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GEOMATRIX

February 28, 2005
Project 3095.007

Mr. Robert Schultz
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Summary of Past and Current Environmental Site Investigations and Remediation Activities, Toxics Case No. RO0002619
4226 Halleck Street
Emeryville, California

Dear Mr. Schultz:

Geomatrix Consultants, Inc. (Geomatrix), in partnership with Mr. Tom Graf, has prepared this letter on behalf of Holliday Development, LLC, agent for Hamilton Senior Homes, LLC, the current owner of the property located at 4226 Halleck Street (the Site), in Emeryville, California. This letter presents a summary of previous environmental investigations and remedial work completed at the Site and summarizes additional environmental activities conducted in response to Technical Comments presented in your September 7, 2004 letter to Todd Adams of Holliday Development. The purpose of this report is to provide Alameda County Health Care Services Agency (ACHCSA) with further definition of environmental conditions at the Site to support our request for site closure.

BACKGROUND

The Site is approximately 0.5 acres and reportedly was used for railroad freight loading and unloading from 1906 until sometime before 1975. Subsequent to 1975, the Site was used as a material storage and parking area. Environmental investigations and remedial activities conducted at the Site on behalf of the previous owner, Emerylofts Development Company LLC, are presented chronologically below, followed by a summary of the results of this work:

- In 1990, PES Environmental, Inc. (PES), of Novato, California, performed soil and groundwater sampling (PES report included as Attachment A). PES installed a groundwater monitoring well (J-1) and advanced five soil borings (FF-1 through FF-5). Soil samples were collected from all five of the soil borings, grab groundwater samples were collected from two of the soil borings, and a groundwater sample was collected from the monitoring well. One discrete soil sample collected at 6.0 feet below ground surface (bgs) was analyzed for total extractable hydrocarbons (TEH), volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). Two composite soil samples, one comprised of samples collected at 1 foot bgs and one comprised of samples collected at 1.75 feet bgs, were analyzed for Title 22 Metals.

One composite sample, comprised of samples collected between 5.5 and 6.0 feet bgs, was analyzed for TEH, VOCs, and SVOCs. The groundwater samples collected were analyzed for dissolved Title 22 Metals, total volatile hydrocarbons quantified as gasoline (TVHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and purgeable organics. In addition, the groundwater sample collected from the monitoring well was analyzed for dissolved hexavalent chromium and total extractable hydrocarbons quantified as diesel (TEHd) and kerosene (TEHk).

- In 1994, Weiss Associates (Weiss) of Emeryville, California, installed two additional borings (B-1 and B-2) at the Site in the vicinity of two previous PES samples (Weiss report included as Attachment B). Soil and groundwater samples were collected from the borings. Additionally, Weiss collected a groundwater sample from the existing monitoring well. The soil samples were analyzed for Title 22 metals. One grab groundwater sample was analyzed for total Title 22 metals and one was analyzed only for total lead. The groundwater sample from the monitoring well was analyzed for total Title 22 metals, TVHg, and VOCs.

- In 1995, Subsurface Consultants (Subsurface), of Oakland, California, collected a soil and a grab groundwater sample from one boring during a geotechnical investigation (B-8; analytical results and a figure are included as Attachment C). The soil sample was analyzed for chromium and arsenic and the grab groundwater sample was analyzed for dissolved arsenic and total chromium.

- In 1997 and 1998, Geomatrix conducted additional soil sampling at the Site to provide further delineation of the black sand layer containing elevated concentrations of residual chemicals (Geomatrix report included as Attachment D). Eleven soil borings were advanced and four test pits were excavated. A total of 11 soil samples were collected from 7 of the borings. The soil samples were analyzed for arsenic, barium, cadmium, copper, lead, and zinc. Leachability tests were also performed on two of the samples. One sample was collected from each test pit and analyzed for arsenic.

- Excavation of metals-affected soil was carried out in 1999 and is documented in a letter to the former property owner dated July 6, 2001. This letter is included as Attachment E.

SUMMARY OF FINDINGS

Lithology

The Site was covered with asphalt and base rock. Beneath the base rock was a sandy or clayey sand fill material with gravel. In over half the borings, black sand was encountered at approximately 2 feet bgs, beneath the sandy fill material. The thickness of this black sand layer varied from 2 to 6 feet across the Site. The black sand or sandy fill layer was underlain by clay. Groundwater at the Site was encountered at approximately 5 feet bgs.

Soil

Between 1990 and 1998, 17 borings were advanced and 18 soil samples were analyzed for a variety of constituents. A summary of historical soil sample analytical results is presented in Table 1. TVHd, TEHd, TEHk, and SVOCs were not detected in either of the two samples (one discrete, one composite) analyzed. VOCs were either not detected or were detected at very low concentrations (toluene at 0.016 and 0.018 milligrams per kilogram [mg/kg]) in these two samples.

Metals were detected in all the samples analyzed. Results of initial investigations indicated elevated concentrations of several metals (arsenic, barium, cadmium, copper, lead, and zinc). Further investigation indicated that elevated metals in soil were confined to a layer of black sand that occurred at depths ranging from 1.5 to 2.5 feet bgs, immediately above the native clay. Soil above and below the black sand layer consistently showed significantly lower concentrations of metals and organics. A summary of arsenic concentrations in soil prior to the 1999 excavation are shown on Figure 2.

Groundwater

Groundwater samples were collected from three on-site soil borings, one soil boring adjacent to the Site in Halleck Street, and one on-site monitoring well. A summary of historical groundwater analytical results is presented in Table 2. Three samples were analyzed for TVHg and VOCs, including BTEX. VOCs were not detected in any of the three samples and TVHg was only detected in one sample at a concentration of 53 micrograms per liter (µg/l). TEHd and TEHk were not detected in the one sample analyzed. Metals detected in groundwater beneath the Site were generally below Water Quality Objectives (WQOs), with the exception of barium (1.8 milligrams per liter [mg/l]; filtered sample), beryllium (0.005 mg/l; unfiltered sample), and cadmium (0.01 mg/l; unfiltered sample). A summary of groundwater results are shown on Figure 3.

Results of 1999 Soil Excavation

Due to the presence of elevated metals concentrations, the black sand layer at the Site was excavated in two phases in 1999. Since it was easily identified, excavation of the black sand

was carried out on a visual basis, with 20 confirmation samples collected from the bottom of the excavation (S-1 through S-20; Figure 4). The confirmation samples were composited into five 4-point composite samples. The cleanup criteria being used at the time of the excavation was a background arsenic concentration of 22 mg/kg. Concentrations of arsenic in four of the five confirmation composite samples were below the cleanup criteria. The four samples that comprised the composite sample that exceeded the criteria (S-1 through S-4) were analyzed discretely. Three of these samples, collected adjacent to the existing building to the east, contained arsenic near or above the cleanup criteria. Since the native clay layer remained exposed, one additional soil sample was collected at each of these three locations for analysis prior to placement and compaction of the backfill. Results of this re-sampling effort did not indicate elevated arsenic concentrations. Results of confirmation sampling are presented in Table 1.

Following placement and compaction of the backfill (primarily overburden material from the excavation), 16 samples of the backfill material were collected and analyzed for arsenic as four 4-point composite samples (BF-1 through BF-4). Results of these analyses indicated concentrations of arsenic ranging from 24 to 32 mg/kg, which was above the cleanup criterion. Therefore, the backfill material was removed to the underlying native clay layer. Results of the backfill sampling are presented in Table 1.

In 2002, additional soil fill material from the Presidio in San Francisco was brought in by Ryan Engineering, and a surface layer of base rock from the Evans Brothers Crushing facility in Oakland was placed across the Site.

RECENT INVESTIGATION

The purpose of the recent investigation was to address specific items to facilitate regulatory closure of the Site. In order to better evaluate the historical data, complete copies of the PES and Weiss reports were obtained and reviewed. In addition, target cleanup concentrations for the previously-identified constituents of concern (arsenic, barium, cadmium, copper, lead, and zinc) were assessed based on current regulatory agency policies. Based on this review, and the technical comments contained in the September 7, 2004 ACHCSA letter, it was concluded that additional soil sampling at the Site would be useful in evaluating the Site for closure. Specifically, the additional investigation was designed to:

- confirm the removal of metals-affected soil along the eastern boundary of the Site;
- evaluate the presence of metals in soil in the southwestern (unexcavated) portion of the Site; and

- evaluate the presence of polynuclear aromatic hydrocarbons (PAHs) in site soil to address one of ACHCSA staff's comments.

To meet these objectives, 11 additional borings were advanced at the Site in October 2004; 3 along the western excavation boundary (GMX-9 through GMX-11) and 8 along the eastern Site boundary (GMX-1 through GMX-8); these sampling locations are shown on Figure 5. Geomatrix contracted with ResonantSonic International, Inc. (RSI), of Woodland, California, to advance the borings using direct-push drilling methods. Borings were advanced to depths ranging from 4 to 6 feet bgs. One soil sample was collected from each of the eight borings collected along the eastern Site boundary from a depth of 4 to 5.5 feet bgs (beneath the extent of the 1999 excavation). Two soil samples were collected from each of the three borings along the western excavation boundary from depths of approximately 2 feet bgs (likely within the fill material) and 4 feet bgs (the depth where metals had been detected above current cleanup criteria in this area during previous investigations). Soil samples were collected in butyrate liners and sealed with Teflon sheets, plastic end caps and silicon tape. Soil samples were stored in an ice-cooled chest until transferred under Geomatrix chain-of-custody procedures to the analytical laboratory.

Soil samples were analyzed by Severn Trent Laboratories, Inc. (STL) of Pleasanton, California, a state-certified laboratory, for arsenic, barium, cadmium, copper, lead, and zinc. Additionally, soil samples collected from borings GMX-9 and GMX-11 at 2.0 feet bgs and from borings GMX-2, GMX-5, and GMX-8 were from 4.0 feet bgs were analyzed for PAHs using EPA Method 8270C with selective ion monitoring (SIM). Analytical results for metals analyses are presented in Table 3 and summarized below:

- Arsenic was detected in all soil samples at concentrations ranging from 2.7 to 22 mg/kg.
- Barium was detected in all the soil samples at concentrations ranging from 73 to 260 mg/kg.
- Cadmium was detected in nine of the fourteen samples analyzed at concentrations ranging from 0.5 to 5.4 mg/kg.
- Copper was detected in all soil samples at concentrations ranging from 15 to 110 mg/kg.
- Lead was detected in all soil samples at concentrations ranging from 3.8 to 300 mg/kg.
- Zinc was detected in all soil samples at concentrations ranging from 34 to 520 mg/kg.

The samples collected from GMX-10 at 2 feet bgs generally contained the highest concentrations of metals. Geomatrix compared results of the October 2004 soil sampling to the residential environmental screening levels (ESLs) published by the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) and regional background concentrations. For arsenic, the 95th percentile background concentration for fill material (14 mg/kg) from the 2002 Lawrence Berkeley National Laboratory study was selected to represent background.[1] This background concentration is appropriate because the Site and surrounding area have historically been filled. The analytical results indicated that only arsenic and lead exceeded their respective screening criteria, and that these exceedances were generally co-located.

Results of PAH analyses are presented in Table 5. PAHs were detected in the samples collected from borings GMX-5 at 4 feet bgs, GMX-8 at 4 feet bgs, and GMX-11 at 2 feet bgs. As indicated in Table 5, the concentrations of PAHs, except benzo(a)pyrene, are below the respective screening criteria.

For benzo(a)pyrene and other carcinogenic PAHs, the Department of Toxic Substance Control/Office of Environmental Health Hazard Assessment (DTSC/OEHHA) recommends the use of potency equivalent factors (PEFs) to calculate a benzo(a)pyrene equivalent [B(a)P EQ] for carcinogenic PAHs. These factors relate the carcinogenic potency of each carcinogenic PAH within a particular sample to that of benzo(a)pyrene [B(a)P]. To estimate B(a)P EQs, the concentration of each carcinogenic PAH detected in soil is multiplied by the appropriate PEF developed by OEHHA.[2] If a PAH was not detected, one-half the detection limit for the PAH was multiplied by the corresponding PEF. If carcinogenic PAHs were not detected in a sample, then a B(a)P EQ was not calculated and the value is reported as not detected. The sum of B(a)P EQ concentrations for a mixture of PAHs results in a total B(a)P EQ for each sample.

The estimated B(a)P EQs ranged from 0.025 (GMX-11) to 0.14 mg/kg (GMX-8). B(a)P EQs in two of the soil samples (GMX-5 and GMX-8) are above the B(a)P residential ESL of 0.038 mg/kg. However, the estimated B(a)P EQs are below an adjusted screening criterion of 0.38 mg/kg, a level corresponding to a lifetime excess cancer risk of $1x10^{-5}$, which is within the

[1] Lawrence Berkeley National Laboratory – University of California, 2002, Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory: Lawrence Berkeley National Laboratory Environmental Restoration Program, June.

[2] The PEFs that were used in these calculations were 1 for benzo(a)pyrene; 0.1 for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene; 0.01 for chrysene; and 0.35 for dibenz(a,h)anthracene.

acceptable risk range of $1x10^{-4}$ to $1x10^{-6}$. In addition, a screening criterion of 0.38 mg/kg for B(a)P EQs has been accepted by the RWQCB at other residential sites in Alameda County.[3]

ADDITIONAL SOIL REMOVAL

Arsenic and lead equaled or exceeded the screening criteria in the samples collected from boring GMX-1 at 4 feet bgs and GMX-10 at 2 feet bgs. Therefore, Geomatrix proceeded with excavation of soil in these areas. Although re-sampling (S-4A, S-2A, and S-3A) did not indicate elevated concentrations of arsenic near the three initial post-excavation locations that contained elevated arsenic concentrations (S-1, S-2, and S-3), it was concluded that these three areas also would be locally excavated and re-sampled.

Geomatrix contracted with Clearwater Environmental Management, Inc. (Clearwater), of Fremont, California, to perform excavation activities on November 4, 2004. Clearwater excavated an approximately 3 feet by 3 feet area around borings GMX-1, S-1, and S-2. The excavation at GMX-1 extended to approximately 5.5 feet bgs and the excavation at S-1 and S-2 extended to approximately 3 feet bgs. Confirmation soil samples were collected from the bottom of these excavations (GMX-1-BTM, S-1-BTM, and S-2-BTM). Sidewall samples were not collected because this area had been previously excavated, and therefore, the sidewall samples would have consisted of imported fill. An area approximately 5 feet by 5 feet was excavated to a depth of approximately 5 feet at the location of boring GMX-10. Confirmation soil samples were collected from the bottom of the excavation (GMX-10-BTM) and from approximately 4 feet bgs on all four sidewalls of the excavation (GMX-10-NORTH, GMX-10-SOUTH, GMX-10-WEST, and GMX-10-EAST) at this location. Due to the presence of a buried electrical line, an area of only approximately 3 feet by 2 feet was excavated to a depth of 3 feet bgs at the location of boring S-3. A confirmation soil sample was collected from the bottom of the excavation (S-3-BTM) and the western sidewall (S-3-WEST), where the electrical line was located.

The confirmation soil samples were collected in clean brass tubes, sealed with Teflon sheets, plastic end caps, and silicon tape. Soil samples were stored in an ice-cooled chest until transferred under Geomatrix chain-of-custody procedures to the analytical laboratory.

Soil samples were analyzed by STL for arsenic, barium, cadmium, copper, lead, and zinc. Table 3 presents the analytical results of the confirmation samples. Concentrations of metals in the confirmation samples collected from the bottom of the excavations at locations GMX-1, S-1, and S-2 did not exceed the screening criteria. These locations were backfilled with imported fill from U-Save Rockery of Hayward, California. However, the concentrations of

[3] RWQCB, 2004, Approval of Remediation Cleanup Levels, Central Station Site, Wood Street between 10th Street and West Grand Avenue, Oakland, California, May 21.

arsenic in the sample collected from the bottom of the excavation at S-3, and arsenic and lead in the samples collected from the west sidewall and north sidewall of the excavation at GMX-10 exceeded the screening criteria. Therefore, additional soil removal activities were conducted.

On November 22, 2004, Clearwater remobilized to the Site to excavate additional soil from locations GMX-10 and S-3. At location GMX-10, the excavation was extended 2 feet to the north and west to a depth of 4 feet bgs and sidewall confirmation samples (GMX-10-NORTH-2 and GMX-10-WEST-2) were collected for lead and arsenic analyses. A location S-3, the excavation was extended 1 foot deeper to a total depth of approximately 4 feet bgs and a confirmation sample (S-3-BTM-2) was collected from the bottom of the excavation for arsenic analysis. Confirmation sample analytical results are presented in Table 3.

The confirmation sample collected from the bottom of the S-3 excavation contained arsenic at a concentration of 66 mg/kg, which is above the screening criteria. Therefore, the excavation was extended to 5 feet bgs on November 23, 2004 and another confirmation sample (S-3-BTM-3) was collected for arsenic analysis. The confirmation sample collected from 5 feet bgs contained 4.5 mg/kg arsenic, which is below the screening criteria. Therefore, no additional soil removal was conducted and the excavation was backfilled.

At location GMX-10, the western sidewall sample did not contain arsenic or lead above the screening criteria. However, the northern sidewall sample contained both arsenic (26 mg/kg) and lead (350 mg/kg) above the criteria.

On November 30, 2004, an iterative soil boring program was conducted to define the extent of the arsenic- and lead-affected soil to the north of location GMX-10. Soil borings (DB-1A through DB-6A and DB-1B through DB-6B) were advanced at 5 foot intervals north of GMX-10. Samples were collected at approximately 2 and 4 feet bgs for arsenic and lead analyses. Analytical results are presented in Table 3. Soil sampling locations are shown on Figure 5. The samples collected from 2 feet bgs did not contain arsenic or lead above the screening criteria. The samples collected from 4 feet bgs indicated that lead- and arsenic-affected soil extended approximately 25 to 30 feet north of GMX-10.

Based on these results, the extent of the excavation at GMX-10 was extended. The final extent is shown on Figure 6. Based on the analytical results, the top 2 feet of soil was removed and stockpiled separately for reuse. Soil from 2 feet bgs to 5 feet bgs was removed and disposed off-site. One confirmation sample was collected at 4 feet bgs along the west wall of the excavation (EX-3) and two were collected from the bottom of the excavation (EX-1 and EX-2). Analytical results are presented in Table 3. Soil sampling locations are

shown on Figure 6. Lead and arsenic were not present at above the screening criteria in any of these confirmation samples.

A total of approximately 50 cubic yards of soil was excavated and disposed off-site. Soil excavated during the activities described above was disposed of as non-hazardous waste, based on composite soil samples collected from soil bins or stockpiles. Soil was transported by Clearwater to Alviso Independent Oil of Alviso, California, for disposal. Soil was imported from U-Save Rockery of Hayward, California, to backfill the excavations.

In summary, the recent investigation activities indicated that arsenic and lead were present in soil at concentrations exceeding the screening criteria. The post-excavation analytical results indicate that the soil removal program was effective in mitigating these elevated concentrations.

RESPONSE TO TECHNICAL COMMENTS

This section presents responses to specific comments presented by the ACHCSA in their September 7, 2004 letter.

1. Documentation – In the *Summary of Completed Soil Removal*, waste manifests were not included because the soil was disposed as a non-hazardous waste. Complete copies of the Weiss, PES, and Geomatrix reports are included as attachments to this letter, and summary figures and tables have been prepared and are included herein.

2. Source and Lateral Definition – As described earlier, the source of elevated metals concentrations at the subject site appears to have been primarily the black sand layer located at the bottom of fill overlying the native clay. This layer was likely placed at the Site during initial site filling. Since this black sand layer was easily identified visually, excavation and removal of this layer was accomplished to its lateral extent, or to the adjacent street (in the case of Sherwin Street), with confirmation samples collected at the bottom of the excavation to confirm removal. In response to a portion of this comment, excavation perimeter samples were collected in October 2004 and, as a result, additional soil was removed. Based on results of excavation, it appears that the black sand layer does not extend west into Halleck Street or south beneath the adjacent parking garage, but may extend to the north underlying Sherwin Street. The building to the east of the Site has a basement, therefore, the black sand layer does not extend to the east.

3. Confirmation Sample Analytes – At the time the initial investigations were conducted, the data was compared to literature background values, 10 times the soluble threshold limit concentration (STLC), and U.S. EPA Preliminary Remedial Goals (PRGs). Six metals were identified as being constituents of concern based on this initial comparison. Comparison of the pre-excavation data to current residential ESLs and background concentrations for metals indicates that the same six metals (arsenic, barium, cadmium, copper, lead, and zinc) were present at elevated concentrations. Additionally, antimony which was detected at a concentration less than its residential PRG, previously was detected at an elevated concentration relative to current screening criterion. The elevated antimony concentration was collocated with other elevated metals concentrations and therefore, was mitigated accordingly.

   During the current investigation, five samples were analyzed for PAHs. Two of these samples consisted of sand that overlies the clay and three of these consisted of the underlying clay. As discussed above, carcinogenic PAHs evaluated as B(a)P EQs, and noncarcinogenic PAHs do not exceed applicable screening criteria.

4. Representative Concentrations – A total of 50 discrete samples that represent post-excavation Site conditions have been collected across the approximately 0.5 acre site. This number of samples is sufficient to evaluate the distribution of chemical concentrations for unrestricted residential use. The concentration of constituents in each of these remaining samples is below the risk-based screening criteria. Additionally, four 4-point composite samples that are representative of Site conditions were collected and analyzed; the concentrations of constituents in these composite samples are also below the risk-based screening criteria. Therefore, a statistical analysis to estimate the 95% upper confidence limit (UCL) of the mean is not necessary.

5. Excavation Backfill Removal – Backfilled overburden was removed to the native organic clay layer after sampling indicated that it contained concentrations of arsenic above allowable levels. The overburden consisted primarily of clayey sand with gravel and was typically lighter in color than the underlying organic clay. Therefore, removal of the replaced overburden was done on a visual basis and confirmation sampling was not deemed necessary.

6. Arsenic and Lead Concentrations in East Site – Samples GMX-1 through GMX-8 of the current sampling program provide documentation of residual chemical concentrations along the eastern portion of the Site. The three areas with elevated arsenic concentrations detected in earlier sampling events and one area identified during this sampling event were excavated and re-sampled as part of this investigation

program. Results of the current investigation and excavation program indicate that residual soil containing elevated arsenic has been removed from the Site.

7. Cleanup Goals – The most current and applicable screening criteria were used to evaluate the analytical results collected from the Site (residential ESLs and regional background metals concentrations). Naturally-occurring levels of arsenic will nearly always show appreciable risks ($> 1x10^{-6}$ based on the risk-based screening criterion of 0.39 mg/kg for residential land use) for both residential and commercial/industrial exposure scenarios because of the relatively high cancer potency factor for arsenic from an oral intake (e.g., incidental ingestion of soil). Arsenic is generally not evaluated as a chemical of potential concern in risk assessments when concentrations in soil are representative of local conditions. Thus, a regional background concentration for arsenic was selected to represent the screening criterion.

8. Hydrocarbons and Metals in Groundwater - Metals were not detected in groundwater samples above Water Quality Objectives (WQOs) presented in the Basin Plan[4]; except for barium at 1.8 mg/l in boring FF-2 (the WQO for barium is 1.0 mg/l), and beryllium at 0.005 mg/l (WQO is 0.004 mg/l) and cadmium at 0.01 mg/l (WQO is 0.005 mg/l) in well J-1. For these three metals, the WQO is the drinking water MCL. However, according to the East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, prepared by the RWQCB Groundwater Committee[5], groundwater in Emeryville is unlikely to be used as a drinking water source in the foreseeable future. Therefore, the drinking water MCL is not applicable. In comparing the data for these metals to the San Francisco Bay RWQCB ESLs where groundwater is NOT a current or potential drinking water source, the ESLs based on the protection of aquatic habitats also is not applicable because of the distance of the Site with respect to the San Francisco Bay. Therefore, the ceiling value is the most applicable screening criteria. The ceiling values are 50 µg/l for barium, beryllium, and cadmium. The detections of these constituents are all below the most applicable screening level.

   Groundwater samples from Well J-1 and borings FF-2 and FF-3 were analyzed for petroleum hydrocarbons and VOCs. The only detection was TVHg at 53 µg/l in boring FF-2. The ESL for TVHg where groundwater is not a drinking water source is 500 µg/l. Additionally, a discrete soil sample collected from boring FF-2 at 6.0 feet bgs (below the water table) and a composite soil sample collected from borings FF-1, FF-2, and FF-5 at 5.5/6.0 feet bgs (below the water table) were analyzed for TVHg, TEHk, and TEHd; none were detected. Therefore, there is not likely a petroleum issue

[4] RWQCB, 1995, Water Quality Control Plan, San Francisco Bay Basin (Region 2), June 21.
[5] RWQCB Groundwater Committee, 1999, East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, June.

in groundwater beneath this Site and no additional grab groundwater sampling is warranted for TPH and VOCs.

SUMMARY AND CONCLUSIONS

The Site is approximately 0.5 acres and was previously used for railroad freight loading operations, material storage, and parking. Several soil and groundwater investigations and soil removal activities have been conducted at the Site.

Groundwater

Investigation activities have indicated the presence of some metals and TVHg in groundwater beneath the Site. However, metals are present below applicable screening criteria (ceiling values) given the fact that groundwater will not likely be used as a drinking water source. TVHg was only detected in one groundwater sample and was not present in the water or deeper soil samples analyzed at the Site. Therefore, metals and petroleum in groundwater at the Site are not considered to be issues of concern at the Site and no further action with respect to groundwater is recommended.

Soil

Soil investigations conducted in the 1990s indicated the presence of arsenic, barium, cadmium, copper, lead, and zinc at concentrations exceeding human health screening levels in use at the time. The elevated metals concentrations appeared to be confined to a 2- to 6-feet-thick layer of black sand that was present at approximately 2 feet bgs at the Site. The black sand was excavated in 1999 and confirmation sampling indicated that, with a few exceptions, arsenic (used as an indicator) concentrations remaining were below screening levels.

Additional investigation was conducted in 2004 to assess metals concentrations remaining at the Site with respect to current residential screening levels and to assess the presence of PAHs at the Site. Based on these results and previous confirmation sample results, additional soil containing elevated metals concentrations was excavated from five areas. Confirmation samples collected from these excavations indicate that metals concentrations remaining in soil at the Site are below the current screening levels (Figure 6).

PAHs were detected in Site soil, however, concentrations were below acceptable screening criteria.

Based on the information provided herein, we conclude that groundwater at the Site has not been significantly impacted and the concentrations of metals remaining in soil at the Site are below residential screening criteria. Therefore, we request that no further action be required

at this Site, that the ACHCSA formally issue a no further action status for the Site, and that it be approved for unrestricted residential deed development.

Please call either of the undersigned if you have any questions or require additional information.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

Jennifer L. Patterson, P.E.
Senior Engineer

Tom E. Graf
Consultant

JLP/TEG/ldu

Attachments: Table 1 – Summary of Historical Soil Analytical Results
Table 2 – Summary of Historical Groundwater Analytical Results
Table 3 – Soil Sample Analytical Results – Metals
Table 4 – Soil Sample Analytical Results – Polynuclear Aromatic Hydrocarbons
Figure 1 – Site Location Map
Figure 2 – Arsenic Concentrations in Soil Prior to 1999 Excavation
Figure 3 – Groundwater Analytical Results
Figure 4 – Post-1999 Excavation Confirmation Soil Sampling Locations
Figure 5 – 2004 Investigation Soil Sampling and Excavation Locations
Figure 6 – Arsenic Concentrations Remaining in Soil
Attachment A – PES, December 1990 Report
Attachment B – Weiss Associates, October 5, 1994 Letter
Attachment C – Subsurface Consultants, Figure and Analytical Results
Attachment D – Geomatrix Consultants, December 9, 1997 Draft Letter
Attachment E – Geomatrix Consultants, July 6, 2001 Letter

TABLE 1

SUMMARY OF HISTORICAL SOIL ANALYTICAL RESULTS

4226 Halleck Street

Emeryville, California

Concentrations reported in milligrams per kilogram (mg/kg)

Sample Location	Sample Depth	Sample Type	Sample Date	Metals																	Organics				
				Antimony	Arsenic	Barium	Beryl-lium	Cad-mium	Chrom-ium[1]	Cobalt	Copper	Mercury	Molyb-denum	Nickel	Lead	Selen-ium	Silver	Thal-lium	Vanad-ium	Zinc	TVHg	TEHk	TEHd	VOCs	SVOCs
FF-2/3/4[2,4]	1.0	Investigation	11/20/90	<5.0	6	110	<0.5	2	28	10	74	0.3	<0.5	39	96	<2.5	<1	<5.0	18	280	NA	NA	NA	NA	NA
FF-2/4/5[3,4]	1.75 - 2.5	Investigation	11/20/90	<5.0	210	1100	<0.5	24	52	72	2600	<0.1	3.2	13	550	<2.5	2	<5.0	34	9300	NA	NA	NA	NA	NA
FF-2-6.0[4]	6.0	Investigation	11/20/90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	<10	Toluene - **0.016**	ND
FF-1/3/5[4]	5.5 - 6.0	Investigation	11/20/90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	<10	Toluene - **0.018**	ND
B1S[5]	2.5	Investigation	08/10/94	16	6800	1400	<0.5	10	25	43	2300	<0.05	21	9	190	<1.0	12	<5.0	27	21,000	NA	NA	NA	NA	NA
B2S[5]	2.5	Investigation	08/10/94	27	1400	440	<0.5	7	65	58	2300	<0.05	11	28	640	<1.0	11	6	26	10,000	NA	NA	NA	NA	NA
8@2.5'[6]	2.5	Investigation	12/15/95	NA	2.3	NA	NA	NA	44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
G-1	7.0	Investigation	11/13/97	NA	1.7	96	NA	0.3	NA	NA	16	NA	NA	NA	5.0	NA	NA	NA	NA	30	NA	NA	NA	NA	NA
	8.0	Investigation	11/13/97	NA	4.0	140	NA	0.5	NA	NA	40	NA	NA	NA	12	NA	NA	NA	NA	150	NA	NA	NA	NA	NA
G-2	2.0	Investigation	11/13/97	NA	140	2400	NA	6.0	NA	NA	3000	NA	NA	NA	200	NA	NA	NA	NA	10,000	NA	NA	NA	NA	NA
G-6	2.0	Investigation	11/13/97	NA	360	910	NA	2.0	NA	NA	1700	NA	NA	NA	450	NA	NA	NA	NA	6900	NA	NA	NA	NA	NA
	4.0	Investigation	11/13/97	NA	4.0	300	NA	0.9	NA	NA	20	NA	NA	NA	6.0	NA	NA	NA	NA	47	NA	NA	NA	NA	NA
G-7	7.0	Investigation	11/13/97	NA	4.5	81	NA	0.3	NA	NA	15	NA	NA	NA	5.0	NA	NA	NA	NA	28	NA	NA	NA	NA	NA
G-11	4.0	Investigation	11/13/97	NA	5.8	200	NA	0.7	NA	NA	22	NA	NA	NA	7.0	NA	NA	NA	NA	55	NA	NA	NA	NA	NA
G-13	4.0	Investigation	11/13/97	NA	19	240	NA	4.1	NA	NA	130	NA	NA	NA	450	NA	NA	NA	NA	670	NA	NA	NA	NA	NA
	5.0	Investigation	11/13/97	NA	5.8	230	NA	0.7	NA	NA	20	NA	NA	NA	7.0	NA	NA	NA	NA	45	NA	NA	NA	NA	NA
G-14	2.0	Investigation	11/13/97	NA	11	110	NA	0.9	NA	NA	64	NA	NA	NA	11	NA	NA	NA	NA	290	NA	NA	NA	NA	NA
	4.0	Investigation	11/13/97	NA	4.5	180	NA	0.5	NA	NA	19	NA	NA	NA	6.0	NA	NA	NA	NA	47	NA	NA	NA	NA	NA
T-1	2.5	Investigation	Unknown	NA	340	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3.0	Investigation	Unknown	NA	17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-2	2.0	Investigation	Unknown	NA	1100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3.0	Investigation	Unknown	NA	6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-3	2.0	Investigation	Unknown	NA	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3.5	Investigation	Unknown	NA	8.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-4	2.5	Investigation	Unknown	NA	870	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3.5	Investigation	Unknown	NA	802	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-1	Unknown	Confirmation	03/23/99	NA	21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-2	Unknown	Confirmation	03/23/99	NA	36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-3	Unknown	Confirmation	03/24/99	NA	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-4	Unknown	Confirmation	03/25/99	NA	4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S4-A	Unknown	Confirmation	04/13/99	NA	5.4	200	NA	<0.099	NA	NA	27	NA	NA	NA	6.6	NA	NA	NA	NA	64	NA	NA	NA	NA	NA
S-2A	Unknown	Confirmation	04/24/99	NA	5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S3-A	Unknown	Confirmation	04/24/99	NA	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-1/2/3/4	Unknown	Confirmation	3/23-25/99	NA	48	420	NA	2.3	NA	NA	270	NA	NA	NA	120	NA	NA	NA	NA	1200	NA	NA	NA	NA	NA
S-5/6/7/8	Unknown	Confirmation	3/25-29/99	NA	9.5	330	NA	1.3	NA	NA	98	NA	NA	NA	30	NA	NA	NA	NA	380	NA	NA	NA	NA	NA
S-9/10/11/12	Unknown	Confirmation	3/29-31/99	NA	11	230	NA	1.4	NA	NA	78	NA	NA	NA	30	NA	NA	NA	NA	270	NA	NA	NA	NA	NA
S-13/14/15/16	Unknown	Confirmation	4/1-15/99	NA	5	170	NA	<0.098	NA	NA	30	NA	NA	NA	15	NA	NA	NA	NA	67	NA	NA	NA	NA	NA
S-17/18/19/20	Unknown	Confirmation	4/15-20/99	NA	6.3	200	NA	0.2	NA	NA	28	NA	NA	NA	8.5	NA	NA	NA	NA	73	NA	NA	NA	NA	NA

TABLE 1

SUMMARY OF HISTORICAL SOIL ANALYTICAL RESULTS

4226 Halleck Street
Emeryville, California

Concentrations reported in milligrams per kilogram (mg/kg)

Sample Location	Sample Depth	Sample Type	Sample Date	Metals																	Organics				
				Antimony	Arsenic	Barium	Beryl-lium	Cad-mium	Chrom-ium[1]	Cobalt	Copper	Mercury	Molyb-denum	Nickel	Lead	Selen-ium	Silver	Thal-lium	Vanad-ium	Zinc	TVHg	TEHk	TEHd	VOCs	SVOCs
BF1A,B,C,D	Unknown	Confirmation	04/27/99	NA	32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BF2A,B,C,D	Unknown	Confirmation	04/27/99	NA	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BF3A,B,C,D	Unknown	Confirmation	04/27/99	NA	31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BF4A,B,C,D	Unknown	Confirmation	04/27/99	NA	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ESLs[7]				6.3	5.5	750	4.0	1.7	58	40	230	2.5	40	150	200	1.0	20	1.0	110	600	100	500	500	various	various
Background[8]				<10	14	410	1.1	5.6	120	25	63	0.5	<5	270	57	5.1	3	10	90	140	--	--	--	--	--

Notes:
All samples were collected by Geomatrix Consultants, Inc., unless otherwise indicated.
Shading indicates sample location was excavated.
[1] Total chromium; no hexavalent chromium was detected in any of the samples analyzed for metals.
[2] PES sample CFF-1, composite sample from Boring FF2 at 1.0', FF-3 at 1.0', and FF-4 at 1.0'.
[3] PES sample CFF-2, composite sample from Boring FF-2 at 2.5', FF-4 at 1.75' and FF-5 at 1.75'.
[4] Samples were collected by PES Environmental, Inc., of Novato, California.
[5] Samples were collected by Weiss Associates of Emeryville, California.
[6] Samples were collected by Subsurface Consultants of Oakland, California.
[7] Environmental Screening Levels; S.F. Bay Regional Water Quality Control Board, 2003, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, June (Table B-1).
[8] Represents the 99th percentile of background; arsenic is based on the 95th percentile. Lawrence Berkeley National Laboratory, 2002, Analysis of Background Distributions of Metals in Soil at Lawrence Berkeley National Laboratory, June.

Abbreviations:
NA = not analyzed
TVHg = Total Volatile Hydrocarbons quantified as gasoline.
TEHk = Total Extractable Hydrocarbons quantified as kerosene.
TEHd = Total Extractable Hydrocarbons quantified as diesel.
VOCs = Volatile Organic Compounds
SVOCs = Semivolatile Organic Compounds
-- = not applicable

TABLE 2

SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS
4226 Halleck Street
Emeryville, California

Concentrations reported in micrograms per liter (µg/L)

Sample Location	Sample Date	Metals																Organics				
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Mercury	Molyb-denum	Nickel	Lead	Selenium	Silver	Thallium	Vanadium	Zinc	TVHg	TEHk	TEHd	VOCs	SVOCs
WFF-1[1]	11/20/90	<50	<50	**250**	<10	<10	<10	<10	<10	<10	**10**	**20**	<50	<50	<20	<50	<20	**50**	<50	NA	NA	ND	NA
WFF-2[1]	11/20/90	<50	<50	**1800**	<10	<10	<10	<10	**20**	<1	**30**	<10	<50	<50	<20	<50	<20	**70**	**53**	NA	NA	ND	NA
B1W[2]	08/10/94	<100	**9**	**330**	<5	<10	<20	<20	<20	<2	<20	<20	<20	<10	<20	<200	<20	<20	NA	NA	NA	NA	NA
B2W[2]	08/10/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J-1[1]	10/15/90	<100	<50	NA	<10	<10	<10	NA	<20	<1	NA	<10	<50	<50	<20	<100	NA	<10	<50	<50	<50	ND	NA
J-1[2]	08/10/94	<100	**5**	**120**	**5**	**10**	<20	<20	<20	<2	<20	**20**	<100	<10	<20	<200	**50**	<20	NA	NA	NA	NA	NA
B-8[3]	12/15/95	NA	**32**	NA	NA	NA	**45**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WQO's		6	50	1000	4	5	50	--	1000	2	--	1000	50	50	50	2	--	5000	--	--	--	various	various

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Notes:

[1] Samples were collected by PES Environmental, Inc., of Novato, California and filtered by the laboratory prior to analysis.

[2] Samples were collected by Weiss Associates of Emeryville, California and were not filtered prior to analysis.

[3] Sample was collected by Subsurface Consultants of Oakland, California and filtered by the laboratory prior to analysis.

[4] Water Quality Objectives; Regional Water Quality Control Board, San Francisco Bay Region, 1995, Water Quality Control Plan, San Francisco Basin (Region 2), June 21.

Abbreviations:
NA = not analyzed
ND = not detected above laboratory reporting limit
TVHg = Total Volatile Hydrocarbons quantified as gasoline.
TEHk = Total Extractable Hydrocarbons quantified as kerosene.
TEHd = Total Extractable Hydrocarbons quantified as diesel.
VOCs = Volatile Organic Compounds
SVOCs = Semivolatile Organic Compounds
-- = not applicable

GEOMATRIX

TABLE 3

SOIL SAMPLE ANALYTICAL RESULTS - METALS[1]

4226 Halleck Street
Emeryville, California

Concentrations in milligrams per kilogram (mg/kg)

Boring Location	Sample Depth (feet bgs)	Sample Type	Sample Date	Metals					
				Arsenic	Barium	Cadmium	Copper	Lead	Zinc
GMX-1	4.0	Investigation	10/22/04	22	73J+[2]	5.4	57	54J[3]	470
GMX-1-BTM	5.5	Confirmation	11/04/04	2.4	180	<0.50[4]	19	5.3J-[5]	40J-
GMX-2	4.0	Investigation	10/22/04	3.0	200J+	0.53	21	5.5J	51
GMX-3	4.0	Investigation	10/22/04	5.6	140J+	<0.50	18	4.9J	40
GMX-4	4.0	Investigation	10/22/04	3.8	150J+	<0.50	19	5.0J	38
GMX-5	4.0	Investigation	10/22/04	6.9	160J+	0.54	29	9.8J	70
GMX-6	4.0	Investigation	10/22/04	4.9	170J+	0.50	19	4.7J	40
GMX-7	5.5	Investigation	10/22/04	4.8	140J+	<0.50	24	25J	76
GMX-8	5.0	Investigation	10/22/04	2.7	120J+	<0.50	15	3.8J	34
GMX-9	2.0	Investigation	10/22/04	7.8	94J+	<0.50	28	20J	71
	4.0	Investigation	10/22/04	3.9	140J+	0.55	21	27J	58
GMX-10	2.0	Investigation	10/22/04	14.0	260J+	2.20	110	300J	520
	4.0	Investigation	10/22/04	94.0	180J+	3.00	36	120J	220
GMX-10-BTM	5.0	Confirmation	11/04/04	2.0	150	<0.50	19	6.6J-	34J-
GMX-10-EAST	4.0	Confirmation	11/04/04	5.0	79	<0.50	26	42J-	110J-
GMX-10-SOUTH	4.0	Confirmation	11/04/04	12.0	230	1.30	49	110J-	210J-
GMX-10-WEST	4.0	Confirmation	11/04/04	14.0	340	3.40	140	430J-	480J-
GMX-10-WEST-2	4.5	Confirmation	11/22/04	5.7	--[6]	--	--	56.0	--
GMX-10-NORTH	4.0	Confirmation	11/04/04	19.0	290	2.80	260	680J-	1300J-
GMX-10-NORTH-2	4.5	Confirmation	11/22/04	26.0	--	--	--	350.0	--
EX-1	5.0	Confirmation	12/13/04	<1.0	--	--	--	3.9	--
EX-2	5.0	Confirmation	12/13/04	<1.0	--	--	--	5.3	--
EX-3	4.0	Confirmation	12/13/04	<1.0	--	--	--	5.7	--
GMX-11	2.0	Investigation	10/22/04	4.9	82J+	0.62	51	37J	140
	4.0	Investigation	10/22/04	8.2	200J+	0.79	26	6.7J	61
S-3-BTM	3.0	Confirmation	11/04/04	38.0	420	1.50	240	42J-	810J-
S-3-BTM-2	4.0	Confirmation	11/22/04	66.0	--	--	--	--	--
S-3-BTM-3	5.5	Confirmation	11/23/04	4.5	--	--	--	--	--
S-3-WEST	2.5	Confirmation	11/04/04	3.7	86	0.57	20	52J-	83J-
S-2-BTM	3.0	Confirmation	11/04/04	3.9	130	0.52	20	12J-	42J-
S-1-BTM	3.0	Confirmation	11/04/04	6.1	160	0.64	40	20J-	110J-
DB-1A	2.0	Investigation	11/30/04	6.6	--	--	--	40J-	--
	4.0	Investigation	11/30/04	11.0	--	--	--	670J-	--
DB-1B	2.0	Investigation	11/30/04	6.7	--	--	--	46J-	--
	4.0	Investigation	11/30/04	12.0	--	--	--	360J-	--
DB-2A	2.0	Investigation	11/30/04	6.6	--	--	--	32J-	--
	4.0	Investigation	11/30/04	5.8	--	--	--	130J-	--
DB-2B	2.0	Investigation	11/30/04	7.0	--	--	--	39J-	--
	4.0	Investigation	11/30/04	23.0	--	--	--	640J-	--
DB-3A	2.0	Investigation	11/30/04	7.0	--	--	--	40.0	--
	4.0	Investigation	11/30/04	7.1	--	--	--	35.0	--
DB-3B	2.0	Investigation	11/30/04	9.2	--	--	--	190.0	--
	4.0	Investigation	11/30/04	22.0	--	--	--	260.0	--
DB-4A	2.0	Investigation	11/30/04	7.1	--	--	--	40.0	--
	4.0	Investigation	11/30/04	5.9	--	--	--	160.0	--
DB-4B	2.0	Investigation	11/30/04	9.6	--	--	--	27.0	--
	4.0	Investigation	11/30/04	50.0	--	--	--	260.0	--

GEOMATRIX

TABLE 3

SOIL SAMPLE ANALYTICAL RESULTS - METALS[1]

4226 Halleck Street
Emeryville, California

Concentrations in milligrams per kilogram (mg/kg)

Boring Location	Sample Depth (feet bgs)	Sample Type	Sample Date	Metals					
				Arsenic	Barium	Cadmium	Copper	Lead	Zinc
DB-5A	2.0	Investigation	11/30/04	**4.7J-**	--	--	--	**24J-**	--
	4.0	Investigation	11/30/04	**5.3J-**	--	--	--	**130J-**	--
DB-5B	2.0	Investigation	11/30/04	**5.1J-**	--	--	--	**27J-**	--
	3.5	Investigation	11/30/04	**5.7J-**	--	--	--	**120J-**	--
DB-6A	2.0	Investigation	11/30/04	**6.4J-**	--	--	--	**29J-**	--
	4.0	Investigation	11/30/04	**2.3J-**	--	--	--	**160J-**	--
DB-6B	2.0	Investigation	11/30/04	**5.7J-**	--	--	--	**40J-**	--
	4.0	Investigation	11/30/04	**6.5J-**	--	--	--	**100J-**	--
ESLs[7]				5.5	750	1.7	230	200	600
Background[8]				14	410	5.6	63	57	140

Notes:

Shading indicates that the soil at that location has been excavated and removed from the site

[1] Soil samples were collected by Geomatrix Consultants, Inc., of Oakland, California, and analyzed for arsenic, barium, cadmium, copper, lead and zinc using U.S. Environmental Protection Agency (EPA) Method 6010B.

[2] "J+" indicates the result is an estimated quantity, but the results may be biased high.

[3] "J" indicates the result is an estimated quantity. The associated numerical value is the approximate concentration.

Background Distributions of Metals in Soil at Lawrence Berkeley National Laboratory, June.

[4] "<" indicates chemical concentration not detected at or above the laboratory reporting limit shown.

[5] "J-" indicates the result is an estimated quantity, but the results may be biased low.

[6] "--" = not analyzed

[7] Environmental Screening Levels; S.F. Bay Regional Water Quality Control Board 2003, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, June (Table B-1).

[8] Represents the 99th percentile of background; arsenic is based on the 95th percentile. Lawrence Berkeley National Laboratory. 2002. Analysis of Background Distributions of Metals in Soil at Lawrence Berkeley National Laboratory, June.

Abbreviations:

bgs = below ground surface

TABLE 4

SOIL SAMPLE ANALYTICAL RESULTS - POLYNUCLEAR AROMATIC HYDROCARBONS[1]

4226 Halleck Street
Emeryville, California

Concentrations reported in milligrams per kilogram (mg/kg)

Sample Point	Bottom Depth (feet)	Sample Date	Acenaph-thene	Acenaph-thylene	Anthra-cene	Benzo (a) anthracene	Benzo (a) pyrene	Benzo (b) fluoran-thene	Benzo (g,h,i) perylene	Benzo (k) fluoran-thene	Chrysene	Dibenz (a,h) anthracene	Fluoran-thene	Fluorene	Indeno (1,2,3-cd) pyrene	Naph-thalene	Phenan-threne	Pyrene	B(a)P EQ [2]
GMX-2	4.0	10/22/04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND
GMX-5	4.0	10/22/04	<0.025	<0.025	0.028	0.120	0.074	0.095	0.130	0.09	0.160	<0.025	0.320	<0.025	0.100	<0.025	0.220	0.240	0.12
GMX-8	4.0	10/22/04	<0.025	<0.025	0.048	0.110	0.110	0.051	0.058	0.074	0.110	<0.025	0.210	<0.025	0.053	<0.025	0.160	0.240	0.14
GMX-9	2.0	10/22/04	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	ND
GMX-11	2.0	10/22/04	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	<0.025	0.039	<0.025	<0.025	0.031	0.025
Potency Equivalency Factor			NA	NA	NA	0.1	1	0.1	NA	0.1	0.01	0.34[3]	NA	NA	0.1	NA	NA	NA	NA
ESLs[4]			19	13	2.8	0.38	0.038	0.38	27	0.38	3.8	0.11	40	8.9	0.38	0.52	11	85	0.038

Notes:

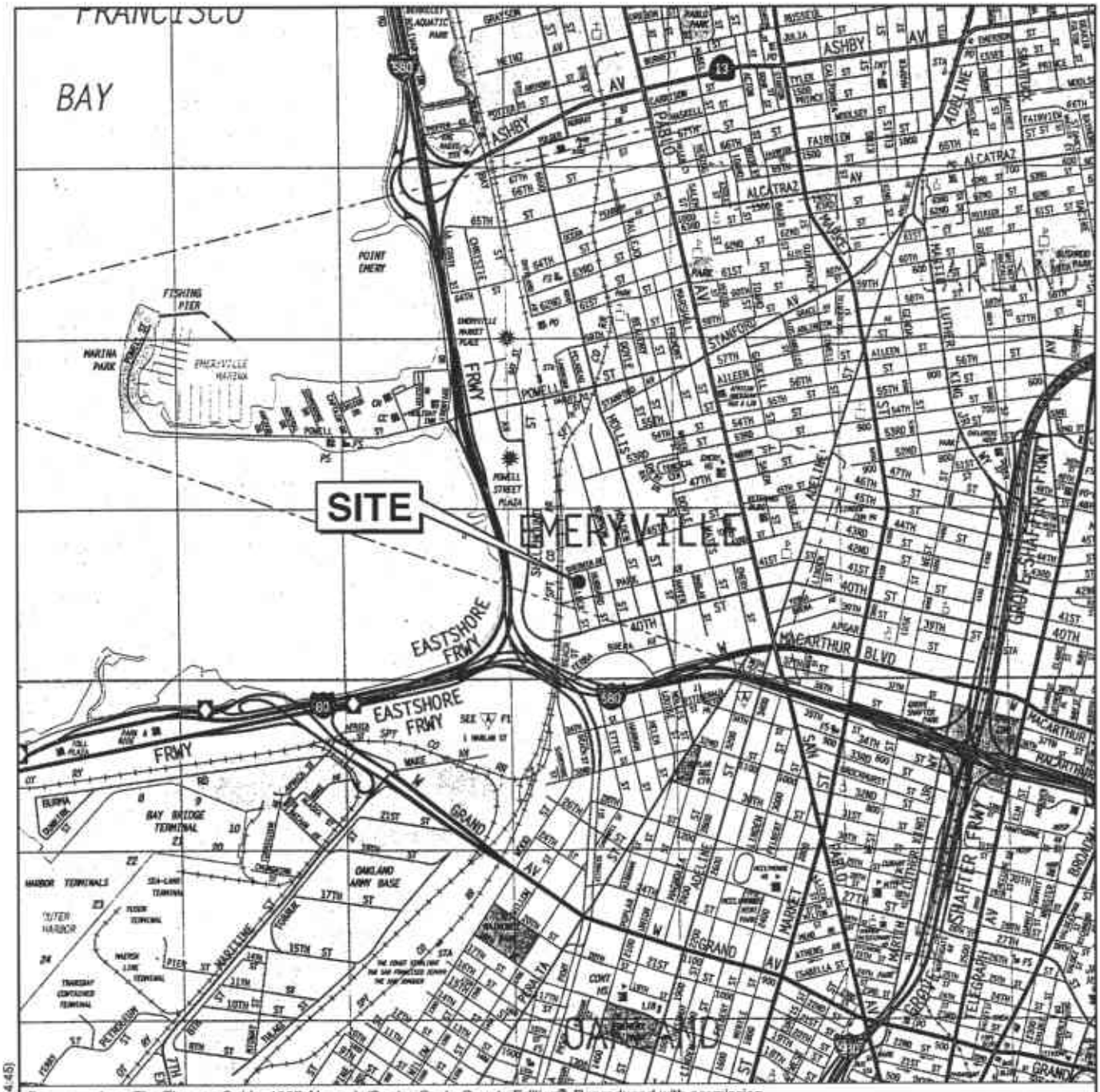
[1] Samples collected by Geomatrix Consultants, Inc., and analyzed by Severn Trent Laboratories, Inc., of Pleasanton, California, for polynuclear aromatic hydrocarbons using EPA Method 8270C with selective ion monitoring (SIM).

[2] B(a)P EQs = Benzo(a)pyrene equivalents are used to assess the relative toxicity of carcinogenic PAHs and PAH derivatives as a group (OEHHA, 1993).
If a PAH was not detected, one-half the detection limit was multiplied by the corresponding potency equivalency factor (PEF).
B(a)P EQs were only calculated if one or more of the carcinogenic PAHs were detected. The PEFs used to calculate B(a)P EQs were 1.0 for benzo(a)pyrene;
0.1 for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene; 0.01 for chrysene; and 0.34 for dibenz(a,h)anthracene.

[3] PEF based upon the California EPA oral carcinogenic slope factor of 4.1 mg/kg-day[1] (OEHHA, 2004).

[4] Environmental Screening Levels; S.F. Bay Regional Water Quality Control Board 2003, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, June (Table B-1).

Abbreviations:
NA = not applicable
ND = not detected



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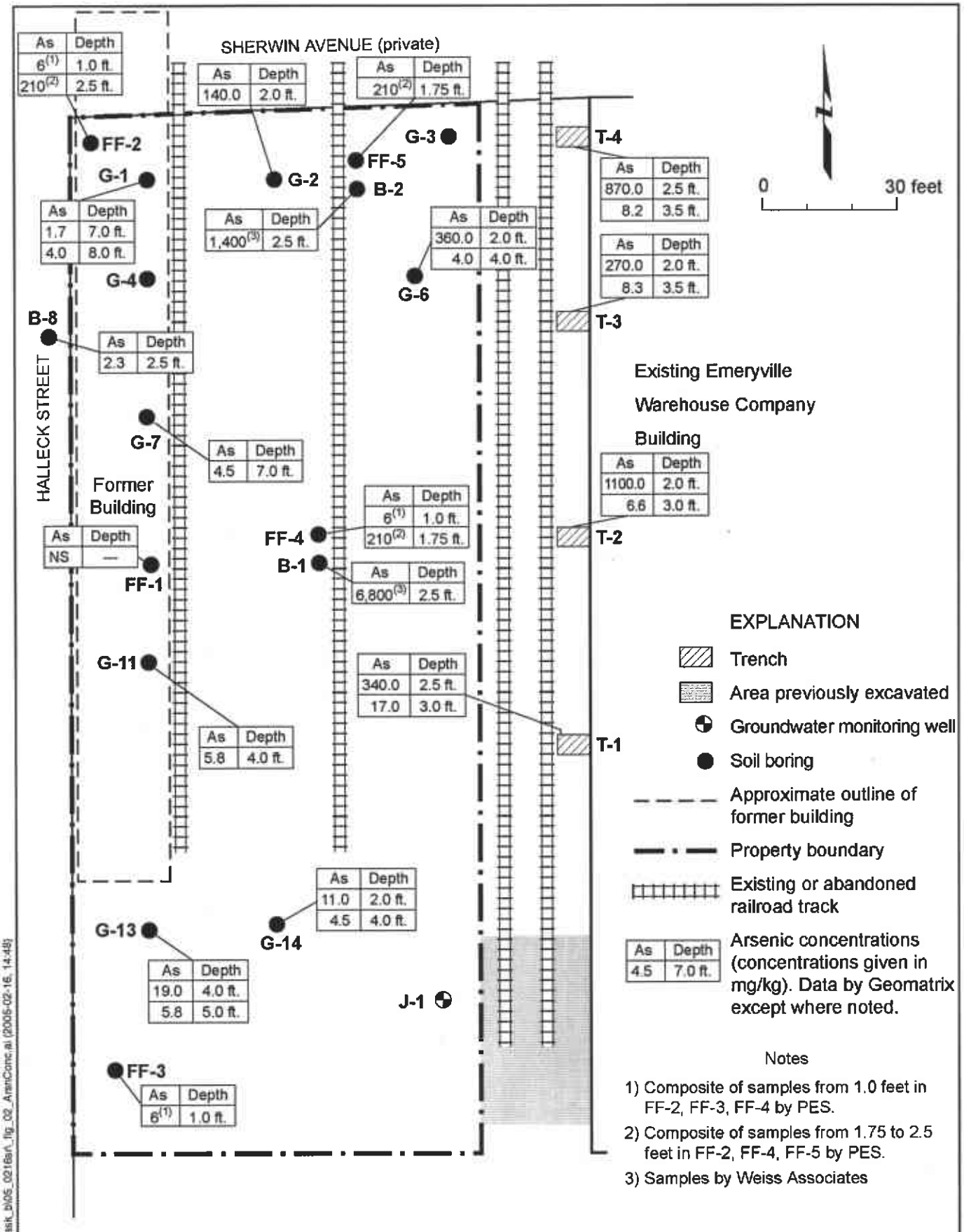
GEOMATRIX

SITE LOCATION MAP
4226 Halleck Street
Emeryville, California

Project No.
3095.007

Figure
1



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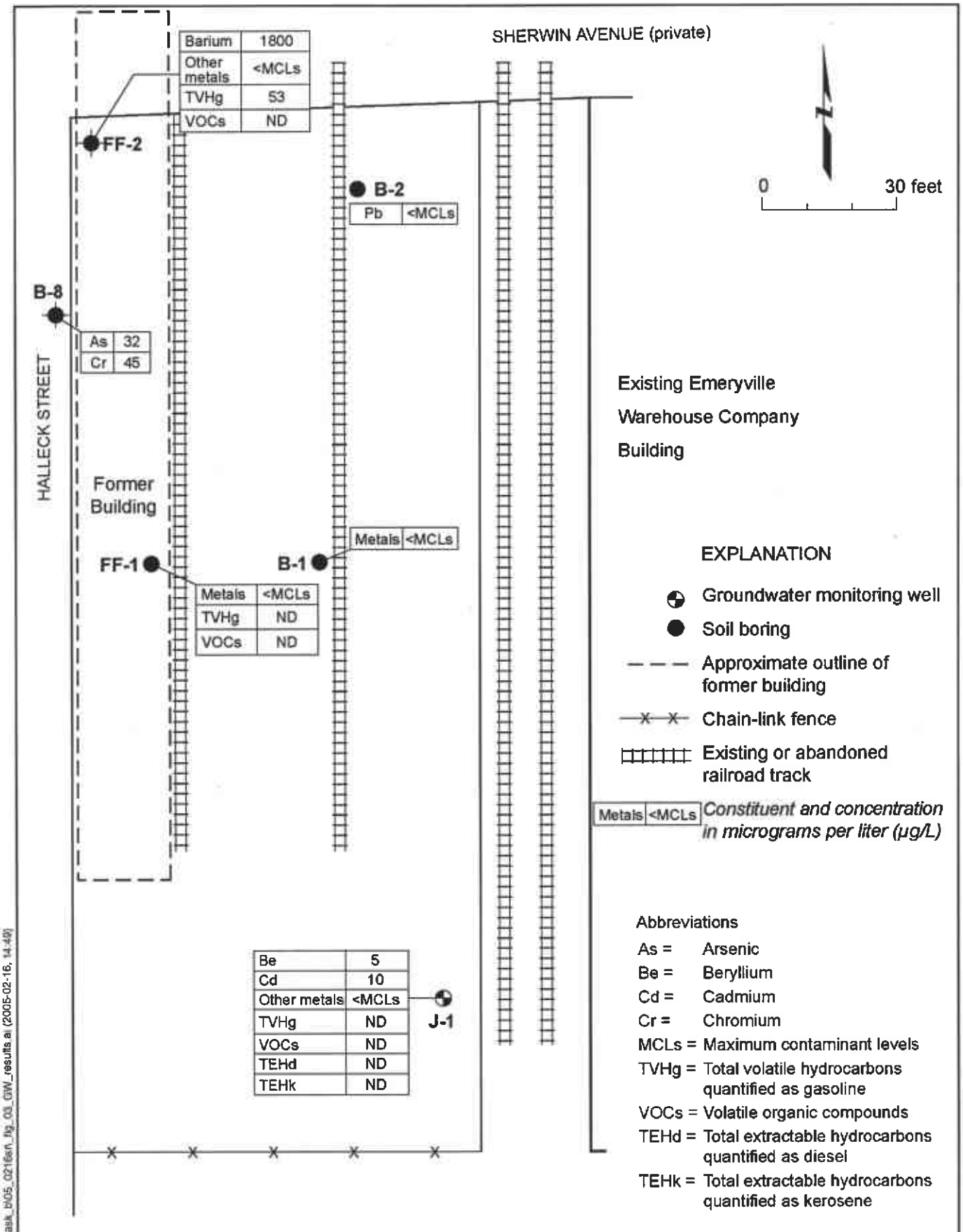
GEOMATRIX

ARSENIC CONCENTRATIONS IN SOIL PRIOR TO 1999 EXCAVATION
4226 Halleck Street
Emeryville, California

Project No. 3095.007

Figure 2



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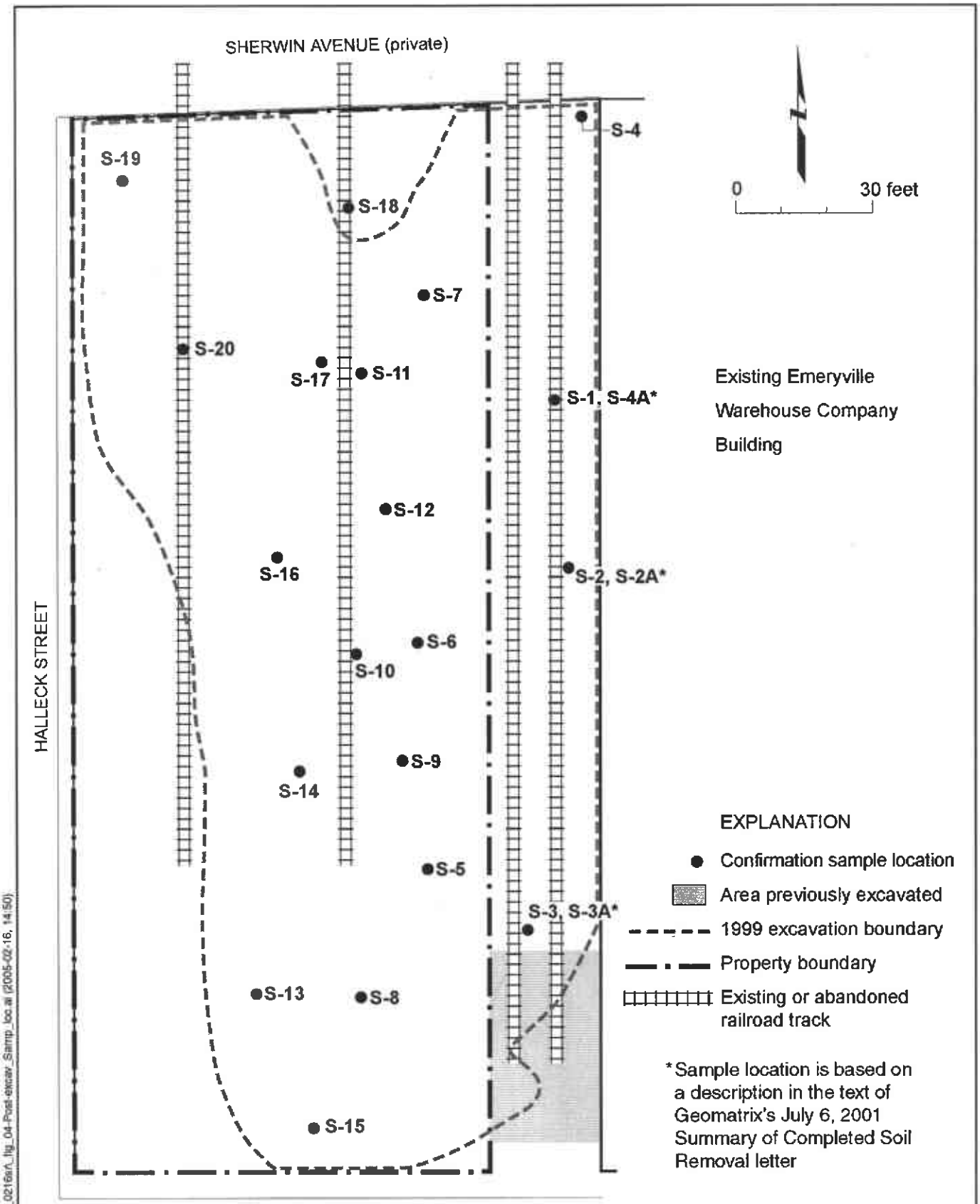
GEOMATRIX

GROUNDWATER ANALYTICAL RESULTS
4226 Halleck Street
Emeryville, California

Project No.
3095.007

Figure
3



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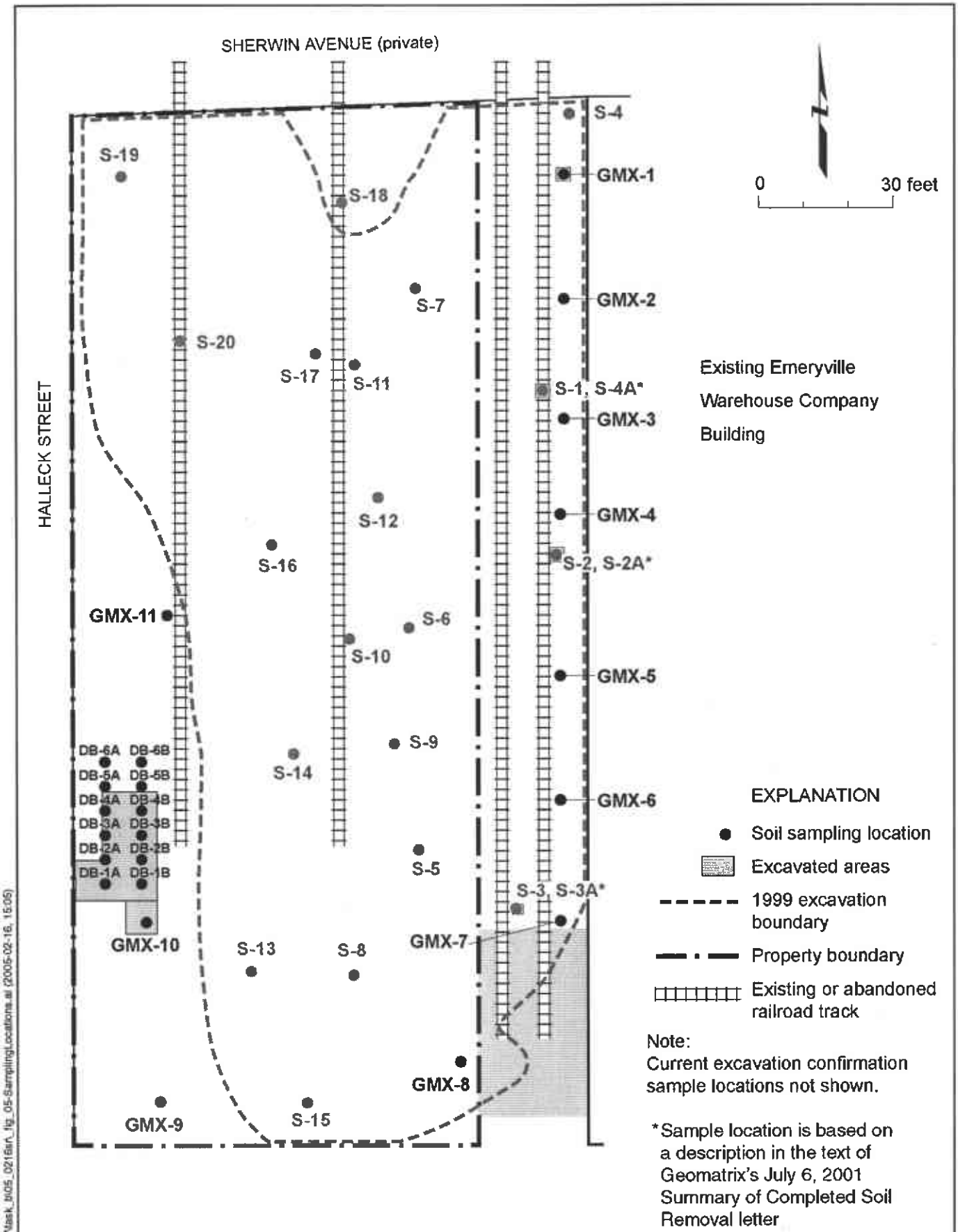
GEOMATRIX

POST-1999 EXCAVATION CONFIRMATION
SOIL SAMPLING LOCATIONS
4226 Halleck Street
Emeryville, California

Project No.
3095.007

Figure
4



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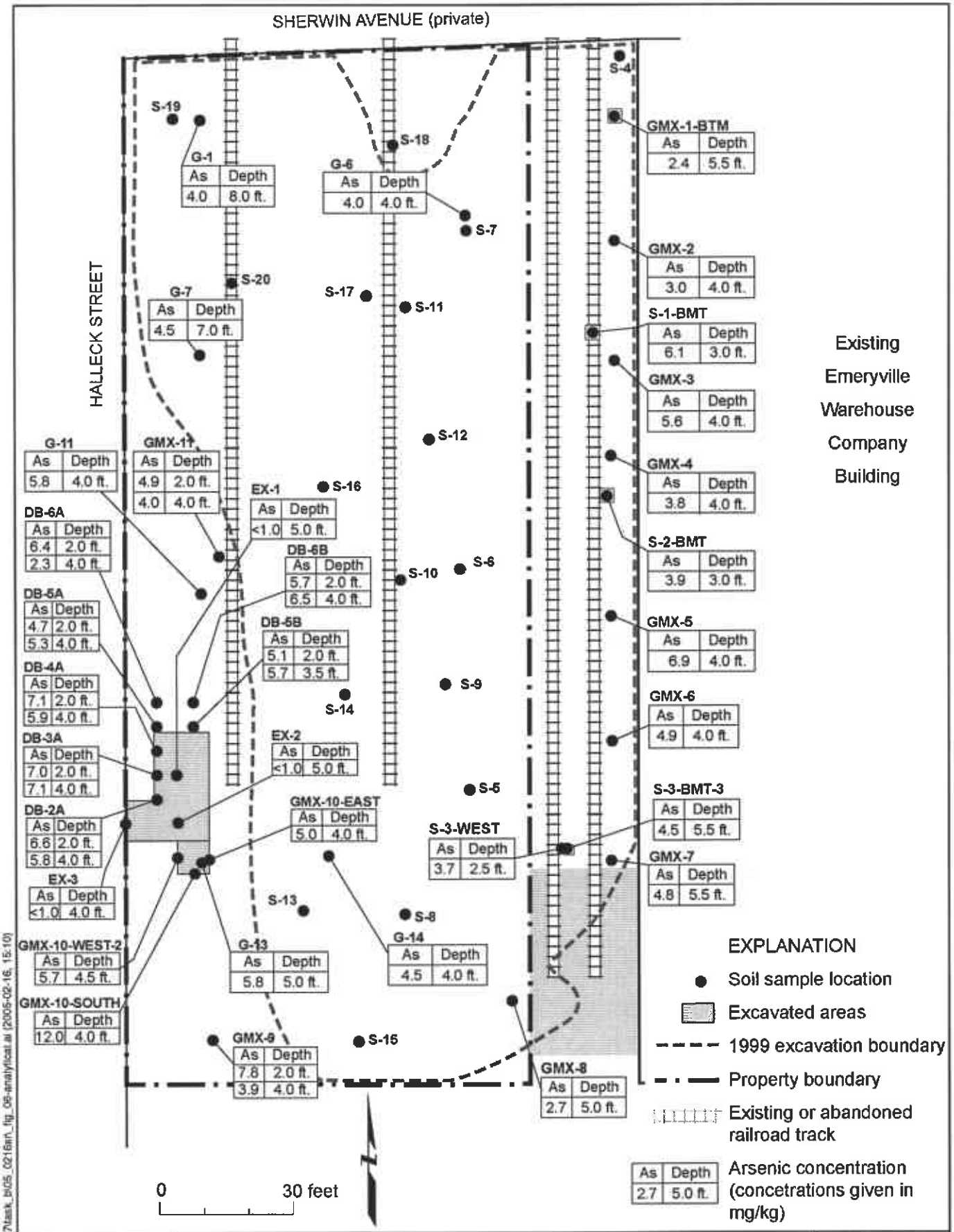
GEOMATRIX

2004 INVESTIGATION SOIL SAMPLING AND EXCAVATION LOCATIONS
4226 Halleck Street
Emeryville, California

Project No. 3095.007

Figure 5



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GEOMATRIX

ARSENIC CONCENTRATIONS REMAINING IN SOIL
4226 Halleck Street
Emeryville, California

Project No.
3095.007

Figure
6

GEOMATRIX

ATTACHMENT A

PES, December 1990 Report

PES Environmental, Inc.
Engineering & Environmental Services

A Report Prepared for:

Emeryville Warehouse Company
244 Kearny Street, 9th Floor
San Francisco, California 94108

SUBSURFACE ENVIRONMENTAL INVESTIGATION
PHASES II AND III
SOUTHERN PACIFIC PROPERTY
SHERWIN AVENUE AND HALLECK STREET
EMERYVILLE, CALIFORNIA

PES Job No. FF001C

by

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EXP. 10/30/94
CIVIL
STATE OF CALIFORNIA

December 19, 1990

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8991600

SF 031926

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1.0 INTRODUCTION

This report presents the results of a subsurface environmental investigation of the Southern Pacific property located southeast of the corner of Sherwin Avenue and Halleck Street in Emeryville, California. The vicinity of the project site is shown on Plate 1. This investigation was performed by PES Environmental, Inc. (PES) for Emeryville Warehouse Company (EWC). EWC is evaluating environmental conditions on the property prior to purchasing the site.

1.1 Background Information

The subject property is a vacant and partially paved lot which is used for parking by surrounding businesses. No structures currently exist onsite. The site is generally level and measures approximately 90 by 230 feet. A site plan is attached as Plate 2.

In August, 1990, PES was retained by EWC to conduct a Phase I - Preacquisition Site Assessment (PSA) of the subject property. A copy of the PSA is attached as Appendix A. The PSA included a review of available information regarding former site uses and current and former uses of surrounding properties. A review of government environmental agency files was also performed. The results of the PSA indicated that the property was formerly used as a materials transfer facility by surrounding businesses. Materials transported by railroad cars were unloaded at the site and transferred to trucks for distribution to local businesses. The remnants of four rail sidings are still present on the site. Aerial photos indicate a building, possibly used as a warehouse, was located along Halleck Street. These features are shown on Plate 2.

The PSA also determined that several properties are located nearby that are associated with current or past use, storage or disposal of hazardous materials. Additionally, several sites were identified at which the soil and/or groundwater contamination has been documented. It is believed that groundwater generally flows to the west, towards San Francisco Bay. Groundwater contamination has been identified at several sites upgradient of the subject property. These sites are discussed in Appendix A.

Based on the results of the PSA, it was concluded that a potential for environmental impairment of the subject property exists due to former site uses on offsite sources. Specific onsite occurrences of contaminant release were not identified; however, the heavy industrial activity in the vicinity suggests that hazardous materials or other potential site contaminants may have been handled as part of the materials transfer activities. It was also concluded that the presence of groundwater contamination at nearby upgradient sites could have resulted in migration of contaminated groundwater to the Southern Pacific property.

1.2 Purpose and Scope

This subsurface investigation was conducted in two phases (Phase II and Phase III). The Phase II investigation consisted of a limited evaluation of the uppermost groundwater conditions on the assumed upgradient (eastern) side of the property. The objective of Phase II was to evaluate whether near-surface groundwater contamination from upgradient sites has migrated onto the subject property. The scope consisted of installing one shallow groundwater monitoring well, collecting one groundwater sample, and conducting chemical analysis. The investigation was limited to the near-surface groundwater within the uppermost water-bearing zone. Exploration of deeper groundwater conditions was beyond the scope of the investigation. The Phase II investigation methods are described in Section 2.1.

The objective of the Phase III investigation was to evaluate whether past onsite activities have resulted in near-surface soil and/or groundwater contamination. Phase III consisted of exploration of onsite soils by drilling shallow soil borings, collecting soil samples and conducting chemical analysis. Also during Phase III, additional near-surface groundwater sampling was performed by collecting samples from two soil borings located on the assumed downgradient (western) side of the property. The Phase III methodology is described in Section 2.2 of this report.

Results of the Phase II and III investigations are presented in Section 3.0 of this report. Discussion of the results and recommendations are presented in Section 4.0.

2.0 INVESTIGATION METHODOLOGY

This section describes the procedures employed during the field investigation and the analytical program for chemical analysis of soil and groundwater samples. The Phase II investigative procedures are described in Section 2.1. The Phase III methodology is described in Section 2.2.

Prior to conducting field activities, PES prepared a project-specific health and safety plan in accordance with PES' guidelines for conducting hazardous waste investigations. The purpose of the plan is to identify potential safety and health risks and then develop appropriate procedures to reduce risks to acceptable levels. The plan was developed in accordance with applicable federal guidelines.

Before subsurface explorations were initiated, PES retained the services of California Utility Surveys, of San Mateo, to verify that the boring locations were clear of underground utilities.

2.1 Phase II Investigation

As described in Section 1.2, the Phase II Investigation consisted of drilling a single boring for installation of a groundwater monitoring well (Well J-1). The well was developed and groundwater samples were collected for chemical analysis.

2.1.1 Soil Borings and Soil Sampling

The well boring was drilled on October 11, 1990, using a truck-mounted hollow stem auger drill rig operated by Exceltech of Fremont, California. The borehole was advanced using an 8-inch outside diameter, hollow-stem auger to a depth of 14.5 feet below ground surface (bgs). The location of Boring J-1 is shown on Plate 2. Soil cuttings were collected by a PES geologist for lithologic description. Saturated soils were encountered at 5.5 bgs.

To avoid cross-contamination between sampling locations, all equipment used for drilling and soil sampling was decontaminated prior to each sampling event. Drilling equipment was pre-cleaned with a combination steam/high pressure wash system. Soil sampling equipment used repeatedly in the same boring was decontaminated by washing with a tri-sodium phosphate (TSP) soap and water solution with a potable water rinse. Water used for cleaning was collected and stored in a 55-gallon drum and left on site.

Discrete soil samples were collected during drilling at approximately 2-foot intervals. The samples were collected by driving a 2-inch-diameter split spoon sampler lined with brass tubes through 18 inches of undisturbed soil. The samples were used for lithologic description and screened for the presence of volatile hydrocarbons using a photo-ionization gas analyzer. The soils were logged using the Uniform Soil Classification System (USCS). The presence or absence of soil discoloration, debris fill, odors and other evidence of

potential contamination was also noted. Plate 3 includes a log of Boring J-1 depicting subsurface conditions.

One sample tube from each sample drive was preserved by covering the tube ends with aluminum foil and vinyl caps then sealed with tape. Samples were labeled to designate boring number, depth, time and date of collection, and stored in a cooler for later chemical analysis, if needed.

Soil cuttings generated during drilling are being temporarily stored on-site in a 55-gallon drum. Disposal of this soil can now be arranged.

2.1.2 Monitoring Well Installation

After soil sampling and drilling was completed, the well casing was installed in the borehole through the hollow stem auger. The well casing consisted of 2-inch-diameter PVC with threaded flush-jointed connections. Well screen, with 0.020-inch slots, was placed within the water-bearing zone from 3.5 to 13.5 feet bgs. A sand filter pack, consisting of Monterey No. 2/12 sand, was placed adjacent to the entire screened interval and was extended one foot above the screen. A one foot bentonite pellet seal was placed above the sand pack and hydrated with potable water. Levels of the sand pack and bentonite seal were confirmed by sounding with a weighted tape.

The annular space above the bentonite seal was grouted from the bentonite seal up to ground surface with a neat cement and bentonite grout. The well was completed at grade in a traffic-resistant utility vault with a locking water-tight cap. The well completion details are shown with the lithologic log on Plate 3.

2.1.3 Well Development and Groundwater Sampling

The well was developed by Blaine Tech Services, Inc. (Blaine Tech) on October 12, 1990. Well development included surging to sort the sand pack and pumping to remove fine sand and sediment. Development continued until the discharge water was reasonably free of sediment. A description of the well development procedures is provided in Appendix B.

Groundwater samples were collected by Blaine Tech on October 15, 1990. Approximately three well volumes were evacuated from the well using a Middleburg positive displacement pump. During evacuation, the discharge water was measured for pH, temperature, and electrical conductivity. Following purging, the well was sampled using the Middleburg pump. Samples were placed in appropriate containers, labeled to designate sample number, time and date collected, and analyses requested, and stored in a cool container for transport to the analytical laboratory with chain of custody documentation. Samples collected for metals analyses, including hexavalent chromium, were filtered through a 0.45-micron filter and preserved by acidifying with nitric acid to a pH less than 2.0. Information collected during groundwater sampling and chain of custody records are presented in Appendix C.

Well development and purge water is being temporarily stored on-site in a 55-gallon drum. Arrangements for disposal of this material can now be made.

2.1.4 Analytical Program

Phase II groundwater samples collected from Well J-1 were analyzed by Curtis and Tompkins, Ltd., a state-certified hazardous waste analytical laboratory located in Berkeley, California. The groundwater was analyzed for dissolved concentrations of priority pollutant metals using atomic absorption and inductively coupled plasma atomic emission spectroscopy (ICPAE) methods (EPA Test Methods 6000 and 7000 series). The groundwater was also analyzed for dissolved hexavalent chromium following EPA Test Method 7195.

Samples were also collected and analyzed for total extractable petroleum hydrocarbons (TEH) quantified as kerosine and diesel, following the California Department of Health Services (DOHS) method recommended in the Leaking Underground Fuel Tank (LUFT) Manual, 1989, and total volatile petroleum hydrocarbons (TVH), quantified as gasoline, also following the LUFT methods. The Phase II groundwater sample was also analyzed for benzene, toluene, ethyl benzene and total xylenes following EPA Test Method 5030/8020. Finally, the groundwater was analyzed for purgeable halogenated organics following EPA Test Method 8010. One quality control trip blank sample was provided by the laboratory and analyzed for purgeable halogenated organics.

2.2 Phase III Investigation

The Phase III Investigation included exploration and testing of onsite soils by drilling a total of five shallow soil borings and collecting soil samples. In addition, groundwater samples were collected from two borings for evaluation of groundwater chemical characteristics. The Phase III field activities were performed on November 20, 1990.

2.2.1 Soil Borings and Soil Sampling

Five soil borings (Boring FF-1 through FF-5) were drilled to a depth of 8.5 feet bgs using a Failing 1500 mobile hollow-stem auger drill rig, operated by Weeks Drilling and Pump, Inc. of Sebastopol, California. The locations of the borings are shown on Plate 2.

Soil samples were collected for lithologic description and chemical analysis following procedures described in Section 2.1.1. Soils were logged using the UCSC system. The logs of Borings FF-1 through FF-5 are shown on Plates 4 through 8, respectively. Saturated soil conditions were encountered at depths between 4.5 and 5.5 feet bgs.

Soil samples were preserved for chemical analyses by covering the tube ends with foil and end caps, then sealing the caps with tape. The samples were labelled and placed in a cooled container for transport to the analytical laboratory with chain-of-custody documentation. One

soil sample from each 18-inch sampling drive was submitted to the laboratory for preservation, if needed for analysis. Analyses requests were not made at that time (see Section 2.2.3).

2.2.2 Groundwater Sampling

Groundwater samples (Samples WFF-1 and WFF-2) were collected for chemical analysis from two of the soil borings (Borings FF-1 and FF-2, respectively) during the Phase III investigation. Samples were collected from the hollow-stem auger using a clean stainless steel bailer, poured in appropriate sample containers, labeled and placed in a cooler container for transport to the analytical laboratory under chain of custody documentation. Samples for metals analysis were filtered, upon arrival at the laboratory, through a 0.45 micron filter.

2.2.3 Analytical Program

Phase III soil and groundwater samples were also analyzed by Curtis and Tompkins.

The Phase III soil analytical program was developed, in part, based on the results of field observations made at the time of drilling. The analytical program and sample analysis request was then forwarded to the lab on the afternoon of November 20, 1990, after the field data was evaluated.

Curtis and Tompkins was instructed to analyze four soil samples: one discrete sample and three composite samples. The discrete sample, collected from Boring FF-2 at 6.0 feet bgs (Sample FF-2-6.0), was analyzed for TEH, volatile organic compounds (VOCs) following EPA Test Method 8240, and semivolatile organic compounds (SOCs) following EPA test Method 8270.

The laboratory created and analyzed three soil composite samples (Composites CFF-1, CFF-2 and CFF-3). Composite CFF-1 consisted of three sub-samples collected at a depth of 1.0 foot bgs from Borings FF-2, FF-3 and FF-4. Composite CFF-1 was intended to represent general soil conditions immediately below the asphalt surface covering the site. Composite CFF-2 consisted of subsamples from Boring FF-2 at 2.5 feet bgs, FF-4 at 1.75 feet bgs and FF-5 at 1.75 feet bgs. Composite CFF-2 was composed of three subsamples of poorly graded black sand that was found at a depth of about 1.75 feet bgs in each of these borings (see Section 3.1.1). Composite CFF-3 consisted of three subsamples: Boring FF-1 at 5.5 feet, FF-3 at 6.0 feet, and FF-5 at 6.0 feet. CFF-3 was intended to represent general soil conditions at this depth over the site.

Composite samples CFF-1 and CFF-2 were analyzed for the Title 22, California Code of Regulations, Section 66699 list of 17 metals (Title 22 metals) using atomic absorption and ICPAE methods. Composite sample CFF-3 was analyzed for TEH, VOCs and SOCs.

The Phase III groundwater samples were analyzed for dissolved concentrations of Title 22 metals, TVH, benzene, toluene, ethylbenzene and total xylene, and purgeable organics.

3.0 RESULTS OF INVESTIGATION

3.1 Subsurface Conditions

3.1.1 Soils

Subsurface soils were explored to a depth of 14.5 feet bgs in Boring J-1 and 8.5 feet bgs in the other five borings. In all borings, the surface consisted of about three to five inches of asphaltic concrete, which was underlain by about 6 to 9 inches of aggregate baserock.

Soils consist of gravelly and sandy fill underlain by unconsolidated alluvium, including clays, silts and sands. In general, subsurface soils beneath the pavement section consist of green and black silty or clayey sands. These sands vary in thickness from non-existent in Boring J-1, at the southeastern corner of the site, up to five feet in Boring FF-2 at the northwestern corner of the site. In Borings FF-2, FF-4 and FF-5, a black poorly graded sand, believed to be fill, was found at a depth of 1.75 to 2.0 feet bgs. This black sand was about one foot thick in Borings FF-4 and FF-5 and about four feet thick in Boring FF-2, extending to a depth of six feet bgs in this boring. Clayey soils were generally found below the sands. These consisted of black to green silty and sandy clays, which extended to the bottom of the borings. In Boring J-1, a one foot thick layer of saturated dark brown sand was encountered at a depth of about 5.5 feet bgs.

Only minor amounts of debris fill were encountered during the investigation. This consisted of concrete and wood debris, found in Boring J-1.

In general, no unusual odors were encountered with the exception of Boring FF-2. In this boring, slight hydrocarbon-like odors were detected in a silty clayey soil collected at a depth of about six feet bgs. This soil was sampled (Sample FF-2-6.0) for chemical analysis.

3.1.2 Groundwater

Saturated soil conditions were encountered in all borings at depths between 4.5 and 5.5 feet bgs. Once developed, the water level in Well J-1 was measured at about 4.1 feet bgs.

The primary water bearing units that were encountered included the relatively thin brown sand layer at 5.5 feet bgs in Boring J-1 and the black poorly graded sand found in Boring FF-2, FF-4 and FF-5. These materials likely transmit groundwater relatively freely and therefore form a pathway for movement of near-surface groundwater. The silts and clays found below the sands likely have a low permeability.

As noted in Section 1.2, it is believed that the groundwater flows generally in a western direction, towards San Francisco Bay. However, the flow direction at nearby sites appears to be influenced by the presence of Temescal Creek, located about 1,000 feet north of the site. These other sites are closer to the creek. Based on the distance between the subject site

and the creek, it is assumed that flow at the site is westward. An evaluation of groundwater flow characteristics for this site was beyond the scope of this investigation.

3.2 Chemical Analytical Results

3.2.1 Soils

As described in Section 2.2.3, four soil samples were analyzed: one discrete sample and three soil composites. The results of chemical analytical results for soil samples are summarized in Table 1. Analytical laboratory reports are attached as Appendix D.

Sample FF-2-6.0 was collected from soils in Boring FF-2 which exhibited a slight hydrocarbon odor. No TEH was detected above the method reporting level of 10 milligrams per kilogram (equivalent to parts per million [ppm]). This sample was also analyzed for VOCs. Only toluene was detected, at a concentration of 0.016 ppm.

Composite sample CFF-1 consisted of soil subsamples collected immediately beneath the asphalt concrete pavement and aggregate baserock. The sample was analyzed for Title 22 metals. In general, only low levels of several metals were detected. These levels are likely representative of background soil conditions.

Composite sample CFF-2 consisted of the black poorly graded sands found in Borings FF-2, FF-4 and FF-5. This composite was analyzed for Title 22 metals. Significant levels of two metals were found. Copper was found at 2,600 ppm and zinc at 9,300 ppm. Slightly elevated levels of arsenic (210 ppm), barium (1,100 ppm) and lead (550 ppm) were also detected in the composite.

Composite sample CFF-3 consisted of subsamples collected at the 6.0 foot depth over the site. There was no evidence of contamination noted during the field investigation. This sample was analyzed for TEH and VOCs. No TEH was detected. Only toluene was detected in the VOC scan at a concentration of 0.018 ppm.

3.2.2 Groundwater

A summary of chemical analytical results for groundwater samples collected during Phase I from Well J-1 II and grab water samples bailed from Borings FF-1 and FF-2 during Phase III is provided as Table 2. Analytical reports are included in Appendices E and F.

Groundwater collected from Well J-1 was analyzed for dissolved priority pollutant metals, hexavalent chromium, TEH, TVH, benzene, toluene, ethyl benzene, total xylenes and purgeable halocarbons. No detectable levels of these chemical parameters were found.

Grab groundwater samples (Samples WFF-1 and WFF-2) were analyzed for dissolved Title 22 metals, TVH, benzene, toluene, ethyl benzene, total xylenes and purgeable halocarbons.

In general only low levels of several metals were detected. No organic parameters were detected in Sample WFF-1. Sample WFF-2 contained TVH, quantified relative to a gasoline standard, at 53 micrograms per liter (equivalent to parts per billion [ppb]).

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 Discussion

The shallow subsurface conditions at the Southern Pacific property have been investigated to assess the site for the existence of environmental contamination resulting from past site uses and migration of offsite groundwater contamination onto the site.

On the basis of the results of the groundwater sample collected from Well J-1 and the selected analytical program, it does not appear that the near-surface groundwater has been affected by upgradient sites. No detectable levels of metals were identified. Based on the results of organic analysis from groundwater in this well, it appears that the shallow groundwater does not contain organic contaminants. As noted above and shown on Plate 3, relatively low permeability soils were encountered from 7.5 feet to 14.5 feet bgs in Boring J-1. The underlying clays likely impede vertical migration. Soil and groundwater conditions at depths greater than 14.5 feet bgs were not explored.

The groundwater sample collected from Borings FF-1 did not indicate the presence of contaminants. While data from grab water samples is not considered to be as reliable as data from wells, the data is generally appropriate to make a qualitative assessment of groundwater conditions. Based upon the results of chemical analysis of Sample WFF-1, it does not appear that past site uses have affected shallow groundwater in this portion of the site.

The groundwater sample from Boring FF-2, in the northwestern corner of the site, did exhibit a light-fraction petroleum hydrocarbon at a concentration of 53 ppb, quantified as gasoline. No detectable levels of major constituents of gasoline such as benzene, toluene, ethyl benzene of xylenes were identified. Therefore, a significant gasoline release does not appear to be present. The location of Boring FF-2 is likely downgradient of the northern portion of the site. The presence of low-level TVH in the groundwater at this location may be remnants of a minor and/or highly degraded release of petroleum during previous site activities. Toluene was detected at a very low level in Soil Sample FF-2-6.0 from Boring FF-2. This sample exhibited a slight hydrocarbon odor.

Soils collected directly beneath the asphalt concrete pavement section did not exhibit evidence of petroleum contamination during the field investigation. No significant metals were detected.

The black poorly graded sand found in soil Borings FF-2, FF-4 and FF-5 appears to contain significant levels of regulated metals. Based upon the pattern of occurrence, this soil appears to cover the northern third of the site and is thickest in the northwestern corner of the site. It is believed that the black sand was used as fill to bring the ground surface up to near its present elevation.

The black sandy fill contains elevated levels of copper and zinc, and to a lesser degree arsenic, barium and lead. Because the sample was composited from three subsamples, the actual level of these metals present in the sand may vary. The levels of copper (2600 ppm) and zinc (9,300 ppm) found in the composite are significant because these levels exceed the levels at which California Hazardous Waste Control regulations define a hazardous waste. These levels exceed the Total Threshold Limit Concentration (TTLC) for copper (2,500 ppm) and zinc (5,000 ppm). The levels of arsenic and lead also exceed levels which are normally considered acceptable for exposure by sensitive populations in an uncontrolled land use situation.

4.2 Recommendations

The objective of this subsurface environmental investigation was to identify potential environmental concerns that may have resulted from past site uses or the migration of contaminants from adjacent sites. Based on the results of the investigation, two concerns have been identified:

- low-level hydrocarbon contamination in shallow groundwater on the northeastern corner of the site; and
- sandy fill covering the northern portion of the site which contains elevated levels of several state-regulated metals which in some cases exceed state criteria for hazardous waste classification.

The existence of these environmental concerns was identified during the investigation; however, it was beyond the scope of work to define the degree and extent of the contamination, and evaluate remedial alternatives. A focused investigation of these concerns, complying with applicable regulatory guidelines, is recommended prior to developing and implementing a remedial plan.

Based on the type and levels of contaminants found during this investigation, it is not believed that an imminent threat to human health exists under current land use conditions. Because of the limited amount of groundwater data compiled to date, it is not known whether a significant threat to groundwater quality exists. Although a significant health threat does not appear to be present, the contaminants found are regulated by both local and state environmental laws. Therefore, the existence of these materials is significant to the planned purchase of the property.

Prior to completing the purchase transaction, it is recommended that a focused investigation be performed so the site may be adequately characterized and an appropriate remedial response can be initiated to minimize or eliminate your long-term liability risk.

Table 1. Summary of Analytical Results for Soil Samples.
Phase III Investigation, Southern Pacific Property
Sherwin Avenue and Halleck Street, Emeryville, California
(all results in milligrams per kilogram[1])

Sample ID:	FF-2-6.0[2]	CFF-1[3]	CFF-2[3]	CFF-3[3]
Metals[4]				
Antimony	NA	ND(5)	ND(5)	NA
Arsenic	NA	6	210	NA
Barium	NA	110	1,100	NA
Beryllium	NA	ND(0.5)	ND(0.5)	NA
Cadmium	NA	2	24	NA
Total Chromium	NA	28	52	NA
Cobalt	NA	10	72	NA
Copper	NA	74	2,600	NA
Lead	NA	96	550	NA
Mercury	NA	0.3	ND(0.1)	NA
Molybdenum	NA	ND(0.5)	3.2	NA
Nickel	NA	39	13	NA
Selenium	NA	ND(2.5)	ND(2.5)	NA
Silver	NA	ND(1)	2	NA
Thallium	NA	ND(5)	ND(5)	NA
Vanadium	NA	18	34	NA
Zinc	NA	280	9,300	NA
Organics				
TEH - Gasoline[5]	ND(10)	NA	NA	ND(10)
TEH - Kerosene[5]	ND(10)	NA	NA	ND(10)
TEH - Diesel[5]	ND(10)	NA	NA	ND(10)
Volatile Organics[6]	Toluene-.016	NA	NA	Toluene-.018
Semivolatile Organics[7]	ND	NA	NA	ND

ND - Not detected at or above the stated reporting limit
NA - Not analyzed
[1] Approximately equivalent to parts per million (ppm)
[2] Discrete sample from Boring FF-2 at 6.0' depth
[3] Composite samples:
CFF-1 – From Boring FF-2 at 1.0', FF-3 at 1.0' and FF-4 at 1.0'
CFF-2 – From Boring FF-2 at 2.5', FF-4 at 1.75' and FF-5 at 1.75'
CFF-3 – From Boring FF-1 at 5.5', FF-3 at 6.0' and FF-5 at 6.0'
[4] Metals analyzed by atomic adsorption or ICAP methods (see laboratory report)
[5] Total Extractable Petroleum Hydrocarbons - California DOHS-LUFT Manual, 1989
[6] Volatile Organic Compounds by EPA Test Method 5030/8240. Only detected compounds shown - all others not detected above method reporting limits (see laboratory report).
[7] Semivolatile Organic Compounds by EPA Test Method 3550/8270. Reporting limits vary - see laboratory report

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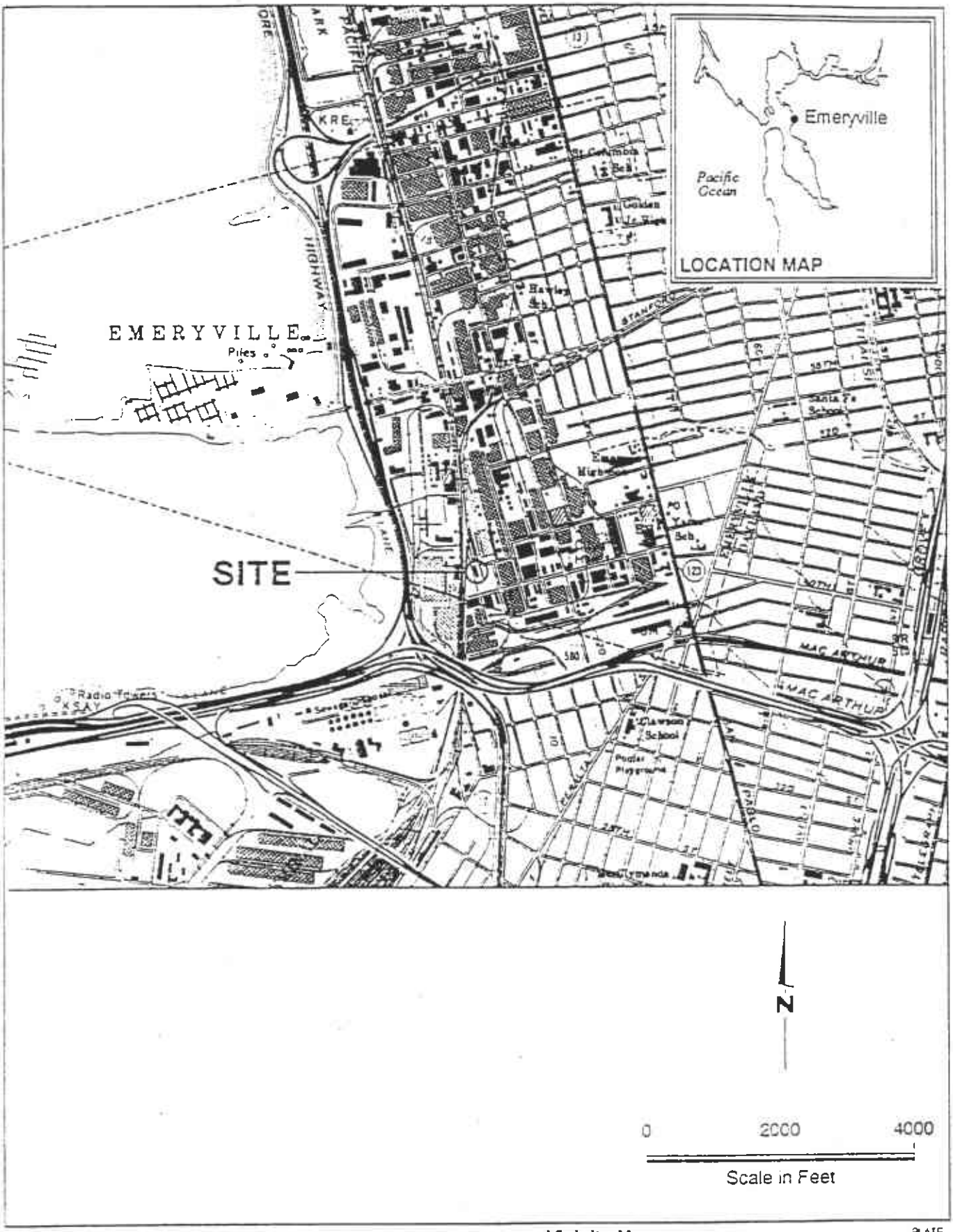
Table 2. Summary of Analytical Results for Ground-Water Samples, Phase II and III Investigations, Southern Pacific Property, Sherwin Avenue and Halleck Street, Emeryville, California
(all results in micrograms per liter[1])

Sample ID:	Well J-1[2]	WFF-1[3]	WFF-2[3]
Metals[4]			
Antimony	ND(100)	ND(50)	ND(50)
Arsenic	ND(50)	ND(50)	ND(50)
Barium	NA	250	1,800
Beryllium	ND(10)	ND(10)	ND(10)
Cadmium	ND(10)	ND(10)	ND(10)
Total Chromium	ND(10)	ND(10)	ND(10)
Hexavalent Chromium[5]	ND(50)	NA	NA
Cobalt	NA	ND(10)	ND(10)
Copper	ND(20)	ND(10)	20
Lead	ND(50)	ND(50)	ND(50)
Mercury	ND(1)	ND(10)	ND(1)
Molybdenum	NA	10	30
Nickel	ND(10)	20	ND(10)
Selenium	ND(50)	ND(50)	ND(50)
Silver	ND(20)	ND(20)	ND(20)
Thallium	ND(100)	ND(50)	ND(50)
Vanadium	NA	ND(20)	ND(20)
Zinc	ND(10)	50	70
Organics			
TEH - Kerosine[6]	ND(50)	NA	NA
TEH - Diesel[6]	ND(50)	NA	NA
TVH - Gasoline[7]	ND(50)	ND(50)	53
Benxene[8]	ND(0.5)	ND(0.5)	ND(0.5)
Toluene[8]	ND(0.5)	ND(0.5)	ND(0.5)
Ethyl Benzene[8]	ND(0.5)	ND(0.5)	ND(0.5)
Total Xylenes[8]	ND(0.5)	ND(0.5)	ND(0.5)
Purgeable halocarbons[9]	ND(1-2)	ND(1.2)	ND (1-2)

ND - Not detected at or above the stated reporting limit
NA - Not analyzed
[1] Equivalent to parts per billion (ppb)
[2] Sample collected from Phase II ground-water monitoring well
[3] Sample collected from Phase III borehole auger
[4] Metals analyzed by atomic adsorption or ICAP methods (see laboratory report)
[5] Hexavalent Chromium by EPA Test Method 7195
[6] TEH - Total Extractable Petroleum Hydrocarbons - California DOHS-LUFT Manual, 1989
[7] TVH - Total Volatile Petroleum Hydrocarbons - California DOHS-LUFT Manual, 1989
[8] EPA Test Method 5030/8020
[9] EPA Test Method 8010

SF 031944



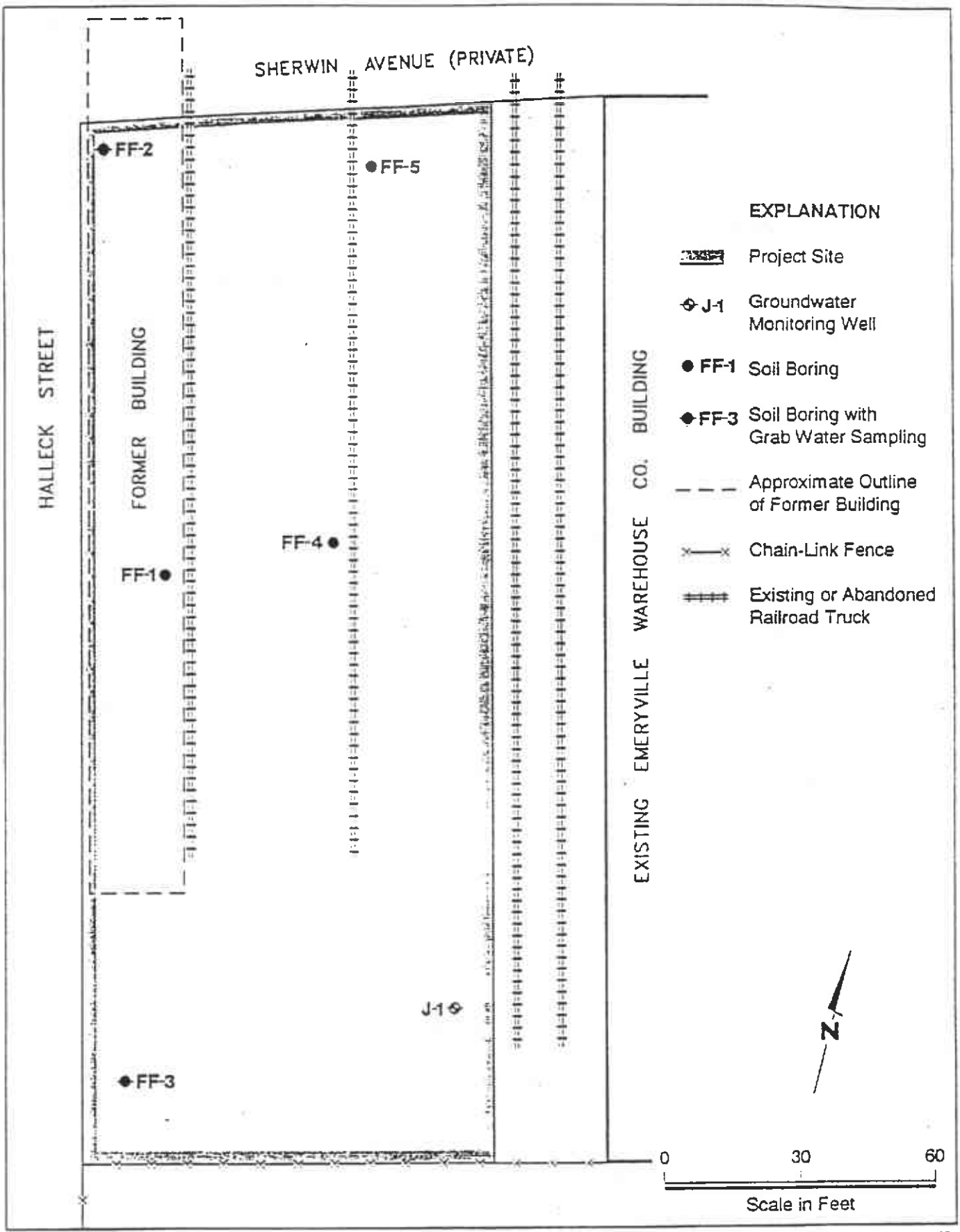
PES Environmental, Inc.
Engineering & Environmental Services

Vicinity Map
Phase II & III Investigations
Sherwin Avenue & Halleck Street
Emeryville, California

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
FF001C	RSC	12/90		

SF 031947



PES Environmental, Inc.
Engineering & Environmental Services

Site Plan
Phase II & III Investigations
Sherwin Avenue & Halleck Street
Emeryville, California

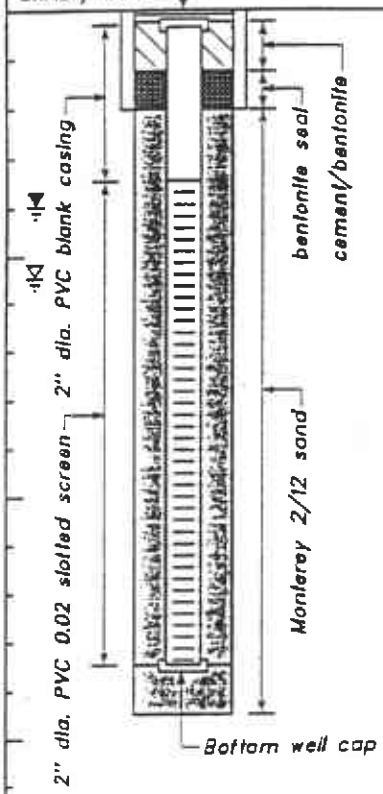
PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
FF001C	RSC	12/90		

SF 031948

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF BORING J-1



BLOWS/6"	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
			ASPHALT (FILL) ASPHALT DARK GREYISH BROWN WELL GRADED GRAVEL (GW) with sand, dense, moist. 30-35% fine-grained to coarse-grained sand. trace concrete debris (fill)
3 4 7			VERY DARK GREYISH BROWN LEAN CLAY (CL) with sand, soft to medium, moist. 10-20% fine-grained to medium-grained sand. trace fine to medium gravel. trace wood debris at 4.5 feet.
3 4 8	5		DARK BROWN POORLY GRADED SAND (SP) loose, saturated medium-grained to coarse-grained sand. trace fine gravel.
4 5 9			DARK GREYISH BROWN SILT (ML) with sand, very soft, moist to saturated. 15-20% very fine-grained sand. trace gravel.
			LIGHT BLUISH GREY LEAN CLAY (CL) with sand, soft to medium, moist to saturated. 10-15% very fine-grained sand.
8 13 19	10		YELLOWISH GROWN LEAN CLAY (CL) with sand, stiff, moist. 20-25% very fiine-grained to coarse-grained sand. trace gravel.
10 9 15	15		*Bottom of Boring at 14.5 feet*
	20		
	25		
	30		

Fill

CLIENT	Emeryville Warehouse Co.	DIAMETER OF HOLE	8 inches
LOCATION	Sherwin Avenue & Halleck Street Emeryville, California	TOTAL DEPTH OF HOLE	14.5 feet
JOB NUMBER	FF001C	TOP OF CASING ELEVATION	0.3 feet Below Ground Level
GEOLOGIST/ENGINEER	Jim Dunn, Jane Gill	DATE STARTED	10/11/90
DRILL RIG	Mobile B-34	DATE COMPLETED	10/11/90

PLATE

3

SF 031949

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF BORING FF-1

BLOWS/6"	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
			ASPHALT
			BASE ROCK
grab			DARK GREEN CLAYEY SAND (SC) with gravel, dense, moist, no odor
35			
22			
10			becomes softer at 3.5 feet
			BLACK SILTY CLAY (CL) with fine-grained to medium-grained sand, medium stiff, moist to wet, no odor
5	5		
7			
10			
			BLUE GREEN SILTY CLAY (CL) medium stiff, wet, no odor
4			
6			
8			*Bottom of Boring at 8.5 feet*
	10		
	15		
	20		
	25		
	30		

Fill

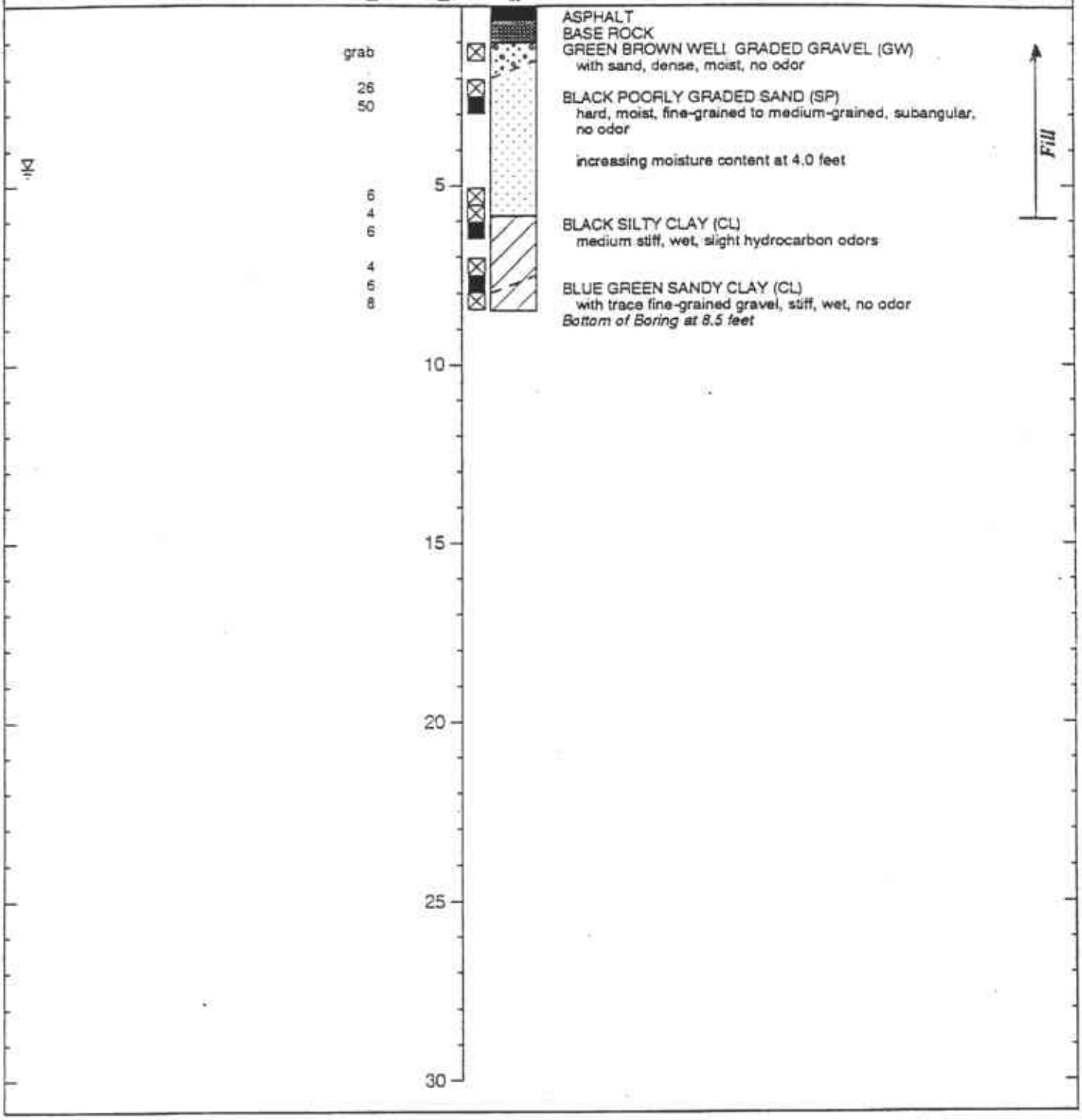
CLIENT	Emeryville Warehouse Co.	DIAMETER OF HOLE	8 inches
LOCATION	Sherwin Avenue & Halleck Street Emeryville, California	TOTAL DEPTH OF HOLE	8.5 feet
JOB NUMBER	FF001C	TOP OF CASING ELEVATION	N/A
GEOLOGIST/ENGINEER	Jim Dunn JSC	DATE STARTED	11/20/90
DRILL RIG	Failing 1500	DATE COMPLETED	11/20/90

PLATE 4

SF 031950

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF BORING FF-2



CLIENT	Emeryville Warehouse Co.	DIAMETER OF HOLE	8 inches
LOCATION	Sherwin Avenue & Halleck Street Emeryville, California	TOTAL DEPTH OF HOLE	8.5 feet
JOB NUMBER	FF001C	TOP OF CASING ELEVATION	N/A
GEOLOGIST/ENGINEER	Jim Dunn RSC	DATE STARTED	11/20/90
DRILL RIG	Failing 1500	DATE COMPLETED	11/20/90

PLATE

5

SF 031951

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF BORING FF-3

BLOWS/6"	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
	0		ASPHALT BASE ROCK DARK BROWN TO BLACK SILTY CLAYEY SAND (SC) dense, moist, no odor
4 4 5			BLACK SILTY CLAY (CL) firm, moist, no odor
	5		increasing moisture content at 5.0 feet
6 8 12			
8 8 12			YELLOW GREEN SANDY CLAY (CL) with gravel, stiff, wet, no odor *Bottom of Boring at 8.5 feet*
	10		
	15		
	20		
	25		
	30		

Fill

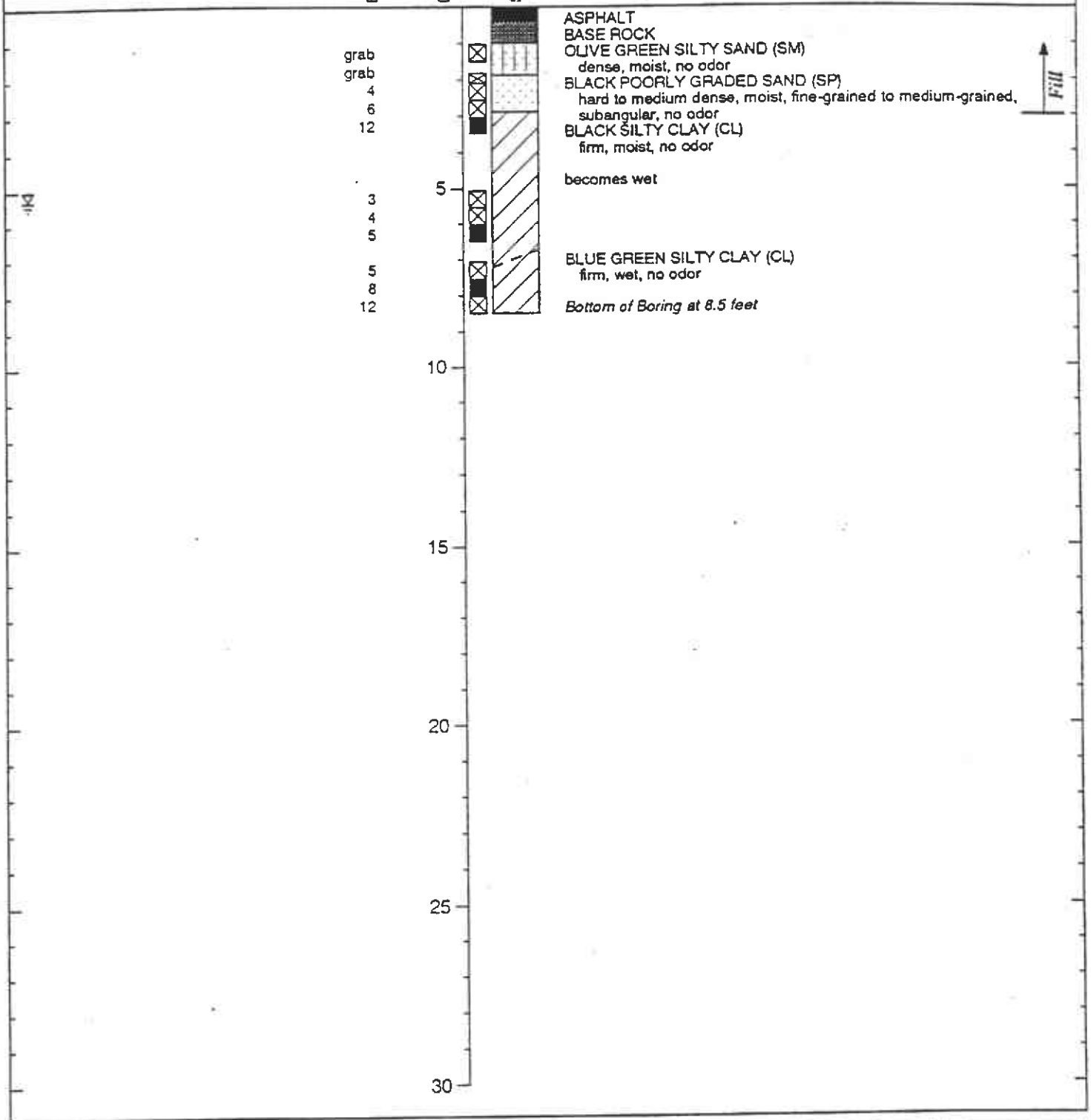
CLIENT	Emeryville Warehouse Co.	DIAMETER OF HOLE	8 inches
LOCATION	Sherwin Avenue & Halleck Street Emeryville, California	TOTAL DEPTH OF HOLE	8.5 feet
JOB NUMBER	FF001C	TOP OF CASING ELEVATION	N/A
GEOLOGIST/ENGINEER	Jim Dunn RSC	DATE STARTED	11/20/90
DRILL RIG	Failing 1500	DATE COMPLETED	11/20/90

PLATE 6

SF 031952

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF BORING FF-4



CLIENT	Emeryville Warehouse Co.	DIAMETER OF HOLE	8 inches
LOCATION	Sherwin Avenue & Halleck Street Emeryville, California	TOTAL DEPTH OF HOLE	8.5 feet
JOB NUMBER	FF001C	TOP OF CASING ELEVATION	N/A
GEOLOGIST/ENGINEER	Jim Dunn RSC	DATE STARTED	11/20/90
DRILL RIG	Failing 1500	DATE COMPLETED	11/20/90

PLATE 7

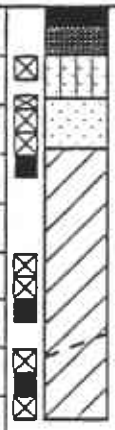
SF 031953

LOG OF BORING FF-4

PAGE 1 OF 1

SYMBOLS

MATERIALS DESCRIPTION



ASPHALT
BASE ROCK
OLIVE GREEN SILTY SAND (SM)
dense, moist, no odor
BLACK POORLY GRADED SAND (SP)
hard to medium dense, moist, fine-grained to medium-grained, subangular, no odor
BLACK SILTY CLAY (CL)
firm, moist, no odor

FILL

becomes wet

BLUE GREEN SILTY CLAY (CL)
firm, wet, no odor

Bottom of Boring at 8.5 feet

DIAMETER OF HOLE	8 inches
TOTAL DEPTH OF HOLE	8.5 feet
TOP OF CASING ELEVATION	N/A
DATE STARTED	11/20/90
DATE COMPLETED	11/20/90

PLATE 7

SF 031953

LOG OF BORING FF-5

PAGE 1 OF 1

S DESCRIPTION

N CLAYEY SAND (SC)
st, no odor
RLY GRADED SAND (SP)
t, no odor

FILL

' (CL)
race gravel, firm, moist, no odor

: at 5.0 feet

N SILTY SANDY CLAY (CL)
st, no odor

ring at 8.5 feet

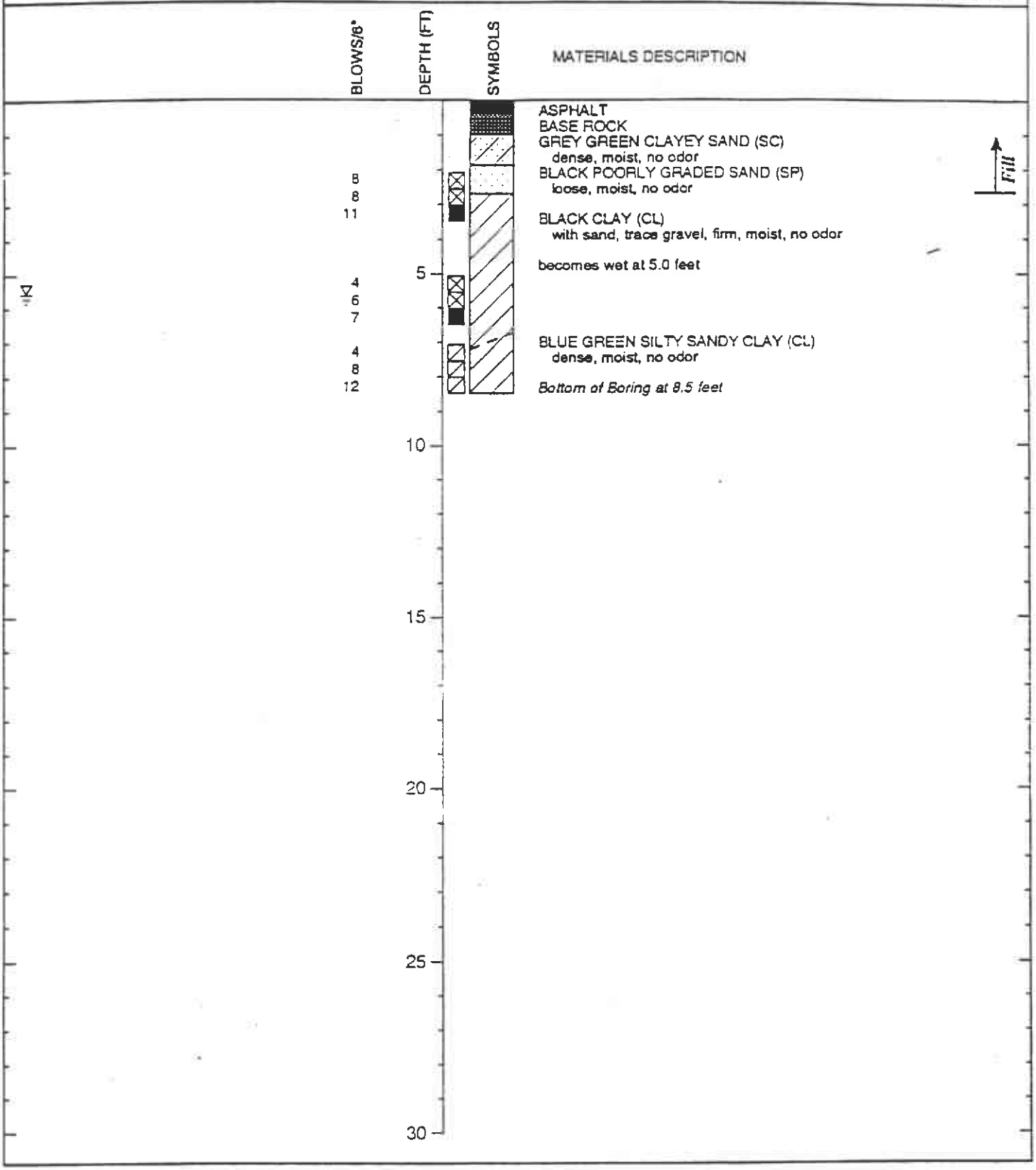
	8 inches
OLE	8.5 feet
VATION	N/A
	11/20/90
	11/20/90

PLATE 8

SF 031954

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF BORING FF-5



CLIENT	Emeryville Warehouse Co.	DIAMETER OF HOLE	8 inches
LOCATION	Sherwin Avenue & Halleck Street Emeryville, California	TOTAL DEPTH OF HOLE	8.5 feet
JOB NUMBER	FF001C	TOP OF CASING ELEVATION	N/A
GEOLOGIST/ENGINEER	Jim Dunn RSC	DATE STARTED	11/20/90
DRILL RIG	Failing 1500	DATE COMPLETED	11/20/90

PLATE 8

SF 031954

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

Perm	- Permeability
Consol	- Consolidation
LL	- Liquid Limit (%)
PI	- Plastic Index (%)
G_s	- Specific Gravity
MA	- Particle Size Analysis
2.5 YR 6/2	- Soil Color according to Munsell Soil Color Charts (1975 Edition)
5 GY 5/2	- GSA Rock Color Chart

☒	- No Soil Sample Recoverd
■	- "Undisturbed" Sample
⊠	- Bulk or Classification Sample
▽	- First Encountered Ground Water Level
▼	- Piezometric Ground Water Level
Penetration	- Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 6 inches are indicated on the logs

PES Environmental, Inc.
Engineering & Environmental Services

Unified Soil Classification Chart
Phase II & III Investigations
Sherwin Avenue & Halleck Street
Emeryville, California

PLATE
9

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
FF001C	ZSC	12/90		

SF 031955

APPENDIX A

PREACQUISITION SITE ASSESSMENT

PES Environmental, Inc.
Engineering & Environmental Services

October 17, 1990

FF001A

Emeryville Warehouse Company
244 Kearny Street, 9th Floor
San Francisco, California 94108

Attention: Donald A. Friend. Esq.

PREACQUISITION SITE ASSESSMENT
SOUTHERN PACIFIC PROPERTY
SHERWIN AVENUE AND HALLECK STREET
EMERYVILLE, CALIFORNIA

Dear Don:

This report presents the results of a Preaquisition Environmental Site Assessment (PSA) conducted by PES Environmental, Inc. (PES) for the Southern Pacific Railroad property located at the southeastern corner of Sherwin Avenue and Halleck Street in Emeryville, California (Plate 1). The PSA has been performed for the Emeryville Warehouse Company, who own an adjacent warehouse and are interested in purchasing the subject property for use as a parking lot. This PSA was completed under contract to the Emeryville Warehouse Company (PES Service Agreement, Reference No. FF001A, dated August 23, 1990), and has been performed in accordance with general industry-wide requirements for commercial real estate transactions.

The PSA has been conducted to assess current and former uses of the subject and surrounding properties and to evaluate whether these uses have resulted in adverse environmental impact to the subject property. The PSA involves completion of an on site and surrounding area inspection, reviewing aerial photographs of the area, conducting owner interviews, reviewing regulatory agency files on documented areas of known environmental problems in the vicinity of the site, and reporting the findings and our conclusions based on the potential for environmental impairment of the subject property.

SF 031958

P.O. Box 1833 • 100 Medical Plaza • Novato, CA 94948 • (415) 898-3531 • FAX (415) 898-2780

RESULTS OF ON-SITE INSPECTION AND SURVEY OF SURROUNDING AREAS

A site visit was conducted by PES personnel on Wednesday, September 19, 1990 to assess current environmental conditions on the subject property and surrounding parcels. The following discussion presents our findings.

On-Site Inspection

The site consists of a parcel of land approximately 20,000 square feet in size. The site, currently used as a parking area, is partially paved and contains several unused railroad siding tracks. Moderate amounts of debris are present on the site. Several isolated areas on the subject property show evidence of surface oil spills.

During the site visit, none of the following were found:

- Ponds, pits, sumps or any other solid waste or liquid waste disposal area;
- Current use or handling of hazardous materials;
- Presence of underground storage tanks; or
- Noxious odors.

Surrounding Area Survey

In concurrence with the property site visit, PES personnel conducted a limited visual survey of properties in the surrounding area to provide a qualitative assessment of the potential for on-site contamination due to off-site sources. The property is located in a commercial/industrial district of Emeryville. The subject property is bounded to the north by Sherwin Avenue and a Sherwin-Williams paint manufacturing facility. To the south, an automobile mechanic shop and a air compressor equipment business are found. Park Avenue is found on south side of these businesses. The Emeryville Warehouse Company's facility is found to the east of the subject property. Halleck Street bounds the west side of the subject property. The Pelco Building is located across Halleck Street. The following sections present the results of the surrounding area survey:

Sherwin-Williams Facility: A survey of the Sherwin-Williams facility visible from public access areas indicate that significant chemical storage occurs on the site as part of normal operations. Drums containing a variety of chemicals, including acids and caustics, were found stored in several areas on the Sherwin-Williams property. The drums storage areas are located approximately 500 feet north of the subject property. No visible evidence of releases were noted during the survey. One area was identified

approximately 1000 feet north of the subject property where monitoring wells have been installed and recent earthwork has been conducted. Access to this area has been controlled by installation of a temporary chain link fence. the location of the Sherwin-Williams facility with drum storage areas and the area where the groundwater monitoring wells have been installed is shown on Plate 2.

Southern Boundary Properties: Examination of the automotive mechanics shop and the air compressor company properties revealed general poor outdoor housekeeping practices, evidence of surface spillage of oils and other materials, distressed vegetation, and possible usage of hydrocarbon solvents and oils was observed. Large amounts of automotive and air compressor parts were observed scattered across the two sites. Surface spills of what appears to be oil were seen in numerous locations on these sites and extend up to the shared property line with the subject site. The location of these sites are shown on Plate 2.

Pelco Distribution Building: A portion of the Pelco Building, located west of the subject property at 4245 Halleck Street (see Plate 2), is currently being used to store chemicals. From open doorways, drums can been seen stacked within the building. A National Fire Protection Association (NFPA) label is present on the exterior wall of the building indicating substances are present on the site which on intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment is given. No evidence of off-site release of chemicals was found during the survey.

Modine Western: Modine Western, located at 1461 Park Avenue, is located at the southwestern corner of Park Avenue and Horton Street. (see Plate 2). During the drive-by survey, two monitoring wells were identified in Horton Avenue adjacent to this property. Drums, containing soil cuttings, were also found in the vicinity of the wells. Based on visual evidence, it appears that an underground tank was removed near the east side of the structure and the wells were installed to monitor groundwater.

National Environmental: As shown on Plate 2, this site, located at 4055 Hubbard Street, is approximately 500 feet south of the subject property. A fuel dispenser for an underground tank was identified on the southern portion of the property adjacent to Halleck Street. The dispenser had been disconnected and recent grading of a near by area suggests removal of an underground tank from this site. Isolated areas of surface soil discoloration was observed across the National Environmental site.

west, another portion of the Pelco Distribution building has been constructed. The large aboveground tank has been removed by 1975. South of the property at the southwestern corner of Halleck Street and Park Avenue, structures present in the 1949 photo have been removed. Surface soils in this area are highly discolored, particularly along the SP right-of-way.

Aerial Photograph ALA AV-3845 (June 12, 1990): The 1990 photograph reflects current site and surrounding area conditions. No significant changes from currently observed conditions were noted on the photograph.

Current Owner Interviews

The current owner of the property, Southern Pacific, was contacted for information concerning the former uses of the subject property. According to Mr. Ron Mayer, the property was formerly used as a transfer facility by local businesses in the area. Materials transported by railcars were off-loaded at the site and transferred to street vehicle for transport to the local businesses. No information was available concerning former property users or prior owners.

Review of Regulatory Lists

The discussion presented in this section is based on available information provided by government agencies. In addition to reviewing agency lists that contain general information about the sites that have had reported environmental problems, PES personnel reviewed agency files for detailed information on sites that appeared on these lists.

Regional Water Quality Control Board (RWQCB) Fuel Leaks List (September 7, 1990): The Fuel Leaks list for Alameda County provides a list of sites where documented releases have been reported from underground storage tanks. Within a quarter mile radius of the subject site, seven sites were identified on this list, as follows:

- Del Monte Plant No. 35: This site, located at 1250 Park Avenue, has been used for assorted industrial activities including fish processing and medical research. It has been in operation since 1928. Chlorinated solvents were found in subsurface soils and groundwater on this site following removal of four underground tanks in 1988. A subsequent environmental report indicated that the soil contamination was limited to the vicinity of the former tanks.

Information concerning the groundwater contamination was limited to periodic monitoring of groundwater in wells located at the former tank location. The aforementioned report indicated that concentrations of contaminants had decreased substantially since tank removal. No information was available concerning the size of the contaminated groundwater plume or the potential for off-site migration. This site is located approximately 1/4 mile east and potentially upgradient of the subject property. The site is identified as location #1 on Plate 3.

- Pfizer Pigments: The Pfizer Pigments facility is located at 4650 Shellmound Street approximately three-eights of a mile northwest (cross gradient) of the subject property. The Pfizer site is used for the manufacture of paints and paint pigments. Following removal of eleven underground fuel and waste oil tanks in 1987, oil and grease were detected in the soil in the vicinity of the tanks. Groundwater sampled from the excavation contained low concentrations of diesel fuel and solvents. The contaminated soil was excavated and transported off-site for disposal. No action has been taken to address the groundwater contamination. The site is location #2 on Plate 3.

- Unidentified Site at 4543 Horton Street: Soil and groundwater contamination was found at this site following removal of two underground gasoline storage tanks. No further information is available on this property. The site is location #3 on Plate 3 and is approximately one-eighth mile north of the subject property.

- Rifkin Container Corporation: Groundwater contamination was identified after removal of a small underground gasoline storage tank at the site (#4 on Plate 3) in 1988. The site has been capped and groundwater monitoring is currently in progress. The site is located approximately one-eighth mile north of the subject property.

- City of Emeryville (Artist's Cooperative, Shell): This site is located at 1420 45th Street (location #6 on Plate 3). Six underground fuel storage tanks were removed from this site prior to 1987. Testing conducted at the time revealed over 1 percent gasoline in the groundwater. No further information on extent of the groundwater contamination or remedial actions was available. This site is located approximately one-eighth mile northeast and cross-gradient of the subject property.

- Judson Steel: The Judson Steel facility (location #7 on Plate 3) is located on Shellmound Avenue across the SP right-of-way from the subject property. A number of underground fuel storage tanks were removed from this site prior to 1988. Soil and groundwater contamination were identified during tank removal. No record of further investigation or remedial activities were found. This site is downgradient from the subject property.

RWQCB North Bay Toxics List (July 6, 1990): The North Bay Toxics list provides a summary of cases included in the RWQCB Site Management System for Alameda County and includes sites where environmental problems are not limited to leaking underground fuel tanks. There are five sites on this list within approximately one-forth mile of the subject property. One of these sites, the Del Monte Plant No. 35, was discussed in the previous section. The remaining four sites are as follows:

- Pacific Gas and Electric: This site, located at 4525 Hollis Street, was designated as a California State Superfund site in 1987. Soils on this site are contaminated with lead and polychlorinated biphenyls (PCBs). Groundwater was also found to contain these contaminants. Remedial investigation and feasibility studies for this site have been completed and remedial planning is currently being conducted. The site, designated as location #8 on Plate 3, is located approximately one-quarter mile northeast and cross-gradient of the subject property.

- Sherwin-Williams: The Sherwin-Williams facility, located north of the subject property, which was discussed previously was found on the North Bay Toxics list. Solvents and fuels have been identified in the soil and groundwater on this site in the vicinity of the former tank farm. Remedial investigations have determined that the contaminated groundwater plume does not extend south of Sherwin Avenue. This site is location #9 on Plate 3.

- Electro-Coatings: The Electro-Coatings facility (location #10) located at 1421 Park Avenue is a California Superfund site under investigation since 1982. This site is under investigation for disposing of chromium wastes in shallow wells and sumps on the property. Groundwater sampling indicates that elevated levels of total and hexavalent chromium extend off site to the northwest (towards the subject property). As of 1984, the chromium plume had extended to the intersection of Hubbard Street and Park Avenue. No information is available concerning the Electro-Coating site since that time.

- Myers Container: The Myers Container facility at 4500 Shellmound Avenue is located northwest of the subject property across the SP right-of-way (location #11). Periodic significant releases of hazardous materials have occurred on this property due to poor handling practices. Soils on this site are contaminated with a variety of heavy metals and organic compounds. No information was available on groundwater conditions. This site is located downgradient of the subject site.

United States Environmental Protection Agency Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), (October 10, 1989): The CERCLIS provides information for businesses or other properties that are in the Federal Superfund Program. Under this program, a business or property is identified and a preliminary assessment is performed to assess whether the site shall become a Federal Superfund site. Four sites were found on the CERCLIS list within one quarter of a mile of the subject property including the PG & E, Electro-Coatings, and Myers Containers sites mentioned in the previous section. The fourth site is as follows:

- Chromex (Charles Lowe & Co.): This site is located at 1400 Park Avenue approximately one-eighth of a mile east of the subject property (location #5 on Plate 3). Available information for this site indicated that chromium sludge was dumped into a 12-foot deep pit on the site contaminating soil and groundwater. Chromic acid tanks on the site were also reported to have leaked. No information was available concerning off-site migration of contaminated groundwater. The site is located directly upgradient from the subject property.

Agency Personnel Interviews

During file research associated with the aforementioned sites, agency personnel familiar with the sites were queried for additional information. In addition to agency personnel at the Department of Health Services and the RWQCB, Emeryville Fire department personnel in charge of tracking the use and storage of hazardous materials in the vicinity of the site were contacted.

According to Mr. George Warren, a fire marshall for Emeryville, several sites not included on the RWQCB lists had underground storage tanks or used significant quantities of hazardous materials in the vicinity of the subject property. The locations of these sites are shown on Plate 3 (locations #12-19).

DISCUSSIONS AND RECOMMENDATIONS

Based on the results of the site use history review, a potential for environmental impairment of the subject property exists due to the nature of former property uses. While specific instances were not identified, heavy industrial use in the area would suggest that hazardous materials may have been handled on the property as part of the materials transfer activities.

Additionally, environmental concerns exist on nearby properties that are associated with present or past use, storage, or disposal of hazardous materials on these sites which may affect the subject property. In summary these findings include:

- the presence of two CERCLIS sites within one-eighth of a mile and up-gradient of the property. The latest information available in 1984 indicates that groundwater has been impaired from releases from the Electro-Coating site northwest of the intersection of Hubbard Street and Park Avenue. Based on available data, there is no indication that the migration of contaminated groundwater has been addressed and it is likely that the plume has migrated closer to the subject property.

- Numerous other sites located upgradient from the subject property have been identified where hazardous materials have been or are stored in underground storage tanks. Many of the tanks have been found to have been leaking and remedial actions have not been implemented. There is a possibility that releases from these sites have affected the subject property.

- Poor housekeeping activities by sites adjacent to the subject property suggest the possibility for improper hazardous materials handling and/or disposal. Releases from these properties could migrate onto the subject property.

In conclusion, the results of this PSA indicate that previous activities on the subject site and documented nearby contamination have the potential for causing on-site contamination. Therefore, we recommend that direct environmental sampling be conducted on the subject property at this time. This sampling should be conducted as part of a Phase II preliminary soil and groundwater investigation to evaluate whether subsurface on-site soils have been impacted by past site activities and evaluate whether groundwater contamination plumes arising from upgradient releases have resulted in groundwater degradation on the property.

LIMITATIONS

The PSA activities were conducted in accordance with practices and procedures generally accepted in the consulting engineering field. Information presented in this report does not confirm or deny the presence of subsurface contamination at the property, but indicates that there is a potential that it is present. Our professional judgement to assess the potential of contamination was based on limited data; no warranty is given or implied by this report. A more extensive assessment that would include a surface and/or subsurface investigation and chemical analyses of soil and groundwater samples would provide more definitive information concerning site-specific conditions.

We trust this is the information that you require at this time. If you have any questions. please contact the undersigned.

Yours very truly,

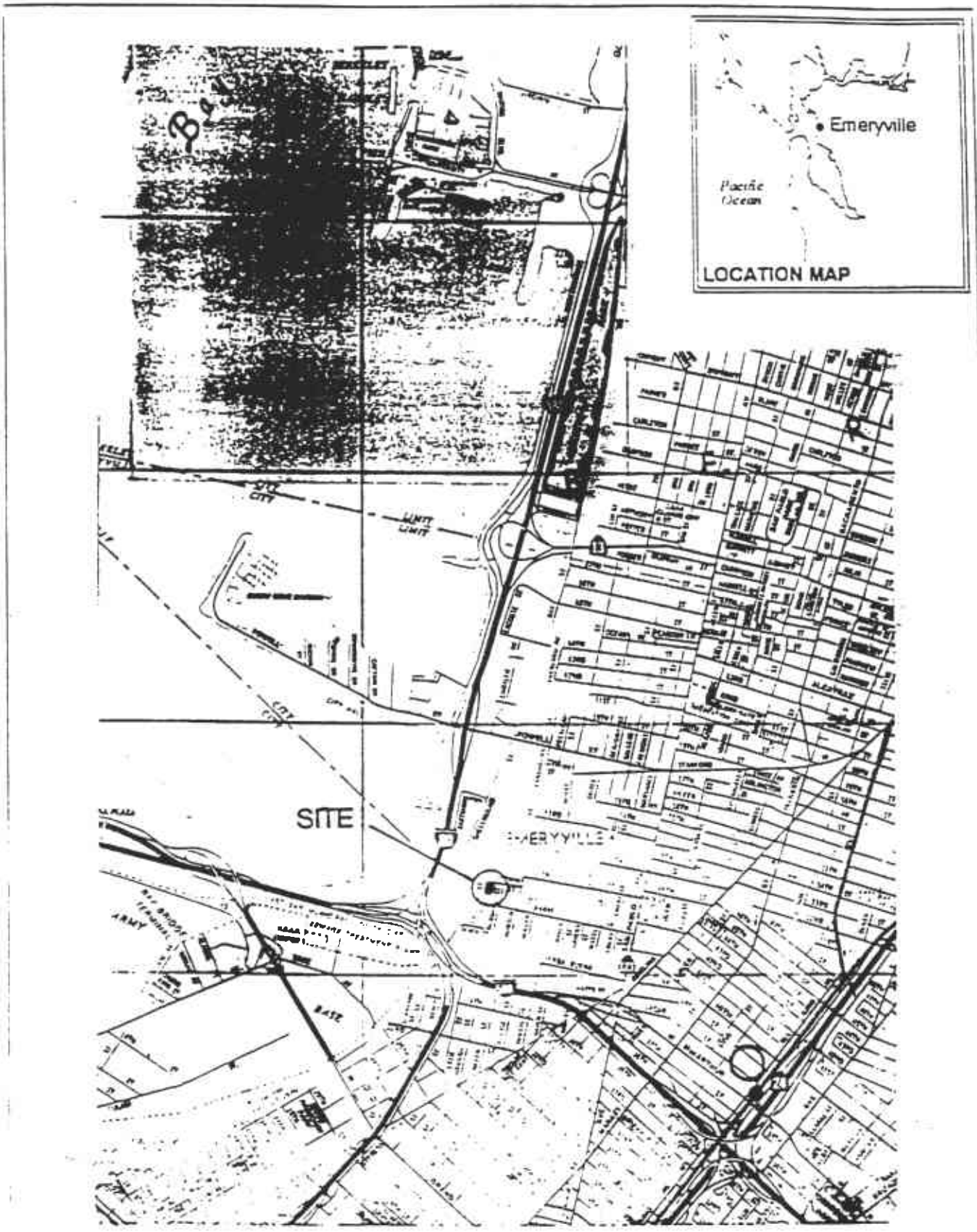
PES ENVIRONMENTAL, INC.

James P. Dunn
Senior Geologist

Robert S. Creps, P.E.
Associate Engineer

Attachments: Plate 1 - Vicinity Map
Plate 2 - Site Location Map
Plate 3 - Agency Identified Sites

FF001-5.ltr



PES Environmental, Inc.
Engineering & Environmental Services

Vicinity Map
Southern Pacific Property
Sherwin Avenue and Halleck Street
Emeryville, California

FIGURE
1

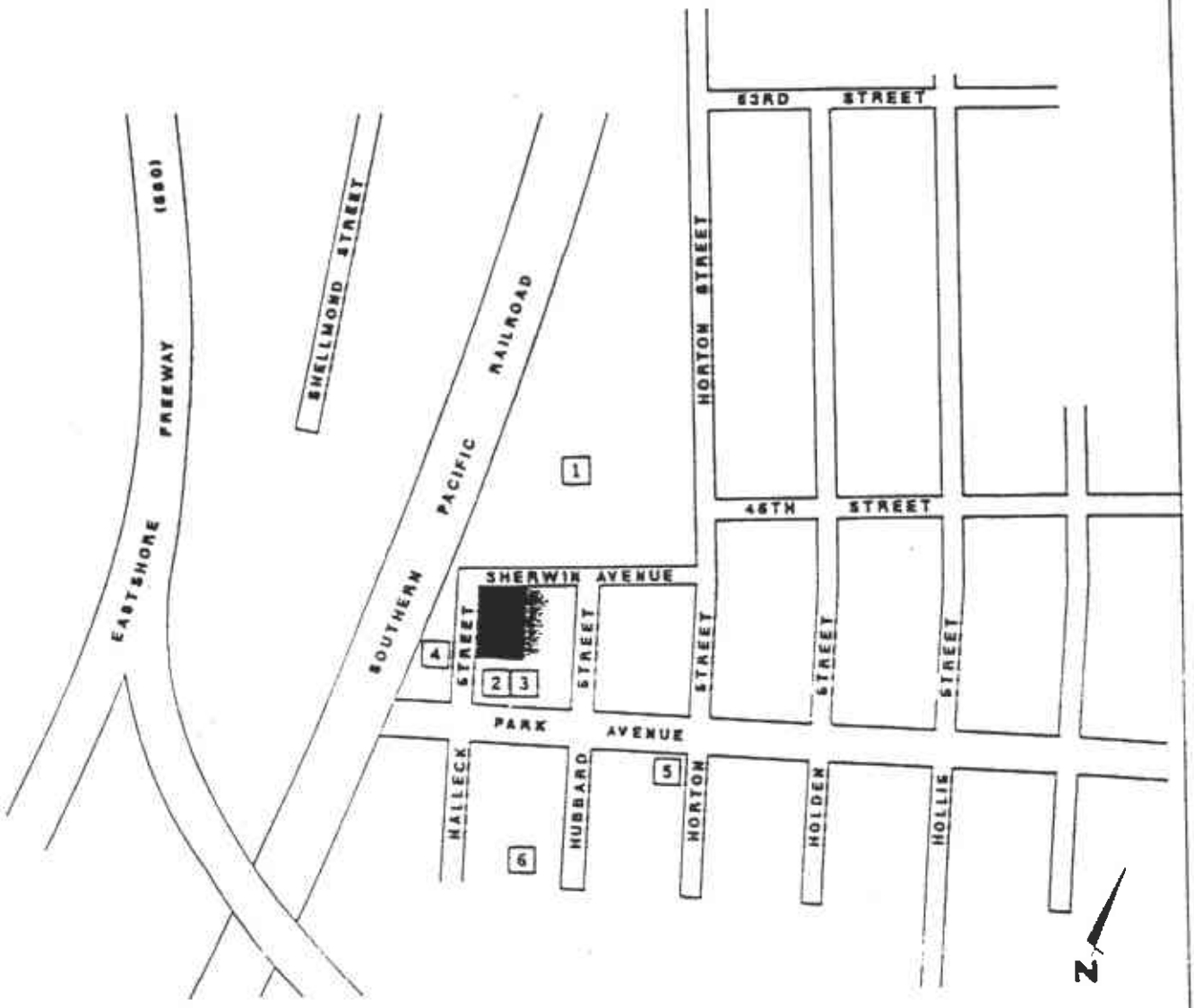
001A

2/90

SF 031968

EXPLANATION

1 - Sherwin Williams Facility Former Tank Farm
2 - Automobile Repair Shop
3 - Air Compressor Repair Shop
4 - Pelco Distribution Building
5 - Modine Western Facility
6 - National Environmental Property



SF 031969

PES Environmental, Inc.
Engineering & Environmental Services

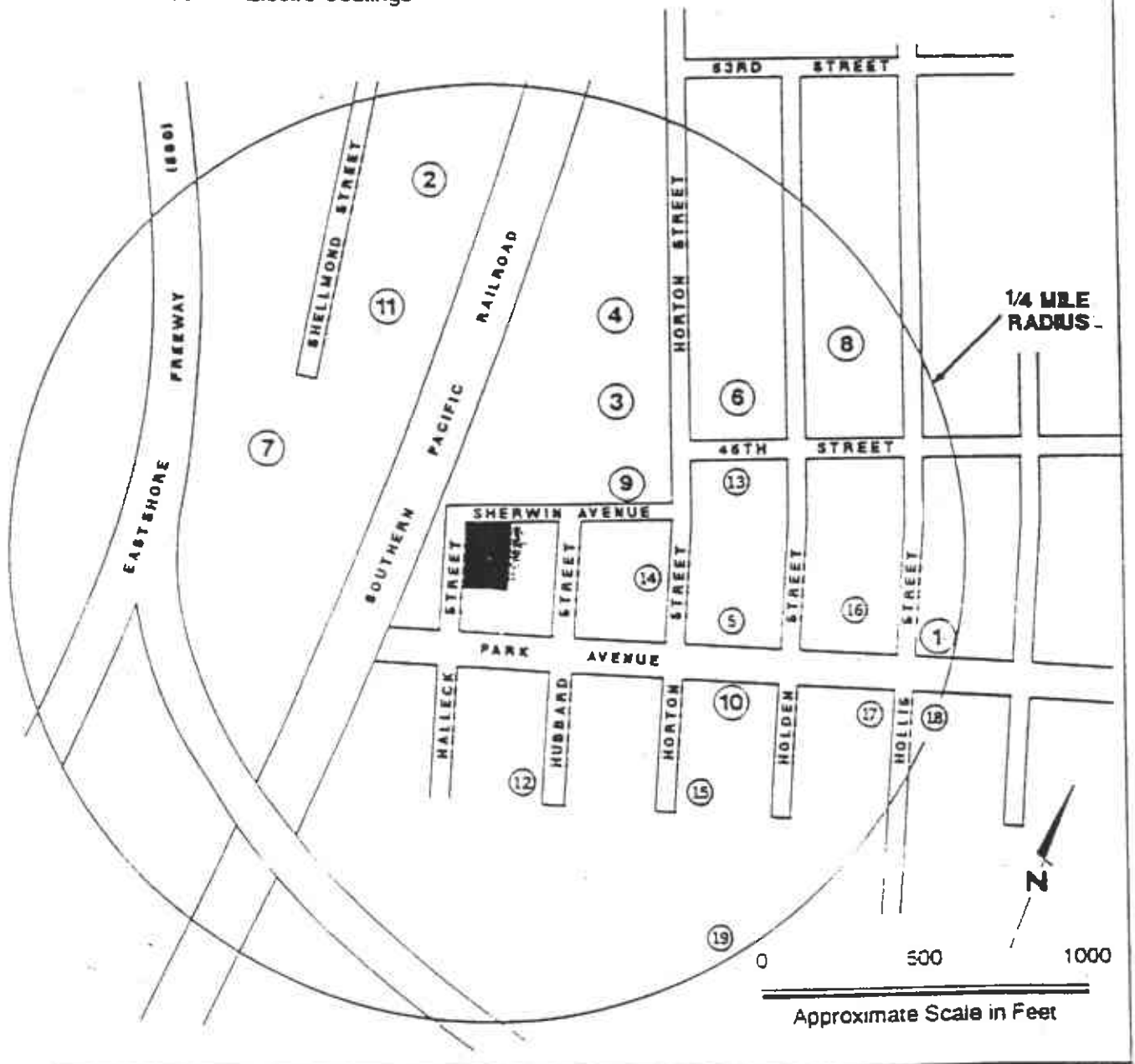
Site Location Map
Southern Pacific Property
Sherwin Avenue and Halleck Street
Emeryville, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
FF001A		9/90		

EXPLANATION

1 -	Del Monte Plant No. 35	11 -	Myers Container
2 -	Pfizer Pigments	12 -	National Environment
3 -	Unknown Property	13 -	California Plywwod
4 -	Rifkin	14 -	Pepsi Cola
5 -	Chromex (Charles Lowe & Co.)	15 -	PALS
6 -	City of Emeryville	16 -	Morehouse
7 -	Judson Steel	17 -	Eugenes (former gas
8 -	Pacific Gas and Electric	18 -	City of Emeryville
9 -	Sherwin Williams	19 -	Bay Area Warehouse
10 -	Electro-Coatings		



PES Environmental, Inc.
Engineering & Environmental Services

Agency Identified Sites
Southern Pacific Property
Sherwin Avenue and Halleck Street
Emeryville, California

PLATE
3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
FF001A		9/90		

SF 031970

APPENDIX B

PHASE II WELL DEVELOPMENT REPORT

BLAINE
TECH SERVICES INC.

1370 TULLY RD., SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

October 23, 1990

PES Environmental
P.O. Box 1833
Novato, CA 94948

Attention: Jane Gill

SITE:
Friend Project
Sherwin & Halleck
Emeryville, California

PROJECT:
Well Development

PROJECT INITIATED ON:
October 12, 1990

WELL DEVELOPMENT REPORT 901012-L-1.DEV

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or become involved with the marketing or installation of remedial systems. The interpretation of results should be performed by representatives of the interested regulatory agencies and those certified professionals who are engaged as paid consultants in the business of providing professional opinions along with recommendations and proposals for further investigative or remedial activities.

As an independent third party, Blaine Tech Services, Inc. routinely performs evacuation and sampling of groundwater wells. In addition, we are frequently asked to provide specialized personnel, instruments and equipment for well development work. Similar standards of care and cleanliness are required in all these activities and our personnel are accustomed to the safety measures that must be taken.

SF 031973

J-1

Well Designation	Well Diameter (inches)	Initial Depth to Water (feet)	Well Depth (feet)	Volume of single case (gallons)
J-1	2	3.81	12.6	1.4

Equipment Used: USGS/Middleburg Pump, Swabb

Data collection during well development:

Date	Time	Gallons Evacuated	pH	Electrical Conductivity (micromhos/cm)	Temp. (F)	Notes
10/12/90	10:32	--	--	--	--	Swabbed.
	10:39	0.5	7.0	900	72.0	Silty brown.
	10:44	4.0	7.1	1000	72.7	Silty brown.
	10:54	8.0	7.3	800	71.5	Brown.
	11:00	12.0	7.4	800	70.8	Brown.
	11:09	16.0	7.3	700	70.7	Brown.
	11:16	20.0	7.4	700	70.6	Medium brown.
	11:24	24.0	7.4	600	70.6	Medium brown.
	11:33	28.0	7.4	600	70.6	Light brown.
	11:40	--	--	--	--	Swabbed.
	11:45	32.0	7.2	700	71.6	Medium brown.
	11:52	36.0	7.2	700	71.2	Medium brown.
	12:00	40.0	7.3	600	71.0	Light brown.
	12:12	44.0	7.4	700	70.9	Light brown.
	12:24	47.0	7.4	600	71.4	Light brown.

Because formations vary in their geologic composition, transmissivity and water production capability, well development cannot be reduced to a set of fixed procedures that can simply be repeated for a set period of time and be expected to produce a complete or satisfactory result. Instead, well development is accomplished by procedures that (1) repair the portion of the native formation that was disrupted by the cutting action of the well drilling tool, and (2) promote the flow of water out of the native formation into the newly installed well (through the filter pack and well screen). Execution of development actions that are not appropriate to the native formation will be inefficient and even deleterious. While trial and error experimentation (guided by field instrument readings) can eventually succeed, the most efficient approach is to have the well development actions specified by the geologist who oversaw the installation of the well. This person will have observed and examined both the cuttings and soil samples produced during the drilling, and then characterized the native materials according to the Unified Soil Classification System as part of logging the well. This information together with the professional knowledge of soil types and their hydraulic characteristics will also have served as the basis for judgments that determined the final construction details of the finished well. Because the same information and judgments are needed to select the processes that can be expected to efficiently develop the well, it is common practice to have the well development specifications set by the same geologist (or geological team) as installed the well.

In addition to specifying the particular well development actions that will be performed, the geologist is also asked to determine the evaluation criteria to be used in evaluating the progress and completeness of the well development work. The most common standard are volumetric, recharge rate, and water clarity (measured as turbidity). Through the use of field instruments and radio communications our personnel can work independently of the project geologist. However, it is often productive to have the geologist on site so as to observe the progress being made as the well is being developed. This is especially true of sites where multiple wells have been installed, because wells even a short distance apart will often display quite different characteristics and the adequacy of development for a particular well may need to be evaluated in light of the hydrologic condition presented by the native formation at that location on the site.

Scope of Requested Services

Blaine Tech Services, Inc. was asked to provide specialized equipment, instruments and personnel for a well development project being overseen by PES Environmental.

Execution of the Recent Work

Our personnel arrived at the site on friday, October 12, 1990 and developed one well in accordance with PES Environmental specifications communicated to us by Ms. Jane Gill. A summary of the well development actions is presented in the tables of field data which follow.

J-1

Well Designation	Well Diameter (inches)	Initial Depth to Water (feet)	Well Depth (feet)	Volume of single case (gallons)
J-1	2	12.6	3.81	1.4

Equipment Used: USGS/Middleburg Pump, Swabb

Data collection during well development:

Date	Time	Gallons Evacuated	pH	Electrical Conductivity (micromhos/cm)	Temp. (F)	Notes
10/12/90	10:32	--	--	--	--	Swabbed.
	10:39	0.5	7.0	900	72.0	Silty brown.
	10:44	4.0	7.1	1000	72.7	Silty brown.
	10:54	8.0	7.3	800	71.5	Brown.
	11:00	12.0	7.4	800	70.8	Brown.
	11:09	16.0	7.3	700	70.7	Brown.
	11:16	20.0	7.4	700	70.6	Medium brown.
	11:24	24.0	7.4	600	70.6	Medium brown.
	11:33	28.0	7.4	600	70.6	Light brown.
	11:40	--	--	--	--	Swabbed.
	11:45	32.0	7.2	700	71.6	Medium brown.
	11:52	36.0	7.2	700	71.2	Medium brown.
	12:00	40.0	7.3	600	71.0	Light brown.
	12:12	44.0	7.4	700	70.9	Light brown.
	12:24	47.0	7.4	600	71.4	Light brown.

STANDARD PROCEDURES

Personnel

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

Selection of Development Equipment

Each Blaine Tech Services, Inc. vehicle provided for a well development project will have a wide assortment of development tools including stainless steel surgeblocks and swabs, several types of pumps, and complete instrumentation for determining standard parameters. Special equipment which includes certain type of winches, jetting heads, and drop surging pumps can be provided.

General Policy

Truly difficult conditions which can only be resolved by the application of massive force or large volumes of high pressure air should be addressed by the well drilling contractor. Blaine Tech Services, Inc. has a general policy against the use of tools or techniques which provide enough mechanical advantage to pose a serious risk of damaging the well. The same policy prohibits introducing foreign materials into a well which would be presumed to carry with them contaminants that would also be introduced to the well. In keeping with this policy, our personnel avoid surging with slugs of effluent water, or jetting with unfiltered air unless these actions are specifically requested by a geologist who seems cognizant of the problems and hazards that accompany the action. In a similar vein, our personnel will, whenever possible, avoid development actions that are likely to seal clay formations or promote bridging, and make every attempt to call obvious indications of such conditions to the attention of the project geologist so that a different regimen can be selected.

Effluent Materials

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation.

Well development routinely generates as much or more effluent water as routine evacuation prior to monitoring. In some cases, very large amounts of water must be removed from the well before a satisfactory level of development has been achieved. The effluent water from these development actions must be contained in suitable containers. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new DOT 17 E drums to the site which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of samples collected from each individual groundwater well. If those individual samples do not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment will be decontaminated after use in each well and before leaving the site. Decontamination consists of complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces (including the inside of the Teflon bladders in USGS/Middleburg pumps. Teflon conductor tubing is connected to the steam cleaner water outlet and water is run through the interior of the tubing for several minutes. The devices are then reassembled and actuated for a period of time as an additional measure. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/jmb

APPENDIX C

PHASE II WELL SAMPLING REPORT

BLAINE
TECH SERVICES INC.

1370 TULLY RD., SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

October 24, 1990

PES Environmental
P.O. Box 1833
Novato, CA 94948

Attn: Jane Gill

SITE:
Friend Project
Sherwin & Halleck
Emeryville, California

PROJECT:
PES Environmental
well installation project

SAMPLING EVENT:
Evacuate and sample one well

DATE:
October 15, 1990

GROUNDWATER SAMPLING REPORT 901015-L-1

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or become involved with the marketing or installation of remedial systems.

This report deals with the groundwater well sampling performed by our firm in response to your request. Data collected in the course of our work at the site is presented in the TABLE OF WELL MONITORING DATA. This data was collected during our inspection, well evacuation, and sample collection. Measurements include the total depth of the well and depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, and temperature readings were obtained during well evacuation and at the time of sample collection. Recharge performance can be evaluated by comparing the anticipated three, four, or five case volume evacuation gallonage with the volume which could actually be purged.

SF 031981

TABLE OF WELL MONITORING DATA

Well I.D.	J-1 *
Date Sampled	10/15/90
Well Diameter (in.)	2
Total Well Depth (ft.)	12.71
Depth To Water (ft.)	3.93
Free Product (in.)	NONE
Reason If Not Sampled	--
1 Case Volume (gal.)	1.4
Did Well Dewater?	NO
Gallons Actually Evacuated	5.0
Purging Device	MIDDLEBURG
Sampling Device	MIDDLEBURG

Time	09:36	09:54	10:13
Temperature (Fahrenheit)	68.7	70.8	71.1
pH	7.6	7.6	7.4
Conductivity (micromhos/cm)	600	600	600

BTS Chain of Custody	901015-L-1
BTS Sample I.D.	FF00181
DHS MMTL Laboratory	CURTIS & THOMPKINS
Analysis	BTEX, TVH, EPA 601, TEH, HEXAVALENT CHROME, PRIORITY POLLUTANT METALS **

* Sample ID FF00182 was a trip blank.

** The sample liquid intended for priority pollutant metals and hexavalent chrome analysis was field filtered prior to placing it in the appropriate sample containers. Nitric acid was not used for the hexavalent chrome analysis.

EQUIPMENT

Selection of Sampling Equipment

The determination of what apparatus is to be used on particular wells may be made by the property owner or the professional consultant directing the performance of the monitoring on the property owner's behalf. If no specific requirement is made known to us, our personnel will select equipment that will accomplish the work in the most efficient manner. Our personnel are equipped with a variety of sampling devices that include USGS/Middleburg pumps, down hole electric submersible pumps, air lift pumps, suction pumps, and bailers made of both Teflon and stainless steel.

SF 031982

Evacuation and Sampling Equipment Mechanics

When equipment is not selected by the client, the apparatus for well evacuation and sample collection is selected by our field personnel based on an evaluation of the field conditions. Four types of devices are commonly available for employment:

Bailers
High Volume Suction Pumps
Electric Submersible Pumps
USGS/Middleburg positive displacement sampling pumps

USGS/Middleburg pumps were selected for the collection of samples at this site.

USGS/Middleburg Positive Displacement Sampling Pumps: USGS/Middleburg positive displacement sampling pumps are EPA approved pumps appropriate for use in wells down to two inches in diameter and depths up to several hundred feet. The pump contains a flexible Teflon bladder which is alternately allowed to fill with well water and then collapsed. Actuation of the pump is accomplished with compressed air supplied by a single hose to one side of the Teflon membrane. Water on the other side of the membrane is squeezed out of the pump and up a Teflon conductor pipe to the surface. Evacuation and sampling are accomplished as a continuum. The rate of water removal is relatively slow and loss of volatiles almost non-existent. There is only positive pressure on the water being sampled and there is no impeller cavitation or suction. The pumps can be placed at any location within the well, can draw water from the very bottom of the well case, and are virtually immune to the erosive effects of silt or lack of water which destroy other types of pumps.

Disadvantages associated with Middleburg pumps include their high cost, low flow rate, temperamental operation, and cleaning requirements which are both elaborate and time consuming.

STANDARD PRACTICES

Evacuation

There are few accepted groundwater sampling protocols that do not call for the evacuation of at least three case volumes of water prior to sample collection, and there are situations where up to ten case volumes of evacuation may be requested. Different professional consultants may specify different levels of evacuation prior to sampling or may request that specific parameters be used to determine when to collect the sample. Our personnel use several standard instruments to record the changes in parameters as the well is evacuated. These instruments are used regardless of whether or not a specific volumetric standard has been called for. As a result, the consultant will always be provided with a record of the pH, EC, and temperature changes that occurred during the evacuation process. Additional information obtained with different types of instruments (such as dissolved oxygen and turbidity meters) can also be collected if requested in advance.

Effluent Materials

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water than has been newly drawn into the well from the surrounding geologic formation. The evacuation of this purge water creates a volume of effluent water which must be contained. Blaine Tech Service, Inc. will place this water in appropriate containers of the client's choice or bring new DOT 17 E drums to the site which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater well. If that sample does not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

Observations and Measurements

Included in the scope of work are routine measurements and investigative procedures which are intended to determine if the wells are suitable for evacuation and sampling. These include measurement (from the top of the well case) of the total depth of the well; the depth to water, and the thickness of any free product zone (FPZ) encountered. The presence of a significant free product zone may interfere with efforts to collect a water sample that accurately reflects the condition of groundwater lying below the FPZ. This interference is caused by adhesion of petroleum to any device being lowered through the FPZ and the likelihood that minute globules of petroleum may break free of the sampling device and be included in the sample. Accordingly, evaluation of analytical results from wells containing any amount of free petroleum should take into account the possibility that positive results have been skewed higher by such an inclusion. The decision to sample or not sample such wells is left to the discretion of our field personnel at the site and the consultant who establishes sampling guidelines based on the need for current information on groundwater conditions at the site.

Sampling Methodology

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms with State and Regional Water Quality Control Board standards and specifically adheres to EPA requirements for apparatus, sample containers and sample handling as specified in publication SW 846.

Sample Containers

Sample material is collected in specially prepared containers appropriate to the type of analyses intended. Our firm uses new sample containers of the type specified by either EPA or the RWQCB. Often times analytical laboratories wish to supply the sample containers because checks performed on these bottles are often part of a comprehensive laboratory QC program. In cases where the laboratory does not supply sample containers our personnel collect water samples in containers that are appropriate to the type of analytical procedure that the sample is to receive. For example, 40 ml volatile organic analysis vials

(VOAs) are used when analysis for gasoline and similar light volatile compounds is intended. These containers are prepared according to EPA SW 846 and will usually contain a small amount of preservative when the analysis is for TPH as gasoline or EPA 602. Vials intended for EPA 601 analysis and EPA 624 GCMS procedures are not preserved. The closure of volatile organic analysis water sample containers is accomplished with an open headed (syringe accessible) plastic screw cap brought down on top of a Teflon faced septum which is used to seal the sample without headspace.

Water samples intended for semivolatile and nonvolatile analysis such as total oil and grease (TOG) and diesel (TPH HBF) are collected and transported in properly prepared new glass liter bottles. Dark amber glass is used in the manufacture of these bottles to reduce any adverse effect on the sample by sunlight. Antimicrobial preservative may be added to the sample liquid if a prolonged holding time is expected prior to analysis. Closure is accomplished with a heavy plastic screw cap.

Groundwater well samples intended for metals analysis are transported in new plastic bottles and preserved with nitric acid. Our personnel can field filter the sample liquid prior to placing it in the sample container if instructed to perform this procedure.

Sample Handling Procedures

Water samples are collected in any of several appropriate devices such as bailers, Coliwasas, Middleburg sampling pumps etc. which are described in detail only as warranted by their employment at a given site. Sample liquid is decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA procedures for handling volatile organic and semi-volatile compounds. Only two variations from the EPA methods are generally employed. First, preservative is added to the sample container prior to addition of the sample liquid. We first discovered this method in bottles prepared by Stoner Laboratories in 1982. It was subsequently adopted by many northern California laboratories and environmental consulting firms as a practical means of reducing the time that a liquid is allowed to aerate prior to closure of the sampling container. Second, because tests have shown that the preservative readily mixes with sample liquid, glass stirring rods are not used to agitate the sample/preservative mixture.

Groundwater samples that are to receive metals analyses can be filtered prior to being placed in the plastic sample bottles that contain the nitric acid preservative. The filtration process employs new glass containers which are discarded and laboratory quality disposable filtering containers which are also discarded. A frequently used filtering procedure employs a vacuum pump to draw sample material through a 0.45 micron filter. The 0.45 micron pore size is standard, but the amount of filter available varies with the type of package selected. Filters are selected on the basis of the relative turbidity of the water sample. Samples which are relatively clean can be efficiently filtered with relatively inexpensive filters while very turbid water will require a very large filter with a high tolerance for sediments. One of many such filters our firm uses are the Nalgene Type A filters in which an upper and lower receptacle chamber are affixed to the filter. Sample material is poured into the upper chamber and a vacuum pump attached to the lower chamber. Simple actuation of the vacuum pump induces the flow of water through the filter and into the lower chamber. The sample is then decanted into the laboratory container and the filter assembly discarded.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days as jobs and projects often do.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under our standard chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to Curtis & Tompkins Laboratory in Redwood City, California. Curtis & Tompkins Laboratory is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #159.

Personnel

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Decontamination procedures include complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces (this applies to the *inside* of the Teflon bladders of USGS/Middleburg pumps). Teflon conductor tubing is connected to the steam cleaner water outlet and water is run through the interior of the tubing for several minutes. The devices are then reassembled and actuated for a period of time as an additional measure. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/jmb

attachments: chain of custody

BLAINE TECH SERVICES INC

1370 TULLY ROAD, SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

CONDUCT ANALYSIS TO DETECT

LAB Curtis & Tompkins DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMIT SET BY CALIFORNIA DHS AND

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

CHAIN OF CUSTODY: 50105-L-1
CLIENT: PES
SITE: Friend Project
Corner of Shevlin & Hollis
Emeryville, CA

SPECIAL INSTRUCTIONS

Bill to PES Environmental

Hexavalent Chrome - 24 hr. holding time & do not preserve

SAMPLE I.D.	MATRIX (S = SOIL, W = H2O)	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	TEH	Priority Pollutant Metals	Hexavalent Chrome	EPA 601	TVH	BTXE	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FF-001B1	W	7		X	X	X	X	X	X		Rec'd -		
FF-001B2	U	1					X				"		

SAMPLING COMPLETED: DATE 10/15/90 TIME 10:20
SAMPLING PERFORMED BY: [signature]
RESULTS NEEDED NO LATER THAN

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	10/15/90	10:56			
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
			Nancy Wooten	10/15/90	1200

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

SF 031988

APPENDIX D

PHASE III SOIL ANALYTICAL REPORTS

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 11/20/90
DATE REPORTED: 11/27/90

LAB NUMBER: 102337

CLIENT: PES ENVIRONMENTAL

REPORT ON: 1 SOIL SAMPLE AND 3 SOIL COMPOSITES

PROJECT #: FF001B
LOCATION: EMERYVILLE WAREHOUSE COMPANY

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

SF 031991

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102337
CLIENT: PES ENVIRONMENTAL
PROJECT ID: FF001B
LOCATION: EMERYVILLE WAREHOUSE

DATE RECEIVED: 11/20/90
DATE EXTRACTED: 11/21/90
DATE ANALYZED: 11/26/90
DATE REPORTED: 11/27/90

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	GASOLINE RANGE (mg/Kg)	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
102337-7	FF-2-6.0	ND	ND	ND	10
102337-24	CFF-3	ND	ND	ND	10

ND = Not Detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	90

SF 031992

Curtis & Tomkins, Ltd.

LABORATORY NUMBER: 102337-24
CLIENT: PES ENVIRONMENTAL
PROJECT ID: FF001B
SAMPLE ID: CFF-3

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/26/90
DATE REPORTED: 11/27/90

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/kg	Reporting Limit (ug/kg)
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
acetone	ND	10
carbon disulfide	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
1,2-dichloroethene (total)	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
2-butanone	ND	10
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
vinyl acetate	ND	10
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
dibromochloromethane	ND	5.0
1,1,2-trichloroethane	ND	5.0
benzene	ND	5.0
trans-1,3-dichloropropene	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
1,1,2,2-tetrachloroethane	ND	5.0
tetrachloroethylene	ND	5.0
toluene	18	5.0
chlorobenzene	ND	5.0
ethyl benzene	ND	5.0
styrene	ND	5.0
total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	121 %
Toluene-d8	96 %
Bromofluorobenzene	97 %

SF 031994

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102337-7
CLIENT: PES ENVIRONMENTAL
PROJECT ID : FF001B
SAMPLE ID: FF-2-6.0

DATE RECEIVED: 11/20/90
DATE EXTRACTED: 11/21/90
DATE ANALYZED: 11/21/90
DATE REPORTED: 11/27/90

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Phenol	ND	330
2-Chlorophenol	ND	330
Benzyl Alcohol	ND	330
2-Methylphenol	ND	330
4-Methylphenol	ND	330
2-Nitrophenol	ND	1650
2,4-Dimethylphenol	ND	330
Benzoic Acid	ND	1650
2,4-Dichlorophenol	ND	1650
4-Chloro-3-methylphenol	ND	330
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	1650
2,4-Dinitrophenol	ND	1650
4-Nitrophenol	ND	1650
4,6-Dinitro-2-methylphenol	ND	1650
Pentachlorophenol	ND	1650
BASE/NEUTRAL COMPOUNDS		
N-Nitrosodimethylamine	ND	330
Aniline	ND	330
Bis(2-chloroethyl)ether	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
N-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
Bis(2-chloroethoxy)methane	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
4-Chloroaniline	ND	330
Hexachlorobutadiene	ND	330
2-Methylnaphthalene	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	1650

SF 031995

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102337-7
SAMPLE ID: FF-2-6.0

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
3-Nitroaniline	ND	1650
Acenaphthene	ND	330
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
4-Chlorophenyl-phenylether	ND	330
Fluorene	ND	330
4-Nitroaniline	ND	1650
N-Nitrosodiphenylamine	ND	330
Azobenzene	ND	330
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	330
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	1650
Benzo (a) anthracene	ND	330
Chrysene	ND	330
Bis (2-ethylhexyl)phthalate	ND	330
Di-n-octylphthalate	ND	330
Benzo (b) fluoranthene	ND	330
Benzo (k) fluoranthene	ND	330
Benzo (a) pyrene	ND	330
Indeno (1,2,3-cd) pyrene	ND	330
Dibenzo (a,h) anthracene	ND	330
Benzo (g,h,i) perylene	ND	330

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

2-Fluorophenol	109 %	Nitrobenzene-d5	81 %
Phenol-d6	108 %	2-Fluorobiphenyl	75 %
2,4,6-Tribromophenol	119 %	Terphenyl-d14	58 %

SF 031996

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 102337-24
CLIENT: PES ENVIRONMENTAL
PROJECT ID : FF001B
SAMPLE ID: CFF-3

DATE RECEIVED: 11/20/90
DATE EXTRACTED: 11/21/90
DATE ANALYZED: 11/21/90
DATE REPORTED: 11/27/90

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Phenol	ND	330
2-Chlorophenol	ND	330
Benzyl Alcohol	ND	330
2-Methylphenol	ND	330
4-Methylphenol	ND	330
2-Nitrophenol	ND	1650
2,4-Dimethylphenol	ND	330
Benzoic Acid	ND	1650
2,4-Dichlorophenol	ND	1650
4-Chloro-3-methylphenol	ND	330
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	1650
2,4-Dinitrophenol	ND	1650
4-Nitrophenol	ND	1650
4,6-Dinitro-2-methylphenol	ND	1650
Pentachlorophenol	ND	1650
BASE/NEUTRAL COMPOUNDS		
N-Nitrosodimethylamine	ND	330
Aniline	ND	330
Bis(2-chloroethyl)ether	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
N-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
Bis(2-chloroethoxy)methane	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
4-Chloroaniline	ND	330
Hexachlorobutadiene	ND	330
2-Methylnaphthalene	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	1650

SF 031997

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102337-24
SAMPLE ID: CFF-3

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
3-Nitroaniline	ND	1650
Acenaphthene	ND	330
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
4-Chlorophenyl-phenylether	ND	330
Fluorene	ND	330
4-Nitroaniline	ND	1650
N-Nitrosodiphenylamine	ND	330
Azobenzene	ND	330
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	330
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	1650
Benzo (a) anthracene	ND	330
Chrysene	ND	330
Bis (2-ethylhexyl)phthalate	ND	330
Di-n-octylphthalate	ND	330
Benzo (b) fluoranthene	ND	330
Benzo (k) fluoranthene	ND	330
Benzo (a) pyrene	ND	330
Indeno (1,2,3-cd) pyrene	ND	330
Dibenzo (a,h) anthracene	ND	330
Benzo (g,h,i) perylene	ND	330

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

2-Fluorophenol	107 %	Nitrobenzene-d5	79 %
Phenol-d6	108 %	2-Fluorobiphenyl	72 %
2,4,6-Tribromophenol	107 %	Terphenyl-d14	55 %

SF 031998

Curtis & Tomkins, Ltd.

LABORATORY NUMBER: 102337-22
CLIENT: PES ENVIRONMENTAL
PROJECT ID: FF001B
SAMPLE ID: CFF-1

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/24/90
DATE REPORTED: 11/27/90

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	6.0	2.5	EPA 7060
Barium	110	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	2.0	0.5	EPA 6010
Chromium (total)	28	0.5	EPA 6010
Cobalt	10	0.5	EPA 6010
Copper	74	1	EPA 6010
Lead	96	2.5	EPA 6010
Mercury	0.3	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	39	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	18	1	EPA 6010
Zinc	280	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	<1	92	Mercury	2	109
Arsenic	5	94	Molybdenum	1	95
Barium	<1	95	Nickel	1	96
Beryllium	1	93	Selenium	4	88
Cadmium	3	90	Silver	5	84
Chromium	<1	96	Thallium	14	92
Cobalt	1	93	Vanadium	<1	92
Copper	1	94	Zinc	2	93
Lead	4	80			

SF 031999

Curtis & Tomkins, Ltd.

LABORATORY NUMBER: 102337-23
CLIENT: PES ENVIRONMENTAL
PROJECT ID: FF001B
SAMPLE ID: CFF-2

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/24/90
DATE REPORTED: 11/27/90

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 7041
Arsenic	210	2.5	EPA 6010
Barium	1,100	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	24	5	EPA 6010
Chromium (total)	52	0.5	EPA 6010
Cobalt	72	0.5	EPA 6010
Copper	2,600	1	EPA 6010
Lead	550	25	EPA 6010
Mercury	ND	0.1	EPA 7471
Molybdenum	3.2	0.5	EPA 6010
Nickel	13	5	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	2	1	EPA 6010
Thallium	ND	5	EPA 7841
Vanadium	34	1	EPA 6010
Zinc	9,300	5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	<1	92	Mercury	2	109
Arsenic	5	94	Molybdenum	1	95
Barium	<1	95	Nickel	1	96
Beryllium	1	93	Selenium	4	88
Cadmium	3	90	Silver	5	84
Chromium	<1	96	Thallium	14	92
Cobalt	1	93	Vanadium	<1	92
Copper	1	94	Zinc	2	93
Lead	4	80			

SF 032000

APPENDIX E

PHASE II GROUNDWATER ANALYTICAL REPORT

10337

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94710
(415) 486-0900

Samplers J. DUNN

Job Description EMERYVILLE WAREHOUSE CO.

Job Number FF00818

Client Contact J. DUNN

Recorder

Matrix						# Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES
Water	Soil	Waste	Oil				H_2SO_4	HNO_3	Ice	None	Other		Yr	Mo	Dy	Time	
	X					1			X			FF-1-1.0					
	X					1			X			FF-1-3.5					
	X					1			X			FF-1-5.5					
	X					1			X			FF-1-8.0					
	X					1			X			FF-2-1.5					
	X					1			X			FF-2-2.5					
	X					1			X			FF-2-6.0					
	X					1			X			FF-2-8.0					
	X					1			X			FF-3-1.0					
	X					1			X			FF-3-2.5					
	X					1			X			FF-3-4.0					

ANALYSIS REQUESTED														
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method-	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's					

Laboratory Notes :

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature) Nancy 3/20

SF032001

1025.01

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94107
(415) 486-0900

Samplers: J. DUNN

Job Description: Emeryville Warehouse Co.

Job Number: FF001B

Client Contact: J. DUNN/PES

Recorder:

	Matrix						# Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES
	Water	Soil	Waste	Oil				H_2SO_4	HNO3	Ice	None	Other		Yr	Mo	Dy	Time	
12		✓					1			1			FF-3-8.0					
13		✓					1			1			FF-4-1.0					
14		✓					1			1			FF-4-3.0					
15		✓					1			1			FF-4-6.0					
16		✓					1			1			FF-4-8.5					
17		✓					1			1			FF-5-1.0					
18		✓					1			1			FF-5-3.0					
19		✓					1			1			FF-5-6.0					
20		✓					1			1			FF-4-1.75					
21		✓					1			1			FF-5-1.75					

ANALYSIS REQUESTED

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method-	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's						

Laboratory Notes :

SF 032002

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature) 1/30/96 11 3:20

PES Environmental, Inc.
Engineering & Environmental Services

November 20, 1990

102337

Curtis and Tompkins, Ltd.
2323 Fifth Street
Berkeley, California
486-0532 (FAX)

Attention: Nancy Wilson

Subject: Emeryville Warehouse Company

PES Job Number: FF001~~B~~C

Please composite and analyze samples as indicated below on a 1-week turnaround schedule. Need results by midday Tuesday, November 27, 1990.

Composite No.		Sample ID No.	Analysis	
22	CFF-1	FF-2-1.0 5 FF-3-1.0 9 FF-4-1.0 13	Title 22 Metals	11-27
23	CFF-2	FF-2-2.5 6 FF-4-1.75 20 FF-5-1.75 21	Title 22 Metals	11-27
24	CFF-3	FF-1-5.5 FF-1-6.0 3 FF-3-6.0 11 FF-5-6.0 19	EPA 3550/8015 (TEH) EPA 8240 EPA 8270	11-26
~~BLANK~~	FF-2-6.0	FF-2-6.0 7	EPA 3550/8015 (TEH) EPA 8240 EPA 8270	

Thanks for your assistance on this project.

PACIFIC ENVIRONMENTAL SOLUTIONS, INC.

James P. Dunn
Senior Geologist

FF001B.ltr

SF 032003

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 10/15/90
DATE REPORTED: 10/25/90

LAB NUMBER: 101929

CLIENT: PES ENVIRONMENTAL

REPORT ON: 2 WATER SAMPLES

PROJECT #: 901015-L-1
LOCATION: SHEWIN & HALLECK, EMERYVILLE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

SF 032006

Curtis & Tompkins Ltd

LABORATORY NUMBER: 101929
CLIENT: PES ENVIRONMENTAL
JOB #: 901015-L-1

DATE RECEIVED: 10/15/90
DATE EXTRACTED: 10/24/90
DATE ANALYZED: 10/24/90
DATE REPORTED: 10/25/90

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT (ug/L)
101929-1	FF001B1 (with T-4)	ND	ND	50

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	83

SF 032007

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101929
CLIENT: PES ENVIRONMENTAL
JOB NUMBER: 901015-L-1

DATE RECEIVED: 10/15/90
DATE ANALYZED: 10/16/90
DATE REPORTED: 10/25/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101929-1	FF001B1 (Well T-1)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	89

SF 032008

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101929
CLIENT: PES ENVIRONMENTAL
PROJECT #: 901015-L-1

DATE RECEIVED: 10/15/90
DATE ANALYZED: 10/16/90
DATE REPORTED: 10/25/90

ANALYSIS: HEXAVALENT CHROMIUM
ANALYSIS METHOD: EPA 7195

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101929-1	FF001B1 (Well T-1)	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	97

SF 032009

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101929-1
CLIENT: PES ENVIRONMENTAL
PROJECT #: 901015-L-1
SAMPLE ID: FF001B1 (Well F-1)

DATE RECEIVED: 10/15/90
DATE ANALYZED: 10/16/90
DATE REPORTED: 10/25/90

EPA Priority Pollutant Metals in Aqueous Solutions

METAL	RESULT mg/L	REPORTING LIMIT mg/L	METHOD
Antimony	ND	0.1	EPA 6010
Arsenic	ND	0.05	EPA 6010
Beryllium	ND	0.01	EPA 6010
Cadmium	ND	0.01	EPA 6010
Chromium (total)	ND	0.01	EPA 6010
Copper	ND	0.02	EPA 6010
Lead	ND	0.05	EPA 6010
Mercury	ND	0.001	EPA 7470
Nickel	ND	0.01	EPA 6010
Selenium	ND	0.05	EPA 7740
Silver	ND	0.02	EPA 6010
Thallium	ND	0.1	EPA 7841
Zinc	ND	0.01	EPA 6010

ND = Not detected at or above reporting limit

QA/QC SUMMARY

	RPD, %	RECOVERY, %		RPD, %	RECOVERY, %
Antimony	1	106	Mercury	8	105
Arsenic	4	103	Nickel	1	111
Beryllium	<1	108	Selenium	1	108
Cadmium	2	103	Silver	13	83
Chromium	<1	109	Thallium	11	104
Copper	1	108	Zinc	1	108
Lead	<1	97			

SF 032010

Curtis & Tompkins Ltd

LABORATORY NUMBER: 101929-1
CLIENT: PES ENVIRONMENTAL
PROJECT #: 901015-L-1
SAMPLE ID: FF001B1 (Dew T-1)

DATE RECEIVED: 10/15/90
DATE ANALYZED: 10/23/90
DATE REPORTED: 10/25/90

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethyl vinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	91

SF 032011

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101929-2
CLIENT: PES ENVIRONMENTAL
PROJECT #: 901015-L-1
SAMPLE ID: FF001B2 (Well J-1 Duplicate)

DATE RECEIVED: 10/15/90
DATE ANALYZED: 10/23/90
DATE REPORTED: 10/25/90

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	4.5	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethyl vinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	91

SF 032012

101929

BLAINE

TECH SERVICES, Inc.

1370 Tully Road, Suite 505
San Jose, CA 95122
(408) 995 5535

CHAIN OF CUSTODY

1

CLIENT

SITE

C = COMPOSITE ALL CONTAINERS

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	TPH	Volatile Halocarbons	Volatile Aromatics	EPA 601	TTLH	BTXE
FF(x)101	W	7	X	X	X	X	X	X
FF(x)102	W	1				X		

SF 032013

CONDUCT ANALYSIS TO DETECT

LAB

DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION

SPECIAL INSTRUCTIONS

ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #

SAMPLING COMPLETED	DATE	TIME

SAMPLING PERFORMED BY

RESULTS NEEDED NO LATER THAN

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

APPENDIX F

PHASE III GROUNDWATER ANALYTICAL REPORTS

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 11/20/90
DATE REPORTED: 11/27/90

LAB NUMBER: 102333

CLIENT: PES ENVIRONMENTAL

REPORT ON: 2 WATER SAMPLES

PROJECT #: FF001B
LOCATION: EMERYVILLE WAREHOUSE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

SF 032016

LABORATORY NUMBER: 102333
CLIENT: PES ENVIRONMENTAL
PROJECT ID: FF001B
JOB LOCATION: EMERYVILLE WAREHOUSE

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/21/90
DATE REPORTED: 11/27/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
102333-1	WFF-1	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102333-2	WFF-2	53	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	87

SF 032017

Curtis & Tompkins Ltd

LABORATORY NUMBER: 102333-1
CLIENT: PES ENVIRONMENTAL
PROJECT #: FF001B
SAMPLE ID: WFF-1

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/20/90
DATE REPORTED: 11/27/90

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethyl vinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	82

SF 032018

Curtis & Tompkins Ltd

LABORATORY NUMBER: 102333-2
CLIENT: PES ENVIRONMENTAL
PROJECT #: FF001B
SAMPLE ID: WFF-2

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/20/90
DATE REPORTED: 11/27/90

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethyl vinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	82

SF 032019

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102333-1
CLIENT: PES ENVIRONMENTAL
PROJECT ID: FF001B
SAMPLE ID: WFF-1

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/26/90
DATE REPORTED: 11/27/90

Title 26 Metals in Aqueous Solutions

METAL	RESULT mg/L	REPORTING LIMIT mg/L	METHOD
Antimony	ND	0.05	EPA 6010
Arsenic	ND	0.05	EPA 6010
Barium	0.25	0.01	EPA 6010
Beryllium	ND	0.01	EPA 6010
Cadmium	ND	0.01	EPA 6010
Chromium (total)	ND	0.01	EPA 6010
Cobalt	ND	0.01	EPA 6010
Copper	ND	0.01	EPA 6010
Lead	ND	0.05	EPA 6010
Mercury	ND	0.001	EPA 7470
Molybdenum	0.01	0.01	EPA 6010
Nickel	0.02	0.01	EPA 6010
Selenium	ND	0.05	EPA 6010
Silver	ND	0.02	EPA 6010
Thallium	ND	0.05	EPA 6010
Vanadium	ND	0.02	EPA 6010
Zinc	0.05	0.01	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	2	99	Mercury	7	92
Arsenic	2	100	Molybdenum	2	104
Barium	2	102	Nickel	2	102
Beryllium	2	99	Selenium	1	100
Cadmium	2	103	Silver	3	99
Chromium	5	85	Thallium	2	104
Cobalt	2	104	Vanadium	2	104
Copper	1	98	Zinc	2	101
Lead	2	105			

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Curtis & Tompkins Ltd

LABORATORY NUMBER: 102333-2
CLIENT: PES ENVIRONMENTAL
PROJECT ID: FF001B
SAMPLE ID: WFF-2

DATE RECEIVED: 11/20/90
DATE ANALYZED: 11/26/90
DATE REPORTED: 11/27/90

Title 26 Metals in Aqueous Solutions

METAL	RESULT mg/L	REPORTING LIMIT mg/L	METHOD
Antimony	ND	0.05	EPA 6010
Arsenic	ND	0.05	EPA 6010
Barium	1.8	0.01	EPA 6010
Beryllium	ND	0.01	EPA 6010
Cadmium	ND	0.01	EPA 6010
Chromium (total)	ND	0.01	EPA 6010
Cobalt	ND	0.01	EPA 6010
Copper	0.02	0.01	EPA 6010
Lead	ND	0.05	EPA 6010
Mercury	ND	0.001	EPA 7470
Molybdenum	0.03	0.01	EPA 6010
Nickel	ND	0.01	EPA 6010
Selenium	ND	0.05	EPA 6010
Silver	ND	0.02	EPA 6010
Thallium	ND	0.05	EPA 6010
Vanadium	ND	0.02	EPA 6010
Zinc	0.07	0.01	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	2	99	Mercury	7	92
Arsenic	2	100	Molybdenum	2	104
Barium	2	102	Nickel	2	102
Beryllium	2	99	Selenium	1	100
Cadmium	2	103	Silver	3	99
Chromium	5	85	Thallium	2	104
Cobalt	2	104	Vanadium	2	104
Copper	1	98	Zinc	2	101
Lead	2	105			

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Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94710
(415) 486-0900

Samplers: J. DUNN

Job Description: Emeryville Warehouse Co.

Job Number: FF0018

Client Contact: J. DUNN / PES

Recorder: J. DUNN & PES

Matrix	# Containers	Method Preserved	Sample Number	Sampling Date	Time	SAMPLE NOTES
Water / Soil / Waste / Oil		HCl / HNO3 / Ice / None / Other		Yr Mo Dy		
X	4		WFF01	90 11 20		
X	4		WFF-02	90 11 26		

ANALYSIS REQUESTED

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (*	TPH Method- TVH/BTXE	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's
X				X		X			
X				X		X			

Laboratory Notes:

1) Filter metals sample and acidify ASAP
2) Drinking Water Detection Limit

Chain of Custody Record

Relinquished by: (Signature) Date/Hr	Received by: (Signature)
Relinquished by: (Signature) Date/Hr	Received by: (Signature)
Relinquished by: (Signature) Date/Hr	Received by: (Signature)
Relinquished by: (Signature) Date/Hr	Received by: (Signature)
Dispatched by: (Signature) Date/Hr	Received for Lab by: (Signature) 1/24/90

SF 032022

3:20

GEOMATRIX

ATTACHMENT B

Weiss Associates, October 5, 1994 Letter

Weiss Associates *Environmental and Geologic Services*

5500 Shellmound Street, Emeryville, CA 94608-2411 *Fax: 510-547-5043* *Phone: 510-450-6000*

October 5, 1994

Mr. Jim Hart
1337 Josephine Street
Berkeley, California 94703

Re: 4226 Halleck Street @ Sherwin
Emeryville, CA
WA Proposal #99-0967

Dear Jim:

Weiss Associates (WA) is pleased to submit this proposal for additional investigation to determine the extent of arsenic and other metals in soil and/or ground water beneath the subject site (Figure 1). A brief site background, our recommended scope of work and a tentative schedule for the proposed work are provided below. A budget to complete the proposed work is attached.

SITE BACKGROUND

The subject property has been owned by the Southern Pacific Transportation Co. or a related entity since 1906, and since 1906 the property has apparently been used for freight loading and unloading. A Phase I-II site assessment was completed for the property by PES Environmental, Inc. in 1990, for another potential buyer. Elevated concentrations of lead, copper, zinc and arsenic (as compared to concentration ranges in naturally occurring surficial sediments in the San Francisco Bay Region) were detected in composited soil samples collected from a black sandy fill during the PES assessment. In addition, total volatile hydrocarbons as gasoline (TVH-G) were detected in a ground water sample collected from one soil boring

To better define subsurface conditions regarding the hydrocarbons and metals, WA augered soil borings B-1 and B-2 near previous sampling locations at the subject site with the permission of Southern Pacific (Figure 1), and collected soil samples for metals analysis on August 10, 1994, as part of our supplemental Phase I-II site assessment. The borings were drilled to determine actual soil concentrations at the previous locations, rather than the averaged results of the composited samples which PES collected. In addition, we collected a ground water sample from existing monitoring well J-1 for analysis of TVH-G, and volatile organic compounds. The results of the soil sampling included:

- Elevated concentrations of arsenic were detected in a brown to black sandy fill at 2.5-ft depth in both borings, at 6,800 ppm in boring B-1 and at 1,400 ppm in boring B-2;
- Lead, copper and zinc were also detected above estimated background concentrations in all samples. Although barium was detected at more than twice the US median for surface soils, this may be in the range of natural variability;
- Ground water was encountered at about 6-ft depth in the borings, and subsequently rose to about 4-ft depth. However, a ground water sample from boring B-1, which had higher metals concentrations in soil, had no detectable metals except arsenic at 0.009 ppm; and
- No TVH-G or organic compounds were detected in the ground water sample from well J-1.

We compared the metals concentrations in the soil samples to US EPA Region IX, Preliminary Remediation Goals (PRGs) to determine whether the arsenic concentrations detected in soil are a potential health hazard (Table 1). The PRGs are concentrations that under conservative assumptions of exposure would not likely exceed a standard risk for detrimental health affects including cancer. Arsenic at the concentrations detected would, under conservative assumptions for exposure (implying relatively higher chances of exposure) exceed the acceptable risk levels according to the PRGs, since the site concentrations exceed PRGs by a factor of one thousand. Therefore, mitigative or preventive measures may need to be implemented in order to develop this site for residential use.

WA identified at least two potential sources of the arsenic in the site vicinity: a former metal refinery directly west of the site and across the Southern Pacific tracks may have generated arsenic wastes as a byproduct of metal refining; and the Sherwin-Williams site directly to the north has a known arsenic release to ground water related to past arsenic-based pesticide manufacturing at that site. Arsenic as high as 110,000 ppm was detected in soil at the Sherwin-Williams property.

RECOMMENDED SCOPE OF WORK

According to our discussions regarding the project, the purpose of the proposed work is to provide subsurface data that can be used to determine what, if any, mitigation or remedial action would be needed due to the elevated metals, especially arsenic, to be able to develop the property for residential use. When collecting the data, we will consider that the arsenic-bearing material may occur irregularly across the site, since it seems the arsenic occurs in fill material. Therefore, the 6,800 ppm of arsenic detected in boring B-1 may not be the maximum concentration encountered. In addition, we will also need to characterize the arsenic's leachability, since arsenic may occur in the subsurface in either soluble or insoluble forms. Soluble forms are of greater concern, as they may

migrate with ground water more easily. Solubility of arsenic is affected by the general soil chemistry as well as the source of the arsenic. Considering these points, our recommended scope of work includes the following tasks:

- Establish a grid at the site and auger soil borings at regularly-spaced intervals for collecting soil and ground water samples. Initially, we recommend collecting samples from 12 borings across the site;
- Collect soil samples of various sediment types encountered for possible chemical analysis, and continue augering the soil borings until both native sediments and ground water are encountered in the boring, which we expect will be less than 8-ft depth;
- When ground water is encountered, collect water samples from the augered holes for filtering at the laboratory and possible metals analysis;
- Based on the field observations, analyze soil samples of differing sediment types for arsenic at a minimum, and possibly for, copper, lead, zinc and/or barium;
- After reviewing the soil results, reanalyze some soil samples for soluble metals to determine the leachability, and analyze selected water samples for metals to estimate potential ground water impacts;
- Analyze some soil samples for soil pH to determine the natural conditions for arsenic solubility; and
- tabulate and plot the analytic results on a map to determine whether a pattern of distribution is established.

If the initial results show a random vertical or horizontal distribution, or incomplete trends in areas where a pattern is evident, additional soil borings can be augered to further refine the data.

Once we have collected all the field data, we will prepare a presentation to discuss the results and determine the next course of action. Additional work may include completing a risk assessment with less conservative site assumptions than the PRGs, which may prove that higher concentrations are acceptable in site soils than the PRGs; or preparing a remedial action plan to mitigate any hazards related to the metals occurrence.

SCHEDULE

Assuming we will need to complete 20 soil borings to fully characterize the metals occurrence in shallow soils, we can complete the initial 12 borings in one week. We would then need about one additional week to review the analytic results and plan the additional eight borings. We could then present the data within one month of the project start; however, if overnight turnaround of the soil analyses is conducted, we would be able to present the results in about three weeks from the project start.

BUDGET

Our estimated budget for the proposed work, assuming we auger 20 borings and complete the indicated number of analyses, is presented as Attachment A. This budget was prepared on a time and materials basis assuming normal laboratory turnaround of the analyses, and includes all WA labor and outside expenses to complete the above tasks. To receive the laboratory results on overnight turnaround, the estimated analytic costs would double and we would expend a nominal amount of additional labor to coordinate the quicker turnaround.

Weiss Associates appreciates the opportunity to provide you with environmental consultation, and we trust this proposal meets your needs. Please call if you have any questions or comments.

Sincerely,
Weiss Associates

John W. Duey
Project Geologist

Mary L. Stallard, C.E.G.
Senior Project Geologist

Att: Budget

cc: Ms. Michelle Mussen

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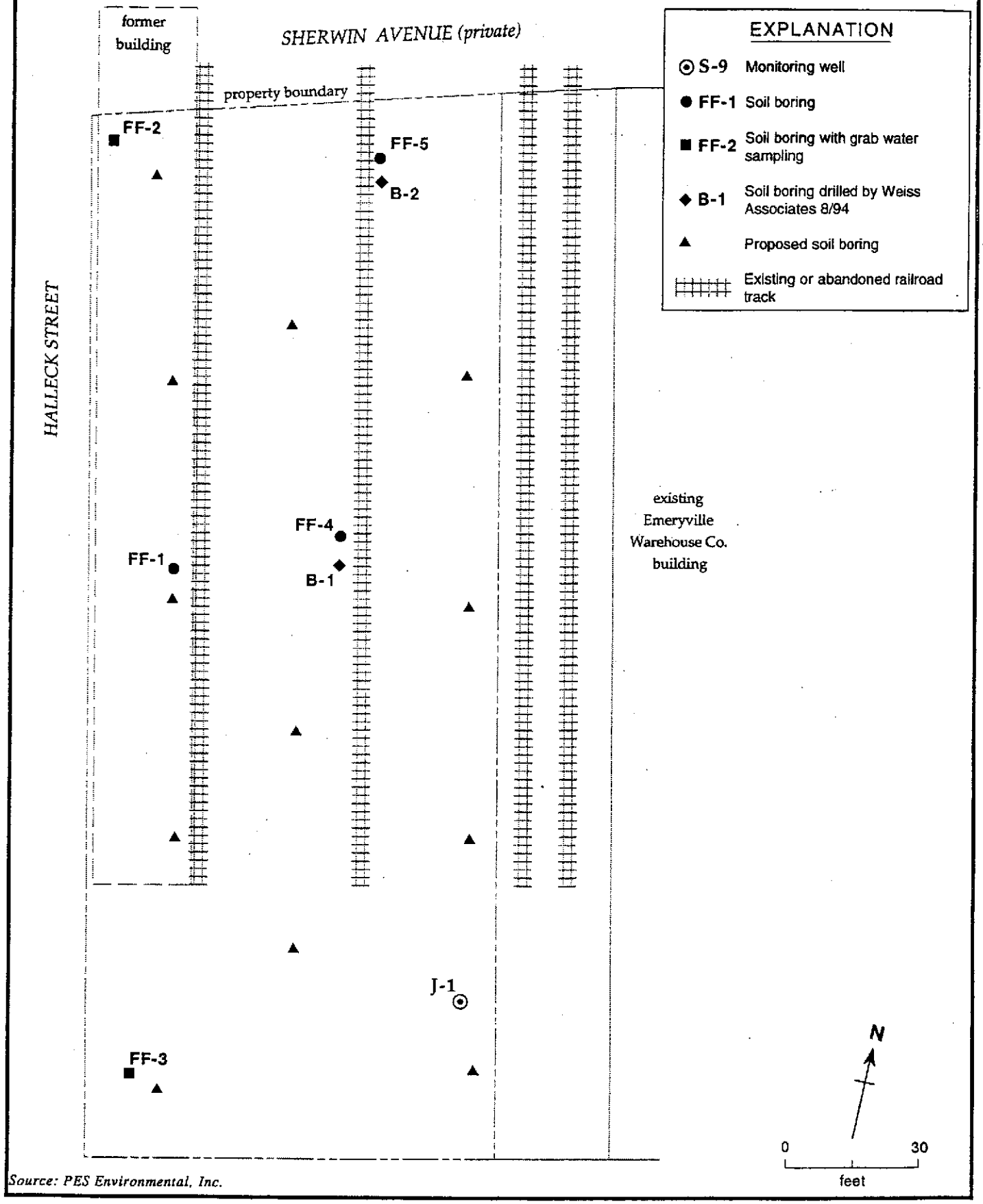


Figure 1. Monitoring Well and Soil Boring Location Map - , Sherwin and Halleck Street, Emeryville, California

Table 1. Analytic Results for Metals in Soil and Ground Water Samples - 4226 Halleck Street, Emeryville, California.

Boring/ ID	Sample Depth (ft)	Date Sampled	As	Ag	Ba	Be	Cd	Cr[a]	Co	Cu	Hg	Mo	Ni	Pb	Sb	Se	Tl	V	Zn
			< parts per million (mg/kg) >																
SOIL																			
FF-2/3/4[b]	1.0	11/20/90	6	<1	110	<0.5	2	28	10	74	0.3	<0.5	39	96	<5	<2.5	<5	18	280
FF-2/4/5[c]	1.75-2.5	11/20/90	210	2	1,100	<0.5	24	52	72	2,600	<0.1	3.2	13	550	<5	<2.5	<5	34	9,300
B1S	2.5	08/10/94	6,800	12	1,400	<0.5	10	25	43	2,300	<0.05	21	9	190	16	<1	<5	27	21,000
B2S	2.5	08/10/94	1,400	11	440	<0.5	7	65	58	2,300	<0.05	11	28	640	27	<1	6	26	10,000
PRG			22	380	5,300	0.14ca	9	NE	NE	2,800	23	380	150	400	31	380	5.4[d]	540	23,000
PRG			0.32ca																
Background			2.86	NE	500	<1	NE	100	30	30	NE	<3	20	20	NE	NE	NE	150	79
TTLC			500	500	10,000	75	100	2,500	8,000	2,500	20	3,500	2,000	1,000	500	100	700	2,400	5,000
STLC			5	5	100	0.75	1	5	80	25	0.2	350	20	5	15	1	7	24	250
WATER																			
WWFF-1		11/20/90	<0.05	<0.02	0.25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.05
WWFF-2		11/20/90	<0.05	<0.02	1.8	<0.01	<0.01	<0.01	<0.01	<0.02	<0.001	0.03	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	0.07
B1W	4	08/10/94	0.009	<0.02	0.33	<0.005	<0.01	<0.02	<0.02	<0.02	<0.002	<0.02	<0.02	<0.02	<0.1	<0.01	<0.2	<0.02	<0.02
B2W	4	08/10/94	---	---	---	---	---	---	---	---	---	---	---	<0.005	---	---	---	---	---
J-1	4	10/15/90	<0.05	<0.02	---	<0.01	<0.01	<0.01	---	<0.02	<0.001	---	<0.01	<0.05	<0.1	<0.05	<0.1	---	<0.01
		08/10/94	.005	<0.02	0.12	0.005	0.01	<0.02	<0.02	<0.02	<0.002	<0.02	0.02	<0.1	<0.1	<0.01	<0.2	0.05	<0.02
STLC			5	5	100	0.75	1	5	80	25	0.2	350	20	5	15	1	7	24	250
MCL			0.05	0.05	1.0	0.004	0.01	0.05	NE	1.0[e]	0.002	NE	0.1	0.05[e]	NE	0.01	NE	NE	5.0[f]

-- Table 1 continues on next page --

Table 1. Analytic Results for Metals in Soil and Ground Water Samples - 4226 Halleck Street, Emeryville, California. (continued)

Abbreviations:

As = Arsenic by EPA Method 6010
Ag = Silver by EPA Method 6010
Ba = Barium by EPA Method 6010
Be = Beryllium by EPA Method 6010
Cd = Cadmium by EPA Method 6010
Cr = Total Chromium by EPA Method 6010
Co = Cobalt by EPA Method 6010 or 7197
Cu = Copper by EPA Method 6010
Hg = Mercury by EPA Method 6010
Mo = Molybdenum by EPA Method 6010
Ni = Nickel by EPA Method 6010
Pb = Lead by EPA Method 7421
Sb = Antimony by EPA Method 6010
Se = Selenium by EPA Method 6010
Tl = Thallium by EPA Method 6010
V = Vanadium by EPA Method 6010
Zn = Zinc by EPA Method 6010
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
NE = Not established
PRG = USEPA Region IX Preliminary Remediation Goals for soil in Residential Areas (non-cancer risk unless noted, ca = cancer risk-basis)

Notes:

All 1990 data taken from a PES Environmental, Inc. subsurface investigation report dated December 19, 1990.

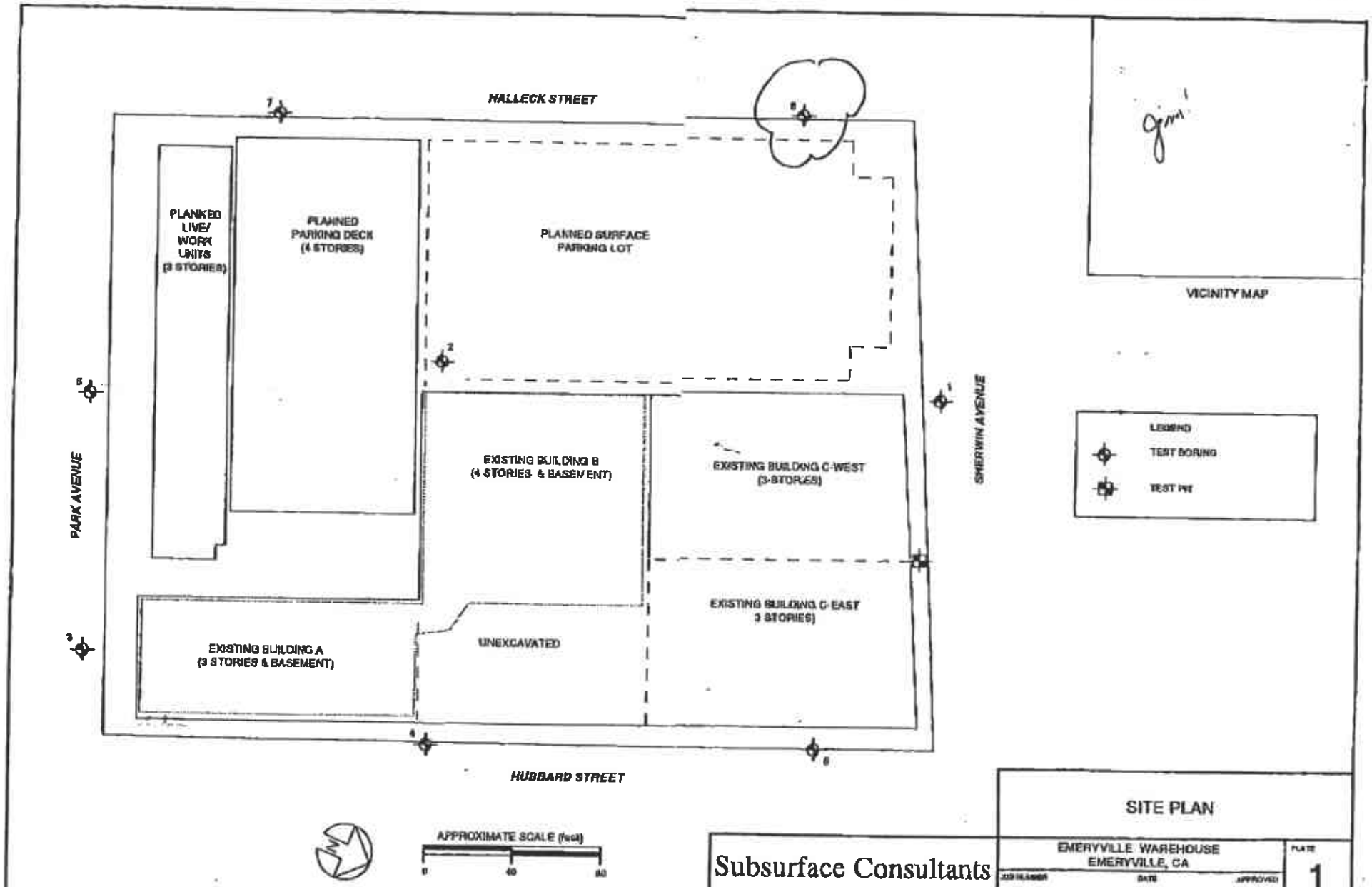
a = Total chromium; no hexavalent chromium was detected in any of the samples analyzed for metals.
b = PES sample CFF-1, composite sample from Boring FF-2 at 1.0', FF-3 at 1.0', and FF-4 at 1.0'.
c = PES sample CFF-2, composite sample from Boring FF-2 at 2.5', FF-4 at 1.75' and FF-5 at 1.75'.
d = as Thallic Oxide (most hazardous form)
e = Recommended Action Level = 0.015 ppm
f = Secondary MCL - No primary MCL established.

GEOMATRIX

ATTACHMENT C

Subsurface Consultants, Figure and Analytical Results

CURVES GRAPHIC DESIGN 5106610337 P.02



REDUCED FOR FAX

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Subsurface Consultants
171 12th Street
Suite 201
Oakland, CA 94607

Date: 27-DEC-95
Lab Job Number: 123746
Project ID: 495.004
Location: Emeryville Warehouse

Reviewed by: _____

Reviewed by: _____

Curtis & Tompkins, Ltd.

SAMPLE ID: B-8
LAB ID: 123746-001
CLIENT: Subsurface Consultants
PROJECT ID: 495.004
LOCATION: Emeryville Warehouse
MATRIX: Water

DATE SAMPLED: 12/15/95
DATE RECEIVED: 12/18/95
DATE REPORTED: 12/27/95

Metals Analytical Report

Compound	Result (ug/L)	Reporting Limit (ug/L)	QC Batch	Method	Analysis Date
Arsenic	32	5.0	24874	EPA 6010A	12/19/95
Chromium (total)	45	10	24874	EPA 6010A	12/19/95

Curtis & Tompkins, Ltd.

SAMPLE ID: 8 @ 2.5'
LAB ID: 123746-002
CLIENT: Subsurface Consultants
PROJECT ID: 495.004
LOCATION: Emeryville Warehouse
MATRIX: Soil

DATE SAMPLED: 12/15/95
DATE RECEIVED: 12/18/95
DATE REPORTED: 12/27/95

Metals Analytical Report

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
Arsenic	2.3	0.24	24892	EPA 6010A	12/20/95
Chromium (total)	44	0.48	24892	EPA 6010A	12/20/95

123 +40

CHAIN OF CUSTODY FORM

PAGE / OF /

PROJECT NAME: Emeryville Warehouse
JOB NUMBER: 495.004
PROJECT CONTACT: Tom Cundey
SAMPLED BY: Denis Alexander
LAB: Curtis + Tompkins
TURNAROUND: Normal
REQUESTED BY: Tom Cundey

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR	CONTAINERS: VOA	LITER	PINT	TUBE	METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME	NOTES	ANALYSIS REQUESTED: Arsenic	Chromium
1-1	B-8	X						2				X	X		12	15	95	0900	*	X	X
-2	8@2.5'		X						X				X		12	15	95	0830		X	X

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
Denis Alexander	12/18/95 10:00 a.m.	D. Moore	12-18-95 9:55
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

COMMENTS & NOTES: * Please filter

Subsurface Consultants, Inc.
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
(510) 260-0461 - FAX: 510-260-0137

GEOMATRIX

ATTACHMENT D

Geomatrix Consultants, December 9, 1997 Draft Letter

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1366

GEOMATRIX

9 December 1997
3095.04

DRAFT

Emery Lofts Development Company, LLC
c/o The Martin Group
Attn: Mr. Dan McNevin
100 Bush Street, 26th Floor
San Francisco, California 94104

Subject: Additional Environmental Assessment
4226 Halleck Street
Emeryville, California

Dear Mr. McNevin:

Geomatrix Consultants, Inc. (Geomatrix), is pleased to report the results of additional assessment of environmental conditions at the property located at 4226 Halleck Street in Emeryville, California (Site). The purpose of the additional assessment was to provide better definition of the distribution of metals in soil underlying the Site. This information was used to evaluate the potential requirements for remediation or risk management prior to site development as a parking lot or as multi-family residential.

BACKGROUND

The Site reportedly was used for railroad freight loading and unloading from 1906 until sometime before 1975. Subsequent to 1975, the Site reportedly was used as a material storage and parking area.

In 1990, Emeryville Warehouse Company retained PES Environmental, Inc. of Novato, California (PES), to perform environmental investigations at the Site. PES collected soil samples from four borings. A discrete sample and a composite sample were analyzed for total extractable hydrocarbons (TEH), total volatile hydrocarbons (TVH) and polyaromatic hydrocarbons (PAH). Two additional composite samples were analyzed for metals. PES reported that organic constituents were either not detected or were detected at very low concentrations (toluene at 16 and 18 parts per billion). Concentrations of arsenic, barium, cadmium, copper, lead, and zinc were elevated in one composite sample of black sandy fill material (black sand) from a depth of approximately 2.5 feet. Groundwater samples were additionally collected from two soil borings and one monitoring well. PES reported organic concentrations to be non-detect, except for Total Volatile Hydrocarbons as gasoline at 53 parts per billion. Reported concentrations of metals in groundwater were low (below MCLs) or non-detect in the three samples.

In 1994, Weiss Associates of Emeryville, California, installed two additional borings at the Site in the vicinity of two previous PES samples. Two soil samples and one groundwater sample were submitted for laboratory analysis. A maximum arsenic concentration of 6800 milligrams per kilogram (mg/kg) was detected in the black sand. Elevated concentrations of barium, cadmium, copper, lead, and zinc were also detected in the black sand. Concentrations of chemicals in groundwater were reportedly below detection limits, with the exception of arsenic, which was detected at 9 micrograms per liter (µg/l).

Review of results from the PES and Weiss investigations indicates that the upper approximately 1.5 feet of site fill does not contain significant concentrations of heavy metals. Higher concentrations of metals were found in the black sand layer found below the surface fill material. Therefore, subsequent site investigation was focused on further characterizing the black sand layer across the site.

FIELD ACTIVITIES

On 13 November, Geomatrix personnel conducted sampling activities at the Site. Precision Sampling, Inc. (PSI), of San Rafael, California, collected continuous cores from 11 borings using a direct-push technique. After perforating the top 1 foot (primarily asphalt and base rock), a 2½-inch split spoon sample was collected from the 1 to 2.5 foot interval. Samples from 2.5 feet and deeper were collected using a 2½-inch stainless steel probe equipped with 2-inch clear butyrate plastic sample tubes. Three-foot cores were retrieved and logged by a Geomatrix engineer. Boring logs are included in Appendix B. Samples from cores containing evidence of black sand and samples of underlying Bay Mud were collected for laboratory analysis. The samples were capped, labeled, and placed on ice for shipment to the laboratory under chain-of-custody control.

Difficult conditions encountered during boring resulted in completion of 11 of a planned 16 borings. Refusal was encountered in two locations, and at one of these locations PSI could not retrieve the split spoon from the boring. Due to the unconsolidated nature of the shallow soil at the Site, we experienced poor retrieval of samples in four locations.

Geomatrix collected a total of 11 samples from 6 of the borings to further characterize the distribution of metal concentrations in and below the black sand. These samples were analyzed for total concentrations of arsenic, barium, cadmium, copper, lead, and zinc using U.S. Environmental Protection Agency (EPA) Methods 6010/7000. The 2 black sand samples with the highest total metals concentrations were subsequently analyzed for leachable metals using

the EPA Toxicity Characteristic Leaching Procedure (TCLP) to evaluate disposal options and the EPA Synthetic Precipitation Leaching Procedure (SPLP) to evaluate the feasibility of leaving the material in place.

RESULTS AND CONCLUSIONS

Analytical laboratory results are presented in Table 1, and the laboratory report is included as Appendix A. Arsenic, barium, cadmium, copper, lead, and zinc were detected in all samples; however, concentrations appeared to be elevated only in samples G-2-2 and G-6-2, which were both black sand samples. Concentrations of metals in both of these samples exceeded the California hazardous waste criteria for total zinc, and sample G-2-2 also exceeded the hazardous waste criteria for total copper.

TCLP results indicate that the soil would not be classified as a federal hazardous waste and, therefore, could be disposed of as a nonhazardous waste outside of California. Geomatrix's experience indicates that transportation costs would negate potential cost savings for out-of state disposal of this soil. SPLP results indicate that arsenic is not likely to leach significantly from the black sand under expected site conditions and that in-place management of the material could be a feasible alternative.

The RWQCB has indicated in preliminary discussions that in-place management of the soil would likely be acceptable given appropriate management controls, such as a deed restriction and a soil management plan. Were the soil to be left in-place, residential development could be approved if the soil was sufficiently isolated from contact with residents and consumable plants. In order for the Site to be cleared for residential development without a deed restriction, it will be necessary to remove soils containing arsenic in excess of a RWQCB-approved human health risk-based concentration, which is assumed to be approximately 20 mg/kg.

EVALUATION OF ALTERNATIVES

Based upon the previous and current analytical data for the Site, Geomatrix developed high and low estimates of the volume of black sand that is present on the Site. Based on the results of previous samples, the Site surface soil (the upper approximately 1.5 feet) overlying the black sand does not appear to be significantly impacted by heavy metals. The extent of black sand was plotted in three dimensions using Surfer, a graphical analysis software application. Volume estimates based on this plot were then calculated using the software. The volume of in-place soil containing black sand is estimated to range between 450 and 600 cubic yards.

Geomatrix calculated a tonnage estimate ranging from 675 to 900 tons of black sand potentially containing elevated heavy metal concentrations assuming an average ratio of 1.5 tons per cubic yard of soil. Because the arsenic concentrations were considered to be the primary concern for residential development of the site, arsenic was selected to be the target compound for discussion of removal and site management parameters.

Three alternatives were evaluated to facilitate future development of the Site.

1. Multi-Family Residential Without a Deed Restriction – This alternative requires removal of soil containing concentrations of arsenic greater than the health-based cleanup standard. This alternative would allow residential development of the Site without a deed restriction or management controls. This alternative would be protective of public health and the environment.

2. Multi-Family Residential with a Deed Restriction – This alternative entails removal of a limited volume of arsenic-affected soil to construct 4-foot-wide by 7-foot-deep utility corridors along the east and west sides of the property. This alternative would allow residential development of the Site with a deed restriction and site management plan. and would be protective of public health and the environment. Future subsurface work performed within the utility corridors would be unlikely to expose utility workers and residents to heavy metal-affected soil.

3. Parking Lot with a Deed Restriction – This alternative does not require removal of arsenic-affected soil. This alternative would allow the Site to be used as parking for residences and would require a deed restriction and a site management plan. This alternative is protective of public health and the environment.

The alternatives are summarized in the following table:

Alternative	Advantages	Disadvantages
1. Multi-Family Residential Without a Deed Restriction	Allows property to be unencumbered by deed restriction	Most expensive alternative.

Alternative	Advantages	Disadvantages
2. Multi-Family Residential with a Deed Restriction	Allows residential use of property and limits potential for residents or utility workers to be exposed to arsenic-affected soil.	Property would be encumbered by deed restriction. Notification of RWQCB, owners, and residents would be required for earthwork outside of utility corridors.
3. Parking Lot with a Deed Restriction	Least expensive alternative	Does not consider residential use of the property.

It is recommended that Proposition 65 notification requirements for the selected development alternative be discussed with legal counsel.

We appreciate the opportunity to provide Emery Lofts Development Company with our environmental services. Please call either of the undersigned if you have any questions or need additional information.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Brad Job, P.E.
Project Engineer

Tom Graf, P.E.
Principal Engineer

BJ/TG:mdg
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Attachments: Table 1 – Summary of Analytical Results for Soil
Table 2 – Summary of Soil Leachability Results
Figure 1 – Site Location Map
Figure 2 – Previous and Current Boring Locations
Appendix A – Laboratory Report
Appendix B – Boring Logs

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TABLE 1

SUMMARY OF ANALYTICAL RESULTS FOR SOIL

4226 Halleck Street
Emeryville, California

Concentrations in milligrams per kilogram (mg/kg)

Sample Number	Arsenic	Barium	Cadmium	Copper	Lead	Zinc
G-1-7	1.7	96	0.3	16	5	30
G-1-8	4	140	0.5	40	12	150
G-11-4	5.8	200	0.7	22	7	55
G-13-4	19	240	4.1	130	450	670
G-13-5	5.8	230	0.7	20	7	45
G-14-2	11	110	0.9	64	11	290
G-14-4	4.5	180	0.5	19	6	43
G-2-2	140	2400	6	3000	200	10,000
G-6-2	360	910	2	1700	450	6900
G-6-4	4	300	0.9	20	6	42
G-7-7	4.5	81	0.3	15	5	28

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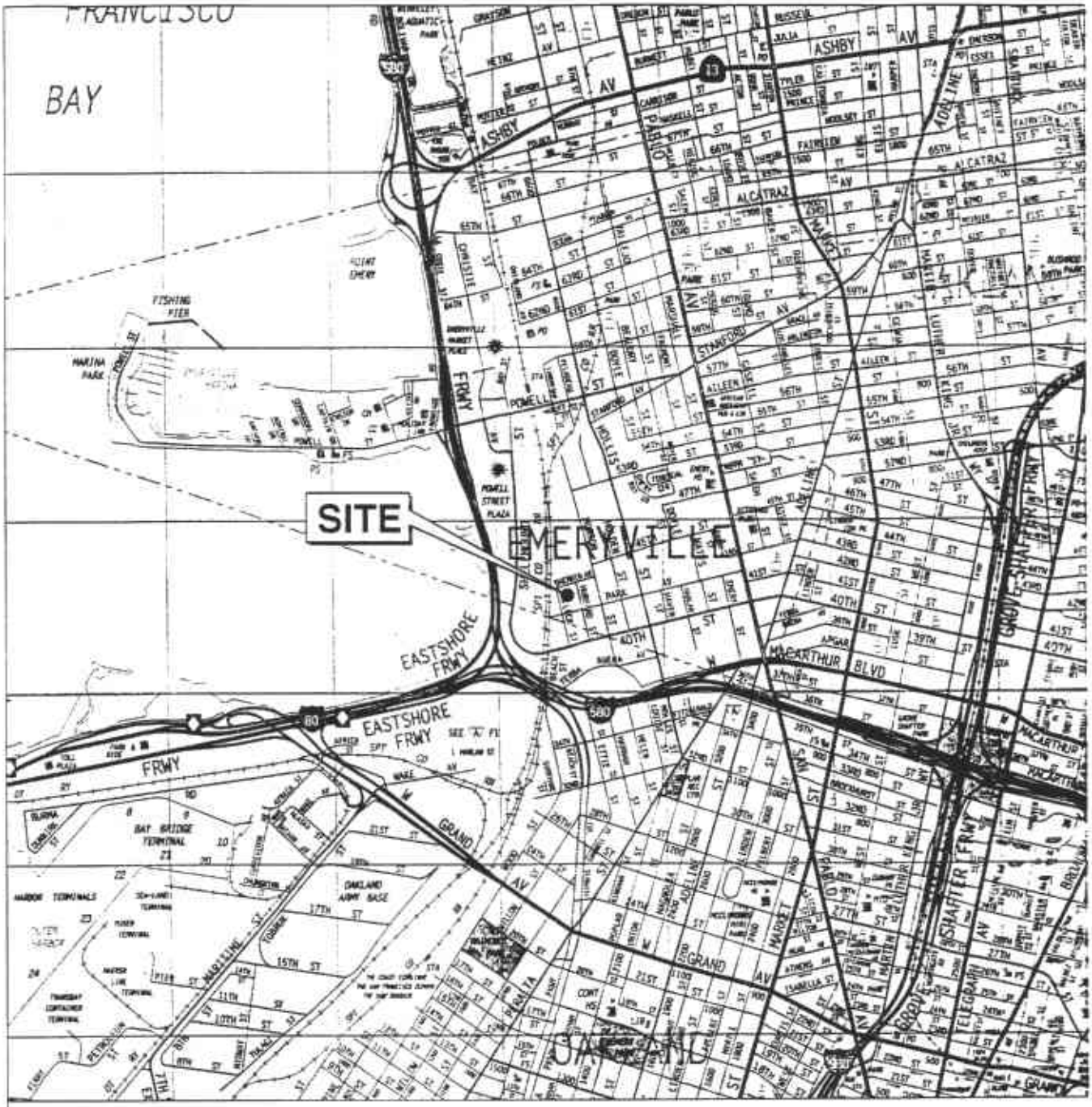
TABLE 2

SUMMARY OF SOIL LEACHABILITY RESULTS

4226 Halleck Street
Emeryville, California

Concentrations in milligrams per liter (mg/l)

Leachability								
SPLP								
G-6	2	G-6-2	0.062	0.2	ND	0.16	0.05	0.22
G-2	2	G-2-2	0.015	0.4	ND	0.28	ND	0.54
TCLP								
G-6	2	G-6-2	0.007	0.8	ND	1.1	ND	1.9
G-2	2	G-2-2	ND	1.7	ND	2	ND	6



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GEOMATRIX

SITE LOCATION MAP
Emeryville Warehouse
Emeryville, California

Figure
1

Project No.
3095.04

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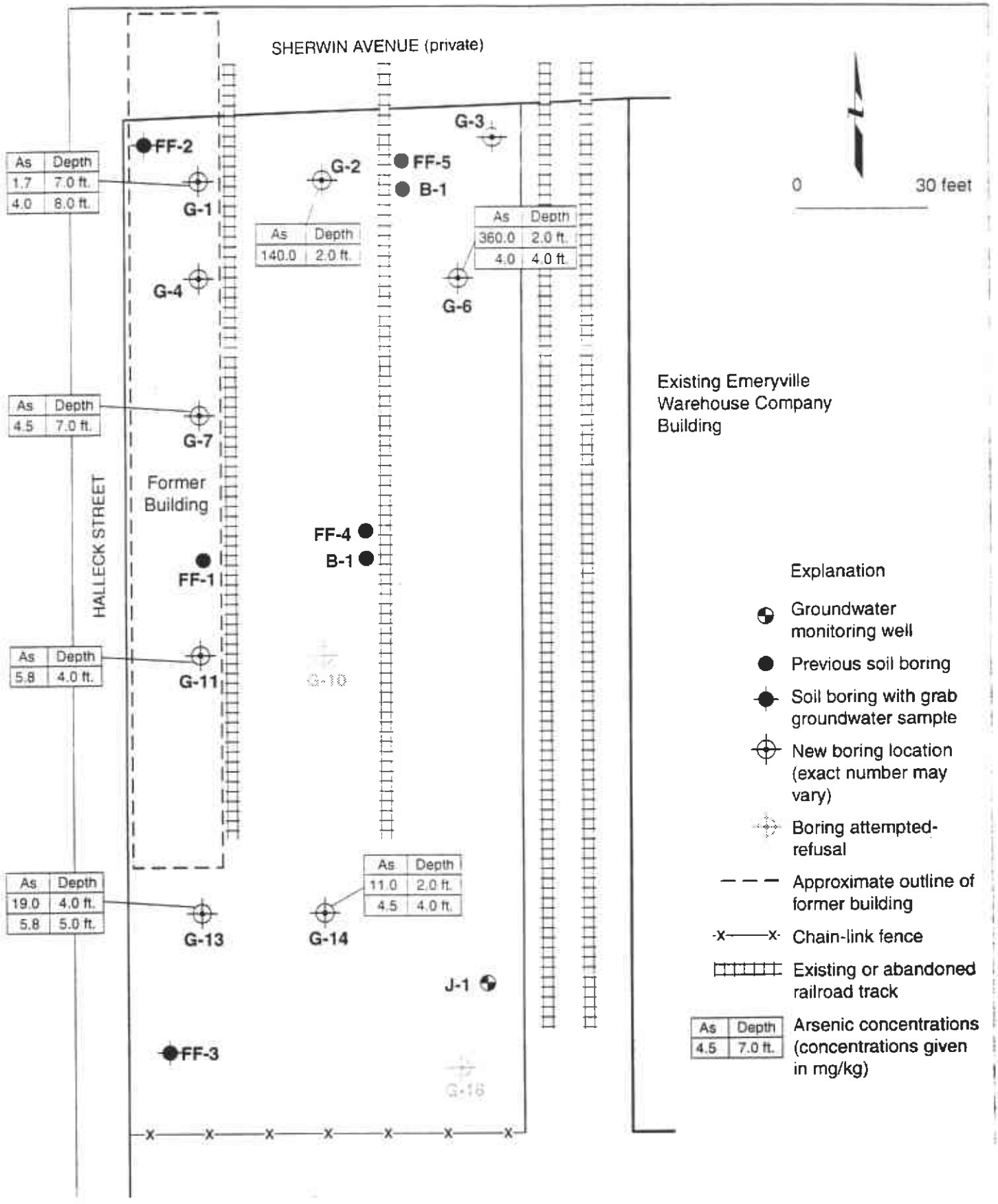

GEOMATRIX

PREVIOUS AND CURRENT BORING LOCATIONS
Emeryville Warehouse
Emeryville, California

Figure 2

Project No. 3095.04

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APPENDIX A

LABORATORY REPORT

American Environmental Network

GEOMATRIX CONSULTANTS
100 PINE ST., SUITE 1000
SAN FRANCISCO, CA 94111

ATTN: BRAD JOB
CLIENT PROJ. ID: 3095.01

C.O.C. NUMBER: 10590,10603

REPORT DATE: 11/25/97

DATE(S) SAMPLED: 11/13/97

DATE RECEIVED: 11/14/97

AEN WORK ORDER: 9711204

PROJECT SUMMARY:

On November 14, 1997, this laboratory received 11 soil sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

GEOMATRIX CONSULTANTS

SAMPLE ID: G-1-7
AEN LAB NO: 9711204-01
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED: 11/13/97
DATE RECEIVED: 11/14/97
REPORT DATE: 11/18/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	11/17/97
Arsenic	EPA 7060	1.7 *	0.5	mg/kg	11/18/97
#Digestion for ICP/AA	EPA 3050	-		Prep Date	11/17/97
Barium	EPA 6010	96 *	1	mg/kg	11/18/97
Cadmium	EPA 6010	0.3 *	0.2	mg/kg	11/18/97
Copper	EPA 6010	16 *	0.5	mg/kg	11/18/97
Lead	EPA 6010	5 *	1	mg/kg	11/18/97
Zinc	EPA 6010	30 *	1	mg/kg	11/18/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-1-8
AEN LAB NO: 9711204-02
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED: 11/13/97
DATE RECEIVED: 11/14/97
REPORT DATE: 11/26/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	11/17/97
Arsenic	EPA 7060	4.0 *	0.5	mg/kg	11/18/97
#Digestion for ICP/AA	EPA 3050	-		Prep Date	11/17/97
Barium	EPA 6010	140 *	1	mg/kg	11/18/97
Cadmium	EPA 6010	0.5 *	0.2	mg/kg	11/18/97
Copper	EPA 6010	40 *	0.5	mg/kg	11/18/97
Lead	EPA 6010	12 *	1	mg/kg	11/18/97
Zinc	EPA 6010	150 *	1	mg/kg	11/18/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-6-2
AEN LAB NO: 9711204-13
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED:
DATE RECEIVED:
REPORT DATE:

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	
Arsenic	EPA 7060	360 *	0.5	mg/kg	
Arsenic in SPLP Extract	EPA 7060	0.062 *	0.002	mg/L	
#Digestion for ICP/AA	EPA 3050	-		Prep Date	
#Digestion, metals in SPLP	EPA 3010	-		Prep Date	
Barium	EPA 6010	910 *	10	mg/kg	
Barium in SPLP Extract	EPA 6010	0.2 *	0.1	mg/L	
Cadmium	EPA 6010	2 *	2	mg/kg	
Cadmium in SPLP Extract	EPA 6010	ND	0.005	mg/L	
Copper	EPA 6010	1,700 *	5	mg/kg	
Copper in SPLP Extract	EPA 6010	0.16 *	0.01	mg/L	
Lead	EPA 6010	450 *	10	mg/kg	
Lead in SPLP Extract	EPA 6010	0.05 *	0.04	mg/L	
Zinc	EPA 6010	6,900 *	10	mg/kg	
Zinc in SPLP Extract	EPA 6010	0.22 *	0.05	mg/L	
#SPLP Extraction	EPA 1312M	-		Extrn Date	

Reporting limits elevated for total metals due to matrix interference.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-6-4
AEN LAB NO: 9711204-04
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED:
DATE RECEIVED:
REPORT DATE:

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion. Metals by GFAA	EPA 3050	-		Prep Date	
Arsenic	EPA 7060	4.0 *	0.5	mg/kg	
#Digestion for ICP/AA	EPA 3050	-		Prep Date	
Barium	EPA 6010	300 *	1	mg/kg	
Cadmium	EPA 6010	0.9 *	0.2	mg/kg	
Copper	EPA 6010	20 *	0.5	mg/kg	
Lead	EPA 6010	6 *	1	mg/kg	
Zinc	EPA 6010	42 *	1	mg/kg	

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-11-4
AEN LAB NO: 9711204-05
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED:
DATE RECEIVED:
REPORT DATE:

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	
Arsenic	EPA 7060	5.8 *	0.5	mg/kg	
#Digestion for ICP/AA	EPA 3050	-		Prep Date	
Barium	EPA 6010	200 *	1	mg/kg	
Cadmium	EPA 6010	0.7 *	0.2	mg/kg	
Copper	EPA 6010	22 *	0.5	mg/kg	
Lead	EPA 6010	- *	1	mg/kg	
Zinc	EPA 6010	55 *	1	mg/kg	

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-14-2
AEN LAB NO: 9711204-06
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED:
DATE RECEIVED:
REPORT DATE:

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	
Arsenic	EPA 7060	*	0.5	mg/kg	
#Digestion for ICP/AA	EPA 3050	-		Prep Date	
Barium	EPA 6010	110 *	1	mg/kg	
Cadmium	EPA 6010	0.9 *	0.2	mg/kg	
Copper	EPA 6010	64 *	0.5	mg/kg	
Lead	EPA 6010	11 *	1	mg/kg	
Zinc	EPA 6010	290 *	1	mg/kg	

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-14-4
AEN LAB NO: 9711204-07
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED:
DATE RECEIVED:
REPORT DATE:

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	
Arsenic	EPA 7060	4.5 *	0.5	mg/kg	
#Digestion for ICP/AA	EPA 3050	-		Prep Date	
Barium	EPA 6010	180 *	1	mg/kg	
Cadmium	EPA 6010	0.5 *	0.2	mg/kg	
Copper	EPA 6010	19 *	0.5	mg/kg	
Lead	EPA 6010	6 *	1	mg/kg	
Zinc	EPA 6010	43 *	1	mg/kg	

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-7-7
AEN LAB NO: 9711204-08
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED: 11 10 97
DATE RECEIVED: 11 12 97
REPORT DATE: 11 26 97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	11 17 97
Arsenic	EPA 7060	4.6 *	0.5	mg/kg	11 18 97
#Digestion for ICP/AA	EPA 3050	-		Prep Date	11 17 97
Barium	EPA 6010	81 *	1	mg/kg	11 18 97
Cadmium	EPA 6010	0.3 *	0.2	mg/kg	11 18 97
Copper	EPA 6010	15 *	0.5	mg/kg	11 18 97
Lead	EPA 6010	5 *	1	mg/kg	11 18 97
Zinc	EPA 6010	28 *	1	mg/kg	11 18 97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-2-2
AEN LAB NO: 9711204-0
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3096.01

DATE SAMPLED: 11/13/97
DATE RECEIVED: 11/14/97
REPORT DATE: 11/25/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	11/17/97
Arsenic	EPA 7060	140 *	0.5	mg/kg	11/18/97
Arsenic in SPLP Extract	EPA 7060	0.015 *	0.002	mg/L	11/24/97
#Digestion for ICP/AA	EPA 3050	-		Prep Date	11/17/97
#Digestion, metals in SPLP	EPA 3010	-		Prep Date	11/21/97
Barium	EPA 6010	2,400 *	10	mg/kg	11/18/97
Barium in SPLP Extract	EPA 6010	0.4 *	0.1	mg/L	11/24/97
Cadmium	EPA 6010	6 *	2	mg/kg	11/18/97
Cadmium in SPLP Extract	EPA 6010	ND	0.005	mg/L	11/24/97
Copper	EPA 6010	3,000 *	5	mg/kg	11/18/97
Copper in SPLP Extract	EPA 6010	0.28 *	0.01	mg/L	11/24/97
Lead	EPA 6010	200 *	10	mg/kg	11/18/97
Lead in SPLP Extract	EPA 6010	ND	0.04	mg/L	11/24/97
Zinc	EPA 6010	10,000 *	10	mg/kg	11/18/97
Zinc in SPLP Extract	EPA 6010	0.64 *	0.05	mg/L	11/24/97
#SPLP Extraction	EPA 1312M	-		Extrn Date	11/20/97

Reporting limits elevated due to matrix interference.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: G-13-4
AEN LAB NO: 9711204-10
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3095.01

DATE SAMPLED: 11.13.97
DATE RECEIVED: 11.14.97
REPORT DATE: 11.26.97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	11.17.97
Arsenic	EPA 7060	19 *	0.5	mg/kg	11.18.97
#Digestion for ICP/AA	EPA 3050	-		Prep Date	11.17.97
Barium	EPA 6010	240 *	1	mg/kg	11.18.97
Cadmium	EPA 6010	4.1 *	0.2	mg/kg	11.18.97
Copper	EPA 6010	130 *	0.5	mg/kg	11.18.97
Lead	EPA 6010	450 *	1	mg/kg	11.18.97
Zinc	EPA 6010	670 *	1	mg/kg	11.18.97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: B-13-5
AEN LAB NO: 9711204-11
AEN WORK ORDER: 9711204
CLIENT PROJ. ID: 3096.11

DATE SAMPLED:
DATE RECEIVED:
REPORT DATE:

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Digestion, Metals by GFAA	EPA 3050	-		Prep Date	
Arsenic	EPA 7060	6.3 *	0.5	mg/kg	
#Digestion for ICP/AA	EPA 3050	-		Prep Date	
Barium	EPA 6010	230 *	1	mg/kg	
Cadmium	EPA 6010	0.7 *	0.2	mg/kg	
Copper	EPA 6010	20 *	0.5	mg/kg	
Lead	EPA 6010	7 *	1	mg/kg	
Zinc	EPA 6010	45 *	1	mg/kg	

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9711204
CLIENT PROJECT ID: 3095.01

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analyses.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behaviour, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrument performance.

D1 Surrogates diluted out.

Interference.

Indicates result outside of established laboratory QC limits.

WORK ORDER: 9711204

QUALITY CONTROL REPORT

ANALYSIS: Arsenic

MATRIX: Water

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/L
METHOD:

LAB ID: GFW_LCS_U
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: 4000\971124131800/2
BATCH ID: GFW112197-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in water by GFAA	0.0447		0.002						

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/L
METHOD:

LAB ID: GFW_PBS_U
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: 4000\971124131800/1
BATCH ID: GFW112197-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in water by GFAA	ND		0.002						

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/L
METHOD:

LAB ID: TCLP_BLANK
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: 4000\971124131800/5
BATCH ID: GFW112197-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in water by GFAA	ND		0.002						

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/L
METHOD:

LAB ID: GFW_LCD_U
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: 4000\971124131800/3/1
BATCH ID: GFW112197-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in water by GFAA	0.0457	ND	0.002	0.0400	114	82	140		

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/L
METHOD:

LAB ID: MS11204-03A
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: 4000\971124131800/7,8
BATCH ID: GFW112197-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in water by GFAA	0.1006	0.0620	0.002	0.0400	96.5	82	140		

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Method Spike Sample Duplicate
INSTRUMENT: TJA 4000
UNITS: mg/L
METHOD:

LAB ID: GFW_LCR_U
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: 4000\971124131800/4/2
BATCH ID: GFW112197-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in water by GFAA	0.0457	0.0447	0.002					2.22	13

WORK ORDER: 9711204

QUALITY CONTROL REPORT

ANALYSIS: Arsenic

MATRIX: Soil/Bulk

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/kg
METHOD:

LAB ID: GFS_PBS_J
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: 4000\971118141700/1
BATCH ID: GFS111797-J
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in soil EPA 7060	ND		0.5						

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/kg
METHOD:

LAB ID: GFS_LCD_J
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: 4000\971118141700/3/1
BATCH ID: GFS111797-J
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in soil EPA 7060	11.6	ND	0.5	10.0	116	77	141		

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA 4000
UNITS: mg/kg
METHOD:

LAB ID: GFS_LCS_J
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: 4000\971118141700/2/1
BATCH ID: GFS111797-J
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in soil EPA 7060	11.0	ND	0.5	10.0	110	77	141		

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Method Spike Sample Duplicate
INSTRUMENT: TJA 4000
UNITS: mg/kg
METHOD:

LAB ID: GFS_LCR_J
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: 4000\971118141700/4/2
BATCH ID: GFS111797-J
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in soil EPA 7060	11.6	11.0	0.5					5.31	15

MATRIX SPIKE SAMPLES

SAMPLE TYPE: Spike-Sample/Matrix
INSTRUMENT: TJA 4000
UNITS: mg/kg
METHOD:

LAB ID: MD11204-06A
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: 4000\971118141700/7/5
BATCH ID: GFS111797-J
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in soil EPA 7060	12.3	10.8	0.5	10.0	15.0	12	168		

SAMPLE TYPE: Spike-Sample/Matrix
INSTRUMENT: TJA 4000
UNITS: mg/kg
METHOD:

LAB ID: MS11204-06A
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: 4000\971118141700/6/5
BATCH ID: GFS111797-J
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Arsenic in soil EPA 7060	12.3	10.8	0.5	10.0	15.0	12	168		

WORK ORDER: 9711204

QUALITY CONTROL REPORT

ANALYSIS: Arsenic

MATRIX: Soil Bulk

MATRIX SPIKE DUPLICATES

SAMPLE TYPE: Spiked Sample Duplicate
INSTRUMENT: TJA 4000
UNITS: mg/kg
METHOD:

LAB ID: MR11204-06A
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: 4000\971118141700/8/6
BATCH ID: SFS111797-3
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT
Arsenic in soil EPA 7060	12.3	12.3	0.5					0	35

WORK ORDER: 9711204 QUALITY CONTROL REPORT PAGE [illegible]

ANALYSIS: Metals Scan by ICP

MATRIX: Water

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/L
METHOD:

LAB ID: IFW_PBW_T
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: ICP\971124131500/1
BATCH ID: IFW112197-T
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ag	Silver	ND		0.005						
Ba	Barium	ND		0.01						
Be	Beryllium	ND		0.002						
Cd	Cadmium	ND		0.005						
Co	Cobalt	ND		0.005						
Cr	Chromium	ND		0.01						
Cu	Copper	ND		0.01						
Mo	Molybdenum	ND		0.01						
Ni	Nickel	ND		0.01						
Pb	Lead	ND		0.04						
Sb	Antimony	ND		0.02						
Tl	Thallium	ND		0.05						
V	Vanadium	ND		0.005						
Zn	Zinc	0.0110		0.01						

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/L
METHOD:

LAB ID: IFW_LCD_T
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: ICP\971124131500/3
BATCH ID: IFW112197-T
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ag	Silver	0.0251	ND	0.005	0.0250	100	72	127		
Ba	Barium	0.993	ND	0.01	1.00	99.3	91	120		
Be	Beryllium	0.0282	ND	0.002	0.0250	113	82	119		
Cd	Cadmium	0.0515	ND	0.005	0.0500	103	84	120		
Co	Cobalt	0.265	ND	0.005	0.250	106	96	120		
Cr	Chromium	0.0997	ND	0.01	0.100	99.7	85	128		
Cu	Copper	0.117	ND	0.01	0.125	93.6	86	123		
Mo	Molybdenum	0.207	ND	0.01	0.200	104	89	117		
Ni	Nickel	0.253	ND	0.01	0.250	101	92	121		
Pb	Lead	0.529	ND	0.04	0.500	106	90	122		
Sb	Antimony	0.523	ND	0.02	0.500	105	82	113		
Tl	Thallium	0.471	ND	0.05	0.500	94.2	85	115		
V	Vanadium	0.264	ND	0.005	0.250	106	91	118		
Zn	Zinc	0.263	0.0110	0.01	0.250	101	90	121		

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/L
METHOD:

LAB ID: IFW_LCS_T
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: ICP\971124131500/2
BATCH ID: IFW112197-T
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ag	Silver	0.0248	ND	0.005	0.0250	99.2	72	127		
Ba	Barium	0.982	ND	0.01	1.00	98.2	91	120		
Be	Beryllium	0.0263	ND	0.002	0.0250	105	82	119		
Cd	Cadmium	0.0495	ND	0.005	0.0500	99.0	84	120		
Co	Cobalt	0.264	ND	0.005	0.250	106	96	120		
Cr	Chromium	0.106	ND	0.01	0.100	106	85	128		
Cu	Copper	0.117	ND	0.01	0.125	93.6	86	123		
Mo	Molybdenum	0.204	ND	0.01	0.200	102	89	117		
Ni	Nickel	0.252	ND	0.01	0.250	101	92	121		
Pb	Lead	0.517	ND	0.04	0.500	103	90	122		
Sb	Antimony	0.510	ND	0.02	0.500	102	82	113		
Tl	Thallium	0.458	ND	0.05	0.500	91.6	85	115		
V	Vanadium	0.260	ND	0.005	0.250	104	91	118		
Zn	Zinc	0.255	0.0110	0.01	0.250	102	90	121		

WORK ORDER: 9711204

QUALITY CONTROL REPORT

PAGE [illegible]

ANALYSIS: Metals Scan by ICP

MATRIX: Water

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Method Spike Sample Duplicate
INSTRUMENT: TJA Enviro 36
UNITS: mg/L
METHOD:

LAB ID: IFW_LCR_T
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: ICP\971124131500/4-2
BATCH ID: IFW112197-T
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT
Ag	Silver	0.0251	0.0248	0.005					[illegible]	
Ba	Barium	0.993	0.982	0.01					[illegible]	
Be	Beryllium	0.0282	0.0263	0.002					[illegible]	
Cd	Cadmium	0.0515	0.0495	0.005					[illegible]	
Co	Cobalt	0.265	0.264	0.005					[illegible]	
Cr	Chromium	0.0997	0.106	0.01					[illegible]	
Cu	Copper	0.117	0.117	0.01					[illegible]	
Mo	Molybdenum	0.207	0.204	0.01					1.46	
Ni	Nickel	0.253	0.252	0.01					0.396	
Pb	Lead	0.529	0.517	0.04					[illegible]	
Sb	Antimony	0.523	0.510	0.02					[illegible]	
Tl	Thallium	0.471	0.458	0.05					[illegible]	
V	Vanadium	0.264	0.260	0.005					[illegible]	
Zn	Zinc	0.263	0.265	0.01					0.758	

MATRIX: TCLP Extract

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/L
METHOD:

LAB ID: MODTCLP_PBW
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: ICP\971124131500/5-
BATCH ID: IFW112197-T
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT
Ba	Barium	ND		0.1						
Cd	Cadmium	ND		0.005						
Cu	Copper	ND		0.01						
Pb	Lead	ND		0.04						
Zn	Zinc	ND		0.05						

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/L
METHOD:

LAB ID: TCLP_BLNK
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: ICP\971124131500/3-
BATCH ID: IFW112197-T
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT
Cr	Chromium	ND		0.01						
Pb	Lead	ND		0.04						

MATRIX SPIKE SAMPLES

SAMPLE TYPE: Spike-Sample/Matrix
INSTRUMENT: TJA Enviro 36
UNITS: mg/L
METHOD:

LAB ID: MS11204-03B
PREPARED:
ANALYZED: 11/24/97

INSTR RUN: ICP\971124131500/7-6
BATCH ID: IFW112197-T
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT
Ba	Barium	1.15	0.147	[illegible]	[illegible]	100				
Cd	Cadmium	0.0549	ND	0.005	0.0500	110				
Cu	Copper	[illegible]	[illegible]	[illegible]	[illegible]	96.0				
Pb	Lead	0.680	0.0457	0.04	0.500	107				
Zn	Zinc	0.477	0.222	0.01	0.250	102				

WORK ORDER: 9711204

QUALITY CONTROL REPORT

ANALYSIS: Metals Scan by ICP

MATRIX: Soil/Bulk

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media Blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_PBS_I
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: ICP\971118145300/1/
BATCH ID: IFS111797-I
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ba	Barium	ND		1						
Cd	Cadmium	ND		0.2						
Cu	Copper	ND		0.5						
Pb	Lead	ND		1						
Zn	Zinc	ND		1						

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Spike-Method/Media Blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_LCD_I
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: ICP\971118145300/4/2
BATCH ID: IFS111797-I
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ba	Barium	95.6	5.48	1	100	90.1	80	115		
Cd	Cadmium	4.66	ND	0.2	5.00	93.2	87	110		
Cu	Copper	48.8	ND	0.5	50.0	97.6	87	113		
Pb	Lead	47.8	ND	1	50.0	95.6	90	120		
Zn	Zinc	46.0	ND	1	50.0	92.0	83	111		

SAMPLE TYPE: Spike-Method/Media Blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_LCS_I
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: ICP\971118145300/3/2
BATCH ID: IFS111797-I
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ba	Barium	98.0	5.48	1	100	92.5	80	115		
Cd	Cadmium	4.72	ND	0.2	5.00	94.4	87	110		
Cu	Copper	49.9	ND	0.5	50.0	99.8	87	113		
Pb	Lead	48.4	ND	1	50.0	96.8	90	120		
Zn	Zinc	47.4	ND	1	50.0	94.8	83	111		

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Method Spike Sample Duplicate
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_LCR_I
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: ICP\971118145300/5/3
BATCH ID: IFS111797-I
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ba	Barium	95.6	98.0	1					2.48	20
Cd	Cadmium	4.66	4.72	0.2					1.28	20
Cu	Copper	48.8	49.9	0.5					2.23	20
Pb	Lead	47.8	48.4	1					1.25	20
Zn	Zinc	46.0	47.4	1					3.00	20

WORK ORDER: 9711204

QUALITY CONTROL REPORT

ANALYSIS: Metals Scan by ICP

MATRIX: Soil/Bulk

MATRIX SPIKE SAMPLES

SAMPLE TYPE: Spike-Sample/Matrix
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: MD11204-06A
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: ICP\971118145300 8 6
BATCH ID: IFS111797-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ba	Barium	192	109	1	100	83.0	45	139		
Cd	Cadmium	5.35	0.929	0.2	5.00	88.4	57	112		
Cu	Copper	83.8	64.3	0.5	50.0	39.0 !	52	134		
Pb	Lead	48.5	10.8	1	50.0	75.4	24	153		
Zn	Zinc	147	292	1	50.0	-290 !	31	134		

SAMPLE TYPE: Spike-Sample/Matrix
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: MS11204-06A
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: ICP\971118145300/7 6
BATCH ID: IFS111797-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ba	Barium	199	109	1	100	90.0	45	139		
Cd	Cadmium	5.00	0.929	0.2	5.00	81.4	57	112		
Cu	Copper	83.1	64.3	0.5	50.0	37.6 !	52	134		
Pb	Lead	47.7	10.8	1	50.0	73.8	24	153		
Zn	Zinc	137	292	1	50.0	-310 !	31	134		

MATRIX SPIKE DUPLICATES

SAMPLE TYPE: Spiked Sample Duplicate
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: MR11204-06A
PREPARED:
ANALYZED: 11/18/97

INSTR RUN: ICP\971118145300/9/7
BATCH ID: IFS111797-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	HIGH	RPD (%)	RPD LIMIT (%)
Ba	Barium	192	199	1					3.58	
Cd	Cadmium	5.35	5.00	0.2					6.76	
Cu	Copper	83.8	83.1	0.5					0.839	
Pb	Lead	48.5	47.7	1					1.66	
Zn	Zinc	147	137	1					7.04	

----------- End of Quality Control Report -----------

CHAIN-OF-CUSTODY RECORD

Nº 10590

Date: 11-13-97

Page 1 of 2

Project No.: 3095.01

Samplers (Signatures):

Date	Time	Sample Number	EPA Method 8010	EPA Method 8020	EPA Method 8020 (BTEX only)	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	COD/TOOO Metals	Archive	Cooled	Soil (S), Water (W), or Vapor (V)	Acidified	Number of containers
11-13	9:10	G-1-7								X		✓	S		1
	9:15	G-1-8								X		✓	S		1
	11:05	G-6-2								X		✓	S		1
	11:15	G-6-4								X		✓	S		1
		G-8								X					
		G-8								X					
	1:45	G-11-4								X		✓	S		1
		G-11								X					
		G-12								X					
		G-12								X					
	2:35	G-14-2								X		✓	S		1
	2:45	G-14-4								X		✓	S		1

ANALYSES

REMARKS

Additional Comments

Metals to be analyzed: Arsenic, Barium, Cadmium, Copper, Lead, and Zinc

~~Pot~~ Possible high conc. of As in blank soil samples

Turnaround time: 3 days

Results to: Brad Job

Total No. of containers: 7

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
Printed Name: Brad Job	11/14	1600	Printed Name:	11/14	1835
Company: GMX			Company:		
Relinquished by (signature):	Date: 11/14	Time: 1600	Received by (signature): Greg Glaser	Date: 11/14	Time: 1835
Printed Name: Michael McMillan			Printed Name: Greg Glaser		
Company: AEN			Company: AEN		
Relinquished by (signature):	Date:	Time:	Received by (signature):	Date:	Time:
Printed Name:			Printed Name:		
Company:			Company:		

Method of Shipment:

Laboratory Comments and Log No.:

Geomatrix Consultants
100 Pine Street, 10th Floor
San Francisco, California 94111
415 434 9400

Form(P1)012 (Revised 1/98)

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-1

BORING LOCATION: Northwest corner	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 10.0 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST ~3.5 feet / COMPL. ---
SAMPLING METHOD: Butyiate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. C55699

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION: NAME (USCS Symbol), color, moist, %, by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: ---	
					Approximately 2 inches asphalt and baserock	
1–2					CLAYEY SAND with GRAVEL (SC) Very dark grayish brown (2.5Y 3/2), 50% fine to coarse sand, 35% gravel, 15% plastic fines [FILL]	
3–4					POORLY-GRADED SAND with CLAY (SP-SC) Black (2.5Y 2.5/1), moist, 85% fine to medium sand, 15% plastic fines, subangular	
					— Saturated	
5–6						
7	G-1-7					
8	G-1-8				FAT CLAY (CH) Greenish gray (5G 5/1), moist, 95% plastic fines, 5% fine sand, firm	
9–10					Bottom of boring at 10.0 feet.	
11–12						
13–14						
15						

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-2

BORING LOCATION: North end	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 — DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 7.0 feet — MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST ~3.5 feet — COMPL ---
SAMPLING METHOD: Butviate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- — DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job — REG. NO. 055899

DEPTH (feet)	SAMPLES	DESCRIPTION	REMARKS
		Surface Elevation: ---	
		Approximately 2 inches asphalt and baserock	
1		POORLY-GRADED SAND with CLAY and GRAVEL (SP-SC) Gray (N5/), 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2	G-2-2	POORLY-GRADED SAND with CLAY (SP-SC) Red with black sand (2.5YR 5/6), moist, 90% angular fine to medium sands, 10% plastic fines	
3			
4			
5		FAT CLAY (CH) Very dark gray (2.5Y 3/1), moist, 95% fines, 5% fine sand, firm, trace organic matter	
6			
7		Bottom of boring at 7.0 feet.	
8			
9			
10			
11			
12			
13			
14			
15			

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-3

BORING LOCATION: Northeast corner	ELEVATION AND DATUM: ---	
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97	DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 11.0 feet	MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST ~4.0 feet	COMPL: ---
SAMPLING METHOD: Butyiate tubes	LOGGED BY: Brad Job	
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job	REG. NO. C55699

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	SAMPLES: (VOM Reading, ppm)	DESCRIPTION: NAME (USCS Symbol) ... cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: ---	
					Approximately 2 inches asphalt and baserock	
1					POORLY-GRADED SAND with CLAY and GRAVEL (SP-SC) Gray (N5/), 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2					Poorly-graded sand with clay (SP-SC), black (2.5Y 2.5/1), 85% fine to medium sand, 15% plastic fines, subangular	
3						
4						
5						
6						
7						
8						
9						
10						
11					Bottom of boring at 11.0 feet.	
12						
13						
14						
15						

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-4

BORING LOCATION: West nornwest corner	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 10.0 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST ~3.5 feet / COMPL: ---
SAMPLING METHOD: Butviate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. C55699

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample Type	SAMPLES: Blows/Foot	SAMPLES: OVM Reading (ppm)	DESCRIPTION	REMARKS
					Surface Elevation: ---	
					Asphalt	
1					CLAYEY SAND with GRAVEL (SC) Very dark grayish brown (2.5Y 3/2), 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2						
3						
4						
5						
6						
7						
8						
9					Fat clay (CH), greenish gray (5G 5/1), moist, 95% plastic fines, 5% fine sand, firm	
10					Bottom of boring at 10.0 feet.	
11						
12						
13						
14						
15						

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-6

BORING LOCATION:	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 7.0 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST ~3.0 feet / COMPL. ---
SAMPLING METHOD: Butyiate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. C55699

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION	REMARKS
					Surface Elevation: ---	
					Approximately 2 inches asphalt and baserock	
1					CLAYEY SAND with GRAVEL (SC) Very dark grayish brown (2.5Y 3/2), 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2	G-6-2				POORLY-GRADED SAND with CLAY (SP-SC) Black (2.5Y 2.5/1), moist, 85% fine to medium sand, 15% plastic fines	
3						
4	G-6-4				FAT CLAY (CH) Greenish gray (5G 5/1), moist, 95% plastic fines, 5% fine sand, firm	
5						
6						
7					Bottom of boring at 7.0 feet.	
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-7

BORING LOCATION: West side	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 10.0 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST ~3.5 feet / COMPL. ---
SAMPLING METHOD: Butyrate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. C55699

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	UVM (units) (ppm)	DESCRIPTION (NAME, USCS Symbol, color, %'s by weight, plast., consistency, structure, cementation, react. w/HCl, geo. interp.)	REMARKS
					Surface Elevation: ---	
					Approximately 2 inches asphalt and baserock	
1					CLAYEY SAND with GRAVEL (SC) Very dark grayish brown (2.5Y 3/2), 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2						
3						
4						
5						
6						
7					FAT CLAY (CH) Very dark gray (2.5Y 3/1), moist, 95% fines, 5% fine sand, firm	
8						
9						
10					Bottom of boring at 10.0 feet.	
11						
12						
13						
14						
15						

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-10

BORING LOCATION: Central	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 2.5 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST --- / COMPL ---
SAMPLING METHOD: Butyrate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. C55699

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM (units)	DESCRIPTION (NAME, USCS Symbol, color, moist., rel. density/consistency, structure, cementation, react. with HCl, geo. interp.)	REMARKS
					Surface Elevation: ---	
					Approximately 2 inches asphalt and baserock	
1					CLAYEY SAND with GRAVEL (SC) Gray (2.5Y 6/1), dry, 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2					Asphalt	
					Bottom of boring at 2.5 feet.	
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-11

BORING LOCATION: West side	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 7.0 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST --4.0 feet / COMPL: ---
SAMPLING METHOD: Butyrate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. C55699

DEPTH (Feet)	SAMPLES: Sample No	Sample Blows/Foot	DESCRIPTION (NAME (USCS Symbol), color, moist, % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. interp.)	REMARKS
			Surface Elevation: ---	
			Asphalt and baserock	
1			CLAYEY SAND with GRAVEL (SC) Very dark grayish brown (2.5Y 3/2), 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2				
3				
4			FAT CLAY (CH) Very dark gray (2.5Y 3/1), moist, 95% fines, 5% fine sand, firm	
5				
6				
7			Bottom of boring at 7.0 feet.	
8				
9				
10				
11				
12				
13				
14				
15				

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-13

BORING LOCATION:	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 7.0 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST -3.0 feet / COMPL. ---
SAMPLING METHOD: Butyrate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. C55699

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM Reading (ppm)	DESCRIPTION	REMARKS
					Surface Elevation: ---	
					Asphalt and baserock	
1					CLAYEY SAND with GRAVEL (SC) Dark grayish brown (2.5Y ???)	
2						
3						
4	G-13-4				POORLY-GRADED SAND with CLAY (SP-SC) Black (2.5Y 2.5/1), moist, 85% fine to medium sand, 15% plastic fines	
5						
6	G-13-5				FAT CLAY (CH) Very dark gray (2.5Y 3/1), moist, 95% fines, 5% fine sand, firm	
7					Bottom of boring at 7.0 feet.	
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-14

BORING LOCATION:	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 DATE FINISHED: [illegible]
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 7.0 feet MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST ~3.5 feet COMPL. ---
SAMPLING METHOD: Butyrate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job REG. NO. [illegible]

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sampler Blows/Foot	OVM Headspace (ppm)	DESCRIPTION: NAME (USCS Symbol), color, moist, [illegible], consistency, structure, cementation, react. w/HCl, geo. interp.	REMARKS
				Surface Elevation: ---	
0				Asphalt and baserock	
1				CLAYEY SAND with GRAVEL (SC) Very dark grayish brown (2.5Y 3/2), 50% fine to coarse sand, 35% gravel, 15% plastic fines	
2					
3	G-14-2			POORLY-GRADED SAND with CLAY (SP-SC) Red with black sand (2.5YR 5/6), moist, 90% angular fine to medium sands, 10% plastic fines	
4	G-14-4			FAT CLAY (CH) Very dark gray (2.5Y 3/1), moist, 95% fines, 5% fine sand, firm	
5					
6					
7				Bottom of boring at 7.0 feet.	
8					
9					
10					
11					
12					
13					
14					
15					

PROJECT: EMERYVILLE WAREHOUSE
Emeryville, California

Log of Boring No. G-3

BORING LOCATION: Southeast corner	ELEVATION AND DATUM: ---
DRILLING CONTRACTOR: Precision Sampling	DATE STARTED: 11/13/97 / DATE FINISHED: 11/13/97
DRILLING METHOD: Direct push / continuous core	TOTAL DEPTH: 1.0 feet / MEASURING POINT: ---
DRILLING EQUIPMENT: MD-3	DEPTH TO WATER: FIRST --- / COMPL. ---
SAMPLING METHOD: Butyrate tubes	LOGGED BY: Brad Job
HAMMER WEIGHT: --- DROP: ---	RESPONSIBLE PROFESSIONAL: Brad Job / REG. NO. 055699

DEPTH (feet)	SAMPLES: Sample No	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM Reading (ppm)	DESCRIPTION: NAME (USCS Symbol), color, moist, % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: ---	
		X			Asphalt	
1					Bottom of boring at 1.0 feet. Split spoon stuck.	
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

GEOMATRIX

ATTACHMENT E

Geomatrix Consultants, July 6, 2001 Letter

2101 Webster Street
12th Floor
Oakland, CA 94612
(510) 663-4100 • FAX (510) 663-4141

GEOMATRIX

July 6, 2001
Project 3095.006

Mr. Dan McNevin
Emery Lofts Development Co., LLC
c/o The Martin Group
100 Bush Street, 26th Floor
San Francisco, California 94104

Subject: Summary of Completed Soil Removal
Former Emeryville Warehouse and Adjacent Parcel
Emeryville, California

Dear Mr. McNevin:

This letter report documents the soil removal work performed for the subject site (Figure 1), located at 1500 Park Avenue and 4226 Halleck Street in Emeryville, California (the Site).

BACKGROUND

The Site, consisting of a small strip on the western edge of the former Emeryville Warehouse at 1500 Park Avenue and all of the adjacent parcel at 4226 Halleck Street, was sampled by Geomatrix Consultants, Inc. (Geomatrix), in 1997 and 1998 to characterize the distribution of metal concentrations in a thin black sandy fill (black sand) layer beneath the Site. Arsenic, barium, cadmium, copper, lead, and zinc were detected in the samples from the black sand, with arsenic being the primary chemical of concern due to concentrations greater than Environmental Protection Agency (EPA) Region 9 residential soil preliminary remediation goals (see Table 1). Therefore, arsenic was used as the target removal chemical.

Geomatrix submitted a work plan in January 1999 to the California Regional Water Quality Control Board, San Francisco Bay Region, and to the Alameda County Health Services Agency to remove the soil containing elevated metals concentrations so that a deed restriction would not be required for the development of the site. Confirmation of soil removal was based on residual arsenic concentrations.

FIELD ACTIVITIES

The work occurred in two phases, from March 23, 1999 through April 24, 1999 and from July 22, 1999 to August 5, 1999. Remedial Solutions, Inc. (RSI), performed the first phase of the work, excavating the black sand layer. Trumpp Brothers, Inc. (Trumpp Bros.), performed the second phase of work, off-hauling fill material and disposing of the railroad ties. Geomatrix personnel were onsite to supervise portions of the excavation and backfilling work and collect samples. The black sand occurred at depths ranging from approximately 1.5 to 2.5 feet throughout the site. The top one to two feet of fill material was excavated and stockpiled to be used as backfill. The remaining six inches of fill material along with the black sand material

were excavated down to bay mud and stockpiled for off-site disposal. The black sand was overexcavated into the underlying bay mud (native soil) approximately six inches.

A control grid was established on site for the purpose of fieldwork and sampling documentation (see Figure 2). Cells were approximately 40 feet by 40 feet. After excavating an area of the fill material and the black sand down to bay mud, a confirmatory sample was collected from the native soil by Geomatrix personnel prior to backfilling the excavation with the stockpiled fill material.

Railroad tracks encountered during the soil excavation operations were removed. Rails were torch-cut and stockpiled on site along with tie plates and railroad spikes for off-haul to a metals recycler. Railroad ties in good condition were stockpiled for off-haul by a scavenger; ties in poor condition were sampled for total pentachlorophenol (PCP) and Cresol using the California Waste Extraction Test (WET) and the Toxicity Characteristic Leaching Procedure (TCLP). Results of the railroad tie sample indicated no detections of phenols. Analytical data was collected for off-haul and disposal purposes.

Confirmatory sampling consisted of collecting twenty native soil samples from the base of the excavation and compositing as 5 four-point composites (Table 2). The composited samples were analyzed for arsenic, barium, cadmium, copper, lead and zinc by EPA Method 6010. Analysis of composite sample S-1 through S-4 indicated a concentration of 48 ppm of arsenic in the native soil. Consequently, each of the individual samples were analyzed separately for arsenic. Results of the analysis indicated elevated concentrations of arsenic in S-1 through S-3. Because of elevated concentrations of arsenic, samples S-1 through S-3 were resampled. S-4A, S-2A, and S-3A were collected as resamples of S-1, S-2, and S-3, respectively. Results of the analysis for samples S-4A, S-2A, and S-3A indicated concentrations of arsenic at 5.4, 5.0, and 6.4 mg/kg, respectively. Concentrations of arsenic for the remaining 4-point composite samples (S-5 through S-8; S-9 through S-12; and S-17 through S-20) were below 11 mg/kg.

For disposal profiling, two stockpile samples were collected of the excavated black sand material and analyzed for volatile organic compounds by EPA Method 8260, semivolatile organic compounds by EPA Method 8270B, California Title 26 metals (total and leachable) by EPA Method 6010, and total petroleum hydrocarbons by EPA Method 418.1. Results of the analyses indicated no detections of volatile organics in the two samples, detections of several semivolatile organics in sample SP-1, detections of metals and petroleum hydrocarbons for both samples. Analyses results are summarized in Table 3. Approximately 2,400 tons of excavated black sand was off-hauled by Lutrel Trucking and disposed of at Forward Inc. Landfill in Manteca, California, a Class II Landfill facility.

Following placement and compaction of the backfill, sixteen samples of the backfill material were collected and analyzed for arsenic as 4 four-point composite samples by EPA Method

6010 (Table 2). Results of the analysis ranged from 24 to 32 mg/kg of arsenic in the back-filled material. In order to complete removal of soils with residual arsenic above background concentrations, it was decided to remove the backfill material and dispose of it off-site at the Hayward Water Pollution Control District (HWPCD).

For disposal purposes at HWPCD, the backfill was resampled on August 3, 1999, by performing a 15-point composite sample. The composite was analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX) by EPA Method 8020; and for arsenic, cadmium, total chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc by EPA Methods 6010 and 7471. Results of the analysis met HWPCD's standards for soil to be mixed with waste sludge (Table 4).

On August 5, 1999, approximately 770 cubic yards of the backfilled material was removed from the site by Trumpp Bros. and off-hauled for use by HWPCD. The remaining railroad ties were sampled on August 3, 1999 for arsenic by EPA Method 6010 (Table 4). Approximately 9 tons of ties were off-hauled by Trumpp Bros. on August 5, 1999 for disposal at the BFI Vasco Road Sanitary Landfill, in Livermore, California, a state-certified Class III landfill.

Based on field observations and results of soil sample analyses, soil containing elevated concentrations of arsenic above RWQCB-approved background concentrations were removed from the subject sites. The 95% upper confidence limit of the mean for arsenic was calculated to be 9.98 milligrams per kilogram, confirming successful removal of soil with elevated metal concentrations. Based on the results, a deed restriction or other administrative restrictions likely will not be required for development of the site. We appreciate the opportunity to provide Emery Lofts Development Company with our environmental services. Please call either of the undersigned if you have any questions or need additional information.

Sincerely,
GEOMATRIX CONSULTANTS, INC.

Blake M. Yamamoto
Project Engineer

Tom Graf, P.E.
Principal Engineer

BMY/TG/pp
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Attachments

GEOMATRIX

TABLE 1

EPA REGION 9 RESIDENTIAL SOIL PRELIMINARY REMEDIATION GOALS

Emery Lofts

1500 Park Avenue / 4226 Halleck Street

Emeryville, California

CAS No.	Contaminant	Residential Soil (mg/kg)
7440-38-2	Arsenic (noncancer endpoint)	22
7440-39-3	Barium and compounds	5400
7440-43-9	Cadmium and compounds	37
7440-50-8	Copper and compounds	2900
7439-92-1	Lead	400
7440-66-6	Zinc	23,000

Source:

EPA Region 9 website, http://www.epa.gov/region09/waste/sfund/prg/index.htm

GEOMATRIX

TABLE 2

SUMMARY OF CONFIRMATORY AND BACKFILL SAMPLING

Emery Lofts

1500 Park Avenue / 4226 Halleck Street

Emeryville, California

Sample	Date Collected	Individual Sample Analysis[1]						Composited Sample Analysis[1]					
		Arsenic	Barium	Cadmium	Copper	Lead	Zinc	Arsenic	Barium	Cadmium	Copper	Lead	Zinc
S-1	3/23/99	21	NA[2]					48	420	2.3	270	120	1200
S-2	3/23/99	36											
S-3	3/24/99	87											
S-4	3/25/99	4											
S4-A	4/13/99	5.4	200	<0.099	27	6.6	64	NA					
S-2A	4/24/99	5.0	NA										
S3-A	4/24/99	6.4											
S-5	3/25/99	NA						9.5	330	1.3	98	30	380
S-6	3/25/99												
S-7	3/25/99												
S-8	3/29/99												
S-9	3/29/99	NA						11	230	1.4	78	30	270
S-10	3/30/99												
S-11	3/31/99												
S-12	3/31/99												
S-13	4/1/99	NA						5	170	<0.098	30	15	67
S-14	4/1/99												
S-15	4/13/99												
S-16	4/15/99												
S-17	4/15/99	NA						6.3	200	0.2	28	8.5	78
S-18	4/15/99												
S-19	4/20/99												
S-20	4/20/99												
BF1A,B,C,D	4/27/99	32	NA					NA					
BF2A,B,C,D	4/27/99	24											
BF3A,B,C,D	4/27/99	31											
BF4A,B,C,D	4/27/99	29											

Notes: [1] All concentrations in mg/kg. [2] NA = Not Analyzed.

GEOMATRIX

TABLE 3

STOCKPILE ANALYTICAL DATA

Emery Lofts

1500 Park Avenue / 4226 Halleck Street

Emeryville, California

Sample	SP-1[1]	SP-2
Volatile Organics		
All Constituents[2]	ND	ND
Semivolatile Organics (in mg/kg)		
Phenanthrene	960	<1700
Flouranthene	1000	<1700
Pyrene	1100	<1700
bis(2-Ethylhexyl)phthalate	1500	<1700
Benzo(b,k)fluoranthene	950	<1700
California Title 26 Metals (soil in mg/kg)		
Antimony	12	7.1
Arsenic	300	180
Barium	560	640
Beryllium	0.28	0.38
Cadmium	6.6	5.5
Chromium (total)	50	46
Cobalt	29	25
Copper	1000	780
Lead	250	220
Mercury	0.059	0.078
Molybdenum	7.3	5.7
Nickel	38	41
Selenium	1.8	2.7
Silver	3.1	1.5
Thallium	3.6	2.6
Vanadium	27	30
Zinc	3400	3200
California Title 26 Metals (WET Leachate in mg/l)		
Antimony	<3	
Arsenic	2.8	4.4
Barium	11	14
Beryllium	<0.1	<0.1
Cadmium	<0.25	<0.25
Chromium (total)	0.55	0.8
Cobalt	<1	<1
Copper	<0.5	<0.5

GEOMATRIX

TABLE 3

STOCKPILE ANALYTICAL DATA

Emery Lofts

1500 Park Avenue / 4226 Halleck Street

Emeryville, California

Sample	SP-1[1]	SP-2
California Title 26 Metals (WET Leachate in mg/l) (Continued)		
Lead	1.3	0.88
Mercury	<0.002	<0.002
Molybdenum	<1	<1
Nickel	1.2	1.3
Selenium	<0.25	<0.25
Silver	<0.25	<0.25
Thallium	<0.25	<0.25
Vanadium	1.2	1.2
Zinc	45	52
Total Petroleum Hydrocarbons (in mg/kg)		
TPH	1600	150

Notes:

[1] Concentrations for SP-1 are estimated values.

[2] EPA 8260A analytes.

GEOMATRIX

TABLE 4

ANALYTICAL DATA FOR DISPOSAL PURPOSES[1]

Emery Lofts

1500 Park Avenue / 4226 Halleck Street

Emeryville, California

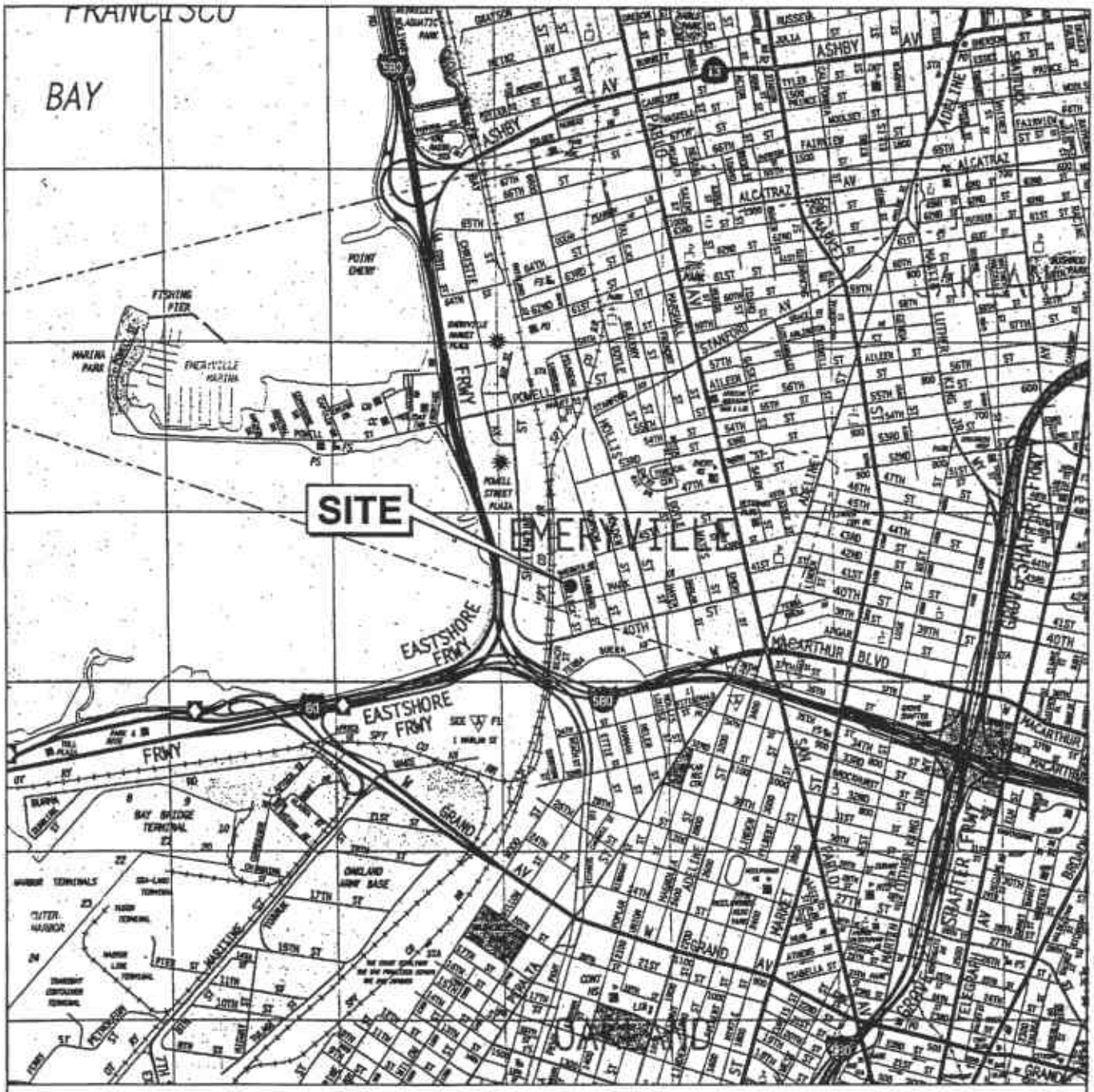
Sample	Date	Concentrations in mg/kg										Concentrations in µg/kg			
		Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Zinc	Benzene	Toluene	Ethyl-benzene	Xylenes
SS-1 through SS-15 (15-point composite)	7/22/99	22	2.7	43	180	160	1.4	1.1	39	<0.25	1000	<5	<5	<5	<5
RT-1	8/3/99	12	NA[1]									NA			
RT-2	8/3/99	22													
RT-3	8/3/99	8.6													

Abbreviations:

mg/kg = milligrams per kilogram

µg/kg = micrograms per kilogram

NA = Not analyzed



N

0 0.5 mile

GEOMATRIX

SITE LOCATION MAP
Emery Lofts
Emeryville, California

Figure
1

Project No.
3095.06

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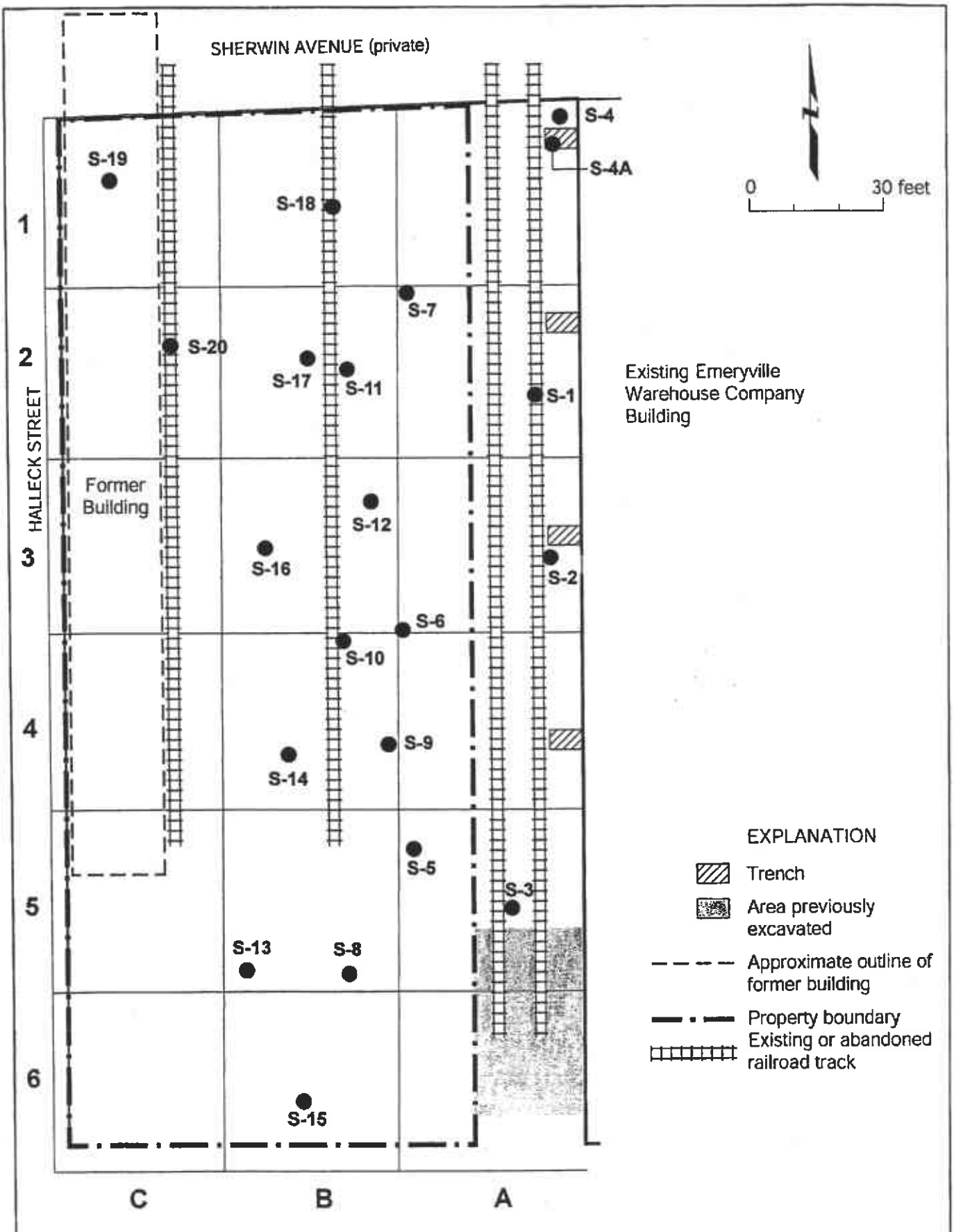

GEOMATRIX

SOIL SAMPLING LOCATIONS
Emery Lofts
Emeryville, California

Figure 2

Project No. 3095.06

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