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Statement of Basis

Proposed Remedy Selection for Soil and Groundwater

At

**Former Pure-Etch Company Facility
EPA ID # CAD 983 650 490**

**1031 Industrial Way
Salinas, California 93906
Monterey County**

Prepared by

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1. Introduction

The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this Statement of Basis (SB) to discuss the proposed remedy selection for soil and groundwater at the former Pure-Etch Company Facility ("Site" or "Facility" or "Property") located at 1031 Industrial Way, Salinas, Monterey County, California (see Figure 1, Site Location)

DTSC is issuing this SB as part of its public participation responsibilities under Chapter 6.5, California Health and Safety Code, Hazardous Wastes Control Act. The corrective action process conducted at the Site addressed releases of hazardous waste and hazardous constituents at the Site. The Corrective Action Consent Agreement ("Consent Agreement") between Pure-Etch and DTSC defines the steps and corresponding scope of work for federal Resource Conservation and Recovery Act (RCRA) corrective action with respect to the 1.25 acres of land now owned by Dan & Linda O'Brien and Carl and Diane Stroub of Plaza Properties, Salinas, California.

This SB summarizes the remedial alternatives analyzed for this Site. DTSC will select a final remedy for the Site only after the public comment period has ended and any information submitted during this time has been reviewed and considered. This SB also summarizes information that can be found in greater detail in the Corrective Measures Study Report (CMS) dated April 10, 2006 and the Land Use Covenant Implementation & Enforcement Plan (LUC I&E Plan

In addition to this SB, DTSC has prepared the following documents as part of the public review process to facilitate public comments on the CMS and LUC I&E Plan prior to making a decision to approve the final remedy:

- Fact Sheet that summarizes the proposed remedies selected and provides a notice of public comment period.
- Draft Negative Declaration which is an environmental analysis under the California Environmental Quality Act (CEQA)

DTSC may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on all alternatives. The public can be involved in the remedy selection process by reviewing the documents during the 45-day public comment period which begins on August 22, 2007 and ends on October 5, 2007. Once a final decision is made on the proposed remedy, Pure-Etch would be required to implement the selected remedy for soil and groundwater associated with historical chemical releases.

2. Proposed Remedies for Groundwater

DTSC is proposing the following remedies for the gasoline contamination in the soil and groundwater beneath the Site.

- Dual phase vapor extraction for 12 to 18 months at an area near the closed-in-place underground storage tank. Dual phase extraction relies on the relatively short-term vapor and groundwater extraction using negative pressure extraction techniques to remove volatile contaminant mass from soil and groundwater.
- Periodic groundwater confirmation sampling to confirm that chemical constituents of concerns are below the cleanup goal.
- Monitoring the site for additional five years to gather sufficient information to confirm the effectiveness of the remedy implementation.
- Current landowner entering into a Land Use Covenant with DTSC to have an annual inspection of the Site to ensure that future land use remains industrial and that no drinking water wells are installed onsite.

A more detailed discussion of the proposed remedies is included in sections 9 and 10 of this SB.

3. Facility Background

3.1 Facility Location

The Site is located at 1031 Industrial Way in Salinas, Monterey County, California and identified by Assessor's Parcel Number 003 571 006. The Site occupies approximately 1.25 acres of land in an industrial area of Salinas at the southeast corner of Industrial Way and Vertin Avenue. (See Figure 1, Site Location Map and Figure 2, Topographic Map Showing Site Location).

The Site is zoned for General Industrial according to the City of Salinas General Plan Land Use and can be accessed from U.S. Highway 101 from the north to South Sanborn Road through Pellet Avenue and Sanborn Place. The surrounding property land use is primarily industrial. The Site is bordered by Kuhlman Electronics to the north and east, Industrial Way to the south parallel to the Union Pacific Railroad and Sanborn Place to the west parallel to Sanborn Road. A railspur enters the southwest portion of the Site from the west.

The entire Site is a fully developed industrial site with paved surfaces and buildings. It is paved with 80% concrete slab and 20% asphalt or concrete. The Site is currently owned by Dan & Linda O'Brien and Carl and Diane Stroub of Plaza Properties, Salinas, California. It is being leased to an automobile towing company and a company that manufactures insect monitoring equipment parts.

The nearest body of water is Alisal Slough located approximately 2,200 feet southwest of the Site. Drinking water in the Salinas area is generally drawn from wells below 180 feet. A nearby water supply well, located at the Shippers Development Company site at 634 South Sanborn Road, within 1,000 feet north of the former Site is reportedly drawing groundwater from 235 feet bgs. There are residences approximately 3,000 feet southwest and northeast of the facility. The nearest residence are the apartments and farm labor camps located 660 feet northwest of the facility. The nearest school is 3,000 feet southwest of the Site. (See Figure 3, Land Use Map).

3.2 History of the Site

In 1993, the former Pure-Etch Company Facility (Pure-Etch, Facility, Site) purchased the Site from Georgia Pacific Corporation and operated at the Site a spent etchant (etching solution no longer usable) recycling facility from 1994 to 1997. The Facility recycled spent etchant from semi-conductor industry into ammonia vapor and copper oxide. The ammonia vapor was used onsite to manufacture fresh etchant. The copper oxide was reclaimed for use in other industries. The recycling operation was permitted under a Hazardous Waste Facility Permit issued by DTSC. The authorization allowed the Facility to store and treat hazardous wastes from offsite sources. Pure-Etch did not operate any underground storage tanks. Pure-Etch ceased operations in 1997 and in 1998, the Facility began closure activities under DTSC oversight. DTSC approved the closure certification in December 1999.

A 1,000-gallon underground storage tank (UST), previously used for storage of gasoline, was identified in the RCRA Facility Assessment (RFA) as a solid waste management unit (SWMU) which needed further investigation. According to information gathered, the operation of the UST ceased in the 1960s or 1970s. Previous owners legally closed-in-place the UST in 1985 by filling it with concrete under a permit issued by the Monterey County Environmental Health Department. The tank reportedly had not been used for 10 to 25 years prior to its closure in 1985. In 1997, an investigation report submitted to Monterey County concluded that gasoline from the UST leaked into the soil prior to its closure in 1985 and further study was necessary to investigate any impacts to groundwater. DTSC is now overseeing the cleanup of the Site under a Corrective Action Consent Agreement (Consent Agreement) pursuant to section 25187 of the California Health and Safety Code. Under the Consent Agreement signed on February 14, 2000, Pure-Etch is required to investigate and address all historic releases of hazardous waste to soil and groundwater that may have occurred at the facility. The corrective actions included a RCRA Facility Investigations (RFI) and Corrective Measures Study (CMS), Remedy Selection, and Corrective Action Implementation (See Figure 5, Corrective Action Process Flow Diagram).

3.3 Environmental Conditions

The City of Salinas is located in the heart of Salinas Valley which is nestled eight miles inland from Monterey, 101 miles south of San Francisco and 325 miles north of Los Angeles. The Salinas Valley is 10 - 20 miles wide and 150 miles long comprised of some 640 acres. According to the US Bureau of Census, the City of Salinas had a population of 143,920 in the year 2000. The nearest surface body of water is Alisal Slough, located approximately 2,200 feet southwest of the Site.

Salinas Valley is defined by the Gabilan Range to the east and the Santa Lucia Range to the west. It is underlain by the Salinas Groundwater Basin, created by the regional downwarping and localized reverse and strike slip faulting along the eastern range front of the Santa Lucia Range. The basin is post-Miocene synclinal graben-trough with a repository of thick mid-late Cenozoic sediments up to 8,000 feet thick.

The Salinas Valley Ground Water Basin contains a series of productive aquifers, which are mined intensively to supply water for agricultural, domestic, and industrial purposes. The shallowest aquifer underlying Salinas is the unconfined "A-aquifer", composed of interbedded and interfingering sands, gravel, silts, and clays. This aquifer is underlain by a relatively continuous, impermeable blue clay layer at approximately 180 feet. This clay separates the A-aquifer and the deeper "180 foot aquifer".

Since perched groundwater is present in the A-aquifer, depth to first groundwater is variable across the City of Salinas. Regional groundwater flow direction across the Salinas area is west-northwest towards the Pacific Ocean. The A-aquifer has been

encountered at the Granite Construction Company site (1161 Abbott Street) in a sand aquifer at a depth of 80 to 100 feet bgs. The Granite Construction Monitoring well site is less than 1,500 feet southwest of the Pure-Etch property. A nearby water supply well is located at the Shippers Development site at 634 South Sanborn Road less than 1,000 feet north of the Pure-Etch site. The upper perforations of the near by water supply well begin at 235 feet bgs.

Pure-Etch investigated the soil beneath the Site and found that the soil consists of fine-grained clay and silt from the ground surface to approximately 15 feet, sandy soil from 15 feet to about 38 feet, and mostly fine-grained clay and silt from 38 feet to about 70 feet. The shallow water table lies between 55 and 62 feet below ground surface. The shallow groundwater in Salinas is generally not used for consumption. Drinking water supplies in the City of Salinas are derived from wells typically drilled to depths greater than 180 feet. No drinking water or public wells are located within the shallow water table in the vicinity of the Site.

Twenty five sites within $\frac{1}{4}$ mile radius of the Site were listed in a VISTA Report as having USTs. Five of these identified sites, as well as 13 others within $\frac{1}{2}$ mile radius of the Site are listed as having leaking underground storage tanks ("LUSTs"). Investigations of LUSTs are ongoing at Granite Construction site located at 1161 Abbott Street which is approximately 1,000 feet southeast from the Site and at Mitchell Sillman site located $\frac{1}{3}$ mile southeast from the Site (see Figure 4, Aerial Photomap).

4. RCRA Facility Assessment

In the RCRA Corrective Action Program, the initial site assessment is called the RCRA Facility Assessment (RFA). During the RFA, an overseeing agency typically compiles existing information on environmental conditions at a given facility and, as necessary, gathers additional facility-specific information on solid waste management units and other areas of concern, releases, potential releases, releases pathways, and receptors. A Solid Waste Management Unit (SWMU) means "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous wastes. Such units include any area at a facility at which solid wastes have been routinely and systematically released." An Area of Concern (AOC) means "any area of a facility under the control or ownership of an owner or operator where a release to the environment of hazardous wastes or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration." Information gathered during the RFA usually forms the basis for initiating full scale site investigation (RCRA Facility Investigation). If the facility poses a threat to human health or the environment, DTSC may require corrective action either by a corrective action order, corrective action consent agreement, or through the facility's permit conditions.

In 1993, DTSC conducted an RFA for this facility and identified the 1,000-gallon underground storage tank (UST) as the only SWMU at the facility. Based upon the findings of the RFA, DTSC concluded that further investigations were necessary to better understand the contamination at the Site and required Pure-Etch to conduct a RCRA Facility Investigation. The location of the UST is shown in Figure 6, Site Map.

5. RCRA Facility Investigation

The general objective of the RCRA Facility Investigation (RFI) is to thoroughly evaluate the nature and extent of releases of hazardous waste and its constituents. The RFI must include characterization of the facility (process, waste management, etc.), environmental setting, source areas, nature and extent of contamination, migration pathways (transport mechanisms) and potential receptors. The RFI characterizes the nature and extent of any contamination in and around the facility with soil and groundwater samples. The investigation evaluates whether hazardous wastes or hazardous waste constituents have migrated or may migrate from the facility into the environment through the following pathways: soil, groundwater, and air.

In March 1997, Pure-Etch started the soil and groundwater investigations attributed to releases of petroleum hydrocarbons from the concrete filled closed-in-place underground storage tank (UST). Three soil borings were advanced in the vicinity of the closed UST (See Figure 6, Sampling Locations). Two of the borings located within 10 feet southeast and southwest of the UST (BH1 and BH-2, respectively) exhibited elevated levels of gasoline constituents. The third soil boring (BH-3) located 20 feet west of the UST showed no petroleum hydrocarbon contamination. Soil vapor samples collected from each boring at a depth of 15 feet below ground surface (bgs) also contained gasoline constituents (See Table 1, Results of analysis of soil and vapor samples taken on March 27, 1997). Drilling was terminated at approximately 40 feet below ground surface. Groundwater was not encountered during the 1997 investigations. Subsurface investigations beneath the Site determined that soil beneath the UST have been impacted by releases of petroleum hydrocarbons.

To determine the lateral and vertical extent of petroleum hydrocarbon releases to soil and groundwater, seven additional soil borings were advanced in July and August, 2000. Three borings located within 20 feet of the UST (BH-6, BH-8, BH-10) exhibited elevated levels of gasoline constituents in the vadose zone and at the capillary fringe (See Figure 7, Soil Boring Locations of BH-6, BH-8, BH-10). Three borings located east (BH-5) and south (BH-4 and BH-7) of the former UST exhibited elevated levels of gasoline constituents primarily in the capillary fringe. One boring located north (BH-9) of the UST exhibited no evidence of gasoline contamination. Groundwater samples collected from boring BH-4 through BH-9 indicated that the highest concentrations of dissolved gasoline constituents were present in areas south and east of the UST (See Table 2, Results of Soil Analysis July - August 2000).

To characterize the hydrology and water quality of the shallow groundwater beneath the site, five groundwater monitoring wells (MW1- through MW5) were installed at the Site in June 2002. The investigation confirmed that soil contamination at the Site is generally limited to a relatively small area in the vicinity of the UST and lies primarily within the upper clay/silt unit and the upper sand unit to a depth of approximately 40-45 feet bgs (See Figure 8, Stratigraphic Cross Section A-A' and Figure 9, Stratigraphic Cross Section B-B') . Based on the initial groundwater monitoring data, shallow groundwater beneath the site flows generally in a southeasterly direction. Free petroleum product measuring 1.42 feet thick was present in

well MW-1, located south of the UST. Elevated dissolved gasoline constituents were present in well MW-4, located southeast of the UST.

To determine if the previously documented free-phase gasoline product observed in MW1 had migrated downgradient, the following were installed: six additional groundwater monitoring wells (MW6 through MW11), one soil vapor extraction test well (VW1) and six soil vapor probes (within the annular space of wells MW6, MW9 and MW11). Groundwater monitoring wells were completed at depths of approximately 70 feet below ground surface (bgs) (MW7), 72 feet bgs (MW6, MW8, MW9, and MW10), and 80 feet bgs (MW11). No petroleum hydrocarbon constituents were detected in downgradient wells MW8, MW9, and MW10 (See Table 3, Third Quarter Groundwater Monitoring Data). None of the Site wells contained any of the oxygenated gasoline compounds above the laboratory reporting limits. Dissolved gasoline contamination beneath the site is generally defined, with non-detect results of TPHg/BTEX constituents in wells MW3, MW8, MW9, and MW11 and very low levels in MW5 (4.7 ug/L benzene). Additional investigation determined that the downgradient extent of groundwater contamination is limited to within the boundaries of the Site.

Certain chlorinated solvents, primarily 1,1-DCE (MW4, MW5, MW8, MW10, and MW11), 1,1-DCA (MW3, MW5, MW8, MW10, and MW11), TCE (MW5) and PCE (MW11) have been detected in select site wells. Pure-Etch reportedly did not use these chemicals on site. It should be noted that groundwater samples collected in 1999 from the Kulman Electric Corporation site, located upgradient and cross-gradient from the former Pure-Etch facility, contained a variety of chlorinated solvents including, DCE isomers, DCA, TCA isomers, and PCE.

Soil vapor samples collected from the boring located nearest the UST from the permeable sand zone at a depth of approximately 16 feet bgs contained concentrations of gasoline constituents' five orders of magnitude greater than those detected in the vapor sample collected from the silt/clay unit at 7 feet bgs. These results suggest that the upper clay/silt unit is an effective barrier to upward migration of hydrocarbon vapors to the atmosphere.

Pure-Etch drilled ten soil borings, installed eleven groundwater monitoring wells and seven vapor sampling points during the RFI. Gasoline constituents were found in soil primarily beneath the UST in the sandy zone between 15 and 45 feet below ground surface. Gasoline constituents were also found in groundwater beneath the Site and under part of Industrial Street, but were not found under adjacent properties. As an interim measure, Pure-Etch monitors and removes free-phase gasoline (gasoline on groundwater) from the two monitoring wells containing free-phase gasoline. (Please see Section 6 "Interim Remedial Measure" for details.)

The RFI findings are summarized as follows:

1. Soil and groundwater beneath the UST have been impacted by historical releases of gasoline;

2. Soil contamination at the Site is generally limited to a relatively small area in the vicinity of the UST primarily within the upper clay/silt unit and the upper sand unit to a depth of approximately 40-45 feet below ground surface (bgs).
3. Middle clay appears to impede the downward vertical migration of contaminants in soil. Soil contamination found below the 45 feet bgs may be due to fluctuations of the water table which is contaminated.
4. The vertical and lateral extent of petroleum hydrocarbon releases to soil has been defined.
5. The lateral extent of shallow groundwater contamination beneath the Site has been defined.
6. Certain chlorinated solvents, primarily 1,1-DCE (MW4, MW5, MW8, MW10, and MW11), 1,1-DCA (MW3, MW5, MW8, MW10, and MW11), TCE (MW5) and PCE (MW11) have been detected in select site wells. Pure-Etch reportedly did not use these chemicals on site. It should be noted that groundwater samples collected in 1999 from the Kulman Electric Corporation site, located upgradient and cross-gradient from the former Pure-Etch facility, contained a variety of chlorinated solvents including, DCE isomers, DCA, TCA isomers, and PCE.

Based on the RFI findings, the Facility was required to prepare a Corrective Measures Study proposing additional corrective action. The contaminants detected in on-site groundwater are provided in Table 2.

6. Interim Remedial Measures

Interim Remedial Measures (IRMs) are actions that can be taken at any time during the corrective action process to reduce or eliminate imminent threats to human health or the environment. These measures are to control, stabilize or eliminate further release(s) or potential release(s) of hazardous wastes or hazardous waste constituents at or from a facility.

Interim Remedial Measures (IRM) was conducted at the former Pure-Etch Site from October 24, 2002 through September 6, 2006. Pure-Etch completed the installation of groundwater monitoring wells in the vicinity of the closed-in-place underground storage tank (UST) as part of the RCRA Facility Investigation. On June 18, 2002, more than a foot of free-phase gasoline was observed in well casing of well MW1. Free product monitoring and removal was initiated on October 24, 2002. A total of approximately 15.65 gallons of product/water mixture has been removed from well MW1. The monitoring and removal data of free product in well MW1 is shown in Table 4.

On July 10, 2006, 0.01 feet of free product was observed for the first time in well MW6. A total of approximately 4.5 gallons of product/water mixture has been removed from well MW6. At the present time, Pure-Etch is conducting periodic monitoring and when needed, physical removal of free product from wells MW1 and MW6.

7. Summary of Facility Risks

7.1 Human Health Risk Assessment

A health risk assessment (HRA) is used to estimate the potential risks to human health from chemical contamination in soil, soil gas or groundwater. The HRA has four steps as follows:

1. Identifying harmful chemicals in soil, soil gas, and groundwater;
2. Examining the degree to which people might be exposed to identified chemicals;
3. Assessing the toxicity or harmfulness of each chemical to determine health effects. Chemicals are evaluated in two categories: those known to cause cancer and those that do not cause cancer but could have other negative health effects; and
4. Combining the results of the first three steps to estimate the risk to human health.

This four-part process estimated, numerically the chance that contact with chemicals from a facility could harm people. It identifies who could be at the most risk and the potential for human exposure from touching, eating or breathing contaminated soil, water and /or air.

A site specific risk assessment, more specifically a receptor-based exposure assessment was conducted that takes into account the current and probable future use of the Site and the site specific physical characteristics that affect exposure pathways. For the purposes of human health screening evaluation, the land use of the site was focused on being in a heavy industrial area and precludes redevelopment for future residential use. The HRA evaluated the following exposure routes and media of exposure:

- Inhalation of vapors
- Ingestion of contaminated soil and groundwater
- Dermal contact with contaminated soil and groundwater

The following chemicals were included as constituents of concern (COCs) for purposes of the HRA:

- Benzene
- Toluene
- Ethylbenzene
- Xylenes

- 1,2-Dichloroethane (1,2-DCA)
- 1,2-Dibromoethane (EDB)
- Naphthalene

The risk and hazard at the Site were evaluated on assumption that current land use at the Site remains industrial. Under the current property use, workers are not exposed to contaminated soil because no bare soil is exposed. Therefore, dermal contact and/or ingestion of contaminated soil are not considered a complete exposure pathway. The depth to groundwater of approximately 60 feet precludes site workers' direct contact with groundwater. Thus, dermal contact and/or ingestion of contaminated groundwater were eliminated from consideration in the HRA.

The RFI indicated that the area of soil contamination is located outside the footprint of the building. However, the groundwater plume appears to extend beneath a portion of the building. The HRA evaluated the inhalation of vapors from contaminated soil or groundwater. This includes evaluating both the indoor and outdoor vapor exposures from volatilization of subsurface contamination. The health risk from indoor air was also evaluated. The results shown in Table 6 indicate that an acceptable cumulative health risk exists with regard to indoor air at the Site.

The potential lifetime cancer risks and the likelihood of adverse noncancer health effects were evaluated in the HRA based on exposures of hypothetical receptors to COCs in soil and groundwater. The results of the evaluation for potential cancer risks and non-carcinogenic hazard index from subsurface contamination were summarized in the Table 5. The excess cancer risk for the industrial use of the Site was calculated to be $2.7E-6$. The calculated hazard quotient is below 1 and therefore poses no toxicity hazard.

A hazard quotient (hazard index) equal to or below one suggests that adverse health effects are unlikely to occur. A hazard quotient greater than one does not indicate that adverse health effects will or likely to occur, rather, it suggests that additional evaluation is warranted.

Under the U.S. EPA superfund Regulations (CFR 40, Part 300), cancer risks below 1×10^{-6} are considered *de minimus* and generally do not warrant further evaluation or remediation. DTSC also uses a risk of 1×10^{-6} as the point of departure for risk management decisions. In general, both DTSC and US EPA consider cancer risks above 100×10^{-6} (or 1×10^{-4}) as significant and warrant further consideration and potential remediation.

The proposed preliminary remedial goals for soil and groundwater are presented in Table 6.

8. Scope of Corrective Action

Results of soil sample investigation indicated that soil contamination remains in the vadose zone which becomes a continuing source of groundwater degradation via leaching of contaminants to the groundwater. In addition, results of analysis of groundwater samples indicated that the dissolved hydrocarbon plume is migrating beneath Industrial Street along the southwestern Site boundary.

As a result, DTSC required Pure-Etch to conduct a Corrective Measure Study (CMS) and required the Pure-Etch to propose a remedy to remediate the releases of petroleum hydrocarbons in soil and groundwater at the Site. The preliminary remediation goals at the Site will focus on reducing the residual hydrocarbons in the soil to prevent continued degradation of shallow groundwater beneath the Site and controlling hydrocarbon plume migration to prevent further off-site migration of dissolved petroleum hydrocarbon constituents.

9. Summary of Alternatives

The general objective of the Corrective Measure Study (CMS) is to develop and evaluate corrective measure alternative(s) that may be utilized at the Facility to address releases of petroleum hydrocarbons or constituents of concern from the SWMUs, areas of concern, and other sources areas at the Facility. The information collected during the RFA, RFI and CMS phases will be used to determine which technologies to use during the Corrective Measures Implementations. With adequate forethought during the RFI, certain technologies may be adequately screened or eliminated from the CMS decision process with a minimum outlay of time and expense.

The corrective measure needed at the site is to address the cleanup of the soil and groundwater in a small area below and near the closed-in-place underground storage tank at the Site. Removing the petroleum hydrocarbon contamination that is present in the vadose zone will remove the source of groundwater degradation via leaching of contaminants to the groundwater. To ensure that the Site's land use is not changed, an administrative measure such as the Land Use Covenant will be added to the remedy selected. The five potential cleanup alternatives are considered for the soil and groundwater.

The five potential alternatives are further described below.

9.1 Alternative 1 – Monitored Natural Attenuation

The "Monitored Natural Attenuation" involves no actions to achieve cleanup goals but includes periodic groundwater sampling and monitoring to confirm conditions at the Site. This alternative is easily implemented but due to the extent of contamination at the Site, it would not be acceptable to the regulatory agencies. Therefore, this alternative was not considered to be a viable approach for this Facility.

9.2 Alternative 2 - Soil Vapor Extraction

This alternative relies on the use of soil vapor extraction using the wells drilled in the vadose zone and capillary fringe zone. Vadose zone has sandy soil with considerable contamination. Wells are connected through subgrade piping and manifold where vapors will be extracted and treated with carbon. Access at the Site is feasible for vertical wells.

9.3 Alternative 3 - Groundwater Extraction/Treatment

This alternative involves the implementation of a pump and treats system. The system consists of low-flow extraction and/or intermittent extraction of groundwater using down-well pumps, treatment of extracted groundwater through air stripping or granular activated carbon, and eventual discharge to a local sanitary sewer. Groundwater monitoring and extraction wells already exist at the Site. There is no access issue at the Site and permit can be obtained from the local sanitation district.

9.4 Alternative 4 – Chemical Oxidation/Enhanced Biodegradation

This alternative involves the installation of vertical and/or angled injection points within the plume area and at the downgradient of the plume to introduce a strong oxidizing agent or substrate/nutrients to stimulate the breakdown of contaminants. Typical oxidizing agents used in this process include Fenton's reagent (with hydrogen peroxide), ozone, potassium permanganate, hydrogen peroxide, and "modified" Fenton's reagent. Each reagent has advantages and disadvantages specific to site geochemistry. Potential negative impacts include possible oxidation of chromium III in the soil and groundwater to a more toxic chromium VI. Injection of chemicals into the saturated zone may also pose a moderate short-term risk to site workers conducting the application. Testing on a bench scale is typically required before granting a permit to inject oxidizer into contaminated aquifers.

9.6 Alternative 5 – Dual-Phase Extraction

This alternative relies on the use of vapor and groundwater extraction using negative pressure extraction techniques to remove volatile contaminant mass from soil and groundwater including capillary-fringe groundwater and groundwater in low permeability soil that is not appreciably affected by standard groundwater extraction techniques. Extraction wells will be installed and a field test will be conducted to complete the installation. Extracted groundwater will be treated as necessary for discharge to local sanitation district. Extracted vapors will be treated by carbon and the treated air discharged to the atmosphere under a permit from the local air quality management district. Once on-site contaminant mass and concentrations are reduced to the point that cleanup goals will not be exceeded at the point of compliance for the Facility, the treatment system will be shut down.

10. Evaluation of Proposed Remedy and Alternatives

10.1 Evaluation of Alternatives

DTSC evaluates corrective measures alternatives based on the following four general standards for corrective measures (1-4) and five selection decision factors (5-9):

The nine criteria for evaluating corrective measure alternatives are as follows:

- 1) Overall protection of human health and the environment
- 2) Attain media cleanup standards
- 3) Control the sources of releases
- 4) Comply with standards for management of wastes
- 5) Long-term reliability and effectiveness
- 6) Reduction of toxicity, mobility or volume of wastes
- 7) Short-term effectiveness
- 8) Implementability
- 9) Cost.

The following table summarizes the comparative analysis of the five proposed alternatives.

Comparative analysis of five corrective measure alternatives				
	Four general standards for corrective measures			
	1. Overall protection of human health	2. Attain media cleanup standards	3. Control sources of releases	4. Comply with standards of management of wastes
Alternative 1 Monitored Natural Attenuation	No. Overall protection cannot be confirmed.	No. Attainment of cleanup goals cannot be confirmed	No. The alternative does not control sources of releases	The alternative will not generate wastes to be managed. No waste to be complied with.
Alternative 2 Soil Vapor Extraction	Yes. Overall protection will be achieved by removal of contaminant mass.	Yes. Removing soil vapor contamination from saturated soil may eventually reduce concentration of contaminants to below cleanup goals. Contamination may still be in the groundwater.	Yes. Sources of contamination in soil will be removed by soil vapor extraction	Yes. Soil vapor extracted will be treated with carbon and carbon will be disposed appropriately.
Alternative 3 Groundwater Extraction/ Treatment	Yes. Overall protection will be achieved by removal of contamination from groundwater	Yes. Extracting contamination from groundwater may eventually reduce concentration of contaminants to below cleanup goals	Yes. Contamination from groundwater will be removed by extraction and treatment. Contamination in saturated soil may not be removed.	Yes. Contamination from groundwater will be extracted and treated with carbon and groundwater will be disposed according to local sanitation district permit.
Alternative 4 Chemical Oxidation/ Enhanced Biodegradation	Yes. Overall protection will be achieved by treatment of contaminant mass.	Yes. Treatment of contamination in saturated soil groundwater may eventually reduce concentration of contaminants to below cleanup goals.	Yes. Contamination from soil and groundwater may be removed by chemical oxidation and enhanced biodegradation.	Yes. Process is not expected to produce waste. Treatment will be conducted per local or state agencies requirements
Alternative 5 Dual Phase Extraction (DPE)	Yes. Overall protection will be achieved by extracting contaminant mass	Yes. DPE has proven capable of reducing VOCs in soil and groundwater	Yes. DPE has proven capable of removing VOCs mass above free groundwater by extracting impacted capillary-fringe water that contains dissolved contaminants.	Yes. Vapor will be treated according to the local air quality management district's permit. Groundwater will be treated and discharged according to local sanitation district permit.

Comparative analysis of five corrective measure alternatives			
	Five selection decision factors (Relative score of 1 to 4 is assigned; 4 = relatively highly effective and meets all the requirements)		
	5. Long-term reliability and effectiveness	6. Reduction of toxicity, mobility, or volume of wastes	7. Short-term effectiveness
Alternative 1 Monitored Natural Attenuation	Relative Score = 1 Not reliable and not effective. Potential for offsite migration of contaminant.	Relative Score = 1 Will not reduce toxicity mobility. Potential for offsite migration of contaminant.	Relative Score = 1 Not effective
Alternative 2 Soil vapor extraction	Relative Score = 2 Is only effective to treat contamination in soil but not groundwater.	Relative Score = 2 Can reduce soil gas toxicity mobility but not groundwater contaminant volume.	Relative Score = 2 The procedure is not short-term and will require months to years to complete.
Alternative 3 Groundwater Extraction/ Treatment	Relative Score = 3 May be effective but will not treat the source (soil) of contamination.	Relative Score = 3 Can reduce groundwater contaminant volume and groundwater toxicity mobility	Relative Score = 2 The procedure is not short-term and will require years to complete.
Alternative 4 Chemical Oxidation/ Enhanced Biodegradation	Relative Score = 4 It is most comprehensive in cleaning up contaminants. Chemical oxidant may pose risk to site workers.	Relative Score = 3 Can reduce contaminant volume but not toxicity mobility	Relative Score = 2 The procedure is not short-term and will require years to complete. Injection of chemicals may pose risk to site workers.
Alternative 5 Dual Phase Extraction (DPE)	Relative Score = 4 DPE has proven to be effective in reducing VOC mass permanently especially the site is sandy. It is most comprehensive.	Relative Score = 3 DPE can reduce contaminant volume but not toxicity mobility. Vapor extraction can reduce contaminants in vadose zone by 90 % within 6-12 months.	Relative Score = 3 The procedure may require months to complete. The treatment unit may achieve the cleanup goal in soil and groundwater within shorter period of time.

Comparative analysis of five corrective measure alternatives			
	Five selection decision factors (Relative score of 1 to 4 is assigned; 4 = relatively highly effective and meets all the requirements)		
	8. Implementability	9. Cost	Total Score in Selection
Alternative 1 Monitored Natural Attenuation	Relative Score = 4 The procedure does nothing except groundwater monitoring	Relative Score = 4 \$305,000 (lowest cost but still relatively expensive; monitoring for over 15 years)	11
Alternative 2 Soil vapor extraction	Relative Score = 3 Groundwater well network is in place but needs periodic maintenance	Relative Score = 3 \$405,400	12
Alternative 3 Groundwater Extraction/ Treatment	Relative Score = 3 Groundwater well network is in place but needs periodic maintenance. Need permits from local agencies. Submersible pumps may require replacement after several years.	Relative Score = 3 \$509,400 for a period of 9 years	14
Alternative 4 Chemical Oxidation/ Enhanced Biodegradation	Relative Score = 2 It may be hard to implement because the water table is deep. There is also a chance that the oxidizing agents may oxidize metals to more toxic forms.	Relative Score = 4 \$450,000 for over 5 years	15
Alternative 5 Dual Phase Extraction (DPE)	Relative Score = 3 Equipment is readily available. Need permits from local agencies.	Relative Score = 3 \$515,400 (cost effective over time of 2 to 4 years)	17

10.2 Recommended Alternative

Alternative 5, the dual-phase extraction (DPE), is the preferred technology to properly remove the petroleum hydrocarbon contamination in the soil and groundwater in a small area near the closed-in-place underground storage tank (UST). The recommendation is made after careful consideration of the site data.

The significant benefit of DPE is the relatively rapid achievement of the remedial goals by aggressively removing the contaminant mass from the subsurface in a shorter period of time. The DPE will result in the reduction of mass and concentration of chemical constituents of concern in on-site groundwater. As indicated in the table of comparative analysis of five corrective measures alternatives, the dual-phase extraction remediation system will be designed to achieve the cleanup goals for the chemical of constituents in groundwater within a period of 12 to 18 months. After implementing the dual-phase extraction, a total of five years of groundwater monitoring will be conducted to gather sufficient information to justify termination of all post-closure activities, including groundwater monitoring at the site. Statistical analysis of the data from groundwater sampling will be evaluated and will be described in detail in the Corrective Measures Implementation (CMI) report.

The implementation of the proposed remedies, including DPE, along with the land use covenant (LUC) will be protective of human health and the environment. The LUC and the annual inspection will ensure that future land use will be restricted to industrial and commercial only.

11. Public Participation

The Facility has submitted several reports regarding the Site, most importantly:

- Phase III RCRA Facility Investigation (RFI) Report dated March 29, 2004;
- Health Risk Assessment Report (Revised) dated April 10, 2006;
- Draft Corrective Measures Study Report, dated April 10, 2006; and
- Land Use Covenant Implementation and Enforcement Plan.

DTSC conducted technical review of the reports listed above and found them to contain complete and technically accurate information. DTSC has prepared a Negative Declaration to comply with California Environmental Quality Act.

DTSC is now formally soliciting public comments on these documents during a 45-day comment period. If DTSC approves the CMS and the proposed remedies discussed in the CMS Report and the Land Use Covenant Implementation and Enforcement Plan (LUC I&E Plan), Pure-Etch would be authorized to implement the remedies selected and the LUC will be entered between DTSC and the current property owner, Plaza Properties. The public comment period begins on September 28, 2007 and ends on November 14, 2007.

Public input on the proposed corrective action remedies for groundwater and on the information that supports the selection of the remedy and the LUC I&E Plan is an important contribution to the selection process. After DTSC receives all public comments, DTSC will make the final remedy determination. The final remedy selected could be different from the ones that have been proposed by the Facility and the current property owner, depending on the information that is received through the public participation process.

The CMS Report, RFI Report (Phase III), Health Risk Assessment Report (Revised), and the LUC I&E Plan which were used as the source of information for this Statement of Basis and other documents are available for review at:

Buena Vista Branch Library
Reference Desk
18250 Tara Drive
Salinas, California 93908
(831) 455-9699

The complete administrative records will be available for public review at:

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
700 Heinz Avenue
Berkeley, California 94710
(510) 540-3800

In addition, the Statement of Basis is also available on the DTSC website at:

<http://www.dtsc.ca.gov/HazardousWaste/>

To be considered in the decision making for this Project, all comments on the draft CMS Report, the proposed remedies and the LUC I&E Plan should be received, at the following address by November 14, 2007.

Cherry Padilla, Project Manager
Hazardous Substances Scientist
Standardized Permitting and Corrective Action Branch
Department of Toxic Substances Control
700 Heinz Avenue, Suite 300
Berkeley, California 94710-2721

To obtain additional information or have questions regarding the former Pure-Etch Site, the following individuals should be contacted:

Jesus Cruz
Public Participation
Specialist
(916) 255-3315

Cherry Padilla
Hazardous Substances Scientist
DTSC
(510) 540-3967

Mr. Ian Hunter
655 Deep Valley Drive
Palos Verdes, CA 90270-3189
(310) 265-6670

12. Key References

Ground Zero Analysis, Inc.. *Quarterly Groundwater Monitoring and Sampling Report. July 1, 2006 through September 30, 2006*, Pure-Etch Company Facility, 1031 Industrial Street, Salinas, California. January 23, 2007

Ground Zero Analysis, Inc.. *Phase III RCRA Facility Investigation Status Report*. Former Pure-Etch Company Facility, 1031 Industrial Street, Salinas, California. March 29, 2004

Department of Toxic Substances Control, *Fact Sheet*, Former Pure-Etch Company Facility, 1031 Industrial Street, Salinas, California. February 2005

Ground Zero Analysis, Inc.. *Phase III RCRA Facility Investigation Status Report*. Former Pure-Etch Company Facility, 1031 Industrial Street, Salinas, California. March 29, 2004

CapRock Environmental & Engineering Geology, *Underground Storage Tank Site Investigation Report*, Pure-Etch Company, 1031 Industrial Way, Salinas, California. April 30, 1997

Ground Zero Analysis, Inc.. *Revised Health Risk Assessment Report*. Former Pure-Etch Company Facility, 1031 Industrial Street, Salinas, California. April 10, 2006



Figure 1. Site Location Map, Former Pure-Etch Company Facility, 1031 Industrial Street, Salinas, California

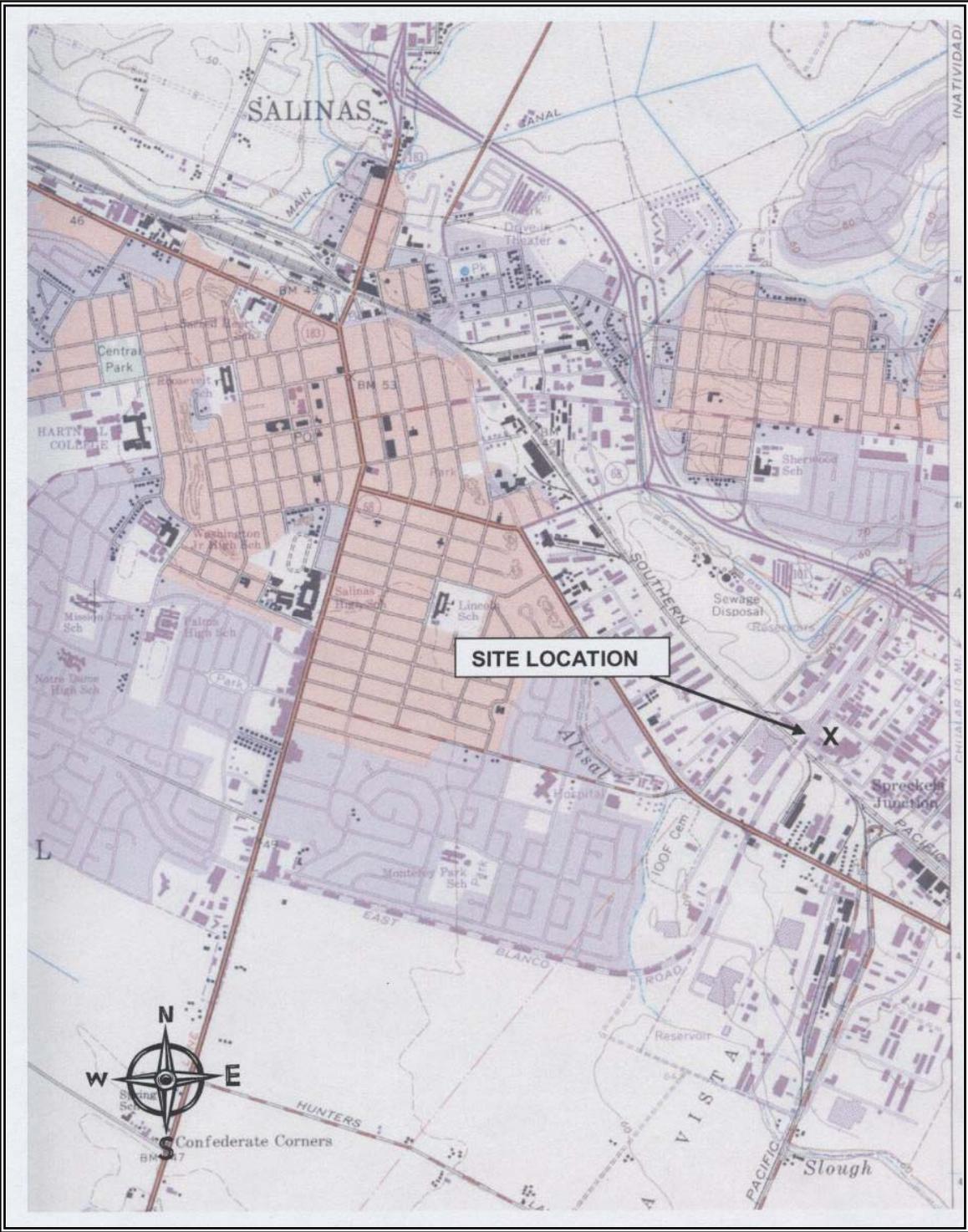


Figure 2. Topographic Map Showing Site Location

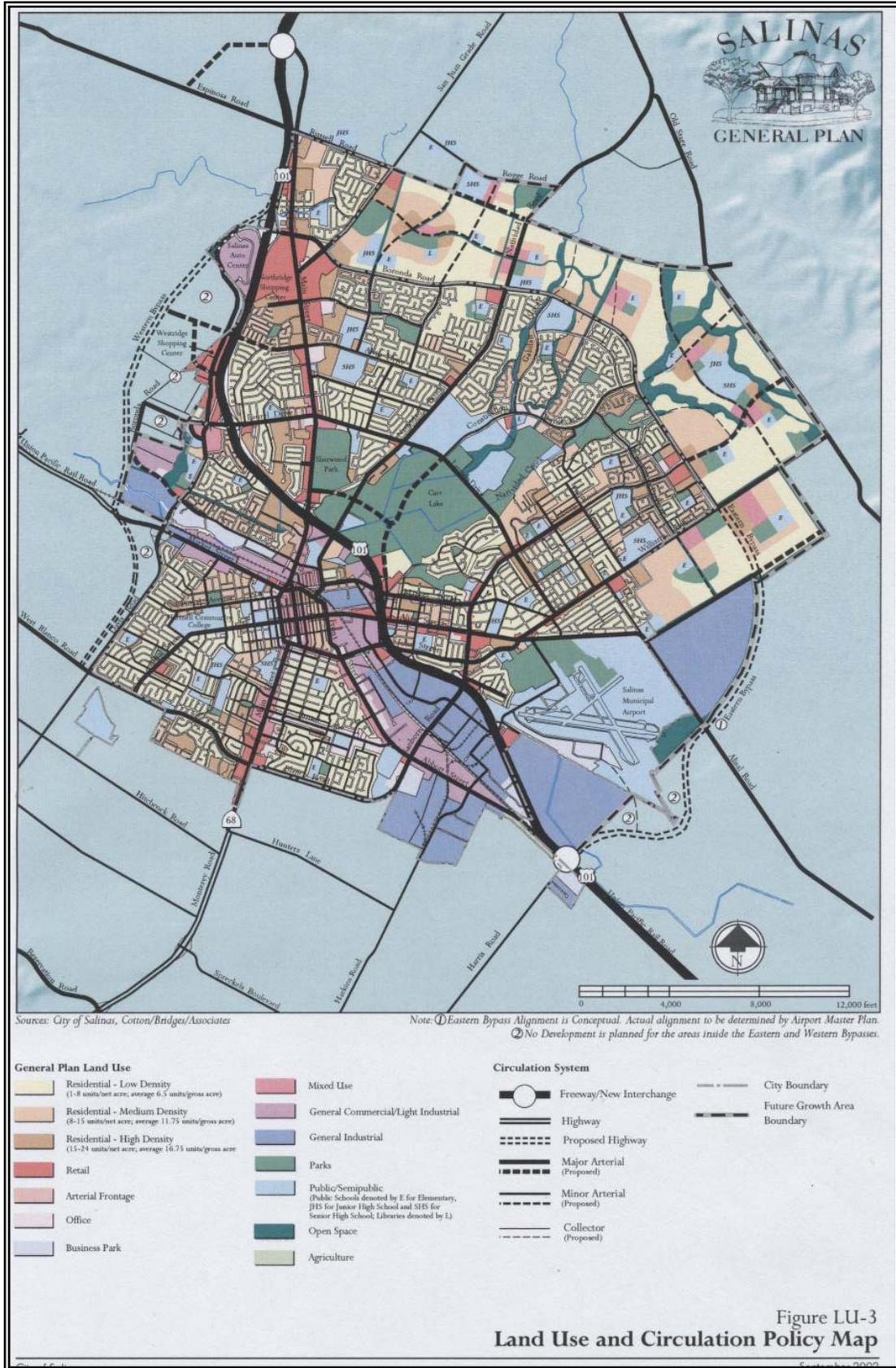


Figure 3. Land Use, City of Salinas, California



Figure 4. Aerial Photomap, City of Salinas, California

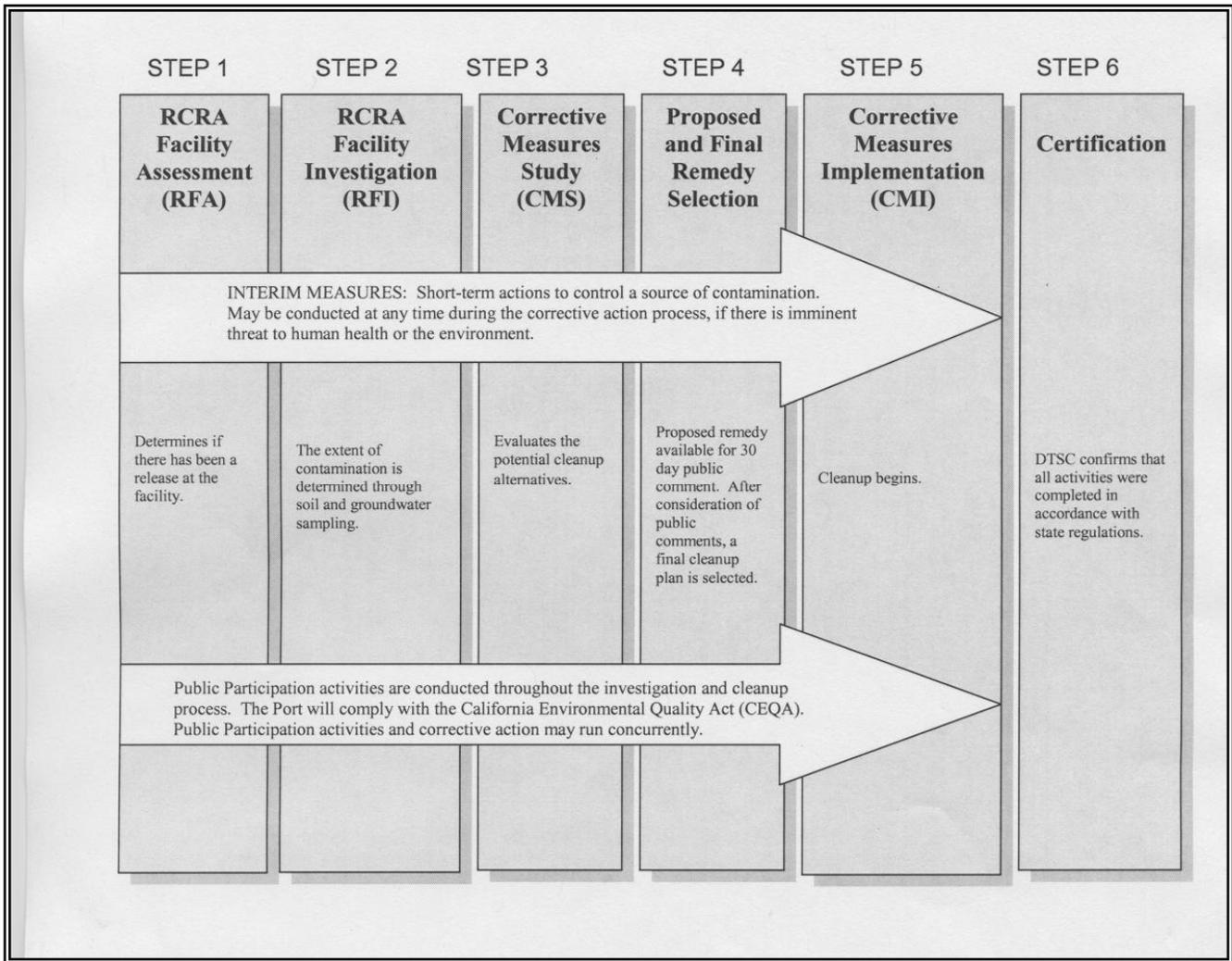


Figure 5. Corrective Action Process Flow Diagram.

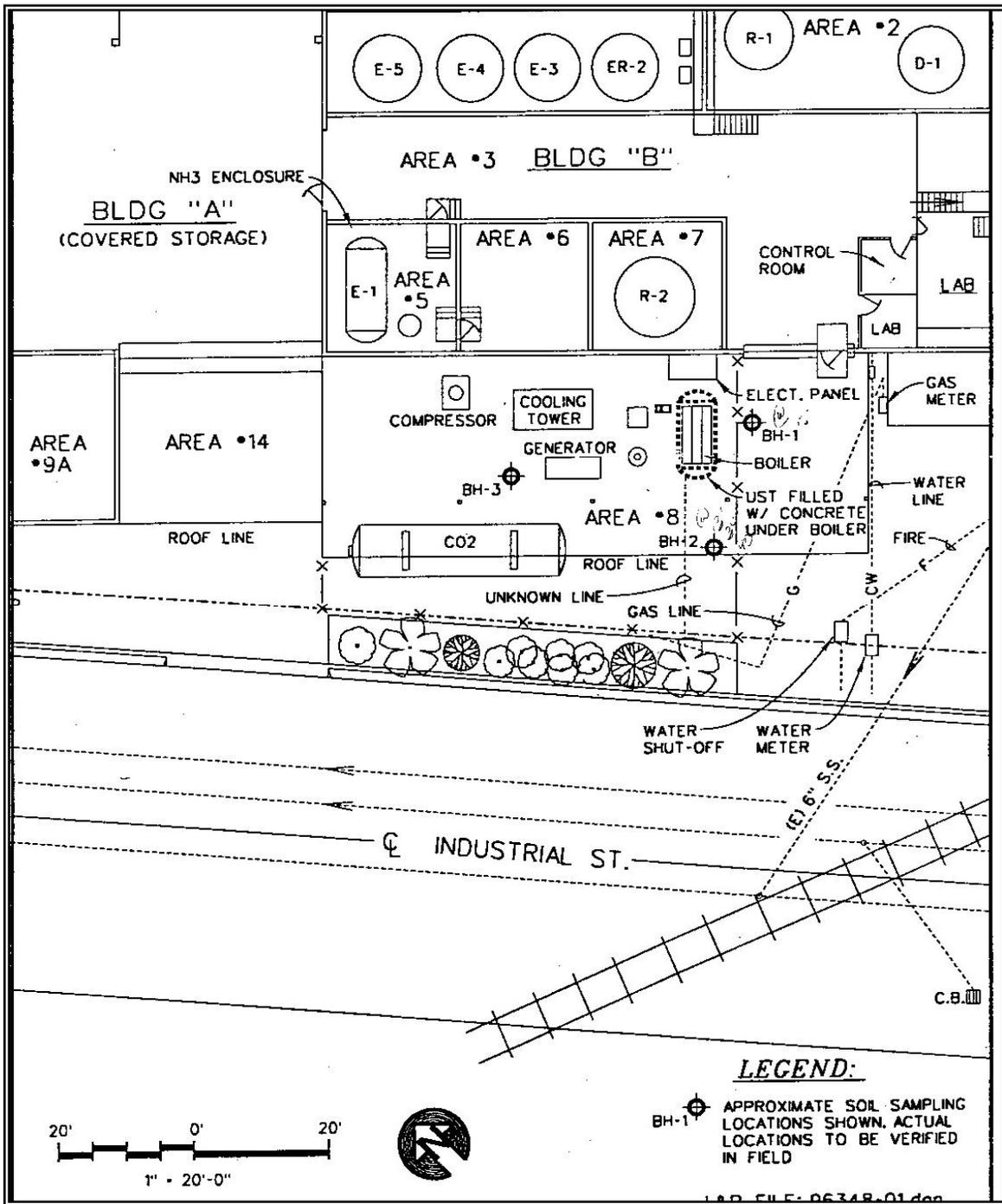


Figure 6. Sampling location for soil borings BH-1, BH-2 and BH-3

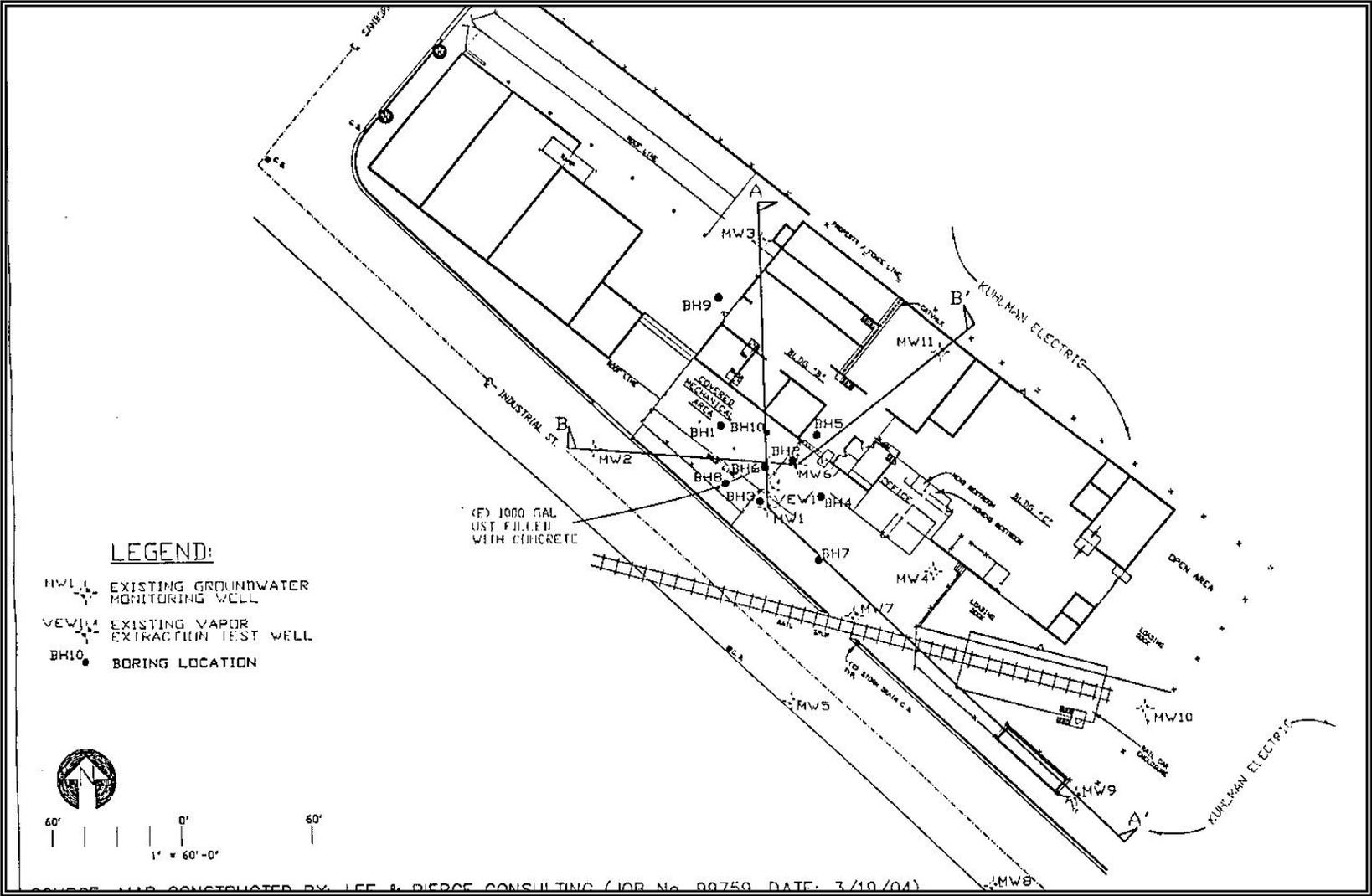


Figure 7. Soil Boring Location for Soil Borings BH-6, BH-8, BH-10

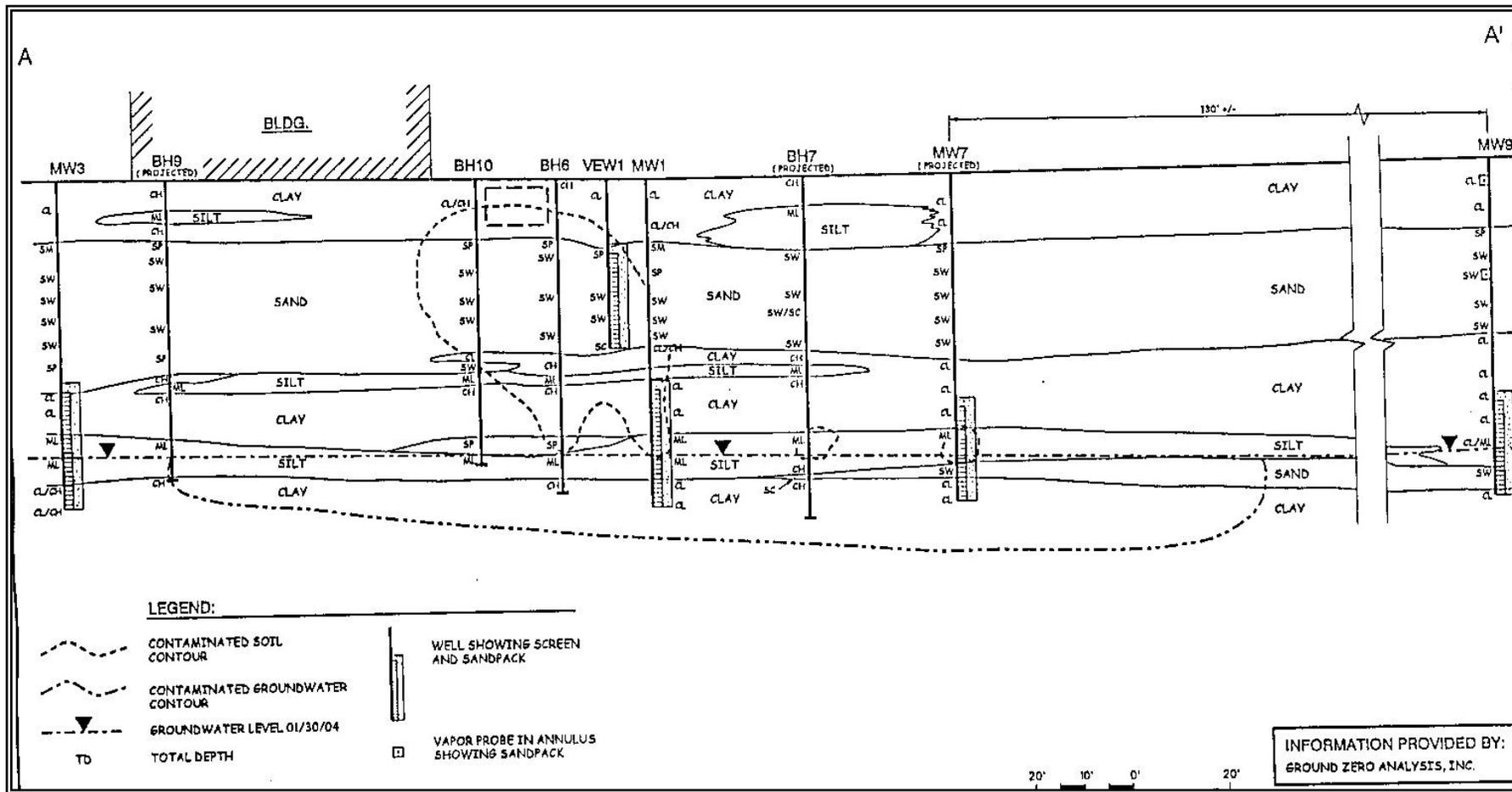


Figure 8. Stratigraphic Cross Section A-A'

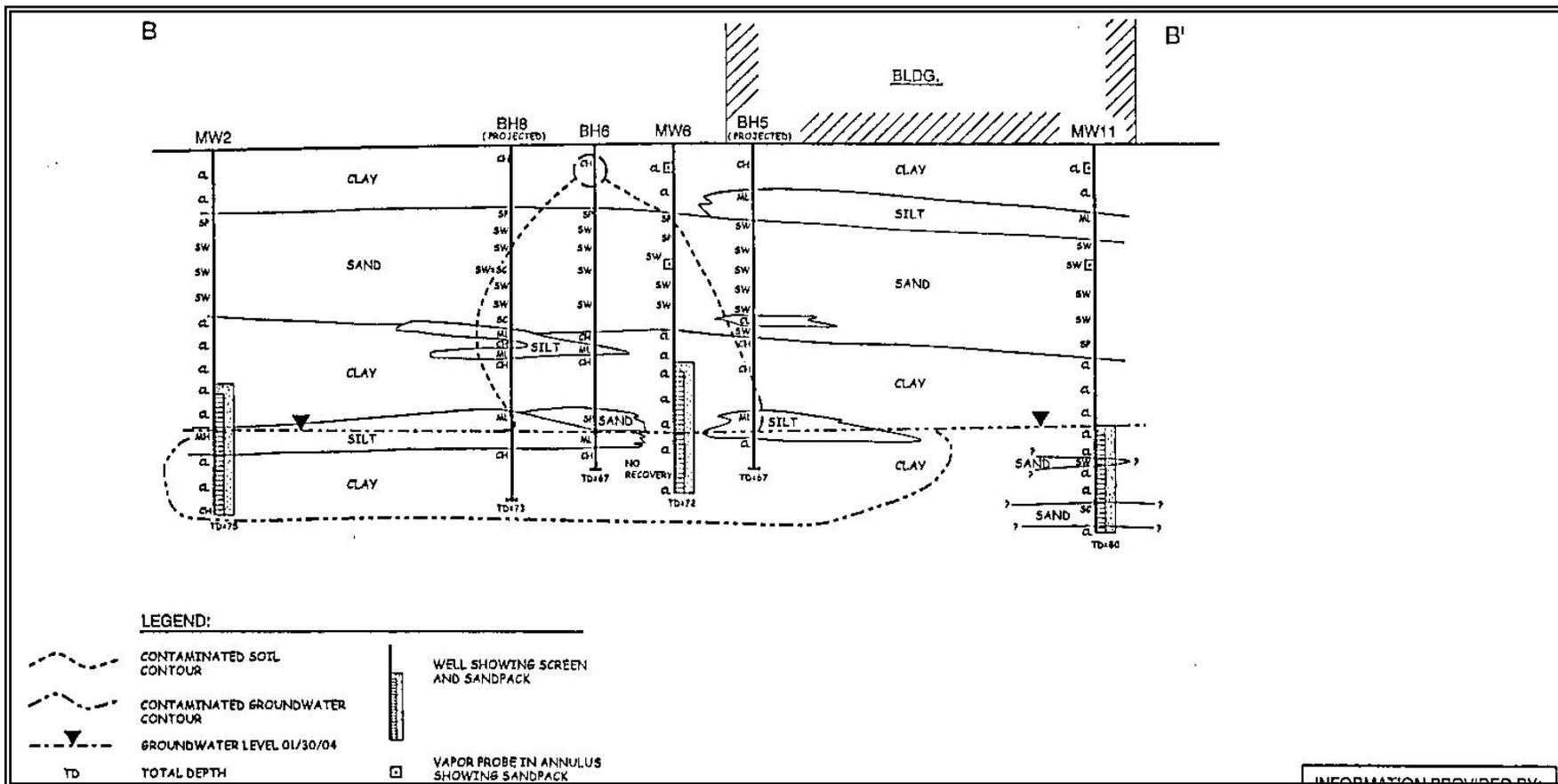


Figure 9. Stratigraphic Cross Section B-B'

Table 1. Results of analysis of soil and vapor samples taken on March 27, 1997												
Results of Soil Analysis at Different Soil Boring Number and Depth of Soil Sample in Feet Below Ground Surface											Soil	
Chemicals of Concern in ppm	B1			B2			B3				PRG Residential	PRG Industrial
	B1-13'	B1-31'	B1-40'	B2-13'	B2-34'	B2-40'	B3-16'	B3-19'	B3-37'	B3-40'		
TPHd	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND		
TPHg	8,200	1,100	34	10,000	2,200	4,200	NA	ND	6.8	ND		
Benzene	ND	ND	0.72	ND	ND	ND	NA	ND	ND	ND	6.4E-01	1.4E+00
Toluene	170	17	3.8	69	39	150	NA	ND	0.22	ND	5.2E+02	5.2E+02
Ethylbenzene	140	9	0.38	39	23	64	NA	ND	ND	0.05	4.0E+02	4.0E+02
Xylenes	810	110	4.8	640	170	340	NA	ND	1.5	0.2	2.7E+02	4.2E+02
MTBE	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	1.7E+01	3.6E+01
Lead	38.5	1.7	7.7	3.2	13.2	4.1	2.4	2.5	1.6	7.3	4.0E+02	8.0E+02
Results of Soil Vapor at Different Soil Boring Number at 15 Feet Below Ground Surface											Vapor	
Chemicals of Concern in ppm	B1			B2			B3				Ambient Air	
	18,000			15,000			290				2.5E-01	
TPHg	18,000			15,000			290				2.5E-01	
Benzene	ND			15			0.7				2.5E-01	
Toluene	860			750			9.2				4.0E+02	
Ethylbenzene	170			150			2.3				1.1E+03	
Xylenes	1,300			1,000			22				1.1E+02	

Source of Data: CapRock Environmental & Engineering Geology, *Underground Storage Tank Site Investigation Report*, Pure-Etch Company, 1031 Industrial Way, Salinas, California. April 30, 1997

TPHd Total Petroleum Hydrocarbon as Diesel
TPHg Total Petroleum Hydrocarbon as Gasoline
MTBE Methyl Tertbutyl Ether

Table 2. Fourth Quarter 2006 Groundwater Monitoring Data (concentrations in ug/L, ppb)						
Well	Date	TPHg	Benzene	Toluene	Ethylbenzene	Xylene
MW1	6/18/02	Not sampled due to free product				
	9/20/03	57,000	6,000	7,000	500	1,700
	12/30/03	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
	1/30/04	67,000	6,000	12,000	1,000	4,400
	4/22/04	41,000	4,800	8,900	530	2,100
	7/29/04	56,000	6,700	15,000	1,200	4,900
	10/27/04	77,000	6,800	21,000	2,800	12,000
	1/14/05	77,000	6,100	18,000	2,300	9,800
	4/29/05	84,000	7,500	22,000	2,900	13,000
	7/15/05	130,000	7,700	21,000	3,100	1,100
	10/13/05	97,000	9,800	23,000	3,400	15,000
	1/24/05	79,000	6,100	19,000	2,700	12,000
	4/10/06	81,000	5,300	15,000	2,900	11,000
	7/10/06	Not sampled due to free product				
	12/23/06	230,000	22,000	62,000	4,000	21,000
MW2	6/18/02	240	< 0.5	< 0.5	16a	< 1.0
	9/19/03	130	<0.5	<0.5	0.80	<1.0
	12/30/03	NA	NA	NA	NA	NA
	1/29/04	330	<0.5	< 0.5	3.6	< 1.0
	4/22/04	420	1.7	<0.5	7.6	<1.0
	7/29/04	390	2.2	< 0.5	0.8	< 1.0
	10/26/04	490	<0.5	<0.5	2.6	<1.0
	1/14/05	830	<0.5	0.9	12	1.8
	4/29/05	3,800	26	10	470	140
	7/14/05	1,300	2.4	12	31	17
	10/12/05	380	<0.5	0.6	2.1	< 1.0
	1/24/06	540	<0.5	<0.5	1.5	<1.0
	4/10/06	820	2.9	0.5	98	2.9
	7/10/06	1,400	2.2	2.7a	120	14
	12/23/06	730	< 0.5	0.7	31	3.4
MW4	6/18/02	8,200	360a	1,400a	130	400
	9/20/03	1,500	69a	110a	49a	71a
	12/30/03	NA	NA	NA	NA	NA
	1/30/04	1,200	65	110	28	57
	4/23/04	1,700	150	170	51	75
	7/29/04	1,200	89	130	43	79
	10/27/04	1,200	120	150	61	120
	1/14/05	2,100	260	290	100	200
	4/29/05	1,100	210	130	99	100
	7/15/05	2,400	200	180	90	130
	10/12/05	1,400	170	160	70	120
	1/24/06	810	86	51	39	48
	4/10/06	740	89	33	37	41
	7/10/06	10,000	1,300	1,100A	450	850
	12/23/06	5,100	330	250	220	380
MW5	6/18/02	100	19	0.5	<0.5	<1.0
	9/19/03	<50	14	0.5	<0.5	<1.0

Table 2. Third Quarter 2006 Groundwater monitoring data (concentrations in ug/L, ppb)							
Well	Date	TPHg	Benzene	Toluene	Ethylbenzene	Xylene	
MW5	12/30/03	NA	NA	NA	NA	NA	
	1/29/04	<50	2.0	<0.5	<0.5	<1.0	
	4/22/04	<50	<0.5	<0.5	<0.5	<1.0	
	7/29/04	<50	6.0	<0.5	<0.5	<1.0	
	10/26/04	<50	<0.5	<0.5	<0.5	<1.0	
	1/14/05	<50	3.3	<0.5	<0.5	<1.0	
	4/29/05	<50	0.6	<0.5	<0.5	<1.0	
	7/14/05	<50	14	<0.5	<0.5	<1.0	
	10/12/05	<50	1.7	<0.5	<0.5	<1.0	
	1/24/05	<50	3.1	<0.5	<0.5	<1.0	
	4/10/06	<50	6.3	<0.5	<0.5	<1.0	
	7/10/06	<50	4.7a	<0.5	<0.5	<1.0	
	12/23/06	<50	2.0	<0.5	<0.5	<1.0	
	MW6	12/30/03	NA	NA	NA	NA	NA
1/30/04		28,000	1,700	4,400	230	1,800	
4/23/04		29,000	2,200	5,500	320	1,300	
7/29/04		15,000	2,300	3,000	180	150	
10/27/04		11,000	1,900	2,300	310	730	
1/14/05		8,400	1,400	1,500	200	440	
4/29/05		13,000	2,500	4,100	350	1,400	
7/15/05		50,000	4,100	7,000	790	3,400	
10/13/05		31,000	3,100	4,900	820	4,600	
1/24/06		32,000	2,500	5,300	66	4,200	
4/10/06		21,000	1,100	2,100	33	2,200	
7/10/06		Not sampled due to free product					
12/23/06		69,000	4,300	6,300	970	5,500	
MW7		12/30/03	NA	NA	NA	NA	NA
	1/30/04	260	6.9	3.2	1.4	3.7	
	4/22/04	1,500	65	1.5	16	8.2	
	7/29/04	1,400	50	1.3	4.2	5.6	
	10/27/04	1,400	14	1.4	4.3	3.7	
	1/14/05	1,600	23	1.0	2.4	1.9	
	4/29/05	14,000	3,900	52	1,500	530	
	7/15/05	28,000	4,800	100	1,500	630	
	10/13/05	1,300	120	1.2	22	6.2	
	1/24/06	1,400	36	1.0	10	3.5	
	4/10/06	20,000	4,400	52	1,300	490	
	7/10/06	18,000	4,000	44	1,200	410	
	12/23/06	2,600	250	2.2	61	8.4	

Date	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Volume Removed (gallons)	Product Thickness After Bailing (feet)
MW1					
06/18/02	55.65	57.07	1.42	0.00	No Bailing
10/24/02	57.60	58.76	1.16	0.50	0.00
11/14/02	57.96	58.03	0.07	0.25	0.00
11/27/02	58.00	58.07	0.07	0.13	0.01
12/12/02	58.07	58.08	0.01	0.25	0.00
12/23/02	58.05	58.08	0.03	0.25	0.00
01/06/03	57.98	57.98	0.00	0.00	0.00
01/28/03	57.60	57.60	0.00	0.00	0.00
02/27/03	57.31	57.31	0.00	0.00	0.00
04/04/03	56.95	56.95	0.00	0.00	0.00
05/15/03	56.62	56.62	0.00	0.00	0.00
06/11/03	56.62	56.62	0.00	0.00	0.00
07/17/03	56.98	56.98	0.00	0.00	0.00
08/19/03	57.42	57.50	0.08	0.13	0.00
09/19/03	57.70	57.78	0.08	0.40	0.00
10/06/03	58.09	58.15	0.06	0.13	0.00
10/14/03	58.30	58.32	0.02	0.13	0.00
11/05/03	58.43	58.43	0.00	0.00	0.00
12/09/03	58.51	58.51	0.00	0.00	0.00
12/30/03	58.48	58.48	0.00	0.00	0.00
01/28/04	58.11	58.11	0.00	0.00	0.00
07/10/06	55.01	59.91	4.90	5.00	0.00
08/16/06	56.38	57.46	1.08	2.50	0.00
09/06/06	56.78	57.45	0.67	2.00	0.00
10/05/06	57.12	57.60	0.48	1.00	0.00
12/23/06	57.61	58.05	0.44	3.00	0.00
Total Volume Purged from MW1 (gallons)				15.65	
MW6					
07/10/06	57.58	57.59	0.01	2.00	0.00
08/16/06	58.30	58.31	0.01	2.50	0.00
09/06/06	58.66	58.66	0.00	0.00	0.00
10/05/06	58.95	58.95	0.00	0.00	0.00
12/23/06	59.32	59.35	0.03	0.00	0.00
Total Volume Purged from MW6 (gallons)				4.50	

Table 3. Free Phase Product Monitoring and Removal
(Source: Third Quarter Groundwater Monitoring and Sampling Report)

CANCER RISK - INHALATION			
COMPOUND	Ca (mg/m ³)	SFi (mg/kg-day) ¹	Risk (lifetime excess cancer)
Benzene	9.73E-05	1.0E-01	6.8E-07
1,2-dichloroethane	1.28E-04	7.3E-02	6.5E-07
Ethylene dibromide	4.58E-05	2.5E-01	8.0E-07
Naphthalene	7.14E-05	1.2E-01	6.0E-07
TOTAL PATHWAY RISK			2.7E-06

TOXICITY HAZARD - INHALATION			
COMPOUND	Ca (mg/m ³)	RfDi (mg/kg-day) ¹	Hazard Quotient
Benzene	9.73E-05	1.7E-02	1.1E-03
Toluene	3.27E-03	8.6E-02	7.5E-03
Ethylbenzene	3.86E-03	5.7E-01	1.3E-03
Xylenes	1.82E-02	2.0E-01	1.8E-02
1,2-dichloroethane	2.55E-04	1.3E-04	1.8E-02
Ethylene dibromide	9.15E-05	4.6E-05	3.4E-03
Naphthalene	7.14E-05	2.6E-03	5.4E-03
TOTAL PATHWAY HAZARD INDEX			5.4E-02

NOTES:

Pathways for soil and water exposures through ingestion or dermal contact were determined to be incomplete exposure pathways.

Table 4. Cancer Risk and Toxicity Hazard Calculations

INDOOR AIR RISK USING VAPOR INTRUSION GUIDANCE DOCUMENT						
COMPOUND	CONCENTRATION (mg/M ³)	FACTOR	RESULTS	STANDARD	RATIO OF RESULTS TO STANDARD	EXCEED?
BENZENE	4.5	0.001	0.0045	0.12	0.0375	No
DCA	1	0.001	0.001	0.17	0.0058824	No
EDB	1	0.001	0.001	NONE	NA	NA
NAPHTHALENE	1	0.001	0.001	0.11	0.0090909	No
TOLUENE	1100	0.001	1.1	380	0.0028947	No
ETHYLBENZENE	170	0.001	0.17	NONE	NA	NA
XYLENES	2410	0.001	2.41	880	0.0027386	No
CUMULATIVE RISK					0.0581066	No

NOTES:

Indoor air screening evaluation conducted pursuant to *Interim Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, Cal/EPA DTSC, December 15, 2004 (Revised February 7, 2005)

Table 5. Summary of Indoor Air Screening Evaluation

PROPOSED PRELIMINARY REMEDIAL GOALS FOR SOIL						
COMPOUND	Proposed PRG ¹ (mg/kg)	Risk - Industrial (inhalation)	Hazard - Industrial (inhalation)	Risk - Industrial (dermal/ingestion)	Hazard - Industrial (dermal/ingestion)	DTSC Concurrence?
Benzene	1.4	5.E-08	6.5E-04			Yes
Toluene	520		3.6E-03			Yes
Ethylbenzene	400		5.6E-03	Not considered a completed exposure pathway for industrial Site use.		Yes
Xylenes	420		2.9E-03			Yes
1,2-dichloroethane	0.6	1.E-08	2.8E-05			Yes
Ethylene dibromide	0.073	1.E-07	1.1E-05			Yes
Naphthalene	4.2	2.E-07	1.7E-04			Yes
CUMULATIVE RISK/HAZARD		4.E-07	1.3E-02			

PROPOSED PRELIMINARY REMEDIAL GOALS FOR GROUNDWATER						
COMPOUND	Initial Proposed PRG ² (ug/L)	Risk - Industrial (dermal/ingestion)	Hazard - Industrial (dermal/ingestion)	DTSC Concurrence?	Revised PRG Required by DTSC ³ (ug/L)	
Benzene	340			No	1	
Toluene	1,050			No	150	
Ethylbenzene	700			No	300	
Xylenes	1,750	Not considered a completed exposure pathway for industrial Site use.		Yes	1,750	
1,2-dichloroethane	21			No	0.5	
Ethylene dibromide	8			No	0.05	
Naphthalene	21			Yes	21	

NOTES:

Site specific risk assessment determined that only VOC inhalation air pathway is complete for industrial Site use.

¹ = Proposed soil PRGs are adopted from USEPA Region IX PRGs established for industrial Site use.

² = Initial proposed groundwater PRGs for BTEX constituents were selected based upon 95% reduction in current groundwater contamination or 100X the current drinking water MCL, whichever was less. Initial proposed groundwater PRGs for EDB and 1,2-DCA reflected maximum background concentrations, based upon detected concentrations in upgradient and downgradient wells not impacted by gasoline constituents. Since no MCLs have been established for Naphthalene in groundwater, the Taste and Odor Threshold was selected as the initial proposed PRG.

³ = DTSC requires that groundwater PRGs be reduced to the levels of their corresponding MCLs.

Figure 6. Proposed Preliminary Remedial Goals for Soil and Groundwater