RO-2584

★ Stellar Environmental Solutions, Inc.

2198 Sixth Street, Berkeley, CA 94710
Tel: (510) 644-3123 • Fax: (510) 644-3859
Geoscience & Engineering Consulting

July 31, 2003

Alameda County
AUG 0 4 2003
Environmental Health

Ms. Donna Drogos – Manager of Local Oversight Program
Alameda County Health Care Services Agency
Environmental Health Services – Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Corrective Action Plan (CAP) for Searway Property
649 Pacific Avenue, Alameda, California

Dear Ms. Drogos:

INTRODUCTION AND BACKGROUND

Stellar Environmental Solutions, Inc. (SES) is submitting this Corrective Action Plan (CAP) on behalf of the majority property owners (Benjamin, Robin and Brent) to address soil and groundwater contamination at the referenced property. We previously submitted a June 6, 2003 letter notifying Alameda County Environmental Health (ACEH) of the contamination discovery. This CAP follows subsurface investigations (initiated as part of a proposed property transfer) conducted by SES between March and July 2003. Those investigations and findings are discussed in detail in the SES July 2003 Remedial Investigation report (submitted concurrently with this CAP).

This CAP specifically addresses soil and groundwater contamination that warrants remediation and further investigation associated with the 649 Pacific Avenue subsite (a former dry cleaner which used Stoddard Solvent but not PCE). Stoddard Solvent (volatile-range hydrocarbon) contamination has been detected in the immediate vicinity of a below-grade sanitary sewer line. Figure 1 (attachment) is a site location map. Figure 2 is a site plan. Figures 3 and 4 show previous investigation analytical results at this subsite.

The objective of this CAP is to present SES's approach for the proposed soil remediation (and additional site characterization) activities in order to move the site towards regulatory closure. The property owners have elected to conduct source area contaminated soil removal to minimize the time necessary to achieve site closure, and to satisfy the generally-applied regulatory closure criterion of contaminant source removal.

The corrective action will include:

- Excavating for offsite disposal all reasonably-accessible, unsaturated zone soil contaminated above screening-level criteria and collecting for laboratory analysis excavation confirmation soil samples;
- Installing, developing and surveying four groundwater monitoring wells and conducting a baseline groundwater monitoring/sampling events;
- Preparing a corrective action documentation and baseline groundwater monitoring report that discusses the first two project elements; and
- Conducting subsequent quarterly groundwater monitoring/sampling events, each discussed in a quarterly groundwater monitoring report.

SES is the majority owner's environmental consultant of record, and will coordinate the project, perform the site characterization and remediation, and complete the documentation reports.

REGULATORY CONSIDERATIONS

We understand that ACEH generally assumes lead agency status for petroleum release cases. The ACEH has informed the property owners that ACEH is the lead agency for this case.

We are not aware of any regulatory agency published numerical criteria for cleanup of soil contaminated with Stoddard Solvent. Our previous reports have evaluated site soil contamination in the context of the Regional Board's Tier 1 Risk-Based Screening Level (RBSLs) for TPH as gasoline in soil, and we assume that Stoddard Solvent has the same RBSL as gasoline (100 mg/kg where groundwater is a current or potential drinking water source and 400 mg/kg where groundwater is not a current or potential drinking water source). It is our experience that the RBSLs for volatile-range hydrocarbons are generally more conservative than cleanup goals as determined in a formal risk assessment. As a conservative measure, the proposed corrective action endeavors to remove all reasonably-accessible, unsaturated zone soils contaminated with Stoddard Solvent above the 100 mg/Kg RBSL.

PREVIOUS ENVIRONMENTAL INVESTIGATIONS AND REMEDIATION

The facility was utilized as a dry cleaning establishment between the 1940's and approximately 1979. There is historical documentation of Stoddard Solvent usage but no documentation of tetrachloroethylene (PCE) usage. Subsurface investigations have been conducted since March 2003 to evaluate the magnitude and extent of soil and groundwater contamination, and those findings are used here to develop the proposed corrective action strategy.

A total of 18 exploratory boreholes have been advanced, and 27 soil and 14 grab-groundwater samples have been collected for laboratory analysis. Tables 1 through 3 summarize the analytical results.

Contaminants of Concern

<u>Petroleum Hydrocarbons</u>

The investigation results indicate that Stoddard Solvent is the sole contaminant of concern. As discussed in detail in the SES July 2003 Remedial Investigation Report, Stoddard Solvent elutes wholly within the volatile hydrocarbon range (C7-C12). Extractable-range hydrocarbons (equivalent to diesel-range C10-36) have also been detected at the subsite. Chromatogram examination suggests that this extractable-range hydrocarbon is predominantly late-range Stoddard Solvent (C10-C12) contamination, with only minor contamination that may be directly attributable to diesel-range hydrocarbons. We therefore propose to discontinue analyses for diesel-range hydrocarbons for proposed remedial and groundwater characterization samples.

<u>Aromatic Hydrocarbons</u>

Low levels of BTEX and MTBE have also been detected in groundwater samples. As discussed in our previous report, this contamination is likely related to an offsite petroleum release, however the proposed corrective action (and groundwater characterization) will continue to evaluate BTEX and MTBE concentrations until it is determined that these contaminants are no longer warranted.

VOCs

Trace levels (below RBSL criteria) of dry cleaning-related volatile organic compounds (PCE and various degradational byproducts) have been detected; the source of this trace-level contamination (maximum of 2.6 μg/L PCE) is not known. Additional evaluation of VOCs is not technically warranted.

DISTRIBUTION AND INFERRERED SOURCE OF CONTAMINATION

Soil Contaminant Distribution

The available data indicate a release of Stoddard Solvent in the immediate vicinity of the below-grade sanitary line. As shown on Figure 3, the lateral limits of soil contamination are adequately defined to propose soil excavation of the contaminated soil as a viable remedy. The maximum soil concentrations are near a floor drain of that line. As shown on Figure 5, soil contamination above the 100 mg/Kg RBSL extends over an approximately 40-foot long (north to south along sanitary line) by 30-foot wide (maximum width), irregularly-shaped polygon, and is largely within the building. Soil analytical results and field screening indicate that unsaturated zone soil (less than 10 feet deep) contamination begins at a depth of approximately 7 feet. As a conservative measure, we will assume that soils below 5' depth are contaminated. Therefore we estimate that the total volume of soil contaminated above 100 mg/kg is approximately 220 tons (based on a 1.5 conversion factor from in-bank yardage to excavated tonnage). Likewise, there is approximately 220 tons of overlying, potentially-uncontaminated soil that might be usable for excavation backfilling (to be confirmed by confirmation sampling/analysis).

Soil contamination between approximately 100 mg/kg and 1,000 mg/kg is likely present beneath a 40-foot length of the building wall that cannot be reasonably excavated. Assuming a 5-foot average width of inaccessible soils, we estimate the tonnage of inaccessible contaminated soil to be approximately 70 tons, or approximately 30% of the total contaminated soil volume. This results in an estimated tonnage of accessible contaminated soils of approximately 150 tons.

Groundwater Contaminant Distribution

As shown on Figure 4, Stoddard Solvent contamination in groundwater is wholly defined by the available borehole data. The groundwater contamination is wholly confined onsite, and appears to be confined largely within the subsite tenant space, with some hydrocarbon contamination present in the adjacent western parking lot. Note that the "TPH" isoconcentration contours on Figure 4 conservatively include both Stoddard Solvent-range and diesel-range hydrocarbons. As discussed, it is probable that the majority of groundwater contamination is therefore attributable to Stoddard Solvent, and the actual magnitude and footprint of Stoddard Solvent contamination is smaller than shown on Figure 4.

Inferred Contaminant Source

The exact source (point of release) of the Stoddard Solvent contamination has not been identified, although maximum soil and groundwater concentrations are in the vicinity of a sanitary sewer line floor drain.

LOCAL HYDROGEOLOGY

Shallow soils beneath the subject property consist predominantly of well-sorted (fine- and medium-grained) sand and clayey sand. Shallow groundwater was encountered at depths ranging from approximately 10 to 13 feet below grade, and occurs under confining or semi-confining conditions (i.e. groundwater rises to a depth of approximately 7 feet when the water-bearing zone is penetrated). Groundwater flow direction in the immediate area of the subject property has been reported as northerly.

PROPOSED CORRECTIVE ACTION

Soil Removal

Prior to soil removal, SES will make the required notification of contaminated soil excavation activities to the Bay Area Air Quality Management District. We know of no other permit or notification requirements.

Figure 5 shows the proposed excavation layout, which is based on removing reasonably-accessible unsaturated zone soil contamination above the 100 mg/kg RBSL. A photoionization detector (PID) calibrated for volatile-range hydrocarbons will be used to field screen soil samples as a qualitative indication of when the limits of soil contamination has been reached and excavation confirmation soil samples should be collected.

Overlying concrete will be sawcut, removed and disposed of as non-contaminated construction debris. The existing sanitary sewer line within the footprint of the excavation will be exposed and temporarily dismantled. Soil will be excavated with a backhoe. A bobcat may be used to move soil from the excavation to stockpiles/soil bins. To facilitate heavy equipment access, part of the non-load bearing front of the tenant space will be temporarily removed. Contaminated soil will be temporarily containerized in 20 cubic yard-capacity rolling-top soil bins, and the soil in the bin will be fully enclosed in plastic sheeting to minimize potential volatile emissions.

An estimated 220 tons of upper, likely uncontaminated soils will be removed and stockpiled or binned (see later discussion), to be profiled separately from inferred contaminated soils. If analytical results of stockpile sampling warrant, the uncontaminated soils may be reused as excavation backfill.

The proposed excavation will endeavor to remove as much reasonably-accessible contaminated soil in the unsaturated zone (likely 10 feet deep or less). Figure 5 shows the proposed boundaries of the excavation. There are two anticipated limiting factors as regards soil accessibility.

1) Stoddard Solvent soil contamination in the range of approximately 100 mg/kg to 1,000 mg/kg is present in an area measuring 40 feet long by five feet wide under the building's exterior wall. Geotechnical constraints (i.e. foundation instability) will likely dictate that no excavation be conducted within this zone. Confirmation soil sampling will be conducted to estimate the volume and magnitude of residual contaminated soil.

2) Because of the confining groundwater conditions, it is likely that groundwater will infiltrate the excavation when the water table is reached (potentially as shallow as 9 feet below grade). Care will be taken to remove as much unsaturated zone soil as possible (i.e. in 1-foot depth layers) prior to onset of groundwater infiltration. If significant infiltration occurs, we will make a field decision as to the practicality and technical merits of pumping a limited amount of groundwater from the excavation (to allow deeper excavation and/or collecting desired excavation confirmation soil samples). An excavation "grab" groundwater sample (pre- and post-pumping) will be collected and analyzed for site contaminants of concern. Pumped water will be temporarily containerized onsite in a Baker tank (or similar), chemically profiled, and transported offsite for proper treatment/disposal.

Confirmation Soil Sampling

Excavation confirmation samples will be collected to document the magnitude and extent of any residual soil contamination. Based on the high potential for infiltrating groundwater to flood the excavation to a depth above the zone of highest soil contamination, and our objective to remove all unsaturated zone contaminated soil down to first occurrence of groundwater, base of excavation soil samples are not appropriate and will not be collected. Rather, SES will collect a sufficient density of excavation sidewall samples to document the zone of residual soil contamination.

SES proposes to collect two sets of excavation confirmation sidewall samples, including two depth-specific samples at each of 12 locations (a sampling density of 2 samples per approximately 10 lineal feet of excavation sidewall). Figure 5 shows likely sampling locations, which might be revised in the field based on observed conditions. The proposed locations are located to maximize total investigation sampling coverage (i.e. spacing excavation confirmation samples away from previous borehole samples at similar depths).

At each sampling location, we will collect two samples: 1) from the depth documented to have the maximum soil contamination (approximately 7 to 9 feet below grade) and/or the depth where excavation sample PID readings are highest; and 2) at the higher depth that seems to represent the top of the contaminated soil layer. All the lower soil samples will be analyzed immediately and the upper sample set will be held in the laboratory (but not beyond the 14-day holding time). Following receipt of the lower sample set analytical results, we will analyze the 7 upper samples that correspond to the 7 lower samples with maximum TVH-SS contamination. The upper sample results will allow a more focused quantification of residual unsaturated zone soil contamination by constraining its highest depth.

To ensure that the excavation doesn't flood before excavation sidewall confirmation samples can be collected, we will likely collect one of sidewall samples at each depth layer below approximately 7 feet. Should deeper samples be collected, we will select for laboratory analysis the available depth-specific sample that will best demonstrate maximum residual soil contamination concentrations.

Laboratory Analyses

All soil (and potential pit water) samples will be analyzed for TVH as Stoddard Solvent (C7-C12 range) by modified EPA Method 8015. Analysis for BTEX and MTBE by EPA Method

8020 will also be conducted. Further analysis for diesel-range hydrocarbons is not warranted based on the available analytical results.

Site Restoration

Following all excavation and confirmation sampling activities, the excavation will be appropriately backfilled and compacted. If groundwater enters the excavation, drain rock will be used from the base of the excavation to the top of groundwater. The remainder of the excavation will be backfilled with clean imported fill material. The removed sanitary sewer line will be replaced, and the excavation will be resurfaced, with concrete. All residual dirt will be swept from the site.

Health and Safety

A site specific Health and Safety Plan (HASP) has been completed and updated for the proposed activities, and will be implemented as part of the corrective action. Because of the documented volatile-range hydrocarbon (Stoddard Solvent) soil contamination, there is a potential for worker exposure to volatile emissions of Stoddard Solvent. Air monitoring will be conducted to ensure that PCE concentrations in worker breathing zone do not exceed the Permissible Exposure Limit (PEL). Initial air monitoring will be conducted with a photoionization detector (PID) calibrated to read total organic vapors in the Stoddard Solvent range. If the PEL is exceeded, an Exclusion Zone will be established around the work area, and site workers inside the Exclusion Zone will don Level C respiratory protection.

Soil Disposal

Excavated soil will be chemically profiled in accordance with local non-hazardous landfill requirements (generally one 4-point composite soil sample per 500 cubic yards of excavated soil). The samples will be analyzed for the same constituents as specified for excavation confirmation soil samples. Following landfill acceptance, the soil bins will be transported by a licensed hauler to an appropriately-permitted landfill.

PROPOSED GROUNDWATER CHARACTERIZATION PROGRAM

Following the proposed corrective action, SES will implement a groundwater characterization program to evaluate impacts to groundwater associated with the documented contamination. The objective of the groundwater characterization program is to satisfy the commonly-utilized regulatory agency closure criterion that the groundwater contaminant plume is stable or reducing. We anticipate that a minimum of one year of quarterly groundwater monitoring/sampling will be required to satisfy that criterion.

Well Locations and Depths

We propose to install the following four groundwater monitoring wells:

- One well through the center of the excavation in the area of documented maximum soil and groundwater contamination ("source area").
- One well in the western parking lot, approximately 10 feet west of the building's west wall (to constrain the western lateral edge of the contaminant plume)
- One well approximately 10 feet east of the final eastern limit of the remedial excavation (to constrain the eastern lateral edge of the contaminant plume)
- One well approximately 10 feet north of (downgradient) the final northern limit of the remedial excavation (to constrain the downgradient front of the contaminant plume).

Figure 4 shows the proposed well locations. The well configuration will be sufficient to document local groundwater flow direction. Based on the findings of the baseline groundwater monitoring event, we will evaluate whether an additional groundwater monitoring well(s) is needed to constrain the limits of the groundwater contaminant plume.

Borehole geologic data indicate the presence of recently-saturated soils as shallow as approximately 6 feet deep, suggesting that the water table may that high during the rainy season. Low-permeability, low moisture soils have been encountered in the range of 10 to 13 feet deep, corresponding to the inferred base of the upper water-bearing zone. Therefore we propose to complete all wells to a depth of approximately 14 feet. All wells will be screened across the upper-water bearing zone. As discussed below, we propose to collect additional data on the depth to base of the upper-water bearing zone, during drilling of the groundwater monitoring well boreholes. If the upper water-bearing zone extends deeper than 14', the wells will be completed at a lower depth.

Drilling, Sampling and Well Completion Methods

Due to the limited height and width access into the building, boreholes will be drilled with a track- or truck-mounted (limited access-type) direct-push rig. Wells will be commercially-available, pre-constructed ¾-inch ID, 2-inch OD type. In addition to the solving the access issue, these wells have the added advantages: generating less waste soil during drilling (vs. a hollow-stem auger), and generating less monitoring well development and sampling purge water. This method of well installation is now common in the industry, and their data performance as groundwater monitoring wells is comparable to conventional 2-inch wells. There is also no reasonable potential for these wells to be utilized as extraction wells so the narrow diameter is not an issue.

Core soil samples will be collected (for geologic logging and soil sampling analysis) in a split-spoon type sampler. One soil sample will be collected for laboratory analysis from each borehole, at the depth of maximum PID reading and/or in the 7' to 9' zone of documented soil contamination. While the wells will be completed in the upper water-bearing zone, we will deepen and sample each well borehole below the completion depth to evaluate the vertical extent of the upper water-bearing zone (boreholes will likely terminate before 20 feet deep). Soil samples from the deeper interval will be examined for evidence of contamination, water-bearing materials and/or free water in the samples. One soil sample will be collected within the deeper zone and analyzed for TVH-SS, BTEX and MTBE to document any contamination in that zone.

Well construction will include the following:

- Five feet of ¾-inch ID and 2-inch outer diameter PVC factory-slotted well screen (0.010 inch slots) at the well base (9' to 14' interval) overlain by blank PVC (same dimensions) to surface

- Pre-packed annular sand pack (#12/12) from total well depth to 2 feet above the top of the well screen (7' to 14' interval)

- A foam bridge overlain by approximately 2 feet of pre-packed, bentonite seal material (5' to 7' interval)

- Neat Portland cement grout slurry (surface to 5' interval);

- Surface completion will be Christy-type, traffic-rated well boxes.

Overlying concrete will be cored to expose underlying soils. The boreholes for the wells will be geologically logged in accordance with the visual method of the Unified Soils Classification System, and borehole geologic logs will be prepared and certified by a California Registered Geologist. One soil sample will be collected for laboratory analysis from the capillary fringe (documented zone of maximum soil contamination) from each borehole. The wells will be installed under appropriate permits from the Alameda County Public Works Agency.

No sooner than 48 hours following installation, the wells will be developed by surging and bailing or pumping to set the annular sand pack and reduce the potential for fine-grained native materials to infiltrate the sand pack. The vertical elevations of the well casing tops will be surveyed by a licensed California land surveyor so that accurate groundwater elevations can be measured over time.

Groundwater Monitoring and Sampling

The wells will be monitored and sampled on a quarterly basis. Groundwater sampling will be conducted in accordance with Cal/EPA guidelines for sampling dissolved petroleum products in groundwater. In brief, water levels will be measured with an electric water level meter prior to sampling. Each well will be purged 3 to 5 wetted well volumes either with a peristaltic pump or by with evacuation through Tygon™ tubing with a basal check valve. Aquifer stabilization indicators (temperature, pH, electrical conductivity) will be measured between each well volume purged, and purging will continue until stabilized formation water is entering the well. Water samples will be collected with a new disposable bailer and transferred to sampling containers appropriate for each analytical method. Samples will be preserved and managed in accordance with USEPA protocols.

Laboratory Analyses

Groundwater samples will be analyzed by a State of California ELAP-certified laboratory for the TVH-Stoddard Solvent (C7 to C12 range), BTEX and MTBE. To demonstrate that the groundwater plume is stable or reducing, groundwater samples may also be analyzed for indicators of natural attenuation, which might include ferrous iron, dissolved oxygen, redox potential (ORP), sulfate and/or nitrogen. As discussed previously, it is our opinion that further analysis of groundwater samples for extractable-range hydrocarbons is not technically warranted, and we propose to discontinue this analysis for the groundwater characterization program.

Drilling and Groundwater Waste Management

Soil cuttings from the monitoring well installations will be temporarily containerized in labeled, 55-gallon steel drums. Those drums will be disposed of at a permitted landfill following chemical profiling. Equipment decontamination rinseate and well development and purge water will be temporarily containerized in either labeled, 55-gallon drums or a poly tank. The water will be stored onsite until either it is determined that no additional project wastewater will be generated, or space constraints dictate water removal. All project wastewater will be properly disposed of at a permitted non-hazardous liquids treatment facility.

CORRECTIVE ACTION AND BASELINE GROUNDWATER MONITORING DOCUMENTATION REPORT

SES will complete a technical documentation report for submittal to ACDEH that will discuss the corrective action implementation as well as the groundwater monitoring well installation and baseline sampling event. This report will fully document the scope described. The focus of the report will be to document the remediation completed and document the levels of residual soil and groundwater contamination. The report will contain:

- Scope and objectives of the work completed;
- Breif summary of pertinent investigation history and data;
- Site map delineating site features, investigation locations, and other pertinent information;
- Drilling, sampling and analytical protocols;
- Local geology and hydrogeology;
- Discussion of corrective action and well installation activities
- Extent of soil removal and fate of waste soil;
- Evaluation of the data in the context of the effectiveness of the corrective action, residual soil and groundwater contamination, regulatory considerations and closure criteria;
- Conclusions and, where appropriate, recommendations; and
- Technical appendices.

The report will be signed and stamped by a California Registered Geologist or Professional Engineer.

ESTIMATED SCHEDULE

The most technically appropriate time to conduct the soil excavation work is just before the onset of the rainy season, when the groundwater table is lowest and/or vertical hydraulic head is least (to minimize excavation flooding). Therefore the majority owners are proposing to conduct the soil excavation in the October-November 2003 timeframe. We estimate that the soil excavation phase (through site restoration) will be completed within approximately one month. The well installations and baseline groundwater monitoring event should be completed within three weeks following completion of the corrective action. The technical documentation report summarizing all activities will be completed within approximately three weeks following the baseline sampling event. Therefore, we estimate that all work (through the technical documentation report) will be conducted over an approximately 10 week period.

Please call us directly at (510) 644-3123 if you have any questions regarding this submittal. Otherwise we look forward to your written concurrence.

Sincerely,

Bruce M. Rucker, R.G., R.E.A,
Project Manager

Richard S. Makdisi, R.G., R.E.A,
Principal

cc:
Benjamin, Robin and Brent Searway (majority property owners)
Stan Hammond (Wells and Bennett Realtors, agent for majority property owners)

attachments: figures and tables

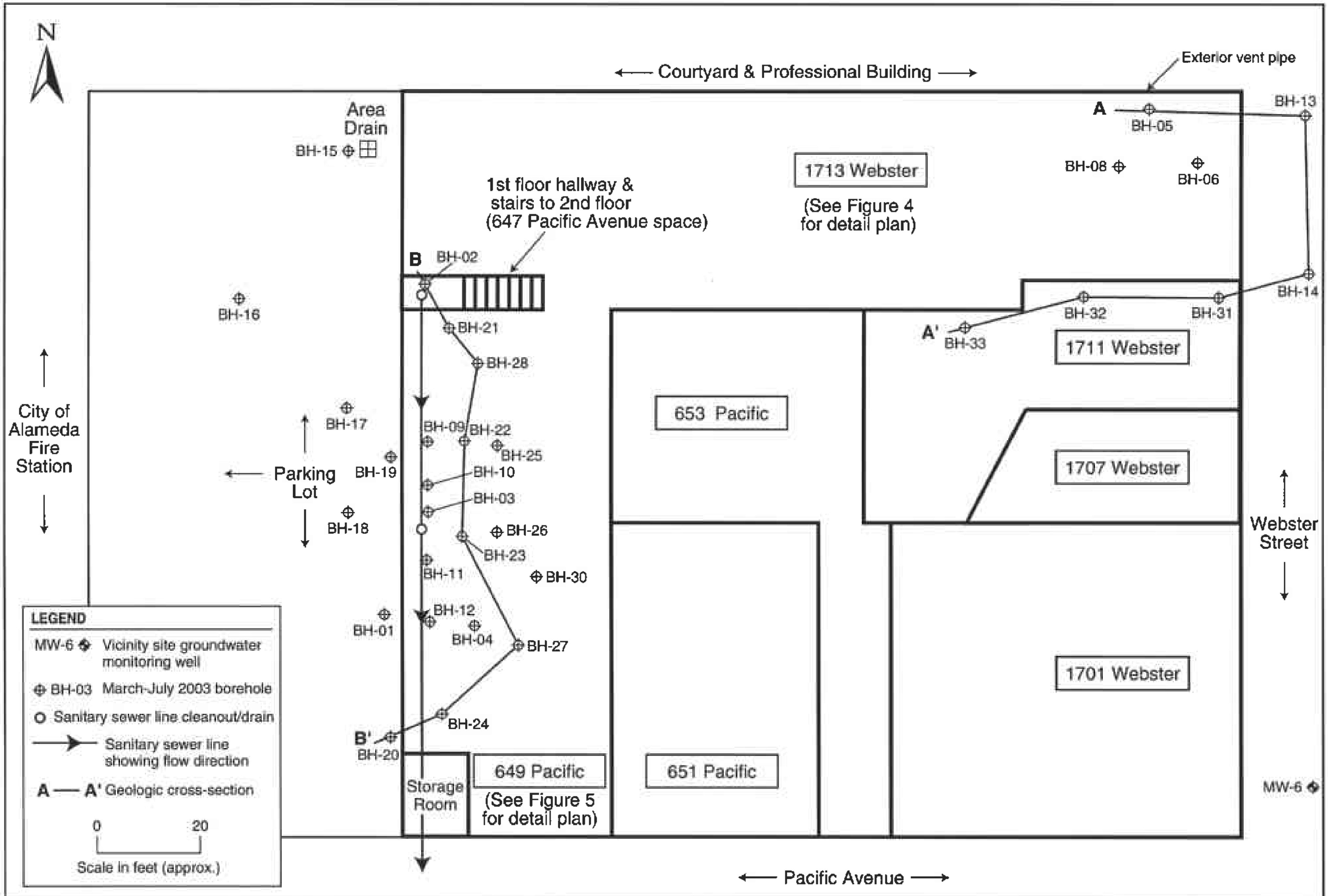
BIBLIOGRAPHY AND REFERENCES

Stellar Environmental Solutions, Inc., 2003. Subsurface Site Investigation Report – Searway Property – 649 Pacific Avenue and 1713 Webster Street, Alameda, California. March 18

Stellar Environmental Solutions, Inc., 2003. Site Remedial Investigation Report – Searway Property – 649 Pacific Avenue & 1701-1713 Webster Street, Alameda, California. July 31

N	SITE LOCATION ON U.S.G.S. TOPOGRAPHIC MAP		
	649 Pacific Ave. & 1713 Webster St. Alameda, CA	By: MJC / MARCH 2003 **Figure 1**	★ Stellar Environmental Solutions, Inc. Geoscience & Engineering Consulting

2003-13-01



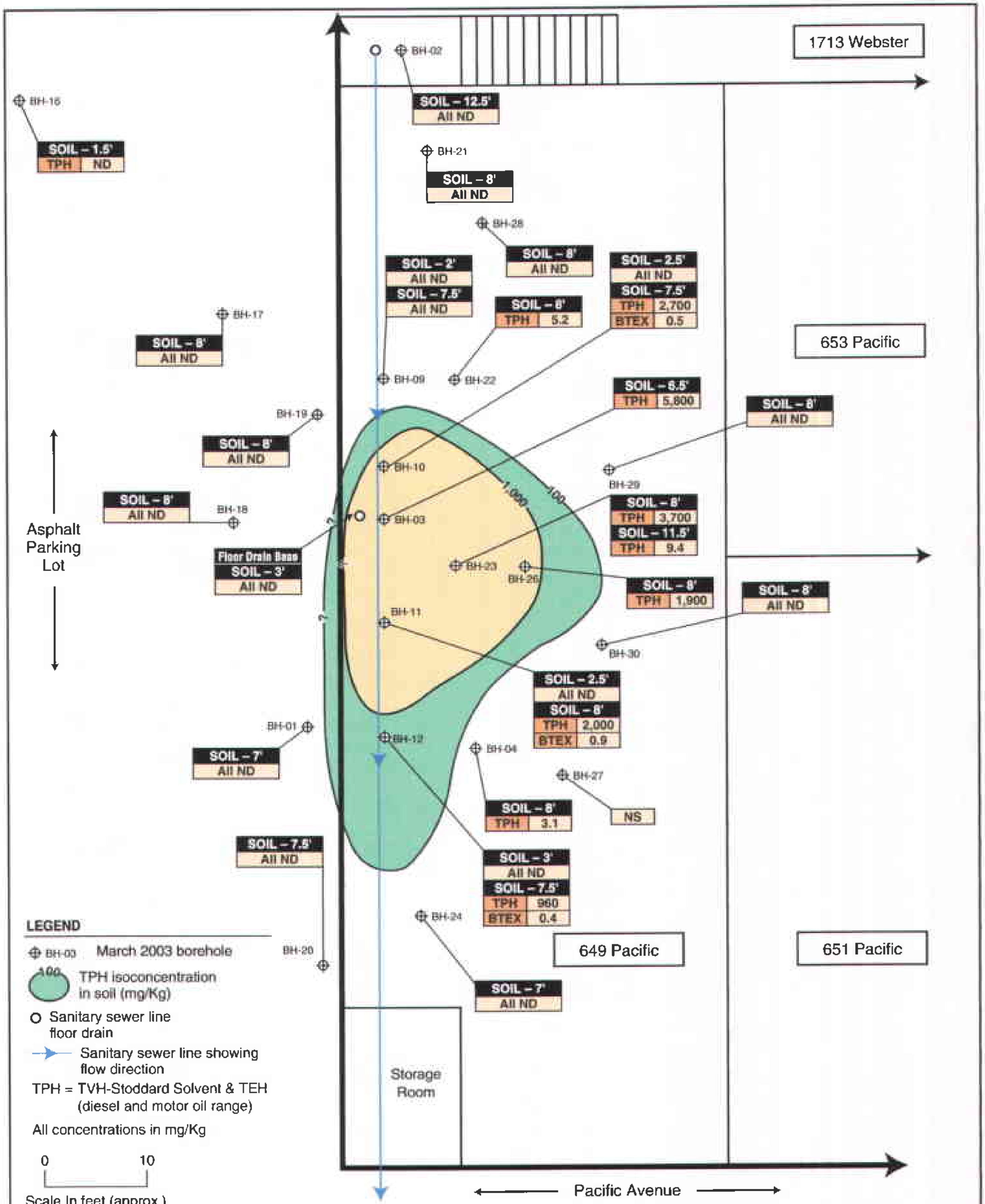
2003-13-13

★ Stellar Environmental Solutions, Inc.
Geoscience & Engineering Consulting

SITE PLAN, ADJACENT LAND USE AND BOREHOLE LOCATIONS
649 Pacific Avenue and 1711/1713 Webster Street, Alameda, CA

Figure 2

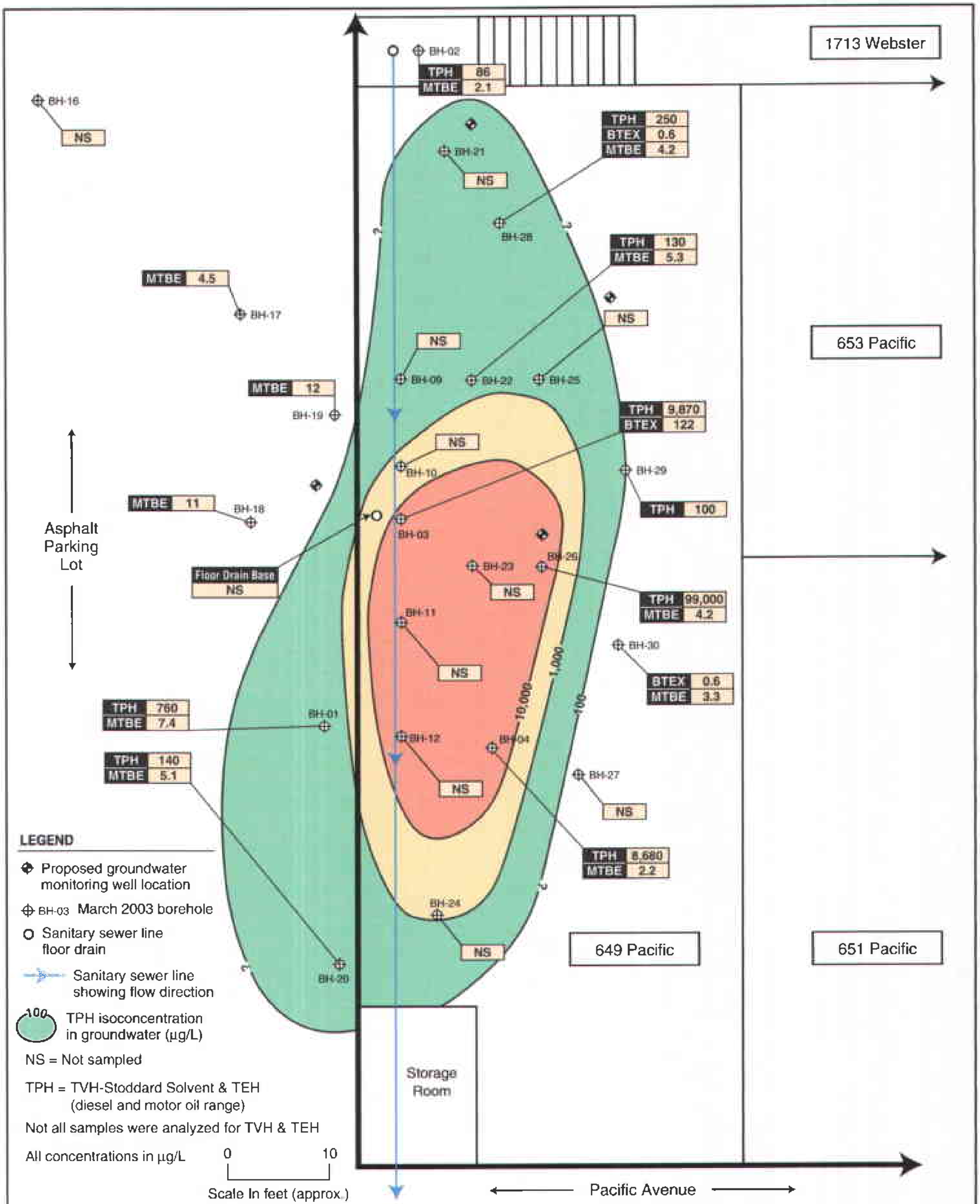
by: MJC | JULY 2003



BOREHOLE LOCATIONS & SOIL ANALYTICAL RESULTS

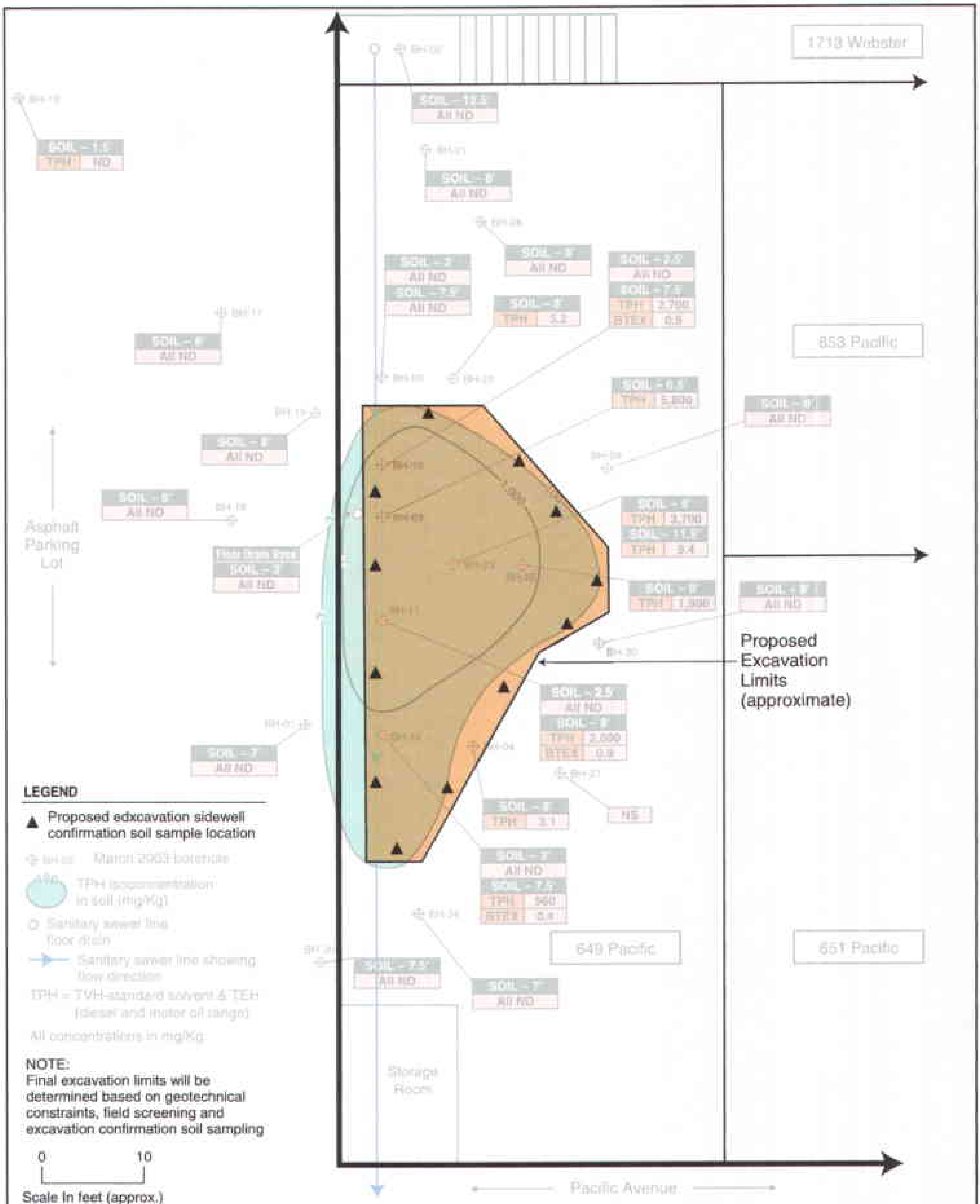
649 Pacific Avenue Alameda, CA	By: MJC · JULY 2003 **Figure 3**	Stellar Environmental Solutions, Inc. Geoscience & Engineering Consulting

2003-13-17



N	BOREHOLE LOCATIONS, GROUNDWATER ANALYTICAL RESULTS AND PROPOSED WELL LOCATIONS		
	649 Pacific Avenue Alameda, CA	By: MJC · JULY 2003 **Figure 4**	Stellar Environmental Solutions, Inc. Geoscience & Engineering Consulting

2003-13-18



N

PROPOSED SOIL EXCAVATION BOUNDARIES AND CONFIRMATION SOIL SAMPLING LOCATIONS

649 Pacific Avenue Alameda, CA	By: MJC / JULY 2003 **Figure 5**	Stellar Environmental Solutions, Inc. Geoscience & Engineering Consulting

2003-15-15

Table 1
March 2003 Soil and Groundwater Analytical Results
Volatile Organic Compounds
649 Pacific Avenue Subsite, Alameda, California

Sample I.D.	Sample Depth (feet)	Chloroform	TCE	PCE	Trans-1,2-DCE	Cis-1,2-DCE
Soil Analytical Results (µg/kg)						
BH-01-7'	7'	*< 4.6*	*< 4.6*	*< 4.6*	*< 4.6*	*< 4.6*
BH-02-12.5'	12.5'	*< 5.2*	*< 5.2*	*< 5.2*	*< 5.2*	*< 5.2*
BH-03-6.5'	6.5'	*< 130*	*< 130*	*< 130*	*< 130*	*< 130*
BH-04-8'	8'	*< 4.8*	*< 4.8*	*< 4.8*	*< 4.8*	*< 4.8*
Soil RBSLs (b)		*260 / 580 (a)*	*1,500*	*530*	*15,000*	*7,700*
Soil RBSLs (c		*260 / 580 (a)*	*400*	*150 / 530 (a)*	*650*	*190*
Groundwater Analytical Results (µg/L)						
BH-01-GW	10'-12'	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*
BH-02-GW	10'-13'	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*
BH-03-GW	10'-13'	**1.0**	**1.3**	**1.9**	*< 0.5*	*< 0.5*
BH-04-GW	10'-13'	<0.5	**1.9**	**2.6**	**0.5**	**0.7**
Groundwater RBSLs (d)		*28*	*360*	*120*	*590*	*590*
Groundwater RBSLs (e)		*28*	*5.0*	*5.0*	*10*	*6.0*

Notes:

DCE = Dichloroethene.
PCE = Tetrachloroethylene.
RBSLs = Regional Water Quality Control Board Risk-Based Screening Levels (see "Regulatory Considerations" text for applicable criteria)
TCE = Trichloroethylene.
VOCs = Volatile organic compounds.
(a) 1st value is for surface soils (less than 10 feet deep); 2nd value is for subsurface soils (greater than 10 feet deep).
(b) For commercial/industrial sites where groundwater is not a current or potential drinking water source.
(c.) For commercial/industrial sites where groundwater is a current or potential drinking water source
(d) For commercial/industrial sites where a drinking water resource is not threatened.
(e) For commercial/industrial sites where a drinking water resource is threatened.
Table includes only detected compounds. See Appendix E for full list of analytes.

Table 2
March - July 2003 Soil Analytical Results
Petroleum and Aromatic Hydrocarbons
649 Pacific Avenue Subsite, Alameda, California
(All soil analytical results reported as mg/kg)

Sample I.D.	Date Sampled	Sample Depth (feet)	TVHss	TEH	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
BH-01-7'	3/8/03	7'	*< 1.1*	*NA*	- -	*< 0.0051*	*< 0.0051*	*< 0.0051*	*< 0.0051*	*< 0.020*
BH-02-12.5'	3/8/03	12.5'	*< 1.1*	*< 5.0*	*< 5.0*	*< 0.0053*	*< 0.0053*	*< 0.0053*	*< 0.0053*	*< 0.021*
BH-03-6.5'	3/8/03	6.5'	**5,800**	*NA*	- -	*< 1.3*	*< 1.3*	*< 1.3*	*< 1.3*	*< 5.0*
BH-04-8'	3/8/03	8'	**3.1**	*NA*	- -	*< 0.0054*	*< 0.0054*	*< 0.0054*	*< 0.0054*	*< 0.022*
Floor Drain Base	3/25/03	3'	*< 1.0*	*NA*	- -	*< 0.0050*	*< 0.0050*	*< 0.0050*	*< 0.0050*	*< 0.020*
BH-9-2'	3/25/03	2'	*< 1.0*	*NA*	- -	*< 0.0052*	*< 0.0052*	*< 0.0052*	*< 0.0052*	*< 0.021*
BH-9-7.5'	3/25/03	7.5'	*< 0.98*	*NA*	- -	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.020*
BH-10-2.5'	3/25/03	2.5'	*< 1.0*	*NA*	- -	*< 0.0051*	*< 0.0051*	*< 0.0051*	*< 0.0051*	*< 0.020*
BH-10-7.5'	3/25/03	7.5'	**2,700 (a)**	*NA*	- -	*< 0.0051*	<0.0051	**0.26**	**0.22**	*< 0.020*
BH-11-2.5'	3/25/03	2.5'	*< 1.0*	*NA*	- -	*< 0.0048*	*< 0.0048*	*< 0.0048*	*< 0.0048*	*< 0.019*
BH-11-8'	3/25/03	8'	**2,000 (a)**	*NA*	- -	*< 0.0054*	*< 0.0054*	**0.88**	*< 0.0054*	*< 0.022*
BH-12-3'	3/25/03	3'	*< 0.98*	*NA*	- -	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.020*
BH-12-7.5'	3/25/03	7.5'	**960 (a)**	*NA*	- -	*< 0.0052*	*< 0.0052*	**0.084**	**0.31**	*< 0.021*
BH-17-8'	7/9/03	8'	*< 1.1*	*NA*	- -	*< 0.0053*	*< 0.0053*	*< 0.0053*	*< 0.0053*	*< 0.021*
BH-18-8'	7/9/03	8'	*< 0.95*	*NA*	- -	*< 0.0048*	*< 0.0048*	*< 0.0048*	*< 0.0048*	*< 0.019*
BH-19-8'	7/9/03	8'	*< 1.0*	*NA*	- -	*< 0.0051*	*< 0.0051*	*< 0.0051*	*< 0.0051*	*< 0.020*
BH-20-7.5'	7/9/03	7.5'	*< 1.1*	*NA*	- -	*< 0.0054*	*< 0.0054*	*< 0.0054*	*< 0.0054*	*< 0.022*

(Table continued on next page)

Table 2 (continued)

Sample I.D.	Date Sampled	Sample Depth (feet)	TVHss	TEH	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
BH-21-8'	7/10/03	8'	*< 0.97*	*NA*	- -	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.019*
BH-22-8'	7/10/03	8'	*< 0.98*	**5.2**	**5.2**	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.020*
BH-24-7'	7/10/03	7'	*< 1.0*	*NA*	- -	*< 0.0050*	*< 0.0050*	*< 0.0050*	*< 0.0050*	*< 0.020*
BH-25-9'	7/10/03	9'	*< 1.0*	*NA*	- -	*< 0.0052*	*< 0.0052*	*< 0.0052*	*< 0.0052*	*< 0.021*
BH-26-8'	7/10/03	8'	**1,900**	*NA*	- -	*< 0.50*	*< 0.50*	*< 0.50*	*< 0.50*	*< 2.0*
BH-28-8'	7/10/03	8'	*< 0.97*	*NA*	- -	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.019*
BH-29-8'	7/10/03	8'	*< 1.1*	*< 1.0*	*< 1.1*	*< 0.0053*	*< 0.0053*	*< 0.0053*	*< 0.0053*	*< 0.021*
BH-30-8'	7/10/03	8'	*< 0.97*	*NA*	- -	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.0049*	*< 0.019*
Soil RBSLs (b)			400	400	400	0.39	8.4	24	1.0	1.0
Soil RBSLs (c.)			100	100	100	0.045	2.6	2.5	1.0	0.028

Notes:

NA = Sample not analyzed for this contaminant.
ND = Not detected (multiple method reporting limits, see Appendix E).
RBSLs = Regional Water Quality Control Board RiskBased Screening Levels (see "Regulatory Considerations" text for applicable criteria)
TEH = Total extractable hydrocarbons (diesel- through motor oil- ranges).
TVHss = Total volatile hydrocarbons- Stoddard Solvent range.
TPH = Total Petroleum Hydrocarbons = TVHss + T.EH (when both analyses were run)
(a) See laboratory case narrative regarding quantification of TVH.
(b) For surface soil (< 10 feet deep) at commercial/industrial sites where groundwater is not a current or potential drinking water source.
(c) For surface soil (< 10 feet deep) at commercial/industrial sites where groundwater is a current or potential drnking water source.

Table 3
March - July 2003 Groundwater Analytical Results
Petroleum and Aromatic Hydrocarbons
649 Pacific Avenue Subsite, Alameda, California
(All groundwater analytical results reported as μg/L.)

Sample I.D.	Date Sampled	Sample Depth (feet)	TVHss	TEH	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
BH-01-GW	3/8/03	10'-12'	*< 50*	**760**	**760**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**7.4**
BH-02-GW	3/8/03	10'-13'	*< 50*	**86**	**86**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**2.1**
BH-03-GW	3/8/03	10'-13'	**270**	**9,600**	**9,870**	**0.68**	**110**	**1.6**	**9.4**	*< 2.0*
BH-04-GW	3/8/03	10'-13'	**280**	**8,400**	**8,680**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**2.2**
BH-17-GW	7/9/03	10'-11'	*< 50*	*NA*	--	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**4.5**
BH-18-GW	7/9/03	10'-11'	*< 50*	*NA*	--	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**11**
BH-19-GW	7/9/03	10'-11'	*< 50*	*NA*	--	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**12**
BH-20-GW	7/9/03	10'-11'	*< 50*	**140**	**140**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**5.1**
BH-22-GW	7/10/03	10'-11'	*< 50*	**130**	**130**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**5.3**
BH-26-GW	7/10/03	10'-11'	**99,000**	*NA*	--	*< 0.5*	*< 0.5*	*< 0.5*	**4.2**	*< 2.0*
BH-28-GW	7/10/03	10'-11'	*< 50*	**250**	**250**	*< 0.5*	**0.58**	*< 0.5*	*< 0.5*	**4.2**
BH-29-GW	7/10/03	*~ 10.5'*	*< 50*	**100**	**100**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
BH-30-GW	7/10/03	*~ 10'*	*< 50*	*NA*	--	*< 0.5*	**0.63**	*< 0.5*	*< 0.5*	**3.3**
Groundwater RBSLs (a)			500	500	500	46	130	290	13	1,800
Groundwater RBSLs (b)			100	100	100	1.0	40	30	13	5.0

Notes:

NA = Sample not analyzed for this contaminant. ND = Not detected (multiple method reporting limits, see Appendix E).
RBSLs = Regional Water Quality Control Board RiskBased Screening Levels (see"Regulatory Considerations" text for applicable criteria)
TEH = Total extractable hydrocarbons (diesel- through motor oil- ranges).
TVHss = Total volatile hydrocarbons- Stoddard Solvent range. See laboratory case narrative regarding quantification of TVH.
TPH = Total Petroleum Hydrocarbons = TVHss + TE.H
(a) For commercial/industrial sites where a drinking water resource is not threatened. (b) For commercial/industrial sites where a drinking water resource is threatened.