PES Environmental, Inc.
Engineering & Environmental Services

RECEIVED

2:50 pm, Oct 27, 2010

Alameda County
Environmental Health

October 22, 2010

1091.002.01.004

Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Attention: Mr. Paresh C. Khatri, Hazardous Materials Specialist

TRANSMITTAL LETTER
TIER I SCREENING ASSESSMENT
ROLLS-ROYCE ENGINE SERVICES - OAKLAND, INC.
TEST CELL FACILITY
6701 OLD EARHART ROAD
OAKLAND, CALIFORNIA

Dear Mr. Khatri:

This letter has been prepared on behalf of Rolls-Royce Engine Services - Oakland, Inc. (RRESO) by PES Environmental, Inc. (PES) to transmit a Tier I Screening Assessment prepared by SLR International Corp (SLR) dated October 21, 2010. The RRESO Test Cell facility is located at 6701 Old Earhart Road, Oakland, California.

As discussed verbally on September 18, 2009 with Mr. Steven Plunkett of Alameda County Environmental Health (ACEH), and as stated by Mr. Plunkett in electronic correspondence to me dated September 21, 2009, Tier I Screening Assessments or human health risk assessments are typically not stamped by a licensed Professional Geologist. However, we understand that ACEH no longer accepts hard copies of reports and electronic submittals require a stamp of a licensed geologist or engineer. We further understand that this is an administrative requirement.

This transmittal letter is submitted to satisfy ACEH's administrative requirement and allow for acceptance of the Tier I Screening Assessment by ACEH's technicians. The Professional Geologists stamp affixed to this letter is intended to satisfy ACEH's administrative requirement for acceptance of the report and does not imply that the work was directed or conducted by a licensed Professional Geologist.

We trust this is the information you require at this time. Should you require additional information or have questions concerning this letter please contact me at (415) 899-1600.

Very truly yours,

PES ENVIRONMENTAL, INC.

Kyle S. Flory, P.G.
Principal Geologist

PROFESSIONAL GEOLOGIST
KYLE S. FLORY
No. 6472
STATE OF CALIFORNIA

109100201T002.doc

Rolls-Royce

Rolls-Royce Engine Services-Oakland Inc.
7200 Earhart Road
Oakland, California 94621-4504

Tel: (510) 613-1000

October 26, 2010

Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Attention: Mr. Paresh Khatri ,
Hazardous Materials Specialist

Tier I Screening Assessment
Rolls-Royce Engine Services – Oakland, Inc.
Test Cell Facility
6701 Old Earhart Road
Oakland, California

Dear Mr. Khatri :

Submitted herewith for your review is the Tier I Screening Assessment for the Rolls-Royce Engine Services – Oakland, Inc. Test Cell Facility in Oakland, California prepared by SLR International Corp with oversight by PES Environmental, Inc.

I declare, under penalty of perjury, that the information and recommendations contained in the attached document are true and correct to the best of my knowledge.

Very truly yours,

Rolls Royce Engine Services - Oakland, Inc.

David Goldberg
Facilities HS&E Specialist

October 21, 2010

Mr. David Goldberg
Rolls Royce Engine Service Oakland, Inc.
6701 Old Earhart Road
Oakland, CA

Re: Port of Oakland Comment Letter Dated October 5, 2010
Tier I Screening Assessment, Rolls Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Dear Mr. Goldberg:

This letter responds to the recent comments submitted in a letter from the Port of Oakland (Port) dated October 5, 2010, to the Alameda County Department of Environmental Health (ACDEH) on a Draft Tier I Screening Assessment prepared by SLR International Corp (SLR), on behalf of PES Environmental (PES). The comments are regarding the potential sources of chemicals in offsite soils, and the presence of organic lead in offsite soil, as presented in the Draft Tier I Screening Assessment Report ("Draft Report").

Even though the Draft Report had not been submitted to the ACDEH, the Port submitted the comment letter to the Agency, which, to our knowledge, has not yet seen the report. The purpose of this letter is to respond to the Port's comments, and to transmit to you a Final Tier I Screening Assessment Report ("Final Report") that reflects these responses. For the sake of clarity, we recommend that you forward a copy of this letter to the ACDEH along with a copy of the Final Report.

Below are the Port's two comments as written in their letter, followed by our response and recommendations.

Port's Comment 1: Graywater Discharge

In 1996, EMCOM (sic) prepared "Soil and Groundwater Investigation, National Airmotive Corporation Facility, Oakland, CA ("1996 EMCOM Report") for National Airmotive Corporation ("NAC") (purchased by RRESO in 1999). The 1996 EMCON Report indicates that from the 1960s until 1978, the NAC test facility discharged graywater from engine cleaning through a shallow concrete channel that drained into an unlined storm culvert. From 1978 to 1992, NAC treated the graywater discharge with an oil-water separator; however, it discharged into an unlined storm culvert. Therefore, the graywater discharge could have transported contaminants off-site.

SLR's Response and Recommendations

The Port's statement regarding graywater discharge into an unlined stormwater culvert may be true; however, as noted on page 2 of the Final Report, there are no processes conducted on the Test Cell that would have used or generated inorganic compounds that might have been released to the environment except for organic lead, which may have been a component of leaded fuels potentially used at some point in historical Test Cell operations. In support of this statement, soil sampling analytical results have generally demonstrated that lead concentrations in surface soils from the offsite sampling locations (38 - 1,000 mg/kg; Table 5) are generally lower than those at depth in the same borings (1,200 – 2,500 mg/kg; Table 5). If metals had somehow been released as part of the graywater spill in 1994, the surface (i.e., upper six inch) concentrations should be greater than the deeper subsurface concentrations. Additionally, landfill debris was encountered in all soil boring logs available for review in the EMCON (1996) report.

Copies of the boring logs are presented in the Final Report. These metals are typically associated with landfill sites due to the likely presence of batteries (cadmium, nickel), wires (copper, lead), and chrome (chromium), among other debris.

This information and text are provided in the Final Report, so no changes need to be made to the Draft Report based on this response. However, a clarification has been made in the text of the Final Report regarding the differentiation between organic lead and other metals.

Port's Comment 2: Organic Lead

The Tier 1 Report indicates that organic lead may have been included in jet fuel releases. Organic lead was identified in soil samples from off-site locations; therefore, other on-site contaminants associated with RRESO operations could also have been transported off-site. The data collected by Kleinfelder and reported in their "Report of Supplemental Site Investigation, Rolls Royce Engine Services, Test Cell Facility, 6701 Earhart Road, Oakland, CA" ("2002 Kleinfelder Report") clearly show organic lead (as well as other compounds in many of the samples from off-site locations).

The Tier 1 Report (page 13) states, "there are no organic lead data from off-site locations". Based on the data in the 2002 Kleinfelder Report, this does not appear to be correct.

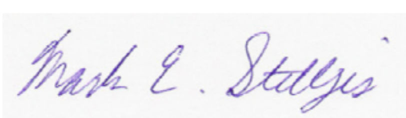
SLR's Response and Recommendations

With respect to the Port's statement that the Draft Report states "there are no organic lead data from offsite locations," as noted above, the report in question was a draft and was therefore subject to correction. We did not realize that the Port was going to submit comments to the ACDEH on a draft. The Final Report corrects this error. It should be noted, however, in the first paragraph on page 13 of the Draft Report, it was clearly stated: "Lead-organic was also detected in several offsite samples and as previously discussed is identified as a site-related chemical. The TPH mixtures and naphthalene are also identified as site-related chemicals. Therefore, all organic chemicals were assumed to potentially be sources from the Test Cell facility." This statement is retained in the Final Report.

We recommend adding organic lead to the screening evaluation (Table 9) and indicating it is an offsite COPC on the table. Rather than provide a screening value in the table, since the only available value is from U.S. Environmental Protection Agency for tetraethyl lead, we recommend indicating in a footnote the value and source for general information. Also, we recommend clarifying that organic lead was, indeed, detected in some offsite soil samples, as shown on Table 5 of the Final Report.

If you have any questions on this response letter or the Final Report, please contact me at (925) 229-1411.

Sincerely,



Mark E. Stelljes, Ph.D.
Director of Risk Assessment and Toxicology

cc: Mr. Kyle Flory, PES
Mr. David Cooke, Allen Matkins Leck Gamble Mallory & Natsis LLP
Mr. Greg Dunn, RRESO

October 21, 2010

Mr. Kyle Flory
PES Environmental, Inc.
1682 Novato Boulevard, Suite 100
Novato, CA 94947-7021

RE: Tier 1 Screening Assessment
Rolls-Royce Engine Services-Oakland Inc. Test Cell Facility
6701 Old Earhart Road, Oakland, California

Dear Kyle:

SLR International Corp (SLR) has prepared this Tier 1 Screening Assessment for the active Rolls-Royce Engine Services-Oakland Inc. (RRESO) Test Cell Facility ("the site") under lease from the Port of Oakland at the Oakland International Airport. A Conceptual Site Model (CSM) was also prepared for the site, as part of the Tier 1 assessment. This letter describes the CSM, the methods used to evaluate concentrations of Jet A fuel (TPHj) and other total petroleum hydrocarbon (TPH) mixtures (i.e., TPHg, TPHd, TPHmo) and associated chemicals in soil and groundwater at the site, and the results of the Tier 1 evaluation. Some of the site history and background information provided by PES Environmental, Inc. (PES) is also included to provide context for the evaluation.

Site Description

The site is located at 6701 Old Earhart Road, Alameda County, Oakland, California within the Oakland International Airport (OIA)-North Field property. The topography at the site is relatively flat with an average ground surface elevation of approximately 7.5 feet above mean sea level (amsl). Bordering the site to the east is Earhart Road; across Old Earhart Road is a wetland separating the site from San Leandro Bay. Parcel B of the North Port of Oakland Refuse Disposal (NPORD) Site borders the site to the north and west, and to the south is NPORD Site Parcel C. Located within Parcel B to the northwest of the site is an athletic field, Spunkmeyer Field, which is operated by the City of Oakland and is irrigated during the dry season. Attachment 1 includes maps showing the location of the site, including a site topographical map (Envirometrix Corporation [EMC], 1996) and the location of the NPORD parcels (ETIC Engineering [ETIC], 2006).

The Test Cell Facility is surrounded by fencing and covers approximately 2.3 acres. Its main features include six engine test cells with auxiliary structures, one 30,000-gallon above-ground liquefied petroleum (LP) fuel tank, three jet-A-fuel underground storage tanks (USTs; one 10,000-gallon & twin 8,000-gallon tanks), and an unlined drainage ditch along the southwestern edge of site which formerly collected storm water and runoff from operations at Test Cells 1 through 4. The facility runoff water (e.g., Test Cell 2) is now contained and treated. The remaining storm water from the site is still collected in the ditch. Collected storm water flows through the ditch into an underground pipe, which drains to the south where it is pumped to the tidal wetland and eventually flows to San Leandro Bay. Attachment 2 includes maps showing the layout of these features provided by Kleinfelder (2001) and Gettler-Ryan (GR; 2008b).

Operations at the Test Cell facility consist of testing turbine engines that have undergone repair at RRESO's Main Building or elsewhere. The operations include testing the mechanical and electrical functions of the repaired turbine engines as well as operating the turbine engines under simulated flight conditions. The tested turbine engines are prepared for testing in the Engine Preparation Area and subsequently tested in one of the active test cells at the site. After preparation activities have been completed the engines are transferred to a test cell and connected to a fuel source, typically via hoses with quick connection fittings that draw fuel from the USTs located on the property, and operated to simulate flight conditions. The tested turbine engine performance is monitored by RRESO personnel in the Control Room. Following the completion of the test, the engines are disconnected from the fuel source and the test cell and prepared for delivery to the owner or removed for additional repairs. The Test Cell operations do not involve significant grinding, cutting, welding or abrasion of metal; therefore, the presence of metals is not a significant waste product from the operations. The Test Cell operations routinely use lubricants, oils, and greases to ensure the engines operate as intended and utilize jet fuel in order to simulate flight conditions. Wastes generated at the Test Cell include lubricants, oil, greases and jet fuel that are recovered from engines prior to, during and/or following testing of the turbine engines.

Environmental investigations and remediation are conducted with regulatory oversight by Alameda County Environmental Health (ACEH, formerly ACDEH) under site number #RO0002606. The adjacent NPORD Site is listed in the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) webpage GeoTracker with a Global ID of L10005405301.

This Tier I assessment assumes the continued use of the site as a test cell facility through RRESO's lease with the Port, which extends until 2025. Therefore, this Tier I assessment is relevant for the continued use of the site as a test cell facility. Additionally, the site is located within the OIA-North Field; the airport area is an industrial/commercial area (Baseline, 2005). This land use is consistent with current zoning as discussed in the Port of Oakland's Final Soil Management Protocol (SMP) for the OIA (SAIC, 2010).

Site History and Chemical Releases

The Test Cell Facility appears to have been constructed around World War II by the US Navy to test repaired aircraft engines. A portion of the Test Cell Facility may have been constructed on top of the eastern portion of the former NPORD Site. Although cross-sections previously developed by Golder Associates in 1989 show that a portion of the site does not appear to be underlain by the building demolition debris reportedly disposed of on that property until around 1960, RRESO uncovered construction debris and other refuse during the construction and replacements of Test Cells 5, 6, and 7, and during the remediation of soil at Test Cell 2. Borings drilled by EMCON (1996) and Kleinfelder (2002) also encountered landfill debris to approximately 8 feet below ground surface (bgs) in the northwest portion of the site, and immediately west of the site boundary (EMCON, 1996; Kleinfelder, 2002).

In 1969, National Airmotive Corporation (NAC) took over the site under lease from the Port of Oakland (Port) as part of their aircraft engine maintenance operations at OIA and subsequently enlarged the operations. In 1999, RRESO acquired NAC's operations in Oakland, including the Test Cell and Maintenance Facility at 7200 Earhart Road (Attachment 1). RRESO continues to operate the Test Cell Facility under a lease from the Port.

According to Kleinfelder (2001), three documented chemical releases have occurred at the Test Cell Facility, as described below.

1. September 1992: 1,143 gallons of jet-A-fuel were released adjacent to the twin USTs in the northwestern portion of the site; the spill was mostly contained but some was suspected to have entered exposed backfill material in the vicinity of the USTs (Kleinfelder, 2001).

2. April or May 1994: A discharge of "gray water" (water potentially containing oil from Test Cell engine wash down operations) occurred near the southwest corner of the facility into the unlined drainage ditch. A history of gray water discharges at the site is described below:

a. Pre 1960s–1978: Gray water was discharged to the unlined drainage ditch west of facility.
b. 1978-1992: Gray water was treated with an oil/water separator prior to discharge.
c. 1992 onward: Gray water is transported off-site for disposal.

ACEH conducted surface soil sampling after the release in May 1994 and found elevated concentrations of lead and oil & grease in the samples (ARCI, 2006).

3. October 1998: Petroleum hydrocarbons (identified as a mixture of degraded motor oil, diesel, and/or kerosene) were discovered during trenching operations conducted during upgrades to the 10,000-gallon jet-A-fuel UST and associated product lines; the source was suspected to have been an unidentified leak from the 10,000-gallon jet-A-fuel UST, or from historical surface spills in the vicinity (Kleinfelder, 2001).

No further release incidents have been reported. The locations of these three releases are indicated in Attachment 2.

Summary of Previous Site Investigations

Information for this summary of previous environmental investigations was derived from a total of 17 documents relating to environmental activities conducted at the site. Maps showing sample locations, as well as tables summarizing the laboratory analytical results of the previous investigations, are presented in Attachment 2. The previous investigations can be grouped into five primary activities, as described below.

Groundwater Investigation

Three monitoring wells were installed by Envirometrix Corporation (EMC) on March 29, 1996 at the request of ACEH to characterize and monitor groundwater on the site near the twin USTs. This work was based on previous investigations conducted by EMCON Associates in September 1992 (EMC, 1996). Groundwater samples were collected on April 3, 1996 from the three newly installed monitoring wells and analyzed for TPHj, total petroleum hydrocarbons as diesel (TPHd), and benzene, toluene, ethylbenzene, and xylenes (BTEX). Because TPHj was detected in one sample, the groundwater samples were additionally analyzed for semi-volatile organic compounds (SVOCs), although those analytical results were not included in the report and were not available for review.

Jet Fuel UST Area and Graywater Discharge Area Investigation

Based on surface soil samples collected from the area west of the testing facility, ACEH requested NAC to further characterize the soils and groundwater in the jet fuel UST area and the area where graywater had been released in various manners from the late 1960s until 1992. EMCON drilled and sampled eight onsite borings and one offsite boring in the vicinity of the jet fuel UST area. Twelve (12) soil samples and nine groundwater samples were collected from the nine borings.

EMCON drilled five exploratory borings in and near the graywater discharge path and collected soil and grab groundwater samples from each boring, with ACEH oversight. A total of eight soil samples were collected from 0, 0.5, 1, and 2 feet bgs, and five grab groundwater samples were collected from unspecified depths (total boring depths ranged from 2 to 9 feet bgs). Soil and groundwater samples were analyzed for BTEX, high boiling point hydrocarbons (HBHCs), total petroleum hydrocarbons as gasoline (TPHg), SVOCs, volatile organic compounds (VOCs), and CAM17 metals (EMCON, 1996). Groundwater samples were unfiltered for all analyses.

Supplemental Site Investigation

A supplemental site investigation was conducted by Kleinfelder in 2002 to further characterize the environmental conditions at the site. The locations on the site investigated during the supplemental investigation included the three jet fuel USTs, the vicinity of the 1998 fuel release into pipeline trenches, the offsite storm water drainage ditch system, and the three onsite groundwater monitoring wells (Kleinfelder, 2002).

Forty-five (45) soil samples and 25 groundwater samples were collected from 26 onsite and offsite soil boring locations in July 2002 and analyzed for TPHj, TPHd, TPHg, total petroleum hydrocarbons as motor oil (TPHmo), VOCs, California Code of Regulations (CCR) Title 22 metals, and organic lead. Groundwater samples were filtered and unfiltered for analysis for TPHd, TPHj, and TPHmo, and were lab-filtered for metals analysis; samples were not collected from one soil boring location because of its close proximity to another boring (Kleinfelder, 2002). Groundwater samples were also collected from the three onsite monitoring wells (MW-1 through MW-3) and two NPORD wells located offsite (NPORD MW-3 and NPORD MW-4; Kleinfelder, 2002).

Soil Remediation and Installation of Additional Groundwater Monitoring Wells

In June through September 2007, GR conducted soil remediation in the vicinity of the former fuel pipeline trenches adjacent to Test Cell 2 (including soil locations KB-10, KB-11, and KB-12) and installed 14 groundwater monitoring wells. The new wells were installed on the site, with the exception of two wells installed west of the facility on the NPORD Site (ARCI, 2006; GR, 2007a; and GR 2007b).

According to GR (2008c), the soil remediation activities included the removal of approximately 282 cubic yards of soil and artificial fill, and extraction of approximately 12,100 gallons of water from the excavation. The soil generated during excavation activities was stored onsite in two stockpiles covered with plastic while awaiting transportation and offsite disposal, and the water was stored onsite in a Baker tank.

On September 13, 2007, GR collected 13 confirmation soil samples from the excavation sidewalls at a depth of 4.5 feet (GR, 2008c). The confirmation samples were analyzed for TPHg, TPHd, TPHmo, TPHj, BTEX, methyl tert-butyl ether (MTBE), and naphthalene. Two composite soil stockpile samples were additionally analyzed for total oil and grease (TOG), VOCs, SVOCs, polychlorinated biphenyls (PCBs), cadmium, chromium, lead, nickel, and zinc. Chromium and lead were each detected at concentrations greater than 50 mg/kg and 100 mg/kg, respectively, in the composite soil stockpile samples; accordingly they were additionally analyzed for Soluble Threshold Limit Concentration (STLC) lead and chromium analysis, and Toxicity Characteristic Leaching Procedure (TCLP) lead analysis.

In November 2007, 249.96 tons of soil were transported offsite as non-RCRA hazardous waste for disposal, and the remaining 144.47 tons of soil were transported offsite as non-hazardous waste for disposal. Water extracted from the excavation activities was removed from the site and transported to a disposal facility in October 2007 for disposal. One water sample was collected from the excavation and was analyzed for TPHg, TPHd, TPHmo, TPHj, BTEX, MTBE, and naphthalene (GR, 2008c).

A total of 22 soil samples were collected for laboratory analysis from the borings advanced for the well installations, from depths of approximately 5 and 10 ft bgs. These samples were analyzed for TPHg, TPHd, TPHmo, TPHj, BTEX, MTBE, and naphthalene (GR, 2008b).

Periodic Groundwater and Surface Water Monitoring

Groundwater monitoring data for the site date back to 1996 when EMC installed the first three monitoring wells. Annual groundwater monitoring was reportedly conducted at the three wells following their installation, although those groundwater monitoring reports were not available for review.

On March 28, 2006, ARCI conducted groundwater sampling on behalf of RRESO offsite at NPORD MW-4, and surface water sampling at NPORD SW-3, concurrently with NPORD's quarterly groundwater monitoring event. These samples were analyzed for TPHg, TPHj, TPHmo, TPHd, total petroleum hydrocarbons as aviation gas (TPHag), BTEX, and MTBE. Quarterly groundwater and surface water sampling at NPORD MW-4 and NPORD SW-3 continued in coordination with NPORD thereafter, as documented in a February 14, 2008 letter from Baseline to San Francisco Bay Regional Water Quality Control Board (Baseline, 2008). These samples were analyzed for TPHg, TPHj, TPHmo, TPHd, VOCs, and SVOCs.

Beginning in the fourth quarter of 2007, following the installation of new monitoring wells, groundwater samples have been collected quarterly from the network of 19 groundwater monitoring wells (MW-1 through MW-15, MW-17, MW-18, NPORD MW-3, NPORD MW-4). The samples have been analyzed for TPHg, TPHd, TPHmo, TPHj, MTBE, BTEX, and naphthalene (GR, 2008a, 2008b, 2008c). Analytical results for quarterly groundwater monitoring since the fourth quarter of 2007, as well as potentiometric maps, are included in Attachment 3.

Additionally, SVOCs were analyzed in samples with TPH concentrations greater than 2,000 micrograms per liter (ug/L; from MW-4, MW-6, MW-7, MW-9, MW-10, and MW-11) during the first quarter sampling event in 2010.

All data considered in the Tier I assessment are presented in Attachments 2 and 3. Data used quantitatively in the Tier I assessment are presented in Tables 1-5. The rationale for inclusion and exclusion of data is discussed under Soil, Groundwater, and Surface Water Datasets later in this letter.

Based on the historical data summary provided above, no data gaps are identified with regard to chemicals at the RRESO facility.

Site Subsurface Conditions

Hydrogeology

Groundwater is encountered beneath the site at depths ranging from 3 to 5 ft bgs (GR, 2008d). Based on the available information, the direction of groundwater flow appears to vary depending on the location within the site. Most recent quarterly monitoring results indicate that the hydraulic gradient is 0.02 to 0.03 foot per foot (ft/ft) to the south or southeast in the southeastern portion of the site, and toward the west in the remainder of the site. From 1996 through 1998, EMC consistently measured a westward gradient of approximately 0.01 ft/ft, away from the tidal wetlands located across Earhart Road to the east of the site (Kleinfelder, 2002); however, these measurements were based only on annual data from three wells (MW-1 through MW-3). Studies and quarterly groundwater monitoring conducted at the adjacent NPORD Site indicate that the flow direction is generally eastward but varies seasonally and tidally (ETIC, 2006). Beyond the tidal marsh lies San Leandro Bay, a portion of the San Francisco Bay. Attachment 2 contains the available groundwater elevation maps that have been prepared for the site.

Based on field measurements of specific conductivity, the groundwater underlying the site is brackish, which is defined as water having a Total Dissolved Solids (TDS) concentration between 1,000 and 10,000 milligrams per liter (mg/L; Driscoll, 1986). Further, groundwater beneath the Oakland International Airport has been deemed to be non-potable, as documented in the Port's Final Soil Management Protocol (SAIC, 2010). As cited in the SMP, a 1999 State Water Resources Control Board (SWRCB) document stated, "shallow bay-front groundwater in the artificial fill, Young Bay Mud (YBM), and San Antonio/Merritt Formations generally exceeds the 3,000 mg/L [total dissolved solids] TDS criteria and, therefore, dedesignation of the municipal beneficial use in this area is warranted. The Report recommended that the Oakland Shoreline Zone existing municipal (MUN) beneficial use designation be dedesignated. This is an area that includes the Fleet and Industrial Supply Center of Oakland (FISC) Navy Base, Port of Oakland, and Alameda Point. For this area, the Report states, "most groundwater to a depth of 100 feet below ground surface is not a [RWQCB] Resolution No. 89-39 source of drinking water". Since this area includes the RRESO site, no direct groundwater use is relevant in this Tier I assessment.

Regional and Local Geology

The site lies in the Eastern Franciscan Block of the Coast Range geomorphic province, which is characterized by many elongate ranges and narrow valleys trending generally northwest. The basement rock is the Franciscan subduction complex and is dominated by greenish-gray graywackes interbedded with dark shale and occasional limestone. Shallowest bedrock deposits are Cenozoic shelf, slope, and land deposits consisting mostly of sandstone and shale, or local areas of mudstone. Locally, the site is situated within a mixture of Pleistocene silts and bluish gray clays known as Bay Mud, and is located approximately 5 miles west of the Hayward Fault and approximately 17 miles east of the San Andreas Fault, both considered active faults (EMC, 1996).

Information about the site lithology is provided to a maximum depth of 12 feet bgs in the reports of monitoring well installations performed by EMC in 1996 and GR in 2008 (2008b), and the supplemental site investigation performed by Kleinfelder in 2002. GR encountered "artificial fill" in the majority of the monitoring well locations (MW-4, -5, -8, -10 through -15, -17, and -18) to depths of 8.5 to 11.5 ft bgs, although Kleinfelder only reported "landfill debris" in the western portion of the site (KB-3, -5, -6, -13, and -20 through -25) to a depth of 8 ft bgs. This fill is generally described in boring logs prepared by GR (2008b) and Kleinfelder (2002) as consisting of dark greenish gray clay starting at 1.5 feet bgs and variously containing gravel (up to 1.5 inches, up to 10-15%), wood debris, foam, plastic, brick, un-insulated copper wire bundles, glass, and/or concrete fragments. Below this depth, Bay Mud consisting of dark greenish gray, low to high plasticity sandy clay with lenses of sand and gravel was encountered to a total depth of 12 ft bgs, the maximum depth explored.

Conceptual Site Model

A CSM was developed to identify potential human and ecological receptors and potentially complete exposure pathways at the site. The CSM described below and depicted in Figure 1 presents the relationship between chemical sources and receptors at the site, and identifies potentially complete pathways through which receptors may be exposed to the analytes detected in soil, groundwater, and surface water. This is based on consideration of site characteristics, as well as the fate and transport characteristics of analytes identified at the site. The Tier 1 analysis then serves to verify pathways requiring further evaluation, and eliminates others from further consideration. The CSM is described separately below for human and ecological receptors. Both types of receptors are included in the CSM diagram shown on Figure 1.

Human-Health CSM

Current site use is commercial/industrial, and this land use is expected to continue at the site for at least the remaining 16 years of the lease agreement between RRESO and the Port of Oakland. The site is located adjacent to the North Field of the Oakland International Airport, making future residential development highly unlikely. Residential receptors were therefore not included in the CSM for this site. Commercial/industrial workers are currently present at the site, and are also expected to be present in the future. The commercial/industrial worker was included in the CSM as a current/future receptor. Although construction is not currently occurring at the site, such activities may occur in the future. Periodic maintenance may also occur. The construction worker was included in the CSM, but only as a future receptor. Visitors could be present at the site, but their exposure would be much less than that for the commercial/industrial worker. Therefore, site visitors were excluded from the CSM since protection of the commercial/industrial worker will also be protective of any site visitor.

In general, exposure to chemicals in soil can occur directly through incidental ingestion and dermal contact and inhalation of dust or indirectly through inhalation of vapors from the subsurface. All receptors were assumed to be exposed to vapors in air originating from the subsurface. Since the site is fully paved, only the construction worker receptor was assumed to be exposed directly to chemicals in soil (during excavation activities). Exposure to chemicals in dust is only relevant for metals and SVOCs at the site since all other site-related chemicals identified in soil are volatile and are evaluated as such rather than as adhered to dust particles. However, the environmental screening levels (ESLs) used in the Tier 1 analysis to evaluate potential direct contact with soil are based on dust and vapor inhalation in outdoor air as well as soil ingestion and dermal exposure (RWQCB, 2008). Therefore, the outdoor vapor inhalation pathway is incorporated into the ESLs.

Detected metals and SVOCs can adhere to dust particles and be entrained in ambient air. While this may represent a potentially complete exposure pathway, it contributes only negligibly to the overall exposure of potential onsite excavation worker receptors. This conclusion is supported by comparison of potential dust in air concentrations, using maximum detected soil metal concentrations and default particulate emission factors (PEFs) for construction workers, to ambient air based Regional Screening Levels (RSLs; USEPA, 2009) adjusted for construction workers as outlined in the ESL document (RWQCB, 2008). This adjustment included two parts. One, a target cancer risk of $1x10^{-5}$ is used in the ESLs document for evaluation of construction workers instead of the $1x10^{-6}$ target cancer risk used for the RSLs. Two, the relative exposure between the commercial/industrial and construction worker receptors reported in the ESL document, representing a factor of 25 (25 years exposure for the former and 1 year for the latter), was used to upwardly adjust the construction worker RSLs to reflect their shorter exposure. This is only relevant for the carcinogenic metals, since the exposure duration is not a factor in the RSL calculation for noncancer effects. The only detected organic SVOC, naphthalene, is considered a volatile chemical by DTSC and OEHHA, and as such is evaluated as a vapor rather than as adsorbed to dust. Therefore, this evaluation is only relevant for metals in soil.

U.S. Environmental Protection Agency (USEPA) RSLs were used rather than California Environmental Protection Agency (CalEPA) values since CalEPA has only developed ambient air levels for residents (i.e., reference exposure levels; RELs; OEHHA, 2010), which are not applicable to this site. RSLs are analogous to RELs developed and published by OEHHA. The commercial/industrial ambient air RSLs developed by USEPA utilize the same exposure assumptions and PEF as presented in the ESL document (RWQCB, 2008). The inverse of the PEF for construction workers of $1.4x10^{6}$ was multiplied by the maximum detected soil concentration to estimate a maximum dust in air concentration for each metal. The commercial/industrial RSLs for ambient air were either used directly (for noncancer endpoints) or multiplied by 250 (for cancer endpoints) to target a $1x10^{-5}$ lifetime excess cancer risk and a 1-year exposure duration, consistent with the ESL approach to evaluate the construction worker receptor as described earlier.

Results of this comparison for the construction worker receptor are shown in Table 6. Values for the commercial/industrial worker receptor were also developed for comparative purposes using the values discussed above and are also shown on Table 6. As shown on the table, all estimated maximum dust in air concentrations are below their respective adjusted RSLs. Note that lead is not included in Table 6 as this chemical is evaluated differently than other metals. Lead is further discussed later in the Tier I evaluation. Based on this conservative comparison, the dust in air pathway will not be quantitatively evaluated since it represents no more than an insignificant source of potential exposure.

First encountered groundwater at the site is approximately 3-5 feet bgs. Therefore, direct exposure to groundwater via dermal contact by the construction worker receptor engaged in soil excavation is a potentially complete exposure pathway. Ingestion of groundwater by this receptor, while possible, is unlikely to occur at levels resulting in significant exposure. This pathway was therefore identified as potentially complete but insignificant for the construction worker receptor. Groundwater at the OIA is not used as a domestic water supply, and is not suitable for use as drinking water due to high TDS content. Exposure through domestic use is therefore an incomplete exposure pathway for all receptors.

Vapor inhalation may occur from volatile chemicals originating in either groundwater or soil. Vapor inhalation in the indoor environment is typically assumed to be associated with higher exposures than outdoor vapor inhalation. Therefore all potential vapor inhalation by the commercial/industrial worker receptor was assumed to occur indoors. Vapor inhalation for the construction worker receptor was assumed to occur outdoors, since these receptors are not expected to work indoors.

On the basis of the discussions provided in the preceding text, the following exposure pathways were identified as potentially complete and were evaluated in the Tier 1 analysis:

- Current/Future onsite commercial/industrial worker receptor:
    - Inhalation of vapors in indoor air due to subsurface (i.e., soil and groundwater) vapor intrusion

- Future onsite construction worker receptor:
    - Direct contact with soil via ingestion and dermal exposure
    - Direct contact with groundwater via dermal exposure
    - Inhalation of vapors in outdoor air

Ecological CSM

The highly developed and paved nature of the site makes it likely that ecological soil exposure pathways are incomplete. Wildlife present at the site likely includes common, non-endangered species such as perching birds, small mammals such as rodents, and reptiles such as lizards. However, exposure to chemicals in soil is prevented by paving and ongoing disturbance by human activity makes nesting and breeding at the site unlikely. Ecological habitat is therefore not considered to be present at the site, and no complete exposure pathways were identified for terrestrial ecological habitat.

A tidal marsh, which is considered to be a wetland, is present adjacent to the site and provides habitat for aquatic ecological receptors. The marsh is also connected to a channel that flows north to San Leandro Bay. Contaminants detected in groundwater beneath the site may migrate to offsite areas, and eventually to surface water, where aquatic ecological habitat may be impacted. Ecological screening levels used in the Tier 1 assessment were based on the protection of estuarine habitat, rather than individual aquatic receptors; aquatic habitat is therefore considered a receptor in the ecological CSM. Receptors utilizing aquatic habitat in the marsh or connected water bodies may be exposed to contaminants in groundwater (through migration to surface water) via dermal contact as well as direct ingestion of surface water. These two pathways were therefore identified as potentially complete for the aquatic ecological habitat receptor.

A search for special status species that may occur in the area was conducted using the California Natural

Diversity Database (CNDDB) for the San Leandro quadrangle, which extends north to San Leandro Bay, south to the San Mateo Bridge, and east to the hills near Lake Chabot. One amphibian, three mammalian, nine avian, and nine plant species were listed in the database (CNDDB, 2010), as shown on Table 7. None of these species has been observed on or immediately adjacent to the site, with the exception of raptors that occasionally fly over the site, but neither nest nor feed onsite (CNDDB, 2010). A summary of the natural history of these species is provided on Table 7, which provides information documenting either lack of habitat or lack of presence of these species. Therefore, no special status species need to be considered at this site.

Tier 1 Screening Methodology

To identify chemicals of potential concern (COPCs) and chemicals of potential ecological concern (COPECs) at the site, soil, groundwater, and surface water data were compared to environmental screening levels. As described in the CSM for human health, only commercial/industrial and construction worker receptors are relevant for the site; screening levels for these receptors were therefore used in the evaluation, as available. The maximum concentrations of each detected chemical in soil, groundwater, and surface water were compared to the relevant screening levels for each media.

For human health, screening levels used in the comparison include:

- California Human Health Screening Levels (CHHSLs; CalEPA, 2005a) for soil, for commercial/industrial land use only
- San Francisco Regional Water Quality Control Board Environmental Screening Levels (ESLs; RWQCB, 2008) for shallow soil at commercial/industrial sites where groundwater is not a potential drinking water resource (Table B-2); lowest of available values excluding the urban area ecotoxicity criteria
- RWQCB (2008) soil ESLs for the construction/trench worker exposure scenario (Table K-3)
- RWQCB (2008) ESLs for groundwater at sites where groundwater is not a potential drinking water resource (Table F-1b); lowest of available values excluding the aquatic habitat goals.
- USEPA (2009) Regional Screening Levels (RSLs) for industrial soil and tap water were used for organic lead only, due to the lack of available screening levels for this chemical. Use of the tap water screening level is very conservative, since water at the site is not used for domestic purposes.

Ecological screening levels used in the comparison include:

- RWQCB (2008) aquatic habitat goals for groundwater (Table F-1b)
- RWQCB (2008) lowest estuary aquatic habitat goals (Table F-4a)
- RWQCB (2008) surface water screening levels for estuary habitats (Table F-2c).

Port of Oakland SMP (SAIC, 2010) ESLs for soil and groundwater were also considered, but were not used to identify COPCs. The SMP ESLs were based on the RWQCB ESLs at the time that the Protocol was originally written, and the document states that updated RWQCB ESLs must be researched to verify that ESLs are current before using the values in the table (SAIC, 2010). Within the context of this Tier 1 assessment, the SMP is not applicable as this evaluation is not being conducted to evaluate whether and to what extent materials excavated from the Test Cell (concrete or soil) can be stored or reused at the OIA.

Chemicals with maximum concentrations below all screening levels listed above were excluded from further evaluation, since they are below levels considered to present either a human health or environmental risk. Chemicals with maximum concentrations exceeding the lowest screening levels were identified as COPCs and/or COPECs.

As described previously, residential land use is not anticipated at the site in the foreseeable future. However, soil data were compared to residential ESLs from the RWQCB (2008) to provide additionally conservative information for the Tier 1 assessment, and to meet the expectations of the regulatory agency. This comparison was not used to identify COPCs, but is summarized briefly in the results section of this report for informational purposes. Shallow soil screening levels for residential land use for sites where groundwater is not a current or potential drinking water source (Table B-1; RWQCB, 2008) were used for this comparison; the lowest available values, excluding the urban area ecotoxicity criteria, were used for this residential scenario evaluation. Groundwater screening levels from the RWQCB (2008) are not specific to land use; therefore, no additional comparison was performed using the groundwater data. The Tier I soil screening table for residential land use is provided as Attachment 4.

Soil, Groundwater, and Surface Water Datasets

Soil and groundwater data were evaluated to identify data applicable to a Tier 1 risk-based screening evaluation. Some data points may not be applicable based on criteria such as sample date, location, and sample type. The Tier 1 datasets are described below for soil and groundwater. Groundwater data used in the Tier 1 assessment are presented in Tables 1-3, and the soil data are presented in Tables 4 and 5. The soil and groundwater data included in the Tier 1 datasets were considered representative of site conditions for the purposes of the Tier 1 screening assessment. No data gaps were identified in the evaluation of historical data.

Soil Datasets

Two soil datasets were developed for this Tier I evaluation; one representing onsite soil samples and the other representing offsite soil sample locations, both in the vicinity of the graywater discharge area and in other offsite areas within the NPORD property. For the onsite soil dataset, all sample data were included except those representing soil that was excavated and removed from the site in 2007 (GR, 2008c). Therefore, the onsite soil dataset includes only samples collected from locations that remain onsite (this excludes sampling locations KB-10, KB-11, and KB-12). Soil samples were also collected from areas to the west of the site boundary in a 2002 site investigation (Kleinfelder, 2002). These are included as offsite samples in the soil datasets since they were collected from offsite locations (KB-05, KB-06, KB-13 through KB-19, and KB-22 through KB-26). All soil data, including samples excluded from the datasets, are presented in Attachment 3.

Soil samples were collected offsite in the graywater discharge area in 1995, one year following the reported graywater spill (OB-2 through OB-6). As shown in Table 4, TPHj was detected in some of these samples (OB-2, OB-4, and OB-6), and lead was detected at concentrations above 100 mg/kg in borings OB-2 through OB-5. Therefore, it is likely that the TPHj and possible that some of the lead (if it were in the tetraethyl lead [TEL] form) were included in the jet fuel releases. In boring OB-3, TPHmo was the only detected petroleum mixture, while in OB-5, both TPHmo and TPHd were detected. Both mixtures were also detected in onsite samples at similar concentrations. Therefore, while both motor oil and diesel could be present in landfill debris (e.g., drip pans, fuel containers, empty oil cans), all of the detected petroleum mixtures from these offsite soil samples will be included as site-related chemicals for quantitative evaluation.

Similarly in the other offsite soil samples analyzed in 2002, all four TPH mixtures were detected at some locations, and total xylenes and naphthalene were each detected in one sample. The TPHg, TPHd, and TPHj concentrations detected in these offsite samples were lower than the concentrations detected onsite, suggesting that some of the TPH detected in these samples could be from onsite sources. Although the naphthalene detection was at a location where relatively low TPH concentrations were detected (KB-13), naphthalene detected in this offsite sample will also be included as a site-related chemical for quantitative evaluation.

Metals other than lead-organic were also detected in offsite samples, as shown on Table 5. Several of the detected metals (cadmium, chromium, copper, lead, and nickel) were present at greater concentrations in these samples (whether from the graywater discharge area or from other offsite locations) than in onsite samples. Additionally, landfill debris was encountered in all soil boring logs available for review in the EMCON (1996) report. Copies of the boring logs are presented in Attachment 2. These metals are typically associated with landfill sites due to the likely presence of batteries (cadmium, nickel), wires (copper, lead), and chrome (chromium), among other debris. Because lead was detected in organic forms, organic lead in offsite samples will be included as a site-related chemical for quantitative evaluation. However, for purposes of completeness, these other detected metals in offsite soil samples will be further evaluated in Tier II.[1]

All other available soil data were retained for the Tier 1 assessment.

The Tier 1 soil datasets are presented in Tables 4 and 5 for organic and inorganic samples, respectively. All offsite inorganic data previously discussed are presented in Table 5, but only “lead-organic” is considered a site-related chemical in offsite samples.

Groundwater Dataset

Monitoring well data from both onsite (MW-1 through MW-15, and MW-17) and offsite (NPORD–MW3 and NPORD–MW4) wells were included in the Tier 1 groundwater dataset. MW-16 is no longer used, and MW-18 was not sampled due to the presence of separate phase hydrocarbons (SPH). For onsite wells, groundwater monitoring data were available through January of 2010. Due to the mobile nature of groundwater, as well as processes such as volatilization, dispersion, and natural attenuation, older monitoring well data are typically not considered representative of current groundwater conditions. Therefore, only data from the last four monitoring events were included in the Tier 1 groundwater dataset for organic contaminants. All groundwater monitoring well data for all onsite wells, and for offsite wells NPORD-MW3 and NPORD-MW4, are provided in Attachment 3. For inorganics, only a limited number of monitoring well data from 2002 were available; these data were retained in the Tier 1 groundwater inorganic dataset since more recent data were not available. SVOCs were included in the analysis of the six samples with TPH concentrations greater than 2,000 ug/L during the January 2010 sampling event. All SVOCs, including polynuclear aromatic hydrocarbons (PAHs), were non-detect across these samples. These non-detect results are not all presented for all compounds in this Tier I evaluation (i.e., all SVOCs were non-detect, but only a subset of these chemicals appear on the Tier I screening tables because they represent chemicals historically detected in at least one groundwater sample).

Grab groundwater samples are typically not considered appropriate for risk assessment purposes as they are not representative of groundwater equilibrium conditions. In addition, the grab groundwater data available for the site are from samples collected in 1995 and 2002 and likely do not represent current conditions, particularly for volatile compounds. Unfiltered grab samples may contain contaminants adsorbed to particles suspended in the samples, as well as those dissolved in the water. Filtering removes these particles, leaving only the dissolved fraction. However, such grab groundwater samples were collected from locations where no monitoring wells are located, and many samples were also collected from areas to the west of the site boundary. Some of these samples were also analyzed for dissolved inorganic constituents, for which only limited monitoring well data were available. Therefore, to be conservative, and to ensure that the entire site was adequately characterized in the screening step, grab groundwater data were included in the Tier 1

[1] SLR’s and PES’s opinion, and RRESO’s position, is and has been that the NPORD site, not the test cell facility, is the source of metals other than organic lead detected in offsite soils. RRESO has authorized SLR to evaluate these metals in the Tier II assessment solely as an accommodation to the Port of Oakland. This accommodation is not and should not be construed as an acknowledgement by RRESO, SLR, or PES that the presence of metals other than organic lead in offsite soils is or may be attributable to operations at the test cell facility.

assessment. For TPHd, TPHmo, and TPHj, both filtered and unfiltered grab groundwater data were available and were included in the Tier I assessment groundwater dataset, but only filtered data were used to identify COPCs and COPECs in groundwater, consistent with published recommendations (Zemo, 2009). Filtered data were not available for TPHg, or for analytes other than TPH.

The Tier 1 groundwater dataset is presented in Tables 1-3 for organic, inorganic, and grab samples, respectively.

Surface Water Dataset

Samples collected from surface water sampling location SW-3 were included in the surface water dataset. This included a total of 10 samples analyzed for organic chemicals (Table 3) and three samples analyzed for metals (Table 2). Sampling dates range from November 1989 through December 2007; no samples were collected between 1991 and 1994. This sampling location is seasonally dry, limiting the opportunity for surface water sampling. Only unfiltered data are available for surface water from this location. All data from this location are included in the surface water dataset.

The Tier 1 surface water dataset is presented in Tables 2 and 3 for organic and inorganic chemicals, respectively.

Results and Discussion

The results of the Tier 1 screening evaluation are discussed first for soil, and then for groundwater and surface water. The COPCs identified from this process are summarized on Tables 8 and 9 for soil and groundwater, respectively. COPECs are presented on Tables 10 and 11 for groundwater and surface water, respectively.

Soil

Onsite Soil

Based on the results of the screening step, three petroleum hydrocarbon mixtures (TPHj, TPHg, and TPHd), as well as benzene and naphthalene, were identified as COPCs in onsite soil. Five metals (antimony, arsenic, lead, mercury, and zinc) also exceeded ESLs in at least one onsite location, and were therefore identified as COPCs (Table 8).

Concentrations of TPHg, TPHd and TPHj in soil exceeded risk-based screening levels at numerous locations across the site. Naphthalene exceeded screening levels at several locations, while benzene exceeded its ESL only in sidewall samples from an excavation performed near Test Cell 2 in September 2007.

Except for arsenic, metals concentrations that exceeded screening levels were limited to one location (KB-01) within the site boundaries. Arsenic concentrations exceeded screening levels across the site, but were consistent with background arsenic levels in fill material across the Port of Oakland, which is relevant at the OIA, of 16.4 mg/kg, as identified in the SMP (SAIC, 2010). Only the maximum arsenic concentration (at location KB-01) exceeded the background concentration; all other onsite arsenic concentrations were below those associated with background at the OIA. Both the average onsite arsenic concentration of 7.3 mg/kg and the 95 percent upper confidence limit of the mean (95UCL) of 9.2 mg/kg are below the background level of 16.4 mg/kg identified in the SMP (SAIC, 2010). Therefore, arsenic does not require further evaluation in soil. Since regional background concentrations are not available for other metals detected in soil, no additional statistical evaluation of data was conducted in this Tier I report.

All detected chemicals in soil that exceeded commercial ESLs (benzene, TPHg, TPHd, TPHj, naphthalene, antimony, arsenic, lead, mercury, and zinc) also exceeded residential ESLs. In addition, TPHmo, barium, cadmium, and vanadium concentrations exceeded ESLs for residential land use. TPHmo and vanadium concentrations exceeded residential ESLs at numerous locations across the site, while the cadmium concentrations above ESLs were limited to the northwestern portion of the site. Barium concentrations exceeded the residential ESL at only one location, KB-01; as described above, this was also the only location at which commercial ESLs were exceeded by metals concentrations in soil (except arsenic).

Offsite Soil

Three TPH mixtures (TPHd, TPHj, and TPHmo), naphthalene, and six metals (arsenic, cadmium, copper, lead, mercury, and zinc) exceeded screening levels in at least one sample from the offsite soils collected by EMCON in 1995. Lead-organic was also detected in several offsite samples, as shown in Table 5, and as previously discussed is identified as a site-related chemical. The TPH mixtures and naphthalene are also identified as site-related chemicals. Therefore, all organic chemicals were assumed to potentially be sourced from the Test Cell facility. However, cadmium, copper, mercury, and zinc are considered non-site-related elements based on the following discussion, and the distribution of arsenic in offsite soils is also consistent with background, although like the onsite soil dataset, the maximum detected concentration of arsenic in offsite soils exceeds the background concentration.

All of the metals in soils at the site, with the possible exception of lead, likely originated from wastes disposed of onsite as part of the NPORD operations. It is possible that the presence of lead in offsite soils may be related to some degree to the use of leaded fuels in historical test cell operations, but samples for organic lead provide the best measure of potential site-related use of lead in fuel at the Test Cell facility. Tetraethyl lead, used as an anti-knock agent, was removed as an additive from aviation fuel in the mid-1970s.

Apart from the foregoing, there are currently no known sources of metals at the site. For example, offsite sample results from the EMCON (1996) report demonstrated higher concentrations of cadmium, chromium, copper, lead, nickel, and zinc in offsite soils than onsite soils, which is inconsistent with a hypothesis that the metals originated from onsite industrial activities. EMCON (1996) encountered landfill debris in these sample locations, indicating an offsite source of metals is present. Lead concentrations in surface soils from the offsite sampling locations (38 - 1,000 mg/kg; Table 5) are generally lower than those at depth in the same borings (1,200 – 2,500 mg/kg; Table 5). If metals had somehow been released as part of the graywater spill in 1994, the surface concentrations should be greater than subsurface concentrations.

Also, the maximum onsite concentrations of antimony, arsenic, barium, cadmium, copper, lead, mercury, and zinc are all from sample location KB-01, located in the drainage channel just south of the graywater discharge area that is geographically associated with the EMCON sampling locations. As previously discussed, no metals other than lead could have been released as part of graywater discharge. Further, Kleinfelder (2002) states, "Antimony, arsenic, barium, copper, lead, mercury, and zinc RBSLs were exceeded in the 3-foot bgs sample from KB-1…Elevated levels of copper, lead and zinc were the metals most often detected in samples from KB-5, -6, -21, -22, and -24. Because these metals were detected in samples from 2 feet bgs or deeper, and because this portion of the Test Cell was reportedly built over a portion of the NPORD Site, these metals concentrations in soil are attributed to the former disposal facility and **<u>not</u>** the Test Cell" (emphasis added). The same conclusion is made by EMCON (1996), who state, "the metals observed in the graywater area soil appear to be the result of the historical uses of the site; formerly a refuse disposal area." Evaluation of the data and the statements by others provide evidence that historical RRESO site activities have not significantly contributed to metal concentrations in the area of graywater discharge, with the possible exception of lead due to the possible historical presence of lead in aviation fuels used at the Test Cell. Therefore, while organic lead is identified as a COPC, no other metals detected in offsite soils are considered to be site-related. They are identified as offsite soil COPCs, but will be separately discussed in subsequent reports from site-related

COPCs.

Groundwater and Surface Water

All four evaluated TPH mixtures (TPHg, TPHd, TPHmo, and TPHj), as well as naphthalene, were identified as COPCs and COPECs in groundwater (Tables 9 and 10, respectively). Several metals (antimony, barium, cobalt, copper, lead, nickel, selenium, silver, vanadium, and zinc) were also identified as COPECs (Table 10). Ecological screening levels were not available for organic lead. However, the ecological screening level for inorganic lead was exceeded by an order of magnitude by grab groundwater concentrations of both inorganic and organic lead. Given the increased sensitivity of aquatic organisms to organic lead relative to inorganic forms, concentrations of organic lead that would be considered safe for ecological receptors can be expected to be lower than those for inorganic lead. Organic lead was therefore conservatively identified as a COPEC. The maximum concentration of organic lead exceeded the tap water screening level for this compound; organic lead was therefore also conservatively identified as a COPC for human health.

The human health ESLs for TPH and naphthalene in groundwater are based on ceiling levels for gross contamination concerns, and are not risk-based screening levels. Human health risk-based ESLs for other petroleum constituents (BTEX, MTBE) and naphthalene were not exceeded in monitoring well samples. Naphthalene ESLs were only exceeded in grab groundwater samples; BTEX and MTBE screening levels were not exceeded in any sample. Because naphthalene (and TPHg) only exceeded screening levels for grab groundwater samples, these chemicals were not identified as COPCs in groundwater monitoring wells at the site. However, due to these grab sample results, they are conservatively included as COPCs in groundwater for further evaluation. Risk-based ESLs were not available for TPH, so the ceiling levels were used as the only available ESLs (Table 9).

Although no soil gas data are available to evaluate the vapor intrusion pathway in this Tier I assessment, the RWQCB ESL document includes groundwater concentrations that are protective of the indoor air pathway. Therefore, this pathway was evaluated through use of the ESLs. This is consistent with the ESL document, which states that "groundwater data should be collected at all sites where significant releases of VOCs may have occurred and compared to screening levels presented in this document". Because the groundwater is shallow at the site (i.e., less than five feet bgs), soil gas samples cannot be collected from the vadose zone soils, as documented in the Department of Toxic Substances Control's (DTSC's) soil gas advisory, without compromising the data due to the presence of a large smear zone and potential intrusion by atmospheric air (CalEPA, 2003). Also, the ESL document states "soil gas samples collected from depths less than 3 m are considered unreliable due to the increased potential to draw in ambient, surface air and may not provide an accurate measure of contaminant mass" (RWQCB, 2008).

The only volatile chemicals identified as COPCs in groundwater monitoring wells are the petroleum mixtures, for which the RWQCB (2008) suggests that soil gas data be used to evaluate potential indoor air issues. However, the ESL document (RWQCB, 2008) also states that the indicator compounds recommended for evaluation of TPH mixtures include BTEX, MTBE, and PAHs. All of these analytes have been evaluated in multiple groundwater samples. BTEX compounds are present below ESLs, indicating they are below levels of potential concern for any exposure pathway. Additionally, PAH concentrations in the wells with the highest TPH concentrations were all below detection limits, verifying that toxic PAHs are not present in the mixtures. The absence of BTEX (above ESLs) and PAHs in these samples precludes any need to collect soil gas data, even if it were practical to do so in light of the impediments to soil gas sampling at this location, as described above.

Historically, naphthalene has been detected in groundwater samples at concentrations up to 240 ug/L in grab samples, and up to 6.8 ug/L in monitoring wells (Table 9). The lowest human health-based ESL for naphthalene in groundwater relevant to this site is the ceiling concentration of 210 ug/L (Table F-1b). This is the threshold for nuisance odors as identified by the Ontario Ministry of Environment and Energy, and is not a risk-based concentration. The vapor intrusion-based groundwater ESL for naphthalene, as listed in Table F-1b, is 3,200 ug/L (RWQCB, 2008). Since the maximum detected groundwater concentration is more than an order of magnitude below this vapor intrusion-based ESL, vapor intrusion is not a concern for this chemical. Therefore, soil gas data need not be collected to further evaluate this pathway, even if it were practical to do so in light of the impediments to soil gas sampling at this location, as described above.

Further, the Engine Service Test Cell Facility contains large rollup doors that are often open to the air, reducing the potential for vapor intrusion into the building. This, combined with the active use of petroleum compounds during the engine testing, strongly implies that any subsurface contribution to inhalation exposures would be negligible. Finally, a methane alarm system is in place to monitor accumulation of landfill gases beneath the structure. We understand this system has not registered the presence of methane, which would be expected to migrate more quickly through the vapor phase than other detected organic constituents.

Indoor air sampling is not appropriate for this active repair facility due to confounding factors regarding sources of any detected analytes. As stated by CalEPA in their Vapor Intrusion Guidance (CalEPA, 2005b), "it is important to identify and mitigate the consumer products as contaminant sources prior to collecting indoor air samples…the inability to eliminate potentially interfering substances may be justification for not testing". The facility actively tests turbine engines, so there are indoor sources of the same chemicals present in the subsurface. Due to the very low detection limits achieved for air samples (e.g., 0.01 ug/L), even off-gassing of chemicals from tap water can be detected (CalEPA, 2005b). Since the goal of indoor air sampling is to identify the potential risk from inhalation of chemicals volatilizing from the subsurface, the sources of chemicals between active indoor uses and subsurface volatilization need to be differentiated. Given the conditions at the site, this is not a feasible approach. This is reinforced by the building not being a typical office building, but rather is an active test cell facility with large rollup doors that are open during operation. CalEPA (2005b) also recommends that indoor air samples be collected under typical working conditions (e.g., HVAC system operational, roll-up doors open), which further limits the ability to differentiate among subsurface, ambient, and "indoor" sources. These same conditions also limit the vapor intrusion pathway since air exchange is very high during operating conditions. Based on this discussion, indoor air sampling is not a recommended approach at this site.

Therefore, evaluation of groundwater data represents an appropriate approach to evaluate the vapor intrusion pathway at the site. Also, both the ESL document (RWQCB, 2008) and the Interstate Technology and Regulatory Council (ITRC, 2007) guidance on vapor intrusion, which is heavily cited in the new draft vapor intrusion guidance under development by the DTSC, both indicate that lower levels of risk are associated with vapor intrusion for petroleum constituents relative to other constituents due to their tendency to biodegrade. Based on the evaluation of groundwater data and building design and use, vapor intrusion into indoor air does not represent a potentially significant exposure pathway.

As mentioned above, ecological ESLs were exceeded for all evaluated TPH mixtures, as well as naphthalene, ten metals (some in grab samples; and tetraethyl lead; Table 10). This conservative assessment assumes that no chemical degradation or attenuation occurs between the groundwater and a viable surface water body. Further evaluation, including groundwater modeling and/or definition of the impacted groundwater, may be necessary to address potential ecological issues associated with TPH, naphthalene, and/or metals in groundwater.

To summarize, the following constituents are COPCs in groundwater regardless of the nature of the sample:

- TPHj
- TPHd

- TPHmo.

The following are additional COPCs in grab groundwater samples only:

- TPHg
- Naphthalene
- Organic lead.

The following constituents are COPECs in groundwater:

- TPHg
- TPHj
- TPHd
- TPHmo
- Lead
- Organic lead
- Naphthalene
- Antimony
- Barium
- Cobalt
- Copper
- Nickel
- Selenium
- Silver
- Vanadium
- Zinc.

Surface water samples were also collected at one location at the NPORD site (SW-3), with the most recent sample date in 2007. The surface water samples were collected from a drainage ditch southwest of the site boundary, which was dry during two of the three most recent sampling events and is present only as an intermittent water body. When water is present in the ditch, it flows south to a pumping station and is then pumped out to the tidal marsh east of the site. As shown on Table 11, ecological ESLs for toluene, ethylbenzene, total xylenes, four SVOCs (naphthalene, n-butylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene), and three TPH mixtures (TPHg, TPHd, and TPHmo) were exceeded at the surface water sampling location. However, the only exceedances for the TPH indicator chemicals were from samples collected in 1989 (except for naphthalene in 2005), and they have not been detected in any surface water samples since then. TPH concentrations have been detected three times since 2005, with lower concentrations detected in each subsequent event (Table 3).

Several metals (antimony, arsenic, cadmium, cobalt, copper, lead, mercury, nickel, and zinc) were also detected in the sample from 1989 at concentrations exceeding aquatic ESLs (Table 11). Since that time, only four metals (barium, chromium, nickel, and zinc) have been detected, and all at concentrations below aquatic ESLs.

Therefore, the only target analytes for which ESLs have been exceeded since 1989 are TPHg, TPHd, TPHj, and naphthalene. These four analytes will be further evaluated as surface water COPECs in a Tier II risk assessment, along with those chemicals identified as COPECs due to a lack of relevant screening levels (Table 11). In Tier II the COPECs will be quantitatively addressed through review of available ecotoxicological information.

The identified COPCs and COPECs will be further evaluated in a Tier II risk assessment, focusing quantitatively on those pathways and receptors for which screening levels were exceeded, and for those chemicals without relevant screening levels. The Tier II risk assessment will be conducted consistent with RWQCB (2008) guidance, using CalEPA and USEPA input assumptions. Potentially complete and significant exposure pathways identified in the CSM will be evaluated for the relevant receptors (Figure 1). Only chemicals identified as COPCs and COPECs will be included in the Tier II assessment. If exposures are associated with potential cancer risks in excess of $1x10^{-6}$ or a noncancer hazard index of 1, then risk-based cleanup levels specific to the site may need to be developed in the Tier II assessment.

Closing

We appreciate the opportunity to provide you with this Tier 1 evaluation, and we look forward to assisting you and your client in completing work at this site. Please contact us with any questions or comments at (425) 402-8800 or (925) 229-1411.

Sincerely,
SLR International Corp

This letter was prepared and managed by the undersigned.

Amanda Bailey, M.S.
Project Risk Assessment Scientist

Mark Stelljes, Ph.D.
Director of Risk Assessment and Toxicology

Cc: Dave Goldberg, Rolls-Royce Engine Services-Oakland, Inc.
Greg Dunn, Rolls-Royce Corporation
David Cooke, Allen Matkins Leck Gamble Mallory & Natsis LLP

References:

ARCI. 2006. Workplan for Soil Remediation and Installation of Additional Groundwater Monitoring Wells at Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California 94621. October 17.

Baseline Environmental Consulting (Baseline; for Port of Oakland). 2005. CEQA Ramification of Changing Soil Reuse Criteria from Residential to Commercial ESLs for the Oakland International Airport Materials Management Program Subsequent Initial Study, Mitigated Negative Declaration, dated December 2004, Part of Final Subsequent Initial Study/Mitigated Negative Declaration for Oakland International Airport Materials Management Program. March 4.

Baseline (for Port of Oakland). 2008. North Port of Oakland Former Refuse Disposal Site – Data Summary Report. Letter to Mr. Vic Pal (San Francisco Bay Regional Water Quality Control Board). February 14.

California Environmental Protection Agency (CalEPA). 2003. Advisory – Active Soil Gas Investigations. January 13.

California Environmental Protection Agency (CalEPA). 2005a. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.

California Environmental Protection Agency (CalEPA). 2005b. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. Interim Final. Department of Toxic Substances Control, December 15, 2004 (Revised February 7, 2005).

California Natural Diversity Database (CNDDB). 2010. San Leandro Quadrangle. Queried March 4, 2010.

Driscoll, F.G., 1986, *Groundwater and Wells*, St. Paul, Minnesota, Johnson Division, second edition, 1,089 p.

EMCON. 1996. Soil and Groundwater Investigation National Airmotive Corporation Facility Oakland, California. January 16.

Envirometrix Corporation (EMC). 1996. Groundwater Investigation, Test Cell Facility, 6701 Earhart Road, Oakland, California. April 19.

ETIC Engineering (ETIC). 2006. Evaluation Monitoring Program Plan, North Port of Oakland Refuse Disposal Site, Oakland, California. May 31.

Gettler-Ryan Inc. (GR), 2007a. Addendum to Work Plan for Soil Remediation and Installation of Additional Groundwater Monitoring Wells, Rolls-Royce Engine Services Test Facility, 6701 Earhart Road, Oakland, California. April 5.

GR, 2007b. Work Plan Addendum to Work Plan for Soil Remediation and Installation of Additional Groundwater Monitoring Wells at Rolls-Royce Engine Services Test Facility, 6701 Old Earhart Road, Oakland California. July 25.

GR. 2008a. 4th Quarter 2007 Groundwater Monitoring and Sampling Report, Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California, Alameda County Site #RO0002606. January 11.

GR. 2008b. Well Installation Report for Rolls-Royce Engine Services Test Facility, 6701 Old Earhart Road, Oakland, California. Report No. 25-948218.7, Alameda County Site #RO0002606. January 11.

GR. 2008c. Corrected Soil Excavation Report, Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California, Alameda County Site #RO0002606. February 29.

GR. 2008d. 3rd Quarter 2008 Groundwater Monitoring and Sampling Report, Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California, Alameda County Site #RO0002606. November 14.

GR. 2010. 1st Quarter 2010 Groundwater Monitoring and Sampling Report, Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California, Alameda County Site #RO0002606.

Interstate Technology Regulatory Council (ITRC). 2007. Vapor Intrusion Pathway: A Practical Guideline. January.

Kleinfelder, 2001. Revised Workplan for Supplemental Site Investigation, Rolls-Royce Engine Services, Test Cell Facility, 7200 Earhart Road, Oakland, California. May 11.

Kleinfelder. 2002. Report of Supplemental Site Investigation, Rolls-Royce Engine Service Test Cell Facility, 6701 Earhart Road, Oakland, California. August 23.

Office of Environmental Health Hazard Assessment (OEHHA). 2010. Reference Exposure Levels. Accessed at: www.oehha.org/air/allrels.html. California Environmental Protection Agency, Sacramento.

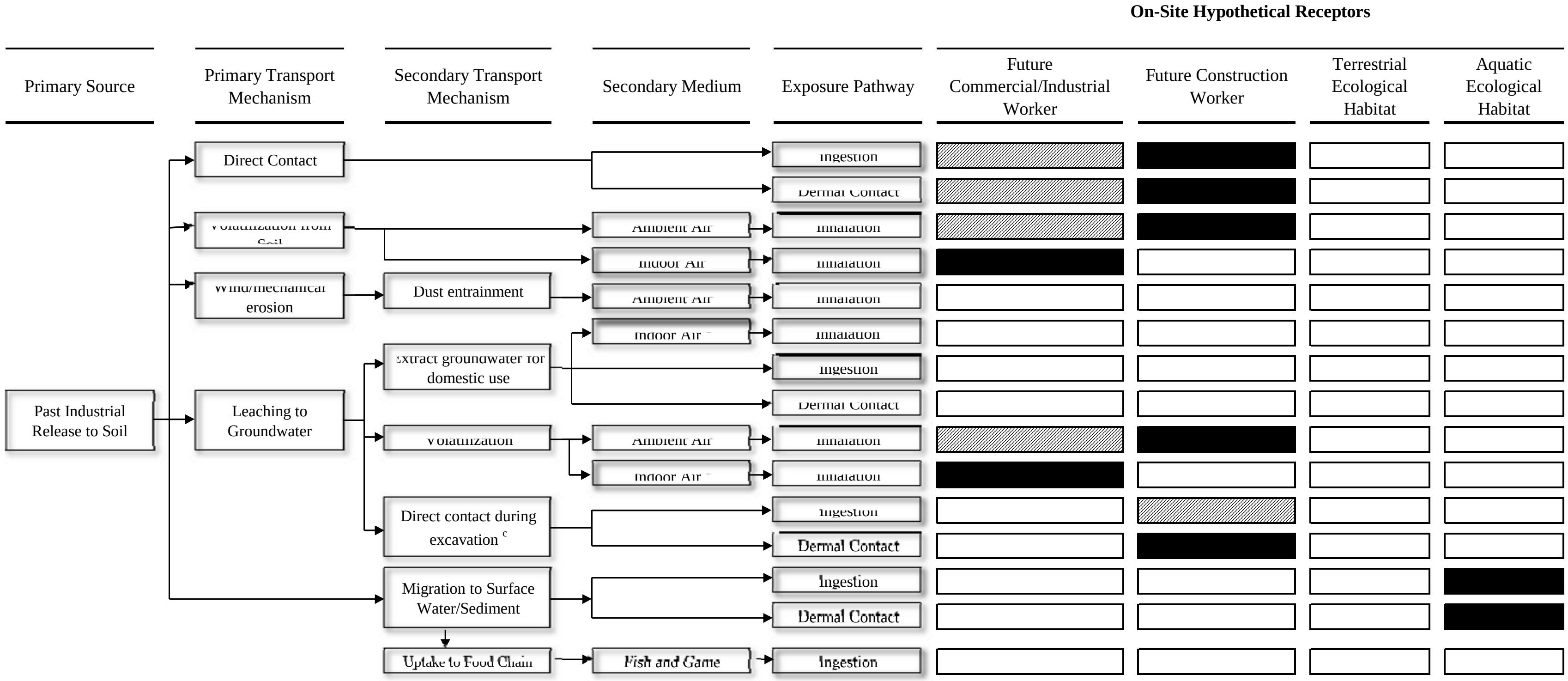
Regional Water Quality Control Board - San Francisco Bay Region (RWQCB). 2008. Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater. Interim Final. November 2007. Revised May 2008.

SAIC (for Port of Oakland). 2010. Final Soil Management Protocol, Port of Oakland International Airport Materials Management Program. February.

U.S. Environmental Protection Agency (USEPA). 2009. Regional Screening Level Table. December. http://www.epa.gov/region09/waste/sfund/prg/

Zemo, DA. 2009. Suggested Methods to Mitigate Bias from Nondissolved Petroleum in Ground Water Samples collected the Smear Zone. Ground Water Monitoring & Remediation 29(3): 77-83.

Figure 1
Conceptual Site Model (CSM) Diagram
Human Health and Ecological Risk Assessment
Rolls-Royce Engine Test Cell Facility
Oakland International Airport



Receptor likely to be exposed via this route, so exposure pathway considered potentially complete and significant, and will be quantitatively evaluated.

Receptor may be exposed via this route; however, exposure is likely insignificant. If further research shows pathway to be complete and significant, the pathway will be quantified. Otherwise, qualitative evaluation only.

Pathway is incomplete and not evaluated further.

Footnotes:

[a] Inhalation of vapors from groundwater during bathing and domestic use.

[b] Passive intrusion of vapors from first encountered groundwater to indoor air.

[c] Groundwater ranges from 3 to 5 feet below ground surface.

Table 1
Groundwater Monitoring Well Organic Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

			TPH (ug/L)				VOCs (ug/L)										SVOCs (ug/L)	
Sample Identification	**Sample Date**	**DTW (feet)**	**TPHg Unfiltered**	**TPHd Unfiltered**	**TPHmo Unfiltered**	**TPHj Unfiltered**	**B**	**T**	**E**	**X**	**MtBE**	**Chloro-benzene**	**1,2-Dichloro-benzene**	**1,4-Dichloro-benzene**	**Naphthalene**	**1,3,5-Trimethyl-benzene**	**bis(2-Ethylhexyl)-phthalate**	**Butylbenzyl-phthalate**
MW-1	3/26/09	3.30	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	2.57	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	3.08	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	2.21	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
MW-2	3/26/09	3.15	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	2.52	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	2.87	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	2.15	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
MW-3	3/26/09	3.82	<50	<50	<100	400	<0.50	<0.50	<0.50	<0.50	0.69	--	--	--	<0.50	--	--	--
	6/24/09	4.21	<50	<50	<100	460	<0.50	<0.50	<0.50	<0.50	0.80	--	--	--	<0.50	--	--	--
	9/24/09	4.33	<50	<50	<100	400	<0.50	<0.50	<0.50	<0.50	0.70	--	--	--	<0.50	--	--	--
	1/15/10	3.92	<50	<50	110	420	<0.50	<0.50	<0.50	<0.50	0.70	--	--	--	<0.50	--	--	--
MW-4	3/26/09	5.65	<50	720	550	1,000	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	5.72	<50	<50	<100	480	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	5.85	<50	1,300	1,100	1,700	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	4.86	<50	210	280	580	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	ND	<0.50	ND	ND	ND
MW-5	3/26/09	4.25	<50	2,400	5,500	2,600	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	4.38	<50	1,300	2,700	990	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	4.47	<50	1,400	3,000	1,400	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	3.47	<50	450	1,800	870	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
MW-6	3/26/09	5.38	<50	2,400	6,800	1,800	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	5.46	<50	490	1,600	450	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	5.60	<50	1,100	3,400	860	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	4.57	<50	450	2,700	790	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	ND	<0.50	ND	ND	ND
MW-7	3/26/09	5.11	<50	710	2,300	790	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	5.22	<50	<50	<100	390	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	5.38	<50	950	2,600	980	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	4.38	<50	910	4,900	1,200	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	ND	<0.50	ND	ND	ND
MW-8	3/26/09	4.05	<50	470	1,500	570	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	4.21	<50	<50	<100	650	<0.50	<0.50	<0.50	<0.50	<0.50				<0.50			
	9/24/09	4.32	<50	130	330	340	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	3.57	<50	120	640	410	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
MW-9	3/26/09	5.26	<50	6,900	9,700	5,600	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	5.42	<50	2,900	5,200	1,800	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	5.53	<50	600	1,100	720	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	4.69	<50	1,300	3,100	1,600	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	ND	<0.50	ND	ND	ND
MW-10	3/26/09	3.36	53	1,500	1,300	2,900	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	1.80	--	--	--
	6/24/09	3.54	<50	710	750	1,400	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	3.61	<50	480	600	1,100	<0.50	<0.50	<0.50	0.69	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	2.81	<50	180	210	500	<0.50	<0.50	0.66	3.5	<0.50	ND	ND	ND	3.4	ND	ND	ND
MW-11	3/26/09	3.49	<50	2,300	4,200	2,800	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	3.70	<50	1,100	2,600	1,200	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	3.37	<50	1,400	3,800	1,800	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	3.02	<50	260	860	620	<0.50	<0.50	<0.50	<0.50	<0.50	ND	ND	ND	<0.50	ND	ND	ND
MW-12	3/26/09	3.13	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	3.21	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	3.38	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	2.80	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
MW-13	3/26/09	2.44	310	86	120	1,800	0.81	<0.50	<0.50	<0.50	1.7	--	--	--	2.2	--	--	--
	6/24/09	2.91	330	170	<100	2,000	1.0	<0.50	<0.50	<0.50	1.9	--	--	--	5.2	--	--	--
	9/24/09	2.81	380	180	130	5,400	1.5	<0.50	<0.50	<0.50	2.5	--	--	--	6.8	--	--	--
	1/15/10	1.58	230	140	<100	1,600	0.58	<0.50	<0.50	<0.50	1.4	--	--	--	3.1	--	--	--
MW-14	3/26/09	2.23	<50	79	540	1,000	<0.50	<0.50	<0.50	<0.50	0.89	--	--	--	<0.50	--	--	--
	6/24/09	2.33	<50	<50	290	1,100	<0.50	<0.50	<0.50	<0.50	1.2	--	--	--	0.52	--	--	--
	9/24/09	2.47	<50	88	350	1,200	<0.50	<0.50	<0.50	<0.50	0.83	--	--	--	<0.50	--	--	--
	1/15/10	1.95	<50	60	490	1,100	<0.50	<0.50	<0.50	<0.50	1.0	--	--	--	<0.50	--	--	--
MW-15	3/26/09	4.45	<50	<50	<100	110	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	4.68	<50	<50	<100	59	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	4.75	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	4.29	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
MW-17	12/19/08	2.24	<50	<50	<100	54	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	3/26/09	1.85	<50	<50	<100	71	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09		Not able to sample well-Oakland Airport security failed to provide access to well															
	9/24/09	2.97	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	2.49	<50	<50	<100	59	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
MW-18	3/26/09	3.28	Not sampled due to presence of SPH															
	6/24/09	3.53	Not sampled due to presence of SPH															
	9/24/09	3.57	Not sampled due to presence of SPH															
	1/15/10	3.02	Not sampled due to presence of SPH															
NPORD MW-3	3/26/09	4.22	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--

Table 1
Groundwater Monitoring Well Organic Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

			TPH (ug/L)				VOCs (ug/L)										SVOCs (ug/L)	
Sample Identification	**Sample Date**	**DTW (feet)**	**TPHg Unfiltered**	**TPHd Unfiltered**	**TPHmo Unfiltered**	**TPHj Unfiltered**	**B**	**T**	**E**	**X**	**MtBE**	**Chloro-benzene**	**1,2-Dichloro-benzene**	**1,4-Dichloro-benzene**	**Naphthalene**	**1,3,5-Trimethyl-benzene**	**bis(2-Ethylhexyl)-phthalate**	**Butylbenzyl-phthalate**
	6/24/09	4.02	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	4.19	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	3.51	<50	<50	<100	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
NPORD MW-4	3/26/09	5.91	<50	95	160	520	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	6/24/09	6.10	<50	200	100	1,000	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	9/24/09	6.20	<50	200	180	500	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
	1/15/10	5.45	<50	93	<100	770	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	--	--	--
Data Summary																		
Minimum			53	60	100	54	0.58	--	0.66	0.69	0.69	--	--	--	0.52	--	--	--
Maximum			380	6,900	9,700	5,600	1.5	--	0.66	3.5	2.5	--	--	--	6.8	--	--	--
Number of Detections			5	40	39	53	4	0	1	2	12	0	0	0	7	0	0	0
Number Analyzed			72	72	72	72	72	72	72	72	72	6	6	6	72	6	6	6
Frequency of Detection			7%	56%	54%	74%	6%	0%	1%	3%	17%	0%	0%	0%	10%	0%	0%	0%

Notes:
DTW = Depth to Water
µg/L = Micrograms per liter
mg/L = Milligrams per liter
TPHg = Total Petroleum Hydrocarbons quantified as gasoline
TPHd = Total Petroleum Hydrocarbons quantified as diesel
TPHmo = Total Petroleum Hydrocarbons quantified as motor oil
TPHj = Total Petroleum Hydrocarbons quantified as jet fuel
B = Benzene
T = Toluene
E = Ethylbenzene
Total X = Total xylenes
MtBE = Methyl tert-Butyl Ether
TOG = Total Oil and Grease
<5.0 = Not detected at or above the stated laboratory reporting limit
-- = Not Applicable or Available
ND = not detected; no detection limit available
Only chemicals detected at least once are included in the table

References:
Gettler-Ryan (GR). 2010. 1st Quarter 2010 Groundwater Monitoring and Sampling Report, Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road
Oakland, California, Alameda County Site #RO0002606.
Baseline, 2008. North Port of Oakland Former Refuse Disposal Site - Data Summary Report Update. February 14

Table 2
Inorganic Water Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Lead-Organic	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Surface Water Samples																			
SW-3	Nov-89	3.2	0.007	0.46	<0.01	0.14	0.049	0.024	0.01	0.30	--	0.021	0.041	0.074	<0.05	<0.05	<10	0.015	2.2
SW-3	2/28/2005	<0.005	<0.005	--	<0.005	<0.002	<0.005	--	0.015	<0.005	--	<0.0002	--	<0.005	<0.005	<0.005	<0.005	--	0.035
SW-3	10/1802005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SW-3	12/12/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SW-3	3/28/2006	--	--	0.62	--	<0.001	0.0035	--	<0.002	<0.001	--	<0.0002	--	0.0065	--	--	--	--	0.02
SW-3	9/28/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SW-3	3/28/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SW-3	12/30/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grab Samples																			
KB-01-GW	7/15/2002	<0.006	<0.005	0.50	<0.004	<0.005	<0.02	<0.05	<0.05	0.0067	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-02-GW	7/15/2002	<0.01	0.0178	0.68	<0.004	<0.005	<0.02	<0.05	<0.05	0.011	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	0.061
KB-03-GW	7/15/2002	<0.006	0.0108	0.58	<0.004	<0.005	<0.02	<0.05	<0.05	0.0097	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	0.15
KB-04-GW	7/15/2002	0.0101	0.0137	1.5	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	0.072
KB-05-GW	7/16/2002	<0.006	<0.005	0.90	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-06-GW	7/16/2002	<0.01	<0.005	1.0	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-07-GW	7/15/2002	<0.006	<0.005	0.19	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-08-GW	7/16/2002	<0.01	<0.005	0.33	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-09-GW	7/16/2002	<0.006	<0.005	0.21	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-10-GW	7/16/2002	<0.006	0.0212	0.25	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-11-GW	7/16/2002	<0.01	0.0113	0.12	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	0.011	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-12-GW	7/16/2002	<0.006	<0.010	0.17	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-13-GW	7/17/2002	<0.006	0.00812	0.37	<0.004	<0.005	<0.02	<0.05	<0.05	0.0053	0.019	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-14-GW	7/17/2002	<0.006	0.00839	0.48	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-15-GW	7/17/2002	<0.006	<0.01	0.38	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-16-GW	7/12/2002	<0.05	<0.005	0.14	<0.004	<0.005	<0.02	<0.05	<0.05	0.0064	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-17-GW	7/12/2002	<0.05	0.0145	0.37	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-18-GW	7/12/2002	<0.05	<0.005	0.66	<0.004	<0.005	<0.02	<0.05	<0.05	0.0054	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-19-GW	7/12/2002	<0.05	0.0131	0.20	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-21-GW	7/15/2002	<0.006	<0.010	0.35	<0.004	<0.005	<0.02	<0.05	<0.05	0.0099	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	0.17
KB-22-GW	7/16/2002	<0.006	0.0145	0.84	<0.004	<0.005	<0.02	<0.05	<0.05	0.034	0.0057	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	<0.05
KB-24-GW	7/17/2002	<0.006	<0.005	0.80	<0.004	<0.005	<0.02	<0.05	<0.05	0.0067	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	0.050
KB-25-GW	7/17/2002	0.00665	<0.005	0.51	<0.004	<0.005	<0.02	<0.05	<0.05	0.011	<0.005	<0.0008	<0.05	<0.05	<0.05	<0.01	<0.005	<0.05	0.086
Monitoring Well Samples																			
MW-1	7/2/2002	<0.06	<0.05	0.13	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
MW-2	7/2/2002	<0.006	<0.005	0.064	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
MW-3	7/2/2002	<0.06	<0.05	0.91	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
NPORD MW-3	Nov-89	<0.3	<0.0050	0.15	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	<0.05	0.054
NPORD MW-3	Jan-90	<0.3	<0.0050	0.093	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	0.031	<0.1
NPORD MW-3	Mar-90	<0.3	<0.0050	0.10	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	0.037	<0.1
NPORD MW-3	May-90	<0.3	<0.0050	0.11	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	0.04	<0.1
NPORD MW-3	8/4/1995	<0.03	<0.05	0.09	<0.005	<0.005	<0.01	<0.01	<0.01	<0.05	--	<0.0005	<0.01	<0.02	<0.05	<0.01	<0.05	<0.01	<0.01
NPORD MW-3	7/2/2002	<0.06	<0.05	0.15	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
NPORD MW-3	3/2/2005	<0.005	<0.005	--	<0.005	<0.002	<0.005	--	<0.005	<0.005	--	<0.0002	--	<0.005	<0.005	<0.005	<0.005	--	0.019
NPORD MW-3	10/18/2005	<0.01	<0.025	0.35	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	--	<0.0002	--	0.014	<0.025	<0.025	<0.005	<0.025	<0.05
NPORD MW-3	12/12/2005	<0.002	0.020	0.33	<0.001	<0.001	<0.002	0.0023	0.0023	<0.001	--	<0.0002	--	0.0096	0.018	<0.005	<0.001	0.0054	<0.010
NPORD MW-3	3/28/2006	--	0.015	0.27	--	--	--	0.0013	<0.001	--	--	--	--	0.0074	0.010	--	--	<0.005	<0.010
NPORD MW-3	9/28/2006	--	--	--	--	--	--	--	--	--	--	--	--	0.0055	<0.025	--	--	<0.005	--
NPORD MW-3	3/29/2007	--	0.024	0.44	--	--	--	0.002	0.0023	--	--	--	--	0.0079	0.001	--	--	0.0077	--
NPORD MW-3	9/27/2007	--	0.0034	0.560	--	--	0.0013	0.0022	0.0045	<0.0010	--	--	--	0.0051	0.0054	<0.0050	--	0.0068	0.0033
NPORD MW-3	12/30/2007	--	0.0096	0.720	--	--	0.0025	0.0019	0.0071	0.00035	--	--	--	0.0057	0.0021	0.0002	--	0.0037	0.023
NPORD MW-4	Nov-89	<0.3	<0.0050	0.54	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	<0.05	0.23
NPORD MW-4	Jan-90	<0.3	<0.0050	0.44	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	<0.05	<0.1
NPORD MW-4	Mar-90	0.10	<0.0050	0.65	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	<0.05	<0.1

Table 2
Inorganic Water Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Lead-Organic	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
NPORD MW-4	May-90	<0.03	<0.0050	0.98	<0.01	<0.025	<0.5	<0.5	<0.1	<0.25	--	<0.0002	<0.1	<0.2	<0.05	<0.05	<10	0.012	<0.1
NPORD MW-4	8/4/1995	<0.03	<0.05	1.8	<0.005	<0.005	<0.01	<0.01	<0.01	<0.05	--	<0.0005	<0.01	<0.02	<0.05	<0.01	<0.05	<0.01	<0.01
NPORD MW-4	7/2/2002	<0.006	<0.005	0.62	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
NPORD MW-4	2/18/2005	<0.005	<0.005	--	<0.005	<0.002	<0.005	--	<0.005	<0.005	--	<0.0002	--	<0.005	<0.005	<0.005	<0.005	--	<0.01
NPORD MW-4	10/18/2005	<0.01	<0.025	0.69	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	--	<0.0002	--	<0.01	<0.025	<0.025	<0.005	<0.025	<0.05
NPORD MW-4	12/12/2005	<0.002	0.011	0.77	<0.0001	<0.001	0.0038	<0.001	<0.002	<0.001	--	<0.0002	--	0.0045	0.010	<0.005	<0.001	<0.005	0.022
NPORD MW-4	3/28/2006	--	0.0069	0.84	--	--	0.0029	--	--	<0.001	--	<0.0001	--	0.0042	0.0056	--	--	--	0.021
NPORD MW-4R*	3/29/2007	--	0.0082	0.49	--	--	0.0030	--	--	--	--	<0.0000	--	0.0042	0.0024	--	--	--	0.23
NPORD MW-4R	9/27/2007	--	0.0017	0.84	--	--	0.0028	0.00045	0.0022	<0.0010	--	--	--	0.0018	0.0044	<0.0050	--	0.0026	0.0071
NPORD MW-4R	12/30/2007	--	0.024	0.92	--	--	0.0066	0.0044	0.014	0.012	--	--	--	0.0068	<0.025	<0.0050	--	0.0055	0.080
Surface Water Data Summary																			
Minimum		3.2	0.007	0.46	--	0.14	0.0035	0.024	0.01	0.3	--	0.021	0.041	0.0065	--	--	--	0.015	0.02
Maximum		3.2	0.007	0.62	--	0.14	0.049	0.024	0.015	0.3	--	0.021	0.041	0.074	--	--	--	0.015	2.2
Number of Detections		1	1	2	0	1	2	1	2	1	--	1	1	2	0	0	0	1	3
Number Analyzed		2	2	2	2	3	3	1	3	3	--	3	1	3	2	2	2	1	3
Frequency of Detection		50%	50%	100%	0%	33%	67%	100%	67%	33%	--	33%	100%	67%	0%	0%	0%	100%	100%
Grab Data Summary																			
Minimum		0.00665	0.00812	0.12	--	--	--	--	--	0.0053	0.0057	--	--	--	--	--	--	--	0.050
Maximum		0.0101	0.0212	1.5	--	--	--	--	--	0.034	0.019	--	--	--	--	--	--	--	0.17
Number of Detections		2	10	23	0	0	0	0	0	10	3	0	0	0	0	0	0	0	6
Number Analyzed		23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Frequency of Detection		9%	43%	100%	0%	0%	0%	0%	0%	43%	13%	0%	0%	0%	0%	0%	0%	0%	26%
MW Data Summary																			
Minimum		0.10	0.0017	0.064	--	--	0.0013	0.00045	0.0022	0.00035	--	--	--	0.0018	0.0010	0.0002	--	0.0026	0.0033
Maximum		0.10	0.024	1.8	--	--	0.0066	0.0044	0.014	0.012	--	--	--	0.014	0.018	0.0002	--	0.04	0.23
Number of Detections		1	10	27	0	0	7	7	6	2	0	0	0	12	9	1	0	10	10
Number Analyzed		21	29	27	21	21	27	25	27	26	5	23	15	30	30	25	21	26	28
Frequency of Detection		5%	34%	100%	0%	0%	26%	28%	22%	8%	0%	0%	0%	40%	30%	4%	0%	38%	36%

Notes:

Dissolved metals analyzed by EPA Method 6010/7000 on filtered and acidified samples

All units in mg/L (milligrams per liter)

-- = Not analyzed/sampled or not available

* = MW-4 was found damaged in September 2006 and abandoned and replaced with MW-4R at a nearby location in February 2007

Reference:

Kleinfelder. 2002. Report of Supplemental Site Investigation, Rolls-Royce Engine Service Test Cell Facility, 6701 Earhart Road, Oakland, California. August 23.

Baseline, 2008. North Port of Oakland Former Refuse Disposal Site - Data Summary Report Update. February 14.

Table 3
Grab Groundwater/Surface Water Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Report Reference(s)	Sample Identification	Sample Date	DTW (feet)	TPHg Unfiltered	TPHd Unfiltered	TPHd Filtered*	TPHmo Unfiltered	TPHmo Filtered*	TPHj Unfiltered	TPHj Filtered*
Grab Groundwater Samples										
3 and 6	KB-01-GW	7/15/2002	5	100	6,800	280	13,000	520	4,500	170
3 and 6	KB-02-GW	7/15/2002	4.5	68	5,700	110	4,600	<250	4,600	99
3 and 6	KB-03-GW	7/15/2002	6	<50	1,900	240	2,500	<250	830	130
3 and 6	KB-04-GW	7/15/2002	5	<50	38,000	360	13,000	<250	42,000	370
3 and 6	KB-05-GW	7/16/2002	6	120	11,000	100	32,000	<250	6,800	86
3 and 6	KB-06-GW	7/16/2002	8	<50	1,600	<50	4,600	<250	400	<50
3 and 6	KB-07-GW	7/15/2002	4.5	<50	5,000	260	1,400	<250	5,900	240
3 and 6	KB-08-GW	7/16/2002	4.5	310	2,000	70	7,600	<250	1,400	<50
3 and 6	KB-09-GW	7/16/2002	2.5	100	1,500	54	8,700	<250	1,100	<50
3 and 6	KB-10-GW	7/16/2002	3	27,000	1,600,000	110	100,000	<250	2,400,000	98
3 and 6	KB-11-GW	7/16/2002	3	7,900	460,000	3,000	120,000	570	830,000	3,300
3 and 6	KB-12-GW	7/16/2002	3	1,300	21,000	460	1,300	<250	24,000	500
3 and 6	KB-13-GW	7/17/2002	2.5	590	39,000	9,900	26,000	1,100	39,000	11,000
3 and 6	KB-13-GWDUP	7/17/2002	2.5	500	8,200	1,900	5,300	880	8,300	1,900
3 and 6	KB-14-GW	7/17/2002	1.5	150	56,000	3,200	82,000	4,500	13,000	750
3 and 6	KB-15-GW	7/17/2002	1.5	1,200	110,000	5,300	52,000	2,200	200,000	4,800
3 and 6	KB-16-GW	7/12/2002	1	2,600	8,800	5,900	2,100	690	9,900	6,500
3 and 6	KB-17-GW	7/12/2002	1	220	460	460	300	<250	480	500
3 and 6	KB-18-GW	7/12/2002	0.5	1,600	9,300	4,700	2,300	2,600	9,300	4,500
3 and 6	KB-19-GW	7/12/2002	1.5	<1.0	110	<50	<250	<250	84	<50
3 and 6	KB-21-GW	7/15/2002	6	<50	6,100	57	54,000	<250	2,800	<50
3 and 6	KB-22-GW	7/16/2002	6.5	<50	6,700	<50	30,000	<250	1,800	<50
3 and 6	KB-24-GW	7/17/2002	5	<50	14,000	160	29,000	450	2,300	<50
3 and 6	KB-25-GW	7/17/2002	5	<50	4,500	130	23,000	320	1,000	<50
3 and 6	KB-26-GW	7/18/2002		<50	--	--	--	--	--	--
2	Water-I	9/13/2007	--	400	66,000	--	17,000	--	72,000	--
Surface Water Samples										
7	SW-3	Nov-89	--	--	ND	--	--	--	--	--
7	SW-3	Jan-90	--	ND	ND	--	--	--	--	--
7	SW-3	Mar-90	--	ND	ND	--	--	--	--	--
7	SW-3	May-90	--	ND	ND	--	--	--	--	--
7	SW-3	2/28/2005	--	1,600	2,900	--	1,100	--	--	--
7	SW-3	7/8/2005	--	640	2,100	--	2,000	--	--	--
7	SW-3	9/30/2005	--	--	--	--	--	--	--	--
7	SW-3	12/12/2005	--	--	--	--	--	--	--	--
7	SW-3	3/28/2006	--	500	910	--	<500	--	--	--
7	SW-3	12/30/2007	--	--	--	--	--	--	--	--
Groundwater Data Summary										
Minimum				68	110	54	300	320	84	86
Maximum				27,000	1,600,000	9,900	120,000	4,500	2,400,000	11,000
Number of Detections				16	25	21	24	10	25	16
Number Analyzed				26	25	24	25	24	25	24
Frequency of Detection				62%	100%	88%	96%	42%	100%	67%
Surface Water Data Summary										
Minimum				500	910	--	1,100	--	--	--
Maximum				1,600	2,900	--	2,000	--	--	--
Number of Detections				3	3	--	2	--	--	--
Number Analyzed				6	7	--	3	--	--	--
Frequency of Detection				50%	43%	--	67%	--	--	--

Report Reference(s)	Sample Identification	Sample Date	B	T	E	P,M-X	O-X	Total X	MtBE	n-Butyl benzene	Napthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
Grab Groundwater Samples													
3 and 6	KB-01-GW	7/15/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	<0.5	--	--
3 and 6	KB-02-GW	7/15/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	0.58	--	--
3 and 6	KB-03-GW	7/15/2002	<0.5	4.1	<0.5	--	--	3.3	<0.5	--	<0.5	--	--
3 and 6	KB-04-GW	7/15/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	<0.5	--	--
3 and 6	KB-05-GW	7/16/2002	<0.5	<0.5	0.64	--	--	0.74	<0.5	--	<0.5	--	--
3 and 6	KB-06-GW	7/16/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	<0.5	--	--
3 and 6	KB-07-GW	7/15/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	<0.5	--	--
3 and 6	KB-08-GW	7/16/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	0.79	--	--
3 and 6	KB-09-GW	7/16/2002	<0.5	<0.5	<0.5	--	--	<0.5	2.2	--	1.2	--	--
3 and 6	KB-10-GW	7/16/2002	<2.5	<2.5	<2.5	--	--	<2.5	4.9	--	240	--	--
3 and 6	KB-11-GW	7/16/2002	3.9	1.2	<0.5	--	--	2.6	30	--	9.8	--	--
3 and 6	KB-12-GW	7/16/2002	4.9	0.54	<0.5	--	--	1.4	2.1	--	<0.5	--	--
3 and 6	KB-13-GW	7/17/2002	<5	<5	<5	--	--	<5	<5	--	<5	--	--
3 and 6	KB-13-GWDUP	7/17/2002	<5	<5	<5	--	--	<5	<5	--	<5	--	--
3 and 6	KB-14-GW	7/17/2002	<5	<5	<5	--	--	<5	<5	--	<5	--	--
3 and 6	KB-15-GW	7/17/2002	<5	<5	<5	--	--	<5	<5	--	<5	--	--
3 and 6	KB-16-GW	7/12/2002	<1.7	<1.7	<1.7	--	--	2.0	<1.7	--	68	--	--
3 and 6	KB-17-GW	7/12/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	0.94	--	--
3 and 6	KB-18-GW	7/12/2002	<0.5	<0.5	<0.5	--	--	1.9	<0.5	--	14	--	--
3 and 6	KB-19-GW	7/12/2002	<0.5	<0.5	<0.5	--	--	<0.5	0.84	--	<0.5	--	--
3 and 6	KB-21-GW	7/15/2002	<0.5	2.9	<0.5	--	--	1.9	<0.5	--	<0.5	--	--
3 and 6	KB-22-GW	7/16/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	<0.5	--	--
3 and 6	KB-24-GW	7/17/2002	<5	<5	<5	--	--	<5	<5	--	<5	--	--
3 and 6	KB-25-GW	7/17/2002	<5	<5	<5	--	--	<5	<5	--	<5	--	--
3 and 6	KB-26-GW	7/18/2002	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	--	<0.5	--	--
2	Water-I	9/13/2007	2.5	1.5	2.6	4.3	2.9	--	5.5	--	53	--	--
Surface Water Samples													
7	SW-3	Nov-89	--	270	84	--	--	500	--	--	4,600	--	--
7	SW-3	Jan-90	--	--	--	--	--	--	--	--	--	--	--
7	SW-3	Mar-90	--	--	--	--	--	--	--	--	--	--	--
7	SW-3	May-90	--	--	--	--	--	--	--	--	--	--	--
7	SW-3	2/28/2005	--	<0.5	<0.5	--	--	<1	16	<1	<1	<0.5	<0.5
7	SW-3	7/8/2005	--	<1.0	<1.0	--	--	<2.0	<5.0	14	53	11	1.2
7	SW-3	9/30/2005	--	--	--	--	--	--	--	--	--	--	--
7	SW-3	12/12/2005	--	--	--	--	--	--	--	--	--	--	--
7	SW-3	3/28/2006	--	<1.0	<1.0	--	--	<2.0	<5.0	5.4	3.1	2	<1.0
7	SW-3	12/30/2007	--	--	--	--	--	--	--	--	--	--	--
Groundwater Data Summary													
Minimum			2.5	0.54	0.64	4.3	2.9	0.74	0.84	--	0.58	--	--
Maximum			4.9	4.1	2.6	4.3	2.9	3.3	30	--	240	--	--
Number of Detections			3	5	2	1	1	8	7	--	12	--	--
Number Analyzed			26	26	26	1	1	25	26	--	26	--	--
Frequency of Detection			12%	19%	8%	100%	100%	32%	27%	--	46%	--	--
Surface Water Data Summary													
Minimum			--	270	84	--	--	500	16	5.4	3.1	2	1.2
Maximum			--	270	84	--	--	500	16	14	4,600	11	1.2
Number of Detections			--	1	1	--	--	1	1	2	3	2	1
Number Analyzed			--	4	4	--	--	4	3	3	4	3	3
Frequency of Detection			--	25%	25%	--	--	25%	33%	67%	75%	67%	33%

Table 3
Grab Groundwater/Surface Water Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Report Reference(s)	Sample Identification	Sample Date	DTW (feet)	TPHg Unfiltered	TPHd Unfiltered	TPHd Filtered*	TPHmo Unfiltered	TPHmo Filtered*	TPHj Unfiltered	TPHj Filtered*	B	T	E	P,M-X	O-X	Total X	MtBE	n-Butyl benzene	Napthalene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene

Notes:

DTW = Depth to Water
All units in µg/L (micrograms per liter)
TPHg = Total Petroleum Hydrocarbons quantified as gasoline
TPHd = Total Petroleum Hydrocarbons quantified as diesel
TPHmo = Total Petroleum Hydrocarbons quantified as motor oil
TPHj = Total Petroleum Hydrocarbons quantified as jet fuel
-- = Not analyzed
ND = Not detected (no reporting limit provided)
<5.0 = Not detected at or above the stated laboratory reporting limit
* = Samples were filtered to remove entrained sediment with absorbed hydrocarbons to provide better representation of dissolved fractions of groundwater

B = Benzene
T = Toluene
E = Ethylbenzene
P,M-X = P,M Xylenes
O-X = O-Xylenes
Total X = total xylenes
MtBE = Methyl tert-Butyl Ether

References:

Report # 2 Gettler-Ryan, Inc. 2008c. Corrected Soil Excavation Report, Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California, Alameda County Site #RO0002606. February 29.
Report # 3 Kleinfelder. 2002. Report of Supplemental Site Investigation, Rolls-Royce Engine Service Test Cell Facility, 6701 Earhart Road, Oakland, California. August 23.
Report # 6 ARCI. 2006. Workplan for Soil Remediation and Installation of Additional Groundwater Monitoring Wells at Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California 94621. October 17.
Report # 7 Baseline, 2008. North Port of Oakland Former Refuse Disposal Site - Data Summary Report Update. February 14.

Table 4
Soil Organic Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Report Reference	Sample Identification	Sample Date	Sample Depth (feet)	TPHg	TPHd	TPHmo	TPHj	B	T	E	P,M-X	O-X	Total X	MtBE	Naphthalene
ONSITE SAMPLES															
3	KB-01	7/15/2002	1	<1.0	3.1	31	1.2	--	--	--	--	--	<0.005	--	<0.005
3	KB-01	7/15/2002	3	<1.0	4.9	26	1.2	--	--	--	--	--	<0.005	--	<0.005
3	KB-02	7/15/2002	1	11	58	56	51	--	--	--	--	--	<0.005	--	<0.005
3	KB-02	7/15/2002	4	34	78	7	82	--	--	--	--	--	<0.005	--	<0.005
3	KB-03	7/15/2002	0	<1.0	3.1	47	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-03	7/15/2002	1	<1.0	2.5	47	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-04	7/15/2002	1	<1.0	44	160	34	--	--	--	--	--	<0.005	--	<0.005
3	KB-04	7/15/2002	4	<1.0	<1.0	<5.0	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-07	7/15/2002	1	<1.0	1.4	13	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-07	7/15/2002	4	<1.0	<1.0	<5.0	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-08	7/16/2002	1	6.2	1.5	13	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-08	7/16/2002	4	1.7	<1.0	6.5	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-09	7/16/2002	1	3.8	<1.0	<5.0	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-09	7/16/2002	4	<1.0	14	50	4.1	--	--	--	--	--	<0.005	--	<0.005
3	KB-20	7/15/2002	1	<1.0	3.2	93	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-20	7/15/2002	3	<1.0	1.1	8.7	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-21	7/15/2002	1	<1.0	3.9	45	<1.0	--	--	--	--	--	<0.005	--	<0.005
3	KB-21	7/15/2002	3	<1.0	1.8	9.7	<1.0	--	--	--	--	--	<0.005	--	<0.005
1	MW4-5.5	6/5/2007	5.5	2.3	1,700	1,400	2,100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW4-10.5	6/5/2007	10.5	<1.0	76	87	59	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW5-5.5	6/6/2007	5.5	<1.0	590	830	400	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW5-10.5	6/6/2007	10	<1.0	12	31	7.7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW6-5.5	6/5/2007	5.5	<1.0	240	340	200	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW6-10	6/5/2007	10	<1.0	17	55	15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW7-5.5	6/6/2007	5.5	<1.0	180	960	54	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW8-10	8/31/2007	10	<1.0	24	50	16	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW9-10	6/5/2007	10	<1.0	350	940	180	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW10-10	6/5/2007	10	<1.0	7.4	16	4.8	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW11-10	6/6/2007	10	<1.0	21	20	18	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW12-5.5	6/6/2007	5.5	<1.0	10	15	6.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW12-9.5	6/6/2007	9.5	<1.0	10	49	10	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW13-5	6/7/2007	5	42	1,500	970	1,700	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	--	<0.0050	0.21
1	MW13-9.5	6/7/2007	9.5	<1.0	17	35	17	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW14-5	6/7/2007	5	<1.0	42	190	18	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW14-9.5	6/7/2007	9.5	<1.0	3.0	<10	2.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW15-9	6/7/2007	9	<1.0	14	50	17	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW17-5.5	8/31/2007	5.5	<1.0	160	900	70	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW17-10	8/31/2007	10	<1.0	9.5	26	8.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW18-5.5	6/6/2007	5.5	<1.0	40	76	26	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1	MW18-10	6/6/2007	10	<1.0	27	58	21	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
2	SW1-4.5	9/13/2007	4.5	2,200	13,000	1,200	13,000	<0.25	<0.25	<0.25	<0.50	<0.25	--	<0.25	<5.0
2	SW2-4.5	9/13/2007	4.5	<1.0	200	350	220	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.050
2	SW3-4.5	9/13/2007	4.5	<1.0	8.0	<10	7.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
2	SW4-4.5	9/13/2007	4.5	360	12,000	2,100	15,000	0.052	<0.025	<0.025	<0.50	0.055	--	<0.025	<0.50
2	SW5-4.5	9/13/2007	4.5	520	370	150	360	0.036	0.027	<0.050	0.078	0.038	--	<0.025	<1.0
2	SW6-4.5	9/13/2007	4.5	<1.0	43	53	54	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
2	SW7-4.5	9/13/2007	4.5	2,000	7,900	1,600	8,900	<0.25	<0.25	<0.25	<0.50	<0.25	--	<0.025	<5.0
2	SW8-4.5	9/13/2007	4.5	6,200	12,000	370	14,000	0.42	<0.40	<0.40	<0.80	<0.40	--	<0.40	<5.0
2	SW9-4.5	9/13/2007	4.5	2,200	500	860	210	<0.40	<0.40	<0.40	<0.70	<0.40	--	<0.40	10
2	SW10-4.5	9/13/2007	4.5	670	4,100	2,200	6,000	<0.050	<0.050	<0.050	<0.10	<0.050	--	<0.050	1.6
2	SW11-4.5	9/13/2007	4.5	<1.0	38	91	35	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
2	SW12-4.5	9/13/2007	4.5	2,400	920	67	950	<0.40	<0.40	<0.40	<0.70	<0.40	--	<0.40	72
2	SW13-4.5	9/13/2007	4.5	7.3	76	68	84	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	--	<0.0050	0.0065
OFFSITE SAMPLES															
Gray Water Discharge Area															
4	OB-2	11/3/1995	0.5	--	<1.0	170	<1.0	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
4	OB-2	11/3/1995	2	--	54	190	440	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
4	OB-3	11/3/1995	0	--	<10	510	<10	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
4	OB-3	11/3/1995	2	--	<10	1,300	<10	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
4	OB-4	11/3/1995	0	--	1,100	1,100	240	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
4	OB-4	11/3/1995	1	--	22	310	430	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
4	OB-5	11/3/1995	0	--	250	300	<5.0	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
4	OB-6	11/3/1995	0	--	120	120	280	<0.050	<0.1	<0.1	--	--	<0.1	--	ND
Other Offsite Areas															
3	KB-05	7/16/2002	0	<1.0	4.4	46	<1.0	--	--	--	--	--	--	--	--
3	KB-05	7/16/2002	2	<1.0	1.1	11	<1.0	--	--	--	--	--	--	--	--
3	KB-06	7/16/2002	0	<1.0	1.6	18	<1.0	--	--	--	--	--	<5.0	--	<5.0
3	KB-06	7/16/2002	2	<1.0	380	1,700	120	--	--	--	--	--	<5.0	--	<5.0

Table 4
Soil Organic Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Report Reference	Sample Identification	Sample Date	Sample Depth (feet)	TPHg	TPHd	TPHmo	TPHj	B	T	E	P,M-X	O-X	Total X	MtBE	Naphthalene
3	KB-13	7/17/2002	0	5.7	72	300	14	--	--	--	--	--	<50	--	<50
3	KB-13	7/17/2002	2	92	140	66	170	--	--	--	--	--	18	--	92
3	KB-14	7/17/2002	0	<1.0	7.9	89	2	--	--	--	--	--	<5.0	--	<5.0
3	KB-15	7/17/2002	0	<1.0	60	180	13	--	--	--	--	--	<5.0	--	<5.0
3	KB-16	7/17/2002	0	<1.0	63	180	12	--	--	--	--	--	<5.0	--	<5.0
3	KB-17	7/12/2002	0	3.7	92	110	49	--	--	--	--	--	<5.0	--	<5.0
3	KB-18	7/17/2002	0	<1.0	77	190	17	--	--	--	--	--	<5.0	--	<5.0
3	KB-19	7/12/2002	0	<1.0	24	24	17	--	--	--	--	--	<5.0	--	<5.0
3	KB-22	7/16/2002	1	<1.0	16	130	16	--	--	--	--	--	<5.0	--	<5.0
3	KB-22	7/16/2002	3	<1.0	1.3	10	<1.0	--	--	--	--	--	<5.0	--	<5.0
3	KB-23	7/17/2002	0	<1.0	23	190	<1.0	--	--	--	--	--	<5.0	--	<5.0
3	KB-24	7/17/2002	0	<1.0	2.9	25	<1.0	--	--	--	--	--	<5.0	--	<5.0
3	KB-24	7/17/2002	2	<1.0	13	120	<1.0	--	--	--	--	--	<5.0	--	<5.0
3	KB-25	7/17/2002	0	<1.0	6.9	88	<5.0	--	--	--	--	--	<5.0	--	<5.0
3	KB-25	7/17/2002	2	<1.0	<200	3,100	<200	--	--	--	--	--	<5.0	--	<5.0
3	KB-26	7/12/2002	0	<1.0	20	43	8.2	--	--	--	--	--	<5.0	--	<5.0
3	KB-26	7/12/2002	3	<1.0	4.4	15	2.4	--	--	--	--	--	<5.0	--	<5.0
Onsite Data Summary															
Minimum				1.7	1.1	6.5	1.2	0.036	0.027	--	0.078	0.0053	--	--	0.0065
Maximum				6,200	13,000	2,200	15,000	0.42	0.027	--	0.078	0.055	--	--	72
Number of Detections				16	49	48	41	3	1	0	1	3	0	0	6
Number Analyzed				53	53	53	53	35	35	35	35	35	18	35	53
Frequency of Detection				30%	92%	91%	77%	9%	3%	0%	3%	9%	0%	0%	11%
Offsite Data Summary															
Minimum				3.7	1.1	9.6	2.2	--	--	--	--	--	18	--	92
Maximum				92	1,100	3,100	440	--	--	--	--	--	18	--	92
Number of Detections				3	25	29	16	0	0	0	0	0	1	0	1
Number Analyzed				21	29	29	29	8	8	8	0	0	27	0	27
Frequency of Detection				14%	86%	100%	55%	0%	0%	0%	NA	NA	4%	NA	4%

Notes:

All units in mg/kg (milligrams per kilogram)
TPHg = Total Petroleum Hydrocarbons quantified as gasoline
TPHd = Total Petroleum Hydrocarbons quantified as diesel
TPHmo = Total Petroleum Hydrocarbons quantified as motor oil
TPHj = Total Petroleum Hydrocarbons quantified as jet fuel
B = Benzene
T = Toluene
E = Ethylbenzene
P,M-X = P,M Xylenes
O-X = O-Xylenes
Total X = Total Xylenes
MtBE = Methyl tert-Butyl Ether
-- = Not Applicable
<0.0050 = Not detected at or above the stated laboratory reporting limit
ND = Not detected; reporting limits not provided

References:

Report # 1 Gettler-Ryan, Inc. (GR). 2008b. Well Installation Report for Rolls-Royce Engine Services Test Facility, 6701 Old Earhart Road, Oakland, California. Report No. 25-948218.7, Alameda County Site #RO0002606. January 15.

Report # 2 GR. 2008c. Corrected Soil Excavation Report, Rolls-Royce Engine Service Test Facility, 6701 Old Earhart Road, Oakland, California, Alameda County Site #RO0002606. February 29.

Report # 3 Kleinfelder. 2002. Report of Supplemental Site Investigation, Rolls-Royce Engine Service Test Cell Facility, 6701 Earhart Road, Oakland, California. August 23.

Table 5
Soil Inorganic Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Date	Depth (feet)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Lead-Organic	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
ONSITE SAMPLES																				
KB-01	7/15/2002	1	<2.5	6.4	170	<0.5	0.56	44	9.1	34	54	<0.5	0.17	<2.0	54	<2.5	<1.0	<2.5	35	97
KB-01	7/15/2002	3	99	24	2,200	<0.5	4.7	52	5.9	580	910	<0.5	100	<2.0	24	<2.5	<1.0	<2.5	19	3,800
KB-02	7/15/2002	1	<2.5	7.8	180	<0.5	0.78	49	11	45	79	<0.5	0.21	<2.0	77	<2.5	<1.0	<2.5	40	130
KB-02	7/15/2002	4	<2.5	9.3	76	0.52	<0.5	17	3.7	12	11	<0.5	<0.06	<2.0	12	<2.5	<1.0	<2.5	35	42
KB-03	7/15/2002	0	<2.5	5.8	130	<0.5	0.61	36	11	89	110	<0.5	0.29	<2.0	74	<2.5	<1.0	<2.5	31	120
KB-03	7/15/2002	1	<2.5	10	320	<0.5	2.2	70	14	93	280	<0.5	0.44	<2.0	48	<2.5	<1.0	<2.5	49	510
KB-04	7/15/2002	1	<2.5	5.0	52	<0.5	<0.5	6.5	7.0	20	4.1	<0.5	<0.06	<2.0	11	<2.5	<1.0	<2.5	28	39
KB-04	7/15/2002	4	<2.5	11	140	0.67	<0.5	17	7.0	16	12	<0.5	0.074	<2.0	13	<2.5	<1.0	<2.5	37	55
KB-07	7/15/2002	1	<2.5	<2.5	62	<0.5	<0.5	9.8	11	25	4.0	<0.5	0.34	<2.0	6.5	<2.5	<1.0	<2.5	61	150
KB-07	7/15/2002	4	<2.5	<2.5	9.6	<0.5	<0.5	82	22	10	<3.0	<0.5	0.10	<2.0	38	<2.5	<1.0	<2.5	71	32
KB-08	7/16/2002	1	<2.5	4.5	78	<0.5	<0.5	31	6.1	20	35	<0.5	0.40	<2.0	22	<2.5	<1.0	<2.5	23	49
KB-08	7/16/2002	4	<2.5	5.6	95	<0.5	<0.5	47	5.7	18	6.0	<0.5	<0.06	5.1	34	<2.5	<1.0	<2.5	31	35
KB-09	7/16/2002	1	<2.5	9.9	56	0.62	<0.5	14	7.0	78	18	<0.5	0.14	<2.0	11	<2.5	<1.0	<2.5	77	79
KB-09	7/16/2002	4	<2.5	4.7	82	<0.5	<0.5	30	7.3	17	21	<0.5	<0.06	<2.0	31	<2.5	<1.0	<2.5	24	52
KB-20	7/15/2002	1	2.8	8.5	330	<0.5	2.0	45	11	110	570	<0.5	0.32	<2.0	47	<2.5	<1.0	<2.5	32	580
KB-20	7/15/2002	3	28	6.7	420	<0.5	0.85	41	7.3	120	350	<0.5	0.44	10	51	<2.5	<1.0	<2.5	25	410
KB-21	7/15/2002	1	<2.5	9.4	140	<0.5	1.0	39	11	54	160	<0.5	0.44	<2.0	50	<2.5	<1.0	<2.5	36	180
KB-21	7/15/2002	3	<2.5	5.5	510	<0.5	2.4	37	6.7	91	170	<0.5	<0.06	<2.0	31	<2.5	<1.0	<2.5	21	810
OFFSITE SAMPLES																				
Gray Water Discharge Area																				
OB-2	11/3/1995	0.5	<10	8	220	--	2	53	12	89	280	--	0.5	<10	60	--	1	--	38	340
OB-2	11/3/1995	2	<10	<5	730	--	5	57	25	1,300	2,500	--	0.5	<10	69	--	6	--	39	1,300
OB-3	11/3/1995	0	<10	8	810	--	8	62	18	280	1,000	--	2.0	16	160	--	2	--	37	1,100
OB-3	11/3/1995	2	11	10	750	--	6	110	16	320	1,700	--	29	10	63	--	3	--	28	1,600
OB-4	11/3/1995	0	<10	<5	260	--	35	190	15	170	440	--	1.7	10	90	--	4	--	25	820
OB-4	11/3/1995	1	<10	<5	500	--	5	49	6	100	1,200	--	0.7	<10	32	--	<1	--	21	1,400
OB-5	11/3/1995	0	10	9	410	--	4	82	6	240	710	--	2.2	<10	37	--	3	--	26	320
OB-6	11/3/1995	0	<10	<5	93	--	2	33	7	120	38	--	0.3	<10	30	--	<1	--	27	150
Other Offsite Areas																				
KB-05	7/16/2002	0	<2.5	7.2	210	<0.5	3.3	57	12	110	360	<0.5	0.43	<2	62	<2.5	<1.0	<2.5	35	480
KB-05	7/16/2002	2	6.4	8.2	94	<0.5	0.67	120	16	1500	120	<0.5	0.52	2.6	51	<2.5	<1.0	<2.5	29	230
KB-06	7/16/2002	0	<2.5	11	230	<0.5	1.1	42	11	54	150	<0.5	0.19	<2	66	<2.5	<1.0	<2.5	35	450
KB-06	7/16/2002	2	4.3	<2.5	21	<0.5	6.9	130	30	49	2200	51	<0.06	3.3	8.4	<2.5	<1.0	<2.5	7.4	17000
KB-13	7/17/2002	0	<2.5	10	490	<0.5	10	69	15	200	1700	3	1.8	10	72	<2.5	<1.0	<2.5	31	1200
KB-13	7/17/2002	2	3.2	<5	940	<0.5	4.8	120	12	13000	4200	1.6	0.35	5.8	210	<2.5	3.8	<2.5	13	4500
KB-14	7/17/2002	0	<2.5	4.3	730	<0.5	11	49	8.2	170	2400	2.6	1.5	3.9	33	<2.5	<1.0	<2.5	32	1700
KB-15	7/17/2002	0	<2.5	<2.5	55	<0.5	6.3	19	3.3	36	110	1.2	73	<2	18	<2.5	<1.0	<2.5	6.3	180
KB-16	7/17/2002	0	<2.5	<5	190	<0.5	23	59	7.2	110	260	1	4.2	7.1	43	<2.5	<1.0	<2.5	25	570
KB-17	7/12/2002	0	<2.5	6.6	170	<0.5	6.9	39	9.7	68	150	0.54	1.7	<2	48	<2.5	<1.0	<2.5	24	270
KB-18	7/17/2002	0	<2.5	<5	190	<0.5	12	29	3.1	220	160	<0.5	2.3	<2	30	<2.5	<1.0	<2.5	16	610
KB-19	7/12/2002	0	<2.5	5.8	55	<0.5	0.72	47	6.8	25	22	<0.5	0.098	<2	38	<2.5	<1.0	<2.5	37	90
KB-22	7/16/2002	1	<2.5	7.4	140	<0.5	0.69	43	9.7	40	68	<0.5	0.1	<2	54	<2.5	<1.0	<2.5	32	130
KB-22	7/16/2002	3	5.9	30	490	<0.5	19	540	11	240	650	<0.5	4.8	4	50	<2.5	<1.0	<2.5	32	1400
KB-23	7/17/2002	0	<2.5	10	180	<0.5	0.91	48	13	36	91	0.9	0.24	<2	77	<5	<1.0	<2.5	35	150
KB-24	7/17/2002	0	12	11	340	<0.5	6.4	71	12	230	500	<0.5	0.52	<2	54	<2.5	<1.0	<2.5	35	2100
KB-24	7/17/2002	2	2.7	8.1	510	<0.5	2.8	34	6.7	120	760	0.9	0.33	<2	26	<2.5	<1.0	<2.5	33	1200
KB-25	7/17/2002	0	<2.5	4.5	170	<0.5	0.77	63	12	55	95	<0.5	0.15	5.6	73	<2.5	<1.0	<2.5	38	160
KB-25	7/17/2002	2	<2.5	3.6	170	<0.5	1.1	24	6.3	57	240	1.1	<0.06	<2	33	<2.5	<1.0	<2.5	19	350
KB-26	7/12/2002	0	<2.5	12	77	<0.5	1.9	150	7.5	59	350	<0.5	0.097	<2	42	<2.5	1.6	<2.5	43	110

Table 5
Soil Inorganic Analytical Tier 1 Dataset
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Date	Depth (feet)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Lead-Organic	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
KB-26	7/12/2002	3	<2.5	5.5	22	<0.5	1.2	34	4.3	18	6.8	<0.5	<.0.06	<2	23	<2.5	<1.0	<2.5	23	49
Onsite Data Summary																				
Minimum			2.8	4.5	9.6	0.52	0.56	6.5	3.7	10	4.0	--	0.074	5.1	6.5	--	--	--	19	32
Maximum			99	24	2,200	0.67	4.7	82	22	580	910	--	100	10	77	--	--	--	77	3,800
Number of Detections			3	16	18	3	9	18	18	18	17	0	13	2	18	0	0	0	18	18
Number Analyzed			18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Frequency of Detection			17%	89%	100%	17%	50%	100%	100%	100%	94%	0%	72%	11%	100%	0%	0%	0%	100%	100%
Arithmetic Mean			--	8.4																
95UCL			--	10.7																
Offsite Data Summary																				
Minimum			2.7	3.6	21	--	0.7	19.0	3.1	18.0	6.8	0.5	0.1	2.6	8.4	--	1.0	--	6	49
Maximum			12	30	940	--	35	540	30	13000	4200	51	73	16	210	--	6.0	--	43	17000
Number of Detections			8	20	29	--	29	29	29	29	29	10	26	11	29	0	8	0	29	29
Number Analyzed			29	29	29	--	29	29	29	29	29	29	29	29	29	29	29	29	29	29
Frequency of Detection			28%	69%	100%	--	100%	100%	100%	100%	100%	34%	90%	38%	100%	0%	28%	0%	100%	100%
Arithmetic Mean			--	9.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
95UCL			--	11.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

Dissolved metals analyzed by EPA Method 6010/7000

All units in mg/kg (milligrams per kilogram)

<2.5 = Not detected at or above the stated laboratory report limit

-- = Not available/ not analyzed

References:

EMCON. 1996. Soil and Groundwater Investigation National Airmotive Corporation Facility Oakland, California. January 16.

Kleinfelder. 2002. Report of Supplemental Site Investigation, Rolls-Royce Engine Service Test Cell Facility, 6701 Earhart Road, Oakland, California. August 23.

Table 6
Screening for Metals in Dust
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Chemical	Maximum Soil Concentration (mg/kg) [a]	CW EPC (mg/m^3) [b]	C/I Worker EPC (mg/m^3) [c]	C/I RSL (mg/m^3) [d]	CW RSL (mg/m^3) [e]
Antimony [f]	99	7.1E-05	7.6E-08	8.8E-04	8.8E-04
Arsenic	24	1.7E-05	1.8E-08	2.9E-06	7.3E-04
Barium	2,200	1.6E-03	1.7E-06	2.2E-03	2.2E-03
Beryllium	0.67	4.8E-07	5.2E-10	5.1E-06	1.3E-03
Cadmium	35	2.5E-05	2.7E-08	6.8E-06	1.7E-03
Chromium	190	1.4E-04	1.5E-07	NA	NA
Cobalt	25	1.8E-05	1.9E-08	1.4E-06	3.5E-04
Copper	1,300	9.3E-04	1.0E-06	NA	NA
Mercury [g]	100	7.1E-05	7.7E-08	1.3E-04	1.3E-04
Molybdenum	16	1.1E-05	1.2E-08	NA	NA
Nickel	160	1.1E-04	1.2E-07	4.7E-05	1.2E-02
Silver	6	4.3E-06	4.6E-09	NA	NA
Vanadium [h]	77	5.5E-05	5.9E-08	1.5E-06	3.8E-04
Zinc	3,800	2.7E-03	2.9E-06	NA	NA

Notes:
CW = Construction worker
C/I = Commercial/industrial
EPC = Exposure Point Concentration
mg/kg = Milligrams per kilogram
mg/m^3 = milligrams per cubic meter
RSL = Regional screening level
NA = Not available, not applicable

Footnotes:
[a] The maximum concentration is from Table 5; represents greater of onsite and offsite concentrations.
[b] EPC = Maximum soil concentration ÷ default Particulate Emission Factor (PEF) for construction workers of 1.4E06 m^3/kg (RWQCB, 2008).
[c] EPC = Maximum soil concentration ÷ default Particulate Emission Factor (PEF) for commercial/industrial workers of 1.3E09 m^3/kg (RWQCB,
[d] Regional Screening Level for ambient air for commercial/industrial worker (EPA, 2009).
[e] Conservatively set equal to RSL (EPA, 2009) for commercial/industrial worker for noncarcinogens, and equal to RSL times 250 for constructio
for carcinogens (10^{-5} target cancer risk and 1 year exposure duration, RWQCB, 2008).
[f] Value for antimony trioxide used.
[g] Value for mercuric chloride used.
[h] Value for vanadium pentoxide used.

References:

California Regional Water Quality Control Board (San Francisco Bay Region; RWQCB). 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater. Interim Final - November 2007. Revised May 2008.
U.S. Environmental Protection Agency (USEPA). 2009. Regional Screening Level (RSL) Master Table. December.

Table 7
Special Status Species Listed for the San Leandro Quadrangle [a]
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Scientific Name	Common Name	Federal Status	California Status	Department of Fish and Game Status	California Natural Plant Survey Status	Habitat/Natural History
Amphibians						
Ambystoma californiense	California tiger salamander	FT	CE	SSC		Frequents grassland, oak savanna, and edges of mixed woodland and lower elevation coniferous forest. Requires breeding ponds. This salamander needs both suitable upland terrestrial habitat and temporary breeding ponds in order to survive. **No suitable habitat present.**
Birds						
Circus cyaneus	Northern harrier	None	None	SSC		This raptor uses tidal brackish and salt marshes, non-tidal freshwater riparian marshes, swampy riparian thickets, coastal swales, and woodland throughout San Francisco Estuary. Also uses the edges of disturbed weed fields and grasslands that border soggy habitats. **Does not nest or reside onsite.**
Laterallus jamaicensis coturniculus	California black rail	None	ST	FP		Uses coastal salt, brackish, and freshwater marshes, usually brackish marshes with tall grass-like emergent marsh vegetation along channels and pickleweed associations on the marsh plain. Suisun Bay and San Pablo Bay, formerly San Francisco Bay. **Presumed extirpated, outside current range.**
Rallus longirostris obsoletus	California clapper rail	FE	SE	FP		Uses tidal salt and brackish marshes; most abundant in cordgrass pickleweed salt marsh with abundant small channels, dense vegetation, and ample flood escape cover. San Francisco Bay, San Pablo Bay, and western Suisun Marsh. **No habitat present.**
Charadrius alexandrinus nivosus	Western snowy plover	FT	None	SSC		Restricted to tidal salt marshes on the fringes of south San Francisco Bay. **Not within current range.**
Sternula antillarum browni	California least tern	FE	SE	FP		In the San Francisco Estuary, uses salt pond levees and exposed, emergent salt pond beds (playa-like habitat). San Francisco Bay; rare in San Pablo Bay. Typical coastal habitat is on wide, sandy beaches with scattered debris. **No habitat present.**
Rynchops niger	Black skimmer	None	None	SSC		In San Francisco Bay, forages over open shallow water of bays, salt ponds; roosts and nests on barren levees, and dry salt ponds, and derelict paved areas. Naturally roosts and nests on undisturbed beaches. **No habitat present.**
Athene cunicularia	Burrowing owl	None	None	SSC		This owl forages in channel habitat and nests in native high marsh pickleweed (*Salicornia virginica*) and marsh gum plant. **No habitat present.**
Geothlypis trichas sinuosa	Saltmarsh common yellowthroat	None	None	SSC		Breeds in salt or freshwater marshes, where the ground is moist but not entirely submerged.They also use grassy wet meadows. **Not observed onsite according to CNDDB bird siting information.**
Melospiza melodia pusillula	Alameda song sparrow	None	None	SSC		Uses beaches. **No habitat present.**
Mammals						
Sorex vagrans halicoetes	Salt-marsh wandering shrew	None	None	SSC		Tidal salt marsh plains above cordgrass zone, moist, lower pickleweed-dominated marsh, with abundant invertebrates, tidal debris, and flood escape habitat. South San Francisco Bay. **No suitable habitat present.**
Scapanus latimanus parvus	Alameda Island mole	None	None	SSC		Only on Alameda Island. **Outside species range.**
Reithrodontomys raviventris	Salt-marsh harvest mouse	FE	SE	FP		Salt marsh and brackish marsh (both non-tidal and tidal) with perennial pickleweed and associated salt-tolerant low-growing subshrubs and herbs; most frequent in dense, continuous vegetation cover with infrequent and brief flooding, and ample flood escape habitat. Does not occur in cordgrass. **No habitat present.**
Plants						
Sanicula maritima	Adobe sanicle	None	SR		1B.1	Last seen in Potrero Hills, San Francisco (above 250 feet elevation) before 1900. Other 10 occurrences found from Monterey south. Uses coastal, grassy, open wet meadows, ravines, valley and foothill grasslands. **Outside current range.**
Centromadia parryi ssp. congdonii	Congdon's tarplant	None	None		1B.2	Occurs in alkaline, often heavy clay soils in mesic areas within grassland communities with ruderal and native alkali-tolerant plants. **No suitable habitat present.**
Lasthenia conjugens	Contra Costa goldfields	FE	None		1B.1	Occurs in alluvial seasonally wet grasslands, alkali or sub-saline vernal pools marginal to the San Francisco Estuary, and edges of salt ponds and pans; not known to occur within modern tidal marshes, but present in some diked baylands. Historic Bay margin locality records from Mt. Eden (Hayward), Suisun Marsh, and Warm Springs (Fremont; extant). **Outside current range.**
Streptanthus albidus ssp. peramoenus	Most beautiful jewel-flower	None	None		1B.2	Occurs in chaparral, cismontane woodland, valley and foothill grassland/ serpentinitic soils above 400 feet elevation. **No habitat present.**
Suaeda californica	California seablite	FE	None		1B.1	Historic range in San Francisco Bay was Richmond to Palo Alto and Alameda. Occurs in estuarine beach edges, sandy high salt marsh edges. Extirpated in San Francisco Bay area. **Outside current range.**
Astragalus tener var. tener	Alkali milk-vetch	None	None		1B.2	Occurs in alluvial seasonally wet grasslands, alkali or sub-saline vernal pools marginal to the San Francisco Estuary; not known to occur within modern tidal marshes, but present in some diked baylands. Modern records from Warm Springs (Fremont), Napa, and Montezuma Wetlands site. **No habitat present.**
Chorizanthe robusta var. robusta	Robust spineflower	FE	None		1B.1	Occurs in cismontane woodland, coastal dunes, or coastal scrub on sandy terraces and bluffs or in loose sand. **No habitat present.**
Horkelia cuneata ssp. sericea	Kellogg's horkelia	None	None		1B.1	Occurs in closed-cone coniferous forest, coastal scrub, and chaparral. **No habitat present.**
Cordylanthus maritimus ssp. palustris	Point Reyes bird's-beak	None	None		1B.2	Extirpated in San Francisco Bay south of Sausalito, formerly abundant. Extant populations in the San Francisco Estuary occur rarely from the Petaluma Marsh to Richardson Bay (reintroduced to San Francisco). **Not in current range.**

Notes:
FE: Federally-listed Endangered
FT: Federally-listed Threatened
SE: State-listed Endangered
ST: State-listed Threatened
SR: State-listed Rare
SSC: California Species of Special Concern
FP: Fully protected under California Fish and Game code
1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
1B.1: More or less widespread outside of California
1B.2: Rare outside California
CE: Candidate for State Listing as Endangered

Footnotes:
[a] Information from CNDDB, 2010.

Reference:
California Natural Diversity Database (CNDDB). 2010. San Leandro Quadrangle. Queried March 4, 2010.

Table 8
Identification of Chemicals of Potential Concern (COPCs) in Soil
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Parameter	Maximum Onsite Concentration [a] (mg/kg)	Location of Maximum	Maximum Offsite Concentration [a] (mg/kg)	Location of Maximum	Tier 1 Screening Levels (mg/kg) CHHSLs [b]	RWQCB ESLs Trench [c]	RWQCB ESLs C/I [d]	Onsite Soil COPC? [e]	Offsite Soil COPC? [e]
BTEX									
Benzene	**0.42**	**SW8-4.5**	--	--	NA	12	**0.27**	**Yes**	No
Toluene	0.027	SW5-4.5	--	--	NA	650	9.3	No	No
p&m-Xylene [f]	0.078	SW5-4.5	NA	--	NA	420	11	No	No
o-Xylene [f]	0.055	SW4-4.5	NA	--	NA	420	11	No	No
TPH [g]									
TPHg	**6,200**	**SW8-4.5**	NA	--	NA	**4,200**	**180**	**Yes**	No
TPHd	**13,000**	**SW1-4.5**	**1,100**	**OB-4**	NA	**4,200**	**180**	**Yes**	**Yes**
TPHmo	2,200	SW10-4.5	**3,100**	**KB-25**	NA	12,000	**2,500**	No	**Yes**
TPHj	**15,000**	**SW4-4.5**	**440**	**OB-2**	NA	**4,200**	**180**	**Yes**	**Yes**
VOCs									
Naphthalene	**72**	**SW12-4.5**	**92**	**KB-13**	NA	130	**2.8**	**Yes**	**Yes**
Inorganics									
Antimony	**99**	**KB-01 (3)**	12	OB-3	380	310	**82**	**Yes**	No
Arsenic [h]	**24**	**KB-01 (3)**	**30**	OB-3	**0.24**	**15**	**1.6**	No [k]	No [k]
Barium	2,200	KB-01 (3)	940	OB-3	63,000	2,600	2,500	No	No
Beryllium	0.67	KB-04 (4)	NA	--	1,700	98	390	No	No
Cadmium	4.7	KB-01 (3)	**35**	OB-4	**7.5**	39	**7.4**	No	**Yes**
Chromium [i]	82	KB-07 (4)	540	OB-4	83,340	1,000,000	2,500	No	No
Cobalt	22	KB-07 (4)	30	OB-2	3,200	94	1,900	No	No
Copper	580	KB-01 (3)	**13,000**	OB-2	38,000	310,000	**2,500**	No	**Yes**
Lead	**910**	**KB-01 (3)**	**4,200**	OB-2	3,500	**750**	**750**	**Yes**	**Yes**
Lead - Organic [j]	--	--	**51**	**KB-06**	--	--	--	No	**Yes**
Mercury	**100**	**KB-01 (3)**	**73**	**OB-3**	180	**58**	**18**	**Yes**	**Yes**
Molybdenum	10	KB-20 (3)	16	OB-3	4,800	3,900	1,000	No	No
Nickel	77	KB-02 (1)	210	OB-3	16,000	260	2,500	No	No
Silver	--	--	6.0	OB-2	4,800	3,900	1,000	No	No
Vanadium	77	KB-09 (1)	43	OB-2	6,700	770	200	No	No
Zinc	**3,800**	**KB-01 (3)**	**17,000**	OB-3	100,000	230,000	**2,500**	**Yes**	**Yes**

Notes:
mg/kg = milligrams per kilogram
CHHSLs = California Human Health Screening Levels
RWQCB = Regional Water Quality Control Board (San Francisco Bay)
ESLs = Environmental Screening Levels
BTEX = Benzene, toluene, ethylbenzene, and xylenes
TPH = Total petroleum hydrocarbons (g = gasoline, d = diesel, mo = mineral oil, j = jet fuel)
VOCs = Volatile organic compounds
MtBE = Methyl tert-butyl ether
C/I = Commercial/Industrial
KB-01 (3) = Sample location KB-01, sample depth of 3 feet
NA = not available/not analyzed
-- = not applicable; analyte not detected

Footnotes:
[a] Maximum concentration from Tables 4 and 5.
[b] Soil human health screening levels, commercial/industrial land use only, from CalEPA (2005).
[c] Construction/trench worker screening levels from Table K-3 in RWQCB (2008).
[d] Lowest available screening level from Table B-2 in RWQCB (2008), excluding urban ecotoxicity criteria.
[e] Analyte was retained as a COPC if the maximum concentration exceeded the ESL.
If no ESL was available, the analyte was conservatively retained as a COPC.
COPCs are shown in bold font, along with the levels they exceeded.
[f] ESLs for total xylenes used in the absence of isomer-specific ESLs.
[g] ESL for TPH gasolines used for TPHg. ESL for TPH middle distillates used for TPHd, TPHj, and residual range used for TPHmo.
[h] Background arsenic concentration for fill material at the Port of Oakland of 16.4 mg/kg (SAIC, 2010) used for screening, since this concentration exceeds the ESL and CHHSL.
[i] ESL is for total chromium.
[j] Screening level for tetraethyl lead of 0.062 mg/kg is the industrial soil value from USEPA (2009).
Screening levels for this chemical were not available from other sources.
[k] Since mean and 95UCL are below background (7.3 and 9.2 mg/kg, respectively), arsenic is not identified as a COPC.

References:

California Regional Water Quality Control Board (San Francisco Bay Region; RWQCB). 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater. Interim Final - November 2007. Revised May 2008.
California Environmental Protection Agency (CalEPA). 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.
SAIC (for Port of Oakland). 2010. Final Soil Management Protocol, Port of Oakland International Airport Materials Management Program. February.
U.S. Environmental Protection Agency (USEPA). 2009. Regional Screening Level Table. December.

Table 9
Identification of Chemicals of Potential Concern (COPCs) in Groundwater
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Parameter	**MW Maximum Concentration [a] (ug/L)**	**Grab Maximum Concentration [b] (ug/L)**	**Tier 1 Screening Levels RWQCB ESLs (ug/L) [c]**	**GW COPC? [d]**
BTEX				
Benzene	1.5	4.9	540	No
Toluene	--	4.1	400	No
Ethylbenzene	0.66	2.6	300	No
p&m-Xylene [e]	NA	4.3	5,300	No
o-Xylene [e]	NA	2.9	5,300	No
Total Xylenes	3.5	3.3	5,300	No
TPH [f]				
TPHg	380	**27,000**	**5,000**	**Yes**
TPHd	**6,900**	**9,900**	**2,500**	**Yes**
TPHmo	**9,700**	**4,500**	**2,500**	**Yes**
TPHj	**5,600**	**11,000**	**2,500**	**Yes**
VOCs				
MtBE	2.5	30	1,800	No
Naphthalene	6.8	**240**	**210**	**Yes**
Inorganics				
Antimony	100	10.1	50,000	No
Arsenic	24	21.2	50,000	No
Barium	1,800	1,500	50,000	No
Chromium [g]	6.6	--	50,000	No
Cobalt	4.4	--	50,000	No
Copper	14	--	50,000	No
Lead	12	34	50,000	No
Lead - Organic	**--**	**19**	**0.0037 [h]**	**Yes**
Nickel	14	--	50,000	No
Selenium	18	--	50,000	No
Silver	0.2	--	50,000	No
Vanadium	40	--	50,000	No
Zinc	230	170	50,000	No

Notes:
ug/L = micrograms per liter
RWQCB = Regional Water Quality Control Board (San Francisco Bay)
ESLs = Environmental Screening Levels
MW = Monitoring Well
GW = Groundwater
BTEX = Benzene, toluene, ethylbenzene, and xylenes
TPH = Total petroleum hydrocarbons (g = gasoline, d = diesel, mo = mineral oil, j = jet fuel)
VOCs = Volatile organic compounds
MtBE = Methyl tert-butyl ether
NA = not available/not analyzed
-- = not applicable; analyte not detected

Footnotes:
[a] Maximum concentration from Tables 1 and 2.
[b] Maximum concentration from Tables 2 and 3.
[c] Lowest available screening level from Table F-1b in RWQCB (2008), excluding aquatic habitat goals.
[d] Analyte was retained as a COPC if the maximum concentration exceeded the ESL.
If no ESL was available, the analyte was conservatively retained as a COPC.
COPCs and maximum concentrations exceeding screening levels are shown in bold font.
[e] ESLs for total xylenes used in the absence of isomer-specific ESLs.
[f] ESL for TPH gasolines used for TPHg. ESL for TPH middle distillates used for TPHd,
and TPHj, and residual range for TPHmo. TPH data are unfiltered (filtered data not available).
[g] ESL is for total chromium.
[h] Screening level for tetraethyl lead is the tap water value from USEPA (2009).
Screening levels for this chemical were not available from other sources.

References:
California Regional Water Quality Control Board (San Francisco Bay Region; RWQCB). 2008.
Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater.
Interim Final - November 2007. Revised May 2008.
U.S. Environmental Protection Agency (USEPA). 2009. Regional Screening Level Table. December.
http://www.epa.gov/region09/waste/sfund/prg/

Table 10
Identification of Chemicals of Potential Ecological Concern (COPECs) in Groundwater
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Parameter	MW Maximum Concentration [a] (ug/L)	Grab Maximum Concentration [b] (ug/L)	RWQCB ESLs		GW COPEC? [e]
			Aquatic [c]	Estuarine [d]	
BTEX					
Benzene	1.5	4.9	46	46	No
Toluene	--	4.1	130	130	No
Ethylbenzene	0.66	2.6	43	43	No
p&m-Xylene [f]	NA	4.3	100	100	No
o-Xylene [f]	NA	2.9	100	100	No
Total Xylenes	3.5	3.3	100	100	No
TPH [g]					
TPHg	**380**	**27,000**	**210**	**210**	**Yes**
TPHd	**6,900**	**9,900**	**210**	**210**	**Yes**
TPHmo	**9,700**	**4,500**	**210**	**210**	**Yes**
TPHj	**5,600**	**11,000**	**210**	**210**	**Yes**
VOCs					
MtBE	2.5	30	1,800	8,000	No
Naphthalene	6.8	**240**	**24**	**24**	**Yes**
Inorganics					
Antimony	**100**	10.1	**30**	**30**	**Yes**
Arsenic	24	21.2	36	36	No
Barium	**1,800**	**1,500**	**1,000**	**1,000**	**Yes**
Chromium [h]	6.6	--	180	180	No
Cobalt	**4.4**	--	**3**	**3**	**Yes**
Copper	**14**	--	**3.1**	**3.1**	**Yes**
Lead	**12**	**34**	**2.5**	**2.5**	**Yes**
Lead - Organic	--	**19**	**NA**	**NA**	**Yes**
Nickel	**14**	**--**	**8.2**	**8.2**	**Yes**
Selenium	**18**	**--**	**5**	**5**	**Yes**
Silver	**0.2**	**--**	**0.19**	**0.19**	**Yes**
Vanadium	**40**	**--**	**19**	**19**	**Yes**
Zinc	**230**	**170**	**81**	**81**	**Yes**

Abbreviations:
ug/L = micrograms per liter
RWQCB = Regional Water Quality Control Board (San Francisco Bay)
ESLs = Environmental Screening Levels
GW = Groundwater
COPEC = Contaminant of Potential Ecological Concern
BTEX = Benzene, toluene, ethylbenzene, and xylenes
TPH = Total petroleum hydrocarbons (g = gasoline, d = diesel, mo = mineral oil, jf = jet fuel)
VOCs = Volatile organic compounds
MtBE = Methyl tert-butyl ether
NA = not available/not analyzed
-- = not applicable; analyte not detected

Footnotes:
[a] Maximum concentration from Tables 1 and 2.
[b] Maximum concentration from Tables 2 and 3.
[c] Aquatic Habitat goals for groundwater from Table F-1b in RWQCB (2008).
[d] Lowest Estuary Aquatic Habitat Goals, Table F-4a in RWQCB (2008).
[e] Analyte was retained as a COPEC if the maximum concentration exceeded the ESL.
If no ESL was available, the analyte was conservatively retained as a COPEC.
COPECs are shown in bold font.
[f] ESLs for total xylenes used in the absence of isomer-specific ESLs.
[g] ESL for TPH gasolines used for TPHg. ESL for TPH middle distillates used for TPHd,
and TPHj, and residual range used for TPHmo. TPH data are unfiltered (filtered data not available).
[h] ESL is for total chromium.

References:

California Regional Water Quality Control Board (San Francisco Bay Region; RWQCB). 2008.
Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater.
Interim Final - November 2007. Revised May 2008.

Table 11
Identification of Chemicals of Potential Ecological Concern (COPECs) in Surface Water
Tier I Screening Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Parameter	SW Maximum Concentration [a] (ug/L)	RWQCB ESLs (ug/L) Surface Water [b]	Habitat [c]	SW COPEC? [d]
BTEX				
Toluene	**270**	**40**	**130**	**Yes**
Ethylbenzene	**84**	**30**	**43**	**Yes**
Total Xylenes	**500**	**100**	**100**	**Yes**
TPH [f]				
TPHg	**1,600**	**210**	**210**	**Yes**
TPHd	**2,900**	**210**	**210**	**Yes**
TPHmo	**2,000**	**210**	**210**	**Yes**
VOCs				
MtBE	16	180	8,000	No
Naphthalene	**4,600**	**21**	**24**	**Yes**
n-Butylbenzene	**14**	**NA**	**NA**	**Yes**
1,2,4-Trimethylbenzene	**11**	**NA**	**NA**	**Yes**
1,3,5-Trimethylbenzene	**1.2**	**NA**	**NA**	**Yes**
Inorganics				
Antimony	**3,200**	**30**	**30**	**Yes**
Arsenic	**7**	**0.14**	36	**Yes**
Barium	620	1,000	1,000	No
Beryllium	--	0.53	0.53	No
Cadmium	**140**	**0.25**	**0.25**	**Yes**
Chromium [g]	49	180	180	No
Cobalt	**24**	**3**	**3**	**Yes**
Copper	**15**	**3.1**	**3.1**	**Yes**
Lead	**300**	**2.5**	**2.5**	**Yes**
Lead - Organic	**NA**	**NA**	**NA**	**Yes**
Mercury	**21**	**0.025**	**0.025**	**Yes**
Molybdenum	41	240	240	No
Nickel	**74**	**8.2**	**8.2**	**Yes**
Selenium	--	5	5	No
Silver	--	0.19	0.19	No
Thallium	--	4	4	No
Vanadium	15	19	19	No
Zinc	**2,200**	**81**	**81**	**Yes**

Notes:

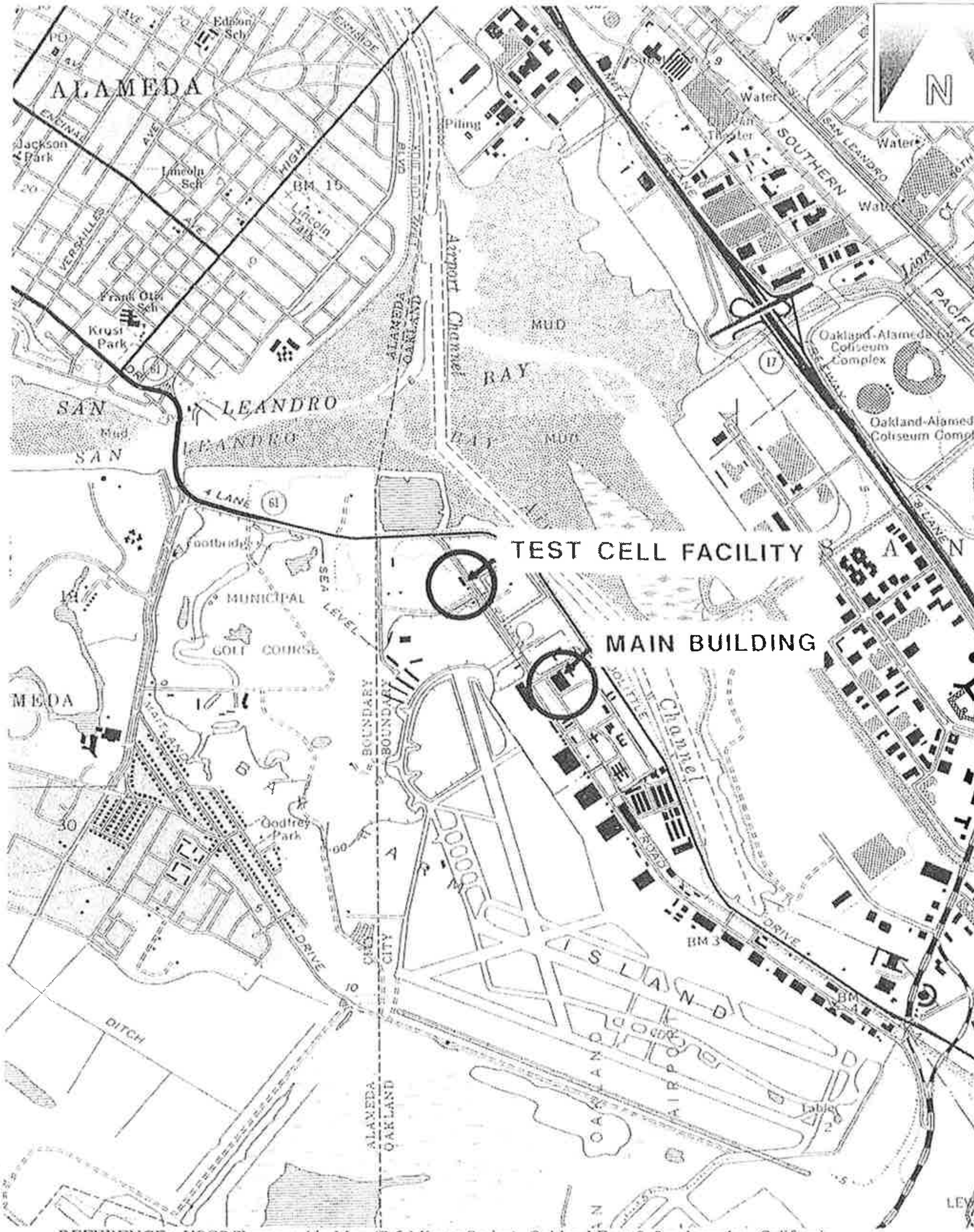
ug/L = micrograms per liter
RWQCB = Regional Water Quality Control Board (San Francisco Bay)
ESLs = Environmental Screening Levels
SW = Surface Water
COPEC = Contaminant of Potential Ecological Concern
BTEX = Benzene, toluene, ethylbenzene, and xylenes
TPH = Total petroleum hydrocarbons (g = gasoline, d = diesel, mo = mineral oil, jf = jet fuel)
VOCs = Volatile organic compounds
MtBE = Methyl tert-butyl ether
NA = not available/not analyzed
-- = not applicable; analyte not detected

Footnotes:

[a] Maximum concentration from Tables 2 and 3.
[b] Surface Water Screening Levels, Estuary Habitats, Table F-2c in RWQCB (2008).
[c] Lowest Estuary Aquatic Habitat Goals, Table F-4a in RWQCB (2008).
[d] Analyte was retained as a COPEC if the maximum concentration exceeded the ESL. If no ESL was available, the analyte was conservative
retained as a COPEC. COPECs are shown in bold font.
[e] ESLs for total xylenes used in the absence of isomer-specific ESLs.
[f] ESL for TPH gasolines used for TPHg. ESL for TPH middle distillates used for TPHd, and TPHj, and residual range used for TPHmo.
TPH data are unfiltered (filtered data not available).
[g] ESL is for total chromium.

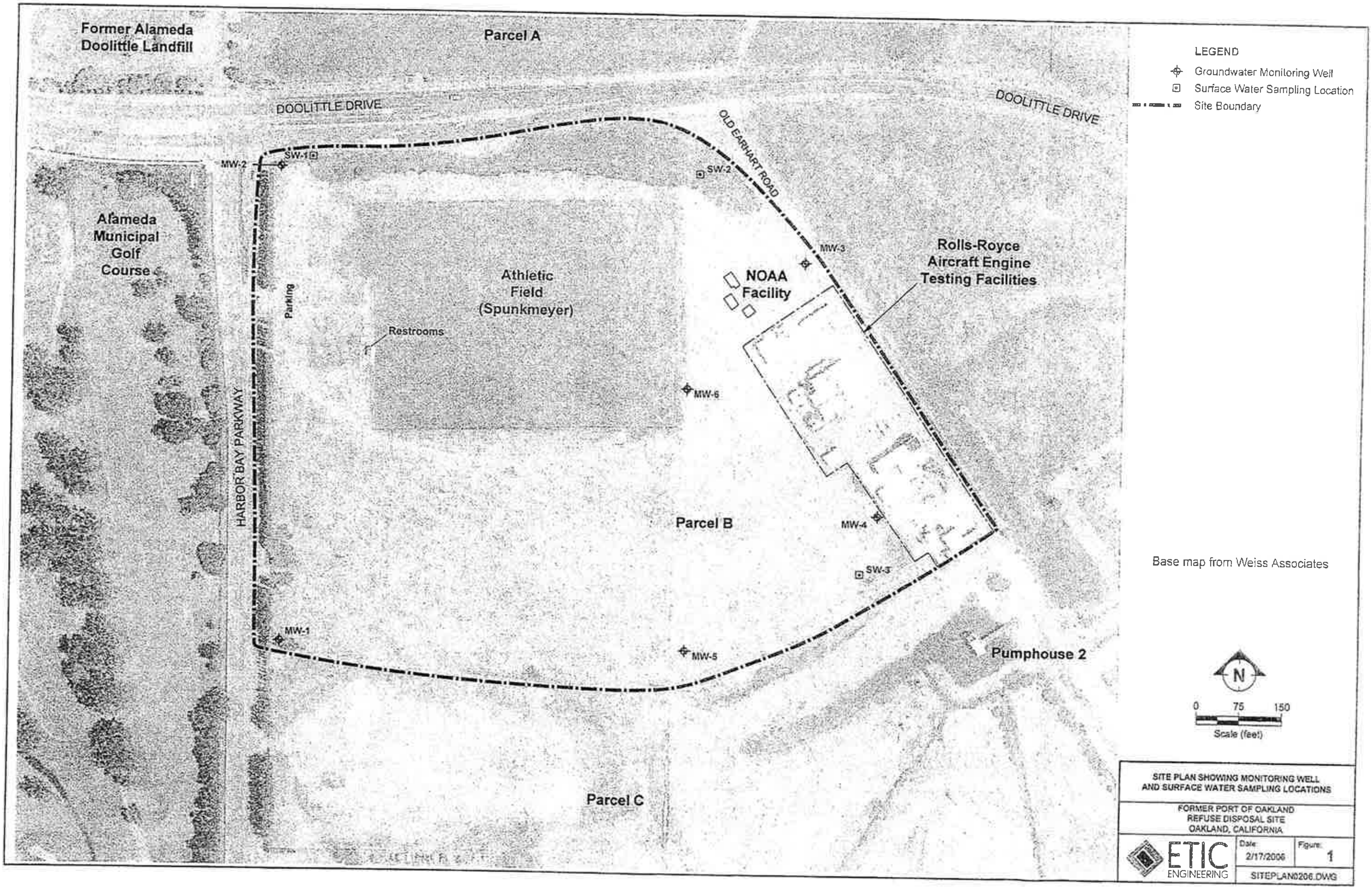
References:

California Regional Water Quality Control Board (San Francisco Bay Region; RWQCB). 2008.
Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater.
Interim Final - November 2007. Revised May 2008.



REFERENCE: USGS Topographic Map (7.5 Minute Series), Oakland East & San Leandro, California (1959, Photorevised 1980)

ENVIROMETRIX	DRAWN: BCC	JOB NUMBER: 196332	**SITE TOPOGRAPHICAL MAP**	PLATE
	APPROVED: NTS	DATE: 4/96	National Airmotive Corporation Test Cell Facility Oakland, California	3
	REVISED	DATE		


Former Alameda Doolittle Landfill
Parcel A
DOOLITTLE DRIVE
OLD EARHART ROAD
DOOLITTLE DRIVE
LEGEND
Groundwater Monitoring Well
Surface Water Sampling Location
Site Boundary
MW-2
SW-1
SW-2
Alameda Municipal Golf Course
Athletic Field (Spunkmeyer)
Parking
Restrooms
MW-3
NOAA Facility
Rolls-Royce Aircraft Engine Testing Facilities
MW-6
HARBOR BAY PARKWAY
Parcel B
MW-4
SW-3
Base map from Weiss Associates
MW-1
MW-5
Pumphouse 2
N
0
75
150
Scale (feet)
Parcel C
SITE PLAN SHOWING MONITORING WELL AND SURFACE WATER SAMPLING LOCATIONS
FORMER PORT OF OAKLAND REFUSE DISPOSAL SITE OAKLAND, CALIFORNIA
ETIC ENGINEERING
Date: 2/17/2006
Figure: 1
SITEPLAN0206.DWG

ENVIROMETRIX

Table 2
Summary of Analytical Results
National Airmotive Corporation
6701 Earhart Road
Oakland, California
EMC Job No. 196332

DATE	SAMPLE NUMBER	TPH-JF	TPH-D	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES
4/3/96	MW-1	<50	**81**	<0.50	<0.50	<0.50	<0.50
4/3/96	MW-2	<50	<50	<0.50	<0.50	<0.50	<0.50
4/3/96	MW-3	**1,300**	**2,200**	<0.50	<0.50	<0.50	<0.50

TPH-JF = Total Petroleum Hydrocarbons as Jet Fuel
TPH-D = Total Petroleum Hydrocarbons as Diesel

All units are in parts per billion (ppb).

ENVIROMETRIX

DRAWN	BCC
JOB NUMBER	196332
APPROVED	NTS
DATE	4/96
REVISED	
DATE	

SITE PLAN AND GROUNDWATER ELEVATIONS 4/3/96

National Airmotive Corporation
Test Cell Facility
Oakland, California

PLATE 4

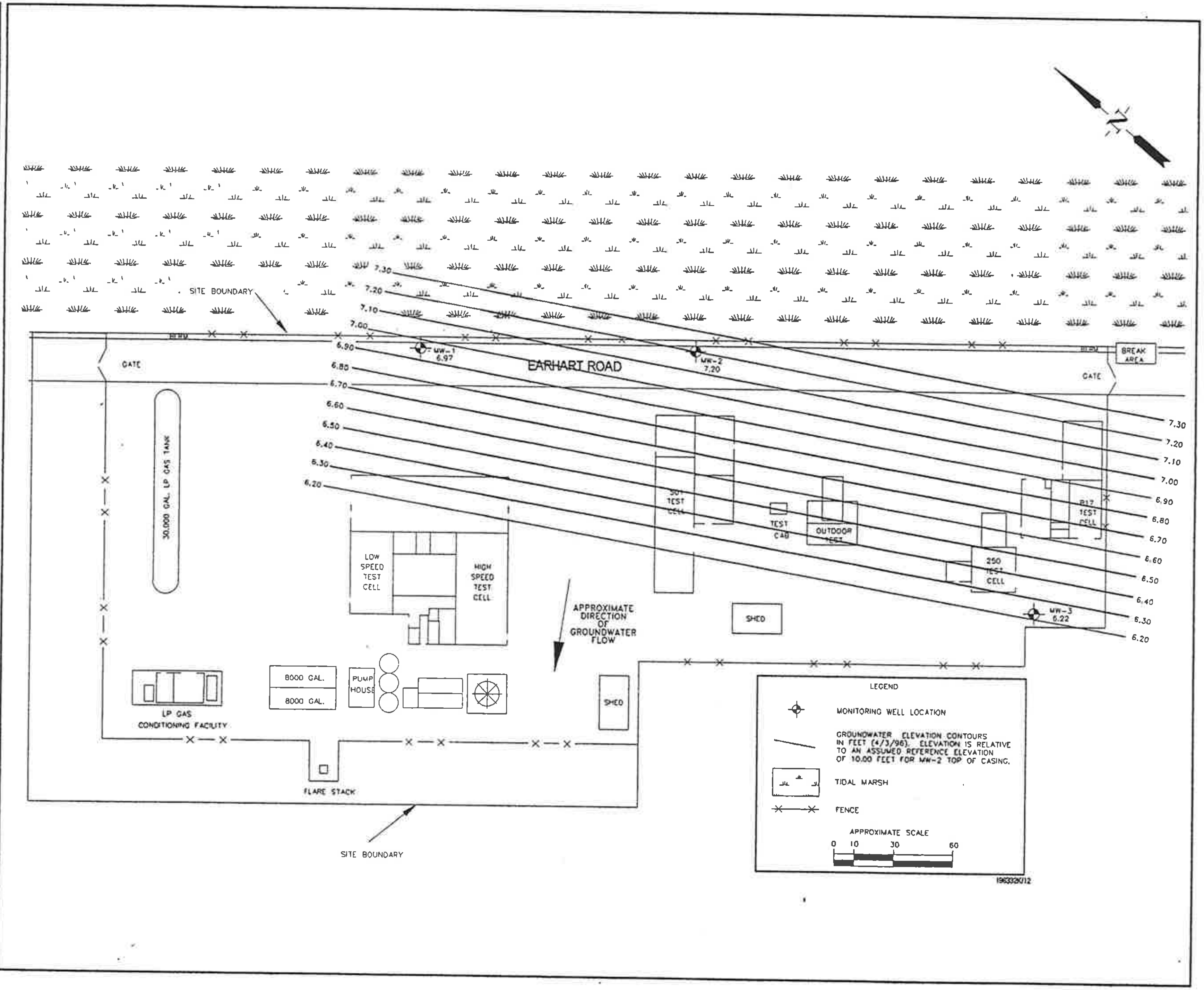


Table 1. Analytical Results of Soil Samples
Total Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Boring Number	Depth (feet)	Sample Date (2002)	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Jet Fuel (mg/kg)	TPH as Motor Oil (mg/kg)
KB-01	1.0	15-Jul	3.1 [c]	<1.0	1.2	31
KB-01	3.0	15-Jul	4.9 [c]	<1.0	1.2	26
KB-02	1.0	15-Jul	58 [e]	11 [j]	51	56
KB-02	4.0	15-Jul	78 [f]	34 [j]	82	7
KB-03	0.0	15-Jul	3.1 [c]	<1.0	<1.0	47
KB-03	1.0	15-Jul	2.5 [c]	<1.0	<1.0	47
KB-04	1.0	15-Jul	44 [b,c,d]	<1.0	34	160
KB-04	4.0	15-Jul	<1.0	<1.0	<1.0	<5.0
KB-05	0.0	16-Jul	4.4 [c]	<1.0	<1.0	46
KB-05	2.0	16-Jul	1.1 [c]	<1.0	<1.0	11
KB-06	0.0	16-Jul	1.6 [c]	<1.0	<1.0	18
KB-06	2.0	16-Jul	380 [c]	<1.0	120	**1,700**
KB-07	1.0	15-Jul	1.4 [c]	<1.0	<1.0	13
KB-07	4.0	15-Jul	<1.0	<1.0	<1.0	<5.0
KB-08	1.0	16-Jul	1.5 [c]	6.2 [n]	<1.0	13
KB-08	4.0	16-Jul	<1.0 [c]	1.7 [n]	<1.0	6.5
KB-09	1.0	16-Jul	<1.0	3.8 [j]	<1.0	<5.0
KB-09	4.0	16-Jul	14 [b,c]	<1.0	4.1	50
KB-10	2.0	16-Jul	**29,000** [m]	**13,000** [j]	**42,000**	**2,500**
KB-11	1.0	16-Jul	**2,600** [m]	**3,000** [j]	**3,500**	530
KB-11	3.0	16-Jul	**1,600** [c,g]	**1,300** [j]	**1,800**	**1,900**
KB-12	1.0	16-Jul	470 [c,g]	**480** [j]	**630**	33
KB-12	3.0	16-Jul	**21,000** [m]	**6,400** [j]	**25,000**	<5,000

Table 1. Analytical Results of Soil Samples
Total Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Boring Number	Depth (feet)	Sample Date (2002)	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Jet Fuel (mg/kg)	TPH as Motor Oil (mg/kg)
KB-13	0.0	17-Jul	72 [b,c]	5.7 [a]	14	300
KB-13	2.0	17-Jul	140 [f,p]	92 [j]	170	66
KB-14	0.0	17-Jul	7.9 [b,c]	<1	2.2	89
KB-15	0.0	17-Jul	60 [b,c]	<1	13	180
KB-16	0.0	17-Jul	63 [b,c]	<1	12	180
KB-17	0.0	12-Jul	92 [b,c]	3.7 [j]	49	110
KB-18	0.0	17-Jul	77 [e,p]	<1	17	190
KB-19	0.0	12-Jul	24 [b,c]	<1.0	17	24
KB-20	1.0	15-Jul	3.2 [c]	<1.0	<1.0	93
KB-20	3.0	15-Jul	1.1 [c]	<1.0	<1.0	8.7
KB-21	1.0	15-Jul	3.9 [c]	<1.0	<1.0	45
KB-21	3.0	15-Jul	1.8 [c]	<1.0	<1.0	9.7
KB-22	1.0	16-Jul	16 [c]	<1.0	16	130
KB-22	3.0	16-Jul	1.3 [c]	<1.0	<1.0	9.6
KB-23	0.0	17-Jul	23 [c]	<1	<1	190
KB-24	0.0	17-Jul	2.9 [c]	<1	<1	25
KB-24	2.0	17-Jul	13 [c]	<1	<1	120
KB-25	0.0	17-Jul	6.9 [c]	<1	<5	88
KB-25	2.0	17-Jul	<200 [c]	<1	<200	**3,100**
KB-26	0.0	12-Jul	20 [b,c]	<1.0	8.2	43
KB-26	3.0	12-Jul	4.4 [b,c]	<1.0	2.4	15
		RBSLs	*500*	*400*	*500*	*1,000*

Table 1. Analytical Results of Soil Samples
Total Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Boring Number	Depth (feet)	Sample Date (2002)	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Jet Fuel (mg/kg)	TPH as Motor Oil (mg/kg)

Notes:

TPH	Total Petroleum Hydrocarbons by modified EPA Method 8015, silica gel clean-up used for TPH as diesel, jet fuel, and motor oil
mg/kg	Milligrams per kilogram
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs

Lab Qualifiers:

a	Heavier gasoline range compounds are significant (aged gasoline?).
b	Diesel range compounds are significant; no recognizable pattern
c	Oil range compounds are significant.
d	Liquid sample contains greater than ~2 volume % sediment.
e	Aged diesel(?) is significant.
f	Unmodified or weakly modified diesel is significant.
g	Kerosene/kerosene range
j	Strongly aged gasoline or diesel range compounds are significant.
m	Stoddard solvent
n	No recognizable pattern
p	Fuel oil.

Table 2. Analytical Results of Reconnaissance Groundwater Samples
Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	TPH as Diesel Unfiltered (µg/L)	TPH as Diesel Filtered * (µg/L)	TPH as Gasoline Unfiltered (µg/L)	TPH as Jet Fuel Unfiltered (µg/L)	TPH as Jet Fuel Filtered * (µg/L)	TPH as Motor Oil Unfiltered (µg/L)	TPH as Motor Oil Filtered * (µg/L)
KB-01-GW	15-Jul	6,800 [b,c,d]	280 [b,c,d]	100 [d,j]	4,500	170	13,000	520
KB-02-GW	15-Jul	5,700 [c,d,f]	110 [b,d]	68 [d,j]	4,600	99	4,600	<250
KB-03-GW	15-Jul	1,900 [b,c,d]	240 [b,d]	<50 [d]	830	130	2,500	<250
KB-04-GW	15-Jul	38,000 [c,d,g]	360 [d,f]	<50 [d]	42,000	370	13,000	<250
KB-05-GW	16-Jul	11,000 [b,c,d,h]	100 [b/k,d,h]	120 [a,d,h]	6,800	86	32,000	<250
KB-06-GW	16-Jul	1,600 [b,c]	<50	<50	400	<50	4,600	<250
KB-07-GW	15-Jul	5,000	260	<50 [d,h]	5,900	240	1,400	<250
KB-08-GW	16-Jul	2,000 [c]	70 [k]	310 [n]	1,400	<50	7,600	<250
KB-09-GW	16-Jul	1,500 [c,d]	54 [b,d]	100 [d,n]	1,100	<50	8,700	<250
KB-10-GW	16-Jul	1,600,000 [g]	110 [d,h,k]	**27,000** [d,h,j]	2,400,000	98	100,000	<250
KB-11-GW	16-Jul	460,000 [c,d,h]	**3,000** [g,h]	**7,900** [h,j]	830,000	**3,300**	120,000	570
KB-12-GW	16-Jul	21,000 [g,h]	460 [h,k]	**1,300** [h,j]	24,000	500	1,300	<250
KB-13-GW	17-Jul	39,000 [c,d,f,g,h]	**9,900** [d,f,h]	**590** [d,h,j]	39,000	**11,000**	26,000	**1,100**
KB-13-GW (Dup)	17-Jul	8,200 [c,d,f]	**1,900** [c,d,f]	**500** [d,j]	8,300	**1,900**	5,300	**880**
KB-14-GW	17-Jul	56,000 [b,c,d,h]	**3,200** [b,c,d]	150 [d,j]	13,000	**750**	82,000	**4,500**
KB-15-GW	17-Jul	110,000 [b,c,d,k]	**5,300** [b,c,d,k]	**1,200** [d,j]	200,000	**4,800**	52,000	**2,200**
KB-16-GW	12-Jul	8,800 [b,c,d,k]	**5,900** [b,c]	**2,600** [b,d]	9,900	**6,500**	2,100	**690**
KB-17-GW	12-Jul	460 [b,d]	460 [b]	220 [b,d]	480	500	300	<250
KB-18-GW	12-Jul	9,300 [b,c,d,h]	**4,700** [b,c,h]	**1,600** [d,h,j]	9,300	**4,500**	2,300	**2,600**
KB-19-GW	12-Jul	110 [b,d]	<50	<1.0	84	<50	<250	<250
KB-21-GW	15-Jul	6,100 [c,d]	57 [b,d]	<50 [d]	2,800	<50	54,000	<250

KLEINFELDER

Table 2. Analytical Results of Reconnaissance Groundwater Samples
Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	TPH as Diesel Unfiltered (µg/L)	TPH as Diesel Filtered * (µg/L)	TPH as Gasoline Unfiltered (µg/L)	TPH as Jet Fuel Unfiltered (µg/L)	TPH as Jet Fuel Filtered * (µg/L)	TPH as Motor Oil Unfiltered (µg/L)	TPH as Motor Oil Filtered * (µg/L)
KB-22-GW	16-Jul	6,700 [b,c]	<50	<50	1,800	<50	30,000	<250
KB-24-GW	17-Jul	14,000 [b,c]	160 [b,c]	<50	2,300	<50	29,000	450
KB-25-GW	17-Jul	4,500 [c,d]	130 [b,c,d]	<50 [d]	1,000	<50	23,000	320
KB-26-GW	18-Jul	NA	NA	<50	NA	NA	NA	NA
	RBSLs	*640*		*500*	*640*		*640*	

Notes:

TPH — Total Petroleum Hydrocarbons by modified EPA Method 8015; silica gel clean-up used for TPH as diesel, jet fuel, and motor oil.

* — Samples were filtered to remove entrained sediment with adsorbed hydrocarbons to provide better representation of dissolved fractions of groundwater.

µg/L — Micrograms per liter

RBSLs — Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).

Bold — Values in **boldface** type exceed their respective RBSLs; only filtered sample results for TPH-d, TPH-jf, and TPH-mo compared to RBSLs

Lab Qualifiers:

a — Heavier gasoline range compounds are significant (aged gasoline?).

b — Diesel range compounds are significant; no recognizable pattern

c — Oil range compounds are significant.

d — Liquid sample contains greater than ~2 volume % sediment.

f — Unmodified or weakly modified diesel is significant.

g — Kerosene/kerosene range

h — Lighter than water immiscible sheen/product is present.

j — Strongly aged gasoline or diesel range compounds are significant.

k — Gasoline range compounds are significant.

n — No recognizable pattern

KLEINFELDER

Table 3. Analytical Results of Monitoring Well Samples
Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	TPH as Diesel Unfiltered (µg/L)	TPH as Diesel Filtered (µg/L)	TPH as Gasoline Unfiltered (µg/L)	TPH as Jet Fuel Unfiltered (µg/L)	TPH as Jet Fuel Filtered (µg/L)	TPH as Motor Oil Unfiltered (µg/L)	TPH as Motor Oil Filtered (µg/L)
MW-1	2-Jul	<50	<50	<50	<50	<50	<250	<250
MW-2	2-Jul	<50	<50	<50	<50	<50	<250	<250
MW-3	2-Jul	<50	51 [b]	<50	<50	<50	<250	<250
NPORD MW-3	2-Jul	<50	<50	<50	<50	<50	<250	<250
NPORD MW-4	2-Jul	100 [b]	85 [b]	110 [a]	98	<50	<250	<250
	RBSLs	*640*		*500*	*640*		*640*	

Notes:

TPH — Total Petroleum Hydrocarbons by modified EPA Method 8015
Silica gel clean-up used for TPH as diesel, jet fuel, and motor oil

µg/L — Micrograms per liter

RBSLs — Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).

Lab Qualifiers:

a — Heavier gasoline range compounds are significant (aged gasoline?).

b — Diesel range compounds are significant; no recognizable pattern

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-01	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-01	3.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-02	1.0	15-Jul	<10	<5.0	5.2	<5.0	<5.0	<5.0	<5.0	<5.0	7.8	<5.0	<5.0
KB-02	4.0	15-Jul	<10	<5.0	17	<5.0	<5.0	<5.0	<5.0	<5.0	43	9.0	<5.0
KB-03	0.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-03	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-04	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-04	4.0	15-Jul	15	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-06	0.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-06	2.0	16-Jul	11	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-07	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-07	4.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-08	1.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-08	4.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-09	1.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-09	4.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	11	<5.0	<5.0	<5.0	<5.0
KB-10	2.0	16-Jul	<10,000	97,000	38,000	25,000	<5,000	8,100	**230,000**	57,000	<5,000	<5,000	<5,000
KB-11	1.0	16-Jul	<2,000	14,000	4,300	1,500	<1,000	1,600	**5,300**	4,600	<1,000	<1,000	<1,000
KB-11	3.0	16-Jul	<2,000	7,100	1,800	<1,000	<1,000	<1,000	3,900	1,700	<1,000	<1,000	<1,000
KB-12	1.0	16-Jul	<400	<200	<200	<200	<200	<200	720	<200	<200	<200	<200
KB-12	3.0	16-Jul	<4,000	26,000	12,000	6,100	<2,000	3,400	**16,000**	19,000	<2,000	<2,000	<2,000
KB-13	0.0	17-Jul	<100	<50	<50	<50	1,300	<50	<50	<50	<50	<50	<50
KB-13	2.0	17-Jul	23	62	6.8	<5.0	<5.0	12	92	<5.0	50	39	18
KB-14	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-15	0.0	17-Jul	29	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-16	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-17	0.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-18	0.0	17-Jul	16	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-19	0.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-20	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-20	3.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-21	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-21	3.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-22	1.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-22	3.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-23	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-24	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-24	2.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-25	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-25	2.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-26	0.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-26	3.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
		RBSLs	*13,000*	*NE*	*NE*	*NE*	*NE*	*NE*	4,900	*NE*	*NE*	*NE*	*1,000*

Notes:

Volatile Organic Compounds analyzed by EPA Method 8260B

µg/kg Micrograms per kilogram

RBSLs Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).

Bold Values in **boldface** type exceed their respective RBSLs

NE Not established

KLEINFELDER

Table 5. Analytical Results of Reconnaissance Groundwater Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	Benzene (µg/L)	2-Butanone (µg/L)	n-Butyl benzene (µg/L)	sec-Butyl benzene (µg/L)	tert-Butyl benzene (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	Ethylbenzene (µg/L)	Isopropylbenzene (µg/L)	4-Isopropyl toluene (µg/L)	4-Methyl-2-pentanone (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	n-Propyl benzene (µg/L)	Styrene (µg/L)	Toluene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5-Trimethylbenzene (µg/L)	Xylenes (total) (µg/L)
KB-01-GW	15-Jul	<0.5	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-02-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.58	<0.5	<0.5	<0.5	1.4	<0.5	<0.5
KB-03-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.68	<0.5	<0.5	<0.5	<0.5	<0.5	4.1	<0.5	<0.5	3.3
KB-04-GW	15-Jul	<0.5	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-05-GW	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	4.0	<0.5	<0.5	<0.5	<0.5	2.6	<0.5	1.2	0.63	0.74
KB-06-GW	16-Jul	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-07-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-08-GW	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.79	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-09-GW	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-10-GW	16-Jul	<2.5	7.0	50	22	<2.5	<2.5	<2.5	<2.5	42	7.2	<2.5	4.9	**240**	86	<2.5	<2.5	7.4	<2.5	<2.5
KB-11-GW	16-Jul	3.9	3.7	<0.5	4.7	<0.5	<0.5	<0.5	<0.5	6.0	7.9	<0.5	30	9.8	3.0	<0.5	1.2	<0.5	<0.5	2.6
KB-13-GW (dup)	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-12-GW	16-Jul	4.9	1.3	6.2	3.4	0.59	<0.5	<0.5	<0.5	3.7	2.4	<0.5	2.1	<0.5	5.4	<0.5	0.54	1.4	<0.5	1.4
KB-13-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-14-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-15-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-16-GW	12-Jul	<1.7	4.8	<1.7	4.0	<1.7	2.2	<1.7	<1.7	<1.7	5.2	<1.7	<1.7	**68**	2.6	<1.7	<1.7	24	2.1	2.0
KB-17-GW	12-Jul	<0.5	2.9	1.6	<0.5	<0.5	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.94	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-18-GW	12-Jul	<0.5	1.6	<0.5	2.9	<0.5	3.2	0.52	<0.5	<0.5	5.6	<0.5	<0.5	14	0.88	<0.5	<0.5	6.9	<0.5	1.9

KLEINFELDER

Table 5. Analytical Results of Reconnaissance Groundwater Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	Benzene (µg/L)	2-Butanone (µg/L)	n-Butyl benzene (µg/L)	sec-Butyl benzene (µg/L)	tert-Butyl benzene (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	Ethylbenzene (µg/L)	Isopropylbenzene (µg/L)	4-Isopropyl toluene (µg/L)	4-Methyl-2-pentanone (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	n-Propyl benzene (µg/L)	Styrene (µg/L)	Toluene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5-Trimethylbenzene (µg/L)	Xylenes (total) (µg/L)
KB-19-GW	12-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.84	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-21-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.9	<0.5	<0.5	1.9
KB-22-GW	16-Jul	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-24-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-25-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-26-GW	18-Jul	<0.5	4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trip Blank-1	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trip Blank-2	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trip Blank-3	17-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	RBSLs	*46*	*14,000*	*NE*	*NE*	*NE*	*NE*	*50*	290	*NE*	*NE*	*190*	*1,800*	*24*	*NE*	*NE*	*130*	*NE*	*NE*	*13*

Notes:

	Volatile Organic Compounds analyzed by EPA Method 8260B
µg/L	Micrograms per liter
MTBE	Methyl tertiary-butyl ether
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs
NE	Not established

KLEINFELDER

Table 6. Analytical Results of Monitoring Well Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Well Number	Sample Date (2002	2-Butanone (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	1,4-Dichlorobenzene (µg/L)	MTBE (µg/L)
MW-1	2-Jul	<1.0	<0.5	<0.5	<0.5	<0.5
MW-2	2-Jul	<1.0	<0.5	<0.5	<0.5	<0.5
MW-3	2-Jul	<1.0	<0.5	<0.5	<0.5	1.5
NPORD MW-3	2-Jul	2.2	0.66	<0.5	<0.5	<0.5
NPORD MW-4	2-Jul	<1.0	<0.5	1.8	0.88	<0.5
	RBSLs	14,000	NE	50	15	1,800

Notes:

Volatile Organic Compounds analyzed by EPA Method 8260B

µg/L Micrograms per liter

MTBE Methyl tertiary-butyl ether

RBSLs Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).

NE Not established

Table 7. Analytical Results of Soil Samples
Dissolved Metals
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Lead-organic (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
KB-01	1.0	15-Jul	<2.5	6.4	170	<0.5	0.56	44	9.1	34	54	<0.5	0.17	<2.0	54	<2.5	<1.0	<2.5	35	97
KB-01	3.0	15-Jul	**99**	**24**	**2,200**	<0.5	4.7	52	5.9	**580**	**910**	<0.5	**100**	<2.0	24	<2.5	<1.0	<2.5	19	**3,800**
KB-02	1.0	15-Jul	<2.5	7.8	180	<0.5	0.78	49	11	45	79	<0.5	0.21	<2.0	77	<2.5	<1.0	<2.5	40	130
KB-02	4.0	15-Jul	<2.5	9.3	76	0.52	<0.5	17	3.7	12	11	<0.5	<0.06	<2.0	12	<2.5	<1.0	<2.5	35	42
KB-03	0.0	15-Jul	<2.5	5.8	130	<0.5	0.61	36	11	89	110	<0.5	0.29	<2.0	74	<2.5	<1.0	<2.5	31	120
KB-03	1.0	15-Jul	<2.5	10	320	<0.5	2.2	70	14	93	280	<0.5	0.44	<2.0	48	<2.5	<1.0	<2.5	49	510
KB-04	1.0	15-Jul	<2.5	5.0	52	<0.5	<0.5	6.5	7.0	20	4.1	<0.5	<0.06	<2.0	11	<2.5	<1.0	<2.5	28	39
KB-04	4.0	15-Jul	<2.5	11	140	0.67	<0.5	17	7.0	16	12	<0.5	0.074	<2.0	13	<2.5	<1.0	<2.5	37	55
KB-05	0.0	16-Jul	<2.5	7.2	210	<0.5	3.3	57	12	110	360	<0.5	0.43	<2.0	62	<2.5	<1.0	<2.5	35	480
KB-05	2.0	16-Jul	6.4	8.2	94	<0.5	0.67	120	16	**1,500**	120	<0.5	0.52	2.6	51	<2.5	<1.0	<2.5	29	230
KB-06	0.0	16-Jul	<2.5	11	230	<0.5	1.1	42	11	54	150	<0.5	0.19	<2.0	66	<2.5	<1.0	<2.5	35	450
KB-06	2.0	16-Jul	4.3	<2.5	21	<0.5	6.9	130	30	49	**2,200**	51	<0.06	3.3	8.4	<2.5	<1.0	<2.5	7.4	**17,000**
KB-07	1.0	15-Jul	<2.5	<2.5	62	<0.5	<0.5	9.8	11	25	4.0	<0.5	0.34	<2.0	6.5	<2.5	<1.0	<2.5	61	150
KB-07	4.0	15-Jul	<2.5	<2.5	9.6	<0.5	<0.5	82	22	10	<3.0	<0.5	0.10	<2.0	38	<2.5	<1.0	<2.5	71	32
KB-08	1.0	16-Jul	<2.5	4.5	78	<0.5	<0.5	31	6.1	20	35	<0.5	0.40	<2.0	22	<2.5	<1.0	<2.5	23	49
KB-08	4.0	16-Jul	<2.5	5.6	95	<0.5	<0.5	47	5.7	18	6.0	<0.5	<0.06	5.1	34	<2.5	<1.0	<2.5	31	35
KB-09	1.0	16-Jul	<2.5	9.9	56	0.62	<0.5	14	7.0	78	18	<0.5	0.14	<2.0	11	<2.5	<1.0	<2.5	77	79
KB-09	4.0	16-Jul	<2.5	4.7	82	<0.5	<0.5	30	7.3	17	21	<0.5	<0.06	<2.0	31	<2.5	<1.0	<2.5	24	52
KB-10	2.0	16-Jul	<2.5	<2.5	33	<0.5	<0.5	11	4.6	9.1	7.4	<0.5	<0.06	<2.0	16	<2.5	<1.0	<2.5	22	22
KB-11	1.0	16-Jul	<2.5	6.8	110	<0.5	<0.5	22	9.7	49	11	<0.5	0.18	<2.0	27	<2.5	<1.0	<2.5	58	92
KB-11	3.0	16-Jul	<2.5	3.3	38	<0.5	<0.5	9.4	4.3	8.6	100	2.3	0.071	<2.0	4.1	<2.5	<1.0	<2.5	15	110
KB-12	1.0	16-Jul	<2.5	11	100	<0.5	<0.5	26	8.9	27	13	<0.5	0.13	<2.0	28	<2.5	<1.0	<2.5	34	98
KB-12	3.0	16-Jul	<2.5	7.8	24	<0.5	<0.5	22	4.2	66	16	<0.5	<0.06	<2.0	33	<2.5	<1.0	<2.5	14	21

KLEINFELDER

Table 7. Analytical Results of Soil Samples
Dissolved Metals
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Lead-organic (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
KB-13	0.0	17-Jul	<2.5	10	490	<0.5	10	69	15	200	**1,700**	3	1.8	10	72	<2.5	<1	<2.5	31	**1,200**
KB-13	2.0	17-Jul	3.2	<5	940	<0.5	4.8	120	12	**13,000**	**4,200**	1.6	0.35	5.8	**210**	<2.5	<1	<2.5	13	**4,500**
KB-14	0.0	17-Jul	<2.5	4.3	730	<0.5	11	49	8.2	170	**2,400**	2.6	1.5	3.9	33	<2.5	3.8	<2.5	21	**1,700**
KB-15	0.0	17-Jul	<2.5	<2.5	55	<0.5	6.3	19	3.3	36	110	1.2	**73**	<2	18	<2.5	<1	<2.5	6.3	180
KB-16	0.0	17-Jul	<2.5	<5	190	<0.5	23	59	7.2	110	260	1.0	4.2	7.1	43	<2.5	<1	<2.5	25	570
KB-17	0.0	12-Jul	<2.5	6.6	170	<0.5	6.9	39	9.7	68	150	0.54	1.7	<2.0	48	<2.5	<1.0	<2.5	24	270
KB-18	0.0	17-Jul	<2.5	<5	190	<0.5	**12**	29	3.1	220	160	<0.5	2.3	<2	30	<2.5	<1	<2.5	16	**610**
KB-19	0.0	12-Jul	<2.5	5.8	55	<0.5	0.72	47	6.8	25	22	<0.5	0.098	<2.0	38	<2.5	<1.0	<2.5	37	90
KB-20	1.0	15-Jul	2.8	8.5	330	<0.5	2.0	45	11	110	570	<0.5	0.32	<2.0	47	<2.5	<1.0	<2.5	32	580
KB-20	3.0	15-Jul	28	6.7	420	<0.5	0.85	41	7.3	120	350	<0.5	0.44	10	51	<2.5	<1.0	<2.5	25	410
KB-21	1.0	15-Jul	<2.5	9.4	140	<0.5	1.0	39	11	54	160	<0.5	0.44	<2.0	50	<2.5	<1.0	<2.5	36	180
KB-21	3.0	15-Jul	<2.5	5.5	510	<0.5	2.4	37	6.7	91	170	<0.5	<0.06	<2.0	31	<2.5	<1.0	<2.5	21	**810**
KB-22	1.0	16-Jul	<2.5	7.4	140	<0.5	0.69	43	9.7	40	68	<0.5	0.10	<2.0	54	<2.5	<1.0	<2.5	32	130
KB-22	3.0	16-Jul	5.9	**30**	490	<0.5	**19**	540	11	**240**	650	<0.5	4.8	4.0	50	<2.5	<1.0	<2.5	32	**1,400**
KB-23	0.0	17-Jul	<2.5	10	180	<0.5	0.91	48	13	36	91	0.90	0.24	<2	77	<5	<1	<2.5	35	150
KB-24	0.0	17-Jul	12	11	340	<0.5	6.4	71	12	**230**	500	<0.5	0.52	<2	54	<2.5	<1	<2.5	35	**2,100**
KB-24	2.0	17-Jul	2.7	8.1	510	<0.5	2.8	34	6.7	120	**760**	0.90	0.33	<2	26	<2.5	<1	<2.5	33	**1,200**
KB-25	0.0	17-Jul	<2.5	4.5	170	<0.5	0.77	63	12	55	95	<0.5	0.15	5.6	73	<2.5	<1	<2.5	38	160
KB-25	2.0	17-Jul	<2.5	3.6	170	<0.5	1.1	24	6.3	57	240	1.1	<0.06	<2	33	<2.5	<1	<2.5	19	350
KB-26	0.0	12-Jul	<2.5	12	77	<0.5	1.9	150	7.5	59	350	<0.5	0.097	<2.0	42	<2.5	1.6	<2.5	43	110
KB-26	3.0	12-Jul	<2.5	5.5	22	<0.5	1.2	34	4.3	18	6.8	<0.5	<0.06	<2.0	23	<2.5	<1.0	<2.5	23	49
		RBSLs	*40*	*13**	*1,500*	*8*	*12*	*750*	*80*	*225*	*750*	*NE*	*10*	*40*	*150*	*10*	*40*	*29*	*200*	*600*

KLEINFELDER

Table 7. Analytical Results of Soil Samples
Dissolved Metals
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Lead-organic (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)

Notes:

	Dissolved metals analyzed by EPA Methods 6010/7000
mg/kg	Milligrams per kilogram
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs
NE	Not established
*	RBSL for arsenic (13 mg/kg) in deeper soil (>3m) used for comparison due to naturally ocurring background levels of arsenic exceeding the shallow soil (<3m) RBSL of 2.7 mg/kg.

KLEINFELDER

Table 8. Analytical Results of Reconnaissance Groundwater Samples
Dissolved Metals
Rolls Royce
Oakland, California

Well Number	Sample Date (2002)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Lead-organic (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
KB-01-GW	15-Jul	<0.006	<0.005	**0.50**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0067**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-02-GW	15-Jul	<0.01	0.0178	**0.68**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.011**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.061**
KB-03-GW	15-Jul	<0.006	0.0108	**0.58**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0097**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.15**
KB-04-GW	15-Jul	0.0101	0.0137	**1.5**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.072**
KB-05-GW	16-Jul	<0.006	<0.005	**0.90**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-06-GW	16-Jul	<0.01 z	<0.005	**1.0**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-07-GW	15-Jul	<0.006	<0.005	**0.19**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-08-GW	16-Jul	<0.01 z	<0.005	**0.33**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-09-GW	16-Jul	<0.006	<0.005	**0.21**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-10-GW	16-Jul	<0.006	0.0212	**0.25**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-11-GW	16-Jul	<0.01 z	0.0113	**0.12**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	**0.011**	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-12-GW	16-Jul	<0.006	<0.010 z	**0.17**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-13-GW	17-Jul	<0.006	0.00812	**0.37**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0053**	**0.019**	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-14-GW	17-Jul	<0.006	0.00839	**0.48**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-15-GW	17-Jul	<0.006	<0.01 z	**0.38**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-16-GW	12-Jul	<0.05	<0.005	**0.14**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0064**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-17-GW	12-Jul	<0.05	0.0145	**0.37**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-18-GW	12-Jul	<0.05	<0.005	**0.66**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0054**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05

Table 8. Analytical Results of Reconnaissance Groundwater Samples
Dissolved Metals
Rolls Royce
Oakland, California

Well Number	Sample Date (2002)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Lead-organic (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
KB-19-GW	12-Jul	<0.05	0.0131	**0.20**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-21-GW	15-Jul	<0.006	<0.010	**0.35**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0099**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.17**
KB-22-GW	16-Jul	<0.006	0.0145	**0.84**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.034**	**0.0057**	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-24-GW	17-Jul	<0.006	<0.005	**0.80**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0067**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.050**
KB-25-GW	17-Jul	0.00665	<0.005	**0.51**	<0.004	0.0055	<0.02	<0.05	<0.05	0.011	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.86**
	RBSLs	*0.030*	*0.036*	*0.0039*	*0.0051*	*0.0011*	*0.18*	*0.003*	*0.0024*	*0.0032*	*0.0032*	*0.000012*	*0.24*	*0.0082*	*0.005*	*0.0012*	*0.04*	*0.019*	*0.023*

Notes:

Dissolved metals analyzed by EPA Methods 6010/7000 on filtered and acidified samples.

mg/L Milligrams per liter

RBSLs Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000). RBSLs based on freshwater aquatic life protection assuming a release of groundwater to surface water.

Bold Values in **boldface** type exceed their respective RBSLs; note that laboratory reporting limits exceed RBSLs in some cases.

NE Not established

Lab Qualifiers:

z Reporting limit raised due to matrix interference

KLEINFELDER

Table 9. Analytical Results of Monitoring Well Samples
Dissolved Metals
Rolls Royce
Oakland, California

Well Number	Sample Date (2002)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Lead-organic (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
MW-1	2-Jul	<0.06	<0.05	**0.13**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
MW-2	2-Jul	<0.006	<0.005	**0.064**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
MW-3	2-Jul	<0.06	<0.05	**0.91**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
NPORD MW-3	2-Jul	<0.06	<0.05	**0.15**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
NPORD MW-4	2-Jul	<0.006	<0.005	**0.62**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
	RBSLs	*0.030*	*0.036*	*0.0039*	*0.0051*	*0.001*	*0.18*	*0.003*	*0.0024*	*0.0032*	*NE*	*0.000012*	*0.24*	*0.0082*	*0.005*	*0.0012*	*0.040*	*0.019*	*0.023*

Notes:

	Dissolved metals analyzed by EPA Methods 6010/7000
mg/L	Milligrams per liter
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs
NE	Not established

KLEINFELDER

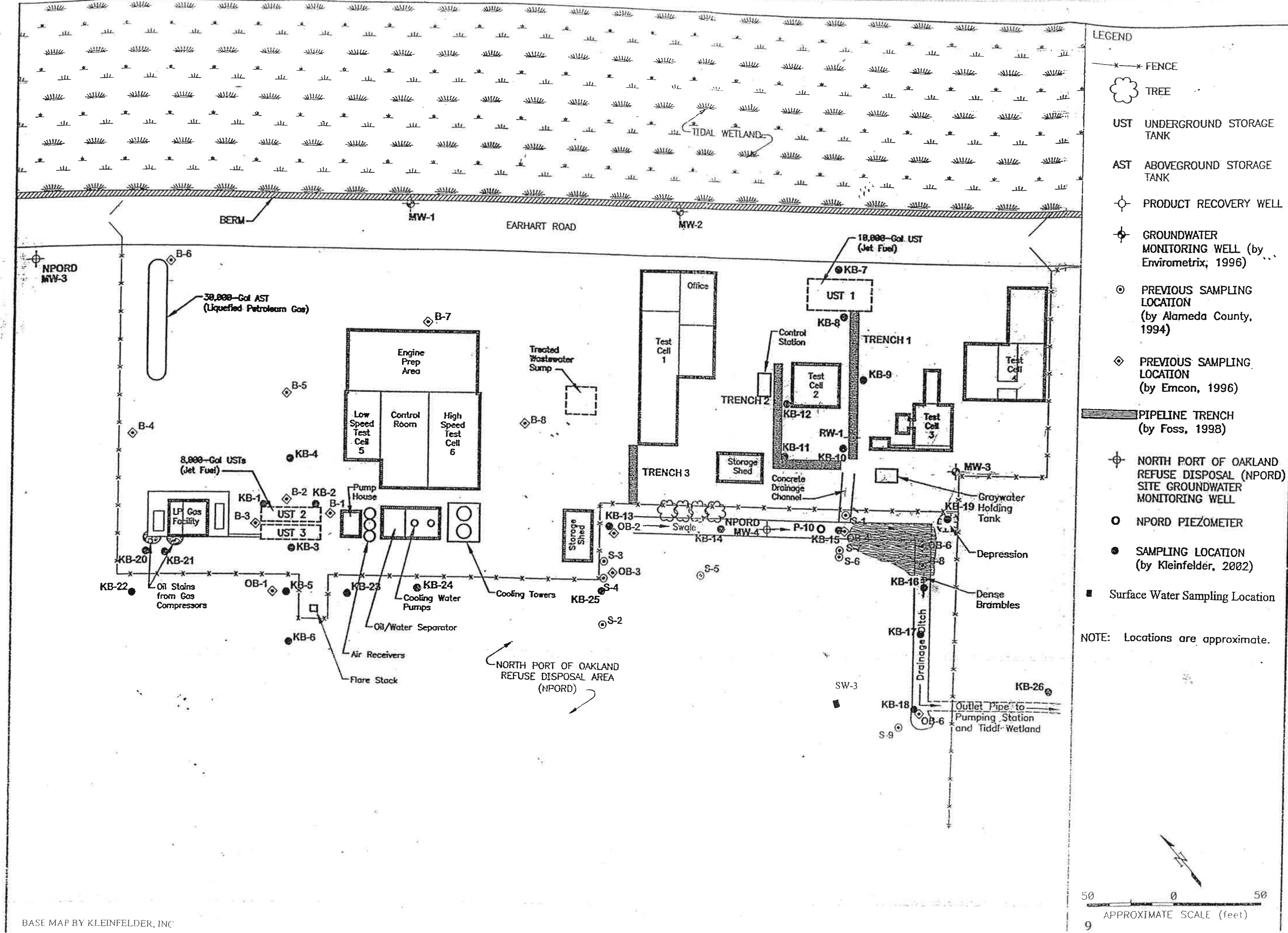


Figure 2-2: Site Map
Rolls-Royce Test Cell Facility
6701 Old Earhart Road
Oakland, CA 94621

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Outdoor Engine Test Cell Excavation													
SW1-4.5[2,3]	4.5	9/13/07	**2,200**	**13,000**	**1,200**	**13,000**	<0.25	<0.25	<0.25	<0.50	<0.25	<0.25	<5.0
SW2-4.5[2]	4.5	9/13/07	<1.0	**200**	**350**	**220[4]**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.050**
SW3-4.5[2]	4.5	9/13/07	<1.0	**8.0[5]**	<10	**7.2[4]**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SW4-4.5[2,3]	4.5	9/13/07	**360**	**12,000**	**2,100**	**15,000**	**0.052**	<0.025	<0.025	<0.050	0.055	<0.025	<0.50
SW5-4.5[2,3]	4.5	9/13/07	**520**	**370**	**150**	**360**	**0.036**	**0.027**	<0.050	**0.078**	**0.038**	<0.025	<1.0
SW6-4.5[2]	4.5	9/13/07	<1.0	**43**	**53**	**54**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SW7-4.5[2,3]	4.5	9/13/07	**2,000**	**7,900**	**1,600**	**8,900**	<0.25	<0.25	<0.25	<0.50	<0.25	<0.25	<5.0
SW8-4.5[2,3]	4.5	9/13/07	**6,200**	**12,000**	**370**	**14,000**	**0.42**	<0.40	<0.40	<0.80	<0.40	<0.40	<5.0
SW9-4.5	4.5	9/13/07	**2,200**	**500[5]**	**860**	**210[4]**	<0.40	<0.40	<0.40	<0.70	<0.40	<0.40	**10**
SW10-4.5[2]	4.5	9/13/07	**670**	**4,100**	**2,200**	**6,000**	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	**1.6**
SW11-4.5[2]	4.5	9/13/07	<1.0	**38[5]**	**91**	**35[4]**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SW12-4.5[2]	4.5	9/13/07	**2,400**	**920**	**67**	**950**	<0.40	<0.40	<0.40	<0.70	<0.40	<0.40	**72**
SW13-4.5	4.5	9/13/07	**7.3**	**76**	**68**	**84**	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	**0.0065**
Soil Stockpile													
SP1-A,B,C,D[3]	--	9/27/07	**140**	**4,000**	**2,600**	**4,200**	<0.025	<0.025	<0.025	<0.050	<0.025	<0.025	<0.50
SP2-A,B,C,D[3]	--	9/27/07	**37**	**1,500**	**970**	**2,000**	<0.025	<0.025	<0.025	<0.050	<0.025	<0.025	<0.10

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	O&G (ppm)	VOCs (ppm)	SVOs (ppm)	PCBs (ppm)	Cd (ppm)	Cr (ppm)	Pb (ppm)	Ni[1] (ppm)	Zn (ppm)
Soil Stockpile									
SP1-A.B.C.D	**3,300**	ND[8]	ND[7]	ND[6]	<0.500	**50**[9]	**170**[10]	**66.3**	**186**
SP2-A.B.C.D	**790**	ND[6]	ND[6]	ND[6]	<0.500	**32.5**	**319**[11]	**27.6**	**122**

Explanation:
ppm = parts per million (mg/kg)
ft = feet
NA = Not Analyzed
-- = Not Applicable
ND = not detected for the parameter analyzed at the reporting limit
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHjf = Total Petroleum Hydrocarbons as jet fuel
B = Benzene
T = Toluene
E = Ethylbenzene
P,M-X = P.M-xylene
O-X = O-xylene
MtBE = Methyl tert-Butyl Ether
O&G = Total Oil & Grease
VOCs = Volatile Organic Compounds
SVOs = Semi-Volatile Organics
PCBs = Polychlorinated Biphenyls

Analytical Laboratory:
Kiff Analytical LLC (ELAP # 2236)

Analytical Methods:
TPHg/BTEX/MtBE/Napthalene by EPA Method 8260B
TPHd/TPHmo/TPHjf by modified EPA Method 8015
O&G by EPA Method 1864A M
SVOs by EPA Method 8270C
VOCs by EPA Method 8260B
PCBs by EPA Method 8082
Cd, Cr, Pb, Ni, and Zn by EPA Method 6010B

Table 1

Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Explanation: (con't)

Cd = Cadmium

Cr = Chromium

Pb = Lead

Ni = Nickel

Zn = Zinc

Notes:

[1] With Silica Gel Cleanup

[2] Matrix spike/Matrix spike duplicate results associated with this sample for the analyte TPH as Diesel were affected by the analyte concentrations already present in the un-spiked sample.

[3] The method reporting limit for napthalene in this sample has been increased due to the presence of an interfering compound.

[4] Hydrocarbons present in this sample are higher boiling than typical Jet Fuel.

[5] Hydrocarbons present in this sample are higher boiling than typical Diesel Fuel.

[6] All analytes were ND or less than their respective reporting limits

[7] With the exception of 1.8 ppm of 1-methylnaphthalene, all other analytes were ND or less than their respective reporting limits

[8] With the exceptions of 0.18 ppm of 1,3,5-trimethylbenzene, 0.090 ppm of sec-butylbenzene, and 0.15 ppm of p-isopropyltoluene; all other analytes were ND or less than their respective reporting limits.

[9] Sample was re-logged for Soluble Threshold Limit Concentration (STLC) chromium analysis and resulted in a STLC chromium concentration of 0.532 ppm.

[10] Sample was re-logged for STLC lead analysis and resulted in a STLC lead concentration of 6.82 ppm. Sample was again re-logged for Toxicity Characteristic Leaching Procedure (TCLP) lead analysis and resulted in a TCLP lead concentration of 0.381 ppm.

[11] Sample was re-logged for STLC lead analysis and resulted in a STLC lead concentration of 3.15 ppm. Sample was again re-logged for TCLP lead analysis and resulted in a TCLP lead concentration of 0.151 ppm.

Table 2
Water Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Date	Sample Depth (ft)	TPHg (ppb)	TPHd[1] (ppb)	TPHmo (ppb)	TPHjf (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	P,M-X (ppb)	O-X (ppb)	MtBE (ppb)	Napthalene (ppb)
Water-1[2]	9/13/07	4.5	**400**	**66,000**	**17,000**	**72,000**	**2.5**	**1.5**	**2.6**	--	**4.3**	**2.9**	**5.5**	**53**
BK-1	10/3/07	--	**260**	**140**[3]	**<100**	**2,400**	**<0.50**	**<0.50**	**<0.50**	**0.54**	NA	NA	**5.1**	**1.6**

Explanation:
ft = feet
ppb = parts per billion (µg/L)
NA = Not Analyzed
-- = Not Applicable
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHjf = Total Petroleum Hydrocarbons as jet fuel
B = Benzene
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylenes
P,M-X = P,M-xylenes
O-X = O-xylenes
MtBE = Methyl tert-Butyl Ether

Analytical Laboratory:
Kiff Analytical LLC (ELAP # 2236)

Analytical Methods:
TPHg/BTEX/MtBE/Napthalene by EPA Method 8260B
TPHd/TPHmo/TPHjf by modified EPA Method 8015

Notes:
[1] With Silica Gel Cleanup
[2] Matrix spike/matrix spike duplicate results associated with this sample for the analyte Benzene were affected by the analyte concentrations already present in the un-spiked sample.
[3] Hydrocarbons present in this sample are lower boiling than typical Diesel Fuel.

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Boring MW-4													
MW4-5.5	5.5	6/5/07	**2.3**	**1,700**	**1,400**	**2,100**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW4-10.5	10.5	6/5/07	<1.0	**76**[4]	**87**	**59**[4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-5													
MW5-5.5	5.5	6/6/07	<1.0	**590**	**830**	**400**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW5-10	10	6/6/07	<1.0	**12**[3]	**31**	**7.7**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-6													
MW6-5.5	5.5	6/5/07	<1.0	**240**	**340**	**200**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW6-10	10	6/5/07	<1.0	**17**[3]	**55**	**15**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-7													
MW7-5.5	5.5	6/6/07	<1.0	**180**[3]	**960**	**54**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-8													
MW8-10	10	8/31/07	<1.0	**24**[5]	**50**	**16**[6]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-9													
MW9-10	10	6/5/07	<1.0	**350**[4]	**940**	**180**[4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-10													
MW10-10	10	6/5/07	<1.0	**7.4**[3]	**16**	**4.8**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Table 1

Soil Chemical Analytical Results

Rolls-Royce Engine Service Test Facility

6701 Old Earhart Road

Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Boring MW-11													
MW11-10	10	6/6/07	<1.0	**21**	**20**	**18**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-12													
MW12-5.5	5.5	6/6/07	<1.0	**10**[3]	**15**	**6.9**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW12-9.5	9.5	6/6/07	<1.0	**10**[3]	**49**	**10**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-13													
MW13-5	5.0	6/7/07	**42**	**1,500**	**970**	**1,700**	<0.0050	<0.0050	<0.0050	<0.010	**0.0053**	<0.0050	**0.21**
MW13-9.5	9.5	6/7/07	<1.0	**17**[3]	**35**	**17**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-14													
MW14-5	5.0	6/7/07	<1.0	**42**[3]	**190**	**18**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW14-9.5	9.5	6/7/07	<1.0	**3.0**[3]	<10	**2.1**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-15													
MW15-9	9	6/7/07	<1.0	**14**	**50**	**17**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-17													
MW17-5.5	5.5	8/31/07	<1.0	**160**[5]	**900**	**70**[6]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW17-10	10	8/31/07	<1.0	**9.5**[5]	**26**	**8.9**[6]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Boring MW-18													
MW18-5.5	5.5	6/6/07	<1.0	**40**[3]	**76**	**26**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW18-10	10	6/6/07	<1.0	**27**[4]	**58**	**21**[4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Explanation:
ppm = parts per million (mg/kg)
ft = feet
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHjf = Total Petroleum Hydrocarbons as jet fuel
B = Benzene
T = Toluene
E = Ethylbenzene
P,M-X = P,M-xylene
O-X = O-xylene
MtBE = Methyl tert-Butyl Ether

Notes:
[1] With Silica Gel Cleanup

Analytical Laboratory:
Kiff Analytical LLC (ELAP # 2236)

Analytical Methods:
TPHg/BTEX/MtBE/Napthalene by EPA Method 8260B
TPHd/TPHmo/TPHjf by modified EPA Method 8015

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Notes: Con't

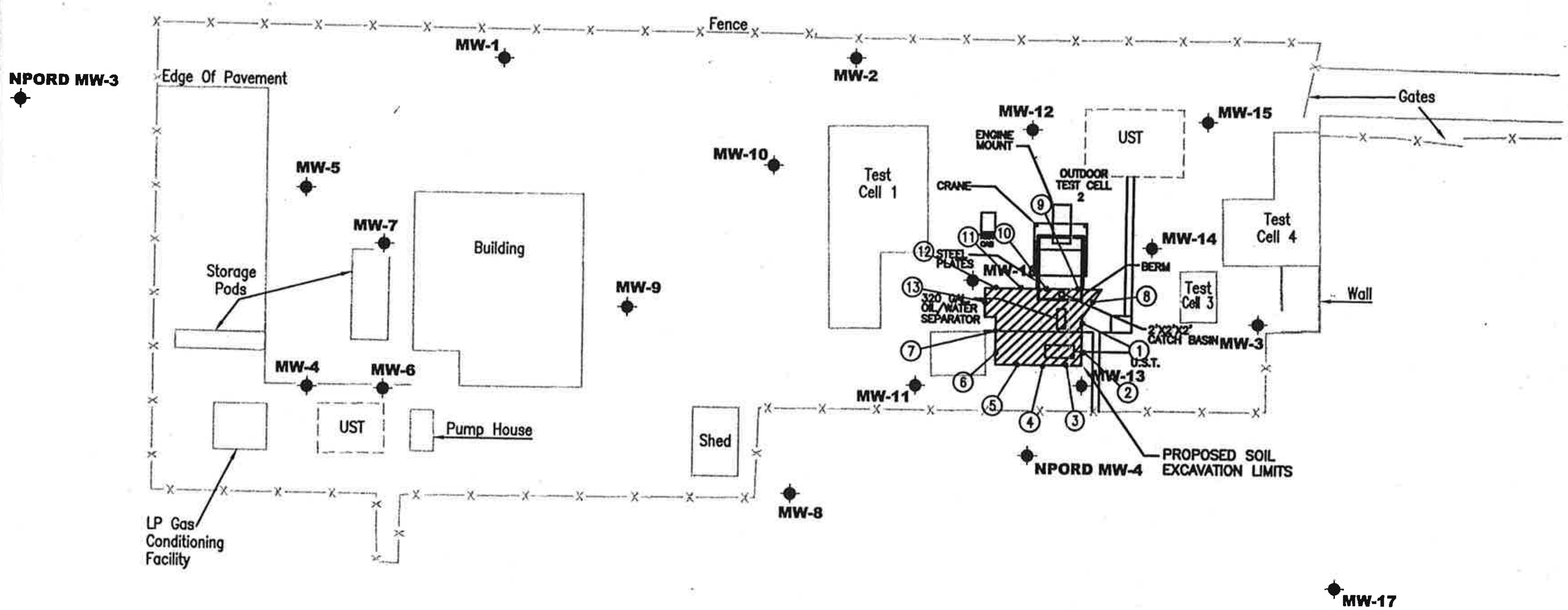
[2] Hydrocarbons reported as TPH as Jet Fuel do not exhibit a typical Jet Fuel chromatographic pattern for samples MW6-5.5, MW6-10, MW10-10, MW5-5.5, MW5-10, MW7-5.5, MW18-5.5, MW12-5.5, MW12-9.5, MW13-9.5, MW14-5, and MW14-9.5. These hydrocarbons are higher boiling than typical Jet Fuel.

[3] Hydrocarbons reported as TPH as Diesel do not exhibit a typical Diesel chromatographic pattern for samples MW6-10, MW10-10, MW5-10, MW7-5.5. MW18-5.5, MW12-5.5, MW12-9.5, MW13-9.5, MW14-5, and MW14-9.5. These hydrocarbons are higher boiling than typical diesel fuel.

[4] Hydrocarbons reported as TPH as Diesel and TPH as Jet Fuel do not exhibit a typical Diesel or Jet Fuel chromatographic pattern for samples MW4-10.5, MW9-10, and MW18-10. There is minor amount of diesel range hydrocarbons with primarily higher boiling hydrocarbons present.

[5] Hydrocarbons present are higher-boiling than typical Diesel Fuel

[6] Lubrication range hydrocarbons present, atypical for Jet Fuel



SAMPLE DESIGNATIONS

◯ Soil Sample Designation

1	SW1−4.5
2	SW2−4.5
3	SW3−4.5
4	SW4−4.5
5	SW13−4.5
6	SW6−4.5
7	SW5−4.5
8	SW7−4.5
9	SW8−4.5
10	SW9−4.5
11	SW12−4.5
12	SW11−4.5
13	SW10−4.5

LEGEND

- • Soil Sample Location
- ① Soil Sample Designation
- ⌖ Groundwater Monitoring Well

N

0 60

Scale in Feet

Source: Figure modified from drawing provided by Morrow Surveying, Dated: 10/8/07.

SITE PLAN
Rolls−Royce Engine Services Test Facility
6701 Old Earhart Road
Oakland, CA

FIGURE 2

DATE 11/07

REVISED DATE 2/6/08

REVIEWED BY

PROJECT NUMBER 948218.7

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **2077-001.01**

BORING NO.: **B-1**

PROJECT NAME: **National Airmotive Corporation**

PAGE: **1 of 1**

BY: **L.Gallagher**

DATE: **04/06/95**

SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, gravel,pale brown (10YR, 6/3); trace sand; fine angular gravel; dry; no hydrocarbon odor.	
0/1.5	0	16					@4': (from shoe) sandy gravel; 20% well-graded medium sand; 80% fine gravel, subangular to angular; some glass fragments and trash (small toy and shoe fragment); dry; no hydrocarbon odor.	
1.2/1.5	20	16		5				
			4/6/95				@6': gravel as above, with 2 inch layer of gravelly sandy silt marbled with hydrocarbons; black plant debris and wood fragments 1 to 2 inches in length at sample base; strong hydrocarbon odor.	
							@6.5': black plant debris as above; wet; strong hydrocarbon odor.	
							BOTTOM OF BORING AT 8 FEET BELOW GROUND SURFACE.	
				10				
				15				
				20				

REMARKS

Boring drilled by a CME 75 portable rig driving an 8-inch diameter, continuous flight auger. Samples collected with a modified California split-spoon sampler fitted with stainless-steel liners. After sampling was complete, the boring was sealed to the ground surface with bentonite.

EMCON ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **2077-001.01**

PROJECT NAME: **National Airmotive**

BY: **L.Gallagher**

DATE: **04/06/95**

BORING NO.: **B-2**

PAGE: **1 of 1**

SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, sandy gravel, pale brown (10YR,6/3); 5-10% coarse sand, 90-95% fine gravel, angular; dry; no hydrocarbon odor.	
0.7/1.5	0	34						
1.2/1.5	15	15					@4': light yellow brown (10YR, 6/4); some brick fragments; medium dense; dry; no hydrocarbon odor.	
				5				
			∇ 4/6/95				@ 5.25': silty wood fragments and masonry fragments; black (10YR, 2/1); moist; strong hydrocarbon odor.	
							@5.6': wet.	
							BOTTOM OF BORING AT 7 FEET BELOW GROUND SURFACE	
				10				
				15				
				20				

REMARKS

Boring drilled by a CME 75 drill rig driving an 8-inch diameter continous flight auger. Samples collected with a modified California split-spoon sampler fitted with stainless-steel liners. After sampling was complete, the boring was sealed to the ground surface with bentonite.

EMCON ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: 2077-001.01

BORING NO.: B-3

ROJECT NAME: National Airmotive

PAGE: 1 of 1

BY: L.Gallagher

DATE: 04/06/95

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, sandy gravel, pale brown (10YR,6/3); 10% coarse sand, 90% fine gravel, subangular to angular; dry; no hydrocarbon odor.	
.9/1.5	0	40					@3.2': sandy clay, dark yellow brown (10YR, 4/4); 40% coarse sand; damp to moist; no hydrocarbon odor.	
.5/1.5	0	28	∇ 4/6/95	5			@ 5': wood fragments, glass, wire and fine gravel in black (10YR,2/1) silt matrix; moderate hydrocarbon odor; wet.	
							BOTTOM OF BORING AT 6 FEET BELOW GROUND SURFACE	
				10				
				15				
				20				

REMARKS

Boring drilled with a CME 75 drill rig driving an 8-inch diameter continous flight auger. Samples collected with a modified California split-spoon sampler fitted with stainless-steel liners. After sampling was complete, the boring was sealed to the ground surface with bentonite.

CIATES

APPENDIX B

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **2077-001.01**

PROJECT NAME: **National Airmotive**

BY: **L.Gallagher**

DATE: **11/03/95**

BORING NO.: **OB-1**

PAGE: **1 of 1**

SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRA-TION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, silty sandy gravel, dark brown (10YR, 4/3); 20% low plastic icity fines; 20% fine to medium sand; 50% wood fragments 1" diameter and masonry fragments less than 1/8"; dry; loose; no hydrocarbon odor.	
0.5/1.5	13	18						
0.6/1.5	28	13					@ 4.4': sandy silt, 10% sand, 60% low to medium plasticity fines; 30% wood fragments less than 1/2" diameter; firm; damp; hydrocarbon odor detected.	
			▽ 11/03/95	5				
							BOTTOM OF BORING AT 7 FEET BELOW GROUND SURFACE	
				10				
				15				
				20				

REMARKS

Boring drilled with a B-61 drill rig driving an 8-inch diameter, continous flight hollow-stem auger. Samples collected with a modified California split-spoon sampler fitted with brass liners. After sampling was completed, the boring was sealed to the ground surface with a bentonite-cement grout.

EMCON
ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **2077-001.01**

BORING NO.: **OB-2**

PROJECT NAME: **National Airmotive**

PAGE: **1 of 1**

BY: **L.Gallagher**

DATE: **11/03/95**

SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
1.0/1.5	0	20					FILL, dark brown (7.5YR, 3.2); trace low plasticity fines; 20% fine to medium sand; 80% wood and masonry fragments less than 3/4"; medium dense; dry; no hydrocarbon odor.	
1.0/1.5	0	30					@ 1.5': small scraps of ceramic tile and paper in sample; some rounded coarse gravel; damp.	
			▽ 11/03/95					
				5				
							Boring suspended at 6' BGS for grab groundwater sampling. Boring continued to 9' BGS and set with temporary well casing after insufficient recharge at 6'BGS.	
							BOTTOM OF BORING AT 9 FEET BELOW GROUND SURFACE	
				10				
				15				
				20				

REMARKS

Boring drilled with a B-61 drill rig driving an 8-inch diameter, continous flight hollow-stem auger. Samples collected with a modified California split-spoon sampler fitted with brass liners. After sampling was completed, the boring was sealed to the ground surface with a bentonite-cement grout.

EMCON ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **2077-001.01**
BORING NO.: **OB-3**

PROJECT NAME: **National Airmotive**
PAGE: **1 of 1**

BY: **L.Gallagher**
DATE: **11/03/95**
SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
0.8/1.5	0	26			■		FILL, dark brown (7.5YR, 4/3); 10% low plasticity fines; 40% fine sand; 20% wood and 30% glass and masonry fragments 1/4"– 3/4" diameter; medium dense; dry; no hydrocarbon odor.	
0.8/1.5	0.3	9			■		@ 1.5': very dark grey; 20% non- to low-plasticity fines; 30% fine sand; 50% clean friable wood fragments 1/16"– 1" diameter; damp; organic odor.	
				5				
			▽ 11/03/95				Boring suspended at 6' BGS for grab groundwater sampling. Boring continued to 9' BGS after insufficient recharge at 6'BGS.	
							BOTTOM OF BORING AT 9 FEET BELOW GROUND SURFACE	
				10				
				15				
				20				

REMARKS
Boring drilled with a B-61 drill rig driving an 8-inch diameter, continous flight hollow-stem auger. Samples collected with a modified California split-spoon sampler fitted with brass liners. After sampling was completed, the boring was sealed to the ground surface with a bentonite-cement grout.

EMCON
ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **2077-001.01**

BORING NO.: **B-3**

PROJECT NAME: **National Airmotive**

PAGE: **1 of 1**

BY: **L.Gallagher**

DATE: **04/06/95**

SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
					⊠		FILL, sandy gravel, pale brown (10YR,6/3); 10% coarse sand, 90% fine gravel, subangular to angular; dry; no hydrocarbon odor.	
0.9/1.5	0	40			■		@3.2': sandy clay, dark yellow brown (10YR, 4/4); 40% coarse sand; damp to moist; no hydrocarbon odor.	
).5/1.5	0	28	▽ 4/6/95	5	■		@ 5': wood fragments, glass, wire and fine gravel in black (10YR,2/1) silt matrix; moderate hydrocarbon odor; wet.	
							BOTTOM OF BORING AT 6 FEET BELOW GROUND SURFACE	
				10				
				15				
				20				

REMARKS

Boring drilled with a CME 75 drill rig driving an 8-inch diameter continous flight auger. Samples collected with a modified California split-spoon sampler fitted with stainless-steel liners. After sampling was complete, the boring was sealed to the ground surface with bentonite.

EMCON ASSOCIATES

LOG OF EXPLORATORY BORING

PROJECT NUMBER: **2077-001.01**

BORING NO.: **B-4**

PROJECT NAME: **National Airmotive**

PAGE: **1 of 1**

BY: **L.Gallagher**

DATE: **04/06/95**

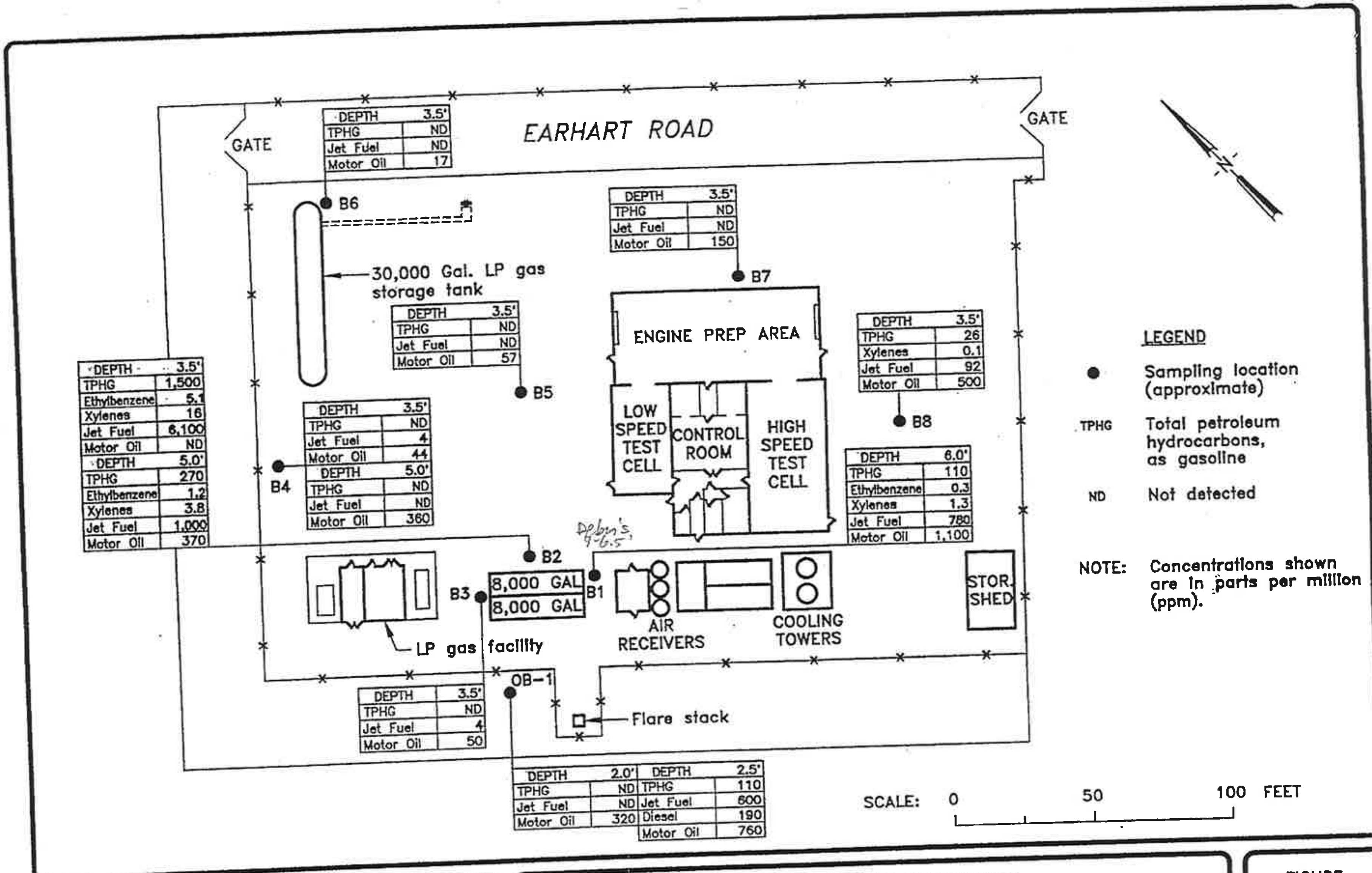
SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, sandy gravel, dark brown (10YR, 4/3); 20% coarse sand, 80% fine gravel, angular; dry; no hydrocarbon odor.	
0.3/1.5	0	29						
1.2/1.5	2	26					@ 4': 1" layer of sandy clay, dark yellow brown (10YR, 4/4); 60% moderate plasicity fines; 40% coarse sand; stiff; damp; no hydrocarbon odor.	
			⊽ 4/6/95	5			@ 5': black wood fragments, length approximately 1.5 inches; no soil matrix; moderate hydrocarbon odor; moist.	
							@5.5': approximately 50% coarse sand to fine gravel clasts and wire, glass and wood fragments in approximately 50% matrix of low plasticity fines; moist to wet; slight hydrocarbon odor.	
							BOTTOM OF BORING AT 7 FEET BELOW GROUND SURFACE	
				10				
				15				
				20				

REMARKS

Boring drilled with a CME 75 drill rig driving an 8-inch diameter continous flight auger. Samples collected with a modified California split-spoon sampler fitted with stainless-steel liners. After sampling was complete, the boring was sealed to the ground surface with bentonite.

EMCON ASSOCIATES



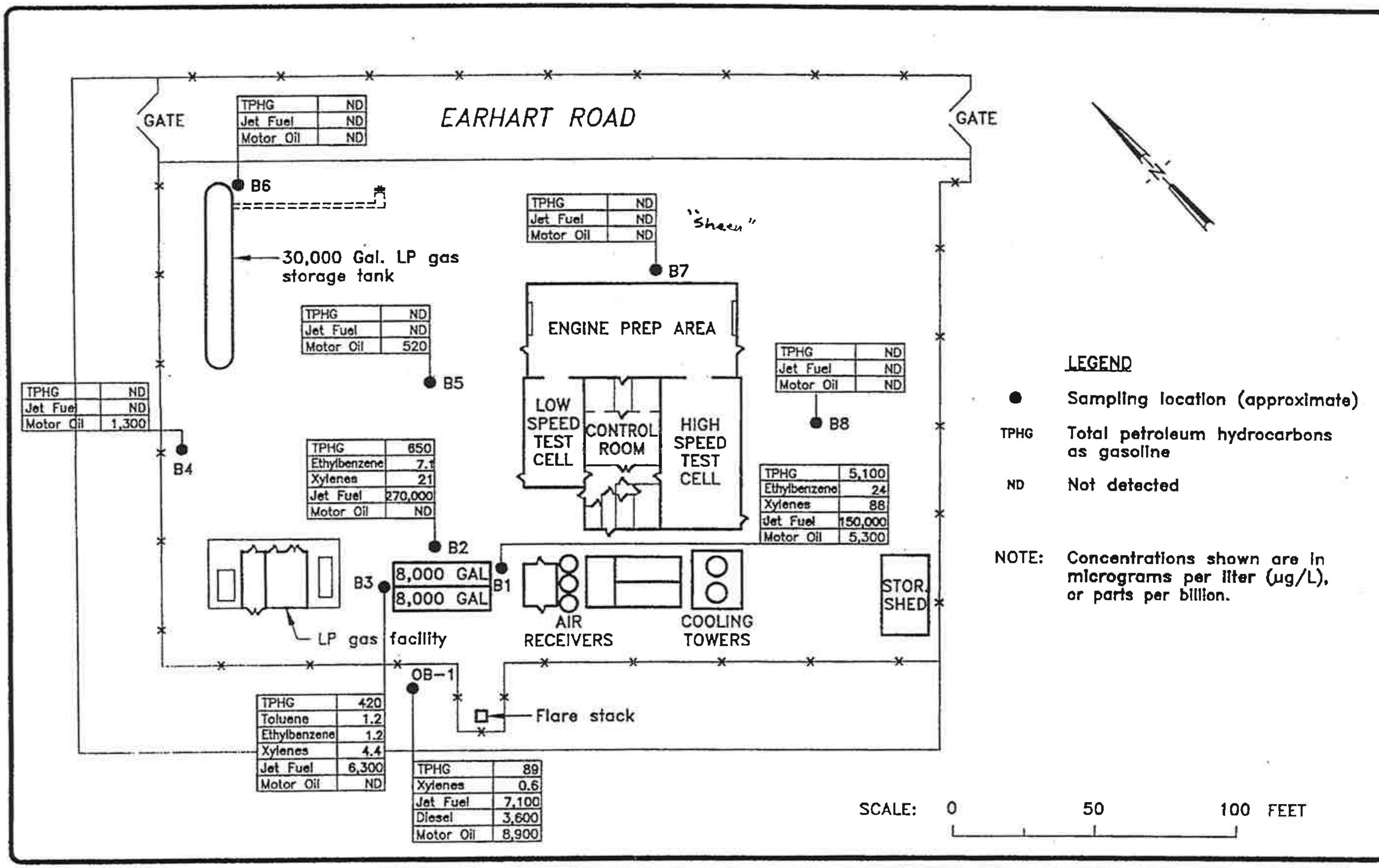
EMCON

NATIONAL AIRMOTIVE CORPORATION
7200 LOCKHEED STREET
SOIL AND GROUNDWATER CHARACTERIZATION
OAKLAND, CALIFORNIA

JET FUEL UST AREA SOIL ANALYTICAL RESULTS

FIGURE 2

PROJECT NO. 2077-001.01

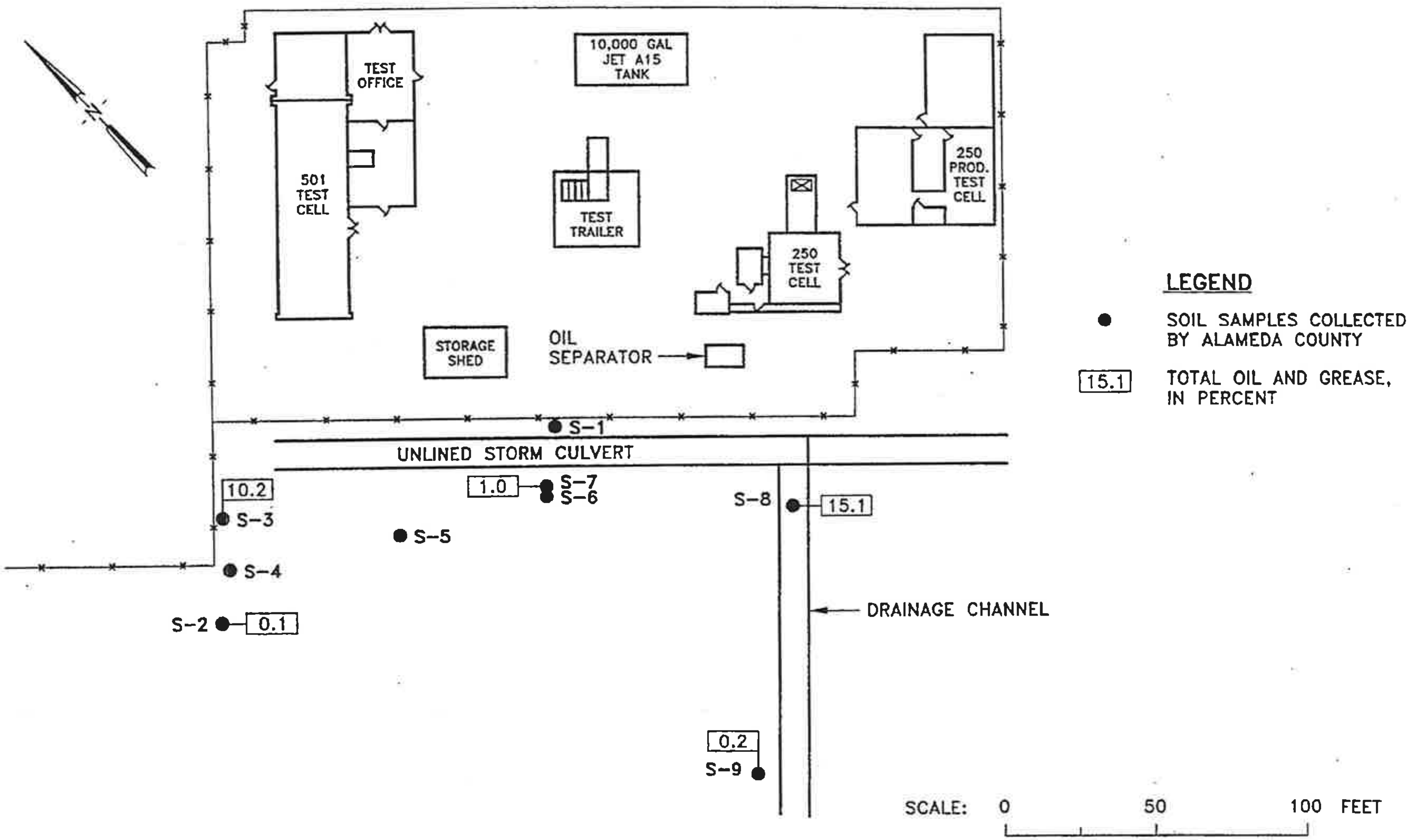


EMCON

NATIONAL AIRMOTIVE CORPORATION
7200 LOCKHEED STREET
SOIL AND GROUNDWATER CHARACTERIZATION
OAKLAND, CALIFORNIA

JET FUEL UST AREA GROUNDWATER ANALYTICAL RESULTS

FIGURE
3
PROJECT NO.
2077-001.01

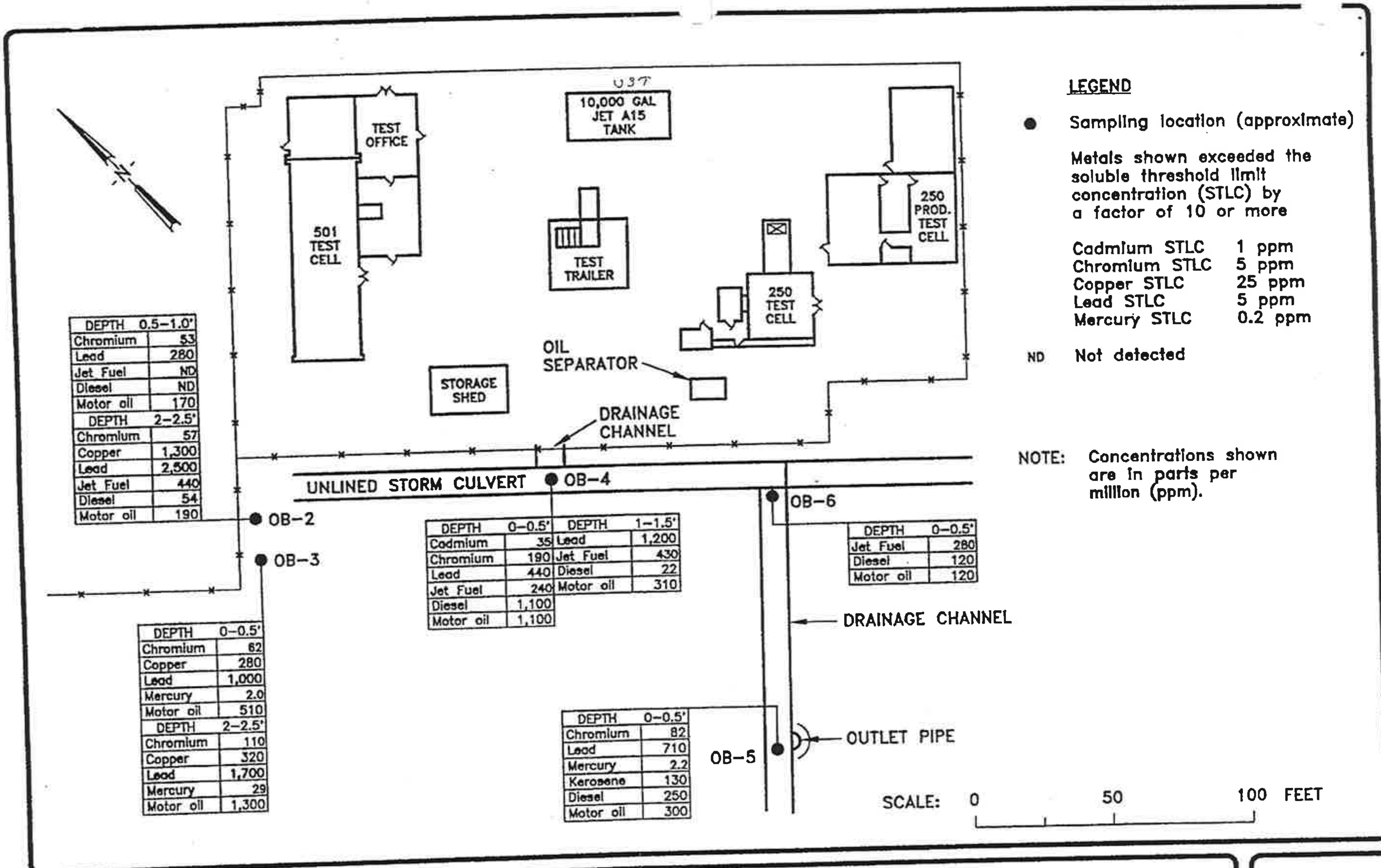


EMCON

NATIONAL AIRMOTIVE CORPORATION
7200 LOCKHEED STREET
SOIL AND GROUNDWATER CHARACTERIZATION
OAKLAND, CALIFORNIA

GRAY WATER AREA PLAN

FIGURE
4
PROJECT NO.
2077-001.01



OB-2

DEPTH	0.5–1.0'
Chromium	53
Lead	280
Jet Fuel	ND
Diesel	ND
Motor oil	170
DEPTH	**2–2.5'**
Chromium	57
Copper	1,300
Lead	2,500
Jet Fuel	440
Diesel	54
Motor oil	190

OB-3

DEPTH	0–0.5'
Chromium	62
Copper	280
Lead	1,000
Mercury	2.0
Motor oil	510
DEPTH	**2–2.5'**
Chromium	110
Copper	320
Lead	1,700
Mercury	29
Motor oil	1,300

OB-4

DEPTH	0–0.5'
Cadmium	35
Chromium	190
Lead	440
Jet Fuel	240
Diesel	1,100
Motor oil	1,100

DEPTH	1–1.5'
Lead	1,200
Jet Fuel	430
Diesel	22
Motor oil	310

OB-6

DEPTH	0–0.5'
Jet Fuel	280
Diesel	120
Motor oil	120

OB-5

DEPTH	0–0.5'
Chromium	82
Lead	710
Mercury	2.2
Kerosene	130
Diesel	250
Motor oil	300

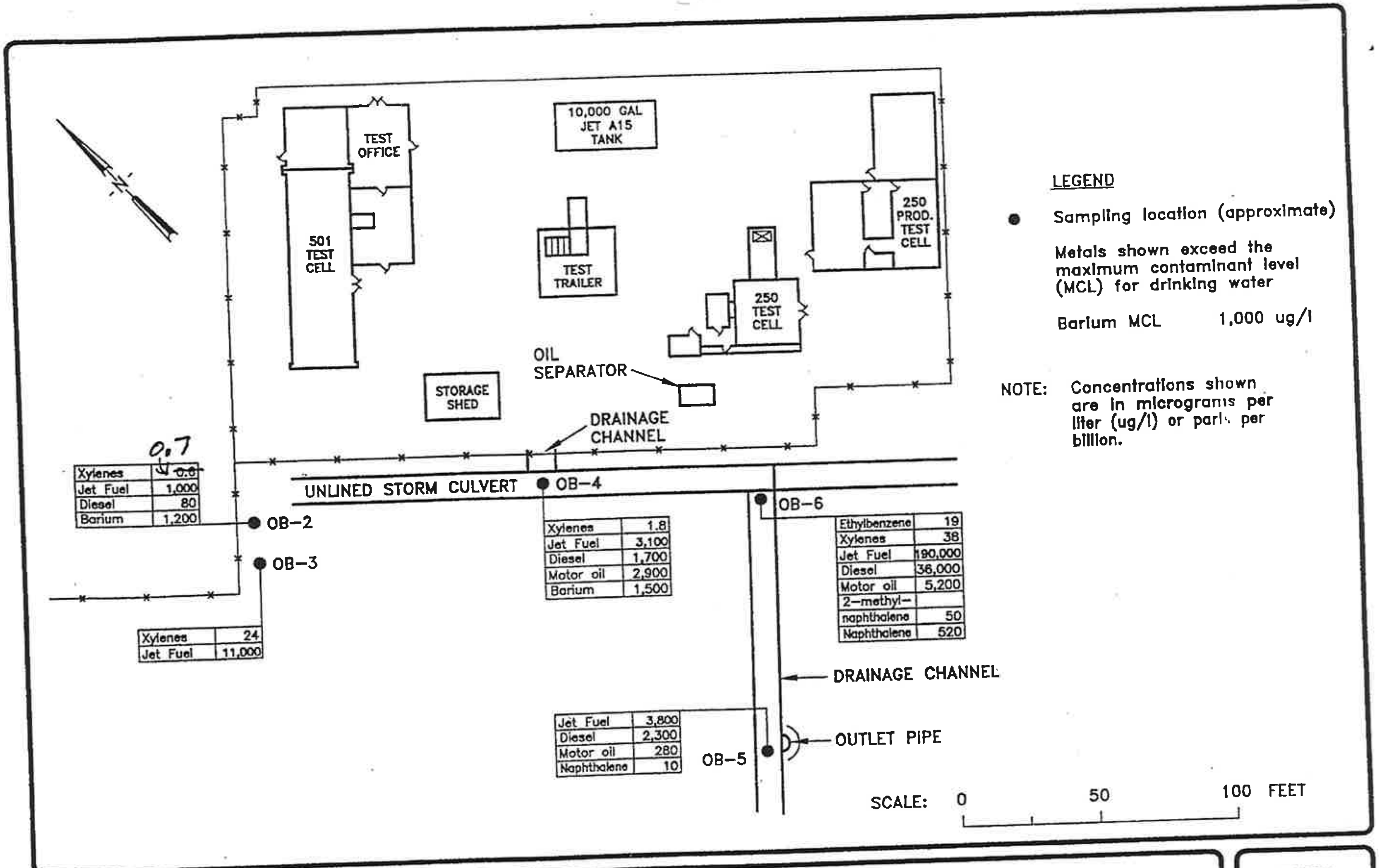
EMCON

NATIONAL AIRMOTIVE CORPORATION
7200 LOCKHEED STREET
SOIL AND GROUNDWATER CHARACTERIZATION
OAKLAND, CALIFORNIA

GRAY WATER AREA SOIL ANAYTICAL RESULTS

FIGURE **5**

PROJECT NO. 2077-001.01



OB-2

Xylenes	~~0.6~~ 0.7
Jet Fuel	1,000
Diesel	80
Barium	1,200

OB-3

Xylenes	24
Jet Fuel	11,000

OB-4

Xylenes	1.8
Jet Fuel	3,100
Diesel	1,700
Motor oil	2,900
Barium	1,500

OB-6

Ethylbenzene	19
Xylenes	38
Jet Fuel	190,000
Diesel	36,000
Motor oil	5,200
2-methyl-naphthalene	50
Naphthalene	520

OB-5

Jet Fuel	3,800
Diesel	2,300
Motor oil	280
Naphthalene	10

EMCON

NATIONAL AIRMOTIVE CORPORATION
7200 LOCKHEED STREET
SOIL AND GROUNDWATER CHARACTERIZATION
OAKLAND, CALIFORNIA

GRAY WATER AREA GROUNDWATER ANAYTICAL RESULTS

FIGURE 6

PROJECT NO. 2077-001.01

Table 1

Soil Analytical Results[1]
Jet Fuel Spill Area
National Airmotive Corporation
Oakland, California

Sample Location	Sample Depth (ft)	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes	Jet Fuel	Kerosene	Diesel	Motor Oil
OB-1	2	<5	<0.05	<0.1	<0.1	<0.1	<1	<1	<1	320
	3.5	110	<0.2[2]	<0.4[2]	<0.4[2]	<0.5[3]	600	<5[2]	190[7]	760
B-1	6	110	<0.1[2]	<0.2	0.3	1.3	780[4]	<10[2]	<10[2]	1,100[3]
B-2	3.5	1,500	<1[2]	<2[2]	5.1	16	6,100[5]	<10[2]	<10[2]	<10[2]
	5	270	<0.2[2]	<0.4[2]	1.2	3.8	1,000[4]	<10[2]	<10[2]	370[4]
B-3	3.5	<5	<0.05	<0.1	<0.1	<0.1	4[4]	<1	<1	50[4]
B-4	3	<5	<0.05	<0.1	<0.1	<0.1	4[4]	<1	<1	44[4]
	5	<5	<0.05	<0.1	<0.1	<0.1	<10[2]	<10[2]	<10[2]	360[4]
B-5	3.5	<5	<0.05	<0.1	<0.1	<0.1	<1	<1	<1	57[6]
B-6	3.5	<5	<0.05	<0.1	<0.1	<0.1	<1	<1	<1	17[6]
B-7	3.5	<5	<0.05	<0.1	<0.1	<0.1	<10[2]	<10[2]	<10[2]	150[6]
B-8	3.5	26	<0.05	<0.1	<0.1	0.1	92[4]	<10[2]	<10[2]	500[4]

1 Results are presented in milligrams per kilogram, or parts per million
2 Raised MRL; analyte concentration required sample dilution
3 Raised MRL due to matrix interference
4 The chromatogram fingerprint resembles a mixture of jet fuel and motor oil
5 The chromatogram fingerprint resembles jet fuel
6 The chromatogram fingerprint resembles motor oil
7 The chromatogram does not match the typical diesel fingerprint
8 The chromatogram does not match the typical jet fuel fingerprint

Table 2

Groundwater Analytical Results[1]
Jet Fuel Spill Area
Oakland, California

Sample Location	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes	Jet Fuel	Kerosene	Diesel	Motor Oil
OB-1	89	<0.5	<0.5	<0.5	0.6	7,100	<250[2]	3,600	8,900
B-1	5,100	<2.5[2]	<2.5	24	88	150,000[3]	<500[2]	<500[2]	5,300[3]
B-2	650	<2.5[2]	<2.5	7.1	21	270,000[4]	<500[2]	<500[2]	<500[2]
B-3	420	<0.5	1.2	1.2	4.4	6,300[4]	<500[2]	<500[2]	<500[2]
B-4	<50	<0.5	<0.5	<0.5	<0.5	<50	<50	<50	1,300[5]
B-5	<50	<0.5	<0.5	<0.5	<0.5	<50	<50	<50	520[5]
B-6	<50	<0.5	<0.5	<0.5	<0.5	<50	<50	<50	250
B-7	<50	<0.5	<0.5	<0.5	<0.5	<50	<50	<50	250
B-8	<50	<0.5	<0.5	<0.5	<0.5	<50	<50	<50	250

[1] Results are presented in micrograms per liter, or parts per billion
[2] Raised MRL; high analyte concentration required sample dilution
[3] The chromatogram fingerprint resembles a mixture of jet fuel and motor oil
[4] The chromatogram fingerprint resembles jet fuel
[5] The chromatogram fingerprint resembles motor oil

Table 3

Soil Analytical Results[1]
Graywater Discharge Area
National Airmotive Corporation
Oakland, California

Sample Location	Sample Depth (ft)	Jet Fuel	Kerosene	Diesel	Motor Oil	VOCs	SVOCs	Benzene	Toluene	Ethylbenzene	Xylenes
		Organic Compounds									
OB-2	0.5	<1	<1	<1	170	ND	ND	<0.05	<0.1	<0.1	<0.1
	2	440	<1	54	190	ND	ND	<0.05	<0.1	<0.1	<0.1
OB-3	0	<10[2]	<10[2]	<10[2]	510	ND	ND	<0.05	<0.1	<0.1	<0.1
	2	<10[2]	<10[2]	<10[2]	1,300	ND	ND	<0.05	<0.1	<0.1	<0.1
OB-4	0	240	<10[2]	1,100	1,100	ND	ND	<0.05	<0.1	<0.1	<0.1
	1	430	<5[2]	22	310	ND	ND	<0.05	<0.1	<0.1	<0.1
OB-5	0	<5	130	250	300	ND	ND	<0.05	<0.1	<0.1	<0.1
OB-6	0	280	<1	120	120	ND	ND	<0.05	<0.1	<0.1	<0.1

Sample Location	Sample Depth (ft)	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Silver	Vanadium	Zinc
		Metals													
OB-2	0.5	<10	8	220	2	53[4]	12	89	280[5]	0.5	<10	60	1	38	340
	2	<10	<5	730	5	57[4]	25	1,300[4]	2,500[5]	0.5	<10	69	6	39	1,300
OB-3	0	<10	8	810	8	62[4]	18	280[4]	1,000[5]	2.0[4]	16	160	2	37	1,100
	2	11	10	750	6	110[4]	16	320[4]	1,700[5]	29[5]	10	63	3	28	1,600
OB-4	0	<10	<5	260	35[4]	190[4]	15	170	440[4]	1.7	10	90	4	25	820
	1	<10	<5	500	5	49	6	100	1,200[5]	0.7	<10	32	<1	21	1,400
OB-5	0	10	9	410	4	82[4]	6	240	710[4]	2.2[4]	<10	37	3	26	320
OB-6	0	<10	<5	93	2	33	7	120	38	0.3	<10	30	<1	27	150

1 Results are presented in parts per million
2 Raised MRL; high analyte concentration required sample dilution
3 Chromatogram does not match the typical jet fuel fingerprint
4 Metal concentration meets or exceeds Title 22 soluble threshold limit concentration by a factor of 10 or more
5 Metal concentration meet or exceeds Title 22 total threshold limit concentration

Note:
VOCs Volatile organic compounds by Method 8010
SVOCs Semivolatile organic compounds by method 8270

Rev. 0, 1/11/96

Table 4

Groundwater Analytical Results[1]
Graywater Discharge Area
National Airmotive Corporation
Oakland, California

Sample Location	Jet Fuel	Kerosene	Diesel	Motor Oil	Naphthalene	2-Methyl-Naphthalene	Ethylbenzene	Total Xylenes
	Organic Compounds							
OB-2	1,000	ND	80[3]	ND	ND	ND	ND	0.7
OB-3	11,000	<100[3]	<100[3]	<500[3]	ND	ND	ND	24
OB-4	3,100	<500[4]	1,700[2]	2,900	ND	ND	ND	1.8
OB-5	3,800	ND	2,300[2]	280	10	ND	ND	ND
OB-6	190,000	<500[4]	36,000[2]	5,200	520	50	19	38

Sample Location	Arsenic	Barium	Lead	Zinc
	Metals			
OB-2	ND	1,200[5]	ND	30
OB-3	11	920	ND	10
OB-4	ND	1,500[5]	4	110
OB-5	9	880	ND	ND
OB-6	ND	840	ND	20

1 Results are presented in micrograms per liter, or parts per billion
2 The chromatogram does not match the typical diesel fingerprint
3 Raised MRL due to matrix interference (high sediment)
4 Raised MRL; high analyte concentration required sample dilution
5 Metal concentration exceeds maximum contaminant level for drinking water

Note:
Naphthalene and 2-Methyl-Naphthalene based on Method 8270 analyses. All other 8270 compounds were not detected.
Samples OB-2 through OB-6 were also analyzed for volatile organic compounds by Method 8010. No VOCs were detected.

APPENDIX A

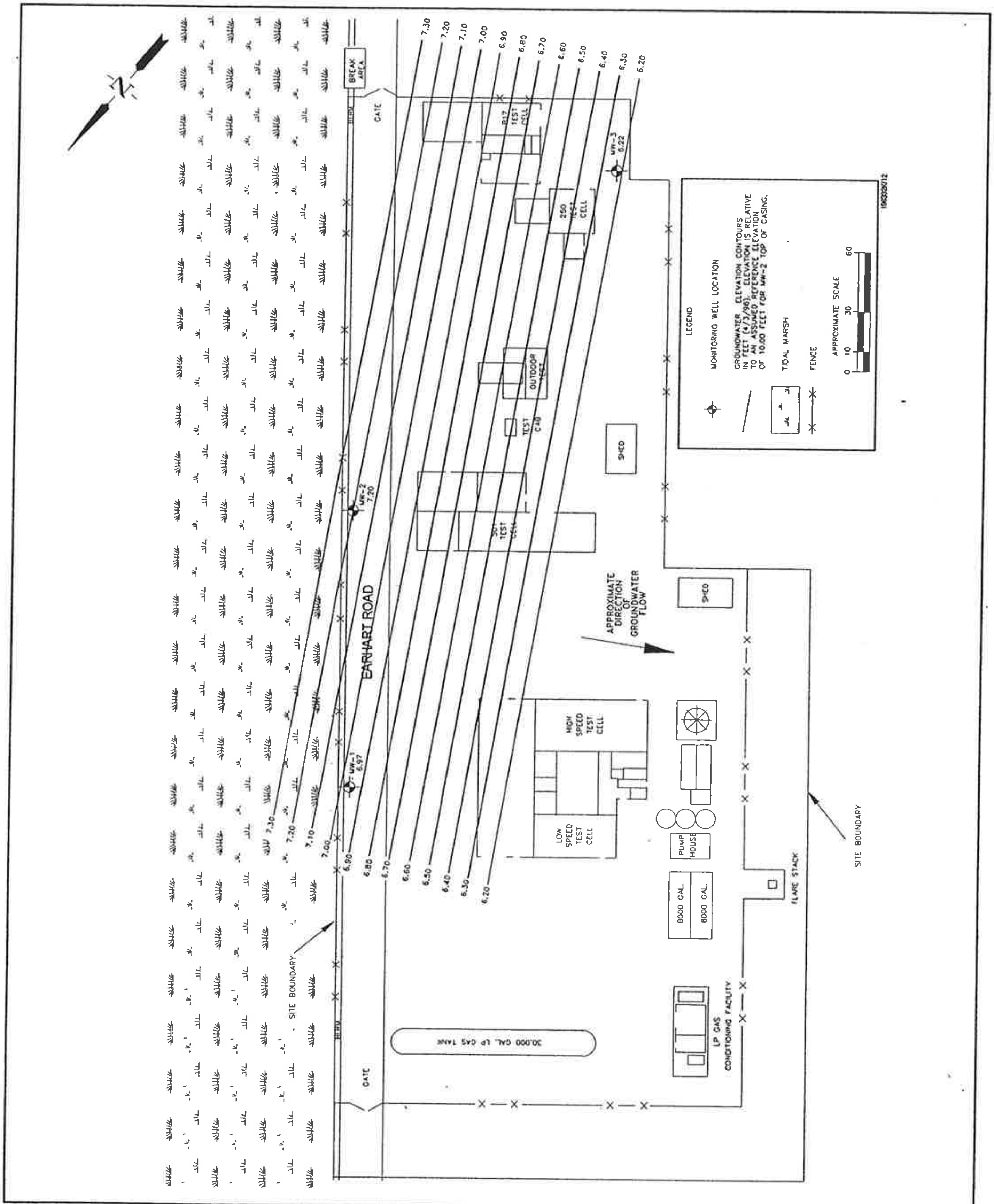
ENVIROMETRIX

Table 2
Summary of Analytical Results
National Airmotive Corporation
6701 Earhart Road
Oakland, California
EMC Job No. 196332

DATE	SAMPLE NUMBER	TPH-JF	TPH-D	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES
4/3/96	MW-1	<50	**81**	<0.50	<0.50	<0.50	<0.50
4/3/96	MW-2	<50	<50	<0.50	<0.50	<0.50	<0.50
4/3/96	MW-3	**1,300**	**2,200**	<0.50	<0.50	<0.50	<0.50

TPH-JF = Total Petroleum Hydrocarbons as Jet Fuel
TPH-D = Total Petroleum Hydrocarbons as Diesel

All units are in parts per billion (ppb).



ENVIROMETRIX	DRAWN BCC	JOB NUMBER 196332	**SITE PLAN AND GROUNDWATER ELEVATIONS 4/3/96** National Airmotive Corporation Test Cell Facility Oakland, California	PLATE **4**
	APPROVED NTS	DATE 4/96		
	REVISED	DATE		

Table 1. Analytical Results of Soil Samples
Total Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Boring Number	Depth (feet)	Sample Date (2002)	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Jet Fuel (mg/kg)	TPH as Motor Oil (mg/kg)
KB-01	1.0	15-Jul	3.1 [c]	<1.0	1.2	31
KB-01	3.0	15-Jul	4.9 [c]	<1.0	1.2	26
KB-02	1.0	15-Jul	58 [e]	11 [j]	51	56
KB-02	4.0	15-Jul	78 [f]	34 [j]	82	7
KB-03	0.0	15-Jul	3.1 [c]	<1.0	<1.0	47
KB-03	1.0	15-Jul	2.5 [c]	<1.0	<1.0	47
KB-04	1.0	15-Jul	44 [b,c,d]	<1.0	34	160
KB-04	4.0	15-Jul	<1.0	<1.0	<1.0	<5.0
KB-05	0.0	16-Jul	4.4 [c]	<1.0	<1.0	46
KB-05	2.0	16-Jul	1.1 [c]	<1.0	<1.0	11
KB-06	0.0	16-Jul	1.6 [c]	<1.0	<1.0	18
KB-06	2.0	16-Jul	380 [c]	<1.0	120	**1,700**
KB-07	1.0	15-Jul	1.4 [c]	<1.0	<1.0	13
KB-07	4.0	15-Jul	<1.0	<1.0	<1.0	<5.0
KB-08	1.0	16-Jul	1.5 [c]	6.2 [n]	<1.0	13
KB-08	4.0	16-Jul	<1.0 [c]	1.7 [n]	<1.0	6.5
KB-09	1.0	16-Jul	<1.0	3.8 [j]	<1.0	<5.0
KB-09	4.0	16-Jul	14 [b,c]	<1.0	4.1	50
KB-10	2.0	16-Jul	**29,000** [m]	**13,000** [j]	**42,000**	**2,500**
KB-11	1.0	16-Jul	**2,600** [m]	**3,000** [j]	**3,500**	530
KB-11	3.0	16-Jul	**1,600** [c,g]	**1,300** [j]	**1,800**	**1,900**
KB-12	1.0	16-Jul	470 [c,g]	**480** [j]	**630**	33
KB-12	3.0	16-Jul	**21,000** [m]	**6,400** [j]	**25,000**	<5,000

Table 1. Analytical Results of Soil Samples
Total Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Boring Number	Depth (feet)	Sample Date (2002)	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Jet Fuel (mg/kg)	TPH as Motor Oil (mg/kg)
KB-13	0.0	17-Jul	72 [b,c]	5.7 [a]	14	300
KB-13	2.0	17-Jul	140 [f,p]	92 [j]	170	66
KB-14	0.0	17-Jul	7.9 [b,c]	<1	2.2	89
KB-15	0.0	17-Jul	60 [b,c]	<1	13	180
KB-16	0.0	17-Jul	63 [b,c]	<1	12	180
KB-17	0.0	12-Jul	92 [b,c]	3.7 [j]	49	110
KB-18	0.0	17-Jul	77 [e,p]	<1	17	190
KB-19	0.0	12-Jul	24 [b,c]	<1.0	17	24
KB-20	1.0	15-Jul	3.2 [c]	<1.0	<1.0	93
KB-20	3.0	15-Jul	1.1 [c]	<1.0	<1.0	8.7
KB-21	1.0	15-Jul	3.9 [c]	<1.0	<1.0	45
KB-21	3.0	15-Jul	1.8 [c]	<1.0	<1.0	9.7
KB-22	1.0	16-Jul	16 [c]	<1.0	16	130
KB-22	3.0	16-Jul	1.3 [c]	<1.0	<1.0	9.6
KB-23	0.0	17-Jul	23 [c]	<1	<1	190
KB-24	0.0	17-Jul	2.9 [c]	<1	<1	25
KB-24	2.0	17-Jul	13 [c]	<1	<1	120
KB-25	0.0	17-Jul	6.9 [c]	<1	<5	88
KB-25	2.0	17-Jul	<200 [c]	<1	<200	**3,100**
KB-26	0.0	12-Jul	20 [b,c]	<1.0	8.2	43
KB-26	3.0	12-Jul	4.4 [b,c]	<1.0	2.4	15
		RBSLs	*500*	*400*	*500*	*1,000*

Table 1. Analytical Results of Soil Samples
Total Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Boring Number	Depth (feet)	Sample Date (2002)	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Jet Fuel (mg/kg)	TPH as Motor Oil (mg/kg)

Notes:

TPH	Total Petroleum Hydrocarbons by modified EPA Method 8015, silica gel clean-up used for TPH as diesel, jet fuel, and motor oil
mg/kg	Milligrams per kilogram
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs

Lab Qualifiers:

a	Heavier gasoline range compounds are significant (aged gasoline?).
b	Diesel range compounds are significant; no recognizable pattern
c	Oil range compounds are significant.
d	Liquid sample contains greater than ~2 volume % sediment.
e	Aged diesel(?) is significant.
f	Unmodified or weakly modified diesel is significant.
g	Kerosene/kerosene range
j	Strongly aged gasoline or diesel range compounds are significant.
m	Stoddard solvent
n	No recognizable pattern
p	Fuel oil.

Table 2. Analytical Results of Reconnaissance Groundwater Samples
Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	TPH as Diesel Unfiltered (µg/L)	TPH as Diesel Filtered * (µg/L)	TPH as Gasoline Unfiltered (µg/L)	TPH as Jet Fuel Unfiltered (µg/L)	TPH as Jet Fuel Filtered * (µg/L)	TPH as Motor Oil Unfiltered (µg/L)	TPH as Motor Oil Filtered * (µg/L)
KB-01-GW	15-Jul	6,800 [b,c,d]	280 [b,c,d]	100 [d,j]	4,500	170	13,000	520
KB-02-GW	15-Jul	5,700 [c,d,f]	110 [b,d]	68 [d,j]	4,600	99	4,600	<250
KB-03-GW	15-Jul	1,900 [b,c,d]	240 [b,d]	<50 [d]	830	130	2,500	<250
KB-04-GW	15-Jul	38,000 [c,d,g]	360 [d,f]	<50 [d]	42,000	370	13,000	<250
KB-05-GW	16-Jul	11,000 [b,c,d,h]	100 [b/k,d,h]	120 [a,d,h]	6,800	86	32,000	<250
KB-06-GW	16-Jul	1,600 [b,c]	<50	<50	400	<50	4,600	<250
KB-07-GW	15-Jul	5,000	260	<50 [d,h]	5,900	240	1,400	<250
KB-08-GW	16-Jul	2,000 [c]	70 [k]	310 [n]	1,400	<50	7,600	<250
KB-09-GW	16-Jul	1,500 [c,d]	54 [b,d]	100 [d,n]	1,100	<50	8,700	<250
KB-10-GW	16-Jul	1,600,000 [g]	110 [d,h,k]	**27,000** [d,h,j]	2,400,000	98	100,000	<250
KB-11-GW	16-Jul	460,000 [c,d,h]	**3,000** [g,h]	**7,900** [h,j]	830,000	**3,300**	120,000	570
KB-12-GW	16-Jul	21,000 [g,h]	460 [h,k]	**1,300** [h,j]	24,000	500	1,300	<250
KB-13-GW	17-Jul	39,000 [c,d,f,g,h]	**9,900** [d,f,h]	**590** [d,h,j]	39,000	**11,000**	26,000	**1,100**
KB-13-GW (Dup)	17-Jul	8,200 [c,d,f]	**1,900** [c,d,f]	**500** [d,j]	8,300	**1,900**	5,300	**880**
KB-14-GW	17-Jul	56,000 [b,c,d,h]	**3,200** [b,c,d]	150 [d,j]	13,000	**750**	82,000	**4,500**
KB-15-GW	17-Jul	110,000 [b,c,d,k]	**5,300** [b,c,d,k]	**1,200** [d,j]	200,000	**4,800**	52,000	**2,200**
KB-16-GW	12-Jul	8,800 [b,c,d,k]	**5,900** [b,c]	**2,600** [b,d]	9,900	**6,500**	2,100	**690**
KB-17-GW	12-Jul	460 [b,d]	460 [b]	220 [b,d]	480	500	300	<250
KB-18-GW	12-Jul	9,300 [b,c,d,h]	**4,700** [b,c,h]	**1,600** [d,h,j]	9,300	**4,500**	2,300	**2,600**
KB-19-GW	12-Jul	110 [b,d]	<50	<1.0	84	<50	<250	<250
KB-21-GW	15-Jul	6,100 [c,d]	57 [b,d]	<50 [d]	2,800	<50	54,000	<250

KLEINFELDER

Table 2. Analytical Results of Reconnaissance Groundwater Samples
Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	TPH as Diesel		TPH as Gasoline	TPH as Jet Fuel		TPH as Motor Oil	
		Unfiltered (µg/L)	Filtered * (µg/L)	Unfiltered (µg/L)	Unfiltered (µg/L)	Filtered * (µg/L)	Unfiltered (µg/L)	Filtered * (µg/L)
KB-22-GW	16-Jul	6,700 [b,c]	<50	<50	1,800	<50	30,000	<250
KB-24-GW	17-Jul	14,000 [b,c]	160 [b,c]	<50	2,300	<50	29,000	450
KB-25-GW	17-Jul	4,500 [c,d]	130 [b,c,d]	<50 [d]	1,000	<50	23,000	320
KB-26-GW	18-Jul	NA	NA	<50	NA	NA	NA	NA
	RBSLs	*640*		*500*	*640*		*640*	

Notes:

TPH	Total Petroleum Hydrocarbons by modified EPA Method 8015; silica gel clean-up used for TPH as diesel, jet fuel, and motor oil.
*	Samples were filtered to remove entrained sediment with adsorbed hydrocarbons to provide better representation of dissolved fractions of groundwater.
µg/L	Micrograms per liter
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs; only filtered sample results for TPH-d, TPH-jf, and TPH-mo compared to RBSLs

Lab Qualifiers:

a	Heavier gasoline range compounds are significant (aged gasoline?).
b	Diesel range compounds are significant; no recognizable pattern
c	Oil range compounds are significant.
d	Liquid sample contains greater than ~2 volume % sediment.
f	Unmodified or weakly modified diesel is significant.
g	Kerosene/kerosene range
h	Lighter than water immiscible sheen/product is present.
j	Strongly aged gasoline or diesel range compounds are significant.
k	Gasoline range compounds are significant.
n	No recognizable pattern

KLEINFELDER

Table 3. Analytical Results of Monitoring Well Samples
Petroleum Hydrocarbons
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	TPH as Diesel Unfiltered (µg/L)	TPH as Diesel Filtered (µg/L)	TPH as Gasoline Unfiltered (µg/L)	TPH as Jet Fuel Unfiltered (µg/L)	TPH as Jet Fuel Filtered (µg/L)	TPH as Motor Oil Unfiltered (µg/L)	TPH as Motor Oil Filtered (µg/L)
MW-1	2-Jul	<50	<50	<50	<50	<50	<250	<250
MW-2	2-Jul	<50	<50	<50	<50	<50	<250	<250
MW-3	2-Jul	<50	51 [b]	<50	<50	<50	<250	<250
NPORD MW-3	2-Jul	<50	<50	<50	<50	<50	<250	<250
NPORD MW-4	2-Jul	100 [b]	85 [b]	110 [a]	98	<50	<250	<250
	RBSLs	*640*		*500*	*640*		*640*	

Notes:

TPH — Total Petroleum Hydrocarbons by modified EPA Method 8015
Silica gel clean-up used for TPH as diesel, jet fuel, and motor oil

µg/L — Micrograms per liter

RBSLs — Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).

Lab Qualifiers:

a — Heavier gasoline range compounds are significant (aged gasoline?).

b — Diesel range compounds are significant; no recognizable pattern

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-01	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-01	3.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-02	1.0	15-Jul	<10	<5.0	5.2	<5.0	<5.0	<5.0	<5.0	<5.0	7.8	<5.0	<5.0
KB-02	4.0	15-Jul	<10	<5.0	17	<5.0	<5.0	<5.0	<5.0	<5.0	43	9.0	<5.0
KB-03	0.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-03	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-04	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-04	4.0	15-Jul	15	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-06	0.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-06	2.0	16-Jul	11	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-07	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-07	4.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-08	1.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

KLEINFELDER

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-08	4.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-09	1.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-09	4.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	11	<5.0	<5.0	<5.0	<5.0
KB-10	2.0	16-Jul	<10,000	97,000	38,000	25,000	<5,000	8,100	**230,000**	57,000	<5,000	<5,000	<5,000
KB-11	1.0	16-Jul	<2,000	14,000	4,300	1,500	<1,000	1,600	**5,300**	4,600	<1,000	<1,000	<1,000
KB-11	3.0	16-Jul	<2,000	7,100	1,800	<1,000	<1,000	<1,000	3,900	1,700	<1,000	<1,000	<1,000
KB-12	1.0	16-Jul	<400	<200	<200	<200	<200	<200	720	<200	<200	<200	<200
KB-12	3.0	16-Jul	<4,000	26,000	12,000	6,100	<2,000	3,400	**16,000**	19,000	<2,000	<2,000	<2,000
KB-13	0.0	17-Jul	<100	<50	<50	<50	1,300	<50	<50	<50	<50	<50	<50
KB-13	2.0	17-Jul	23	62	6.8	<5.0	<5.0	12	92	<5.0	50	39	18
KB-14	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-15	0.0	17-Jul	29	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-16	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-17	0.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-18	0.0	17-Jul	16	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-19	0.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-20	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-20	3.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-21	1.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-21	3.0	15-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-22	1.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-22	3.0	16-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-23	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-24	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-24	2.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-25	0.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Table 4. Analytical Results of Soil Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	2-Butanone (µg/kg)	n-Butyl benzene (µg/kg)	sec-Butyl benzene (µg/kg)	Isopropylbenzene (µg/kg)	2-Hexanone (µg/kg)	4-Isopropyl toluene (µg/kg)	Naphthalene (µg/kg)	n-Propyl benzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	Xylenes (total) (µg/kg)
KB-25	2.0	17-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-26	0.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
KB-26	3.0	12-Jul	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
		RBSLs	*13,000*	*NE*	*NE*	*NE*	*NE*	*NE*	4,900	*NE*	*NE*	*NE*	*1,000*

Notes:

	Volatile Organic Compounds analyzed by EPA Method 8260B
µg/kg	Micrograms per kilogram
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs
NE	Not established

Table 5. Analytical Results of Reconnaissance Groundwater Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	Benzene (µg/L)	2-Butanone (µg/L)	n-Butyl benzene (µg/L)	sec-Butyl benzene (µg/L)	tert-Butyl benzene (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	Ethylbenzene (µg/L)	Isopropylbenzene (µg/L)	4-Isopropyl toluene (µg/L)	4-Methyl-2-pentanone (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	n-Propyl benzene (µg/L)	Styrene (µg/L)	Toluene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5-Trimethylbenzene (µg/L)	Xylenes (total) (µg/L)
KB-01-GW	15-Jul	<0.5	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-02-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.58	<0.5	<0.5	<0.5	1.4	<0.5	<0.5
KB-03-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.68	<0.5	<0.5	<0.5	<0.5	<0.5	4.1	<0.5	<0.5	3.3
KB-04-GW	15-Jul	<0.5	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-05-GW	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	4.0	<0.5	<0.5	<0.5	<0.5	2.6	<0.5	1.2	0.63	0.74
KB-06-GW	16-Jul	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-07-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-08-GW	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.79	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-09-GW	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-10-GW	16-Jul	<2.5	7.0	50	22	<2.5	<2.5	<2.5	<2.5	42	7.2	<2.5	4.9	**240**	86	<2.5	<2.5	7.4	<2.5	<2.5
KB-11-GW	16-Jul	3.9	3.7	<0.5	4.7	<0.5	<0.5	<0.5	<0.5	6.0	7.9	<0.5	30	9.8	3.0	<0.5	1.2	<0.5	<0.5	2.6
KB-13-GW (dup)	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-12-GW	16-Jul	4.9	1.3	6.2	3.4	0.59	<0.5	<0.5	<0.5	3.7	2.4	<0.5	2.1	<0.5	5.4	<0.5	0.54	1.4	<0.5	1.4
KB-13-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-14-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-15-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-16-GW	12-Jul	<1.7	4.8	<1.7	4.0	<1.7	2.2	<1.7	<1.7	<1.7	5.2	<1.7	<1.7	**68**	2.6	<1.7	<1.7	24	2.1	2.0
KB-17-GW	12-Jul	<0.5	2.9	1.6	<0.5	<0.5	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.94	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-18-GW	12-Jul	<0.5	1.6	<0.5	2.9	<0.5	3.2	0.52	<0.5	<0.5	5.6	<0.5	<0.5	14	0.88	<0.5	<0.5	6.9	<0.5	1.9

KLEINFELDER

Table 5. Analytical Results of Reconnaissance Groundwater Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, CA

Well Number	Sample Date (2002)	Benzene (µg/L)	2-Butanone (µg/L)	n-Butyl benzene (µg/L)	sec-Butyl benzene (µg/L)	tert-Butyl benzene (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	Ethylbenzene (µg/L)	Isopropylbenzene (µg/L)	4-Isopropyl toluene (µg/L)	4-Methyl-2-pentanone (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	n-Propyl benzene (µg/L)	Styrene (µg/L)	Toluene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5-Trimethylbenzene (µg/L)	Xylenes (total) (µg/L)
KB-19-GW	12-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.84	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-21-GW	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.9	<0.5	<0.5	1.9
KB-22-GW	16-Jul	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KB-24-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-25-GW	17-Jul	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
KB-26-GW	18-Jul	<0.5	4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trip Blank-1	15-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trip Blank-2	16-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trip Blank-3	17-Jul	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	RBSLs	*46*	*14,000*	*NE*	*NE*	*NE*	*NE*	*50*	290	*NE*	*NE*	*190*	*1,800*	*24*	*NE*	*NE*	*130*	*NE*	*NE*	*13*

Notes:

	Volatile Organic Compounds analyzed by EPA Method 8260B
µg/L	Micrograms per liter
MTBE	Methyl tertiary-butyl ether
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs
NE	Not established

KLEINFELDER

Table 6. Analytical Results of Monitoring Well Samples
Volatile Organic Compounds
Rolls Royce Test Cell Facility
Oakland, California

Well Number	Sample Date (2002	2-Butanone (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	1,4-Dichlorobenzene (µg/L)	MTBE (µg/L)
MW-1	2-Jul	<1.0	<0.5	<0.5	<0.5	<0.5
MW-2	2-Jul	<1.0	<0.5	<0.5	<0.5	<0.5
MW-3	2-Jul	<1.0	<0.5	<0.5	<0.5	1.5
NPORD MW-3	2-Jul	2.2	0.66	<0.5	<0.5	<0.5
NPORD MW-4	2-Jul	<1.0	<0.5	1.8	0.88	<0.5
	RBSLs	14,000	NE	50	15	1,800

Notes:

Volatile Organic Compounds analyzed by EPA Method 8260B

µg/L — Micrograms per liter

MTBE — Methyl tertiary-butyl ether

RBSLs — Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).

NE — Not established

Table 7. Analytical Results of Soil Samples
Dissolved Metals
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Lead-organic (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
KB-01	1.0	15-Jul	<2.5	6.4	170	<0.5	0.56	44	9.1	34	54	<0.5	0.17	<2.0	54	<2.5	<1.0	<2.5	35	97
KB-01	3.0	15-Jul	**99**	**24**	**2,200**	<0.5	4.7	52	5.9	**580**	**910**	<0.5	**100**	<2.0	24	<2.5	<1.0	<2.5	19	**3,800**
KB-02	1.0	15-Jul	<2.5	7.8	180	<0.5	0.78	49	11	45	79	<0.5	0.21	<2.0	77	<2.5	<1.0	<2.5	40	130
KB-02	4.0	15-Jul	<2.5	9.3	76	0.52	<0.5	17	3.7	12	11	<0.5	<0.06	<2.0	12	<2.5	<1.0	<2.5	35	42
KB-03	0.0	15-Jul	<2.5	5.8	130	<0.5	0.61	36	11	89	110	<0.5	0.29	<2.0	74	<2.5	<1.0	<2.5	31	120
KB-03	1.0	15-Jul	<2.5	10	320	<0.5	2.2	70	14	93	280	<0.5	0.44	<2.0	48	<2.5	<1.0	<2.5	49	510
KB-04	1.0	15-Jul	<2.5	5.0	52	<0.5	<0.5	6.5	7.0	20	4.1	<0.5	<0.06	<2.0	11	<2.5	<1.0	<2.5	28	39
KB-04	4.0	15-Jul	<2.5	11	140	0.67	<0.5	17	7.0	16	12	<0.5	0.074	<2.0	13	<2.5	<1.0	<2.5	37	55
KB-05	0.0	16-Jul	<2.5	7.2	210	<0.5	3.3	57	12	110	360	<0.5	0.43	<2.0	62	<2.5	<1.0	<2.5	35	480
KB-05	2.0	16-Jul	6.4	8.2	94	<0.5	0.67	120	16	**1,500**	120	<0.5	0.52	2.6	51	<2.5	<1.0	<2.5	29	230
KB-06	0.0	16-Jul	<2.5	11	230	<0.5	1.1	42	11	54	150	<0.5	0.19	<2.0	66	<2.5	<1.0	<2.5	35	450
KB-06	2.0	16-Jul	4.3	<2.5	21	<0.5	6.9	130	30	49	**2,200**	51	<0.06	3.3	8.4	<2.5	<1.0	<2.5	7.4	**17,000**
KB-07	1.0	15-Jul	<2.5	<2.5	62	<0.5	<0.5	9.8	11	25	4.0	<0.5	0.34	<2.0	6.5	<2.5	<1.0	<2.5	61	150
KB-07	4.0	15-Jul	<2.5	<2.5	9.6	<0.5	<0.5	82	22	10	<3.0	<0.5	0.10	<2.0	38	<2.5	<1.0	<2.5	71	32
KB-08	1.0	16-Jul	<2.5	4.5	78	<0.5	<0.5	31	6.1	20	35	<0.5	0.40	<2.0	22	<2.5	<1.0	<2.5	23	49
KB-08	4.0	16-Jul	<2.5	5.6	95	<0.5	<0.5	47	5.7	18	6.0	<0.5	<0.06	5.1	34	<2.5	<1.0	<2.5	31	35
KB-09	1.0	16-Jul	<2.5	9.9	56	0.62	<0.5	14	7.0	78	18	<0.5	0.14	<2.0	11	<2.5	<1.0	<2.5	77	79
KB-09	4.0	16-Jul	<2.5	4.7	82	<0.5	<0.5	30	7.3	17	21	<0.5	<0.06	<2.0	31	<2.5	<1.0	<2.5	24	52
KB-10	2.0	16-Jul	<2.5	<2.5	33	<0.5	<0.5	11	4.6	9.1	7.4	<0.5	<0.06	<2.0	16	<2.5	<1.0	<2.5	22	22
KB-11	1.0	16-Jul	<2.5	6.8	110	<0.5	<0.5	22	9.7	49	11	<0.5	0.18	<2.0	27	<2.5	<1.0	<2.5	58	92
KB-11	3.0	16-Jul	<2.5	3.3	38	<0.5	<0.5	9.4	4.3	8.6	100	2.3	0.071	<2.0	4.1	<2.5	<1.0	<2.5	15	110
KB-12	1.0	16-Jul	<2.5	11	100	<0.5	<0.5	26	8.9	27	13	<0.5	0.13	<2.0	28	<2.5	<1.0	<2.5	34	98
KB-12	3.0	16-Jul	<2.5	7.8	24	<0.5	<0.5	22	4.2	66	16	<0.5	<0.06	<2.0	33	<2.5	<1.0	<2.5	14	21

KLEINFELDER

Table 7. Analytical Results of Soil Samples
Dissolved Metals
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Lead-organic (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
KB-13	0.0	17-Jul	<2.5	10	490	<0.5	10	69	15	200	**1,700**	3	1.8	10	72	<2.5	<1	<2.5	31	**1,200**
KB-13	2.0	17-Jul	3.2	<5	940	<0.5	4.8	120	12	**13,000**	**4,200**	1.6	0.35	5.8	**210**	<2.5	<1	<2.5	13	**4,500**
KB-14	0.0	17-Jul	<2.5	4.3	730	<0.5	11	49	8.2	170	**2,400**	2.6	1.5	3.9	33	<2.5	3.8	<2.5	21	**1,700**
KB-15	0.0	17-Jul	<2.5	<2.5	55	<0.5	6.3	19	3.3	36	110	1.2	**73**	<2	18	<2.5	<1	<2.5	6.3	180
KB-16	0.0	17-Jul	<2.5	<5	190	<0.5	23	59	7.2	110	260	1.0	4.2	7.1	43	<2.5	<1	<2.5	25	570
KB-17	0.0	12-Jul	<2.5	6.6	170	<0.5	6.9	39	9.7	68	150	0.54	1.7	<2.0	48	<2.5	<1.0	<2.5	24	270
KB-18	0.0	17-Jul	<2.5	<5	190	<0.5	**12**	29	3.1	220	160	<0.5	2.3	<2	30	<2.5	<1	<2.5	16	**610**
KB-19	0.0	12-Jul	<2.5	5.8	55	<0.5	0.72	47	6.8	25	22	<0.5	0.098	<2.0	38	<2.5	<1.0	<2.5	37	90
KB-20	1.0	15-Jul	2.8	8.5	330	<0.5	2.0	45	11	110	570	<0.5	0.32	<2.0	47	<2.5	<1.0	<2.5	32	580
KB-20	3.0	15-Jul	28	6.7	420	<0.5	0.85	41	7.3	120	350	<0.5	0.44	10	51	<2.5	<1.0	<2.5	25	410
KB-21	1.0	15-Jul	<2.5	9.4	140	<0.5	1.0	39	11	54	160	<0.5	0.44	<2.0	50	<2.5	<1.0	<2.5	36	180
KB-21	3.0	15-Jul	<2.5	5.5	510	<0.5	2.4	37	6.7	91	170	<0.5	<0.06	<2.0	31	<2.5	<1.0	<2.5	21	**810**
KB-22	1.0	16-Jul	<2.5	7.4	140	<0.5	0.69	43	9.7	40	68	<0.5	0.10	<2.0	54	<2.5	<1.0	<2.5	32	130
KB-22	3.0	16-Jul	5.9	**30**	490	<0.5	**19**	540	11	**240**	650	<0.5	4.8	4.0	50	<2.5	<1.0	<2.5	32	**1,400**
KB-23	0.0	17-Jul	<2.5	10	180	<0.5	0.91	48	13	36	91	0.90	0.24	<2	77	<5	<1	<2.5	35	150
KB-24	0.0	17-Jul	12	11	340	<0.5	6.4	71	12	**230**	500	<0.5	0.52	<2	54	<2.5	<1	<2.5	35	**2,100**
KB-24	2.0	17-Jul	2.7	8.1	510	<0.5	2.8	34	6.7	120	**760**	0.90	0.33	<2	26	<2.5	<1	<2.5	33	**1,200**
KB-25	0.0	17-Jul	<2.5	4.5	170	<0.5	0.77	63	12	55	95	<0.5	0.15	5.6	73	<2.5	<1	<2.5	38	160
KB-25	2.0	17-Jul	<2.5	3.6	170	<0.5	1.1	24	6.3	57	240	1.1	<0.06	<2	33	<2.5	<1	<2.5	19	350
KB-26	0.0	12-Jul	<2.5	12	77	<0.5	1.9	150	7.5	59	350	<0.5	0.097	<2.0	42	<2.5	1.6	<2.5	43	110
KB-26	3.0	12-Jul	<2.5	5.5	22	<0.5	1.2	34	4.3	18	6.8	<0.5	<0.06	<2.0	23	<2.5	<1.0	<2.5	23	49
		RBSLs	*40*	*13**	*1,500*	*8*	*12*	*750*	*80*	*225*	*750*	*NE*	*10*	*40*	*150*	*10*	*40*	*29*	*200*	*600*

KLEINFELDER

Table 7. Analytical Results of Soil Samples
Dissolved Metals
Rolls Royce Test Cell Facility
Oakland, California

Boring Number	Depth (feet)	Sample Date (2002)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Lead-organic (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)

Notes:

	Dissolved metals analyzed by EPA Methods 6010/7000
mg/kg	Milligrams per kilogram
RBSLs	Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).
Bold	Values in **boldface** type exceed their respective RBSLs
NE	Not established
*	RBSL for arsenic (13 mg/kg) in deeper soil (>3m) used for comparison due to naturally ocurring background levels of arsenic exceeding the shallow soil (<3m) RBSL of 2.7 mg/kg.

KLEINFELDER

Table 8. Analytical Results of Reconnaissance Groundwater Samples
Dissolved Metals
Rolls Royce
Oakland, California

Well Number	Sample Date (2002)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Lead-organic (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
KB-01-GW	15-Jul	<0.006	<0.005	**0.50**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0067**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-02-GW	15-Jul	<0.01	0.0178	**0.68**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.011**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.061**
KB-03-GW	15-Jul	<0.006	0.0108	**0.58**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0097**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.15**
KB-04-GW	15-Jul	0.0101	0.0137	**1.5**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.072**
KB-05-GW	16-Jul	<0.006	<0.005	**0.90**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-06-GW	16-Jul	<0.01 z	<0.005	**1.0**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-07-GW	15-Jul	<0.006	<0.005	**0.19**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-08-GW	16-Jul	<0.01 z	<0.005	**0.33**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-09-GW	16-Jul	<0.006	<0.005	**0.21**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-10-GW	16-Jul	<0.006	0.0212	**0.25**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-11-GW	16-Jul	<0.01 z	0.0113	**0.12**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	**0.011**	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-12-GW	16-Jul	<0.006	<0.010 z	**0.17**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-13-GW	17-Jul	<0.006	0.00812	**0.37**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0053**	**0.019**	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-14-GW	17-Jul	<0.006	0.00839	**0.48**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-15-GW	17-Jul	<0.006	<0.01 z	**0.38**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-16-GW	12-Jul	<0.05	<0.005	**0.14**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0064**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-17-GW	12-Jul	<0.05	0.0145	**0.37**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-18-GW	12-Jul	<0.05	<0.005	**0.66**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0054**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05

Table 8. Analytical Results of Reconnaissance Groundwater Samples
Dissolved Metals
Rolls Royce
Oakland, California

Well Number	Sample Date (2002)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Lead-organic (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
KB-19-GW	12-Jul	<0.05	0.0131	**0.20**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-21-GW	15-Jul	<0.006	<0.010	**0.35**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0099**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.17**
KB-22-GW	16-Jul	<0.006	0.0145	**0.84**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.034**	**0.0057**	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
KB-24-GW	17-Jul	<0.006	<0.005	**0.80**	<0.004	<0.005	<0.02	<0.05	<0.05	**0.0067**	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.050**
KB-25-GW	17-Jul	0.00665	<0.005	**0.51**	<0.004	0.0055	<0.02	<0.05	<0.05	0.011	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	**0.86**
	RBSLs	*0.030*	*0.036*	*0.0039*	*0.0051*	*0.0011*	*0.18*	*0.003*	*0.0024*	*0.0032*	*0.0032*	*0.000012*	*0.24*	*0.0082*	*0.005*	*0.0012*	*0.04*	*0.019*	*0.023*

Notes:

Dissolved metals analyzed by EPA Methods 6010/7000 on filtered and acidified samples.

mg/L — Milligrams per liter

RBSLs — Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000). RBSLs based on freshwater aquatic life protection assuming a release of groundwater to surface water.

Bold — Values in **boldface** type exceed their respective RBSLs; note that laboratory reporting limits exceed RBSLs in some cases.

NE — Not established

Lab Qualifiers:

z — Reporting limit raised due to matrix interference

KLEINFELDER

Table 9. Analytical Results of Monitoring Well Samples
Dissolved Metals
Rolls Royce
Oakland, California

Well Number	Sample Date (2002)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Lead-organic (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
MW-1	2-Jul	<0.06	<0.05	**0.13**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
MW-2	2-Jul	<0.006	<0.005	**0.064**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
MW-3	2-Jul	<0.06	<0.05	**0.91**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
NPORD MW-3	2-Jul	<0.06	<0.05	**0.15**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
NPORD MW-4	2-Jul	<0.006	<0.005	**0.62**	<0.004	<0.005	<0.02	<0.05	<0.05	<0.005	<0.005	<0.0008	<0.05	<0.05	<0.005	<0.01	<0.005	<0.05	<0.05
	RBSLs	*0.030*	*0.036*	*0.0039*	*0.0051*	*0.001*	*0.18*	*0.003*	*0.0024*	*0.0032*	*NE*	*0.000012*	*0.24*	*0.0082*	*0.005*	*0.0012*	*0.040*	*0.019*	*0.023*

Notes:

Dissolved metals analyzed by EPA Methods 6010/7000

mg/L — Milligrams per liter

RBSLs — Risk-Based Screening Levels, industrial/commercial land use surface soil (<3 m) and groundwater not a current or potential source of drinking water (RWQCB, 2000).

Bold — Values in **boldface** type exceed their respective RBSLs

NE — Not established

KLEINFELDER

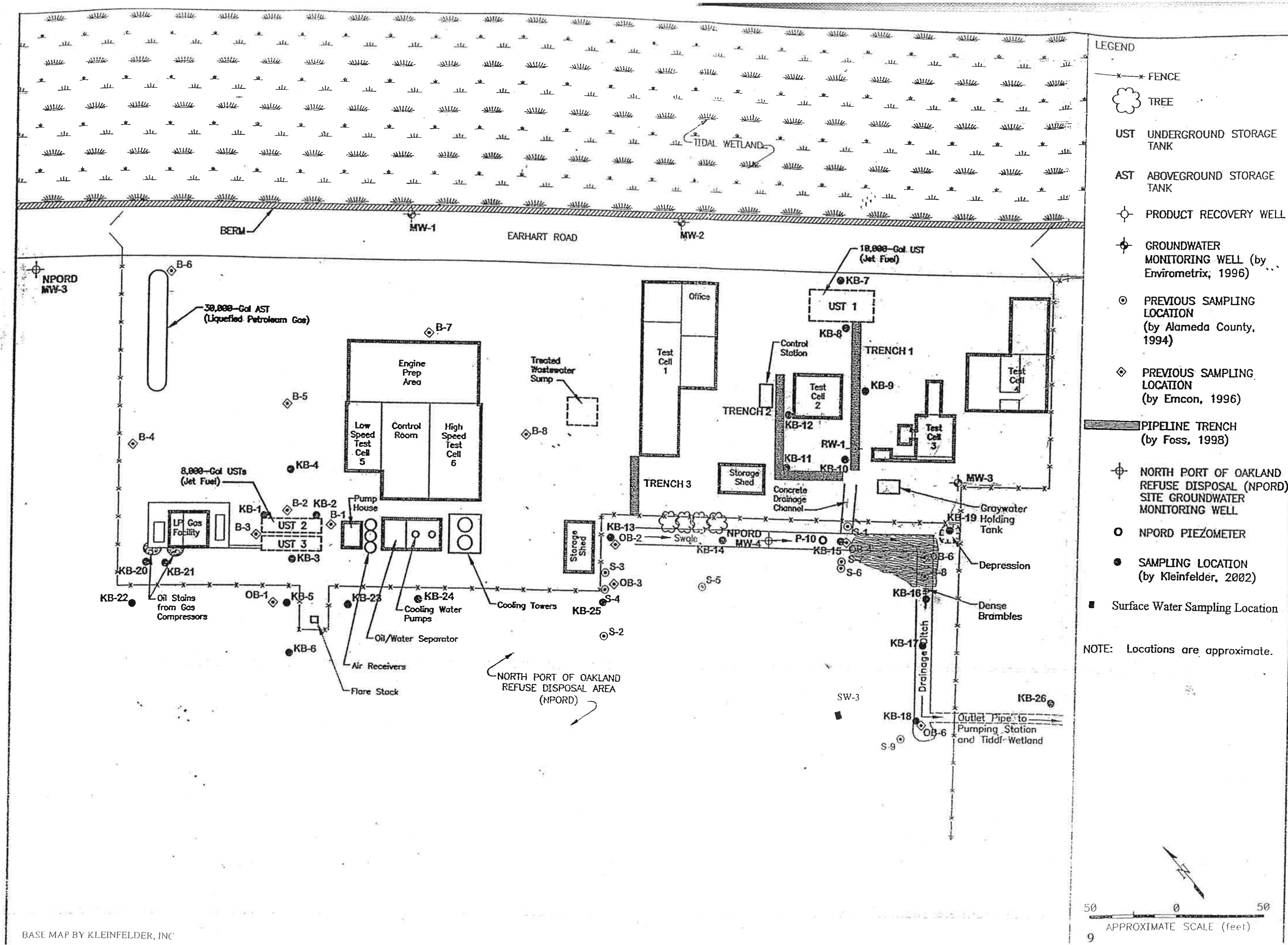


Figure 2-2: Site Map
Rolls-Royce Test Cell Facility
6701 Old Earhart Road
Oakland, CA 94621

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Outdoor Engine Test Cell Excavation													
SW1-4.5[2,3]	4.5	9/13/07	**2,200**	**13,000**	**1,200**	**13,000**	<0.25	<0.25	<0.25	<0.50	<0.25	<0.25	<5.0
SW2-4.5[2]	4.5	9/13/07	<1.0	**200**	**350**	**220[4]**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.050**
SW3-4.5[2]	4.5	9/13/07	<1.0	**8.0[5]**	<10	**7.2[4]**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SW4-4.5[2,3]	4.5	9/13/07	**360**	**12,000**	**2,100**	**15,000**	**0.052**	<0.025	<0.025	<0.050	0.055	<0.025	<0.50
SW5-4.5[2,3]	4.5	9/13/07	**520**	**370**	**150**	**360**	**0.036**	**0.027**	<0.050	**0.078**	**0.038**	<0.025	<1.0
SW6-4.5[2]	4.5	9/13/07	<1.0	**43**	**53**	**54**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SW7-4.5[2,3]	4.5	9/13/07	**2,000**	**7,900**	**1,600**	**8,900**	<0.25	<0.25	<0.25	<0.50	<0.25	<0.25	<5.0
SW8-4.5[2,3]	4.5	9/13/07	**6,200**	**12,000**	**370**	**14,000**	**0.42**	<0.40	<0.40	<0.80	<0.40	<0.40	<5.0
SW9-4.5	4.5	9/13/07	**2,200**	**500[5]**	**860**	**210[4]**	<0.40	<0.40	<0.40	<0.70	<0.40	<0.40	**10**
SW10-4.5[2]	4.5	9/13/07	**670**	**4,100**	**2,200**	**6,000**	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	**1.6**
SW11-4.5[2]	4.5	9/13/07	<1.0	**38[5]**	**91**	**35[4]**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SW12-4.5[2]	4.5	9/13/07	**2,400**	**920**	**67**	**950**	<0.40	<0.40	<0.40	<0.70	<0.40	<0.40	**72**
SW13-4.5	4.5	9/13/07	**7.3**	**76**	**68**	**84**	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	**0.0065**
Soil Stockpile													
SP1-A,B,C,D[3]	--	9/27/07	**140**	**4,000**	**2,600**	**4,200**	<0.025	<0.025	<0.025	<0.050	<0.025	<0.025	<0.50
SP2-A,B,C,D[3]	--	9/27/07	**37**	**1,500**	**970**	**2,000**	<0.025	<0.025	<0.025	<0.050	<0.025	<0.025	<0.10

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	O&G (ppm)	VOCs (ppm)	SVOs (ppm)	PCBs (ppm)	Cd (ppm)	Cr (ppm)	Pb (ppm)	Ni[1] (ppm)	Zn (ppm)
Soil Stockpile									
SP1-A.B.C.D	**3,300**	ND[8]	ND[7]	ND[6]	<0.500	**50**[9]	**170**[10]	**66.3**	**186**
SP2-A.B.C.D	**790**	ND[6]	ND[6]	ND[6]	<0.500	**32.5**	**319**[11]	**27.6**	**122**

Explanation:
ppm = parts per million (mg/kg)
ft = feet
NA = Not Analyzed
-- = Not Applicable
ND = not detected for the parameter analyzed at the reporting limit
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHjf = Total Petroleum Hydrocarbons as jet fuel
B = Benzene
T = Toluene
E = Ethylbenzene
P,M-X = P.M-xylene
O-X = O-xylene
MtBE = Methyl tert-Butyl Ether
O&G = Total Oil & Grease
VOCs = Volatile Organic Compounds
SVOs = Semi-Volatile Organics
PCBs = Polychlorinated Biphenyls

Analytical Laboratory:
Kiff Analytical LLC (ELAP # 2236)

Analytical Methods:
TPHg/BTEX/MtBE/Napthalene by EPA Method 8260B
TPHd/TPHmo/TPHjf by modified EPA Method 8015
O&G by EPA Method 1864A M
SVOs by EPA Method 8270C
VOCs by EPA Method 8260B
PCBs by EPA Method 8082
Cd, Cr, Pb, Ni, and Zn by EPA Method 6010B

Table 1

Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Explanation: (con't)

Cd = Cadmium

Cr = Chromium

Pb = Lead

Ni = Nickel

Zn = Zinc

Notes:

[1] With Silica Gel Cleanup

[2] Matrix spike/Matrix spike duplicate results associated with this sample for the analyte TPH as Diesel were affected by the analyte concentrations already present in the un-spiked sample.

[3] The method reporting limit for napthalene in this sample has been increased due to the presence of an interfering compound.

[4] Hydrocarbons present in this sample are higher boiling than typical Jet Fuel.

[5] Hydrocarbons present in this sample are higher boiling than typical Diesel Fuel.

[6] All analytes were ND or less than their respective reporting limits

[7] With the exception of 1.8 ppm of 1-methylnaphthalene, all other analytes were ND or less than their respective reporting limits

[8] With the exceptions of 0.18 ppm of 1,3,5-trimethylbenzene, 0.090 ppm of sec-butylbenzene, and 0.15 ppm of p-isopropyltoluene; all other analytes were ND or less than their respective reporting limits.

[9] Sample was re-logged for Soluble Threshold Limit Concentration (STLC) chromium analysis and resulted in a STLC chromium concentration of 0.532 ppm.

[10] Sample was re-logged for STLC lead analysis and resulted in a STLC lead concentration of 6.82 ppm. Sample was again re-logged for Toxicity Characteristic Leaching Procedure (TCLP) lead analysis and resulted in a TCLP lead concentration of 0.381 ppm.

[11] Sample was re-logged for STLC lead analysis and resulted in a STLC lead concentration of 3.15 ppm. Sample was again re-logged for TCLP lead analysis and resulted in a TCLP lead concentration of 0.151 ppm.

Table 2
Water Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Date	Sample Depth (ft)	TPHg (ppb)	TPHd[1] (ppb)	TPHmo (ppb)	TPHjf (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	P,M-X (ppb)	O-X (ppb)	MtBE (ppb)	Napthalene (ppb)
Water-1[2]	9/13/07	- 4.5	**400**	**66,000**	**17,000**	**72,000**	**2.5**	**1.5**	**2.6**	--	**4.3**	**2.9**	**5.5**	**53**
BK-1	10/3/07	--	**260**	**140**[3]	<100	**2,400**	<0.50	<0.50	<0.50	**0.54**	NA	NA	**5.1**	**1.6**

Explanation:
ft = feet
ppb = parts per billion (μg/L)
NA = Not Analyzed
-- = Not Applicable
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHjf = Total Petroleum Hydrocarbons as jet fuel
B = Benzene
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylenes
P,M-X = P,M-xylenes
O-X = O-xylenes
MtBE = Methyl tert-Butyl Ether

Analytical Laboratory:
Kiff Analytical LLC (ELAP # 2236)

Analytical Methods:
TPHg/BTEX/MtBE/Napthalene by EPA Method 8260B
TPHd/TPHmo/TPHjf by modified EPA Method 8015

Notes:
[1] With Silica Gel Cleanup
[2] Matrix spike/matrix spike duplicate results associated with this sample for the analyte Benzene were affected by the analyte concentrations already present in the un-spiked sample.
[3] Hydrocarbons present in this sample are lower boiling than typical Diesel Fuel.

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Boring MW-4													
MW4-5.5	5.5	6/5/07	**2.3**	**1,700**	**1,400**	**2,100**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW4-10.5	10.5	6/5/07	<1.0	**76**[4]	**87**	**59**[4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-5													
MW5-5.5	5.5	6/6/07	<1.0	**590**	**830**	**400**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW5-10	10	6/6/07	<1.0	**12**[3]	**31**	**7.7**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-6													
MW6-5.5	5.5	6/5/07	<1.0	**240**	**340**	**200**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW6-10	10	6/5/07	<1.0	**17**[3]	**55**	**15**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-7													
MW7-5.5	5.5	6/6/07	<1.0	**180**[3]	**960**	**54**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-8													
MW8-10	10	8/31/07	<1.0	**24**[5]	**50**	**16**[6]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-9													
MW9-10	10	6/5/07	<1.0	**350**[4]	**940**	**180**[4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-10													
MW10-10	10	6/5/07	<1.0	**7.4**[3]	**16**	**4.8**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Boring MW-11													
MW11-10	10	6/6/07	<1.0	**21**	**20**	**18**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-12													
MW12-5.5	5.5	6/6/07	<1.0	**10**[3]	**15**	**6.9**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW12-9.5	9.5	6/6/07	<1.0	**10**[3]	**49**	**10**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-13													
MW13-5	5.0	6/7/07	**42**	**1,500**	**970**	**1,700**	<0.0050	<0.0050	<0.0050	<0.010	**0.0053**	<0.0050	**0.21**
MW13-9.5	9.5	6/7/07	<1.0	**17**[3]	**35**	**17**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-14													
MW14-5	5.0	6/7/07	<1.0	**42**[3]	**190**	**18**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW14-9.5	9.5	6/7/07	<1.0	**3.0**[3]	<10	**2.1**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-15													
MW15-9	9	6/7/07	<1.0	**14**	**50**	**17**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boring MW-17													
MW17-5.5	5.5	8/31/07	<1.0	**160**[5]	**900**	**70**[6]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW17-10	10	8/31/07	<1.0	**9.5**[5]	**26**	**8.9**[6]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Sample ID	Sample Depth (ft)	Sample Date	TPHg (ppm)	TPHd[1] (ppm)	TPHmo (ppm)	TPHjf (ppm)	B (ppm)	T (ppm)	E (ppm)	P,M-X (ppm)	O-X (ppm)	MtBE (ppm)	Napthalene (ppm)
Boring MW-18													
MW18-5.5	5.5	6/6/07	<1.0	**40**[3]	**76**	**26**[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW18-10	10	6/6/07	<1.0	**27**[4]	**58**	**21**[4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Explanation:

ppm = parts per million (mg/kg)
ft = feet
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHjf = Total Petroleum Hydrocarbons as jet fuel
B = Benzene
T = Toluene
E = Ethylbenzene
P,M-X = P,M-xylene
O-X = O-xylene
MtBE = Methyl tert-Butyl Ether

Notes:

[1] With Silica Gel Cleanup

Analytical Laboratory:

Kiff Analytical LLC (ELAP # 2236)

Analytical Methods:

TPHg/BTEX/MtBE/Napthalene by EPA Method 8260B
TPHd/TPHmo/TPHjf by modified EPA Method 8015

Table 1
Soil Chemical Analytical Results
Rolls-Royce Engine Service Test Facility
6701 Old Earhart Road
Oakland, California

Notes: Con't

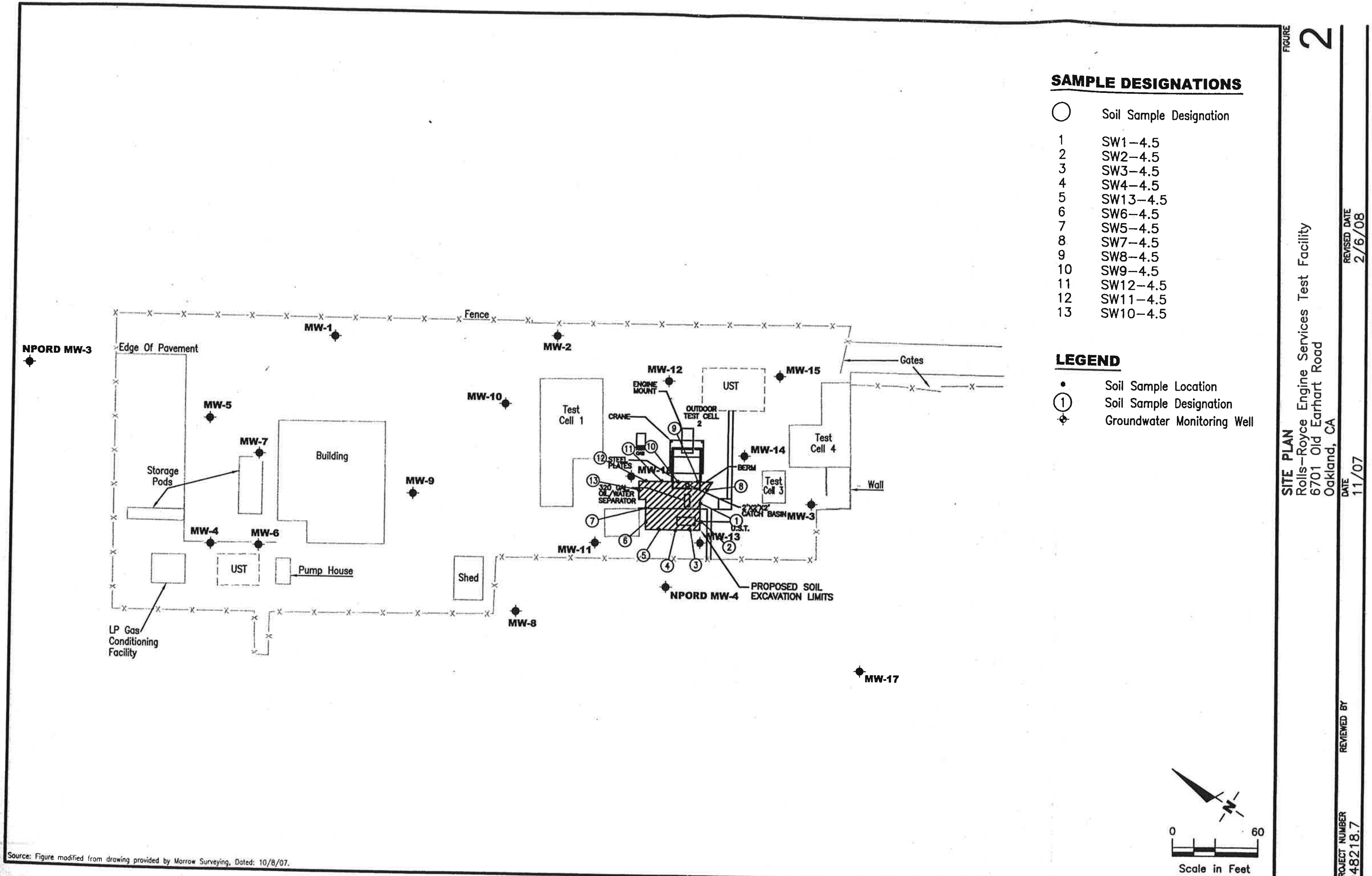
[2] Hydrocarbons reported as TPH as Jet Fuel do not exhibit a typical Jet Fuel chromatographic pattern for samples MW6-5.5, MW6-10, MW10-10, MW5-5.5, MW5-10, MW7-5.5, MW18-5.5, MW12-5.5, MW12-9.5, MW13-9.5, MW14-5, and MW14-9.5. These hydrocarbons are higher boiling than typical Jet Fuel.

[3] Hydrocarbons reported as TPH as Diesel do not exhibit a typical Diesel chromatographic pattern for samples MW6-10, MW10-10, MW5-10, MW7-5.5. MW18-5.5, MW12-5.5, MW12-9.5, MW13-9.5, MW14-5, and MW14-9.5. These hydrocarbons are higher boiling than typical diesel fuel.

[4] Hydrocarbons reported as TPH as Diesel and TPH as Jet Fuel do not exhibit a typical Diesel or Jet Fuel chromatographic pattern for samples MW4-10.5, MW9-10, and MW18-10. There is minor amount of diesel range hydrocarbons with primarily higher boiling hydrocarbons present.

[5] Hydrocarbons present are higher-boiling than typical Diesel Fuel

[6] Lubrication range hydrocarbons present, atypical for Jet Fuel



SAMPLE DESIGNATIONS
Soil Sample Designation
1 SW1-4.5
2 SW2-4.5
3 SW3-4.5
4 SW4-4.5
5 SW13-4.5
6 SW6-4.5
7 SW5-4.5
8 SW7-4.5
9 SW8-4.5
10 SW9-4.5
11 SW12-4.5
12 SW11-4.5
13 SW10-4.5
LEGEND
Soil Sample Location
Soil Sample Designation
Groundwater Monitoring Well
Fence
Edge Of Pavement
Gates
Wall
NPORD MW-3
NPORD MW-4
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
MW-13
MW-14
MW-15
MW-17
Storage Pods
Building
UST
Pump House
Shed
LP Gas Conditioning Facility
Test Cell 1
Test Cell 3
Test Cell 4
OUTDOOR TEST CELL 2
ENGINE MOUNT
CRANE
STEEL PLATES
320 GAL OIL/WATER SEPARATOR
BERM
CATCH BASIN
U.S.T.
PROPOSED SOIL EXCAVATION LIMITS
0
60
Scale in Feet
Source: Figure modified from drawing provided by Morrow Surveying. Dated: 10/8/07.
FIGURE
2
SITE PLAN
Rolls-Royce Engine Services Test Facility
6701 Old Earhart Road
Oakland, CA
DATE
11/07
REVISED DATE
2/6/08
REVIEWED BY
PROJECT NUMBER
948218.7

Attachment 4
Comparison of Soil Concentrations to Residential Screening Levels
Human Health and Ecological Risk Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Parameter	Maximum Onsite Concentration [a] (mg/kg)	Location of Maximum	Maximum Offsite Concentration [a] (mg/kg)	Location of Maximum	Tier 1 Screening Levels (mg/kg) CHHSLs [b]	Tier 1 Screening Levels (mg/kg) RWQCB ESLs [c]	Onsite Soil COPC? [d]	Offsite Soil COPC? [d]
BTEX								
Benzene	**0.42**	**SW8-4.5**	--	--	NA	**0.12**	**Yes**	No
Toluene	0.027	SW5-4.5	--	--	NA	9.3	No	No
p&m-Xylene [e]	0.078	SW5-4.5	NA	--	NA	11	No	No
o-Xylene [e]	0.055	SW4-4.5	NA	--	NA	11	No	No
TPH [f]								
TPHg	**6,200**	**SW8-4.5**	NA	--	NA	**100**	**Yes**	No
TPHd	**13,000**	**SW1-4.5**	**1,100**	**OB-4**	NA	**100**	**Yes**	**Yes**
TPHmo	**2,200**	**SW10-4.5**	**1,300**	**OB-3**	NA	**370**	**Yes**	**Yes**
TPHj	**15,000**	**SW4-4.5**	**440**	**OB-2**	NA	**100**	**Yes**	**Yes**
VOCs								
Naphthalene	**72**	**SW12-4.5**	--	--	NA	**1.3**	**Yes**	No
Inorganics								
Antimony	**99**	**KB-01 (3)**	**11**	OB-3	**30**	**6.3**	**Yes**	**Yes**
Arsenic [g]	**24**	**KB-01 (3)**	10	OB-3	**0.07**	**0.39**	**Yes**	No
Barium	**2,200**	**KB-01 (3)**	810	OB-3	5,200	**1,000**	**Yes**	No
Beryllium	0.67	KB-04 (4)	NA	--	150	31	No	No
Cadmium	**4.7**	**KB-01 (3)**	**35**	OB-4	**1.7**	**1.7**	**Yes**	**Yes**
Chromium [h]	82	KB-07 (4)	190	OB-4	83,336	835	No	No
Cobalt	22	KB-07 (4)	25	OB-2	660	280	No	No
Copper	580	KB-01 (3)	**1,300**	OB-2	3,000	1,000	No	**Yes**
Lead	**910**	**KB-01 (3)**	**2,500**	OB-2	**150**	**260**	**Yes**	**Yes**
Mercury	**100**	**KB-01 (3)**	**29**	**OB-3**	**18**	**1.3**	**Yes**	**Yes**
Molybdenum	10	KB-20 (3)	16	OB-3	380	78	No	No
Nickel	77	KB-02 (1)	160	OB-3	1,600	300	No	No
Silver	--	--	6.0	OB-2	380	78	No	No
Vanadium	**77**	**KB-09 (1)**	**39**	OB-2	530	**16**	**Yes**	**Yes**
Zinc	**3,800**	**KB-01 (3)**	**1,600**	OB-3	23,000	**1,000**	**Yes**	**Yes**

Attachment 4
Comparison of Soil Concentrations to Residential Screening Levels
Human Health and Ecological Risk Assessment
Rolls-Royce Engine Service Test Cell Facility
6701 Old Earhart Road
Oakland, California

Abbreviations:
mg/kg = milligrams per kilogram
CHHSLs = California Human Health Screening Levels
RWQCB = Regional Water Quality Control Board (San Francisco Bay)
SMP = Soil Management Protocol
ESLs = Environmental Screening Levels
BTEX = Benzene, toluene, ethylbenzene, and xylenes
TPH = Total petroleum hydrocarbons (g = gasoline, d = diesel, mo = mineral oil, j = jet fuel)
VOCs = Volatile organic compounds
MtBE = Methyl tert-butyl ether
C/I = Commercial/Industrial
KB-01 (3) = Sample location KB-01, sample depth of 3 feet
NA = not available
-- = not applicable; analyte not detected

Footnotes:
[a] Maximum concentration from Tables 4 and 5 of main text tables.
[b] Soil human health screening levels, residential land use, from CalEPA (2005).
[c] Lowest available screening level from Table B-1 in RWQCB (2008), excluding urban ecotoxicity criteria.
[d] Analytes exceeding screening levels are shown in bold font, along with the levels they exceeded.
[e] ESLs for total xylenes used in the absence of isomer-specific ESLs.
[f] ESL for TPH gasolines used for TPHg. ESL for TPH middle distillates used for TPHd, TPHj, and residual range used for TPHmo.
[g] Background arsenic concentration for fill material at the Port of Oakland of 16.4 mg/kg (SAIC, 2010) used for screening, since this concentration exceeds the ESL and CHHSL.
[h] ESL is for total chromium.

References:

California Regional Water Quality Control Board (San Francisco Bay Region; RWQCB). 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater. Interim Final - November 2007. Revised May 2008.
California Environmental Protection Agency (CalEPA). 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.
SAIC (for Port of Oakland). 2010. Final Soil Management Protocol, Port of Oakland International Airport Materials Management Program. February.