

Phase 1 Update
Caral Manufacturing Facility

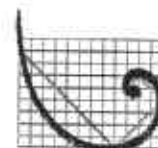
May 2004

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Environmental Resources Management
1777 Botelho Drive, Suite 260
Walnut Creek, CA 94596
(925) 946-0455

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Phase 1 Update: Caral Manufacturing Facility

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Albany, California



Michael E. Quillin, P.E.

Principal-in-Charge



Patrick Ritter, P.E.

Project Manager

Environmental Resources Management

1777 Botelho Drive, Suite 260
Walnut Creek, California 94596
T: 925-946-0455
F: 925-946-9968

SUMMARY OF UPDATED PHASE I ENVIRONMENTAL ASSESSMENT: Caral Manufacturing, 578 Cleveland Avenue, Albany, California, USA 94710

EXECUTIVE SUMMARY

This Phase I Environmental Assessment is an update of a previous Phase I Assessment performed by ERM in September 2001. In addition to updating the previous Phase I, this assessment also includes the results of soil, sediment, and groundwater sampling completed by ERM at the facility in September and October 2001, and early 2002. This updated assessment included cost estimates for corrective actions identified that are considered order of magnitude only. Attachment A presents figures from the previous assessment (Figures 1 and 4), and Attachment B presents soil and groundwater sampling results. Attachments C and D present the historical database search and historical Sanborn maps, respectively.

The principal changes in this audit, compared with the previous (2001) audit, are the following.

- *Emissions to Air:* No change.
- *Wastewater:* The facility currently does not generate any effluent from the steam-cleaning and oil/water separator operations, as it did in 2001. Petroleum residues were observed coming from the steam-cleaning tray during a heavy rainstorm. Because the facility is idle, effluent sampling and upgrades to the oil-water separator are no longer recommended (as in previous audit), but rather cleaning and removal of any remaining residuals at closure and sampling underneath the system.
- *Stormwater:* Since 2001, exceedances in pH criteria in facility stormwater discharge have been noted by the Regional Water Quality Control Board.
- *Waste Oils:* Similar waste oils were observed in 2004, with a greater volume of waste oils observed stored in drums or other containers on the shop floor.
- *Nuisance complaints:* No change.
- *Solid Wastes:* Additional solids wastes were observed at the facility, including lead wastes.
- *Hazardous Wastes:* The storage of hazardous wastes has improved since 2001, with the addition of a secure, secondary containment bunker that replaced the former semi-enclosed storage facility. Similar hazardous wastes were observed at the facility, with a greater volume of wastes observed in drums and containers on the shop floor.
- *Hazardous Chemicals and Materials:* More hazardous chemicals and materials were observed on the shop floor, and on pallets, drums, and other containers.
- *Asbestos:* The asbestos-containing transite siding, formerly present along the exterior western side of the building, has been removed. No change in other potential asbestos-containing materials at the site.
- *PCBs:* Soils and sediments containing PCBs, present outside of the building at the compressor tanks, has been removed. No change regarding PCBs present within the facility air compressor system.
- *Potential Contaminant Sources Arising From Onsite Activities:* No change.

The subject facility is located in the City of Albany, California, and is leased by Caral Manufacturing, Inc., a wholly owned subsidiary of GE-Imatron, Inc. (Imatron) of South San Francisco, California. The facility is in an industrial area between two major freeways near the eastern portion of San Francisco Bay. No manufacturing operations are currently being conducted at the facility. The facility formerly provided machining and fabrication services to a number of clients, including Imatron. The facility's standard industrial code (3499) designated fabricated metal products. The equipment onsite includes milling machines, lathes, drill presses, bridge cranes, welding equipment, saws, grinders, and other tools. All equipment is presently idle.

The key issues identified during the assessment are as follows:

- **Emissions to Air** - The facility did not require any air permits under its former operations. There are no significant emissions currently from the facility.
- **Wastewater** - Wastewater currently generated at the property includes sanitary wastewater and stormwater runoff. A former oil/water separator and steam-cleaning tray is still present at the facility, outside of the west corner of the building. The oil-water separator contains solid residues and oily water in the collection basin. The steam-cleaning tray contains minor oily residues, and residues may be present underneath the oil/water separator and tray. ERM recommends removal of residual oily water and solids, decontamination of the oil/water separator system and piping and tray, and sampling underneath the system following closure. Cost estimate: \$5,000
- **Stormwater** - ERM recommends that stormwater continue to be monitored for pH and other regulated parameters, until closure is complete. Cost estimate: \$500
- **Waste Oils** - Waste oils (including hydraulic, cutting, and gear oils), are present at the facility, either within machines, or stored at the facility in drums or other containers. ERM recommends that all remaining waste oils be collected, sampled and characterized as needed, labeled, and transported offsite by a licensed hauler, to disposal facilities approved for the waste, or oil recycler, as applicable. Cost estimate: \$5,000
- **Nuisance and Complaints (including Housekeeping)** - Minor housekeeping issues were noted within the building.
- **Solid and Universal Wastes** - Lead wastes, spill absorbents, and shop rags are present at the facility. There are batteries present, and there may be other universal wastes such as older fluorescent bulbs. ERM recommends that all remaining solid wastes, be sampled or otherwise characterized, collected, labeled, and transported from the facility to approved disposal or recycling facilities, as applicable. Cost Estimate: \$4,000
- **Hazardous Wastes** - There are a number of wastes present at the facility, including wastes in storage in various containers and drums, and wastes present in a large sump. ERM recommends that all remaining wastes, be sampled, or otherwise characterized, in order to determine whether they are hazardous or non-hazardous. All hazardous wastes should then be collected, labeled, and transported from the facility to approved disposal or recycling facilities, as applicable. Cost Estimate: \$15,000
- **Hazardous Chemicals and Materials** - A number of hazardous chemicals and materials are in storage at the facility, either in flammable or corrosive storage cabinets and in the new storage bunker. ERM recommends that all remaining hazardous chemicals and materials be collected and characterized, labeled, and transported offsite by a licensed hauler, to disposal facilities approved for the applicable waste, or approved oil recycler, if applicable. Cost Estimate: \$10,000
- **Asbestos** - Asbestos-containing materials (transite) are present in the exterior siding, based on previous sampling. A previous Phase I inspection (ACC 1993) identified other potentially suspected asbestos-containing materials within the building. ERM recommends a complete asbestos survey of the facility by an AHERA-approved asbestos inspector. Cost Estimate: \$5,000

- PCBs - PCBs have been detected in soil samples taken in borings north of the building at low levels. PCBs were not measured in groundwater. Soil and sediment containing PCB was removed from the west side of the building near the air compressor receiving tanks, and PCBs were detected within an air compressor knockout tank within the building. ERM recommends further characterization to determine the extent of PCBs within the air compressor system tanks and piping.

Cost Estimate: \$5,000

Potential Contaminant Sources Arising from Existing On Site Activities - Indirect sources of releases to subsurface soils or groundwater are the existing soils that contain elevated levels of petroleum hydrocarbons and solvents. Three exterior aboveground tanks are located along the western side of the building. Soil sampling from shallow soil borings indicated the presence of constituents of concern, including TCE and petroleum wastes, immediately north of the building in the service yard. Elevated levels of lead and arsenic were measured in borings advanced on the western property boundary near the adjacent railroad tracks.

Shallow groundwater, collected near the northwest property boundary, indicated a level of pentachlorophenol that exceeded the California drinking water standard; total petroleum as diesel (TPH-diesel) and several metals were also detected in this groundwater sample. Further characterization would be required to determine the source(s) of these constituents, whether onsite or offsite.

Cost Estimate: \$50,000

The levels measured in soils exceed some of the Regional Water Quality Control Board's Environmental Screening Levels (ESLs). However, the affected soils are effectively capped underneath pavement and do not present a threat to worker or public health and safety. However, should site excavation be required (e.g. for utility work, repaving or other facility upgrades), the subsurface soils would need to be characterized and disposed accordingly.

Cost Estimate: \$25,000-\$100,000, depending on extent of excavation

Waste oil is present in a large onsite sump, underneath one machine. ERM recommends that the waste oils be removed from the sump, sampled and characterized, and properly disposed offsite. The sump should then be cleaned and inspected for cracks, or other potential signs of leakage. If necessary, cores should be advanced beneath the floor of the sump and the first soil encountered sampled for TPH and CAM 17 metals.

Cost Estimate: \$15,000

SITE DESCRIPTION AND OPERATIONS

<u># of Employees</u>	<u>Site Area</u>	<u>Hours of Operation</u>	<u>Ownership</u>	<u>Auditors</u>	<u>Date of Audits</u>
3	Total estimated property area: approximately 60,000 square feet. Total building area: approximately 30,000 square feet.	Currently Idle	Buildings are leased by Caral Manufacturing from the property owner, Mr. August Blasquez.	Patrick Ritter	25 February 2004

SITE LOCATION & SURROUNDING LAND USES

The site is flat, as is the surrounding industrial area (Refer to Figure 1). Adjacent land uses are:

- *North* - Formerly the Grace Bakery, the property is now operated by the City of Albany as a maintenance yard.
- *East* - Cleveland Avenue and, immediately east of that, Highway 80.
- *South* - Parking lot, and immediately south of that a printing company (Joyce Printing).
- *West* - Union Pacific Railroad tracks, and immediately west of that Highway 580. The nearest residential area is a development of high rise (4-10 stories) apartments (or condominiums) along Pierce Street, approximately 0.5 miles to the east, across Highway 80.

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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OPERATIONAL ISSUES

Emissions to Air

There are no significant emissions of volatile compounds. There are very minor fugitive emissions associated with oily wastes present in a machine sump, and waste oil being stored onsite in drums and other containers.

During operations, the facility did not require air permits. Management reported that chlorofluorohydrocarbons (CFCs) were not used at the facility. A former air cyclone is still present at the facility, mounted above the storage shed outside the northeast corner of the building. Approximately 100-200 feet of 8- and 4-inch duct, feeding the cyclone from inside workstations, is also present along the east wall. Previously, a drum containing solid wastes reported by facility management to be cyclone dust, was sampled for metals and was found to be non-hazardous.

Water Supply

Water is supplied by East Bay Municipal Utilities District and is used for sanitary purposes. No industrial discharge is presently occurring.

Facility management reported that the site does not use groundwater or surface water, and no wells were observed on-site.

Wastewater

Wastewater currently generated at the property includes sanitary wastewater and stormwater runoff. Sanitary wastewater is discharged directly to the municipal sewer system. An oil/water separator, formerly used to remove oily waste during steam cleaning operations, is still present outside the building at the northwest corner (Figure 4). In addition, an uncovered, sloped, secondary containment tray (approximately 15 ft x 10 ft, with a 6-inch curb on the downslope end), formerly used to steam clean oily machine parts, is still present adjacent to the oil/water separator. The 25 February 2004 site reconnaissance was performed immediately after a very strong rainstorm. The drain valve to the tray was in a set "open" position, resulting in rainwater flowing out of the parts cleaning tray and onto the ground. A minor sheen of oil was present in this runoff, which flowed from the tray to the west, under the facility fence, and then offsite. There are unpaved areas within 10 feet of the oil/water separator and parts cleaning tray, including near the existing power pole, and along property fence line to the west.

The parts cleaning tray still contains oily residues that are mobilized during rain storms, as evidenced by the sheen on the runoff. The potential exists that oily residues are present underneath the tray, or in sediments adjacent to the oil/water separator or tray.

Cost Estimate: \$5,000

ERM recommends that the facility closure include cleanout of the residues present in the oil/water separator, and disposal at a licensed offsite disposal or oil recycling facility. ERM also recommends that the tray and piping, and the oil/water separator, be cleaned and disposed offsite at a metal scrap facility.

ERM recommends that oily sediments (if

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
<p>Stormwater runoff from the building roofs, parking areas, and grounds is discharged directly to stormwater drain inlets around the building. According to facility management, a stormwater drainage line runs from the inlet on the eastern side of the building, west under the building, to a discharge point near the railroad track. Facility staff reported that during excavation in 2000 to install a new concrete pad inside the building, this west-to-east drainage line was damaged during construction. The line was repaired by pushing a new line through the damaged piece, to prevent stormwater from being released under the building.</p> <p>The facility has prepared a Stormwater Pollution Prevention Plan and conducts regular sampling, with stormwater analytical results submitted to the Regional Water Quality Control Board (RWQCB). The plan was revised in 2003 (<i>Stormwater Pollution Prevention Plan, Caral Manufacturing, 578 Cleveland Avenue, July 1, 2003.</i>) ERM reviewed the revised plan, and it appeared complete. No spills were noted in the revised plan, and the plan concluded that the likelihood of pollutants being present in stormwater discharge to be "low" for stored materials (drummed inside building or within the storage bunker).</p> <p>Stormwater sampling results since September 2001 were also reviewed by ERM. The results indicated exceedances of pH criteria in 2001 and 2002. In its letter to the facility of February 21 2003, the RWQCB stated that the pH levels measured in the facility stormwater exceeded the EPA benchmark level (6.0-9.0). The facility's response (letter of June 25, 2003) presented the pH data from December 1999 through December 2003, indicating that at one of the discharge locations (SW-1) the measured pH range (5.7-10.4) exceeded the EPA benchmark at both the high and low end of the EPA range, while at the other sampling location (SW-2), the measured range (6.2-9.6) exceeded the criteria at the high end only.</p> <p>The SW-1 discharges originated from a roof drain, and the facility suggested, in its response, that the exceedances were due to particulates from area-wide industrial activities and vehicle exhaust collecting on the roof. More recent (2004) stormwater sampling results were not yet available.</p>	<p>encountered) beneath the tray be collected and disposed offsite and that any unpaved area(s) encountered beneath the oil/water separator or the tray, be sampling for oil and grease, total petroleum hydrocarbons (TPH), and metals, at a minimum.</p> <p>ERM recommends that stormwater continue to be monitored for pH and other regulated parameters, until closure is complete.</p>	<p>Cost estimate: \$500</p>

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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ERM reviewed the stormwater sampling results for other regulated parameters for 2002 and 2003. The levels of aluminum, zinc, and nitrate were low, all less than 1.5 parts per million (ppm), and the measured level of oil & grease was non-detect for both years.

Waste Management

Waste Oils

According to facility management, three types of oils were previously used: hydraulic oil, used within machines; lubricating oil (gear oil) used in various equipment; and cutting oil, applied to metal surfaces. The facility generated about 200-300 gallons of waste oil per year.

The machines also used a coolant (AquaKool). Most of the coolant has been drained and removed from the tools.

During the facility reconnaissance, the following waste oils were observed at the facility:

- Liquid or semi-solid waste oils on floor or wall surfaces;
- Hydraulic oils still present within machines;
- Cutting oils in machine collection trays; and
- Machine lube oils stored in containers near the machines.

ERM recommends that all remaining waste oils be collected, sampled and characterized as needed, labeled, and transported offsite by a licensed hauler, to disposal facilities approved for the applicable waste, or approved oil recycler, as applicable.

Cost Estimate: \$5,000

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
<p><i>Hazardous Wastes</i></p> <p>Hazardous wastes are stored within a newly constructed waste storage bunker (recommended in the previous 2001 Phase I Assessment) located outside the northeast corner of the building. The storage bunker is set on a secure concrete pad, with secondary containment curb on the downslope side, and traffic protection posts on the northern end. The bunker includes interior secondary containment, with acids and bases stored in separate areas. Within the bunker, the following hazardous wastes were observed in storage, with labels:</p> <ul style="list-style-type: none"> • Hazardous Waste - Spent Absorbent (one, 55-ga drum); • Hazardous Waste - Hazardous Waste Liquid (one, 55-ga drum); and • Hazardous Waste - AquaKool (one, 55-ga drum). <p>A large sump, approximately 12 ft x 14 ft x 4 ft deep, is located underneath a machine in the center of the building. This sump is approximately half full of used cutting oil. Facility staff reported that the sump was not known to have leaked.</p> <p>The following liquid wastes were stored within the building:</p> <ul style="list-style-type: none"> • Coolant within machines or being stored immediately adjacent in 5-gallon buckets; • Degreaser - ONNI-ALLII (three, 5-gallon containers on a pallet); • Tramp Oil (five, 5-ga buckets); and • Waste Coolant (ten, 55-gallon drums on wooden pallet). 	<p>ERM recommends that all remaining hazardous wastes, or potentially hazardous wastes, be sampled, characterized, collected, labeled, and transported from the facility to approved disposal or recycling facilities, as applicable.</p>	<p>Cost Estimate: \$15,000</p>

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
<p><i>Solid Wastes</i></p> <p>The following solid wastes were present inside the building:</p> <ul style="list-style-type: none"> • Lead wastes (one, 55-gallon drum); • Shop towels; and • Spill absorbents. 	<p>ERM recommends that all remaining solid wastes be sampled, characterized, collected, labeled, and transported from the facility to approved disposal or recycling facilities, as applicable.</p>	<p>Cost Estimate: \$2,000</p>
<p><i>Universal Wastes</i></p> <p>Batteries are stored at the facility. It is possible that older fluorescent bulbs are still present at the facility, which could contain hazardous chemicals such as PCBs or mercury.</p> <p>Oily rags are picked up by a collection service and disposed offsite. Scrap and unused metal is collected in bins along the northern property boundary and is transported offsite for recycling. Within the building, solid, spill sorbents were also observed at the base of machines.</p>	<p>ERM recommends that all remaining universal wastes be characterized, collected, labeled, and transported from the facility to approved disposal facilities.</p>	<p>Cost Estimate: \$2,000</p>

Inspections and Plans

The facility has a Hazardous Materials Business plan, last revised on December 10, 2003. The last inspection performed by the Alameda County Environmental Health/Hazardous Materials Division was in 1997, according to facility records. The most recent Albany Fire Department inspection was on November 18, 2002; no corrective actions, code violations, or citations were noted by the Fire Department during this inspection. The facility has performed regular "Shop Housekeeping Inspections" since 2001. Facility inspection records reviewed by ERM identify minor issues such as labeling, messy tool areas, table tops needing cleaning, tools not put away, etc., and the inspection records include no mention of spills or releases. The facility has also maintained inspections records for "Hazardous Material/Waste Aboveground Storage Area Inspection Form," with no spills, releases, or leaks noted in the records available for review by ERM.

The facility did not store enough oils to trigger SPCC plan requirements. Based on the quantities of hazardous materials observed at the site (all less than 10,000 pounds), the facility was not required to file a Community Right-to-Know Tier II report.

The facility had a hazardous materials management plan, as required for hazardous liquids, hazardous solids and hazardous gases, stored in quantities greater than 55 gallons, 500 pounds, and 200 cubic feet, respectively.

Offsite Hazardous Waste Shipments

Manifests for the last two years were reviewed. The manifests indicated that the following types of hazardous wastes were transported from the facility since September 2001:

- Non-RCRA Hazardous Waste Liquids (Coolant Sludge);
- Non-RCRA Hazardous Waste Liquids (Oil w Trace Coolant);
- Non-RCRA Hazardous Waste Liquids (Ethylene glycol);
- Non-RCRA Hazardous Waste Liquids (Used Oil);
- Non-RCRA Hazardous Waste Liquids (Spent AquaKool);
- Non-RCRA Hazardous Waste Liquids (Oil/Water Separator sludge);
- Non-RCRA Hazardous Waste Solid (Used Oil Filters);

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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- Non-RCRA Hazardous Waste Solid (Soil w < 50 ppm PCBs);
- Waste Paint-Related Materials;
- Waste Combustible Liquid (Oil w halogens); and
- Waste Aerosols, Flammable.

Environmental Noise & Vibration

The facility was idle and no noise or vibration issues were noted.

Nuisance and Complaints (including Housekeeping)

Facility management reported that there were no outstanding complaints or notices of violation. Within the building, the following minor housekeeping issues were noted. Spill sorbent was noted in several areas. Oils and coolants are being drained or stored throughout the building. Oily surfaces were present on machines or nearby floor surfaces.

OILS, CHEMICALS & HAZARDOUS MATERIALS

Storage & Handling of Oils & Chemicals

Management reported no herbicides or pesticides used or stored at the facility historically, and none were observed. Management reported that rodent control services are outsourced to a local vendor.

Management reported no underground storage tanks, or sumps, at the site presently, or to their knowledge in the past. None were observed by ERM during the site visit.

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
<p><i>Hazardous Materials and Chemicals</i></p> <p>The following chemicals were stored within flammable or corrosives cabinets within the building:</p> <ul style="list-style-type: none"> • Small spray paint cans; • Rust Stopper spray cans; • Machine oils; • Motor oil (1 qt); • Velocite Oil No. 6 (two, 5-gallons containers); • Batteries; • Cleaners; and • ZipaLume (Aluminum cleaner). <p>The following hazardous materials (raw materials) wastes were stored within the bunker:</p> <ul style="list-style-type: none"> • Hydraulic oil (one, 55-gallon drum); • Gear Oil (one, 55-ga drum); • Diesel Oil (one, 55-ga drum); • Cutting Oil (one, 55-ga drum); • Hydraulic Fluid (one, 55-ga drum); and • Acetone (one, 55-ga drum). <p>Three exterior aboveground tanks are present along the western exterior side of the building. Two of these tanks are presently in use as compressed air tanks; their approximate dimensions are 6 and 8 ft tall and 3 ft in diameter each. The third tank is reported by management to be out of service with its previous function unknown; this tank is approximately 6 ft tall and 4 ft in diameter, and would hold about 500 gallons. The tanks are sited on a paved area.</p> <p>Oil residues and oily soils near the tank were removed in 2002 and the area appears to be free of oily residue, with the possible exception the area immediately underneath the tanks.</p>	<p>ERM recommends that all remaining hazardous chemicals and materials be collected and characterized, labeled, and transported offsite by a licensed hauler, to disposal facilities approved for the applicable waste, or approved oil recycler, if applicable.</p>	<p>Cost Estimate: \$10,000</p>

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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Solid Wastes

Outside and north of the building, one 15-yd bin contained garbage and non-hazardous solid wastes. Two, 15 yd bins, and four, 1-yd bins contained scrap metal wastes.

Compressed Gasses

The only compressed gas cylinders observed were five, liquid propane cylinders (~ 2 ft long) stored adjacent to the waste storage bunker.

Radioactive Substances

No radioactive substances or wastes were reported or identified during the site inspection.

No material compliance issues identified.

Asbestos

The building is covered with transite siding on the exterior building surface, on all sides, beginning 6 to 10 feet from grade, to the roof. The siding has been painted, and does not appear to be friable. Approximately 8,000 to 10,000 square feet of siding is present on building surfaces. Previous sampling of a piece of siding material stored along the western side of the building (and since removed) indicated that the siding contains 20-30% Chrysotile asbestos.

In its present condition, the siding on the building does not appear to present a health hazard to workers, unless disturbed. The siding would have to be removed prior to renovation or demolition of the building.

Previous due diligence investigations (ACC Environmental, 1993) reported that "suspect asbestos containing building materials" were also present in interior office and workshop areas (ceiling tiles, drywall taping and texture compounds, vinyl flooring, duct tape and roofing material). None of these materials were inspected, or sampled as part of ERM's investigations.

ERM recommends a complete asbestos survey of the facility by an AHERA-approved asbestos inspector.

Cost Estimate: \$ 5,000

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
<p>PCBs</p> <p>No equipment (e.g. oil filled transformers, capacitors) potentially containing PCBs was observed onsite. Management reported that all onsite transformers have been upgraded. Pole transformers, that could have contained PCBs, were observed on the adjacent property to the immediate north of the facility.</p> <p>PCBs were measured in soils/sediments west of the building near the air compressor receiving tanks, in the air compressor knockout system within the building, and in soil borings to the north of the building, as follows. During a first round of sampling, PBB-1260 was measured at 210 ppb and PCB 1268 was measured at 240 ppb in the sediments underneath the outside air compressor receiver tank (Location SS1 in Figure 4). During a second round of sampling, five soil samples were collected: three from the soil immediately downgradient of the receiver tank; one from the sediment underneath the tank; and one composite sample from oily sediments underneath the air compressor pump inside the building. The only PCBs detected during this round of sampling were from the sample collected directly underneath the receiver tank, with a level of PCB 1260 measured at 180 ppb (detection limit of 33 ppb).</p> <p>Three waste samples were also collected within the air compressor system itself: one from used oil within the air compressor pump; one from the receiver tank; and one from a knockout tank inside the building near the compressor pump. The only PCBs detected in these waste samples was from the knockout tank, with a measured level of PCB 1232 at 2.4 ppb (detection limit of 1 ppb).</p> <p>PCBs were also detected in soil borings advanced outside the building to the north. PCB-1254 was detected at 31 ppb in Boring B2 (Figure 4), at a depth of 1.75 feet. PCB-1260 was detected in Boring B2 at 25 ppb at a depth of 1.25 ft, and in Boring B4 at 74 and 35 ppb, at depths of 1.5 and 5 feet respectively.</p> <p>Sediments present on the pavement outside the western wall, and the surface soils immediately downgradient of the pavement, were collected and removed in 2002, and disposed offsite. The collected soils were sampled and disposed at an offsite disposal facility. Surface soils at the bottom of the excavation were then sampled, with the levels of PCBs found to be non-detect.</p>	<p>ERM recommends that all equipment and materials associated with the compressed air system that could contain residual PCBs, be sampled for the possible presence of PCBs. These include:</p> <ul style="list-style-type: none"> • Existing (operable) air compressor inside the building on the west side, and pipelines; • Former (inoperable) air compressor stored inside the building; • Existing air compressor tanks outside the building; • 24 compressed air knockout traps inside the building; and • Approximately 1000 linear feet of compressed air pipeline (1, 2 and 4 inches in diameter) within the building. <p>In California, wastes containing PCBs are classified as a hazardous waste if the total concentration (as measured in the total threshold limit concentration, or TTLIC) equals or exceeds 50 mg/kg (ppm), or the soluble threshold limit concentration (STLC) (as determined by the waste extraction test, or WET) equals or exceeds 5 mg/l (ppm). The results to date indicate that the wastes present within the air system would not be classified as a hazardous waste under the TTLIC limit; an STLC characterization (via WET evaluation) has not yet been performed on the waste. Wastes would also be subject to federal requirements (40 CFR 761), including provisions for special handling and disposal if the concentrations is equal or greater than 50 ppm.</p>	<p>Cost Estimate: \$5,000</p>

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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Ozone Depleting Substances (ODSs)

The management reported that the facility did not include air conditioning equipment and none was observed at the facility.

SOIL AND GROUNDWATER CONTAMINATION

Site History (On Site and Off Site)

Information on the history of the property was obtained from a review of historical aerial photographs (Pacific Aerial Surveys: 1921, 1925, 1959, 1969, 1990, 1998) from 1963 to 1992, historical topographic maps (EDR: 1968, 1973, 1980, 1993, 1995), a previous due diligence report (ACC, 1993), and historical Sanborn fire insurance maps (1929, 1950, 1967), and through discussions with site management. Attachment C presents the historic data search (EDR report), and Attachment D presents the historic Sanborn maps.

The potential for historic on-site land use to cause significant soil and groundwater contamination is considered to be low.

The potential for historical off-site land use to cause significant soil and groundwater contamination is considered to be moderate.

Based on a previous due diligence report (ACC, 1993), the site has been used for welding and metal fabrication since 1956. Caral began leasing the site from the owner on 23 February 1981 (ACC, 1993-Appendices). Prior to this (circa 1949), the site was reportedly used as a crane making facility by Moffett Empire Company (ACC, 1993).

A 1929 Sanborn map shows the site to be undeveloped and the surrounding area to have several rectangular shed-like structures and a pond. The area is labeled "Old & Vacant Partly Used for Cattle Sheds."

In a 1939 aerial photograph, no structures are visible on the site, which appears unpaved.

In a 1947 aerial photograph, a structure resembling a portion of the current building is visible on the site. The area surrounding the structure appears to be unpaved.

According to a previous report (ACC, 1993), a 1949 aerial photograph shows an object resembling an aboveground storage tank approximately 150 feet north of the site.

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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In a 1950 Sanborn map, the cattle and sheep sheds are no longer present near the site, but a structure covering over 5,000 square feet is present north of the site. The structure is labeled "The Adhesive Products Inc. - Mfg Gummed Paper Tape, Glues & Pastes" and is equipped with a laboratory and acid storage vault on the first floor. This appears to be at the location of the present Adhesive Products facility north of the site. According to a previous due diligence report (ACC, 1993), a 1987 Hazardous Materials Management Plan inventory lists 2,000 gallons of 1,1,1-TCA, as well as other solvents and acids stored at the Adhesives Products facility.

By 1965, the site appears to be entirely paved and the structure appears to have been enlarged.

In a 1967 Sanborn map, the site has a building labeled "Welding & Machine Shop" (and "ASB SIDING," which presumably means the building has asbestos siding). To the south is a square structure labeled "Silk Screen Printing."

In the 1982 and 1994 aerial photographs, the site appears unchanged.

Potential Contaminant Sources Arising from Existing Off Site Activities

A summary of database results from EDR's Radius Map report is as follows:

- 2 RCRIS-SQG sites (sites that generate, store, treat, or dispose of hazardous waste) are located 1/8 to 1/4 mile from the site: Easy Overhead Door Company and Miracle Auto Painting (1/8 - 1/4 mile N-NW).
- 9 HAZNET sites (sites that have manifested hazardous waste and informed the California Department of Toxic Substances Control) are within 1/4-mile of the site. Types of hazardous waste manifested by these sites include halogenated solvents, laboratory waste chemicals, unspecified aqueous solution, metal sludge, photochemical/photoprocessing waste, organic solids, waste oil and mixed oil, asbestos-containing waste, alkaline solution, and unspecified oil-containing waste.
- 15 LUST (Leaking Underground Storage Tank) incidents have occurred within 1/2-mile of the site, based on information from the SWRCB as of 31 March 2001. According to the EDR report, 14 of the 15 sites are at an equal or higher elevation. Contaminants of concern include gasoline and diesel fuel primarily.

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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- 5 CAL-SITES (known or potential hazardous substance sites according to the California Department of Toxic Substances Control) are within 1 mile of the site, two of which are at an elevation that is equal to or higher than the site: Western Forge & Flange (0 to 1/8-mile N-NW) and Southern Pacific Railway right of way.

Environmental Receptors & Pathways

Hydrogeology

The site is in western Alameda County, approximately 1/8-mile east of San Francisco Bay. Local geology in this area consists of a thin quaternary alluvium and marine deposits on top of Cretaceous Jurassic-age Franciscan Formation sandstone. The sandstone bedrock on site was found to be as shallow as 3 feet below ground surface (bgs). Based on a previous due diligence report, subsurface materials between ground surface and 10 feet bgs consist of fill materials, sand and gravel, silty clays, and bay mud (ACC, 1993). Ground water was encountered 9.5 feet bgs on the west side of the site. Regional ground water flow is generally toward San Francisco Bay. The site has an elevation of approximately 20 feet above mean sea level.

Previous groundwater investigations conducted within 0.5 miles of the site indicate that regional ground water flow is generally toward San Francisco Bay (ACC, 1993). The San Francisco Bay Regional Water Quality Control Board has only one site file for the area with one-half mile of the facility. Based on a review of this file, the depth to groundwater about one half mile north of the facility, at a location similar in elevation to the facility, was found to be 20-25 feet below grade in 1992, and 15-25 feet below grade in 1998/1999.

Surface Water Resources

The site slopes slightly to the west, surface water would likely flow west toward the railroad tracks. According to a previous due diligence report (ACC 1993). El Cerrito Creek empties into San Francisco Bay approximately 600 feet north of the site and reportedly divides the surrounding areas into northern and southern hydrologic regions. Any potential sources of contamination north of the creek would likely not migrate to shallow groundwater south of the creek.

Given that the San Francisco Bay is located 250-300 feet west of the site, ERM considers the surface water vulnerability to be high.

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
Site Field Investigations		
<u>Soil Sampling Methods</u>		
<p>Management reported that no previous soil and groundwater investigations had been completed at the facility, prior to 2001, to their knowledge. Because of possible release areas observed during site inspections, surface and subsurface soil samples (B1 through B10) were collected in 2001. Site sampling locations are shown in Figure 4 (Attachment A). Four-inch holes were saw-cut at most sampling locations through existing pavement, as needed to gain access to underlying soils. Surface samples were collected from the first six inches below pavement or gravel. Subsurface samples were collected at depths of 1.0 to 5.0 feet below grade, by hand auguring and with the use of a direct-push (GeoProbe) unit.</p> <p>An additional sample (SS-1) was collected from oily sediments/residue adjacent to the existing aboveground tanks along the western side of the building (Refer to PCB discussion above). All samples were analyzed for a large suite of parameters including: volatile and semi-volatile organic compounds; PCBs; total petroleum hydrocarbons (both gasoline and diesel); and Title 22 metals.</p>		
<u>Soil Sampling Results</u>		
<p>Tables 1 through- 4 (Attachment B) present a summary of all parameters detected in the soil and groundwater samples. These tables present only the compounds detected for the analytical method; all other parameters that were analyzed under the method were non-detect.</p>	<p>The levels measured in soils exceeded some of the Regional Water Quality Control Board's Environmental Screening Levels (ESLs) for a number of parameters, as noted in the tables. The ESLs are not cleanup levels, but initial screening levels addressing ecotoxicity, direct exposure, etc, that are used to indicate whether additional site characterizations, and possibly cleanup, may be necessary.</p>	
<p>A lens of affected soil was observed at Boring B2, at a depth of 1.5 to 2.5 feet. At this depth, soils were highly odorous and sticky, with elevated readings of organic vapors based on field OVM readings. This lens is present within the layer of gravel beneath the concrete, tending to cement the gravel into a hardened mass. The lens is approximately 8-12 inches at location B2.</p>	<p>Because the affected soils are buried beneath existing pavement, they are effectively capped, and do not present a threat to worker or public health and safety. However, should site excavation be needed for repaving, utility relocation or repair, or for upgrades and improvement to facilities, the subsurface soils would need to be characterized and disposed accordingly. Also, if the site is converted to another use, and excavation were required, the subsurface soils would likely have to be handled</p>	<p>Cost Estimate: \$25,000-\$100,000, depending on extent of excavation.</p>

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
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separately, and either disposed or capped.

The concentration of constituents within this lens includes: TPH-gasoline (1,800 ppm); TEPH-diesel (5,300 ppm); and 14-29 ppm TCE. Additional borings were advanced to further define this lens. The affected soils extend at least to B10.

Because of the presence of buried utilities, additional borings could not be advanced closer to the building. It is possible that affected soils extend under the building.

At boring location B5, arsenic was measured at a depth of 1.5 feet at 2,200 ppm, far exceeding the ESL for an industrial area (5.5 ppm). Lead was measured at a depth of 1.5 feet at location B4 at 2,200 ppm, exceeding its ESL of 750 ppm. Other metals and organics were measured in various borings at relatively low levels.

A large sump beneath one machine contains, what appears to be waste oils.

ERM recommends that all waste oils be removed from the sump and properly disposed offsite, and that the sump be cleaned and inspected for cracks, or other potential signs of leakage. If necessary, cores should be advanced beneath the floor of the sump and the first soil encountered sampled for TPH and CAM 17 metals.

Cost Estimate: \$15,000

Ground Water Sampling Methods

An attempt was made to advance all borings into groundwater. At every location except one (B4) the augur and GeoProbe hit a hard, sandstone formation indicative of either bedrock or a transition material at the interface with bedrock. Every hole except B4 was dry, with low moisture.

At boring B4, groundwater was encountered at a depth of approximately 10 feet below grade. A well point was set into this hole, and ground water was extracted using a peristaltic pump. Ground water flow was minimal, but sufficient ground water was obtained to analyze the full suite of parameters.

Ground Water Sampling Results

The ground water sample at boring B4 indicated a concentration of pentachlorophenol (PCP) of 210 ppb. This level is over 200 times the ESL for PCP (1.0 ppb) and almost 400 times greater than the drinking water standard (maximum contaminant level, or MCL) for PCP (0.56 ppb).

Remedial actions could be required to address PCP and TPH-diesel in ground water, especially if these constituents are present farther to the west toward San Francisco Bay.

Finding/Issue	Implication/Corrective Action	Potential Expenditure (\$)
<p>In addition, the ground water sample indicated measured levels of TPH-diesel (150 ppb). Levels of nickel, cobalt, barium, and molybdenum were also measured in the sample, at levels below their corresponding MCLs.</p>	<p>Further investigations would be required to determine the extent of contaminants present in ground water at and near boring B4, and the need (if any) for remediation. At this time no enforcement actions are pending.</p>	

KEY HEALTH AND SAFETY

Fire

No information obtained

Accidents & Incidents Recording Program

No Information obtained

Worker's Compensation Claims

No information obtained

Liens/Notices of Violation

Management reported that, to their knowledge, there are no environmental liens or previous or outstanding notices of violations with respect to the facility.

Cost Recovery Actions

A CERCLA/RCRA cost recovery action by the Port of Redwood City was initiated against Caral Manufacturing, relating to the offsite disposal of 130 gallons of waste oils that were sent to the Gibson Environmental facility in Redwood City. The Port demanded (April 12, 2001) \$6,000 from Caral Manufacturing for settlement.

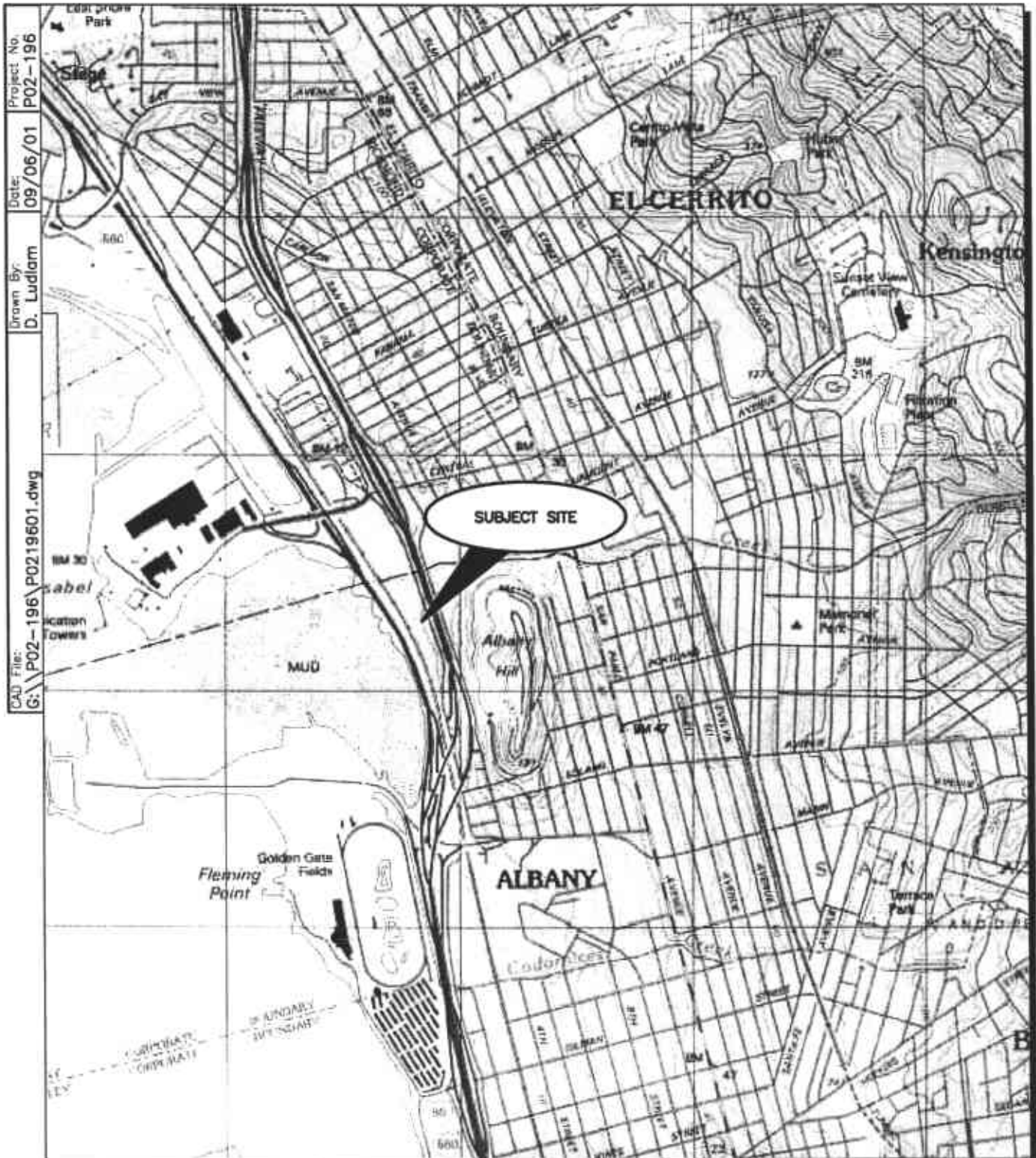
HSE Visits/Improvement Notices

Management reported that there are no current or historical health and safety notices pertaining to the site.

ATTACHMENT A

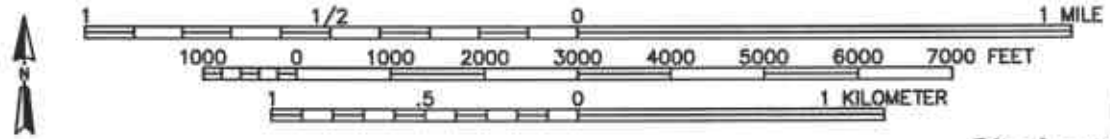
Figure 1 - Facility Location

Figure 4 - Site Layout and Sampling Locations



Project No. P02-196
 Date: 09/06/01
 Drawn By: D. Ludlam
 CAD File: G:\P02-196\P0219601.dwg

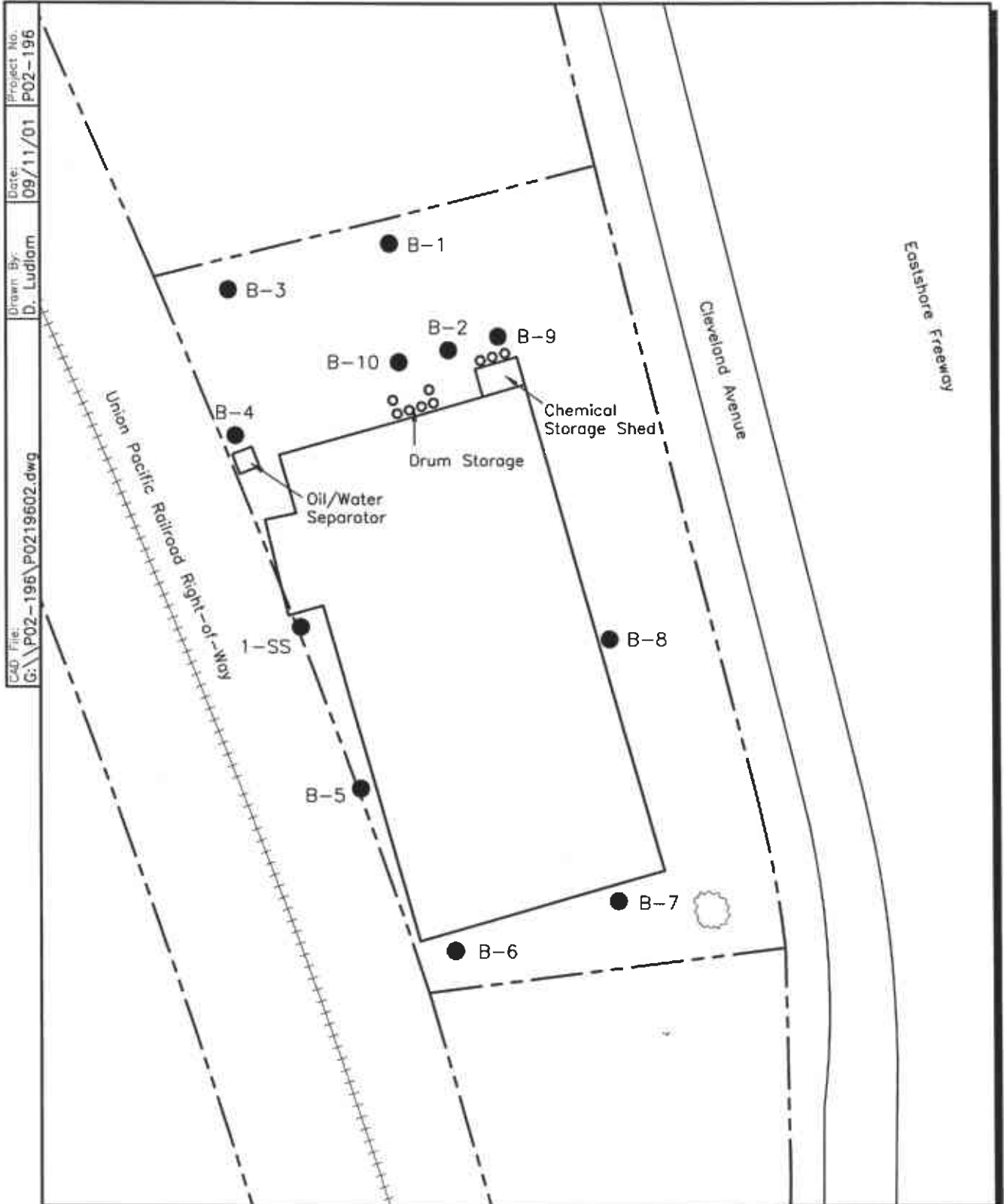
SCALE 1:24,000



References:
 U.S.G.S. 7.5 Minute Series (Topographic) Quadrangle,
 Richmond, California
 Dated: 1993

Figure 1
Site Location Map
578 Cleveland Avenue
Albany, California

ERM 08/01



CAD File: G:\P02-196\P0219602.dwg
 Drawn By: D. Ludlum
 Date: 09/11/01
 Project No: P02-196

LEGEND

- Soil Sample Location
- - - Assessor Property Line, Approximate Location

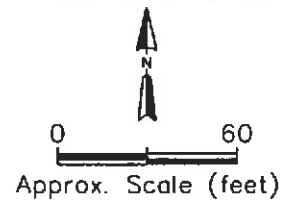


Figure 4
Soil Sample Locations
578 Cleveland Avenue
Albany, California

ATTACHMENT B
SOIL AND GROUNDWATER SAMPLING RESULTS

Table 1 Tentatively Identified Compounds

Table 2 Volatile Compounds

Table 3 Metals

Table 4 Semivolatile Compounds

Table 1
Tentatively Identified Compounds Detected
Caral Manufacturing Facility
Albany, CA

	B2-1.25	B2-1.75	B9-1.25	B10-3.0	B4-W
<i>Units</i>	<i>mg/kg</i>	<i>mg/kg</i>	<i>mg/kg</i>	<i>mg/kg</i>	<i>ug/l</i>
2,5-dichloro Benzoic acid					11
2,3,4,5- tetrachloro Phenol					9.2
1-methyl-2-(2-propenyl)-Benzene		1.2			
1-Hexacosanol			2.4		
methyl (1-methylethyl)Benzene	9.0				
1-ethyl-2-methyl Benzene	15				
methyl,Heptadecane			1.6		
methyl) Cyclohexanone	9.5				
Decane		1.2			
Dodecane	14	1.8			
2-butyl-1-Octanol	20	8.6	1.0	0.6	
Hexacosane	13	2.0			
3,4,4-trimethyl-2-Hexene	13	2.8			
3-methyl Decane	8.2				
5-Hexadecyne			1.6		
Heptadecane		1.2			
4-methyl Nonane	10				
Teratriacontane		1.1			
cis-1-ethyl-2-methyl-Cyclohexane			0.9		
2-methyl Bicyclo[2.2.1] heptane		1.4			
5-methyl-2-(1-methyl) Decane	14				
1,1'-ethylidene bis Cyclopentane			1.3		
d-Dihomandrostane			1.6		
4,7,7-t Bicyclo[4.1.0] heptan-3-one	9.1	1.3			
octahydro-2-methyl-Pentalene	9.8				
2-methyl-Nonadecane			2.5		
3-methyl-Nonane	17	4.4	1.4		
propyl-cyclohexane	7.1	1.8			
Undecane	13	1.6	1.4		
trans-decahydro-Napthalene		2.3			
4,8-dimethyl-Undecane			1.4		

mg/kg= Milligrams per Kilogram
ug/kg= Micrograms per Kilogram
ug/l= Micrograms per Liter

Table 2
Summary of Volatile Organic Compounds Detected
Caral Manufacturing Facility
Albany, CA

	TPH- Gasoline	TEPH-Diesel w/SGCU ¹	cis-1,2-DCE	TCE	Isopropylbenzene	n-Propylzene	1,3,5- Trimethylbenzene	1,2,4- Trimethylbenzene	sec-Butylbenzene	p-Isopropyltoluene	n-Butylbenzene	Napthalene
Soil-Industrial Final ESL	100	100	0.19	0.46	---	---	---	---	---	---	---	4.2
Soil-Residential Final ESL	100	100	0.19	0.26	---	---	---	---	---	---	---	4.2
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SS-1	<2.0	66 _{HC12}	<0.20	<0.21	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B1-1.75	<1.0	<1.0	<0.20	<0.25	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B1-5.5	<1.0	<1.0	<0.20	<0.25	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B2-1.25	1800 _{HC12}	5300 _{HC12}	5.8	29	2.4	4.7	7.6	13	0.61	1.5	0.79	0.34
B2-1.75	170 _{HC12}	140 _{HC12}	9.1	14	0.46	0.92	1.5	2.6	<0.25	0.25	<0.20	0.25
B2-3.5	<1.0	3.5 _{HC12}	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B3-1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B4-1.5	26 _{HC12}	82 _{HC12}	<0.40	<0.40	<0.40	<0.20	<0.40	<0.40	<0.50	<0.40	<0.40	<0.50
B4-5.0	<1.0	3.5 _{HC12}	<0.40	<0.40	<0.40	<0.20	<0.40	<0.40	<0.50	<0.40	<0.40	<0.50
B5-1.5	<1.0	<1.0	<0.40	<0.40	<0.40	<0.20	<0.40	<0.40	<0.50	<0.40	<0.40	<0.50
B5-5.0	<1.0	<1.0	<0.40	<0.40	<0.40	<0.20	<0.40	<0.40	<0.50	<0.40	<0.40	<0.50
B6-1.25	<1.0	<1.0	<0.20	<0.25	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B7-1.5	<1.0	1.8 _{HC12}	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B8-1.5	<1.0	2.8 _{HC12}	<0.50	<0.40	<0.40	<0.20	<0.40	<0.40	<0.50	<0.40	<0.40	<0.50
B9-1.25	8 _{HC12}	1400 _{HC12}	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B9-2.5	<1.0	27 _{HC12}	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B10-1.5	<1.0	17 _{HC12}	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
B10-3.0	11 _{HC12}	8.2 _{HC12}	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.25	<0.20	<0.20	<0.25
Ground Water												
	Final ESL ²	100	100	6	5	---	---	---	---	---	---	21
	Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
B4-W	<50	150 _{HC12}	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

NA=Not Analyzed

SGCU= Silica Gels Clean Up

mg/kg= milligrams per kilogram

ug/kg= micrograms per kilogram

ug/l= micrograms per liter

TPH = Total petroleum hydrocarbons

cis-1,2-DCE = cis-1,2-Dichloroethene

TCE = Trichloroethene

HC12 = Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.

< = less than

--- Denotes no established ESL

RWQCB Regional Water Quality Control Board (San Francisco Bay) has developed the Environmental Screening Values (ESLs) the San Francisco Bay Area (<http://www.swrcb.ca.gov/rwqcb2/esl.htm>)

Industrial Final ESL - Final Environmental Screening Level is lowest of ceiling value (nuisance concerns etc.), ecotoxicity, direct-exposure, indoor-air impact, and leaching screening levels.

Appendix 1, ESL Table A-2, Shallow soils, (< 3 meters bgs) commercial/industrial land use where ground water is a current or potential source of drinking water

Residential Final ESL - Final Environmental Screening Level is lowest of ceiling value (nuisance concerns etc.), ecotoxicity, direct-exposure, indoor-air impact, and leaching screening levels.

Appendix 1, ESL Table A-1, Shallow soils, (< 3 meters bgs) residential land use where ground water is a current or potential source of drinking water

1 - TPH (middle distillates) has an established ESL but there is no ESL for diesel fuel specifically.

2 - Appendix 1, ESL Table F-1a for Groundwater as Current or Potential Drinking Water Source. Final ESL is the lowest of ceiling value, drinking water, indoor air and aquatic habitat impact goals.

Table 3
Summary of CAM 17 Metals Detected
Caral Manufacturing Facility
Albany, CA

	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil-Industrial ESL	40	5.5	1,500	8.0	7.4	58	80	230	750	10	40	150	10	40	13	200	600
Soil-Residential ESL	6.3	5.5	750	4.0	1.7	58	40	230	200	3	40	150.00	10	20	1	110	600
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SS-1	<5.0	<5.0	330	<0.50	12	410	14	280	630	1.3	32	250	<5.0	2.9	24	40	4900
B1-1.75	<5.0	<5.0	42	<0.50	<0.05	15	3.1	6.9	4.8	0.021	<0.50	18	<5.0	<0.50	41	18	27
B1-5.5	<5.0	5.4	83	<0.50	<0.50	12	3.4	<0.50	3.4	0.042	<0.50	13	<5.0	<0.50	<5.0	16	20
B3-1.0	<5.0	<5.0	99	<0.50	<0.50	13	4.0	6.7	3.3	0.038	<0.50	9.2	<5.0	<0.50	11	14	19
B6-1.25	<5.0	<5.0	76	<0.50	<0.50	9.2	8.8	5.5	6.6	0.066	<0.50	14	<5.0	<0.50	<5.0	20	29
B7-1.5	<5.0	<5.0	98	<0.50	<0.50	20	16	3.7	6.4	0.026	<0.50	14	<5.0	<0.50	<5.0	23	15
B9-1.25	<5.0	<5.0	9.0	<0.50	<0.50	260	23	24	6.2	0.014	<0.50	200	<5.0	<0.50	<5.0	12	11
B9-2.5	<5.0	<5.0	76	0.59	<0.50	33	11	3.2	6.1	0.062	<0.50	28	<5.0	<0.50	<5.0	27	14
B10-1.5	<5.0	<5.0	7.6	<0.50	<0.50	270	23	32	<1.0	0.016	<0.50	220	<5.0	<0.50	<5.0	15	12
B10-3.0	<5.0	<5.0	29	<0.50	<0.50	77	11	<0.50	2.8	0.017	<0.50	66	<5.0	0.80	5.9	17	14
B4-1.5	17	<5.0	120	<0.50	<0.50	100	37	34	2200	0.16	20	220	<5.0	0.85	<25	21	52
B4-5.0	<5.0	<5.0	77	<0.50	<0.50	120	46	5.8	22	0.046	18	240	<5.0	0.55	<25	22	60
B8-1.5	<5.0	<5.0	68	<0.50	<0.50	21	5.1	9.2	3.5	0.052	<0.50	18	<5.0	<0.50	<25	22	15
B5-1.5	29	2200	190	<0.50	3.5	8.6	<0.50	<0.50	<1.0	0.056	<0.50	<1.0	<5.0	0.65	<25	<0.50	<1.0
B5-5.0	<5.0	<5.0	21	<0.50	<0.50	290	26	34	3.2	0.026	<0.50	200	<5.0	<0.50	<25	17	30
B2-1.25	<5.0	<5.0	56	<0.50	<0.50	53	8.5	1.3	3.8	0.029	<0.50	46	<5.0	0.5	<25	23	13
B2-1.75	<5.0	<5.0	72	<0.50	<0.50	23	5.5	1.9	2.5	0.04	<0.50	23	<5.0	<0.50	<25	23	12
B2-3.5	<5.0	<5.0	72	<0.50	<0.50	23	5.5	1.9	2.5	0.046	<0.50	23	<5.0	<0.50	<5.0	23	12

Ground Water	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Final ESL ¹	0.006	0.0036	1	0.0027	0.0022	0.05	0.003	0.0031	0.0025	0.000012	0.035	0.0082	0.005	0.00019	0.002	0.015	0.081
Units	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
B4-W	0.0062	0.0011	0.18	<0.001	<0.001	0.0069	0.24	0.0058	<0.004	<0.0002	0.0013	0.89	0.0056	0.001	<0.001	<0.001	0.0072

NA=Not Analyzed
mg/kg= Milligrams per Kilogram
ug/kg= Micrograms per Kilogram
ug/l= Micrograms per Liter
cis-1,2-DCE = cis-1,2-Dichloroethene

Table 4
Semivolatile Organic Compound and PCBs Detected
Caral Manufacturing Facility
Albany, CA

	Bis (2-ethylhexyl) phthalate	Pentachlorophenol	PCB-1254 ^a	PCB-1260 ^a	PCB-1268 ^a
Soil-Industrial Final ESL	66	5	0.74	0.74	0.74
Soil-Residential Final ESL	66	4.4	0.22	0.22	0.22
	Units	mg/kg	ug/kg	ug/kg	ug/kg
SS-1	<25	<25	<20	210	240
B1-1.75	<0.50	<0.50	<20	<20	<20
B1-5.5	<0.50	<0.50	<20	<20	<20
B2-1.25	<5.0	<5.0	<20	25	<20
B2-1.75	<0.50	<0.50	31	<20	<20
B2-3.5	0.70	<0.50	<20	<20	<20
B3-1.0	<0.50	<0.50	<20	<20	<20
B4-1.5	<0.50	<0.50	<20	74	<20
B4-5.0	<0.50	<0.50	<20	35	<20
B5-1.5	<0.50	<0.50	<20	<20	<20
B5-5.0	<0.50	<0.50	<20	<20	<20
B6-1.25	<0.50	<0.50	<20	<20	<20
B7-1.5	<0.50	<0.50	<20	<20	<20
B8-1.5	<0.50	<0.50	<20	<20	<20
B9-1.25	<0.50	<0.50	<20	<20	<20
B9-2.5	<0.50	<0.50	<20	<20	<20
B10-1.5	<0.50	<0.50	<20	<20	<20
B10-3.0	<0.50	<0.50	<20	<20	<20

Ground Water	Bis (2-ethylhexyl) phthalate	Pentachlorophenol	PCB-1254	PCB-1260	PCB-1268
Final ESL ^b	4	1.0	0.014	0.014	0.014
Units	ug/l	ug/l	ug/l	ug/l	ug/l
B4-W	<10	210	<0.53	<0.53	<0.53

mg/kg= milligrams per kilogram

ug/kg= micrograms per kilogram

ug/l= micrograms per liter

PCB = Polychlorinated biphenyl

< = less than

— Denotes no established ESL

RWQCB Regional Water Quality Control Board (San Francisco Bay) has developed the Environmental Screening Values (ESLs) the San Francisco Bay Area (<http://www.swrcb.ca.gov/rwqcb2/esl.htm>)

Industrial Final ESL - Final Environmental Screening Level is lowest of ceiling value (nuisance concerns etc.), ecotoxicity, direct-exposure, indoor-air impact, and leaching screening levels.

Appendix 1, ESL Table A-2, Shallow soils, (< 3 meters bgs) commercial/industrial land use where ground water is a current or potential source of drinking water

Residential Final ESL - Final Environmental Screening Level is lowest of ceiling value (nuisance concerns etc.), ecotoxicity, direct-exposure, indoor-air impact, and leaching screening levels.

Appendix 1, ESL Table A-1, Shallow soils, (< 3 meters bgs) residential land use where ground water is a current or potential source of drinking water

a - ESL for polychlorinated biphenyls does not distinguish between the various types of PCBs.

b - Appendix 1, ESL Table F-1a for Groundwater as Current or Potential Drinking Water Source. Final ESL is the lowest of ceiling value, drinking water, indoor air and aquatic habitat impact goals

ATTACHMENT C
Historical Data Search (EDR)

ATTACHMENT D
Historical Sanborn Maps

**TABLE A. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (<3m bgs)
Groundwater IS Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
ACENAPHTHENE	1.6E+01	1.6E+01	2.0E+01
ACENAPHTHYLENE	1.3E+01	1.3E+01	3.0E+01
ACETONE	2.4E-01	2.4E-01	7.0E+02
ALDRIN	2.9E-02	1.0E-01	2.0E-03
ANTHRACENE	2.8E+00	2.8E+00	7.3E-01
ANTIMONY	6.3E+00	4.0E+01	6.0E+00
ARSENIC	5.5E+00	5.5E+00	3.6E+01
BARIUM	7.5E+02	1.5E+03	1.0E+03
BENZENE	4.4E-02	4.4E-02	1.0E+00
BENZO(a)ANTHRACENE	3.8E-01	1.3E+00	2.7E-02
BENZO(b)FLUORANTHENE	3.8E-01	1.3E+00	2.9E-02
BENZO(k)FLUORANTHENE	3.8E-01	1.3E+00	2.9E-02
BENZO(g,h,i)PERYLENE	2.7E+01	2.7E+01	1.0E-01
BENZO(a)PYRENE	3.8E-02	1.3E-01	1.4E-02
BERYLLIUM	4.0E+00	8.0E+00	2.7E+00
BIPHENYL, 1,1-	6.5E-01	6.5E-01	5.0E-01
BIS(2-CHLOROETHYL)ETHER	1.8E-04	1.8E-04	1.4E-02
BIS(2-CHLOROISOPROPYL)ETHER	5.4E-03	5.4E-03	5.0E-01
BIS(2-ETHYLHEXYL)PHTHALATE	6.6E+01	6.6E+01	4.0E+00
BORON	1.6E+00	2.0E+00	1.6E+00
BROMODICHLOROMETHANE	1.2E-02	3.9E-02	1.0E+02
BROMOFORM	2.2E+00	2.2E+00	1.0E+02
BROMOMETHANE	2.2E-01	3.9E-01	9.8E+00
CADMIUM	1.7E+00	7.4E+00	2.2E+00
CARBON TETRACHLORIDE	1.2E-02	3.5E-02	5.0E-01
CHLORDANE	4.4E-01	1.7E+00	4.0E-03
CHLOROANILINE, p-	5.3E-02	5.3E-02	5.0E+00
CHLOROENZENE	1.5E+00	1.5E+00	2.5E+01
CHLOROETHANE	6.3E-01	8.5E-01	1.2E+01
CHLOROFORM	9.8E-02	2.7E-01	1.0E+02
CHLOROMETHANE	2.9E-01	4.2E-01	2.7E+00
CHLOROPHENOL, 2-	1.2E-02	1.2E-02	1.8E-01
CHROMIUM (Total)	5.8E+01	5.8E+01	5.0E+01
CHROMIUM III	7.5E+02	7.5E+02	1.8E+02
CHROMIUM VI	1.8E+00	1.8E+00	1.1E+01
CHRYSENE	3.8E+00	1.3E+01	2.9E-01
COBALT	4.0E+01	8.0E+01	3.0E+00
COPPER	2.3E+02	2.3E+02	3.1E+00
CYANIDE (Free)	1.0E+02	5.0E+02	1.0E+00
DIBENZO(a,h)ANTHRACENE	1.1E-01	3.8E-01	8.5E-03
DIBROMOCHLOROMETHANE	1.9E-02	5.8E-02	1.0E+02
1,2-DIBROMO-3-CHLOROPROPANE	1.1E-03	1.1E-03	2.0E-01
DIBROMOETHANE, 1,2-	3.3E-04	3.3E-04	5.0E-02
DICHLOROBENZENE, 1,2-	1.1E+00	1.1E+00	1.0E+01

**TABLE A. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (<3m bgs)
Groundwater IS Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
DICHLOROBENZENE, 1,3-	7.2E-01	7.2E-01	6.3E+00
DICHLOROBENZENE, 1,4-	4.7E-02	1.3E-01	5.0E+00
DICHLOROBENZIDINE, 3,3-	7.7E-03	7.7E-03	2.9E-02
DICHLORODIPHENYLDICHLOROETHANE (DDD)	2.4E+00	1.0E+01	1.0E-03
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	1.7E+00	4.0E+00	1.0E-03
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	1.7E+00	4.0E+00	1.0E-03
DICHLOROETHANE, 1,1-	2.0E-01	2.0E-01	5.0E+00
DICHLOROETHANE, 1,2-	4.5E-03	4.5E-03	5.0E-01
DICHLOROETHYLENE, 1,1-	1.0E+00	1.0E+00	6.0E+00
DICHLOROETHYLENE, Cis 1,2-	1.9E-01	1.9E-01	6.0E+00
DICHLOROETHYLENE, Trans 1,2-	6.7E-01	6.7E-01	1.0E+01
DICHLOROPHENOL, 2,4-	3.0E-01	3.0E-01	3.0E-01
DICHLOROPROPANE, 1,2-	5.2E-02	1.2E-01	5.0E+00
DICHLOROPROPENE, 1,3-	3.3E-02	5.9E-02	5.0E-01
DIELDRIN	2.3E-03	2.3E-03	1.9E-03
DIETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHENOL, 2,4-	6.7E-01	6.7E-01	1.0E+02
DINITROPHENOL, 2,4-	4.0E-02	4.0E-02	1.4E+01
DINITROTOLUENE, 2,4-	8.5E-04	8.5E-04	1.1E-01
1,4 DIOXANE	1.8E-03	1.8E-03	3.0E+00
DIOXIN (2,3,7,8-TCDD)	4.5E-06	1.8E-05	5.0E-06
ENDOSULFAN	4.6E-03	4.6E-03	8.7E-03
ENDRIN	6.5E-04	6.5E-04	2.3E-03
ETHYLBENZENE	3.3E+00	3.3E+00	3.0E+01
FLUORANTHENE	4.0E+01	4.0E+01	8.0E+00
FLUORENE	8.9E+00	8.9E+00	3.9E+00
HEPTACHLOR	1.4E-02	1.4E-02	3.8E-03
HEPTACHLOR EPOXIDE	1.5E-02	1.5E-02	3.8E-03
HEXACHLOROBENZENE	2.7E-01	9.6E-01	1.0E+00
HEXACHLOROBUTADIENE	1.0E+00	1.0E+00	2.1E-01
HEXACHLOROCYCLOHEXANE (gamma) LINDANE	4.9E-02	4.9E-02	8.0E-02
HEXACHLOROETHANE	2.4E+00	2.4E+00	7.0E-01
INDENO(1,2,3-cd)PYRENE	3.8E-01	1.3E+00	2.9E-02
LEAD	2.0E+02	7.5E+02	2.5E+00
MERCURY	2.5E+00	1.0E+01	1.2E-02
METHOXYCHLOR	1.9E+01	1.9E+01	1.9E-02
METHYLENE CHLORIDE	7.7E-02	7.7E-02	5.0E+00
METHYL ETHYL KETONE	3.9E+00	3.9E+00	4.2E+03
METHYL ISOBUTYL KETONE	2.8E+00	2.8E+00	1.2E+02
METHYL MERCURY	1.2E+00	1.0E+01	3.0E-03
METHYLNAPHTHALENE (total 1- & 2-)	2.5E-01	2.5E-01	2.1E+00
METHYL TERT BUTYL ETHER	2.3E-02	2.3E-02	5.0E+00
MOLYBDENUM	4.0E+01	4.0E+01	3.5E+01

**TABLE A. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils ($\leq 3\text{m}$ bgs)
Groundwater IS Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater ($\mu\text{g/L}$)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
NAPHTHALENE	4.2E+00	4.2E+00	2.1E+01
NICKEL	1.5E+02	1.5E+02	8.2E+00
PENTACHLOROPHENOL	4.4E+00	5.0E+00	1.0E+00
PERCHLORATE	1.6E+00	2.0E+01	7.0E-01
PHENANTHRENE	1.1E+01	1.1E+01	4.6E+00
PHENOL	7.6E-02	7.6E-02	5.0E+00
POLYCHLORINATED BIPHENYLS (PCBs)	2.2E-01	7.4E-01	1.4E-02
PYRENE	8.5E+01	8.5E+01	2.0E+00
SELENIUM	1.0E+01	1.0E+01	5.0E+00
SILVER	2.0E+01	4.0E+01	1.9E-01
STYRENE	1.5E+00	1.5E+00	1.0E+01
tert-BUTYL ALCOHOL	7.3E-02	7.3E-02	1.2E+01
TETRACHLOROETHANE, 1,1,1,2-	2.4E-02	2.4E-02	1.3E+00
TETRACHLOROETHANE, 1,1,2,2-	9.0E-03	1.8E-02	1.0E+00
TETRACHLOROETHYLENE	8.8E-02	2.5E-01	5.0E+00
THALLIUM	1.0E+00	1.3E+01	2.0E+00
TOLUENE	2.9E+00	2.9E+00	4.0E+01
TOXAPHENE	4.2E-04	4.2E-04	2.0E-04
TPH (gasolines)	1.0E+02	1.0E+02	1.0E+02
TPH (middle distillates)	1.0E+02	1.0E+02	1.0E+02
TPH (residual fuels)	5.0E+02	1.0E+03	1.0E+02
TRICHLOROBENZENE, 1,2,4-	7.6E+00	7.6E+00	2.5E+01
TRICHLOROETHANE, 1,1,1-	7.8E+00	7.8E+00	6.2E+01
TRICHLOROETHANE, 1,1,2-	3.3E-02	7.0E-02	5.0E+00
TRICHLOROETHYLENE	2.6E-01	4.6E-01	5.0E+00
TRICHLOROPHENOL, 2,4,5-	1.8E-01	1.8E-01	1.1E+01
TRICHLOROPHENOL, 2,4,6-	1.7E-01	1.7E-01	5.0E-01
VANADIUM	1.1E+02	2.0E+02	1.5E+01
VINYL CHLORIDE	6.7E-03	1.9E-02	5.0E-01
XYLENES	1.5E+00	1.5E+00	1.3E+01
ZINC	6.0E+02	6.0E+02	8.1E+01

**TABLE B. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (<3m bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
ACENAPHTHENE	1.9E+01	1.9E+01	2.3E+01
ACENAPHTHYLENE	1.3E+01	1.3E+01	3.0E+01
ACETONE	5.0E-01	5.0E-01	1.5E+03
ALDRIN	2.9E-02	1.0E-01	1.3E-01
ANTHRACENE	2.8E+00	2.8E+00	7.3E-01
ANTIMONY	6.3E+00	4.0E+01	3.0E+01
ARSENIC	5.5E+00	5.5E+00	3.6E+01
BARIIUM	7.5E+02	1.5E+03	1.0E+03
BENZENE	1.8E-01	3.8E-01	4.6E+01
BENZO(a)ANTHRACENE	3.8E-01	1.3E+00	2.7E-02
BENZO(b)FLUORANTHENE	3.8E-01	1.3E+00	2.9E-02
BENZO(k)FLUORANTHENE	3.8E-01	1.3E+00	4.0E-01
BENZO(g,h,i)PERYLENE	2.7E+01	2.7E+01	1.0E-01
BENZO(a)PYRENE	3.8E-02	1.3E-01	1.4E-02
BERYLLIUM	4.0E+00	8.0E+00	2.7E+00
BIPHENYL, 1,1-	6.5E+00	6.5E+00	5.0E+00
BIS(2-CHLOROETHYL)ETHER	4.0E-03	1.3E-02	6.1E+01
BIS(2-CHLOROISOPROPYL)ETHER	6.6E-01	6.6E-01	6.1E+01
BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+02	5.3E+02	3.2E+01
BORON	1.6E+00	2.0E+00	1.6E+00
BROMODICHLOROMETHANE	1.2E-02	3.9E-02	1.6E+02
BROMOFORM	6.1E+01	6.9E+01	3.2E+03
BROMOMETHANE	2.2E-01	5.1E-01	1.6E+02
CADMIUM	1.7E+00	7.4E+00	2.2E+00
CARBON TETRACHLORIDE	1.2E-02	3.5E-02	9.5E+00
CHLORDANE	4.4E-01	1.7E+00	4.0E-03
CHLOROANILINE, p-	5.3E-02	5.3E-02	5.0E+00
CHLOROBENZENE	1.5E+00	1.5E+00	2.5E+01
CHLOROETHANE	6.3E-01	8.5E-01	1.2E+01
CHLOROFORM	9.8E-02	2.7E-01	3.4E+02
CHLOROMETHANE	2.9E-01	8.1E-01	1.7E+02
CHLOROPHENOL, 2-	1.2E-01	1.2E-01	1.8E+00
CHROMIUM (Total)	5.8E+01	5.8E+01	1.8E+02
CHROMIUM III	7.5E+02	7.5E+02	1.8E+02
CHROMIUM VI	1.8E+00	1.8E+00	1.1E+01
CHRYSENE	3.8E+00	1.3E+01	3.5E-01
COBALT	4.0E+01	8.0E+01	3.0E+00
COPPER	2.3E+02	2.3E+02	3.1E+00
CYANIDE (Free)	1.0E+02	5.0E+02	1.0E+00
DIBENZO(a,h)ANTHTRACENE	1.1E-01	3.8E-01	2.5E-01
DIBROMOCHLOROMETHANE	1.9E-02	5.8E-02	1.8E+02

**TABLE B. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (<3m bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
1,2-DIBROMO-3-CHLOROPROPANE	1.1E-03	1.1E-03	2.0E-01
DIBROMOETHANE, 1,2-	7.3E-03	2.1E-02	1.6E+02
DICHLOROBENZENE, 1,2-	1.6E+00	1.6E+00	1.4E+01
DICHLOROBENZENE, 1,3-	3.2E+00	7.4E+00	6.5E+01
DICHLOROBENZENE, 1,4-	4.7E-02	1.3E-01	1.5E+01
DICHLOROBENZIDINE, 3,3-	4.0E-01	1.4E+00	2.5E+02
DICHLORODIPHENYLDICHLOROETHANE (DDD)	2.4E+00	1.0E+01	1.0E-03
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	1.7E+00	4.0E+00	1.0E-03
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	1.7E+00	4.0E+00	1.0E-03
DICHLOROETHANE, 1,1-	3.3E-01	9.1E-01	4.7E+01
DICHLOROETHANE, 1,2-	2.5E-02	6.9E-02	2.0E+02
DICHLOROETHYLENE, 1,1-	4.3E+00	4.3E+00	2.5E+01
DICHLOROETHYLENE, Cis 1,2-	1.6E+00	3.6E+00	5.9E+02
DICHLOROETHYLENE, Trans 1,2-	3.1E+00	7.3E+00	5.9E+02
DICHLOROPHENOL, 2,4-	3.0E+00	3.0E+00	3.0E+00
DICHLOROPROPANE, 1,2-	5.2E-02	1.5E-01	1.0E+02
DICHLOROPROPENE, 1,3-	3.3E-02	9.1E-02	4.9E+01
DIELDRIN	2.3E-03	2.3E-03	1.9E-03
DIETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHENOL, 2,4-	7.4E-01	7.4E-01	1.1E+02
DINITROPHENOL, 2,4-	2.1E-01	2.1E-01	7.5E+01
DINITROTOLUENE, 2,4-	8.6E-01	8.6E-01	1.2E+02
1,4 DIOXANE	1.8E+01	3.0E+01	5.0E+04
DIOXIN (2,3,7,8-TCDD)	4.5E-06	1.8E-05	5.0E-06
ENDOSULFAN	4.6E-03	4.6E-03	8.7E-03
ENDRIN	6.5E-04	6.5E-04	2.3E-03
ETHYLBENZENE	4.7E+00	1.3E+01	2.9E+02
FLUORANTHENE	4.0E+01	4.0E+01	8.0E+00
FLUORENE	8.9E+00	8.9E+00	3.9E+00
HEPTACHLOR	1.4E-02	1.4E-02	3.8E-03
HEPTACHLOR EPOXIDE	1.5E-02	1.5E-02	3.8E-03
HEXACHLOROBENZENE	2.7E-01	9.6E-01	3.7E+00
HEXACHLOROBUTADIENE	3.7E+00	2.2E+01	4.7E+00
HEXACHLOROCYCLOHEXANE (gamma) LINDANE	4.9E-02	4.9E-02	8.0E-02
HEXACHLOROETHANE	1.2E+01	4.1E+01	1.2E+01
INDENO(1,2,3-cd)PYRENE	3.8E-01	1.3E+00	2.9E-02
LEAD	2.0E+02	7.5E+02	2.5E+00
MERCURY	2.5E+00	1.0E+01	1.2E-02
METHOXYCHLOR	1.9E+01	1.9E+01	1.9E-02
METHYLENE CHLORIDE	5.2E-01	1.5E+00	2.2E+03

TABLE B. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils ($\leq 3\text{m}$ bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
METHYL ETHYL KETONE	1.3E+01	1.3E+01	1.4E+04
METHYL ISOBUTYL KETONE	3.9E+00	3.9E+00	1.7E+02
METHYL MERCURY	1.2E+00	1.0E+01	3.0E-03
METHYLNAPHTHALENE (total 1- & 2-)	2.5E-01	2.5E-01	2.1E+00
METHYL TERT BUTYL ETHER	2.0E+00	5.6E+00	1.8E+03
MOLYBDENUM	4.0E+01	4.0E+01	2.4E+02
NAPHTHALENE	4.5E+00	4.8E+00	2.4E+01
NICKEL	1.5E+02	1.5E+02	8.2E+00
PENTACHLOROPHENOL	4.4E+00	5.0E+00	7.9E+00
PERCHLORATE	1.6E+00	2.0E+01	6.0E+02
PHENANTHRENE	1.1E+01	1.1E+01	4.6E+00
PHENOL	1.9E+01	1.9E+01	1.3E+03
POLYCHLORINATED BIPHENYLS (PCBs)	2.2E-01	7.4E-01	1.4E-02
PYRENE	8.5E+01	8.5E+01	2.0E+00
SELENIUM	1.0E+01	1.0E+01	5.0E+00
SILVER	2.0E+01	4.0E+01	1.9E-01
STYRENE	1.5E+01	1.5E+01	1.0E+02
tert-BUTYL ALCOHOL	1.0E+02	1.1E+02	1.8E+04
TETRACHLOROETHANE, 1,1,1,2-	3.1E+00	7.2E+00	9.3E+02
TETRACHLOROETHANE, 1,1,2,2-	9.0E-03	2.5E-02	1.9E+02
TETRACHLOROETHYLENE	8.8E-02	2.5E-01	1.2E+02
THALLIUM	1.0E+00	1.3E+01	2.0E+01
TOLUENE	9.3E+00	9.3E+00	1.3E+02
TOXAPHENE	4.2E-04	4.2E-04	2.0E-04
TPH (gasolines)	1.0E+02	4.0E+02	5.0E+02
TPH (middle distillates)	5.0E+02	5.0E+02	6.4E+02
TPH (residual fuels)	5.0E+02	1.0E+03	6.4E+02
TRICHLOROBENZENE, 1,2,4-	7.6E+00	7.6E+00	2.5E+01
TRICHLOROETHANE, 1,1,1-	7.8E+00	7.8E+00	6.2E+01
TRICHLOROETHANE, 1,1,2-	3.3E-02	9.1E-02	3.5E+02
TRICHLOROETHYLENE	2.6E-01	7.3E-01	3.6E+02
TRICHLOROPHENOL, 2,4,5-	1.8E-01	1.8E-01	1.1E+01
TRICHLOROPHENOL, 2,4,6-	6.9E+00	1.0E+01	4.9E+02
VANADIUM	1.1E+02	2.0E+02	1.9E+01

**TABLE B. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Shallow Soils (≤ 3 m bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Shallow Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
VINYL CHLORIDE	6.7E-03	1.9E-02	4.0E+00
XYLENES	1.5E+00	1.5E+00	1.3E+01
ZINC	6.0E+02	6.0E+02	8.1E+01
Electrical Conductivity (mS/cm, USEPA Method 120.1 MOD)	2.0	4.0	not applicable
Sodium Adsorption Ratio	5.0	12	not applicable

Notes:

1. Shallow soils defined as soils less than or equal to 3 meters (approximately 10 feet) below ground surface.
2. Category "Residential Land Use" generally considered adequate for other sensitive uses (e.g., day-care centers, hospitals, etc.)
3. Assumes potential discharge of groundwater into marine or estuary surface water system.

Source of soil ESLs: Refer to Appendix 1, Tables A-1 and A-2.

Source of groundwater ESLs: Refer to Appendix 1, Table F-1b.

Soil data should be reported on dry-weight basis (see Appendix 1, Section 6.2).

Soil ESLs intended to address direct-exposure, groundwater protection, ecologic (urban areas) and nuisance concerns under noted land-use scenarios. Soil gas data should be collected for additional evaluation of potential indoor-air impacts at sites with significant areas of VOC-impacted soil. See Section 2.6 and Table E.

Groundwater ESLs intended to address surface water, indoor-air and nuisance concerns. Use in conjunction with soil gas screening levels to more closely evaluate potential impacts to indoor-air if groundwater screening levels for this concern approached or exceeded (refer to Section 2.6 and Appendix 1, Table F-1a).

Aquatic habitat goals for bioaccumulation concerns not considered in selection of groundwater goals (refer to Section 2.7).

Refer to appendices for summary of ESL components.

TPH -Total Petroleum Hydrocarbons. TPH ESLs must be used in conjunction with ESLs for related chemicals (e.g., BTEX, PAHs, oxidizers, etc.). See Volume 1, Section 2.2 and Appendix 1, Chapter 5.

**TABLE C. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
ACENAPHTHENE	1.6E+01	1.6E+01	2.0E+01
ACENAPHTHYLENE	1.3E+01	1.3E+01	3.0E+01
ACETONE	2.4E-01	2.4E-01	7.0E+02
ALDRIN	1.2E+00	1.2E+00	2.0E-03
ANTHRACENE	2.8E+00	2.8E+00	7.3E-01
ANTIMONY	3.1E+02	3.1E+02	6.0E+00
ARSENIC	1.6E+01	1.6E+01	3.6E+01
BARIUM	2.5E+03	2.5E+03	1.0E+03
BENZENE	4.4E-02	4.4E-02	1.0E+00
BENZO(a)ANTHRACENE	1.2E+01	1.2E+01	2.7E-02
BENZO(b)FLUORANTHENE	1.5E+01	1.5E+01	2.9E-02
BENZO(k)FLUORANTHENE	2.7E+00	2.7E+00	2.9E-02
BENZO(g,h,j)PERYLENE	2.7E+01	2.7E+01	1.0E-01
BENZO(a)PYRENE	1.5E+00	1.5E+00	1.4E-02
BERYLLIUM	9.8E+01	9.8E+01	2.7E+00
BIPHENYL, 1,1-	6.5E-01	6.5E-01	5.0E-01
BIS(2-CHLOROETHYL)ETHER	1.8E-04	1.8E-04	1.4E-02
BIS(2-CHLOROISOPROPYL)ETHER	5.4E-03	5.4E-03	5.0E-01
BIS(2-ETHYLHEXYL)PHTHALATE	6.6E+01	6.6E+01	4.0E+00
BORON	4.6E+04	4.6E+04	1.6E+00
BROMODICHLOROMETHANE	1.2E-02	3.9E-02	1.0E+02
BROMOFORM	2.2E+00	2.2E+00	1.0E+02
BROMOMETHANE	2.2E-01	3.9E-01	9.8E+00
CADMIUM	3.8E+01	3.8E+01	2.2E+00
CARBON TETRACHLORIDE	1.2E-02	3.5E-02	5.0E-01
CHLORDANE	1.5E+01	1.5E+01	4.0E-03
CHLOROANILINE, p-	5.3E-02	5.3E-02	5.0E+00
CHLOROBENZENE	1.5E+00	1.5E+00	2.5E+01
CHLOROETHANE	6.3E-01	8.5E-01	1.2E+01
CHLOROFORM	9.8E-02	2.7E-01	1.0E+02
CHLOROMETHANE	2.9E-01	4.2E-01	2.7E+00
CHLOROPHENOL, 2-	1.2E-02	1.2E-02	1.8E-01
CHROMIUM (Total)	5.8E+01	5.8E+01	5.0E+01
CHROMIUM III	2.5E+03	5.0E+03	1.8E+02
CHROMIUM VI	1.8E+00	1.8E+00	1.1E+01
CHRYSENE	1.9E+01	1.9E+01	2.9E-01
COBALT	9.4E+01	9.4E+01	3.0E+00
COPPER	2.5E+03	5.0E+03	3.1E+00
CYANIDE (Free)	5.0E+02	1.0E+03	1.0E+00
DIBENZO(a,h)ANTHTRACENE	4.3E+00	4.3E+00	8.5E-03
DIBROMOCHLOROMETHANE	1.9E-02	5.8E-02	1.0E+02
1,2-DIBROMO-3-CHLOROPROPANE	1.1E-03	1.1E-03	2.0E-01

**TABLE C. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
DIBROMOETHANE, 1,2-	3.3E-04	3.3E-04	5.0E-02
DICHLOROBENZENE, 1,2-	1.1E+00	1.1E+00	1.0E+01
DICHLOROBENZENE, 1,3-	7.2E-01	7.2E-01	6.3E+00
DICHLOROBENZENE, 1,4-	4.7E-02	1.3E-01	5.0E+00
DICHLOROBENZIDINE, 3,3-	7.7E-03	7.7E-03	2.9E-02
DICHLORODIPHENYLDICHLOROETHANE (DDD)	1.2E+02	1.2E+02	1.0E-03
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	8.7E+01	8.7E+01	1.0E-03
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	4.3E+00	4.3E+00	1.0E-03
DICHLOROETHANE, 1,1-	2.0E-01	2.0E-01	5.0E+00
DICHLOROETHANE, 1,2-	4.5E-03	4.5E-03	5.0E-01
DICHLOROETHYLENE, 1,1-	1.0E+00	1.0E+00	6.0E+00
DICHLOROETHYLENE, Cis 1,2-	1.9E-01	1.9E-01	6.0E+00
DICHLOROETHYLENE, Trans 1,2-	6.7E-01	6.7E-01	1.0E+01
DICHLOROPHENOL, 2,4-	3.0E-01	3.0E-01	3.0E-01
DICHLOROPROPANE, 1,2-	5.2E-02	1.2E-01	5.0E+00
DICHLOROPROPENE, 1,3-	3.3E-02	5.9E-02	5.0E-01
DIELDRIN	2.3E-03	2.3E-03	1.9E-03
DIETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHENOL, 2,4-	6.7E-01	6.7E-01	1.0E+02
DINITROPHENOL, 2,4-	4.0E-02	4.0E-02	1.4E+01
DINITROTOLUENE, 2,4-	8.5E-04	8.5E-04	1.1E-01
1,4 DIOXANE	1.8E-03	1.8E-03	3.0E+00
DIOXIN (2,3,7,8-TCDD)	2.3E-04	2.3E-04	5.0E-06
ENDOSULFAN	4.6E-03	4.6E-03	8.7E-03
ENDRIN	6.5E-04	6.5E-04	2.3E-03
ETHYLBENZENE	3.3E+00	3.3E+00	3.0E+01
FLUORANTHENE	6.0E+01	6.0E+01	8.0E+00
FLUORENE	8.9E+00	8.9E+00	3.9E+00
HEPTACHLOR	1.4E-02	1.4E-02	3.8E-03
HEPTACHLOR EPOXIDE	1.5E-02	1.5E-02	3.8E-03
HEXACHLOROENZENE	1.1E+01	1.1E+01	1.0E+00
HEXACHLOROBUTADIENE	1.0E+00	1.0E+00	2.1E-01
HEXACHLOROCYCLOHEXANE (gamma) LINDANE	4.9E-02	4.9E-02	8.0E-02
HEXACHLOROETHANE	2.4E+00	2.4E+00	7.0E-01
INDENO(1,2,3-cd)PYRENE	7.7E+00	7.7E+00	2.9E-02
LEAD	7.5E+02	7.5E+02	2.5E+00
MERCURY	1.1E+02	1.1E+02	1.2E-02
METHOXYCHLOR	1.9E+01	1.9E+01	1.9E-02
METHYLENE CHLORIDE	7.7E-02	7.7E-02	5.0E+00
METHYL ETHYL KETONE	3.9E+00	3.9E+00	4.2E+03
METHYL ISOBUTYL KETONE	2.8E+00	2.8E+00	1.2E+02

TABLE C. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS a Current or Potential Source of Drinking Water

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
METHYL MERCURY	4.1E+01	4.1E+01	3.0E-03
METHYLNAPHTHALENE (total 1- & 2-)	2.5E-01	2.5E-01	2.1E+00
METHYL TERT BUTYL ETHER	2.3E-02	2.3E-02	5.0E+00
MOLYBDENUM	2.5E+03	3.9E+03	3.5E+01
NAPHTHALENE	4.2E+00	4.2E+00	2.1E+01
NICKEL	1.0E+03	1.0E+03	8.2E+00
PENTACHLOROPHENOL	5.3E+00	5.3E+00	1.0E+00
PERCHLORATE	7.7E+01	7.7E+01	7.0E-01
PHENANTHRENE	1.1E+01	1.1E+01	4.6E+00
PHENOL	7.6E-02	7.6E-02	5.0E+00
POLYCHLORINATED BIPHENYLS (PCBs)	6.3E+00	6.3E+00	1.4E-02
PYRENE	8.5E+01	8.5E+01	2.0E+00
SELENIUM	2.5E+03	3.9E+03	5.0E+00
SILVER	2.5E+03	3.9E+03	1.9E-01
STYRENE	1.5E+00	1.5E+00	1.0E+01
tert-BUTYL ALCOHOL	7.3E-02	7.3E-02	1.2E+01
TETRACHLOROETHANE, 1,1,1,2-	2.4E-02	2.4E-02	1.3E+00
TETRACHLOROETHANE, 1,1,2,2-	9.0E-03	1.8E-02	1.0E+00
TETRACHLOROETHYLENE	8.8E-02	2.5E-01	5.0E+00
THALLIUM	5.1E+01	5.1E+01	2.0E+00
TOLUENE	2.9E+00	2.9E+00	4.0E+01
TOXAPHENE	4.2E-04	4.2E-04	2.0E-04
TPH (gasolines)	1.0E+02	1.0E+02	1.0E+02
TPH (middle distillates)	1.0E+02	1.0E+02	1.0E+02
TPH (residual fuels)	1.0E+03	1.0E+03	1.0E+02
TRICHLOROENZENE, 1,2,4-	7.6E+00	7.6E+00	2.5E+01
TRICHLOROETHANE, 1,1,1-	7.8E+00	7.8E+00	6.2E+01
TRICHLOROETHANE, 1,1,2-	3.3E-02	7.0E-02	5.0E+00
TRICHLOROETHYLENE	2.6E-01	4.6E-01	5.0E+00
TRICHLOROPHENOL, 2,4,5-	1.8E-01	1.8E-01	1.1E+01
TRICHLOROPHENOL, 2,4,6-	1.7E-01	1.7E-01	5.0E-01
VANADIUM	2.5E+03	5.0E+03	1.5E+01

**TABLE C. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
VINYL CHLORIDE	6.7E-03	1.9E-02	5.0E-01
XYLENES	1.5E+00	1.5E+00	1.3E+01
ZINC	2.5E+03	5.0E+03	8.1E+01
Electrical Conductivity (mS/cm, USEPA Method 120.1 MOD)	not applicable	not applicable	not applicable
Sodium Adsorption Ratio	not applicable	not applicable	not applicable

Notes:

1. Deep soils defined as soils greater than 3 meters (approximately 10 feet) below ground surface.
2. Category "Residential Land Use" generally considered adequate for other sensitive uses (e.g., day-care centers, hospitals, etc.)
3. Assumes potential discharge of groundwater into a freshwater, marine or estuary surface water system.

Source of soil ESLs: Refer to Appendix 1, Tables C-1 and C-2.

Source of groundwater ESLs: Refer to Appendix 1, Table F-1a.

Soil data should be reported on dry-weight basis (see Appendix 1, Section 6.2).

Soil ESLs intended to address human health, groundwater protection and nuisance concerns under a construction/trench worker exposure scenario and noted land-use scenarios. **Soil gas data should be collected for additional evaluation of potential indoor-air impacts at sites with significant areas of VOC-impacted soil. See Section 2.6 and Table E.**

Groundwater ESLs intended to be address drinking water, surface water, indoor-air and nuisance concerns. **Use in conjunction with soil gas screening levels to more closely evaluate potential impacts to indoor-air if groundwater screening levels for this concern approached or exceeded (refer to Section 2.6 and Appendix 1, Table F-1a).**

Aquatic habitat goals for bioaccumulation concerns not considered in selection of groundwater goals (refer to Section 2.7).

Refer to appendices for summary of ESL components.

TPH -Total Petroleum Hydrocarbons. TPH ESLs must be used in conjunction with ESLs for related chemicals (e.g., BTEX, PAHs, oxidizers, etc.). See Volume 1, Section 2.2 and Appendix 1, Chapter 5.

TABLE D. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
ACENAPHTHENE	1.9E+01	1.9E+01	2.3E+01
ACENAPHTHYLENE	1.3E+01	1.3E+01	3.0E+01
ACETONE	5.0E-01	5.0E-01	1.5E+03
ALDRIN	1.2E+00	1.2E+00	1.3E-01
ANTHRACENE	2.8E+00	2.8E+00	7.3E-01
ANTIMONY	3.1E+02	3.1E+02	3.0E+01
ARSENIC	1.6E+01	1.6E+01	3.6E+01
BARIUM	2.5E+03	2.5E+03	1.0E+03
BENZENE	1.8E-01	5.0E-01	4.6E+01
BENZO(a)ANTHRACENE	1.2E+01	1.2E+01	2.7E-02
BENZO(b)FLUORANTHENE	1.5E+01	1.5E+01	2.9E-02
BENZO(k)FLUORANTHENE	1.5E+01	1.5E+01	4.0E-01
BENZO(g,h,i)PERYLENE	2.7E+01	2.7E+01	1.0E-01
BENZO(a)PYRENE	1.5E+00	1.5E+00	1.4E-02
BERYLLIUM	9.8E+01	9.8E+01	2.7E+00
BIPHENYL, 1,1-	6.5E+00	6.5E+00	5.0E+00
BIS(2-CHLOROETHYL)ETHER	4.0E-03	1.3E-02	6.1E+01
BIS(2-CHLOROISOPROPYL)ETHER	6.6E-01	6.6E-01	6.1E+01
BIS(2-ETHYLHEXYL)PHTHALATE	5.3E+02	5.3E+02	3.2E+01
BORON	4.6E+04	4.6E+04	1.6E+00
BROMODICHLOROMETHANE	1.2E-02	3.9E-02	1.6E+02
BROMOFORM	6.9E+01	6.9E+01	3.2E+03
BROMOMETHANE	2.2E-01	5.1E-01	1.6E+02
CADMIUM	3.8E+01	3.8E+01	2.2E+00
CARBON TETRACHLORIDE	1.2E-02	3.5E-02	9.5E+00
CHLORDANE	1.5E+01	1.5E+01	4.0E-03
CHLOROANILINE, p-	5.3E-02	5.3E-02	5.0E+00
CHLOROBENZENE	1.5E+00	1.5E+00	2.5E+01
CHLOROETHANE	6.3E-01	8.5E-01	1.2E+01
CHLOROFORM	9.8E-02	2.7E-01	3.4E+02
CHLOROMETHANE	2.9E-01	8.1E-01	1.7E+02
CHLOROPHENOL, 2-	1.2E-01	1.2E-01	1.8E+00
CHROMIUM (Total)	5.8E+01	5.8E+01	1.8E+02
CHROMIUM III	2.5E+03	5.0E+03	1.8E+02
CHROMIUM VI	1.8E+00	1.8E+00	1.1E+01
CHRYSENE	2.3E+01	2.3E+01	3.5E-01
COBALT	9.4E+01	9.4E+01	3.0E+00
COPPER	2.5E+03	5.0E+03	3.1E+00
CYANIDE (Free)	5.0E+02	1.0E+03	1.0E+00
DIBENZO(a,h)ANTHTRACENE	4.3E+00	4.3E+00	2.5E-01
DIBROMOCHLOROMETHANE	1.9E-02	5.8E-02	1.8E+02
1,2-DIBROMO-3-CHLOROPROPANE	1.1E-03	1.1E-03	2.0E-01

TABLE D. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
DIBROMOETHANE, 1,2-	7.3E-03	2.1E-02	1.6E+02
DICHLOROENZENE, 1,2-	1.6E+00	1.6E+00	1.4E+01
DICHLOROENZENE, 1,3-	7.4E+00	7.4E+00	6.5E+01
DICHLOROENZENE, 1,4-	4.7E-02	1.3E-01	1.5E+01
DICHLOROBENZIDINE, 3,3-	1.7E+01	1.7E+01	2.5E+02
DICHLORODIPHENYLDICHLOROETHANE (DDD)	1.2E+02	1.2E+02	1.0E-03
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	8.7E+01	8.7E+01	1.0E-03
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	4.3E+00	4.3E+00	1.0E-03
DICHLOROETHANE, 1,1-	3.3E-01	9.1E-01	4.7E+01
DICHLOROETHANE, 1,2-	2.5E-02	6.9E-02	2.0E+02
DICHLOROETHYLENE, 1,1-	4.3E+00	4.3E+00	2.5E+01
DICHLOROETHYLENE, Cis 1,2-	1.6E+00	3.6E+00	5.9E+02
DICHLOROETHYLENE, Trans 1,2-	3.1E+00	7.3E+00	5.9E+02
DICHLOROPHENOL, 2,4-	3.0E+00	3.0E+00	3.0E+00
DICHLOROPROPANE, 1,2-	5.2E-02	1.5E-01	1.0E+02
DICHLOROPROPENE, 1,3-	3.3E-02	9.1E-02	4.9E+01
DIELDRIN	2.3E-03	2.3E-03	1.9E-03
DIETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHTHALATE	3.5E-02	3.5E-02	1.5E+00
DIMETHYLPHENOL, 2,4-	7.4E-01	7.4E-01	1.1E+02
DINITROPHENOL, 2,4-	2.1E-01	2.1E-01	7.5E+01
DINITROTOLUENE, 2,4-	8.6E-01	8.6E-01	1.2E+02
1,4 DIOXANE	3.0E+01	3.0E+01	5.0E+04
DIOXIN (2,3,7,8-TCDD)	2.3E-04	2.3E-04	5.0E-06
ENDOSULFAN	4.6E-03	4.6E-03	8.7E-03
ENDRIN	6.5E-04	6.5E-04	2.3E-03
ETHYLBENZENE	4.7E+00	1.3E+01	2.9E+02
FLUORANTHENE	6.0E+01	6.0E+01	8.0E+00
FLUORENE	8.9E+00	8.9E+00	3.9E+00
HEPTACHLOR	1.4E-02	1.4E-02	3.8E-03
HEPTACHLOR EPOXIDE	1.5E-02	1.5E-02	3.8E-03
HEXACHLOROBENZENE	1.1E+01	1.1E+01	3.7E+00
HEXACHLOROBUTADIENE	2.3E+01	2.3E+01	4.7E+00
HEXACHLOROCYCLOHEXANE (gamma) LINDANE	4.9E-02	4.9E-02	8.0E-02
HEXACHLOROETHANE	4.1E+01	4.1E+01	1.2E+01
INDENO(1,2,3-cd)PYRENE	7.7E+00	7.7E+00	2.9E-02
LEAD	7.5E+02	7.5E+02	2.5E+00
MERCURY	1.1E+02	1.1E+02	1.2E-02
METHOXYCHLOR	1.9E+01	1.9E+01	1.9E-02
METHYLENE CHLORIDE	5.2E-01	1.5E+00	2.2E+03
METHYL ETHYL KETONE	1.3E+01	1.3E+01	1.4E+04
METHYL ISOBUTYL KETONE	3.9E+00	3.9E+00	1.7E+02

**TABLE D. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
METHYL MERCURY	4.1E+01	4.1E+01	3.0E-03
METHYLNAPHTHALENE (total 1- & 2-)	2.5E-01	2.5E-01	2.1E+00
METHYL TERT BUTYL ETHER	2.0E+00	5.6E+00	1.8E+03
MOLYBDENUM	2.5E+03	3.9E+03	2.4E+02
NAPHTHALENE	4.5E+00	4.8E+00	2.4E+01
NICKEL	1.0E+03	1.0E+03	8.2E+00
PENTACHLOROPHENOL	4.2E+01	4.2E+01	7.9E+00
PERCHLORATE	7.7E+01	7.7E+01	6.0E+02
PHENANTHRENE	1.1E+01	1.1E+01	4.6E+00
PHENOL	1.9E+01	1.9E+01	1.3E+03
POLYCHLORINATED BIPHENYLS (PCBs)	6.3E+00	6.3E+00	1.4E-02
PYRENE	8.5E+01	8.5E+01	2.0E+00
SELENIUM	2.5E+03	3.9E+03	5.0E+00
SILVER	2.5E+03	3.9E+03	1.9E-01
STYRENE	1.5E+01	1.5E+01	1.0E+02
tert-BUTYL ALCOHOL	1.1E+02	1.1E+02	1.8E+04
TETRACHLOROETHANE, 1,1,1,2-	1.6E+01	1.6E+01	9.3E+02
TETRACHLOROETHANE, 1,1,2,2-	9.0E-03	2.5E-02	1.9E+02
TETRACHLOROETHYLENE	8.8E-02	2.5E-01	1.2E+02
THALLIUM	5.1E+01	5.1E+01	2.0E+01
TOLUENE	9.3E+00	9.3E+00	1.3E+02
TOXAPHENE	4.2E-04	4.2E-04	2.0E-04
TPH (gasolines)	4.0E+02	4.0E+02	5.0E+02
TPH (middle distillates)	5.0E+02	5.0E+02	6.4E+02
TPH (residual fuels)	1.0E+03	1.0E+03	6.4E+02
TRICHLOROBENZENE, 1,2,4-	7.6E+00	7.6E+00	2.5E+01
TRICHLOROETHANE, 1,1,1-	7.8E+00	7.8E+00	6.2E+01
TRICHLOROETHANE, 1,1,2-	3.3E-02	9.1E-02	3.5E+02
TRICHLOROETHYLENE	2.6E-01	7.3E-01	3.6E+02
TRICHLOROPHENOL, 2,4,5-	1.8E-01	1.8E-01	1.1E+01
TRICHLOROPHENOL, 2,4,6-	1.6E+02	1.6E+02	4.9E+02
VANADIUM	2.5E+03	5.0E+03	1.9E+01

**TABLE D. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Deep Soils (>3m bgs)
Groundwater IS NOT a Current or Potential Source of Drinking Water**

CHEMICAL PARAMETER	¹ Deep Soil		³ Groundwater (ug/L)
	² Residential Land Use (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	
VINYL CHLORIDE	6.7E-03	1.9E-02	4.0E+00
XYLENES	1.5E+00	1.5E+00	1.3E+01
ZINC	2.5E+03	5.0E+03	8.1E+01
Electrical Conductivity (mS/cm, USEPA Method 120.1 MOD)	not applicable	not applicable	not applicable
Sodium Adsorption Ratio	not applicable	not applicable	not applicable

Notes:

1. Deep soils defined as soils greater than 3 meters (approximately 10 feet) below ground surface.
 2. Category "Residential Land Use" generally considered adequate for other sensitive uses (e.g., day-care centers, hospitals, etc.)
 3. Assumes potential discharge of groundwater into marine or estuary surface water system.
- Source of soil ESLs: Refer to Appendix 1, Tables D-1 and D-2.
Source of groundwater ESLs: Refer to Appendix 1, Table F-1b.
Soil data should be reported on dry-weight basis (see Appendix 1, Section 6.2).
Soil ESLs intended to address human health, groundwater protection and nuisance concerns under a construction/trench worker exposure scenario and noted land-use scenarios. **Soil gas data should be collected for additional evaluation of potential indoor-air impacts at sites with significant areas of VOC-impacted soil. See Section 2.6 and Table E.**
Groundwater ESLs intended to address surface water, indoor-air and nuisance concerns. **Use in conjunction with soil gas screening levels to more closely evaluate potential impacts to indoor-air if groundwater screening levels for this concern approached or exceeded (refer to Section 2.6 and Appendix 1, Table F-1a).**
Aquatic habitat goals for bioaccumulation concerns not considered in selection of groundwater goals (refer to Section 2.7).
Refer to appendices for summary of ESL components.
TPH -Total Petroleum Hydrocarbons. TPH ESLs must be used in conjunction with ESLs for related chemicals (e.g., BTEX, PAHs, oxidizers, etc.). See Volume 1, Section 2.2 and Appendix 1, Chapter 5.

**TABLE E. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Indoor Air and Soil Gas**

CHEMICAL PARAMETER	INDOOR AIR SCREENING LEVELS		² SHALLOW SOIL GAS SCREENING LEVELS	
	¹ Residential Land Use (ug/m ³)	Commercial/Industrial Land Use Only (ug/m ³)	¹ Residential Land Use (ug/m ³)	Commercial/Industrial Land Use Only (ug/m ³)
ACENAPHTHENE	4.4E+01	6.1E+01	4.4E+04	1.2E+05
ACENAPHTHYLENE	2.9E+01	4.1E+01	2.9E+04	8.2E+04
ACETONE	7.3E+01	1.0E+02	7.3E+04	2.0E+05
ALDRIN				
ANTHRACENE	2.3E+02	3.2E+02	2.3E+05	6.4E+05
ANTIMONY				
ARSENIC				
BARIUM				
BENZENE	8.4E-02	1.4E-01	8.4E+01	2.8E+02
BENZO(a)ANTHRACENE				
BENZO(b)FLUORANTHENE				
BENZO(k)FLUORANTHENE				
BENZO(g,h,i)PERYLENE				
BENZO(a)PYRENE				
BERYLLIUM				
BIPHENYL, 1,1-	3.7E+01	5.1E+01	3.7E+04	1.0E+05
BIS(2-CHLOROETHYL)ETHER	3.4E-03	5.8E-03	3.4E+00	1.2E+01
BIS(2-CHLOROISOPROPYL)ETHER	2.4E-01	4.1E-01	2.4E+02	8.2E+02
BIS(2-ETHYLHEXYL)PHTHALATE				
BORON				
BROMODICHLOROMETHANE	6.6E-02	1.1E-01	6.6E+01	2.2E+02
BROMOFORM				
BROMOMETHANE	1.0E+00	1.4E+00	1.0E+03	2.9E+03
CADMIUM				
CARBON TETRACHLORIDE	5.1E-04	7.2E-04	5.1E-01	1.4E+00
CHLORDANE				
CHLOROANILINE, p-				
CHLOROBENZENE	1.3E+01	1.8E+01	1.3E+04	3.5E+04
CHLOROETHANE	2.9E+00	4.9E+00	2.9E+03	9.9E+03
CHLOROFORM	4.6E-01	7.7E-01	4.6E+02	1.5E+03
CHLOROMETHANE	1.4E+00	2.3E+00	1.4E+03	4.5E+03
CHLOROPHENOL, 2-	3.8E+00	5.3E+00	3.8E+03	1.1E+04
CHROMIUM (Total)				
CHROMIUM III				
CHROMIUM VI				
CHRYSENE				
COBALT				
COPPER				
CYANIDE (Free)				
DIBENZO(a,h)ANTHTRACENE				
DIBROMOCHLOROMETHANE	9.0E-02	1.5E-01	9.0E+01	3.0E+02
1,2-DIBROMO-3-CHLOROPROPANE	3.5E-07	5.8E-07	3.5E-04	1.2E-03
DIBROMOETHANE, 1,2-	3.4E-02	5.8E-02	3.4E+01	1.2E+02

**TABLE E. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Indoor Air and Soil Gas**

CHEMICAL PARAMETER	INDOOR AIR SCREENING LEVELS		² SHALLOW SOIL GAS SCREENING LEVELS	
	¹ Residential Land Use (ug/m ³)	Commercial/ Industrial Land Use Only (ug/m ³)	¹ Residential Land Use (ug/m ³)	Commercial/ Industrial Land Use Only (ug/m ³)
DICHLOROBENZENE, 1,2-	4.2E+01	5.8E+01	4.2E+04	1.2E+05
DICHLOROBENZENE, 1,3-	6.7E-01	9.3E-01	6.7E+02	1.9E+03
DICHLOROBENZENE, 1,4-	2.2E-01	3.7E-01	2.2E+02	7.4E+02
DICHLOROBENZIDINE, 3,3-				
DICHLORODIPHENYLDICHLOROETHANE (DDD)				
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)				
DICHLORODIPHENYLTRICHLOROETHANE (DDT)				
DICHLOROETHANE, 1,1-	1.5E+00	2.6E+00	1.5E+03	5.1E+03
DICHLOROETHANE, 1,2-	1.2E-01	1.9E-01	1.2E+02	3.9E+02
DICHLOROETHYLENE, 1,1-	4.2E+01	5.8E+01	4.2E+04	1.2E+05
DICHLOROETHYLENE, Cis 1,2-	7.3E+00	1.0E+01	7.3E+03	2.0E+04
DICHLOROETHYLENE, Trans 1,2-	1.5E+01	2.0E+01	1.5E+04	4.1E+04
DICHLOROPHENOL, 2,4-				
DICHLOROPROPANE, 1,2-	2.4E-01	4.1E-01	2.4E+02	8.2E+02
DICHLOROPROPENE, 1,3-	1.5E-01	2.6E-01	1.5E+02	5.1E+02
DIELDRIN				
DIETHYLPHTHALATE				
DIMETHYLPHTHALATE				
DIMETHYLPHENOL, 2,4-	1.5E+01	2.0E+01	1.5E+04	4.1E+04
DINITROPHENOL, 2,4-				
DINITROTOLUENE, 2,4-				
1,4 DIOXANE				
DIOXIN (2,3,7,8-TCDD)				
ENDOSULFAN				
ENDRIN				
ETHYLBENZENE	2.2E+00	3.7E+00	2.2E+03	7.4E+03
FLUORANTHENE				
FLUORENE	2.9E+01	4.1E+01	2.9E+04	8.2E+04
HEPTACHLOR				
HEPTACHLOR EPOXIDE				
HEXACHLOROBENZENE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOHEXANE (gamma) LINDANE				
HEXACHLOROETHANE				
INDENO(1,2,3-cd)PYRENE				
LEAD				
MERCURY				
METHOXYCHLOR				
METHYLENE CHLORIDE	2.4E+00	4.1E+00	2.4E+03	8.2E+03
METHYL ETHYL KETONE	2.1E+02	2.9E+02	2.1E+05	5.8E+05
METHYL ISOBUTYL KETONE	1.7E+01	2.4E+01	1.7E+04	4.7E+04
METHYL MERCURY				
METHYLNAPHTHALENE (total 1- & 2-)	2.9E+01	4.1E+01	2.9E+04	8.2E+04

TABLE E. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Indoor Air and Soil Gas

CHEMICAL PARAMETER	INDOOR AIR SCREENING LEVELS		² SHALLOW SOIL GAS SCREENING LEVELS	
	¹ Residential Land Use (ug/m ³)	Commercial/ Industrial Land Use Only (ug/m ³)	¹ Residential Land Use (ug/m ³)	Commercial/ Industrial Land Use Only (ug/m ³)
METHYL TERT BUTYL ETHER	9.4E+00	1.6E+01	9.4E+03	3.1E+04
MOLYBDENUM				
NAPHTHALENE	6.3E-01	8.8E-01	6.3E+02	1.8E+03
NICKEL				
PENTACHLOROPHENOL				
PERCHLORATE				
PHENANTHRENE	2.9E+01	4.1E+01	2.9E+04	8.2E+04
PHENOL				
POLYCHLORINATED BIPHENYLS (PCBs)				
PYRENE	2.3E+01	3.2E+01	2.3E+04	6.4E+04
SELENIUM				
SILVER				
STYRENE	2.1E+02	2.9E+02	2.1E+05	5.8E+05
tert-BUTYL ALCOHOL	2.8E+00	4.8E+00	2.8E+03	9.5E+03
TETRACHLOROETHANE, 1,1,1,2-	3.3E-01	5.5E-01	3.3E+02	1.1E+03
TETRACHLOROETHANE, 1,1,2,2-	4.2E-02	6.1E-02	4.2E+01	1.2E+02
TETRACHLOROETHYLENE	4.1E-01	6.9E-01	4.1E+02	1.4E+03
THALLIUM				
TOLUENE	8.3E+01	1.2E+02	8.3E+04	2.3E+05
TOXAPHENE				
TPH (gasolines)	1.0E+01	1.5E+01	1.0E+04	2.9E+04
TPH (middle distillates)	1.0E+01	1.5E+01	1.0E+04	2.9E+04
TPH (residual fuels)				
TRICHLOROBENZENE, 1,2,4-	4.2E+01	5.8E+01	4.2E+04	1.2E+05
TRICHLOROETHANE, 1,1,1-	4.6E+01	6.4E+01	4.6E+04	1.3E+05
TRICHLOROETHANE, 1,1,2-	1.5E-01	2.6E-01	1.5E+02	5.1E+02
TRICHLOROETHYLENE	1.2E+00	2.0E+00	1.2E+03	4.1E+03
TRICHLOROPHENOL, 2,4,5-	7.3E+01	1.0E+02	7.3E+04	2.0E+05
TRICHLOROPHENOL, 2,4,6-				
VANADIUM				
VINYL CHLORIDE	3.1E-02	5.2E-02	3.1E+01	1.0E+02
XYLENES	2.1E+01	2.9E+01	2.1E+04	5.8E+04
ZINC				

**TABLE E. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Indoor Air and Soil Gas**

CHEMICAL PARAMETER	INDOOR AIR SCREENING LEVELS		² SHALLOW SOIL GAS SCREENING LEVELS	
	¹ Residential Land Use (ug/m ³)	Commercial/Industrial Land Use Only (ug/m ³)	¹ Residential Land Use (ug/m ³)	Commercial/Industrial Land Use Only (ug/m ³)
Electrical Conductivity (mS/cm, USEPA Method 120.1 MOD)	not applicable	not applicable	not applicable	not applicable
Sodium Adsorption Ratio	not applicable	not applicable	not applicable	not applicable

Notes:

- Category "Residential Land Use" generally considered adequate for other sensitive uses (e.g., day-care centers, hospitals, etc.)
- Soil Gas: Screening levels based on soil gas data collected less than 1.5 meters (five feet) below a building foundation or the ground surface. Intended for evaluation of potential indoor-air impacts.

Soil gas data should be collected and evaluated at all sites with significant areas of VOC-impacted soil. Screening levels also apply to areas over of impacted groundwater.

Source of soil ESLs: Refer to Tables E-2 and E-3 in Appendix 1.

TPH -Total Petroleum Hydrocarbons. TPH ESLs must be used in conjunction with ESLs for related chemicals (e.g., BTEX, PAHs, oxidizers, etc.). See Volume 1, Section 2.2 and Appendix 1, Chapter 5.

**TABLE F. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Surface Water Bodies**

CHEMICAL PARAMETER	SURFACE WATER SCREENING LEVELS		
	Freshwater (ug/L)	Marine (ug/L)	Estuarine (ug/L)
ACENAPHTHENE	2.0E+01	2.0E+01	2.0E+01
ACENAPHTHYLENE	3.0E+01	3.0E+01	3.0E+01
ACETONE	7.0E+02	1.5E+03	1.5E+03
ALDRIN	1.4E-04	1.4E-04	1.4E-04
ANTHRACENE	7.3E-01	7.3E-01	7.3E-01
ANTIMONY	6.0E+00	5.0E+02	5.0E+02
ARSENIC	1.4E-01	1.4E-01	1.4E-01
BARIUM	1.0E+03	1.0E+03	1.0E+03
BENZENE	1.0E+00	7.1E+01	7.1E+01
BENZO(a)ANTHRACENE	2.7E-02	2.7E-02	2.7E-02
BENZO(b)FLUORANTHENE	2.9E-02	2.9E-02	2.9E-02
BENZO(k)FLUORANTHENE	2.9E-02	4.9E-02	4.9E-02
BENZO(g,h,i)PERYLENE	1.0E-01	1.0E-01	1.0E-01
BENZO(a)PYRENE	1.4E-02	1.4E-02	1.4E-02
BERYLLIUM	2.7E+00	2.7E+00	2.7E+00
BIPHENYL, 1,1-	5.0E-01	5.0E-01	5.0E-01
BIS(2-CHLOROETHYL)ETHER	1.4E-02	1.4E+00	1.4E+00
BIS(2-CHLOROISOPROPYL)ETHER	5.0E-01	6.1E+01	6.1E+01
BIS(2-ETHYLHEXYL)PHTHALATE	4.0E+00	5.9E+00	5.9E+00
BORON	1.6E+00	1.6E+00	1.6E+00
BROMODICHLOROMETHANE	1.0E+02	3.2E+03	3.2E+03
BROMOFORM	1.0E+02	3.6E+02	3.6E+02
BROMOMETHANE	9.8E+00	3.2E+03	3.2E+03
CADMIUM	2.2E+00	9.3E+00	9.3E+00
CARBON TETRACHLORIDE	5.0E-01	4.4E+00	4.4E+00
CHLORDANE	5.9E-04	5.9E-04	5.9E-04
CHLOROANILINE, p-	5.0E+00	5.0E+00	5.0E+00
CHLORO BENZENE	2.5E+01	5.0E+01	5.0E+01
CHLOROETHANE	1.2E+01	1.2E+01	1.2E+01
CHLOROFORM	1.0E+02	4.7E+02	4.7E+02
CHLOROMETHANE	2.7E+00	3.2E+03	3.2E+03
CHLOROPHENOL, 2-	1.8E-01	1.8E-01	1.8E-01
CHROMIUM (Total)	5.0E+01	1.8E+02	1.8E+02
CHROMIUM III	1.8E+02	1.8E+02	1.8E+02
CHROMIUM VI	1.1E+01	5.0E+01	5.0E+01
CHRYSENE	4.9E-02	4.9E-02	4.9E-02
COBALT	3.0E+00	3.0E+00	3.0E+00
COPPER	9.0E+00	3.1E+00	3.1E+00
CYANIDE (Free)	5.2E+00	1.0E+00	1.0E+00
DIBENZO(a,h)ANTHRACENE	8.5E-03	4.9E-02	4.9E-02
DIBROMOCHLOROMETHANE	4.6E+01	4.6E+01	4.6E+01
1,2-DIBROMO-3-CHLOROPROPANE	2.0E-01	2.0E-01	2.0E-01
DIBROMOETHANE, 1,2-	5.0E-02	1.4E+03	1.4E+03
DICHLORO BENZENE, 1,2-	1.0E+01	1.0E+01	1.0E+01
DICHLORO BENZENE, 1,3-	6.3E+00	6.5E+01	6.5E+01

**TABLE F. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Surface Water Bodies**

CHEMICAL PARAMETER	SURFACE WATER SCREENING LEVELS		
	Freshwater (ug/L)	Marine (ug/L)	Estuarine (ug/L)
DICHLOROBENZENE, 1,4-	5.0E+00	1.1E+01	1.1E+01
DICHLOROBENZIDINE, 3,3-	2.9E-02	7.7E-02	7.7E-02
DICHLORODIPHENYLDICHLOROETHANE (DDD)	8.4E-04	8.4E-04	8.4E-04
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	5.9E-04	5.9E-04	5.9E-04
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	5.9E-04	5.9E-04	5.9E-04
DICHLOROETHANE, 1,1-	5.0E+00	4.7E+01	4.7E+01
DICHLOROETHANE, 1,2-	5.0E-01	9.9E+01	9.9E+01
DICHLOROETHYLENE, 1,1-	3.2E+00	3.2E+00	3.2E+00
DICHLOROETHYLENE, Cis 1,2-	6.0E+00	5.9E+02	5.9E+02
DICHLOROETHYLENE, Trans 1,2-	1.0E+01	2.6E+02	2.6E+02
DICHLOROPHENOL, 2,4-	3.0E-01	3.0E-01	3.0E-01
DICHLOROPROPANE, 1,2-	5.0E+00	1.0E+01	1.0E+01
DICHLOROPROPENE, 1,3-	5.0E-01	1.2E+02	1.2E+02
DIELDRIN	2.2E-03	1.9E-03	1.9E-03
DIETHYLPHTHALATE	1.5E+00	1.7E+00	1.7E+00
DIMETHYLPHTHALATE	1.5E+00	1.7E+00	1.7E+00
DIMETHYLPHENOL, 2,4-	1.0E+02	1.1E+02	1.1E+02
DINITROPHENOL, 2,4-	1.4E+01	7.5E+01	7.5E+01
DINITROTOLUENE, 2,4-	1.1E-01	9.1E+00	9.1E+00
1,4 DIOXANE	3.0E+00	5.0E+04	5.0E+04
DIOXIN (2,3,7,8-TCDD)	1.4E-08	1.4E-08	1.4E-08
ENDOSULFAN	5.6E-02	8.7E-03	8.7E-03
ENDRIN	3.6E-02	2.3E-03	2.3E-03
ETHYLBENZENE	3.0E+01	3.0E+01	3.0E+01
FLUORANTHENE	8.1E+00	8.0E+00	8.0E+00
FLUORENE	3.9E+00	3.9E+00	3.9E+00
HEPTACHLOR	2.1E-04	2.1E-04	2.1E-04
HEPTACHLOR EPOXIDE	1.1E-04	1.1E-04	1.1E-04
HEXACHLOROBENZENE	7.7E-04	7.7E-04	7.7E-04
HEXACHLOROBUTADIENE	2.1E-01	4.7E+00	4.7E+00
HEXACHLOROCYCLOHEXANE (gamma) LINDANE	6.3E-02	6.3E-02	6.3E-02
HEXACHLOROETHANE	7.0E-01	8.9E+00	8.9E+00
INDENO(1,2,3-cd)PYRENE	2.9E-02	2.9E-02	2.9E-02
LEAD	2.5E+00	8.1E+00	8.1E+00
MERCURY	5.1E-02	2.5E-02	2.5E-02
METHOXYCHLOR	1.9E-02	1.9E-02	1.9E-02
METHYLENE CHLORIDE	5.0E+00	1.6E+03	1.6E+03
METHYL ETHYL KETONE	4.2E+03	8.4E+03	8.4E+03
METHYL ISOBUTYL KETONE	1.2E+02	1.7E+02	1.7E+02
METHYL MERCURY	3.0E-03	3.0E-03	3.0E-03
METHYLNAPHTHALENE (total 1- & 2-)	2.1E+00	2.1E+00	2.1E+00
METHYL TERT BUTYL ETHER	5.0E+00	1.8E+02	1.8E+02
MOLYBDENUM	3.5E+01	2.4E+02	2.4E+02
NAPHTHALENE	2.1E+01	2.1E+01	2.1E+01
NICKEL	5.2E+01	8.2E+00	8.2E+00

**TABLE F. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Surface Water Bodies**

CHEMICAL PARAMETER	SURFACE WATER SCREENING LEVELS		
	Freshwater (ug/L)	Marine (ug/L)	Estuarine (ug/L)
PENTACHLOROPHENOL	1.0E+00	7.9E+00	7.9E+00
PERCHLORATE	7.0E-01	6.0E+02	6.0E+02
PHENANTHRENE	6.3E+00	4.6E+00	4.6E+00
PHENOL	5.0E+00	1.3E+03	1.3E+03
POLYCHLORINATED BIPHENYLS (PCBs)	1.7E-04	1.7E-04	1.7E-04
PYRENE	2.0E+00	2.0E+00	2.0E+00
SELENIUM	5.0E+00	7.1E+01	7.1E+01
SILVER	3.4E-01	1.9E-01	1.9E-01
STYRENE	1.0E+01	1.1E+01	1.1E+01
tert-BUTYL ALCOHOL	1.2E+01	1.8E+04	1.8E+04
TETRACHLOROETHANE, 1,1,1,2-	1.3E+00	9.3E+02	9.3E+02
TETRACHLOROETHANE, 1,1,2,2-	1.0E+00	1.1E+01	1.1E+01
TETRACHLOROETHYLENE	5.0E+00	8.9E+00	8.9E+00
THALLIUM	2.0E+00	6.3E+00	6.3E+00
TOLUENE	4.0E+01	4.0E+01	4.0E+01
TOXAPHENE	2.0E-04	2.0E-04	2.0E-04
TPH (gasolines)	1.0E+02	3.7E+03	3.7E+03
TPH (middle distillates)	1.0E+02	6.4E+02	6.4E+02
TPH (residual fuels)	1.0E+02	6.4E+02	6.4E+02
TRICHLOROBENZENE, 1,2,4-	2.5E+01	6.5E+01	6.5E+01
TRICHLOROETHANE, 1,1,1-	6.2E+01	6.2E+01	6.2E+01
TRICHLOROETHANE, 1,1,2-	5.0E+00	4.2E+01	4.2E+01
TRICHLOROETHYLENE	5.0E+00	8.1E+01	8.1E+01
TRICHLOROPHENOL, 2,4,5-	6.3E+01	1.1E+01	1.1E+01
TRICHLOROPHENOL, 2,4,6-	5.0E-01	6.5E+00	6.5E+00
VANADIUM	1.5E+01	1.9E+01	1.9E+01
VINYL CHLORIDE	5.0E-01	5.3E+02	5.3E+02
XYLENES	1.3E+01	1.3E+01	1.3E+01
ZINC	1.2E+02	8.1E+01	8.1E+01

**TABLE F. ENVIRONMENTAL SCREENING LEVELS (ESLs)
Surface Water Bodies**

CHEMICAL PARAMETER	SURFACE WATER SCREENING LEVELS		
	Freshwater (ug/L)	Marine (ug/L)	Estuarine (ug/L)
Electrical Conductivity (mS/cm, USEPA Method 120.1 MOD)	not applicable	not applicable	not applicable
Sodium Adsorption Ratio	not applicable	not applicable	not applicable
<p>Notes:</p> <p>1. Source of Freshwater ESLs: Refer to Appendix 1, Table F-2a</p> <p>2. Source of Marine ESLs: Refer to Appendix 1, Table F-2b.</p> <p>3. Source of Estuarine ESLs: Refer to Appendix 1, Table F-2c.</p> <p>Surface water screening levels lowest of drinking water goal (freshwater only), chronic aquatic habitat goal, goal to address bioaccumulation in aquatic organisms and subsequent consumption by humans, and general nuisance goal (odors, etc.). Refer to Section 2.7 of text for discussion.</p> <p>Estuarine screening levels lowest of freshwater and marine screening levels.</p> <p>TPH -Total Petroleum Hydrocarbons. TPH ESLs must be used in conjunction with ESLs for related chemicals (e.g., BTEX, PAHs, oxidizers, etc.). See Section 2.2 and Appendix 1, Chapter 5.</p>			