0E+03	1.7E+02	1.7E+02

Notes:

a. The evaluation thresholds are the minimum of calculated construction worker RBTCs and soil vapor RBTCs derived from regulatory air screening levels and default attenuation factor in Cal/EPA 2011.

b. Attenuation factors (AF) are the default DTSC-recommended AF for future use scenario.

c. Attenuation factors (AF) are the default DTSC-recommended AF for existing commercial scenario.

-- = Not calculated
µg/L = microgram per liter
ft bgs= feet below ground surface
AF = Attenuation Factor
TPH = Total Petroleum Hydrocarbons
RBTC = Risk-Based Target Concentration
VOC = Volatile Organic Compound

Sources:

Cal/EPA. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

USEPA. 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. June.

Table A-7A

Risk-Based Target Concentrations -- Residents Exposed to Groundwater Migrating to Indoor Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Residential Air Screening Level		Henry's Law Constant [a] (unitless)	Residential Groundwater RBTC (µg/L)
		Value ($\mu g/m^3$)	Source		Default AF = 0.001 (Cal/EPA 2011)
VOC	1,1-Dichloroethane	1.8	Cal/EPA 2019	2.30E-01	7.8E+00
VOC	1,1-Dichloroethene	73	Cal/EPA 2019	1.07E+00	6.8E+01
VOC	cis-1,2-Dichloroethene	8.3	Cal/EPA 2019	1.67E-01	5.0E+01
VOC	trans-1,2-Dichloroethene	83	Cal/EPA 2019	3.84E-01	2.2E+02
VOC	Tetrachloroethene	0.46	Cal/EPA 2019	7.24E-01	6.4E-01
VOC	Trichloroethene	0.48	USEPA 2019	4.03E-01	1.2E+00
VOC	Vinyl Chloride	0.0095	Cal/EPA 2019	1.14E+00	8.4E-03
VOC	Acetone	32000	USEPA 2019	1.43E-03	2.2E+07
VOC	Chloroform	0.12	USEPA 2019	1.50E-01	8.0E-01
VOC	1,4-Dioxane	0.56	USEPA 2019	1.96E-04	2.9E+03
TPH	TPH as Diesel	270	SFBRWQCB 2019	7.36E+01	3.7E+00
TPH	TPH as Gasoline	600	SFBRWQCB 2019	7.36E+01	8.1E+00

Notes:

a. Henry's constant is from USEPA RSL (2019) for VOC and SFBRWQCB ESL (2019) for PDIST.

$\mu g/m^3$ = microgram per cubic meter
µg/L = microgram per liter
AF = Attenuation Factor
Cal/EPA = California Environmental Protection Agency
TPH = Total Petroleum Hydrocarbons
RBTC = Risk-Based Target Concentration
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
VOC = Volatile Organic Compound
USEPA = United States Environmental Protection Agency

Sources:

Cal/EPA. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

Cal/EPA. 2019. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). April.

SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. January.

USEPA. 2019. Regional Screening Levels. November.

Table A-7B

Risk-Based Target Concentrations -- Commercial/Industrial Composite Workers Exposed to Groundwater Migrating to Indoor Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Commercial/Industrial Air Screening Level		Henry's Law Constant [a] (unitless)	Future Commercial/Industrial Groundwater RBTC (µg/L)	
		Value (µg/m^3)	Source		Default AF = 0.001 (Cal/EPA 2011[b])	Default AF = 0.0005 (Cal/EPA 2011[c])
VOC	1,1-Dichloroethane	7.7	Cal/EPA 2019	2.30E-01	3.3E+01	6.7E+01
VOC	1,1-Dichloroethene	310	Cal/EPA 2019	1.07E+00	2.9E+02	5.8E+02
VOC	cis-1,2-Dichloroethene	35	Cal/EPA 2019	1.67E-01	2.1E+02	4.2E+02
VOC	trans-1,2-Dichloroethene	350	Cal/EPA 2019	3.84E-01	9.1E+02	1.8E+03
VOC	Tetrachloroethene	2	Cal/EPA 2019	7.24E-01	2.8E+00	5.5E+00
VOC	Trichloroethene	3	USEPA 2019	4.03E-01	7.4E+00	1.5E+01
VOC	Vinyl Chloride	0.16	Cal/EPA 2019	1.14E+00	1.4E-01	2.8E-01
VOC	Acetone	140000	USEPA 2019	1.43E-03	9.8E+07	2.0E+08
VOC	Chloroform	0.53	USEPA 2019	1.50E-01	3.5E+00	7.1E+00
VOC	1,4-Dioxane	2.5	USEPA 2019	1.96E-04	1.3E+04	2.5E+04
TPH	TPH as Diesel	1100	SFBRWQCB 2019	7.36E+01	1.5E+01	3.0E+01
TPH	TPH as Gasoline	2500	SFBRWQCB 2019	7.36E+01	3.4E+01	6.8E+01

Notes:

a. Henry's constant is from USEPA RSL (2019) for VOC and SFBRWQCB ESL (2019) for PDIST.

b. Default attenuation factor for existing commercial/industrial workers (Cal/EPA, 2011).

c. Default attenuation factor for future commercial/industrial workers (Cal/EPA, 2011).

µg/m^3 = microgram per cubic meter
µg/L = microgram per liter
AF = Attenuation Factor
Cal/EPA = California Environmental Protection Agency
TPH = Total Petroleum Hydrocarbons
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
VOC = Volatile Organic Compound
USEPA = United States Environmental Protection Agency

Sources:

Cal/EPA. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

Cal/EPA. 2019. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). April.

SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. January.

USEPA. 2019. Regional Screening Levels. November.

Table A-7C

Risk-Based Target Concentrations -- Construction Trench Workers Exposed to Groundwater Migrating to Trench Air

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Construction Trench Worker Trench Air RBTC			Groundwater to Trench Air Transfer Factor [a] (µg/L per µg/L)	Construction Trench Grounwater RBTC (µg/L)
		$RBTC_C$ (µg/L)	$RBTC_{NC}$ (µg/L)	Minimum RBTC (µg/L)		
VOC	1,1-Dichloroethane	3.8E-01	3.1E+01	3.8E-01	1.25E-05	3.1E+04
VOC	1,1-Dichloroethene	--	3.5E-01	3.5E-01	6.01E-05	5.8E+03
VOC	cis-1,2-Dichloroethene	--	3.1E-01	3.1E-01	9.63E-06	3.2E+04
VOC	trans-1,2-Dichloroethene	--	3.5E+00	3.5E+00	2.19E-05	1.6E+05
VOC	Tetrachloroethene	1.0E-01	1.8E-01	1.0E-01	2.38E-05	4.2E+03
VOC	Trichloroethene	1.5E-01	9.4E-03	9.4E-03	1.81E-05	5.2E+02
VOC	Vinyl Chloride	7.9E-03	3.4E-01	7.9E-03	7.95E-05	9.9E+01
VOC	Acetone	--	1.4E+02	1.4E+02	9.89E-08	1.4E+09
VOC	Chloroform	2.7E-02	1.1E+00	2.7E-02	7.53E-06	3.5E+03
VOC	1,4-Dioxane	1.2E-01	3.2E+00	1.2E-01	1.12E-08	1.1E+07
TPH	TPH as Diesel	--	1.1E+00	1.1E+00	2.88E-03	4.0E+02
TPH	TPH as Gasoline	--	2.5E+00	2.5E+00	3.51E-03	7.1E+02

Notes:

a. Groundwater to Trench Air Transfer Factor is calculated using Equation 2-2 in VDEQ (2019) and relevant chemical properties from USEPA RSL (2019) for VOC and SFBRWQCB ESL (2019) for PDIST.
-- = Not calculated
µg/L = microgram per liter
ft bgs= feet below ground surface
TPH = Total Petroleum Hydrocarbons
RBTC = Risk-Based Target Concentration
VDEQ = Virginia Department of Environmental Quality
VOC = Volatile Organic Compound

Sources:

SFBRWQCB. 2019. Environmental Screening Levels (ESLs) Workbook. January.

USEPA. 2019. Regional Screening Levels. November.

VDEQ. 2019. Virginia Unified Risk Assessment Model - VURAM User Guide. July.

Table A-8

Summary for Groundwater Evaluation Thresholds

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Residential Groundwater RBTC (µg/L)	Commercial/Industrial Groundwater RBTC (µg/L)		Construction Trench Groundwater RBTC (µg/L)	Groundwater Evaluation Threshold [a] (µg/L)
		Default AF = 0.001 (Cal/EPA 2011) [b]	Default AF = 0.001 (Cal/EPA 2011) [c]	Default AF = 0.0005 (Cal/EPA 2011) [b]		
VOC	1,1-Dichloroethane	7.8E+00	3.3E+01	6.7E+01	3.1E+04	7.8E+00
VOC	1,1-Dichloroethene	6.8E+01	2.9E+02	5.8E+02	5.8E+03	6.8E+01
VOC	cis-1,2-Dichloroethene	5.0E+01	2.1E+02	4.2E+02	3.2E+04	5.0E+01
VOC	trans-1,2-Dichloroethene	2.2E+02	9.1E+02	1.8E+03	1.6E+05	2.2E+02
VOC	Tetrachloroethene	6.4E-01	2.8E+00	5.5E+00	4.2E+03	6.4E-01
VOC	Trichloroethene	1.2E+00	7.4E+00	1.5E+01	5.2E+02	1.2E+00
VOC	Vinyl Chloride	8.4E-03	1.4E-01	2.8E-01	9.9E+01	8.4E-03
VOC	Acetone	2.2E+07	9.8E+07	2.0E+08	1.4E+09	2.2E+07
VOC	Chloroform	8.0E-01	3.5E+00	7.1E+00	3.5E+03	8.0E-01
VOC	1,4-Dioxane	2.9E+03	1.3E+04	2.5E+04	1.1E+07	2.9E+03
TPH	TPH as Diesel	3.7E+00	1.5E+01	3.0E+01	4.0E+02	3.7E+00
TPH	TPH as Gasoline	8.1E+00	3.4E+01	6.8E+01	7.1E+02	8.1E+00

Notes:

a. The evaluation thresholds are the minimum of calculated construction worker RBTCs and groundwater RBTCs derived from regulatory air screening levels and default attenuation factor in Cal/EPA 2011.

b. Attenuation factors (AF) are the default DTSC-recommended AF for future use scenario.

c. Attenuation factors (AF) are the default DTSC-recommended AF for existing commercial scenario.

-- = Not calculated
µg/L = microgram per liter
ft bgs= feet below ground surface
AF = Attenuation Factor
TPH = Total Petroleum Hydrocarbons
RBTC = Risk-Based Target Concentration
VOC = Volatile Organic Compound

Sources:

Cal/EPA. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

Table A-9

Risk-Based Target Concentrations -- Construction Trench Workers Exposed to Soil through Direct Contact

2101-2129 Rosecrans Avenue

Gardena, California

Chemical Group	Chemical	Soil Ingestion		Soil Dermal Contact		Soil Inhalation		Combined Cancer RBTC (mg/kg)	Combined Non-Cancer RBTC (mg/kg)	Minimum RBTC (mg/kg)
		$RBTC_{soil\text{-}ing\text{-}C}$ (mg/kg)	$RBTC_{soil\text{-}ing\text{-}NC}$ (mg/kg)	$RBTC_{soil\text{-}derm\text{-}C}$ (mg/kg)	$RBTC_{soil\text{-}derm\text{-}NC}$ (mg/kg)	$RBTC_{soil.part\text{-}inh\text{-}C}$ (mg/kg)	$RBTC_{soil.part\text{-}inh\text{-}NC}$ (mg/kg)			
PCB	Aroclor-1248	2.5E+01	1.1E+01	1.2E+01	5.2E+00	1.1E+03	--	8.1E+00	3.5E+00	3.5E+00
PCB	Aroclor-1254	2.5E+01	1.1E+01	1.2E+01	5.2E+00	1.1E+03	4.6E+02	8.1E+00	3.5E+00	3.5E+00
PCB	Aroclor-1260	2.5E+01	1.1E+01	1.2E+01	5.2E+00	1.1E+03	--	8.1E+00	3.5E+00	3.5E+00
PCB	Aroclor-1262	2.5E+01	1.1E+01	1.2E+01	5.2E+00	1.1E+03	--	8.1E+00	3.5E+00	3.5E+00
INORG	Antimony	--	1.4E+02	--	--	--	--	--	1.4E+02	1.4E+02
INORG	Barium	--	7.1E+04	--	--	--	2.2E+04	--	1.7E+04	1.7E+04
INORG	Beryllium	--	1.8E+03	--	--	2.6E+02	3.1E+01	2.6E+02	3.0E+01	3.0E+01
INORG	Cadmium	--	1.8E+02	--	6.1E+02	1.5E+02	4.4E+01	1.5E+02	3.3E+01	3.3E+01
INORG	Chromium	--	5.3E+05	--	--	--	2.2E+04	--	2.1E+04	2.1E+04
INORG	Chromium VI	9.9E+01	1.8E+03	--	--	4.1E+00	1.3E+03	3.9E+00	7.5E+02	3.9E+00
INORG	Cobalt	--	1.1E+03	--	--	6.8E+01	8.8E+01	6.8E+01	8.1E+01	6.8E+01
INORG	Copper	--	3.5E+03	--	--	--	--	--	3.5E+03	3.5E+03
INORG	Mercury	--	7.1E+02	--	--	--	1.3E+02	--	1.1E+02	1.1E+02
INORG	Molybdenum	--	1.8E+03	--	--	--	--	--	1.8E+03	1.8E+03
INORG	Nickel	--	7.1E+03	--	--	2.4E+03	8.8E+02	2.4E+03	7.8E+02	7.8E+02
INORG	Selenium	--	1.8E+03	--	--	--	8.8E+04	--	1.7E+03	1.7E+03
INORG	Silver	--	1.8E+03	--	--	--	--	--	1.8E+03	1.8E+03
INORG	Thallium	--	1.4E+01	--	--	--	--	--	1.4E+01	1.4E+01
INORG	Vanadium	--	3.5E+03	--	--	--	4.4E+02	--	3.9E+02	3.9E+02
INORG	Zinc	--	1.1E+05	--	--	--	--	--	1.1E+05	1.1E+05

Notes:

-- = Not calculated

mg/kg = milligram per kilogram

INORG = Inorganic

PCB = Polychlorinated Biphenyl

$RBTC_{soil\text{-}ing\text{-}C}$ = Risk-Based Concentration, cancer, soil ingestion

$RBTC_{soil\text{-}ing\text{-}NC}$ = Risk-Based Concentration, noncancer, soil ingestion

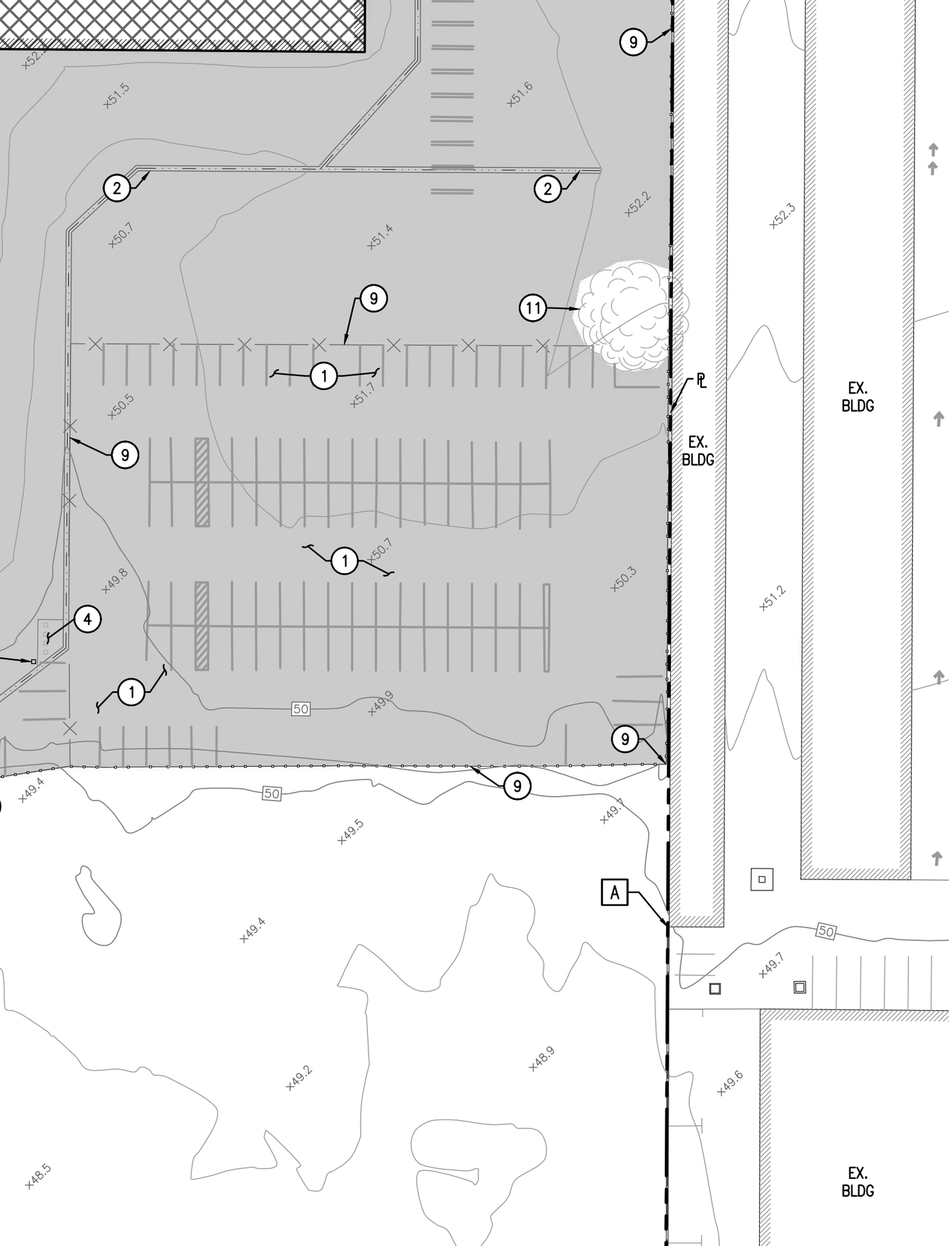
$RBTC_{soil\text{-}derm\text{-}C}$ = Risk-Based Concentration, cancer, soil dermal contact

$RBTC_{soil\text{-}derm\text{-}NC}$ = Risk-Based Concentration, noncancer, soil dermal contact

$RBTC_{soil.part\text{-}inh\text{-}C}$ = Risk-Based Concentration, cancer, soil particulate inhalation

$RBTC_{soil.part\text{-}inh\text{-}NC}$ = Risk-Based Concentration, noncancer, soil particulate inhalation

APPENDIX B
GRADING PLANS



UTILITY PROVIDERS.

4. CONTRACTOR SHALL MARK THE LOCATIONS OF ALL EXISTING UTILITY STUBS ON THE CURB. ON SEWER STUBS, INDICATE THE DEPTH FROM TOP OF CURB.

5. EXISTING PERIMETER CURBS AND SIDEWALKS ARE TO BE PROTECTED IN PLACE.

6. ALL ITEMS REMOVED DURING DEMOLITION OF THIS SITE SHALL BE DISPOSED AND/OR RECYCLED ACCORDING TO ALL APPLICABLE FEDERAL, STATE AND/OR CITY ORDINANCES AND LAWS.

7. CARE SHOULD BE TAKEN DURING THE DEMOLITION PROCESS TO IDENTIFY ANY LEACH FIELDS, SEPTIC TANKS, SEEPAGE PITS, OR OTHER UNDERGROUND FEATURES. NOTIFY ENGINEER IF SUCH AREAS ARE ENCOUNTERED.

8. THIS DEMOLITION PLAN IS SPECIFIC TO THE PROJECT SITE. ALL OTHER REMOVALS OR IMPROVEMENTS SHALL BE PER SEPARATE SPECIFIC CITY APPROVED PLANS AND REQUIRE APPROPRIATE ENCROACHMENT PERMITS AND AGENCY APPROVAL.

9. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A DEMOLITION PERMIT AND DESIGNATING ALL HAUL ROUTES AND DISPOSAL.

CIVIL ENGINEER'S NOTICE TO CONTRACTOR:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THEIR PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF MY KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTION– ANY MEASURES TO PROTECT THE UTILITIES AND STRUCTURES SHOWN AND ANY OTHER LINES OR STRUCTURES NOT OF RECORD OR NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THE PROTECTION OF, AND ANY DAMAGE TO, THESE LINES OR STRUCTURES.

2. THE CONTRACTOR AGREES THAT HE WILL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OR WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER, OR ANY PUBLIC AGENCY.

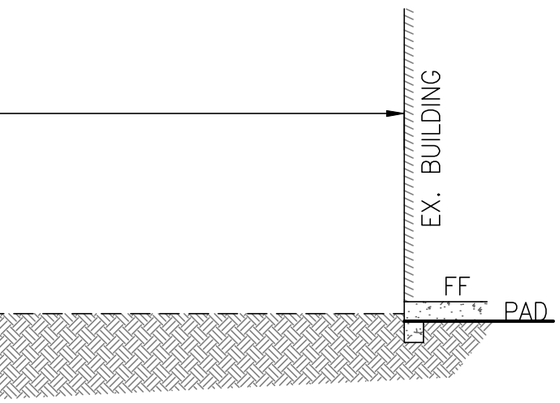
3. THE ESTIMATES OF IMPROVEMENT QUANTITIES AS SHOWN HEREON ARE PROVIDED ONLY FOR THE PURPOSE OF SATISFYING DISTRICT PLAN INFORMATION REQUIREMENTS. THE CONTRACTOR SHALL PERFORM AN INDEPENDENT ESTIMATE OF ALL IMPROVEMENT QUANTITIES AND SHALL USE SAME AS A BASIS FOR HIS BID(S) AND CONTRACT(S).

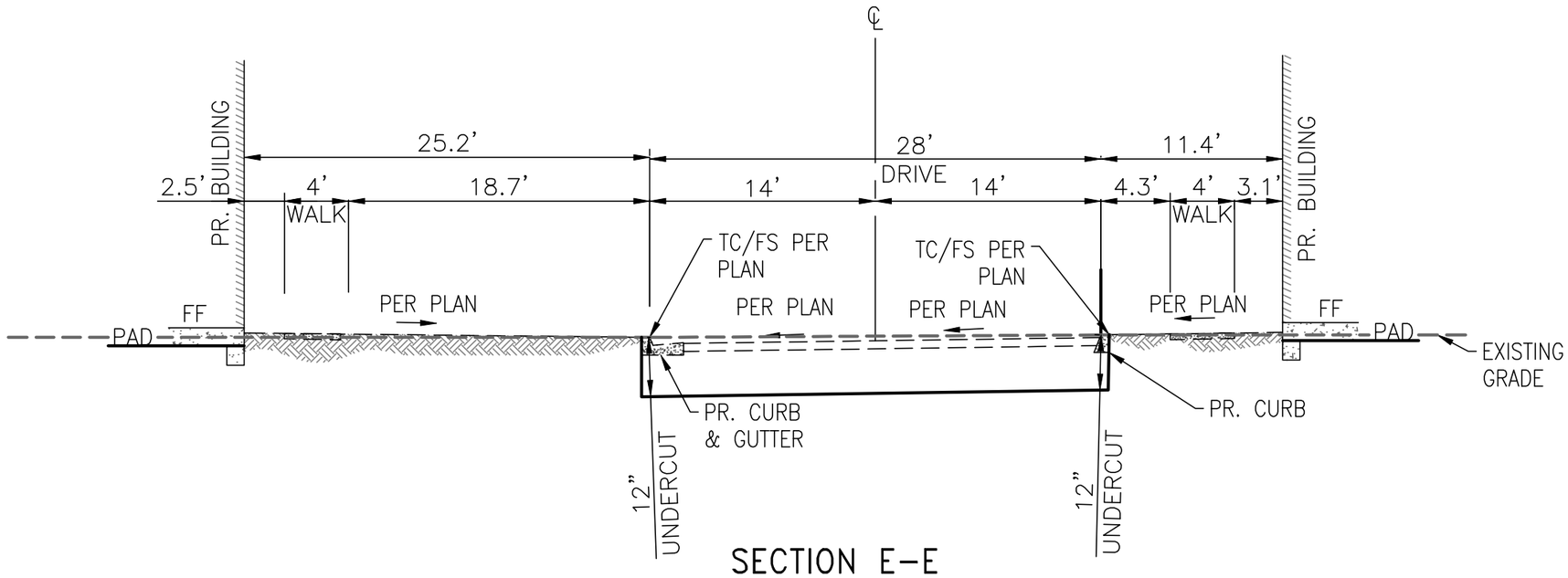
4. CONTRACTOR TO VERIFY CLEARANCE AT ALL UTILITY CROSSINGS. IF INTERFERENCE OCCURS, OTHER THAN NOTED ON PLAN, CONTRACTOR TO CONTACT DESIGN ENGINEER FOR POSSIBLE REDESIGN. IF REDESIGN IS UNFEASIBLE, CONTRACTOR TO RELOCATE UTILITY AT NO EXPENSE TO ENGINEER.

5. CONTRACTOR SHALL FOLLOW CALIFORNIA DEPARTMENT OF HEALTH SERVICES CRITERIA FOR THE SEPARATION AND PROTECTION OF WATER MAINS AND NON–POTABLE PIPELINES, FOR MATERIALS OF PIPES, AND THE INSTALLATION OF THE PROPOSED WATER SYSTEM.

SOIL ENGINEER'S NOTE

ALL GRADING SHALL COMPLY WITH SOIL REPORT'S RECOMMENDATIONS.
OVER–EXCAVATION NOT TO EXCEED 5' IN DEPTH ON–SITE.

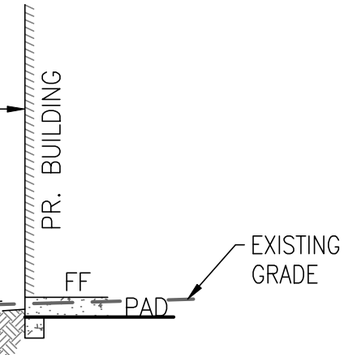


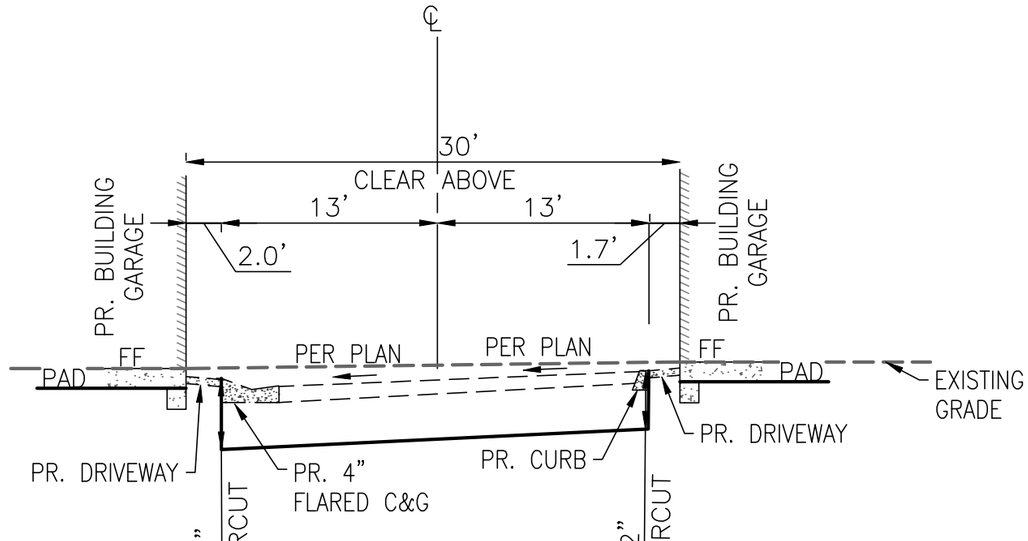


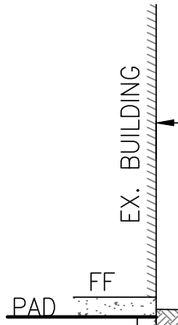
SECTION E-E

28' INTERIOR STREET

NOT TO SCALE







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PAD=51.50
PAD=51.59
GP=50.41
GP=50.24
GP=50.07
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49.72FL
50.43TC
49.93FL
GP=50.65
GP=50.88
GP=51.13
50.81TC
50.31FS
GP=51.18
1%
51.32TC
50.99FS
GP=51.24
50.45TC
49.95FL
0.8%
0.7%
24'
12'
12'
0.8%
0.7%
0.8%
0.8%
50.48
GP=50.31
GP=50.16
GB
50.80TC
50.30FL
50.76TC
50.26FL
50.85TC
50.35FS
50.94TC
50.44FS
51.21TC
50.71FS
51.23TC
50.73FS
51.31TC
50.81FS
51.55TC
51.05FS
GB
GB
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(48.76)
FG
PAD=50.10
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50.12TC
49.62FL
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0.7%
2%
1.1%
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50.93TC
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51.53TC
51.03FS
1%
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PROP.
LOT LINE
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50.14TC
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(48.02)
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GB
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BLDG#2
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1.6%
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PROP.
LOT LINE
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(48.57)
FG
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(49.00)
FG
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48.68FL
48.78TC
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48.91TC
48.41FL
49.25TC
48.75FL
49.43TC
48.93FL
26'
13'
13'
GP=48.82
PAD=48.40
PAD=49.74
49.42TC
48.92FL
49.06TC
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R/W
R/W
(48.74)
FG
GB

GP=53.11
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GP=52.77
52.07FL
52.19TC
51.69FL
52.14TC
51.64FL
52.28TC
51.78FS
52.33TC
51.83FS
52.62TC
52.12FL
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FS
D
D
0.8%
1%
#7
51.83TC
51.33FS
51.78TC
51.28FS
51.60TC
51.10FS
PAD=51.93
PAD=52.23
PAD=52.50
PAD=52.80
PAD=52.67
(52.22)
FS
GP=51.75
GP=51.58
GP=51.40
51.72TC
51.22FS
51.88TC
51.38FL
G
G
GP=51.66
GP=51.92
GP=52.19
GP=52.48
52.61TC
52.28FS
52.18
FS
GP=52.54
(52.46)
FS
51.87TC
51.37FL
1%
0.9%
0.8%
1%
22'
11'
11'
51.32TC
50.82FS
GP=51.73
GP=51.56
GP=51.39
51.78TC
51.28FL
GP=51.68
GP=51.94
GP=52.21
52.55TC
52.05FS
GP=52.28
GP=52.35
C
C
51.04TC
50.54FL
51.02TC
50.52FL
51.21TC
50.71FS
51.16TC
50.66FS
51.50TC
51.00FS
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FS
PL
50.96TC
50.46FS
1%
0.8%
50.71TC
50.21FS
50.66TC
50.16FS
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49.98FL
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50.62TC
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GP=50.65
GP=50.91
GP=51.20
51.33TC
51.00FS
(49.85)
FS
GP=51.26
50.61TC
50.11FS
50.35
FS
50.45
FS
50.62
FS
50.71
FS
50.88
FS
11'
22'
0.8%
1%
50.13TC
49.63FS

APPENDIX C
VAPOR INTRUSION MITIGATION SYSTEM DESIGN SPECIFICATIONS AND SCHEMATICS

ATTACHMENT C

GARDEN COURT

(RESIDENTIAL LAND USE: SINGLE FAMILY DWELLING – SLAB-ON-GRADE CONSTRUCTION DETACHED HOMES)

ATTACHMENT C
GARDEN COURT
(RESIDENTIAL LAND USE: SINGLE FAMILY DWELLING – SLAB-ON-GRADE CONSTRUCTION DETACHED HOMES)

1. Applicability

1.1 The standard vapor intrusion mitigation system (VIMS) components shall be installed during construction of single-family dwellings with slab-on-grade foundations.

2. VIMS Components

2.1 Soil Vapor Barrier (Detail 1)

2.1.1 Materials. The soil vapor barrier shall consist of: 1) A sand layer; 2) Base Layer: such as EPRO e.BASE 205, Geo-Seal Base or equivalent; 3) Core Layer: EPRO e.spray, Geo-Seal Core or equivalent and 4) Bond Layer: EPRO e.SHIELD 205, Geo-Seal bond or equivalent. The soil vapor barrier components are shown on Detail 1.

2.1.1.1 Sand Layer. A sand layer shall be placed under the base layer and shall be a minimum of 2 inches.

2.1.1.2 BASE Layer. The BASE layer shall be comprised of a high strength laminated HDPE membrane that is thermally bonded to a polypropylene geotextile giving the BASE layer a high puncture resistance (Class A Rating) as well as high chemical resistance. The BASE layer shall be installed over the substrate with the HDPE side facing up.

2.1.1.3 CORE Layer. The CORE layer shall be an elastic water-based co-polymer modified asphaltic membrane spray applied to a minimum dry thickness of 60 mils.

2.1.1.4 BOND Layer. The BOND layer shall be comprised of a high strength laminated HDPE membrane that is thermally bonded to a polypropylene geotextile giving the BASE layer a high puncture resistance (Class A Rating) as well as high chemical resistance. The BOND layer shall be installed as a protection course over the BASE and CORE layers with the geotextile side facing up.

2.1.2 Submittals. The following product data for the soil vapor barrier shall be submitted to the architect/engineer no later than 30 days prior to construction: 1) manufacturer's printed instructions for evaluating and preparing the substrate; 2) product technical data, including tested physical and performance properties; 3) samples of soil vapor barrier components; and 4) certified installer certificates.

2.1.3 Pre-Installation Meeting. A pre-installation meeting shall be held prior to application of the soil vapor barrier system to assure proper site and installation conditions. The meeting shall include, at a minimum, the contractor, installer, architect/engineer, other trades influenced by soil vapor barrier installation and special inspector (if any).

2.1.4 Installation. The soil vapor barrier shall be installed below the entire building ground level floor slab.

2.1.4.1 Materials shall be delivered to the project site as specified by the manufacturer, labeled with manufacturer's name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.

2.1.4.2 Materials shall be stored as specified by the manufacturer in a clean, dry, protected location and within the temperature range required by manufacturer.

2.1.4.3 Stored materials shall be protected from direct sunlight.

2.1.4.4 Material that cannot be applied within its stated shelf life shall be removed and replaced.

2.1.4.5 Areas adjacent to installation area should be protected. Where necessary, masking shall be applied to prevent staining of surfaces to remain exposed wherever membrane abuts to other finish surfaces. Minimum clearance of 24 inches is required for application of product. For areas with less than 24-inch clearance, the membrane may be applied by hand.

2.1.4.6 Soil vapor barrier installation shall only be performed when existing and forecasted weather conditions are within manufacturer's recommendations for the material and application method used. Ambient

temperature shall be within manufacturer's specifications. (Greater than +45°F/+7°C.) Consult manufacturer for the proper requirements when desiring to apply the CORE layer below 45°F/7°C.

2.1.4.7 All plumbing, electrical, mechanical and structural items to be under or passing through the soil vapor barrier system shall be positively secured in their proper positions and appropriately protected prior to membrane application, and smoke tested in accordance with soil vapor barrier manufacturer Quality Assurance Standards.

2.1.4.8 The soil vapor barrier shall be installed before placement of fill material and reinforcing steel. When not possible, all exposed reinforcing steel shall be masked by general contractor prior to CORE layer application.

2.1.4.9 Stakes used to secure the concrete forms shall not penetrate the soil vapor barrier system after it has been installed. If stakes need to puncture the soil vapor barrier system after it has been installed, the necessary repairs need to be made by a certified applicator. To confirm the staking procedure is in agreement with the manufacture's recommendation, contact the manufacturer.

2.1.4.10 The BASE layer shall be installed over substrate material in one direction with six-inch overlaps and the geotextile (fabric side) facing down.

2.1.4.11 The BASE seams shall be secured by applying 60 mils of CORE between the 6" overlapped sheets with the geotextile side down.

2.1.4.12 The Installer shall manually verify there are no gaps/fish mouths in seams.

2.1.4.13 For best results, an equal amount of BASE and CORE shall be installed in one day. Leaving unsprayed BASE overnight might allow excess moisture to collect on the BASE. If excess moisture collects, it shall be removed.

2.1.4.14 The film thickness of the CORE layer shall be verified every 500 ft². (46.45 m²). The CORE layer will generally cure in 24 to 48 hours. As a rule, when temperature decreases or humidity increases, the curing of the membrane will be prolonged. The membrane does not need to be fully cured prior the placement of the BOND layer, provided 60 mil thickness has been verified and a smoke test conducted.

2.1.4.15 When applying to a vertical concrete wall, the CORE layer can be applied directly to the concrete surface using manufacturer's recommended protection material based on site specific conditions. NOTE: Care should be taken to not trap moisture between the layers of the CORE. Trapping moisture may occur from applying a second coat prior to the membrane prior to curing. Repairs and detailing may be done over the CORE layer when not fully cured.

2.1.4.16 The BOND layer protection course shall be installed perpendicular to the direction of the BASE layer with overlapped seams over the nominally cured CORE layer.

2.1.4.17 Any water that has collected on the surface of the CORE layer shall be removed prior to the placement of the BOND layer.

2.1.4.18 The seams of the BOND layer shall be overlapped in the same manner as the BASE layer.

2.1.5 Utility Pipe/Conduit Penetrations. Gas tight seals shall be provided at all pipe or conduit penetrations through the soil vapor barrier (as shown in Detail 10). Penetrations shall be field tested for Quality Assurance in accordance with this specification and soil vapor barrier manufacturer's specifications.

2.1.5.1 All pipe penetrations should be securely in place prior to the installation of the soil vapor barrier.

2.1.6 Foundation Seal. Gas tight seals shall be provided where the soil vapor barrier attaches to interior and perimeter footings.

2.1.7 Quality Assurance. The soil vapor barrier must be installed by a trained and certified installer and inspector(s) approved by the soil vapor barrier manufacturer.

2.1.7.1 As required by the warranty, the soil vapor barrier manufacturer will require a manufacturer's representative or certified 3rd party inspector to inspect and verify that the soil vapor barrier has been installed per the manufacturer's recommendations.

2.1.7.2 Smoke Testing shall be conducted per the smoke testing protocol provided by the soil vapor barrier manufacturer. Where leaks, are identified, repairs should be made and additional testing performed until no leaks are detected.

2.1.7.3 Visual inspections prior to placement of concrete, but after the installation of concrete reinforcing, shall be performed to identify any punctures that may have occurred during the installation of rebar, post tension cables, etc. Punctures in the system should be easy to identify due to the color contrasting layers in the system. Punctures shall be repaired in accordance with the manufacturer's recommendations.

2.2 Vent Piping (Detail 2)

2.2.1 Materials. Vent piping shall consist of minimum Schedule 40, minimum 3-inch diameter, rigid, slotted or perforated PVC pipe. Per plan details, corrugated PVC drain piping may be used for short bends below shallow footings and/or utility piping and shall be connected to solid PVC pipe using an appropriate fitting (see Details 3 and 4).

2.2.2 Vent Piping Trenches. Vent pipes shall be placed in trenches with a minimum of 2-inches of sand (see Table 1 for specifications) around the vent pipe. A geo-fabric to prevent sand from entering the vent pipes shall be placed around the vent pipe.

2.2.3 Installation. Vent piping shall be installed a minimum of 2-inches below the soil vapor barrier as shown in Detail 2.

2.2.3.1 The vent piping shall be located no greater than 25 feet apart.

2.2.3.2 Except where needed to accommodate shallow footings and/or utilities, undulations in the vent piping, which may impede the flow of gas, shall be avoided.

2.2.3.3 Vent piping shall be connected to Vent Risers which extend above the building.

2.3 Vent Risers (Detail 13)

2.3.1 Material. Vent risers and associated fittings shall be constructed of materials that comply with the Uniform Plumbing and Mechanical Codes. All joints shall be tightly sealed with approved materials.

2.3.2 Installation. Vent Risers shall be connected to vent piping and equipped with a shut-off valve as shown in these plans.

2.3.2.1 Where vent risers are cast-in-concrete, piping shall be wrapped with high density PVC Foam Tape [Closed Cell, Adhesive backed, ¼-inch thick (minimum) by 4-inch wide (minimum)].

2.3.2.2 Where vent risers transition through building footings, the penetration shall be accomplished in compliance with the Uniform Building Code and with the approval of the Project Structural Engineer.

2.3.2.3 Vent risers shall be properly secured with brackets a minimum of every 5 feet.

2.3.2.4 Vent riser pipe shall be clearly marked to indicate that the pipe may contain vapors. This may be accomplished through stencils, labels, or other permanent labeling method. Riser pipe shall be clearly and permanently labeled "Vapor", in ½" high letters, near their termination point and at 5-foot intervals along the remainder of the vent pipe. This includes sections encased within walls or other enclosures.

2.3.2.5 To prevent UV damage, vent risers shall be painted with a light-colored, water-based paint where exposed to sunlight.

2.3.3 Outlets. Vent Risers outlets attached to, or penetrating the sides of, buildings should be located at least 10 feet above ground level, at least one foot above the edge of the roof, and at least 10 feet away from any window, door or other opening.

2.3.3.1 Vent Riser outlets above the roof line should terminate above the highest roof of the building or ridge, where practicable. Each vent riser outlet should be equipped with a wind-driven turbine (such as a "spinner vent" or "vacu stack cap").

2.4 Sampling Ports (Detail 12)

2.4.1 Material. Sampling port piping and associated fittings shall be constructed of minimum Schedule 80 PVC and shall be no smaller than 3-inches in diameter. All joints shall be tightly sealed with approved materials.

2.4.2 Installation. Sampling port piping shall be connected to vent piping and equipped with a sampling port and a shut-off valve as shown in these plans.

2.4.2.1 Where sampling port piping is cast-in-concrete, piping shall be wrapped with high density PVC Foam Tape [Closed Cell, Adhesive backed, ¼-inch thick (minimum) by 4-inch wide (minimum)].

2.4.2.2 Where sampling port piping transitions through building footings, the penetration shall be accomplished in compliance with the Uniform Building Code and with the approval of the Project Structural Engineer.

2.4.2.3 Sampling port piping shall be installed in a manner that will allow it to be connected to an active venting system without modification of damage to the structure (e.g. Capped TEE fitting located near the foundation).

3. Utility Corridor Protection (Detail 11)

3.1 Installation. Trench dams shall be installed to protect utility corridors from the migration of underground gas into buildings or structures along the trench backfill. All piping and electrical conduits installed below ground shall be placed in trenches sealed with Trench Dams prior to entering the building.

3.2 Materials. Trench Dams shall be constructed of one of the following:

3.2.1 Bentonite Cement Slurry Trench Dam: a mixture of 4% Type II Cement and 2% Powdered Bentonite. The length of the bentonite slurry mix shall be a minimum of three feet for trenches that are 18 inches wide or less. For utility trenches that are wider than 18 inches, the length of the bentonite slurry mix trench dam shall be a minimum of 2 times the utility trench width.

3.2.2 Compacted Native Soils Backfill Trench Dam: Native soils shall be compacted at least 90% relative compaction in accordance with ASTM D-1557 Testing Procedures. The length of the compacted native soil trench dam shall be a minimum of five feet for trenches that are 18 inches wide or less. For utility trenches that are wider than 18 inches, the length of the trench dam shall be a minimum of 3 times the utility trench width.

3.2.3 Concrete Mixes other than Bentonite Cement Slurry may be used for utility trench dams provided that conduit or piping is wrapped with high density PVC Foam Tape [Closed Cell, Adhesive backed, ¼ inch thick (minimum) by ½ inch wide (minimum)] within the Trench Dam. The tape shall be applied to a clean surface with ends butted together. Conduit/piping protection requirements should be verified with utility provider standards. The length of the trench dam shall be a minimum of three feet for trenches that are 18 inches wide or less. For utility trenches that are wider than 18 inches, the length of the trench dam shall be a minimum of 2 times the utility trench width.

3.3 Corrosion Protection. Piping and conduit placed in Trench Dams shall be protected from corrosion and settlement as needed depending on the size and type of piping material and utility provider standards.

3.4 Conduit Seals. Conduit seals shall be provided at the termination of all utility conduits to reduce the potential for elevated concentrations of chemicals in soil vapor to migrate along the conduit to other non-impacted areas of the site. Seals shall be constructed of closed cell polyurethane foam, or other inert gas-impermeable material, extending a minimum of six conduit diameters, or six inches, whichever is greater, into the conduit. Electrical conduit should be provided with seals as required by the appropriate sections of the National Electrical Code.

4. Notification Placards (Details 14 and 15)

4.1 Permanent notification placards are required to indicate the presence of the Soil Vapor Barrier and/or Vent Piping.

4.1.1 The notification placards shall be posted and maintained at the front of the building that is constructed with a Soil Vapor Barrier and/or Vent Piping.

4.1.2 The notification placard shall be uncovered and located in a conspicuous location.

4.1.3 When cast in floors, the placard shall also remain uncovered and in a conspicuous location.

5. Inspections

5.1 The inspection and periodic observations of the VIMS shall be performed by the Vapor Barrier Engineer (i.e. the Engineer or his Designee). At a minimum, inspection/observation shall take place at the following stages of the installation:

5.1.1 During the installation of the (sub-slab) vent piping.

5.1.2 After backfilling of the (sub-slab) vent piping.

5.1.3 During the installation of the (sub-slab) soil vapor barrier.

5.1.4 After the installation of the (sub-slab) soil vapor barrier but prior to backfilling. The vapor barrier shall be smoke tested at this time. These tests shall be documented in the as-built report.

5.1.5 During the placement of the protective course.

5.1.6 Prior to placing the concrete slab over the soil vapor barrier, the Vapor Barrier Installer shall certify in writing that the soil vapor barrier has been installed and tested in accordance with the manufacturer's specifications and is free of leaks.

5.1.7 During, and at the completion of, the vent riser installation for the (sub-slab) vent piping.

5.1.8 At the completion of construction prior to the issuance of the certification of occupancy.

5.2 As-built plans and the installer's final certification of the soil vapor barrier system shall be submitted to the Owner at the completion of the final inspection.

5.3 The Vapor Barrier Engineer/Engineer of Record shall provide a report of their periodic observations to the Owner at the conclusion of the installation.

Table 1: Specifications for Sand

SIEVE SIZE	PERCENTAGE PASSING SIEVE
3/8" (9.5 mm)	100
No.4 (4.75 mm)	90-100
No. 8 (2.36 mm)	75-90
No. 16 (1.18 mm)	55-75
No. 30 (600 um)	30-50
No. 50 (300 um)	10-25
No. 100 (150 um)	2-10
No. 200 (75 um)	0-5

LIVEWORK, NEW AA PRODUCT AND RETAIL "BUILDING A"

(MIXED LAND USE: – SINGLE FAMILY ATTACHED HOMES AND/OR RETAIL)

ATTACHMENT C-1
LIVEWORK, NEW AA PRODUCT AND RETAIL "BUILDING A"
(MIXED LAND USE: – SINGLE FAMILY ATTACHED HOMES AND/OR RETAIL)

1. Applicability

1.1 The standard vapor intrusion mitigation system (VIMS) components shall be installed during construction of residential and/or commercial buildings with slab-on-grade foundations and first-level occupants.

2. VIMS Components

2.1 Soil Vapor Barrier (Detail 1)

2.1.1 Materials. The soil vapor barrier shall consist of: 1) A sand layer; 2) Base Layer: such as EPRO e.BASE 205, Geo-Seal Base or equivalent; 3) Core Layer: EPRO e.spray, Geo-Seal Core or equivalent and 4) Bond Layer: EPRO e.SHIELD 205, Geo-Seal bond or equivalent. The soil vapor barrier components are shown on Detail 1.

2.1.1.1 Sand Layer. A sand layer shall be placed under the base layer and shall be a minimum of 2 inches.

2.1.1.2 BASE Layer. The BASE layer shall be comprised of a high strength laminated HDPE membrane that is thermally bonded to a polypropylene geotextile giving the BASE layer a high puncture resistance (Class A Rating) as well as high chemical resistance. The BASE layer shall be installed over the substrate with the HDPE side facing up.

2.1.1.3 CORE Layer. The CORE layer shall be an elastic water-based co-polymer modified asphaltic membrane spray applied to a minimum dry thickness of 60 mils.

2.1.1.4 BOND Layer. The BOND layer shall be comprised of a high strength laminated HDPE membrane that is thermally bonded to a polypropylene geotextile giving the BASE layer a high puncture resistance (Class A Rating) as well as high chemical resistance. The BOND layer shall be installed as a protection course over the BASE and CORE layers with the geotextile side facing up.

2.1.2 Submittals. The following product data for the soil vapor barrier shall be submitted to the architect/engineer no later than 30 days prior to construction: 1) manufacturer's printed instructions for evaluating and preparing the substrate; 2) product technical data, including tested physical and performance properties; 3) samples of soil vapor barrier components; and 4) certified installer certificates.

2.1.3 Pre-Installation Meeting. A pre-installation meeting shall be held prior to application of the soil vapor barrier system to assure proper site and installation conditions. The meeting shall include, at a minimum, the contractor, installer, architect/engineer, other trades influenced by soil vapor barrier installation and special inspector (if any).

2.1.4 Installation. The soil vapor barrier shall be installed below the entire building ground level floor slab.

2.1.4.1 Materials shall be delivered to the project site as specified by the manufacturer, labeled with manufacturer's name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.

2.1.4.2 Materials shall be stored as specified by the manufacturer in a clean, dry, protected location and within the temperature range required by manufacturer.

2.1.4.3 Stored materials shall be protected from direct sunlight.

2.1.4.4 Material that cannot be applied within its stated shelf life shall be removed and replaced.

2.1.4.5 Areas adjacent to installation area should be protected. Where necessary, masking shall be applied to prevent staining of surfaces to remain exposed wherever membrane abuts to other finish surfaces. Minimum clearance of 24 inches is required for application of product. For areas with less than 24-inch clearance, the membrane may be applied by hand.

2.1.4.6 Soil vapor barrier installation shall only be performed when existing and forecasted weather conditions are within manufacturer's recommendations for the material and application method used. Ambient temperature shall be within manufacturer's specifications. (Greater than +45°F/+7°C.) Consult manufacturer for the proper requirements when desiring to apply the CORE layer below 45°F/7°C.

2.1.4.7 All plumbing, electrical, mechanical and structural items to be under or passing through the soil vapor barrier system shall be positively secured in their proper positions and appropriately protected prior to membrane application, and smoke tested in accordance with soil vapor barrier manufacturer Quality Assurance Standards.

2.1.4.8 The soil vapor barrier shall be installed before placement of fill material and reinforcing steel. When not possible, all exposed reinforcing steel shall be masked by general contractor prior to CORE layer application.

2.1.4.9 Stakes used to secure the concrete forms shall not penetrate the soil vapor barrier system after it has been installed. If stakes need to puncture the soil vapor barrier system after it has been installed, the necessary repairs need to be made by a certified applicator. To confirm the staking procedure is in agreement with the manufacture's recommendation, contact the manufacturer.

2.1.4.10 The BASE layer shall be installed over substrate material in one direction with six-inch overlaps and the geotextile (fabric side) facing down.

2.1.4.11 The BASE seams shall be secured by applying 60 mils of CORE between the 6" overlapped sheets with the geotextile side down.

2.1.4.12 The Installer shall manually verify there are no gaps/fish mouths in seams.

For best results, an equal amount of BASE and CORE shall be installed in one day. Leaving unsprayed BASE overnight might allow excess moisture to collect on the BASE. If excess moisture collects, it shall be removed.

2.1.4.13 The film thickness of the CORE layer shall be verified every 500 ft^2. (46.45 m^2). The CORE layer will generally cure in 24 to 48 hours. As a rule, when temperature decreases or humidity increases, the curing of the membrane will be prolonged. The membrane does not need to be fully cured prior the placement of the BOND layer, provided 60 mil thickness has been verified and a smoke test conducted.

2.1.4.14 When applying to a vertical concrete wall, the CORE layer can be applied directly to the concrete surface using manufacturer's recommended protection material based on site specific conditions. NOTE: Care should be taken to not trap moisture between the layers of the CORE. Trapping moisture may occur from applying a second coat prior to the membrane prior to curing. Repairs and detailing may be done over the CORE layer when not fully cured.

2.1.4.15 The BOND layer protection course shall be installed perpendicular to the direction of the BASE layer with overlapped seams over the nominally cured CORE layer.

2.1.4.16 Any water that has collected on the surface of the CORE layer shall be removed prior to the placement of the BOND layer.

2.1.4.17 The seams of the BOND layer shall be overlapped in the same manner as the BASE layer.

2.1.5 Utility Pipe/Conduit Penetrations. Gas tight seals shall be provided at all pipe or conduit penetrations through the soil vapor barrier (as shown in Detail 10). Penetrations shall be field tested for Quality Assurance in accordance with this specification and soil vapor barrier manufacturer's specifications.

2.1.5.1 All pipe penetrations should be securely in place prior to the installation of the soil vapor barrier.

2.1.6 Foundation Seal. Gas tight seals shall be provided where the soil vapor barrier attaches to interior and perimeter footings.

2.1.7 Quality Assurance. The soil vapor barrier must be installed by a trained and certified installer and inspector(s) approved by the soil vapor barrier manufacturer.

2.1.7.1 As required by the warranty, the soil vapor barrier manufacturer will require a manufacturer's representative or certified 3rd party inspector to inspect and verify that the soil vapor barrier has been installed per the manufacturer's recommendations.

2.1.7.2 Smoke Testing shall be conducted per the smoke testing protocol provided by the soil vapor barrier manufacturer. Where leaks, are identified, repairs should be made and additional testing performed until no leaks are detected.

2.1.7.3 Visual inspections prior to placement of concrete, but after the installation of concrete reinforcing, shall be performed to identify any punctures that may have occurred during the installation of rebar, post tension cables, etc. Punctures in the system should be easy to identify due to the color contrasting layers in the system. Punctures shall be repaired in accordance with the manufacturer's recommendations.

2.2 Vent Piping (Detail 2)

2.2.1 Materials. Vent piping shall consist of minimum Schedule 40, minimum 3-inch diameter, rigid, slotted or perforated PVC pipe. Per plan details, corrugated PVC drain piping may be used for short bends below shallow footings and/or utility piping and shall be connected to solid PVC pipe using an appropriate fitting (see Details 3 and 4).

2.2.2 Vent Piping Trenches. Vent pipes shall be placed in trenches with a minimum of 2-inches of sand (see Table 1 for specifications) around the vent pipe. A geo-fabric to prevent sand from entering the vent pipes shall be placed around the vent pipe.

2.2.3 Installation. Vent piping shall be installed a minimum of 2-inches below the soil vapor barrier as shown in Detail 2.

2.2.3.1 The vent piping shall be located no greater than 25 feet apart.

2.2.3.2 Except where needed to accommodate shallow footings and/or utilities, undulations in the vent piping, which may impede the flow of gas, shall be avoided.

2.2.3.3 Vent piping shall be connected to Vent Risers which extend above the building.

2.3 Vent Risers (Detail 13)

2.3.1 Material. Vent risers and associated fittings shall be constructed of materials that comply with the Uniform Plumbing and Mechanical Codes. All joints shall be tightly sealed with approved materials.

2.3.2 Installation. Vent Risers shall be connected to vent piping and equipped with a shut-off valve as shown in these plans.

2.3.2.1 A minimum of one vent riser shall be installed for every 10,000 sf of building footprint area.

2.3.2.2 Where vent risers are cast-in-concrete, piping shall be wrapped with high density PVC Foam Tape [Closed Cell, Adhesive backed, ¼-inch thick (minimum) by 4-inch wide (minimum)].

2.3.2.3 Where vent risers transition through building footings, the penetration shall be accomplished in compliance with the Uniform Building Code and with the approval of the Project Structural Engineer.

2.3.2.4 Vent risers shall be properly secured with brackets a minimum of every 5 feet.

2.3.2.5 Vent riser pipe shall be clearly marked to indicate that the pipe may contain vapors. This may be accomplished through stencils, labels, or other permanent labeling method. Riser pipe shall be clearly and permanently labeled "Vapor", in ½" high letters, near their termination point and at 5-foot intervals along the remainder of the vent pipe. This includes sections encased within walls or other enclosures.

2.3.2.6 To prevent UV damage, vent risers shall be painted with a light-colored, water-based paint where exposed to sunlight.

2.3.3 Outlets. Vent Risers outlets attached to, or penetrating the sides of, buildings should be located at least 10 feet above ground level, at least one foot above the edge of the roof, and at least 10 feet away from any window, door or other opening.

2.3.3.1 Vent Riser outlets above the roof line should terminate above the highest roof of the building or ridge, where practicable. Each vent riser outlet should be equipped with a wind-driven turbine (such as a "spinner vent" or "vacu stack cap").

2.4 Sampling Ports (Detail 12)

2.4.1 Material. Sampling port piping and associated fittings shall be constructed of minimum Schedule 80 PVC and shall be no smaller than 3-inches in diameter. All joints shall be tightly sealed with approved materials.

2.4.2 Installation. Sampling port piping shall be connected to vent piping and equipped with a sampling port and a shut-off valve as shown in these plans.

2.4.2.1 A minimum of one sampling port shall be installed for every 10,000 sf of building footprint area.

2.4.2.2 Where sampling port piping is cast-in-concrete, piping shall be wrapped with high density PVC Foam Tape [Closed Cell, Adhesive backed, ¼-inch thick (minimum) by 4-inch wide (minimum)].

2.4.2.3 Where sampling port piping transitions through building footings, the penetration shall be accomplished in compliance with the Uniform Building Code and with the approval of the Project Structural Engineer.

2.4.2.4 Sampling port piping shall be installed in a manner that will allow it to be connected to an active venting system without modification of damage to the structure (e.g. Capped TEE fitting located near the foundation).

3. Utility Corridor Protection (Detail 11)

3.1 Installation. Trench dams shall be installed to protect utility corridors from the migration of underground gas into buildings or structures along the trench backfill. All piping and electrical conduits installed below ground shall be placed in trenches sealed with Trench Dams prior to entering the building.

3.2 Materials. Trench Dams shall be constructed of one of the following:

3.2.1 Bentonite Cement Slurry Trench Dam: a mixture of 4% Type II Cement and 2% Powdered Bentonite. The length of the bentonite slurry mix shall be a minimum of three feet for trenches that are 18 inches wide or less. For utility trenches that are wider than 18 inches, the length of the bentonite slurry mix trench dam shall be a minimum of 2 times the utility trench width.

3.2.2 Compacted Native Soils Backfill Trench Dam: Native soils shall be compacted at least 90% relative compaction in accordance with ASTM D-1557 Testing Procedures. The length of the compacted native soil trench dam shall be a minimum of five feet for trenches that are 18 inches wide or less. For utility trenches that are wider than 18 inches, the length of the trench dam shall be a minimum of 3 times the utility trench width.

3.2.3 Concrete Mixes other than Bentonite Cement Slurry may be used for utility trench dams provided that conduit or piping is wrapped with high density PVC Foam Tape [Closed Cell, Adhesive backed, ¼ inch thick (minimum) by ½ inch wide (minimum)] within the Trench Dam. The tape shall be applied to a clean surface with ends butted together. Conduit/piping protection requirements should be verified with utility provider standards. The length of the trench dam shall be a minimum of three feet for trenches that are 18 inches wide or less. For utility trenches that are wider than 18 inches, the length of the trench dam shall be a minimum of 2 times the utility trench width.

3.3 Corrosion Protection. Piping and conduit placed in Trench Dams shall be protected from corrosion and settlement as needed depending on the size and type of piping material and utility provider standards.

3.4 Conduit Seals. Conduit seals shall be provided at the termination of all utility conduits to reduce the potential for elevated concentrations of chemicals in soil vapor to migrate along the conduit to other non-impacted areas of the site. Seals shall be constructed of closed cell polyurethane foam, or other inert gas-impermeable material, extending a minimum of six conduit diameters, or six inches, whichever is greater, into the conduit. Electrical conduit should be provided with seals as required by the appropriate sections of the National Electrical Code.

4. Notification Placards (Details 14 and 15)

4.1 Permanent notification placards are required to indicate the presence of the Soil Vapor Barrier and/or Vent Piping.

4.1.1 The notification placards shall be posted and maintained at the front of the building that is constructed with a Soil Vapor Barrier and/or Vent Piping.

4.1.2 The notification placard shall be uncovered and located in a conspicuous location.

4.1.3 When cast in floors, the placard shall also remain uncovered and in a conspicuous location.

5. Inspections

5.1 The inspection and periodic observations of the VIMS shall be performed by the Vapor Barrier Engineer (i.e. the Engineer or his Designee). At a minimum, inspection/observation shall take place at the following stages of the installation:

5.1.1 During the installation of the (sub-slab) vent piping.

5.1.2 After backfilling of the (sub-slab) vent piping.

5.1.3 During the installation of the (sub-slab) soil vapor barrier.

5.1.4 After the installation of the (sub-slab) soil vapor barrier but prior to backfilling. The vapor barrier shall be smoke tested at this time. These tests shall be documented in the as-built report.

5.1.5 During the placement of the protective course.

5.1.6 Prior to placing the concrete slab over the soil vapor barrier, the Vapor Barrier Installer shall certify in writing that the soil vapor barrier has been installed and tested in accordance with the manufacturer's specifications and is free of leaks.

5.1.7 During, and at the completion of, the vent riser installation for the (sub-slab) vent piping.

5.1.8 At the completion of construction prior to the issuance of the certification of occupancy.

5.2 As-built plans and the installer's final certification of the soil vapor barrier system shall be submitted to the Owner at the completion of the final inspection.

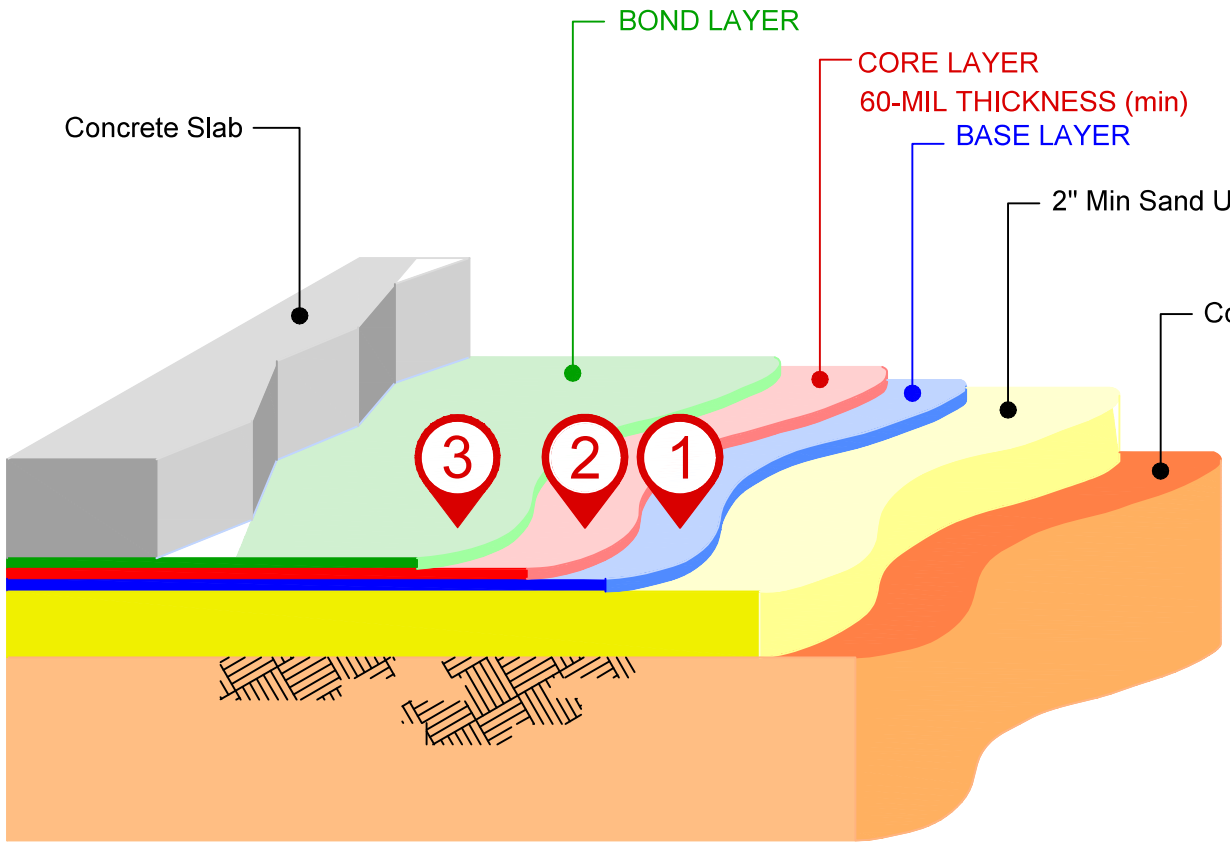
5.3 The Vapor Barrier Engineer/Engineer of Record shall provide a report of their periodic observations to the Owner at the conclusion of the installation.

Table 1: Specifications for Sand

SIEVE SIZE	PERCENTAGE PASSING SIEVE
3/8" (9.5 mm)	100
No.4 (4.75 mm)	90-100
No. 8 (2.36 mm)	75-90
No. 16 (1.18 mm)	55-75
No. 30 (600 um)	30-50
No. 50 (300 um)	10-25
No. 100 (150 um)	2-10
No. 200 (75 um)	0-5

PRELIMINARY
NOT FOR CONSTRUCTION

STANDARD DETAILS AND SCHEMATICS FOR VAPOR MITIGATION SYSTEMS



1. BASE LAYER is a high strength laminated HDPE membrane that is thermally bonded to a polypropylene geotextile, which allows Core Layer to be applied directly to the base.

2. CORE LAYER is an elastic water-based co-polymer modified asphaltic membrane spray applied to a minimum dry thickness of 60 mils.

3. BOND LAYER is a high strength laminated HDPE membrane that is thermally bonded to a polypropylene geotextile placed over the Core Layer to enhance the curing of the membrane and increase puncture resistance.

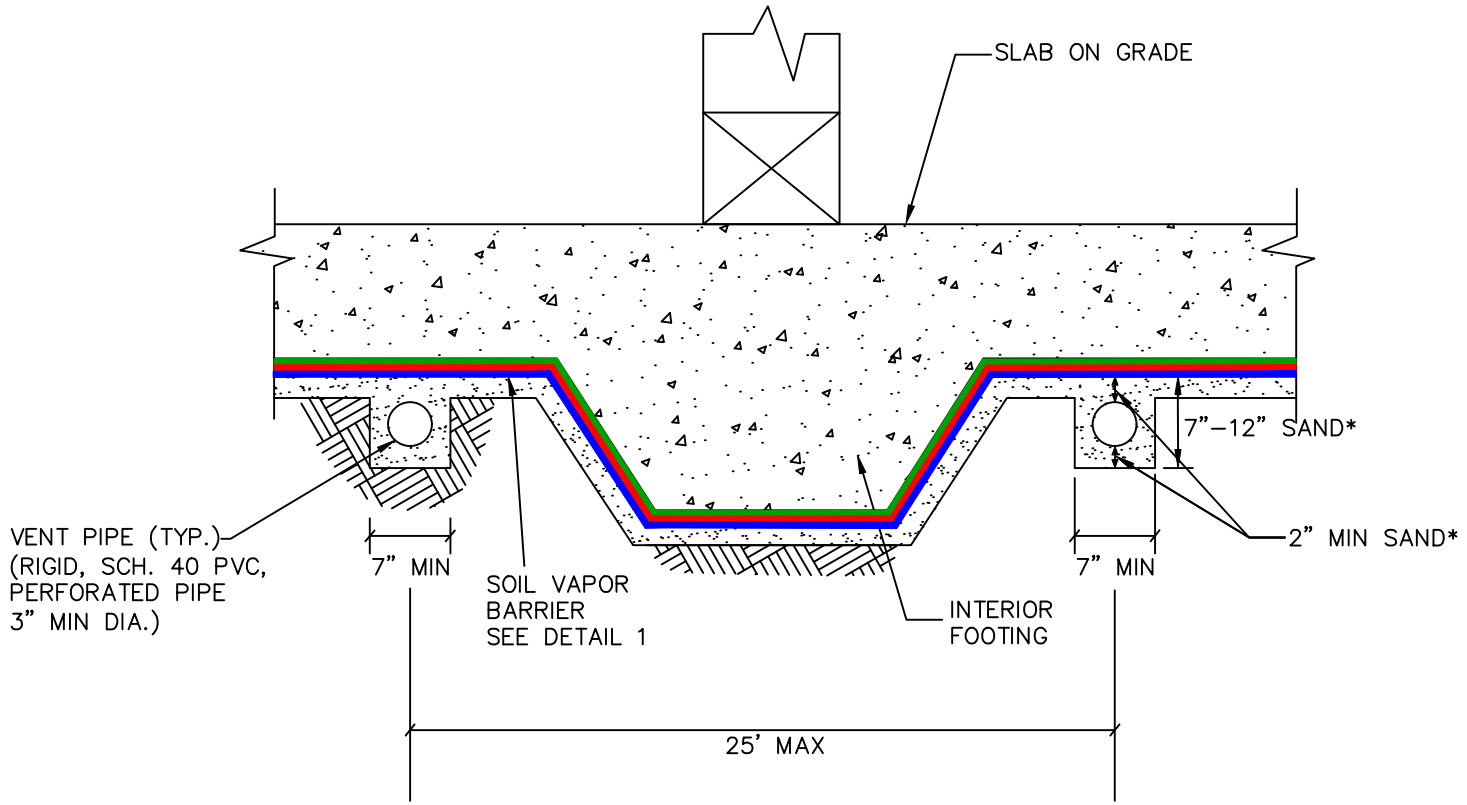
RAMBOLL

DRAFTED BY: RS | DATE: 10/30/18

SOIL VAPOR BARRIER CONFIGURATION
DETAIL VIMS STANDARD DETAILS (TYPICAL)

1

PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

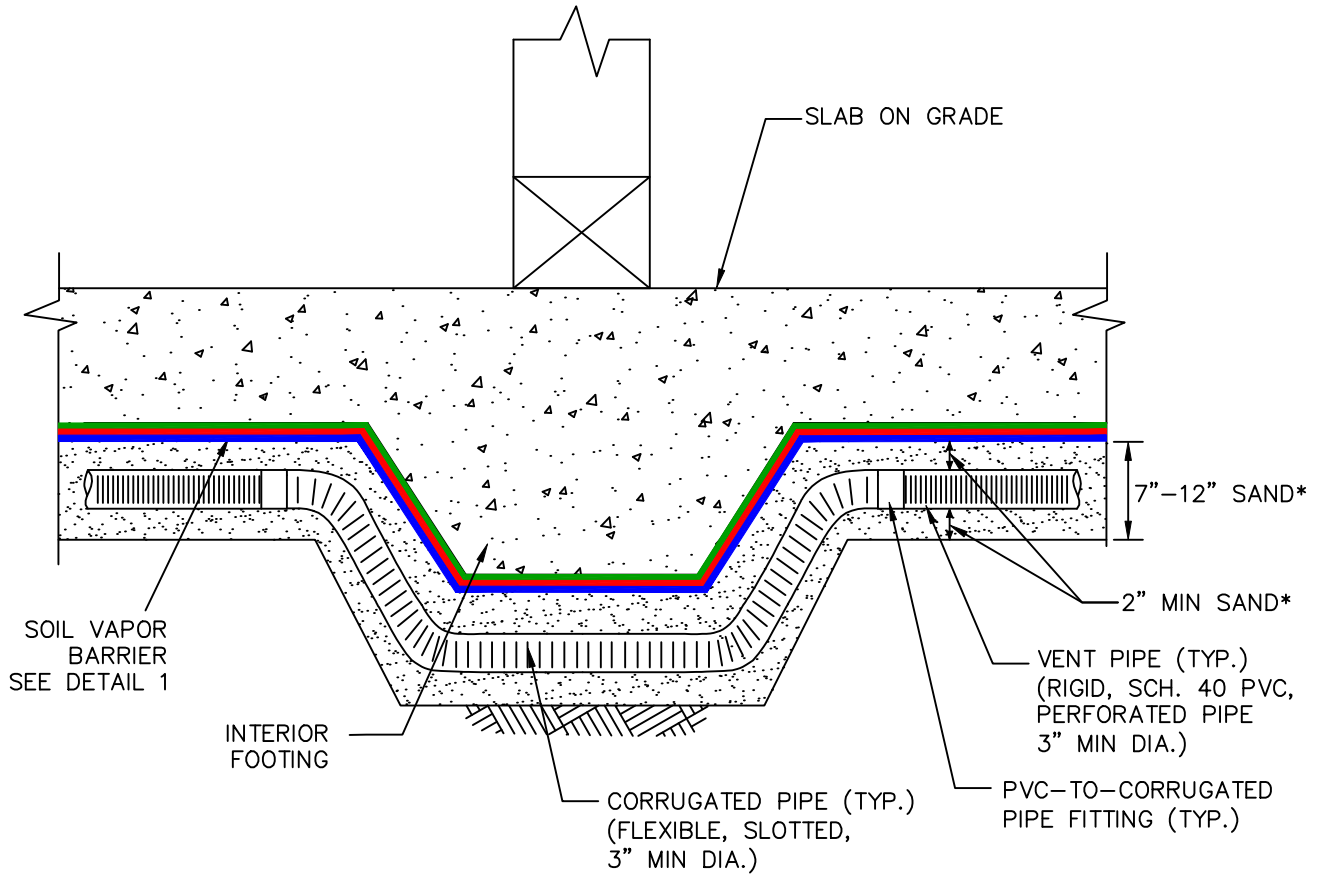
(NOT TO SCALE)

RAMBOLL

VENT PIPE AND INTERIOR FOOTING DETAILS
VIMS STANDARD DETAILS (TYPICAL)

2

DRAFTED BY: RS | DATE: 10/30/18 | PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

(NOT TO SCALE)

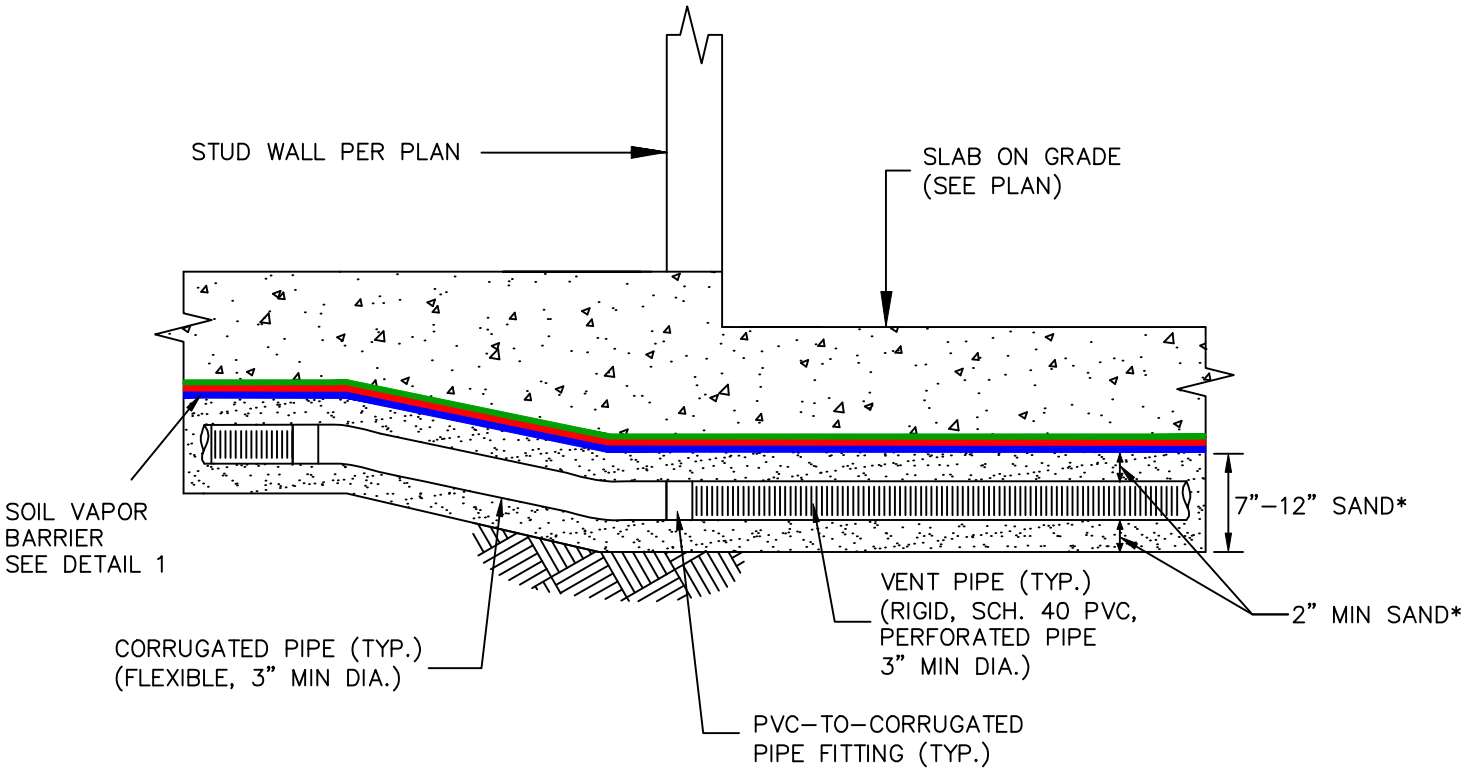
RAMBOLL

DRAFTED BY: RS | DATE: 10/30/18

VENT PIPE CROSSING INTERIOR FOOTING
VIMS STANDARD DETAILS (TYPICAL)

3

PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

(NOT TO SCALE)

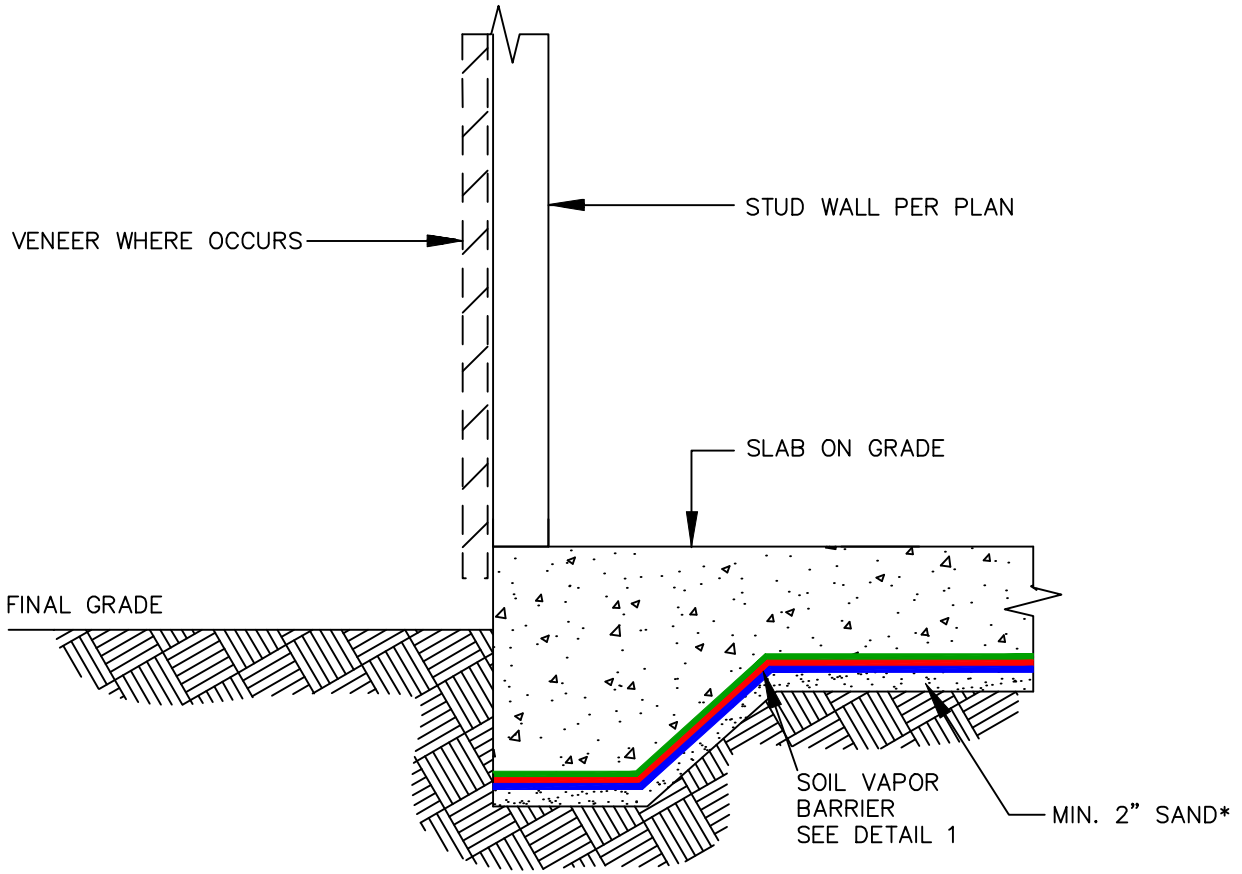
RAMBOLL

DRAFTED BY: RS | DATE:10/30/18

VENT PIPE CROSSING INTERIOR STEP FOOTING
VIMS STANDARD DETAILS (TYPICAL)

4

PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

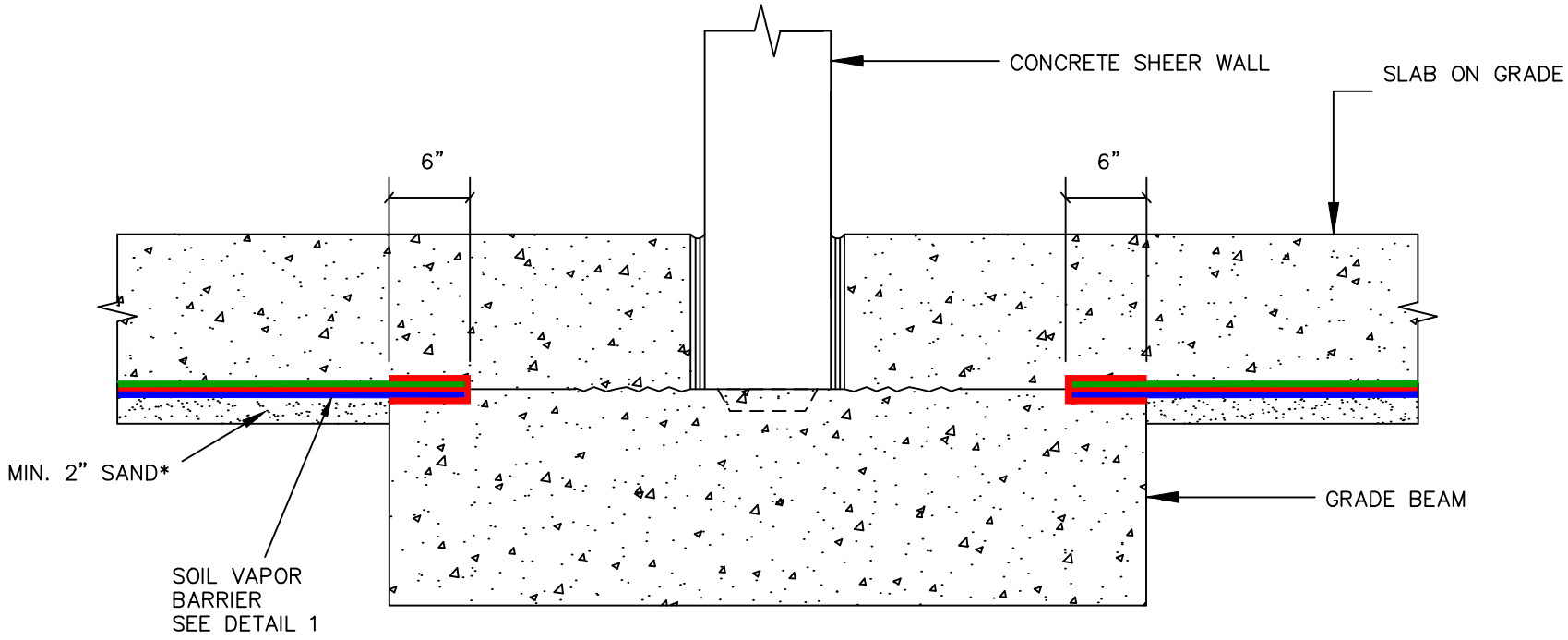
(NOT TO SCALE)

RAMBOLL

EXTERIOR FOOTING DETAIL
VIMS STANDARD DETAILS (TYPICAL)

5

DRAFTED BY: RS | DATE: 10/30/18 | PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

(NOT TO SCALE)

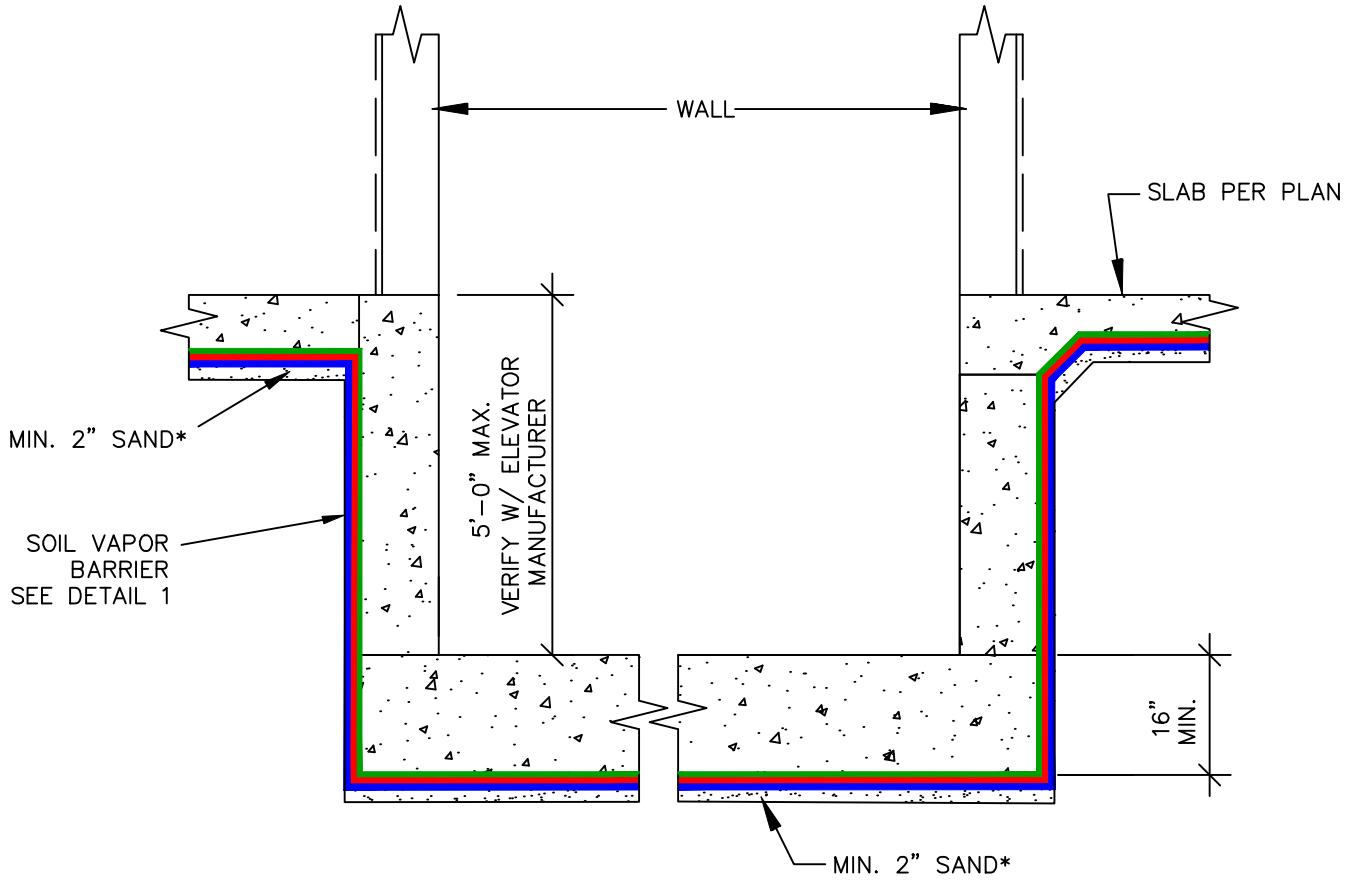
RAMBOLL

DRAFTED BY: RS | DATE: 10/30/18

SHEER WALL FOOTING
VIMS STANDARD DETAILS (TYPICAL)

6

PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

(NOT TO SCALE)

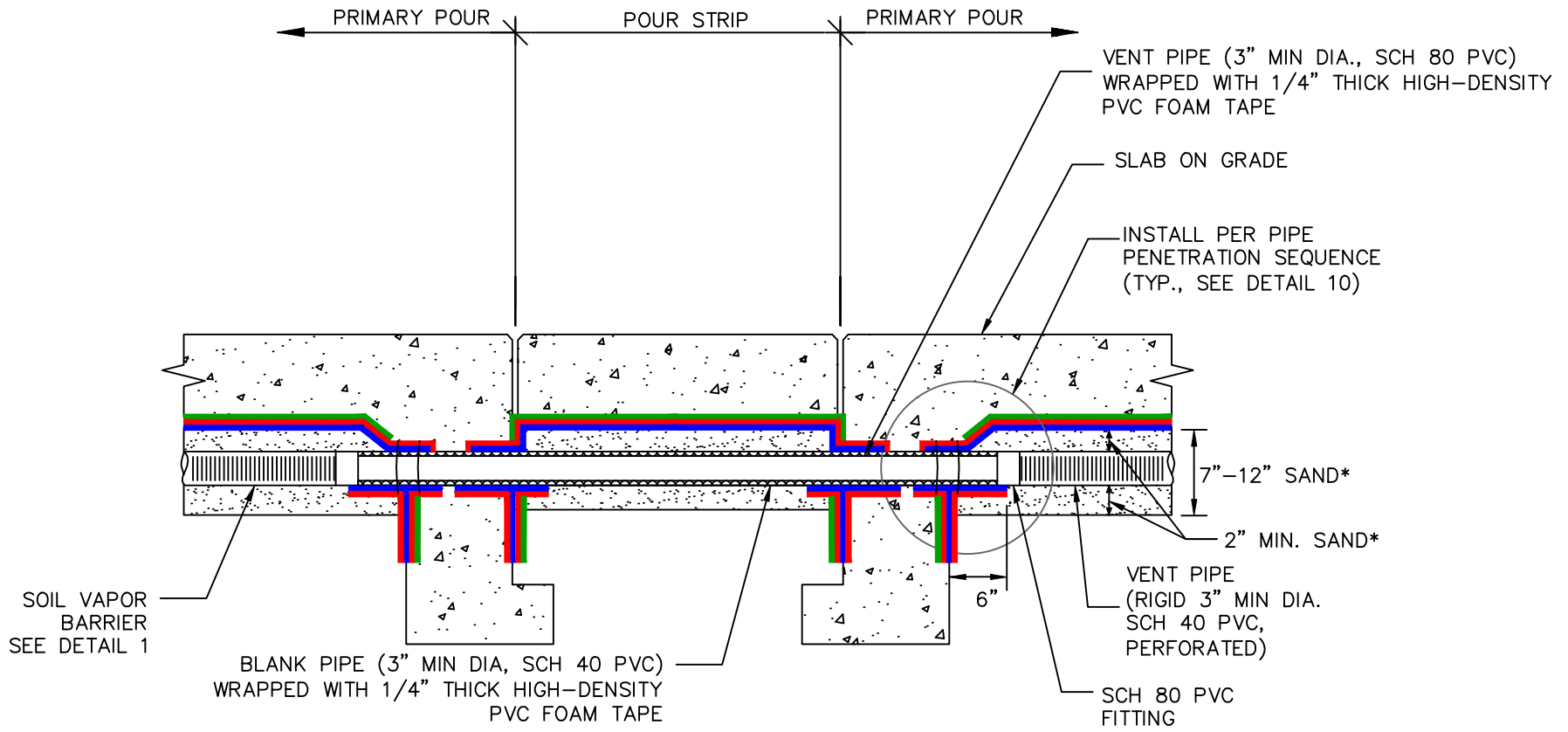
RAMBOLL

DRAFTED BY: RS | DATE: 10/30/18

ELEVATOR
VIMS STANDARD DETAILS (TYPICAL)

7

PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

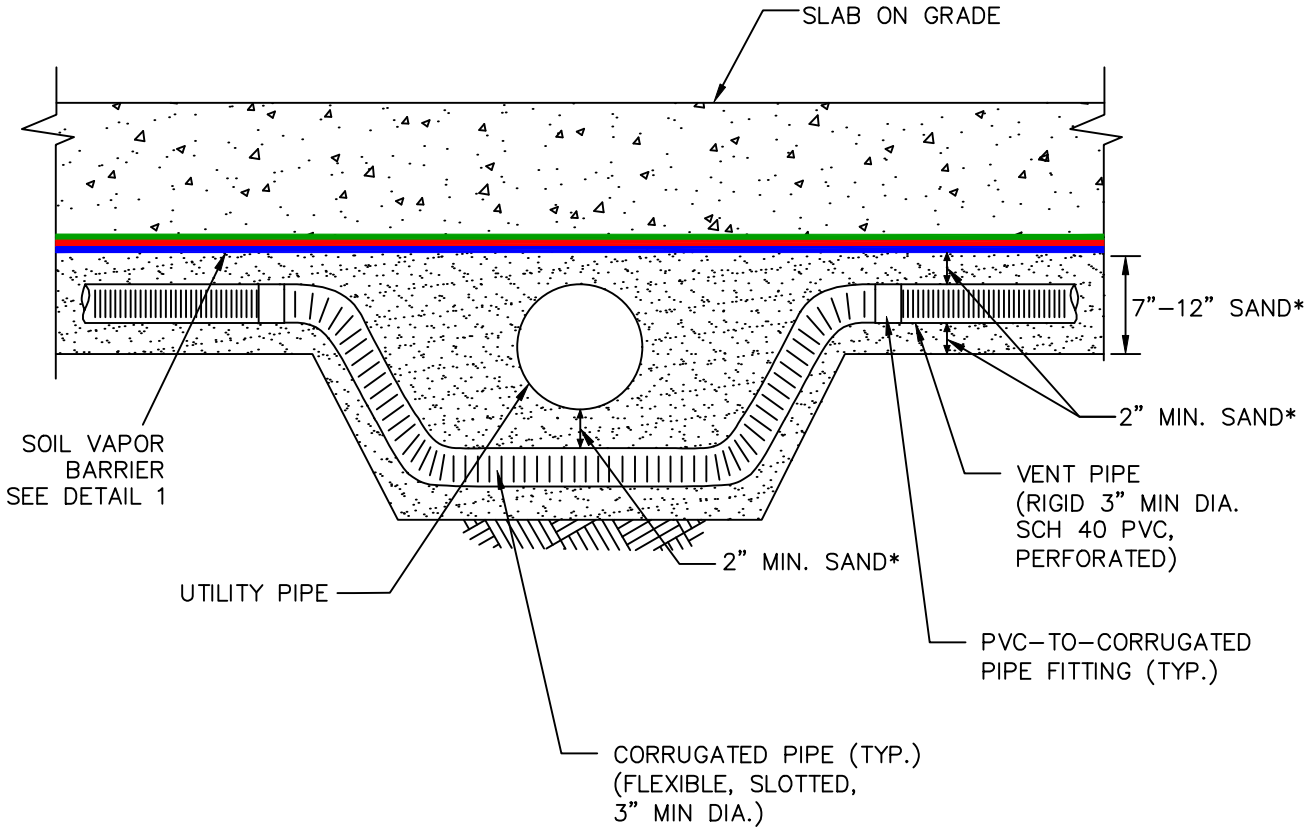
(NOT TO SCALE)

RAMBOLL

VENT PIPE CROSSING POUR STRIP DETAIL
VIMS STANDARD DETAILS (TYPICAL)

8

DRAFTED BY: RS | DATE: 10/30/18 | PROJECT:1690006343



* SEE TABLE 1 (ATTACHMENT A OR C)

(NOT TO SCALE)

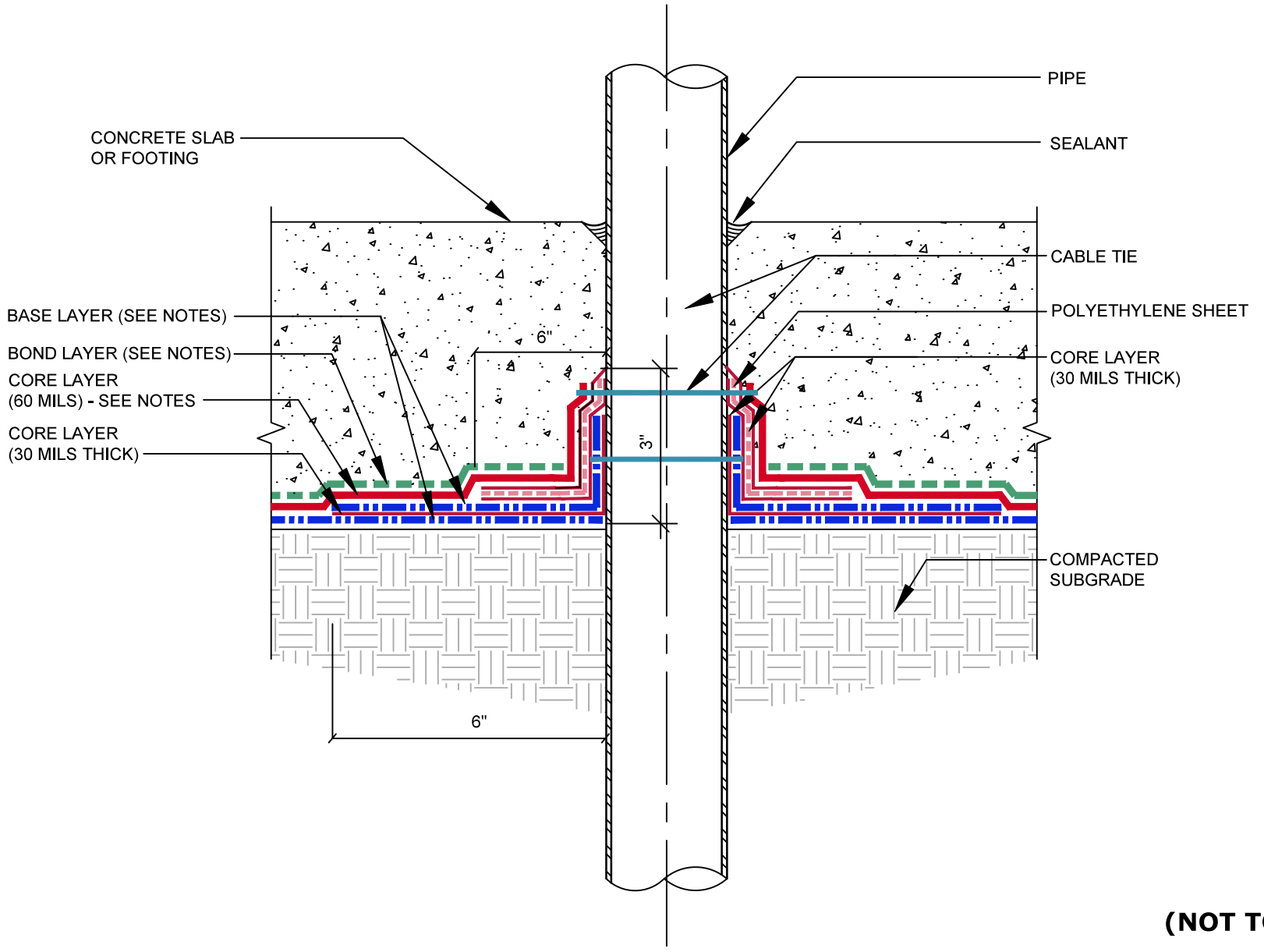
RAMBOLL

DRAFTED BY: RS | DATE: 10/30/18

VENT PIPE CROSSING UTILITY PIPE
VIMS STANDARD DETAILS (TYPICAL)

9

PROJECT:1690006343



(NOT TO SCALE)

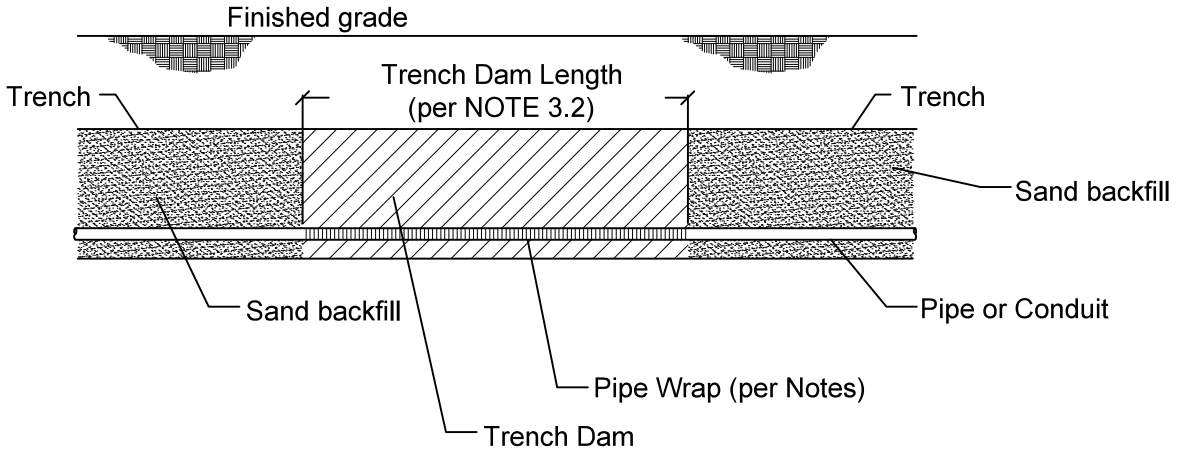
RAMBOLL

PENETRATION DETAIL
VIMS STANDARD DETAILS (TYPICAL)

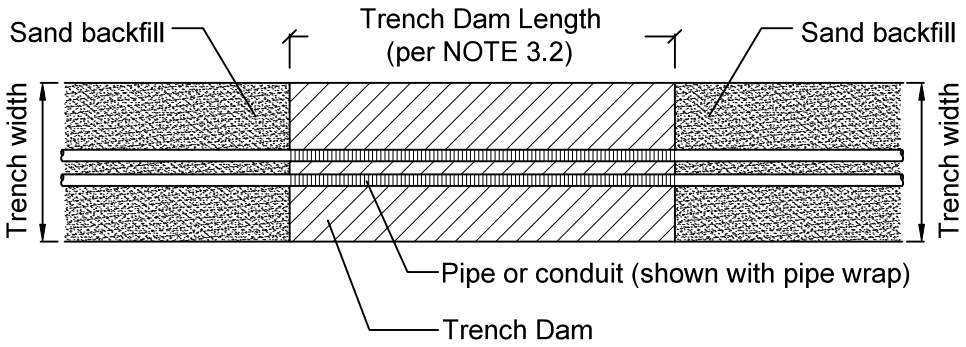
10

DRAFTED BY: RS | DATE: 10/30/18 | PROJECT:1690006343

Section:



Plan View:



(NOT TO SCALE)

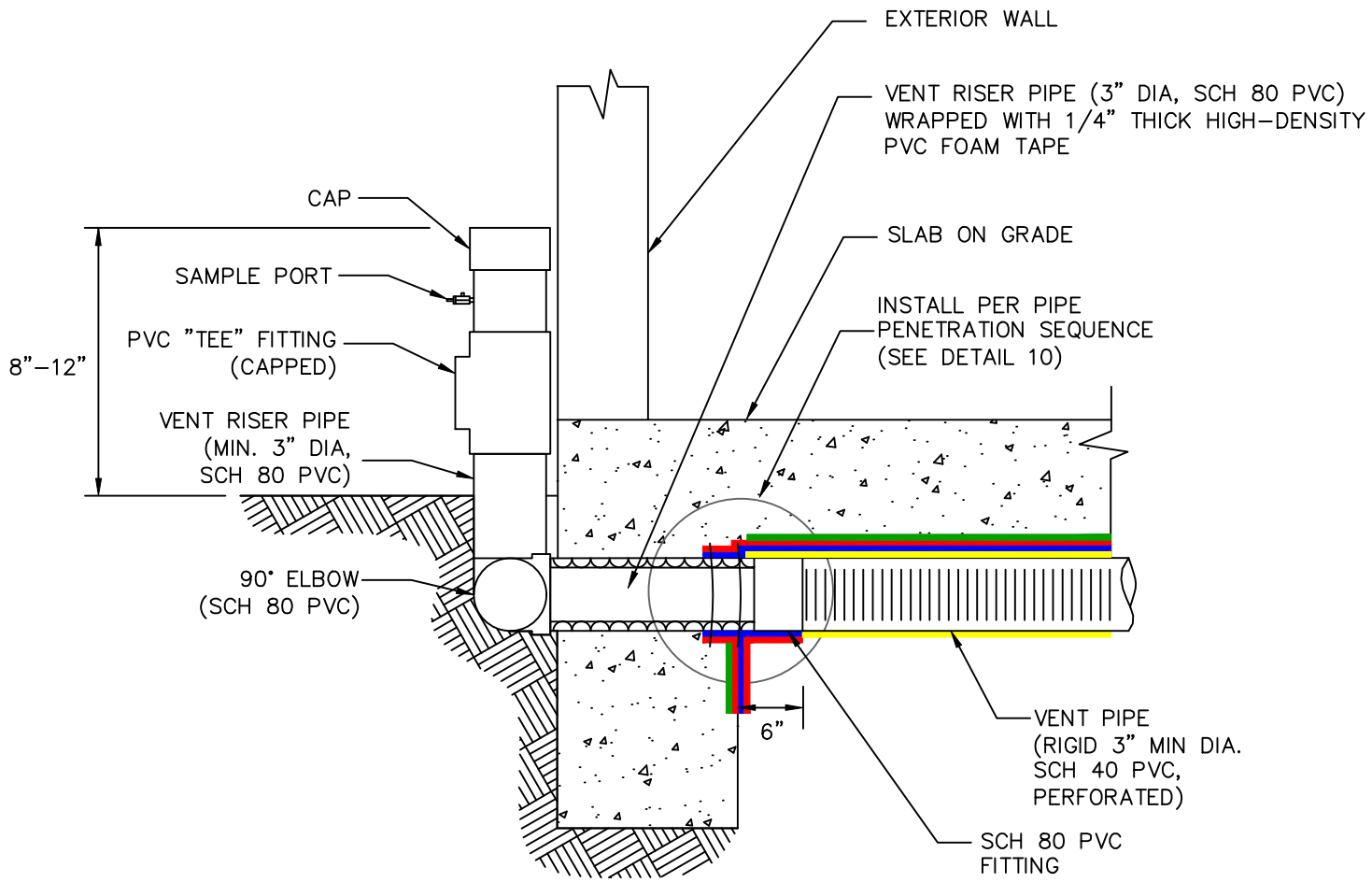
RAMBOLL

DRAFTED BY: RS | DATE: 10/30/18

UTILITY CORRIDOR PROTECTION - TYPICAL TRENCH DAM
VIMS STANDARD DETAILS (TYPICAL)

11

PROJECT:1690006343



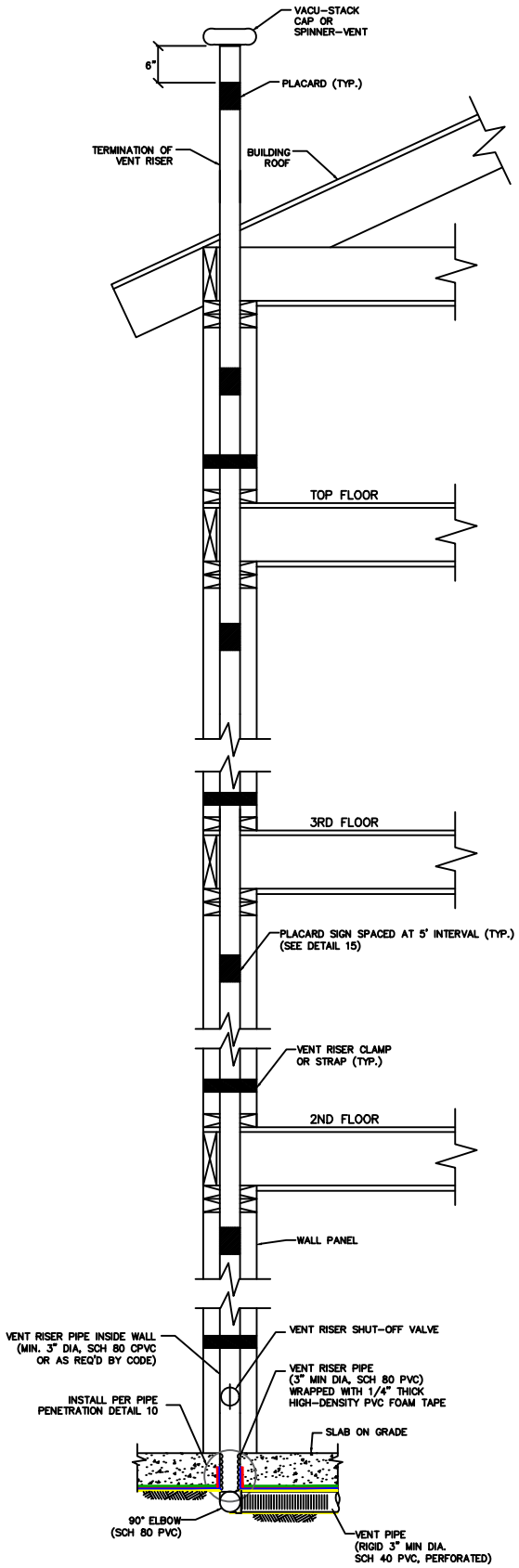
(NOT TO SCALE)

RAMBOLL

VENT PIPE TO EXTERIOR SAMPLE PIPE TRANSITION
VIMS STANDARD DETAILS (TYPICAL)

12

DRAFTED BY: RS | DATE: 10/30/18 | PROJECT:1690006343



(NOT TO SCALE)

RAMBOLL

VENT PIPE TO RISER PIPE TRANSITION
VIMS STANDARD DETAILS (TYPICAL)

13

DRAFTED BY: RS | DATE: 10/31/18 | PROJECT:1690006343

RMSO 10/31/18 Q:\DRAWINGS\1690006343\VIMS < 1690006343_VIMS DETAILS-8X11 >

WARNING

THIS BUILDING IS PROTECTED WITH
A VAPOR CONTROL BARRIER.
ANY PROPOSED PENETRATION OR
ALTERATION OF FLOOR SLAB
REQUIRES NOTIFICATION OF THE
BUILDING OFFICIAL AND INSPECTION
BY A QUALIFIED ENGINEER

This Notification is to be Permanently Stamped or Etched in the Surface of the Slab at the Time it is Poured or a Placard Permanently Adhered to Completed Slab.

Location of Notification to be determined by Project Superintendent and Building Official

Alt Letters 1/2” (Min.) in Height

1 Required Per Building

RAMBOLL

DRAFTED BY: RS | DATE: 10/30/18

TYPICAL VAPOR BARRIER IDENTIFICATION
VIMS STANDARD DETAILS (TYPICAL)

PROJECT:1690006343

Vapor

SUB-SLAB VENT PIPE

IF DAMAGED

IMMEDIATELY NOTIFY

BUILDING OWNER

3"x4" Wide

All Signs Plastic With Adhesive Backing

Large Letters Min. ½" High

Red Letter on White or Yellow Background

3 Min. Required Per Interior Vent Riser

This Sign Shall Be Posted On Each Vent Riser at Approximately 5-Foot Vertical Intervals (Max.) and at Roof Outlet

RAMBOLL

TYPICAL PLACARD AT VENT PIPING OUTLET
VIMS STANDARD DETAILS (TYPICAL)

15

DRAFTED BY: RS | DATE: 10/30/18 | PROJECT:1690006343

APPENDIX D
PCB CERTIFICATION

ATTACHMENT D CERTIFICATION

APPLICATION FOR RISK-BASED PCB CLEANUP
2101 and 2129 West Rosecrans Avenue
Gardena, CALIFORNIA

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

In accordance with 40 CFR 761.61(a)(3), all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the presence and extent of polychlorinated biphenyls (PCBs) at 2101 and 2129 West Rosecrans Avenue, Gardena, California are available for USEPA inspection at the following location:

U.S. EPA - Region 9 75
Hawthorne Street
San Francisco, California 94105

Property Owner

Signed

Jordan Gardner

Print Name

For **Rosecrans Place, LLC**

May 12, 2020

Date

Party Conducting the Cleanup

Signed

Leo Rebele

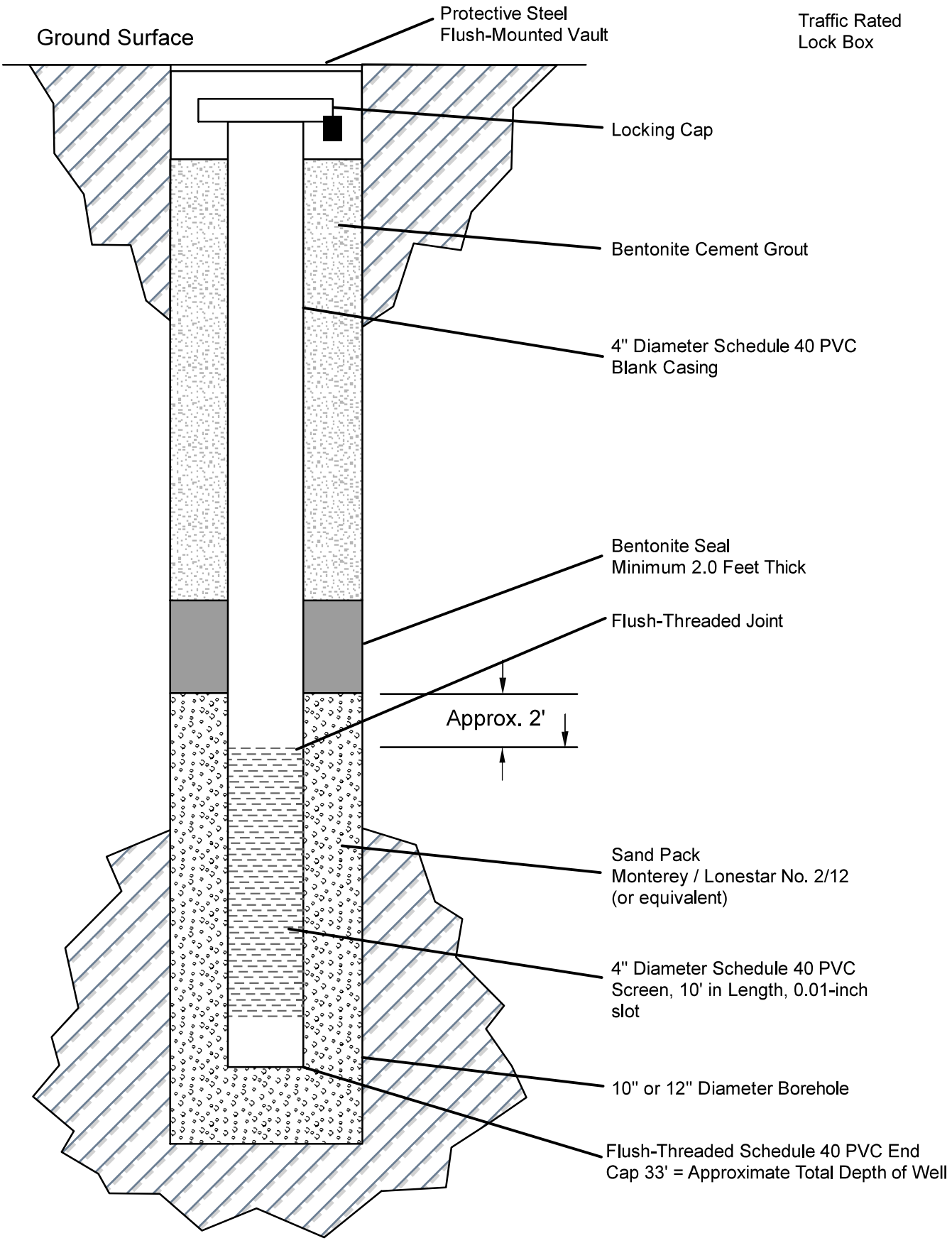
Print Name

For **Ramboll US Corporation**

May 12, 2020

Date

APPENDIX E
WELL CONSTRUCTION DIAGRAMS



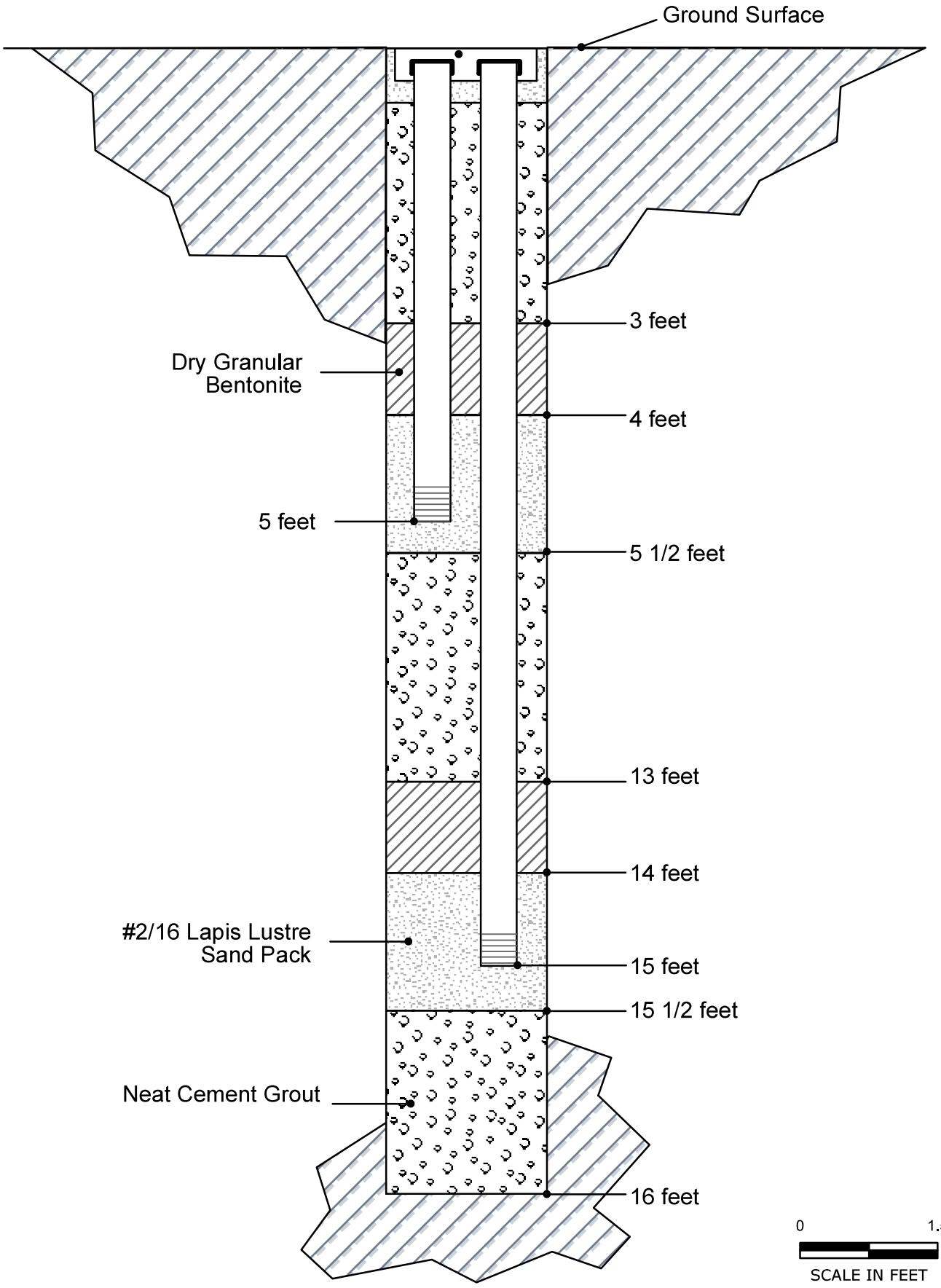
RAMBOLL

Proposed Groundwater Monitoring Well Schematic

FIGURE
E-1

DRAFTED BY: C.Enslin | DATE: 3/26/2018

Z:\01_Projects\Raytheon\03_GIS\04266008 - El Segundo DTSC Order\2018 Permit\Figure 2 -Proposed Groundwater Monitoring Well Schematic 2018-03-26.mxd



RAMBOLL

Typical Nested Vapor Probe Construction Diagram

FIGURE **E-2**

DRAFTED BY: M KNEALE | DATE: 9/30/2019 | PROJECT:

Z:\05_Operations\GSS_Standards\Typical Well Diagrams\2019-09-30 - Typical Nested Vapor Probe Construction Diagram\Typical Nested Vapor Probe Construction Diagram.mxd

APPENDIX F
CEQA NOE

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

To: Office of Planning and Research
State Clearinghouse
P.O. Box 3044, 1400 Tenth Street, Room 212
Sacramento, CA 95812-3044

From: Department of Toxic Substances Control
Site Mitigation and Restoration Program
9211 Oakdale Avenue
Chatsworth, CA 91311

Project Title: Rosecrans Place Response Plan

Project Location: 2101 and 2129 West Rosecrans Avenue, Gardena, California 90249

County: Los Angeles

Project Applicant: Rosecrans Place, LLC

Approval Action Under Consideration by DTSC: Response Plan

Statutory Authority: California Health and Safety Code, Chapter 6.8

Project Description: The Project involves the excavation of approximately 2,500 cubic yards of soil contaminated with polychlorinated biphenyls, metals and total petroleum hydrocarbons in shallow soil, primarily shallower than 5 feet below ground surface. In addition, a Vapor Intrusion Mitigation System (VIMS) consisting of passive sub-slab depressurization system coupled with a vapor barrier system will be installed under all the proposed residential development on the Project Site to reduce the potential for vapor intrusion into indoor air from the subsurface. The Department of Toxic Substances Control (DTSC) determined remediation of the Project Site was required to address the contaminates in soil, soil vapor and groundwater at the Project Site. This determination was based upon the findings of the Response Plan which included previous Site Investigations and the selection of the appropriate remedial measures to address the onsite contamination. DTSC approved the Response Plan, prepared by Ramboll, US Corporation.

Background: The Project Site is located at 2101 and 2129 West Rosecrans Avenue in Gardena, California. In the 1960s and 1970s, the western portion of the Site was used for automobile storage and automobile parts salvage, while the eastern portion was used for metal salvage. Metal salvage appeared site-wide by the late 1970s and early 1980s. The office building was constructed by 1976. The remaining onsite building and attached building appeared onsite in 1988 and 1989. The Site use changed from automobile parts salvage to taxi services in the late 1980s and early 1990s. The Site appears in its present-day configuration by 1989. Historical aerial photographs indicate the Site was part of a larger area used for agricultural purposes from the 1920s to the early 1950s. By the early 1970s, the vicinity of the Site appears to have been largely developed for industrial uses. The City of Gardena is contemplating a mixed-use development on the Project known as Rosecrans Place. This exemption is proposed to cover the activities in the Response Plan due to the limited nature of the cleanup activities and the determination that these activities will not have a significant impact on the environment.

Project Activities: The project activities consist of excavation and offsite disposal of contaminated soil, in conjunction with a Land Use Covenant to address impacted soils left in place at the Project Site to prevent residents from exposure to soil concentrations that may be above residential screening levels. The remedy to address soil vapor will consist of a passive Sub Slab Depressurization (SSD) System coupled with a vapor barrier system. The Vapor Intrusion Mitigation System will be installed under the proposed residences, including garage areas.

The Response Plan will be implemented during the fourth quarter of 2020. Specific enforceable environmental safeguards and monitoring procedures will be made a condition of project approval to ensure that impacts to the environment are less than significant. Dust control measures and monitoring activities will be implemented at the Site.

In the event biological, cultural or historical resources are discovered during project activities, work will be suspended while a qualified biologist, cultural or historical specialist assesses the area and arrangements are made to protect or preserve any resources that are discovered. If human remains are discovered, no further disturbance will occur in the location where the remains are found, and the County Coroner will be notified pursuant to Health and Safety Code Chapter 2, Section 7050.5.

An analysis of project activities upon existing environmental conditions indicates that implementation of environmental safeguards and monitoring procedures are enforceable and made a condition of project approval and will ensure that impacts to the environment will be less than significant.

Name of Public Agency Approving Project: Department of Toxic Substances Control

Name of Person or Agency Carrying Out Project: Rosecrans Place, LLC

Exempt Status: Categorical Exemption: Section 15330, Class 30

Reasons Why Project is Exempt: Minor Actions to Prevent, Minimize, Stabilize, Mitigate or Eliminate the Release or Threat of Release of Hazardous Waste or Hazardous Substances

1. The project is a minor action designed to prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release of hazardous waste or hazardous substances.
2. The project will not exceed $1 million in cost.
3. The project will be consistent with applicable State and local environmental permitting requirements.
4. The project does not involve the onsite use of a hazardous waste incinerator or thermal treatment unit.
5. The project does not involve the relocation of residences or businesses.
6. The project does not involve the potential release into the air of volatile organic compounds as defined in Health and Safety Code Section 25123. (Exception: Small-scale in situ soil vapor extraction and treatment systems which have been permitted by the local Air Pollution Control District or Air Quality Management District.)
7. The exceptions pursuant to California Code of Regulations, Title 14, Section 15300.2 have been addressed as follows:
    a. Cumulative Impact. The project will not result in cumulative impacts because it is designed to be a short-term final remedy that would not lead to a succession of projects of the same type in the same place over time.
    b. Significant Effect. The environmental safeguards and monitoring procedures that are enforceable and made a condition of project approval will prevent unusual circumstances from occurring so that there is no possibility that the project will have a significant effect on the environment.
    c. Scenic Highways. The project will not damage scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, because it is not located within a highway officially designated as a state scenic highway.
    d. Hazardous Waste Sites. The project is not located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code. (http://calepa.ca.gov/sitecleanup/corteselist/default.htm

The administrative record for this project is available to the public by appointment at the following location:

Department of Toxic Substances Control
Site Mitigation and Restoration Program
9211 Oakdale Avenue
Chatsworth, CA 9311

Additional project information is available on EnviroStor:
https://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60002809

Contact Person	Contact Title	Phone Number
Luis Garcia	Hazardous Substances Engineer	(818) 717-6611

Approver's Signature:

Date:

05/20/2020
Click or tap to enter a date.

Approver's Name	Approver's Title	Approver's Phone Number
Haissam Y. Salloum, P.E.	Supervising Hazardous Substances Engineer II	(818) 717-6538

TO BE COMPLETED BY OPR ONLY

Date Received for Filing and Posting at OPR:

RAMBOLL

ENVIRONMENT
& HEALTH

MEMORANDUM

To: Ms. Lisa E. Kranitz
lkranitzlaw@gmail.com

From: Leo M. Rebele
Brian Bauer

Subject: **TECHNICAL MEMORANDUM**
APPLICATION OF SCREENING LEVELS IN RELATION TO REVISED DEVELOPMENT PLAN
ROSECRANS PLACE
2101 AND 2129 WEST ROSECRANS AVENUE
GARDENA, CALIFORNIA

Date: May 5, 2020

Ramboll
5 Park Plaza
Suite 500
Irvine, CA 92614
USA

T +1 949 261 5151
F +1 949 261 6202
www.ramboll.com

Ramboll US Corporation (Ramboll) has prepared this technical memorandum on behalf of Rosecrans Place, LLC (Rosecrans Place), for the property located at 2101 and 2129 West Rosecrans Avenue in Gardena, California (herein referred to as the "Site"). The Site is the proposed location of a residential development known as Rosecrans Place.

This technical memorandum provides clarification regarding the application of commercial soil screening levels at the Site, to be employed during Response Plan (or "RP") implementation at the Site.

Ramboll prepared a RP on behalf of Rosecrans Place for the Site. The purpose of the RP was to set forth in detail the comprehensive plan and site-specific screening levels for addressing the presence of contaminants at the Site. The RP presents a remedial and human health risk mitigation approach that has been developed to be protective of both human health and the environment. Key components of the RP include the development of screening levels for soil. Commercial soil screening levels were developed for use across the entire residential development and deemed appropriate (i.e., in lieu of residential soil screening levels) based on the specific exposure scenarios to soil at the Site by future Site occupants and workers. The remedial approach and soil screening levels were approved by both California Department of Toxic Substances Control (DTSC) and United States Environmental Protection Agency.

On April 7th, 2020, Rosecrans Place submitted a revised Development Site Plan (Site Plan) to the DTSC for review in order to confirm that the RP appropriately addresses the revised development plan. The revised Site Plan included the replacement of the commercial component of the Site Plan with additional residential units in this portion of the Site. The additional residential units are essentially of the same type and configuration as those of the original Site Plan

presented in the RP. DTSC reviewed the revised Development Site Plan, and in an email dated April 7, 2020, concluded that the "changes are not problematic with the cleanup of the property". No further changes to the RP are therefore required.

CLOSURE

Please contact Leo Rebele or Brian Bauer if you have any questions regarding this technical memorandum.

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
9211 Oakdale Avenue
Chatsworth, California 91311

Jared Blumenfeld
Secretary for
Environmental Protection

Gavin Newsom
Governor

May 19, 2020

Via Electronic Mail Only

Mr. Mitch Gardner
c/o G3 40 Gardena, LLC
15235 Western Avenue,
Gardena, California 90249

APPROVAL OF RESPONSE PLAN FOR ROSECRANS PLACE, 2101 AND 2129 WEST ROSECRANS AVENUE, GARDENA, CALIFORNIA 90249 (SITE) (SITE CODE: 301854)

Dear Mr. Gardner:

The Department of Toxic Substances Control (DTSC) hereby approves the Response Plan for implementation for the subject site. The Response Plan presents the response action for addressing chemical releases to soil and groundwater in order to facilitate redevelopment of the Site. The Response Plan was reviewed pursuant to the California Land Reuse and Revitalization Act agreement, Docket No. HSA-FY18/19-138 between Rosecrans Place, LLC and DTSC.

DTSC held a public comment period from March 30, 2020 to April 29, 2020. DTSC evaluated the comments received during the public comment period and determined that revisions to the Response Plan and the California Environmental Quality Act (CEQA) Notice of Exemption (NOE) were not required. Furthermore, DTSC prepared a Response to Comments for comments received during the public comment period. Enclosed you will find a copy of the Response to Comments and CEQA NOE for your records and for inclusion into the final version of the Response Plan.

The Response Plan proposes to clean up contaminated soil via excavation and offsite disposal, in conjunction with a Land Use Covenant to address impacted soils left in place. Since the property is to be developed for residential uses, the Response Plan includes mitigation measures to eliminate potential exposure to residual contaminants through vapor intrusion by installing a vapor intrusion mitigation system (VIMS). The VIMS will consist of a passive sub-slab depressurization system coupled with a vapor barrier system and will be installed under all the proposed structures. The Response Plan also proposes to monitor the groundwater well network on a quarterly basis for a minimum of two years following installation.

Printed on Recycled Paper

Please provide a hard copy of the final Response Plan by May 25, 2020. If you have any questions please contact Mr. Luis Garcia, project manager, at (818) 717-6611 or e-mail Luis.Garcia@dtsc.ca.gov. Thank you for your on-going efforts with the cleanup process.

Sincerely,

Haissam Y. Salloum, P.E.
Branch Chief
Site Mitigation and Restoration Program - Chatsworth

cc: Mr. Leo Rebele
Ramboll US Corporation
5 Park Plaza #500
Irvine, California 92614

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Mitch Gardner
c/o G3 40 Gardena, LLC
15235 Western Avenue,
Gardena, California 90249

Re: USEPA Conditional Approval of PCB Cleanup Plan under TSCA 761.61(c) for Rosecrans Development also known as the Gardena Village located at 2101 and 2129 West Rosecrans Avenue, Gardena, California – EPA TSCA ID# CATSCA102221

Dear Mr. Gardner:

Thank you for working with the U.S. Environmental Protection Agency, Region 9 ("USEPA") to address the characterization and disposal of polychlorinated biphenyls ("PCBs") found at 2101 and 2129 West Rosecrans Avenue, Gardena, California (the "Site" or "Rosecrans Place" or "Gardena Village").

USEPA has received and reviewed the *Risk-Based Approval Application* (the "Application") submitted by Ramboll US Corporation (Ramboll) on behalf of Rosecrans Place LLC, the ("Applicant") on May 21, 2020. The Application outlines the plan for characterizing, removing, and disposing of soils with PCB concentrations greater than 970 ppb.[1] The Application consists of a Response Plan dated May 21, 2020 that contains the signed certification and a Soil Management Plan dated December 13, 2020.

The Applicant proposes to redevelop the Site by constructing a residential and commercial mixed-use development on the 5.46-acres, which consists of two parcels. The proposed project will include one 5,080 square foot free-standing commercial building and 105 residential dwelling units, which are further broken down as follows: 50 residential three-story townhomes, 14 live/work units, and 41 three-story single-family dwelling units.

The remedial approach for PCBs in soil is excavation and off-Site disposal. Soil containing PCBs at concentrations exceeding 970 ppb in the upper 5 feet of soil will be excavated and disposed of off-Site. Confirmation soil sampling and analysis will be conducted to verify that target concentration of 970 ppb is met at the excavation bottom and sidewalls. The maximum depth of impacted soil removal will be approximately 5 feet below ground surface, unless otherwise determined and discussed with USEPA at the time impacted soils below 5 feet depth are discovered. Any soils left "in place" above target level of 970 ppb at a depth below 5 feet will be recorded on a deed restriction.

USEPA is approving the Application with conditions pursuant to 40 C.F.R. § 761.61(c) (i.e., risk-based disposal standards of TSCA). EPA believes implementation of the Application, as amended by the conditions below, will pose no unreasonable risk of injury to health or the environment. The Applicant shall implement the Application as modified by the conditions listed below.

USEPA Conditions of Approval and Additional Comments:

1. **Land Use Restriction** – The Applicant shall have a LUC that shall restrict the use of the property consistent with Section 5.10 of the Final Response Plan. The LUC shall be submitted to USEPA for

[1] 970 parts per billion (ppb) is equivalent to 0.970 parts per million (ppm).

review and approval. A copy of the final LUC shall be sent to USEPA. If any homeowner or other tenant bi-laws are created, these bi-laws shall reference the LUC and clearly spell out the restrictions for each property owner or tenant. In addition, the bi-laws shall include language assigning the homeowners association the responsibility to enforce the restrictions, comply with the soil management plan, conduct and submit the annual inspection reports, and maintain copies of property owner certifications. If any parcel within this site is sold or resold, the new owner must acknowledge in writing that they have read the LUC, understand that the restrictions in the LUC are to prevent exposure to PCBs that remain on the property, and understand and agree to the property restrictions. Owner certifications shall be maintained by the homeowner's association for inspection by EPA or the California Department of Toxic Substances Control (DTSC) or any other state or local agency.

The LUC shall:

a. Prohibit any alteration of the concrete caps within the backyards of residential properties.
b. Prohibit any soil disturbances within the landscaped common areas that are not authorized in the approved Soil Management Plan.
c. Prohibit any alteration, disturbance or degradation of the asphalt caps that are not authorized in the approved Soil Management Plan.
d. Include language referencing the annual Inspection, Repair, and Maintenance requirements in condition 2 and the Soil Management Plan in condition 3.
e. Include a diagram showing the areas that are subject to restrictions and inspections.
f. Require owners of all parcels to acknowledge and agree to the property restrictions. These written acknowledgement and agreements shall be maintained for review by EPA or DTSC.

2. **Inspection, Repair, and Maintenance Plan** – The Applicant shall submit an Inspection, Repair, and Maintenance plan to USEPA within 90 days before submittal of the cleanup completion report. This plan shall include a minimum inspection frequency of once every year. It shall also identify the process of repairing and maintaining the soil, concrete, and asphalt caps. A copy of the annual inspection report shall be submitted to DTSC and EPA within 30 days after the inspection is complete.

3. **Soil Management Plan** - The Applicant shall submit a soil management plan to USEPA at the same time as the Inspection, Repair, and Maintenance Plan. The two documents may be combined into one single document. The Soil Management Plan shall be implemented when any hardscape or soil in greenspace areas are disturbed.

4. **Disposal of PCBs:** The Applicant shall dispose of all PCB waste that it generates during the PCB cleanup in accordance with the TSCA PCB regulations and other applicable federal, state, and local regulations. In determining the disposal method for the waste, the Applicant must comply with the anti-dilution requirements in 40 C.F.R. § 761.1(b). All bulk PCB remediation waste must be disposed of in accordance with the requirements in 40 C.F.R. § 761.61(a)(5). The Applicant must select appropriate disposal facilities based on the in-situ PCB concentrations of the waste.

5. **PCB Cleanup Waste Disposal:** Cleanup waste (e.g., personal protective equipment, rags, gloves, booties) shall be disposed of in accordance with 40 C.F.R. § 761.61(a)(5)(v). Disposal of all waste shall be in accordance with all federal, state, and local regulations.

6. **Equipment Decontamination:** The Applicant shall decontaminate non-disposable sampling tools and equipment, as well as movable equipment used during cleanup and/or additional sampling in accordance with 40 C.F.R. § 761.79(c)(2). Decontamination residues must be disposed of at their original concentrations in accordance with the requirements in 40 C.F.R. § 761.79(g). Recordkeeping of the decontamination events must be maintained in accordance with the requirements in 40 C.F.R. § 761.79(f)(2). These procedures must be implemented in a manner that is protective of human health and the environment consistent with the requirements in 40 C.F.R. § 761.79(e).

7. **PCB Cleanup Report:** The Applicant shall submit a PCB cleanup report to USEPA, to include all relevant data and justification demonstrating that the work completed is consistent with this approval. The Applicant must address at a minimum all the reporting requirements listed in 40 C.F.R. § 761.61(a)(9) and 40 C.F.R. § 761.125(c)(5). The Applicant shall also include figures, surveys, or GPS coordinates depicting the location and results for all Site characterization samples. An electronic copy of the report containing the information described in this condition, must be submitted via email to Mike Zabaneh at Zabaneh.mahfouz@epa.gov and to R9LandSubmit@epa.gov. Please include the project name: "Rosecrans Place" and the site ID: "CATSCA102221" in the subject line in all email correspondence with EPA.

8. **Future Proposed Modifications to the Application:** The Applicant shall request any changes to the approved cleanup plan via email to USEPA, and USEPA will provide any response to the request via email.

This approval does not relieve the Applicant from complying with all other applicable federal, state, and local regulations and permits. Departure from the conditions of the approval without prior written permission from USEPA may result in the commencement of proceedings to revoke this approval and/or an enforcement action. Nothing in this approval bars USEPA from imposing penalties for violations of this approval or for violations of other applicable TSCA PCB requirements or for activities not covered under this approval.

This approval only applies to the Applicant. USEPA reserves the right to require additional characterization and/or cleanup of PCBs at the Site if new information during additional Site characterization, cleanup verification, and/or during future post-cleanup activities (e.g. redevelopment or post-redevelopment) at the property. In addition, USEPA may require cleanup of areas immediately adjacent to the Site if those areas are found to be impacted by PCBs from the Site.

USEPA appreciates the opportunity to assist the Applicant with this PCB cleanup. If you have any questions regarding this approval, please contact "Mike" Mahfouz Zabaneh at (415) 972-3536 or zabaneh.mahfouz@epa.gov. Thank you for your cooperation.

Sincerely,

Jeff Scott, Director
Land, Chemicals, and Redevelopment Division

cc (electronic): Leo Rebele, Ramboll
Brian Bauer, Ramboll
R9LandSubmit (Records Center)

PRELIMINARY HYDROLOGY STUDY
VTTM No. 82667
Rosecrans and Van Ness
2129 Rosecrans Avenue
Gardena , CA 90249

Project Address:

2129 Rosecrans Ave.
Gardena , CA 90249

Prepared For:

G3 Urban
Attn: Mitchell Gardner
15235 S Western Ave.
Gardena, CA 90249
(213) 400-5358

Prepared By:

C&V Consulting Inc.
6 Orchard, Suite 200
Lake Forest, CA 92630
Ryan J. Bittner, P.E.
Contact: Marco Midence,
Project Manager
(949) 916-3800

November 2019

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APPENDIX A: Hydrology Maps
- Existing Conditions Preliminary Hydrology Map
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APPENDIX B: Hydrology Calculations
- Existing & Proposed Conditions Hydrology Calculations (25-year Storm Event)
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Preliminary Hydrology Study
for
Vesting Tentative Tract Map No. 82667
Gardena 40

ACKNOWLEDGEMENT AND SIGNATURE PAGE

This Preliminary Hydrology Study was prepared by C&V Consulting, Inc. under the supervision of Ryan J. Bittner, P.E.

_____ _____

Ryan J. Bittner, R.C.E. 68167 Date
CEO, C&V Consulting, Inc.

1.0 SITE DESCRIPTION:

The proposed development encompasses three parcels as shown on the Assessor's Parcel map, last updated in 2002, at approximately 5.466 acres. The project is bounded by U-Haul Moving & Storage of Gardena building to the West, Rosecrans Avenue to the South, Saf Keep Storage building to the East, and Real Soda in Real Bottles Ltd. building to the North. Additionally, there is an automotive repair shop along the southwestern corner of the site and a taxicab depot currently occupies the northern half of the site.

2.0 PURPOSE OF STUDY:

The preliminary hydrology study will determine the amount of stormwater runoff generated from the project site in the existing and proposed conditions. This study will anticipate whether detention or other peak flow mitigation methods will be required by comparing the proposed and existing condition peak flow rates for the 25, 50 and 100-year storm events.

3.0 EXISTING CONDITIONS:

In its current condition the site generally slopes from east to west and north to south towards Rosecrans Ave. The site ranges in elevations from 48 to 53 feet above sea level, based on the aerial flown on 1/21/2019.

The site is generally split into two different drainage areas. The southeastern quarter of the site is a vacant dirt lot. The existing drainage pattern of this portion of the site is sheet flow over the vacant land. In the northern portion that contains the existing taxicab depot, the existing drainage system appears to convey stormwater to the South via V-gutters. These V-gutters appear to drain to a grate drop inlet which drains into the street gutter through 3 curb cores at the southern end of the site near Rosecrans Ave.

Off-site flows from the east are mitigated by the existing Saf Keep storage building and screen wall along the site's eastern property line. There is also evidence on existing onsite stormwater mitigation controls on the Saf Keep storage facility in the from of v-gutters and grate inlet catch basins. Flows from the Real Soda in Real Bottle Ltd. site to the north are intercepted by a corrugated metal fence along the project site's northern property line. The northern property line represents a high point in that stormwater north of the property line will flow north into the existing v-gutter on the Real Soda in Real Bottles Ltd. site. The U-haul Moving & Storage to the west also has on-site stormwater mitigation controls in the form of v-gutters and grate inlet catch basins. Just as in the north, there is a corrugated metal fence that reaches to grade level to intercept any off-site seepage. Any nuisance water that flows towards our site is intercepted by the corrugated metal fence and sheet flows south, following the slope of the adjacent property. The southwestern portion of the site has an existing structure to prevent off-site flows from entering the site.

Flows from the site onto Rosecrans Ave. then proceed west into a County of Los Angeles owned and maintained catch basin located approximately 250 feet west of the project site along Rosecrans Ave. From this catch basin, the runoff then enters a Los Angeles County Flood Control District owned 9'-

6" x 7'-0" RCP storm system known as Project No. 11, per LACFCD As-Built No. 181-11-D1.4, which continues along Rosecrans Ave. This storm drain system ultimately outlets onto the Dominguez Channel a Los Angeles County Flood Control Facility. The Dominguez Channel then proceeds in a south westerly direction and eventually outlets into the Dominguez Channel Estuary and the Pacific Ocean.

The topographic survey was utilized to identify existing onsite high points and overall site conveyance of storm water runoff. Since all of the existing onsite stormwater runoff ultimately reaches the grate drain in the southern portion of the site, the entire site was used to approximately quantify the runoff based on the longest hydraulic path from the most remote high point to drain inlet low point.

Refer to the "Existing Conditions Hydrology Map" located within Appendix A of this study for more information.

4.0 PROPOSED CONDITIONS:

The proposed project consists of 50 residential townhome units, 41 single family dwellings, 14 live-work townhomes, and a retail building over approximately 5.47 acres. The proposed development includes drive aisles, parking, landscaping, walkways, patios, and common open space areas. The site will be graded to collect runoff at three low points to control the amount of imported fill during grading and reduce the need for retaining walls along the perimeter of the site while closely maintaining the entire site drainage area tributary to the existing Los Angeles County Flood Control District (LACFCD) maintained 9'-6" x 7'-0" RCB storm drain. The proposed grading will also be raising the site in the north, east, and west to ensure the neighboring sites are not tributary to our own. A screen will wall with a subdrain is proposed along the northern, eastern, and western property lines to mitigate any offsite seepage. The proposed development will utilize onsite catch basins, biofiltration systems, and detention pipes to capture and treat stormwater. Stormwater will ultimately be conveyed by a proposed onsite underground storm drain piping system to the LACFCD RCB storm drain located within Rosecrans Ave.

Stormwater runoff will be conveyed via proposed onsite gutter and directed to three sump areas, two equipped with curb inlet catch basins and the other with a grate inlet catch basin. The first curb inlet catch basin, located in area A2 of the post conditions hydrology map, will capture the stormwater from the commercial portion of the site while the other curb inlet catch basin, located in area A1 of the post conditions hydrology map will capture most of the onsite stormwater from the residential portion of the site. The grate inlet catch basin will capture the flow from the alley in area A3 running north-south in the southeastern residential portion of the site. An additional pass-by catch basin will be located near the northern drive aisle in area A1 to capture and treat low-flow stormwater and reduce flows into the residential curb inlet catch basin. All proposed onsite catch basins will be equipped with Modular Wetlands Dvert System to divert low flows to proposed Modular Wetlands System (MWS) Biofiltration Vaults for water quality treatment. These Biofiltration Vaults will be equipped with an internal bypass system to convey larger storm event overflow conditions to on-site detention pipes. During larger storm events, stormwater runoff will be conveyed to the underground detention system where it will be released at the flow rate allowed by LACFCD. The LACFCD has provided an allowable 2-year storm peak runoff rate for discharge to the Channel equal to 0.67 cfs per acre, or 3.66 cfs for the total site drainage area. Any flows in excess will be detained temporarily until they can be

released. Refer to separately prepared Preliminary Grading and Utility Plans for site design information.

In an event where the proposed onsite storm drain system is at its full capacity or clogged, stormwater will pond up at these proposed onsite sump areas and excess stormwater will top over grade break to continue to flow out towards Rosecrans Ave. where it will get intercepted by an offsite City maintained catch basin.

During final engineering, water surface elevation will be analyzed and provided to verify all habitable structures will have at least a 1 foot of freeboard during the 100-year storm event.

The "Proposed Conditions Preliminary Hydrology Map" is included in Appendix A for reference.

5.0 METHODOLOGY:

The site was analyzed using the Los Angeles County Department of Public Works Hydrology Manual 2006. The initial subarea was analyzed for acreage, land-use, soil type, peak flow rate and time of concentration according to the Rational Method described in the manual.

In this preliminary hydrology study, the impervious area percentage values were conservative estimation from the preliminary site design. During final engineering, impervious areas will be calculated in more detail to refine all peak flow rates.

In accordance with the Los Angeles County Department of Public Works Hydrology Manual all habitable structures must have a finished floor elevation to allow 1 ft of freeboard during the 100-year storm event and the drop inlet catch basin and onsite conveyance storm drain pipes will be sized to convey runoff from the 100-year storm event. Catch basin, pipe sizing and 100-year water surface elevation calculations will be provided during final engineering.

Confluence analysis and travel time considerations will be incorporated in the calculations during final engineering to reflect more accurate peak flow rate values.

6.0 RESULTS:

Hydrology Summary

Existing Conditions
Existing Conditions tributary to XA1:
25-year peak storm flow = **9.3527 cfs**
50-year peak storm flow = **11.3511 cfs**
100-year peak storm flow = **13.5784 cfs**
Time of Concertation (Tc) = 9 min

Proposed Conditions
Proposed Conditions tributary to A1:
25-year peak storm flow = **8.1892 cfs**

50-year peak storm flow = **10.0066 cfs**
100-year peak storm flow = **12.1310 cfs**
Tc = 5 min

Proposed Conditions tributary to A2:
25-year peak storm flow = **2.7144 cfs**
50-year peak storm flow = **3.0987 cfs**
100-year peak storm flow = **3.4793 cfs**
Tc = 6 min

Proposed Conditions tributary to A3:
25-year peak storm flow = **1.1112 cfs**
50-year peak storm flow = **1.2689 cfs**
100-year peak storm flow = **1.4249 cfs**
Tc = 5 min

Proposed Conditions Onsite Flow (Total):
Total 25-year peak storm flow = **12.01 cfs**
Total 50-year peak storm flow = **14.37 cfs**
Total 100-year peak storm flow = **17.04 cfs**

Percent Increase:
Δ25-year peak storm flow = 12.01/9.35 = +28.4%
Δ50-year peak storm flow = 14.37/11.35 = +26.7%
Δ100-year peak storm flow = 17.04/13.58 = +25.5%

Note: All time of concentrations indicated above refer to 100-year storm event

Detention Sizing
A Hydrograph was developed based on HydroCalc Program using the proposed conditions 25-year storm event flow rates.

For the purpose of this preliminary study detention volume calculation, post imposed flows for A1, A2, and A3 were added at each time increment (0.2 min) output by HydroCalc to get a total inflow hydrograph. These flows per increment of time were plotted to form a total flow hydrograph. Then, the area under the curve between the Allowable Q of 3.66 cfs and the total peak flows was calculated to determine the amount of detention required. Refer to the Detention Calculator located within Appendix E.

An orifice will be utilized at the downstream end of the proposed onsite private storm drain system to mitigate the increased peak flow rates and increase the overall time of concentration. Orifice calculations will be provided during final engineering.

$\Delta V_{25\text{-}YR}$ = 8,841 cf
BioClean Urbanpond System, Module Storage Capacity (5ft high model) = 298 cf per module;
8,841 cf ÷ 298 cf per module = 30 modules → 30 modules proposed
$V_{Urbanpond}$ = 298 cf per module x 30 Modules = 8,940 cf > $\Delta V_{25\text{-}YR}$ = 8,841 cf ✓

Catch Basin Sizing
Catch basin Sizing will be analyzed for the 100-year storm event peak flow rates and will be provided during final engineering.

Pipe Sizing
Pipe Sizing will be analyzed using WSPG software to verify hydraulic grade line (HGL) based on the 100-year storm event peak flow rates and will be provided during final engineering for proposed onsite conveyance pipe.

A preliminary pipe sizing for offsite runoff conveyance was done using AutoCAD Civil 3D – HydraFlow 2019 and provided in Appendix D of this report.

100-Year Water Surface Elevations
Water surface elevations for the 100-year storm event peak flow rates will verify that the proposed finish floor elevations are set at least 1' above the water surface elevation and will be calculated and provided during final engineering.

7.0 CONCLUSIONS:

The results from this preliminary hydrology study utilizing Los Angeles County Department of Public Works Hydrology Manual 2006 demonstrate that the proposed condition stormwater peak flow for different year storm event frequencies from the subject site will increase compared to the existing condition peak flow as indicated in the hydrology summary results in Section 6 of this report. This is mainly due to the increased change in impervious area based on the type of development is being proposed. This condition represents higher overall peak flow rates. During final engineering, impervious area for proposed conditions will be calculated in more detail based on the finalized landscape plan. The proposed peak flow rates will be re-evaluated to reflect the actual proposed conditions. However, the proposed development will still generate higher peak flows.

Since the development proposes onsite stormwater to be discharged to a LACFCD storm drain system, onsite detention will be required based on the results of this study and the proposed condition peak flow rate will need to be mitigated to match the allowable flow given by LACFCD by utilizing an orifice control plate at the downstream to reduce the peak outflow. This information will be provided during final engineering.

Stormwater generated from 85th percentile storm water depth will be treated onsite via proposed onsite MWS Biofiltration vaults prior to discharging to public onsite storm drain system. Refer to the separately prepared LID report for more details about water quality management.

8.0 DESIGN ASSUMPTIONS:

1. The property is located in the City of Gardena, Orange County rainfall region.

2. 100-year storm event flood level protection analysis required for habitable structures per the requirements of the Los Angeles County Department of Public Works Hydrology Manual

3. Detention and orifice control are required for the storm drain system to mitigate proposed conditions peak flow rate and time of concertation per the requirements required by the Los Angeles Department of Public Works to mitigate increased proposed peak flow rates. The allowable discharge rate (allowable Q) given by LADPW is 0.67 cfs/ac.

4. According to the Los Angeles County Department of Public Works Hydrology Manual 50-Year 24-Hour Isohyet Map 1-H1.8, the drainage area is located in Soil Group 009, the site receives 5.5 inches of rainfall over a 24-Hr storm (Q_{50}).

5. The LACDPW HydroCalc was utilized to determine the time of concentration, run-off flow rate and run-off volume for site.

6. The site was analyzed for a 25, 50 and 100-year storm events per the requirements of the January 2006 Los Angeles County Department of Public Works Hydrology Manual. The Rational Method Analysis was performed, and the appropriate calculations are provided herein.

9.0 REFERENCES:

1. Los Angeles County Department of Public Works, "Hydrology Manual", January 2006.

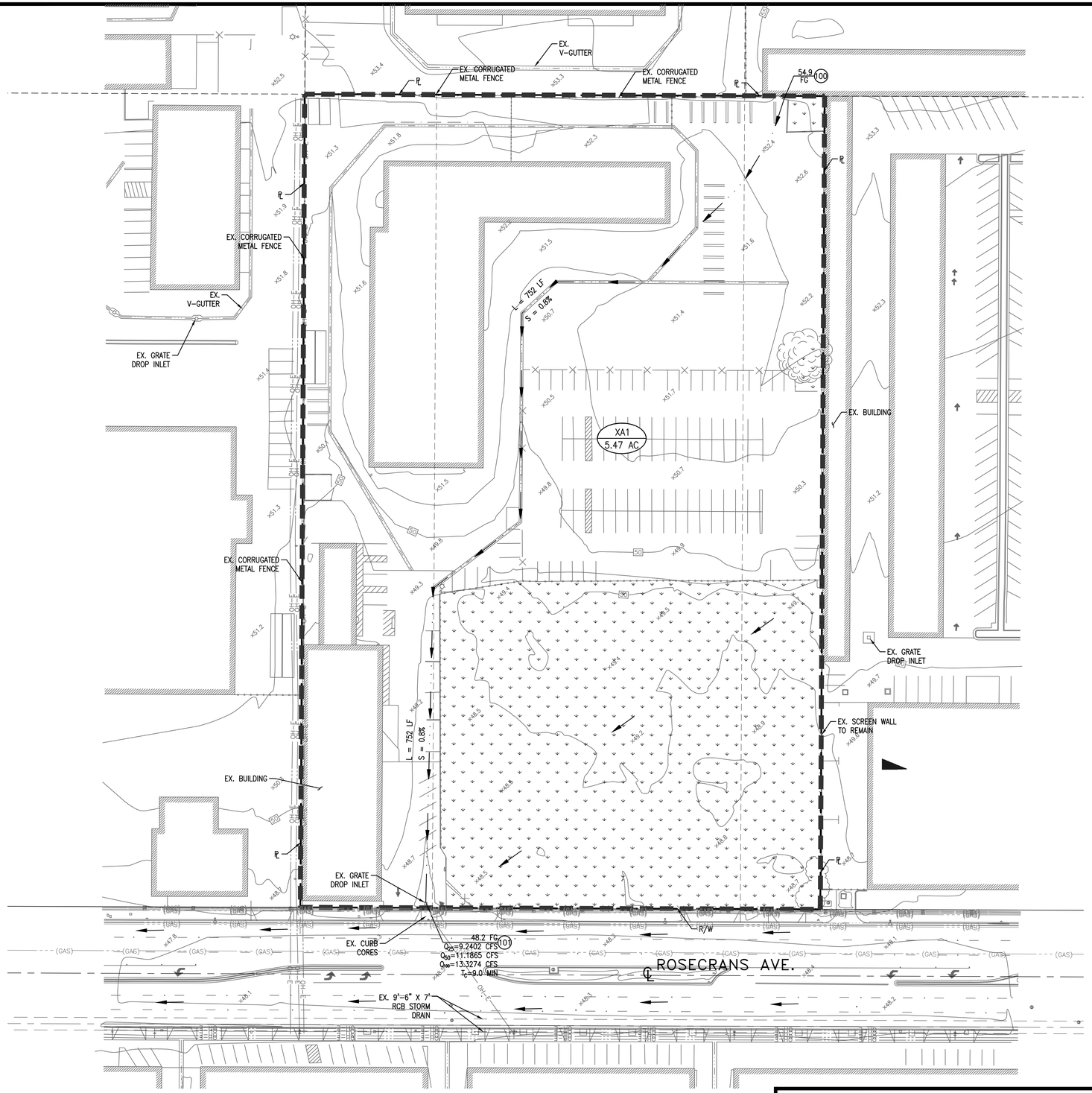
2. Los Angeles County Department of Public Works, "HydroCalc" Outputs and Data

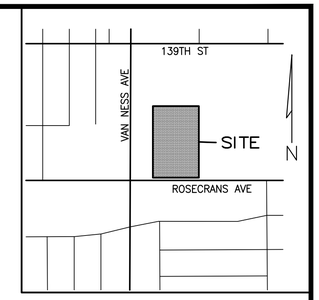
3. Hydraflow Express Extensions for Civil 3D 2013.

4. Preliminary Grading & Drainage Plan for this project by C&V Consulting, Inc. November 2019

APPENDIX A
HYDROLOGY MAPS

Existing Conditions Preliminary Hydrology Map





VICINITY MAP
N.T.S.

Pre-Developed Hydroligic Summary

Area ID	Total Area (AC)	Pervious Area (AC)	Pervious (%)	Impervious Area (AC)	Impervious (%)	Q25 (CFS)	Q50 (CFS)	Q100 (CFS)
XA1	5.47	1.64	0.30	3.83	0.70	9.3527	11.3511	13.5784

LEGEND:

- AREA X1 — SUB-AREA NUMBER
- X.XX Ac — ACREAGE
- L=XXX' — FLOW PATH LENGTH
- S=X.X' — CHANGE IN ELEVATION ALONG FLOW PATH
- SUB-AREA BOUNDARY
- FLOW PATH
- XXX.X — ELEVATION AT NODE
- SURFACE FLOW DIRECTION
- Q=X.XX CFS — STORM EVENT PEAK FLOW RATE
- PERVIOUS LANDSCAPE

OWNER/DEVELOPER

G3 URBAN
15235 S WESTERN AVE.
GARDENA, CA 90249

PREPARED BY :

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REGISTERED PROFESSIONAL ENGINEER
RYAN J. BITTNER
No. 68167
CIVIL
STATE OF CALIFORNIA

PRELIMINARY EXISTING CONDITIONS HYDROLOGY MAP
VTTM NO. 82667

2129 ROSECRANS AVENUE
GARDENA, CA 90249

SHEET 1 OF 1

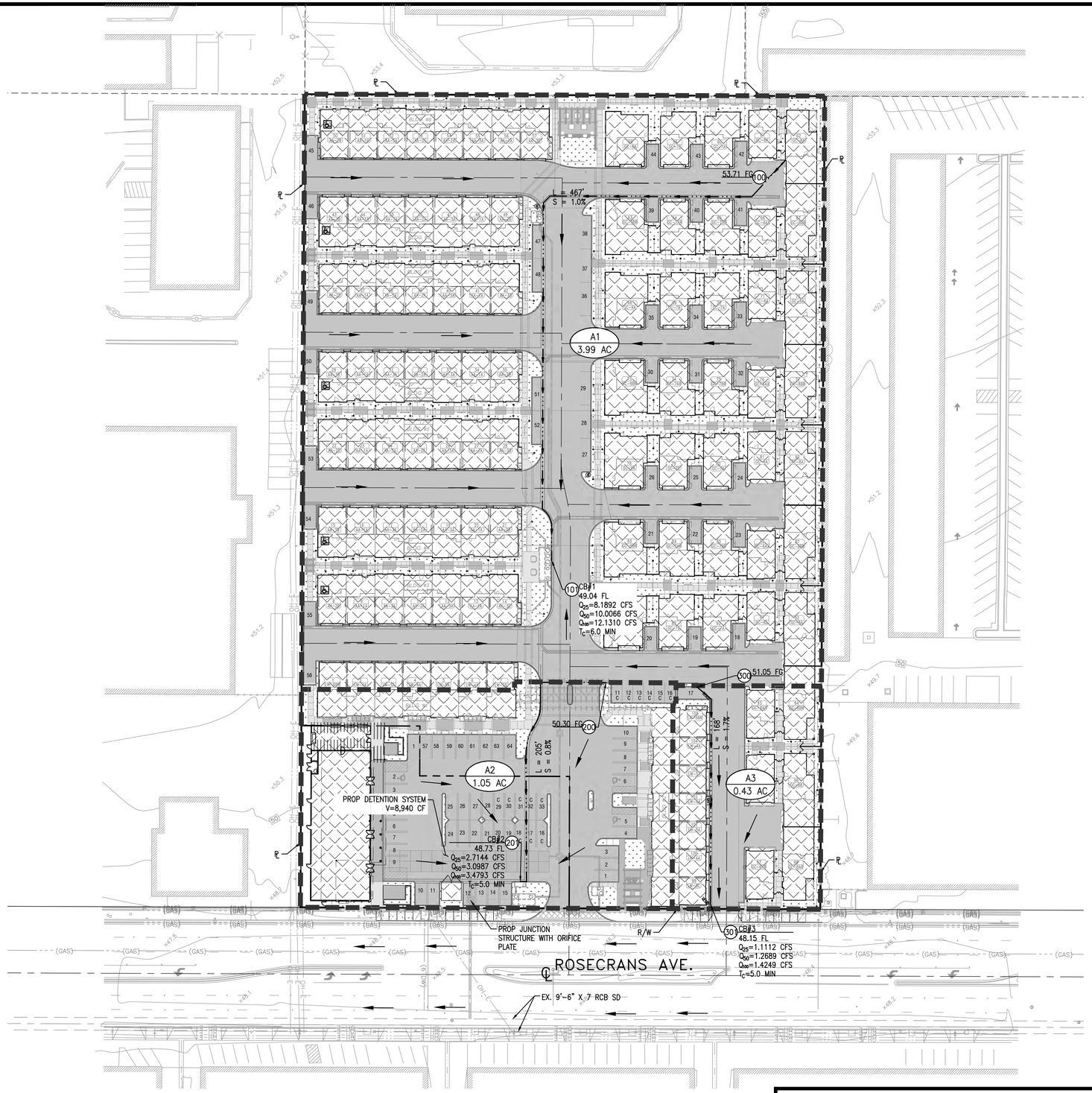
SCALE: AS SHOWN | DRAWN BY: EP | CHECKED BY: MM

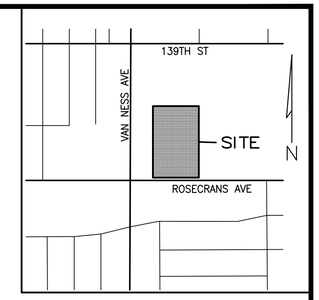
CITY OF GARDENA

PLAN SET: P202
DATE: 11/7/19

P:\JOBS\18-004 (NEW JOBS)\PLOT\18-004-HYDRO-PRELIM.DWG
BY: ERIC PEREZ 11/7/19 11:19 AM

Proposed Conditions Preliminary Hydrology Map





VICINITY MAP
N.T.S.

Post-Developed Hydroligic Summary

Area ID	Total Area (AC)	Pervious Area (AC)	Pervious (%)	Impervious Area (AC)	Impervious (%)	Q25 (CFS)	Q50 (CFS)	Q100 (CFS)
A1	3.99	0.51	0.13	3.49	0.87	8.1892	10.0066	12.1310
A2	1.05	0.10	0.09	0.95	0.91	2.7144	3.0987	3.4793
A3	0.43	0.04	0.10	0.38	0.90	1.1112	1.2689	1.4249
TOTAL	**5.47**	**0.64**	**0.12**	**4.82**	**0.88**	**12.01**	**14.37**	**17.04**

LEGEND:

- AREA X1 — SUB-AREA NUMBER
- X.XX Ac — ACREAGE
- L=XXX' — FLOW PATH LENGTH
- S=X.X' — CHANGE IN ELEVATION ALONG FLOW PATH
- SUB-AREA BOUNDARY
- FLOW PATH
- XXX.X — ELEVATION AT NODE
- SURFACE FLOW DIRECTION
- Q=X.XX CFS — STORM EVENT PEAK FLOW RATE
- SIDEWALK
- STREET
- BUILDING ROOF
- PERVIOUS LANDSCAPE

SCALE: 1" = 40'

0 20 40 80

OWNER/DEVELOPER

G3 URBAN
15235 S WESTERN AVE.
GARDENA, CA 90249

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RYAN J. BITTNER
No. 68167
CIVIL
STATE OF CALIFORNIA

PRELIMINARY PROPOSED CONDITIONS HYDROLOGY MAP
VTTM NO. 82667

2129 ROSECRANS AVENUE
GARDENA, CA 90249

SHEET 1 OF 1

SCALE: AS SHOWN | DRAWN BY: EP | CHECKED BY: MM

CITY OF GARDENA

PLAN SET: PS02
DATE: 11/6/19

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BY: ERIC PEREZ 11/7/19 11:14 AM

APPENDIX B
HYDROLOGY CALCULATIONS

Existing & Proposed Conditions Hydrology Calculations (25-year Storm Event)

Peak Flow Hydrologic Analysis

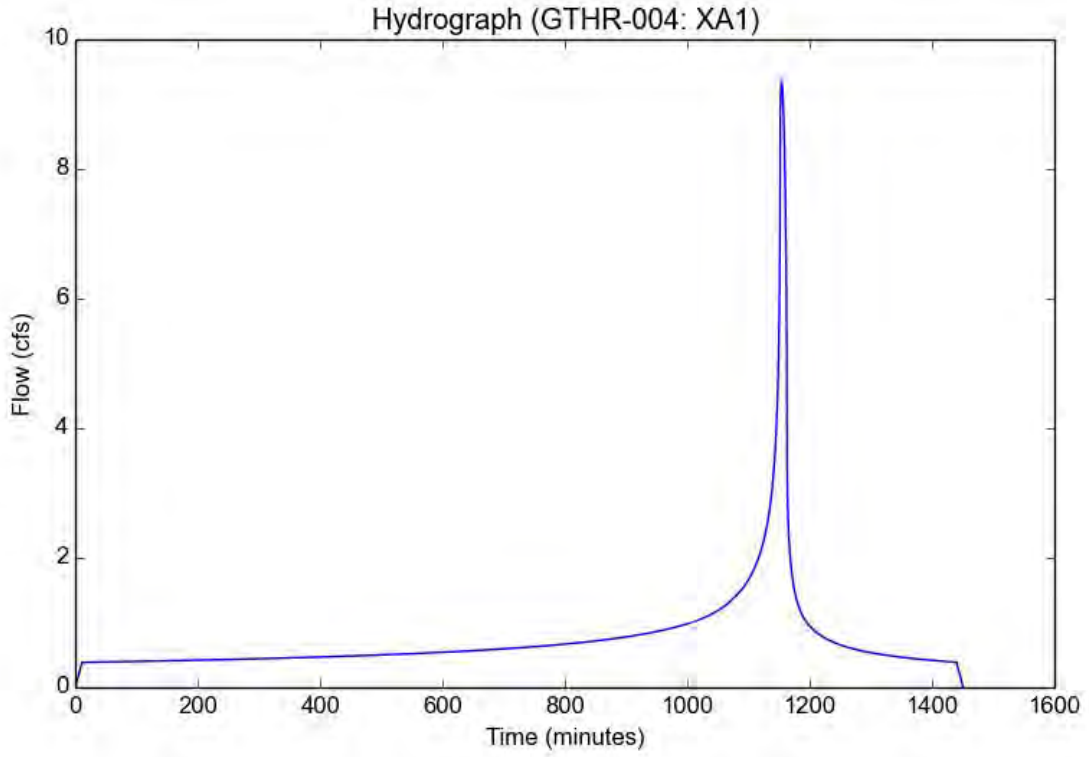
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - XA1, 25yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	XA1
Area (ac)	5.47
Flow Path Length (ft)	752.0
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.7
Soil Type	9
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	1.9889
Undeveloped Runoff Coefficient (Cu)	0.7655
Developed Runoff Coefficient (Cd)	0.8597
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	9.3527
Burned Peak Flow Rate (cfs)	9.3527
24-Hr Clear Runoff Volume (ac-ft)	1.4968
24-Hr Clear Runoff Volume (cu-ft)	65199.7022



Peak Flow Hydrologic Analysis

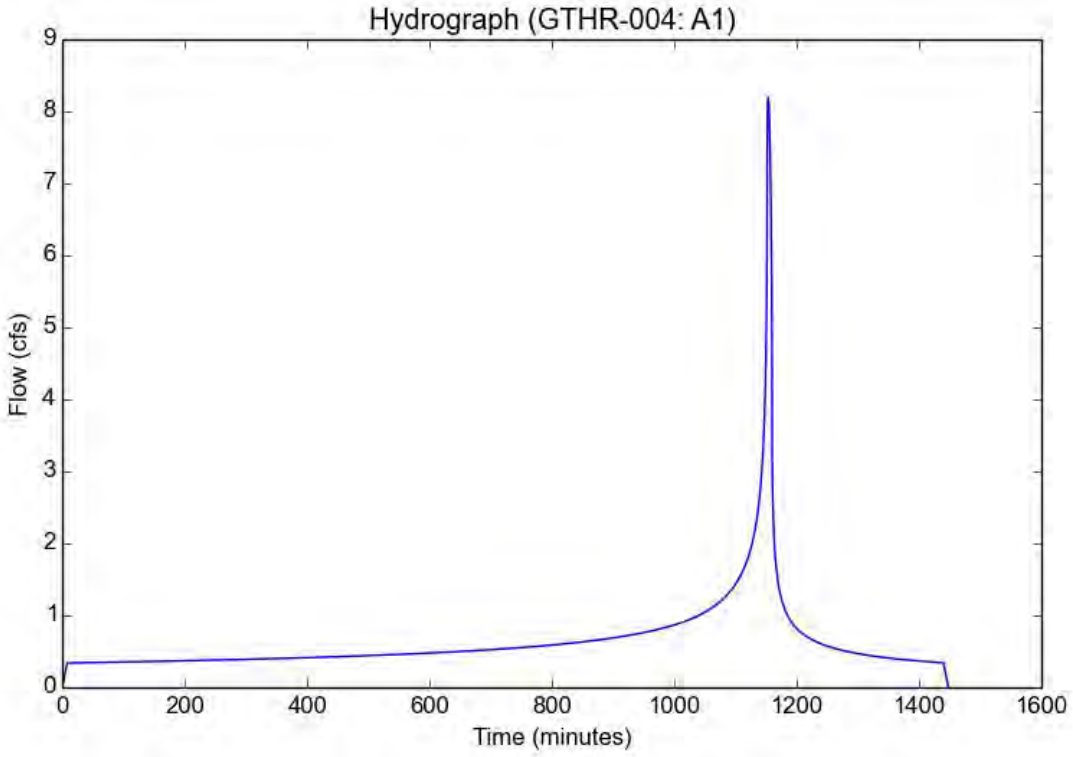
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A1_25yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A1
Area (ac)	3.99
Flow Path Length (ft)	467.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.87
Soil Type	9
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	2.3101
Undeveloped Runoff Coefficient (Cu)	0.8113
Developed Runoff Coefficient (Cd)	0.8885
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	8.1892
Burned Peak Flow Rate (cfs)	8.1892
24-Hr Clear Runoff Volume (ac-ft)	1.2854
24-Hr Clear Runoff Volume (cu-ft)	55992.3708



Peak Flow Hydrologic Analysis

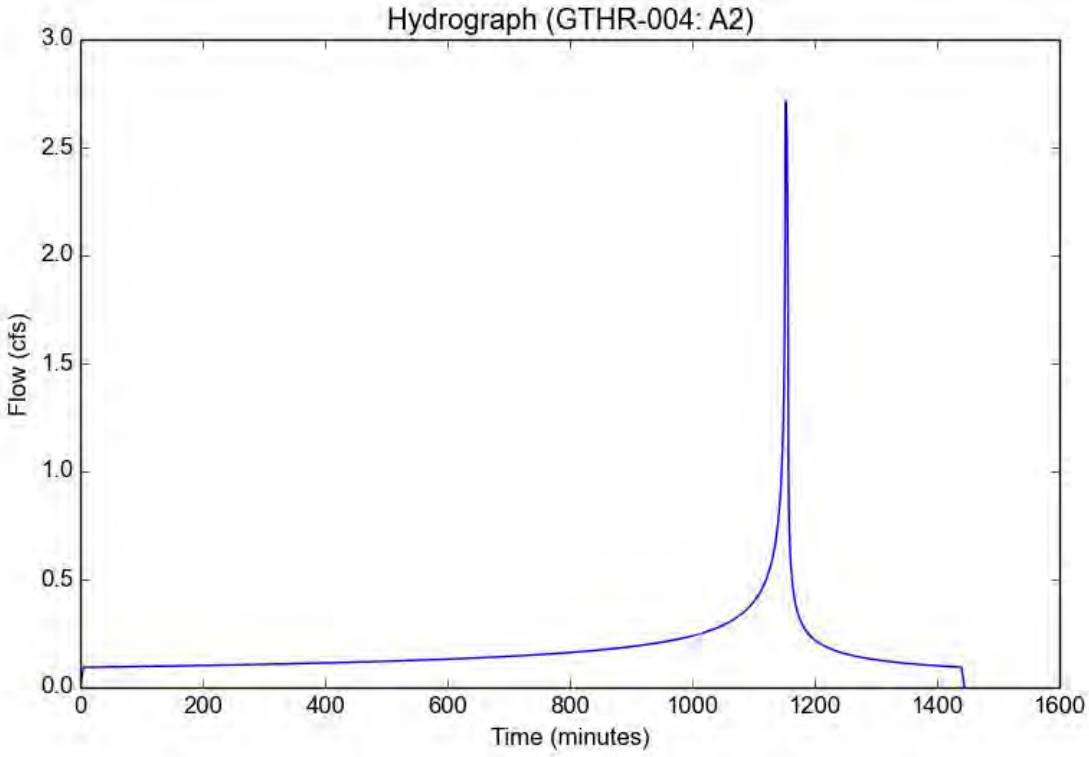
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A2_25yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A2
Area (ac)	1.05
Flow Path Length (ft)	205.0
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.91
Soil Type	9
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	2.8811
Undeveloped Runoff Coefficient (Cu)	0.8697
Developed Runoff Coefficient (Cd)	0.8973
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.7144
Burned Peak Flow Rate (cfs)	2.7144
24-Hr Clear Runoff Volume (ac-ft)	0.3503
24-Hr Clear Runoff Volume (cu-ft)	15257.4394



Peak Flow Hydrologic Analysis

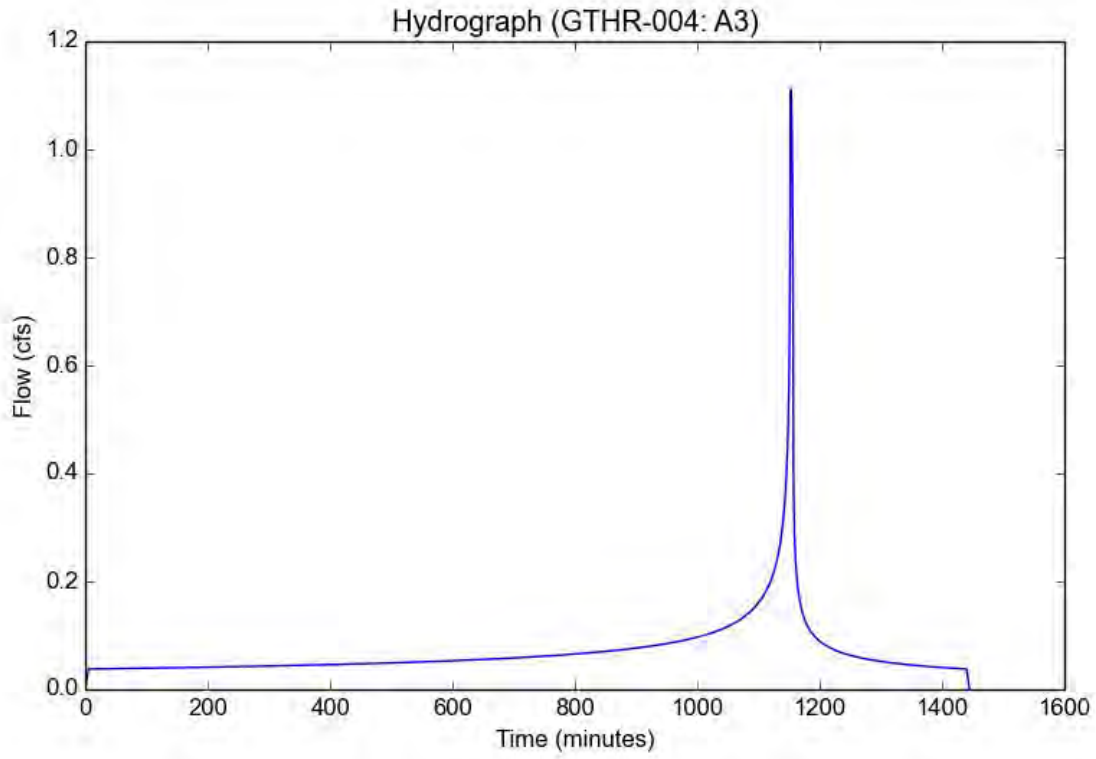
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A3_25yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A3
Area (ac)	0.43
Flow Path Length (ft)	168.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.9
Soil Type	9
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	2.8811
Undeveloped Runoff Coefficient (Cu)	0.8697
Developed Runoff Coefficient (Cd)	0.897
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.1112
Burned Peak Flow Rate (cfs)	1.1112
24-Hr Clear Runoff Volume (ac-ft)	0.1422
24-Hr Clear Runoff Volume (cu-ft)	6195.0091



Existing & Proposed Conditions Hydrology Calculations
(50-year Storm Event)

Peak Flow Hydrologic Analysis

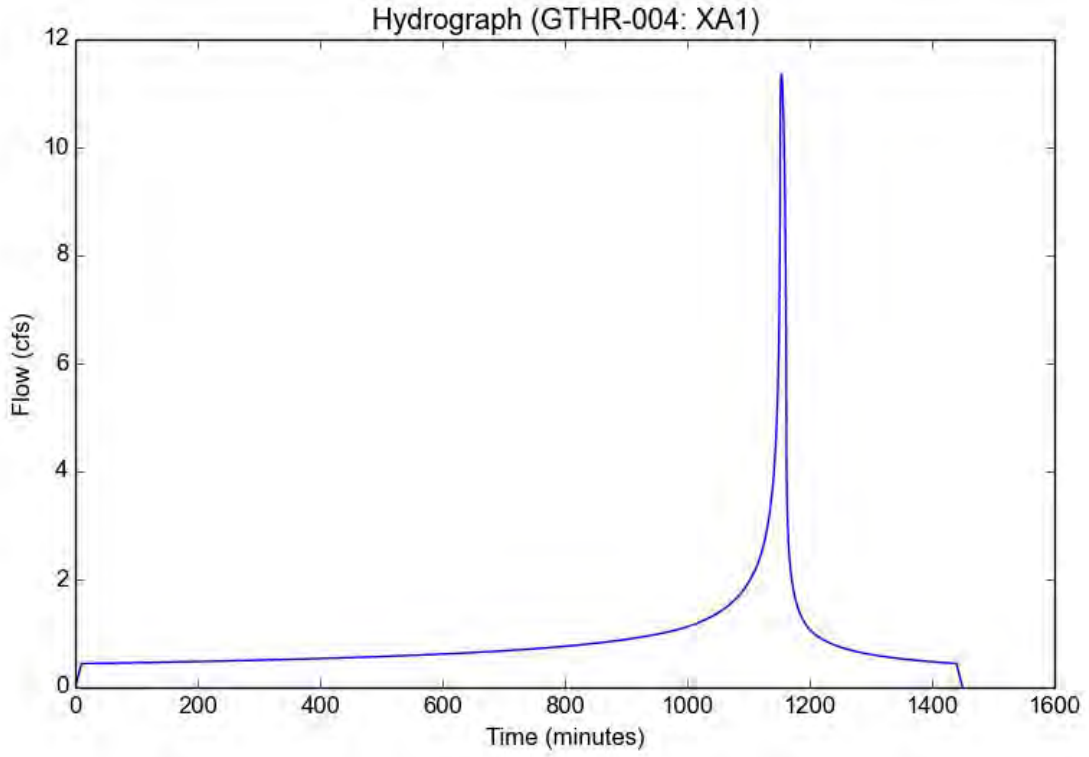
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - XA1, 50yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	XA1
Area (ac)	5.47
Flow Path Length (ft)	752.0
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.7
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	2.3691
Undeveloped Runoff Coefficient (Cu)	0.8198
Developed Runoff Coefficient (Cd)	0.8759
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	11.3511
Burned Peak Flow Rate (cfs)	11.3511
24-Hr Clear Runoff Volume (ac-ft)	1.7157
24-Hr Clear Runoff Volume (cu-ft)	74737.5586



Peak Flow Hydrologic Analysis

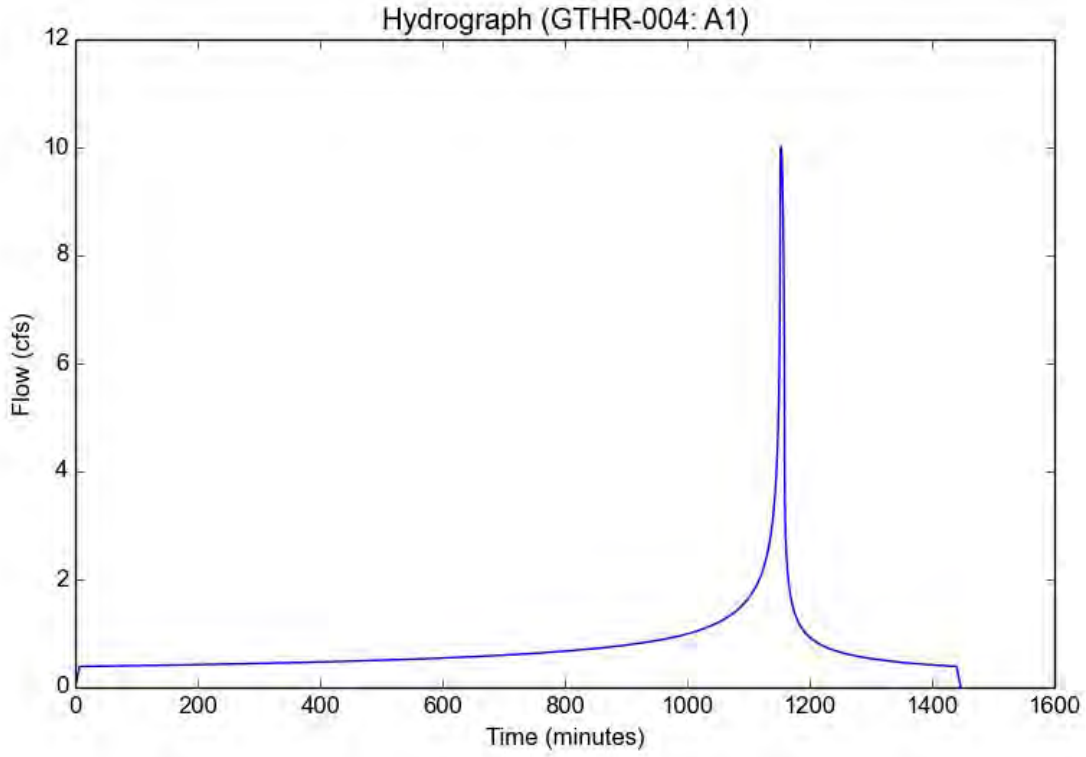
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A1_50yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A1
Area (ac)	3.99
Flow Path Length (ft)	467.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.87
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	2.8015
Undeveloped Runoff Coefficient (Cu)	0.8632
Developed Runoff Coefficient (Cd)	0.8952
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	10.0066
Burned Peak Flow Rate (cfs)	10.0066
24-Hr Clear Runoff Volume (ac-ft)	1.4675
24-Hr Clear Runoff Volume (cu-ft)	63923.2293



Peak Flow Hydrologic Analysis

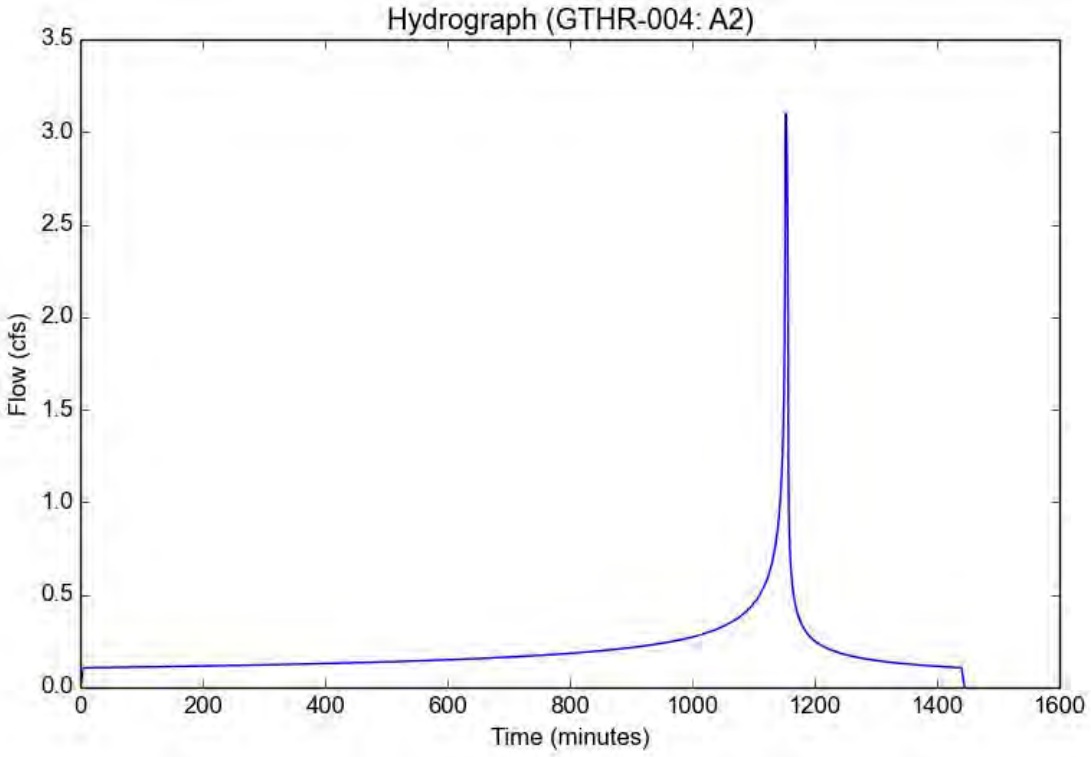
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A2 - 50yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A2
Area (ac)	1.05
Flow Path Length (ft)	205.0
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.91
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	3.2815
Undeveloped Runoff Coefficient (Cu)	0.8928
Developed Runoff Coefficient (Cd)	0.8994
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.0987
Burned Peak Flow Rate (cfs)	3.0987
24-Hr Clear Runoff Volume (ac-ft)	0.3995
24-Hr Clear Runoff Volume (cu-ft)	17403.6767



Peak Flow Hydrologic Analysis

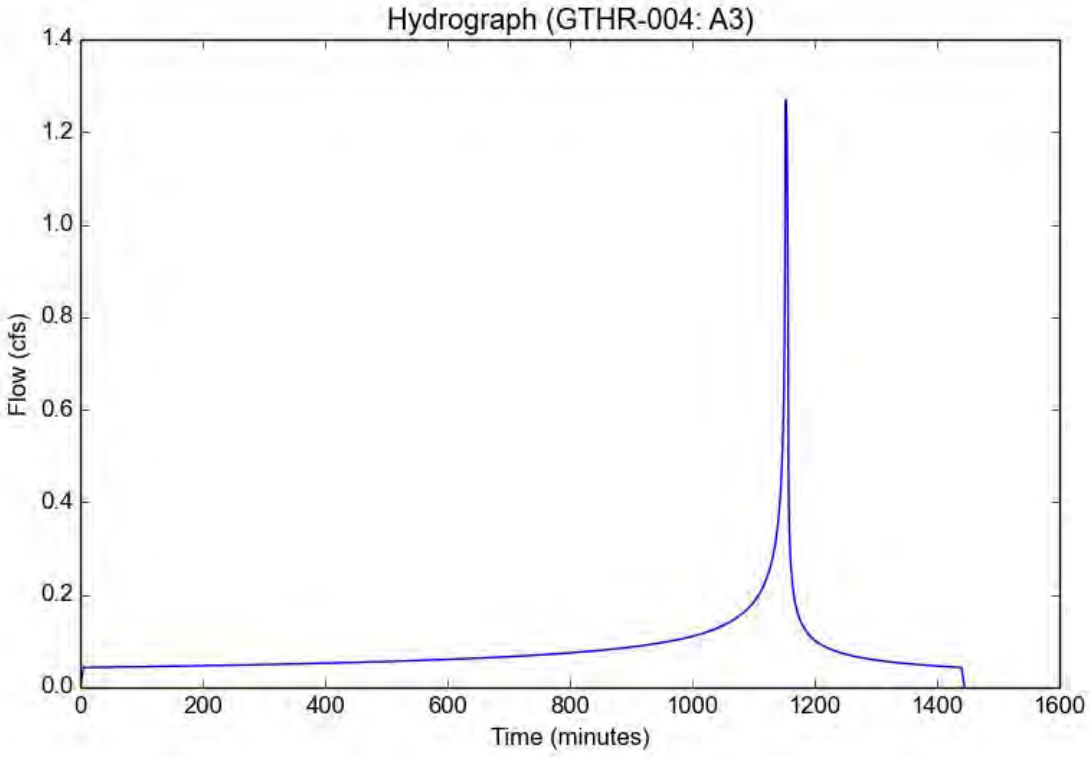
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A3_50yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A3
Area (ac)	0.43
Flow Path Length (ft)	168.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.9
Soil Type	9
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.5
Peak Intensity (in/hr)	3.2815
Undeveloped Runoff Coefficient (Cu)	0.8928
Developed Runoff Coefficient (Cd)	0.8993
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2689
Burned Peak Flow Rate (cfs)	1.2689
24-Hr Clear Runoff Volume (ac-ft)	0.1623
24-Hr Clear Runoff Volume (cu-ft)	7067.733



Existing & Proposed Conditions Hydrology Calculations (100-year Storm Event)

Peak Flow Hydrologic Analysis

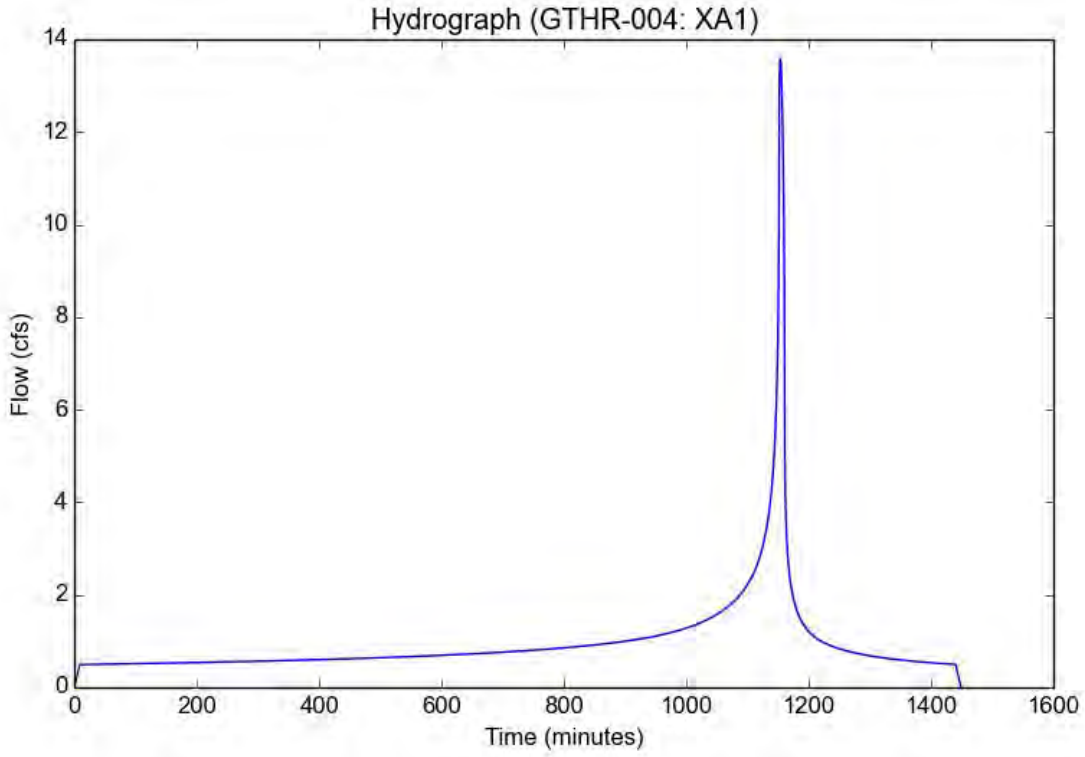
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - XA1, 100yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	XA1
Area (ac)	5.47
Flow Path Length (ft)	752.0
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.7
Soil Type	9
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.171
Peak Intensity (in/hr)	2.7931
Undeveloped Runoff Coefficient (Cu)	0.8625
Developed Runoff Coefficient (Cd)	0.8888
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	13.5784
Burned Peak Flow Rate (cfs)	13.5784
24-Hr Clear Runoff Volume (ac-ft)	1.9375
24-Hr Clear Runoff Volume (cu-ft)	84396.0716



Peak Flow Hydrologic Analysis

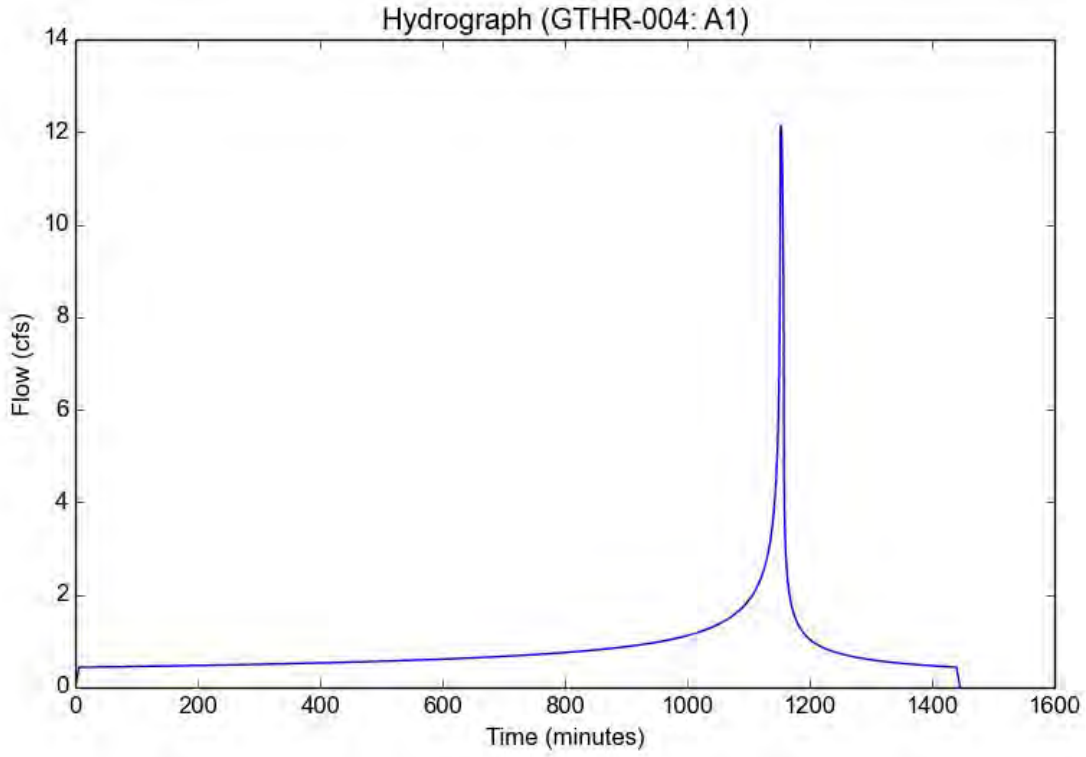
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A1_100yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A1
Area (ac)	3.99
Flow Path Length (ft)	467.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.87
Soil Type	9
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.171
Peak Intensity (in/hr)	3.3794
Undeveloped Runoff Coefficient (Cu)	0.8974
Developed Runoff Coefficient (Cd)	0.8997
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	12.131
Burned Peak Flow Rate (cfs)	12.131
24-Hr Clear Runoff Volume (ac-ft)	1.6503
24-Hr Clear Runoff Volume (cu-ft)	71886.9666



Peak Flow Hydrologic Analysis

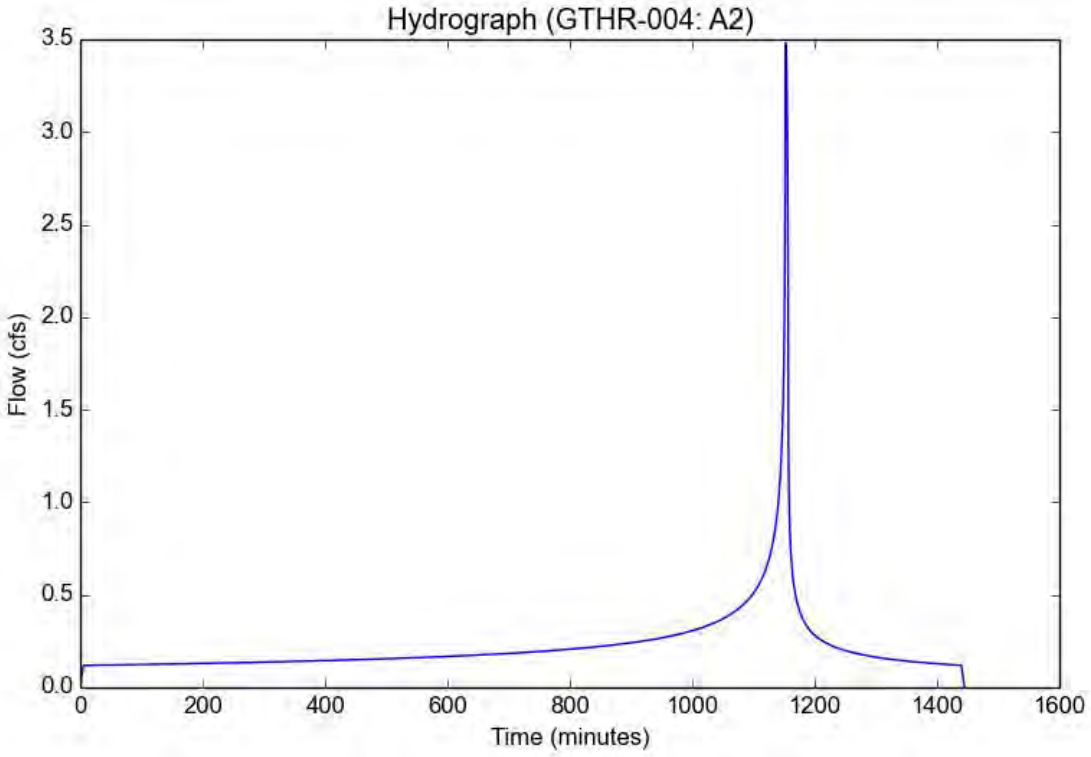
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A2_100yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	A2
Area (ac)	1.05
Flow Path Length (ft)	205.0
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.91
Soil Type	9
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.171
Peak Intensity (in/hr)	3.6818
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.4793
Burned Peak Flow Rate (cfs)	3.4793
24-Hr Clear Runoff Volume (ac-ft)	0.4489
24-Hr Clear Runoff Volume (cu-ft)	19556.079



Peak Flow Hydrologic Analysis

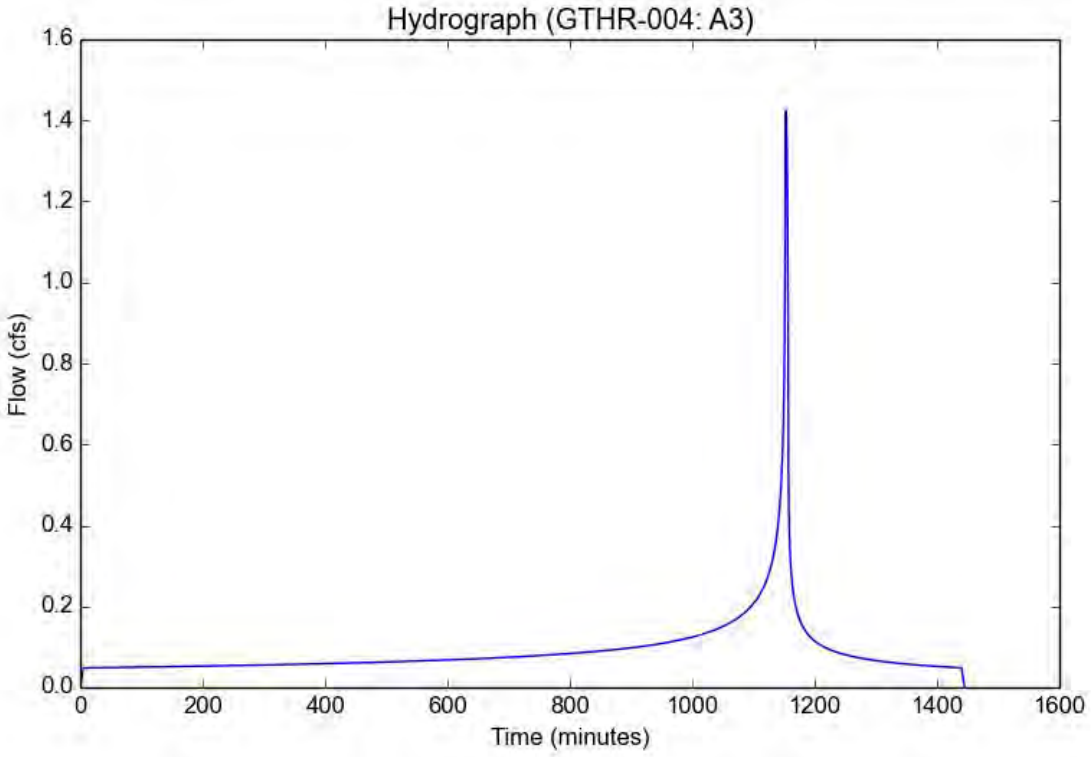
File location: P:/G/GTHR-004/Admin/Reports/Hydrology/PRE-HYDRO/Appendix B - Hydrology Calculations (Hydro Calc)/GTHR-004 - A3_100yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

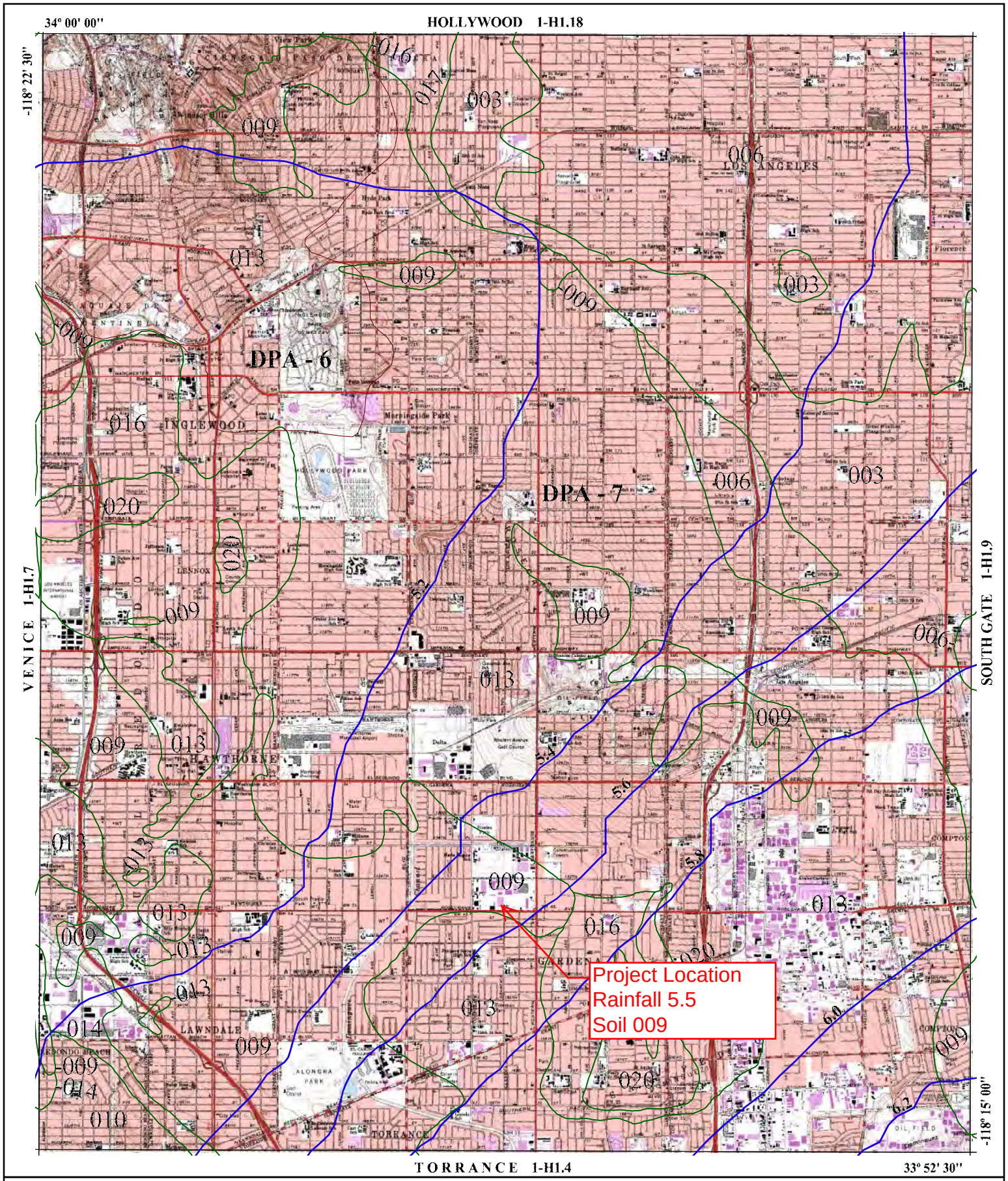
Project Name	GTHR-004
Subarea ID	A3
Area (ac)	0.43
Flow Path Length (ft)	168.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.9
Soil Type	9
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.171
Peak Intensity (in/hr)	3.6818
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.4249
Burned Peak Flow Rate (cfs)	1.4249
24-Hr Clear Runoff Volume (ac-ft)	0.1824
24-Hr Clear Runoff Volume (cu-ft)	7943.2622



APPENDIX C
Isohyet



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

INGLEWOOD
50-YEAR 24-HOUR ISOHYET

1-H1.8

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

APPENDIX D
Hydraulic Calculations

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Nov 13 2019

Offsite Flow Conveyance Pipe - 25 YR

Circular

Diameter (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 2.00
N-Value	= 0.013

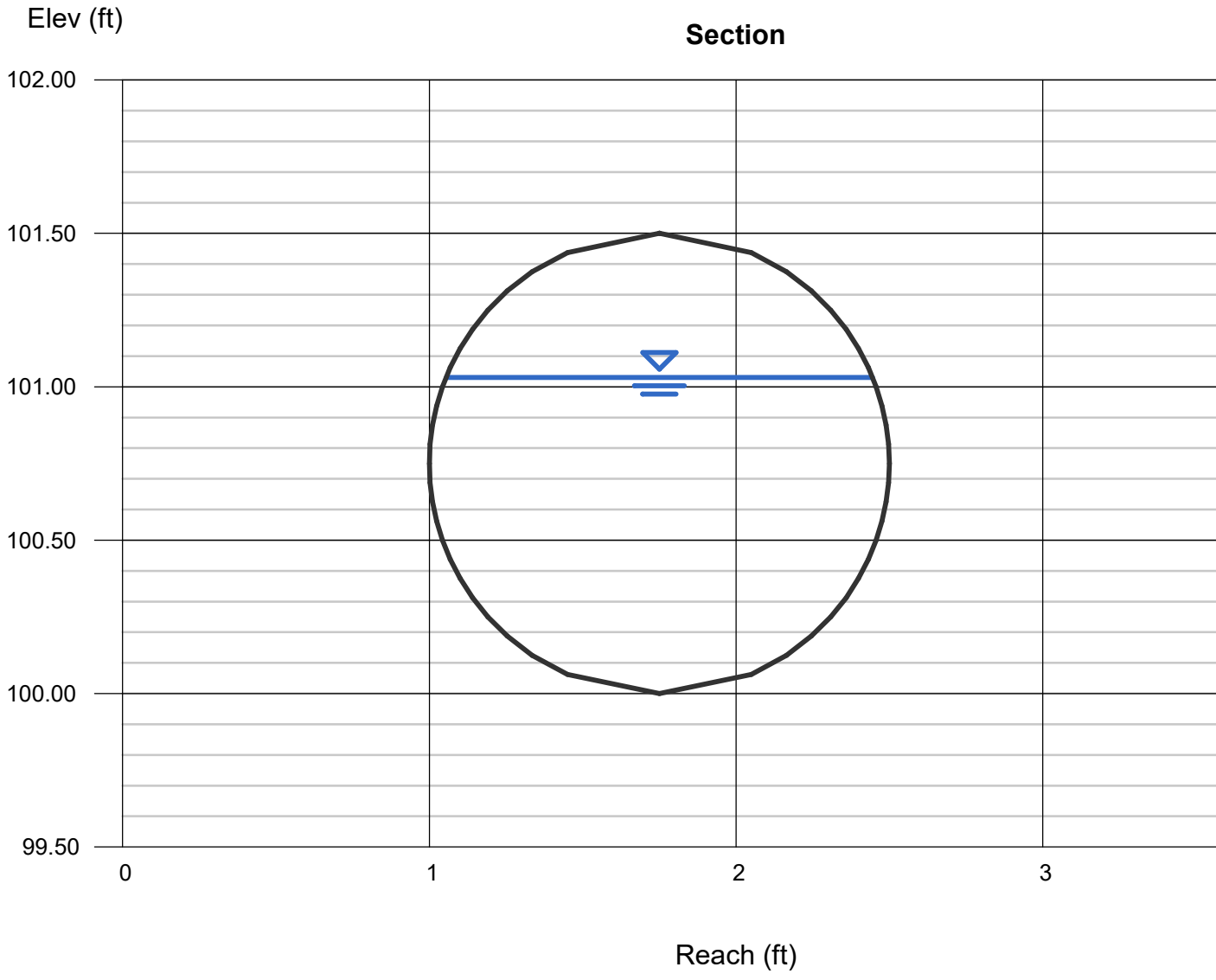
Calculations

Compute by:	Known Q
Known Q (cfs)	= 12.01

Highlighted

Depth (ft)	= 1.03
Q (cfs)	= 12.01
Area (sqft)	= 1.30
Velocity (ft/s)	= 9.27
Wetted Perim (ft)	= 2.93
Crit Depth, Yc (ft)	= 1.32
Top Width (ft)	= 1.39
EGL (ft)	= 2.37

Q was obtained by adding Q25's from A1, A2, and A3



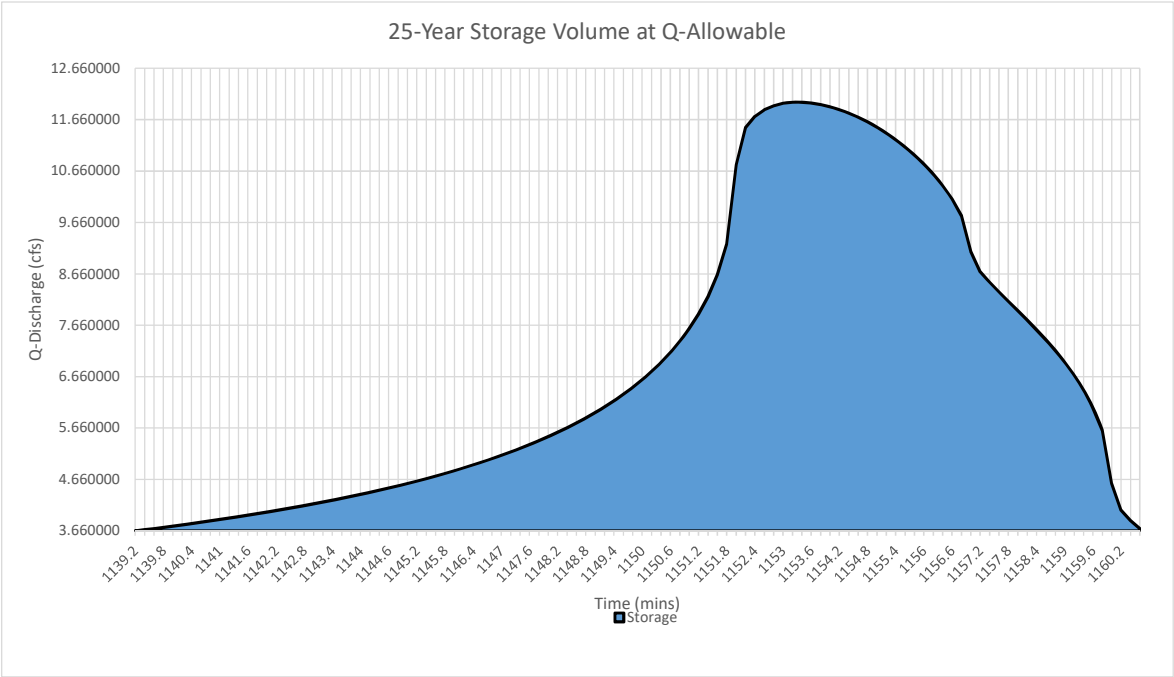
APPENDIX E
Detention Calculations

Q-25 HydroCalc Outputs based on LACDPW Qallowable = 3.66 cfs

Subarea

	A1	A2	A3		
Time (mins)	Q25 (CFS)	Q25 (CFS)	Q25 (CFS)	Total Q25 (cfs)	Area Under Curve
1139.2	2.610714207	0.745741823	0.300889722	3.657346	0.733764368
1139.4	2.626882664	0.750570081	0.302845181	3.680298	0.738400267
1139.6	2.643366652	0.755497287	0.304840806	3.703705	0.743128643
1139.8	2.66017676	0.760526916	0.306878011	3.727582	0.747941619
1140	2.677213617	0.765662614	0.308958277	3.751835	0.75282327
1140.2	2.694406811	0.770908217	0.311083166	3.776398	0.757787157
1140.4	2.711951297	0.776267757	0.313254317	3.801473	0.76285518
1140.6	2.729859486	0.781745483	0.315473458	3.827078	0.768031113
1140.8	2.748144424	0.787345866	0.317742409	3.853233	0.773318925
1141	2.766819836	0.793073626	0.320063088	3.879957	0.778722799
1141.2	2.785900174	0.79893374	0.322437521	3.907271	0.784247142
1141.4	2.805400666	0.804931469	0.324867849	3.935200	0.789896606
1141.6	2.825337373	0.811072371	0.327356333	3.963766	0.795676102
1141.8	2.84572725	0.817362331	0.329905367	3.992995	0.801590823
1142	2.866588214	0.823807582	0.332517489	4.022913	0.807646262
1142.2	2.887939212	0.830414734	0.335195388	4.053549	0.813848236
1142.4	2.909800305	0.837190802	0.337941921	4.084933	0.820202914
1142.6	2.932192753	0.844143241	0.340760121	4.117096	0.826716843
1142.8	2.955139114	0.851279983	0.343653218	4.150072	0.833396979
1143	2.978663347	0.858609476	0.346624651	4.183897	0.840250722
1143.2	3.00279093	0.86614073	0.349678089	4.218610	0.847285955
1143.4	3.02754899	0.873883364	0.352817448	4.254250	0.854511084
1143.6	3.052966448	0.881847665	0.35604692	4.290861	0.861935084
1143.8	3.079074175	0.890044647	0.359370988	4.328490	0.869567556
1144	3.105905173	0.898486119	0.362794464	4.367186	0.877418781
1144.2	3.133494773	0.907184765	0.366322514	4.407002	0.885499783
1144.4	3.161880855	0.916154228	0.369960697	4.447996	0.893822409
1144.6	3.191104102	0.925409206	0.373715003	4.490228	0.902399405
1144.8	3.221208275	0.934965566	0.377591896	4.533766	0.91124451
1145	3.252240535	0.944840462	0.381598368	4.578679	0.920372565
1145.2	3.284251801	0.955052483	0.385741996	4.625046	0.929799625
1145.4	3.317297157	0.965621808	0.390031007	4.672950	0.939543103
1145.6	3.351436316	0.976570394	0.394474351	4.722481	0.949621919
1145.8	3.386734157	0.987922183	0.399081791	4.773738	0.960056682
1146	3.423261335	0.99970335	0.403864003	4.826829	0.970869894
1146.2	3.461094987	1.01194258	0.408832685	4.881870	0.98208619
1146.4	3.50031955	1.024671399	0.414000697	4.938992	0.993732613
1146.6	3.54102772	1.037924552	0.419382215	4.998334	1.005838942
1146.8	3.583321561	1.051740459	0.424992915	5.060055	1.018438069
1147	3.627313827	1.066161735	0.43085019	5.124326	1.03156645
1147.2	3.673129513	1.081235829	0.436973404	5.191339	1.045264643
1147.4	3.720907714	1.097015767	0.443384207	5.261308	1.059577949
1147.6	3.770803847	1.113561064	0.450106896	5.334472	1.074557184
1147.8	3.822992344	1.130938815	0.457168872	5.411100	1.090259619
1148	3.87766993	1.149225038	0.464601184	5.491496	1.106734118
1148.2	3.935059654	1.168396352	0.472389018	5.575845	1.124024568
1148.4	3.995415893	1.188455757	0.480529003	5.664401	1.142227423
1148.6	4.059030636	1.209694392	0.489148548	5.757874	1.161465636
1148.8	4.126241463	1.232241165	0.498300153	5.856783	1.181851682
1149	4.197441808	1.256246954	0.508045276	5.961734	1.203517489
1149.2	4.273094372	1.281889963	0.518456516	6.073441	1.226454853
1149.4	4.352104316	1.309382843	0.529620518	6.191108	1.250796482
1149.6	4.436232878	1.338982349	0.541641918	6.316857	1.276909407
1149.8	4.526585405	1.371002723	0.554648798	6.452237	1.305098728
1150	4.624115173	1.405834721	0.568800459	6.598750	1.335704689
1150.2	4.730024287	1.44397347	0.584298785	6.758297	1.369162638
1150.4	4.845863586	1.486060741	0.601405507	6.933330	1.406044205
1150.6	4.973690744	1.532951928	0.620469548	7.127112	1.447124734
1150.8	5.116334341	1.585828033	0.64197275	7.344135	1.49349632
1151	5.277866379	1.646364425	0.666597272	7.590828	1.546626194
1151.2	5.464528793	1.716021889	0.694883185	7.875434	1.609128602
1151.4	5.686799397	1.800042665	0.729010094	8.215852	1.686001206
1151.6	5.965001969	1.906780598	0.772377341	8.644160	1.788009148
1151.8	6.344616057	2.057625389	0.833690128	9.235932	2.001765392
1152	7.320068398	2.463080235	0.99857371	10.781722	2.228534642
1152.2	7.783046037	2.647179612	1.073398429	11.503624	2.322676983
1152.4	7.931063532	2.698017146	1.094065078	11.723146	2.357486523

1152.6	8.022479012	2.724435113	1.104805352	11.851719	2.378267966
1152.8	8.083471332	2.737408827	1.110080028	11.930960	2.390805272
1153	8.124283922	2.741190899	1.111617715	11.977093	2.397550547
1153.2	8.150189854	2.737930824	1.110292257	11.998413	2.39982003
1153.4	8.164317542	2.728863892	1.106605931	11.999787	2.398409413
1153.6	8.168692176	2.714747725	1.100866867	11.984307	2.393833393
1153.8	8.164703011	2.696056255	1.093267895	11.954027	2.386437101
1154	8.153341648	2.67307637	1.08392583	11.910344	2.376454016
1154.2	8.135335029	2.645959027	1.072902256	11.854196	2.364038172
1154.4	8.111224809	2.614746138	1.060214458	11.786185	2.349282556
1154.6	8.081417172	2.579382644	1.045840342	11.706640	2.332229224
1154.8	8.046215308	2.539717808	1.02971897	11.615652	2.312873709
1155	8.005841149	2.495496721	1.011747132	11.513085	2.29116471
1155.2	7.96045014	2.446340598	0.991771358	11.398562	2.266998859
1155.4	7.910141269	2.391711577	0.969573651	11.271426	2.240130921
1155.6	7.854963719	2.330316537	0.944602457	11.129883	2.210262611
1155.8	7.794920964	2.261300073	0.916522355	10.972743	2.177086287
1156	7.729972823	2.183337156	0.884809497	10.798119	2.140057658
1156.2	7.660035723	2.093958741	0.848462639	10.602457	2.098221782
1156.4	7.584981266	1.988990482	0.805788972	10.379761	2.049819826
1156.6	7.504633041	1.860309867	0.753494629	10.118438	1.990749017
1156.8	7.418761438	1.687137793	0.683153402	9.789053	1.888454165
1157	7.32707607	1.259177806	0.509235145	9.095489	1.779922968
1157.2	7.2292151	1.050170321	0.424355241	8.703741	1.719350343
1157.4	7.124730435	0.972293686	0.392738651	8.489763	1.679051184
1157.6	7.013067148	0.917269017	0.370412897	8.300749	1.642115243
1157.8	6.893534549	0.874002901	0.352865918	8.120403	1.606217007
1158	6.765264739	0.83816511	0.33833685	7.941767	1.570236777
1158.2	6.627151685	0.80752897	0.32592042	7.760601	1.533421085
1158.4	6.477758635	0.780772049	0.315079091	7.573610	1.495127929
1158.6	6.315171406	0.757034624	0.30546348	7.377670	1.454697639
1158.8	6.13675327	0.735721761	0.296831853	7.169307	1.410847649
1159	5.933984319	0.716247074	0.288938209	6.939170	1.362421367
1159.2	5.704910048	0.698421513	0.28171251	6.685044	1.308243836
1159.4	5.440283261	0.682038156	0.275072871	6.397394	1.245432029
1159.6	5.121092088	0.666896298	0.268937615	6.056926	1.167183429
1159.8	4.698832636	0.652834564	0.263241086	5.614908	1.019453609
1160	3.681977019	0.639721128	0.257929659	4.579628	0.86427557
1160.2	3.182722134	0.627446825	0.252958934	4.063128	0.791843995
1160.4	2.991100138	0.615920192	0.248291722	3.855312	0.755716593
1160.6	2.852893535	0.605063801	0.243896541	3.701854	0.727880369
1160.8	2.742391796	0.594811511	0.239746507	3.576950	
				Total	**147.3548631**
				Volume (cf)	**8841**



Detention Vault Size Calcualtion			
Depth of Module (FT)	**Module Storage (CF/Module)**	**Total Required Storage (CF)**	**Required Number of Modules**
4	238	8841	37
5	298		30
6	357		25

APPENDIX F
As-builts & References

INDEX TO PLANS

LOCATION MAP AND INDEX TO PLANS ... Sheet No. 1
PLAN AND PROFILE ... " " 2 to 7
SPEC. INLET NO. 1, 2 & 3 - DETAILS ... " " 8
R.C. BOX SECTIONS - STRUCTURAL DETAILS ... " " 9
SPECIAL STRUCTURE NO. 1 ... " " 10
SPECIAL STRUCTURE NO. 2 ... " " 11
SPECIAL STRUCTURE NO. 3 ... " " 12
SANITARY SEWER RECONSTRUCTION ... " " 13
LOG OF SOILS TEST BORING ... " " 14

STANDARD DRAWINGS ~ FLOOD CONTROL DISTRICT

	Local Depression No. 2	Drawing No. 2-D 88
	Standard Drop Step	" 2-D 96
(22)	Manhole No. 3	" 2-D 104
	Conc. Rings, Reducer and Pipe for M.H. Shaft	" 2-D 107
	Manhole Frame and Cover for Catch Basin	" 2-D 156
	Catch Basin Reinforcement for Round Manhole	" 2-D 157
	Detail of Bolt Support for Catch Basin	" 2-D 158
(15)	Catch Basin No. 1	" 2-D 160
	Detail of Angle and Anchor for Catch Basin	" 2-D 161
(16)	Catch Basin No. 2	" 2-D 162
	Catch Basin No. 3	" 2-D 163
	Standard A 305 Reinforcing	" 2-D 171
	Catch Basin Reinforcement	" 2-D 172
	Pipe Supports Across Trenches	" 2-D 173.1 to 3
	Removable Protection Bar for Catch Basin	" 2-D 175
	Pipe Bedding in Trenches	" 2-D 177
	Standard Non-rocking Manhole Frame & Cover	" 2-D 181
(21)	Manhole No. 2	" 2-D 184
(24)	Transition Structure No. 2	" 2-D 186
(18)	Junction Structure No. 1	" 2-D 189
	Junction Structure No. 3	" 2-D 191
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(25)	Transition Structure No. 4	" 2-D 198
	Window Details for Multiple Box Section	" 2-D 205
	"D" Load Table for Design of Reinforced Concrete Pipe	" 2-D 213.1 & .2
	Detail of Catch Basin Opening	" 2-D 215
(23)	Manhole No. 4	2-D 113
	Reconstruction of Sanitary Sewers & House Connections	" 2-D 146

STANDARD PLANS ~ COUNTY ENGINEER

Reinforcing Steel Assembly - Single R.C. Box	Standard No. Dc - 70
Reinforcing Steel Assembly - Double R.C. Box	" Dc - 71
Standard Chimney Pipe	" S-a-9
Legend for Sanitary Sewer Plans & Profiles	" S-a-64
Brick Sewer Structures	" S-a-104
Standard Manhole Frame & Cover	" S-a-117
Concrete Reinforcement for Circular Pipes	" S-a-119
Trap Manhole Base	" S-a-138
Standard Manhole Step	" S-a-162

GENERAL NOTES

Elevations are in feet above U.S.C. & G.S. Sea Level Datum of 1929, based on the Los Angeles County Engineer's Precise Level Net, 1952 adjustment.

Stationing of Main Line Drawings is based on survey in C.S.F.B. 1969.

Stations shown on profile are along centerline of conduit or on a line normal to centerline of conduit.

Stations and invert elevations of pipe inlets, shown on the profiles, are at the inside face of the conduit wall unless otherwise shown.

Pipe connections shall conform to Standard Drawing 2-D191 or Standard Drawing 2-D193, unless otherwise shown on the project drawings.

Connector Pipes with cover less than two feet in roadway areas shall be backfilled with concrete according to General Note No. 3, Standard Drawing No. 2-D177. Concrete backfill indicated on Standard Drawing No. 2-D213.1 shall be used only in roadways, unless otherwise specified on the project drawings.

All storm drain pipe shall be bedded according to Std. Dwg. No. 2-D177, Case III, except bell and spigot pipe which shall have Case II bedding, unless otherwise shown on the project drawings.

All pipe not otherwise specified shall be Extra Strength Cement Concrete Pipe.

Existing public utilities shall be maintained in place by the Contractor unless otherwise specified on the project drawings. Interfering portions of abandoned utilities shall be removed by the Contractor.

All structures not otherwise specified are Standard Structures. For details, see appropriate Standard Drawing.

For structures marked "SEC ____", see structural details on Sheet No. 9.

At side opening catch basin locations where no curb exists, the catch basins shall be built with a curb face of 12 inches, unless otherwise specified on the project drawings. Where there is an existing curb with a height less than 8 inches the catch basin shall be built with a curb face sufficient to provide an 8 inch opening into the catch basin by increasing the depth of the depression below existing gutter grade. Where existing curb height is 8 inches or more, the curb face at the catch basin shall be that of the existing curb height plus 4 inches unless otherwise specified on the project drawings.

If an elevation is shown at a Catch Basin, it refers to the top of proposed curb at centerline of basin.

At locations where Local Depressions are specified and no curb exists, the curb specified on Standard Drawing No. 2-D88 shall conform to the detail shown on sheet No. 2, with the curb face varying from 12 inches at the basin to 8 inches at each end of the local depression.

The soils test borings for this project were made in June and July, 1955.

Resurface trenches within the cement concrete paved area of Rosecrans Avenue with 8 inches of cement concrete pavement and 6 inches of aggregate base material. Resurface trenches within all other paved areas of streets with 3 inches of premix pavement and 6 inches of aggregate base material, except as otherwise shown. Use Type 'A' base material.

Numbers in circles (6) indicate items under which payment will be made.

Where Premix Local Depressions are specified on the plans, substitute 6 inch Premix Apron for the 8 inch Cement Concrete Apron shown on Standard Drawing No. 2-D88.

STRUCTURAL NOTES

Dimensions for depth of reinforcing steel are from face of concrete to center of bars.

Longitudinal steel shall be continuous and extend through all R.C. Box Construction Joints and shall be lapped a minimum of 20 diameters at all splicies.

Transverse construction joints shall not be placed within 30 inches of manhole or junction structure openings.

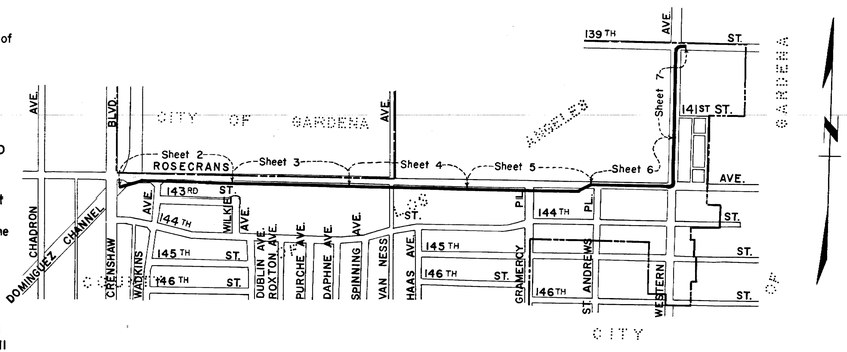
Unless otherwise shown on project drawings, transverse joint keyways, (in both slabs and walls), as detailed for longitudinal joint keyways, shall be placed at the end of each pour but the spacing thereof shall not exceed 50 feet or be less than 10 feet. All construction joints in bottom slab, top slab and side walls shall be in the same plane. No staggering of joints will be permitted.

The walls and top slab may be poured monolithic, but after walls have been poured, a time delay of two hours shall be made before pouring of the top slab is started.

Transverse reinforcement and transverse joints shall be placed at right angles (or radial) to conduit centerline, except as otherwise shown on project drawings.

Unless otherwise shown on the project drawings, transverse bars in curved reaches shall be placed radially. Straight transverse bars in top and bottom slabs shall be spaced as shown for the section, with the spacing to be applied at the centerline of construction and the bars placed radially from this spacing. Straight bars and angle bars in walls shall be spaced as shown for the section, spacing to be measured between vertical legs.

All bar bends and hooks shall conform to the American Concrete Institute "Manual of Standard Practice".



LOCATION MAP
SCALE 1" = 600'
600 300 0 600 1200 1800 2400
SCALE OF FEET

LEGEND
Proposed Storm Drain

"AS BUILT DRAWINGS"

Effective October 5, 1955, JOHN A. LAMBIE was appointed County Engineer. Wherever the name WILLIAM J. FOX appears on these plans it should be construed as meaning JOHN A. LAMBIE.

"PD024235"

COUNTY STORM DRAIN BOND ISSUE

APPROVED AS TO SANITARY SEWERS
A. M. RAWN
CHIEF ENGINEER OF COUNTY SANITATION DISTRICTS
BY L. Posthumus
OFFICE ENGINEER
DATE MAR. 30 1956

PREPARED BY
WILLIAM J. FOX
COUNTY ENGINEER
RECOMMENDED BY
C. V. Green
CONSTRUCTION AND STORM DRAIN ENGINEER
DRAWN BY B. Wheeler DESIGNED BY P.R. Pearl
TRACED BY B. Wheeler SUBMITTED BY A.W. Lyon
CHECKED BY G. W. Tatchell DATE 11-1-55

REVISIONS

MARK	DATE	DESCRIPTION
△	5-9-57	As Built

DRAWN BY County of L.A. DESIGNED BY County of L.A.
TRACED BY County of L.A. SUBMITTED BY
CHECKED BY W.H.E.D.
RECOMMENDED BY
DIVISION ENGINEER (DESIGN)

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
PROJECT NO. 11
ROSECRANS AVENUE
CONCRETE CONDUIT
LOCATION MAP & INDEX TO PLANS
APPROVED BY H.E. Nodyer 4/25/56
CHIEF ENGINEER

SCALE	DATE	NO. 481-11-D1.1
AS SHOWN	OCT. 1955	SHEET 1 OF 14

DIETZGEN 138 IMPERIAL TRACING CLOTH

B.M. K.E. 83 Elev. 45.303 F.B. 1969 pg. 8. Rosecrans Ave. & Van Ness Ave. S.E. Corner Bf. Spk. in Curb 20' S. of N. end C.R.

B.M. 21-10 Elev. 44.574 F.B. 1391-15 & F.B. 1969 pg. 8 Rosecrans Ave. & Van Ness Ave. S.W. Corner 89.6' S. & Rosecrans Ave. 29.5' W. & Van Ness Ave. 1.3' Back of Curb in a well protected by a cast iron cover Marked C.S. Mon. a Std. C.S. Mon. stamped 21-10-1952 R.E. 63.

VAN NESS AVE.

Backfill to this line. See Typical Section on Sheet No 3

Exist ground line

Exist. 24" C.M.P.'S

DOUBLE 7'-6" x 7'-3" R. C. BOX

9'-6" x 7'-0" R. C. BOX

Backfill to this line see typical section at right

Exist ground line

Exist 24" CMP in trench

25+96 M.H. #3 El. Top of M.H. = 45.53

26+00 25+99

26+16.7 26+13.28

18" Opening top of R.C. Box

26+72 TRANS. STR. # 1 JUNCT. STR. # 1

26+82 Window

2-6" waste cap to be relocated by others

42" Inlet (South) El. S. = 36.50

42" Inlet (North) El. S. = 36.50

18" Inlet El. S. = 39.30

27+75

27+86.6 18" Opening top of R.C. Box

2' Inlet El. S. = 37.82

31+50 M.H. #3 El. Top of M.H. = 45.09

S = .0004

Invert

S = .0004

6" H.L. Reconstruct per Std. Dwg. 2-D146 (33)

6" H.L.'s Reconstruct per Std. Dwg. 2-D146 (33)

35.55

35.70

35.71

35.99

M.C. 25+10.1 - 132.8' Tan. 318 Dwg. 2-D146

M.C. 29+47.1 - 16.0 Tan. 318 Dwg. 2-D146

M.C. 30+95.1 - 29.1' Std. Dwg. 2-D146

M.C. 33+93.5 - 23.1' Std. Dwg. 2-D146

Invert Exist. 12" San. Sewer

Invert Exist. 18" San. Sewer

26+67 End Sec. #3 TRANS. STR. #4 26+97 Begin Sec. #4

24" San. Sewer

PROFILE

HORI. SCALE: 1" = 40'

VERT. SCALE: 1" = 4'

SEC. No 3

SEC. No 4

23 24 25 26 27 28 29 30 31 32 33 34

SW 1/4 SEC. 14, T3S, R14W S.B.B. & M.

REPLAT OF BLOCK D AND E STRAWBERRY PARK TRACT M.B. 8-138

18" San. Sewer, As Shown City of Gardena

GARDENA CITY BOUNDARY

Approximate site location

NOTE A Pipe Invert Elev. 39.70; Seal end with 8" brickwork or install 18" SPEC. INLET No. 4 with Inlet Elev. = 44.60 See Sh. No. 11 for details. See Sec. 3-08 of Specifications.

Curve Data for Future Storm Drain North in Van Ness Ave.
Δ = 44° 49' 40"
R = 45'
T = 18.56'
L = 35.21'
B.C. = 1+17.69, E.C. = 1+52.90

26+72 = 1+00 UNCT STR # 1 (North) El. = 36.16 (South) El. = 35.95 Test Hole No 4

See NOTE A of left.

Traffic Signal Conduit As Shown L.A. Co. Rd. Dept. 26+72 TRANS STR. # 1 26+97 Begin Sec. #4

Join 42" R.C.P.

Proposed Street Widening Line

GARDENA CITY BOUNDARY

Exist. Ditch

T.P.

5' C.L. Fence

See Sheet No 3

See Sheet No 5

ROSECRANS AVE.

Remove Exist. 2-Gr. C.B. Salvage Gr. for F.O.B. L.A. Co. Rd. Dept. truck

Steel Barricade

25+96

24 Premix Rolled C.B. 2

63'-15" PIPE

66'-21" Pipe

Remove Exist. 1-Gr. C.B. Salvage Gr. for F.O.B. L.A. Co. Rd. Dept. truck

27+75

W.H.H.

G.W.

P.P.

W.M.

6" H.C.

8" Cement Conc. Pvmt. over 6" Agg. Base

2" Premix Pvmt. over 6" Agg. Base

Conc. Box

F.H.

2" Premix Pvmt. Parking Area. Resurface trenches with 2" Premix Pvmt. (Omit Base)

Premix Pvmt. over 4" Agg. Base

Premix Drwy.

4" Conc. Hdwls.

34"-18" C.M.P. (Exist)

8" Oil As Shown Standard Oil Co.

6" Oil

8" Oil

Dirt Drive 8" C.M.P.

10" Gas 17'N. & Sr. So. Cal. Gas Co.

P.P. 8" C.M.P.

12" C.M.P.

24" Steel P.

27" Steel P.

12" Steel P.

Proposed Street Widening Line

Seal End with 8" Brickwork Invert El. = 33.40

+24.58 End 8'-42" R.C. PIPE Invert El. = 36.64 Seal End with 8" Brickwork

(900-D)

Seal End with 6" Brickwork. Invert El. = 37.15

End 80'-42" R.C. PIPE (900-D)

24" San Sewer St & L.A. Co. San. Dist. #5

6" Water 34.5' W. & St. So. Cal. Water Co.

Conc. Curb & Gutter

Conc. Cr. & Gutter

Conc. Walk

Conc. Drive

Seal Detail at right Exist. 24" C.M.P.

Exist. 24" C.M.P.

Exist. 2-24" C.M.P.

Exist. 18" C.M.P.

Exist. 2-18" C.M.P.

Exist. 8" C.M.P.

Exist. 6" C.M.P.

C.B. #1 L.D. Detail 'E' W=6' L=7.5' Tan. 318 Dwg. 2-D146

C.B. #2 L.D. #2 W=5' L=7.5' Tan. 318 Dwg. 2-D146

C.B. #2 L.D. #2 W=5' L=7.5' Tan. 318 Dwg. 2-D146

C.B. #3 L.D. #3 W=10' Tan. 318 Dwg. 2-D146

C.B. #3 L.D. #3 W=10' Tan. 318 Dwg. 2-D146

18" C.M.P. W=10' L=8'

18" C.M.P. W=10' L=8'

18" - 15° Pipe

Touch Slab St. "Right"

Touch Slab St. "Left"

T.S. cont. both sides

T.S. cont. both sides of L.D. Detail 'E'

T.S. cont. both sides of L.D. #2

T.S. cont. both sides of L.D. #2

T.S. cont. both sides of L.D. #3

T.S. cont. both sides of L.D. #3

WM. To be relocated by others

P.P.

Test Hole No 5 32+67

M.H. #3 31+50 El. = 39.6

18" Storm Drain & Street 38' So. Cal. Water Co.

18" San. Sewer Dist. No 5 & L.A. Co. San. Dist. No 5 & Street 25' So. Cal. Water Co.

Storm Drain & Street 38' L.A. Co. San. Dist. No 5 & So. Cal. Water Co.

Exist. 24" C.M.P. Exist. 2-24" C.M.P. Exist. 18" C.M.P. Exist. 2-18" C.M.P. Exist. 8" C.M.P. Exist. 6" C.M.P.

NOTES:
T.S.'s & T.S. Conduits interfering with construction of Storm Drain & C.B.'s to be relocated by L.A. Co. Road Dept.
△ Remove and Salvage for F.O.B. L.A. County Road Dept. truck.

Curve Data for Storm Drain South in Van Ness Ave.
Δ = 44° 57' 20"
R = 45'
T = 18.62'
L = 35.31'
B.C. = 1+17.50, E.C. = 1+52.81

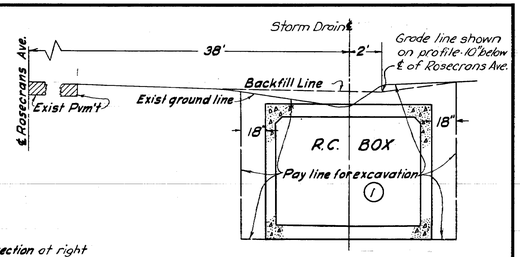
L.D. DETAIL 'E'
No Scale

L.D. DETAIL 'F'
No Scale

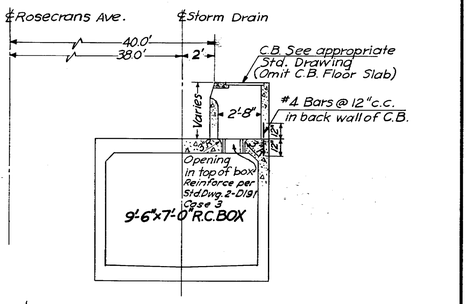
NW 1/4 SEC. 23, T3S, R14W, S.B.B. & M.

NE 1/4 SEC. 23, T3S, R14W, S.B.B. & M.

2" Premix Pvmt over 6" Agg. Base



TYPICAL SECTION FOR BACKFILL
Sta 25+00 to Sta 45+00
Scale 1" = 4'



DETAIL No 2
Scale 1/2" = 1'-0"

PLAN
SCALE: 1" = 40'
40 20 0 40 80 120
SCALE OF FEET

COUNTY STORM DRAIN BOND ISSUE

PREPARED BY
WILLIAM J. FOX
COUNTY ENGINEER

RECOMMENDED BY
C. H. Green
CONSTRUCTION AND STORM DRAIN ENGINEER

DRAWN BY W.H. Fitch DESIGNED BY P.R. Pearl
TRACED BY H. Zaharson SUBMITTED BY A.W. Lynn
CHECKED BY G.W. Tatchell DATE 11-1-55

REVISIONS

MARK	DATE	DESCRIPTION
△	5-9-57	As Built
1	9-14-65	Permit 64522 (181-11-F.14.1/a-8)

DRAWN BY County of L.A. DESIGNED BY County of L.A.
TRACED BY County of L.A. CHECKED BY W.H.F.D. SUBMITTED BY G.W.T.
RECOMMENDED BY W.E. Evans DIVISION ENGINEER (DESIGN)

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

PROJECT NO. 11
ROSECRANS AVE.
CONCRETE CONDUIT
STA. 23+00 TO STA. 34+00
PLAN AND PROFILE

APPROVED BY H. Hedger 4/21/66
CHIEF ENGINEER

SCALE AS SHOWN | DATE OCT. 1955 | NO. 181-11-D1.4 | SHEET 4 OF 14

"PD024238"

DIETZGEN 375P IMPERIAL

PRELIMINARY LOW IMPACT DEVELOPMENT PLAN (LID)

Prepared for:
G3 Urban
Attention: Mitchell Gardner
15235 S Western Ave.
Gardena, CA 90249

Property:
VTTM 82667
2129 Rosecrans Ave.
Gardena, California 90249
APN: 4061-028-049 & -018

Prepared by:
C&V Consulting, Inc.
6 Orchard, Suite 200
Lake Forest, California 92630
(949) 916-3800
Contact: Mr. Ryan Bittner, P.E.

Preparation Date:
November 2019

Receipt of WDID

REPLACE THIS SHEET

To be provided prior to final approval

Notice of Intent

REPLACE THIS SHEET

To be provided prior to final approval

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Owner/Developer
Approval and Certification
of the
Low Impact Development Plan

Project Name: **Gardena 40**

Project Number: **Tract 82667**

Project Address: **2129 Rosecrans Ave.**

This Preliminary Low Impact Development Plan (LID) for the **2129 Rosecrans Ave.** development has been prepared for G3 Urban by C&V Consulting, Inc. It is intended to comply with the requirements of the City of Gardena's Conditions of Approval.

The undersigned is authorized to approve implementation of provisions of this plan as appropriate, and will strive to have the plan carried out by successors consistent with the County of Los Angeles Low Impact Development Plan and the intent of the NPDES storm water requirements.

"I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathered the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Owner/Developer Signature Date

Owner/Developer's Name and Title Telephone Number

Section 200

A. Contact Information/List of Responsible Parties

The responisble party's contact information is:

Contact: TBD
Phone: TBD
Responsible Party TBD

TBD shall have primary responsibility and significant authority for the implementation, maintenance, and inspection of the property Best Management Practices (BMPs). Duties include, but are not limited to:

- Implementing all elements of the Low Impact Development Plan, including but not limited to:
  - Implementation of prompt and effective erosion and sediment control measures
  - Implementing all non-storm water management, and materials and waste management activities, such as: monitoring, discharges, general site clean-up; vehicle and equipment cleaning, spill control; ensuring that nothing other than storm water enters the storm drain system, etc.
- Pre-storm inspections
- Storm event inspections
- Post-storm inspections
- Routine inspections as described in the Low Impact Development Plan
- Ensuring elimination of all unauthorized discharges
- **TBD** shall be assigned authority to mobilize crews in order to make immediate repairs to the control measures.
- Coordinate all of the necessary corrections/repairs are made immediately, and that the project complies with the Low Impact Development Plan at all times.
- Managing and report any Illicit Connections or Illegal Discharges.

Section 300

A. References

The following documents are made a part of this Low Impact Development Plan by reference:

- Project plans and specifications for Tentative Tract No. 82667, prepared by C&V Consulting, Inc.
- State Water Resources Control Board (SWRCB) Order No. 2013-0001-DWQ, February 5, 2013.
- National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activity.
- California Stormwater BMP Handbook – Construction, November 2009.
- California Stormwater BMP Handbook – New Development and Redevelopment, January 2003.
- County of Los Angeles Department of Public Works L.I.D. Standards Manual, February 2014

Section 390 – Body of LID Plan

A. Objectives

This Low Impact Development (LID) Plan has eight main objectives:

- Determination of the peak storm water runoff discharge rate.
- Conserve natural and landscaped areas.
- Minimize storm water pollutants of concern.
- Protect slopes & channels.
- Provide storm drain system stenciling & signage
- Properly design trash storage areas.
- Provide proof of ongoing BMP maintenance.
- Design standards for structural or treatment control BMPs.

B. Vicinity Map

The project is bounded by U-Haul Moving & Storage of Gardena building to the West, Rosecrans Avenue to the South, Saf Keep Storage building to the East, and Real Soda in Real Bottles Ltd. building to the North. Additionally, there is an automotive repair shop along the southwestern corner of the site and a taxi cab depot occupies the northern half of the site. Along the Rosecrans Ave. frontage there is continuous curb, gutter, and sidewalk with one existing driveway approach. An onsite chain link and corregated metal fence, approximately 6 ft. tall, borders the vacant lot that is in the southeastern quarter of the site. The eastern property line is bordered by the existing walls of Saf Keep storage.The northern and western property line are bordered by a similar chain link and corregated metal fence to the vacant lot. Please refer to Figures 1 & 2 for vicinity and Location maps.

C. Project Background and Description

The 5.47 acre site is located on the east side of Van Ness Avenue approximately half way between the northeast corner of Rosecrans Ave. and Van Ness Ave. and the northwest corner of Western Ave. and Rosecrans Ave., in the City of Gardena, California. The site is located at 2129 Rosecrans Ave. The site is rectangular in shape and will be comprised of 2 lots. The property was originally 2 lots with the largest parcel consisting of a vacated taxicab depot and the smaller parcel consisting of vacant land. The lot consisting of the vacated taxicab depot currently has minimal landscape area with a site cover of mostly concrete pavement with 2 vacated commercial buildings.

The proposed project consists of 50 residential townhome units, 41 single family dwellings, 14 live-work townhomes, and a retail building over the approximately 5.47 acre site. Associated improvements such as curb & gutter, drive aisles, and parking areas are included. There are no additional improvements or activities related to the site other than parking and living space areas. The existing pavement/parking areas and other miscellaneous leftover improvements within the property will be demolished while conflicting utilities will be relocated. Four Modular Wetland Systems will be proposed to treat and mitigate storm water flows.

The pre-developed condition has 30% (1.64 acres) pervious area and 70% (3.83 acres) impervious area. The proposed development condition has 14% (0.79 acres) pervious area and 86% (4.68 acres) impervious area.

Various site design principles and source control BMPs have been implemented into the project in addition to those listed in Section G, Tables 1 and 2. These additional principles/BMPs include: The consideration and use of a biofiltration chamber for treatment and flow control in planning for space requirements; Design of site to overflow to adjacent offsite street and into offsite catch basin in consideration of flood control for large storm events; Conservation of native soil and planting if feasible. New vegetation shall be native or drought tolerant; Surface flow patterns in the proposed condition were maintained as closely as possible to the existing condition; imperverious area minimized as 70% of the existing site is impervious. The proposed condition increases pervious area by adding planted landscaping to areas such as open space and adjacent to parking/sidewalk; Roads and sidewalks were kept to the allowable minimum per City of Gardena standards; Additional tree native and/or drought tolerant tree planting in comparison to the existing condition which had close to no onsite trees; and the Implementation of Integrated Best Management practices.

D. Existing Site Drainage Condition

In its current condition the site generally slopes from East to West and North to South towards Rosecrans Ave. The site ranges in elevations from 48 to 53 feet above sea level, based on the aerial flown on 1/21/2019. The site is generally split into two different drainage areas. The southeastern quarter of the site is a vacant dirt lot. The existing drainage pattern of this portion of the site is sheet flow over the vacant land. It is assumed that flows which are not incidentally infiltrated will continue to sheet flow onto Rosecrans Ave. In the northern portion that contains the existing taxicab depot, the existing drainage system appears to convey stormwater to the South via V-gutters. These V-gutters appear to drain to a grate drop inlet which drains into the street gutter through 3 curb cores at the southern end of the site near Rosecrans Ave. Flows from the site onto Rosecrans Ave. then proceed west into a County of Los Angeles owned and maintained catch basin located approximately 250 feet west of the project site along Rosecrans Ave. From this catch basin, the runoff then enters a Los Angeles County Flood Control District owned 9'-6" x 7'-0" RCP storm system which continues west in the County of Los Angeles owned storm drain system along Rosecrans Ave. This storm drain system ultimately outlets onto the Dominguez Channel a Los Angeles County Flood Control Facility. The Dominguez Channel then proceeds in a south westerly direction and eventually outlets into the Dominguez Channel Estuary and the Pacific Ocean.

E. LID Project Types, Characteristics, & Activities

This proposed development of 105 dwelling units and retail lot is subject to the Los Angeles Regional Water Quality Control Board NPDES Permit requirement for the LID under the "Designated Projects - Redevelopment category which is defined in the County of Los Angeles LID Manual as "projects that result in creation or addition or replacement of either more than 5,000 ft^2 or more of impervious surface on a site that was previously developed."

F. Pollutant Source Identification and BMP Selection

The following is a list of materials to be used in the daily activities at the project site, which will potentially contribute to pollutants, other than sediment, to storm water runoff. Source Control Practices for each activity are identified below:

Pollutants generated per Table 2-1 of the California Stormwater BMP Handbook for New Development and Redevelopment:

From the Attached Residential Development Priority Project category, the project has potential pollutants of Pathogens, Oxygen Demanding Substances, Oil and Grease. Anticipated pollutants are Nutrients, Pesticides, Sediments, Trash and Debris.

From the Detached Residential Development Priority Project category, anticipated pollutants are pollutants of Pathogens, Nutrients, Pesticides, Sediments, Trash and Debris, Oxygen Demanding Substances, Oil and Grease.

From the Parking Lots Priority Project category, the project has potential pollutants of Nutrients, Pesticides, Sediments, and Oxygen Demanding Substances. Anticipated pollutants are Heavy Metals, Trash and Debris, and Oil and Grease

The Best Management Practices (BMPs) that have been selected for implementation on this project are detailed in the following sections.

G. Structural BMPs

The County of Los Angeles LID Standards Manual lists preference for selection of BMPs which includes retention-based stormwater quality control measures, biofiltration, vegetation-based storm quality control measures, and/or treatment-based stormwater quality control measures. This project has selected vegetation-based storm quality control measures through the use of a Modular Wetland System (biofiltration chamber) at four locations as the primary BMP.

As infiltration is the primary mechanism for reducing stormwater runoff for all retention-based stormwater quality control measures (with the exception of harvest and reuse control measures), these control measures were not utilized. This is due to infiltration being cost prohibitive and the poor percolation in our site's soils. However, roof gutters will discharge to landscape areas using splash blocks when possible creating a passive bio treatment in small planter areas prior to interception by an area drain system, catch basin, and storm drain system. All runoff from the site is tributary to the proposed onsite Modular Wetland Systems (MWS). Additionally, harvest and reuse measures are also considered as infeasible for this type of development due to the size of the buildings and the number of downspouts for each building. The cost of providing cisterns and pumps throughout the site would be cost prohibitive and is only effective during the rainy season.

The implementation of the MWS units is considered as a vegetation-based storm quality measure and uses the same principles as biofiltration. MWS units were selected for their reduced

footprint than that of a normal biofiltration system. Biofiltration is preferred over treatment-based proprietary stormwater quality control measures.

Structural BMPs shall be installed by G3 Urban, the developer, through the construction and development of the project; planting and irrigation systems shall be designed by licensed landscape architects and installed by qualified contractors to specifications and standards of the City of Gardena. The structural BMPs used for this project are summarized below.

Project proponents shall implement site design concepts that achieve each of the following:

- Minimize Storm Water Pollutants of Concern
- Peak Storm Water Runoff Discharge Rate

The following tables identify the source control and treatment BMPs and how each is implemented to achieve each site design concept.

Table-1: Site Design BMPs

BMP	TECHNIQUE	INCLUDED?		BRIEF DESCRIPTION OF METHOD
		YES	NO	
SD-10	Site Design & Landscape Planning	X		
SD-11	Roof Runoff Controls	X		
SD-12	Efficient Irrigation	X		
SD-13	Storm Drain Signage	X		
SD-20	Pervious Pavements		X	Site design does not allow for this BMP.
SD-21	Alternative Building Materials		X	Not Applicable
SD-30	Fueling Areas		X	Not Applicable
SD-31	Maintenance Bays & Docks		X	Not Applicable
SD-32	Trash Storage Areas	X		
SD-33	Vehicle Washing Areas		X	Not Applicable
SD-34	Outdoor Material Storage Areas		X	Not Applicable
SD-35	Outdoor Work Areas		X	Not Applicable
SD-36	Outdoor Processing Areas		X	Not Applicable

Roof Runoff Controls
All roof runoff will be collected and directed to splash blocks then onto grass or vegetated swales before discharging to the street or storm drain system. Area drains within the onsite landscaping between buildings within DMAs 1-4 will flow to onsite bio filtration systems where flows will be treated.

Efficient Irrigation
As part of the design of all common area landscape irrigation shall employ water conservation principals, including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc., will be used. Such common areas will be maintained by TBD.

Storm Drain Signage
Storm Drain Signage will be provided on all proposed on-site catch basins to prevent residence from discarding pollutants to the storm drain system and potentially obstructing the proposed BMP treatment facility. The placard or stencil will indicate the ultimate destination of the runoff entering the device. This stencil shall be weatherproof and visible at all times. TBD will be responsible for maintaining the signage after the construction is completed. See Appendix D for an example.

Trash Storage Area
Proposed trash enclosures will be designed in accordance with all standards set by local building and fire codes, current County ordances and zoning requirements, as well as the design specifications outlined in the Los Angeles County LID Manual.

Table-2: Source Control BMPs

BMP	TECHNIQUE	INCLUDED?		BRIEF DESCRIPTION OF METHOD
		YES	NO	
S-1	Storm Drain Message and Signage	X		
S-2	Outdoor Material Storage Area		X	Not Applicable
S-3	Outdoor Trash Storage and Waste Handling Area	X		
S-4	Outdoor Loading/Unloading Dock Area		X	No Loading Dock Areas
S-5	Outdoor Vehicle/Equipments Repair/Maintenance Area		X	No Maintenance Bays
S-6	Outdoor Vehicle/Equipments/Accessory Washing Area		X	No Wash Areas
S-7	Fuel and Maintenance Area		X	No Fueling Areas
S-8	Landscape Irrigation Practices	X		
S-9	Building Materials Selection	X		

BMP	TECHNIQUE	INCLUDED?		BRIEF DESCRIPTION OF METHOD
		YES	NO	
S-10	Animal Care and Handling Facilities		X	No Animal Care Facility
S-11	Outdoor Horticulture Areas		X	Not Applicable

Storm Drain Message and Signage
Storm Drain Signage will be provided on all proposed on-site catch basins to prevent residence from discarding pollutants to the storm drain system and potentially obstructing the proposed BMP treatment facility. The placard or stencil will indicate the ultimate destination of the runoff entering the device. This stencil shall be weatherproof and visible at all times. TBD will be responsible for maintaining the signage after the construction is completed. See Appendix B for an example.

Outdoor Trash Storage and Waste Handling Area
Proposed trash enclosures will be designed in accordance with all standards set by local building and fire codes, current County ordances and zoning requirements, as well as the design specifications outlined in the Los Angeles County LID Manual. Proposed trash enclosures shall be covered to prevent rain water from entering.

Landscape Irrigation Processes
Management programs will be designed and established by TBD, who will maintain the common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage (refer to the Maintenance and Frequency Table). Ongoing maintenance will be consistent with the State of California Model- Water Efficient Landscape Ordinance. Fertilizer and pesticide usage shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

Building Materials Selection
Material selection will minimize the use of copper, galvanized metals and other materials that could add significant amounts of harmful pollutants to stormwater runoff.

Table-3: Stormwater Quality Control BMPs

BMP	NAME	INCLUDED?		IF NOT APPLICABLE, STATE BRIEF REASON
		YES	NO	
RET-1	Bioretention		X	Used alternative method – Modular Wetland System
RET-2	Infiltration Basin		X	Infiltration has been determined unfeasible – refer to Appendix H for site percolation testing results.

BMP	NAME	INCLUDED? YES	INCLUDED? NO	IF NOT APPLICABLE, STATE BRIEF REASON
RET-3	Infiltration Trench		X	Infiltration has been determined unfeasible – refer to Appendix H for site percolation testing results.
RET-4	Drywell		X	Infiltration has been determined unfeasible – refer to Appendix H for site percolation testing results.
RET-5	Permeable Pavement without an Underdrain		X	Space not avaible for BMP, infiltration has been determined unfeasible – refer to Appendix H for site percolation testing results.
RET-6	Rain Barrel/Cistern		X	Used alternative method -Modular Wetland System
BIO-1	Biofiltration	X		The Modular Wetland System employes biofiltration
VEG-1	Green Roof		X	Space not availbe for BMP
VEG-2	Stormwater Planter		X	Used alternative method -Modular Wetland System
VEG-3	Tree-Well Filter		X	Used alternative method -Modular Wetland System
VEG-4	Vegetated Swales		X	Space not avaible for BMP, infiltration has been determined unfeasible – refer to Appendix H for site percolation testing results.
VEG-5	Vegetaded Filter Strip		X	Space not avaible for BMP
T-1	Sand Filter		X	Space not avaible for BMP
T-2	Constructed Wetland		X	This is not a wetland area/ development
T-3	Extended Detention Basin		X	Space not avaible for BMP
T-4	Wet Pond		X	This is not a wetland area/ development
T-5	Permeable Pavement with an Underdrain		X	Space not avaible for BMP, infiltration has been determined unfeasible – refer to Appendix H for site percolation testing results.

BIO-1 Modular Wetland System (MWS)

Storm water will enter the MWS unit via a curb opening inlet and flow directly onto specially designed biofiltration media within the MWS container. The biofiltration media captures pollutants and treated flow is conveyed out of the unit via an underdrain pipe at the bottom of the unit. The media, storm water runoff and pollutants help to sustain vegatation lives within the unit. MWS units are accompanied by a high-flow bypass inlet for flows greater than the 85th percentile storm event.

H. Non-Structural BMPs

Non-structural BMPs are generally managerial, educational, inspection and/ or maintenance oriented. These items consist of educating employees and occupants, developing and implementing **Error! Reference source not found.** guidelines, implementing BMPs and enforcing Code requirements. Non-structural BMPs used for this project are summarized below:

Education for Employees and Occupants

Practical informational materials will be provided to occupants, TBD and employees on general good housekeeping practices that contribute to protection of storm water quality. Among other things, these materials will describe the use of chemicals (including household type) that should be limited to the property, with no discharge of specified wastes via hosing or other direct discharge to gutters, catch basins and storm drains.

This program must be maintained, enforced, and updated periodically by TBD. Educational materials including, but not limited to, the materials included in the Appendix F of this plan will be made available to the employees and contractors of TBD.

Activity Restrictions

Activities on this site will be limited to activities related to residential living. The Conditions, Covenants, and Restrictions (CC&Rs) will outline the activities that are restricted on the property. Such activities related to the LID include car washing, car maintenance and disposal of used motor fluids, pet waste cleanup, and trash container areas.

Common Area Landscape Management

Management programs will be designed and established by TBD, who will maintain the common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage, require that fertilizer and pesticide usage shall be consistent with City and County guidelines, discuss utilization of water-efficient landscaping practices, require that maintenance be consistent with any Los Angeles county water conservation resolutions or City of Gardena equivalent, and detail the proper disposal of landscape wastes. Ongoing maintenance will be consistent with the State of California Model Water-Efficient Landscape Ordinance. Fertilizer and pesticide usage shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

Common Area Litter Control

TBD will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. TBD may also contract with their landscape maintenance firm to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations and reporting the violations to TBD for remediation.

Street Sweeping in Private Streets and Parking Lots

TBD shall have all streets and parking lots swept on a weekly basis. This procedure will be intensified around October 15th of each year prior to and throughout rain storm period.

Drainage Facility Inspection & Maintenance
TBD will be responsible for implementing each of the BMPs detailed in this plan. TBD will also be responsible for cleaning and maintaining the BMPs on a regular basis. Refer to Appendix G for the Operation and Maintenance Plan. Refer to Appendix B for site specific drainage BMP information.

Title 22 CC&R Compliance
TBD will comply with this Regulation as part of the development's CC&Rs. CC&Rs will be prepared as a separate document and reviewed by the City's Attorney.

2017 Los Angeles County Fire Code Implementation
TBD will comply with this Code as part of the development's CC&Rs. CC&Rs will be prepared as a separate document and reviewed by the City's Attorney

Employee Training/Education Program
A training program will be established as it would apply to future employees, contractors, and homeowners of TBD to inform and train in maintenance activities regarding the impact of dumping oil, paints, solvents, or other potentially harmful chemicals into storm drains; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal.

TBD (or a hired firm) will conduct the training program which will include targeted training sessions with specific construction disciplines (landscaping, concrete finishers, painters, etc.). See Appendix F for examples of educational materials that will be provided to the Employees.

The project's O&M will include provisions for future employee training programs conducted on a yearly based prior to the rainy season.

l. BMP Maintenance, Inspection, and Repair

Inspections will be conducted as follows:

- Annually prior to the start of the rainy season (Oct. 1st- May 31st)
- Every (1) month during rainy season
- At any other time(s) or intervals of time specified in the contract documents

An inspection form shall be completed at least once per year prior to the start of the rainy season. This inspection check sheet (see Appendix G) shall be included in this report and kept onsite at all times. The check sheet should be filled out completely and clearly indicate any BMPs that are in need of repair or maintenance. These repairs and/ or maintenance procedures shall be carried out at the soonest possible time.

A legible log shall be kept on site to record the inspection of the storm water pollution abatement control measures. The record must contain the following information: (i) type of maintenance activities or source-control practices; (ii) date the activities are completed; and (iii) the name of

the operator performing the activities. During transfer of ownership/operation of the facility, the current owner must notify the new owner/operator of the BMPs and the associated maintenance activities that also transfer to the new owner/operator of the property. See Appendix G.

J. Inspection, Maintenance, and Responsibility for BMPs

The following tables list the post-construction BMPs (routine non-structural and structural), the required ongoing maintenance, the inspection and maintenance frequency, the inspection criteria, and the entity or party responsible for implementation, maintenance, and/or inspection.

Table-4: Non-Structural BMP Maintenance Responsibility/Frequency Matrix

BMP	RESPONSIBILITY	FREQUENCY
Homeowner/ Business owner Education, Activity Restrictions	TBD will provide educational materials. Those materials and responsibilities must be passed onto subsequent property owners.	Continuous. CC&Rs to be provided to homeowners at the time they purchase the property and updates provided by TBD as they occur.
Common Area Landscape Management	TBD will appoint a landscape maintenance contractor	Monthly during regular maintenance and use with management guidelines for use of fertilizers and pesticides.
Parking Areas and Drives Management	TBD will appoint a landscape maintenance contractor	The Drives Aisles are to be swept on a routine scheduled basis to facilitate the pickup of trash and debris (plant or otherwise) and to remove excessive oil, grease and build-up. During sweeping, debris is to be removed from the parking areas and drives and then scrubbed and rinsed. This sweeping schedule will be at a minimum occurrence of once a week and as necessary to rid / reduce active pollutants from the pavement areas. This maintenance requirement will be listed in the Convent, Conditions and Restrictions (CC&Rs) of this project. These CC&Rs will be recorded to the property at the County Recorder's Office and be included on the final Title report of these properties.
Litter Control by Sweeping	TBD will appoint a landscape maintenance contractor.	Weekly inspection of trash receptacles to ensure that lids are closed and pick up any excess trash on the ground, noting trash disposal violations to TBD for remediation.

BMP	RESPONSIBILITY	FREQUENCY
Employee Training	TBD will appoint a landscape contractor after construction.	Monthly for maintenance personnel and employees to include the educational materials contained in the approved LID.
Common Area Catch Basin Inspection & Cleaning	TBD will appoint a landscape maintenance contractor for common areas and storm drain facilities.	Inspect basins once a month. Clean debris and silt in bottom of catch basins as needed. Intensified on or about October 15th each year or prior to the first 24-hour storm event, whichever occurs first. Refer to Appendix E.

Table-5: Structural BMP Maintenance Responsibility/Frequency Matrix

BMP	RESPONSIBILITY	FREQUENCY
Common Area Efficient Irrigation	TBD will appoint a landscape contractor after construction	Once a week, in conjunction with maintenance activities. Verify that runoff minimizing landscape design continues to function by checking that water sensors are functioning properly, that irrigation heads are adjusted properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather and day or night time temperatures.
Common Area Runoff Efficient Landscape Design	TBD will appoint a landscaping contractor	Once a week in conjunction with maintenance activities and prior to finalizing any replanting schemes. Verify that plants continue to be grouped according to similar water requirements in order to reduce excess irrigation runoff.
Oldcastle Flogard Catch Basin Insert Filters	TBD	Inspection three times per year, at minimum or per manufacturer's specifications. Replacement of filter once per year, prior to start of rainy season (October 1st). Repair and/ or replacement of components as needed. Clean and remove all debris within basins at least once per month.

BMP	RESPONSIBILITY	FREQUENCY
ADS StormTech MC-3500 Chambers	TBD	Inspect the level of sediment within chambers and replace filters, covers, grates, and lids as indicated per manufacturer's specifications. Record inspection observations of inspection ports, isolator rows, and manholes upstream of ADS StormTech System. Inspections to occur every 6 months during first year of operation and adjust inspection frequency based on first year observations. Cleanings and replacements to occur when inspections show build-up within chambers. Refer to manufacturer's specifications for specific system maintenance flushing procedures.

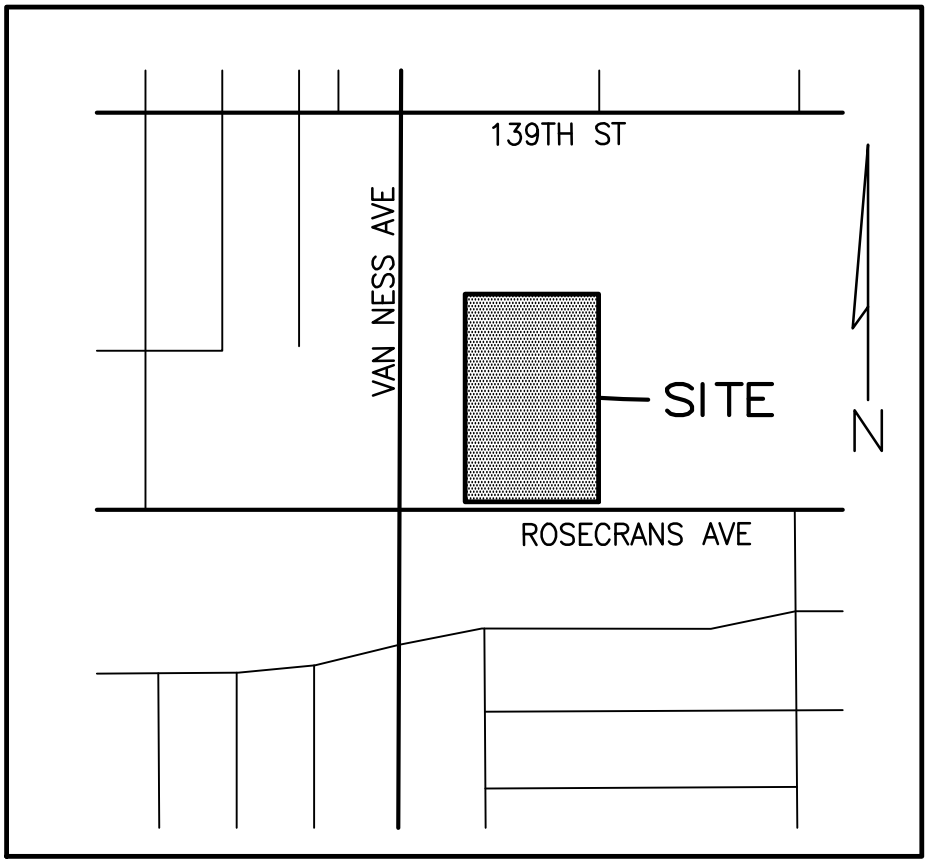
K. Operation/Maintenance Funding after Project Completion

The post-construction BMPs as described above will be funded and maintained by:

TBD

Maintenance and requirements of the maintenance for the properties will be listed in the Convent, Conditions and Restrictions (CC&Rs) of this project and will be the responsibility of the property owner at all times. These CC&Rs will be recorded to the property at the County Recorder's Office and be included on the Title report of these properties.

Figure -1:
Project Vicinity Map



VICINITY MAP

NOT TO SCALE

Figure -2:
Project Location Map

GTHR-004
2129 Rosecrans Ave
Gardena, CA 90249
Tentative Tact No. 82667

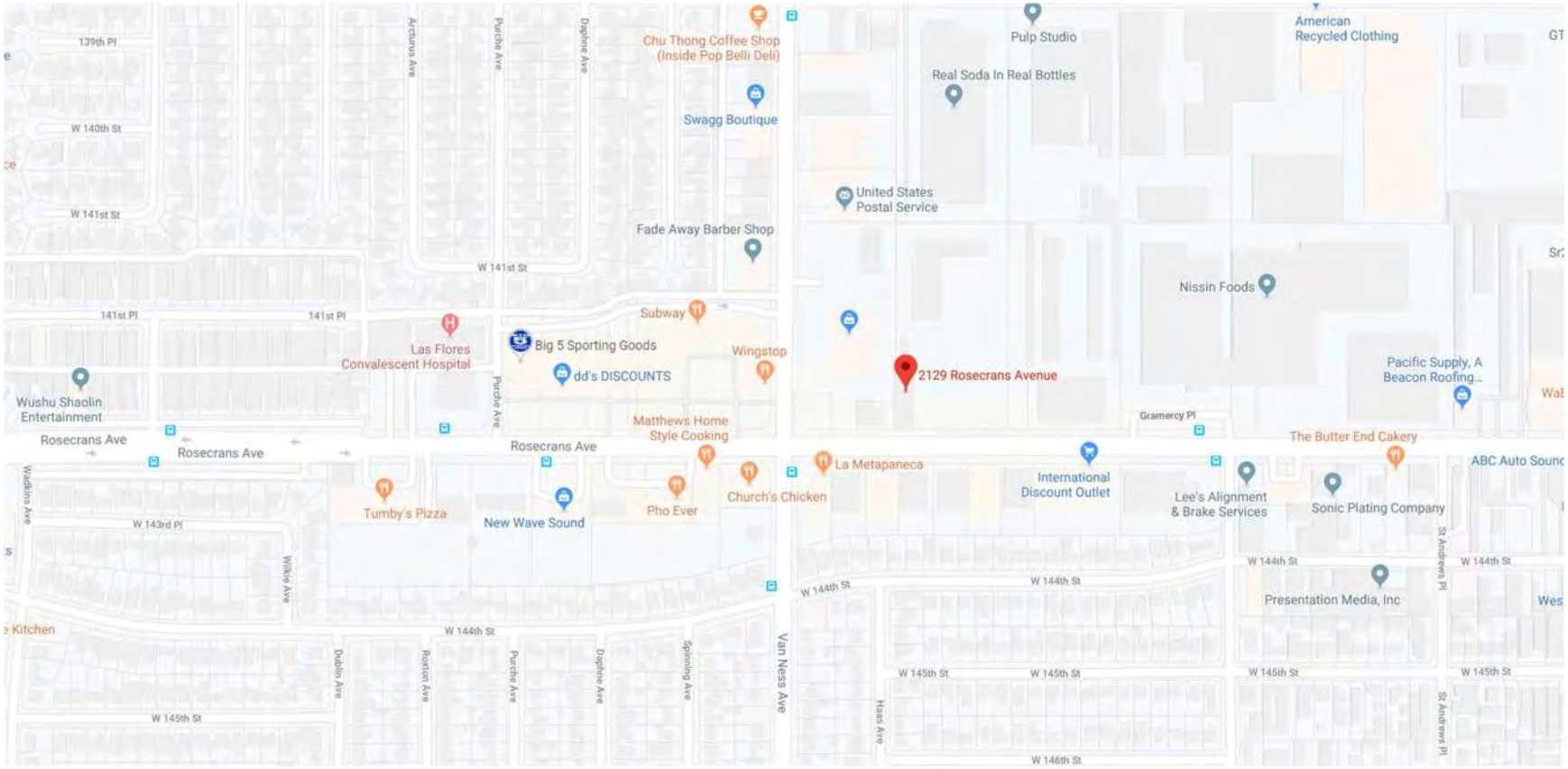
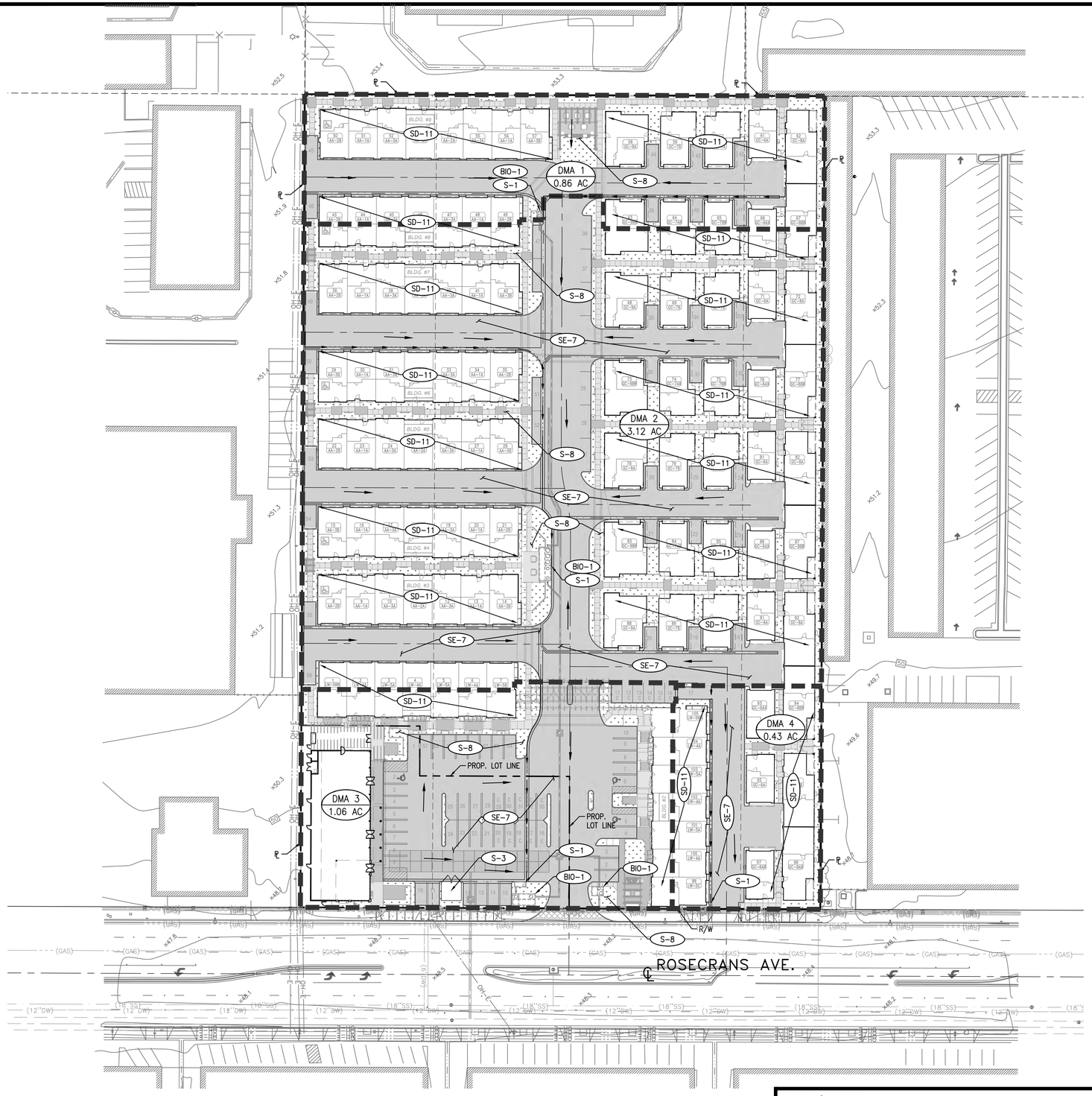
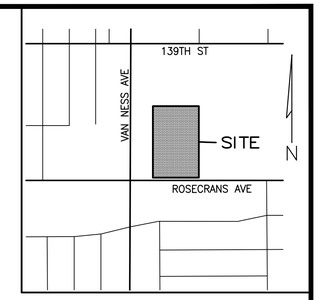


Figure -3:
BMP Exhibit





VICINITY MAP
N.T.S.

BEST MANGEMENT PRACTICES (BMPS):

- SD-11 — ROOF RUNOFF CONTROLS
- S-1 — STORM DRAIN SIGNAGE
- S-3 — OUTDOOR TRASH STORAGE & WASTE HANDLING AREA
- S-8 — LANDSCAPE IRRIGATION PRACTICES
- BIO-1 — BIOFILTRATION
- SE-7 — STREET SWEEPING AND VACUUMING AREA

LEGEND:

- AREA X1 — SUB-AREA NUMBER
- X.XX Ac — ACREAGE
- SUB-AREA BOUNDARY
- FLOW PATH
- XXX.X — ELEVATION AT NODE
- SURFACE FLOW DIRECTION
- Q=X.XX CFS — STORM EVENT PEAK FLOW RATE
- SIDEWALK
- STREET
- PERVIOUS LANDSCAPE

SCALE: 1" = 40'

0 20 40 80

OWNER/DEVELOPER

G3 URBAN
15235 S WESTERN AVE.
GARDENA, CA 90249

PREPARED BY :

C&V CONSULTING, INC.
CIVIL ENGINEERING
LAND PLANNING & SURVEYING
4 ORCHARD, SUITE 200
LAKE FOREST, CALIFORNIA 92630
T. 949.916.3800
F. 949.916.3805
CVC-INC.NET

REGISTERED PROFESSIONAL ENGINEER
RYAN J. BITTNER
No. 68167
CIVIL
STATE OF CALIFORNIA

BMP EXHIBIT
VTTM NO. 82667

2129 ROSECRANS AVENUE
GARDENA, CA 90249

SHEET 1 OF 1

SCALE: AS SHOWN | DRAWN BY: EP | CHECKED BY: MM

CITY OF GARDENA

PLAN SET: PSD2
DATE: 11/13/19

P:\JOBS\18-024 VARIOUS\DWG\VTM\P-BMP.DWG
BY: DAC PEREZ 11/13/19 2:14 PM

Figure -4:
Impaired Waters

COUNTY OF LOS ANGELES

DOMINGUEZ CHANNEL & LA HARBOR WATERSHEDS

Dominguez Channel and L. A. Harbor Watersheds

PACIFIC OCEAN

BALLONA CREEK

SEPULVEDA

LAGUNA DOMINGUEZ F.C.S

ANDERSON WASH

COMPTON CREEK

EAST BRANCH

RIO HONDO

DOMINGUEZ CHANNEL

WILMINGTON DRAIN

MANCHESTER BV

INGLEWOOD

IMPERIAL

EL SEGUNDO

DOMINGUEZ

HAWTHORNE

COMPTON

FIRESTONE BV

BELL

CUDAHY

SOUTH GATE

RIVER

LYNWOOD

ATLANTIC

PARAMOUNT

ROSECRANS

MANHATTAN BEACH

LAWNDALE

GARDENA

HERMOSA BEACH

REDONDO BEACH

TORRANCE

CARSON

ARTESIA

PACIFIC COAST

PALOS VERDES ESTATES

ROLLING HILLS ESTATES

ROLLING HILLS

RANCHO PALOS VERDES

LOMITA

WESTERN

HARBOR LAKE

CARSON

LONG BEACH

LOS ANGELES

ALAMEDA

WILMINGTON

OCEAN

SIGNAL HILL

7TH ST

PACIFIC AV

ALAMITOS AV

ATLANTIC AV

ARTESIA BV

MAIN ST

GAFFEY ST

25TH ST

WILLOW ST

B ST

ST

BV

AV

91

105

110

710

MARINA DEL REY

PLAYA DEL REY

WESTCHESTER

MORNINGSIDE PARK

LENNOX

WATTS

WALNUT PARK

WILLOWBROOK

ATHENS

HOLLYDALE

EL PORTO

ROSEWOOD

EL CAMINO VILLAGE

MONETA

NORTH LONG BEACH

RANCHO DOMINGUEZ

BIXBY KNOLLS

HARBOR GATEWAY

HOLLYWOOD RIVIERA

WALTERIA

HARBOR CITY

WILMINGTON

SAN PEDRO

TERMINAL ISLAND

MIRALESTE

PORTUGUESE BEND

LEGEND

- DOMINGUEZ CHANNEL & L A HARBOR WATERSHED
- UNINCORPORATED AREA
- DAM / LAKE / RESERVOIR
- MAJOR RIVER
- MAJOR CHANNEL

N

MILES

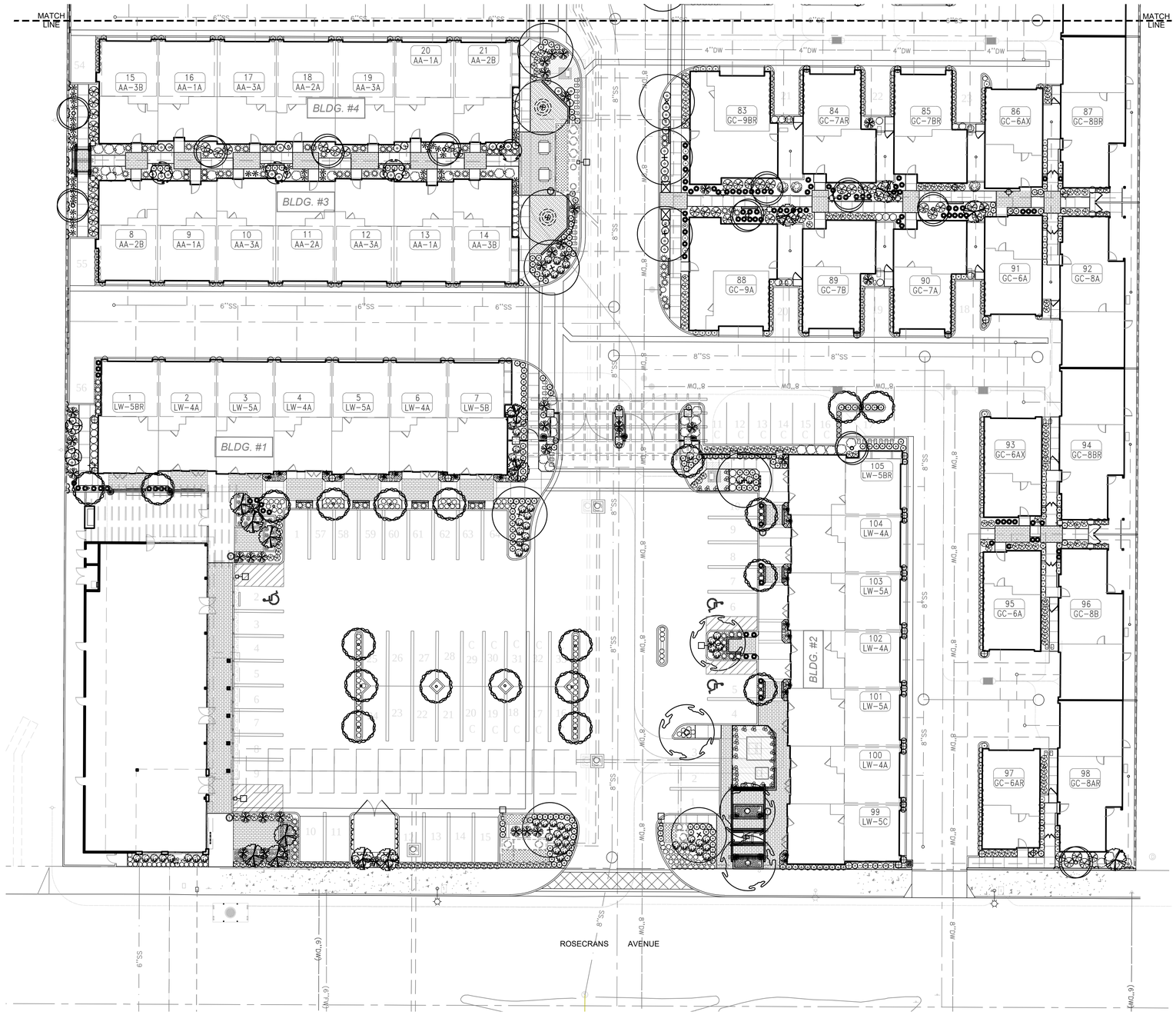
0 0.375 0.75 1.5

Data contained in this map is produced in whole or part from the Los Angeles County Department of Public Works' digital database.

REF: \\pwgisd02\mpmgis$\MPMGIS\projects\mpm\gismaps\wk_2627\DomingChanl&LAHarbor_wtrsheds.mxd DATE: 08/22/07

Mapping & Property Management Division, Mapping & GIS Services Section

Figure -5:
Site Planting Plan by STB Landscape Architects, Inc.



TREE AND GROUNDCOVERS PLANTING LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUAN.	SPACING	WUCOLS#	NOTES
	TREES						
	CALLISTEMON V. 'SLIM'	SLIM BOTTLEBRUSH	24" BOX	33	PER PLAN	0.4	LOW BRANCHED PROVIDE NURSERY TGAS
	CHIONANTHUS RETUSUS	CHINESE FRINGE TREE	24" BOX	13	PER PLAN	0.3	TREE FORM
	HYMENOSPORUM FLAVUM	SWEETSHADE	24" BOX	20	PER PLAN	0.4	LOW BRANCHED
	JACARANDA MIMOSIFOLIA	JACARANDA	48" BOX	12	PER PLAN	0.3	NATURAL MULTI-STEM
	MAGNOLIA G. 'LITTLE GEM'	LITTLE GEM MAGNOLIA	24" BOX	20	PER PLAN	0.4	LOW BRANCHED
	MAYTENUS B. 'GREEN SHOWERS'	GREEN SHOWERS MAYTEN	24" BOX	40	PER PLAN	0.4	LOW BRANCHED
	PITTOSPORUM TENUIFOLIUM	KOHUHU	24" BOX	18	PER PLAN	0.3	TREE-FORM
	PODOCARPUS GRACILIOR	FERN PINE	36" BOX	6	PER PLAN	0.3	TREE-FORM
	GROUND COVERS						
	DIAMOND PRO SYNTHETIC TURF	LAWN		430 S.F.			AVAILABLE FROM SGW (877) 643-8006 -WITH LARGE GREEN INFILL AT A RATE OF 1.5 LBS./SQUARE FOOT
	CAREX DIVULSA	SEDGE GRASS-(WQMP AREAS)	1 GAL	106± 240 S.F.			PLANT AT 18" O.C
	MULCHES						
NOT SHOWN	WOOD MULCH PRODUCT	REDWOOD GORILLA HAIR IN ALL SHRUB BEDS		27,448 S.F.			INSTALL 3" DEEP

SHRUBS AND VINES PLANTING LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QUAN.	WUCOLS#	NOTES
	SHRUBS						
	ALOE STRIATA 'HYBRID'	GHOST ALOE	5 GAL	2'	230	0.2	PROVIDE NURSERY TAGS
	BOUGAINVILLEA 'RASPBERRY ICE'	DWARF VARIEGATED BOUGAINVILLEA	15 GAL	3'	94	0.2	PROVIDE NURSERY TAGS
	CALLISTEMON V. 'BETTER JOHN'	BETTER JOHN DWARF BOTTLEBRUSH	15 GAL	3.5'	114	0.3	PROVIDE NURSERY TAGS
	COPROSMA H. 'TEQUILA SUNRISE'	TEQUILA SUNRISE MIRROR PLANT	15 GAL	3.5'	128	0.3	PROVIDE NURSERY TAGS
	CRASSULA A. 'UNDULATIFOLIA'	RIPPLE JADE	15 GAL	3'	134	0.2	PROVIDE NURSERY TAGS
	DIANELLA T. 'VARIEGATA'	VARIEGATED DIANELLA	5 GAL	2.25'	277	0.3	PROVIDE NURSERY TAGS
	HELICTOTRICHON SEMPERVIRENS	BLUE OAT GRASS	5 GAL	2'	305	0.2	PROVIDE NURSERY TAGS
	JUNIPERUS S. 'SKYROCKET'	SKYROCKET JUNIPER	15 GAL	PER PLAN	34	0.2	PROVIDE NURSERY TAGS
	LOMANDRA LONGIFOLIA 'BREEZE'	BREEZE DWARF MAT RUSH	5 GAL	2.5'	360	0.3	PROVIDE NURSERY TAGS
	LEUCOPHYLLUM L. 'RIO BRAVO'	RIO BRAVO TEXAS RANGER	15 GAL	4'	11	0.2	PROVIDE NURSERY TAGS
	MAHONIA A. 'SOFT CARESS'	SOFT CARESS OREGON GRAPE	15 GAL	2.5'	335	0.3	PROVIDE NURSERY TAGS
	NANDINA D. 'OBSESSION'	OBSESSION DWARF HEAVENLY BAMBOO	15 GAL	3'	238	0.4	PROVIDE NURSERY TAGS
	PELARGONIUM PELTATUM	IVY GERANIUM	1 GAL	18"	83	0.4	MIXED COLORS
	PODOCARPUS M. 'MAKI'	SHRUBBY YEW PINE	15 GAL	PER PLAN	93	0.4	COLUMNAR FORM
	ROSMARINUS O. 'TUSCAN BLUE'	TUSCAN BLUE ROSEMARY	15 GAL	PER PLAN	626	0.2	PROVIDE NURSERY TAGS
	SANSEVIERIA TRIFASCIATA	SNAKE PLANT	15 GAL	PER PLAN	19	0.2	PROVIDE NURSERY TAGS
	SEDUM S. 'TRICOLOR'	TRICOLOR SEDUM	1 GAL	1.5'	63	0.2	PROVIDE NURSERY TAGS
	STRELITZIA REGINAE	BIRD OF PARADISE	15 GAL	PER PLAN	48	0.3	INSTALL IN PLANTER POTS
	VINES						
	BOUGAINVILLEA 'SAN DIEGO RED'	RED BOUGAINVILLEA	15 GAL	PER PLAN	13	0.2	TRAIN ON OVERHEAD TRELLIS
	CLYTOSTOMA CALLISTEGIOIDES	VIOLET TRUMPET VINE-ON TRELLIS	15 GAL	PER PLAN	34	0.2	REMOVE NURSERY TRELLIS AND TRAIN ON GREEN SCREEN FENCE
	MACFADYNEA UNGIS-CATI	CAT'S CLAW	15 GAL	PER PLAN	77	0.2	TRAIN ON ADJACENT WALL

PLANTING INSPECTION NOTE TO CONTRACTOR:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE CITY, COUNTY OR OTHER PRESIDING AUTHORITY, THE LANDSCAPE ARCHITECT AND THE OWNER, AS NECESSARY, TO FACILITATE ALL PLANTING INSPECTIONS REQUIRED THAT RELATE TO OBTAINING CERTIFICATIONS OF COMPLETION.

EXISTING UTILITIES NOTE:

CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE PROJECT AREA ABOVE AND BELOW THE GROUND WHETHER SHOWN OR NOT SHOWN ON THESE PLANS. ANY DAMAGE TO THE EXISTING UTILITIES SHALL BE REPAIRED OR REPLACED WITH NEW AND LIKE MATERIAL TO THE OWNER'S STANDARDS AND SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER OR THE CITY.

North

20 0 20 40 60

Scale 1" = 20'

REFER TO SHEET LP-2 FOR PLANTING NOTES
REFER TO SHEET LPD-1 FOR PLANTING DETAILS
REFER TO SHEET LPS-1 FOR PLANTING SPECIFICATIONS
REFER TO SHEET LWC-1 FOR WATER USE CALCULATIONS

UNDERGROUND SERVICE ALERT
CALL: TOLL FREE
811
TWO WORKING DAYS BEFORE YOU DIG

REGISTERED LANDSCAPE ARCHITECT
SHAWN T. BURCH
date 10/20
signature 11/15/19
date 2725
STATE OF CALIFORNIA

LOW VOLTAGE LIGHTING
STB LANDSCAPE ARCHITECTS, INC.
LANDSCAPE ARCHITECTURE IRRIGATION CONSULTANTS WATER FEATURE DESIGNS
15 SOUTH 5TH STREET
REDLANDS, CALIFORNIA 92373
PH (909) 798-1001 FAX (909) 798-1620
CA LIC. NO. 2725 NV LIC. NO. 456

urban

PLANTING PLAN

ROSECRANS PLACE
ROSECRANS & VAN NESS
GARDENA, CALIFORNIA

REVISIONS

DRAWN BY: CAD
DESIGNED BY: S.T.B.
CHECKED BY: C.R.
DATE: 11/15/19
JOB NO.: 19-10
SCALE: 1"=20'
SHEET: LP-1
OF xx SHEETS

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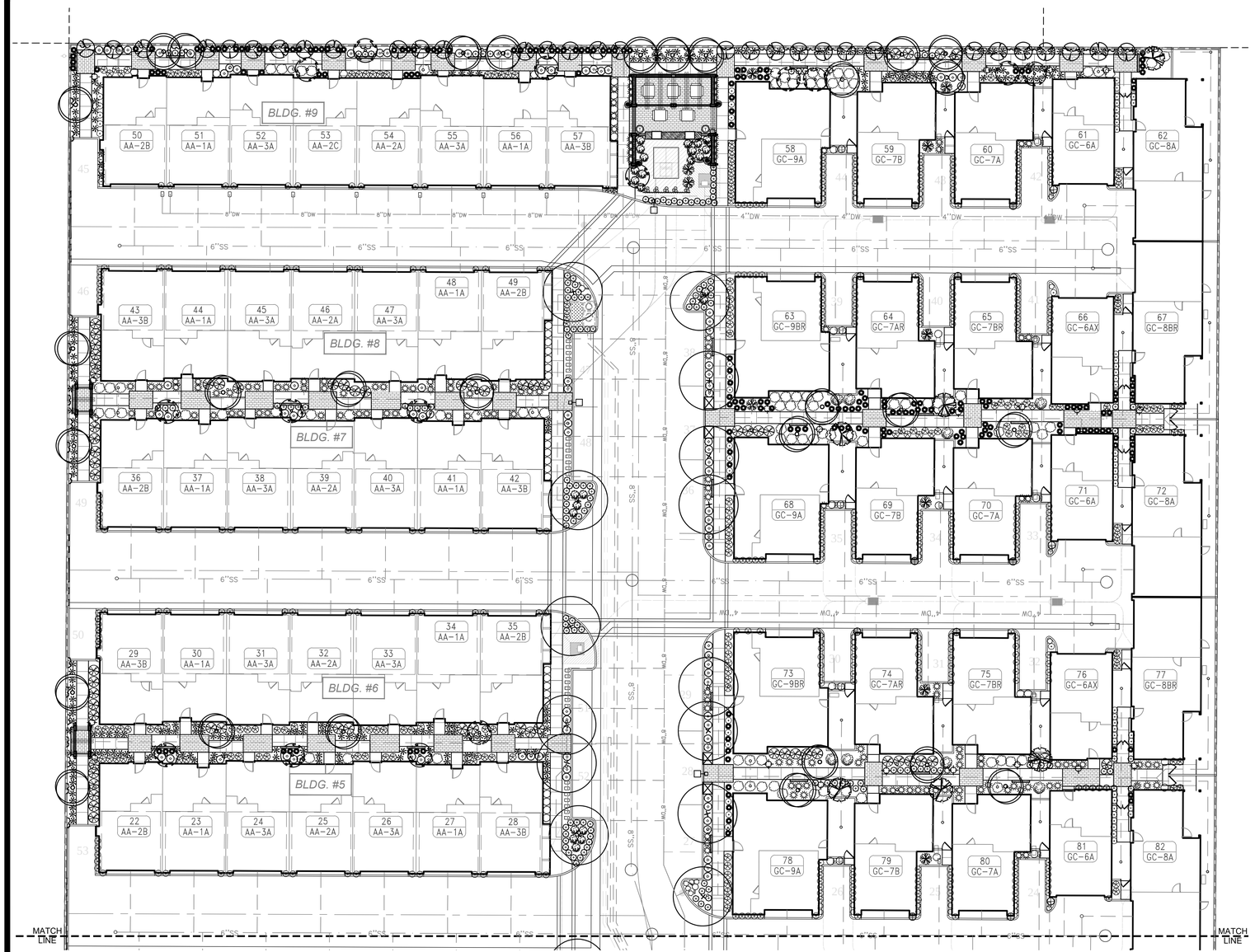

PLANTING NOTES

GENERAL NOTES:
REFER TO PROJECT PLANTING SPECIFICATIONS ON SHEET LPS-1 FOR COMPLETE PLANTING SPECIFICATIONS.

ALL LANDSCAPE INSTALLATION SHALL BE PERFORMED BY A LICENSED CONTRACTOR WITH A C-27 LICENSE OR GREATER.

LAYOUT OF ELEMENTS:
CONTRACTOR SHALL SCALE ALL PLANT MATERIALS OFF THE PLANS TO DETERMINE THEIR APPROXIMATE LOCATIONS. REFER TO PLANT SPACING NOTES IN THE PLANTING LEGEND. MAINTAIN A DISTANCE FROM ALL HARDSCAPE ELEMENTS AND GROUND COVERS ONE-HALF THE AMOUNT OF THE SPACING INDICATED IN THE PLANTING LEGEND OR ½ THE SCALED DIMENSION OF THE SHRUB.

SOILS TEST:
AFTER ALL ROUGH GRADING HAS BEEN COMPLETED BUT PRIOR TO SOIL PREPARATION, THE CONTRACTOR SHALL OBTAIN A SOIL TEST FOR AGRICULTURAL SUITABILITY, FERTILITY AND WATER INFILTRATION RATE. TEST SHALL BE PREPARED BY A CALIFORNIA ASSOCIATION OF AGRICULTURAL LABORATORIES MEMBER. FURNISH ONE COPY OF TEST RESULTS TO THE LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO COMMENCING WITH SOIL CONDITIONING. SOILS TEST REPORT SHALL SUPERSEDE ALL SPECIFICATIONS. SOILS TESTING FACILITY SHALL BE INFORMED OF THE REQUIREMENT OF USING ESTABLISH AMENDMENTS PER PLANTING SPECIFICATIONS.

SEE PLANTING SPECIFICATIONS FOR MINIMAL AMENDMENTS TO BE USED FOR BID PURPOSES. ALL FINAL SOIL CONDITIONING AND AMENDING SHALL BE PER SOILS TEST RECOMMENDATIONS. TEST SHALL INCLUDE THE FOLLOWING ITEMS: SOIL TYPE (TEXTURE), PH, TOTAL SOLUBLE SALTS (BY ELECTRICAL CONDUCTIVITY OF THE SOIL SATURATION EXTRACT), BORON LEVEL, EXCHANGEABLE SODIUM PERCENTAGE, NUTRIENTS (N.P.K.), MICRO NUTRIENTS (NO3, NH4, P, K, Ca, Mg, Na, B, Zn, Fe, Cu, Mn, S), PERCOLATION, % OF ORGANIC MATTER, CATION EXCHANGE CAPACITY, BASE SATURATION, EXCESS LIME OR CARBONATES.

PLANT AVAILABILITY:
PLANTS CALLED OUT ON THESE PLANS WERE RESEARCHED AND DETERMINED TO BE AVAILABLE AT THE TIME OF DESIGN. IT IS THE CONTRACTOR'S RESPONSIBILITY, UPON AWARD OF THE CONTRACT, TO IMMEDIATELY PROCURE ALL PLANT MATERIAL CALLED OUT ON THESE PLANS AND GUARANTEE THEIR AVAILABILITY AT THE TIME OF PLANTING.

GRADING:
FINISH GRADE OF SOIL IN ALL SHRUB PLANTER AREAS (UNLESS OTHERWISE INDICATED) SHALL BE ESTABLISHED SO FINISH GRADE OF SPECIFIED MULCH IS 1/2" BELOW ADJACENT WALKS, CURBS OR PAVING AND BE FREE OF ROCKS OVER 1" IN SIZE IN THE TOP 2" OF SOIL. EXCESS SOIL CREATED DURING THE AMENDING PROCESS SHALL NOT REMAIN ON SITE. ALL ESTABLISHED FLOW-LINES SHALL BE MAINTAINED. CONTRACTOR SHALL GUARANTEE POSITIVE DRAINAGE FROM ALL PLANTED AREAS.

EROSION CONTROL:
SLOPES EXCEEDING 3:1 SHALL RECEIVE EROSION CONTROL NETTING EQUAL TO WESTERN EXCELSIOR #EXCEL CC-4. NETTING TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND STAPLED AS REQUIRED.

TREE AND SHRUB PLANTING:
BACKFILL MIX FOR TREES AND SHRUBS SHALL CONSIST OF A MINIMUM OF 70% CLEAN ON-SITE SOIL AND 30% CUSTOM AMENDMENT MIX WCP-33. REFER TO SOILS TEST RESULT REQUIRED ABOVE FOR FINAL BACKFILL RECOMMENDATIONS. PLANT PER DETAIL SHEET LPD-1. ALL EXCESS SOIL CREATED DURING THE AMENDING PROCESS SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED OF.

TREES:
ALL TREES SHALL HAVE COMPARATIVELY STRAIGHT TRUNKS, WELL-DEVELOPED LEADERS, AND TOPS AND ROOTS CHARACTERISTIC OF THE SPECIES OR VARIETY. ALL TREES MUST BE FREE OF INSECTS, DISEASE, MECHANICAL INJURIES, AND OTHER OBJECTIONABLE FEATURES AT THE TIME OF PLANTING.

TREE SIZES:
THE FOLLOWING ARE THE EXPECTED CALIPER WIDTHS FOR VARIOUS CONTAINER SIZES. IF A TREE DOES NOT MEET THE MINIMUM LISTED SIZE, THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, INCREASE THE SPECIFIED CONTAINER SIZE TO MEET THE EXPECTED CALIPER. IT IS UNDERSTOOD THAT CERTAIN TREE SPECIES WILL BE "EXCEPTIONS" TO THESE STANDARDS AND WILL BE NEGOTIATED ON A CASE BY CASE BASIS.

15 GALLON-3/4" TO 1-1/4"
24" BOX- 1" TO 2"
36" BOX- 2" TO 3-1/2"
48" BOX- 3-1/2" TO 5"

TREE STAKING:
STAKE ALL TREES PER DETAIL ON SHEET LPD-1. ALL STAKES SHALL EXTEND A MINIMUM OF 12" BELOW THE PLANTING PIT.

ROOT BARRIERS:
ALL TREES PLANTED WITHIN EIGHT FEET OF WALLS, CURBS, PAVING, PROPERTY LINES OR HARDSCAPE ELEMENTS SHALL HAVE TYPAR 'BIO-BARRIER' FABRIC INSTALLED FOR A MINIMUM LENGTH OF TWELVE FEET ALONG CURB FACE/PAVING IN FRONT OF SAID TREE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND PER DETAIL SHEET LPD-1.

SCREENING:
ALL GROUND MOUNTED EQUIPMENT SHALL BE SCREENED. CONTRACTOR SHALL LOCATE SHRUBS TO PROVIDE THIS SCREENING AS REQUIRED BY THE CITY.

QUANTITIES:
QUANTITIES SHOWN ARE AN AID ONLY, CONTRACTOR SHALL VERIFY ALL QUANTITIES PRIOR TO BIDDING/ COMMENCING WORK.

SUBSTITUTIONS:
NO PLANT SUBSTITUTIONS WILL BE PERMITTED WITHOUT THE PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT.

ENVIRONMENTAL ISSUES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL STORM WATER PHASE I AND II RULES AND ANY OTHER ENVIRONMENTAL PROTECTION LAWS IN EFFECT AT THE TIME OF CONSTRUCTION.

LANDSCAPE CERTIFICATIONS/DOCUMENTATION:
CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING, AND COMPLYING WITH, ALL STATE AND LOCAL ORDINANCES REGARDING THE WATER USAGE CERTIFICATIONS ON THIS PROJECT SITE.

PLANTING INSPECTION NOTE TO CONTRACTOR:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE CITY, COUNTY OR OTHER PRESIDING AUTHORITY, THE LANDSCAPE ARCHITECT AND THE OWNER, AS NECESSARY, TO FACILITATE ALL PLANTING INSPECTIONS REQUIRED THAT RELATE TO OBTAINING CERTIFICATIONS OF COMPLETION.

EXISTING UTILITIES NOTE:

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North

20 0 20 40 60

Scale 1" = 20'

UNDERGROUND SERVICE ALERT
CALL: TOLL FREE
811
TWO WORKING DAYS BEFORE YOU DIG

REFER TO SHEET LP-1 FOR PLANTING LEGENDS
REFER TO SHEET LPD-1 FOR PLANTING DETAILS
REFER TO SHEET LPS-1 FOR PLANTING SPECIFICATIONS
REFER TO SHEET LWC-1 FOR WATER USE CALCULATIONS

REGISTERED LANDSCAPE ARCHITECT
SHAWN T. BURCH
10/20
date of expiration
signature
11/15/19
date
2725
STATE OF CALIFORNIA

STB LANDSCAPE ARCHITECTS, INC.
LANDSCAPE ARCHITECTURE IRRIGATION CONSULTANTS WATER FEATURE DESIGN
15 SOUTH 5TH STREET SUITE 1250 REDLANDS, CALIFORNIA 92373
PH (909) 307-0779 FAX (909) 307-0858
CA LIC. NO. 2725 NV LIC. NO. 456
LOW VOLTAGE LIGHTING

urban

PLANTING PLAN

ROSECRANS PLACE
ROSECRANS & VAN NESS
GARDENA, CALIFORNIA

REVISIONS

DRAWN BY	CAD
DESIGNED BY	S.T.B.
CHECKED BY	C.R.
DATE	11/15/19
JOB NO.	19-10
SCALE	1"=20'/ AS SHOWN
SHEET	LP-2
OF	XX SHEETS

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Appendix A:
Volume and Flow Rate Calculations and Hydrologic Report

Peak Flow Hydrologic Analysis

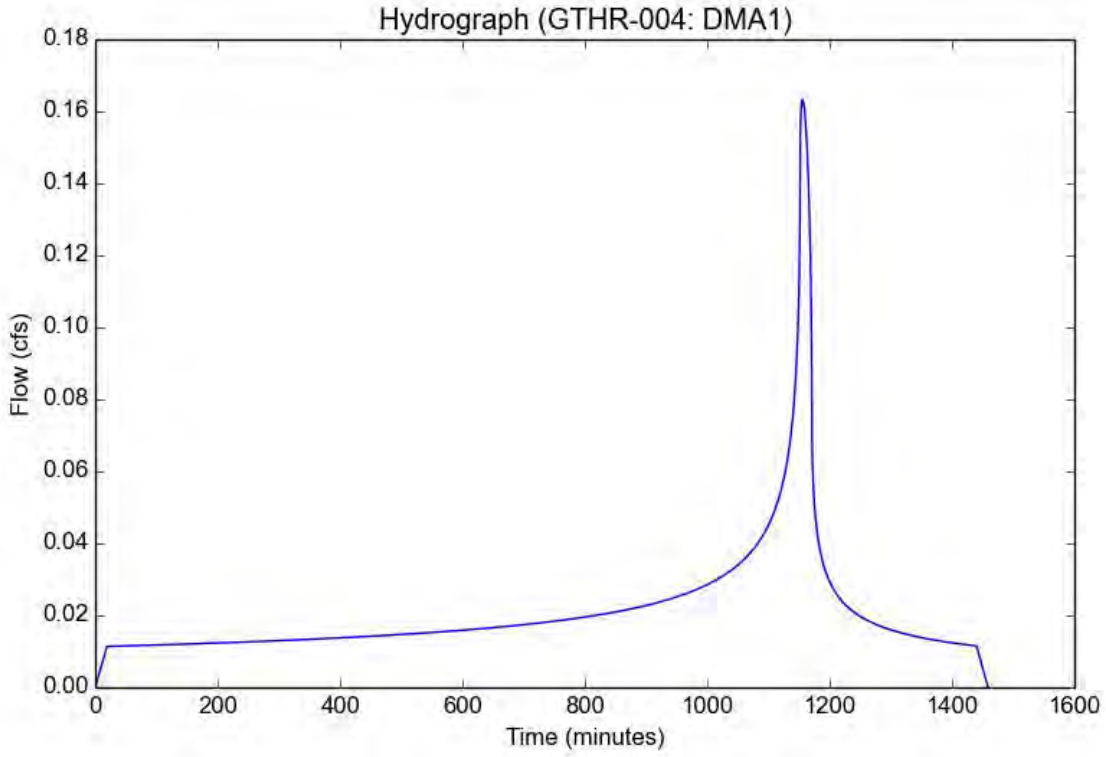
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 1_0.75-in Storm.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA1
Area (ac)	0.859
Flow Path Length (ft)	224.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.87
Soil Type	9
Design Storm Frequency	0.75 inch storm
Fire Factor	0
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2389
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.796
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	0.1634
Burned Peak Flow Rate (cfs)	0.1634
24-Hr Clear Runoff Volume (ac-ft)	0.0424
24-Hr Clear Runoff Volume (cu-ft)	1846.1712



Peak Flow Hydrologic Analysis

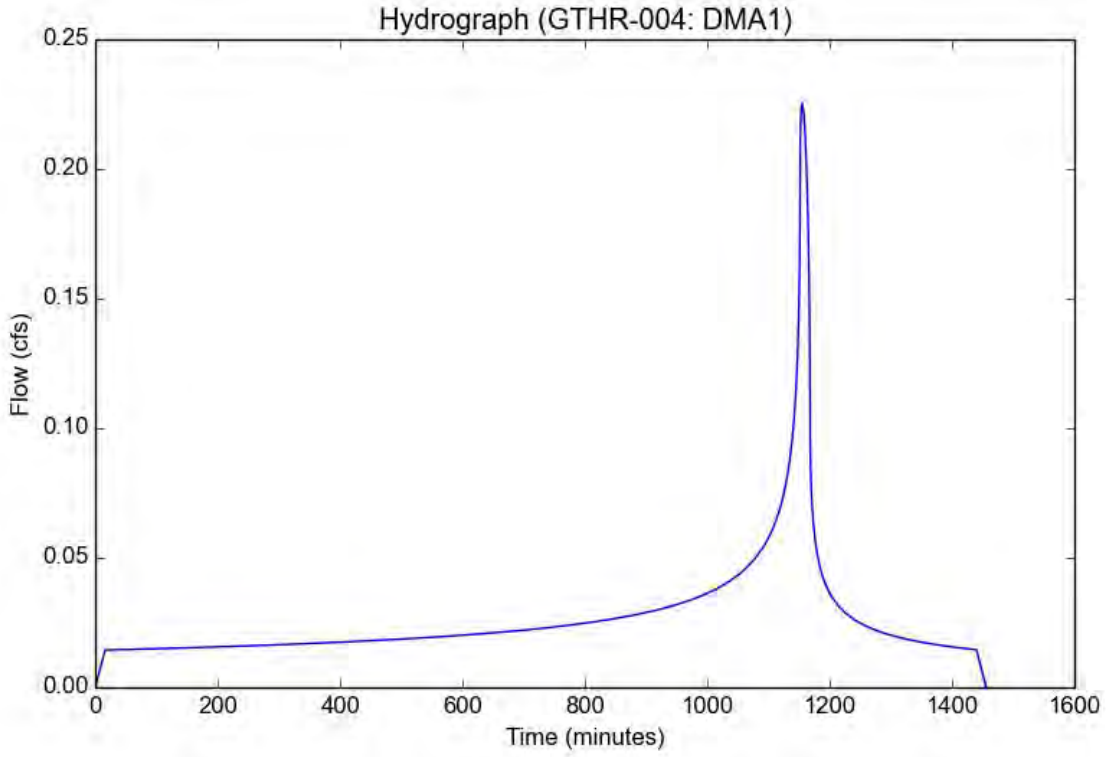
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 1_85th Percentile.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA1
Area (ac)	0.859
Flow Path Length (ft)	224.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.95
Percent Impervious	0.87
Soil Type	9
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.95
Peak Intensity (in/hr)	0.3281
Undeveloped Runoff Coefficient (Cu)	0.1236
Developed Runoff Coefficient (Cd)	0.7991
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	0.2252
Burned Peak Flow Rate (cfs)	0.2252
24-Hr Clear Runoff Volume (ac-ft)	0.0537
24-Hr Clear Runoff Volume (cu-ft)	2338.819



Peak Flow Hydrologic Analysis

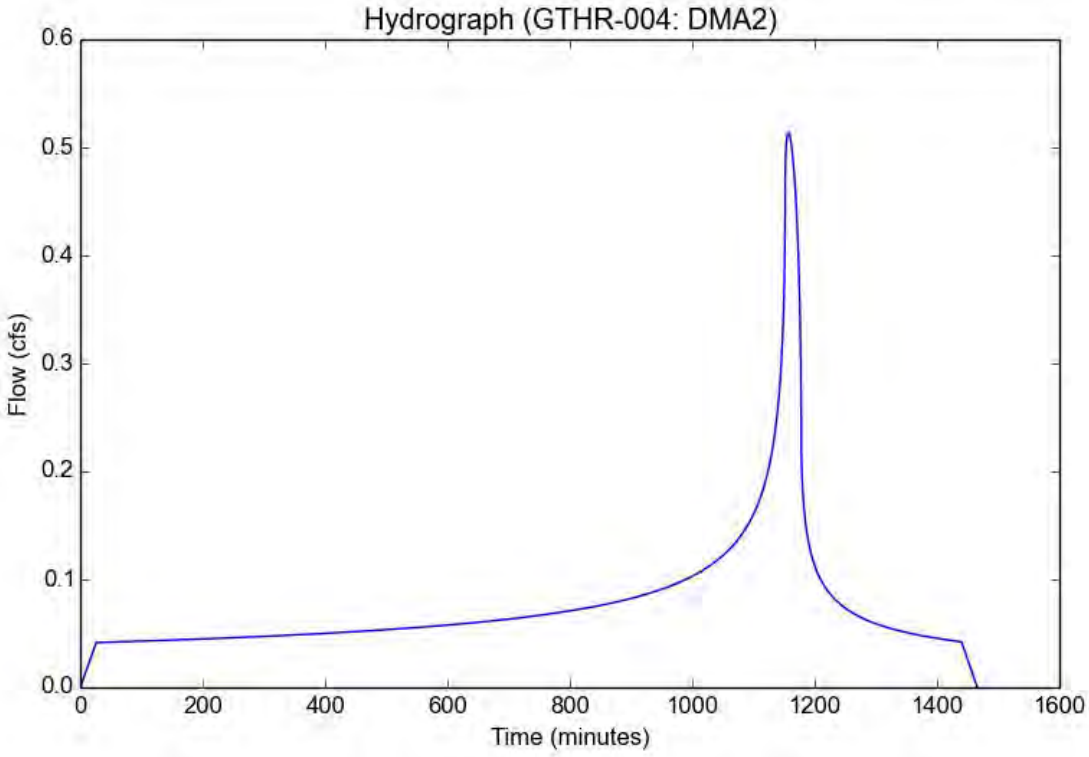
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 2_0.75-in Storm.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA2
Area (ac)	3.13
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.87
Soil Type	9
Design Storm Frequency	0.75 inch storm
Fire Factor	0
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2062
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.796
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	0.5137
Burned Peak Flow Rate (cfs)	0.5137
24-Hr Clear Runoff Volume (ac-ft)	0.1544
24-Hr Clear Runoff Volume (cu-ft)	6727.0539



Peak Flow Hydrologic Analysis

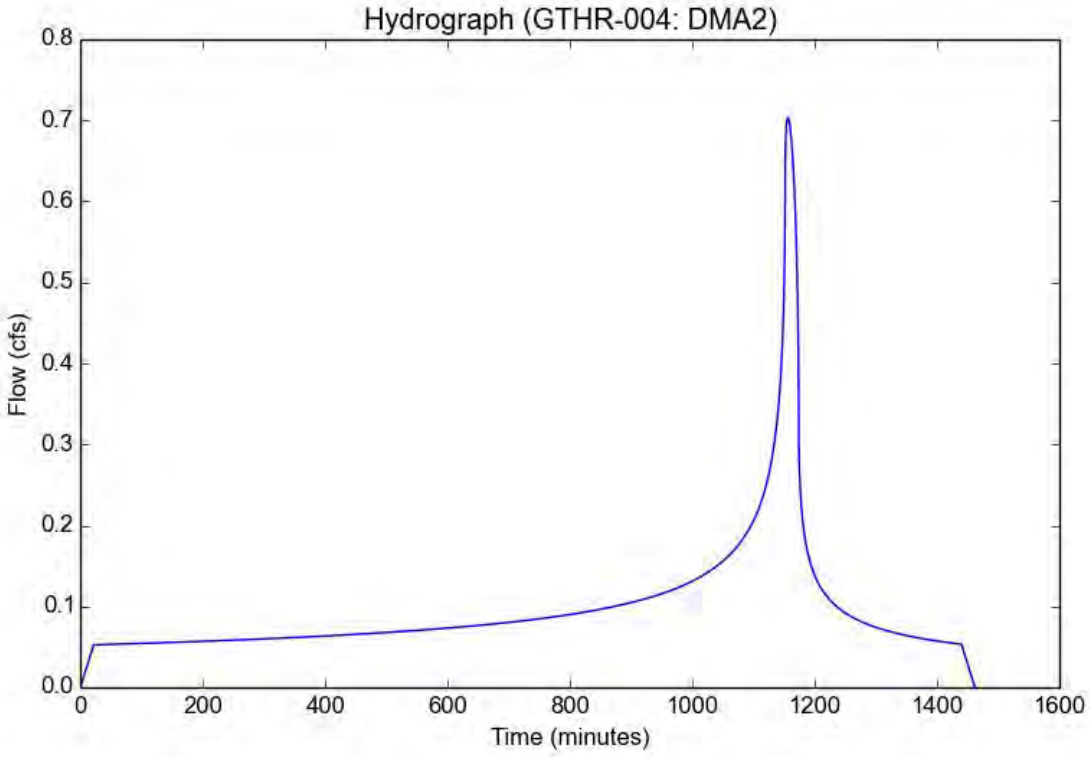
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 2_85th Percentile.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA2
Area (ac)	3.13
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.95
Percent Impervious	0.87
Soil Type	9
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.95
Peak Intensity (in/hr)	0.2825
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.796
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.7038
Burned Peak Flow Rate (cfs)	0.7038
24-Hr Clear Runoff Volume (ac-ft)	0.1956
24-Hr Clear Runoff Volume (cu-ft)	8520.9139



Peak Flow Hydrologic Analysis

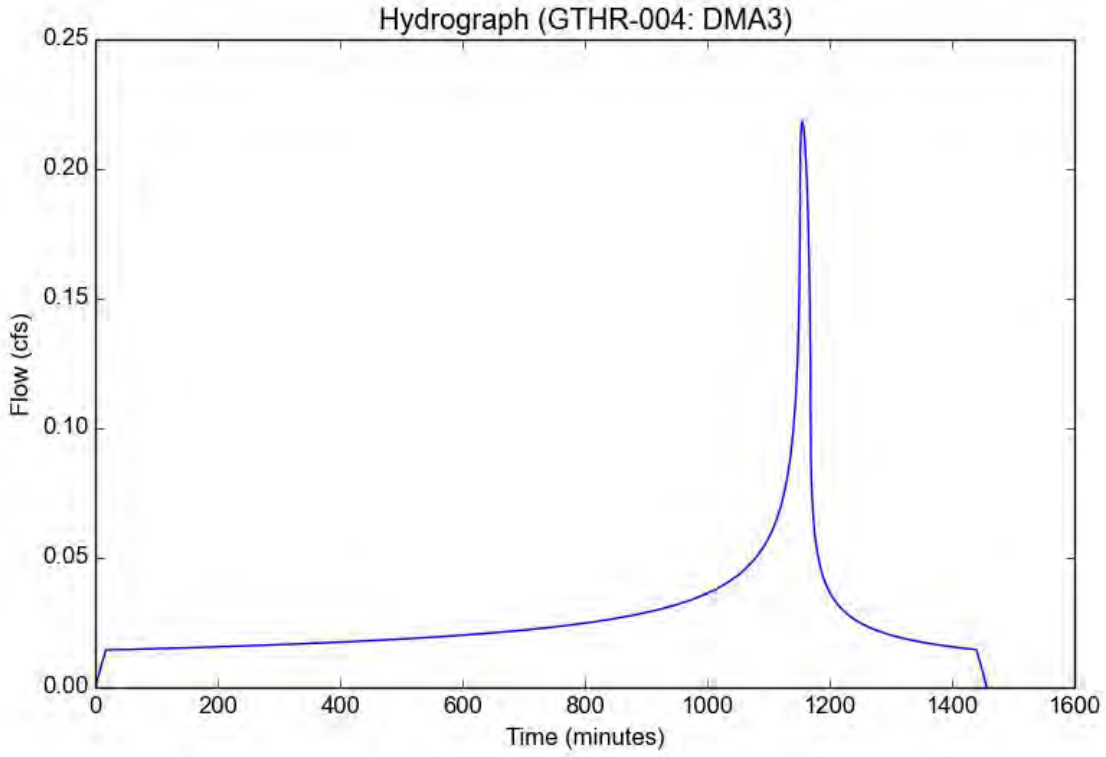
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 3_0.75-in Storm.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA3
Area (ac)	1.047
Flow Path Length (ft)	202.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.91
Soil Type	9
Design Storm Frequency	0.75 inch storm
Fire Factor	0
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2517
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.828
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.2182
Burned Peak Flow Rate (cfs)	0.2182
24-Hr Clear Runoff Volume (ac-ft)	0.0537
24-Hr Clear Runoff Volume (cu-ft)	2340.6818



Peak Flow Hydrologic Analysis

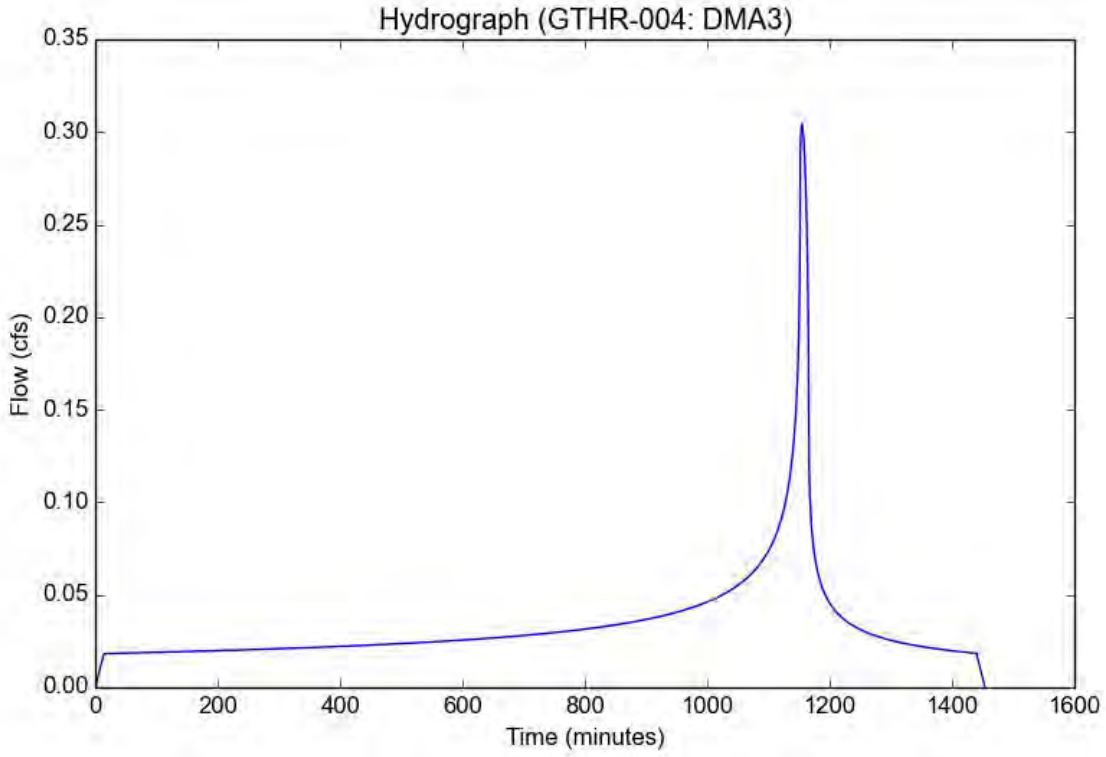
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 3_85th Percentile.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA3
Area (ac)	1.047
Flow Path Length (ft)	202.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.95
Percent Impervious	0.91
Soil Type	9
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.95
Peak Intensity (in/hr)	0.3494
Undeveloped Runoff Coefficient (Cu)	0.1415
Developed Runoff Coefficient (Cd)	0.8317
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.3042
Burned Peak Flow Rate (cfs)	0.3042
24-Hr Clear Runoff Volume (ac-ft)	0.0681
24-Hr Clear Runoff Volume (cu-ft)	2965.431



Peak Flow Hydrologic Analysis

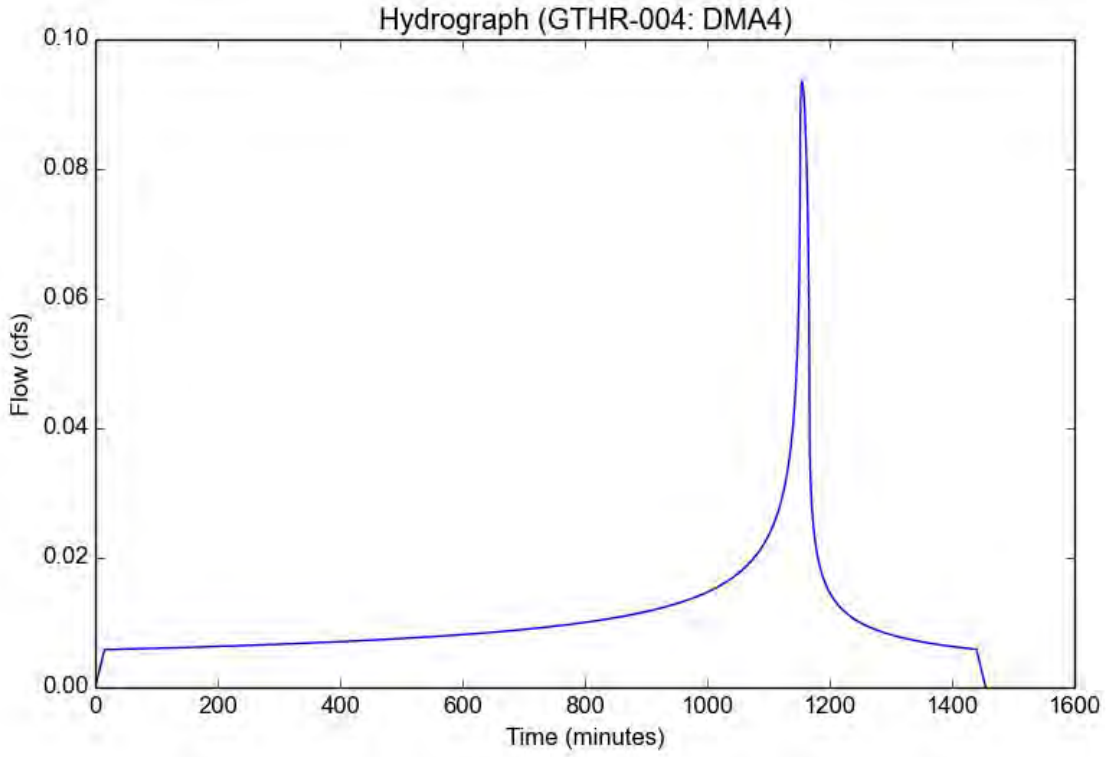
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 4_0.75-in Storm.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA4
Area (ac)	0.427
Flow Path Length (ft)	163.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	9
Design Storm Frequency	0.75 inch storm
Fire Factor	0
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.267
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.0935
Burned Peak Flow Rate (cfs)	0.0935
24-Hr Clear Runoff Volume (ac-ft)	0.0217
24-Hr Clear Runoff Volume (cu-ft)	945.3807



Peak Flow Hydrologic Analysis

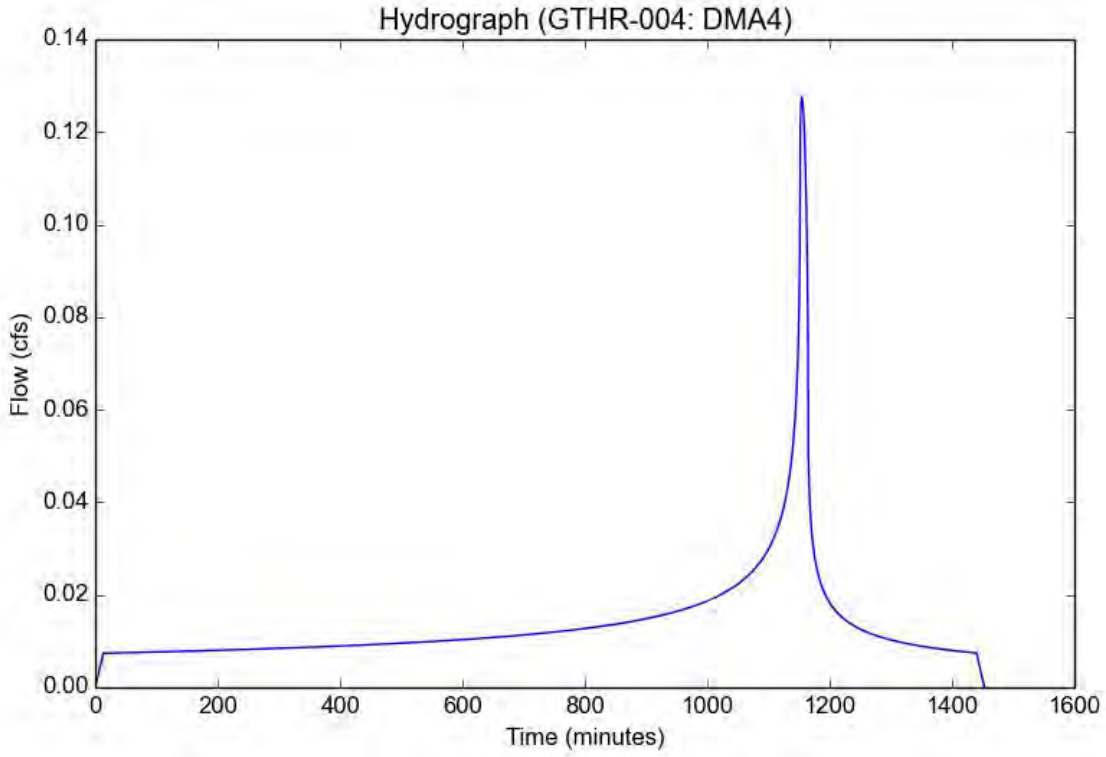
File location: P:/G/GTHR-004/Admin/Reports/LID/PRE/Appendix A - Calcs/DMA 4_85th Percentile.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	GTHR-004
Subarea ID	DMA4
Area (ac)	0.427
Flow Path Length (ft)	163.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.95
Percent Impervious	0.9
Soil Type	9
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.95
Peak Intensity (in/hr)	0.3617
Undeveloped Runoff Coefficient (Cu)	0.1519
Developed Runoff Coefficient (Cd)	0.8252
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	0.1275
Burned Peak Flow Rate (cfs)	0.1275
24-Hr Clear Runoff Volume (ac-ft)	0.0275
24-Hr Clear Runoff Volume (cu-ft)	1197.8154



Appendix B:
Site BMPs

Site Design & Landscape Planning SD-10

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

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barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

S-1: Storm Drain Message and Signage

Purpose

Waste material dumped into storm drain inlets can adversely impact surface and ground waters. In fact, any material discharged into the storm drain system has the potential to significantly impact downstream receiving waters. Storm drain messages have become a popular method of alerting and reminding the public about the effects of and the prohibitions against waste disposal into the storm drain system. The signs are typically stenciled or affixed near the storm drain inlet or catch basin. The message simply informs the public that dumping of wastes into storm drain inlets is prohibited and/or that the drain ultimately discharges into receiving waters.

General Guidance

- The signs must be placed so they are easily visible to the public.
- Be aware that signs placed on sidewalk will be worn by foot traffic.

Design Specifications

- Signs with language and/or graphical icons that prohibit illegal dumping, must be posted at designated public access points along channels and streams within the project area. Consult with Los Angeles County Department of Public Works (LACDPW) staff to determine specific signage requirements for channels and streams.
- Storm drain message markers, placards, concrete stamps, or stenciled language/icons (e.g., “No Dumping – Drains to the Ocean”) are required at all storm drain inlets and catch basins within the project area to discourage illegal or inadvertent dumping. Signs should be placed in clear sight facing anyone approaching the storm drain inlet or catch basin from either side (see Figure D-1 and Figure D-2). LACDPW staff should be contacted to determine specific requirements for types of signs and methods of application. A stencil can be purchased for a nominal fee from LACDPW Building and Safety Office by calling (626) 458-3171. All storm drain inlet and catch basin locations must be identified on the project site map.

Maintenance Requirements

Legibility and visibility of markers and signs should be maintained (e.g., signs should be repainted or replaced as necessary). If required by LACDPW, the owner/operator or homeowner’s association shall enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards and signs.

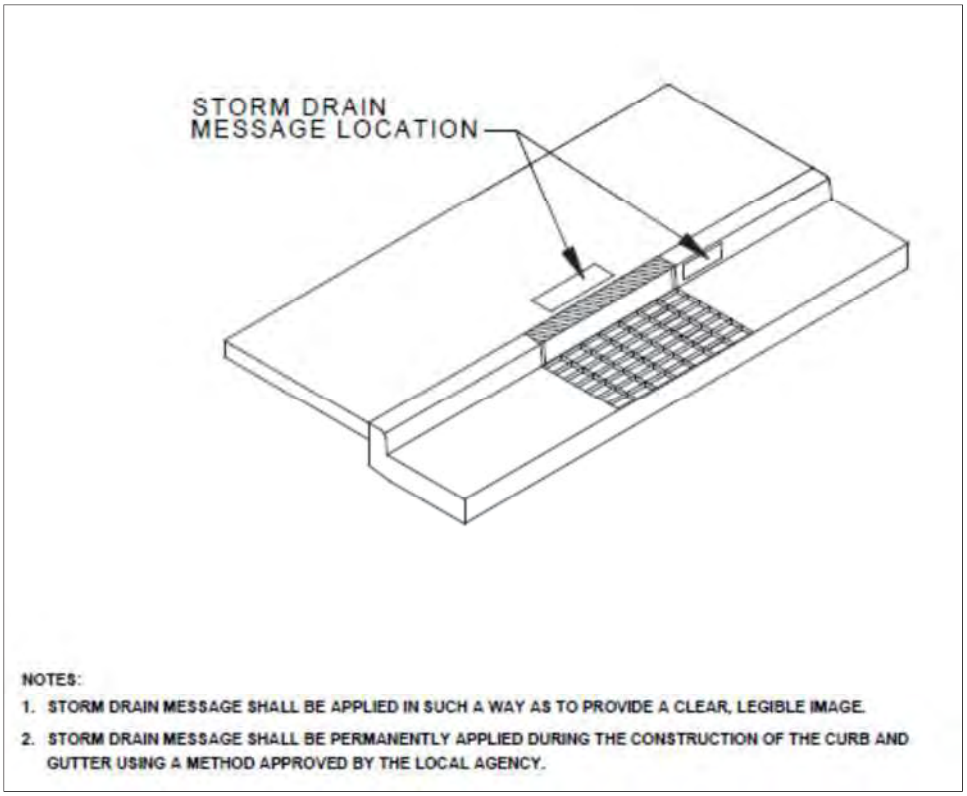


Figure D-1. Storm Drain Message Location – Curb Type Inlet

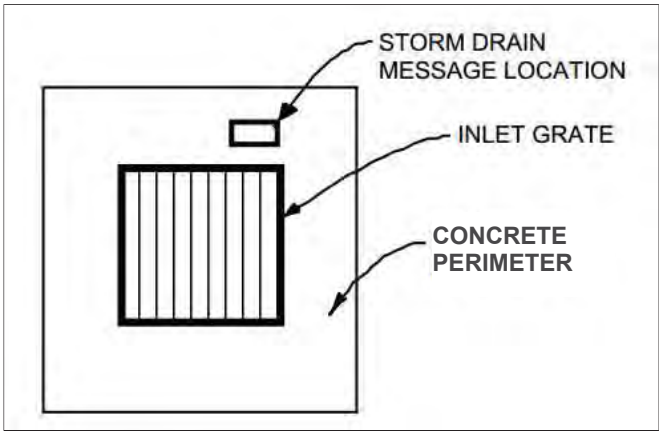


Figure D-2. Storm Drain Message Location – Catch Basin/Area Type Inlet

S-3: Outdoor Trash Storage and Waste Handling Area

Purpose

Stormwater runoff from areas where trash is stored or handled can be polluted. Loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or receiving waters. Waste handling operations (i.e., dumpsters, litter control, waste piles) may be sources of stormwater pollution.

Design Specifications

Wastes from commercial and industrial sites are typically hauled away for disposal by either public or commercial carriers that may have design or access requirements for waste storage areas. Design specifications for waste handling areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. The design specifications, listed below in Table D-3, are recommendations and are not intended to conflict with requirements established by the waste hauler. The design specifications are intended to enhance local codes and ordinances while addressing stormwater runoff concerns. The waste hauler should be contacted prior to the design of trash storage and collection areas to determine established and accepted guidelines for designing trash collection areas. All hazardous waste must be handled in accordance with the legal requirements established in Title 22 of the California Code of Regulations. Conflicts or issues should be discussed with LACDPW staff.

Table D-3. Design Specifications for Outdoor Trash Storage and Waste Handling Area

Design Feature	Design Specifications
Surfacing	• Construct/pave outdoor trash storage and waste handling area with Portland cement concrete or an equivalent impervious surface.
Screens/Covers	• Install a screen or wall around trash storage area to prevent off-site transport of loose trash. • Use lined bins or dumpsters to reduce leaking of liquid wastes. • Use waterproof lids on bins/dumpsters or provide a roof to cover storage area enclosure (LACDPW discretion) to prevent precipitation from entering containers.
Grading/Drainage	• Berm and/or grade waste handling area to prevent stormwater run-on. • Locate waste handling area at least 35 feet from storm drains. • Divert drainage from adjoining roofs and pavement away from adjacent trash storage areas.
Signs	• Post signs on all dumpsters and/or inside enclosures prohibiting disposal of liquids and hazardous materials in accordance with any waste disposal ordinance.

Accumulated Water

Stormwater runoff, non-stormwater runoff, and spills will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and regulations, and cannot be discharged directly to the storm drain or sanitary sewer system without appropriate permitting. Contact LACDPW (1-888-CLEAN-LA) for information regarding discharge of contaminated accumulated water.

Maintenance Requirements

The integrity of structural elements that are subject to damage (e.g., screens, covers, signs) must be maintained by the owner/operator as required by local codes and ordinances. Outdoor trash storage and waste handling areas must be checked periodically to ensure containment of accumulated water and prevention of stormwater run-on. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

S-8: Landscape Irrigation Practices

Purpose

Irrigation runoff provides a pathway for pollutants (i.e., nutrients, bacteria, organics, sediment) to enter the storm drain system. By effectively irrigating, less runoff is produced resulting in less potential for pollutants to enter the storm drain system.

General Guidance

- Do not allow irrigation runoff from the landscaped area to drain directly to storm drain system.
- Minimize use of fertilizer, pesticides, and herbicides on landscaped areas.
- Plan sites with sufficient landscaped area and dispersal capacity (e.g., ability to receive irrigation water without generating runoff).
- Consult a landscape professional regarding appropriate plants, fertilizer, mulching applications, and irrigation requirements (if any) to ensure healthy vegetation growth.

Design Specifications

- Choose plants that minimize the need for fertilizer and pesticides.
- Group plants with similar water requirements and water accordingly.
- Use mulch to minimize evaporation and erosion.
- Include a vegetative boundary around project site to act as a filter.
- Design the irrigation system to only water areas that need it.
- Install an approved subsurface drip, pop-up, or other irrigation system.[1] The irrigation system should employ effective energy dissipation and uniform flow spreading methods to prevent erosion and facilitate efficient dispersion.
- Install rain sensors to shut off the irrigation system during and after storm events.
- Include pressure sensors to shut off flow-through system in case of sudden pressure drop. A sudden pressure drop may indicate a broken irrigation head or water line.
- If the hydraulic conductivity in the soil is not sufficient for the necessary water application rate, implement soil amendments to avoid potential geotechnical hazards (i.e., liquefaction, landslide, collapsible soils, and expansive soils).

[1] If alternative distribution systems (e.g., spray irrigation) are approved, the County will establish guidelines to implement these new systems.

- For sites located on or within 50 feet of a steep slope (15% or greater), do not irrigate landscape within three days of a storm event to avoid potential geotechnical instability.[2]
- Implement Integrated Pest Management practices.

For additional guidelines and requirements, refer to the Los Angeles County Department of Health Services.

Maintenance Requirements

Maintain irrigation areas to remove trash and debris and loose vegetation. Rehabilitate areas of bare soil. If a rain or pressure sensor is installed, it should be checked periodically to ensure proper function. Inspect and maintain irrigation equipment and components to ensure proper functionality. Clean equipment as necessary to prevent algae growth and vector breeding. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

[2] As determined by the City of Los Angeles, Building and Safety Division

S-9: Building Materials Selection

Purpose

Building materials can potentially contribute pollutants of concern to stormwater runoff through leaching. For example, metal buildings, roofing, and fencing materials may be significant sources of metals in stormwater runoff, especially due to acidic precipitation. The use of alternative building materials can reduce pollutant sources in stormwater runoff by eliminating compounds that can leach into stormwater runoff. Alternative building materials may also reduce the need to perform maintenance activities (i.e., painting) that involve pollutants of concern, and may reduce the volume of stormwater runoff. Alternative materials are available to replace lumber and paving.

Design Specifications

Lumber

Decks and other house components constructed using pressure-treated wood that is typically treated using arsenate, copper, and chromium compounds are hazardous to the environment. Pressure-treated wood may be replaced with cement-fiber or vinyl.

Roofs, Fencing, and Metals

Minimizing the use of copper and galvanized (zinc-coated) metals on buildings and fencing can reduce leaching of these pollutants into stormwater runoff. The following building materials are conventionally made of galvanized metals:

- Metal roofs;
- Chain-link fencing and siding; and
- Metal downspouts, vents, flashing, and trim on roofs.

Architectural use of copper for roofs and gutters should be avoided. As an alternative to copper and galvanized materials, coated metal products are available for both roofing and gutter application. Vinyl-coated fencing is an alternative to traditional galvanized chain-link fences. These products eliminate contact of bare metal with precipitation or stormwater runoff, and reduce the potential for stormwater runoff contamination. Roofing materials are also made of recycled rubber and plastic.

Green roofs may be an option. Green roofs use vegetation such as grasses and other plants as an exterior surface. The plants reduce the velocity of stormwater runoff and absorb water to reduce the volume of stormwater runoff. One potential problem with using green roofs in the Los Angeles County area is the long, hot and dry summers, which may kill the plants if they are not watered. See the Green Roof Fact Sheet (RET-7) in Appendix E.

Pesticides

The use of pesticides around foundations can be reduced through the use of alternative barriers. Sand barriers can be applied around foundations to deter termites, as they cannot tunnel through sand. Metal shields also block termites from tunneling. Additionally, diatomaceous earth can be used to repel or kill a wide variety of other pests.

Maintenance Requirements

The integrity of structural elements that are subject to damage (e.g., signs) must be maintained by the owner/operator as required by local codes and ordinances. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

BIO-1: Biofiltration

Definition

A biofiltration area is a vegetated shallow depression that is designed to receive and treat stormwater runoff from downspouts, piped inlets, or sheet flow from adjoining paved areas. A shallow ponding zone is provided above the vegetated surface for temporary storage of stormwater runoff. During storm events, stormwater runoff accumulates in the ponding zone and gradually infiltrates the surface and filters through the biofiltration soil media before being collected by an underdrain system.

Stormwater runoff treatment occurs through a variety of natural mechanisms as stormwater runoff filters through the vegetation root zone. In biofiltration areas, microbes and organic material in the biofiltration soil media help promote the adsorption of pollutants (e.g., dissolved metals and petroleum hydrocarbons) into the soil matrix. Plants utilize soil moisture and promote the drying of the soil through transpiration. Biofiltration areas are typically planted with native, drought-tolerant plant species that do not require fertilization and can withstand wet soils for at least 96 hours.

A schematic of a typical biofiltration area is presented in Figure E-7.

LID Ordinance Requirements

Biofiltration can be used as an alternative compliance measure.

Pollutant of Concern	Treated by Biofiltration?
Suspended solids	No
Total phosphorus	No
Total nitrogen	Yes
Total Kjeldahl nitrogen	Yes
Cadmium, total	No
Chromium, total	Yes
Copper, total	No
Lead, total	Yes
Zinc, total	No

Source: Treatment Best Management Practices Performance, Los Angeles Regional Water Quality Control Board, December 9, 2013.

Advantages

- Has a low cost for installation
- Enhances site aesthetics
- Requires little maintenance

Disadvantages

- May require individual owner/tenants to perform maintenance

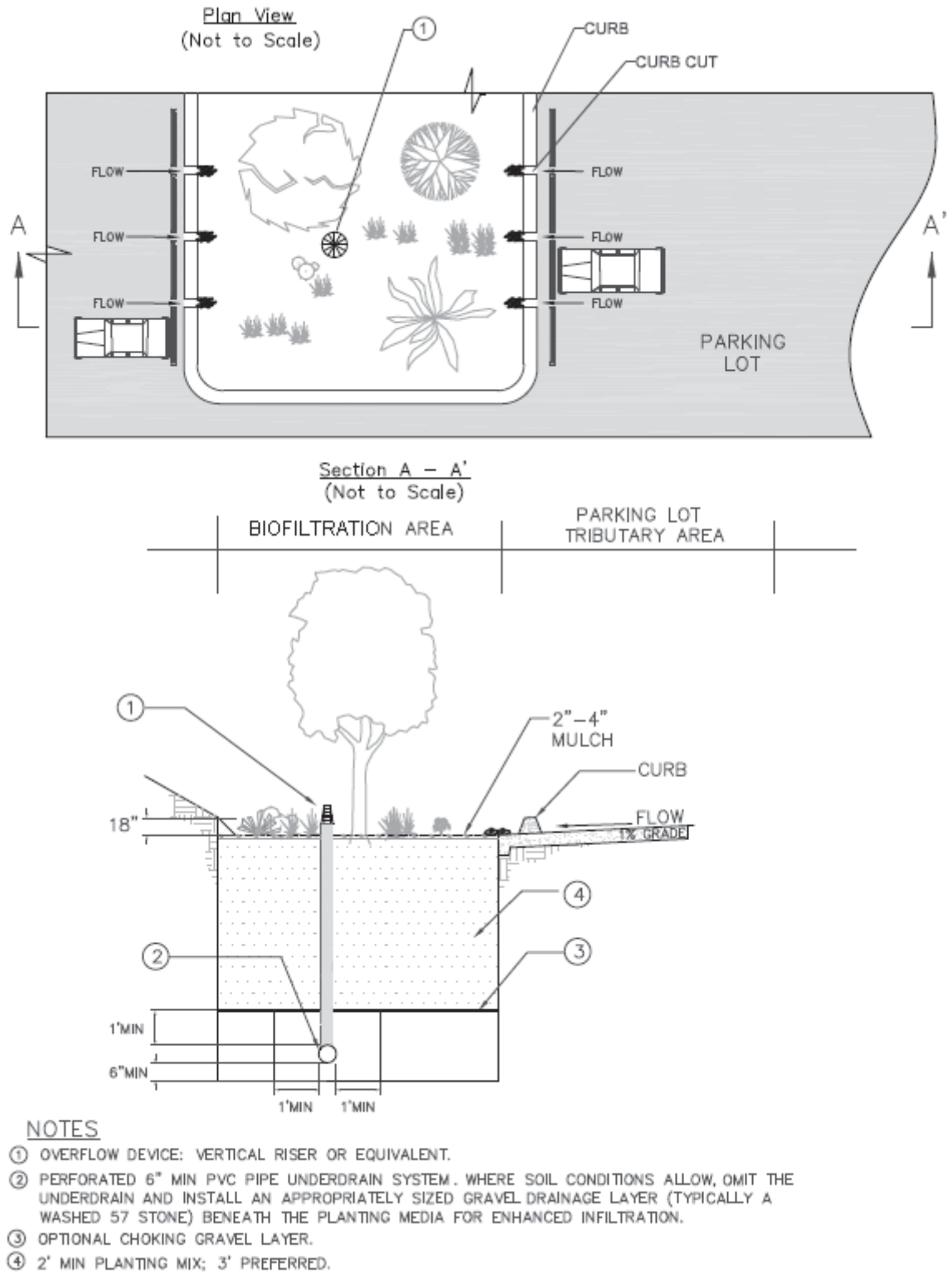


Figure E-7. Biofiltration Area Schematic

General Constraints and Implementation Considerations

- Biofiltration areas can be applied in various settings including, but not limited to:
  - Individual lots for rooftop, driveway, and other on-site impervious surface
  - Shared facilities located in common areas for individual lots
  - Areas within loop roads or cul-de-sacs
  - Landscaped parking lot islands
  - Within right-of-ways along roads
  - Common landscaped areas in apartment complexes or other multi-family housing designs
  - Parks and along open space perimeter
- If tire curbs are provided and parking stalls are shortened, cars are allowed to overhang the biofiltration area.
- Biofiltration areas must be located sufficiently far from structure foundations to avoid damage to structures (as determined by a certified structural or geotechnical engineer).
- Any parking areas bordering the biofiltration area must be monolithically poured concrete or deepended curb concrete to provide structural stability to the adjacent parking section.
- Geomembrane liners must be used in areas subject to spills or pollutant hot spots.
- During construction activities should avoid compaction of native soils below planting media layer or gravel zone.
- Stormwater runoff must be diverted around the biofiltration area during the period of vegetation establishment. If diversion is not feasible, the graded and seeded areas must be protected with suitable sediment controls (i.e., silt fences).All damaged areas should be repaired, seeded, or re-planted immediately.
- The general landscape irrigation system should incorporate the biofiltration area, as applicable.

Design Specifications

The following sections describe the design specifications for biofiltration areas.

Geotechnical

Due to the potential to contaminate groundwater, cause slope instability, impact surrounding structures, and potential for insufficient infiltration capacity, an extensive geotechnical site investigation must be conducted during the site planning process to verify site suitability for biofiltration. All geotechnical investigations must be performed according to the most recent GMED Policy GS 200.1. Soil infiltration rates and the

groundwater table depth must be evaluated to ensure that conditions are satisfactory for proper operation of a biofiltration area. The project applicant must demonstrate through infiltration testing, soil logs, and the written opinion of a licensed civil engineer that sufficiently permeable soils exist on-site to allow the construction of a properly functioning biofiltration system.

Biofiltration areas are appropriate for soils with a minimum corrected in-situ infiltration rate of 0.3 in/hr. The geotechnical report must determine if the proposed project site is suitable for a biofiltration area and must recommend a design infiltration rate (see "Design Infiltration Rate" under the "Sizing" section). The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move through the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Pretreatment

Pretreatment refers to design features that provide settling of large particles before stormwater runoff enters a stormwater quality control measure in order to reduce the long-term maintenance burden. Pretreatment should be provided to reduce the sediment load entering a biofiltration area in order to maintain the infiltration rate of the biofiltration area. To ensure that biofiltration areas are effective, the project applicant must incorporate pretreatment devices that provide sediment removal (e.g., vegetated swales, vegetated filter strips, sedimentation manholes, and proprietary devices). The use of at least two pretreatment devices is highly recommended for biofiltration areas.

Geometry

- Biofiltration areas must be sized to capture and treat 1.5 times the SWQDv that is not reliably retained on the project site with an 18-inch maximum ponding depth.
- The planting soil depth must be a minimum of two feet, although three feet is preferred. The planting soil depth should provide a beneficial root zone for the chosen vegetation and adequate water storage for the stormwater runoff. A deeper planting soil depth will also provide a smaller surface area footprint.
- A gravel storage layer below the biofiltration area soil media is required to provide adequate temporary storage to retain 1.5 times the SWQDv that is not reliably retained on the project site and to promote infiltration.

Sizing

Biofiltration areas are sized using a simple sizing method where 1.5 times the SWQDv that is not reliably retained on the project site must be completely filtered within 96 hours. If the incoming stormwater runoff flow rate is lower than the long term filtration rate, above ground storage does not need to be provided. If the incoming stormwater runoff flow rate is higher than the long term filtration rate, above ground storage shall be provided (see steps below).

Step 1: Calculate the design volume

Biofiltration areas should be sized to capture and treat 1.5 times the portion of the SWQDv (see Section 6 for SWQDv calculation procedures) that is not reliability retained on the project site, as calculated by the equation below:

$$V_B = 1.5 \times (SWQDv - V_R)$$

Where:

V_B = Biofiltration volume [ft^3];
SWQDv = Stormwater quality design volume [ft^3]; and
V_R = Volume of stormwater runoff reliably retained on-site [ft^3].

Step 2: Calculate the design infiltration rate

Determine the corrected in-situ infiltration rate (f_{design}) of the native soil using the procedures described in the most recent GMED Policy GS 200.1.

Step 3: Calculate the surface area

Select a surface ponding depth (d) that satisfies the geometric criteria and meets the site constraints. Selecting a deeper ponding depth (up to 1.5 ft) generally yields a smaller footprint, however, it will require greater consideration for public safety, energy dissipation, and plant selection.

Calculate the time for the selected ponding depth to filter through the planting media using the following equation:

$$\mathrm{d} = t_p \times \frac{\mathrm{f_{design}}}{12}$$

Where:

d = Ponding depth (max 1.5 ft) [ft];
t_p = Required detention time for surface ponding (max 96 hr) [hr]; and
f_{design} = Design infiltration rate [in/hr].

If t_p exceeds 96 hours, reduce surface ponding depth (d). In nearly all cases, t_p should not approach 96 hours unless f_{design} is low.

Calculate the required infiltrating surface (filter bottom area) using the following equation:

$$A = \frac{V_B}{d}$$

Where:

A = Bottom surface area of biofiltration area [ft^2];
V_B = Biofiltration design volume [ft^3]; and
d = Ponding depth (max 1.5 ft) [ft].

Flow Entrance and Energy Dissipation

Maintain a minimum slope of 1 percent for pervious surfaces and 0.5 percent for impervious surfaces to the biofiltration area inlet. The following types of flow entrance can be used for biofiltration cells:

- Level spreaders (i.e., slotted curbs) can be used to facilitate sheet flow.
- Dispersed, low velocity flow across a landscape area. Dispersed flow may not be possible given space limitations or if the biofiltration area is controlling roadway or parking lot flows where curbs are mandatory.
- Dispersed flow across pavement or gravel and past wheel stops for parking areas.
- Flow spreading trench around perimeter of biofiltration area. May be filled with pea gravel or vegetated with 3:1 side slopes similar to a swale. A vertical-walled open trench may also be used at the discretion of LACDPW.
- Curb cuts for roadside or parking lot areas, if approved by LACDPW: curb cuts should include rock or other erosion controls in the channel entrance to dissipate energy. Flow entrance should drop two to three inches from curb line and provide an area for settling and periodic removal of sediment and coarse material before flow dissipates to the remainder of the biofiltration area.
- Piped entrances, such as roof downspouts, should include rock, splash blocks, or other erosion controls at the entrance to dissipate energy and disperse flows.
- Woody plants (trees, shrubs, etc.) can restrict or concentrate flows and can be damaged by erosion around the root ball and must not be placed directly in the entrance flow path.

Drainage

Biofiltration areas must be designed to drain below the planting soil in less than 96 hours. Soils must be allowed to dry out periodically in order to restore hydraulic capacity to receive stormwater runoff from subsequent storm events, maintain infiltration rates, maintain adequate soil oxygen levels for healthy soil biota and vegetation, and provide proper soil conditions for biodegradation and retention of pollutants.

Underdrain

Biofiltration areas require an underdrain to collect and discharge stormwater runoff that has been filtered through the soil media, but not infiltrated, to another stormwater quality control measure, storm drain system, or receiving water. The underdrain must have a mainline diameter of eight inches using slotted PVC SDR 26 or PVC C9000. Slotted PVC allows for pressure water cleaning and root cutting, if necessary. The slotted pipe

should have two to four rows of slots cut perpendicular to the axis of the pipe or at right angles to the pitch of corrugations. Slots should be 0.04 to 0.1 inches wide with a length of 1 to 1.25 inches. Slots should be longitudinally-spaced such that the pipe has a minimum of one square inch opening per lineal foot and should face down.

The underdrain should be placed in a gravel envelope (Class 2 Permeable Material per Caltrans Spec. 68-1.025) that measures three feet wide and six inches deep. The underdrain is elevated from the bottom of the biofiltration area by six inches within the gravel envelope to create a fluctuating anaerobic/aerobic zone below the underdrain to facilitate denitrification within the anaerobic/anoxic zone and reduce nutrient concentrations. The top and sides of the underdrain pipe should be covered with gravel to a minimum depth of 12 inches. The underdrain and gravel envelope should be covered with a geomembrane liner to prevent clogging. The following aggregate should be used for the gravel envelope:

Particle Size (ASTM D422)	% Passing by Weight
¾ inch	100%
¼ inch	30-60%
#8	20-50%
#50	3-12%
#200	0-1%

Underdrains should be sloped at a minimum of 0.5 percent and must drain freely to an approved discharge point.

Rigid non-perforated observation pipes with a diameter equal to the underdrain diameter should be connected to the underdrain to provide a clean-out port as well as an observation well to monitor drainage rates. The wells/clean-outs should be connected to the perforated underdrain with the appropriate manufactured connections. The wells/clean-outs should extend six inches above the top elevation of the biofiltration area mulch, and should be capped with a lockable screw cap. The ends of underdrain pipes not terminating in an observation well/clean-out should also be capped.

Hydraulic Restriction Layer

Lateral infiltration pathways may need to be restricted due to the close proximity of roads, foundations, or other infrastructure. A geomembrane liner, or other equivalent waterproofing, may be placed along the vertical walls to reduce lateral flows. This geomembrane liner must have a minimum thickness of 30 mils and meet the requirements of Table E-12. Generally, waterproof barriers should not be placed on the bottom of the biofiltration unit, as this would prevent incidental infiltration which is important to meeting the required pollutant load reduction.

Table E-12. Geomembrane Liner Specifications for Biofiltration Areas

Parameter	Test Method	Specifications
Material		Nonwoven geomembrane liner
Unit weight		8 oz/yd^3 (minimum)
Filtration rate		0.08 in/sec (minimum)
Puncture strength	ASTM D-751 (Modified)	125 lbs (minimum)
Mullen burst strength	ASTM D-751	400 lb/in^2 (minimum)
Tensile strength	AST D-1682	300 lbs (minimum)
Equiv. opening size	US Standard Sieve	No. 80 (minimum)

Planting/Storage Media

- The planting media placed in the biofiltration area should achieve a long-term, in-place infiltration rate of at least 5 in/hr. Higher infiltration rates of up to 12 in/hr are permissible. The biofiltration soil media must retain sufficient moisture to support vigorous plant growth.
- The planting media mix must consist of 60 to 80 percent sand and 20 to 40 percent compost.
- Sand should be free of wood, waste, coatings such as clay, stone dust, carbonate, or any other deleterious material. All aggregate passing the No. 200 sieve size should be non-plastic. Sand for biofiltration should be analyzed by an accredited laboratory using #200, #100, #40, #30, #16, #8, #4, and 3/8 sieves (ASTM D422 or as approved by the local permitting authority) and meet the following gradations (Note: all sand complying with ASTM C33 for fine aggregate comply with the gradation requirements listed below):

Particle Size (ASTM D422)	% Passing by Weight
3/8 inch	100%
#4	90-100%
#8	70-100%
#16	40-95%
#30	15-70%
#40	5-55%
#110	0-15%
#200	0-5%

Note: The gradation of the sand component of the biofiltration soil media is believed to be a major factor in the infiltration rate of the media mix. If the desired hydraulic conductivity of the biofiltration soil media cannot be achieved within the specified proportions of sand and compost (#2), then it may be necessary to utilize sand at the coarser end of the range specified minimum percent passing.

- Compost should be a well-decomposed, stable, weed-free organic matter source derived from waste materials including yard debris, wood wastes, or other organic material not including manure or biosolids meeting standards developed by the USCC. The product shall be certified through the USCC STA Program (a compost testing and information disclosure program). Compost quality shall be verified via a laboratory analysis to be:
    - Feedstock materials must be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
    - pH between 6.5 and 8.0 (may vary with plant palette)
    - Organic Matter: 35 to 75 percent dry weight basis
    - Carbon and Nitrogen Ratio: 15:1 < C:N < 25:1
    - Maturity/Stability: Compost must have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120°F) upon delivery or rewetting is not acceptable.
    - Toxicity: any one of the following measures is sufficient to indicate non-toxicity:
        - NH_4:NH_3 < 3
        - Ammonium < 500 ppm, dry weight basis
        - Seed germination > 80 percent of control
        - Plant trials > 80 percent of control
        - Solvita® > 5 index value
    - Nutrient content:
        - Total Nitrogen content ≥ 0.9 percent preferred
        - Total Boron should be < 80 ppm; soluble boron < 2.5 ppm
    - Salinity: < 6.0 mmhos/cm
    - Compost for biofiltration area should be analyzed by an accredited laboratory using #200, ¼-inch, ½-inch, and 1-inch sieves (ASTM D422) and meet the gradation requirements in the table below:

Particle Size (ASTM D422)	% Passing by Weight
1 inch	99-100
½ inch	90-100
¼ inch	40-90
#200	2-10

Tests should be sufficiently recent to represent the actual material that is anticipated to be delivered to the site. If processes or sources used by the supplier have changed significantly since the most recent testing, new tests should be requested.

The gradation of compost used in biofiltration soil media is believed to play an important role in the saturated infiltration rate of the media. To achieve a higher saturated infiltration rate, it may be necessary to utilize compost at the coarser end of the range (minimum percent passing). The percent passing the #200 sieve (fines) is believed to be the most important factor in hydraulic conductivity.

In addition, coarser compost mix provides more heterogeneity of the biofiltration soil media, which is believed to be advantageous for more rapid development of soil structure needed to support healthy biological processes. This may be an advantage for plant establishment with lower nutrient and water input.

- Biofiltration soil media not meeting the above criteria should be evaluated on a case-by-case basis. Alternative biofiltration soil media must meet the following specifications:

  "Soils for biofiltration facilities must be sufficiently permeable to infiltrate stormwater runoff at a minimum of rate of 5 in/hr during the life of the facility, and provide sufficient retention of moisture and nutrients to support healthy vegetation." The following steps shall be followed by LACDPW to verify that alternative biofiltration soil media mixes meet the specification:

  - Submittals – The applicant must submit to LACDPW for approval:
    - A sample of mixed biofiltration soil media.
    - Certification from the soil supplier or an accredited laboratory that the biofiltration soil media meets the requirements of this specification.
    - Certification from an accredited geotechnical testing laboratory that the biofiltration soil media has an infiltration rate between 5 and 12 in/hr.
    - Organic content test results of the biofiltration soil media. Organic content test shall be performed in accordance with the Testing Methods for the Examination of Compost and Composting (TMECC) 05.07A, "Loss-On-Ignition Organic Matter Method".
    - Organic grain size analysis results of mixed biofiltration soil media performed in accordance with ASTM D422, Standard Test Method for Particle Size Analysis of Soils.
    - A description of the equipment and methods used to mix the sand and compost to produce the biofiltration soil media.
  - The name of the testing laboratory(ies) and the following information:

        - Contact person(s)
        - Address(es)
        - Phone contact(s)
        - E-mail address(es)
        - Qualifications of laboratory(ies) and personnel including date of current certification by STA, ASTM, or approved equal.
    - Biofiltration soils shall be analyzed by an accredited laboratory using #200 and ½-inch sieves (ASTM D422 or as approved by LACDPW), and meet the gradation described in the table below:

Particle Size (ASTM D422)	% Passing by Weight
½ inch	97-100
#200	2-5

- Biofiltration soil media shall be analyzed by an accredited geotechnical laboratory for the following tests:
    - Moisture – density relationships (compaction tests) must be conducted on biofiltration soil media. Biofiltration soil media for the permeability test shall be compacted to 85 to 90 percent of the maximum dry density (ASTM D1557).
    - Constant head permeability testing in accordance with ASTM D2434 shall be conducted on a minimum of two samples with a 6-inch mold and vacuum saturation.
- Mulch is recommended for the purpose of retaining moisture, preventing erosion, and minimizing weed growth. Projects subject to the California Model Water Efficiency Landscaping Ordinance (or comparable local ordinance) will be required to provide at least 2 inches of mulch. Aged mulch, also called compost mulch, reduces the ability of weeds to establish, keeps soil moist, and replenishes soil nutrients. Biofiltration areas must be covered with two to four inches (average three inches) of mulch at the start and an annual placement (preferably in June after weeding) of one to two inches of mulch beneath plants.
- The planting media design height must be marked appropriately, such as a collar on the overflow device or with a stake inserted two feet into the planting media and notched, to show biofiltration surface level and ponding level.

Vegetation

Prior to installation, a licensed landscape architect must certify that all plants, unless otherwise specifically permitted, conform to the standards of the current edition of American Standard for Nursery Stock as approved by the American Standards Institute, Inc. All plant grades shall be those established in the current edition of American Standards for Nursery Stock.

- Shade trees must have a single main trunk. Trunks must be free of branches below the following heights:

CALIPER (in)	Height (ft)
1½-2½	5
3	6

- Plants must be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 96 hours.
- It is recommended that a minimum of three types of tree, shrubs, and/or herbaceous groundcover species be incorporated to protect against facility failure due to disease and insect infestations of a single species.
- Native plant species and/or hardy cultivars that are not invasive and do not require chemical inputs must be used to the maximum extent practicable.

The biofiltration area should be vegetated to resemble a terrestrial forest community ecosystem, which is dominated by understory trees, a shrub layer, and herbaceous ground cover. Select vegetation that:

- Is suited to well-drained soil;
- Will be dense and strong enough to stay upright, even in flowing water;
- Has minimum need for fertilizers;
- Is not prone to pests and is consistent with Integrated Pest Management practices; and
- Is consistent with local water conservation ordinance requirements.

Irrigation System

Provide an irrigation system to maintain viability of vegetation, if applicable. The irrigation system must be designed to local code or ordinance specifications.

Restricted Construction Materials

The use of pressure-treated wood or galvanized metal at or around a biofiltration area is prohibited.

Overflow Device

An overflow device is required at the 18-inch ponding depth. The following, or equivalent, should be provided:

- A vertical PVC pipe (SDR 26) to act as an overflow riser.
- The overflow riser(s) should be eight inches or greater in diameter, so it can be cleaned without damage to the pipe.

- The inlet to the riser should be at the ponding depth (18 inches for fenced biofiltration areas and 6 inches for areas that are not fenced), and be capped with a spider cap to exclude floating mulch and debris. Spider caps should be screwed in or glued (e.g., not removable). The overflow device should convey stormwater runoff in excess of 1.5 times the SWQDv that is not reliably retained on the project site to an approved discharge location (another stormwater quality control measure, storm drain system, or receiving water).

Maintenance Requirements

Maintenance and regular inspections are important for proper function of biofiltration areas. Biofiltration areas require annual plant, soil, and mulch layer maintenance to ensure optimal infiltration, storage, and pollutant removal capabilities. In general, biofiltration maintenance requirements are typical landscape care procedures and include:

- Irrigate plants as needed during prolonged dry periods. In general, plants should be selected to be drought-tolerant and not require irrigation after establishment (two to three years).
- Inspect flow entrances, ponding area, and surface overflow areas periodically, and replace soil, plant material, and/or mulch layer in areas if erosion has occurred. Properly-designed facilities with appropriate flow velocities should not cause erosion except potentially during in extreme events. If erosion occurs, the flow velocities and gradients within the biofiltration area and flow dissipation and erosion protection strategies in the pretreatment area and flow entrance should be reassessed. If sediment is deposited in the biofiltration area, identify the source of the sediment within the tributary area, stabilize the source, and remove excess surface deposits.
- Prune and remove dead plant material as needed. Replace all dead plants, and if specific plants have a high mortality rate, assess the cause and, if necessary, replace with more appropriate species.
- Remove weeds as needed until plants are established. Weed removal should become less frequent if the appropriate plant species are used and planting density is attained.
- Select the proper soil mix and plants for optimal fertility, plant establishment, and growth to preclude the use of nutrient and pesticide supplements. By design, biofiltration facilities are located in areas where phosphorous and nitrogen levels are often elevated such that these should not be limiting nutrients. Addition of nutrients and pesticides may contribute pollutant loads to receiving waters.
- In areas where heavy metals deposition is likely (i.e., tributary areas to industrial, vehicle dealerships/repair, parking lots, roads), replace mulch annually. In areas where metals deposition is less likely (i.e., residential lots), replace or add mulch as needed to maintain a two to three inch depth at least once every two years.

- Analyze soil for fertility and pollutant levels if necessary. Biofiltration soil media are designed to maintain long-term fertility and pollutant processing capability.
- Eliminate standing water to prevent vector breeding.
- Inspect overflow devices for obstructions or debris, which should be removed immediately. Repair or replace damaged pipes upon discovery.
- Inspect, and clean if necessary, the underdrain.

A summary of potential problems that need to be addressed by maintenance activities is presented in Table E-13.

The County requires execution of a maintenance agreement to be recorded by the property owner for the on-going maintenance of any privately-maintained stormwater quality control measures. The property owner is responsible for compliance with the maintenance agreement. A sample maintenance agreement is presented in Appendix H.

Table E-13. Biofiltration Troubleshooting Summary

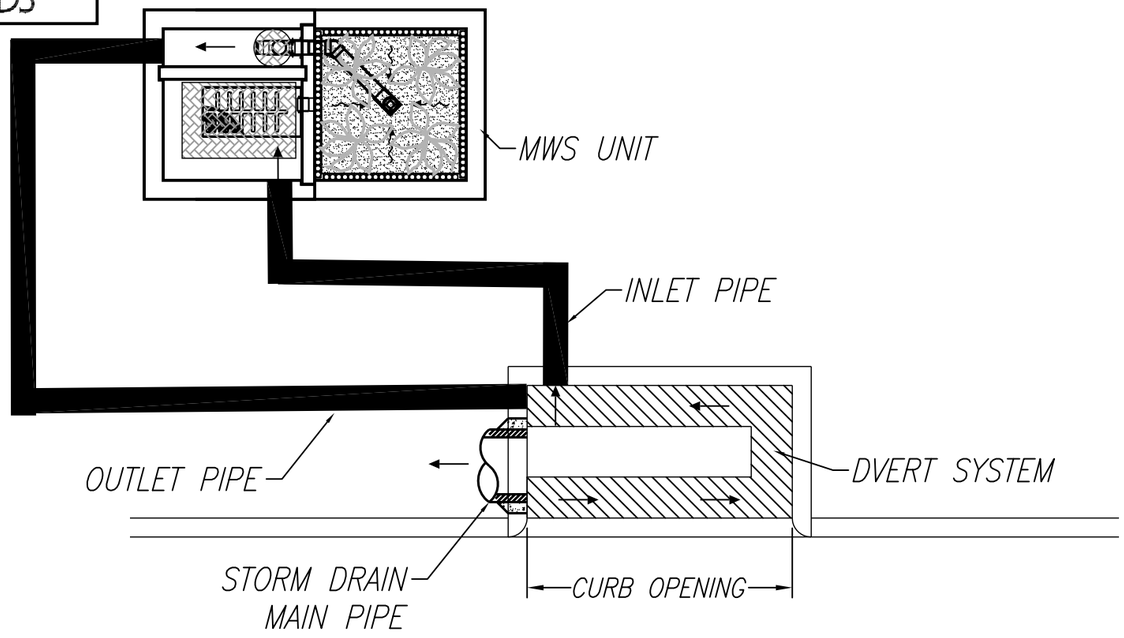
Problem	Conditions When Maintenance Is Needed	Maintenance Required
Vegetation	Overgrown vegetation	Mow and prune vegetation as appropriate.
	Presence of invasive, poisonous, nuisance, or noxious vegetation or weeds	Remove this vegetation and plant native species as needed.
Trash and Debris	Trash, plant litter, and dead leaves present	Remove and properly dispose of trash and debris.
Irrigation (if applicable)	Not functioning correctly	Check irrigation system for clogs or broken lines and repair as needed.
Inlet/Overflow	Inlet/overflow areas clogged with sediment and/or debris	Remove material.
	Overflow pipe blocked or broken	Repair as needed.
Erosion/Sediment Accumulation	Splash pads or spreader incorrectly placed Presence of erosion or sediment accumulation	Check inlet structure to ensure proper function. Repair, or replace if necessary, the inlet device. Repair eroded areas with gravel as needed. Re-grade the biofiltration area as needed.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Remove any evidence of visual contamination from floatables such as oil and grease.
Standing water	Standing water observed more than 96 hours after storm event	Inspect, and clean as needed, the underdrain to ensure proper function. Clear clogs as needed. Remove and replace planter media (sand, gravel, topsoil, mulch) and vegetation.

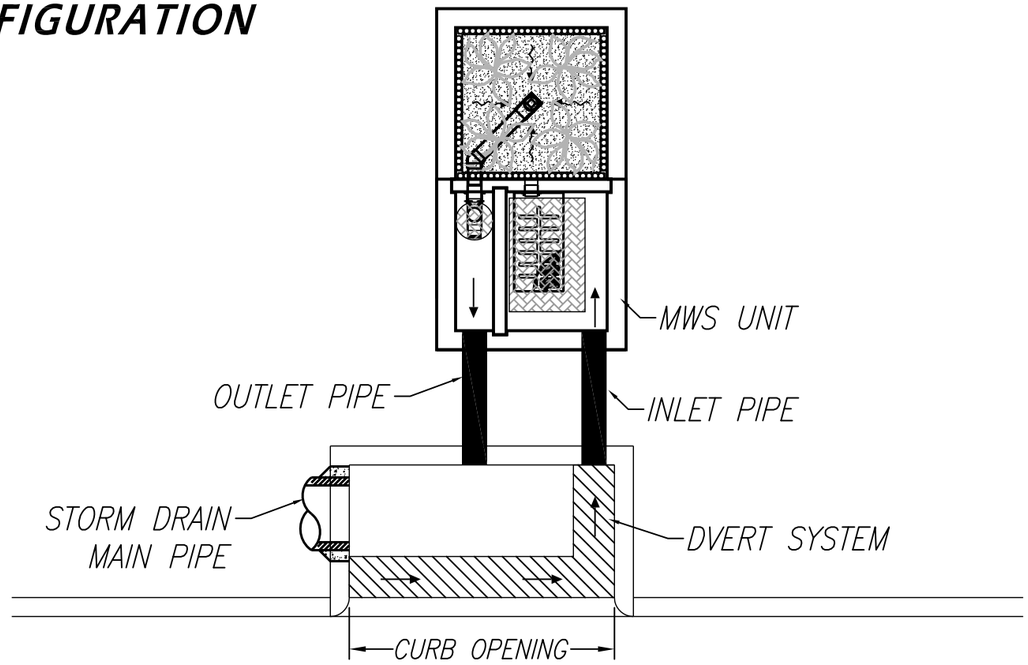
Appendix C:
Modular Wetlands System Information

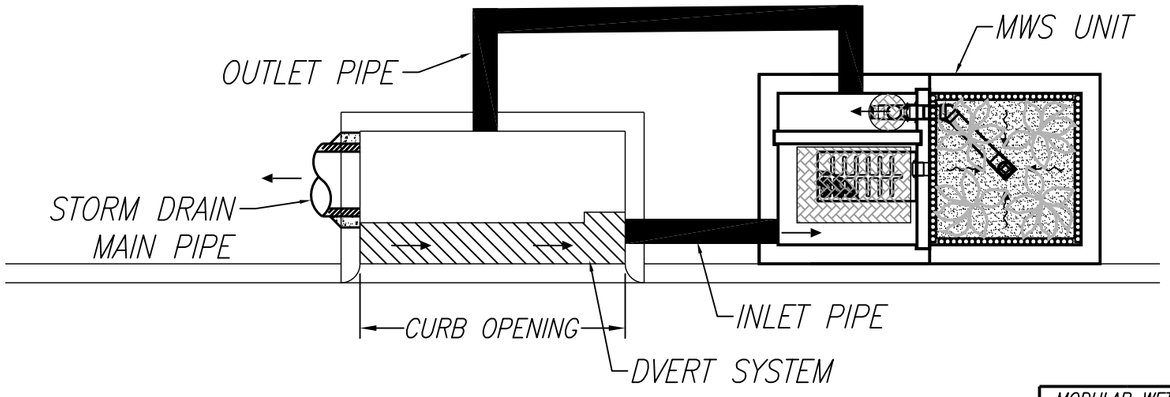
MWS Linear 2.0 HGL Sizing Calculations

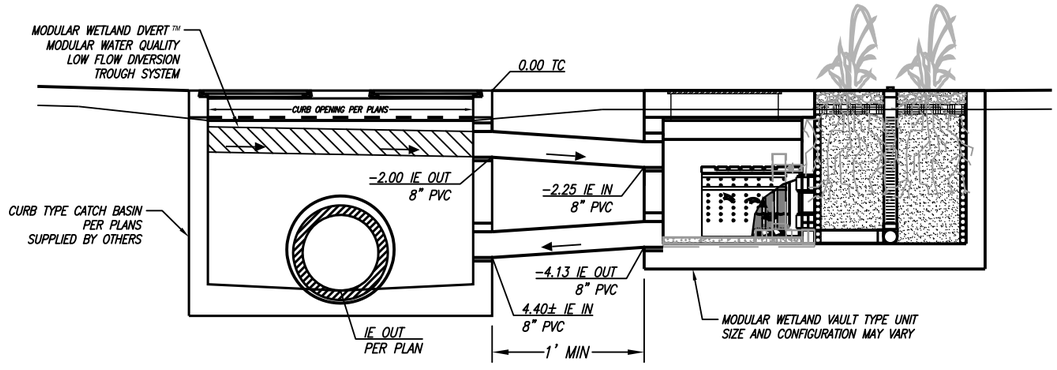
MWS MODEL SIZE	WETLAND PERMITER LENGTH	LOADING RATE GPM/SF	HGL HEIGHT																												
			SHALLOW MODELS																			STANDARD HEIGHT MODEL	HIGH CAPACITY MODELS									
			1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.65	3.70	3.75	3.80	3.85	3.90	3.95
MWS-L-4-4	6.70	1.0	0.022	0.023	0.025	0.026	0.028	0.029	0.031	0.032	0.034	0.035	0.037	0.038	0.040	0.042	0.043	0.045	0.046	0.048	0.049	0.051	**0.052**	0.054	0.055	0.056	0.057	0.058	0.058	0.059	0.060	0.061
~~**MWS-L-4-6**~~	~~10.00~~	~~1.0~~	~~0.032~~	~~0.035~~	~~0.037~~	~~0.039~~	~~0.042~~	~~0.044~~	~~0.046~~	~~0.048~~	~~0.051~~	~~0.053~~	~~0.055~~	~~0.058~~	~~0.060~~	~~0.062~~	~~0.065~~	~~0.067~~	~~0.069~~	~~0.072~~	~~0.074~~	~~0.076~~	**0.078**	~~0.081~~	~~0.083~~	~~0.084~~	~~0.085~~	~~0.087~~	~~0.088~~	~~0.089~~	~~0.090~~	~~0.091~~
MWS-L-4-6	9.30	1.0	0.030	0.032	0.034	0.036	0.038	0.041	0.043	0.045	0.047	0.049	0.051	0.053	0.055	0.058	0.060	0.062	0.064	0.066	0.068	0.070	**0.073**	0.075	0.077	0.078	0.079	0.080	0.081	0.082	0.083	0.084
MWS-L-4-8	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	**0.115**	0.119	0.122	0.124	0.126	0.127	0.129	0.131	0.132	0.134
MWS-L-4-13	18.40	1.0	0.059	0.063	0.068	0.072	0.076	0.080	0.084	0.089	0.093	0.097	0.101	0.106	0.110	0.114	0.118	0.122	0.127	0.131	0.135	0.139	**0.144**	0.148	0.152	0.154	0.156	0.158	0.160	0.163	0.165	0.167
MWS-L-4-15	22.40	1.0	0.072	0.077	0.082	0.087	0.093	0.098	0.103	0.108	0.113	0.118	0.123	0.129	0.134	0.139	0.144	0.149	0.154	0.159	0.165	0.170	**0.175**	0.180	0.185	0.188	0.190	0.193	0.195	0.198	0.200	0.203
MWS-L-4-17	26.40	1.0	0.085	0.091	0.097	0.103	0.109	0.115	0.121	0.127	0.133	0.139	0.145	0.151	0.158	0.164	0.170	0.176	0.182	0.188	0.194	0.200	**0.206**	0.212	0.218	0.221	0.224	0.227	0.230	0.233	0.236	0.239
MWS-L-4-19	30.40	1.0	0.098	0.105	0.112	0.119	0.126	0.133	0.140	0.147	0.153	0.160	0.167	0.174	0.181	0.188	0.195	0.202	0.209	0.216	0.223	0.230	**0.237**	0.244	0.251	0.255	0.258	0.262	0.265	0.269	0.272	0.276
MWS-L-4-21	34.40	1.0	0.111	0.118	0.126	0.134	0.142	0.150	0.158	0.166	0.174	0.182	0.189	0.197	0.205	0.213	0.221	0.229	0.237	0.245	0.253	0.261	**0.268**	0.276	0.284	0.288	0.292	0.296	0.300	0.304	0.308	0.312
MWS-L-6-8	18.80	1.0	0.060	0.065	0.069	0.073	0.078	0.082	0.086	0.091	0.095	0.099	0.104	0.108	0.112	0.116	0.121	0.125	0.129	0.134	0.138	0.142	**0.147**	0.151	0.155	0.157	0.160	0.162	0.164	0.166	0.168	0.170
MWS-L-8-8	29.60	1.0	0.095	0.102	0.109	0.115	0.122	0.129	0.136	0.143	0.149	0.156	0.163	0.170	0.177	0.183	0.190	0.197	0.204	0.211	0.217	0.224	**0.231**	0.238	0.245	0.248	0.251	0.255	0.258	0.262	0.265	0.268
MWS-L-8-12	44.40	1.0	0.143	0.153	0.163	0.173	0.183	0.194	0.204	0.214	0.224	0.234	0.245	0.255	0.265	0.275	0.285	0.296	0.306	0.316	0.326	0.336	**0.346**	0.357	0.367	0.372	0.377	0.382	0.387	0.392	0.397	0.402
MWS-L-8-16	59.20	1.0	0.190	0.204	0.217	0.231	0.245	0.258	0.272	0.285	0.299	0.312	0.326	0.340	0.353	0.367	0.380	0.394	0.408	0.421	0.435	0.448	**0.462**	0.476	0.489	0.496	0.503	0.509	0.516	0.523	0.530	0.537
MWS-L-8-20	74.00	1.0	0.238	0.255	0.272	0.289	0.306	0.323	0.340	0.357	0.374	0.391	0.408	0.425	0.442	0.459	0.476	0.493	0.509	0.526	0.543	0.560	**0.577**	0.594	0.611	0.620	0.628	0.637	0.645	0.654	0.662	0.671
MWS-L-10-20 or MWS-L-8-24	88.80	1.0	0.285	0.306	0.326	0.346	0.367	0.387	0.408	0.428	0.448	0.469	0.489	0.509	0.530	0.550	0.571	0.591	0.611	0.632	0.652	0.673	**0.693**	0.713	0.734	0.744	0.754	0.764	0.774	0.785	0.795	0.805
4'x'4 media cage	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	**0.115**	0.119	0.122	0.124						

MODULAR WETLAND SYSTEMS - LINEAR 2.0
STANDARD DVERT CONFIGURATION









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	NAME	DATE
DRAWN		
EDITED		

COMMENTS:

TITLE: MWS LINEAR 2.0 DVERT SETUP

SIZE	DWG. NO.	REV

SCALE NTS | UNITS = INCHES | SHEET 1 OF 1

SITE SPECIFIC DATA*	
PROJECT NAME	
PROJECT LOCATION	
STRUCTURE ID	

PERFORMANCE DATA	
TREATMENT FLOW (CFS)	
TREATMENT HGL (FT)	
BYPASS FLOW RATE (CFS)	DEPENDANT ON PIPE SIZE

PROJECT PARAMETERS			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1		PVC	
OUTLET PIPE		PVC	
RIM ELEVATION			
SURFACE LOADING REQUIREMENT			PARKWAY

FRAME & COVER	PRETREATMENT	BIOFILTRATION	DISCHARGE
	30"	OPEN PLANTER	12"

WETLANDMEDIA VOLUME (CY)	
MEDIA DELIVERED	TBD
ORIFICE SIZE (DIA)	
MAX PICK WEIGHT (LBS)	TBD

NOTES:

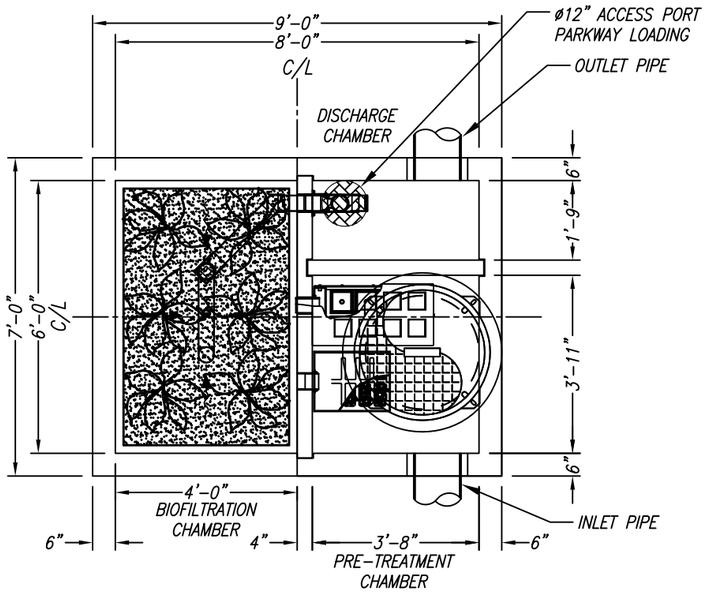
*PER ENGINEER OF RECORD

INSTALLATION NOTES

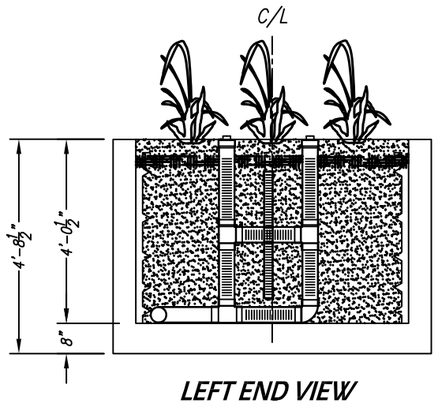
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. MANUFACTURER RECOMMENDS A MINIMUM 6"LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH).
4. INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR.
5. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
6. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
7. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.

GENERAL NOTES

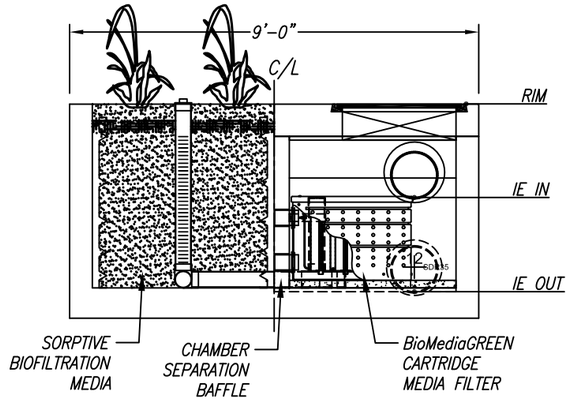
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



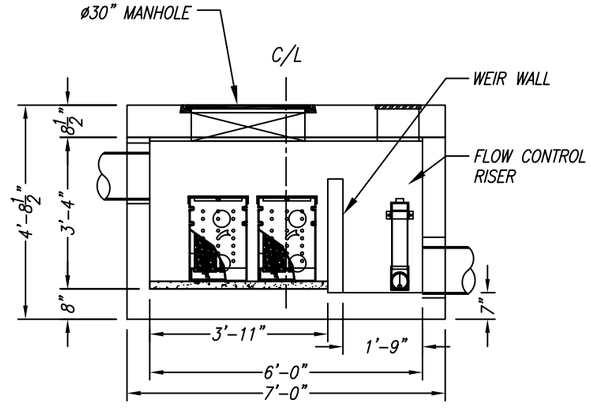
PLAN VIEW



LEFT END VIEW
BIOFILTRATION CHAMBER



ELEVATION VIEW



RIGHT END VIEW
PRETREATMENT/DISCHARGE CHAMBER

TREATMENT CAPACITY (CFS)	0.147
OPERATING HEAD (FT)	3.40
PRE-FILTER LOADING RATE (GPM/SF)	2.07
WETLAND LOADING RATE (GPM/SF)	1.03

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:

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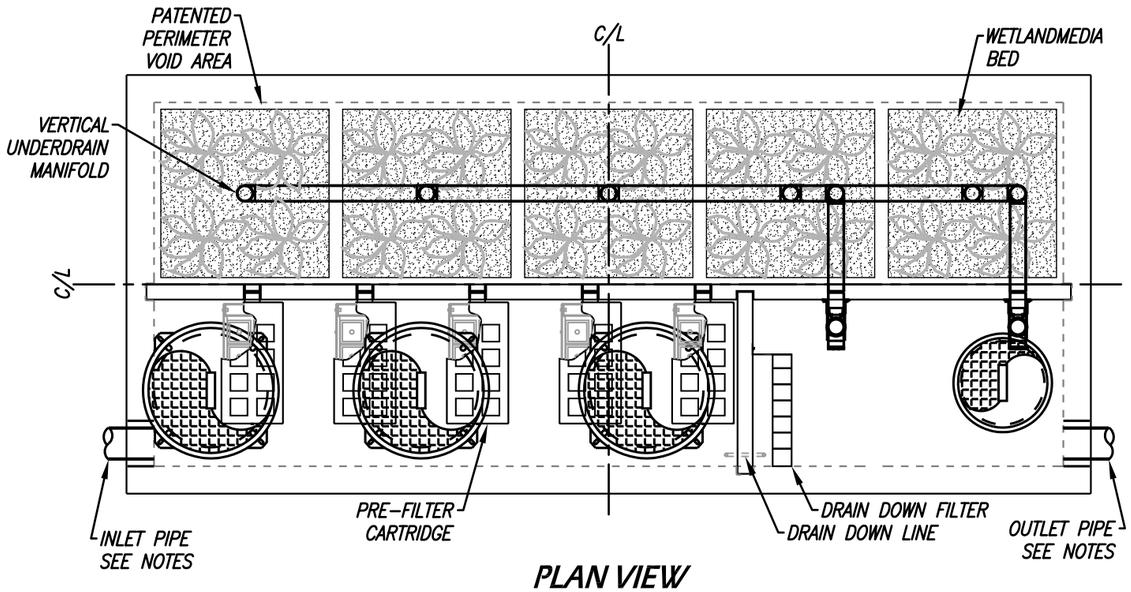
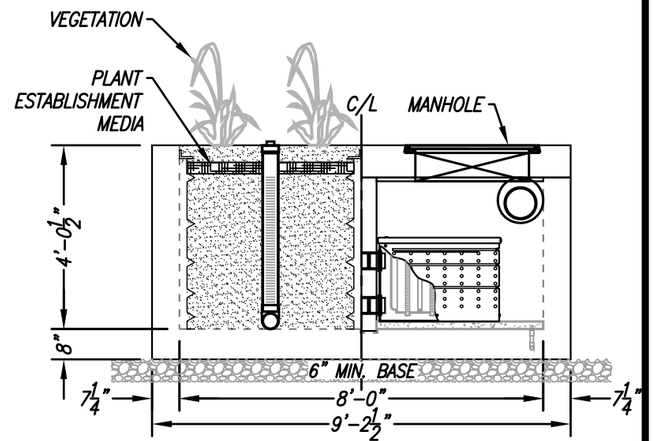
MODULAR WETLANDS

MWS-L-6-8-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

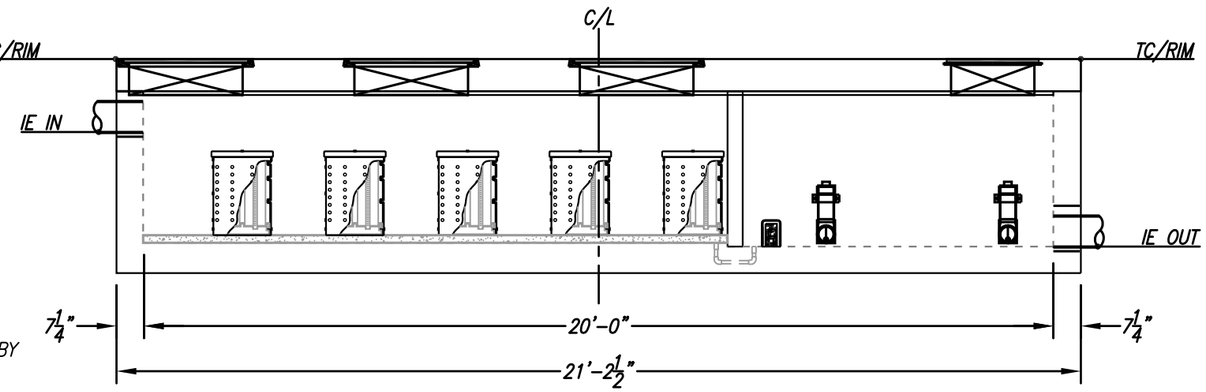
SITE SPECIFIC DATA			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			11.85
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.43"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			



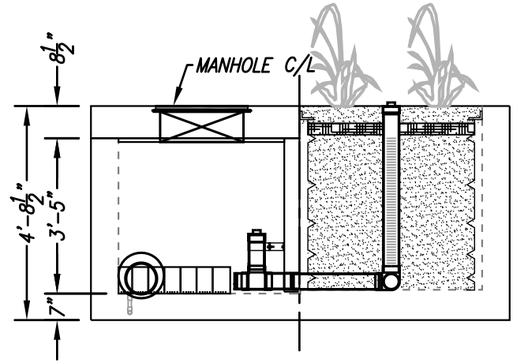
PLAN VIEW



LEFT END VIEW
BIOFILTRATION/PRETREATMENT



ELEVATION VIEW



RIGHT END VIEW
DISCHARGE/BIOFILTRATION

INSTALLATION NOTES

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4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

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TREATMENT FLOW (CFS)	0.577
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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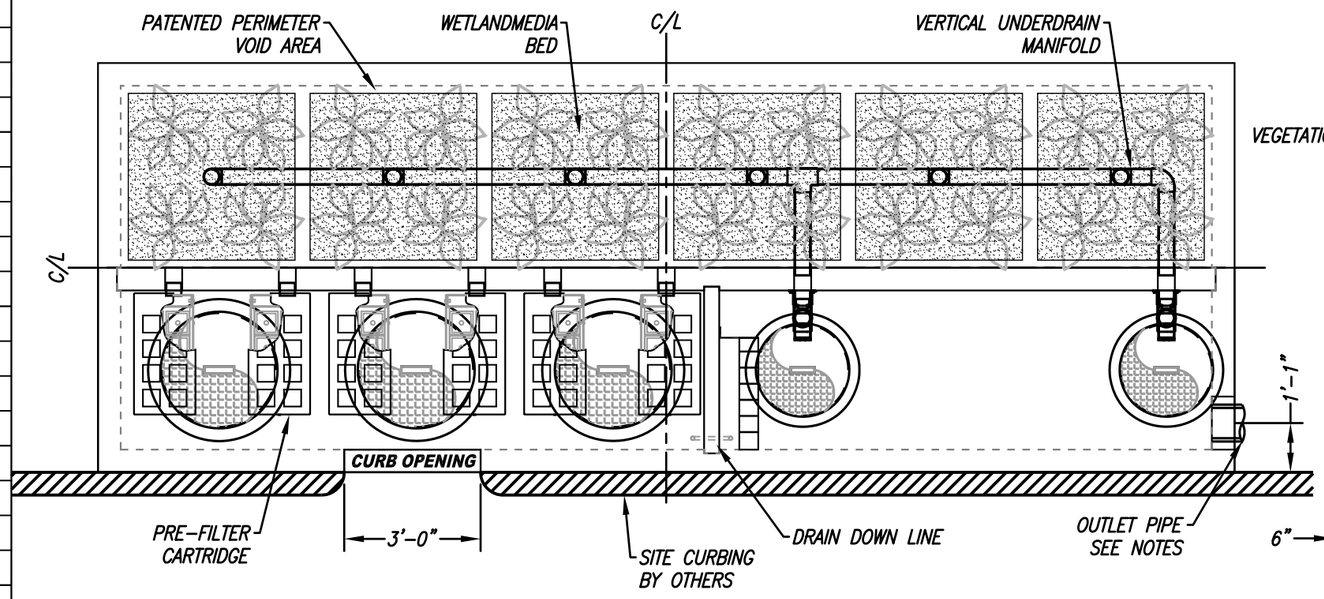
MODULAR WETLANDS
www.ModularWetlands.com | (855) 5MOD-WET

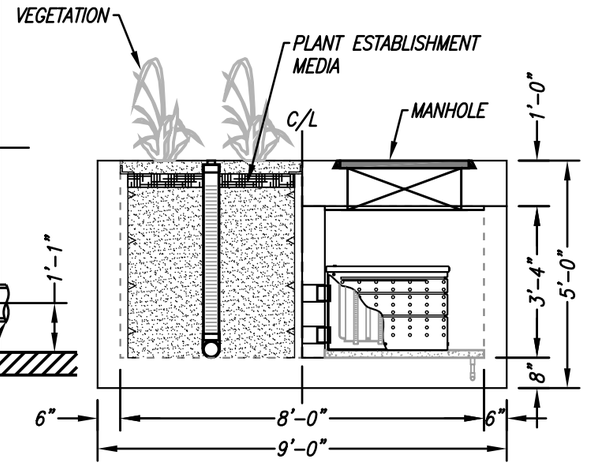
MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

6/2/15/JOHN

SITE SPECIFIC DATA			
PROJECT NUMBER			
ORDER NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	3 EA ø30"	N/A	2 EA ø24"
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



PLAN VIEW



LEFT END VIEW

INSTALLATION NOTES

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6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING MODULAR WETLANDS FOR ACTIVATION OF UNIT. MANUFACTURES WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A MODULAR WETLANDS REPRESENTATIVE.

GENERAL NOTES

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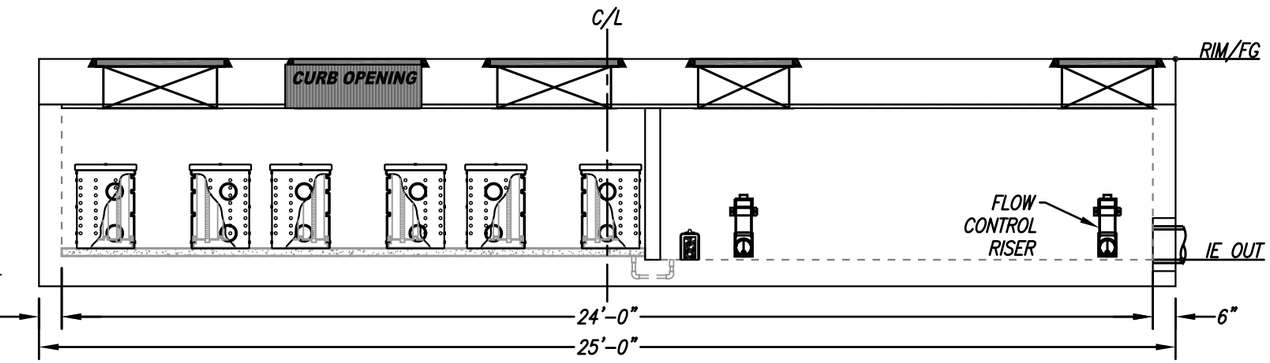
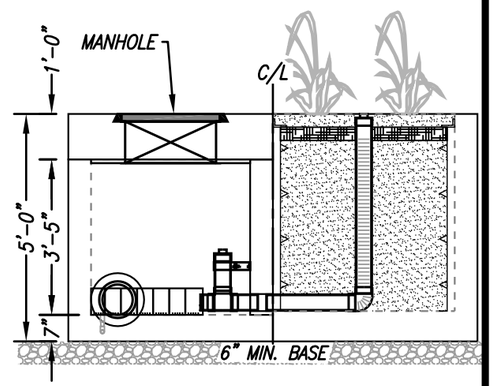
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS
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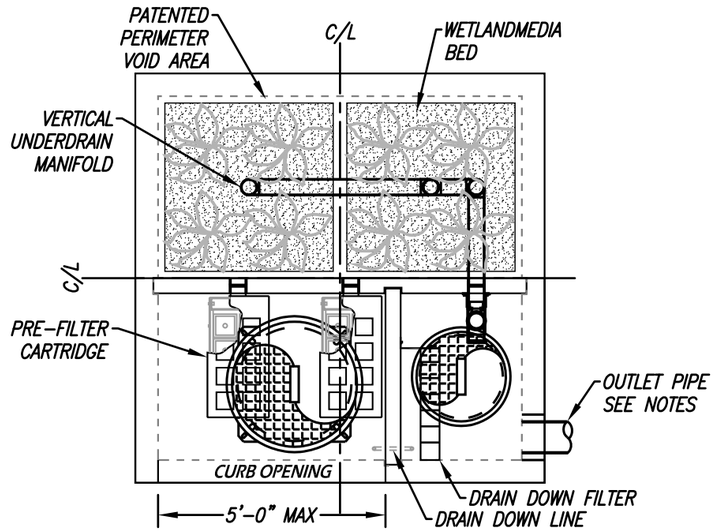
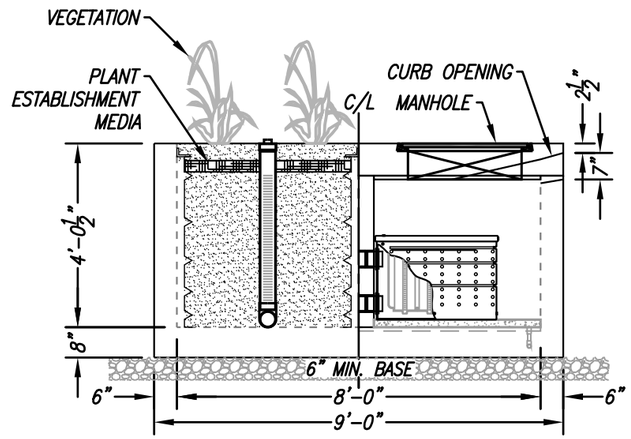
Bio Clean
A Forterra Company

MWS-L-8-24-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

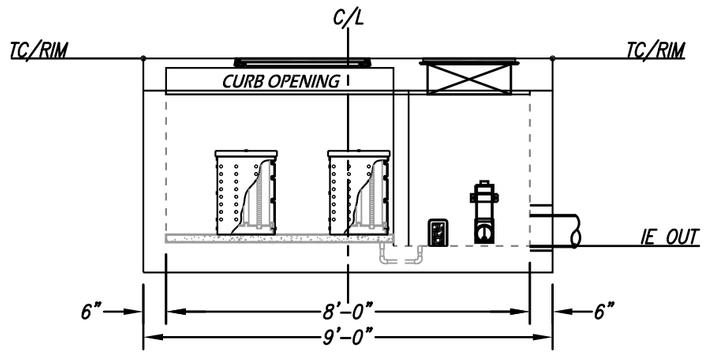
SITE SPECIFIC DATA			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			4.84
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.16"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			



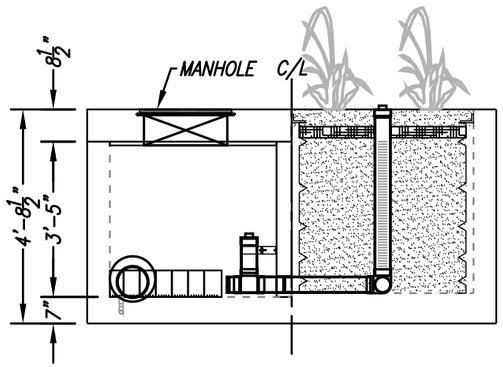
PLAN VIEW



LEFT END VIEW
BIOFILTRATION/PRETREATMENT



ELEVATION VIEW



RIGHT END VIEW
DISCHARGE/BIOFILTRATION

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TREATMENT FLOW (CFS)	0.230
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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MWS-L-8-8-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL