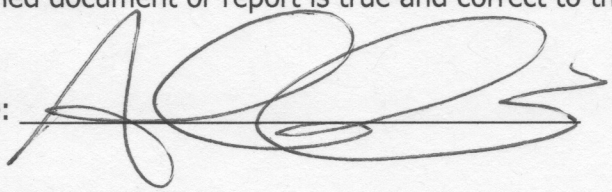
August 30, 2016

Mr. Keith Nowell
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

I, Al Lucchesi, hereby authorize ERAS Environmental, Inc. to submit the Workplan for Limited Phase II Subsurface Investigation for 2200 Wood St., Oakland, California, dated November 30, 2016 to the Alameda County Health Care Services Agency.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Signature: 

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WORK PLAN FOR LIMITED PHASE II SUBSURFACE INVESTIGATION

AT

Lucchesi Property
2200 Wood Street
Oakland, California

ERAS PROJECT NUMBER: 16096

Alameda County Case Number RO0002934

Prepared for

Mr. Al Lucchesi
Soundwave Studios
2200 Wood Street
Oakland, CA 94607

November 30, 2016

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CERTIFICATION

This **Work Plan for Limited Phase II Subsurface Investigation** at 2200 Wood Street in Oakland, California, has been prepared by ERAS Environmental, Inc. (ERAS) under the professional supervision of the Registered Professional Geologist whose signature appears hereon.

This work plan was prepared in general accordance with the accepted standard of practice that exists in Northern California at the time the investigation was performed. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies.

Our firm has prepared this work plan for the Client's exclusive use for this project and in accordance with generally accepted professional practices within the area at the time of our investigation. No other representations, expressed or implied, and no warranty or guarantee is included or intended.

This work plan may be used only by the client and only for the purposes stated within a reasonable time from its issuance. Land use, site conditions (both on-site and off-site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify ERAS of such intended use. Based on the intended use of report, ERAS may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release ERAS from any liability resulting from the use of this report by any unauthorized party.

Sincerely,
ERAS Environmental, Inc.

Curtis Payton
California Registered Professional Geologist 5608

David Siegel
Senior Program Manager

November 30, 2016

1.0 INTRODUCTION

The following is a work plan for the collection of soil and groundwater samples to characterize the lateral and vertical extent of contamination at the site located at 2200 Wood Street in Oakland, California (the "Property"). The Property is occupied by Soundwave Studios, a commercial sound recording studio facility.

A previous subsurface investigation conducted by AEI on the Property identified contamination including elevated concentrations of total petroleum hydrocarbons (TPH) quantified as oil range organics (TPH-oro[1]), diesel range organics (TPH-dro), gasoline range organics (TPH-gro).

This work plan was prepared to further investigate contaminants of concern so that an environmental site case closure can be obtained from the Alameda County Environmental Health Care Services Agency (ACHCSA) who is providing regulatory oversight for the Property (Lucchesi Property Case Number RO0002934). The workplan was requested in a letter from the ACHCSA to 2200 Wood Street LLC dated July 29, 2016.

After submission of the workplan, a letter from the ACHCSA was received dated October 26, 2016 indicating the scope of work presented in the original workplan dated August 30, 2016. The letter provided technical comments, these are discussed further below in **Section 1.2**.

The Property is located on the east corner of Wood Street and West Grand Avenue in the northwest portion of the City of Oakland. The Property consists of an approximately 0.7-acre rectangular shaped parcel of land that is improved with three commercial building structures that include a main building, smaller attached building and a canopy attached to the rear corner of the main building. Paved outside areas are located on the southwest side of the main building and in front of the canopy. The entire site is covered either by structures and pavement.

The location of the Property is shown on **Figure 1**. The layout of the Property is shown on **Figure 2**.

1.1 BACKGROUND

AEI Consultants (AEI) completed a Phase I Environmental Site Assessment (ESA) for the Property and the results were presented in a report dated May 25, 2006. The ESA noted the following recognized environmental conditions (REC).

[1] TPH-gro, TPH-dro, and TPH-oro are methods that compare analytical results to standards for gasoline, diesel and motor oil, respectively. Therefore, analytical results are estimates of quantities based on what would be expected for the range of hydrocarbon results for the standard. Gasoline range organics (gro) are those hydrocarbon compounds that are in the range of C6 to C10, diesel range organics (dro) are those hydrocarbon compounds that are in the range of C10 to C23, and oil range organics (oro) are those hydrocarbon compounds that are in the range of C18 to C36. There can be overlap in reporting methods as well as identification of compounds that fall within the standard that may not necessarily be derived from gasoline, diesel, or oil.

Based on files reviewed at the Oakland Fire Department (OFD), in 1989, a complaint was filed against the former tenant, Peoples Ridesharing Systems, for the disposal of anti-freeze into the sewer, and overflowing waste oil drums with absorbent on the floor.

During a subsequent inspection, six drums were observed in a fenced-off area in the parking area of the Property, and appeared to contain waste oil. Two of the drums had no caps or lids. The drums were quarantined by the ACHCSA and laboratory analysis indicated two of the drums contained a mixture of waste oil and water, and one contained oil contaminated absorbent. These drums were ordered to be removed from the Property by hazardous waste services.

Other violations noted included the lack of an EPA identification number, labeling violations, and the need for separate containment of the coolant waste. The ACEHSD recommended the installation of secondary containment for the hazardous waste storage area.

The Property has historically been used for various industrial purposes since the 1940's. Onsite operations have included a machine shop and repair shop in the 1940's and 1950's, freight handling in the 1960's, tire vulcanizing in the 1970's, van pool repair in the late 1980's, and furniture manufacturing in the early 1990's (AEI, 2006).

Hazardous materials such as cutting oils, solvents, and other petroleum based products and/or waste were likely used and/or generated during these periods of time. OFD records indicated that the vulcanizing operation utilized hazardous materials such as solvents, oils, spray cements, and tire shavings. The van pool repair facility questionnaire on file with the OFD reported the company handled more than 55-gallons per year of waste oil, and waste solvent. The furniture manufacturing facility reportedly handled approximately 200-gallons of hazardous materials.

AEI recommended a subsurface soil and groundwater investigation in the areas of waste spillage and storage as well as additional borings in the parking lot.

ERAS found no indications or evidence of former underground lifts on the Property which are common in repair shops. No records were available specifying the hazardous materials utilized by the furniture manufacturing facility. No records were available specifying what type of repair operations were conducted on the Property.

1.2 REPLY TO ACHCSA TECHNICAL COMMENTS

In the ACHCSA letter dated October 26, 2016, Technical Comments were made pertaining to the workplan dated August 30, 2016.

Note that most of the technical comments were regarding the former occupants and the locations of storage of hazardous materials which were the purported basis of Phase 2 recommendations by AEI.

In order to find these documents ERAS requested the available records from the ACHCSA on November 14, 2016. All of Oakland Fire Department hazardous materials files were transferred

to ACHCSA. On November 14, 2016 ERAS was informed that no hazardous materials or other records were available for the Property.

The following are responses to the Technical Comments in the October 26, 2016 review letter

1) Electronic Submittal of Information – As requested, the previous technical reports will be submitted to the Geotracker website database

2) Soil Bore Locations – The proposed borings are designed to determine the extent of contamination in groundwater reported for the results of analyses of groundwater during the previous soil and groundwater investigation. Note that previous justification for the borings by AEI were "the quarantine of six drums appearing to contain waste oil which were observed at various locations throughout the fenced vehicle parking area". None of the items observed by AEI were shown on the site plans in the 2006 Phase 1 or Phase 2 reports.

Note Sanborn maps for the Property would not indicate the locations of hazardous materials storage, especially as described by AEI. As indicated above, none of the HMBPs, inspection forms or documents that showed the locations of these items were available for review.

3) Work Plan Section 1.1 – Background –

A) Previous Site Usage – None of the equipment pertaining to the former repair shop and van pool repair were visible at the Property. No evidence of former underground hydraulic hoists was found in areas where exposed concrete and pavement was observed.

B) Material Storage – No information pertaining to the former furniture manufacturing facility was found during historical research. Based on knowledge of these types of facilities, chemicals used are lacquers, lacquer thinners (usually Stoddard or other kerosene type hydrocarbons) and paints. The previous investigation performed analyses for the presence of VOCs and SVOCs that would have detected these contaminants. Note however that the reporting limits for the previous samples were above the Regional Water Quality Control Board Environmental Screening Limits (ESLs).

C) Scope of analysis – There was no further information found pertaining to the disposal of anti-freeze in the storm drain, therefore analysis for ethylene glycol will be added to the soil sample from the single on-site storm drain located in the outside fenced yard and to the groundwater samples close to this source area.

4) Work Plan Section 2.0 – The Regional Geology/Hydrology section has been edited for the Property location.

1.3 PREVIOUS SUBSURFACE INVESTIGATIONS

AEI, 2006

AEI performed a subsurface investigation and the results were summarized in a report dated June 30, 2006. AEI advanced four borings (SB-1, SB-2, SB-3, and SB-4) on the Property for the collection of soil and groundwater samples. Two borings SB-3 and SB-4 were advanced in the storage yard on the east side of the Property with SB-4 adjacent to a drainage inlet. Borings SB-1 and SB-2 were advanced on the west side of the Property along the Wood Street side of the Property.

All borings were advanced to a depth of approximately 12 feet below ground surface (bgs) to shallow groundwater. Groundwater was indicated to have been encountered at a depth of approximately 8 feet bgs in all boring locations. Soil samples were collected from each boring from depths of 2, 4, 8, and 12 feet bgs. Only samples from SB-3, and SB-4 at two feet bgs were analyzed for the contaminants of concern.

The soil samples from borings SB-3 and SB-4 were analyzed for TPH-oro, TPH-gro, and TPH-dro by EPA Method 8015.

Groundwater samples from each boring were analyzed for TPH-oro, TPH-gro, TPH-dro by EPA Method 8015, volatile organic compounds (VOCs) by EPA Method 8260, and semi-volatile organic compounds (SVOCs) by EPA Method 8270.

No concentrations of TPH-gro, TPH-dro, TPH-oro were detected in the soil sample collected from boring SB-3 above the method detection limit (MDL), but the soil sample from boring SB-4 was above the MDL for TPH-gro at 1.3 milligrams per kilogram (mg/kg). The concentration was below the Regional Water Quality Control Board's (RWQCB) current environmental screening limit (ESL) for TPH-gro of 100 mg/kg.

Groundwater was found to contain concentrations of TPH-dro ranging from 120 µg/L (SB-2-W) to 5,300 µg/L (SB-4-W), and TPH-oro ranging from 500 µg/L (SB-2-W) to 2,600 µg/L (SB-4-W). The concentrations are above RWQCB current ESL of 100 µg/L. All concentrations of VOCs, and SVOCs were below the reporting limit. However, the reporting limits for the various VOCs were in some cases above the ESLs and for all SVOCs except for 1,3-dichlorobenzene the reporting limits were above the ESLs. Therefore, the VOC and SVOC results are not useful for decision making.

The results of the previous soil and groundwater samples collected on the Property are summarized on **Table 1**.

2.0 REGIONAL GEOLOGY/HYDROLOGY

The Property is in the western part of Oakland, in the eastern part of the San Francisco Bay

Area. The San Francisco Bay area occupies a broad alluvial valley that slopes gently northward and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west. Surface topography in the immediate vicinity of the Property is gently sloping down to the west towards Oakland Outer Harbor.

The Property is at an elevation of approximately 10 feet above Mean Sea Level according to the United States Geological Survey (USGS) Oakland West Quadrangle California 7.5 Minute Series topographic map.

Materials underlying the site are unconsolidated deposits of near shore and beach sediments, deposited in Oakland Bay at higher sea level stands. At shallow depths beneath these sediments are chert, greywacke, serpentine and shale bedrock that are a part of the Cretaceous to Jurassic-aged Franciscan Formation. Bedrock is exposed to the east-northeast on the upland surfaces.

The subject site is located on the San Francisco East Bay Plain in the northernmost part of the Santa Clara Valley Groundwater Basin, (DWR, 1967), the surface of which slopes gently down toward west.

The regional groundwater flow follows the topography, moving from areas of higher elevation to areas of lower elevation. The regional groundwater flow direction in the area of the Property is estimated to be toward the west toward the Oakland Outer Harbor.

3.0 SITE CONCEPTUAL MODEL

A summary of the current site conceptual model is included on **Table 2** and the current data gaps and proposed investigation are summarized on **Table 3**.

3.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

Based on soil borings drilled on the Property, the shallow sediments consist of gravelly clay to a depth of approximately 8 feet bgs, a gravelly sand between approximately 8 and 9 feet bgs, and a silty clay from approximately 9 to 12 feet bgs (AEI, 2006).

Shallow groundwater was observed between approximately 8-9 feet bgs. The shallow water-bearing zone appears to be in a sand to gravelly sand. The base of the shallow water bearing zone has not been determined.

3.2 EXTENT OF CONTAMINATION

The extent of contamination has not been determined.

4.0 WORK PLAN

4.1 SCOPE OF PROPOSED INVESTIGATION

ERAS proposes a scope of work for this investigation as follows.

- Obtain a permit for drilling from the Alameda County Public Works Department (ACPWD).

- Clear the boring locations for the presence of utilities by notifying Underground Service Alert and employing a private underground locating/clearance service.

- Advance six soil borings to a depth of twelve feet using a direct push sample rig

- Soil and groundwater samples will be collected from each boring for laboratory analysis.

- Perform a sensitive receptor survey to determine the locations of nearby wells (0.5-mile radius search) and other potential sensitive receptors.

- Prepare a report detailing the field procedures and results of the investigation.

4.2 FIELD WORK COORDINATION

ERAS will procure a drilling permit from the ACPWD prior to drilling activities.

The boring locations will be marked with paint and Underground Service Alert notified at least 48 hours in advance to give owners of underground utilities an opportunity to mark their lines. Prior to drilling, each boring location will be cleared using a private underground utility locator.

4.3 BORING LOCATIONS AND SAMPLING

The locations of the proposed borings are shown on **Figure 2**. The Standard Operating Procedures for direct-push sampling is included in **Appendix A**.

Six borings will be advanced using a direct push sample rig to a maximum of approximately 12 feet to vertically and horizontally delineate the extent of the contamination. These borings will be continuously logged by a field geologist.

Soil and groundwater samples will be collected from the boring located near the drain near the southeastern corner of the Property. This is considered the likely source of contamination. The samples from this boring will be analyzed for petroleum hydrocarbons, ethylene glycol.

Groundwater samples will also be collected from the other 5 borings located along the margins of the Property to evaluate the extent of the previously detected contaminants. The samples will be analyzed for the presence of TPH-dro and TPH-oro, VOCs and SVOCs.

The soil and groundwater samples will be kept chilled pending transport under chain-of-custody procedures to a California certified environmental analytical laboratory.

4.4 FIELD AND REPORT SCHEDULE

The field work will be scheduled as soon as possible following approval of this work plan by the ACHCSA. A report will be submitted within 30 working days of the completion of field activities.

5.0 REFERENCES

AEI Consultants, Phase II Subsurface Investigation, 2200-2222 Wood Street, Oakland, California, July 5, 2006.

California Regional Water Quality Control Board, Water Quality Control Plan, San Francisco Bay Basin Region (2), December 1986.

Goldman, Harold B., Geology of Burlingame Bay prepared for Burlingame Bay Conservation and Development Commission, February 1967.

FIGURES AND TABLES

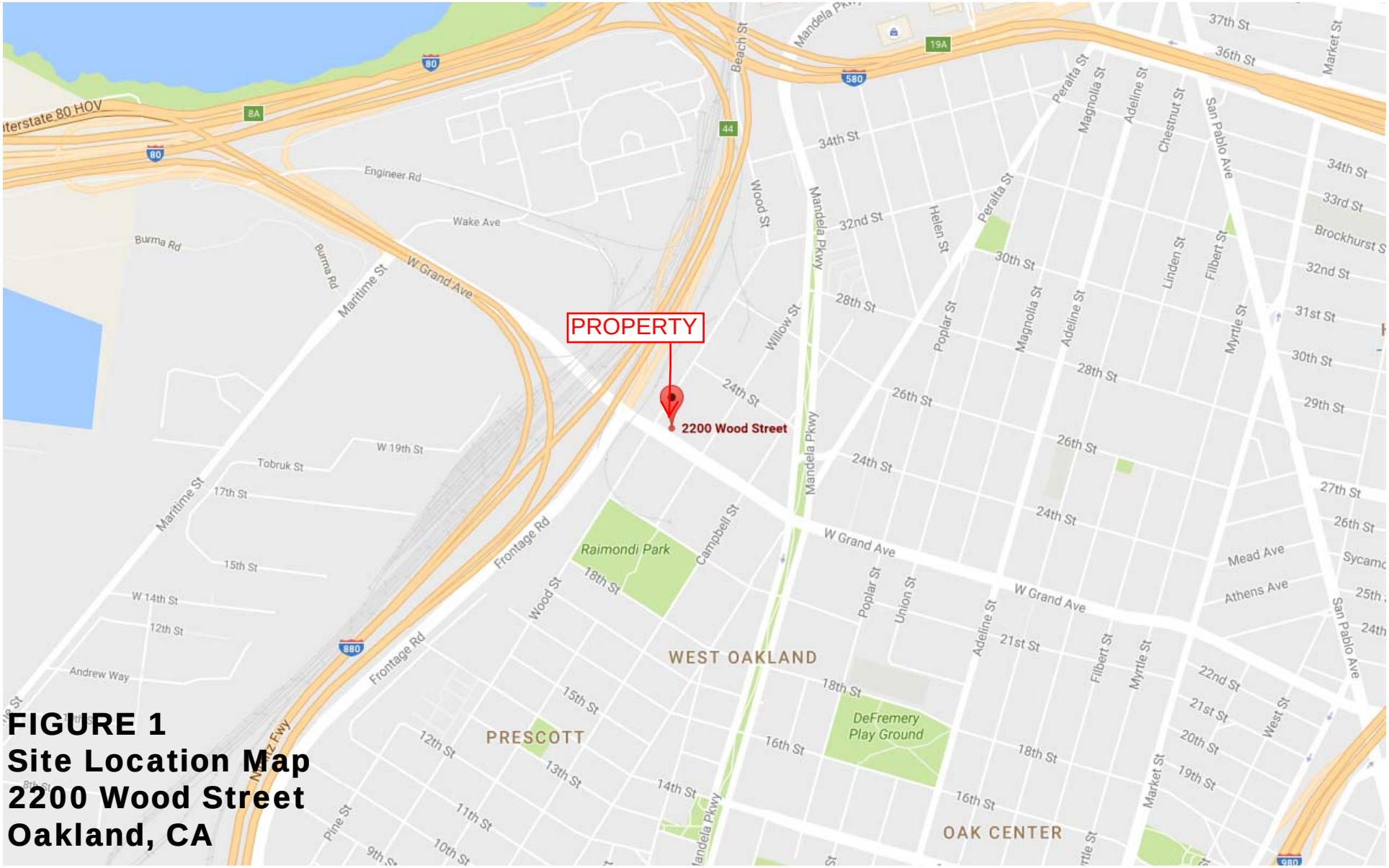
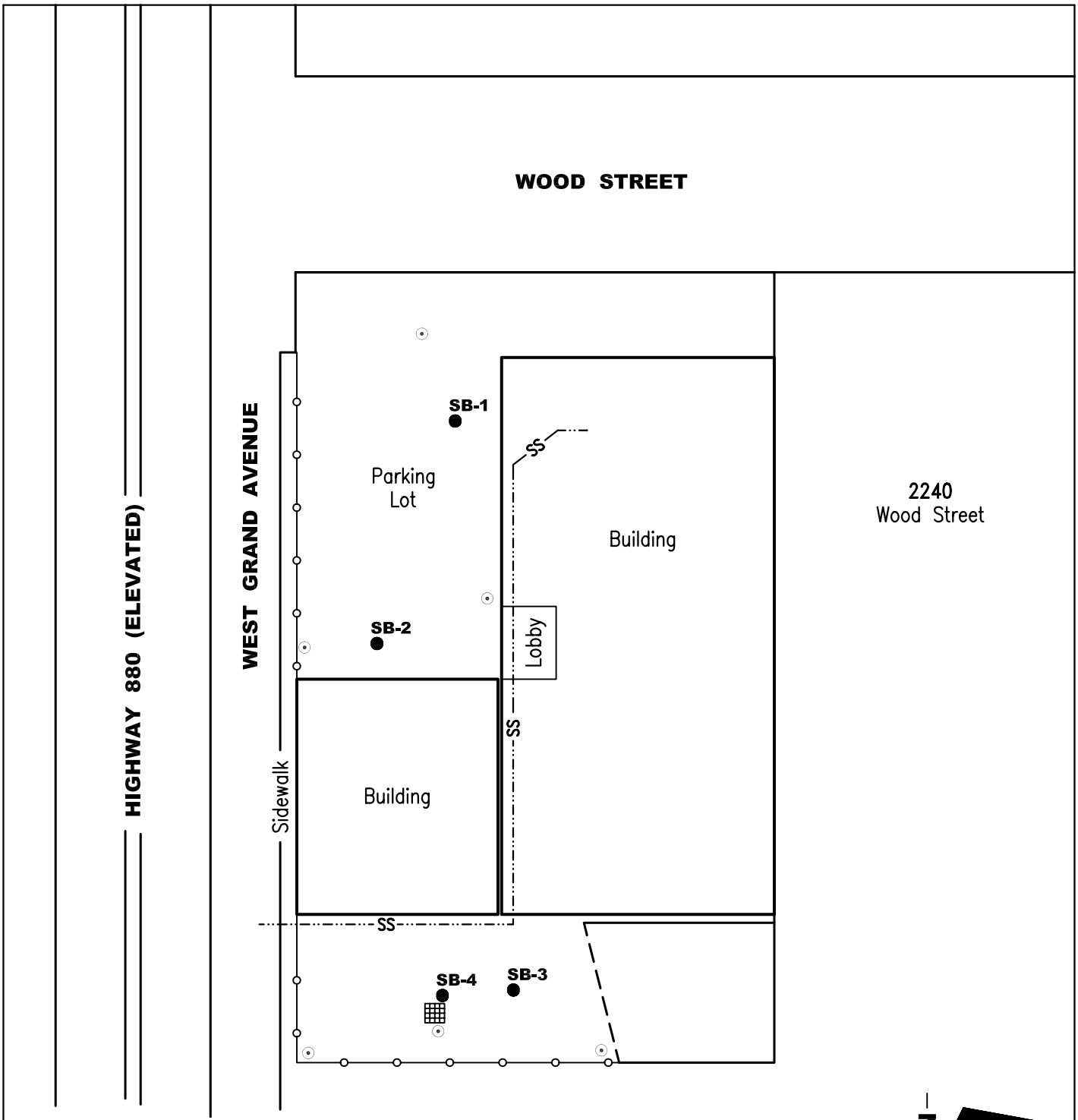


FIGURE 1
Site Location Map
2200 Wood Street
Oakland, CA



SITE PLAN

DATE 08/15/2016 REVIEWED BY DS	– 2200 Wood Street Oakland, California	JOB NUMBER 16096 FIGURE 2

ERAS Environmental Inc.

ERAS 08-15-2016 Site Plan.dwg

Table 1
Soil and Groundwater Sample Analytical Data
Petroleum Hydrocarbons, VOCs and SVOCs

Sample ID	Date	TPH-g	TPH-d	TPH-mo	All VOCs	All SVOCs
		EPA Method 8015C or 8015Cm			*EPA Method 8270*	*EPA Method 8270*
Soil	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SB-3-2'	6/21/06	<1.0	<1.0	<5.0	-	-
SB-4-2'	6/21/06	1.3	<1.0	<5.0	-	-
Groundwater	-	µg/L	µg/L	µg/L	µg/L	µg/L
SB-1-W	6/21/06	<50	1,500	2,200	<MDL	<MDL
SB-2-W	6/21/06	<50	120	500	<MDL	<MDL
SB-3-W	6/21/06	<50	350	970	<MDL	<MDL
SB-4-W	6/21/06	<50	5,300	2,600	<MDL	<MDL
ESLs[1] (GW - µg/L)		400	500	1,000	-	-
RL	-	1.0/50	1.0/50	5.0/250	varies	varies

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TPH-mo = total petroleum hydrocarbons as motor oil
VOCs = volatile organic compounds
SVOCs = semi-volatile organic compounds
mg/kg = milligrams per kilogram (equivalent to parts per million)
µg/L = micrograms per Liter (equivalent to parts per billion)
RL = laboratory reporting limit (before any dilution) - see laboratory reports for sample specific dilution factors
SB = Soil boring
[1] - For Commercial/Industrial land use where groundwater is not a current or potential source of drinking water
GW = groundwater in units of ug/L

TABLE 2 - SITE CONCEPTUAL MODEL
2200 Wood Street, Oakland

CSM Element	CSM Sub-Element	Description	Potential Data Gap(s)
Geology and Hydrogeology	Regional	The Property is in the western part of Oakland, in the eastern part of the San Francisco Bay Area. The San Francisco Bay Area occupies the central part of the Santa Clara Valley, a broad alluvial valley that slopes gently northward toward San Francisco Bay and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west. The San Francisco Bay is located ½ mile northwest from the Property. The upland surfaces rising abruptly approximately 3 miles to the east of the Property are known as the East Bay Hills. Surface topography in the vicinity of the Property slopes gently to the west. The Property is at an elevation of approximately 10 feet above Mean Sea Level according to the United States Geological Survey (USGS) Oakland East Quadrangle California 7.5 Minute Series topographic map. Regionally, topography in the area of the Property slopes down to the west toward the San Francisco Bay. It estimated the groundwater flow direction is toward the west at a low gradient The sediments in the vicinity of the Property are fine-grained alluvial sediments that represent distal deposits of alluvial fans that were deposited by rivers draining upland surfaces to the west and east of the Property. These sediments were deposited in a low energy environment on the margins of San Francisco Bay. At shallow depths beneath these sediments are a series of Recent-age (<10,000 years) blue clay layers that become increasingly thicker toward San Francisco Bay. These clay layers are known as the Bay Mud and were deposited in San Francisco Bay during higher stands of sea level. In the vicinity of the Property it is likely that several hundred feet of these sediments overlie sandstone and serpentine sedimentary and metamorphic rocks of the Jurassic-aged Franciscan Formation bedrock. The subject site is located on the San Francisco Bay Plain in the northernmost part of the Santa Clara Valley Groundwater Basin, (RWQCB, 1986), the surface of which slopes gently down toward San Francisco Bay. The depth to water at the subject site is estimate to be approximately 8 feet below ground surface.	None
	Site	***Geology:*** Based on the lithology observed during most recent investigation the subsurface environmental conditions consist of clayey sediments to a depth of 12 feet bgs.	None
		Hydrogeology: Groundwater at the Property was encountered at a depth of 8.0 to 9.0 feet bgs in gravelly sand.	None
Surface Water Bodies	--	The closest surface water body is the San Francisco Bay which was located approximately 3,200 feet northwest of the Property.	None
Nearby Wells	--	Well survey will be requested from Alameda County and State Water Resources Control Board.	
Constituents of Concern	--	The potential constituents of concern are TPH-dro, TPH-oro, TPH gro, BTEX, naphthalene, VOCs, and SVOCs.	None
Potential Sources	On-site	The improper storage of 55-gallon waste oil drums, both in the building and outside. The illegal disposition of antifreeze into storm sewer.	None
Nature and Extent of Environmental Impacts	Extent in Soil, TPH	A concentration of total petroleum hydrocarbons gasoline range organics of 1.3 mg/kg was found to be present in boring SB-4 at a two feet bgs above the laboratory method detection limit of 1.0 mg/kg, but below RWQCB ESL of 100 mg/kg in the vicinity of the exterior storm drain. The concentration in the other soil sample from the parking area was below the laboratory MDL and RWQCB ESL.	None
	Extent in Soil, BTEX	BTEX has not been detected in the shallow soil samples analyzed.	Presence of contaminants not fully determined
	Extent in Soil,	Naphthalene was not detected in the shallow soil samples analyzed.	Presence of contaminants not fully determined
	Extent in Soil, VOCs	VOCs were not detected in the shallow soil samples analyzed.	None
	Extent in Soil, SVOCs	SVOCs were not detected in the shallow soil samples and groundwater samples analyzed.	Presence of contaminants not fully determined
	Extent in Groundwater, TPH	TPH-gro was not detected in the groundwater samples collected, all samples were below the laboratory MDL. Concentrations of TPH-dro were detected above the RWQCB ESL in all groundwater samples collected ranging from 120 µg/L to 5,300 µg/L (current RWQCB ESL for TPH-dro 100 µg/L). SB-2 had a concentration of 1,500 µg/L this boring is located adjacent to West Grand Avenue in the parking area. SB-4 contained a concentration of 5,300 µg/L this boring was located adjacent to the onsite storm drain. Concentration of TPH-oro were detected above the RWQCBs ESL in all the samples collected ranging from 620 µg/L to 7,900 µg/L. SB-2 contained a concentration of 2,700 µg/L. SB-4 contained a concentration of 7,900 µg/L this boring was located adjacent to the onsite storm drain in the vicinity of the canopy area.	Extent of contaminants not determined
	Extent in Groundwater, VOC	No concentrations of VOC's were detected above the laboratory MDL.	None
	Extent in Groundwater SVOCs	No concentrations of SVOCs were detected above the laboratory MDL.	None
	VOC Soil Vapor	No VOCs were detected in the soil and groundwater, so a vapor threat is not known to be present.	None
Migration Pathways	Potential Conduits	Based on the location of the onsite storm drain, and known contaminates of concern the storm drain could be a migration pathway.	None
Potential Receptors/Risk	On-site	Potable water at the site currently is provided via municipal supply and will continue to be in the foreseeable future. As such, direct contact to groundwater is not contemplated.	None
Potential Receptors/Risk	Off-site	Well survey will be requested from Alameda County and State Water Resources Control Board.	None

TABLE 2 - SITE CONCEPTUAL MODEL
2200 Wood Street, Oakland

Notes
1. AEI Consultants, Phase II Subsurface Investigation, 2200-2222 Wood Street, Oakland, California, July 5, 2006
2. Alameda County Health Care Services Agency, Request for Data Gap Investigation Work Plan and Focused Site Conceptual Model, 2200 Wood Street, Oakland, CA 94607, July 29, 2016

Abbreviations
MDL = Method Detection Limit
RWQCB = Regional Water Quality Control Board
ESL = Environmental Screening Limit
bgs = below ground surface
VOCs = volatile organic compounds
BTEX = benzene, toluene, ethylbenzene, xylene
SVOCs = semi volatile organic compounds
TPH-dro = total petroleum hydrocarbons quantified as diesel range organics
TPH-oro = total petroleum hydrocarbons quantified as oil range organics
mg/Kg = milligrams per kilogram
µg/L = micrograms per liter

TABLE 3 - DATA GAPS AND PROPOSED INVESTIGATION
2200 Wood Street, Oakland

Item	Data Gap	Proposed Investigation	Rational	Analysis
1	The presence of TPH, VOCs and SVOCs in the soil has not been analyzed and delineated on the Property.	Advance a single soil boring using a direct push sample rig to approximately 12 feet adjacent to the storm drain area for the collection of soil and groundwater samples. Selected soil samples will be collected from each of the depth range of 0-5 feet bgs and 5-10 feet bgs.	Determine the presence of TPH, VOCs and SVOCs in the soil and groundwater in the likely source of contamination.	Analyze the soil and groundwater samples in the vicinity of the drain for TPH by EPA Method 8015C, VOCs by EPA Method 8240 and SVOCs by EPA Method 8270.
2	The full extent of TPH in the groundwater has not been determined.	Advance six borings using a direct push sample rig to approximately 12 feet near the margins of the Property for the collection of groundwater samples.	Evaluate the extent of previously detected concentrations of TPH-dro and TPH-oro.	Analyze the groundwater samples for TPH-dro and TPH-oro by EPA Method 8015.

Abbreviations
bgs = below ground surface
VOCs = volatile organic compounds
BTEX = benzene, toluene, ethylbenzene, xylene
SVOCs = semi volatile organic compounds
TPH-gro = total petroleum hydrocarbons quantified as gasoline range organics
TPH-dro = total petroleum hydrocarbons quantified as diesel range organics
TPH-oro = total petroleum hydrocarbons quantified as oil range organics

APPENDIX A

Standard Operating Procedures

STANDARD OPERATING PROCEDURE – DIRECT PUSH BORINGS

SOIL CORING AND SAMPLING PROCEDURES

Prior to drilling, all boreholes will be hand dug to a depth of 4-5 feet below ground surface (bgs) to check for underground utilities.

Soil and groundwater samples are collected for lithologic and chemical analyses using a direct driven soil coring system. A hydraulic hammer drives sampling rods into the ground to collect continuous soil cores. As the rods are advanced, soil is driven into an approximately 2.5-inch-diamter sample barrel that is attached to the end of the rods. Soil samples are collected in sleeves inside the sample barrel as the rods are advanced. After being driven 4 to 5 feet into the ground, the rods are removed from the borehole. The sleeve containing the soil core is removed from the sample barrel, and can then be preserved for chemical analyses, or used for lithologic description. This process is repeated until the desired depth or instrument refusal is reached.

A soil core interval selected for analyses is cut from the sleeve using a pre-cleaned hacksaw. The ends of the tube are covered with aluminum foil or Teflon liner and sealed with plastic caps. The soil-filled liner is labeled with the bore number, sample depth, site location, date, and time. The samples are placed in bags and stored in a cooler containing ice. Soil from the core adjacent to the interval selected for analyses is placed in a plastic zip-top bag. The soil is allowed to volatilize for a period of time, depending on the ambient temperature. The soil is scanned with a flame-ionization detector (FID) or photo-ionization detector (PID).

All sample barrels, rods, and tools (e.g. hacksaw) are cleaned with Alconox or equivalent detergent and de-ionized water. All rinsate from the cleaning is contained in 55-gallon drums at the project site.

GROUNDWATER SAMPLING FROM DIRECT PUSH BORINGS

After the targeted water-bearing zone has been penetrated, the soil-sample barrel is removed from the borehole. Small-diameter well casing with 0.010-inch slotted well screen may be installed in the borehole to facilitate the collection of groundwater samples. Threaded sections of PVC are lowered into the borehole. Groundwater samples may then be collected with a bailer, peristaltic pump, submersible or other appropriate pump until adequate sample volume is obtained. Peristaltic pumps are not used in applications requiring a lift of greater than 1 foot of net head.

Groundwater samples are preserved, stored in an ice-filled cooler, and are delivered, under chain-of-custody, to a laboratory certified by the California Department of Health Services (DHS) for hazardous materials analysis.

BOREHOLE GROUTING FOR DIRECT PUSH BORINGS

Upon completion of soil and water sampling, boreholes will be abandoned with neat cement grout to the surface. If the borehole was advanced into groundwater, the grout is pumped through a grouting tube positioned at the bottom of the borehole.