

**SITE MITIGATION PLAN
SFDPH'S ARTICLE 22A COMPLIANCE
PORT OF SAN FRANCISCO, PIER 94/SEAWALL LOT BACKLANDS
IMPROVEMENT
SAN FRANCISCO, CALIFORNIA**

MARCH 9, 2018

Submitted to:

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San Francisco, CA 94111

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LIST OF COMMON ACRONYMS

AEW	AEW Engineering, Inc.
Article 22A	San Francisco Department of Public Health’s Article 22A Ordinance (also known as Maher Ordinance)
Article 22B	San Francisco Department of Public Health’s Article 22B Ordinance (also known as the San Francisco Dust Ordinance)
bgs	Below ground surface
BTEX	Benzene/Toluene/Ethylene/Xylenes
DTSC-SLs	California Environmental Protection Agency, Department of Toxic Substances Control’s Modified Screen Levels for Soil
ESLs	California Regional Water Quality Control Board – San Francisco Region’s Environmental Screening Criteria
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per liter
NOA Regulation	California Code of Regulations Title 17, Section 93105, “Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations
PCBs	Polychlorinated Biphenyls
Pesticides	Organochlorine Pesticides
Port	Port of San Francisco
RSL	United States Environmental Protection Agency’s Regional Screening Levels
RWQCB-SF	Regional Water Quality Control Board – San Francisco Region
RCRA	Federal Resource Conservation Recovery Act
SFDPH	San Francisco Department of Public Health
STLC	California Soluble Threshold Limit Concentration
SVOCs	Semi-Volatile Organic Compounds
TCLP	United States Environmental Protection Agency’s Toxicity Characteristic Leaching Procedure
Title-22 Metals	17 Metals listed in Title 22 of the California Code of Regulations: Sb=Antimony; As=Arsenic; Ba=Barium; Be=Beryllium; Cd=Cadmium; Cr=Chromium; Cr+6=Chromium VI; Co=Cobalt; Cu=Copper; Pb=Lead; Hg=Mercury; Mo=Molybdenum; Ni=Nickel; Se=Selenium; Ag=Silver; Tl=Thallium; V=Vanadium; and Zn=Zinc.
TPHs	Total Petroleum Hydrocarbons
TPHs-g	TPHs as Gasoline
TPHs-d	TPHs as Diesel
TPHs-mo	THPs as Motor Oil
TTLC	California Total Threshold Limit Concentration
USEPA	United States Environmental Protection Agency
SVOCs	Semi-Volatile Organic Compounds
VOCs	Volatile Organic Compounds



List of Common Acronyms

WET	California Waste Extraction Test
USCS	Unified Soil Classification System
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Liter



PROFESSIONAL CERTIFICATION

The SMP was prepared under the direction of Mr. Kenneth Leung, a licensed professional engineer in civil engineering by the State of California (Certificate Number: C47529, Expiration Date: December 31, 2019) for compliance with San Francisco Department of Public Health's Article 22A compliance on this project.

Signature:



Date:

March 9, 2018

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1 INTRODUCTION

This Site Mitigation Plan (SMP) presents the decision framework and specific protocols for managing the chemicals in the soil and groundwater in a manner to mitigate risks to human health and environment for the Port of San Francisco (Port) proposed Pier 94 Backlands Improvement (Project) in compliance with the San Francisco Department of Public Health Article 22A Ordinance (Article 22A) requirements. The Project site is located on Seawall Lot 344, which is adjacent to Seawall Lot 352 on the southern portion of Pier 94 near Amador Street and Cargo Way in San Francisco, California (Figure 1). The Site is located approximately 1,000 feet from Islais Creek and 2,000 feet from the shore of San Francisco Bay. Railroad tracks are located immediately south of the site boundary. The Port site is on land that has been trusted to the City and County of San Francisco and administered by the Port of San Francisco. The Port Site and Pier 94 are shown on Figure 1.

The Port has worked with the San Francisco Public Works (SFPW) design team to finalize project plans and specifications to complete improvements of approximately 23 acres of vacant land within the Seawall Lot 344 Backlands area into approximately 16 acres of leasable property. As required by the Regional Water Quality Control Board (RWQCB), Project plans include placement of an engineered cap within a 7.6-acre area of the 16 acres to address potential water quality impacts associated with future site development and uses. The remaining 7 acres will be improved with an asphalt road, storm water management features, lighting and landscaping. The Project layout and Limits of Work are shown on Backlands Improvements Project Site Map (Figure 2).

This SMP delineates the specific site management measures that will be implemented prior to, during, and after development of the Site. This SMP was prepared solely for use within the construction area for this project at the Site, as presented in Figures 1 and 2, and is not intended for application toward risk management outside the Site. Although this SMP sets forth the requirements to appropriately manage the chemicals in soil and ground water (if groundwater is encountered during this project), the SMP is not intended to catalogue all other legal requirements that may apply to the project or to activities conducted within the Site.

Current and future owners, occupants and managers, or contractors delegated or authorized to perform property maintenance or construction, are required to comply with the measures identified in the SMP when engaging in the relevant activities discussed.

In the event of any discrepancy between this SMP, and applicable regulations, the more stringent requirements shall apply.

The SMP was prepared under the direction of Mr. Kenneth Leung, a licensed professional engineer in civil engineering by the State of California (Certificate Number: C47529, Expiration Date: December 31, 2019).

This SMP was prepared based on current site conditions known at the time of this SMP preparation and is a “working document” for use by site personnel and the Port. The SMP will be modified and amended if necessary at any time under, but not limited to, any of the following conditions:

- To reflect (1) actual chemical concentrations found in soil and groundwater, or (2) actual site conditions observed during construction;
- To address additional environmental hazards and concerns identified.



1.1 PROJECT BACKGROUND AND DESCRIPTION

The Backlands area was created during the 1960s and 1970s by constructing a perimeter debris dike and placing fill on the inboard side of the dike. The fill consists primarily of dredge spoils and construction debris. After filling ceased in 1975, a soil cap was placed over the construction debris (T&R/RYCG JV. 2012). The RWQCB has identified a portion of the Project area to fall within a former Class III regulated landfill area. A landfill cover is required for this area.

As detailed in the SF PW 100% Project Plans, the project consists of the following key components:

- Vegetation clearing and grubbing;
- Grading of the existing slope;
- Installation of a geomembrane and clean soil cover to cap the 7.6 acre landfill portion of the project area;
- Storm sewer improvements;
- Installation of a paved roadway; and
- Installation of perimeter lighting.

1.2 PLAN ORGANIZATION

The remainder of this SMP is organized into the following sections:

- Section 2.0 –Site History and Existing Environmental Chemical Information, presenting a summary of the site geology and existing environmental information at and around the Site;
- Section 3.0 – Site Management Measures Prior to Site Construction, describing mitigation measures to be implemented prior to site construction activities;
- Section 4.0 – Site Management Measures During Site Construction, describing mitigation measures to be performed during site construction;
- Section 5.0 – Site Management Measures After Site Construction, outlining long-term site maintenance measures planned after site development;
- Section 6.0 – Plan limitations describing the limitations of this SMP; and
- Section 7.0 – References cited in this SMP.



2 SITE HISTORY AND EXISTING ENVIRONMENTAL CHEMICAL INFORMATION

The site history and summary of environmental investigations presented in this section is based on findings from previous environmental investigations performed within and surrounding the Project limits obtained from the following documents¹:

- Bechtel Environmental, Inc. 1994. *“Phase II Environmental Site Assessment Report for the proposed San Francisco Energy Company Facility Port Site”*, dated October 14, 1994;
- Harlan Tait Associates. 2002. *“Site Assessment Report and Mitigation Plan, Pacific Cement New Batching Facility Site, Pier 94, Seawall Lot 352, Port of San Francisco, California”*, dated May 24, 2002;
- T&R/RYCG. *“Site History Report and Sampling and Analysis Plan, Pier 94 Backlands Improvement and Amador Street Sanitary Pump Station, San Francisco, California”*, dated July 11, 2011;
- T&R/RYCG. *“Sampling and Analysis Plan Addendum, Pier 94 Backlands Improvement and Amador Street Sanitary Pump Station, San Francisco, California”*, dated August 24, 2011;
- T&R/RYCG *“Site Investigation Report, Pier 94 Backlands Improvement and Amador Street Sanitary Pump Station, San Francisco, California”*, dated June 15, 2012; and
- AEW Engineering, Inc. *“Naturally-Occurring Asbestos Characterization Report, Backlands Improvement Project, San Francisco, California”* dated March 7, 2018.

2.1 SITE HISTORY

Based on the review of the above documents, the history of the Site and its vicinity is as follow:

- The Backlands were created during the 1960s and early 1970s by constructing a perimeter debris dike bay from Pier 92 in the north to Pier 96 in the south and placing fill within the dike;
- The debris dike was constructed in 1961 and was comprised of wood, brick, metal, and concrete with sandy gravel, silty sand, and clay;
- In 1964, about 2.5 million cubic yards of Bay Mud dredge spoil from Pier 80 were placed within the dike;
- Between 1965 and 1975, an unknown quantity of construction debris and municipal waste were reported to be placed over the Bay Mud dredge spoils. The debris layer ranges from about 9 feet to 29 feet and was appeared to be comprised of a heterogeneous mixture of wood, brick, concrete, roots, terra cotta, metal, plastic, and household debris, mixed with silty sandy clay and silty clayey sand;

1. In the event of any discrepancy between these documents and this SMP, the information described in the relevant respective document shall be followed.



- In 1977, a 1- to 5-foot layer of rocky soil with minor amounts of debris was placed over the debris layer. Previous subsurface investigations identified an approximately 14 to 17-acre portion of the Backlands where significant quantities of municipal refuse were found in the debris layer. This portion of the Backlands where debris was encountered as well as additional areas to the north and southeast of the Backlands boundary are collectively identified as the “landfill” area;
- Since 1987, the landfill portion of the site has been regulated under Waste Discharge Requirements (WDR) issued by the San Francisco Bay Regional Water Quality Control Board (RWQCB) as a Class III solid waste disposal site. In 2003, the RWQCB adopted revised WDR Order No. R2-2003-0055 that required quarterly visual inspection and approved the excavation and/or construction within the landfill area;
- Amador Street was constructed by 1968, and the Amador Street Extension was constructed in 2005;
- San Francisco Bay Railroad, Inc. leases the rail operations along the southwest boundary of the Project;

Since its construction, most of the Backlands area has remained vacant and undeveloped, except for the following, as shown on Figure 2:

- The radio transmission tower constructed by 1980 and associated building, located north of the project area is currently leased to San Francisco Radio Assets and used by KSFO;
- A tallow facility leased to Darling Ingredients has been in operation north of the project area since at least 1982;
- Based on available information, Superstructures Inc. processed and crushed concrete materials from the former Embarcadero Freeway from the early to mid-1990s, and Specialty Crushing operated a concrete crushing facility south of the Backlands project area from 1999 to 2005. The facility is now operated by Sustainable Crushing, a division of Recology, San Francisco; and
- The area northeast of the site and adjacent to the Amador Street extension, currently leased to Central Concrete Supply Company, has been used as a parking and staging area associated with the Bode Gravel facility since at least 2003.

2.2 SITE GEOLOGY AND SETTINGS

Based on review of previous site investigations performed within and surrounding the Project limits, the following site geology and settings were observed:

- According to the Site Investigation Report prepared by T&R/RVCB in 2012, subsurface material in boreholes encountered fill material consisting primarily of sand mixed with varying amounts of gravel, silt, wood, and brick to the maximum explored depth of 14 feet bgs. Groundwater was not encountered in the boreholes during drilling for the 2011 soil investigation;
- According to the Site Investigation and Geotechnical Investigation Reports prepared by T&R/RVCB in 2012, the area next to the Project limits is generally comprised of fill



to depths of 25 to 40 feet bgs. The fill, placed prior to 1961 is heterogeneous and consists of variable mixture of clay, silt, and gravel, with occasional brick, concrete, and asphalt debris. The fill is underlain by soft to stiff clay (Bay Mud) to depths between 70 and 75 feet bgs. Beneath the Bay Mud is about 15 feet of dense sand underlain by stiff to hard clay; and

- According to the 2018 NOA Investigation, AEW observed that the subsurface material at the site from ground surface to the final drilled depth of approximately 4 feet bgs consisted of brown fine to coarse sand fill material with clay and gravel. Trace gravel, brick and wood were also present. No bedrock or groundwater was encountered in any of the soil borings. A single piece of heavily weathered serpentinite gravel was observed in two cores: AEW-5 at 1.2 to 1.8 bgs and AEW-7 at 2.1 to 2.6 bgs (the approximate locations of these two borings are shown in Figure 4). AEW field personnel prepared a log of the subsurface material encountered from each borehole.

2.3 EXISTING ENVIRONMENTAL INFORMATION

Review of the above-mentioned documents indicated chemical analyses were performed on multiple soil samples that would be considered relevant for evaluating the environmental subsurface conditions at the Site. Approximate locations of these soil samples are shown on Figures 3 and 4. Results of the chemical analyses of these soil samples are presented in the following tables:

- Table 1 – List of Chemical Analyses on Soil and Groundwater Samples Collected From Pier 94 Backlands Area;
- Table 2 – Results of Title 22 Metals, Asbestos and pH Analyses on Soil Samples;
- Table 3 – Results of Total Petroleum Hydrocarbons, volatile organic compounds (VOCs), and Polychlorinated Biphenyls (PCBs) Analyses on Soil Samples;
- Table 4 – Results of Semi-volatile organic compounds (SVOCs) Analyses on Soil Samples;
- Table 5 - Results of Cyanide and Sulfide Analyses on Soil Samples;
- Table 6 – Results of TPHs, SVOCs and VOCs on Groundwater Samples; and
- Table 7 - Results of Dissolved Title 22 Metals Analyses on Groundwater Samples.

Results of these chemical analyses indicated the following:

- No total petroleum hydrocarbons (TPHs) as gasoline and as motor oil were found at levels above the Regional Water Quality Control Board San Francisco Bay Region Tier 1 Environmental Screening Level (Tier 1 ESL);
- Only one detection of TPHs as diesel and polychlorinated biphenyl was found at level slightly above the Tier 1 ESL. This sample was the composite of various FOP samples from the Fuel Oil Pipeline Segment B Abandonment Completion Report that consisted of other FOP samples that were collected at locations away from the Site;
- No detection of volatile organic chemicals at above the Tier 1 ESL was reported;
- A total of seven chemicals were reported to have concentrations exceeding the Tier 1 ESL as listed on Table 4;



- With the exception of arsenic, cobalt, lead, and nickel, no other Title 22 Metals were reported to have concentrations above the Tier 1 ESL. A summary of arsenic, cobalt, lead, and nickel results are presented below.
- Arsenic was detected at concentrations exceeding the ESL-Tier 1, USEPA RSL, ESL construction worker, DTSC’s-SL, and CHHSL values. Based on the following rationale, it is believed that the detected concentrations of arsenic in soil are likely representative of background concentrations of arsenic at the site and will not pose a risk to humans and the environment:
 - The spatial distribution of arsenic concentrations observed in the soil samples from the site are all within a similar magnitude suggesting that the reported concentrations are likely due to naturally-occurring arsenic at the site; and
 - According to Section 10 of the “User’s Guide: Derivation and Application of Environmental Screening Levels, Interim Final 2016” by RWQCB-San Francisco Region, February 2016 (ESLs User Guide), the regional naturally-occurring background concentration of arsenic in undifferentiated urbanized flatland soils is around 11 mg/Kg. The average concentration of arsenic observed in soil samples at the site is found to be within the general range of this arsenic background concentration. Because the range of arsenic concentrations for the samples is similar to the background concentration range cited above, it is anticipated that additional site characterization or remediation would not be required for arsenic.
- Cobalt was detected in soil samples at concentrations ranging from 7.7 mg/Kg to 59 mg/Kg. Seven detections of cobalt exceed the Tier 1 ESL;
- Lead was detected in soil samples at concentration ranging from 6 mg/Kg to 1,200 mg/Kg. Six detections of lead exceed the Tier 1 ESL;
- Nickel was detected in soil samples at concentrations ranging from 25 mg/Kg to 1,200 mg/Kg. Thirteen detections of nickel exceed the Tier 1 ESL;

It is believed that the concentrations of cobalt, lead, and nickel are likely associated with the fill materials in the area;

- No NOA is present in soil within the planned area of soil disturbance and grading of Project Site with the exception of potential small local hot spot around historic test pit: H5-01 collected in 2002 by Harlan, Tait Associates located near the project boundary;
- TPHs as diesel was reported in groundwater from boring E-9 at a concentration of 2,400 micrograms per liter ($\mu\text{g/L}$), which exceeds the Tier 1 ESL.
- No TPHs as gasoline and as motor oil were found at levels above the Tier 1 ESL.
- With the exception of dissolved barium, dissolved cobalt, dissolved mercury and dissolved nickel, no other dissolved Title 22 Metals were reported to have concentrations above the Tier 1 ESL.



Based on the above information and the following rationale, it is concluded that levels of these chemicals found in soil are not expected to pose significant adverse impacts to human health and the environment and therefore would not require additional investigation or remediation for these analytes for this project:

- The site is and will remain as commercial use;
- The site is currently capped with asphalt and will remain capped with asphalt or concrete after the site improvement for future open-lot leasing; and
- Either the reported concentrations or the estimated average concentrations are found to below the ESLs for commercial use.



3 SITE MANAGEMENT MEASURES PRIOR TO SITE CONSTRUCTION

This section presents the site management activities that will be implemented prior to site development. These measures primarily include, but not limited to, the following:

- Install Fencing and Gates to Restrict Unauthorized Access to Exposed Native Soils, if needed. If deemed to be necessary by the Port to prohibit unauthorized access, fencing and gates shall be installed prior to beginning site construction. The fences are anticipated to provide sufficient integrity such that they can withstand adverse weather conditions. The installation of fencing restricts unauthorized access to the Site. “No Trespassing” signs will be posted to inform individuals that access to the fenced areas is illegal. Fencing will remain during and after the development of the railroad expansion project;
- Maintain Current Site Use. Currently the site is being used for commercial purposes. The Port will continue to maintain current site use until construction activities of the landfill cap, site grading, sanitary and storm water improvements and roadway installation begin, at which time the site management activities governing the development of the Site (described in Section 4.0) will be followed; and
- Conduct All Surface and Subsurface Site Work in Compliance with Worker Health and Safety Guidelines. All surface and subsurface work activities where workers will come into direct contact with native soils will be conducted in compliance with the relevant health and safety guidelines as described in Section 4.1.

If necessary and deemed as appropriate by the Port, additional site management measures for prior to site construction will be implemented.



4 SITE MANAGEMENT MEASURES DURING SITE CONSTRUCTION

This section presents the key site management measures that shall be implemented by the contractor to control potential impacts to human health and the environment associated with exposure to chemicals present in the soil that could result during construction activities at the Site. Construction and site development activities involving direct contact with soil within the Site may include, but not be limited to, vegetation removal and grubbing, , soil grading, installation of the landfill cap, storm water improvements and installation of the roadway on top of the regraded surface area. No dewatering is currently planned for the project with the exception of the trenching work during storm drain installation work.

Potential major events or activities associated with the construction and site development of the Project that could result in potential impacts to human health for the construction workers include, but are not limited to:

- Dust generation associated with vegetation removal and grubbing, , grading activities, construction of the landfill and installation of the roadway;
- Fugitive dust generation from winds traversing exposed soils at the Site, and any construction activity that could potentially generate dust; and
- Direct contact with site soil.

The site management measures that will control potential impacts associated with each of the events or activities listed above are described in this section. Management measures that will be implemented to control potential impacts on the construction worker, contractors and short-term intrusive workers who may be engaged in limited work activities are also described below.

If necessary and deemed as appropriate, additional site management measures during site construction shall be implemented.

4.1 RESPIRABLE DUST CONTROLS FOR ARTICLE 22B COMPLIANCE

This section outlines primary measures that will be implemented to mitigate potential impacts to human health on the construction workers with potential direct contact with on-site soil and groundwater (in the event groundwater is encountered during the project) during construction phase of the development. As described in Section 1.1, the approximate area is more than 0.5 acre, therefore, submittal of dust control plan (**Dust Control Plan**) for respirable dust in compliance with SFDPH's Article 22B would be required.

The primary risks during construction activities will come from exposure to contaminated soils and/or groundwater if present to on-site construction workers. Potential exposure pathways of the on-site construction workers include:

- Inhalation, incidental ingestion, and dermal contact with soils; and
- Incidental ingestion and dermal contact of soil in groundwater, if present.



Measures that will be implemented to mitigate potential impacts during construction will include, but are not limited to, the following:

- Each contractor will follow, at a minimum, the protocols described in the Contractor’s **Health and Safety Plan** for the project to address the potential exposure to contaminated soils during construction (Section 4.10); and
- Each contractor shall implement dust mitigation measures and monitoring protocols in accordance with the Dust mitigation control through the use of dust control fabric, site watering and other techniques to avoid air dispersion of contaminated soil offsite.

Details of these mitigation measures, except the site-specific health and safety plan that is discussed in Section 4.10, are described below.

4.1.1 Respirable Dust Mitigations for SFDPH’s Article 22B Compliance

Dust mitigation will be implemented to prevent off-site dispersal and accumulation of contaminated site soil, and other applicable regulations pertaining to dust control, air quality, and nuisance control. Potential construction activities that could generate dust and require risk management measures include, but are not limited to, (1) demolition, (2) site grading (3) on-site construction vehicle traffic, and (4) wind-blown soil.

The contractor shall minimize dust generation by implementing all appropriate measures during site activities which will include but are not limited to the following so as to achieve the goal of “no visible dust emissions” in accordance with a Dust Control Plan that shall be prepared for this project. Such mitigation will include, but not limited to, the followings:

- Areas around soil improvement operations, visibly dry disturbed soil surface area, and visibly dry disturbed unpaved driveways will be wetted down at least three times per shift;
- In the event that dust generating operations is required to be temporary suspended due to dust crossing the property boundary, or if two consecutive 10-minute average exceeding the action level as stated in the Dust Control Plan, the Contractor will perform any or combination of the following:
 - Implementing more vigorous dust control measures in this section such as more misting of the work area in an effort to minimize dust; or
 - Identifying and implementing additional engineering control.
- Contractor will limit the area subject of excavation, grading, and other construction activities any one time;
- The amount of excavated material or waste materials stored at the site will be minimized;
- Dust curtains, plastic tarps, barriers, enclosure, or wind breaks will be installed on windward and downward sides of the Site;
- Either paving, or application of water three times daily will be performed on all unpaved access roads, parking areas and staging areas at the construction site. Reclaimed water will be used for dust control;



- No trucks hauling soils, sand and any excavated material will leave the site unless:
 - Truck will be maintained such that no spillage will occur from holes or other openings in cargo compartments; and
 - The loads are adequately wetted and the truck will be covered with tarps, and the trucks will be loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.
- All truck, equipment, and vehicles operated within the site shall be limited to 15 miles per hour (mph) or less;
- A wet vacuum sweeper will be maintained on the jobsite at all times and wet sweep/vacuum sidewalks, intersections, site access and street pavement within the jobsite and along haul routes, at a minimum of three times (3) per shift or more as required to minimize dust emissions. This shall include at least once at the end of each work shift. A wet sweeping log will be submitted monthly to the Port's Project Engineer. Wet sweeping will be done with a vacuum sweeper vehicle with sufficient suction so as to ensure that while sweeping, the vehicle does not blow dust towards neighboring businesses and residences;
- Track out will be controlled at the construction access points by installing wheel washers at the access point and one or more of the following track-out prevention measures:
 - Gravel pad designed using good practices to clean the tires of existing vehicles;
 - A tire shaker;
 - Pavement extending not less than fifty (50) consecutive feet from the intersection with the paved public road; or
 - Any other measure as effective as the measures listed above.
- Wheel washers shall be installed and used to clean all trucks and equipment leaving the construction site;
- Surface excavation and grading activities will not be conducted when wind speeds exceed 25 mph;
- Control for disturbed surface areas, and storage piles that will remain inactive for more than seven (7) days, shall include one or more of the following:
 - Keep the surface adequately wetted;
 - Establishment and maintenance of surface crusting;
 - Covering with tarp(s) or vegetative cover; and/or
 - Installation of wind barriers of fifty (50) percent porosity around three (3) sides of a storage pile.
- Hydroseeding or application of non-toxic soil stabilizers will be used for this project if determined to be required for additional dust mitigation;



- Sweeping of surrounding streets during demolition, excavation and dirt moving activities when work in progress and at the end of the working day;
- Daily power wash will be performed at adjacent storefronts, sidewalks, and street pavements;
- Wet areas will be barricaded to prevent slipping hazards;
- A water truck will be maintained at the jobsite at all times when dust-generating conditions exist. Water truck shall be equipped with hand-held hoses. Hoses shall be equipped with micro-misters or micro-foggers. All water for dust control shall be treated with biodegradable, non-polluting, non-toxic dust control agent;
- All exposed and unpaved areas will be wetted at least three times daily during dry weather and more frequently if dust is blowing or if required by the Port. Soil, gravel and cutback residuals shall be wet swept immediately;
- Wet areas shall be barricaded to prevent slipping hazards;
- Wet down areas around soil improvement operations, visibly dry disturbed soil surface areas, and visibly dry disturbed unpaved driveways, at least three times per shift. All unpaved access roads, parking areas, and staging areas at the construction site shall be paved, otherwise, water shall be applied to all unpaved access roads;
- If water need to be treated for dust control, the treatment shall be the Port’s approved biodegradable, non-polluting, non-toxic dust control chemical. The treated water shall be referred as “amended” water;
- Continuous water misting will be provided using as fine a spray or mist as possible (without creating run-off) in any area of land clearing, earth movement, excavation, drillings, demolition, concrete crushing, and grinding, and other dust generating activity. All active construction areas shall be watered when work is in progress and at the end of the workday. The water frequency may be increased when wind speeds exceed 15 mph;
- If necessary, dust enclosures, curtain, and dust collectors will be used to control dust in the construction area;
- Dust control measures on stockpiles at the site will include the following:
 - Active stockpiles will be kept adequately wetted, stored on, and/or covered with 10-mil (0.01 inch) polyethylene plastic or equivalent tarps; and
 - Any stockpile greater than 10 cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base and soil shall be placed on, and covered with a 10-mil polyethylene plastic or equivalent tarp and braced down. The contractor shall maintain this cover throughout its use. All active stockpiles shall be covered and protected at the end of each working day.



4.2 ASBESTOS DUST MITIGATION COMPLIANCE FOR NOA REGULATION²

Because serpentine was observed in the fill material in one boring within the Site and other borings within the vicinity of the Site, an evaluation was conducted to assess the extent of compliance on the NOA Regulation that would be required for the planned construction activities for this project.

In general, AEW observed that the subsurface material at the site from ground surface to the final drilled depth of 4 feet bgs consisted of brown fine to coarse sand fill material with clay and gravel. Trace gravel, brick and wood were also present. No bay mud or bedrock was encountered in any of the soil borings. AEW did not observe groundwater in any of the soil borings.

Based on the information presented in the 2018 NOA Investigation Report, it is anticipated that no NOA is present in soil within the planned area of soil disturbance and grading of Project Site with the exception of potential small local hot spot around historic test pit: H5-01 collected in 2002 by Harlan, Tait Associates located near the project boundary.

However, due to the presence of serpentine gravel observed in boring log B-8 (T&R/RVCB 2011), and AEW-5 and AEW-7 (AEW, 2018), dust mitigation and compliance requirements would be required for asbestos dust mitigation. Details of the dust mitigation and compliance requirements are described in the 2018 NOA Investigation Report as included in Appendix B of this SMP.

4.3 STORM WATER RUNOFF CONTROL

The contractor is required to provide adequate storm water runoff controls to prevent off-site migration of ingestible quantities of site soil. The contractor shall implement a Storm Water Pollution Prevention measures in accordance with all applicable storm water regulations. Storm water runoff controls will be selected and implemented primarily based on the best management practices such as those described in the *California Storm Water Best Management Practices Handbooks Construction Activity*. In addition, on-site sediment and erosion protection controls will be implemented as the primary means for minimizing the discharges of sediments from the Site in accordance with all applicable regulations. Potential sediment and erosion protections will include, but are not limited to, the following:

- Minimizing dust during demolition if any, grading, and construction by adequately spraying exposed soil on a regular basis;
- Minimizing wind and water erosion on temporary soil stockpiles by spraying with water during dry weather and covering with plastic sheeting or other similar material during the rainy season;
- Minimizing the area and length of time during which the site is cleared and graded;
- Preventing the release of construction pollutants such as cement, mortar, paints, solvents, fuel and lubricating oils, pesticides, and herbicides by storing such materials in a bermed, or other secured area;
- Following all applicable and industry design and construction standards for the placement of riprap and stone size, if needed;

2. NOA Regulation = California Code of Regulations Title 17, Section 93105, “Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations. A copy of the regulation is included in Appendix A.



- Installing and maintaining sediment and oil and grease traps in local stormwater intakes during the construction period, or otherwise properly control oil and grease discharges;
- Cleaning wheels and covering loads of trucks carrying excavated soils before they leave the construction site;
- Implementing a hazardous material spill prevention, control, and cleanup program for the construction period;
- Covering soil stockpiles, if present, with visqueen or other suitable membrane covers; and
- Placing silt fences, straw bales, or other applicable means along the lower elevation boundary of the Site to contain soil-laden runoff.

Specific site practices to be used will be detailed in the SWPPP to be prepared by the contractor.

4.4 MINIMIZATION OF POTENTIAL FOR CREATING CONDUITS

It is anticipated that trenches shall be excavated at the Site for the storm water improvements. If any trenches, excavation, and soil disturbances at the Site extend into the groundwater, the presence of such trenches and excavation pits could create a horizontal conduit for ground water flow and migration of chemicals. If it is determined to be necessary, the Contractor shall develop and implement method and management measures to minimize the potential for creating conduits in accordance with all applicable regulations.

4.5 SOIL MANAGEMENT PROTOCOLS AND SOIL DISPOSAL

Current planned construction activities include site grading and placement of onsite soils beneath a landfill cap or a minimum of 2 feet of clean import soil with no surplus soil generated. In the event that surplus soils are generated and need to be stockpiled prior to potential offsite disposal, the protocols detailed in Sections 4.4 through 4.7 shall be implemented.

Proper soil/waste management and handling protocols will be developed and implemented in accordance with all applicable regulations by the contractor to address the handling and management of soil and waste on this project at the Site. The soil management protocols would also address the following, but not be limited to, the following key elements:

- Measures to minimize dust and erosion from soil movement and handling;
- Management of any soil stockpiles;
- Risk management guidelines to control dust from soil stockpiles, erosion from stockpiles, and access to stockpiles;
- Inspections of soil stockpiles;
- Sampling and analyses of soil stockpile samples, if applicable;
- On-site procedures to be implemented on soil that is considered as hazardous;
- Procedures to ensure compliance of proper waste classifications by applicable regulations and waste acceptance requirements by the landfill; and



- Loading, transportation, and disposal protocols of soil to be disposed to off-site permitted facilities.

During the site construction, it is anticipated that no surplus excavated soil will be generated during site grading, excavation, and other soil disturbance activities. In the event that surplus soil is generated and cannot be placed in the Site, surplus soils will be disposed of to a permitted landfill facility in accordance with the results of the chemical analyses to be conducted on the soil samples to be collected from the surplus stockpiles. Prior to offsite disposal of excavated soil, the contractor shall submit a waste profile application for acceptance.

4.6 SOIL STOCKPILING

In the event soil stockpiling is required, all soil shall be stockpiled in areas lined with plastic sheeting and bermed on the sides using straw wattles covered with plastic sheeting. All non-active stockpiles will be covered with plastic. The plastic cover will be anchored with appropriate weights. Straw wattles will be placed along the circumference at the base of all stockpiles to minimize material erosions. Dust mitigation and controls as presented in Section 4 of this SMP shall be implemented on all active stockpiles to prevent excessive dust generation and emissions.

4.7 STOCKPILE SOIL SAMPLING AND ANALYSES

This stockpile soil sampling and analyses protocols shall be performed for the followings:

- Soil classification required for disposal of soil offsite to a permitted landfill; or
- The native/excavated soil will be placed at the site where direct contact of soil to human and the environment after the construction is expected.

4.7.1 Field Sampling

Soil samples will be collected from soil stockpiles for chemical analyses to evaluate the appropriate waste disposal classification or evaluating for potential direct exposure to humans and the environment. The soil sampling and analyses shall be performed in accordance to the following protocols:

- For every approximate 250 cubic yards of soil stockpile, four soil samples will be collected from randomly selected location for chemical analyses. In the event, the soil stockpile is larger than 250 cubic yards, the sampling frequency will be conducted in accordance to the following guidance:
 - *“Information Advisory Clean Imported Fill Material” prepared by California Department of Toxic Substances Control, and dated October 2001.*
- At each of the randomly selected location, soil sample will be collected in stainless steel liners by manually pushing a clean stainless-steel liner into the soil until the liner is completely full after removing the top few inches of soil from the sampling location. In addition, one Encore samples was collected at one of the randomly selection location for each 250 cubic yards of soil stockpile or the number of samples as determined above;



- Upon completion of sample collection, each end of the soil samples will be capped immediately with teflon sheets and plastic caps and labeled with a minimum of the following information:
 - Unique Sample Identification;
 - Date and time of collection;
 - Samplers' initials; and
 - Project number.

The samples will then be placed in a cooler with blue ice or double-bagged ice at approximately 4 degrees Celsius (°C) for transportation to a California certified laboratory for chemical analyses. Immediately after sampling, Chain-of-Custody (COC) documentation will be completed by the field sampler. The COC documentation is required and necessary to physically trace sample possession from the time of collection to its ultimate disposition. The COC documentation shall be signed as relinquished or received each time the sample changes possession. The COC documentation, at a minimum, shall contain the following elements:

- Project name and number;
- Project contact and phone number;
- Name of field samplers;
- Sample identification numbers;
- Sample date and time of collection;
- Sample matrix;
- Number of containers submitted for each sample;
- Sample container type;
- Analyses requested;
- Turnaround time requested for analyses;
- Preservation of sample containers (if applicable);
- Name and address of analytical laboratory; and
- Comments if applicable.

The samples will be shipped to a California-certified laboratory for chemical analyses as described below. The samples will be transported with COC documentation either by courier to the laboratory or picked up by laboratory representatives at the site. Prior to shipment, a copy of the COC documentation will be made and maintained with the project file.

4.7.2 Chemical Analyses

Soil samples will be submitted to a California-certified laboratory for chemical analyses. For each 250 cubic yards stockpile or the number of composite as required in the Section 4.7.1 for stockpile that is greater than 250 cubic yards, each four samples set were composited into one composite in the



laboratory prior to analyses. The composite sample will be analyzed for the following chemical parameters (additional chemical parameters shall be required to send the soils to a recycling facility):

- Total Petroleum Hydrocarbons (TPHs) as diesel and motor oil by USEPA Method 8015C with silica gel cleanup;
- Chlorinated pesticide and Polychlorinated Biphenyls (PCBs) by EPA Method 8082;
- Semi-Volatile Organic Chemicals (SVOCs) by USEPA Method 8270;
- California Code of Regulations Title 22 17-metals (Title 22 metals) by USEPA Methods 6000/7000 series; and
- Asbestos by CARB Method 435.

The Encore sample collected from each 250 cubic yards stockpile will be analyzed for the following chemical parameters:

- TPHs as gasoline by USEPA Method 8015C; and
- Volatile Organic Compounds (VOCs) by USEPA Method 8260;

When the results of the Title 22 metals analyses performed on the soil composite sample indicates that additional analyses will be required to determine whether the subsurface soil may be classified as hazardous wastes for disposal, additional leaching tests will be conducted. In general, the soil composite sample is subject to additional analyses under the following conditions:

- If the concentration of any analyte in the soil sample is at or greater than ten times the respective California Soluble Threshold Limit Concentration (STLC) value but is below the California Total Threshold Limit Concentration (TTLC) value, the California Waste Extraction Test (WET) on the respective analyte was required to determine if the soil sample is to be considered as California hazardous waste; and
- If the concentration of any analyte concentration in the soil sample is at or greater than twenty times the respective USEPA's Toxicity Characteristic Leaching Procedure (TCLP) limit, the TCLP testing on the respective analyte will be required for determining whether the soil sample is to be considered as federal Resource Conservation and Recovery Act (RCRA) hazardous waste.

The following laboratory QA/QC procedures will be performed by the selected California certified laboratory for the chemical analyses on this project:

- Method Blank;
- Laboratory Control Spike;
- Laboratory Control Spike Duplicate;
- Matrix Spike; and
- Matrix Spike Duplicate.

In addition, all laboratory analytical equipment will be calibrated in accordance with the respective USEPA method as listed above. Laboratory QA/QC data will be validated in accordance with data validation protocol described below.



Data validation is the systematic process for reviewing a set of data against pre-established criteria to determine the quality of the data. The laboratory will review their data for nonconformance and consistency. Upon receipt of the analytical data package from the laboratory, project personnel will check the following items:

- Data package includes all requested deliverables;
- Samples analyzed as requested;
- Sample holding times are met;
- QC sample results are within established control limits;
- Appropriate detection limits are obtained;
- Preservation/Temperature;
- Chain of Custody;
- Sample integrity;
- Calibration criteria; and
- Blank sample results.

A systematic effort will be made to identify any outliers and/or errors prior to the reporting of the data. Outliers (data values that are significantly different from the population) can result from improper sampling or analytical methodology, matrix interference, errors in data transcription, and real but extreme changes in analytical parameters. Outliers that result from errors found during data validation will be identified. Outliers that cannot be attributed to analytical, calculation or transcription errors will be retained in the database for further evaluation. Final data will be reviewed in accordance with the project-specific criteria specified in this SMP and the method-specific criteria stated in the analytical method.

4.7.3 Soil Evaluation Criteria

4.7.3.1 Soil Disposal to Permitted Offsite Landfill

Results of the chemical analyses will be evaluated using the following criteria to determine the appropriate waste classification:

- **California Total Threshold Limit Concentrations (TTLCs).** Soil with concentration of any analyte exceeding the corresponding TTLC value is considered as a minimum as California Class I non-Resource Conservation and Recovery Act (non-RCRA) hazardous material;
- **California Soluble Threshold Limit Concentrations (STLCs).** Soil with soluble concentrations of any analyte, as determined by California's Waste Extraction Test (WET), exceeding the corresponding STLCs value is considered as a minimum as California Class I non-RCRA hazardous material; and
- **United States Environmental Protection Agency Toxicity Characteristic Leaching Procedure (USEPA's TCLP) Limits.** Soil with a soluble concentration of an analyte, as



determined by USEPA's TCLP test, exceeding the corresponding TCLP criteria is considered as a federal RCRA hazardous material.

4.7.3.2 For Reuse at the Site with Potential Direct Contact to Humans and the Environment

In addition to the criteria as stated in Section 4.7.3.1, the following criteria will be used to evaluate the results of chemical analyses that would be considered for reuse at the site with potential direct contact to humans and the environment:

- **California RWQCB – San Francisco Bay Region's Tier 1 ESLs, February 2016 (Revision 3 May 2016):** The Environmental Screening Levels (ESLs) provide conservative screening levels for over 100 chemicals commonly found at sites with contaminated soil and groundwater. They are intended to help expediting the identification and evaluation of potential environmental concerns at contaminated sites. In addition, the ESLs do not apply to sediment or sensitive ecological habitats (such as wetlands or endangered-species habitats). The need for a detailed human health or ecological risk assessment should be evaluated on a site-by-site basis for areas where significant concerns may exist. The presence of a chemical at concentrations in excess of an ESL does not necessarily indicated adverse effects on public human health or the environment, rather that additional evaluation may be warranted. Use of ESLs as cleanup goals should be evaluated in view of the overall site investigation results and the cost/benefit of performing a more site-specific evaluation. Exceedance of ESLs is not necessary to be the stand-alone criteria alone for evaluating the needs to notify regulatory agency. This criterion is employed to evaluate whether potential contamination is present in soil at the site that may require further investigation. Chemicals with concentrations below the Tier 1 ESL criteria are considered as not posing a potential threat of adverse effects to public health and the environment, and therefore additional Site investigation or remediation would not be required for the respective chemical by the RWQCB – San Francisco Bay Region. Soil below this criterion and within the area of investigation can be considered for reuse on-site for environmental purposes if the soil is not considered as hazardous waste and below the other regulatory criteria considered in this section, if needed;
- **Integrated Risk Assessment Branch, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency – California Human Health Screening Levels (CHHSLs) – Residential, September 2010:** This criterion is employed to evaluate whether exposure to chemicals in soil at the site would potentially result in risk of adverse effects to human health. Concentrations below the CHHSL are not considered to pose a significant human health risk based on the residential scenario;
- **California Environmental Protection Agency, Department of Toxic Substances Control's modified screen levels (DTSC-SLs) for soil, Residential, June 2016:** This criterion is employed to evaluate whether exposure to chemicals in soil at the site would potentially result in risk of adverse effects to human health. Concentrations below the respective DTSC-SL are not considered to pose a significant human-health risk based on the residential scenario; and
- **United States Environmental Protection Agency Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites under Residential Scenario, May 2016:** This



criterion is employed to evaluate whether exposure to chemicals in soil at the site would potentially result in risk of adverse effects to human health. They are risk-based concentrations derived from standardized equations combining exposure information and assumptions with USEPA toxicity data. RSLs are considered by USEPA to be protective for humans (including sensitive groups) over a lifetime.

4.8 CONTINGENCY PROTOCOLS

In the event of encountering environmental contingency situation (such as sign of unknown chemical contamination in soil and groundwater, or unknown underground storage tank) at the site during construction, the contractor will immediately suspend all work at the area where the situation is observed, and notify the site owner. The site owner will evaluate the appropriate response actions to address such contingency in accordance with all applicable regulations, and if necessary, will notify SFDPH on such situation and the proposed response actions.

4.9 ACCESS CONTROL DURING CONSTRUCTION

The construction contractor will develop and implement site access control during construction. Such site access control may include, but not limited to, the following:

- Except in streets, fence construction site to prevent pedestrian/vehicular entry except at controlled (gated) points. Gates will be closed and locked during non-construction hours. Fencing will consist of a six-foot chain link or equivalent fence unless particular safety considerations warrant the use of a higher fence;
- In streets, a combination of K-rails or similar barriers and fences with locked gates will be used; and
- “No Trespassing” signs will be posted every appropriate 250 feet.

4.10 PROTOCOLS FOR DEWATERING ACTIVITIES

Some dewatering activities such as during trenching construction will be required for this project. Dewatering activities will be conducted in accordance with the dewatering specifications in the Contract Specifications for this project.

4.11 SITE SPECIFIC HEALTH AND SAFETY REQUIREMENTS AND SAFETY PLAN

The construction contractor shall assume full responsibility and liability for the compliance with provisions of the Work Hours and Safety Standard Act (40 U.S.C. 327 et seq.). The construction contractor shall comply with all applicable safety regulations and other requirements including but not limited to the following:

- Code of Federal Regulations (CFR), Title 29-Labor;
- State of California, California Code of Regulations (CCR), Industrial Relations;
- Medical Surveillance Programs (e.g., OSHA, 29 CFR 1200);
- Injury and Illness Prevention Programs (eg., SB 198, 8 CCR, CAL/OSHA, GISO 3203, Section 5192 and 1509);



- The Construction Standard (29 CFR 1926);
- Workers’ Right to Know (29 CFR 1910.120); and
- Section 6360-99 of the California Labor Code (Hazard Communication).

During construction and site development activities, workers that may directly contact site soil or groundwater, if present, at the Site will perform their activities in accordance with a Site-specific Health and Safety Plan (EHASP) to be prepared and implemented by the construction contractor.

In the event that when asbestos-containing materials are observed during the project, the contractor will develop and implement a plan on the protocols to remove, handle, manage, and dispose such materials. The plan will include appropriate safety, worker training (such as asbestos training and awareness training) and certification requirements for personnel who will engage in contacting such materials. The contractor will not initiate such work until such plan is accepted and approved by the contractor.

4.12 MINIMIZING GROUNDWATER CONTACT BY CONSTRUCTION WORKERS

If groundwater is encountered during site construction, the contractor shall develop and implement health and safety precautions to minimize the exposure of groundwater to construction workers.

4.13 DECONTAMINATION

Any construction equipment that comes in contact with soil and groundwater, if present, at the Site will be decontaminated prior to leaving the site to prevent potential off-site transport. Potential decontamination methods will include brushing and/or vacuuming to remove loose dirt on equipment or vehicle exteriors and wheels. In the event that these dry decontamination methods are not adequate, steam cleaning, high-pressure washing, and cleaning solutions may be employed. Wash waters, if any, will be collected and managed in accordance with similar procedures as described for dewatered water in Section 4.10.

4.14 CERTIFICATION REPORT

Upon completion of the site construction activities, a Certification Report will be prepared and submitted to SFDPH. The report will present a chronology of the construction events, a summary of analytical data generated during the site construction, and a description of all associated site management measures performed at the site during construction.



5 SITE MANAGEMENT MEASURES AFTER SITE CONSTRUCTION

Upon completion of the site development, the Port will implement the following long-term risk management of the Site that is within the Site as appropriate. Such components may include, but not limited to the followings:

- Maintaining the site as for commercial uses;
- Restriction of future use of groundwater for domestic, industrial, or irrigation purposes; and
- Implementation of protocols for future subsurface activities.



6 PLAN LIMITATIONS

This SMP was prepared based on the results of the chemical analyses performed for this Site currently available to AEW. All information presented in this SMP are only valid for the chemical parameters that were evaluated as part of the information known to AEW and shall not be applicable or valid to any chemical parameters that are not known to AEW.

All data interpretations including estimation of potential hazardous waste as described in this SMP are based on general environmental professional interpretation and opinions on the (1) results of the chemical analyses presented in this SMP, and (2) information provided by the Port at the time of this SMP preparation.

This SMP may be distributed and relied upon by the Port, its successors and assigns. Reliance on the information and conclusions in this report by any other person or entity is not authorized without the written consent of AEW. If future information related to this site indicates that any of these analytes may be present at concentrations in soil as well as site geology and hydrogeology that are significantly different from the data presented in this SMP, or other contaminants may be present at the Site, additional environmental and geologic investigations will be required and warranted for site environmental characterization. All information presented in this SMP will be subject to change from such additional information.

Our services consist of professional opinions and recommendations made in accordance with generally accepted environmental engineering principles and practices using degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants.



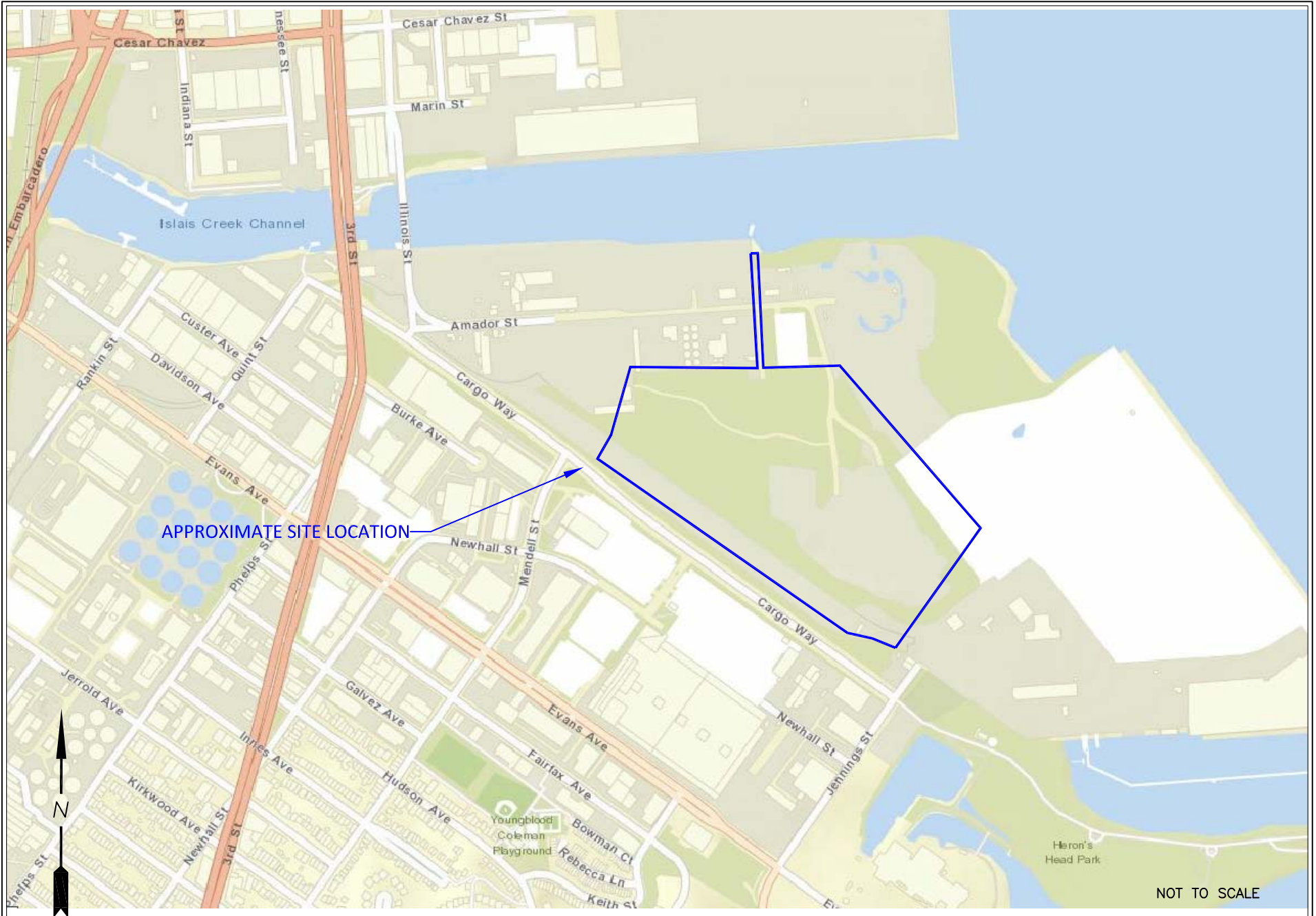
7 REFERENCES

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FIGURES

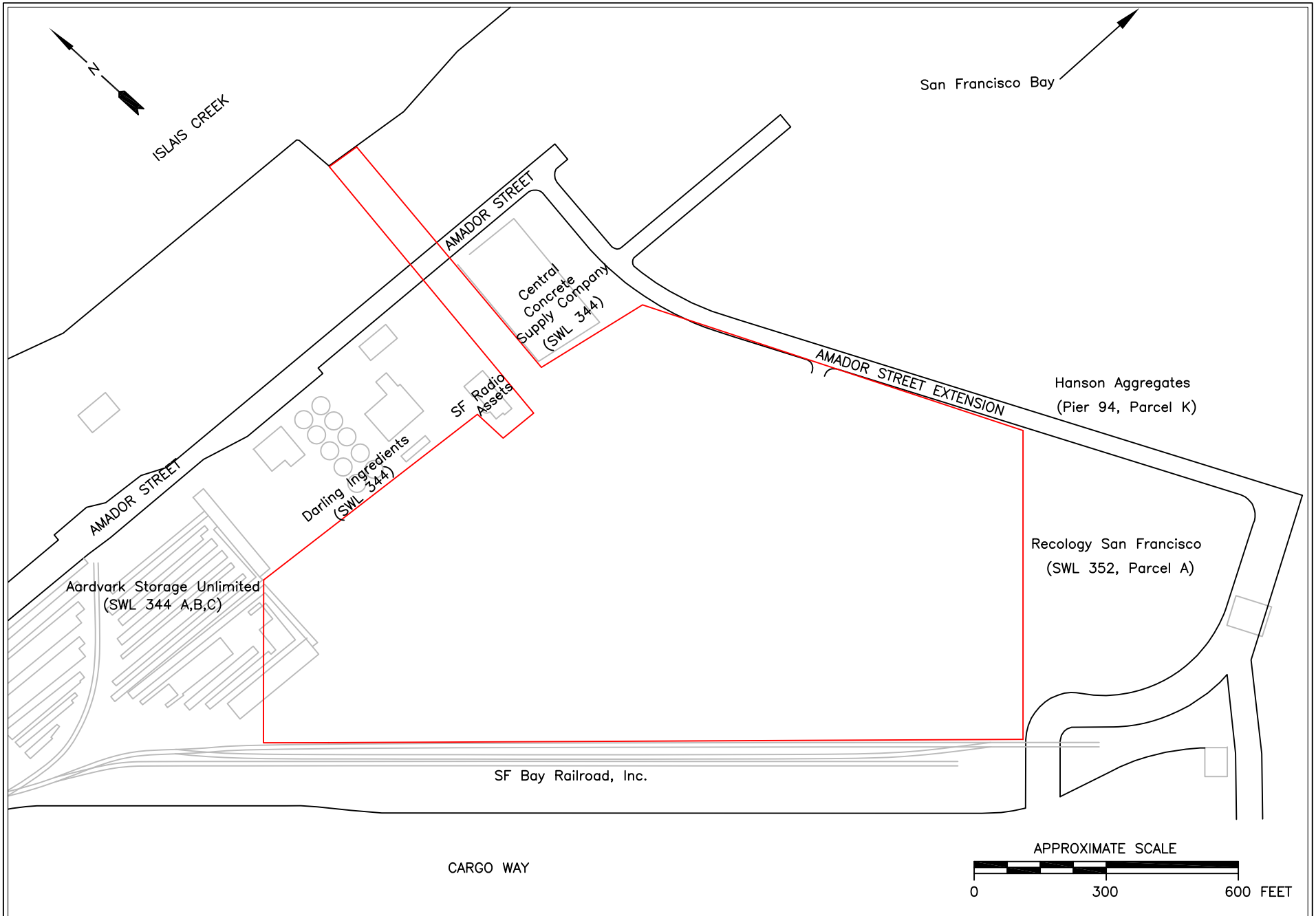




AEW Engineering, Inc.
 55 New Montgomery Street
 Suite 722
 San Francisco, CA 94105

Location Map
Pier 94 Backlands Improvement Project
 San Francisco, California

Figure
1

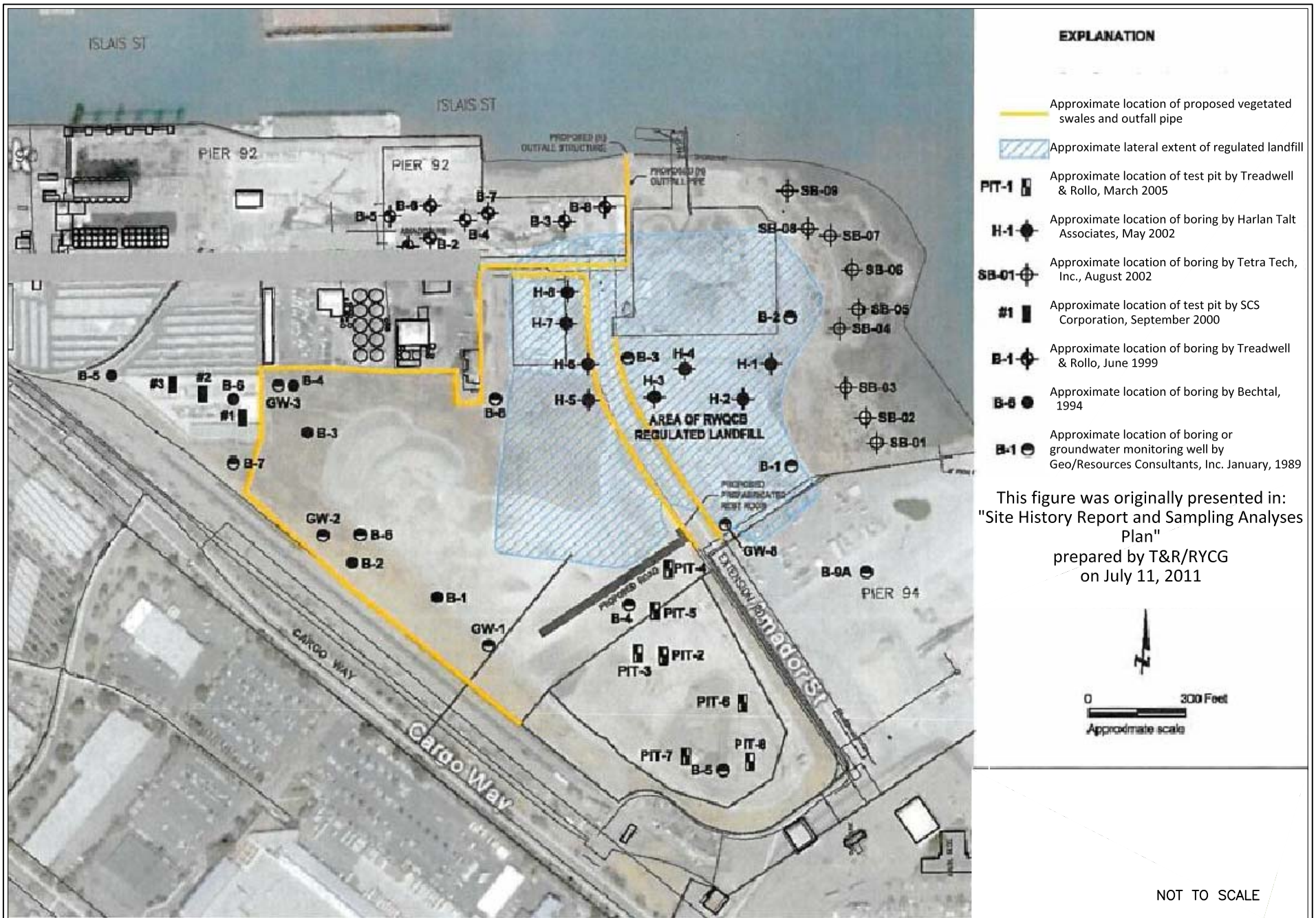


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 55 New Montgomery Street
 Suite 722
 San Francisco, CA 94105

Pier 94 Backlands Improvement Project Site Map

San Francisco, California

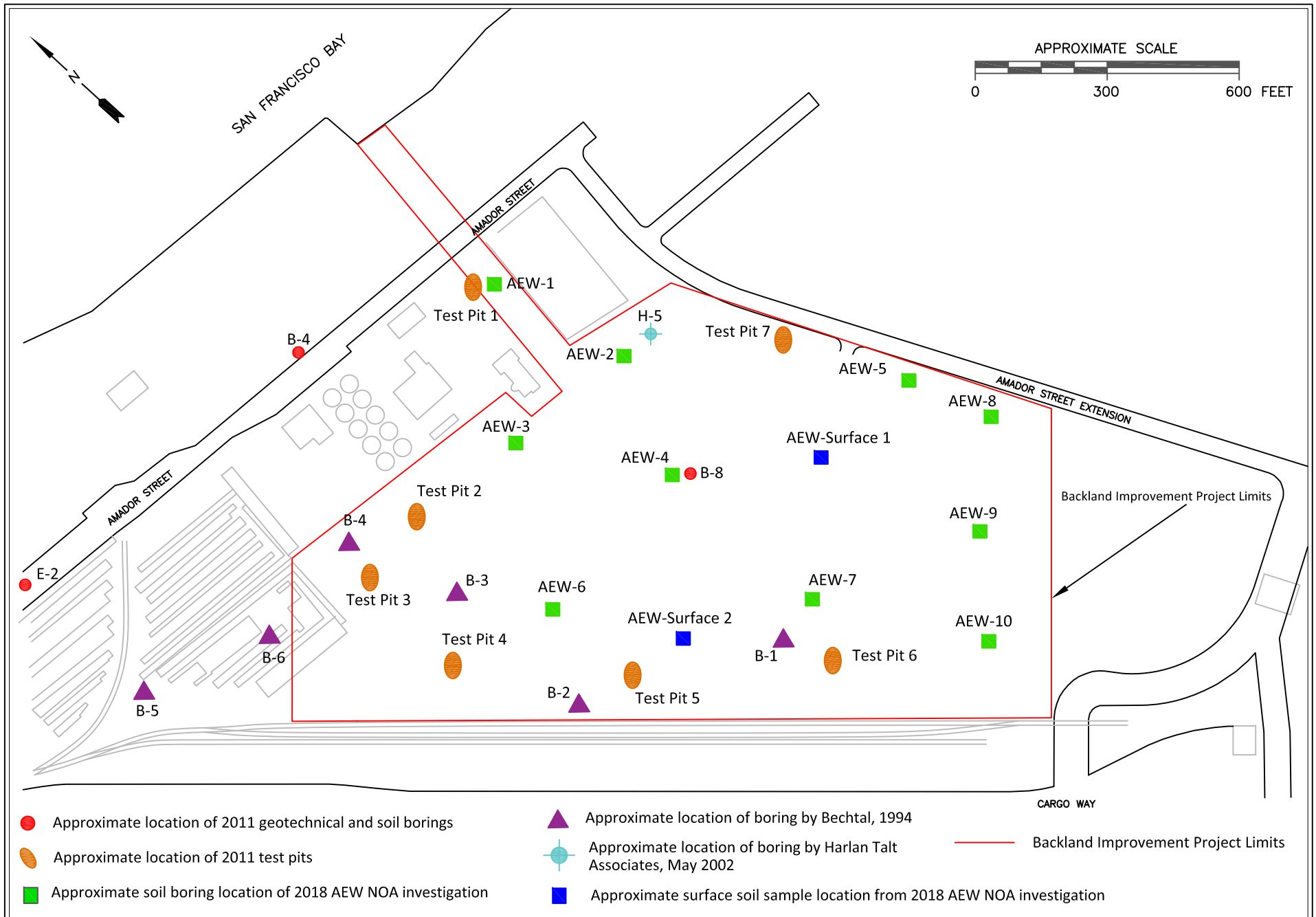
Figure
2



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**Historic Boring and Sample Locations
 Pier 94 Backlands Improvement Project
 San Francisco, California**

**Figure
 3**



**Previous Soil Investigation and 2018 NOA Sampling Locations
Pier 94 Backlands Improvement Project
San Francisco, CA**

**Figure
4**



AEW Engineering, Inc.
55 New Montgomery Street
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San Francisco, CA 94105

TABLES



TABLE 1

LIST OF CHEMICAL ANALYSES ON SOIL AND GROUNDWATER SAMPLES COLLECTED FROM PIER 94 BACKLANDS AREA

Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	TPHs-G/BTEX/MTBE	TPHs-D/MO	VOCs	SVOCs	Pesticides and PCBs	Title-22 Metals	CN ⁻	pH	Sulfides	Asbestos
Soil Samples														
E-1	E-1-2.0	No	12/9/2011	2.0	✓	✓	✓	✓	✓	✓	--	--	--	--
E-2	E-2-2.0	No	12/9/2011	2.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E-3	E-3-2.5	No	12/9/2011	2.5	✓	✓	--	✓	✓	✓	--	--	--	--
E-3	E-3-5.0	No	12/9/2011	5.0			✓							
E-4	E-4-2.5	No	12/9/2011	2.5			✓							
E-4	E-4-5.0	No	12/9/2011	5.0	✓	✓	--	✓	✓	✓	✓	✓	✓	✓
E-4	E-4-10.0	No	12/9/2011	10.0			--							
E-4	E-4-15.0	No	12/9/2011	15.0			--							
E-5	E-5-2.5	No	12/9/2011	2.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E-5	E-5-5.0	No	12/9/2011	5.0			--							
E-6	E-6-2.5	No	12/9/2011	2.5			--							
E-6	E-6-5.0	No	12/9/2011	5.0	✓	✓	✓	✓	✓	✓	--	--	--	--
E-6	E-6-10.0	No	12/9/2011	10.0			--							
E-7	E-7-2.5	No	12/9/2011	2.5			✓							
E-7	E-7-5.0	No	12/9/2011	5.0	✓	✓	--	✓	✓	✓	✓	✓	✓	✓
E-7	E-7-10.0	No	12/9/2011	10.0			--							
E-8	E-8-2.5	No	12/9/2011	2.5			--							
E-8	E-8-5.0	No	12/9/2011	5.0	✓	✓	✓	✓	✓	✓	--	--	--	--
E-8	E-8-10.0	No	12/9/2011	10.0			--							
E-8	E-8-14.0	No	12/9/2011	14.0			--							
E-9	E-9-2.5	No	12/9/2011	2.5			✓							
E-9	E-9-5.0	No	12/9/2011	5.0	✓	✓	--	✓	✓	✓	✓	✓	✓	✓
E-9	E-9-10.0	No	12/9/2011	10.0			--							
E-9	E-9-14.0	No	12/9/2011	14.0			--							
B-12	B-12-3.0	No	5/25/2011	3.0			--							
B-12	B-12-5.0	No	5/25/2011	5.0	✓	✓	✓	✓	✓	✓	--	--	--	--
B-12	B-12-10.0	No	5/25/2011	10.0			--							
TP-1	TP-1-2.5	Yes	12/8/2011	2.5	✓	✓	✓	✓	✓	✓	--	--	--	--
TP-1	TP-1-5.0	Yes	12/8/2011	5.0			--							
TP-2	TP-2-2.5	Yes	12/8/2011	2.5	✓	✓	--	✓	✓	✓	✓	✓	✓	✓
TP-2	TP-2-5.0	Yes	12/8/2011	5.0			✓							
TP-3	TP-3-2.5	Yes	12/8/2011	2.5	✓	✓	✓	✓	✓	✓	--	--	--	--
TP-3	TP-3-5.0	Yes	12/8/2011	5.0			--							
TP-4	TP-4-2.5	Yes	12/8/2011	2.5	✓	✓	--	✓	✓	✓	✓	✓	✓	✓
TP-4	TP-4-5.0	Yes	12/8/2011	5.0			✓							



TABLE 1 (Cont'd)

LIST OF CHEMICAL ANALYSES ON SOIL AND GROUNDWATER SAMPLES COLLECTED FROM PIER 94 BACKLANDS AREA

Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	TPHs-G/BTEX/MTBE	TPHs-D/MO	VOCs	SVOCs	Pesticides and PCBs	Title-22 Metals	CN ⁻	pH	Sulfides	Asbestos
Soil Samples														
TP-5	TP-5-2.5	Yes	12/8/2011	2.5	✓	✓	✓	✓	✓	✓	--	--	--	--
TP-5	TP-5-5.0	Yes	12/8/2011	5.0	✓	✓	--	✓	✓	✓	--	--	--	--
TP-6	TP-6-2.5	Yes	12/8/2011	2.5	✓	✓	--	✓	✓	✓	✓	✓	✓	✓
TP-6	TP-6-5.0	Yes	12/8/2011	5.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TP-7	TP-7-2.5	Yes	12/8/2011	2.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TP-7	TP-7-5.0	Yes	12/8/2011	5.0	✓	✓	--	✓	✓	✓	✓	✓	✓	✓
B-1	B-1 E-1	Yes	5 to 6/1994	0.5-1.5	✓	✓	✓	✓	✓	✓	--	✓	✓	✓
B-2	E2-0.0	Yes	5 to 6/1994	0-1	✓	✓	✓	✓	✓	✓	--	✓	✓	✓
B-3	B-3 E-1	Yes	5 to 6/1994	0.5-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
B-4	B-4 E-1	Yes	5 to 6/1994	0-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
B-5	E5-01	No	5 to 6/1994	0-1	✓	✓	✓	✓	✓	✓	--	✓	✓	✓
B-6	B-6-E-1	No	5 to 6/1994	0.5-1	✓	✓	✓	✓	✓	✓	--	✓	✓	✓
H-5	H-5-1.0	Possible Yes	2002	1.0	--	--	--	--	--	✓	--	✓	--	✓
AEW-1	AEW-1-3.0-3.5	Yes	2/16/2018	3.0-3.5	--	--	--	--	--	--	--	--	--	✓
AEW-2	AEW-2-2.0-2.5	Yes	2/16/2018	2.0-2.5	--	--	--	--	--	--	--	--	--	✓
AEW-3	AEW-3-2.1-2.6	Yes	2/16/2018	2.1-2.6	--	--	--	--	--	--	--	--	--	✓
AEW-4	AEW-4-1.8-2.2	Yes	2/16/2018	1.8-2.2	--	--	--	--	--	--	--	--	--	✓
AEW-5	AEW-5-1.2-1.8	Yes	2/16/2018	1.2-1.8	--	--	--	--	--	--	--	--	--	✓
AEW-6	AEW-6-2.5-3.0	Yes	2/16/2018	2.5-3.0	--	--	--	--	--	--	--	--	--	✓
AEW-7	AEW-7-2.1-2.6	Yes	2/16/2018	2.1-2.6	--	--	--	--	--	--	--	--	--	✓
AEW-8	AEW-8-3.3-3.8	Yes	2/16/2018	3.3-3.8	--	--	--	--	--	--	--	--	--	✓
AEW-9	AEW-9-1.5-2.1	Yes	2/16/2018	1.5-2.1	--	--	--	--	--	--	--	--	--	✓
AEW-10	AEW-10-0.5-	Yes	2/16/2018	0.5-0.9	--	--	--	--	--	--	--	--	--	✓
AEW-Surface	AEW-Surface 1	Yes	2/16/2018	0	--	--	--	--	--	--	--	--	--	✓
AEW-Surface	AEW-Surface 2	Yes	2/16/2018	0	--	--	--	--	--	--	--	--	--	✓
Groundwater Samples														
E-9	E-9-GW	No	12/8/2011	--	✓	✓	✓	✓	--	✓	--	--	--	--



TABLE 1 (Cont'd)

LIST OF CHEMICAL ANALYSES ON SOIL AND GROUNDWATER SAMPLES COLLECTED FROM PIER 94 BACKLANDS AREA

General Notes :

bgs = below existing ground surface.

TPHs-G = Total Petroleum Hydrocarbons (TPHs) as Gasoline by United States Environmental Protection Agency (USEPA) Method 8015 modified.

BTEX/MTBE = Benzene, Toluene, Ethylbenzene and Xylenes; and Methyl tert-Butyl Ether by USEPA Method 8020.

TPHs-D and TPHs-MO = TPHs as Diesel and TPHs as Motor Oil by USEPA Method 8015 modified with silica gel cleanup.

VOCs = Volatile Organic Compounds by USEPA Method 8260.

SVOCs = Semi-Volatile Organic Compounds by USEPA Method 8270 with cleanup to meet ESLs and Baylands.

Pesticides = Organochlorine Pesticides by USEPA Method 8080 series with cleanup to meet ESLs and Baylands.

PCBs = Polychlorinated Biphenyls by USEPA Method 8080 series with cleanup to meet ESLs and Baylands.

Title-22 Metals = 17 Metals as listed in Title 22 of the California Code of Regulations by USEPA Methods 6000/7000 series.

Sb=Antimony, As=arsenic, Ba=Barium, Be=Beryllium, Cd=Cadmium, Cr=Chromium, Cr+6=Chromium VI, and Co=Cobalt.

Cu=Copper, Pb=Lead, Hg=Mercury, Mo=Molybdenum, Ni=Nickel, Se=Selenium, Ag=Silver, Tl=Thallium, V=Vanadium; and Zn=Zinc.

WET = California Waste Extraction Test.

TCLP = United States Environmental Protection Agency's Toxicity Characteristic Leaching Procedure.

CN- = Cyanide analyses by USEPA Method SM4500-CN.

pH = pH analyses by USEPA Method 9045D.

Asb = Asbestos analyses by Air Resources Board's Method 435.

-- = Not Analyzed.

Analyses were conducted on filtered grab groundwater samples. Filtration was performed at the laboratory immediately upon receipt of samples using 0.45 micron filter

This table was developed based on information from other reports. If there is any discrepancy between this table and the information in the relevant report, the information in the relevant report shall be followed.

Sample is located within the project site.



TABLE 2
RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

Unit (2)					Title 22 17-Metals									WET Pb	TCLP Pb	
					Sb	As	Ba	Be	Cd	Cr	WET Cr	Co	Cu			Pb
					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg			mg/Kg
Risk Regulatory and Reference Criteria																
USEPA RSL Residential					31	0.68	15000	160	71	120000	NA (4)	23	3100	400	NA	NA
ESL - Tier 1					31	0.067	3000	42	39	120000	NA	23	3100	80	NA	NA
DTSC's SLs - Commerical					NA	0.36	NA	210	7.3	170000	NA	NA	NA	320	NA	NA
CHHSLs - Commerical					380	0.24	63000	190	7.5	100000	NA	3200	38000	320	NA	NA
Concentration in California Benchmark Soil					NA	3.5	509	1.28	0.36	122	NA	14.9	28.7	23.9	NA	NA
Hazardous Waste Criteria																
TTLc					500	500	10000	75	100	2500	NA	8000	2500	1000	NA	NA
10 x STLC					150	50	1000	7.5	10	50	NA	800	250	50	NA	NA
STLC					NA	NA	NA	NA	NA	NA	5	NA	NA	NA	5	NA
20 x TCLP					NA	100	2000	NA	20	100	NA	NA	NA	100	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
See Note for Assumptions on Statistical Evaluation																
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.5 Max: 26 Ave: 4	Min: <1 Max: 18 Ave: 5	Min: 25 Max: 580 Ave: 187	Min: <0.5 Max: <5 Ave: 1	Min: <0.25 Max: <5 Ave: 1	Min: 25 Max: 800 Ave: 180	Min: 0.094 Max: 4.3	Min: 7.7 Max: 59 Ave: 29	Min: 4.1 Max: 160 Ave: 44	Min: 6 Max: 1200 Ave: 118	Min: 2.4 Max: 21	Min: <0.2 Max: 4
Soil Samples																
E-1	E-1-2.0	No	12/9/2011	2	0.9	3.6	580	< 0.5	< 0.25	49	NR	10	38	13	NR	NR
E-2	E-2-2.0	No	12/9/2011	2	< 0.5	1.7	100	< 0.5	< 0.25	800	0.094	57	31	6.4	NR	NR
E-3	E-3-2.5	No	12/9/2011	2.5	< 0.5	1.6	89	< 0.5	< 0.25	620	1.7	53	30	6	NR	NR
E-3	E-3-5.0	No	12/9/2011	5												
E-4	E-4-2.5	No	12/9/2011	2.5	< 0.5	4.8	260	< 0.5	< 0.25	150	0.75	40	39	76	2.4	NR
E-4	E-4-5.0	No	12/9/2011	5												
E-4	E-4-10.0	No	12/9/2011	10												
E-4	E-4-15.0	No	12/9/2011	15												
E-5	E-5-2.5	No	12/9/2011	2.5	0.78	4.6	200	< 0.5	< 0.25	62	0.63	7.7	31	39	NR	NR
E-5	E-5-5.0	No	12/9/2011	5	1.7	18	100	< 0.5	0.4	130	0.4	21	47	160	21	4
E-6	E-6-2.5	No	12/9/2011	2.5												
E-6	E-6-5.0	No	12/9/2011	5												
E-6	E-6-10.0	No	12/9/2011	10	1.5	5.5	140	< 0.5	0.29	51	0.75	7.9	4.1	67	6.8	< 0.2
E-7	E-7-2.5	No	12/9/2011	2.5												
E-7	E-7-5.0	No	12/9/2011	5												
E-7	E-7-10.0	No	12/9/2011	10												



TABLE 2 (Cont'd)
RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

Unit (2)					Title 22 17-Metals										Asbestos	pH
					Hg	Mo	Ni	WET Ni	Se	Ag	Tl	V	Zn			
					mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	%
Risk Regulatory and Reference Criteria																
USEPA RSL Residential					11	390	1500	NA	390	390	0.78	390	23000	NA	NA	
ESL - Tier 1					13	390	86	NA	390	390	0.78	390	23000	NA	NA	
DTSC's SLs - Commerical					4.5	NA	3100	NA	NA	1500	NA	1000	NA	NA	NA	
CHHSLs - Commerical					180	4800	16000	NA	4800	4800	63	6700	100000	NA	NA	
Concentration in California Benchmark Soil					0.26	1.3	57	NA	0.058	0.8	15.7	112	149	NA	NA	
Hazardous Waste Criteria																
TTLC					20	3500	2000	NA	100	500	700	2400	5000	1	NA	
10 x STLC					2	3500	200	NA	10	50	70	240	2500	NA	NA	
STLC					NA	NA	NA	20	NA	NA	NA	NA	NA	NA	NA	
20 x TCLP					4	NA	NA	NA	20	100	NA	NA	NA	NA	NA	
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.05 Max: 1.2 Ave: 0	Min: <0.5 Max: <5 Ave: 2	Min: 25 Max: 1200 Ave: 430	Min: 1 Max: 21	Min: <0.5 Max: <25 Ave: 2	Min: <0.5 Max: <5 Ave: 2	Min: <0.5 Max: <25 Ave: 3	Min: 13 Max: 100 Ave: 43	Min: 34 Max: 960 Ave: 164	Min: NFD Max: 3	Min: 7.45 Max: 12.24	
Soil Samples																
E-1	E-1-2.0	No	12/9/2011	2	< 0.05	< 0.5	25	NR	< 0.5	< 0.5	< 0.5	34	270	NAA	NAA	
E-2	E-2-2.0	No	12/9/2011	2	0.051	< 0.5	830	1	< 0.5	< 0.5	< 0.5	55	44	2	9.36	
E-3	E-3-2.5	No	12/9/2011	2.5	< 0.05	< 0.5	970	7	< 0.5	< 0.5	< 0.5	42	40	NAA	NAA	
E-3	E-3-5.0	No	12/9/2011	5										NAA	NAA	
E-4	E-4-2.5	No	12/9/2011	2.5	1.2	0.94	520	5.1	< 0.5	< 0.5	< 0.5	48	56	Trace	9.83	
E-4	E-4-5.0	No	12/9/2011	5												
E-4	E-4-10.0	No	12/9/2011	10												
E-4	E-4-15.0	No	12/9/2011	15												
E-5	E-5-2.5	No	12/9/2011	2.5	0.098	0.89	58	NR	< 0.5	< 0.5	< 0.5	45	140	NFD	12.24	
E-5	E-5-5.0	No	12/9/2011	5	0.31	1.1	310	1.2	< 0.5	< 0.5	< 0.5	58	120	NAA	NAA	
E-6	E-6-2.5	No	12/9/2011	2.5												
E-6	E-6-5.0	No	12/9/2011	5												
E-6	E-6-10.0	No	12/9/2011	10	0.25	1.6	61	NR	< 0.5	< 0.5	< 0.5	41	100	NFD	11.97	
E-7	E-7-2.5	No	12/9/2011	2.5												
E-7	E-7-5.0	No	12/9/2011	5												
E-7	E-7-10.0	No	12/9/2011	10												



TABLE 2 (Cont'd)

RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

Unit (2)					Title 22 17-Metals											
					Sb	As	Ba	Be	Cd	Cr	WET Cr	Co	Cu	Pb	WET Pb	TCLP Pb
					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/L
Risk Regulatory and Reference Criteria																
USEPA RSL Residential					31	0.68	15000	160	71	120000	NA (4)	23	3100	400	NA	NA
ESL - Tier 1					31	0.067	3000	42	39	120000	NA	23	3100	80	NA	NA
DTSC's SLs - Commerical					NA	0.36	NA	210	7.3	170000	NA	NA	NA	320	NA	NA
CHHSLs - Commerical					380	0.24	63000	190	7.5	100000	NA	3200	38000	320	NA	NA
Concentration in California Benchmark Soil					NA	3.5	509	1.28	0.36	122	NA	14.9	28.7	23.9	NA	NA
Hazardous Waste Criteria																
TTLc					500	500	10000	75	100	2500	NA	8000	2500	1000	NA	NA
10 x STLC					150	50	1000	7.5	10	50	NA	800	250	50	NA	NA
STLC					NA	NA	NA	NA	NA	NA	5	NA	NA	NA	5	NA
20 x TCLP					NA	100	2000	NA	20	100	NA	NA	NA	100	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
See Note for Assumptions on Statistical Evaluation																
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.5 Max: 26 Ave: 4	Min: <1 Max: 18 Ave: 5	Min: 25 Max: 580 Ave: 187	Min: <0.5 Max: <5 Ave: 1	Min: <0.25 Max: <5 Ave: 1	Min: 25 Max: 800 Ave: 180	Min: 0.094 Max: 4.3	Min: 7.7 Max: 59 Ave: 29	Min: 4.1 Max: 160 Ave: 44	Min: 6 Max: 1200 Ave: 118	Min: 2.4 Max: 21	Min: <0.2 Max: 4
E-8	E-8-2.5	No	12/9/2011	2.5	0.57	9.2	62	< 0.5	< 0.25	400	0.65	15	38	39	NR	NR
E-8	E-8-5.0	No	12/9/2011	5												
E-8	E-8-10.0	No	12/9/2011	10												
E-8	E-8-14.0	No	12/9/2011	14												
E-9	E-9-2.5	No	12/9/2011	2.5	0.84	7.4	74	< 0.5	< 0.25	110	0.51	19	22	64	2.4	NR
E-9	E-9-5.0	No	12/9/2011	5												
E-9	E-9-10.0	No	12/9/2011	10												
E-9	E-9-14.0	No	12/9/2011	14												
B-12	B-12-3.0	No	5/25/2011	3	0.63	2.9	54	< 0.5	< 0.25	260	NAA	51	20	34	NR	NR
B-12	B-12-5.0	No	5/25/2011	5												
B-12	B-12-10.0	No	5/25/2011	10												
TP-1	TP-1-2.5	<u>Yes</u>	12/8/2011	2.5	0.55	3.9	31	< 0.5	< 0.25	290	4.3	43	26	33	NR	NR
TP-1	TP-1-5.0	<u>Yes</u>	12/8/2011	5												
TP-2	TP-2-2.5	<u>Yes</u>	12/8/2011	2.5	1.7	4.8	200	0.51	0.5	53	0.16	9.8	75	98	2.8	NR
TP-2	TP-2-5.0	<u>Yes</u>	12/8/2011	5												
TP-3	TP-3-2.5	<u>Yes</u>	12/8/2011	2.5	3.5	9.7	540	0.55	0.61	110	0.17	24	110	150	5.5	< 0.2
TP-3	TP-3-5.0	<u>Yes</u>	12/8/2011	5												
TP-4	TP-4-2.5	<u>Yes</u>	12/8/2011	2.5	6.7	12	480	0.51	2	71	0.51	21	110	390	NAA	0.21
TP-4	TP-4-5.0	<u>Yes</u>	12/8/2011	5												



TABLE 2 (Cont'd)
RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

Unit (2)					Title 22 17-Metals						Asbestos	pH			
					Hg	Mo	Ni	WET Ni	Se	Ag			Tl	V	Zn
					mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	%	(pH units)
Risk Regulatory and Reference Criteria															
USEPA RSL Residential					11	390	1500	NA	390	390	0.78	390	23000	NA	NA
ESL - Tier 1					13	390	86	NA	390	390	0.78	390	23000	NA	NA
DTSC's SLs - Commerical					4.5	NA	3100	NA	NA	1500	NA	1000	NA	NA	NA
CHHSLs - Commerical					180	4800	16000	NA	4800	4800	63	6700	100000	NA	NA
Concentration in California Benchmark Soil					0.26	1.3	57	NA	0.058	0.8	15.7	112	149	NA	NA
Hazardous Waste Criteria															
TTLC					20	3500	2000	NA	100	500	700	2400	5000	1	NA
10 x STLC					2	3500	200	NA	10	50	70	240	2500	NA	NA
STLC					NA	NA	NA	20	NA	NA	NA	NA	NA	NA	NA
20 x TCLP					4	NA	NA	NA	20	100	NA	NA	NA	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.05	Min: <0.5	Min: 25	Min: 1	Min: <0.5	Min: <0.5	Min: <0.5	Min: 13	Min: 34	Min: NFD	Min: 7.45
					Max: 1.2	Max: <5	Max: 1200	Max: 21	Max: <25	Max: <5	Max: <25	Max: 100	Max: 960		Max: 3
E-8	E-8-2.5	No	12/9/2011	2.5	0.16	3.4	160	NR	< 0.5	< 0.5	< 0.5	46	68	NAA	NAA
E-8	E-8-5.0	No	12/9/2011	5											
E-8	E-8-10.0	No	12/9/2011	10											
E-8	E-8-14.0	No	12/9/2011	14											
E-9	E-9-2.5	No	12/9/2011	2.5	0.3	0.69	240	2.6	< 0.5	< 0.5	< 0.5	44	99	Trace	8.99
E-9	E-9-5.0	No	12/9/2011	5											
E-9	E-9-10.0	No	12/9/2011	10											
E-9	E-9-14.0	No	12/9/2011	14											
B-12	B-12-3.0	No	5/25/2011	3	0.077	0.59	1100	NAA	< 0.5	< 0.5	< 0.5	44	59	NAA	NAA
B-12	B-12-5.0	No	5/25/2011	5											
B-12	B-12-10.0	No	5/25/2011	10											
TP-1	TP-1-2.5	Yes	12/8/2011	2.5	0.14	< 0.5	700	21	< 0.5	< 0.5	< 0.5	36	63	NAA	NAA
TP-1	TP-1-5.0	Yes	12/8/2011	5											
TP-2	TP-2-2.5	Yes	12/8/2011	2.5	0.42	< 0.5	130	NR	< 0.5	< 0.5	< 0.5	37	180	NFD	7.94
TP-2	TP-2-5.0	Yes	12/8/2011	5											
TP-3	TP-3-2.5	Yes	12/8/2011	2.5	0.65	1	110	NR	< 0.5	< 0.5	< 0.5	100	230	NAA	NAA
TP-3	TP-3-5.0	Yes	12/8/2011	5											
TP-4	TP-4-2.5	Yes	12/8/2011	2.5	0.97	1.3	87	NR	< 0.5	< 0.5	< 0.5	48	670	NFD	7.45
TP-4	TP-4-5.0	Yes	12/8/2011	5											



TABLE 2 (Cont'd)
RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

					Title 22 17-Metals									WET Pb	TCLP Pb	
					Sb	As	Ba	Be	Cd	Cr	WET Cr	Co	Cu			Pb
					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg			mg/Kg
Risk Regulatory and Reference Criteria																
USEPA RSL Residential					31	0.68	15000	160	71	120000	NA (4)	23	3100	400	NA	NA
ESL - Tier 1					31	0.067	3000	42	39	120000	NA	23	3100	80	NA	NA
DTSC's SLs - Commerical					NA	0.36	NA	210	7.3	170000	NA	NA	NA	320	NA	NA
CHHSLs - Commerical					380	0.24	63000	190	7.5	100000	NA	3200	38000	320	NA	NA
Concentration in California Benchmark Soil					NA	3.5	509	1.28	0.36	122	NA	14.9	28.7	23.9	NA	NA
Hazardous Waste Criteria																
TTLc					500	500	10000	75	100	2500	NA	8000	2500	1000	NA	NA
10 x STLC					150	50	1000	7.5	10	50	NA	800	250	50	NA	NA
STLC					NA	NA	NA	NA	NA	NA	5	NA	NA	NA	5	NA
20 x TCLP					NA	100	2000	NA	20	100	NA	NA	NA	100	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
					See Note for Assumptions on Statistical Evaluation											
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.5 Max: 26 Ave: 4	Min: <1 Max: 18 Ave: 5	Min: 25 Max: 580 Ave: 187	Min: <0.5 Max: <5 Ave: 1	Min: <0.25 Max: <5 Ave: 1	Min: 25 Max: 800 Ave: 180	Min: 0.094 Max: 4.3	Min: 7.7 Max: 59 Ave: 29	Min: 4.1 Max: 160 Ave: 44	Min: 6 Max: 1200 Ave: 118	Min: 2.4 Max: 21	Min: <0.2 Max: 4
TP-5	TP-5-2.5	Yes	12/8/2011	2.5	1.9	6.2	190	< 0.5	0.5	100	0.35	14	52	150	11	0.28
TP-5	TP-5-5.0	Yes	12/8/2011	5												
TP-6	TP-6-2.5	Yes	12/8/2011	2.5	6.7	10	480	< 0.5	2.2	77	0.4	12	160	1200	NAA	1.2
TP-6	TP-6-5.0	Yes	12/8/2011	5												
TP-7	TP-7-2.5	Yes	12/8/2011	2.5	< 0.5	3.2	65	< 0.5	< 0.25	150	0.38	55	19	37	NR	NR
TP-7	TP-7-5.0	Yes	12/8/2011	5												
B-1	B-1 E-1	Yes	5 to 6/1994	0.5-1.5	<5	<1	25	<0.5	<0.5	180	NAA	45	20	12	NR	NR
B-2	E2-0.0	Yes	5 to 6/1994	0-1	<5	<1	67	<0.5	<0.5	180	NAA	55	18	11	NR	NR
B-3	B-3 E-1	Yes	5 to 6/1994	0.5-1	<5	<1	250	<0.5	<0.5	25	NR	13	36	19	NR	NR
B-4	B-4 E-1	Yes	5 to 6/1994	0-1	26	<1	190	<0.5	<0.5	120	NAA	24	32	30	NR	NR
B-5	E5-01	No	5 to 6/1994	0-1	<5	1	92	<0.5	<0.5	44	NR	17	31	140	NAA	NAA
B-6	B-6-E-1	No	5 to 6/1994	0.5-1	<5	<1	130	<0.5	<0.5	32	NR	12	44	36	NR	NR
H-5	H-5-1.0	Possible Yes	2002	1	< 25	< 5	100	< 5	< 5	260	NAA	59	27	19	NR	NR
AEW-1	AEW-1-3.0-3.5	Yes	2/16/2018	3.0-3.5	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-2	AEW-2-2.0-2.5	Yes	2/16/2018	2.0-2.5	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-3	AEW-3-2.1-2.6	Yes	2/16/2018	2.1-2.6	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-4	AEW-4-1.8-2.2	Yes	2/16/2018	1.8-2.2	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-5	AEW-5-1.2-1.8	Yes	2/16/2018	1.2-1.8	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-6	AEW-6-2.5-3.0	Yes	2/16/2018	2.5-3.0	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-7	AEW-7-2.1-2.6	Yes	2/16/2018	2.1-2.6	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-8	AEW-8-3.3-3.8	Yes	2/16/2018	3.3-3.8	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA



TABLE 2 (Cont'd)

RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

					Title 22 17-Metals						Asbestos	pH			
					Hg	Mo	Ni	WET Ni	Se	Ag			Tl	V	Zn
					Unit (2)	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	%
Risk Regulatory and Reference Criteria															
USEPA RSL Residential					11	390	1500	NA	390	390	0.78	390	23000	NA	NA
ESL - Tier 1					13	390	86	NA	390	390	0.78	390	23000	NA	NA
DTSC's SLs - Commerical					4.5	NA	3100	NA	NA	1500	NA	1000	NA	NA	NA
CHHSLs - Commerical					180	4800	16000	NA	4800	4800	63	6700	100000	NA	NA
Concentration in California Benchmark Soil					0.26	1.3	57	NA	0.058	0.8	15.7	112	149	NA	NA
Hazardous Waste Criteria															
TTLC					20	3500	2000	NA	100	500	700	2400	5000	1	NA
10 x STLC					2	3500	200	NA	10	50	70	240	2500	NA	NA
STLC					NA	NA	NA	20	NA	NA	NA	NA	NA	NA	NA
20 x TCLP					4	NA	NA	NA	20	100	NA	NA	NA	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.05	Min: <0.5	Min: 25	Min: 1	Min: <0.5	Min: <0.5	Min: <0.5	Min: 13	Min: 34	Min: NFD	Min: 7.45
					Max: 1.2	Max: <5	Max: 1200	Max: 21	Max: <25	Max: <5	Max: <25	Max: 100	Max: 960		Max: 3
TP-5	TP-5-2.5	Yes	12/8/2011	2.5	0.54	0.53	120	NR	< 0.5	< 0.5	< 0.5	100	340	NAA	NAA
TP-5	TP-5-5.0	Yes	12/8/2011	5											
TP-6	TP-6-2.5	Yes	12/8/2011	2.5	0.88	1.4	83	NR	< 0.5	0.62	< 0.5	47	960	NFD	7.77
TP-6	TP-6-5.0	Yes	12/8/2011	5											
TP-7	TP-7-2.5	Yes	12/8/2011	2.5	0.21	< 0.5	1000	5.9	< 0.5	< 0.5	< 0.5	42	61	NFD	7.98
TP-7	TP-7-5.0	Yes	12/8/2011	5											
B-1	B-1 E-1	Yes	5 to 6/1994	0.5-1.5	<0.05	<5	840	NAA	<1	<5	<5	18	34	NFD	8
B-2	E2-0.0	Yes	5 to 6/1994	0-1	0.11	<5	1100	NAA	<1	<5	<5	34	44	NFD	7.6
B-3	B-3 E-1	Yes	5 to 6/1994	0.5-1	0.6	<5	52	NR	<1	<5	<5	21	40	NFD	7.6
B-4	B-4 E-1	Yes	5 to 6/1994	0-1	0.2	<5	370	NAA	<1	<5	<5	22	56	NFD	7.4
B-5	E5-01	No	5 to 6/1994	0-1	0.3	<5	180	NR	<1	<5	<5	13	130	<1%	8.8
B-6	B-6 E-1	No	5 to 6/1994	0.5-1	0.58	<5	82	NR	<1	<5	<5	27	83	1	7.3
H-5	H-5-1.0	Possible Yes	2002	1	0.135	< 5	1200	NAA	< 25	< 5	< 25	39	54	3	8.5
AEW-1	AEW-1-3.0-3.5	Yes	2/16/2018	3.0-3.5	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA
AEW-2	AEW-2-2.0-2.5	Yes	2/16/2018	2.0-2.5	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA
AEW-3	AEW-3-2.1-2.6	Yes	2/16/2018	2.1-2.6	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA
AEW-4	AEW-4-1.8-2.2	Yes	2/16/2018	1.8-2.2	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA
AEW-5	AEW-5-1.2-1.8	Yes	2/16/2018	1.2-1.8	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA
AEW-6	AEW-6-2.5-3.0	Yes	2/16/2018	2.5-3.0	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA
AEW-7	AEW-7-2.1-2.6	Yes	2/16/2018	2.1-2.6	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA
AEW-8	AEW-8-3.3-3.8	Yes	2/16/2018	3.3-3.8	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA



TABLE 2 (Cont'd)

RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

					Title 22 17-Metals											
					Sb	As	Ba	Be	Cd	Cr	WET Cr	Co	Cu	Pb	WET Pb	TCLP Pb
					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/L
Risk Regulatory and Reference Criteria																
USEPA RSL Residential					31	0.68	15000	160	71	120000	NA (4)	23	3100	400	NA	NA
ESL - Tier 1					31	0.067	3000	42	39	120000	NA	23	3100	80	NA	NA
DTSC's SLs - Commerical					NA	0.36	NA	210	7.3	170000	NA	NA	NA	320	NA	NA
CHHSLs - Commerical					380	0.24	63000	190	7.5	100000	NA	3200	38000	320	NA	NA
Concentration in California Benchmark Soil					NA	3.5	509	1.28	0.36	122	NA	14.9	28.7	23.9	NA	NA
Hazardous Waste Criteria																
TTLc					500	500	10000	75	100	2500	NA	8000	2500	1000	NA	NA
10 x STLC					150	50	1000	7.5	10	50	NA	800	250	50	NA	NA
STLC					NA	NA	NA	NA	NA	NA	5	NA	NA	NA	5	NA
20 x TCLP					NA	100	2000	NA	20	100	NA	NA	NA	100	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
					See Note for Assumptions on Statistical Evaluation											
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.5 Max: 26 Ave: 4	Min: <1 Max: 18 Ave: 5	Min: 25 Max: 580 Ave: 187	Min: <0.5 Max: <5 Ave: 1	Min: <0.25 Max: <5 Ave: 1	Min: 25 Max: 800 Ave: 180	Min: 0.094 Max: 4.3	Min: 7.7 Max: 59 Ave: 29	Min: 4.1 Max: 160 Ave: 44	Min: 6 Max: 1200 Ave: 118	Min: 2.4 Max: 21	Min: <0.2 Max: 4
AEW-9	AEW-9-1.5-2.1	<u>Yes</u>	2/16/2018	1.5-2.1	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-10	AEW-10-0.5-0.9	<u>Yes</u>	2/16/2018	0.5-0.9	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-Surface 1	AEW-Surface 1	<u>Yes</u>	2/16/2018	0	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA
AEW-Surface 2	AEW-Surface 2	<u>Yes</u>	2/16/2018	0	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA



TABLE 2 (Cont'd)

RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

					Title 22 17-Metals										Asbestos	pH	
					Hg	Mo	Ni	WET Ni	Se	Ag	Tl	V	Zn				
					mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg			%
Risk Regulatory and Reference Criteria																	
USEPA RSL Residential					11	390	1500	NA	390	390	0.78	390	23000	NA	NA		
ESL - Tier 1					13	390	86	NA	390	390	0.78	390	23000	NA	NA		
DTSC's SLs - Commerical					4.5	NA	3100	NA	NA	1500	NA	1000	NA	NA	NA		
CHHSLs - Commerical					180	4800	16000	NA	4800	4800	63	6700	100000	NA	NA		
Concentration in California Benchmark Soil					0.26	1.3	57	NA	0.058	0.8	15.7	112	149	NA	NA		
Hazardous Waste Criteria																	
TTLIC					20	3500	2000	NA	100	500	700	2400	5000	1	NA		
10 x STLC					2	3500	200	NA	10	50	70	240	2500	NA	NA		
STLC					NA	NA	NA	20	NA	NA	NA	NA	NA	NA	NA		
20 x TCLP					4	NA	NA	NA	20	100	NA	NA	NA	NA	NA		
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.05 Max: 1.2 Ave: 0	Min: <0.5 Max: <5 Ave: 2	Min: 25 Max: 1200 Ave: 430	Min: 1 Max: 21	Min: <0.5 Max: <25 Ave: 2	Min: <0.5 Max: <5 Ave: 2	Min: <0.5 Max: <25 Ave: 3	Min: 13 Max: 100 Ave: 43	Min: 34 Max: 960 Ave: 164	Min: NFD Max: 3	Min: 7.45 Max: 12.24		
AEW-9	AEW-9-1.5-2.1	Yes	2/16/2018	1.5-2.1	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA		
AEW-10	AEW-10-0.5-0.9	Yes	2/16/2018	0.5-0.9	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA		
AEW-Surface 1	AEW-Surface 1	Yes	2/16/2018	0	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA		
AEW-Surface 2	AEW-Surface 2	Yes	2/16/2018	0	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NAA	NFD	NAA		



TABLE 2 (Cont'd)

RESULTS OF TITLE 22 METALS, ASBESTOS AND pH ANALYSES ON SOIL SAMPLES

General Notes :

Sb = Antimony, As = Arsenic, Ba = Barium, Be = Beryllium, Cd = Cadmium, Cr = Chromium, Cr VI = Chromium VI, Co = Cobalt, Cu = Copper, Pb = Lead, Hg = Mercury, Mo = Molybdenum, Ni = Nickel, Se = Selenium, Ag = Silver, Tl = Thallium, V = Vanadium, and Zn = Zinc.

Regulatory Criteria:

RSL - Residential = USEPA's Regional Screening Levels under residential scenario, May 2016.

RSL - Commercial = USEPA's Regional Screening Levels under commercial scenario, May 2016.

ESL - Tier 1 = Tier 1 of the California Regional Water Quality Control Board - San Francisco Region's Environmental Screening Criteria, February 2016 (Revision 3, May 2016).

RWQCB Construction Worker ESLs = ESLs for Direct Exposure Soil Screening Levels Construction Worker Exposure Scenario, Any Land Use, and Any Soil Depth, February 2016 (Revision 3, May 2016).

DTSC's SLs - Residential = California Department of Toxic Substances Control - Screening Levels for residential scenario, June 2016.

DTSC's SLs - Commercial = California Department of Toxic Substances Control - Screening Levels for commercial scenario, June 2016.

CHHSLs = California Human Health Screening Levels (CHHSLs) for residential scenario, September 2010

NA = Not Available.

ND = Not detected at concentrations above the respective detection limit(s).

NAA = Not Analyzed.

NFD = No fiber detected.

Hazardous Waste and Recycling Facility Acceptance Criteria:

STLC = California Single Threshold Limit Concentration

TTLIC = California Total Threshold Limit Concentration

TCLP = United States Environmental Protection Agency's Toxicity Characteristic Leaching Procedure

denotes the respective concentration above the detected limit

denotes the respective concentration above at least one of the regulatory criteria listed above.

denotes the respective concentration above at least one of the hazardous waste criteria listed above.

Min = Minimum Concentration. Max = Maximum Concentration.

Ave: Approximate Arithmetic Average Concentration (for concentration reported as below detection limit, the full detection limit was employed for the average estimation).

This table was developed based on information from other reports. If there is any discrepancy between this table and the information in the relevant report, the information in the relevant report shall be followed.



TABLE 3
RESULTS OF TOTAL PETROLEUM HYDROCARBONS, VOCs, AND PCB ANALYSES ON SOIL SAMPLES

Unit (2)					Total Petroleum Hydrocarbons, VOCs								PCBs	
					TPHs-G	TPHs-D	TPHs-MO	Acetone	4-Isopropyl Toluene	Naphthalene	Tetrachloroethene	Xylenes, Total		Other VOCs
					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg
Risk Regulatory Criteria (3)														
USEPA RSL Industrial					420	440	33000	670000	NA	17	100	2500	NA	NA
ESL - Tier 1					100	230	5100	0.5	NA	0.033	0.42	2.3	NA	NA
DTSC's SLs - Commerical					NA	NA	NA	NA	NA	NA	2.7	NA	NA	NA
CHHSLs - Commerical					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hazardous Waste Criteria (5)														
TTLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10 x STLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
STLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20 x TCLP					NA	NA	NA	NA	NA	NA	14	NA	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	See Note for Assumptions on Statistical Evaluation									
					Min: <1 Max: 7.7 Ave: 2	Min: 7 Max: 130 Ave: 34	Min: 63 Max: 540 Ave: 226	Min: <0.05 Max: 0.29 Ave: 0.1	Min: <0.005 Max: 0.022 Ave: 0	Min: <0.005 Max: 0.0051 Ave: 0	Min: <0.005 Max: 0.0095 Ave: 0	Min: <0.005 Max: 0.025 Ave: 0	Not Applicable	Min: <0.25 Max: 16 Ave: 0.9
E-1	E-1-2.0	No	12/9/2011	2	< 1.0	35	350	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 0.25
E-2	E-2-2.0	No	12/9/2011	2	< 1.0	8.1	100	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 0.25
E-3	E-3-2.5	No	12/9/2011	2.5	< 1.0	7	130	"-"	"-"	"-"	"-"	"-"	"-"	< 0.25
E-3	E-3-5.0	No	12/9/2011	5	< 0.05			< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	
E-4	E-4-2.5	No	12/9/2011	2.5	< 0.05			< 0.05	< 0.005	< 0.005	0.0095	< 0.005	ND	
E-4	E-4-5.0	No	12/9/2011	5	1.3	59	540	--	--	--	--	--	--	< 0.5
E-4	E-4-10.0	No	12/9/2011	10	--	--	--	--	--	--	--	--	--	
E-4	E-4-15.0	No	12/9/2011	15	--	--	--	--	--	--	--	--	--	
E-5	E-5-2.5	No	12/9/2011	2.5	< 0.05	30	120	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 0.5
E-5	E-5-5.0	No	12/9/2011	5	1.4			--	--	--	--	--	--	
E-6	E-6-2.5	No	12/9/2011	2.5	--			--	--	--	--	--	--	
E-6	E-6-5.0	No	12/9/2011	5	3.9	58	320	0.11	< 0.005	0.0051	< 0.005	0.025	ND	16
E-6	E-6-10.0	No	12/9/2011	10	--	--	--	--	--	--	--	--	--	
E-7	E-7-2.5	No	12/9/2011	2.5	< 0.05			< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	
E-7	E-7-5.0	No	12/9/2011	5	2.7	32	170	--	--	--	--	--	--	< 5.0
E-7	E-7-10.0	No	12/9/2011	10	--	--	--	--	--	--	--	--	--	



TABLE 3 (Cont'd)

RESULTS OF TOTAL PETROLEUM HYDROCARBONS, VOCs, AND PCB ANALYSES ON SOIL SAMPLES

Unit (2)					Total Petroleum Hydrocarbons, VOCs							PCBs			
					TPHs-G	TPHs-D	TPHs-MO	Acetone	4-Isopropyl Toluene	Naphthalene	Tetrachloroethene		Xylenes, Total	Other VOCs	
					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg	mg/Kg	
Risk Regulatory Criteria (3)															
USEPA RSL Industrial					420	440	33000	670000	NA	17	100	2500	NA	NA	
ESL - Tier 1					100	230	5100	0.5	NA	0.033	0.42	2.3	NA	NA	
DTSC's SLs - Commerical					NA	NA	NA	NA	NA	NA	2.7	NA	NA	NA	
CHHSLs - Commerical					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hazardous Waste Criteria (5)															
TTLc					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10 x STLc					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
STLc					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
20 x TCLP					NA	NA	NA	NA	NA	NA	14	NA	NA	NA	
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	See Note for Assumptions on Statistical Evaluation										
					Min: <1 Max: 7.7 Ave: 2	Min: 7 Max: 130 Ave: 34	Min: 63 Max: 540 Ave: 226	Min: <0.05 Max: 0.29 Ave: 0.1	Min: <0.005 Max: 0.022 Ave: 0	Min: <0.005 Max: 0.0051 Ave: 0	Min: <0.005 Max: 0.0095 Ave: 0	Min: <0.005 Max: 0.025 Ave: 0	Not Applicable	Min: <0.25 Max: 16 Ave: 0.9	
E-8	E-8-2.5	No	12/9/2011	2.5	< 1.0	130	300	--	--	--	--	--	--	--	< 1.0
E-8	E-8-5.0	No	12/9/2011	5				< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	ND	
E-8	E-8-10.0	No	12/9/2011	10				--	--	--	--	--	--	--	
E-8	E-8-14.0	No	12/9/2011	14				--	--	--	--	--	--	--	
E-9	E-9-2.5	No	12/9/2011	2.5	7.7	37	310	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 5.0	
E-9	E-9-5.0	No	12/9/2011	5				--	--	--	--	--	--		--
E-9	E-9-10.0	No	12/9/2011	10				--	--	--	--	--	--		--
E-9	E-9-14.0	No	12/9/2011	14				--	--	--	--	--	--		--
B-12	B-12-3.0	No	5/25/2011	3	1.1	58	340	--	--	--	--	--	--	< 5.0	
B-12	B-12-5.0	No	5/25/2011	5				< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		ND
B-12	B-12-10.0	No	5/25/2011	10				--	--	--	--	--	--		--
TP-1	TP-1-2.5	Yes	12/8/2011	2.5	< 1.0	26	74	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 0.25	
TP-1	TP-1-5.0	Yes	12/8/2011	5				--	--	--	--	--	--		--
TP-2	TP-2-2.5	Yes	12/8/2011	2.5	1.2	15	76	--	--	--	--	--	--	< 0.25	
TP-2	TP-2-5.0	Yes	12/8/2011	5				< 0.05	0.022	< 0.005	< 0.005	< 0.005	< 0.005		ND
TP-3	TP-3-2.5	Yes	12/8/2011	2.5	< 1.0	13	63	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 0.25	
TP-3	TP-3-5.0	Yes	12/8/2011	5				--	--	--	--	--	--		--



TABLE 3 (Cont'd)

RESULTS OF TOTAL PETROLEUM HYDROCARBONS, VOCs, AND PCB ANALYSES ON SOIL SAMPLES

Unit (2)					Total Petroleum Hydrocarbons, VOCs								PCBs		
					TPHs-G	TPHs-D	TPHs-MO	Acetone	4-Isopropyl Toluene	Naphthalene	Tetrachloroethene	Xylenes, Total		Other VOCs	
					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg	
Risk Regulatory Criteria (3)															
USEPA RSL Industrial					420	440	33000	670000	NA	17	100	2500	NA	NA	
ESL - Tier 1					100	230	5100	0.5	NA	0.033	0.42	2.3	NA	NA	
DTSC's SLs - Commerical					NA	NA	NA	NA	NA	NA	2.7	NA	NA	NA	
CHHSLs - Commerical					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hazardous Waste Criteria (5)															
TTLc					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10 x STLc					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
STLc					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
20 x TCLP					NA	NA	NA	NA	NA	NA	14	NA	NA	NA	
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	See Note for Assumptions on Statistical Evaluation										
					Min: <1 Max: 7.7 Ave: 2	Min: 7 Max: 130 Ave: 34	Min: 63 Max: 540 Ave: 226	Min: <0.05 Max: 0.29 Ave: 0.1	Min: <0.005 Max: 0.022 Ave: 0	Min: <0.005 Max: 0.0051 Ave: 0	Min: <0.005 Max: 0.0095 Ave: 0	Min: <0.005 Max: 0.025 Ave: 0	Not Applicable	Min: <0.25 Max: 16 Ave: 0.9	
TP-4	TP-4-2.5	Yes	12/8/2011	2.5	3	63	120	--	--	--	--	--	--	--	0.2
TP-4	TP-4-5.0	Yes	12/8/2011	5				< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	ND	
TP-5	TP-5-2.5	Yes	12/8/2011	2.5	< 1.0	30	220	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 0.5
TP-5	TP-5-5.0	Yes	12/8/2011	5				--	--	--	--	--	--	--	
TP-6	TP-6-2.5	Yes	12/8/2011	2.5	< 1.0	25	240	--	--	--	--	--	--	--	< 0.5
TP-6	TP-6-5.0	Yes	12/8/2011	5				< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	ND	
TP-7	TP-7-2.5	Yes	12/8/2011	2.5	3.9	44	370	0.29	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	ND	< 0.5
TP-7	TP-7-5.0	Yes	12/8/2011	5				--	--	--	--	--	--	--	
B-1	B-1 E-1	Yes	5 to 6/1994	0.5-1.5	<1	<10	--	ND	ND	ND	ND	ND	ND	ND	ND
B-2	E2-0.0	Yes	5 to 6/1994	0-1	<1	<10	--	ND	ND	ND	ND	ND	ND	ND	<0.03
B-3	B-3 E-1	Yes	5 to 6/1994	0.5-1	<1	<10	--	ND	ND	ND	ND	ND	ND	ND	<0.03
B-4	B-4 E-1	Yes	5 to 6/1994	0-1	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	0.04
B-5	E5-01	No	5 to 6/1994	0-1	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	0.14
B-6	B-6-E-1	No	5 to 6/1994	0.5-1	ND	<10	--	ND	ND	ND	ND	ND	ND	ND	0.04



TABLE 3 (Cont'd)

RESULTS OF TOTAL PETROLEUM HYDROCARBONS, VOCs, AND PCBS ANALYSES ON SOIL SAMPLES

General Notes :

TPHs-G = Total Petroleum Hydrocarbons (TPHs) as Gasoline; TPHs-D and TPHs-MO = TPHs as Diesel and TPHs as Motor Oil

bgs=below existing ground surface

mg/Kg = milligrams per Kilogram

Regulatory Criteria :

RSL - Residential = USEPA's Regional Screening Levels under residential scenario, May 2016.

RSL - Commercial = USEPA's Regional Screening Levels under commercial scenario, May 2016.

ESL - Tier 1 = Tier 1 of the California Regional Water Quality Control Board - San Francisco Region's Environmental Screening Criteria, February 2016 (Revision 3, May 2016).

RWQCB Construction Worker ESLs = ESLs for Direct Exposure Soil Screening Levels Construction Worker Exposure Scenario, Any Land Use, and Any Soil Depth, February 2016 (Revision 3, May 2016).

DTSC's SLs - Residential = California Department of Toxic Substances Control - Screening Levels for residential scenario, June 2016.

DTSC's SLs - Commercial = California Department of Toxic Substances Control - Screening Levels for commercial scenario, June 2016.

CHHSLs = California Human Health Screening Levels (CHHSLs) for residential scenario, September 2010

NA = Not Available; ND = Not detected at concentrations above the respective detection limit(s).

-- = Not Analyzed

Hazardous Waste and Recycling Facility Acceptance Criteria :

STLC = California Soluble Threshold Limit Concentration

TTLCL = California Total Threshold Limit Concentration

TCLP = United States Environmental Protection Agency's Toxicity Characteristic Leaching Procedure

denotes the respective concentration above the detected limit

denotes the respective concentration above at least one of the regulatory criteria listed above.

denotes the respective concentration above at least one of the hazardous waste criteria listed above.

Min = Minimum Concentration. Max = Maximum Concentration.

Ave: Approximate Arithmetic Average Concentration (for concentration reported as below detection limit, the full detection limit was employed for the average estimation).

This table was developed based on information from other reports. If there is any discrepancy between this table and the information in the relevant report, the information in the relevant report shall be followed.



TABLE 4
RESULTS OF SVOCs ANALYSES ON SOIL SAMPLES

					Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (g, h, i) perylene	Benzo (a) pyrene	Chrysene	Fluor anthene	Indeno (1,2,3- cd) pyrene	Phenanthrene	Pyrene	Other SVOCs	
Unit					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	
Risk Regulatory Criteria															
USEPA RSL Industrial					2.9	2.9	NA	0.29	290	3000	2.9	NA	23000	NA	
ESL - Tier 1					0.16	0.16	2.5	0.016	3.8	60	0.16	11	85	NA	
DTSC's SLs - Commerical					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CHHSLs - Commerical					NA	NA	NA	0.13	NA	NA	NA	NA	NA	NA	
Hazardous Waste Criteria															
TTLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10 x STLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
STLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
20 x TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.66 Max: <6.6 Ave: 3	Min: <0.66 Max: <6.6 Ave: 3	Min: <0.66 Max: 7.4 Ave: 3.2	Min: <0.66 Max: 7.4 Ave: 3.2	Min: <0.66 Max: <6.6 Ave: 3.1	Min: <0.3 Max: 16 Ave: 3.5	Min: 0.4 Max: <6.6 Ave: 2.9	Min: <0.3 Max: 8.6 Ave: 3.1	Min: <0.3 Max: 20 Ave: 3.7	Not Applicable	
Soil Samples															
E-1	E-1-2.0	No	12/9/2011	2	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	ND	
E-2	E-2-2.0	No	12/9/2011	2	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	ND	
E-3	E-3-2.5	No	12/9/2011	2.5	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	ND	
E-3	E-3-5.0	No	12/9/2011	5											
E-4	E-4-2.5	No	12/9/2011	2.5											
E-4	E-4-5.0	No	12/9/2011	5											
E-4	E-4-10.0	No	12/9/2011	10											
E-4	E-4-15.0	No	12/9/2011	15											
E-5	E-5-2.5	No	12/9/2011	2.5	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	ND	
E-5	E-5-5.0	No	12/9/2011	5	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	ND	
E-6	E-6-2.5	No	12/9/2011	2.5											
E-6	E-6-5.0	No	12/9/2011	5											
E-6	E-6-10.0	No	12/9/2011	10	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	ND	
E-7	E-7-2.5	No	12/9/2011	2.5											
E-7	E-7-5.0	No	12/9/2011	5											
E-7	E-7-10.0	No	12/9/2011	10	3.9	4.7	7.4	7.4	5.5	16	5.2	8.6	20	ND	
E-8	E-8-2.5	No	12/9/2011	2.5											
E-8	E-8-5.0	No	12/9/2011	5											
E-8	E-8-10.0	No	12/9/2011	10											
E-8	E-8-14.0	No	12/9/2011	14	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	ND	
E-9	E-9-2.5	No	12/9/2011	2.5											
E-9	E-9-5.0	No	12/9/2011	5											
E-9	E-9-10.0	No	12/9/2011	10											
E-9	E-9-14.0	No	12/9/2011	14											



TABLE 4 (Cont'd)
RESULTS OF SVOCs ANALYSES ON SOIL SAMPLES

					Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (g, h, i) perylene	Benzo (a) pyrene	Chrysene	Fluoranthene	Indeno (1,2,3-cd) pyrene	Phenanthrene	Pyrene	Other SVOCs
Unit					mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Risk Regulatory Criteria														
USEPA RSL Industrial					2.9	2.9	NA	0.29	290	3000	2.9	NA	23000	NA
ESL - Tier 1					0.16	0.16	2.5	0.016	3.8	60	0.16	11	85	NA
DTSC's SLs - Commerical					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHHSLs - Commerical					NA	NA	NA	0.13	NA	NA	NA	NA	NA	NA
Hazardous Waste Criteria														
TTLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10 x STLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
STLC					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20 x TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.66 Max: <6.6 Ave: 3	Min: <0.66 Max: <6.6 Ave: 3	Min: <0.66 Max: 7.4 Ave: 3.2	Min: <0.66 Max: 7.4 Ave: 3.2	Min: <0.66 Max: <6.6 Ave: 3.1	Min: <0.3 Max: 16 Ave: 3.5	Min: 0.4 Max: <6.6 Ave: 2.9	Min: <0.3 Max: 8.6 Ave: 3.1	Min: <0.3 Max: 20 Ave: 3.7	Not Applicable
Soil Samples														
B-12	B-12-3.0	No	5/25/2011	3										
B-12	B-12-5.0	No	5/25/2011	5	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	< 6.6	ND
B-12	B-12-10.0	No	5/25/2011	10										
TP-1	TP-1-2.5	Yes	12/8/2011	2.5	< 1.6	< 1.6	2.0	1.7	< 1.6	2.7	< 1.6	< 1.6	5.00	ND
TP-1	TP-1-5.0	Yes	12/8/2011	5										
TP-2	TP-2-2.5	Yes	12/8/2011	2.5	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	ND
TP-2	TP-2-5.0	Yes	12/8/2011	5										
TP-3	TP-3-2.5	Yes	12/8/2011	2.5	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	ND
TP-3	TP-3-5.0	Yes	12/8/2011	5										
TP-4	TP-4-2.5	Yes	12/8/2011	2.5	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	ND
TP-4	TP-4-5.0	Yes	12/8/2011	5										
TP-5	TP-5-2.5	Yes	12/8/2011	2.5	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	ND
TP-5	TP-5-5.0	Yes	12/8/2011	5										
TP-6	TP-6-2.5	Yes	12/8/2011	2.5	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	ND
TP-6	TP-6-5.0	Yes	12/8/2011	5										
TP-7	TP-7-2.5	Yes	12/8/2011	2.5	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	ND
TP-7	TP-7-5.0	Yes	12/8/2011	5										
B-1	B-1 E-1	Yes	5 to 6/1994	0.5-1.5	ND	ND	ND	ND	ND	ND	0.4	ND	0.7	ND
B-2	E2-0.0	Yes	5 to 6/1994	0-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-3	B-3 E-1	Yes	5 to 6/1994	0.5-1	ND	ND	ND	ND	ND	<0.3	ND	<0.3	<0.3	ND
B-4	B-4 E-1	Yes	5 to 6/1994	0-1	ND	ND	ND	ND	ND	<3	ND	ND	<3	ND
B-5	E5-01	No	5 to 6/1994	0-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-6	B-6-E-1	No	5 to 6/1994	0.5-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



TABLE 4 (Cont'd)
RESULTS OF SVOCs ANALYSES ON SOIL SAMPLES

General Notes :

SVOCs = Semi-Volatile Organics Compounds

bgs=below existing ground surface

mg/Kg = milligrams per Kilogram

Regulatory Criteria:

RSL - Residential = USEPA's Regional Screening Levels under residential scenario, May 2016.

RSL - Commercial = USEPA's Regional Screening Levels under commercial scenario, May 2016.

ESL - Tier 1 = Tier 1 of the California Regional Water Quality Control Board - San Francisco Region's Environmental Screening Criteria, February 2016 (Revision 3, May 2016).

RWQCB Construction Worker ESLs = ESLs for Direct Exposure Soil Screening Levels Construction Worker Exposure Scenario, Any Land Use, and Any Soil Depth, February 2016 (Revision 3, May 2016).

DTSC's SLs - Residential = California Department of Toxic Substances Control - Screening Levels for residential scenario, June 2016.

DTSC's SLs - Commercial = California Department of Toxic Substances Control - Screening Levels for commercial scenario, June 2016.

CHHSLs = California Human Health Screening Levels (CHHSLs) for residential scenario, September 2010

NA = Not Available; ND = Not detected at concentrations above the respective detection limit(s).

denotes the respective concentration above the detected limit

denotes the respective concentration above at least one of the regulatory criteria listed above.

denotes the respective concentration above at least one of the hazardous waste criteria listed above.

Min = Minimum Concentration. Max = Maximum Concentration.

Ave: Approximate Arithmetic Average Concentration (for concentration reported as below detection limit, the full detection limit was employed for the average estimation).

This table was developed based on information from other reports. If there is any discrepancy between this table and the information in the relevant report, the information in the relevant report shall be followed.



**TABLE 5
RESULTS OF CYANIDE AND SULFIDE ANALYSES ON SOIL SAMPLES**

					Unit	CN- mg/Kg	Sulfide mg/Kg
Risk Regulatory Criteria							
					USEPA RSL Industrial	150	NA
					ESL - Tier 1	3.60E-03	NA
					DTSC's SLs - Commerical	20	NA
					CHHSLs - Commerical	NA	NA
Hazardous Waste Criteria							
					TTLIC	NA	NA
					10 x STLC	NA	NA
					STLC	NA	NA
					20 x TCLP	NA	NA
					TCLP	NA	NA
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.1 Max: 0.9	Min: <10 Max: 110	
E-1	E-1-2.0	No	12/9/2011	2	--	--	
E-2	E-2-2.0	No	12/9/2011	2	< 0.1	< 10	
E-3	E-3-2.5	No	12/9/2011	2.5	< 0.4	< 10	
E-3	E-3-5.0	No	12/9/2011	5			
E-4	E-4-2.5	No	12/9/2011	2.5			
E-4	E-4-5.0	No	12/9/2011	5			
E-4	E-4-10.0	No	12/9/2011	10			
E-4	E-4-15.0	No	12/9/2011	15	0.14	< 10	
E-5	E-5-2.5	No	12/9/2011	2.5			
E-5	E-5-5.0	No	12/9/2011	5	--	--	
E-6	E-6-2.5	No	12/9/2011	2.5			
E-6	E-6-5.0	No	12/9/2011	5			
E-6	E-6-10.0	No	12/9/2011	10			
E-7	E-7-2.5	No	12/9/2011	2.5			
E-7	E-7-5.0	No	12/9/2011	5	0.15	110	
E-7	E-7-10.0	No	12/9/2011	10			
E-8	E-8-2.5	No	12/9/2011	2.5	--	--	
E-8	E-8-5.0	No	12/9/2011	5			
E-8	E-8-10.0	No	12/9/2011	10			
E-8	E-8-14.0	No	12/9/2011	14			
E-9	E-9-2.5	No	12/9/2011	2.5			
E-9	E-9-5.0	No	12/9/2011	5	< 0.1	35	
E-9	E-9-10.0	No	12/9/2011	10			
E-9	E-9-14.0	No	12/9/2011	14			
B-12	B-12-3.0	No	5/25/2011	3	--	--	
B-12	B-12-5.0	No	5/25/2011	5			
B-12	B-12-10.0	No	5/25/2011	10			
TP-1	TP-1-2.5	Yes	12/8/2011	2.5	--	--	
TP-1	TP-1-5.0	Yes	12/8/2011	5			
TP-2	TP-2-2.5	Yes	12/8/2011	2.5	0.23	< 10	
TP-2	TP-2-5.0	Yes	12/8/2011	5			
TP-3	TP-3-2.5	Yes	12/8/2011	2.5	--	--	
TP-3	TP-3-5.0	Yes	12/8/2011	5			
TP-4	TP-4-2.5	Yes	12/8/2011	2.5	0.47	< 10	
TP-4	TP-4-5.0	Yes	12/8/2011	5			
TP-5	TP-5-2.5	Yes	12/8/2011	2.5	--	--	
TP-5	TP-5-5.0	Yes	12/8/2011	5			
TP-6	TP-6-2.5	Yes	12/8/2011	2.5	0.2	< 10	
TP-6	TP-6-5.0	Yes	12/8/2011	5			
TP-7	TP-7-2.5	Yes	12/8/2011	2.5	< 0.1	< 10	
TP-7	TP-7-5.0	Yes	12/8/2011	5			
B-1	B-1 E-1	Yes	5 to 6/1994	0.5-1.5	--	ND	
B-2	E2-0.0	Yes	5 to 6/1994	0-1	--	<10	
B-3	B-3 E-1	Yes	5 to 6/1994	0.5-1	0.9	ND	
B-4	B-4 E-1	Yes	5 to 6/1994	0-1	0.3	40	



TABLE 5 (Cont'd)
RESULTS OF CYANIDE AND SULFIDE ANALYSES ON SOIL SAMPLES

					CN-	Sulfide
					mg/Kg	mgKg
					Unit	
Risk Regulatory Criteria						
USEPA RSL Industrial					150	NA
ESL - Tier 1					3.60E-03	NA
DTSC's SLs - Commerical					20	NA
CHHSLs - Commerical					NA	NA
Hazardous Waste Criteria						
TTLc					NA	NA
10 x STLc					NA	NA
STLc					NA	NA
20 x TCLP					NA	NA
TCLP					NA	NA
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled	Approx. Depth (Feet bgs)	Min: <0.1 Max: 0.9	Min: <10 Max: 110
B-5	E5-01	No	5 to 6/1994	0-1	--	ND
B-6	B-6-E-1	No	5 to 6/1994	0.5-1	--	ND

General Notes :

CN- = Cyanide.

mg/Kg = milligrams per Kilogram; and ppb = parts per billion.

bgs=below existing ground surface

Regulatory Criteria:

RSL - Residential = USEPA's Regional Screening Levels under residential scenario, May 2016.

RSL - Commercial = USEPA's Regional Screening Levels under commercial scenario, May 2016.

ESL - Tier 1 = Tier 1 of the California Regional Water Quality Control Board - San Francisco Region's Environmental Screening Criteria, February 2016 (Revision 3, May 2016).

RWQCB Construction Worker ESLs = ESLs for Direct Exposure Soil Screening Levels Construction Worker Exposure Scenario, Any Land Use, and Any Soil Depth, February 2016 (Revision 3, May 2016).

DTSC's SLs - Residential = California Department of Toxic Substances Control - Screening Levels for residential scenario, June 2016.

DTSC's SLs - Commerical = California Department of Toxic Substances Control - Screening Levels for commerical scenario, June 2016.

CHHSLs = California Human Health Screening Levels (CHHSLs) for residential scenario, September 2010

NA = Not Available; ND = Not detected at concentrations above the respective detection limit(s).

-- = Not Analyzed.

Hazardous Waste and Recycling Facility Acceptance Criteria:

STLc = California Souble Threshold Limit Concentration

TTLc = California Total Threshold Limit Concentration

TCLP = United States Environmental Protection Agency's Toxicity Characteristic Leaching Procedure

Baylands Soil Processing = Acceptance Criteria as listed in Bayland Soil Processing's Acceptance Guidelines, April 2014 by Baylands Processing, Bisbane, California.

Lennar Urban - Candlestick Point Redevelopment is data evaluation criteria listed in Section 3.2.3 of

"Draft Soil Import Protocol, Candlestick Point Redevelopment Project San Francisco, California"

prepared by Geosyntec Consultants, and dated February 19, 2014.

The listed value is the lowest of the versions of the ESLs, CHHSLs, and RSLs criteria listed in Section 3.2.3.

denotes the respective concentration above the detected limit

denotes the respective concentration above at least one of the regulatory criteia listed above.

denotes the respective concentration above at least one of the hazardous waste criteia listed above.

Min = Minimum Concentration. Max = Maximum Concentration.

Ave: Approximate Arithmetic Average Concentration (for concentration reported as below detection limit, the full detection limit was employed for the average estimation).

This table was developed based on information from other reports. If there is any discrepancy between this tak and the information in the relevant report, the information in the relevant report shall be followed.



TABLE 6

RESULTS OF TOTAL PETROLEUM HYDROCARBONS, VOCS, AND SVOCs ANALYSES ON GROUNDWATER SAMPLES

				TPHs-G	TPHs-D	TPHs-MO	VOCs	SVOCs
				Unit	µg/L	µg/L	µg/L	µg/L
Risk Regulatory and Reference Criteria								
ESL (Tier 1)				100	100	NA	NA	NA
Wastewater Discharge Criteria								
SFPUC Batch Discharge Criteria				100000	100000	100000	NA	NA
Soil Boring/Test Pit	Sample ID	Within Project Site? (Y/N)	Date Sampled					
Groundwater Samples								
E-9	E-9-GW	No	12/8/2011	< 50	2400	2800	ND	ND

General Notes :

TPHs = Total Petroleum Hydrocarbons; TPHs-G= Gasoline; TPHs=Diesel; TPHs-MO=Motor Oil.

µg/L = micrograms per Liter.

ESL - Tier 1 = Tier 1 of the California Regional Water Quality Control Board - San Francisco Region's Environmental Screening Criteria, February 2016 (Revision 3, May 2016).

SF Batch Discharge Limit = San Francisco Batch Wastewater Discharge Limit, May 18, 2012.

NA = Not Available; ND = Not detected at concentrations above the respective detection limit(s);

denotes the respective concentration above the detected limit

denotes the respective concentration above at least one of the regulatory criteria listed above.

denotes the respective concentration above the SFPUC Batch Discharge Limit.

Min = Minimum Concentration. Max = Maximum Concentration.

NA = Not Available; ND = Not detected at concentrations above the respective detection limit(s).

This table was developed based on information from other reports. If there is any discrepancy between this table and the information in the relevant report, the information in the relevant report shall be followed.



TABLE 7
RESULTS OF DISSOLVED TITLE 22 METALS ANALYSES ON GROUNDWATER SAMPLES

				Title 22 17-Metals																
				Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	V	Zn
Unit				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Risk Regulatory and Reference Criteria																				
ESL (Table F-1b)				6	11	1000	2.7	0.25	50	3.0	3.1	2.5	0.051	100	8.2	5.0	0.19	2.0	19	81
Wastewater Discharge Criteria																				
SFPUC Batch Discharge Criteria				NA	4000	NA	NA	500	5000	NA	4000	1500	50	NA	2000	NA	600	NA	NA	7000
Soil Boring/Test Pit	Sample ID	Within Project Site?	Date Sampled	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:	Min:
				2.9	2.3	1100	<0.5	<0.25	Min: 1.4	3.3	<0.5	<0.5	0.074	9.9	Min: 14	2.8	<0.19	<0.5	1.4	Min: <5
				Max:	Max:	Max:	Max:	Max:	Max: 1.4	Max:	Max:	Max:	Max:	Max:	Max:	Max:	Max:	Max:	Max:	Max:
Groundwater Samples				2.9	2.3	1100	<0.5	<0.25	1.4	3.3	<0.5	<0.5	0.074	9.9	14	2.8	<0.19	<0.5	1.4	<5.0

General Notes :

Sb = Antimony, As = Arsenic, Ba = Barium, Be = Beryllium, Cd = Cadmium, Cr = Chromium, Cr VI = Chromium VI, Co = Cobalt, Cu = Copper, Pb = Lead, Hg = Mercury, Mo = Molybdenum, Ni = Nickel, Se = Selenium, Ag = Silver, Tl = Thallium, V = Vanadium, and Zn = Zinc.

µg/L = micrograms per Liter.

ESL - Tier 1 = Tier 1 of the California Regional Water Quality Control Board - San Francisco Region's Environmental Screening Criteria, February 2016 (Revision 3, May 2016).

SF Batch Discharge Limit = San Francisco Batch Wastewater Discharge Limit, May 18, 2012.

Analyses of Title 22 metals was performed on groundwater sample filtered in laboratory upon receipt.

denotes the respective concentration above the detected limit

denotes the respective concentration above at least one of the regulatory criteria listed above.

denotes the respective concentration above the SFPUC Batch Discharge Limit.

Min = Minimum Concentration. Max = Maximum Concentration.

This table was developed based on information from other reports. If there is any discrepancy between this table and the information in the relevant report, the information in the relevant report shall be followed.



APPENDIX A

NOA REGULATIONS



FINAL REGULATION ORDER

**ASBESTOS AIRBORNE TOXIC CONTROL MEASURE FOR
CONSTRUCTION, GRADING, QUARRYING,
AND SURFACE MINING OPERATIONS**

CALIFORNIA CODE OF REGULATIONS
TITLE 17, SECTION 93105

FINAL REGULATION ORDER

ASBESTOS AIRBORNE TOXIC CONTROL MEASURE FOR CONSTRUCTION, GRADING, QUARRYING, AND SURFACE MINING OPERATIONS

Section 93105. Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations.

(a) Effective Date.

(1) No later than 120 days after the approval of this section by the Office of Administrative Law, each air pollution control and air quality management district must:

(A) Implement and enforce the requirements of this section; or

(B) Propose their own asbestos airborne toxic control measure as provided in Health & Safety Code section 39666(d).

(2) *Pre-existing Operations:* The owner/operator of any project in which the construction, grading, quarrying, or surface mining operation started before the effective date of this section shall comply with this section by:

(A) The date the district begins implementing and enforcing this section as required in subsection (a)(1)(A); or

(B) The compliance date specified in the airborne toxic control measure adopted by the district as required in subsection (a)(1)(B).

(b) Applicability. Unless one of the specific exemptions specified in subsection (c) applies, this section shall apply to any construction, grading, quarrying, or surface mining operation on any property that meets any of the following criteria:

(1) Any portion of the area to be disturbed is located in a geographic ultramafic rock unit; or

(2) Any portion of the area to be disturbed has naturally-occurring asbestos, serpentine, or ultramafic rock as determined by the owner/operator, or the Air Pollution Control Officer (APCO); or

(3) Naturally-occurring asbestos, serpentine, or ultramafic rock is discovered by the owner/operator, a registered geologist, or the APCO in the area to be disturbed after the start of any construction, grading, quarrying, or surface mining operation.

(c) General Exemptions.

(1) *Geologic Evaluation:* The APCO may provide an exemption from this section for any property that meets the criterion in subsection (b)(1) if a registered geologist has conducted a geologic evaluation of the property and determined that no serpentine or ultramafic rock is likely to be found in the area to be disturbed. Before an exemption can be granted, the owner/operator must provide a copy of a report detailing the geologic evaluation to the APCO for his or her consideration.

(A) At a minimum, the geologic evaluation must include:

1. A general description of the property and the proposed use;
2. A detailed site characterization which may include:
 - i. A physical site inspection;
 - ii. Offsite geologic evaluation of adjacent property;
 - iii. Evaluation of existing geological maps and studies of the site and surrounding area;
 - iv. Development of geologic maps of the site and vicinity;
 - v. Identification and description of geologic units, rock and soil types, and features that could be related to the presence of ultramafic rocks, serpentine, or asbestos mineralization; and
 - vi. A subsurface investigation to evaluate the nature and extent of geologic materials in the subsurface where vertical excavation is planned; methods of subsurface investigation may include, but are not limited to borings, test pits, trenching, and geophysical surveys;
3. A classification of rock types found must conform to the nomenclature based on the International Union of Geological Science system;
4. A description of the sampling procedures used;
5. A description of the analytical procedures used, which may include mineralogical analyses, petrographic analyses, chemical analyses, or analyses for asbestos content;
6. An archive of collected rock samples for third party examination; and
7. A geologic evaluation report documenting observations, methods, data, and findings; the format and content of the report should follow the Guidelines for Engineering Geologic

Reports issued by the State Board of Registration for Geologists and Geophysicists.

- (B) The district may request any additional tests or other information needed to evaluate an application for exemption.
 - (C) The district shall grant or deny a request for an exemption within 90 days of the receipt of a complete application.
 - (D) If the request for an exemption is denied, the APCO shall provide written reasons for the denial.
 - (E) *Expiration of the Geologic Exemption:* If the owner/operator discovers any naturally-occurring asbestos, serpentine, or ultramafic rock in the area to be disturbed after the exemption is granted, then:
 - 1. The owner/operator must comply with the requirements of this section;
 - 2. The owner/operator must report the discovery of the naturally-occurring asbestos, serpentine, or ultramafic rock to the APCO no later than the next business day; and
 - 3. The exemption under subsection (c)(1) shall expire and cease to be effective.
- (2) If a method is developed to accurately demonstrate that property located in a geographic ultramafic rock unit has no detectable asbestos in the area to be disturbed, then the ARB Executive Officer shall propose to the Board for adoption a regulatory amendment allowing the method to be utilized, as appropriate, to obtain an exemption from the requirements specified in this section.
- (3) *Agriculture and Timber Harvesting:* This section shall not apply to agricultural operations or timber harvesting except for construction of roads and buildings. Construction of roads is subject to the requirements of subsection (e) if the road is part of a construction or grading operation, quarry, or surface mine, and is subject to the requirements of subsection (d) if the road is not part of a construction or grading operation, quarry, or surface mine.
- (4) *Homeowners and Tenants:* Individuals engaged in covered activities on residential property they own or occupy are exempt from subsections (e)(1) and (e)(3)(A).

(5) *Sand and Gravel Operations*: The APCO may provide an exemption for crushing, screening and conveying equipment, stockpiles, and off-site material transport at a sand and gravel operation if the operation processes only materials from an alluvial deposit.

(A) The district shall grant or deny a request for an exemption within ninety (90) days of the receipt of a complete application.

(B) If the request for an exemption is denied, the APCO shall provide written reasons for the denial.

(d) Requirements for Road Construction and Maintenance. These requirements shall apply to roads that are not part of a construction or grading project, quarry, or surface mine.

(1) No person shall conduct any road construction or maintenance activities that disturb any area that meets any criterion listed in subsections (b)(1) or (b)(2) unless all of the following conditions are met.

(A) The APCO is notified in writing at least fourteen (14) days before the beginning of the activity or in accordance with a procedure approved by the district.

(B) All the following dust control measures are implemented during any road construction or maintenance activity:

1. Unpaved areas subject to vehicle traffic must be stabilized by being kept adequately wetted, treated with a chemical dust suppressant, or covered with material that contains less than 0.25 percent asbestos;

2. The speed of any vehicles and equipment traveling across unpaved areas must be no more than fifteen (15) miles per hour unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust that is visible crossing the project boundaries;

3. Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept adequately wetted, treated with a chemical dust suppressant, or covered with material that contains less than 0.25 percent asbestos; and

4. Activities must be conducted so that no track-out from any road construction project is visible on any paved roadway open to the public.

- (C) Equipment and operations must not cause the emission of any dust that is visible crossing the project boundaries.
- (2) No person shall conduct any road construction or maintenance activity that disturbs the ground surface in an area that meets the criteria in subsection (b)(3) unless:
 - (A) The APCO is notified no later than the next business day of the discovery that the area meets the criteria in subsection (b)(3); and
 - (B) The requirements of subsections (d)(1)(B) through (d)(1)(C), are implemented within twenty-four (24) hours of the discovery.
- (3) *Exemptions from the Requirements for Road Construction and Maintenance.* The following exemptions may apply in addition to the applicable general exemptions specified in subsection (c).
 - (A) *Emergency Road Repairs:* Subsection (d)(1)(A) shall not apply when construction of a road or firebreak, or a road repair is necessary due to a landslide, flood, or other emergency or to mitigate a condition that constitutes an imminent hazard to the public. The owner/operator shall notify the APCO no later than the next business day of the action taken and the condition establishing the applicability of this subsection.
 - (B) *Remote locations:* The APCO may provide an exemption from the requirements of subsection (d) for any activity which will occur at a remote location.
 1. The district shall grant or deny a request for an exemption within ninety (90) days of the receipt of a complete application.
 2. If the request for an exemption is denied, the APCO shall provide written reasons for the denial.

(e) Requirements for Construction and Grading Operations.

- (1) *Areas of one acre or less meeting the criteria in subsections (b)(1) or (b)(2):* No person shall engage in any construction or grading operation on property where the area to be disturbed is **one (1.0) acre or less** unless all of the following dust mitigation measures are initiated at the start and maintained throughout the duration of the construction or grading activity:

- (A) Construction vehicle speed at the work site must be limited to fifteen (15) miles per hour or less;
 - (B) Prior to any ground disturbance, sufficient water must be applied to the area to be disturbed to prevent visible emissions from crossing the property line;
 - (C) Areas to be graded or excavated must be kept adequately wetted to prevent visible emissions from crossing the property line;
 - (D) Storage piles must be kept adequately wetted, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile;
 - (E) Equipment must be washed down before moving from the property onto a paved public road; and
 - (F) Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA filter equipped vacuum device within twenty-four (24) hours.
- (2) *Areas greater than one acre meeting the criteria in subsections (b)(1) or (b)(2):* No person shall engage in any construction or grading operation on property where the area to be disturbed is **greater than one (1.0) acre** unless:
- (A) An Asbestos Dust Mitigation Plan for the operation has been:
 1. Submitted to and approved by the district before the start of any construction or grading activity; and
 2. The provisions of that dust mitigation plan are implemented at the beginning and maintained throughout the duration of the construction or grading activity; and
 - (B) For a project started before the effective date of this section for which an asbestos dust mitigation plan was submitted at least sixty (60) days before the effective date, and for which the district has not yet approved the asbestos dust mitigation plan:
 1. The measures in subsection (e)(1) must be implemented and maintained until the district-approved asbestos dust mitigation plan is implemented; and
 2. The provisions of the district-approved asbestos dust mitigation plan must be implemented within fourteen (14)

days of district approval of the plan and maintained throughout the remainder of the construction or grading activity.

- (3) *Property that meets the criteria in subsection (b)(3):* No person shall engage in any construction or grading operation unless the following requirements are met:
- (A) The owner/operator notifies the district of the discovery of naturally-occurring asbestos, serpentine, or ultramafic rock no later than the next business day;
 - (B) The dust mitigation measures in subsection (e)(1) are implemented within twenty-four (24) hours after determining that the property meets the criteria in subsection (b)(3); and
 - (C) For operations in which the area to be disturbed is **one (1.0) acre or less**, the dust mitigation measures in subsection (e)(1) are maintained throughout the duration of the construction or grading activity; or
 - (D) For operations in which the area to be disturbed is **greater than one (1.0) acre**, the owner/operator must:
 - 1. Submit an asbestos dust mitigation plan to the district within fourteen (14) days of the discovery of naturally-occurring asbestos, serpentine, or ultramafic rock;
 - 2. Maintain the dust mitigation measures in subsection (e)(1) until the provisions of the district-approved asbestos dust mitigation plan are implemented;
 - 3. Implement the provisions of the district-approved asbestos dust mitigation plan within fourteen (14) days of district approval of the plan; and
 - 4. Maintain the provisions of the district-approved asbestos dust mitigation plan throughout the remainder of the construction or grading activity.
- (4) *Asbestos Dust Mitigation Plans:* An Asbestos Dust Mitigation Plan must specify dust mitigation practices which are sufficient to ensure that no equipment or operation emits dust that is visible crossing the property line, and must include one or more provisions addressing **each** of the following topics.

- (A) Track-out prevention and control measures which shall include:
1. Removal of any visible track-out from a paved public road at any location where vehicles exit the work site; this shall be accomplished using wet sweeping or a HEPA filter equipped vacuum device at the end of the work day or at least one time per day; and
 2. Installation of one or more of the following track-out prevention measures:
 - i. A gravel pad designed using good engineering practices to clean the tires of exiting vehicles;
 - ii. A tire shaker;
 - iii. A wheel wash system;
 - iv. Pavement extending for not less than fifty (50) consecutive feet from the intersection with the paved public road; or
 - v. Any other measure as effective as the measures listed above.
- (B) Keeping active storage piles adequately wetted or covered with tarps.
- (C) Control for disturbed surface areas and storage piles that will remain inactive for more than seven (7) days, which shall include one or more of the following:
1. Keep the surface adequately wetted;
 2. Establishment and maintenance of surface crusting sufficient to satisfy the test in subsection (h)(6);
 3. Application of chemical dust suppressants or chemical stabilizers according to the manufacturers' recommendations;
 4. Covering with tarp(s) or vegetative cover;
 5. Installation of wind barriers of fifty (50) percent porosity around three (3) sides of a storage pile;
 6. Installation of wind barriers across open areas; or
 7. Any other measure as effective as the measures listed above.

- (D) Control for traffic on on-site unpaved roads, parking lots, and staging areas which shall include:
1. A maximum vehicle speed limit of fifteen (15) miles per hour or less; and
 2. One or more of the following:
 - i. Watering every two hours of active operations or sufficiently often to keep the area adequately wetted;
 - ii. Applying chemical dust suppressants consistent with manufacturer's directions;
 - iii. Maintaining a gravel cover with a silt content that is less than five (5) percent and asbestos content that is less than 0.25 percent, as determined using an approved asbestos bulk test method, to a depth of three (3) inches on the surface being used for travel; or
 - iv. Any other measure as effective as the measures listed above.
- (E) Control for earthmoving activities which shall include one or more of the following:
1. Pre-wetting the ground to the depth of anticipated cuts;
 2. Suspending grading operations when wind speeds are high enough to result in dust emissions crossing the property line, despite the application of dust mitigation measures;
 3. Application of water prior to any land clearing; or
 4. Any other measure as effective as the measures listed above.
- (F) *Control for off-site transport.* The owner/operator shall ensure that no trucks are allowed to transport excavated material off-site unless:
1. Trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments; and
 2. Loads are adequately wetted and either:
 - i. Covered with tarps; or
 - ii. Loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.

(G) *Post construction stabilization of disturbed areas.* Upon completion of the project, disturbed surfaces shall be stabilized using one or more of the following methods:

1. Establishment of a vegetative cover;
2. Placement of at least three (3.0) inches of non-asbestos-containing material;
3. Paving;
4. Any other measure deemed sufficient to prevent wind speeds of ten (10) miles per hour or greater from causing visible dust emissions.

(H) *Air monitoring for asbestos (if required by the APCO).*

1. If required by the district APCO, the plan must include an air-monitoring component.
2. The air monitoring component shall specify the following:
 - i. Type of air sampling device(s);
 - ii. Siting of air sampling device(s);
 - iii. Sampling duration and frequency; and
 - iv. Analytical method.

(I) *Frequency of reporting:* The plan shall state how often the items specified in subsection (e)(5)(B), and any other items identified in the plan, will be reported to the district.

(5) *Recordkeeping and Reporting Requirements.*

(A) *Recordkeeping Requirements:* The owner/operator shall maintain all of the following records for at least seven (7) years following the completion of the construction project:

1. The results of any air monitoring conducted at the request of the APCO;
2. The documentation for any geologic evaluation conducted on the property for the purposes of obtaining an exemption, except the archive of collected samples which may be discarded at the expiration of the exemption or one (1) year after the exemption is granted whichever is less; and

3. The results of any asbestos bulk sampling that meets any of the following conditions:
 - i. The asbestos bulk sampling was conducted by the owner/operator to document the applicability of or compliance with this section, or
 - ii. The asbestos bulk sampling was done at the request of the district APCO.

(B) *Reporting Requirements:* The owner/operator of any grading or construction operation subject to this section shall submit the following to the District:

1. The results of any air monitoring conducted at the request of the APCO; and
2. The results of any asbestos bulk sampling that meets any of the following conditions:
 - i. Asbestos bulk sampling conducted by the owner/operator to document applicability of or compliance with this section; or
 - ii. Asbestos bulk sampling done at the request of the APCO.

(f) Requirements for Quarrying and Surface Mining Operations.

(1) No person shall engage in any quarrying or surface mining operation that meets the criteria of subsections (b)(1) or (b)(2) unless an Asbestos Dust Mitigation Plan for the operation has been submitted to and approved by the District and the fugitive dust mitigation measures specified in the Plan are implemented and maintained throughout the duration of any quarrying or surface mining operation except,

(A) *Pre-existing Operations:* The owner or operator of any quarrying or surface mining operation that was in operation before the date this section is implemented as determined pursuant to subsection (a) that has not obtained district approval of the asbestos dust mitigation plan may continue operating if all the following conditions are met:

1. The owner/operator has submitted an asbestos dust mitigation plan to the district at least sixty (60) days prior to the date specified in subsection (a);
2. The owner/operator implements all of the dust mitigation measures specified in subsections (f)(2)(B) and (f)(2)(C) by the effective date specified in subsection (a) and maintains

them until the provisions of an approved asbestos dust mitigation plan are implemented; and

3. The owner/operator implements the provisions of the asbestos dust mitigation plan within fourteen (14) days following district approval of the plan.

(B) *Mineral exploration activities:* Mineral exploration activities as defined in the California Public Resources Code section 2714(d) in an area meeting any of the conditions of subsection (b) are not required to submit an asbestos dust mitigation plan but shall instead implement and maintain the following measures throughout the duration of the activity:

1. Limit vehicle speeds on the site to fifteen (15) miles per hour or less;
2. Apply sufficient water during any ground disturbance to prevent visible dust from crossing the property line;
3. Keep disturbed areas and storage piles adequately wetted until they are permanently stabilized;
4. Install a track-out prevention device designed to prevent track-out onto any paved public road;
5. Clean up any visible track-out at the end of the workday or at a minimum within twenty-four (24) hours; and
6. Cover, treat with a chemical dust suppressant, or otherwise stabilize any disturbed areas when operations cease for more than seven (7) days.

(2) The owner/operator of any quarry or surface mine that meets any of the criteria in subsection (b)(3) shall:

- (A) Notify the APCO no later than the next business day of the discovery.
- (B) Implement all the following measures within twenty-four (24) hours following the discovery:
 1. Keep stock and working piles adequately wetted during the addition and removal of material;

2. Keep on-site unpaved roads, parking lots, and staging areas stabilized using one of the following measures:
 - i. Adequately wetted; or
 - ii. Controlled using dust palliatives or suppressants; or
 - iii. paving; or
 - iv. Covered to a depth of three (3) inches with gravel that contains less than 0.25 percent asbestos as determined using an approved asbestos bulk test method;
 3. Keep exposed areas and inactive stockpiles that are prone to mechanical or wind disturbances:
 - i. Adequately wetted; or
 - ii. Controlled using dust palliatives or suppressants, paving, wind berms or breaks; or
 - iii. Covered with tarps or material that contains less than 0.25 percent asbestos as determined using an approved asbestos bulk test method;
 4. Ensure that materials to be quarried, excavated, or graded are adequately wetted;
 5. Ensure that all loads are adequately wetted before and during truck loading operations;
 6. Ensure that all trucks transporting materials off-site meet the conditions of either paragraph i or paragraph ii at the time the truck leaves the site:
 - i. Loads are adequately wetted and covered with tarps; or
 - ii. Loads are adequately wetted and the material does not touch the front back or sides of the cargo compartment at any point less than six (6) inches from the top and no point of the load extends above the top of the cargo compartment; and
 7. Limit vehicle speeds within the quarry or surface mining operation to fifteen (15) miles per hour or less.
- (C) Implement all of the following measures within fourteen (14) days of the determination that the operation meets any of the criteria in subsection (b)(3).
4. Measures to ensure that material being excavated, crushed, screened, loaded, transferred or conveyed does not result in any dust that is visible crossing the property line.

2. Measures to ensure that no grinding mill, screening operation, or transfer point on a belt conveyor discharges into the air any visible emissions other than uncombined water vapor, for a period aggregating more than three minutes in any one hour which are:
 - i. Fifty percent as dark or darker in shade as that designated as number one on the Ringlemann Chart, as published by the United States Bureau of Mines; or
 - ii. Of such opacity as to obscure an observers view to a degree equal to or greater than smoke as described in subsection (f)(2)(C)2.i. or ten (10) percent opacity.
3. Measures to ensure that no crusher discharges into the air any visible emissions other than uncombined water vapor, for a period aggregating more than three minutes in any one hour which are:
 - i. Seventy-five percent as dark or darker in shade as that designated as number one on the Ringlemann Chart, as published by the United States Bureau of Mines; or
 - ii. Of such opacity as to obscure an observers view to a degree equal to or greater than smoke as described in subsection (f)(3)(C)3.i. or fifteen (15) percent opacity.
4. Measures for material handling sufficient to meet the requirements of subsections (f)(2)(C)1. through (f)(2)(C)3. Such measures may include the following:
 - i. Installation and operation of spraybars on all conveyors; and
 - ii. Installation of shrouds at all drop points.
5. Track-out control and prevention measures which shall include:
 - i. Installation of a gravel pad, grizzly, tire washing system, or paving at least fifty (50) feet of the access road, and
 - ii. Cleaning any visible track-out off the paved public road using wet sweeping or a HEPA filter equipped vacuum device at the end of each workday.
6. Stabilization of all on-site roads, parking lots, and staging areas open to the public by one of the following methods:
 - i. Pave with asphalt or concrete, or
 - ii. Treat with a chemical dust suppressant applied according to manufacturers directions, or
 - iii. Maintain a gravel cover that has a depth of at least three (3) inches and contains less than 0.25 percent asbestos

as determined using an approved asbestos bulk test method.

- (D) Submit an Asbestos Dust Mitigation Plan to the District within fourteen (14) days and maintain the measures specified in subsections (f)(2)(B) and (f)(2)(C) until the asbestos dust mitigation measures in the district-approved Asbestos Dust Mitigation Plan are implemented.
- (3) An Asbestos Dust Mitigation Plan required by subsections (f)(1) and (f)(2)(D) must include sections which address each of the following topics.
- (A) A Fugitive Dust Mitigation Component which shall, at a minimum, include the measures specified in subsections (f)(2)(B) and (f)(2)(C), unless the APCO determines that it is appropriate to add, omit, or modify these measures depending on site-specific parameters. The plan shall also require that:
 - 1. Equipment and operations do not emit dust that is visible crossing the property line;
 - 2. Crushers do not discharge into the air any visible emissions other than uncombined water vapor, for a period aggregating more than three minutes in any one hour, which is:
 - i. Seventy-five percent as dark or darker in shade as that designated as number one on the Ringlemann Chart, as published by the United States Bureau of Mines; or
 - ii. Of such opacity as to obscure an observers view to a degree equal to or greater than smoke as described in subsection (f)(3)(A)2.i. or fifteen (15) percent opacity; and
 - 3. Grinding mills, screening operations, and transfer points on belt conveyors do not discharge into the air any visible emissions other than uncombined water vapor, for a period aggregating more than three minutes in any one hour, which is:
 - i. Fifty percent as dark or darker in shade as that designated as number one on the Ringlemann Chart, as published by the United States Bureau of Mines; or
 - ii. Of such opacity as to obscure an observers view to a degree equal to or greater than smoke as described in subsection (f)(3)(A)3.i. or ten (10) percent opacity.

- (B) *Air monitoring for asbestos (if required by the APCO).*
 - 1. If required by the district APCO, the plan must include an air monitoring component.
 - 2. The air monitoring component shall specify the following:
 - i. Type of air sampling device(s);
 - ii. Siting of air sampling device(s);
 - iii. Sampling duration and frequency; and
 - iv. Analytical method.
- (C) *Frequency of reporting.* The plan shall state how often the items specified in subsection (f)(5)(B), and any other items identified in the plan, will be reported to the district.
- (4) Upon petition by the owner/operator the APCO may approve the use of requirements or restrictions established under other regulatory programs to meet the requirements of subsection (f) under the following conditions:
 - (A) The requirements or restrictions are equivalent to or more stringent than the requirements of subsection (f); and
 - (B) The requirements or restrictions are enforceable by the APCO.
- (5) *Recordkeeping and Reporting Requirements:* The owner/operator of a surface mining or quarrying operation subject to this section must comply with the following recordkeeping and reporting requirements.
 - (A) *Recordkeeping Requirements:* The owner/operator shall maintain all of the following records for at least seven (7) years:
 - 1. The results of any air monitoring conducted at the request of the APCO;
 - 2. The documentation for any geologic evaluation conducted on the property for the purpose of obtaining an exemption except, the archive of collected rock samples which may be discarded at the expiration of the exemption or one (1) year after the district granted or denied the exemption, whichever comes first; and
 - 3. The results of any asbestos bulk sampling that meets any of the following conditions:

- i. The asbestos bulk sampling was conducted by the owner/operator to document the applicability of, or compliance with this section; or
- ii. The asbestos bulk sampling was done at the request of the district APCO.

(B) *Reporting Requirements:* The owner/operator shall submit the following to the District:

1. The results of any air monitoring conducted at the request of the APCO;
2. The documentation of any geologic evaluation conducted on the property in question; and
3. The results of any asbestos bulk sampling that meets any of the following conditions:
 - i. Asbestos bulk sampling conducted by the owner/operator to document applicability of or compliance with this section; or
 - ii. Asbestos bulk sampling done at the request of the district APCO.

(g) **Air Monitoring for Asbestos.** Pursuant to the requirements of Health and Safety Code section 41511:

- (1) Air monitoring may be required by the district APCO.
- (2) The APCO may revise the asbestos dust mitigation plan on the basis of the results of the air monitoring.

(h) **Test Methods.**

- (1) *Ultramafic Rock:* The ultramafic rock composition of any material shall be determined using standard analysis techniques including, but not limited to, color index assessment, microscopic examination, petrographic analysis or rock thin sections, or chemical analysis techniques, such as X-ray fluorescence spectrometry or inductively coupled plasma analysis.
- (2) *Bulk Sampling Methods:* ARB Test Method 435, or an alternative asbestos bulk test method approved in writing by the Executive Officer of the California Air Resources Board, shall be used to determine the asbestos content of a bulk sample. For the purposes of determining compliance with this section, references in ARB Test Method 435 to "serpentine aggregate" shall mean "gravel" or other "bulk materials" to be tested for asbestos content.

- (3) *Analysis of Air Samples:* Analysis of all air samples shall follow the analytical method specified by the United States Environmental Protection Agency, Asbestos Hazard Emergency Response Act (AHERA) criteria for asbestos (40 CFR, Part 763 Subpart E, Appendix A, adopted October 30, 1987), with the following exceptions:
 - (A) The analytical sensitivity shall be 0.001 structures per cubic centimeter (0.001 s/cc); and
 - (B) All asbestos structures with an aspect ratio greater than three to one (3 to1) shall be counted irrespective of length.
- (4) The results of the analysis of air samples shall be reported as transmission electron microscopy (TEM) asbestos structures per cubic centimeter (s/cc).
- (5) *Adequately Wetted:* Field determination of “adequately wetted” shall be as follows:
 - (A) If the district-approved asbestos dust mitigation plan has specified a percent moisture content for specific materials the determination shall be as specified in the district-approved asbestos dust mitigation plan; or
 - (B) If no moisture threshold is specified in a district-approved asbestos dust mitigation plan, a sample of at least one (1) quart in volume shall be taken from the top three (3) inches of a road, or bare area or from the surface of a stockpile. The sample shall be poured out from a height of four (4) feet onto a clean hard surface. The material shall be considered to be adequately wetted if there is no observable dust emitted when the material is dropped.
- (6) *Surface Crusting:* “Measurement of the stability of surface crusting on horizontal surfaces” shall be as follows:
 - (A) Where a visible crust exists, drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16 to 17 grams from a distance of 30 centimeters (one foot) directly above (at a 90 degree angle perpendicular to) the ground surface. If blowsand (thin deposits of loose grains covering less than 50 percent of the surface that have not originated from the surface being tested) is present, clear the blowsand from the surfaces to be tested before dropping the steel ball.

- (B) A sufficient crust is determined to exist if, when the ball is dropped according to subsection (h)(6)(A), the ball does not sink into the surface so that it is partially or fully surrounded by loose grains and, upon removing the ball, the surface on which it was dropped has not been pulverized so that loose grains are visible.
- (C) Drop the ball three times each in three representative test areas within a survey area measuring 1 foot by 1 foot that represents a random portion of the surface being evaluated. The test area shall be deemed to have passed if at least two of the three times the ball was dropped, the results met the criteria in subsection (h)(6)(B). If all three test areas pass, the area shall be deemed to be "sufficiently crusted".

(i) **Definitions.** For the purposes of this section, the following definitions shall apply:

- (1) "Access road" means any road extending from a public thoroughfare onto the property of a construction project, quarry, or surface mining operation.
- (2) "Adequately wetted" means sufficiently moistened with water to minimize the release of particulate matter into the ambient air as determined by the test method(s) in subsection (h)(5).
- (3) "Agricultural operation" means activities necessary for the growing and harvesting of crops or raising of fowl or animals.
- (4) "APCO" means the executive officer, air pollution control officer, or the designee of the executive officer or air pollution control officer of any air pollution control or air quality management district created or continued in existence pursuant to Part 3 (commencing with section 40000), Division 26, Health and Safety Code.
- (5) "Approved asbestos bulk test method" means ARB Test Method 435 or an alternative asbestos bulk test method approved in writing by the Executive Officer of the California Air Resources Board.
- (6) "ARB" means the California Air Resources Board.
- (7) "ARB Test Method 435" means the test method specified in title 17, California Code of Regulations, section 94147.
- (8) "Asbestos" means asbestiforms of the following minerals: chrysotile (fibrous serpentine), crocidolite (fibrous riebeckite), amosite (fibrous cummingtonite--grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophyllite.

- (9) "Asbestos-containing material" means any material that has an asbestos content of 0.25 percent or greater.
- (10) "Asbestos Dust Mitigation Plan" means a detailed written document specifying measures that would be implemented to minimize the emissions of asbestos-laden dust.
- (11) "Carry-out" or "track-out" means any bulk material that adheres to and agglomerates on the exterior surfaces of motor vehicles, haul trucks, and/or equipment, including tires, and that has fallen or been deposited onto a paved public roadway.
- (12) "Construction," "grading," "construction or grading operation" and "construction or grading activity" mean any surface disturbance conducted with powered equipment or any related activity, including, but not limited to, all surface and subsurface cuts and fills, excavation, trenching, stockpiling, bulldozing, and landfills.
- (13) "District" means any air pollution control or air quality management district created or continued in existence pursuant to Part 3 (commencing with section 40000), Division 26, Health and Safety Code.
- (14) "Geographic ultramafic rock unit" means a geographic area that is designated as an ultramafic rock unit or ultrabasic rock unit, including the unit boundary line, on any of the maps referenced in Appendix A.
- (15) "Geologic evaluation" means an evaluation of a property to determine the presence of various types of rocks, including ultramafic rock, serpentinite, or other metamorphic derivatives of ultramafic rock.
- (16) "Gravel pad" means a layer of gravel, rock, or crushed rock which is at least one inch or larger in diameter and less than five (5) percent silt content, maintained at the point of intersection of a paved public roadway and a work site entrance to dislodge mud, dirt, and debris from tires of motor vehicles and haul trucks prior to leaving a worksite.
- (17) "Grizzly" means a device used to dislodge mud, dirt, and debris from the tires and undercarriage of motor vehicles and haul trucks prior to leaving the work site.
- (18) "HEPA filter" means a High Efficiency Particulate Air filter used to remove particles less than one (1) micron in aerodynamic diameter and operates at removal efficiencies of 99.9 percent or greater.

- (19) "Naturally-occurring asbestos" means asbestos that has not been processed in an asbestos mill.
- (20) "Owner/operator" or "person" includes, but is not limited to:
- (A) An individual, trust, firm, joint stock company, business concern, partnership, limited liability company, association, or corporation including, but not limited to, a government corporation;
 - (B) Any city, county, district, commission, the state or any department, agency, or political subdivision thereof, any interstate body, and the federal government or any department or agency thereof to the extent permitted by law; or
 - (C) A project proponent and any of its contractors or subcontractors.
- (21) "Paving" means creating a cover consisting of portland cement, asphalt concrete, or chip seal.
- (22) "Project Boundaries" means the right-of-way and any construction easements adjacent to and necessary for the purposes of a specific road construction project or maintenance activity.
- (23) "Property" means any real property including, but not limited to, any contiguous parcel or parcels of land and anything attached to, or erected on it.
- (24) "Quarrying" means the act of obtaining stone from the earth by means of cutting, digging, excavating, or blasting and includes processes used to convert the excavated material into commercial products.
- (25) "Registered geologist" means an individual that is currently licensed as a geologist with the State of California, Department of Consumer Affairs, Board of Geology and Geophysicists.
- (26) "Remote location" means any location that is at least one (1.0) mile from the location of a receptor. "Receptor" includes, but is not limited to, any hospital, school, day care center, work site, business, residence, and permanent campground. The distance to the nearest receptor is to be measured from the outermost limit of the area to be disturbed or road surface, whichever is closer.
- (27) "Road Construction and Maintenance" means the activities undertaken to build roads, highways, railroads, bridges, culverts, drains and other works incidental to road or highway construction, and maintenance activities that involve grading or excavation. Road Construction and Maintenance does

not include the construction of rest stops, maintenance buildings, or parking lots. These excluded activities are subject to the requirements of subsection (e).

- (28) "Road surface" means the traveled way of a road and any shoulder which may extend up ten (10) feet from the edge of the traveled way.
- (29) "Sand and Gravel Operation" means any facility operating in alluvial deposits.
- (30) "Serpentine" means any form of the following hydrous magnesium silicate minerals: antigorite, lizardite, and chrysotile.
- (31) "Serpentinite" means a rock consisting almost entirely of serpentine, although small amounts of other minerals such as magnetite, chromite, talc, brucite, and tremolite-actinolite may also be present. "Serpentinite" is a metamorphic derivative of the ultramafic rocks, peridotite, pyroxenite, or dunite.
- (32) "Surface mining" means all, or any part of, the process involved in the mining of minerals on mined lands by removing overburden and mining directly from the mineral deposit, open-pit mining of minerals naturally exposed, mining by the auger method, dredging and quarrying, or surface work incident to an underground mine. "Surface mining" includes, but is not limited to, in place distillation or retorting or leaching, the production and disposal of mining waste, prospecting and exploratory activities or any activity subject to regulation under the Surface Mining and Reclamation Act of 1975, Public Resources Code section 2700 et seq.
- (33) "Ultrabasic rock" means ultramafic rock.
- (34) "Ultramafic rock" means an igneous rock composed of 90 percent or greater of one or a combination of the following iron/magnesium-rich, dark-colored silicate minerals: olivine, pyroxene, or more rarely amphibole. For the purposes of this section, "ultramafic rock" includes the following rock types: dunite, pyroxenite, and peridotite; and their metamorphic derivatives.
- (35) "Visible emissions" means any particulate matter that is visually detectable without the aid of instruments other than corrective lenses.

NOTE: Authority cited: Sections 39600, 39601, 39650, 39658, 39659, 39666, and 41511, Health and Safety Code. Reference: Sections 39650, 39658, 39659, 39666, and 41511, Health and Safety Code.

APPENDIX A

California Department of Conservation Division of Mines and Geology

AVAILABLE GEOLOGIC MAPS FOR CALIFORNIA

GEOLOGIC ATLASES OF CALIFORNIA Scale 1:250,000

GEOLOGIC ATLAS OF CALIFORNIA: ALTURAS

Compiled by Gay, T.E. and others, 1958

GEOLOGIC ATLAS OF CALIFORNIA: BAKERSFIELD

Compiled by Smith, A.R., 1964 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: DEATH VALLEY

Compiled by Streitz, R.L. and Stinson, M.C., 1974 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: FRESNO

Compiled by Matthews, R.A. and Burnett, J.L., 1965 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: KINGMAN

Compiled by Jennings, C.W., 1961

GEOLOGIC ATLAS OF CALIFORNIA: LONG BEACH

Compiled by Jennings, C.W., 1962 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: LOS ANGELES

Compiled by Jennings, C.W. and Strand, R.G., 1969 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: MARIPOSA

Compiled by Strand, R.G., 1967 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: NEEDLES

Compiled by Bishop, C.C., 1963 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: REDDING

Compiled by Strand, R.G., 1962

GEOLOGIC ATLAS OF CALIFORNIA: SALTON SEA

Compiled by Jennings, C.W., 1967 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SAN LUIS OBISPO

Compiled by Jennings, C.W., 1958 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SAN DIEGO - EL CENTRO
Compiled by Strand, R.G., 1962 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SANTA ANA
Compiled by Rogers, T.H., (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SANTA CRUZ
Compiled by Jennings, C.W. and Strand, R.G., 1958 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SANTA MARIA
Compiled by Jennings, C.W., 1959 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: TRONA
Compiled by Jennings, C.W., 1962

GEOLOGIC ATLAS OF CALIFORNIA: UKIAH
Compiled by Jennings, C.W. and Strand, R.G., 1960 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: WALKER LAKE
Compiled by Koenig, J.B., 1963 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: WESTWOOD
Compiled by Lyndon, P.A. and others, 1960

REGIONAL GEOLOGIC MAP SERIES Scale 1:250,000

GEOLOGIC MAP OF THE CHICO QUADRANGLE
(set of five sheets)
By Saucedo, G.J. and Wagner, D.L., 1992

GEOLOGIC MAP OF THE SACRAMENTO QUADRANGLE
(set of four sheets)
Compiled by Wagner, D.L. and others, 1981

GEOLOGIC MAP OF THE SANTA ROSA QUADRANGLE
(set of five sheets)
Compiled by Wagner, D.L. and Bortugno, E.J. (reprinted 1999)

GEOLOGIC MAP OF THE SAN BERNARDINO QUADRANGLE
(set of five sheets)
Compiled by Bortugno, E.J. and Spittler, T.E. (reprinted 1998)

GEOLOGIC MAP OF THE WEED QUADRANGLE
(set of four sheets)
By Wagner, D.L. and Saucedo, G.J., 1987

GEOLOGIC MAP OF THE SAN FRANCISCO-SAN JOSE QUADRANGLE
(set of five sheets)
By Wagner, D.L., Bortugno, E.J. and McJunkin, R.D., 1990
Color-coded faults

LOCAL GEOLOGIC MAPS

AREAS MORE LIKELY TO CONTAIN NATURALLY-OCCURRING ASBESTOS
IN WESTERN EL DORADO COUNTY, CALIFORNIA
By Ron Churchill, March 2000
Scale 1:100,000

SERPENTINITE SURVEY OF LAKE COUNTY, CALIFORNIA – MAP A,
ULTRAMAFIC, ULTRABASIC, AND SERPENTINE ROCK AND SOILS OF LAKE
COUNTY,
Adopted: March 2, 1992
Scale: 1:100,000

APPENDIX B

2018 NOA INVESTIGATION REPORT





**NATURALLY-OCCURRING ASBESTOS CHARACTERIZATION
REPORT
BACKLANDS IMPROVEMENT PROJECT
SAN FRANCISCO, CALIFORNIA**

MARCH 7, 2018

Submitted to:
Port of San Francisco

Submitted By:
AEW Engineering, Inc.
55 New Montgomery Street, Suite 722
San Francisco, CA 94105
www.aewengineering.com

LIST OF ACRONYMS

AEW	AEW Engineering, Inc.
BAAQMD	Bay Area Air Quality Management District
bgs	Below existing ground surface
CARB	California Air Resources Board
CARB Method 435	Test Method Specified in the CARB NOA Regulation
CARB NOA Regulation	California Code of Regulations, Title 17, Section 93105, "Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations"
NOA	Naturally-Occurring Asbestos
Port	Port of San Francisco



PROFESSIONAL CERTIFICATIONS

This investigation to assess the presence of naturally-occurring asbestos for the Pier 94 Backlands Improvement project in San Francisco, California was completed under the direction of Mr. Glenn S. Young, a professional geologist by the State of California (Certificate Number: 6406).

Signature:



Date:

March 7, 2018

Glenn S. Young
California Professional Geologist: 6406

Prepared by:



Date:

March 7, 2018

James H. Medley
Project Manager



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APPENDIX B	SELECTED PHOTOGRAPHS
APPENDIX C	FEBRUARY 2018 SOIL BORING LOGS
APPENDIX D	LABORATORY REPORTS



1 INTRODUCTION

This report presents the findings of sampling and analyses conducted to characterize the potential presence of naturally-occurring asbestos (NOA) in the subsurface environment for the Port of San Francisco (Port) Pier 94 Backlands Improvement project (Project). The Project site is located near Amador Street and Cargo Way in San Francisco, California (Figure 1). The sampling and analyses protocols performed were based on the following guidance:

- California Code of Regulations, Title 17, Section 93105, “Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations” (CARB NOA Regulation).

The sampling and analyses was conducted in general conformance with the Port approved Work Plan, Naturally-Occurring Asbestos Characterization, Pier 94 Backlands Improvement Project, San Francisco, California, prepared by AEW Engineering (AEW) and dated February 8, 2018 (NOA Workplan).

1.1 PROJECT BACKGROUND AND DESCRIPTION

The Pier 94 Backlands area was created during the 1960s and 1970s by constructing a perimeter debris dike and placing fill on the inboard side of the dike. The fill consists primarily of dredge spoils and construction debris. After filling ceased in 1975, a soil cap was placed over the construction debris (T&R/RYCG. 2012). The Regional Water Quality Control Board (RWQCB) has identified a portion of the Project area to fall within a former Class III regulated landfill area.

The Port is working with San Francisco Public Works (SFPW) design team to finalize plans and specifications to complete improvements of approximately 23 acres of vacant land within the Pier 94 Backlands into approximately 16 acres of leasable property. As required by the RWQCB, the Project plans also include placement of an approved engineered cap on the 7.6-acre portion of the project (located within the former landfill) to address potential water quality impacts associated with future site development and uses. The remaining 7 acres will be improved with an asphalt road, storm water management features, lighting, and landscaping. The Project layout and Limits of Work are shown on Figures 2.

As detailed in the Project Plans and specifications, the project consists of the following key construction activities:

- Vegetation clearing and grubbing;
- Grading of the existing slope;
- Installation of a geomembrane and clean soil cover to cap the 7.6-acre landfill portion of the project area;
- Storm sewer improvements;
- Installation of a paved roadway; and
- Perimeter lighting.



1.2 SITE GEOLOGY AND SETTING

Based on review of previous site investigations performed within and surrounding the Project limits, the following site geology and settings were observed:

- According to the Site Investigation Report prepared by T&R/RVCB in 2012, subsurface material in boreholes encountered fill material consisting primarily of sand mixed with varying amounts of gravel, silt, wood, and brick to the maximum explored depth of 14 feet bgs. Groundwater was not encountered in the boreholes during drilling for the 2011 soil investigation; and
- According to the Site Investigation and Geotechnical Investigation Reports prepared by T&R/RVCB in 2012, the area next to the Project limits is generally comprised of fill to depths of 25 to 40 feet bgs. The fill, placed prior to 1961 is heterogeneous and consists of variable mixture of clay, silt, and gravel, with occasional brick, concrete, and asphalt debris. The fill is underlain by soft to stiff clay (Bay Mud) to depths between 70 and 75 feet bgs. Beneath the Bay Mud is about 15 feet of dense sand underlain by stiff to hard clay.

1.3 EXISTING ENVIRONMENTAL INFORMATION

Review of the T&R/RVCB Site History and Sampling Results Report, dated July 11, 1011 and the above 2012 reports indicated results of environmental borings, test pits, and geotechnical borings would be considered relevant for evaluating the environmental subsurface conditions at the Pier 94 Backlands Project limits. Approximate locations of these borings and test pits are shown on the attached Figure 3 originally depicted as Figure 2 in the T&R/RVCB 2011 Report.

As shown on Figure 3, some of these borings and samples were located within the vicinity of the soil disturbing area within the proposed Project limits. A summary of the previous results of asbestos analyses and geologic information from previous site investigations that are considered to be relevant for this project are presented in the table below for the depth within the top 4 feet:

SAMPLE ID	WITHIN PROJECT AREA/PLANNED EXCAVATION DEPTH?	SAMPLE DEPTH (FEET BGS)	ASBESTOS DETECTED	SERPENTINE IN LOGS	INVESTIGATION SOURCE
B-1-E-1	Yes/Yes	0.5-1.5	None	Not Available	Bechtel, 1994.
B-2-E2	Yes/Yes	0-1	None	Not Available	Bechtel, 1994
B-3-E-1	Yes/Yes	0.5-1.0	None	Not Available	Bechtel, 1994
B-4-E-1	Yes/Yes	0-1.0	None	Not Available	Bechtel, 1994
B-5-E-1	No/No	0-1.0	< 1%	Not Available	Bechtel, 1994
B-6-E-1	No/No	0.5-1.0	1%	Not Available	Bechtel, 1994



SAMPLE ID	WITHIN PROJECT AREA/PLANNED EXCAVATION DEPTH?	SAMPLE DEPTH (FEET BGS)	ASBESTOS DETECTED	SERPENTINE IN LOGS	INVESTIGATION SOURCE
H-5-1.0	Possibly at Project Boundary/Yes	1.0	3%	Yes	Harlan, Tait Associates, 2002.
B-8	Yes/Yes	Not Analyzed	Not Analyzed	Yes	T&R/RYCG, 2012
TP-1	Yes/Yes	2.5, 5.0 COMPOSITE	None	No	T&R/RYCG, 2012
TP-2	Yes/Yes	Not Analyzed	Not Analyzed	No	T&R/RYCG, 2012
TP-3	Yes/Yes	2.5, 5.0 COMPOSITE	None	No	T&R/RYCG, 2012
TP-4	Yes/Yes	Not Analyzed	Not Analyzed	No	T&R/RYCG, 2012
TP-5	Yes/Yes	Not Analyzed	Not Analyzed	No	T&R/RYCG, 2012
TP-6	Yes/Yes	2.5, 5.0 COMPOSITE	None	No	T&R/RYCG, 2012
TP-7	Yes/Yes	3.0	None	No	T&R/RYCG, 2012

As summarized above, results of the historical asbestos laboratory analyses and boring logs reviewed at the time of this report preparation indicated the following that are relevant to this Project area:

- No fiber was detected in the 2011 test pit samples obtained within the Project limits;
- Only one historic soil sample: H5-01 collected in 2002 by (HT, 2002) located approximately at project boundary, as shown in Figure 3 contain 3% of asbestos with description of serpentine in the test pit boring log;
- One geotechnical boring B8, advanced within the Project limits, was logged to contain serpentine fragments at between one to 4 feet bgs in the fill material; and



- Outside the project area, asbestos was found in the range of no fiber detected to 5% of asbestos fiber.

1.4 NOA CHARACTERIZATION OBJECTIVES AND REPORT ORGANIZATION

Per the approved NOA Workplan (AEW, 2018), the objectives of this characterization are as follows:

- Characterizing the potential presence of NOA in the subsurface environment within the remaining Project area to be potentially graded; and
- Evaluating the requirement to comply with the CARB NOA Regulation for the remaining construction work based on the previous results of asbestos analyses and the results of this NOA characterization.

The remainder of this Report is organized into the following sections:

- Section 2 – Field Sampling Protocols, including the field sampling methods, chain-of-custody documentation, and sample shipment;
- Section 3 – Findings, including boring observations and results of laboratory analysis performed on the samples;
- Section 4 – Conclusions and Recommendations;
- Section 5 – Report Limitations; and
- Section 6 – References.

2 FIELD SAMPLING PROTOCOLS

This section presents the field sampling protocols employed for this NOA characterization.

2.1 PERMITS AND PRE-SAMPLING ACTIVITIES

According to the Project Plans, the potential maximum depth of soil disturbance for the site improvement is approximately 4 feet below ground surface (bgs). Per the NOA Workplan, sampling of subsurface materials to depths to 4 feet bgs was conducted using direct push drilling equipment. A Port Building Permit was obtained prior to field activities and is included as Appendix A. Because the drilling was less than 4 feet no soil drilling permit from the San Francisco Department of Public Health (SFDPH) was required. Utility clearances, and underground services alert notification were conducted prior to sampling.

2.2 SUBSURFACE MEDIA SAMPLING AND NOA ANALYSES

2.2.1 Field Sampling

The proposed subsurface media sampling for this NOA characterization included collection of samples from soil at each of the 10 soil boring locations: AEW-1 through AEW-10. In addition, two surface samples were collected by hand. The approximate locations of these soil boring and surface sample are shown in Figure 4.



At each soil boring location, subsurface samples from a continuous core were collected from the ground surface to approximate 4 feet bgs. The boreholes were drilled by Cascade Drilling, a California C-57 licensed drilling company, using a track mounted drill rig with suitable drilling equipment to collect soil samples to the final depth of the borings. Subsurface continuous cores were obtained for lithologic information as well as sample collection at the targeted depths. Lithologic descriptions of each borehole were logged by the field personnel in accordance with the International Union of Geological Science System. Field photographs were taken of field activities and for visual documentation of the cores. A photo log is presented in Appendix B.

Two surface soil samples were collected by hand using a trowel to remove the top inch of soil and collect the material underneath using the trowel to collect soil and place it directly into Ziploc bags. The location of these two surface samples are shown on Figure 4.

2.2.2 NOA Analyses

A total of 12 discreet soil samples (10 soil samples from the soil borings AEW-1 through AEW-10, and 2 samples from the surface materials) were submitted to Asbestos TEM Laboratory in Berkeley, California for asbestos analysis using CARB 435 Method (NOA Analyses) in accordance with the CARB NOA Regulation. The 10 soil samples from the soil borings were selected based on the following sample selection protocols:

- Samples collected from each sampling location were reviewed by field personnel and Mr. Glenn Young, PG to select samples for asbestos analyses using CARB Method 435 as listed in the CARB NOA Regulation;
- Visual examination of the continuous core soil samples to evaluate the presence of serpentine gravel or rock, identify discrete samples for analyses; or
- If no serpentine gravel or rock are observed in the core, identify soil matrix and discrete samples for analyses.

List of soil samples submitted for NOA analyses are presented below.

SOIL LOCATION	GPS COORDINATES	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (FEET BGS)	SERPENTINE OBSERVED?
AEW-1	Lat: 37 44.732 Long: 122 22.757	AEW-1-3.0-3.5	2/16/2018	3.0-3.5	No
AEW-2	Lat: 37 44.695 Long: 122 22.722	AEW-2-2.0-2.5	2/16/2018	2.0-2.5	No
AEW-3	Lat: 37 44.680 Long: 122 22.780	AEW-3-2.1-2.6	2/16/2018	2.1-2.6	No
AEW-4	Lat: 37 44.641 Long: 122 22.746	AEW-4-1.8-2.2	2/16/2018	1.8-2.2	No
AEW-5	Lat: 37 44.635 Long: 122 22.641	AEW-5-1.2-1.8	2/16/2018	1.2-1.8	Yes (One Single Gravel)
AEW-6	Lat: 37 44.626 Long: 122 22.800	AEW-6-2.5-3.0	2/16/2018	2.5-3.0	No
AEW-7	Lat: 37 44.590	AEW-7-2.1-2.6	2/16/2018	2.1-2.6	Yes (One



SOIL LOCATION	GPS COORDINATES	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (FEET BGS)	SERPENTINE OBSERVED?
	Long: 122 22.764				Single Gravel)
AEW-8	Lat: 37 44.597 Long: 122 22.603	AEW-8-3.3-3.8	2/16/2018	3.3-3.8	No
AEW-9	Lat: 37 44.610 Long: 122 22.693	AEW-9-1.5-2.1	2/16/2018	1.5-2.1	No
AEW-10	Lat: 37 44.558 Long: 122 22.717	AEW-10-0.5-0.9	2/16/2018	0.5-0.9	No
AEW-Surface 1	Lat: 37 44.638 Long: 122 22.712	AEW-Surface 1	2/20/2018	0-0.5	No
AEW-Surface 2	Lat: 37 44.574 Long: 122 22.739	AEW-Surface 2	2/20/2018	0-0.5	No

General Notes:

bgs= below existing ground surface.
 Asbestos analyses by Air Resources Board Method 435
 Lat: Latitude, Long: Longitude

Each sample was labeled with a minimum of the following information on the soil cores with permanent markers for submittal to the laboratory:

- Unique Sample Identification in the format of S-DD where S=unique sampling location identification, and DD=approximate sample depth in feet bgs;
- Date and time of collection;
- Samplers’ initials; and
- Project number.

Upon visual inspection of the soil cores and determination of samples to be submitted for laboratory analyses by the above procedures, the samples were placed in a secured container for transportation to Asbestos TEM Laboratories for asbestos analysis. Immediately after sampling, Chain-of-Custody (COC) documentation was prepared in accordance with the procedure described in Section 2.3.

No quality assurance/quality control (QA/QC) samples (i.e. duplicates, trip blank, and equipment blank) are proposed for this characterization.

2.3 CHAIN-OF-CUSTODY DOCUMENTATION AND SAMPLE SHIPMENT

COC documentation was completed by the field sampler immediately following material sampling. The COC documentation is required and necessary to physically trace sample possession from the time of collection to its ultimate disposition. The COC documentation was signed as relinquished and received when the samples changed possession. The samples were shipped with COC documentation to Asbestos TEM, a certified California laboratory for asbestos analysis.



2.4 SAMPLING EQUIPMENT

All sampling equipment used for this characterization was new sampling equipment. No onsite decontamination was required for this characterization.

3 FINDINGS

The following sections describe the field observations and results of analyses for the samples collected during AEW's NOA characterization.

3.1 FIELD OBSERVATIONS

In general, AEW observed that the subsurface material at the site from ground surface to the final drilled depth of approximately 4 feet bgs consisted of brown fine to coarse sand fill material with clay and gravel. Trace gravel, brick and wood were also present. No bedrock or groundwater was encountered in any of the soil borings. A single piece of heavily weathered serpentinite gravel was observed in two cores: AEW-5 at 1.2 to 1.8 bgs and AEW-7 at 2.1 to 2.6 bgs. AEW field personnel prepared a log of the subsurface material encountered from each borehole. Copies of the boring logs are included in Appendix C.

3.2 RESULTS OF ANALYSES

In total, AEW submitted 10 subsurface soil samples (one from each soil boring including the observed weathered serpentinite gravel), and 2 surface soil gravel samples (collected by hand) to Asbestos TEM for asbestos analyses using CARB Method 435 as listed in the CARB NOA Regulation. Results of analyses detected no asbestos in any of the 12 samples tested in the laboratory.

Results of analyses are summarized below. Laboratory reports and COC documentation are presented in Appendix D.

SOIL LOCATION	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (FEET BGS)	SERPENTINE OBSERVED?	ASBESTOS
AEW-1	AEW-1-3.0-3.5	2/16/2018	3.0-3.5	No	None Detected
AEW-2	AEW-2-2.0-2.5	2/16/2018	2.0-2.5	No	None Detected
AEW-3	AEW-3-2.1-2.6	2/16/2018	2.1-2.6	No	None Detected
AEW-4	AEW-4-1.8-2.2	2/16/2018	1.8-2.2	No	None Detected
AEW-5	AEW-5-1.2-1.8	2/16/2018	1.2-1.8	Yes (One Single Gravel)	None Detected
AEW-6	AEW-6-2.5-3.0	2/16/2018	2.5-3.0	No	None Detected
AEW-7	AEW-7-2.1-2.6	2/16/2018	2.1-2.6	Yes (One Single Gravel)	None Detected
AEW-8	AEW-8-3.3-3.8	2/16/2018	3.3-3.8	No	None Detected
AEW-9	AEW-9-1.5-2.1	2/16/2018	1.5-2.1	No	None Detected
AEW-10	AEW-10-0.5-0.9	2/16/2018	0.5-0.9	No	None Detected
AEW-Surface 1	AEW-Surface 1	2/20/2018	0-0.5	No	None Detected
AEW-Surface 2	AEW-Surface 2	2/20/2018	0-0.5	No	None Detected



4 CONCLUSIONS AND RECOMMENDATIONS

AEW tested a total of 10 soil samples collected in the boreholes and two samples from the ground surface within the project site. Samples were representative of the subsurface materials that will be disturbed during Project construction.

In general, AEW observed that the subsurface material at the site from ground surface to the final drilled depth of 4 feet bgs consisted of brown fine to coarse sand fill material with clay and gravel. Trace gravel, brick and wood were also present. No bay mud or bedrock was encountered in any of the soil borings. AEW did not observe groundwater in any of the soil borings.

No asbestos fiber was reported in the 12 soil samples analyzed during this 2018 investigation.

Based on the results of asbestos analyses on soil samples from previous environmental investigations summarized in Section 1.3 and this 2018 characterization, and the presence of only one piece of weathered serpentinite gravel in borings AEW-5 and AEW-7 during the 2018 field sampling, it is anticipated that no NOA is present in soil within the planned area of soil disturbance and grading of Project Site with the exception of potential small local hot spot around historic test pit: H5-01 collected in 2002 by Harlan, Tait Associates located near the project boundary.

However, due to the presence of serpentinite gravel observed in boring log B-8 (T&R/RVCB 2011), and AEW-5 and AEW-7 (AEW,2018), we conclude that this project will implement the following dust mitigation and compliance requirements¹:

- Basic Construction and Grading Operations control measures will include:
 - Construction vehicle speed at the work site shall be limited to fifteen (15) miles per hour or less;
 - Prior to any ground disturbance, sufficient water shall be applied to the area to be disturbed to prevent visible emissions from crossing the Site boundaries;
 - Areas to be graded or excavated shall be kept adequately wetted to prevent visible emissions from crossing the Site boundaries;
 - Excavated material shall be laid on 10 mil (0.01 inch) polyethylene plastic or equivalent tarp. Maintain this practice throughout duration of the project;
 - Storage piles shall be kept adequately wetted, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile. Securely brace down the cover, and maintain this brace throughout its use;
 - At the end of each workday, all exposed areas shall be covered with 10 mil (0.01 inch) polyethylene plastic, equivalent tarp or other means acceptable

¹. Parties who will implement the dust mitigation measures under the CARB NOA Regulations during construction shall be responsible to review and implement all requirements under the CARB NOA Regulations. Any discrepancy identified between this Report and the CARB NOA Regulations, the requirements as listed in the CARB NOA Regulations shall govern for this project.



- by the Engineer, and braced down. Maintain this cover, and brace throughout its use, including during periods of work stoppages, overnight, weekends and holidays;
- Equipment shall be washed down before moving from the property on to a paved public road; and
- Visible track-out on the paved public road shall be cleaned using wet sweeping or a HEPA filter equipped vacuum device within twenty-four (24) hours.
- Track-out prevention and control measures will include:
 - The Contractor shall remove any visible track-out from a paved public road at any location where vehicles exit the Site; using wet sweeping or a HEPA filter equipped vacuum device;
 - Installation of one or more of the following track-out prevention measures:
 - A gravel pad designed using good engineering practices to clean the tires of exiting vehicles;
 - A tire shaker;
 - A wheel wash system;
 - Pavement extending for not less than fifty (50) consecutive feet from the intersection with the paved public road; or
 - Any other measure as effective as the measures listed above.
- Control for disturbed surface areas, and storage piles that will remain inactive for more than seven (7) days, will include one or more of the following:
 - Keep the surface adequately wetted;
 - Establishment and maintenance of surface crusting;
 - Application of chemical dust suppressants or chemical stabilizers according to the manufacturers' recommendations as needed;
 - Covering with tarp(s) or vegetative cover;
 - Installation of wind barriers of fifty (50) percent porosity around three (3) sides of a storage pile;
 - Installation of wind barriers across open areas, or
 - Any other measure as effective as the measures listed above.
- Control for traffic on on-site unpaved roads, parking lots, and staging areas, which will include:
 - A maximum vehicle speed limit of fifteen (15) miles per hour or less, and
 - One or more of the following:



- Watering every two hours of active operations or sufficiently often to keep the area adequately wetted;
- Applying chemical dust suppressants consistent with manufacturer's directions;
- Maintaining a gravel cover with a silt content that is less than five (5) percent and asbestos content that is less than 0.25 percent, as determined using an approved asbestos bulk test method, to a depth of three (3) inches on the surface being used for travel, or
- Any other measure as effective as the measures listed above.
- Control for earthmoving activities, which will include one or more of the following:
 - Pre-wetting the ground to the depth of anticipated cuts;
 - Set up a containment with a continuous misting system to prevent the release of asbestos fibers when screening of serpentine, or ultramafic rock;
 - Suspending grading operations when wind speeds are high enough to result in dust emissions crossing the property line, despite the application of dust mitigation measures;
 - Application of water prior to any land clearing; or
 - Any other measure as effective as the measures listed above.
- Control for off-site transport. No trucks can transport excavated material off-site unless:
 - Trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments; and
 - Loads are adequately wetted and either:
 - Covered with tarps; or
 - Loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.
- No visible dust should be allowed to leave the site.
- *Post construction stabilization of disturbed areas.* Upon completion of the project, disturbed surfaces shall be stabilized using one or more of the following methods:
 - Establishment of a vegetative cover;
 - Placement of at least three (3.0) inches of non-asbestos-containing material;
 - Paving;
 - Any other measure deemed sufficient to prevent wind speeds of ten (10) miles per hour or greater from causing visible dust emissions.



4.1 DUST MONITORING

A dust monitoring program shall be developed and implemented as part of the Article 22B compliance during construction by the contractor. Details of the dust monitoring program shall be included in the dust mitigation plan to be prepared by the contractor.

If additional serpentine rock or NOA are encountered during the Pier 94 Backlands improvement project, the Port and their environmental consultant should be notified to evaluate whether additional testing of that material is warranted as well as the need for an Asbestos Dust Mitigation Plan (ADMP) including air monitoring to be prepared and implemented.

5 REPORT LIMITATIONS

This Report was prepared based on the results of the analyses performed for this Characterization and information currently available from the Port. All information presented in this Report is only valid for the NOA that was analyzed and evaluated as part of this Characterization and shall not be applicable or valid to any chemical parameters that are not analyzed during this Characterization.

All data interpretations are based on general environmental professional interpretation and opinions on the (1) results of the NOA analyses and data evaluation presented in this Report, (2) information provided by the Port at the time of this Report preparation, and (3) objectives of this report as described in Section 1.4.

If future information related to this site indicates that NOA may be present at concentrations in soil as well as site geology and hydrogeology that are significantly different from the data presented in this Report, or other contaminants may be present at the site, or objectives other than described in Section 1.4, additional environmental and geologic investigations will be required and warranted for site environmental characterization. All information presented in this Report will be subject to change from such additional information.

Our services consist of professional opinions and recommendations made in accordance with generally accepted environmental engineering principles and practices.



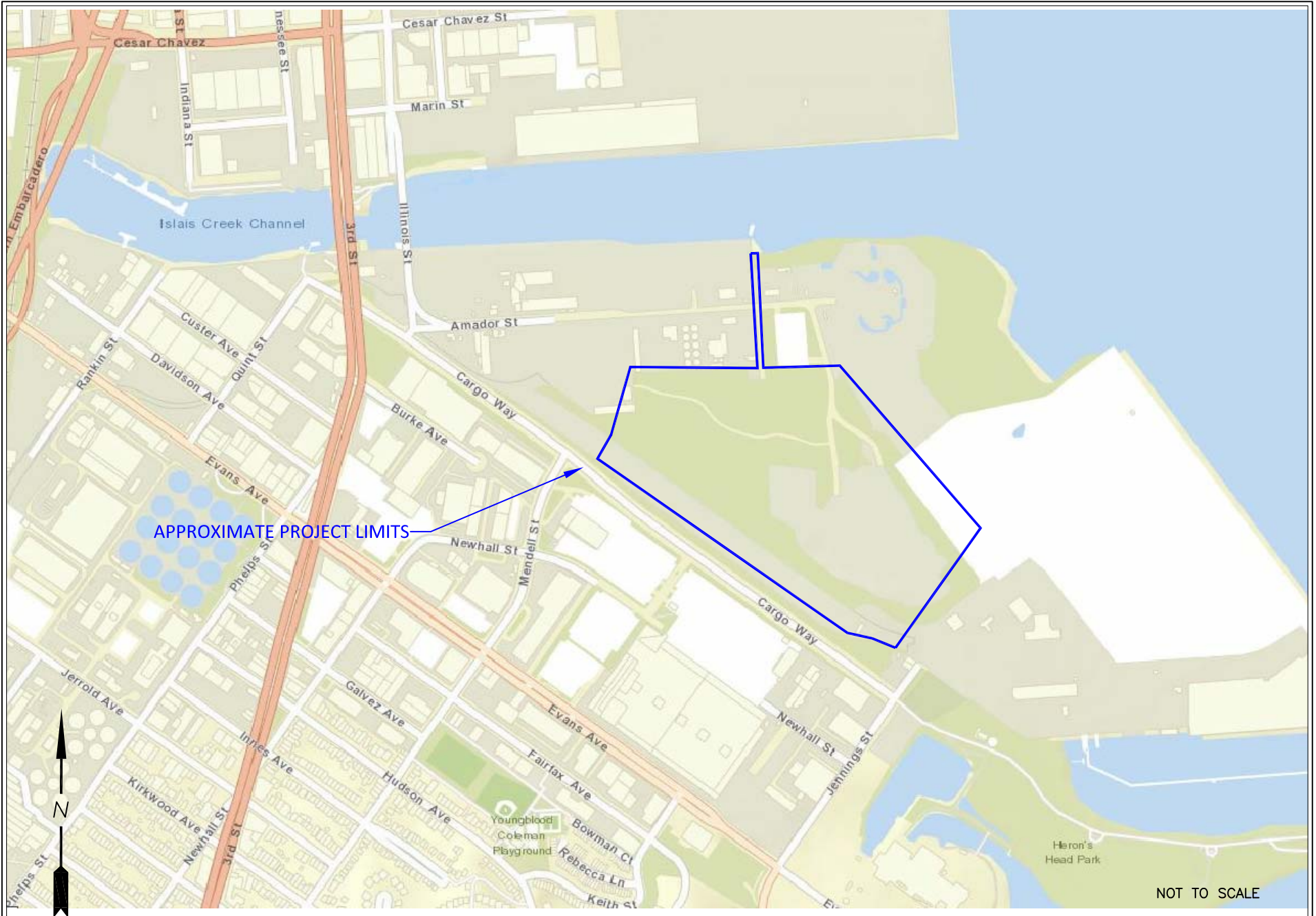
6 REFERENCES

- AEW Inc., 2018. "Work Plan Naturally-Occurring Asbestos Characterization, Pier 94 Backlands Improvement Project, San Francisco, California", dated February 8, 2018.
- Bechtel Environmental, Inc. 1994. "Phase II Environmental Site Assessment Report for the proposed San Francisco Energy Company Facility Port Site", dated October 14, 1994.
- California Code of Regulations, Title 17, Section 93105, "Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations".
- Harlan Tait Associates. 2002. "Site Assessment Report and Mitigation Plan, Pacific Cement New Batching Facility Site, Pier 94, Seawall Lot 352, Port of San Francisco, California", dated May 24, 2002.
- T&R/RYCG. 2012. "Site History Report and Sampling and Analysis Plan, Pier 94 Backlands Improvement and Amador Street Sanitary Pump Station, San Francisco, California", dated July 11, 2011.
- T&R/RYCG. 2012. "Site Investigation Report, Pier 94 Backlands Improvement and Amador Street Sanitary Pump Station, San Francisco, California", dated June 15, 2012.
- T&R/RYCG. 2012. "Geotechnical Investigation, Pier 94 Backland Improvements, San Francisco, California", dated July 5, 2012.



FIGURES

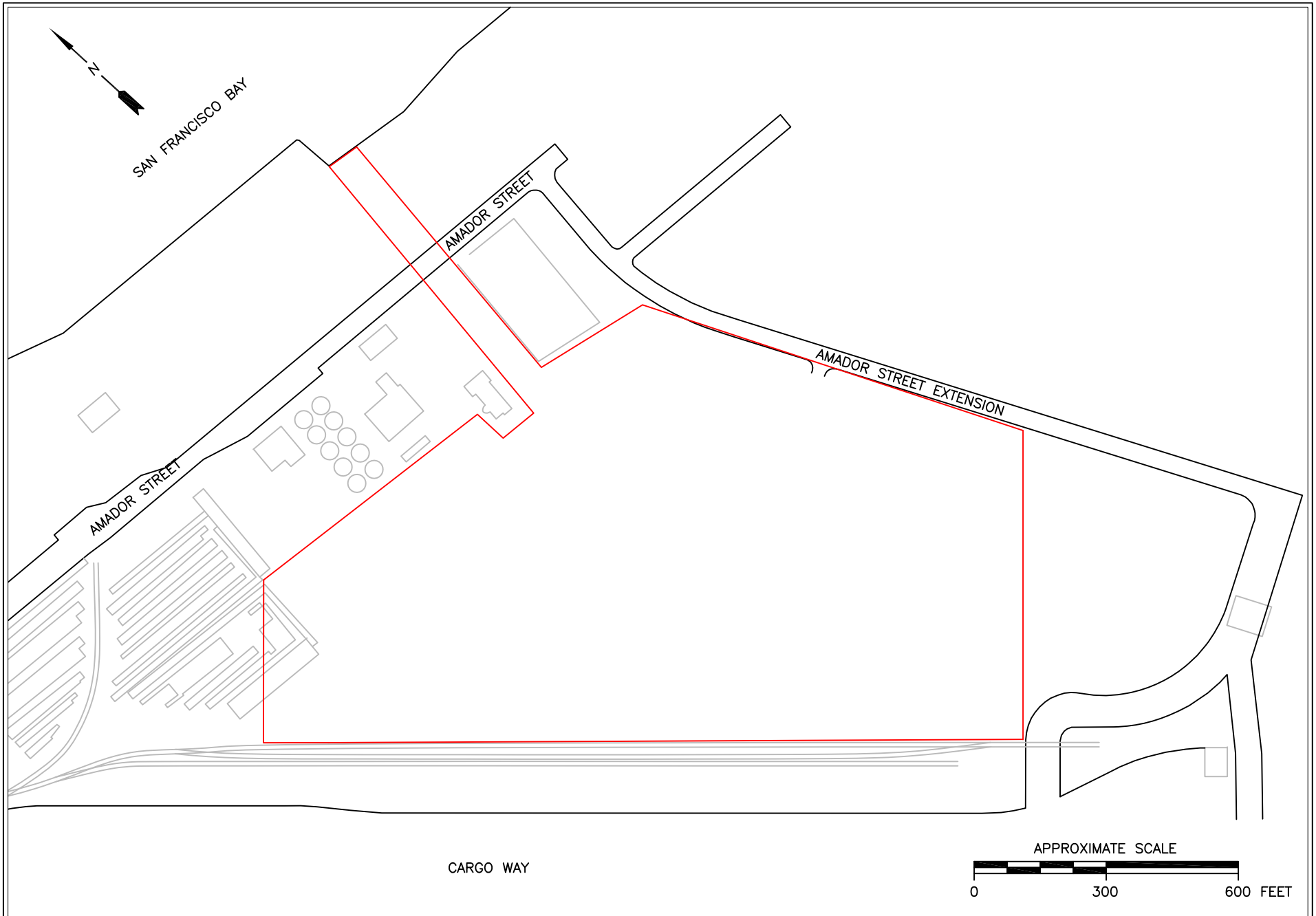




AEW Engineering, Inc.
 55 New Montgomery Street
 Suite 722
 San Francisco, CA 94105

Location Map
Pier 94 Backlands Improvement Project
 San Francisco, California

Figure
1

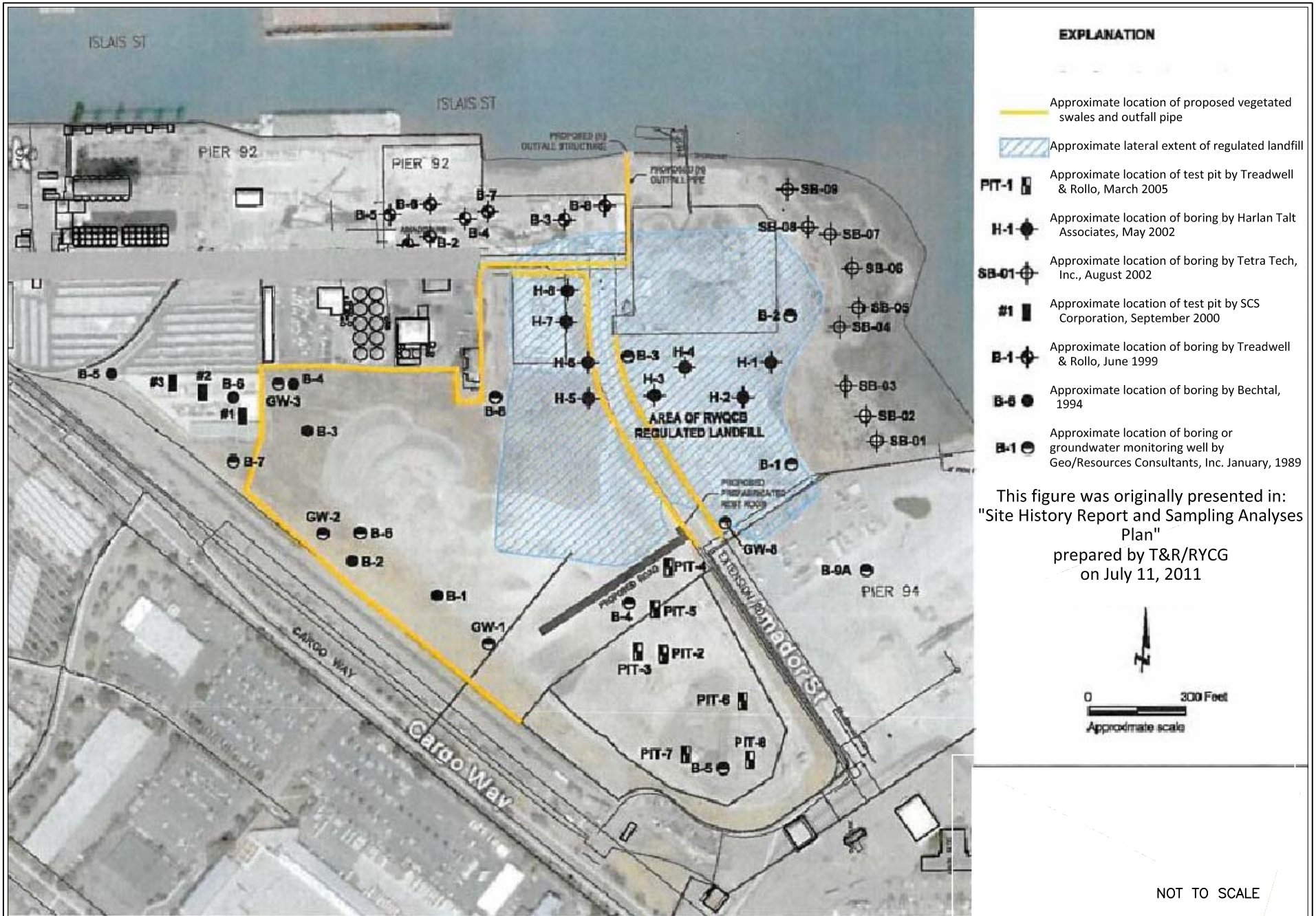


AEW Engineering, Inc.
55 New Montgomery Street
Suite 722
San Francisco, CA 94105

Pier 94 Backlands Improvement Project Site Map

San Francisco, California

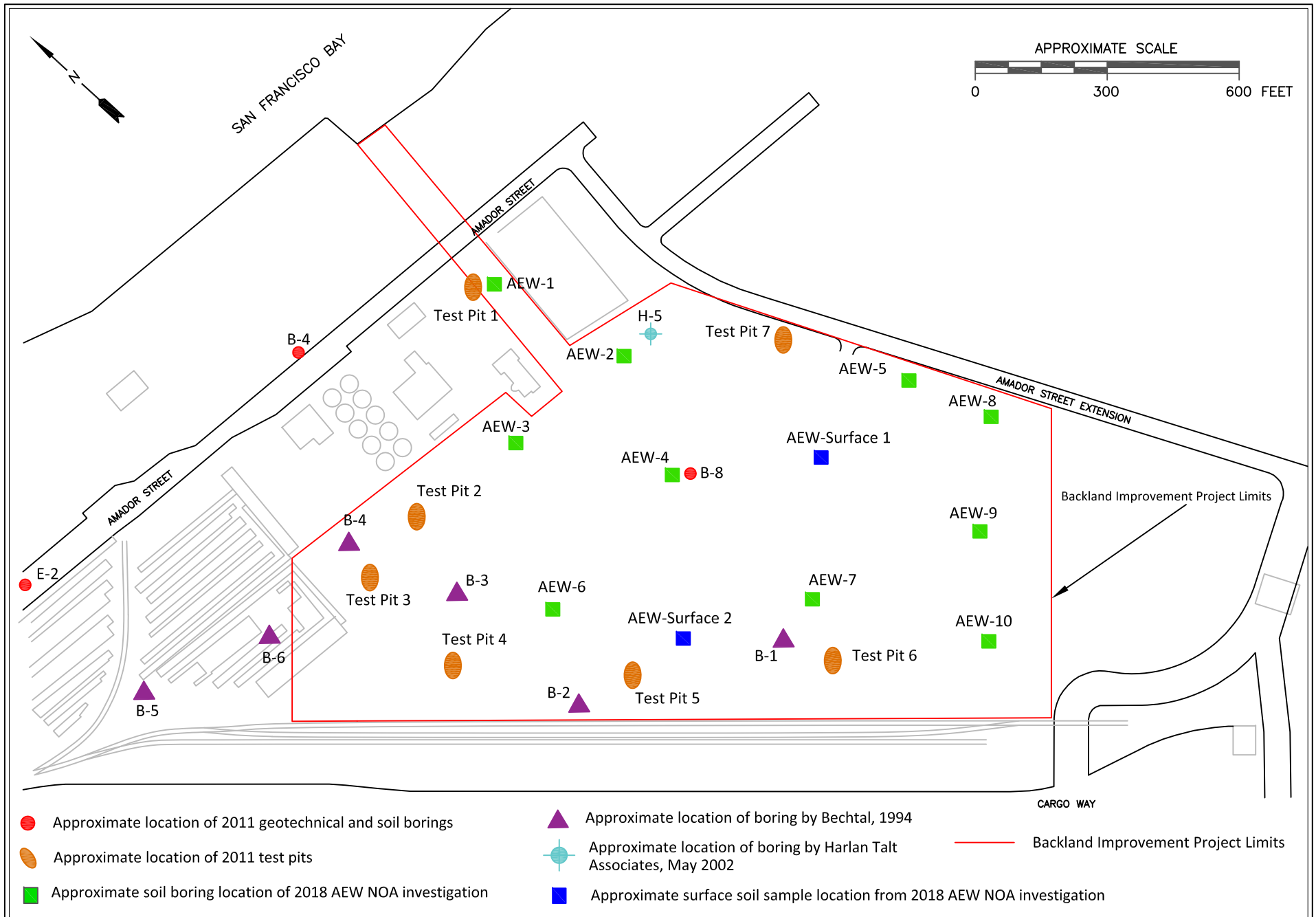
Figure
2



AEW Engineering, Inc.
 55 New Montgomery Street
 Suite 722
 San Francisco, CA 94105

**Historic Boring and Sample Locations
 Pier 94 Backlands Improvement Project
 San Francisco, California**

**Figure
 3**



**Previous Soil Investigation and 2018 NOA Sampling Locations
Pier 94 Backlands Improvement Project
San Francisco, CA**

**Figure
4**



AEW Engineering, Inc.
55 New Montgomery Street
Suite 722
San Francisco, CA 94105

APPENDIX A

PORT OF SAN FRANCISCO BUILDING PERMIT



FOR INSPECTIONS CALL
 Building (415) 274-0561
 Fire (415) 274-0565
 Permit Number Required

JOB RECORD CARD
 MUST BE POSTED AT SITE AT ALL
 TIMES

THIS PERMIT SHALL EXPIRE BY LIMITATION IF
 THE AUTHORIZED WORK IS NOT STARTED
 WITHIN 180 DAYS OF ISSUANCE OR IF
 ABANDONED FOR 180 DAYS OR MORE (PER
 PORT OF SAN FRANCISCO BUILDING CODE)

DIVISION	REVIEWER	DATE	COMMENTS/CONDITIONS OF APPROVAL
Accounting			
Arch.			
ADA - Title II *	Wendy Proctor	02/14/2018	Approved Inspect Not Required.
Structural			
Utility Plb.- Mech.			
Util. Elec.			
Fire			
Environmental *	Kathryn M Purcell	02/08/2018	Approved.
Planning	Dan Hodapp	02/14/2018	Approved.
Health			
Real Estate	Monico Corral	02/09/2018	Approved.
Maritime			
Other			
Engineering/Civil	Ken Chu	02/08/2018	Approved.

REQ'D	INSPECTION	DATE	INSPECTOR	INSPECTION NOTES																																				
	FOUNDATION INSPECTION			PORT PROJECT																																				
	Grounding Electrode																																							
	OK TO POUR FT'GS																																							
	Slab Reinforcement																																							
	Under Slab Plmb'g																																							
	Under Slab Elec																																							
	Under Slab Mech																																							
	OK TO POUR SLAB																																							
	FLOOR FRAME INSPECTION																																							
	Under Floor Plmb'g																																							
	Under Floor Elec																																							
	Under Floor Insul																																							
	FLOOR FRAME OK																																							
	ROUGH FRAME INSPECTION																																							
	Frame Rough																																							
	Elec. Rough																																							
	Plmb'g Rough																																							
	Mech Rough																																							
	Insulation																																							
	OK TO COVER																																							
	SHEAR INSPECTION																																							
	Interior Shear																																							
	Exterior Shear																																							
	Diaphragms																																							
	SHEAR NAILING OK																																							
	FIRE MARSHALL INSPECTIONS																																							
	SPRINKLERS																																							
	HYDRO TEST																																							
	ALARMS																																							
	STAND PIPES																																							
	WALL BOARD																																							
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Pursuant to Port of San Francisco Building Code Sec. 109A, when appropriately signed below, this document shall serve as a
Certificate of Final Completion and Occupancy.

Print Name	Signed	Date
------------	--------	------

FIN: 3440-LAND1-1

Grading

B-2018-0027

FIELD COPY



**BUILDING PERMIT
PORT OF SAN FRANCISCO
PIER 1, THE EMBARCADERO
SAN FRANCISCO, CALIFORNIA 94111
PERMIT DESK (415) 274-0554**

**# B-2018-0027
FIN: 3440-LAND1-1
Issued: 02/14/2018**

Grading

NEW CONSTRUCTION	ALTERATION	X GRADING	SPECIAL EVENT	SIGN
DEFERRED PERMITS				
* ELEC	MECH	PLMB	SPRINK	ALARM
*To be submitted as deferred permit.		OTHER: Deferred work shall not start without obtaining a separate permit.		

1. Date Filed 02/08/2018	2. Plans Yes	3. Location 344 SEAWALL LOT LND AREA 1 - 1, SAN FRANCISCO, CA 94124	4. Proposed work is within 100 feet of the bay YES → NO → X	
DESCRIPTION OF EXISTING USE AND CONSTRUCTION				
5. Type of Const. N/A	6. No. of Stories N/A	7. Present Use LOT AREA	8. Occup Class U	
DESCRIPTION OF PROPOSED USE AND CONSTRUCTION				
9. Type of Const. N/A	10. No. of Stories N/A	11. Proposed Use N/A	12. Occup Class N/A	
13. Owner PAUL GUIDI	14. Public Funding X YES NO		15. Estimated Valuation 13,800.00	Revised Value
16. Applicant (Owner or owner's agent) Name JAMES MEDLEY		Mailing Address 55 NEW MONTGOMER ST #	City/State SAN FRANCISCO, CA	Zip 94105- Phone (415) 713-7598
LICENSED PROFESSIONAL(S)				
17. Contractor:	Mailing Address	City/State	Zip	License No.
Engineer:				
Architect:				

18. SCOPE OF WORK
PORT PROJECT. "SOIL BORINGS"; ONE DA OF DRILLING SHALLOW SOIL BORINGS TO 4 FT. BELOW GROUND SURFACE. MAXIMUM OF (10) SOIL BORINGS
SWL 344

WORK INCLUDES				
Const. Over Water	Fire Alarms / Sprinklers	Paint Removal	x Soil Boring	
Dredging	Food Handling	Paving	Tank (under or above ground)	
Excavation over 50 C.Y.	Hazardous Materials	Seafood Tank(s) * **	Utility Service Equip.	
Fill over 50 C.Y.	Interior Demolition	Sidewalk Encroachment	Other	

* Holding - Cooking - Brine Tanks ** NOTE: Contact State Health Dept. Seafood Program @ (916) 650-6500 to obtain State approval.

HOLD HARMLESS CLAUSE: The permittee(s) by acceptance of the permit, agree(s) to indemnify and hold harmless the Port of San Francisco (PSF) and/or the City and County of San Francisco (CCSF) from and against any and all claims, demands and actions for damages resulting from operations under this permit, regardless of negligence of the PSF and/or CCSF and to assume the defense of the PSF and/or CCSF against all such claims, demands or actions. In conformity with the provisions of Section 3800 of the Labor Code of the State of California, the applicant shall have coverage under (I), or (II) designated below or shall indicate item (III), or (IV), or (VI), whichever is applicable. If however item (V) is checked item (VI) must be checked as well. Mark the appropriate method of compliance below.

- I Certificate of Consent to Self-Insure issued by the Director of Industrial Relations.
- x II Certificate of Workers' Compensation issued by an admitted insurer.
- III An exact copy of duplicate of (I) certified by the Director of (II) certified by the insurer.
- IV The cost of the work to be performed is \$100.00 or less.
- V I Certify that in the performance of the work for which this permit is issued, I shall not employ any person in a manner so as to become subject to the workers' compensation laws of California. I further acknowledge that I understand, in the event that I should become subject to the workers' compensation provisions of the Labor Code of California and fail to comply forthwith with the provisions of Section 3800 of the Labor Code that the permit herein applied for shall be deemed revoked.
- VI I certify as the owner (person, agent, firm or corporation having a legal or equitable interest in the property), that in the performance of the work for which this permit is issued, I will employ a contractor who complies with the workers' compensation laws of California and who has on file, or prior to the commencement of any work will file with the San Francisco Port Commission evidence that the workers' compensation insurance is carried.

Fee Items	Each	Fee
Amount Paid		

PORT PROJECT

APPLICANT- To ensure an efficient and timely review, it is important to completely answer all specified questions on all pages of this application. An incomplete response may lead to the rejection of this application.

Port Real Estate Information Checklist by Applicant **				
Tenant Impact Assessment	Yes	No	NA	Comments
Impact on Tenants considered / addressed			X	
Access to Tenant Premises affected		X	X	
Tenant Protection necessary		X		
Community Outreach	Yes	No	NA	Comments
Project signage to be provided			X	
Construction Staging Area Requirements	Yes	No	NA	Comments
Construction Staging area required			X	Location:
Material or Dirt stockpile area approved			X	Location:
Noise, Dust and Debris mitigation attached			X	
Contractor parking plan required		X		
Hazardous Materials plan in place			X	
Traffic Mitigation Measures	Yes	No	NA	Comments
Lane closures required / dates		X		
Traffic plan / directional signage required		X		
Work Commencement Notification	Yes	No	NA	Comments
Construction commencement notification		X		
Tenant notice required		X		# of Hrs:
Utility Services Disruption - Water	Yes	No	NA	Comments
Utility shut down required		X		
Tenant notification			X	
Port Maintenance notice required		X		
Utility Services Disruption - Gas	Yes	No	NA	Comments
Utility shut down required		X		
Tenant notification			X	
Port Maintenance notice required		X		
Utility Services Disruption - Electric	Yes	No	NA	Comments
Utility shut down required		X		
Tenant notification			X	
Port Maintenance notice required		X		

RECEIVED
FEB 08 2018
PORT OF SAN FRANCISCO

Do not write below this line - OFFICE USE ONLY				
Item Description	Yes	No	NA	Comments
Project Overview / Schedule				Entity
- Special Work Hours restrictions required		✓		RE / Eng
Tenant Impact Assessment				RE
- Parking Restrictions required	✓			RE / HS
- Security Issues considered / addressed	✓			RE / Legal
- Lease Issues reviewed		✓		
Community Outreach				RE
- CAC / CBD organizations contacted		✓		RE / Eng
- Pre-construction meetings required		✓		RE / Eng
- Construction progress reports required		✓		
Traffic Mitigation Measures				RE
- ISCOTT notification required		✓		RE / Eng
- DPW Parking Control Officers requested		✓		RE / Mar
- Cruise Ship/Giants/Spec. Events Schedule		✓		
Work Commencement Notification				RE
- Property Manager notice required		✓		# of Hrs:
Specific Real Estate Conditions				RE
FIN verified & entered to Access data				FIN =
Property Manager: <i>Roseanna</i>				Date: 2/9/18
Project Manager:				Date:

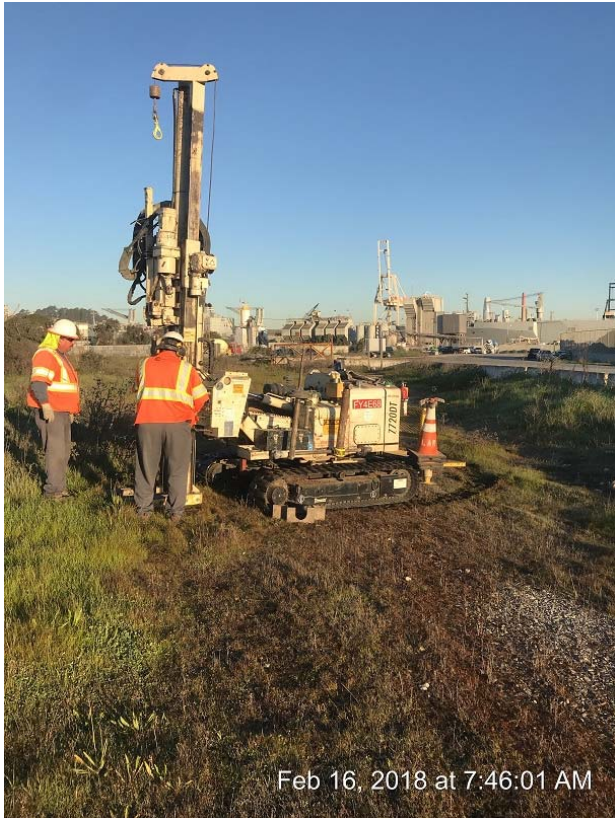
APPROVED
FEB 14 2018
PORT OF SAN FRANCISCO

** Mandatory fields - application will not be processed if left blank

APPENDIX B

SELECTED PHOTOGRAPHS





Cascade Drilling setting up over borehole AEW-5



Cascade Drilling setting up over borehole AEW-7





Sample AEW-1 - 3-3.5



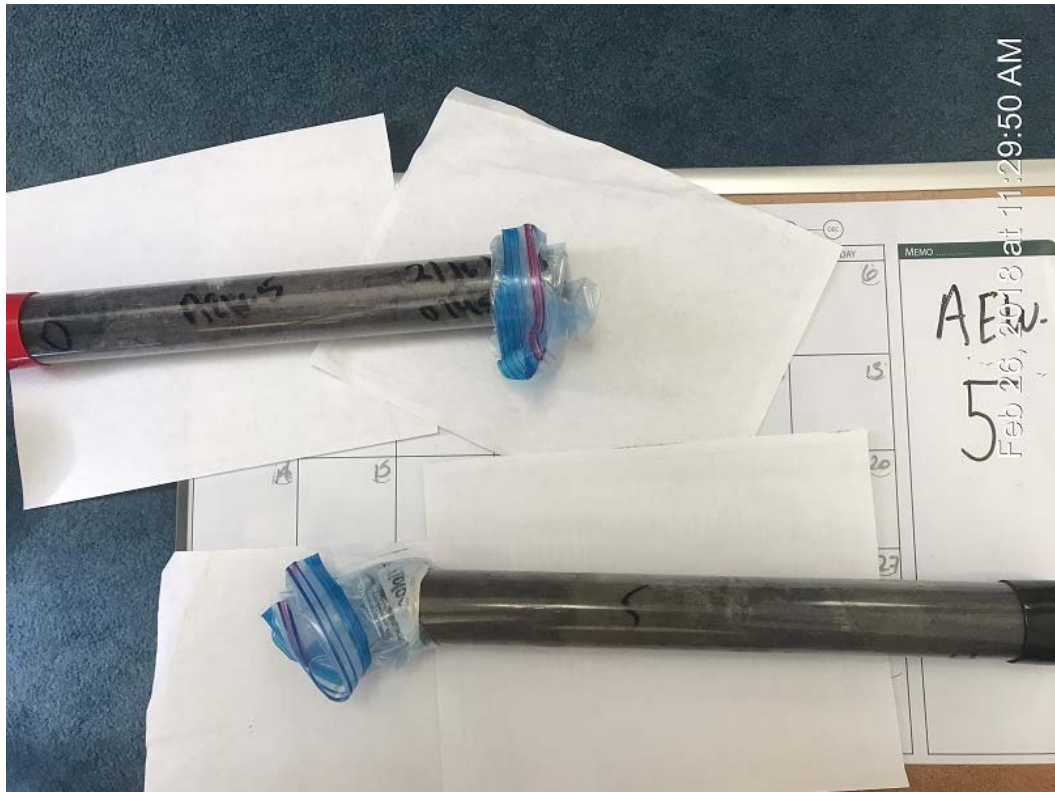
Sample AEW-2 – 2-2.5





Sample AEW-3 - -2.1-2.6 and AEW-4 – 1.8-2.2





Soil Core AEW-5



Sample AEW-6 – 2.5-3.0



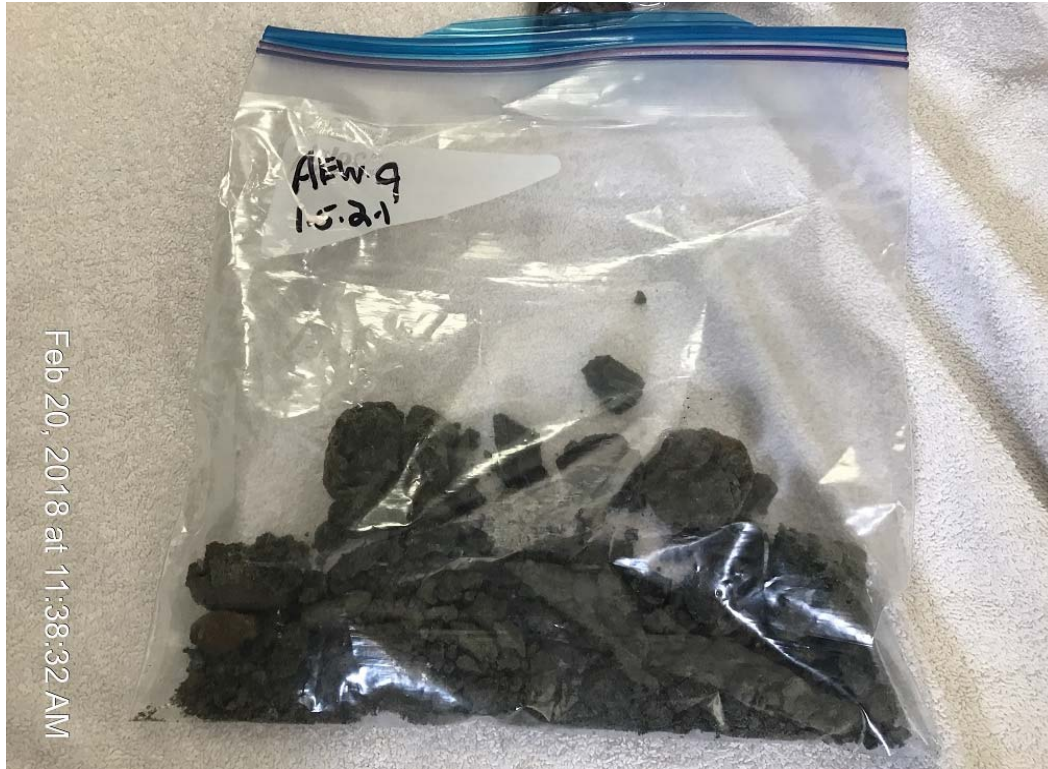


Soil core AEW-7

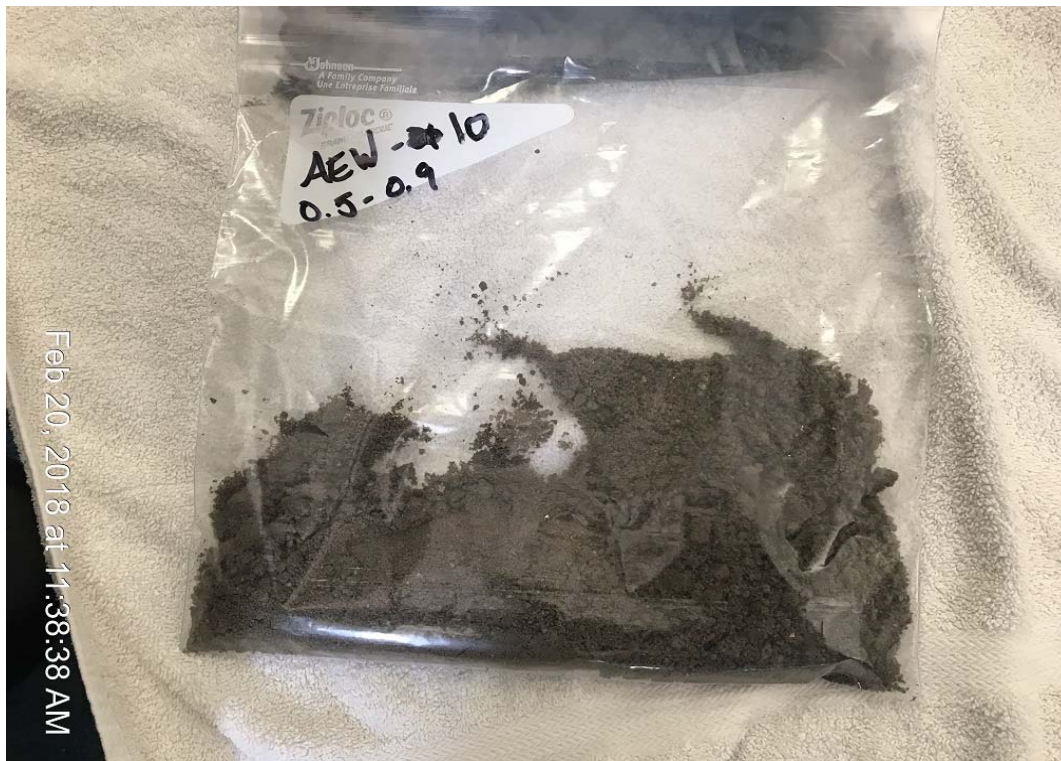


Soil Core AEW-8





Sample AEW-9 - 1.5-2.1



Sample AEW-10 - - 0.5-0.9





APPENDIX C


FEBRUARY 2018 BORING LOGS






Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-1		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Hand Auger, Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: RM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Grass		START	FINISH					
						0950	1010	
1				SP		SAND with clay (SP), brown, moist, fine to coarse sand, trace fine angular gravel, brick fragments - FILL		
2								
3	DIRECT PUSH	AEW-1- 3.0-3.5	48/46					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								


 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105	Drawn By: JM	<h1>AEW-1</h1>	Project No. 2017-017
	Reviewed By:		Sheet 1 of 1


Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-2		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Hand Auger, Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: RM
						SAMPLER(S): Ryder Musselman		TIME
Surface Conditions: Grass		START	FINISH					
						0925	0941	
1	DIRECT PUSH	AEW-2- 2.0-2.5	48/48	SP		SAND with clay (SP), brown, moist, fine to coarse sand, trace fine angular gravel, trace wood, brick fragments - FILL		
2								
3								
4						Bottom of boring at 4 feet bgs.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								


 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105	Drawn By:	AEW-2	Project No.
	JM		2017-017
	Reviewed By:		Sheet
			1 of 1


Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-3		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: JM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Grass		START	FINISH					
1	DIRECT PUSH	AEW-3- 2.1-2.6	48/48	SP		SAND with clay (SP), dark brown, moist, fine to coarse sand, trace fine angular gravel, trace brick fragments - FILL		
2								
3								
4								
5	Bottom of boring at 4 feet bgs.					0910	0920	
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105					Drawn By: JM Reviewed By:	AEW-3		Project No. 2017-017 Sheet 1 of 1


Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	DATE DRILLED: 2/16/2018		Log of Boring: AEW-4							
						DRILLING METHOD: Direct Push				HAMMER WEIGHT: N/A		DROP: N/A		LOGGED BY: JM	
						SAMPLER(S): James Medley						TIME			
						Surface Conditions: Grass						START		FINISH	
												0840		0854	
1	DIRECT PUSH	AEW-4- 1.8-2.2	48/47	SP	[Green Box]	SAND with clay (SP), brown, moist, fine to coarse sand,									
2						trace fine angular gravel- FILL									
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105					Drawn By: JM Reviewed By:	AEW-4		Project No. 2017-017 Sheet 1 of 1							


Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-5		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: JM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Grass		START	FINISH					
							0730	0745
1	DIRECT PUSH	AEW-5- 1.2-1.8	48/39	SP		SAND with clay (SP), brown, moist, fine to coarse sand, trace fine angular gravel. Single piece of serpentinite gravel observed - FILL		
2								
3								
4								
5	Bottom of boring at 4 feet bgs.							
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								


 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105	Drawn By:	AEW-5	Project No.
	JM		2017-017
	Reviewed By:		Sheet
			1 of 1

Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-6		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: JM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Sand		START	FINISH					
							0855	0905
1	DIRECT PUSH	AEW-6- 2.5-3.0	48/48	SP		SAND with clay (SP), and gravel, brown, moist, fine to coarse sand, fine angular gravel, trace silt- FILL		
2								
3								
4								
5	Bottom of boring at 4 feet bgs.							
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105	Drawn By: JM	AEW-6	Project No. 2017-017
	Reviewed By:		Sheet 1 of 1

Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-7		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: JM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Sand		START	FINISH					
						0830	0843	
1	DIRECT PUSH	AEW-7- 2.1-2.6	48/47	SP		SAND with trace clay (SP) and silt, brownish gray, moist,		
2						fine to coarse sand, fine angular gravel- Single piece of		
3						serpentine gravel observed - FILL		
4						Bottom of boring at 4 feet bgs.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105	Drawn By: JM	AEW-7	Project No. 2017-017
	Reviewed By:		Sheet 1 of 1

Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-8		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: JM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Grass		START	FINISH					
							7:55	8:06
1				SP				
2								
3	DIRECT PUSH	AEW-8 3.3-3.8	48/48					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105						Drawn By: JM Reviewed By:	AEW-8	Project No. 2017-017 Sheet 1 of 1

Drawn By:

JM

Reviewed By:



AEW-8

Project No.


2017-017

Sheet

1 of 1

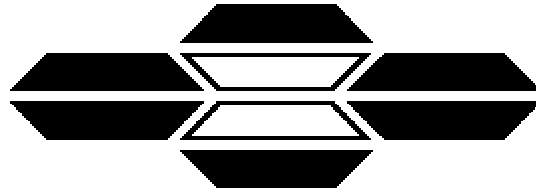
Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-9		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: JM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Sand		START	FINISH					
1	DIRECT PUSH	AEW-9- 1.5-2.1	48/48	SP	 SAND with trace clay (SP) and silt, gray turns to brown @2 feet moist, fine to coarse sand, fine angular gravel- FILL	8:10	8:23	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105					Drawn By: JM Reviewed By:	AEW-9		Project No. 2017-017 Sheet 1 of 1

Depth (feet)	Sample Type	Sample No.	Inches Driven/ Inches Recovered	U.S.C.S. Classification	Sample	Log of Boring: AEW-10		
						DATE DRILLED: 2/16/2018		
						DRILLING METHOD: Direct Push		
						HAMMER WEIGHT: N/A	DROP: N/A	LOGGED BY: JM
						SAMPLER(S): James Medley		TIME
Surface Conditions: Sand		START	FINISH					
						9:50	10:20	
1	DIRECT PUSH	AEW-10- 0.5-0.9	48/44	SP		SAND with trace clay (SP) and silt, brownish gray, moist, fine to coarse sand- FILL		
2								
3								
4						Bottom of boring at 4 feet bgs.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

 AEW Engineering, Inc. 55 New Montgomery, Suite 722 San Francisco, CA 94105	Drawn By: JM	AEW-10	Project No. 2017-017
	Reviewed By:		Sheet 1 of 1

APPENDIX D

LABORATORY REPORTS



ASBESTOS TEM LABORATORIES, INC.

**CARB Method 435
Polarized Light Microscopy
Analytical Report**

Laboratory Job # 1300-00271

630 Bancroft Way
Berkeley, CA 94710
(510) 704-8930
FAX (510) 704-8429



ASBESTOS TEM LABORATORIES, INC

CA DPH ELAP
Lab No. 1866



NVLAP Lab Code: 101891-0
Berkeley, CA

Feb/22/2018

James Medley
AEW Engineering Inc.
55 New Montgomery St, Ste # 722
San Francisco, CA 94105

RE: LABORATORY JOB # 1300-00271

Polarized light microscopy analytical results for 12 bulk sample(s).

Job Site: 2017-017-1

Job No.: Pier 94 Backlands Improvement

Enclosed please find the bulk material analytical results for one or more samples submitted for asbestos analysis. The analyses were performed in accordance with the California Air Resources Board (ARB) Method 435 for the determination of asbestos in serpentine aggregate samples.

Prior to analysis, samples are logged-in and all data pertinent to the sample recorded. The samples are checked for damage or disruption of any chain-of-custody seals. A unique laboratory ID number is assigned to each sample. A hard copy log-in sheet containing all pertinent information concerning the sample is generated. This and all other relevant paper work are kept with the sample throughout the analytical procedures to assure proper analysis.

Sample preparation follows a standard CARB 435 prep method. The entire sample is dried at 135-150 C and then crushed to ~3/8" gravel size using a Bico Chipmunk crusher. If the submitted sample is >1 pint, the sample was split using a 1/2" riffle splitter following ASTM Method C-702-98 to obtain a 1 pint aliquot. The entire 1 pint aliquot, or entire original sample, is then pulverized in a Bico Braun disc pulverizer calibrated to produce a nominal 200 mesh final product. If necessary, additional homogenization steps are undertaken using a 3/8" riffle splitter. Small aliquots are collected from throughout the pulverized material to create three separate microscope slide mounts containing the appropriate refractive index oil. The prepared slides are placed under a polarizing light microscope where standard mineralogical techniques are used to analyze the various materials present, including asbestos. If asbestos is identified and of less than 10% concentration by visual area estimate then an additional five sample mounts are prepared. Quantification of asbestos concentration is obtained using the standard CAL ARB Method 435 point count protocol. For samples observed to contain visible asbestos of less than 10% concentration, a point counting technique is used with 50 points counted on each of eight sample mounts for a total of 400 points. The data is then compiled into standard report format and subjected to a thorough quality assurance check before the information is released to the client.

While the CARB 435 method has much to commend it, there are a number of situations where it fails to provide sufficient accuracy to make a definitive determination of the presence/absence of asbestos and/or an accurate count of the asbestos concentration present in a given sample. These problems include, but are not limited to, 1) statistical uncertainty with samples containing <1% asbestos when too few particles are counted, 2) definitive identification and discrimination between various fibrous amphibole minerals such as tremolite/actinolite/hornblende and the "Libby amphiboles" such as tremolite/winchite/richterite/arfvedsonite, and C) small asbestiform fibers which are near or below the resolution limit of the PLM microscope such as those found in various California coast range serpentine bodies. In these cases, further analysis by transmission electron microscopy is recommended to obtain a more accurate result.

Sincerely Yours,

Lab Manager
ASBESTOS TEM LABORATORIES, INC.

--- These results relate only to the samples tested and must not be reproduced, except in full, without the approval of the laboratory. ---

630 BANCROFT WAY • BERKELEY, CA 94710 • PH. (510) 704-8930 • FAX (510) 704-8429


With Branch Offices Located At: 1350 FREEPORT BLVD. UNIT 104, SPARKS, NV 89431

POLARIZED LIGHT MICROSCOPY CARB 435 ANALYTICAL REPORT

Contact: James Medley	Samples Submitted: 12	Report No. 356219
Address: AEW Engineering Inc. 55 New Montgomery St, Ste # San Francisco, CA	Samples Analyzed: 12	Date Submitted: Feb-20-18
	Job Site / No. Pier 94 Backlands Improvement 2017-017-1	Date Reported: Feb-22-18

SAMPLE ID	POINTS COUNTED	ASBESTOS %	TYPE	LOCATION / DESCRIPTION
AEW-1 3.0-3.5		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-001	400 - Total Points			
AEW-2 2.0-2.5		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-002	400 - Total Points			
AEW-3 2.1-2.6		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-003	400 - Total Points			
AEW-4 1.8-2.2		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-004	400 - Total Points			
AEW-5 1.2-1.8		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-005	400 - Total Points			
AEW-6 2.5-3.0		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-006	400 - Total Points			
AEW-7 2.1-2.6		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-007	400 - Total Points			
AEW-8 3.3-3.8		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-008	400 - Total Points			
AEW-9 1.5-2.1		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-009	400 - Total Points			
AEW-10 0.5-0.9		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-010	400 - Total Points			

QC Reviewer 

Analys 

POLARIZED LIGHT MICROSCOPY CARB 435 ANALYTICAL REPORT

Contact: James Medley	Samples Submitted: 12	Report No. 356219
Address: AEW Engineering Inc. 55 New Montgomery St, Ste # San Francisco, CA	Samples Analyzed: 12	Date Submitted: Feb-20-18
	Job Site / No. Pier 94 Backlands Improvement 2017-017-1	Date Reported: Feb-22-18

SAMPLE ID	POINTS COUNTED	ASBESTOS %	TYPE	LOCATION / DESCRIPTION
AEW-Surface-1		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-011	400 - Total Points			
AEW-Surface-2		<0.25%	None Detected	No Asbestos Detected
Lab ID # 1300-00271-012	400 - Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			

QC Reviewer *R. Mc...*

Analys *Jo Ann...*

AEW ENGINEERING, INC.

55 New Montgomery Street, Suite 722, San Francisco, CA 94105
 Telephone: (415) 495-8422 Fax: (415) 358-5598

Date: February 20, 2018

Report To: James Medley Email: jmedley@aewengengineering.com

Company: AEW Engineering, Inc. Project No.: 2017-017-01

Project Name: Pier 94 Backlands Improvement Location: Pier 94 backlands

Sampler: James Medley Sampler's Phone Number: 415-713-7598

Sampler Signature: James Medley Bill To: AEW Engineering, Inc.

Reporting Requirement: Hard Copy: Yes No Electronic: Yes No

PDF File: Yes No Electronic: Yes No

CHAIN OF CUSTODY RECORD

TURN AROUND TIME 24 Hours 48 Hours Week Others:

LABORATORY: ASBESTOS TEM

Analysis Request

Analysis Request	Hours	Week	Normal	Comments
TFM - Gas, BTEX, MTBE (EPA BC15 Mod)				
TFM Diesel & Motor Oil - Slick Gel Cleanup (B015 Mod)				
CAM 17 Metals (EPA 600/7000 series)				
CAM 17 Metals (Dishhead) (EPA 600/7000 series)				
Organochlorine Pesticides & PCBs (EPA 8081/8082)				
VOCs (EPA 8260B)				
SWOC (EPA 8270d)				
Asbestos (CARB Method 431)	X			
Hexavalent Chromium (EPA 7199) Low Detection Limit				
Cyanides (EPA 9010)				
PH (EPA 450)				
LEAD				

Remarks:
 Upon sample arrival, please fax the chain-of-custody forms to Ryder Musselman @ 415 358-5598. Please also provide electronic analytical report submittal in Microsoft Excel format.

SAMPLE ID	LOCATION	Sampling		# of Containers	Type of Container	Matrix				Method Preserved								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other				
AEW-1 - 3.0 - 3.5		2/16/2016	1008	1	Ziplock	X												
AEW-2 - 2.0 - 2.5		2/16/2016	0938	1	Ziplock	X												
AEW-3 - 2.1 - 2.6		2/16/2016	0918	1	Ziplock	X												
AEW-4 - 1.8 - 2.2		2/16/2016	0850	1	Ziplock	X												
AEW-5 - 1.2 - 1.8		2/16/2016	0745	1	Ziplock	X												
AEW-6 - 2.5 - 3.0		2/16/2016	0903	1	Ziplock	X												
AEW-7 - 2.1 - 2.6		2/16/2016	0837	1	Ziplock	X												
AEW-8 - 3.3 - 3.8		2/16/2016	0800	1	Ziplock	X												
AEW-9 - 1.5 - 2.1		2/16/2016	0814	1	Ziplock	X												
AEW-10 - 0.5 - 0.9		2/16/2016	0827	1	Ziplock	X												
AEW-SURFACE-1		2/20/2018	1410	1	Ziplock	X												
AEW-SURFACE 2		2/20/2018	1425	1	Ziplock	X												

Received By: James Medley Date: 2/20/2018 Time: 15:02
 Received By: [Signature] Date: 2/20/18 Time: 15:02
 Received By: [Signature] Date: 2/20/18 Time: 15:02