LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

WORK PLAN FOR SITE CLEANUP ACTIONS

1300 Powell Street

Emeryville, California

July 2002 (0-1475

This report has been prepared for:

Alameda County Environmental Health Services

1131 Harbor Bay Parkway, Suite 250, Alameda California 94502

July 3, 2002

Project No. 1424-9B

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1424-9B

Ms. Eva Chu
ALAMEDA COUNTY ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RE: WORK PLAN FOR SITE CLEANUP ACTIONS
1300 POWELL STREET
EMERYVILLE, CALIFORNIA

Dear Ms. Chu:

On behalf of Pulte Home Corporation, we are pleased to present the attached Work Plan for Cleanup Actions for 1300 Powell Street in Emeryville, California. If you have any questions, please call and we will be glad to discuss them with you.

Very truly yours,

LOWNEY ASSOCIATES

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Senior Project Geologist

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MJA:PML:jcm

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Attn: Mr. John Wolfenden
Cambria Environmental Technology, Inc. (1)
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WORK PLAN FOR SITE CLEANUP ACTIONS

1300 POWELL STREET

EMERYVILLE, CALIFORNIA

1.0 INTRODUCTION

This Work Plan for Site Cleanup Actions (Work Plan) has been prepared on behalf of Pulte Home Corporation, a potential purchaser of the property at 1300 Powell Street in Emeryville, California (Site) (Figures 1 and 2). Alameda County Health Care Services Agency (ACHCSA) granted case closure for commercial/light industrial land use for the Site in a letter dated November 29, 1999. No further action was required by the ACHCSA provided there was no change in the land use. Pulte would like to perform site cleanup not required for the current land use by the RWQCB or ACHCSA to accommodate a proposed land use change. Pulte proposes residential development of the Site.

1.1 Purpose

On behalf of Pulte Home Corporation, this Work Plan presents site cleanup actions to obtain approval of residential development at the site from the ACHCSA and CRWQCB.

1.2 Site Description

The approximately 1.9-acre Site is located at 1300 Powell Street in Emeryville, California. The Site is bounded by commercial/light industrial areas to the north, Doyle Street to the east, Powell Street to the south, and a commercial area to the west. The Site is zoned for commercial and residential use. The Site is owned by Mr Richard Becker.

1.3 Topographic Features

Based on U.S. Geologic Survey (USGS) topographic maps, the Site's elevation is approximately 15 to 20 feet above mean sea level. Topography in the vicinity of the Site slopes gently to the southwest toward the San Francisco Bay.

1.4 Planned Construction

Pulte Home Corporation is planning to construct town homes (44 units) on-Site. The current plans include a garage on the first level with walk-up entrance to second and third floor living areas. The site also will include paved driveways and landscaped areas.

2.0 SITE BACKGROUND

Based on information obtained during a Phase I environmental Site assessment (Lowney Associates, 2002), the earliest records reviewed, a 1911 Sanborn map, showed the site occupied by a stable and related buildings. By the 1930's the Site was a bulk fuel terminal for the Pennzoil Company. Several buildings and up to 21 above-ground storage tanks (ASTs) were on-Site from the 1930's to 1967, when the buildings were demolished. The former AST locations are shown on Figures 4 and 6. The buildings at 1300 Powell Street were demolished by 1967. By 1983, the current on-site building at 1300 Powell Street had been built and was in use by Construction Services.

2.1 Previous Environmental Reports

Sample locations and hydrocarbon concentrations detected in soil and ground water during previous investigations are presented in Figures 3 and 5. The previous soil and ground water investigations performed at 1300 Powell Street are briefly summarized below:

Lush Geosciences, 1995

In 1995, eight borings were drilled to evaluate potential petroleum hydrocarbon contamination of soil at selected locations at the site including aboveground fuel and oil storage areas. The site was being considered for lease to another party, and a baseline survey was performed to evaluate site conditions prior to transfer of responsibility of site operations to the lessee. The borings were drilled to depths of approximately 5 feet for the collection of soil samples. The areas investigated primarily were located on the northern portion of the property in unpaved areas, areas of worn or damaged pavement, and depressed areas where water accumulated during rainy periods. Perched water was encountered in two of the borings at depths of approximately 1 to 2 feet below grade. Total petroleum hydrocarbons as diesel (TPHd) were detected in nine of 15 soil samples at concentrations ranging from 2.7 to 110 parts per million (ppm); none of the samples exceeded the California Regional Water Quality Control Board's (CRWQCB) risk-based residential screening level (RBSL) for TPHd (500 ppm). Total petroleum hydrocarbons as motor oil (TPHmo) were detected in seven of 15 samples at concentrations ranging from 15 to 880 ppm, with only one sample exceeding the RBSL for TPHmo (500 ppm). Total oil and grease (TOG) was detected in all 15-soil samples at concentrations ranging from 200 to 3,200.

Cambria Environmental Technology, Inc., 1997

In 1997, twelve borings were drilled to depths of 5 to 12 feet for collection of soil and ground water samples. The work was performed in response to a request by the ACHCSA to delineate the extent of soil and ground water contamination at the site. Ground water was encountered in five of the borings at depths of approximately 1 to 7 feet. The ground water appeared perched within fill beneath the site. Total petroleum hydrocarbons as gasoline (TPHg) were detected in one of two soil samples analyzed at a concentration (840 ppm) exceeding the residential

RBSL (400 ppm) for TPHg. In addition, TPHd was detected in nine of 12 soil samples at concentrations ranging from 1.2 to 210 ppm; TPHmo was detected in five of 12 soil samples at concentrations ranging from 11 to 450 ppm; and 50 to 380 ppm TOG were detected in eight of 12 soil samples analyzed. The TPHd and TPHmo results were below residential RBSLs. One soil sample located near the northwest corner of the existing building also was analyzed for volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs). No VOCs were detected other than 0.011 ppm acetone, and no PAHs were detected. In addition, 2,000 to 17,900 parts per billion (ppb) TPHd were detected in four ground water samples analyzed; 3,300 to 24,000 ppb of TPHmo were detected in three ground water samples analyzed; and 6,300 ppb TOG was detected in one of two ground water samples analyzed. Four ground water samples exceeded the TPHd RBSL (640 ppb) and three ground water samples exceeded the TPHmo RBSL (640 ppb). Based on the analytical results, the site was recommended for regulatory case closure (for commercial use).

ACHCSA, 1999

The 1300 Powell Street property was listed as a site with soil and ground water petroleum hydrocarbon (diesel and motor oil range hydrocarbons) contamination by the ACHCSA. The ACHCSA issued a case closure letter dated November 29, 1999 for the petroleum hydrocarbon contamination found in soil and ground water at the site. No further action was required for the site provided no change in the existing land use (commercial/light industrial) was planned.

PES Environmental, 2000

On September 7, 2000, six borings were drilled to depths of up to 7 feet for collection of soil and ground water samples. The work was performed by PES environmental to evaluate redevelopment alternatives for a potential purchaser of the property. One sample of fill soil and one sample of native soil were collected from each boring. TPHg was detected in only three of 12 samples at concentrations ranging from 1.3 to 56 ppm. TPHd was detected in seven of 12 samples and at concentrations ranging from 2.5 to 260 ppm. None of the samples exceeded the TPHg or TPHd residential RBSLs, and no benzene was detected. In addition, the twelve soil samples also were analyzed for VOCs. No VOCs were detected in the soil samples other than 0.014 ppm of sec-butyl benzene and 0.091 ppm 1,3,5-trimethylbenzene in one of 12 samples, and 0.0068 to 0.078 ppm 1,2,4-trimethylbenzene in two of 12 samples analyzed. Six soil samples were additionally analyzed for semi-VOCs; and no semi-VOCs were detected above laboratory detection limits. No TPHg, volatile organic compounds (VOCs), or semi-VOCs were detected in the five water samples collected. TPHd was detected in three of the six water samples at concentrations ranging from 88 ppb to 140 ppb, but all three were below the RBSL for TPHd (640 ppb).

R.T. Hicks Consultants, 2001

In April 2001, three trenches were excavated on-site for collection of soil and ground water samples. The work was performed by R.T. Hicks to evaluate the site for proposed residential use. Two trenches (TP1 and TP3) were excavated near the western property boundary and one trench (TP2) was excavated north of the existing building. The locations were selected to evaluate depth to ground water near the western property boundary where perched (1 to 2 feet below the ground surface) water was reported in previous investigations and near the central portion of the site where deeper (7 to 8 feet below ground surface) ground water was reported. The locations also were based on areas where hydrocarbon concentrations detected in the 1995 Lush Geosciences samples appeared lower in samples collected and analyzed by Cambria in 1997. A 2-foot thick gravel layer was reported at approximately 1½ to 2 feet below the ground surface in the two trenches near the western property boundary. The gravel was approximately 2 inches in diameter and the layer contained perched water. No gravel was observed in the trench near the center of the property. Soil samples in all three trenches were collected at depths between ½ foot and 12 feet. No TPHg, TPHd, or TPHmo were detected at concentrations exceeding RBSLs in the three trenches other than 850 ppm to 2800 ppm TPHd at 5 to 9 feet below the ground surface in the TP1, located near the central portion of the western property boundary. TPHg ranging from 2 to 26 ppm was detected in two of six samples, TPHd ranging from 5 to 2,800 ppm was detected in four of six samples, and TPHmo ranging from 92 to 430 ppm was detected in five of six soil samples from TP1. TPHg ranging from 1.1 to 4.6 ppm was detected in two of six samples, TPHd ranging from 8 to 96 ppm was detected in two of six samples, and TPHmo ranging from 12 to 460 ppm was detected in six of six samples from the trench in the northwest corner of the site (TP3). Three of seven soil samples collected from TP2, located north of the existing building, contained up to 1.1 to 2 ppm TPHg and two of seven samples contained 12 ppm TPHmo. No benzene was detected in the soil from any of the three trenches. Perched water samples were collected from water infiltrating into the trenches. Analysis of one of the ponded water samples collected from near the western property boundary detected 1,800 ppb TPHg, 410,000 ppb TPHd, and 81,000 ppb TPHmo. Ponded water samples collected from the other two trenches contained 57 to 59 ppb TPHg, 230 to 2,500 ppb TPHd, and 700 to 70,000 ppb TPHmo.

2.2 May 2002 Soil and Ground Water Quality Evaluation

2.2.1 Shallow Soil Sampling

On March 6, 2002, and under the supervision of Project Geologist Mark Arniola, R.G., Staff Environmental Engineer Veronica Tiglao directed a subsurface exploration program and logged 13exploratory borings (SS-1 through SS-13) to approximate depths of 4 to 8 feet. Borings SS-1 through SS-9 were drilled on selected locations at 1350 Powell Street (1350 Powell Street is an adjacent property that is being separately considered for purchase by Pulte) and SS-10 through SS-13 were drilled at selected locations at 1300 Powell Street to evaluate shallow soil quality, depth of fill material, and quality of underlying soil, including areas near

present or former railroad tracks and former ASTs. Because borings SS-1 through SS-9 were located off-site, the results are not presented in this Work Plan.

2.2.1.1 Soil Sample Collection and Analyses

Four soil samples collected from the fill (where encountered) and four samples collected from the upper approximately ½ foot of underlying native soil (8 samples total) were analyzed for TPHg, TPHd, and TPHmo (EPA Test Method 8015M); BTEX and MTBE (EPA Test Method 8020); polyaromatic hydrocarbons (PAHs) (EPA Test Method 8310); and polychlorinated biphenyls (PCBs) (EPA Test Method 8082). In addition, two soil samples collected from the fill (where encountered) and three from the upper approximately ½ foot of underlying native soil (five samples total) were analyzed for organochlorine pesticides (EPA Test Method 8018A), arsenic, lead, cadmium, and mercury (EPA Test Method 6010B/7470); compounds and metals that can be present in soil from possible historical agricultural use. One soil sample with the highest concentrations of metals was analyzed for the remainder of the 17 California Assessment Manual (CAM 17) metals (EPA Test Method 6010B). These analyses were selected to help evaluate the quality of the shallow soil and native soil below fill. Analytical results for 1300 Powell Street are presented in Tables 1A, 1B, and 1C. Soil sampling protocol is presented in Appendix A.

Table 1A. Analytical Results of Selected Soil Samples for Petroleum Hydrocarbons – 1300 Powell Street
(concentrations in parts per million)

Sample Number	Depth (feet)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
SS-10 (fill)	0 - ½	<1.0	140	**660**	<0.005	<0.005	<0.005	<0.005	<0.005
SS-10 (native)	4 - 4 ½	<1.0	4.7	<50	<0.005	<0.005	<0.005	<0.005	<0.005
SS-11 (fill)	0 - ½	300	**520**	**710**	<6.2	<6.2	<6.2	<6.2	<6.2
SS-11 (native)	3 ½ - 4	<1.0	1.3	<50	<0.005	<0.005	<0.005	<0.005	<0.005
SS-12(fill)	0 - ½	<1.0	430	**2,200**	<0.005	<0.005	<0.005	<0.005	<0.005
SS-12 (native)	4 ½ - 5	<1.0	1.1	<50	<0.005	<0.005	<0.005	<0.005	<0.005
SS-13 (fill)	0 - ½	<1.0	14	110	<0.005	<0.005	<0.005	<0.005	<0.005
SS-13 (native)	3 ½ - 4	<1.0	2.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005
Residential RBSL*		400	500	500	0.18	8.4	24	1.0	1.0

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
Samples exceeding RBSLs are shown in bold.

Table 1B. Analytical Results of Selected Soil Samples for PAHs – 1300 Powell Street

(concentrations in parts per million)

Sample Number	Depth (feet)	Naptha-lene[1]	Acenaph-thene[1]	Fluorene[1]	Phenan-threne[1]	Anthra-cene[1]	Pyrene[1]	Chrysene[1]	PCBs
SS-10 (fill)	0 - ½	<0.015	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	ND
SS-10 (native)	4 - 4 ½	<0.015	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	ND
SS-11 (fill)	0 - ½	<0.075	<0.05	<0.025	<0.025	<0.025	<0.025	<0.025	ND
SS-11 (native)	3 ½ - 4	<0.015	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	ND
SS-12 (fill)	0 - ½	<0.015	<0.01	<0.005	0.025	<0.005	<0.005	<0.005	ND
SS-12 (native)	4 ½ - 5	<0.015	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	ND
SS-13 (fill)	0 - ½	<0.075	<0.05	<0.025	<0.025	<0.025	<0.025	<0.025	ND
SS-13 (native)	3 ½ - 4	<0.015	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	ND
Residential RBSL*		4.9	16	5.1	11	2.9	55	3.8	–

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
ND Not detected at or above laboratory reporting limits
1 Other PAHs were not detected at or above laboratory reporting limits

Table 1C. Analytical Results of Selected Soil Samples for Metals and Pesticides – 1300 Powell Street

(concentrations in parts per million)

Sample Number	Depth (feet)	Arsenic	Cadmium	Lead	Mercury	Organochlorine Pesticides
EB-4 (native)	4 - 4 ½	1.4	1.1	5.9	0.18	ND
SS-10[1] (fill)	0 - ½	3.9	2.2	59	0.084	ND
SS-10 (native)	4 - 4 ½	3.6	1.9	6.1	<0.05	ND
SS-11 (fill)	0 - ½	1.8	1.6	14	0.056	ND
SS-11 (native)	3 ½ - 4	2.4	1.3	4.7	<0.05	ND
Residential RBSL*		0.39**	1.7	200	4.7	–

ND Not detected at or above laboratory reporting limits
< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
** Average arsenic background concentration in the San Francisco Bay area per RWQCB guidance documents is 8 ppm
1 Sample also analyzed for remainder of CAM 17 metals. The additional CAM 17 metals were either not detected or within typical background concentrations

The risk-based screening levels (RBSLs) presented in Tables 1 and 2 are risk-based concentrations developed by the CRWQCB. RBSLs are for use as screening levels in determining if further evaluation is warranted, in prioritizing areas of concern, in establishing initial cleanup goals, and in estimation of potential health risks. The RBSLs additionally evaluate risks to surface water and ground water quality.

The RBSLs are chemical concentrations that correspond to fixed levels of risk (either a cancer risk of one in one million [10^{-6}] or a non-carcinogenic hazard quotient of one, whichever occurs at a lower concentration). These levels are based on common exposure pathways, but effects of exposure to multiple contaminants and other site specific conditions are not considered. Thus, they are not intended as a substitute for a site-specific health risk assessment. Chemical concentrations above the RBSLs would not automatically designate the site as a health threat or trigger a response action. Exceeding an RBSL, however, may suggest that further evaluation of potential risks is appropriate. This further evaluation may include additional sampling and/or the reassessment of the assumptions and routes of exposure that were used to develop the non-site specific RBSLs.

Generally, regulatory agencies do not require cleanup below natural background concentrations. In some cases, the predictive risk-based models generate RBSL levels that lie below typical background concentrations. If natural background concentrations are higher than the risk-based RBSLs, an adjustment of the PRG or RBSL is probably needed. An example is naturally-occurring arsenic in soils, which frequently has a higher concentration than the risk-based concentration set at a one-in-one-million cancer risk (the RBSL for residential soils is 0.39 mg/kg.).

2.2.2 Deeper Soil Sampling

On March 4 and 5, 2002, and under the supervision of Project Geologist Mark Arniola, R.G., Staff Environmental Geologist Charles Mettler directed a subsurface exploration program and logged twelve borings (EB-1 through EB-12) to approximate depths of 12 to 24 feet. EB-1 through EB-6 were drilled at selected locations on the 1300 Powell Street property to evaluate the vertical and lateral extent of impacted native soil and ground water. Two soil samples were collected from each boring based on field observations and submitted to an analytical laboratory. Ground water was encountered at approximate depths of 7½ to 22½ feet.

To evaluate soil quality, the soil samples collected from borings EB-1 through EB-6 were monitored for volatile hydrocarbons using an organic vapor meter (OVM). The OVM results, shown on the boring logs presented in Appendix B, were used to help select samples for laboratory analyses.

Soil sampling protocol is presented in Appendix A.

2.2.2.1 Soil Sample Collection and Analyses

Soil samples collected from the first native soil, or those with the highest OVM readings, were selected for submittal to a state-certified analytical laboratory.

Twelve soil samples were analyzed for TPHg, TPHd, and TPHmo (EPA Test Method 8015M); and BTEX and MTBE (EPA Test Method 8020). Four selected soil samples were additionally analyzed for VOCs (EPA Test Method 8260). These analyses were selected to help evaluate the vertical and lateral extent of impacted soil. Analytical results for 1300 Powell Street are presented in Table 2.

Table 2. Analytical Results of Selected Soil Samples for Petroleum Hydrocarbons and VOCs – 1300 Powell Street
(concentrations in parts per million)

Boring Number	Depth (feet)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	VOCs
EB-1	7 - 7 ½	<1.0	1.1	<50	<0.005	<0.005	<0.005	<0.005	<0.005	ND
EB-1	17 ½ - 18	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005	NA
EB-2	9 - 9 ½	<1.0	1.2	<50	<0.005	<0.005	<0.005	<0.005	<0.005	NA
EB-2	11 - 11 ½	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005	0.12[1]
EB-3	8 - 8 ½	11	94	<50	<0.005	<0.005	<0.005	<0.005	<0.005	ND
EB-3	15 ½ - 16	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005	NA
EB-4	6 ½ - 7	<1.0	5.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005	NA
EB-4	11 ½ - 12	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005	NA
EB-5	7 ½ - 8	2.0	62	<50	<0.005	<0.005	<0.005	<0.005	<0.005	ND
EB-5	9 ½ - 10	15	10	<50	<0.62	<0.62	<0.62	<0.62	<0.62	NA
EB-6	9 - 9 ½	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005	NA
EB-6	11 - 11 ½	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005	<0.005	NA
Residential RBSL*		400	500	500	0.18	8.4	24	1.0	1.0	--

1 VOC detected was Acetone. Residential RBSl is 0.21 ppm
< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
NA Not Analyzed
ND Not detected at or above laboratory reporting limits

2.2.3 Exploratory Test Pits

On March 8, 2002, and under the supervision of Project Geologist Mark Arniola, R.G., Staff Environmental Geologist Charles Mettler directed exploratory excavation at two selected areas on-site (four test pits total) using a backhoe. The test pits (TP-3A, TP-3B, TP-4A, and TP-4B on Figure 2) were excavated to evaluate the extent of

a shallow gravel layer reported near the property boundary between 1300 and 1350 Powell Street. A previous investigation reported petroleum hydrocarbon impacted ground water in the gravel layer (R.T. Hicks, 2001). Test pit locations were selected based on field observations and historical data review. The gravel layer was encountered in test pits TP-3A, TP-4A, and the eastern portion of test pit TP-3B on the 1300 Powell Street property. Perched ground water was encountered in the gravel layer in test pits TP-3A, TP-3B, TP-4A, and TP-4B.

In addition to the gravel layer, a layer of debris (concrete, brick, asphalt, wood, glass, and metal) was encountered in test-pits TP-3A, TP-3B, TP-4A, and TP-4B (Figure 2). Perched ground water also was encountered in the debris layer in test pits TP-3A and TP-4A. At the completion of excavation and sampling activities, the test pits were loosely backfilled with the excavated soil.

2.2.3.1 Soil Sample Collection and Analyses

Three soil samples collected from the test pits were analyzed at a state-certified laboratory for TPHg, TPHd, and TPHmo (EPA Test Method 8015M); BTEX and MTBE (EPA Test Method 8020). In addition, one soil sample from the debris layer was analyzed for PAHs (EPA Test Method 8310); PCBs (EPA Test Method 8082); CAM 17 Metals (EPA Test Method 6010B); and asbestos. These analyses were selected to evaluate the soil quality in the shallow gravel and debris fill. Soil sampling protocol is presented in Appendix A. Logs of the test pits are presented in Appendix B. Analytical results are presented in Tables 3A and 3B.

Table 3A. Analytical Results of Selected Soil Samples from Test Pits – Petroleum Hydrocarbons
(concentrations in parts per million)

Sample Number	Depth (feet)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
TP-3B (gravel layer)	1½	<1.0	**890**	**2,200**	<0.005	<0.005	<0.005	<0.005	<0.005
TP-4A (gravel layer)	2	<1.0	230	**900**	<0.005	<0.005	<0.005	<0.005	<0.005
TP-4B (debris layer)	2	NA	3.6	<50	NA	NA	NA	NA	NA
Residential RBSL*		400	500	500	0.18	8.4	24	1.0	1.0

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
NA Not analyzed

Table 3B. Analytical Results of Selected Soil Samples
Test Pits – Metals, PCBs, PAHs
(concentrations in parts per million)

Sample Number	Depth (feet)	PAHs	PCBs	Arsenic[2]	Cadmium[2]	Lead[2]	Mercury[2]	Asbestos
TP-4B (debris layer)	2	ND	ND	9.4	3.0	15	0.083	ND
Residential RBSL*		---	--	0.39**	1.7	200	4.7	NE

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
** Average arsenic background concentration in the San Francisco Bay area per RWQCB guidance documents is 8 ppm
1 PAHs detected were 0.25 ppm napthalene and 0.88 ppm phenanthrene. The RBSL for napthalene is 4.0 ppm and the RBSL for phenanthrene is 11 ppm.
2 Other CAM 17 metals were not detected above laboratory reporting limits or within typical background concentrations
ND Not detected at or above laboratory reporting limits
NE Not established

2.2.4 Ground Water Sample Collection and Analyses

To evaluate ground water quality at the site, ground water grab samples were collected from borings EB-1 through EB-6. A discussion of sampling protocol is included in Appendix A.

The six ground water samples were analyzed for TPHg, TPHd, and TPHmo (EPA Test Method 8015M); BTEX and MTBE (EPA Test Method 8020); and VOCs (EPA Test Method 8260). Analytical results are presented in Tables 4A and 4B.

Table 4A. Analytical Results of Selected Ground Water Samples for Petroleum Hydrocarbons – 1300 Powell Street

(concentrations in parts per billion)

Boring Number	Date	Depth (feet)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
EB-1	03/04/02	22½	<50	92	<610	<0.5	<0.5	<0.5	<1.0	<5.0
EB-2	03/04/02	9	<50	<74	<740	<0.5	<0.5	<0.5	<1.0	11
EB-3	03/04/02	16	590	2,800	<1,000	<0.5	<0.5	<0.5	<1.0	7.3
EB-4	03/04/02	8	<50	4,600	31,000	<0.5	<0.5	<0.5	<1.0	<5.0
EB-5	03/04/02	7½	4,900	800,000	<45,0000	<2.0	<2.0	<2.0	<4.0	<20
EB-6	03/04/02	9	<50	150	<810	<0.5	<0.5	<0.5	<1.0	<5.0
MCL*			NE	NE	NE	1.0	150	700	1,750	13
RBSL **			500	640	640	46	130	290	13	1,800

< Indicates that the compound was not detected at or above the 0stated laboratory reporting limit
* Drinking water Maximum Contaminant Levels–California DHS, January 31, 2001
** Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
NE Not established

Table 4B. Analytical Results of Selected Ground Water Samples for VOCs – 1300 Powell Street

(concentrations in parts per billion)

Boring Number	Date	Depth (feet)	n utylbenzene[1]	Sec-Butylbenzene[1]	Iso-Propylbenzene[1]	Napthalene[1]	n-Propylbenzene[1]
EB-1	03/04/02	22½	<1.0	<1.0	<0.5	<1.0	<1.0
EB-2	03/04/02	9	<1.0	<1.0	<0.5	<1.0	<1.0
EB-3	03/04/02	16	<1.0	<1.0	<0.5	<1.0	<1.0
EB-4	03/04/02	8	<1.0	<1.0	<0.5	<1.0	<1.0
EB-5	03/04/02	7½	5.9	18	6.0	6.5	<1.0
EB-6	03/04/02	9	<1.0	<1.0	<0.5	<1.0	<1.0
MCL*			NE	NE	NE	NE	NE
RBSL **			NE	NE	NE	24	NE

1 Other VOCs were not detected at or above the stated laboratory reporting limit
< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Drinking water Maximum Contaminant Levels–California DHS, January 31, 2001
** Risk Based Screening Level (RBSL), CRWQCB, December 2001, Table B
NE Not established

2.2.5 Silica Gel Filter

The ground water samples were passed through a silica gel column prior to the TPHd analysis (EPA Test method 8015) to help remove non-fuel hydrocarbons. The silica gel removes oxygenated organic compounds produced by biologic degradation of organic materials. Studies have shown that the silica gel filter does not significantly remove extractable range petroleum hydrocarbons, including diesel, because the petroleum hydrocarbons are composed of non-polar substances (Zemo 1997). Performing the silica gel filtration prior to analysis is important where the samples are collected from organic rich environments common to the shallow ground water-bearing zones in the San Francisco Bay Area; these environments contain significant concentrations of naturally occurring hydrocarbons that can be detected in the EPA 8015 analysis and falsely quantified by the laboratory as diesel.

2.2.6 Conclusions

2.2.6.1 Soil Quality

No BTEX, MTBE, PCBs, organochlorine pesticides, or asbestos were detected in the soil samples analyzed in this or previous soil quality evaluations. No VOCs, semi-VOCs, or PAHs above RBSLs were detected in the fill or native soil. Metals were either not detected or below RBSLs. Laboratory analysis of soil samples collected from this evaluation and previous investigations detected levels of TPHg, TPHd, or TPHmo above RBSLs in eight of 79 samples analyzed. The concentrations exceeding RBSLs were detected in the shallow (less than approximately 4 feet in depth) fill at SS-10, SS-11, SS-12, B4, CB-12, TP-3B, and TP-4A. Two shallow (less than approximately 4 feet in depth) hydrocarbon-impacted areas were encountered north/northwest of the existing building are in areas where former ASTs were located. A shallow hydrocarbon-impacted area encountered at the southwest portion of the site near the southern property boundary may be from localized surface spills.

Hydrocarbon concentrations detected in the deeper (greater than approximately 4 feet in depth) samples were generally less than RBSLs with the exception of 850 to 2,800 ppm TPHd detected in native soil samples collected from 5 to 9 feet below the ground surface at TP1. This was a location where worn and warped asphalt was reported in 1995. Based on samples collected from below the contaminated zone, the vertical extent of the impacted soil appears limited.

Based on the June 21, 2002, letter from the ACHCSA, if total hydrocarbon concentrations in the upper 10 feet of soil at the site are below 1,000 ppm, the site will be approved for residential development. The selected remedial alternative is described in Sections 5 and 6. In addition, the regulatory agencies may require import of clean soil into the upper two feet of all landscaped areas and vapor barriers beneath any future residential structures. Based on the future remediation results and site evaluation, the regulatory agencies may also require filing of a deed notification/restriction.

Lab analysis of one sample of the debris observed in fill on portions of 1300 Powell Street did not detect TPHd, TPHmo, PAHs, PCBs; and CAM 17 metals were not detected above background levels. In addition, no CAM 17 metals above typical background concentrations; or TPHg, TPHd, TPHmo, BTEX, MTBE, VOCs, organochlorine pesticides, or PCBs above RBSLs were detected in 17 of 17 samples of the underlying native soil.

2.3.6.2 General Ground Water Quality

During the 2002 investigation, ground water grab samples were collected from six borings (EB-1 through EB-6) advanced at selected locations across the 1300 Powell Street property. The samples were collected to better define the extent of ground water contamination detected in previous investigations on the property. No VOCs or BTEX compounds were detected in the six ground water samples analyzed in this investigation or in six samples analyzed in a previous investigation (PES, 2000). Low levels (below the RBSL and drinking water standards) of MTBE were detected in two of six ground water grab samples collected from the property, including EB-2 (11 ppb) and EB-3 (7.3 ppb) in the northeast (up-gradient) portion of the site. The MTBE appeared to be from an off-site source. No MTBE was detected in six previous samples analyzed (PES, 2000). Laboratory analysis of ground water grab samples also detected TPHg above the RBSL (500 ppb) in two of 15 samples, TPHd above the RBSL (640 ppb) in nine of 19 samples, and TPHmo above the RBSL (640 ppb) in seven of 12 samples. Ground water contamination above RBSLs appears limited to the central and northern portion of the western property boundary and an area north of the existing building. The highest hydrocarbon concentrations were detected in boring EB-5 located near the central portion of the western property boundary. Hydrocarbon contamination in the areas near the western property boundary was detected in both the ground water (at depths of approx-imately 7 to 8 feet) and perched water in a gravel layer (at approximately 1 to 2 feet).

Based on the June 21, 2002, letter from the ACHCSA, if total hydrocarbon concentrations in the ground water are in the 10,000 to 20,000 ppb range or less, the site will be approved for residential development. The selected remedial alternative for ground water to achieve the cleanup goal is discussed in Sections 5 and 7.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 Subsurface Materials

Boring logs and test pit logs are presented in Appendix A. In general, the exploratory borings encountered undocumented fills to depths ranging from approximately 3 to 9 feet below existing grade. The fills varied from stiff silty clays to loose to medium dense clayey gravels with varying amounts of sand. In Lowney Associates' borings and test pits, debris including brick fragments, concrete, and wood were observed mixed with the fill.

Below the fill, a layer of stiff silty clay was encountered to depths of approximately 4 to 9 feet. Gravelly clay layers were encountered within the silty clay at depths from 5 to 12 feet. Thin layers of silty sand were encountered from a depth of 13 feet to the full depth explored for exploratory probes (24 feet).

3.2 Hydrogeology

During this investigation, perched ground water initially was encountered in the gravelly fill stratum at depths of approximately 1 to 2 feet. Ground water was encountered below the perched layer in exploratory borings during this and previous investigations were at depths of approximately 7½ to 22½ feet. The ground water appears to be under unconfined conditions and is generally separated from the perched water by silty clay.

4.0 CHEMICALS OF CONCERN AND CLEANUP GOALS

4.1 Selection of Chemicals of Concern

The primary chemicals of concern (COCs) at the Site are total petroleum hydrocarbons. During the most recent subsurface investigation, TPHd and TPHmo were detected in soil exceeding the residential RBSLs. In ground water, TPHd and TPHmo were detected above residential RBSLs. Therefore, TPHd and TPHmo are included as COCs for soil and ground water. The analytical laboratory also reported TPHg concentrations in several samples collected from the Site. However, because no BTEX was detected at the Site, and because TPHg was detected only in locations where higher TPHd or TPHmo concentrations were detected, Cambria's analytical laboratory (Legend Analytical Services) reported that the TPHg concentrations detected were not likely indicative of the presence of TPHg in the soil and ground water. Instead, the TPHg results appeared to be the result of quantification of the lighter range of petroleum hydrocarbons present in TPHd or TPHmo. In addition, in May 1997, Cambria requested analysis of a soil sample collected from the Site to Global Geochemistry Corporation of Canoga Park, California (Global Geochem) for hydrocarbon fingerprinting. Global Geochem concluded that hydrocarbon contamination in the sample primarily consisted of degraded diesel fuel.

Metals concentrations detected in on-Site fill and native soil during the most recent subsurface investigation appeared to be consistent with typical background concentrations and/or below RBSLs for a residential Site. Therefore, the 17 California Assessment Manual (CAM) metals were eliminated as COCs.

No PCBs, PAHs, or organochlorine pesticides were detected in the soil samples analyzed. Therefore, PAHs, PCBs, and pesticides were eliminated as COCs

Laboratory analyses of soil and ground water samples collected during the most recent subsurface investigation did not detect halogenated volatile organic compounds (VOCs) exceeding RBSLs or drinking water standards. Therefore, halogenated VOCs were eliminated as COCs.

4.2 Cleanup Goals

The ACHCSA closure letter specified that a change in land use from the current commercial/light industrial scenario to a more conservative scenario (such as residential or day-care facility) would require a risk assessment. No site-specific risk assessment has been performed. However, the cleanup goals presented below were based on our conversations with CRWQCB staff. The ACHCSA confirmed the proposed cleanup goals in their June 21, 2002, letter to Richard Becker.

Ground water beneath the Site will not be used as a drinking water source. Therefore, the drinking water RBSLs are overly conservative for this Site.

In March 21, 2002, the CRWQCB adopted soil and ground water cleanup goals for petroleum hydrocarbon compounds for 1300 Powell Street. The ACHCSA concurred with the cleanup goals in their letter dated June 21, 2002. Based on the goals approved by the CRWCB and ACHCSA, if total hydrocarbon concentrations in the upper 10 feet of soil at the site are below 1,000 ppm and total hydrocarbon concentrations in the ground water are less than 20,000 ppb, the site will be approved for residential development

The COCs and corresponding target cleanup goals are summarized in Table 5. The target cleanup goals are the CRWQCB's approved cleanup goals for the Site.

Table 5. Chemicals of Concern and Target Cleanup Goals

Compound	Soil Cleanup Goal (ppm)	Ground Water Cleanup Goal (ppb)
TPHd	1,000*	20,000*
TPHmo	1,000*	20,000*

* Total TPH target cleanup goal approved for 1300 Powell Street

5.0 SELECTED REMEDIAL ACTIONS

Based on analytical data, subsurface materials, and cost effectiveness, the selected remedial actions for the Site are summarized below. The remedial actions are described further in Sections 6 and 7.

- Based on the laboratory analytical data diesel and motor oil range hydrocarbons appear to be the primary hydrocarbons in soil. Excavation has been selected as the remedial approach for the hydrocarbon-impacted soil.

- Dewatering of shallow ground water will be performed to control migration of impacted ground water and to help reduce concentrations of petroleum hydrocarbons in ground water.

6.0 PLAN FOR IMPLEMENTING THE RECOMMENDED SOIL ALTERNATIVE

The following is the implementation plan for excavation and off-Site disposal of impacted-soil hotspots at the Site.

6.1 Health and Safety Plan for Remedial Action

A health and safety plan for the remedial action at the Site will be prepared prior to implementing the selected alternative.

6.2 Excavation of Hydrocarbon Impacted Soil

As shown on Figure 4, total hydrocarbons exceeding Site cleanup goals were detected in soil samples collected from four areas. Soil at the north central locations will be excavated to a depth of approximately 2 feet in the area of TP-3B and approximately 3 feet in the area of SS-11. At the southwest location (around SS-12), an area of approximately 25 feet by 25 feet will be excavated to a depth of approximately 2 feet Soil at the west central location will be excavated to a depth of approximately 10 feet in the area of TP1 and to a depth of approximately 2 feet in the area of TP-4A. One soil sample from each sidewall and one from the excavation base will be collected using hand-sampling equipment. The soil samples will be analyzed for TPHd and TPHmo (EPA Test Method 8015). If the analytical results of in-place verification samples show contamination below the site cleanup goal (1,000 ppm total hydrocarbons), then the soil will be left in-place. If the verification samples exceed the cleanup goal, additional suspect (stained, shiny, petroleum odor, free product) soil will be excavated. To evaluate soil quality, the soil samples will be monitored for volatile hydrocarbons using an organic vapor meter (OVM). If additional soil is excavated, one soil sample will be collected for each approximately 2,500 square feet of excavation base or 25 feet of excavation sidewall in the suspect area. Additional verification samples will be analyzed for TPHd and TPHmo.

If the excavated soil requires stockpiling, visqueen would be placed above and beneath the temporary stockpiles. If soil stockpiling and profiling is not required by disposal facilities, the soil may be loaded directly into trucks from the excavations and off-hauled. The soil will be transported by appropriately licensed contractors to appropriate disposal facilities in accordance with all applicable laws.

If the requires analysis for off-site disposal, composite soil samples will be collected and analyzed per the requirements of the landfill site selected by Pulte Home Corporation. If the soil is planned for reuse on-Site, the soil will be sampled for the chemicals of concern in accordance with CRWQCB guidance documents.

6.3 Additional Corrective Action for Soil Exceeding Cleanup Goals

If laboratory results from the verification sampling exceed the Site's target remedial goals, we will discuss the results with the ACEHS and CRWQCB staff to evaluate the need for further work, such as over-excavation at the location of the soil sample(s) exceeding the cleanup goals.

6.4 Soil Management Plan

Currently the on-Site buildings are planned for demolition in September 2002. Prior to building demolition, a soil management plan (SMP) will be prepared and submitted to the Alameda County Environmental Health Services and CRWQCB. The SMP will present guidelines for managing suspect soil, structures, or debris if encountered during building demolition or construction activities.

7.0 PLAN FOR IMPLEMENTING THE RECOMMENDED GROUND WATER ALTERNATIVE

The following is the implementation plan for dewatering of ground water at the Site.

7.1 Health and Safety Plan for Remedial Action

A health and safety plan for the remedial action at the Site will be prepared prior to implementing the selected alternative.

7.2 Permits

Discharge into the storm sewer or sanitary sewer would be performed under an approved permit from the CRWQCB or East Bay Municipal Utility District, respectively. If water is to be discharged into the sanitary sewer system, approval will also be requested from the City of Emeryville Public Works Department. If required, water will be treated prior to discharge.

7.3 Excavation Dewatering

If ground water ponds in the excavations, the water will be pumped into on-site portable storage tanks. The water in the tanks will be sampled and analyzed for discharge into the storm sewer or sanitary sewer. If contamination in the water exceeds approved discharge limits, the water will be treated prior to discharge or disposed off-site.

7.4 Ponded Water Sampling

After the excavations have been dewatered, the excavations will be left open for additional water to collect. Verification samples will be collected from the ponded water to evaluate if the water remaining at the target areas is below Site cleanup goals. The collected samples would be analyzed at a state certified laboratory for TPHd and TPHmo (EPA Test Method 8015M).

8.0 REPORT

We will prepare a corrective action completion report presenting the results of the remedial activities. The report will include a site plan showing sampling locations and copies of permits and laboratory data sheets.

9.0 LIMITATIONS

This report was prepared for the sole use of Pulte Home Corporation, Alameda County Health Care Agency, and California Regional Water Quality Control Board in evaluating remedial alternatives. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location. The chemical and other data presented in this report can change over time and are applicable only to the time this study was performed. We are not responsible for the data presented by others.

In providing opinions of estimated remediation cost, Pulte Home Corporation understands that Lowney Associates has no control over the cost or availability of labor, equipment or materials, or over market conditions, or the Contractor's method of pricing, and that Lowney Associates' opinions of estimated remediation cost are made on the basis of our professional judgment and experience. Lowney Associates makes no warranty, expressed or implied, that the bids, the negotiated cost of work, or the actual cost of work will not vary from Lowney Associates' opinion of estimated remediation cost.

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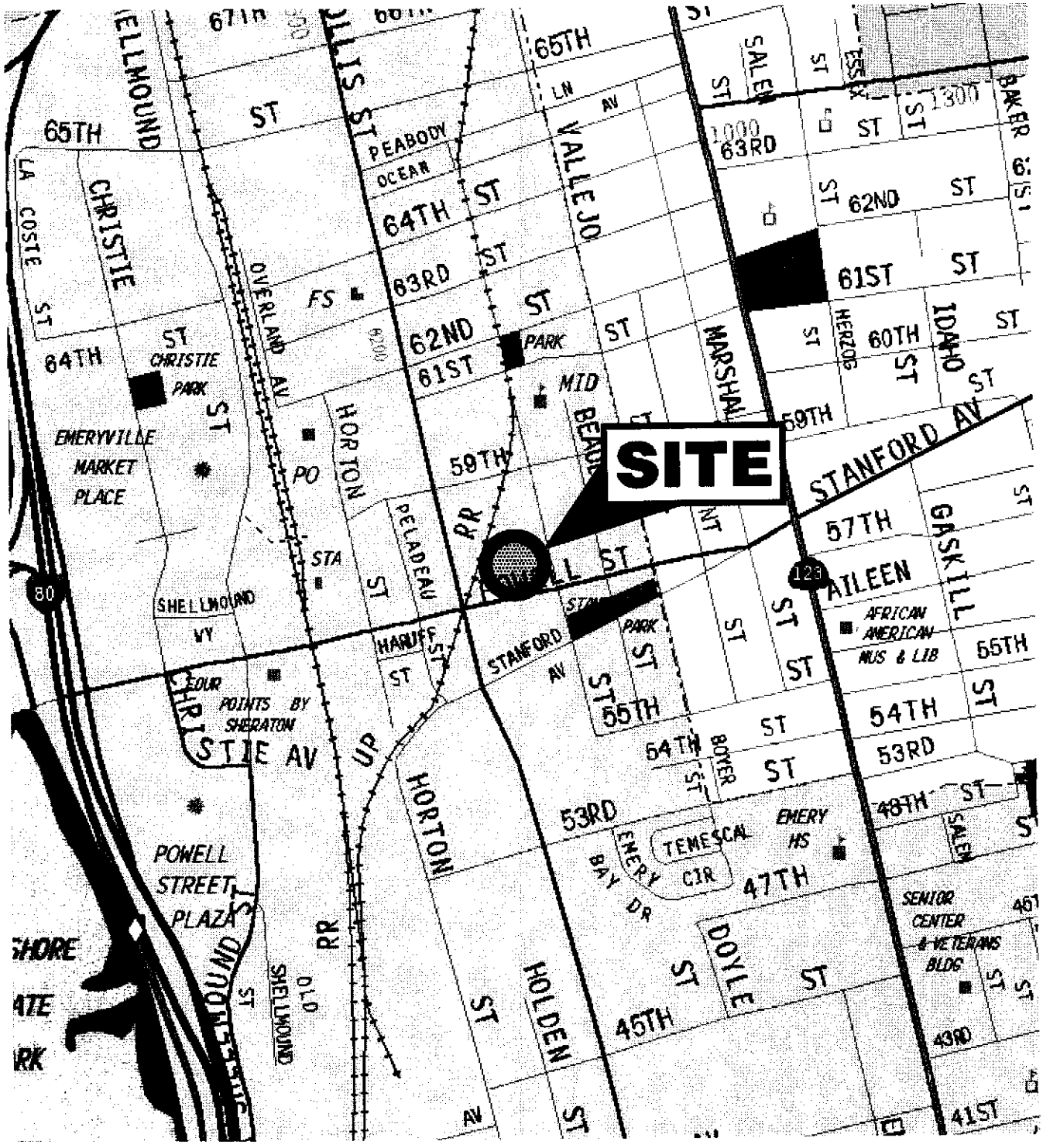


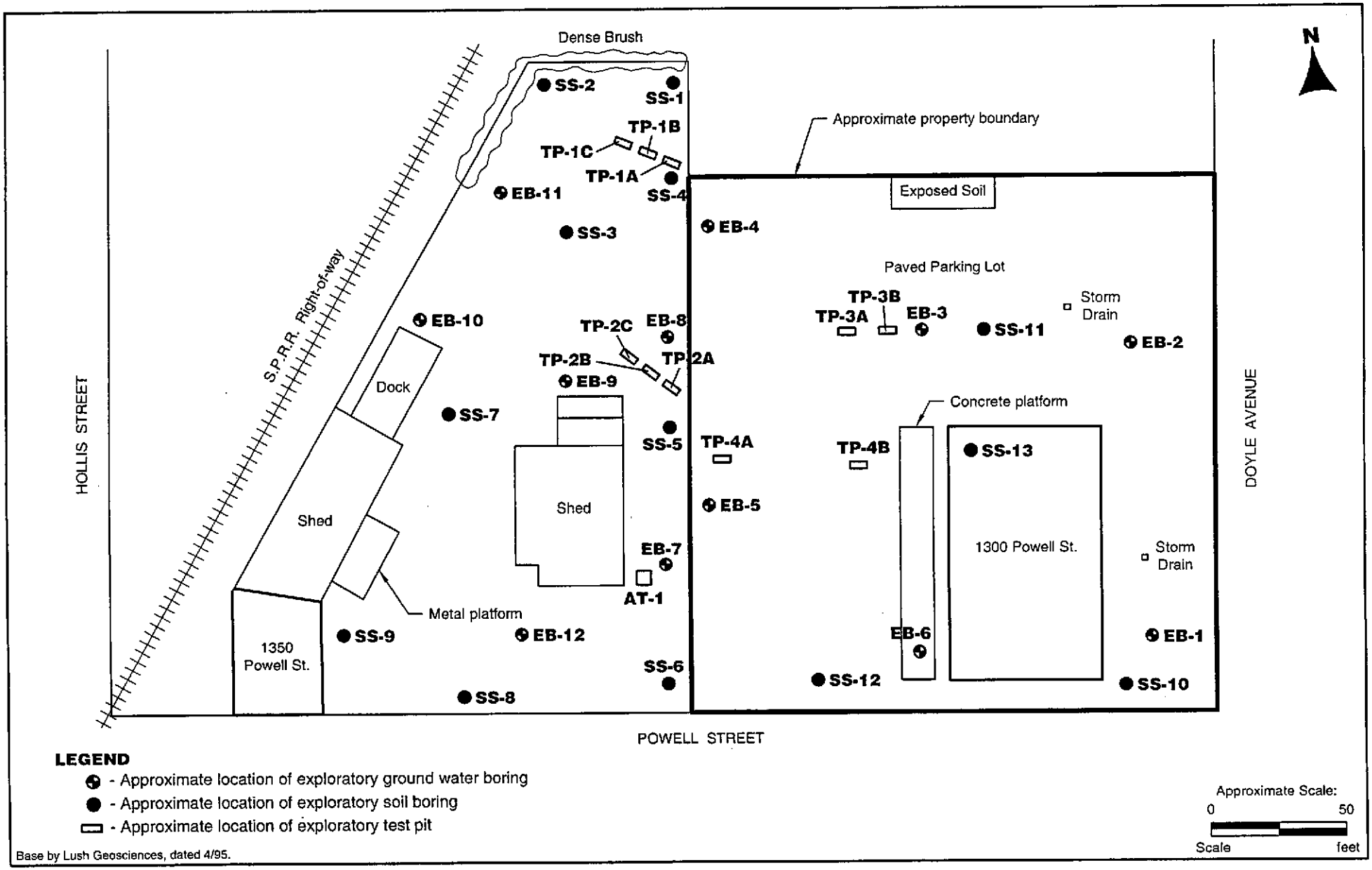
3/02'EB

VICINITY MAP

1300 AND 1350 POWELL STREET
Emeryville, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 1
1424-9B



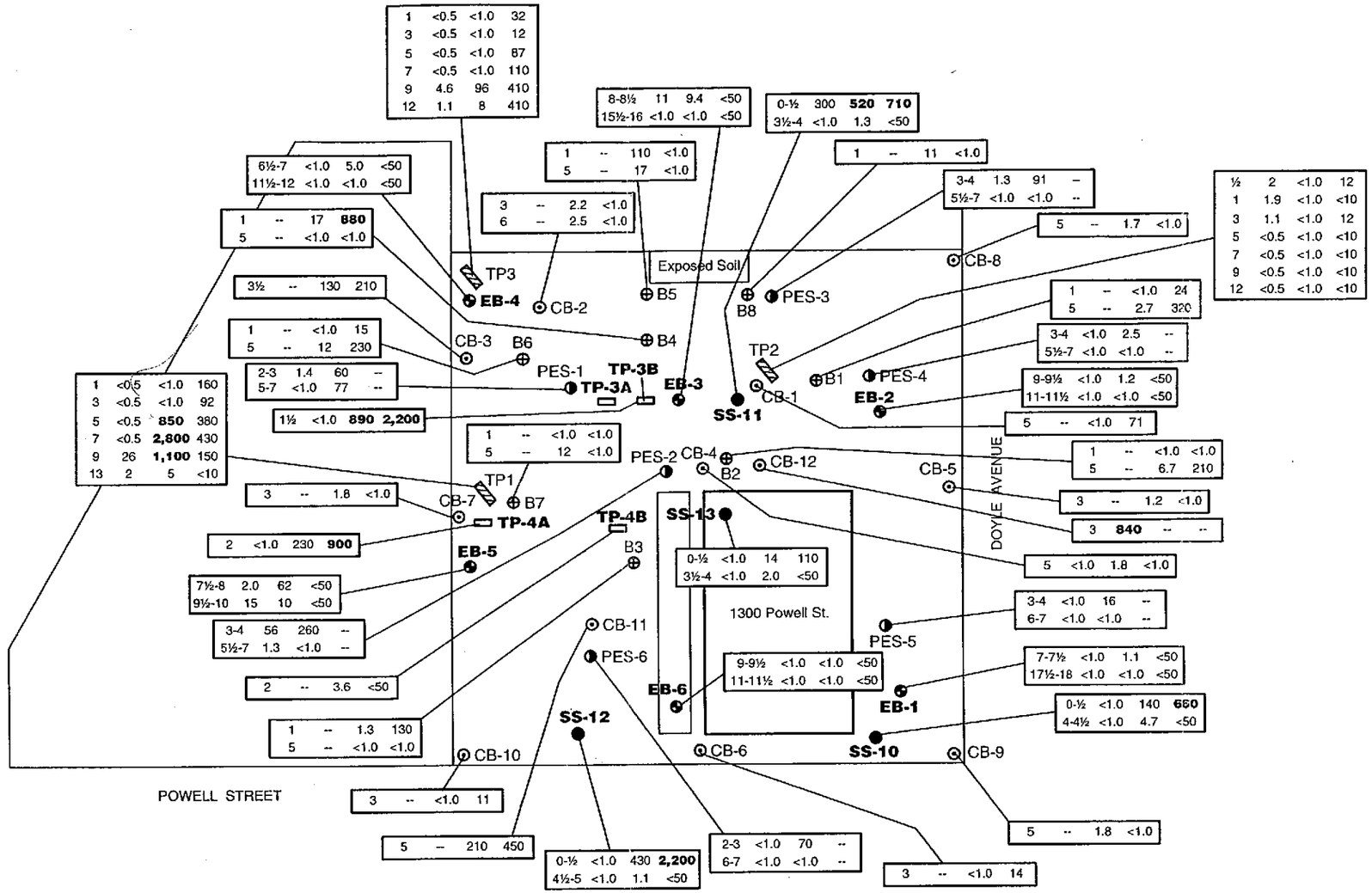
6/02*EB

SITE PLAN

1300 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 2
1424-9B



LEGEND

- ◓ - Approximate location of exploratory boring (Lowney Associates, 2002)
- ● - Approximate location of exploratory soil boring (Lowney Associates, 2002)
- ▭ - Approximate location of exploratory test pit (Lowney Associates, 2002)
- ▨ - Approximate location of exploratory test pit (R.T. Hicks, 2001)
- ◑ - Approximate location of exploratory boring (PES, 2000)
- ⊙ - Approximate location of exploratory boring (Cambria, 1997)
- ⊕ - Approximate location of exploratory boring (Lush Geosciences, 1995)
- < - Indicates that the compound was not detected at or above the stated laboratory limit
- -- - Not Analyzed

Concentrations in parts per million (ppm)

Concentrations exceeding CRWQCB RBSLs are shown in bold

Depth(ft)	TPHg	TPHd	TPHmo
--	--	--	--

Approximate Scale:
0 50
Scale feet

Base by Lush Geosciences, dated 4/95.

TPHg, TPHd, AND TPHmo IN SOIL

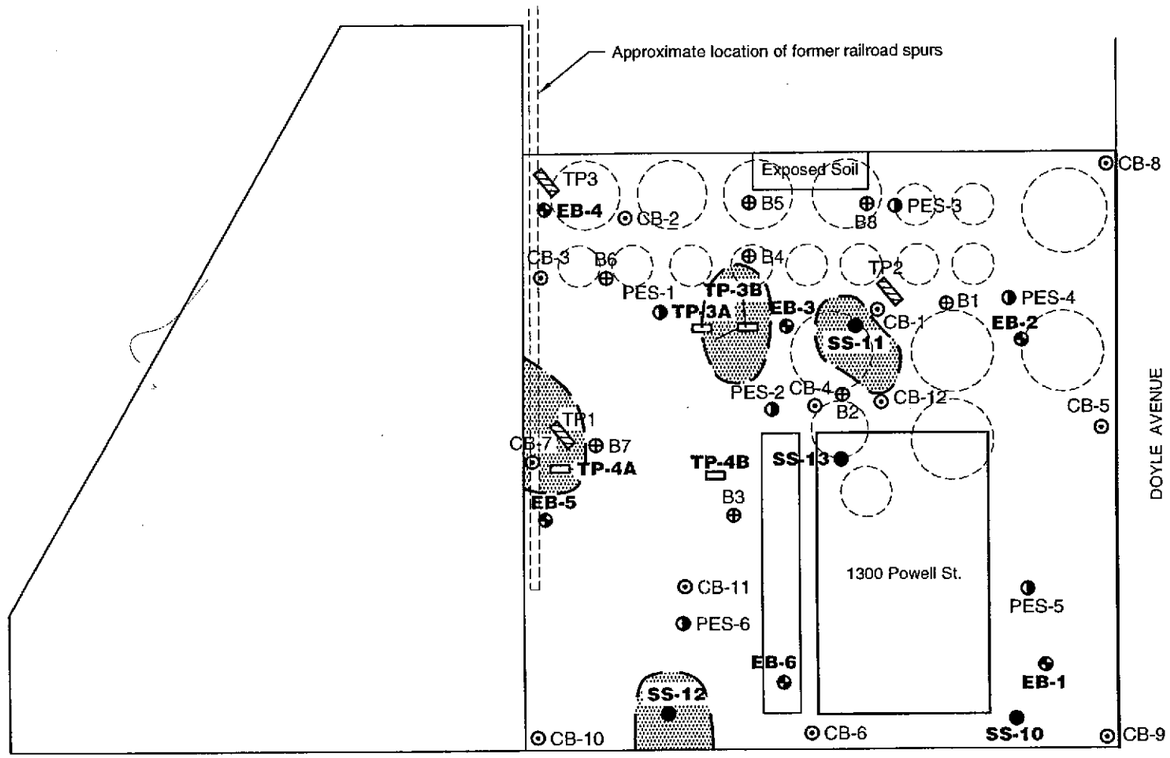
1300 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 3

1424-9B

5/02*EB



LEGEND

- Approximate area of soil >1,000 ppm total TPH (TPHg + TPHd + TPHmo)
- Approximate location of exploratory boring (Lowney Associates, 2002)
- Approximate location of exploratory soil boring (Lowney Associates, 2002)
- Approximate location of exploratory test pit (Lowney Associates, 2002)
- Approximate location of exploratory test pit (R.T. Hicks, 2001)
- Approximate location of exploratory boring (PES, 2000)
- Approximate location of exploratory boring (Cambria, 1997)
- Approximate location of exploratory boring (Lush Geosciences, 1995)
- Approximate location of former ASTs

Approximate Scale:
0 50
Scale feet

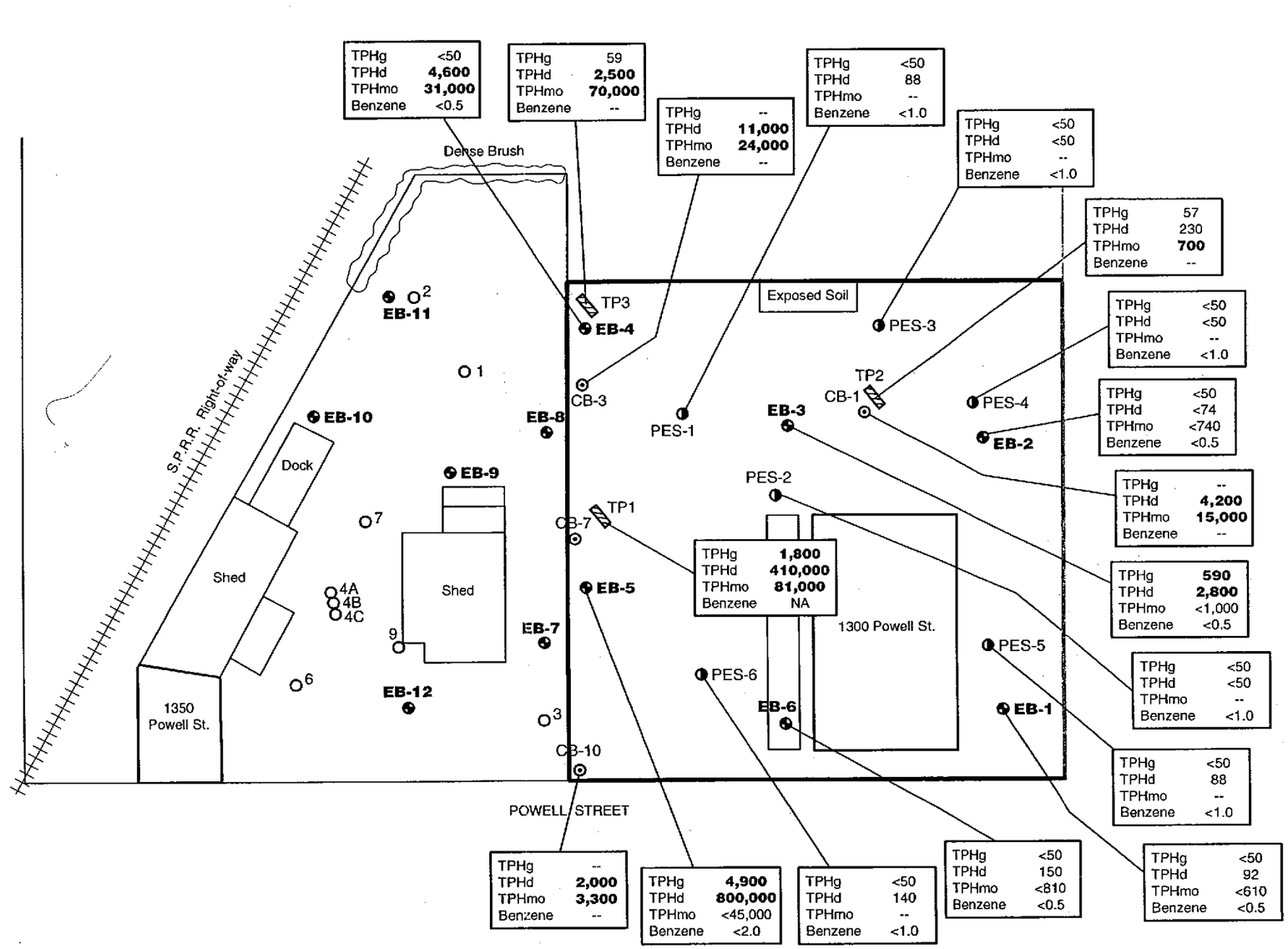
Base by Lush Geosciences, dated 4/95.

TOTAL TPH >1,000 ppm IN SOIL
1300 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 4
1424-9B

5/02*EB



LEGEND

- ◕ - Approximate location of exploratory boring (Lowney Associates, 2002)
- ○ - Approximate location of exploratory boring (R.T. Hicks, 2001)
- ▭ - Approximate location of exploratory test pit (R.T. Hicks, 2001)
- ◑ - Approximate location of exploratory boring (PES, 2000)
- ⊙ - Approximate location of exploratory boring (Cambria, 1997)
- -- - Not Analyzed

ND - Not detected at or above laboratory reporting limit

Concentrations in parts per billion (ppb)

Concentrations exceeding CRWQCB RBSLs are shown in bold

[1] Free product observed on ground water

[2] Fuel sheen observed on ground water

Approximate Scale:
0 50
Scale feet

Base by Lush Geosciences, dated 4/95.

TPHg, TPHd, TPHmo, AND BENZENE IN GROUND WATER

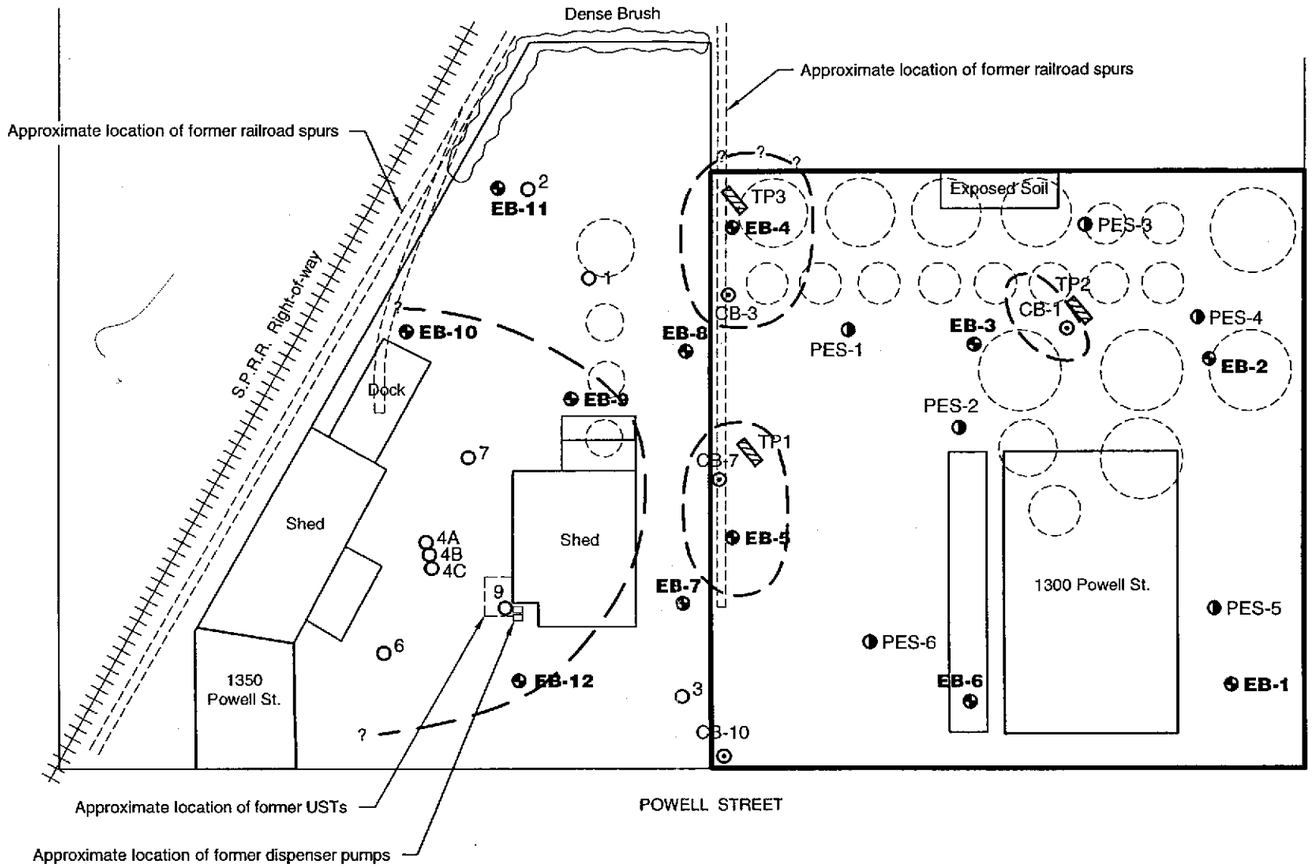
1300 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 5

1424-9B

6/02*EB



LEGEND

- Approximate area of ground water >10,000 ppb total TPH (TPHg + TPHd + TPHmo)
- Approximate location of exploratory boring (Lowney Associates, 2002)
- Approximate location of exploratory boring (R.T. Hicks, 2001)
- Approximate location of exploratory test pit (R.T. Hicks, 2001)
- Approximate location of exploratory boring (PES, 2000)
- Approximate location of exploratory boring (Cambria, 1997)
- Approximate location of former ASTs

Approximate Scale:
0 50
Scale feet

Base by Lush Geosciences, dated 4/95.

TOTAL TPH >10,000 ppb IN GROUND WATER

1300 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 6

1424-9B

6/02*EB

APPENDIX A

SUBSURFACE INVESTIGATION, AND SOIL SAMPLING AND GROUND WATER SAMPLING PROTOCOL

The subsurface investigation was performed on March 4, 5, and 6, 2002, using a limited access hydraulic coring rig. Twenty-five soil borings were drilled to depths of approximately 4 to 24 feet. Soils encountered in the borings were logged using the Unified Soil Classification System (ASTM D-2487). The logs of the borings, as well as a key to the classification of soil (Figure A-1), are included as part of Appendix B.

Soil samples for laboratory analysis were collected in acetate or brass liners, the ends covered in aluminum foil, taped, then labeled with a unique identification number, placed in an ice-chilled cooler, and transported to a state-certified analytical laboratory with chain of custody documentation. Soil vapors from each sample also were monitored with an OVM by first placing the soil in a Ziplock™ bag for several minutes. The OVM probe was then used to pierce the bag and record the organic vapor levels present.

Borings EB-1 through EB-12 were converted into "temporary" wells with the installation of 1-inch I.D. flush-threaded, Schedule 40 PVC casing. The casing in the lower portion of the well had 0.02-inch factory machined slots. Ground water grab samples were collected from the temporary wells with a Teflon bailer. Samples were collected in appropriate sampled bottles, labeled, and immediately placed into an ice-chilled chest for delivery to a state-certified analytical laboratory for analysis.

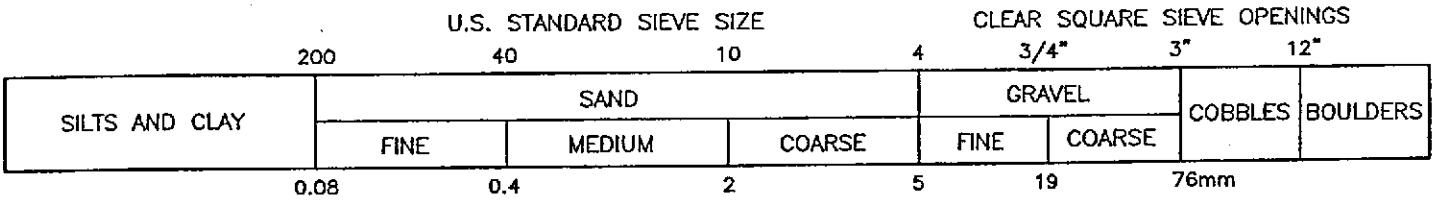
All drilling and sampling equipment was cleaned in a solution of laboratory grade detergent and distilled water or steam-cleaned before use at each sampling point.

APPENDIX B

BORING LOGS AND TEST PIT LOGS

PRIMARY DIVISIONS			SOIL TYPE		SECONDARY DIVISIONS
COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS (MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE)	CLEAN GRAVELS (Less than 5% Fines)	GW		Well graded gravels, gravel–sand mixtures, little or no fines
			GP		Poorly graded gravels or gravel–sand mixtures, little or no fines
		GRAVEL WITH FINES	GM		Silty gravels, gravel–sand–silt mixtures, plastic fines
			GC		Clayey gravels, gravel–sand–clay mixtures, plastic fines
	SANDS (MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE)	CLEAN SANDS (Less than 5% Fines)	SW		Well graded sands, gravelly sands, little or no fines
			SP		Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM		Silty sands, sand–silt–mixtures, non–plastic fines
			SC		Clayey sands, sand–clay mixtures, plastic fines
FINE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT IS LESS THAN 50 %)		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS (LIQUID LIMIT IS GREATER THAN 50 %)		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

DEFINITION OF TERMS



GRAIN SIZES

SAMPLERS

SAND AND GRAVEL	BLOWS/FOOT*
VERY LOOSE	0–4
LOOSE	4–10
MEDIUM DENSE	10–30
DENSE	30–50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH+	BLOWS/FOOT*
VERY SOFT	0–1/4	0–2
SOFT	1/4–1/2	2–4
MEDIUM STIFF	1/2–1	4–8
STIFF	1–2	8–16
VERY STIFF	2–4	16–32
HARD	OVER 4	OVER 32

CONSISTENCY

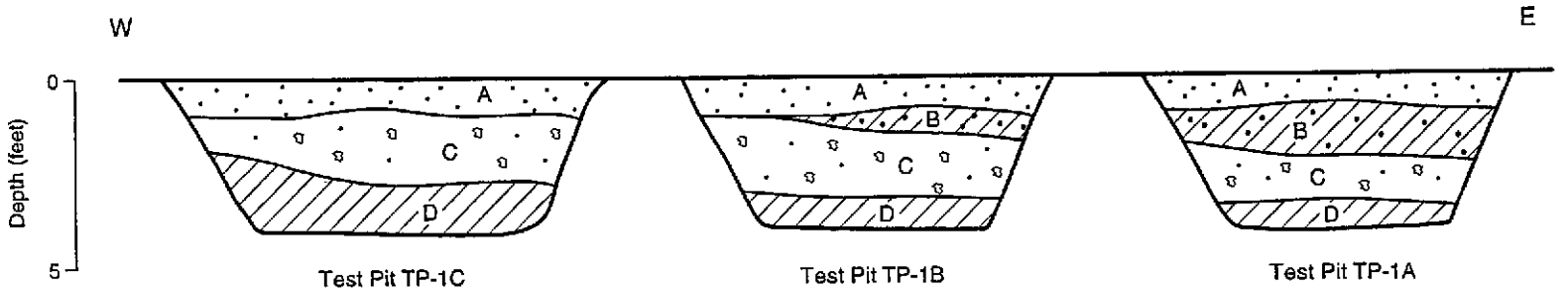
*Number of blows of 140 pound hammer falling 30 inches to drive a 2–inch O.D. (1–3/8 inch I.D.) split spoon (ASTM D–1586).
+Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D–1586), pocket penetrometer, torvane, or visual observation.

KEY TO EXPLORATORY BORING LOGS

Unified Soil Classification System (ASTM D–2487)

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE A–1



A: Baserock/Surface Gravel; gray-brown, moist, loose, minor debris (plastic, nails) (Fill)

B: Gravelly Clay (GC); gravel, and dark brown silty clay, moist, soft

C: Fill/Debris; large blocks of concrete, brick, asphalt, some wood, loose, wet (water seeped into test pit)

D: Clay (CH); black, moist, stiff

Scale: 1"=5'

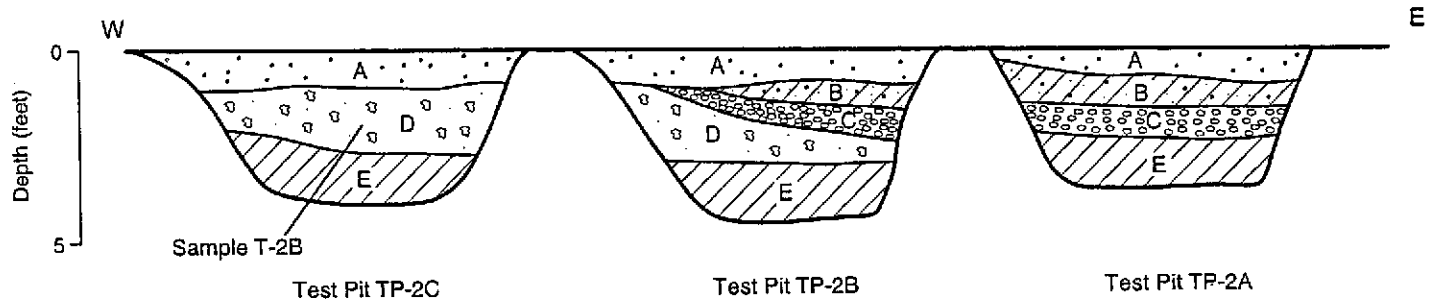
4/02*EB

EXPLORATORY TEST PIT TP-1

1300 AND 1350 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-1
1424-9B



A: Baserock/Surface Gravel; gray, brown, angular to subrounded gravel, moist, loose, minor debris (Fill)

B: Gravelly Clay (GC); gravel and dark brown silty clay, moist, soft

C: Gravel (GP); poorly graded, gravel ~1-1½" dia., rounded, loose, gray, wet

D: Debris/Fill; large blocks of concrete, bricks, wood, metal, asphalt, loose, wet (water seeped into test pit)

E: Fat Clay (CH); native, black, moist, stiff

Scale: 1"=5'

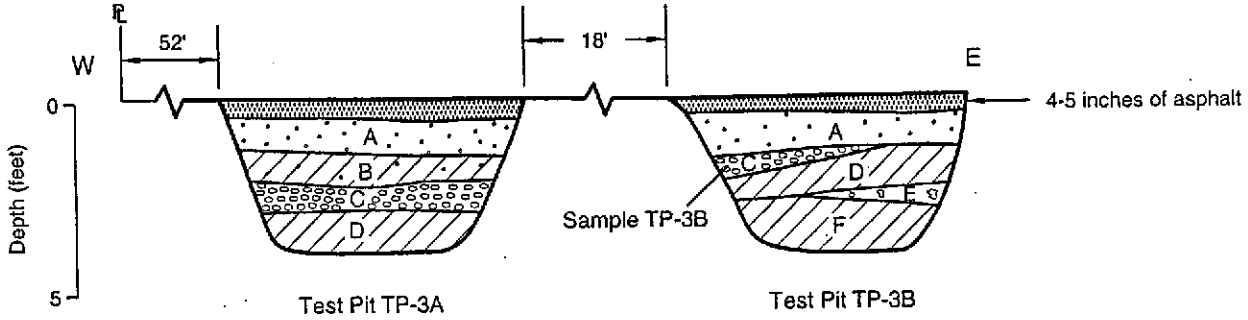
4/02*EB

EXPLORATORY TEST PIT TP-2

1300 AND 1350 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-2
1424-9B



A: Baserock; light brown-yellow, subangular to angular 1/2" dia. gravel, approximately 25% coarse sand, dense

B: Gravelly Clay (GC); baserock, gravel, and dark brown silty clay, stiff, moist, minor debris (metal, nails)

C: Gravel (GP); loose, poorly graded gravels, rounded 1-1½" dia. gray, wet (water seeped into test pit)

D: Silty Clay to Fat Clay (CH/CL); black to dark brown, moist, stiff [Fill]

E: Debris, wood, metal, glass, concrete, brick

F: Silty Clay to Fat Clay (CH/CL); black to dark brown, moist, stiff, native

Scale: 1"=5'

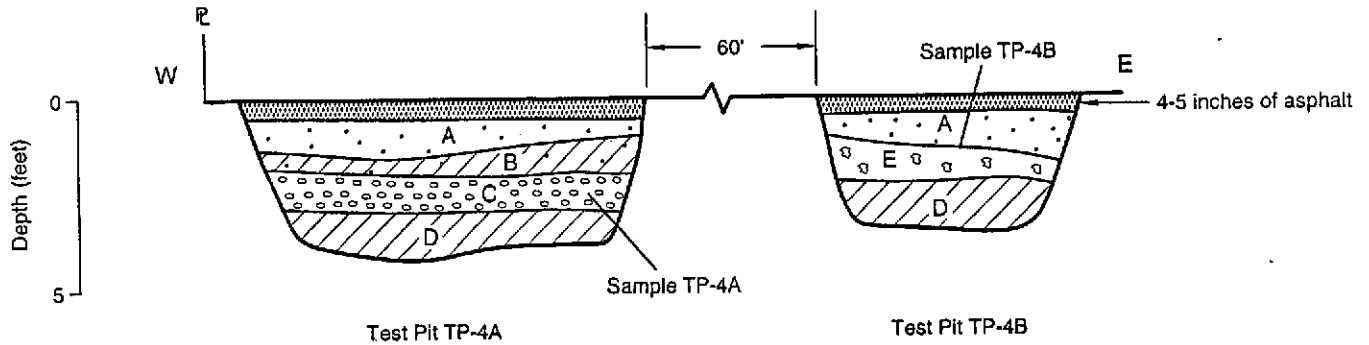
4/02*EB

EXPLORATORY TEST PIT TP-3

1300 AND 1350 POWELL STREET
Emeryville, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-3
1424-9B



A: Baserock; light brown-yellow, subangular to angular 1/2" dia. gravel, approximately 25% coarse sand, medium dense

B: Gravelly Clay (GC); baserock, gravel, and dark brown silty clay, stiff, moist, minor debris (metal, nails)

C: Gravel (GP); loose, poorly graded gravels, rounded 1-1½" dia. gray, wet (water seeped into test pit)

D: Silty Clay to Fat Clay (CH/CL); black to dark brown, native, moist, stiff

E: Debris (wood, metal, glass, concrete, brick)

Scale: 1"=5'

4/02*EB

EXPLORATORY TEST PIT TP-4

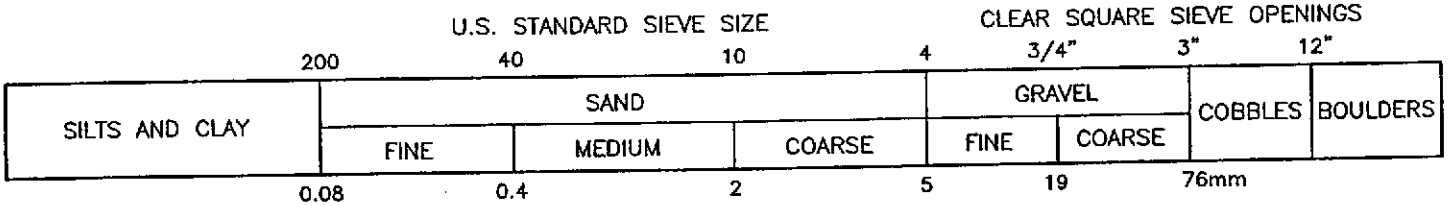
1300 AND 1350 POWELL STREET
Emeryville, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

TP-4
1424-9B

PRIMARY DIVISIONS			SOIL TYPE		SECONDARY DIVISIONS
COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS (MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE)	CLEAN GRAVELS (Less than 5% Fines)	GW		Well graded gravels, gravel–sand mixtures, little or no fines
			GP		Poorly graded gravels or gravel–sand mixtures, little or no fines
		GRAVEL WITH FINES	GM		Silty gravels, gravel–sand–silt mixtures, plastic fines
			GC		Clayey gravels, gravel–sand–clay mixtures, plastic fines
	SANDS (MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE)	CLEAN SANDS (Less than 5% Fines)	SW		Well graded sands, gravelly sands, little or no fines
			SP		Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM		Silty sands, sand–silt–mixtures, non–plastic fines
			SC		Clayey sands, sand–clay mixtures, plastic fines
FINE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT IS LESS THAN 50 %)		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS (LIQUID LIMIT IS GREATER THAN 50 %)		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

DEFINITION OF TERMS



GRAIN SIZES

TERZAGHI SPLIT SPOON STANDARD PENETRATION

MODIFIED CALIFORNIA

D&M UNDERWATER SAMPLER

SHELBY TUBE

NO RECOVERY

SAMPLERS

SAND AND GRAVEL	BLOWS/FOOT*
VERY LOOSE	0–4
LOOSE	4–10
MEDIUM DENSE	10–30
DENSE	30–50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH+	BLOWS/FOOT*
VERY SOFT	0–1/4	0–2
SOFT	1/4–1/2	2–4
MEDIUM STIFF	1/2–1	4–8
STIFF	1–2	8–16
VERY STIFF	2–4	16–32
HARD	OVER 4	OVER 32

CONSISTENCY

*Number of blows of 140 pound hammer falling 30 inches to drive a 2–inch O.D. (1–3/8 inch I.D.) split spoon (ASTM D–1586).
+Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D–1586), pocket penetrometer, torvane, or visual observation.

KEY TO EXPLORATORY BORING LOGS

Unified Soil Classification System (ASTM D–2487)

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FIGURE A–1

EXPLORATORY BORING: EB-1

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 24.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PID (ppm)
	0		SURFACE ELEVATION:						
			Asphalt						
			CLAYEY GRAVEL (GC) [FILL] stiff, damp, gravel and sand with debris (brick, concrete) in a dark clay matrix	GC		X			0.0
	5					X			0.0
			CLAY (CL) stiff, damp, brown and orange with gray mottling	CL		X			2.5
			CLAY (CL) stiff, gray-green with brown mottling, abundant rock fragments, minor sand (<5%)	CL		X			3.7
	10		**SILTY SAND (SM)** medium dense, moist, 25-30% silt, fine grained sand, poorly graded	SM					
			FAT CLAY (CH) soft, moist, light gray brown	CH		X			0.0
	15		**SILTY SAND (SM)** medium dense, moist, orange brown, fine grained, minor rock fragments	SM					
			FAT CLAY (CH) soft, moist, brown, minor sand (<5%), rock fragments, minor orange mottles	CH		X			3.9
	20		**SILTY CLAY (CL)** firm, moist, brown with green and gray mottling	CL		X			1.9
			SILTY SAND (SM) medium dense, wet, brown, approximately 25% silt, fine-grained sand, poorly graded	SM					
			SILTY CLAY (CL) firm, moist, brown with green and gray mottling	CL		X			2.2
	25		Bottom of Boring at 24 feet						
	30								

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 22.5 FEET

LA CORP.GDT 4/24/02 OAK* EB

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EXPLORATORY BORING: EB-2

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 12.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PID (ppm)
SURFACE ELEVATION:	0	Asphalt Baserock						
		SILTY CLAY (CL) [FILL] black, moist, minor debris	CL		☒			1.1
	5	**CLAYEY GRAVEL (GC) [FILL]** medium dense to loose, moist, debris (brick, concrete)	GC		☒			0.0
	10	**SILTY CLAY (CL)** stiff, wet, gray brown, approximately 10% fine-grained sand increase in angular rock fragments and sand	CL		☒			1.1
					☒			2.6
	15	Bottom of Boring at 12 feet						
	20							
	25							
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 9.0 FEET
▼: FREE GROUND WATER MEASURED FOLLOWING DRILLING AT 6.5 FEET

LA CORP.GDT 4/24/02 OAK* EB

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Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-3

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 20.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PID (ppm)
	0	SURFACE ELEVATION:		
		4 inches asphalt 14 inches baserock		
		SILTY CLAY (CL) [FILL] black, with minor debris, mainly red brick fragments, moderate petroleum odor	CL	8.3
	5	**SILTY CLAY (CL)** stiff, moist, green with orange mottling	CL	3.1
		SILTY CLAY (CL) stiff, moist, gray with orange mottling sandy, moderate petroleum odor	CL	13.9
	10	**CLAYEY GRAVEL WITH SAND (GC)** dense, moist, well rounded and angular rock fragments in an orange and gray matrix	GC	3.4
		SILTY CLAY (CL) soft to medium stiff, moist, light brown with gray mottling, minor sandy	CL	
	15	**SILTY SAND (SM)** medium dense, moist to wet, brown, poorly graded, fine grained	SM	
		SILTY CLAY (CL) soft to firm, moist, light brown with gray mottling, minor sand	CL	2.4
		SILTY SAND (SM) medium dense, moist to wet, brown, fine grained	SM	
	20	**SILTY CLAY (CL)** soft to firm, moist, light brown with gray mottling, minor sand	CL	
		SILTY SAND (SM) medium dense, moist to wet, brown, fine grained	SM	
		SILTY CLAY (CL) stiff, wet, brown with green and gray mottling	CL	
		Bottom of Boring at 20 feet		
	25			
	30			

DRILL RATE (FT/MIN.) | SAMPLER | MOISTURE CONTENT (%) | DRY DENSITY (PCF)

Undrained Shear Strength (ksf)
- ○ Pocket Penetrometer
- △ Torvane
- ● Unconfined Compression
- ▲ U-U Triaxial Compression

1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 16.0 FEET
▼: FREE GROUND WATER MEASURED FOLLOWING DRILLING AT 14.0 FEET

LA CORP.GDT 4/24/02 OAK* EB

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EXPLORATORY BORING: EB-4

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 12.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PID (ppm)
SURFACE ELEVATION:				
	0	Asphalt Baserock		
		GRAVELLY CLAY (GC) [FILL] loose, dark gray, angular up to 2" dia. in dark brown silty clay, minor debris (brick and concrete)	GC	4.2
	5	**CLAY (CL)** stiff, moist, black, minor rock fragments, some orange mottles	CL	8.3
		SILTY CLAY (CL) stiff, wet, green-gray, some orange mottles, rock fragments	CL	3.0
	10	**SILTY CLAY WITH GRAVEL (CL)** stiff, wet, mottled clay, angular to rounded rock fragments	CL	7.3
		Bottom of Boring at 12 feet		
	15			
	20			
	25			
	30			

DRILL RATE (FT/MIN.) | SAMPLER | MOISTURE CONTENT (%) | DRY DENSITY (PCF)

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 8.0 FEET

LA CORP.GDT 4/24/02 OAK* EB

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EXPLORATORY BORING: EB-5

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 12.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PID (ppm)
		SURFACE ELEVATION:		
	0	Asphalt		
		SILTY CLAYEY GRAVEL (GC) [FILL] debris (brick fragments, concrete)	GC	
		GRAVEL (GW) wet, well graded, minor fines	GW	3.5
	5	**GRAVELLY CLAY (GC)** wet, 15-20% rounded clasts in lean clay (matrix), debris, moderate petroleum odor, rock fragments decreasing with depth	GC	55.9
		SILTY SAND (SM) medium dense, wet, green, fine grained, poorly graded, ~25-30% silt, moderate petroleum odor	SM	149
	10	**SILTY CLAY (CL)** soft to stiff, wet, brown with green and gray mottling, minor rock fragments	CL	13.9
				8.1
		Bottom of Boring at 12 feet		
	15			
	20			
	25			
	30			

DRILL RATE (FT/MIN.) | SAMPLER | MOISTURE CONTENT (%) | DRY DENSITY (PCF)

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 7.5 FEET
▼: FREE GROUND WATER MEASURED FOLLOWING DRILLING AT 3.5 FEET

LA_CORP.GDT 4/24/02 OAK* EB

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-6

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 12.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PID (ppm)
	0	SURFACE ELEVATION:						
		7 inch concrete pad						
		Baserock with sandy clay						
		GRAVEL (GW) [FILL] gray, rounded gravel	GW					
		SILTY CLAY (CL) [FILL] minor gravel and debris (brick, concrete)	CL		X			2.9
	5	**GRAVELLY CLAY WITH SAND (GC) [FILL]** loose to medium dense, damp, black with orange and green mottling, some Mn staining, iron-oxide spots	GC		X			2.3
		SILT (ML) wet, stiff, <15% fine-grained sand, some silty clay intervals, orange iron-oxide and black Mn spots	ML		X			1.8
	10				X			4.1
		Bottom of Boring at 12 feet						
	15							
	20							
	25							
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 9.0 FEET
▼: FREE GROUND WATER MEASURED FOLLOWING DRILLING AT 5.0 FEET

LA_CORP.GDT 4/24/02 DAK* EB

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EXPLORATORY BORING: EB-7

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 20.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PID (ppm)
		SURFACE ELEVATION:						
	0	Baserock [FILL]						
		CLAYEY GRAVEL (GC) [FILL] brick debris	GC					
		GRAVEL [FILL] light gray, rounded clasts, minor sand (<5%)						
		CLAY (CL) soft, moist, black, minor debris (brick, rock fragments)	CL		☒			15.1
	5	**SILTY CLAY (CL)** medium stiff, moist, gray with orange mottling increasing petroleum odor	CL		☒			37.1
		SANDY SILT (ML) medium stiff, moist, green-gray, fine grained sand, strong petroleum odor	ML		☒			94.6
		SILTY CLAY (CL) medium stiff, moist, gray, with orange mottling strong petroleum odor	CL		☒			147
	10	**GRAVELLY CLAY (GC)** moist, gray with orange and green mottling, angular and rounded gravel	GC		☒			56.3
		SILTY CLAY (CL) stiff, moist, gray-green, some rock fragments, minor sand	CL		☒			48.2
	15	**GRAVELLY CLAY (GC)** moist, gray, orange green mottled, angular and rounded gravel, moderate petroleum odor	GC					
		SILTY CLAY (CL) stiff, moist, gray-green, some rock fragments, minor sand	CL		☒			3.1
		WELL GRADED SAND WITH GRAVEL (SW) medium dense, wet, brown, ~15% fines, 20% gravel	SW					
	20	Bottom of Boring at 20 feet						
	25							
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 18.0 FEET

LA_CORP.GDT 4/24/02 OAK* EB

EXPLORATORY BORING: EB-8

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-4-02 FINISH DATE: 3-4-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 24.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PID (ppm)
		SURFACE ELEVATION:						
	0	6 inches baserock						
		CLAYEY GRAVEL (GC) [FILL] gravel with dark brown silty clay, minor debris (brick, wood)	GC					
		WELL-GRADED GRAVEL (GW) clean, rounded gravel	GW					
		CLAY (CL/CH) stiff, moist, green-gray, rock fragments, minor sand, moderate to high plasticity	CL/CH					11.5
	5							31.1
		very stiff						12.2
	10							
		SILTY CLAY (CL) stiff, moist, brown	CL					5.1
		CLAYEY GRAVEL (GC) dense, damp, orange, brown and green, large rock fragments	GC					
		SILT WITH SAND (ML) stiff, damp, brown, ~25% fine grained sand	ML					1.7
	15	**POORLY GRADED SAND (SP)** medium dense, moist, brown with gray and green mottling, fine-grained sand, minor rock fragments	SP					
		SILTY CLAY (CL) stiff, moist, brown with gray-green mottling	CL					0.0
	20	**SILT WITH SAND (ML)** stiff, wet, brown with gray-green mottling, ~25% fine grained sand	ML					
		POORLY GRADED SAND (SP) medium dense, wet, brown, ~5% fines, fine-grained sand	SP					
	25	Bottom of Boring at 24 feet						
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 19.0 FEET

LA_CORP.GDT 4/24/02 OAK* EB

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EXPLORATORY BORING: EB-9

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-5-02 FINISH DATE: 3-5-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 24.0 FT.

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ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PID (ppm)
			SURFACE ELEVATION:						
	0		6 inches baserock						
			GRAVELLY CLAY (GC) [FILL] loose, moist, some brick and wood debris	GC					74.5
			CLAY (CL/CH) soft, wet, black, moderate to high plasticity, moderate petroleum odor	CL/CH					
	5		**GRAVELLY CLAY (CL)** dense, moist, gray-green with brown and orange mottling, silty clay, strong petroleum odor	CL					84.2 105 78.5
	10		**SILTY CLAY (CL)** stiff, damp, green-gray	CL					
			SANDY SILT (ML) medium stiff, moist, gray greenish, ~15% clay, fine grained sand, low plasticity	ML					41.9
			SILTY CLAY (CL) very soft, moist, green, moderate petroleum odor	CL					84.4
	15		**SANDY SILT (ML)** stiff, moist, orange brown, minor rock fragments	ML					
			SILTY CLAY (CL) stiff, moist, orange-brown	CL					6.4
	20		**SANDY SILT (ML)** very soft, wet, orange brown petroleum sheen on water	ML					
	25		Bottom of Boring at 24 feet						
	30								

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 18.5 FEET

LA CORP.GDT 4/24/02 OAK* EB

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EXPLORATORY BORING: EB-10

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-5-02 FINISH DATE: 3-5-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 12.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PID (ppm)
		SURFACE ELEVATION:		
	0	6-7 inches concrete		
		Baserock		
		CLAY (CL/CH) very soft, wet, black, moderate to high plasticity, slight petroleum odor	CL/CH	21.3
	5	**SILTY CLAY (CL)** stiff, damp, green, minor sand, rock fragments	CL	84.2
		strong petroleum odor floating product on ground water, some rock fragments		6.7
	10	**SANDY SILT (ML)** stiff, wet, brown, minor green-gray mottling	ML	58.0
		Bottom of Boring at 12 feet		
	15			
	20			
	25			
	30			

DRILL RATE (FT/MIN.) | SAMPLER | MOISTURE CONTENT (%) | DRY DENSITY (PCF)

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 9.0 FEET

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EXPLORATORY BORING: EB-11

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-5-02 FINISH DATE: 3-5-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 18.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	DRILL RATE (FT/MIN.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PID (ppm)
SURFACE ELEVATION:	0	Baserock/gravel						
		CLAYEY GRAVEL (GC) [FILL] gravel with silty sandy clay, minor debris	GC					
		SILTY CLAY (CL) dense, damp, black with orange mottling, rock fragments, iron-oxide stains	CL		☒			13.8
	5	**SILTY CLAY (CL)** soft, moist, black with green mottling moderate petroleum odor	CL		☒			100
		GRAVELLY CLAY (CL) moist, gray-green clay, angular to rounded gravel, minor sand	GC		☒			85.6
	10	**CLAYEY GRAVEL (GC)** medium dense, moist, green, brown, and black with orange spot	GC					
▽		**CLAYEY SAND WITH GRAVEL (SC)** dense, moist to wet, well graded	SC		☒			7.7
		CLAYEY GRAVEL (GC) medium dense, moist, green, brown, and black with orange spots	GC		☒			8.4
	15	**SILTY CLAY (CL)** stiff, wet, brown, minor rock gravel	CL					
		Bottom of Boring at 18 feet						
	20							
	25							
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 12.5 FEET

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EXPLORATORY BORING: EB-12

Sheet 1 of 1

DRILL RIG: VIRONEX
BORING TYPE: DIRECT PUSH
LOGGED BY: CM
START DATE: 3-5-02 FINISH DATE: 3-5-02

PROJECT NO: 1424-9B
PROJECT: 1300 AND 1350 POWELL STREET
LOCATION: EMERYVILLE, CA
COMPLETION DEPTH: 12.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	SAMPLER	PID (ppm)
SURFACE ELEVATION:					
	0	4 inches asphalt			
		8 inches baserock			
		CLAY (CL) stiff, black with green mottling, gravel fragments	CL		
		strong petroleum odor		☒	348
		SILTY CLAY (CL/CH) soft to stiff, damp, green-gray, minor rock fragments, moderate to high plasticity	CL/CH		
	5	color change to brown			
		strong petroleum odor	CL	☒	424
		GRAVELLY CLAY WITH SAND (CL) stiff, moist, green with orange mottling, approximately 25% gravel, approximately 15% sand	SM		
		SILTY SAND (SM) green, gray, well graded, approximately 25% silt fines, minor gravel	CL	☒	298
	10	**GRAVELLY CLAY WITH SAND (CL)** wet, gray, strong petroleum odor, floating product on ground water	ML	☒	24.2
		SANDY SILT (ML) stiff, brown with gray and orange mottling, fine grained, approximately 25% sand			
		Bottom of Boring at 12 feet			
	15				
	20				
	25				
	30				

DRILL RATE (FT/MIN.) | MOISTURE CONTENT (%) | DRY DENSITY (PCF)

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 8.5 FEET

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