REPORT
2008 ANNUAL GROUNDWATER MONITORING, SUPPLEMENTAL SOIL BORINGS, SITE CONCEPTUAL MODEL, AND CLOSURE SUMMARY
FORMER SEARS RETAIL CENTER #1058A
2633 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA
CASE I.D. # STID 1082
FOR SEARS HOLDINGS MANAGEMENT CORPORATION

URS Job No. 25363708
May 11, 2009

URS

May 11, 2009

Mr. Paresh Khatri
Hazardous Materials Specialist
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Number 250
Alameda, California 94502

Subject: **2008 Annual Groundwater Monitoring, Supplemental Soil Borings, Site Conceptual Model, and Closure Summary**
Former Sears Retail Center #1058A
2633 Telegraph Avenue
Case I.D. # STID 1082
For Sears Holdings Management Corporation

Dear Mr. Khatri:

Submitted with this letter is the 2008 Annual Groundwater Monitoring, Supplemental Soil Borings, Site Conceptual Model, and Closure Summary Report prepared on behalf of Sears Holdings Management Corporation. Please feel free to contact me at (714) 648-2779 if you have questions or comments.

Respectfully Submitted,

URS CORPORATION

Joseph Liles, P.G., C.H.G.
Project Manager

cc: Mr. Scott Taylor, Sears Holdings Management Corporation

URS Corporation
2020 East First Street, Suite 400
Santa Ana, CA 92705
Tel: 714.835.6886
Fax: 714.667.7147

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

1.0 INTRODUCTION

This report has been prepared by URS Corporation (URS) on behalf of Sears Holdings Management Corporation (Sears). It presents results of the 2008 annual groundwater monitoring, a supplemental soil boring investigation, site conceptual model (SCM), and closure summary for the former Sears Retail Center #1058A (the Site) located at 2633 Telegraph Avenue in Oakland, California (Figure 1).

The work is being performed under the regulatory oversight of the Alameda County Environmental Health Services (ACEHS). The groundwater sampling event and SCM were completed in response to a September 19, 2008 correspondence (Appendix A) from ACEHS that requested sampling of groundwater monitoring wells and submittal of a SCM. The supplemental soil borings were recommended by URS in the 2005 Annual Groundwater Monitoring Report dated October 5, 2005.

The purpose of the groundwater monitoring was to assess groundwater conditions in the vicinity of a slurry-filled 10,000-gallon heating oil underground storage tank (UST). The groundwater monitoring event consisted of "post purge" groundwater sample collection from two of five groundwater monitoring wells (FOMW-4 and FOMW-5) installed on the Site in May 2002 (Figure 2). During Site construction activities, monitoring wells FOMW-2 and FOMW-3 were damaged and were not accessible for sampling during this annual event. FOMW-1 was not sampled because it contained a sheen of heating oil product.

The supplemental soil investigation consisted of completion of two soil borings to the north of the abandoned heating oil UST to complete delineation of soil and groundwater impacts.

The September 19, 2008 ACEHS correspondence requested that the SCM include the following:

- Local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.) extent of contamination, direction and rate of groundwater flow, potential preferential pathways, and locations of receptors;
- Geologic cross section maps that illustrate subsurface features, man-made conduits, and lateral and vertical extent of contamination;
- Plots of chemical concentration versus time;
- Plots of chemical concentration versus distance from the source;
- Summary tables of chemical concentrations in different media (i.e. soils, groundwater, and soil vapor);
- Well logs, boring logs, and well survey maps, and
- Discussion of likely fate and transport.

As discussed in the URS response to comments letter dated November 3, 2008, many of these items have been provided in previous reports. Although previously submitted, these requests are also addressed in this report.

2.0 SITE DESCRIPTION

The Site is bounded by 27th Street to the north, Telegraph Avenue to the east, Sycamore Street to the south, and Northgate Avenue to the west (Figure 2). The property is occupied by a former Sears retail center constructed in 1930, and an above-grade parking garage constructed in the 1960's, which was subsequently redeveloped into retail stores and apartments. Prior to construction of the center, single and multi-family residences dating to the turn of the century occupied the Site. The Site elevation is approximately 30 feet above mean sea level (MSL) and slopes gently to the south towards San Francisco Bay.

The former Sears retail center building was three stories tall (approximately 120,000 square feet) with a basement. The building was converted from a commercial retail center into a four story retail and residential apartment building. The western portion of the former retail center building has been demolished. Sears no longer owns the Site but maintains responsibility for environmental issues related to the slurry-filled 10,000 gallon heating oil UST.

The UST formerly stored heating oil and was located near the northwest corner of the building along 27th Street (Figure 2). The UST was constructed of single-walled steel with product piping that extended into the nearby basement (former boiler room) of the building. The UST was located beneath the former loading dock of the building approximately 25 to 30 feet below ground surface (bgs). The loading dock was demolished during 2001, and the area was repaved with asphalt. The UST is contained in a concrete vault approximately 10 feet high and 30 feet long. The product piping was sealed and capped when the UST was taken out of commission during the 1960's. The UST was filled with slurry in the fourth quarter of 1998 under the regulatory oversight of the City of Oakland Fire Prevention Bureau.

3.0 REGIONAL GEOLOGY AND HYDROGEOLOGY

The Site is approximately 1.5 miles east of San Francisco Bay and three miles west of the Diablo Range in Oakland, California. It is located on the eastern flank of the San Francisco Basin, a broad Franciscan depression. The basement rock of the basin is respectively overlain by the Santa Clara Formation, the Alameda Formation, and the Temescal Formation. These formations consist of unconsolidated sediments ranging in total thickness from approximately 300 to 1,000 feet. The Pleistocene Santa Clara Formation consists primarily of alluvial fan deposits that are interspersed with lake, swamp, river channel, and flood plain deposits. The overlying Alameda Formation was deposited in an estuary environment and consists of organic clays and alluvial fan deposits of sands, gravels and silts. The uppermost Holocene Temescal Formation is an alluvial deposit ranging in thickness from 1 to 50 feet and consists primarily of silts and clays with a basal gravel unit (California Regional Water Quality Control Board [RWQCB], San Francisco Bay Region, June 1999).

Three types of shallow soils are typically found in the Site vicinity. These soil types include the Merrit sands, sandy silts, and clayey silts. The Merritt sands are primarily located in the flatlands area to the west of Lake Merritt. They are a fine-grained, silty sand with lenses of sandy clay and clay. The Merritt sands are typically characterized as having a low moisture content and high permeability. The sandy silts generally consist of unconsolidated, moderately sorted sand, silt, and clay sediments, with both fine-grain and course-grain materials. The sandy silts are typically characterized as having a medium moisture content and moderate permeability. The clayey silts are generally found along the San Francisco Bay and estuary, and in land fills from those areas. The clayey silts may contain organic materials, peaty layers and small lenses of sand. The clayey silts are typically characterized as having high moisture content and low permeability (City of Oakland Public Works Agency, 2000).

The Site is located within the Oakland sub-area of the East Bay Plain groundwater basin. The East Bay Plain groundwater basin encompasses approximately 115 square miles and is bounded by San Pablo Bay to the north, Alameda County to the south, the Hayward Fault to the east, and San Francisco Bay to the west. Existing beneficial use of groundwater within the East Bay Plain basin includes municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply (RWQCB, June 1995).

Groundwater flow direction in the basin typically follows surface topography. Historical high production wells in the Oakland sub-area were screened at depths greater than 200 feet bgs beneath the Yerba Buena Mud Member of the Alameda Formation. The Yerba Buena Mud is a black organic clay with an average thickness of 25 to 50 feet that forms an aquitard between upper and lower groundwater bearing units. From the 1860's until water importation programs were initiated in the 1930's, groundwater in the East Bay Plain was utilized as the primary municipal water source. Current beneficial uses of groundwater in the basin are minimal due to "readily available high quality imported surface water." Alameda County Well permit applications indicated that 91% of groundwater wells within the basin are used for "backyard" or commercial irrigation, 8.6% of the wells are used for industrial process water, and 0.4% are used for drinking water supply (RWQCB, June 1999).

4.0 SUMMARY OF PREVIOUS SUBSURFACE INVESTIGATIONS

The following subsections provide a summary of historical subsurface investigations at the site. Historical soil sampling analytical results are provided in Appendix B, historical groundwater grab sample analytical results are provided in Appendix C, and historical groundwater monitoring results are provided in Appendix D. Boring and well locations are shown on Figure 2.

4.1 1998 PHASE I AND PHASE II INVESTIGATIONS (EB-1 TO EB-12)

Lowney Associates (Lowney) performed a "Phase I Environmental Site Assessment (ESA), and Soil and Groundwater Quality Evaluation" in April 1998, and a "Phase II Soil and Groundwater Evaluation," in May 1998. The first assessment included advancing five exploratory borings in three recognized environmental areas of concern for collection of soil samples and groundwater grab samples (Figure 2). Borings EB-1, EB-2, and EB-3 were driven in an area between the boiler room and a suspect pipe in the 27th Street sidewalk. One boring was drilled within 10-feet of an adjacent dry cleaners (EB-4) and another in the vicinity of a possible former tire and oil shop at the southwest corner of the retail center (EB-5). Detectable concentrations of total petroleum hydrocarbons (TPH) ranging from 79 milligrams per kilogram (mg/kg) to 9,500 mg/kg were present in soil samples collected from borings EB-1, EB-2, EB-3, and EB-5. Benzene was not detected (ND) in any of the soil samples submitted for chemical analysis.

During the second assessment conducted by Lowney, seven additional borings (EB-6 to EB-12) were advanced downgradient of the anticipated groundwater flow direction to collect soil and groundwater grab samples (Figure 2). The investigation also confirmed the location and existence of the 10,000-gallon UST beneath the loading dock of the retail center and identified the piping beneath the 27th Street sidewalk as the UST fill line. TPH and benzene, toluene, ethylbenzene, and total xylenes (BTEX) were ND in soil samples collected from borings EB-6 through EB-12.

Groundwater grab samples were collected by Lowney during the two assessments from borings EB-1 through EB-6, EB-10, EB-11, and EB-12. Groundwater grab samples collected from borings EB-1, EB-2, EB-3, EB-4, and EB-5 contained detectable concentrations of TPH ranging from 9,100 micrograms per liter (µg/L) to 480,000 µg/L. Groundwater grab samples collected from borings EB-2 and EB-4 contained detectable concentrations of benzene at 4.8 µg/L and 4.3 µg/L, respectively. TPH and BTEX were ND for the remaining groundwater grab samples.

4.2 1998 SUBSURFACE INVESTIGATIONS (EB-13 TO EB-21)

SECOR International Incorporated (SECOR) subsequently performed an additional soil and groundwater investigation during November 1998 to further assess subsurface soils and groundwater near the southeastern corner of the property (Secor, Dec. 1998). The scope of work was approved by the ACEHS and included the advancement of nine soil borings (EB-13 through EB-21) for the collection of soil and groundwater grab samples (Figure 2). Soil samples collected from borings EB-19, EB-20, and EB-21

contained detectable concentrations of TPH ranging from 4 mg/kg to 160 mg/kg. BTEX were ND in all soil samples analyzed during the investigation, excluding EB-20-7. Soil sample EB-20-7 contained 0.044 mg/kg of ethylbenzene. Benzene, toluene, and total xylenes were ND.

Groundwater grab samples were collected by SECOR from borings EB-13, EB-14, EB-15, and EB-18. The groundwater grab sample collected from boring EB-14 contained 2,300 µg/L of TPH, 3.2 µg/L of ethylbenzene, and 6.1 µg/L of total xylenes. TPH and BTEX were ND in the groundwater samples collected from borings EB-13, EB-15, and EB-18.

4.3 1998 In-Ground Closure of Heating Oil UST

From October 19 to December 2, 1998, URS and its subcontractor, Foss Environmental, conducted in-place closure activities for the heating oil UST in accordance with the City of Oakland Fire Prevention Bureau, Closure Permit #94-98 (URS, Jan, 2001). The closure activities were conducted after obtaining a closure permit and preparing a Site-specific health and safety plan. During the UST closure activities, the UST was accessed, evacuated, cleaned, and filled with concrete slurry. URS submitted a letter report to the City of Oakland Fire Prevention Bureau dated February 22, 1999 that documents the in-place closure activities. Approximately 2 ½ cubic yards of oily soil was removed from the access shaft, transported off Site, and disposed at an approved facility. Approximately 500 gallons of oily water pumped from the access shaft and vault, and 10,000 gallons of oily water pumped from the UST were transported offsite and disposed at an approved facility.

The City of Oakland Fire Prevention Bureau forwarded the UST closure report to the ACEHS. The ACEHS issued a letter on October 29, 1999 to Sears requesting a Site assessment work plan and a list of responsible parties. In the letter, ACEHS requested the installation of three groundwater monitoring wells to assess subsurface conditions related to the former UST and dry cleaning facility. Resolution of property ownership issues resulted in Sears assuming the responsibility of assessing conditions solely related to the slurry-filled, heating oil UST.

4.4 2000 Monitoring Well Installations (FOMW-1 to FOMW-3)

URS installed three groundwater monitoring wells (FOMW-1, FOMW-2, and FOMW-3) on the Site in May 2000 (URS, Jan. 2001). The monitoring wells were located adjacent to, and south of the slurry-filled UST (Figure 2). A soil sample collected from 20 feet bgs in the FOMW-1 boring contained total extractable petroleum hydrocarbons (TEPH) as bunker oil at a concentration of 3,200 mg/kg. This detection appears to have been related to the former heating oil UST. Soil samples collected from the FOMW-3 boring contained TEPH as diesel fuel at concentrations up to 1,900 mg/kg (11 feet bgs). These shallower detections appear to have been related to the possible former tire and oil shop. TEPH was not detected in the soil samples collected from the FOMW-2 boring. BTEX and methyl tertiary butyl ether (MTBE) were not detected in any of the soil samples analyzed. Water level measurements collected during the 2000 Fourth Quarter Groundwater Monitoring indicated groundwater flow was to the southeast with an approximate gradient of 0.015 foot per foot.

4.5 2002 MONITORING WELL INSTALLATION (FOMW-4 AND FOMW-5) AND SUBSURFACE INVESTIGATION (EB-22 TO EB-24)

During the first quarter of 2002 URS conducted an additional assessment of the soil and groundwater at the Site, which consisted of installing two groundwater monitoring wells (FOMW-4 and FOMW-5) and advancing three soil borings (EB-22 to EB-24), the results of which were presented in the Additional Site Assessment and 2002 First Quarter Groundwater Monitoring Report [URS, 2002 (Figure 2)]. Soil samples were collected from each boring, grab groundwater samples were collected from borings EB-22 and EB-23, and groundwater samples were collected from wells FOMW-4 and FOMW-5. The purpose of the additional assessment was to further characterize the nature and extent of petroleum hydrocarbon impacted soil and groundwater at the Site. Specifically, the extent of heating oil impacted soil in the immediate vicinity of the UST, the lateral extent of separate phase product, and the downgradient extent of impacted groundwater were assessed. Results of the additional assessment were used to evaluate the Site for closure under the City of Oakland Urban Land Redevelopment (ULR) Program guidelines (URS Corporation, 2002).

TPH was detected in soil samples collected from Boring EB-22 at concentrations up to 580 mg/kg (C_{20} to C_{30} range hydrocarbons). Low concentrations of diesel range TPH (up to 5.8 mg/kg) were detected in soil samples collected from borings EB-24 and FOMW-4. TPH was not detected in soil samples collected from borings EB-23 or FOMW-5. Benzene, ethylbenzene, and MTBE were ND in all analyzed soil samples. Toluene was detected in one soil sample from EB-22 at a concentration of 20 microgram per kilogram (µg/kg). Total xylenes were detected in two soil samples from EB-22 at concentrations of 17 µg/kg and 71 µg/kg. The compounds detected were from soil samples collected at depths of at least 10 feet bgs.

The highest concentration of TPH detected in groundwater during the additional assessment was 4.6 mg/L of diesel range hydrocarbons in groundwater grab sample EB-22. Diesel range hydrocarbons were also detected in the groundwater grab sample EB-23 at a concentration of 0.15 mg/L. However, the detected hydrocarbons in both samples did not match the diesel standard, indicating that the hydrocarbon detected was not diesel. BTEX were ND in both groundwater grab samples. TPH and BTEX were ND in groundwater samples collected from wells FOMW-3, FOMW-4, and FOMW-5.

4.6 2002 SEPARATE PHASE PRODUCT MOBILITY ASSESSMENT

As described in Section 4.7 below, in 2002 URS evaluated the site for closure using the ULR Program. A copy of the Oakland Risk-Based Corrective Action (RBCA) Eligibility Checklist for completed for the site is provided in Appendix E. When evaluating the site in response to criteria question #2, the separate phase product present in the vicinity of well FOMW-1 was not considered "mobile or potentially mobile" based on its physical characteristics. A sample of separate phase product was collected from the well on July 11, 2002 for mobility analysis. As described in the Additional Site Assessment and 2002 First Quarter Groundwater Monitoring Report (URS, 2002), the mobility of the product was evaluated using a variation of Darcy's Law for Light Non-Aqueous Phase Liquids (LNAPL) published by the

Environmental Protection Agency (EPA, 1995). The equation to evaluate the one-dimensional migration of the separate phase product is:

$$v = -(k\rho g/\mu)\ (dh/dl)$$

where

v = Darcy velocity (L/T)
k = intrinsic permeability (L^2)
ρ = density of LNAPL (M/L^3)
g = force of gravity (L/T^2)
μ = dynamic viscosity of LNAPL (M/L*T)
dh/dl = hydraulic gradient of LNAPL mass (L/L)

The equation was solved using the horizontal intrinsic permeability values obtained from the soil core EB-22 at 12 and 20 feet bgs of 4×10^{-11} centimeter per second (cm/s) and 2.4×10^{-11} cm/s, respectively. Density of the LNAPL was assumed to be similar to #6 fuel oil (0.95 grams/cubic centimeter). The dynamic viscosity of the LNAPL was 2.4×10^{-11} cm/s as determined from the separate phase product sample collected from the well during July and submitted to PTS laboratories for testing (Appendix F). Due to the minimal thickness of the separate phase product observed in well FOMW-1, the hydraulic gradient of the LNAPL mass is assumed to be equivalent to that of the groundwater gradient of 0.015 foot per foot, beneath the site. Solving the equation using the horizontal intrinsic permeability at 12 feet bgs yields a Darcy velocity of 4×10^{-11} cm/s, or 0.00126 cm/year. Solving the equation using the horizontal intrinsic permeability at 20 feet bgs yields a Darcy velocity of 2.4×10^{-11} cm/s, or 0.0007 cm/year. Both analyses indicate that the product is immobile.

Additional site specific data which indicates the separate phase product is immobile includes the following points:

- The last date of potential release occurred approximately 35 years ago, and product mobility decreases with time;
- Stable or decreasing dissolved phase TPH concentrations in monitoring wells reveal an immobile or shrinking separate phase product plume;
- Product thickness has remained stable at less than 0.01 foot in well FOMW-1;
- The maximum lateral extent of separate phase product over the time span since release occurred is estimated to be approximately 15 feet using the calculated migration rates provided above;
- The hydraulic conductivity values (K) of soil in which product is present are low.
- The "apparent thickness" of the LNAPL product measured in monitoring wells typically exceeds the LNAPL thickness in the saturated formation by a factor of 2 to 10 (Mercer and Cohen, 1990).

In addition, the attempted removal of the separate phase product during the 2002 first quarter resulted in the removal of only 0.1 gallons of product, which demonstrated the "technical inpractibility" of product removal at the site.

4.7 2002 CLOSURE ASSESSMENT

URS performed a focused review for applicable, relevant, and appropriate requirements (ARARs) for soil and groundwater cleanup goals for the Site. The most appropriate ARARs for the Site were found in the Oakland ULR Program: Guidance Document (the Guidance Document). The Guidance Document is used to assist in the clean up and redevelopment of contaminated properties by applying risk-based corrective action at Sites within the City of Oakland.

Site soil and groundwater impacts were evaluated with respect to the Oakland ULR Program Tier 1 Risk-Based Screening Levels (RBSLs) and/or Tier 2 Site Specific Target Levels (SSTLs) in the Additional Site Assessment and 2002 First Quarter Groundwater Monitoring Report (URS, 2002). A brief summary of the evaluation follows.

The Tier 1 and Tier 2 evaluation process consists of comparing existing concentrations of Chemicals of Potential Concern (COPCs) in site soil and groundwater to Tier 1 RBSLs or Tier 2 SSTLs provided in look-up tables included in the Oakland ULR Program Guidance Document. Copies of the Tier 1 RBSLs and Tier 2 SSTLs, last updated in January 2000, are provided in Appendix G. Tier 1 RBSLs may be applied to all sites in Oakland. If COPCs present on a site exceed Tier 1 RBSLs, then it may be appropriate to evaluate the site under Tier 2 SSTLs, depending on the soil type found at that site.

Petroleum hydrocarbons as chemical class were not listed in the Tier 1 RBSLs or Tier 2 SSTLs and therefore were not considered COPCs at the Site. However, specific constituents typically present in TPH (i.e. BTEX) that may present a Site risk were included in the Tier 1 RBSLs or Tier 2 SSTLs, and were considered COPCs.

BTEX concentrations present in soil and groundwater at the Site were evaluated under the Tier 1 RBSLs for commercial/industrial sites. Benzene has not been detected in any soil samples collected from the Site (Appendix B). Benzene has not been detected in any groundwater samples collected from monitoring wells at the Site, excluding one sample collected in September 2001 from well FOMW-3 with a concentration of 0.72 μg/L (Appendix D-2). Benzene was not detected in four samples collected from well FOMW-3 since 2001 (Appendix D-2). Benzene was detected at low concentrations (up to 4.8 μg/L) in two groundwater "grab" samples collected from the Site by Lowney during April 1998 (Appendix C). The most conservative RBSL for benzene in groundwater is 1.0 μg/L. Benzene has not been detected in groundwater at concentrations above Tier 1 RBSLs since April 1998. Thus, historic soil concentrations of benzene and current groundwater concentrations of benzene were below Tier 1 RBSLs for all exposure pathways.

The highest concentrations of toluene historically detected in soil and groundwater were 0.020 mg/kg and 3.7 μg/L, respectively, which were below Tier 1 RBSLs for toluene for all exposure pathways. The highest concentrations of ethylbenzene historically detected in soil and groundwater were 0.044 mg/kg and 3.2 μg/L, respectively, which were below Tier 1 RBSLs for ethylbenzene for all exposure pathways. The highest concentrations of xylenes historically detected in soil and groundwater were 0.071 mg/kg and

6.1 µg/L, respectively, which were below Tier 1 RBSLs for xylenes for all exposure pathways. MTBE has never been detected in soil or groundwater samples collected from the Site.

Based on evaluation of the Site COPCs, the site was eligible for closure under the Oakland ULR Program, Tier 1 RBSL analysis. Three additional sampling events were performed from December 2002 through November 2008 showed similar results to the previous data, confirming plume stability and product immobility.

4.8 MARCH 2005 CONDUIT / PREFERENTIAL PATHWAY STUDY

During the first and second quarters of 2005, URS completed a conduit/preferential pathway study for the Site which evaluated potential migration pathways and potential conduits for horizontal and vertical migration of hydrocarbons and volatile organic compounds (VOCs) in soil and groundwater. A detailed utility survey and well survey was conducted to evaluate the potential preferential pathways for migration. Results of the study were included in the 2005 Annual Groundwater Monitoring Report (URS, 2005).

URS contacted Underground Services Alert (USA) during March of 2005 to schedule a Site meeting with utility owners of record, or their designated agents, to evaluate the locations of underground utilities within the Site vicinity. In addition, URS reviewed available maps of underground public utilities at the City of Oakland Building Department. The approximate locations of underground public utilities in the Site vicinity are provided on Figure 3. Cross sections showing the approximate depths of the utilities are provided as Figures 4 and 5.

Underground utilities border the Site to the north on 27th Street and to the east on Telegraph Avenue (Figure 3). The nearest underground utility to the residual concentrations of petroleum hydrocarbons and VOCs is a gas line entering the Site on 27th Street. The gas line is located approximately 50 feet east of the former UST location.

As requested by ACEHS as part of the conduit/preferential pathway study, survey data for wells in the Site vicinity were requested from the County of Alameda Public Works Agency in February 2004. The survey data were provided in May 2004 and included information on wells in Township 1 south, Range 4 west, Section 26 of the Diablo Base and Meridian. The survey data provided covered a minimum radius of ¼-mile from the Site. A review of the data indicated there were no domestic, irrigation, municipal, or industrial groundwater wells in the Site vicinity. Numerous groundwater monitoring wells are located in the Site Vicinity. It is likely that most or all of these wells are completed in the shallow water bearing zones. A copy of the well survey data is provided in Appendix H.

The conduit/preferential pathway study demonstrated that there are minimal concerns for vertical or horizontal migration of residual hydrocarbons or VOCs to groundwater via underground utility trenches or groundwater wells. In order to complete delineation of heating oil impacts to the north, an additional soil and groundwater investigation was recommended. Results of the soil and groundwater investigation are presented in Section 7.0 of this report.

4.9 GROUNDWATER MONITORING

As summarized in Appendix D, a total of 13 groundwater monitoring events have been performed at the site. Wells FOMW-1, FOMW-2, and FOMW-3 were monitored during each event beginning in 2000. Wells FOMW-4 and FOMW-5 were monitored in the most recent six events, since their installation in 2002.

Well FOMW-1 was sampled twice during 2000 and contained TPHd at concentrations up to 370 µg/L and TPHo at a concentration of 1,200 (J) µg/L. BTEX and MTBE were not detected in FOMW-1. Well FOMW-2 was sampled five times from 2000 to 2001 and did not contain detectable concentrations of TPHd, TPHo, BTEX, or MTBE. Well FOMW-3 was sampled 10 times and contained TPHd at concentrations up to 302 (J) µg/L and TPHo at concentrations up to 1,200 (J) µg/L. However, TPHo was not detected in the most recent eight monitoring events. Benzene and toluene were detected only once at the low concentrations of 0.72 µg/L and 1.0 µg/L, respectively. TPHg, ethylbenzene, xylenes, and MTBE were never detected in this well. Well FOMW-4 was sampled six times and contained TPHd during two sampling events at concentrations up to 120 (J) µg/L. TPHg, TPHo, BTEX, or MTBE were never detected in this well. Well FOMW-5 was sampled six times. TPHg, TPHd, TPHo, BTEX, or MTBE were never detected in this well.

5.0 HEALTH AND SAFETY PLAN

Prior to initiating the field activities, URS updated a Site-specific Health and Safety Plan to:

- Identify and describe potentially hazardous substances which may be encountered during field operations;
- Specify protective equipment and clothing for on Site activities; and
- Outline measures to be implemented in the event of an emergency.

URS field personnel reviewed the Health and Safety Plan prior to commencing the field procedures. Field monitoring activities were recorded in the Health and Safety Plan and were maintained in the project files at URS' Santa Ana office. A copy of the Health and Safety Plan remained on Site during field operations.

6.0 ANNUAL GROUNDWATER MONITORING

The 2008 annual groundwater monitoring was performed on November 14, 2008. Groundwater monitoring was performed on three of five groundwater wells (FOMW-1, FOMW-4, and FOMW-5). Monitoring wells FOMW-2 and FOMW-3 were inaccessible and therefore were not sampled during the 2008 annual groundwater monitoring event. These two wells were covered with soil and/or pavement during Site improvement activities prior to the 2005 annual groundwater monitoring. Depth-to-water data were collected from wells FOMW-1, FOMW-4, and FOMW-5. Monitoring wells FOMW-4 and FOMW-5 were then purged and sampled. FOMW-1 contained a separate phase product sheen and was therefore not sampled. A description of the monitoring procedures and results is presented in the following sections.

6.1 GROUNDWATER GAUGING

Prior to sampling, accessible groundwater monitoring wells were checked for the presence of separate phase product using a Solinst™ product interface probe. Water levels were measured relative to the surveyed top of well casings using a Solinst™ oil/water interface meter. Water levels were recorded to the nearest 0.01 foot. There was a separate phase product sheen in well FOMW-1 that could not be detected by the interface meter. Groundwater depths and elevations for the 2008 annual monitoring event are listed in Table 1 and Appendix D.

6.2 PURGING AND SAMPLING METHODS

Prior to sample collection, wells FOMW-4 and FOMW-5 were purged of approximately three well casing volumes at a purge rate of approximately 0.75 gallon per minute (gpm) using a Grundfos™ RediFlo 2 submersible well pump. Water purged from the well was monitored for field parameters including temperature, pH, electrical conductivity, turbidity, dissolved oxygen (DO), and oxygen reduction potential (ORP) using a YSI™ multi-parameter meter equipped with a flow-through cell. Groundwater samples were collected from the discharge tubing of the well pump following purging. Measured field parameters are listed in Table 1.

The Grundfos RediFlo 2™ submersible well pump was cleaned prior to use (and between wells) by washing in a solution of Alconox, rinsing with tap water, final rinsing with deionized water, and air drying. Pre-cleaned, disposable, polyethylene discharge tubing was attached to the pump, following each decontamination, and was changed between each well purging event. One equipment blank sample, EB-1, was collected by pumping deionized water through the pump and into sample containers following decontamination procedures.

Sample containers and handling procedures conformed with the established protocols for each specific parameter as described in EPA SW-846. The sample bottles, once filled and preserved as required, were properly labeled. The label included well identification number, sample number, date and time sampled, job number, Site/client name and location, and sampling personnel's initials. The sealed and labeled samples were logged on a COC, placed in ice chests containing ice, and transported to a California DHS

accredited laboratory for analysis. A trip blank, prepared by the laboratory, remained in the ice chests during sample collection and transport. The ice chest temperatures were recorded at 4 degrees centigrade by the laboratory upon sample receipt. COCs were maintained throughout the sampling program.

6.3 LABORATORY ANALYSES PROGRAM

Groundwater samples were submitted to Alpha Scientific Corporation in Cerritos, California for analysis. Groundwater samples were analyzed for TPHg, TPHd, and TPH stoddard solvents (TPHss) by modified EPA Method 8015M. The samples were also analyzed for VOCs including BTEX, the fuel oxygenates MTBE, di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), tertiary butanol (TBA), ethanol, and the lead scavengers 1,2-dibromoethane (EDB) and 1,2-dichloroethane (EDC or 1,2-DCA). The equipment blank was analyzed for TPHg by EPA method 8015M and VOCs by EPA Method 8260B. Analytical results for the groundwater samples are summarized in Table 2 and Appendix D. Copies of the laboratory reports are included in Appendix I.

6.4 WELL HEAD MAINTENANCE

As part of the quarterly monitoring program, each well head is inspected to ensure that wells are properly sealed and secured. The routine well maintenance associated with the quarterly groundwater sampling consists of: inspection of water-tight well caps and locks on all monitoring wells and replacement as necessary; replacement of missing or damaged bolts on well box covers; and removal and replacement of damaged well boxes and associated concrete aprons. During this annual event, groundwater monitoring wells FOMW-2 and FOMW-3 could not be located.

6.5 WASTE MANAGEMENT

Purge water and decontamination water were collected and stored in one 55-gallon DOT-approved drum. The containers was numbered and labeled with the date and contents to identify the source of the wastes. The containers were stored on Site in a designated area and properly disposed of by a licensed waste transporter contracted to Sears following review of the chemical analytical data.

6.6 FINDINGS

6.6.1 Shallow Groundwater Conditions

Historical groundwater measurements collected since June 2000 indicate that the potentiometric surface beneath the Site has fluctuated from approximately 7 to 12 feet bgs (13 to 18 feet MSL). The water bearing zones are moderately confined, as water levels ascended within drill rods after penetration of the coarser-grained water bearing units during well installation. Groundwater elevations are presented in Table 1 and Appendix D.

Groundwater elevation contours for the Site were generated using SURFER™, a graphical, contouring software program and are shown along with flow direction on Figure 6. Water level contours generated from the November 14, 2008 water level measurements indicate shallow groundwater flow is to the

south/southeast with an approximate gradient of 0.02. Groundwater flow direction and gradient are consistent with previous monitoring events.

Rose diagrams for historical groundwater gradient and flow direction based on 8 of the 10 monitoring events (including this event) are included as Appendix J. A gradient could not be calculated for two of the monitoring events because water levels could only be taken from two wells.

6.6.2 Laboratory Analytical Results for Groundwater

TPHd, TPHg, TPHss, BTEX, and fuel oxygenates were not detected above their respective MDLs in all groundwater samples. Chemical analytical results for the groundwater samples collected during this monitoring event are presented in Table 2 and Figure 7. Results of historical chemical analyses are provided in Appendix D. The California Department of Health Services (CDHS) accredited laboratory reports and chain-of-custody forms for the groundwater samples are provided in Appendix I.

7.0 SUPPLEMENTAL SOIL BORINGS

The scope of work completed for the supplemental soil borings consisted of the following tasks;

- Cleared proposed boring locations with USA;
- Performed a utility clearance using a geophysical survey contractor;
- Advanced two soil borings (EB-25 and EB-27) to a depth of approximately 20 feet bgs, a third boring (EB-26) could not be advanced due to access issues with buried utilities;
- Collected soil samples at discrete intervals;
- Collected one hydropunch^{TM} groundwater sample from boring EB-27;
- Analyzed the soil samples for TPHg, TPHd, TPHo, and TPH carbon chain (TPHcc) by EPA Method 8015M, and BTEX and MTBE by EPA Method 8260B;
- Analyzed the groundwater sample for TPHg, TPHd, and TPHo by EPA Method 8015M, and BTEX and MTBE by EPA Method 8260B.

The soil boring locations are shown on Figure 2. The methodologies and results are presented in the following subsections.

7.1 UTILITY CLEARANCE

In accordance with California Assembly Bill AB 73, USA was notified of our intent to conduct subsurface borings at least 48 hours prior to initiation of intrusive field tasks. The proposed subsurface boring locations were clearly marked with white paint as required by California Code 4216. USA contacted utility owners of record within the vicinity and notified them of our intention to conduct subsurface borings in proximity to buried utilities. The utility owners of record, or their designated agents, clearly marked the position of their utilities on the ground surface throughout the area designated for investigation.

An independent underground utility clearance survey was performed by Cruz Brothers Locaters, Inc. of Scotts Valley, California on December 22, 2008, at the proposed boring locations. The subsurface survey was conducted to locate and identify piping, conduit, and other subsurface structures or utilities in the vicinity of the proposed boring locations, which may not have been identified previously. A electromagnetic line locator (RD-400) was used to identify potential subsurface utilities. During the utility clearance, one potential line was identified by the utility locator. In addition, while drilling boring EB-27, the Pacific Gas and Electric representative identified a 12 kilowatt electrical line near the proposed boring EB-26. A suitable alternative location for boring EB-26 was not available, based on access issues associated with underground utilities, traffic and the nearby sidewalk, so this boring could not be advanced.

7.2 SOIL BORING METHODOLOGIES

Soil borings EB-25 and EB-27 were drilled with a MARL-25 direct push drill rig. The borings were drilled on December 23, 2008, by Gregg Drilling of Martinez, CA (C-57 License #485165). The first 5 feet of each boring were hand-augered to assess the potential presence of subsurface utilities or other structures.

Discrete soil samples were collected in soil borings EB-25 and EB-27 at 5-foot intervals to a depth of approximately 20 feet bgs. Soil samples were collected utilizing a macrocore sampler (driven 24 inches) equipped with an acetate sleeve. Upon retrieval of the sampler at each sampling interval, the sample sleeve was separated and observed for possible staining. Soil samples analyzed for VOCs were collected using the current EPA Method 5035 protocol required by the RWQCB.

During drilling operations, a photoionization detector (PID) was used to monitor the presence and level of organic vapors in the borings and soil cuttings, and to screen soil samples. Organic vapor readings were recorded on the boring logs prepared by the field geologist during drilling activities. The following sampling information was recorded on the boring log; boring number and location, sample identification numbers, time, sample depth, lithologic description in accordance with the Unified Soils Classification System (USCS), description of any visible evidence of soil contamination (i.e., odor, staining), and organic vapor readings. The boring logs for the completed borings (EB-25 and EB-27) are provided in Appendix K.

The sealed and labeled samples were logged on a COC document, placed in an ice chest containing ice, and transported to a California Department of Health Services (DHS) accredited laboratory for analysis. The ice chest temperature was recorded at 4 degrees centigrade by the laboratory upon sample receipt. COC documentation was maintained throughout the sampling program and is included in Appendix L.

7.3 LABORATORY ANALYSIS PROGRAM

A total of eight soil samples, one duplicate soil sample, and one hydropunch groundwater sample collected from the soil borings were submitted to ASC, located in Cerritos, California. The soil samples were analyzed for TPHg, TPHd, TPH Bunker C, and TPH carbon chain by EPA Method 8015M, and BTEX and MTBE by EPA Method 8260B. The groundwater sample was analyzed for TPHg, TPHd, and TPHo by EPA Method 8015M, and BTEX and MTBE by EPA Method 8260B. A summary of the chemical analytical results for the soil samples is provided in Table 3 and a summary of the groundwater analytical results is provided in Table 4. Copies of the laboratory reports and COC documents are provided in Appendix L.

7.4 LABORATORY ANALYSIS RESULTS FOR SOIL

TPHg, TPHd, TPH Bunker C, TPHcc, BTEX, and MTBE were not detected above there respective MDLs for any of the soil samples collected from borings EB-25 and EB-27. A summary of the analytical results for soil is included in Table 3. Copies of the laboratory report and COC documents are provided in Appendix L.

URS conducted a check of data completeness for the chemical analytical laboratory reports for soil samples collected during this project. Results indicate that "these data are considered to be useable for meeting project objectives." URS' Data Validation Report for soil is included in Appendix M.

7.5 LABORATORY ANALYSIS RESULTS FOR HYDROPUNCH™ GROUNDWATER SAMPLE

TPHg, TPHd, TPHo, BTEX, and MTBE were not detected above their respective MDLs for the groundwater sample collected from boring EB-27. A summary of the analytical results for groundwater is included in Table 4. A copy of the laboratory report and COC documents are provided in Appendix M.

URS conducted a check of data completeness for the chemical analytical laboratory reports for the groundwater sample collected during this project. Results indicate that "these data are considered to be useable for meeting project objectives." URS' Data Validation Report for groundwater is included in Appendix M.

7.6 WASTE MANAGEMENT

Drill cuttings and decontamination water were collected and stored in two 55-gallon DOT-approved drums. Containers were numbered and labeled with the date and contents to identify the source of the wastes. The containers were stored onsite in a designated area and properly disposed of by a licensed waste transporter contracted to Sears following review of the chemical analytical data.

8.0 INTERIM CLEANUP ACTIVITIES

Free phase heating oil product has been consistently observed in groundwater well FOMW-1 from October 2000 to the present groundwater monitoring event. Based on the presence of the heating oil in FOMW-1, the ACEHS requested in 2004, that URS evaluate the need for interim cleanup activities.

URS believes that interim free product cleanup would not be practical for the Site because the free product cannot be collected effectively and efficiently, due to the expected minimal thickness of free product within the well (a sheen too thin to be measured by a Solinst™ product interface probe was noted during the most recent sampling), the minimal recharge of the free product to the well due to its physical properties (high viscosity), and the lack of migration potential (Section 4.6). To demonstrate this, free product removal was attempted in 2002 at FOMW-1 using a vacuum truck. But had to be discontinued because only a minimal amount of free product was removed. In addition, in June 2005, URS installed a SoakEase™ adsorbent "sock" to assist in free product removal activities. The adsorbent system that was installed included a stainless steel mesh canister that held a two inch outer diameter, three foot long adsorbent "sock", capable of adsorbing one quart of heating oil product. The "sock" was changed periodically but due to the minimal thickness of the separate phase product observed in well FOMW-1 (product sheen), and the product viscosity, only a very small amount of free product could be recovered from the well.

URS also evaluated other remedial options such as oxidant or oxygen injection, or excavation options. A weathered/heavy-end heating oil would be difficult to treat with an oxidant, which are more effective against lighter-end, shorter chain hydrocarbons. Oxygen injection to stimulate aerobic biodegradation would fair similar issues. Excavation would not be practical given the UST depth (28 to 30 ft bgs), presence of the UST/vault at depth, and nearby streets/structures. Additional remedial action at this site is not practical; or necessary because of the lack of product migration, lack of dissolved phase detections in downgradient groundwater monitoring wells, and the UST/vault depth and location.

9.0 SITE CONCEPTUAL MODEL

The following subsections provide a description of the nature and distribution of impacts to soil and groundwater. A map depicting residual TPH concentrations in soil is provided as Figure 8. Two cross sections of the Site, A-A' and B-B', are provided as Figures 4 and 5, respectively.

9.1 NATURE AND DISTRIBUTION OF IMPACTS TO SOIL

A summary of historical soil analytical results is provided in Appendix B. As shown on Figure 8, two areas of residual TPH impact are present on the site. The first area measures approximately 100 feet by 80 feet and consists of soil impacted by highly viscous heating oil in the vicinity of the abandoned-in-place heating oil UST. Borings significantly impacted by heating oil included FOMW-1, EB-1, EB-2, EB-3, and EB-22, where TPH was detected at concentrations of 3,200 mg/kg, 3,800 mg/kg, 9,500 mg/kg, 1,300 mg/kg, and 920 mg/kg, respectively. This area of impact is laterally defined by borings EB-27, EB-12, FOMW-4, and EB-24, to the north, east, south, and west, respectively. TPH was not detected in any soil samples collected from borings EB-27 or EB-12. The maximum TPH concentration at any depth in borings FOMW-4 and EB-24 were 5.8 mg/kg and 4.3 mg/kg, respectively. The vertical extent of soil impacts in the vicinity of the heating oil UST extend from a depth of approximately 10 feet (where shallow groundwater exists) to 20 feet just above the top of the concrete UST vault. Impacted groundwater has been detected in well FOMW-1 as discussed in Section 9.2 below.

The second area measures approximately 80 feet by 50 feet and consists of diesel-range impacted soil and is located in the vicinity of FOMW-3 (the "possible" tire and oil shop). Borings impacted by diesel-range impacted soil included FOMW-3, EB-5, and EB-20, where TPH was detected at concentrations up to 1,900 mg/kg, 530 mg/kg, and 160 mg/kg, respectively. It is clear from the cross-section B-B' (Figure 5) that there is a separate source associated with the diesel-range soil impacts in the vicinity of FOMW-3 (the "possible" tire and oil shop) and the bunker oil impacts near FOMW-1 (the heating oil UST).

The TPH impacts associated with the possible oil and tire shop were first detected in soil samples from FOWM-3 at about 6 feet bgs. The shallow detection of TPH in the vicinity of FOMW-3 is indicative of a surface release. In contrast, the TPH impacts in soil samples in the vicinity of FOMW-1 were typically first detected at about 20 feet bgs, indicating a subsurface source, such as a UST.

9.2 NATURE AND DISTRIBUTION OF IMPACTS TO GROUNDWATER

Historical groundwater monitoring results are provided in Appendix D and historical groundwater grab analytical results are provided in Appendix C. Groundwater impacted with heating oil is present in the immediate vicinity of well FOMW-1, located adjacent to the abandoned heating oil tank. Separate phase product has been detected in this well since 2000. A thin sheen (too thin to be measured by a Solinst™ product interface probe) was noted in this well during the 2008 annual groundwater monitoring event. The separate phase heating oil product is immobile with a velocity estimated at 0.0007 cm/yr to 0.00126 cm/year (Section 4.6).

Additional site specific data which indicate the separate phase product is immobile includes the following points:

- The last date of potential release occurred approximately 35 years ago, and product mobility decreases with time;
- Stable or decreasing dissolved phase TPH concentrations in monitoring wells reveal an immobile or shrinking separate phase product plume;
- Product thickness has remained stable at less than 0.01 foot in well FOMW-1;
- The lateral extent of separate phase product over the time span since the release occurred is estimated to be approximately 15 feet;
- The hydraulic conductivity values (K) of soil in which product is present are low; and
- The "apparent thickness" of the LNAPL product measured in monitoring wells typically exceeds the LNAPL thickness in the saturated formation by a factor of 2 to 10 (Mercer and Cohen, 1990).

Groundwater impacted with TPH have historically be present in the immediate vicinity of well FOMW-3, located in the vicinity of the "possible" tire and oil shop" however, groundwater detections of TPH beneath the area have been sporadic (last detection in June 2002), and only trace concentrations indicating that the limited mass is not a groundwater threat..

Based on historical groundwater monitoring results, the plume is stable and is laterally defined to the south by well FOMW-4, which was non-detect for TPHg, TPHd, TPHss, BTEX, and fuel oxygenates during the 2008 annual monitoring event, to the west and east by grab groundwater samples collected from borings EB-11, and EB-12, respectively, which were non-detect for TPHd, TPHo, TPHss, and BTEX, and to the north by the grab groundwater sample collected from boring EB-27, which was non-detect for TPHg, TPHd, TPHo, BTEX, and MTBE.

10.0 SITE CLOSURE ANALYSIS

To date 31 soil borings have been drilled, 16 groundwater grab samples have been collected, and five groundwater monitoring wells have been installed to characterize soil and groundwater affected with petroleum hydrocarbons related to the slurry-filled, heating oil UST. Groundwater monitoring has occurred since 2000. An isoconcentration map showing the highest concentrations of TPH detected in soil at all depths is provided as Figure 8. As discussed above, the figure shows that subsurface soils are affected with petroleum hydrocarbons in two separate areas onsite. The first area of impacted soil measures approximately 100 feet by 80 feet at approximately 20 feet bgs, and consists of soil impacted by highly viscous heating oil in the vicinity of the abandoned-in-place heating oil UST. The second area measures approximately 80 feet by 50 feet at approximately 6 to 11 feet bgs, and consists of diesel-range impacted soil in the vicinity of FOMW-3 (the "possible" tire and oil shop).

Benzene or MTBE have not been detected in soil samples collected during the current and previous site investigations in either impacted soil areas. Trace concentrations of toluene, xylenes and ethylbenzene have been detected in soil samples (Appendix B), but at concentrations below regulatory levels of concerns (RBSLs and SSTLs). Toluene was detected in one of 79 soil samples at a concentration of 0.020 mg/kg. Ethylbenzene was detected in one of 79 soil samples at a concentration of 0.044 mg/kg. Xylenes were detected in three of 79 soil samples with a maximum concentration of 0.41 mg/kg.

On-Site groundwater monitoring wells were used to determine that the extent of petroleum hydrocarbon impacted groundwater in the area of the slurry filled fuel oil UST is limited to the immediate area around the UST. A separate phase product sheen is present in well FOMW-1, located on the north side of the slurry filled heating oil UST, but the sheen is so thin that it is difficult to measure. Analytical results show the product is primarily comprised of long-chain hydrocarbons in the diesel and heavy oil range. BTEX and MTBE were not detected in the product sample. As discussed in Section 4.6, the Darcy velocity for the separate phase product was estimated at only 0.0007 cm/yr to 0.00126 cm/year, so the weathered heating oil product is immobile. A summary of the product sample analytical results is provided in Appendix F.

Since groundwater monitoring was initiated at the Site in June 2000, benzene and toluene have only been detected above the laboratory detection limit in one groundwater sample collected from onsite monitoring well FOMW-3 in 2001 (0.72 μg/L, and 1.0 μg/L, respectively). Benzene and toluene have not been detected in FOMW-3 since 2001. Ethylbenzene, xylenes, or MTBE have not been detected above the laboratory detection limit in any groundwater samples collected from the onsite monitoring wells. No TPH or BTEX were detected in the November 2008 sampling event.

Based on historical groundwater monitoring results, the plume is stable and is laterally defined to the north, east, and west by groundwater grab samples collected from borings EB-27, EB-12, and EB-11, respectively, and to the south by monitoring well FOMW-4. Based on this, the groundwater plume measures at most 220 feet by 160 feet.

10.1 OAKLAND ULR TIER 1 CLOSURE ANALYSIS

The Oakland ULR Program is a collaborative effort between the City of Oakland and environmental regulatory agencies including the Department of Toxic Substances Control (DTSC), the RWQCB, and the ACEHS to "facilitate cleanup and redevelopment of contaminated properties" within the City of Oakland. Sites can be evaluated using the Tier 1, Tier 2, or Tier 3 processes described in the Oakland ULR Program Guidance Document.

BTEX concentrations present in soil and groundwater at the site were evaluated under the Tier 1 RBSLs as summarized below:

- Benzene has not been detected in any soil samples collected from the site. Benzene was detected in one groundwater sample collected from monitoring wells at the site (0.72 μg/L in well FOMW-3 in 2001) and at concentrations up to 4.8 μg/L in groundwater "grab" samples collected from the site by Lowney during April 1998. However, groundwater data collected in 1998 are not representative of current groundwater conditions. Benzene has not been detected in groundwater since the detection in well FOMW-3 in 2001. The most conservative groundwater Tier 1 RBSL for benzene is 1.0 μg/L. Based on this, historical soil concentrations of benzene and current groundwater concentrations of benzene are below Tier 1 RBSLs for all exposure pathways. Benzene has not been detected in groundwater at concentrations above Tier 1 RBSLs since April 1998.

- Toluene was detected in one soil sample collected from EB-22 at 16 feet bgs at a concentration of 0.020 mg/kg. The most conservative soil Tier 1 RBSL for toluene is 0.88 mg/kg. Toluene was detected in one groundwater sample collected from monitoring wells at the site (1.0 μg/L in well FOMW-3 in 2001) and at concentrations up to 3.7 μg/L in groundwater "grab" samples collected from the site by Lowney during April 1998. The most conservative groundwater Tier 1 RBSL for toluene is 150 μg/L. Based on this, historical soil and groundwater concentrations of toluene are below Tier 1 RBSLs for all exposure pathways.

- Ethylbenzene was detected in one soil sample collected from EB-20 at 7 feet bgs at a concentration of 0.044 mg/kg. The highest concentration of ethylbenzene historically detected in groundwater "grab" samples is 3.2 μg/L, which is below the Tier 1 RBSL for ethylbenzene of 700 μg/L for all exposure pathways. Ethylbenzene has never been detected in groundwater samples collected from monitoring wells onsite. The most conservative soil Tier 1 RBSL for ethylbenzene is 8.0 mg/kg. Based on this, all historical soil and groundwater concentrations of ethylbenzene are below Tier 1 RBSLs for all exposure pathways.

- Xylenes were detected in three soil sample collected from EB-5 at 14 feet bgs, EB-22 at 10 feet bgs, and EB-22 at 14 feet bgs at a concentration of 0.41 mg/kg, 0.017 mg/kg, and 0.071 mg/kg, respectively. The most conservative soil Tier 1 RBSL for xylenes is 13 mg/kg. The highest concentration of xylenes historically detected in groundwater "grab" samples is 6.1 μg/L, which

is below the Tier 1 RBSL for xylenes of 1,800 µg/L for all exposure pathways. Xylenes have never been detected in groundwater samples collected from monitoring wells onsite. Based on this, all historical soil and groundwater concentrations of xylenes are below Tier 1 RBSLs for all exposure pathways.

10.2 RWQCB Environmental Screening Levels

Petroleum hydrocarbons are not included in the Tier 1 RBSLs or Tier 2 SSTLs look-up tables and have therefore been evaluated below using the San Francisco Bay Area RWQCB Environmental Screening Levels (ESLs) (RWQCB, 2007). ESLs were developed to address environmental protection goals presented in the Water Quality Control Plan for the San Francisco Bay Basin (SFBRWQCB, 1995). The goals include protection of human health (direct exposure and vapor intrusion into buildings), terrestrial biota, aquatic habitats, drinking water resources, and adverse nuisance conditions. As noted in the ESL guidance document (SFBRWQCB, 2007), "the ESLs are considered to be conservative… the presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is warranted."

10.2.1 Comparison of Site Soil TPH Concentrations to ESLs

Heating Oil UST

In the vicinity of the abandoned heating oil UST, heavy end hydrocarbons have been detected in only deep soil samples at concentrations up to 9,500 mg/kg at depths between 12 and 20 feet bgs. The residential and commercial/industrial ESL for heavy end hydrocarbons (denoted TPH residual fuels in the guidance document) for soil greater than 10 feet bgs is 1,000 mg/kg. The highest detected heavy end TPH concentration in shallow soil in the vicinity of the abandoned heating oil UST was 79 mg/kg, which is below both the residential ESL of 500 mg/kg and the commercial/industrial ESL of 1,000 mg/kg for shallow soil.

TPH (middle distillate) were not detected in the shallow soil samples collected in the vicinity of the abandoned heating oil UST and is therefore not a human health treat. TPH (middle distillate) were detected in deep soil in the vicinity of the abandoned heating oil UST at concentrations up to 340 mg/kg at 12 feet bgs. The ESL for TPH (middle distillate) in deep soil where groundwater is a potential source of drinking water is 83 mg/kg.

The deep soil samples exceeded the ESL, however, groundwater detections of TPH in downgradient wells have been slightly over the laboratory reporting limit and was last detected in June 2002, and appears to be limited to the immediate vicinity of the abandoned UST which is consistent with the immobile residual heating oil. TPH (middle distillate) will also naturally degrade under aerobic conditions, so the concentrations should decline over time.

Possible Tire and Oil Shop

In the vicinity of the "possible" tire and oil shop" TPH (middle distillate) have been detected at concentrations up to 160 mg/kg (EB-20-7') in shallow soil, and 1,900 mg/kg (FOMW-3-11') in deep soil. The ESL for TPH (middle distillate) in shallow soil where groundwater is a potential source of drinking water is 83 mg/kg.

The shallow and deep soil samples exceeded the ESL, however, groundwater detections of TPH beneath the area have been sporadic (last detection in June 2002), and only at trace concentrations indicating that the limited mass is not a groundwater threat. Furthermore, detected concentrations in soil from samples collected from 22 feet bgs in EB-20 (4 mg/kg), and 16 feet bgs in FOMW-3 (16 mg/kg) indicate declining concentration with depth, so limited potential to impact the groundwater. The impacted soil is also not a human health threat due to the detection depth. TPH (middle distillate) will also naturally degrade under aerobic conditions, so the concentrations should decline over time.

10.2.2 Comparison of Site Groundwater TPH Concentrations to ESLs

The ESL for both TPH (middle distillate) and heavy end TPH (residual fuel) in groundwater ranges from 100 μg/L to 210 μg/L, where groundwater is a potential source of drinking water. Because the well closest to the abandoned heating oil UST (FOMW-1) has contained separate phase product, it can be assumed that groundwater in the immediate vicinity of well FOMW-1 contains heavy end hydrocarbons that exceed the residual fuel screening level. These heavy end hydrocarbons, however, are not migrating from the source area based on the lack of hydrocarbon detections in downgradient wells.

The TPH (middle distillate) concentrations near the tire and oil shop ranged from 53 to 302 μg/L with an average of 165 μg/L, just above the ESL of 85 μg/L for TPH (middle distillate) with groundwater as a potential drinking water source. These concentrations have stayed relatively stable over the 10 sampling events performed on this well, indicating the plume is also stable. TPH (middle distillate) will also naturally degrade under aerobic conditions, so the concentration should decline over time.

11.0 CONCLUSIONS / RECOMMENDATIONS

Two limited areas of residual TPH-impacted soil remain at the site, based on data from historical site investigation, groundwater monitoring, and remediation activities. The first is located in the vicinity of the abandoned heating oil UST by well FOMW-1, and consists of heavy end hydrocarbons that have been demonstrated to be immobile. The second area consists of diesel-range hydrocarbons in the vicinity of well FOMW-3 which are believed to be associated with the former oil and tire shop in this area. Both areas of impacted soil have been defined by historical and recent investigations.

Groundwater impacted by the heavy end hydrocarbons is present in the immediate vicinity of the abandoned heating oil UST, where a sheen of separate phase product is typically encountered in well FOMW-1. The separate phase heating oil product is immobile, with an estimated Darcy velocity of 0.0007 cm/yr to 0.00126 cm/year. Due to the immobile nature of the product, historical remediation efforts (use of a vacuum truck and installation of an absorbent sock in well FOMW-1) have only yielded very small amounts of product. Due to the low mobility of the product and hydrocarbon biodegradation of the dissolved phase, the groundwater plume has remained stable. This has been confirmed by historical groundwater monitoring performed at the Site.

Very low concentrations of BTEX have been detected in a limited number of soil and/or groundwater samples in both areas. These BTEX concentrations have not exceeded the Oakland ULR Program Tier 1 RBSLs except for two isolated detections of benzene (4.3 µg/L and 4.8 µg/L) above the benzene groundwater RBSL of 1.0 µg/L from groundwater grab samples in 1998. More recent groundwater monitoring data have shown that benzene was rarely detected in groundwater (one 2001 sample at 0.72 µg/L out of 30 samples) indicating that benzene no longer exceeds regulatory criteria.

Heavy end TPH concentrations in deep soils (greater than 10 feet bgs) in the immediate vicinity of the abandoned heating oil UST were found to exceed applicable RWQCB ESLs, where groundwater is a potential source of drinking water. However, the extent of this area of impacted soil has been shown to be very limited by historical investigations. The groundwater plume beneath this impacted soil is also stable/limited in size. Furthermore, historical pumping of groundwater in this area has occurred in aquifers at depths greater than 200 feet bgs (RQWCB, 1999) indicating a significant vertical separation exists between the THP impacted water and the deeper aquifer.

TPH (middle distillate) in the vicinity of well FOMW-3 (former oil and tire shop) exceed applicable ESLs for deep soil (FOMW-3-11'), where groundwater is a potential source of drinking water. However TPH was not detected in the deeper soil sample collected from 16 feet bgs in FOMW-3 (16 mg/kg). This area of impacted soil has been demonstrated to be separate from the heating oil UST release. Groundwater concentrations beneath this area are just above the ESLs, but have been relatively similar over multiple events, indicating the plume is stable and not a groundwater migration risk.

Based on the results of the Site closure analysis and the above discussion, no further action is recommended in relation to historical releases from the abandoned heating oil UST.

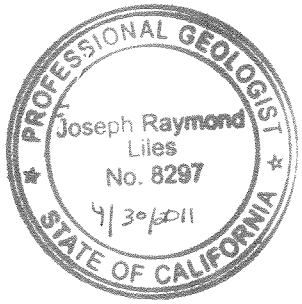
12.0 CLOSING

No additional work is scheduled for this Site at this time, pending a response from the ACEHS regarding the recommendation for Site closure.

Should you have any questions or comments, please do not hesitate to contact us.

Respectfully Submitted,

URS CORPORATION



Joseph R. Liles, PG, CHG.
Project Geologist

Jerome R. Zimmerle, Jr., PE
Principal Engineer

13.0 REFERENCES

California Regional Water Quality Control Board—San Francisco Bay Region Groundwater Committee (RWQCB), 1999. *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report.* June 1999, 106 p.

California Regional Water Quality Control Board—San Francisco Bay Region Groundwater Committee (RWQCB), 1995. *Water Quality Control Plan*. June 1995.

City of Oakland Public Works Agency, 2000. *Oakland Urban Land Redevelopment Program: Guidance Document,* January 1.

URS/Dames & Moore, 2001. *Well Installation and 2000 Second Quarter Groundwater Monitoring,* Former Sears Retail Center #1058, 2633 Telegraph Avenue, Oakland, California, January 30.

Lowney, 1998. *Phase I Environmental Site Assessment and Soil and Groundwater Quality Evaluation*, 2633 Telegraph Avenue, Oakland, California, April 21.

Lowney, 1998. *Phase II Soil and Groundwater Quality Evaluation*, 2633 Telegraph Avenue, Oakland, California, July 6.

SECOR, 1998. Summary Report Subsurface Investigation and Site Closure Tasks, 2633 Telegraph Avenue, Oakland, California, December 8.

URS/Dames & Moore, 2001. *Well Installation and 2000 Second Quarter Groundwater Monitoring,* Former Sears Retail Center #1058, 2633 Telegraph Avenue, Oakland, California, January 30.

URS, 2002. *Additional Site Assessment and 2002 First Quarter Groundwater Monitoring,* Former Sears Retail Center # 1058, 2633 Telegraph Avenue, Oakland, California, August 27.

URS, 2005. *2005 Annual Groundwater Monitoring,* Former Sears Retail Center # 1058A, 2633 Telegraph Avenue, Oakland, California, October 5.

TABLES

Table 1
Groundwater Levels and Field Parameters - 2008 Annual Groundwater Monitoring
Former Sears Retail Center #1058A
Oakland, California

Monitoring Well ID	Date Collected	Notes	GROUNDWATER LEVELS				GROUNDWATER SAMPLING FIELD PARAMETERS					
			Product Thickness (feet)	Depth to Groundwater (feet bgs)	Casing Elevation (MSL)	Groundwater Elevation (MSL)	Temp. (Celsius)	pH (Units)	Conductivity (µS/cm)	Turbidity (NTU)	ORP (mV)	Dissolved Oxygen (mg/L)
FOMW-1	11/14/2008	1	NA	7.97	26.21	18.24	NA	NA	NA	NA	NA	NA
FOMW-2	11/14/2008	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-3	11/14/2008	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-4	11/14/2008		0.00	10.46	26.20	15.74	22.68	6.35	506	68.6	105.9	0.55
FOMW-5	11/14/2008		0.00	12.53	26.23	13.70	19.99	6.25	449	59.3	117.6	0.45

Notes: 1. Sheen observed on top of the water. Not sampled.
2. Well covered by construction. Could not be accessed.
MSL - Mean Sea Level
bgs - Below ground surface
Groundwater Elevation reference to MSL
Groundwater Elevation = Top of Casing Elevation - Depth to Water
Temp. - temperature

µS/cm - microSiemens per centimeter
mV - millivolt
mg/L - milligrams per liter
NTU - nephelometric turbidity units
SP - Separate phase product in well
NA - Not analyzed/Not available
ORP - oxidation reduction potential

Table 2
Groundwater Analytical Results - 2008 Annual Groundwater Monitoring
Former Sears Retail Center #1058A
Oakland, California

Monitoring Well ID	Sample Date	LABORATORY ANALYTICAL RESULTS																
			TPH by 8015M			Volatile Organics by 8260B												
		Notes	TPHg (µg/L)	TPHd (µg/L)	TPHss (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	ETBE (µg/L)	DIPE (µg/L)	TAME (µg/L)	TBA (µg/L)	EDB (µg/L)	EDC (µg/L)	Naphthalene (µg/L)
FOMW-1	11/14/2008	SH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-2	11/14/2008	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-3	11/14/2008	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-4	11/14/2008		< 50	< 500	< 500	< 0.5	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 10	< 1	< 0.5	< 1
FOMW-5	11/14/2008		< 50	< 500	< 500	< 0.5	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 10	< 1	< 0.5	< 1

Notes: 1: Well not accessible/not found

< - Analyte not detected above indicated method detection limit

NA: Not analyzed/Not available

SH: Sheen present

µg/L - micrograms per liter

TPH = Total Petroleum Hydrocarbons

TPHg = Total Petroleum Hydrocarbons as gasoline range organics by EPA Method 8015 (modified)

TPHd = Total Petroleum Hydrocarbons as diesel range organics by EPA Method 8015 (modified)

TPHss = Total Petroleum Hydrocarbons as stoddard solvent range organics by EPA Method 8015 (modified)

B T E X - Benzene, Toluene, Ethylbenzene, Total Xylenes

MTBE - Methyl tertiary butyl ether

ETBE - Ethyl Tertiary Butyl Ether

DIPE - Di-isopropyl Ether

TAME - Tertiary Amyl Methyl Ether

TBA - Tertiary Butyl Alcohol

EDB - 1,2-Dibromoethane

EDC- 1,2-Dichloroethane

TABLE 3
SOIL SAMPLE ANALYTICAL RESULTS - SUPPLEMENTAL SOIL BORINGS
FORMER SEARS RETAIL CENTER #1058A
OAKLAND, CALIFORNIA

Sample Number and Depth	Sample Date	TPH Diesel (mg/kg)	TPH Bunker C (mg/kg)	TPHg C4-C12 (mg/kg)	TPH C10-C20 (mg/kg)	TPH C21-C30 (mg/kg)	TPH C31 & Above (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Xylenes (µg/kg)	MTBE (µg/kg)
EB-25-5	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
DUP-1	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
EB-25-10	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
EB-25-15	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
EB-25-20	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
EB-27-5	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
EB-27-10	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
EB-27-15	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2
EB-27-20	12/23/2008	< 5	< 25	< 0.2	< 5	< 5	< 25	< 1	< 1	< 1	< 2	< 2

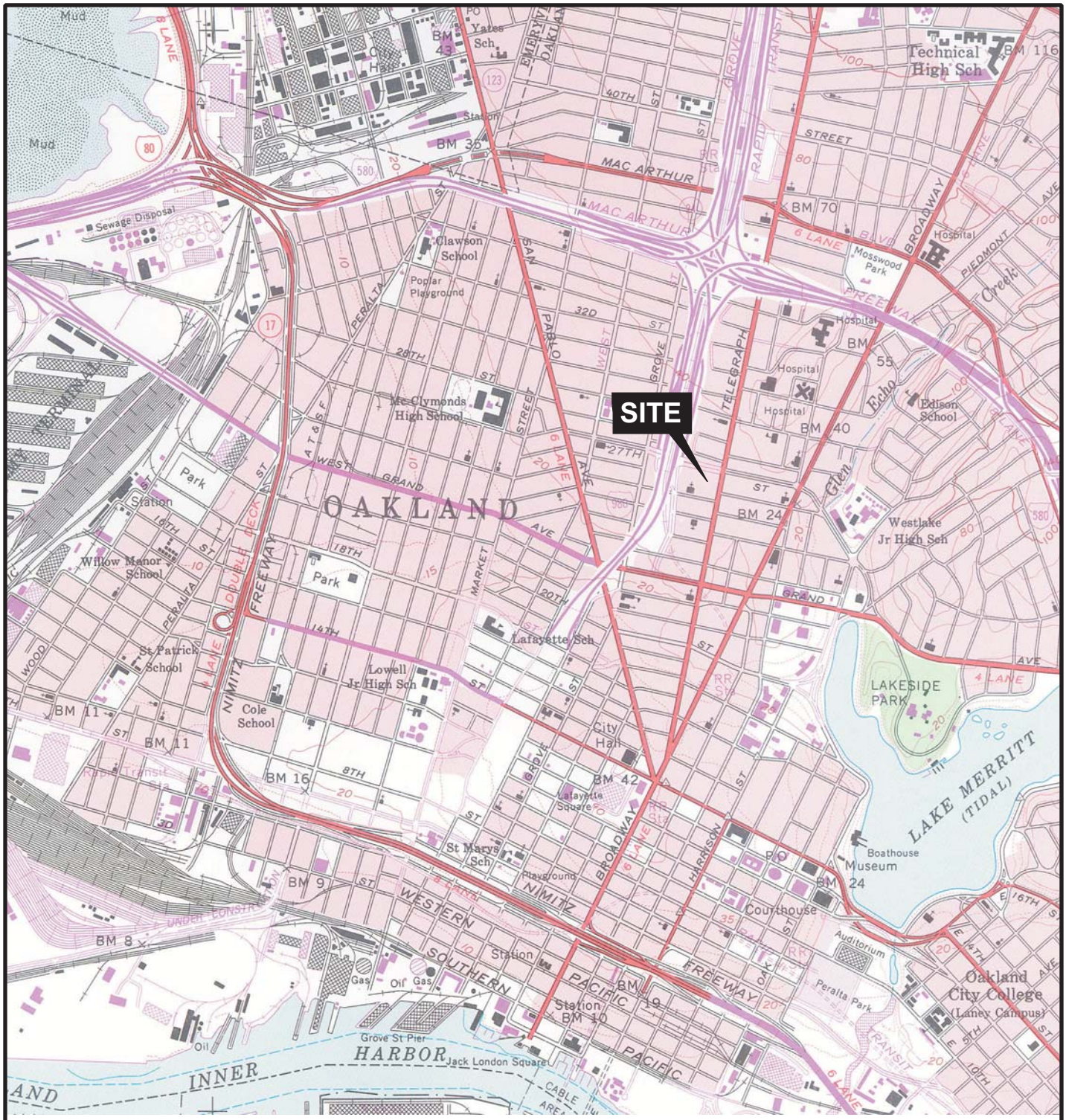
Notes:
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
< = Not Detected at or above indicated detection limit
TPH = Total Petroleum Hydrocarbons
MTBE = methyl tertiary butyl ether

TABLE 4
GROUNDWATER GRAB SAMPLE ANALYTICAL RESULTS - SUPPLEMENTAL SOIL BORINGS
FORMER SEARS RETAIL CENTER #1058A
OAKLAND, CALIFORNIA

Sample Number	Sample Date	TPH-Gasoline (µg/L)	TPH-Diesel (µg/L)	TPH-Motor Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
EB-27W-10-20	12/23/2008	< 50	< 500	< 2500	< 0.5	< 0.5	< 0.5	< 1	< 1
EB-EB-25	12/23/2008	< 50	NA	NA	< 0.5	< 0.5	< 0.5	< 1	< 1

Notes:
µg/L = micrograms per liter
< = Not Detected at or above indicated detection limit
TPH = Total Petroleum Hydrocarbons
MTBE = methyl tertiary butyl ether
NA = Not analyzed

FIGURES



REFERENCE: USGS 7.5 Minute Series Oakland West, CA Quad, 1959, Photorevised 1980

FIGURE 1

VICINITY MAP

FORMER SEARS AUTO CENTER #1058A
2633 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA
For Sears Holdings Managment Corporation

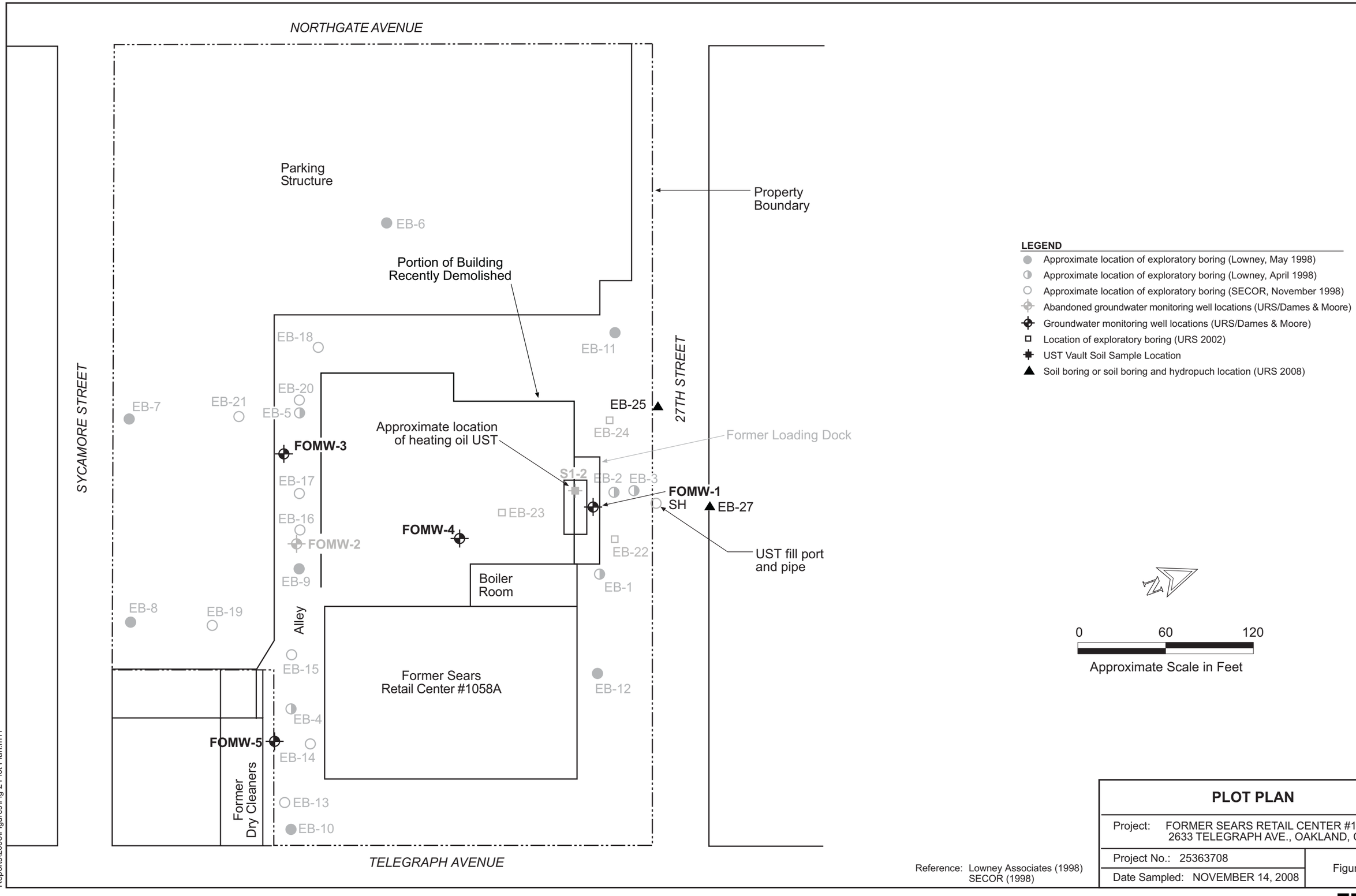
N

0 1/2 1

Scale in Miles

URS

G:\128\Sears_128\Oakland\2633 Telegraph Ave\2008\Q4 2008 Groundwater\Figures\Fig 1 Vicinity Map.FH11



Reference: Lowney Associates (1998)
SECOR (1998)

PLOT PLAN

Project: FORMER SEARS RETAIL CENTER #1058A
2633 TELEGRAPH AVE., OAKLAND, CA

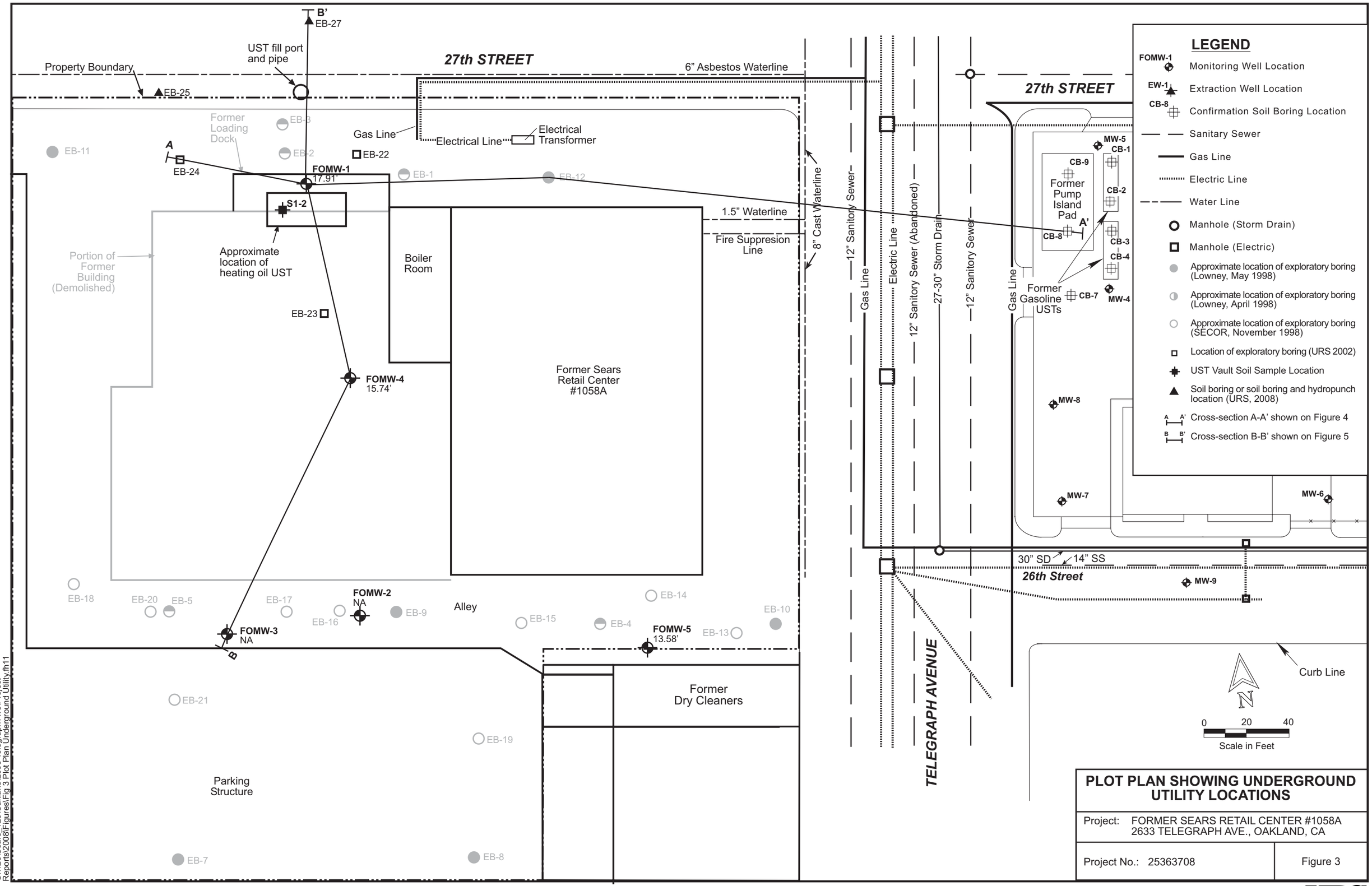
Project No.: 25363708

Date Sampled: NOVEMBER 14, 2008

Figure 2

URS

G:\128\Sears_128\Oakland\2633 Telegraph Ave\Project Reports\2008\Figures\Fig 2 Plot Plan.ffh11



G:\128\Sears_128\Oakland\2633 Telegraph Ave\Project Reports\2008\Figures\Fig 3 Plot Plan Underground Utility.fh11

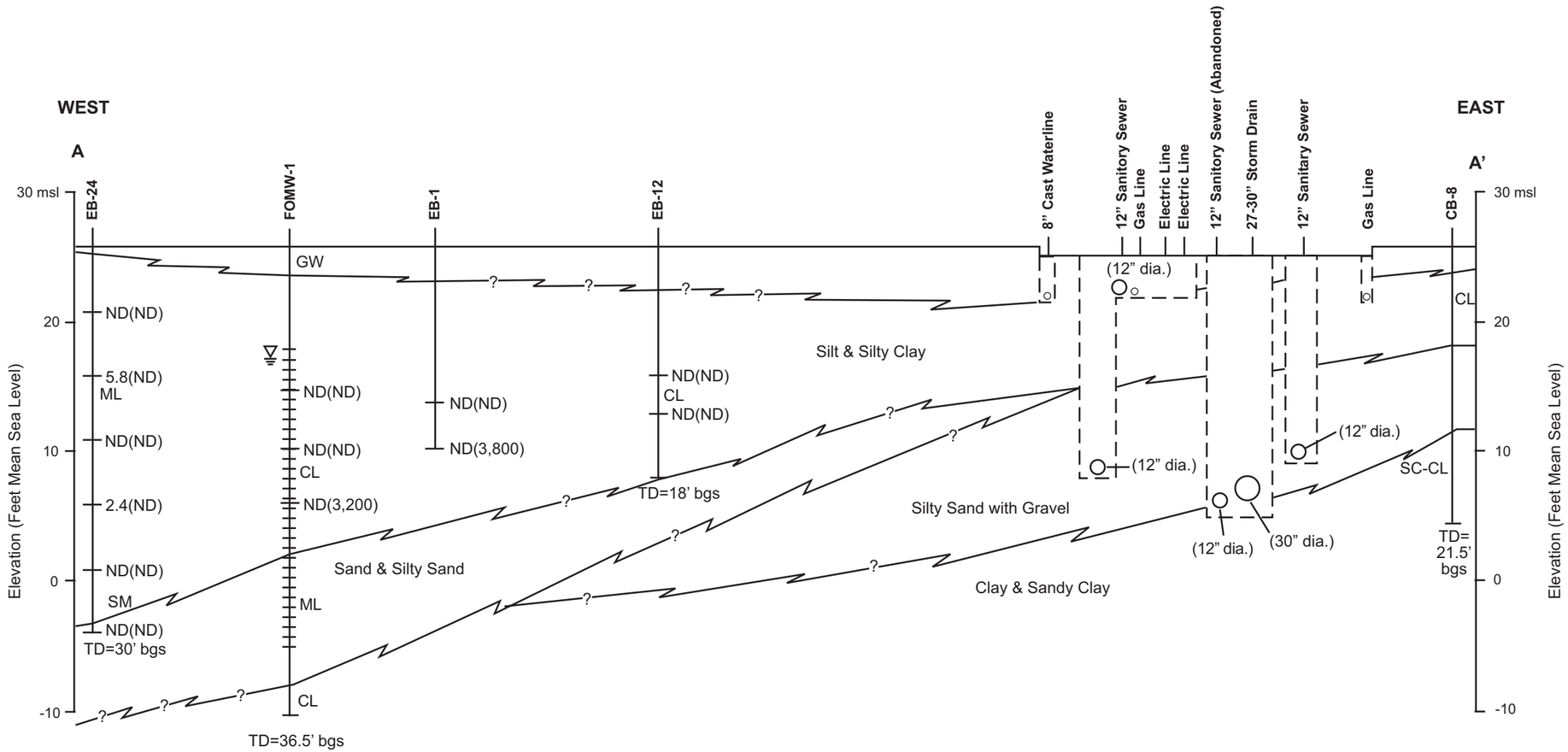
PLOT PLAN SHOWING UNDERGROUND UTILITY LOCATIONS

Project: FORMER SEARS RETAIL CENTER #1058A
2633 TELEGRAPH AVE., OAKLAND, CA

Project No.: 25363708

Figure 3

URS



LEGEND

bgs	Below Ground Surface
TD	Total Depth
≡	Groundwater Well Screen Interval
SM	USCS Soil Classification
[ ]	Approximate Limits of Trenching
○	Underground Piping
SM	Confirmed Boring with USCS Classification
?	Inferred Contact
▽	Groundwater Potentiometric Surface (measured 3/21/05)

Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 10'

GEOLOGIC CROSS SECTION A-A'

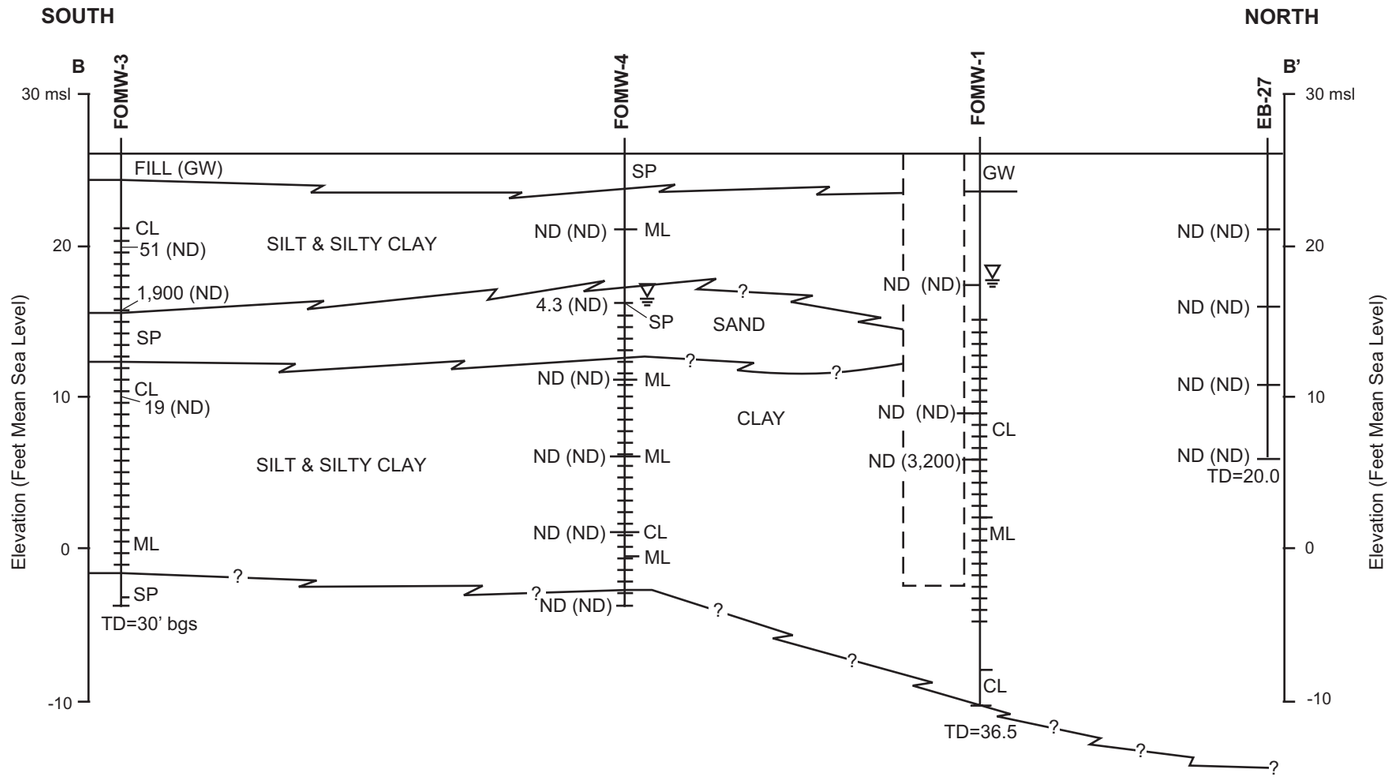
Project: FORMER SEARS AUTO CENTER #1058A
2633 TELEGRAPH AVE., OAKLAND, CA

Project No.: 25363708

Figure 4

G:\128\Sears_128\Oakland\2633 Telegraph Ave\Project Reports\2006\Figures\Fig 3 Cross Sec AA.FH11

URS



LEGEND

bgs	Below Ground Surface
TD	Total Depth
	Groundwater Well Screen Interval
	Approximate Limits of Excavation for Heating Oil UST
CL	Groundwater Monitoring Well with USCS Classification
?	Inferred Contact
4.3 (19) mg/kg	TPHd and (TPH Bunker Oil) Concentrations in Soil During Well Installation *Concentrations in milligrams per kilogram (mg/kg)
	Groundwater Potentiometric Surface (measured 3/21/05)
ND	Non Detect

Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 10'

GEOLOGIC CROSS SECTION B-B'

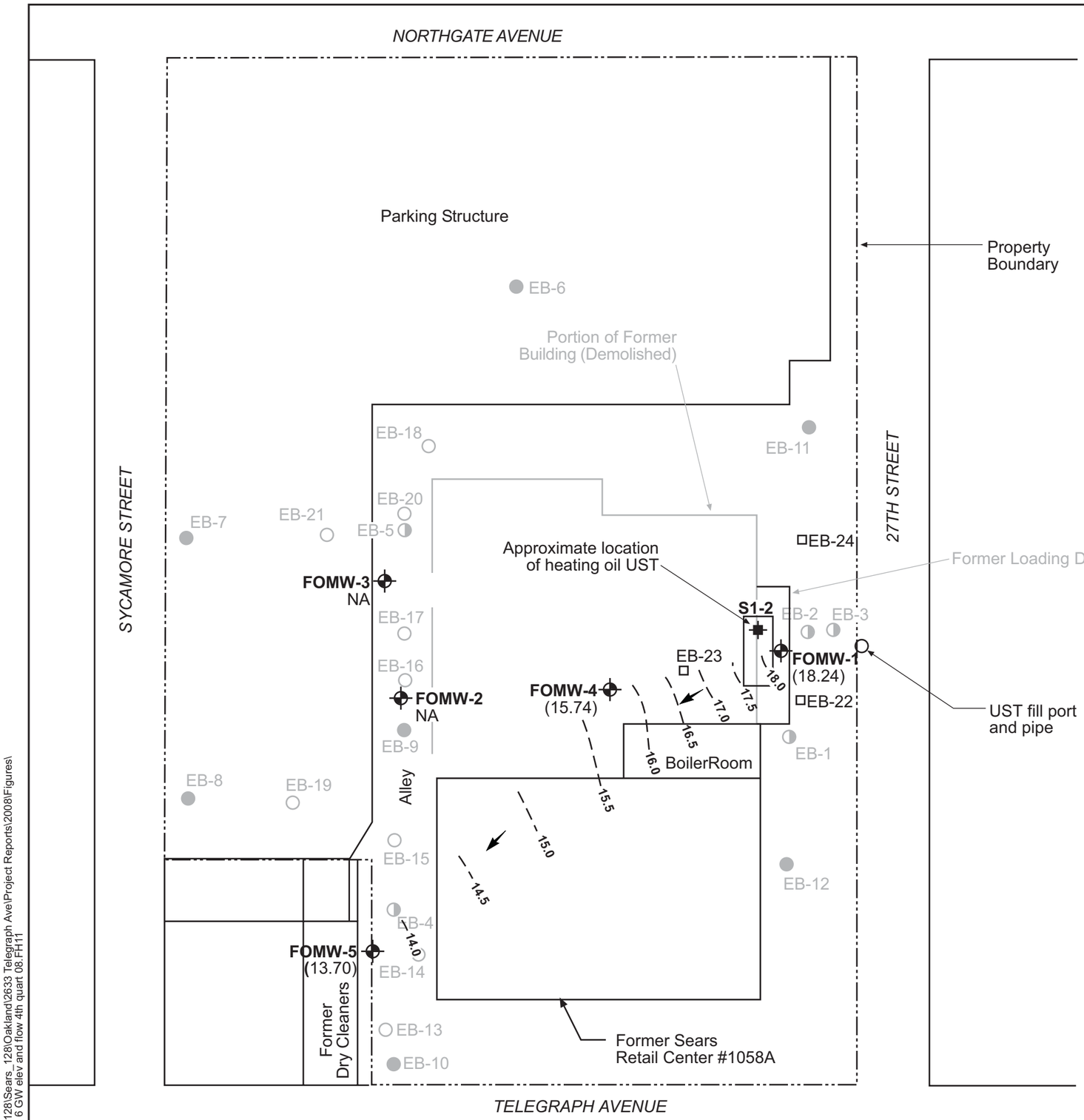
Project: FORMER SEARS AUTO CENTER #1058A
2633 TELEGRAPH AVE., OAKLAND, CA

Project No.: 25363708

Figure 5

URS

G:\1128\Sears_128\Oakland\2633 Telegraph Ave\Project Reports\2008\Figures\Fig 5 Cross Sec BB.FH11



LEGEND

- Approximate location of exploratory boring (Lowney, May 1998)
- Approximate location of exploratory boring (Lowney, April 1998)
- Approximate location of exploratory boring (SECOR, November 1998)
- Groundwater monitoring well locations (URS/Dames & Moore)
- Location of exploratory boring (URS 2002)
- UST soil sample location
- 16.5 — Groundwater contour line
- Groundwater flow direction

NOTES

(1) Groundwater elevations in feet above mean sea level (MSL).
(2) NA = Not Accessible.
(3) Groundwater elevations measured December 11, 2002.
(4) ND = Non-detect

N

0 60 120

Approximate Scale in Feet

Reference: Lowney Associates (1998)
SECOR (1998)

2008 FOURTH QUARTER GROUNDWATER ELEVATIONS AND FLOW DIRECTION

Project: FORMER SEARS RETAIL CENTER #1058A
2633 TELEGRAPH AVE., OAKLAND, CA

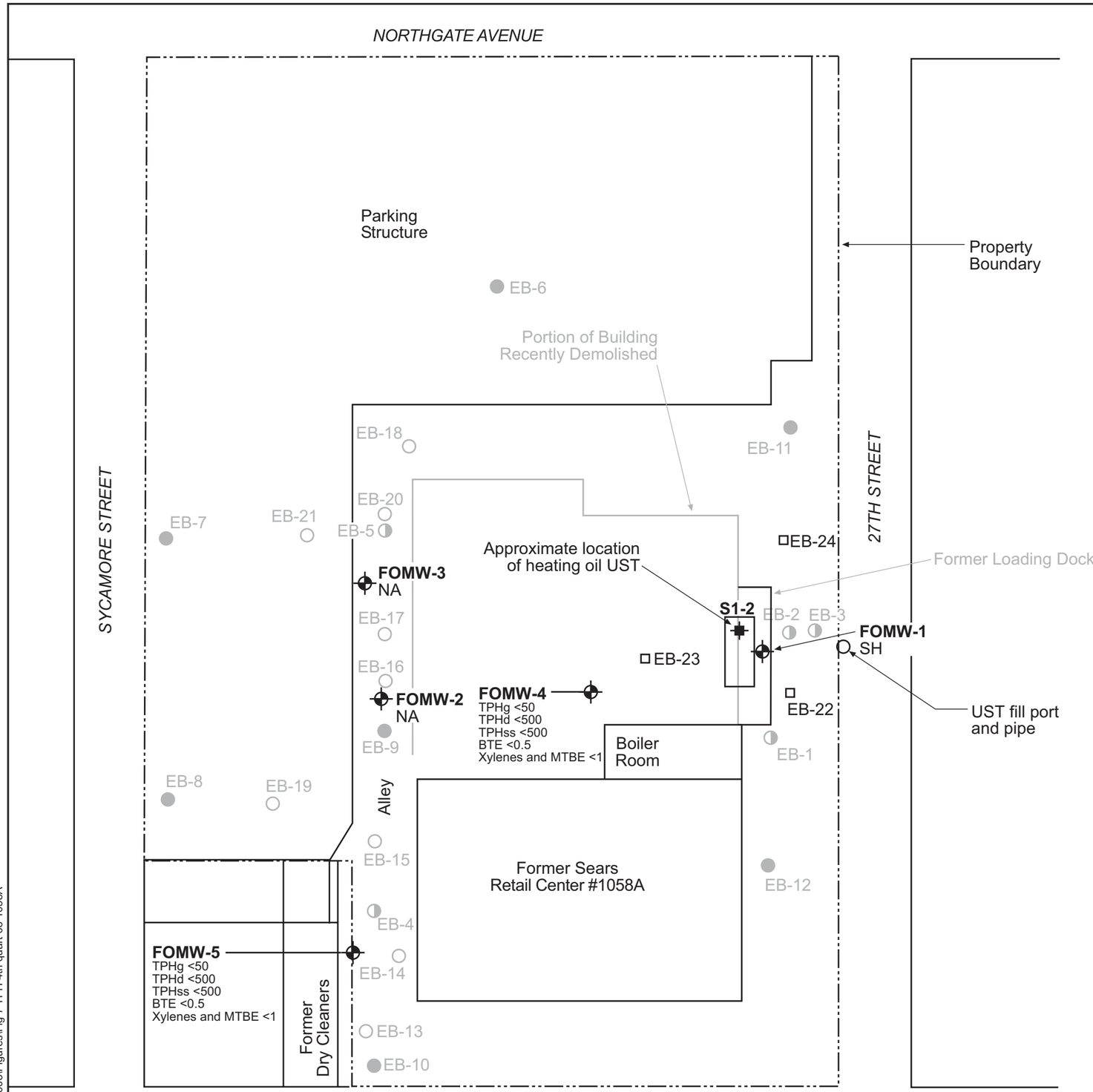
Project No.: 25363708

Date Measured: NOVEMBER 14, 2008

Figure 6

URS

G:\128\Sears_128\Oakland\2633 Telegraph Ave\Project Reports\2008\Figures\
Fig 6 GW elev and flow 4th quart 08.FH11



LEGEND

- Approximate location of exploratory boring (Lowney, May 1998)
- Approximate location of exploratory boring (Lowney, April 1998)
- Approximate location of exploratory boring (SECOR, November 1998)
- Groundwater monitoring well locations (URS/Dames & Moore)
- Location of exploratory boring (URS 2002)
- UST Vault Soil Sample Location

NOTES

(1) Groundwater elevations in feet above mean sea level (MSL).
(2) NA = Not Analyzed.
(3) SH = Sheen Present
(4) TPHg = Total Petroleum Hydrocarbons Gasoline Range Organics
(5) TPHd = Total Petroleum Hydrocarbons Diesel Fuel Range Organics
(6) TPHss = Total Petroleum Hydrocarbons Stoddard Solvent Range Organics
(7) BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
(8) MTBE = Methyl Tertiary Butyl Ether

N

0 60 120

Approximate Scale in Feet

Reference: Lowney Associates (1998)
SECOR (1998)

2008 FOURTH QUARTER TPH, BTEX, AND MTBE CONCENTRATIONS IN GROUNDWATER

Project: FORMER SEARS RETAIL CENTER #1058A
2633 TELEGRAPH AVE., OAKLAND, CA

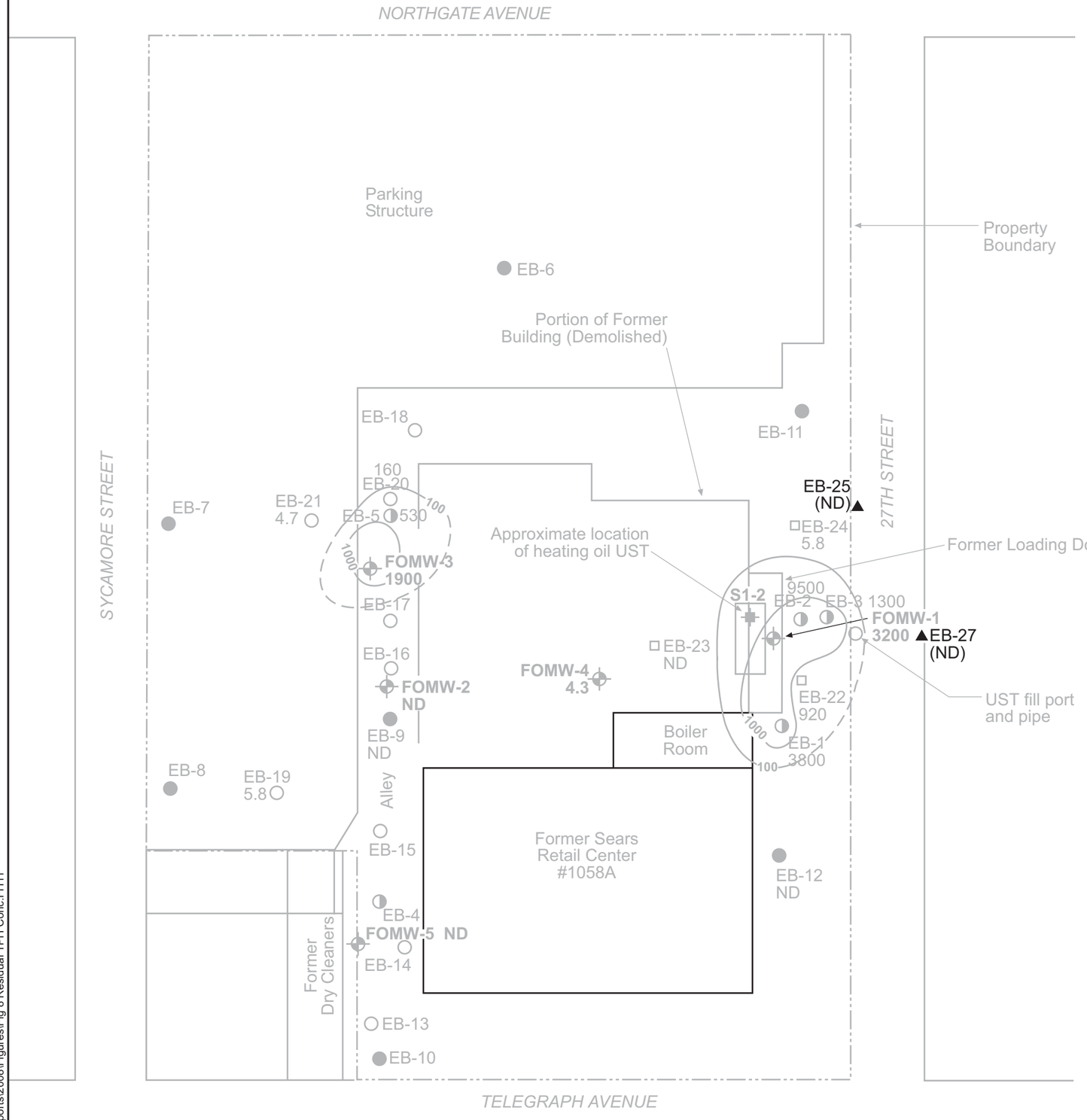
Project No.: 25363708

Date Sampled: NOVEMBER 14, 2008

Figure 7

URS

G:\128\Sears_128\Oakland\2633 Telegraph Ave\Project Reports\2008\Figures\Fig 7 TPH 4th quart 08 1058A



LEGEND

- Approximate location of exploratory boring (Lowney, May 1998)
- Approximate location of exploratory boring (Lowney, April 1998)
- Approximate location of exploratory boring (SECOR, November 1998)
- Groundwater monitoring well locations (URS/Dames & Moore)
- Location of exploratory boring (URS 2002)
- UST Vault Soil Sample Location
- —100— TPH Isoconcentration Line
- Soil boring and hydropunch location (URS 2008)

NOTES

(1) All concentrations in mg/kg.
(2) ND = Non-detect.
(3) Highest TPH concentration per boring listed.

N

0 60 120

Approximate Scale in Feet

Reference: Lowney Associates (1998)
SECOR (1998)

RESIDUAL TPH CONCENTRATIONS IN SOIL

Project: FORMER SEARS AUTO CENTER #1058A
2633 TELEGRAPH AVE., OAKLAND, CA

Project No.: 25363708

Date: October 2008

Figure 8

URS

G:\128\Sears_128\Oakland\2633 Telegraph Ave\Project Reports\2008\Figures\Fig 8 Residual TPH Conc.FH11

APPENDIX A

ACEHS CORRESPONDENCE

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

September 19, 2008

Mr. Bruce Kaye
Sears, Roebuck and Co.
3333 Beverly Road, Dept. 824
Hoffman Estates, IL 60179

Sears Lofts, LLC
c/o Madison Park Prop.
409 13th Street, Floor 8
Oakland, CA 94612-2607

Haagen Hollywood Partnership
c/o Haagen Property Management, Inc.
3500 N. Sepulveda Blvd.
Manhattan Beach, CA 90266-3638

Subject: Fuel Leak Case No. RO0002600 and Geotracker Global ID T0600101208, (Former) Sears Retail Store #1058, 2633 Telegraph Avenue, Oakland, CA 94612

Dear Sirs:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site for case closure as cited in the February 21, 2006, "Site Status Update," prepared by URS Corporation (URS) for the subject site. In the most recently submitted report entitled, "Report, 2005 Annual Groundwater Monitoring," dated October 5, 2005, which was also prepared by URS, URS details results of the annual groundwater monitoring, preferential pathway evaluation, and interim cleanup activities performed at the site. URS reported that 0.23 feet of separate phase hydrocarbons were detected in groundwater monitoring well FOMW-1, concluded that no domestic, irrigation, municipal, or industrial groundwater wells are located within the site vicinity. URS also stated that shallow utilities in the vicinity of the site do not likely act as preferential pathways at the site, and installed SoakEase™ adsorbent sock to abate separate phase hydrocarbons detected in FOMW-1. URS further concluded that "additional soil and groundwater investigation is warranted to complete delineation of soil and groundwater impacts to the north of the heating oil UST," and recommended replacement of the SoakEase™ adsorbent sock in November 2005, perform annual groundwater monitoring in February 2006, complete site assessment activities in February 2006, and submit a annual groundwater monitoring and site assessment report in April 2006. Based on a review of the case file, the data gaps that have identified and summarized below, must be addressed prior to case closure consideration. At this time, ACEH generally concurs with URS' conclusions presented in their "Report, 2005 Annual Groundwater Monitoring Report," and requests that you address the following technical comments, perform the proposed work, and send us the technical reports described below.

TECHNICAL COMMENTS

1. **Site Conceptual Model** – Prior to conducting the subsurface investigation proposed in the above-mentioned report, preparation of a Site Conceptual Model (SCM) for the Site may be advantageous at this time. An SCM, should synthesize all the analytical data and evaluate all potential exposure pathways and potential receptors that may exist at the site, including

identifying, developing, or updating site cleanup levels and cleanup goals, in accordance with the San Francisco Regional Water Quality Control Board Basin Plan and appropriate ESL guidance for all COCs and for the appropriate groundwater designation. Please note that soil cleanup levels should ultimately (within a reasonable timeframe) achieve water quality objectives (cleanup goals) for groundwater in accordance with San Francisco Regional Water Quality Control Board Basin Plan. At a minimum, the SCM should include:

(1) Local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.) extent of contamination, direction and rate of groundwater flow, potential preferential pathways, and locations of receptors;

(2) Geologic cross section maps that illustrate subsurface features, man-made conduits, and lateral and vertical extent of contamination;

(3) Plots of chemical concentrations versus time;

(4) Plots of chemical concentrations versus distance from the source;

(5) Summary tables of chemical concentrations in different media (i.e. soil, groundwater, and soil vapor); and

(6) Well logs, boring logs, and well survey maps;

(7) Discussion of likely contaminant fate and transport.

If data gaps (i.e. potential contaminant volatilization to indoor air or delineation of soil and groundwater impact, etc.) are identified in the SCM, please include a proposed scope of work to address those data gaps in the SCM due by the date specified below. Please note that the scope of work must address all technical comments presented in this correspondence and all data gaps identified in the SCM.

2. **Free Product Abatement Status** – URS reported that a SoakEase™ adsorbent sock was installed in groundwater monitoring well FOMW-1 to abate the consistently detected free product and that the sock was to be replaced in November 2005. At this time, please evaluate the effectiveness of the interim cleanup activities and provide a status of cleanup activities at the site by the date specified below. This may be included in the SCM requested above.

3. **Groundwater Contaminant Plume Monitoring** – In order to evaluate groundwater contaminant plume stability and effectiveness of free product abatement, consecutive groundwater monitoring must be conducted. According to our records, the most recent groundwater monitoring event was conducted on March 21, 2005. Please initiate semi-annual groundwater monitoring at the site. Prior to collecting groundwater samples, it is recommended that the monitoring wells be re-developed so that groundwater samples representative of actual site conditions are collected. Also please rehabilitate any wells that may be compromised prior to sampling. Your consultant may propose and justify an alternate groundwater monitoring plan for review. This may be incorporated this into the above requested SCM.

TECHNICAL REPORT REQUEST

Please submit technical work plans and reports to Alameda County Environmental Health (Attention: Paresh Khatri), according to the following schedule:

- **October 30, 2008** - Quarterly Monitoring Report (3rd Quarter 2008)
- **November 10, 2008** –Site Conceptual Model & Interim Remedial Action Evaluation
- **April 30, 2009** - Quarterly Monitoring Report (1st Quarter 2009)

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 777-2478 or send me an electronic mail message at paresh.khatri@acgov.org.

Sincerely,

Paresh C. Khatri
Hazardous Materials Specialist

Donna L. Drogos, PE
Supervising Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: J.S. Rowlands, URS Corporation, 2020 East First Street, Suite 400, Santa Ana, CA 92705
Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032
Donna Drogos, ACEH
Paresh Khatri, ACEH
File

APPENDIX B

HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS

APPENDIX B
HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
FORMER SEARS RETAIL CENTER #1058A
2633 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

Sample Number and Depth	Sample Date	TPH-Diesel	TPH-Bunker C	TPH-Fuel Oil	TPH-Motor Oil	TPH-Gasoline	TPH- Stoddard Solvent	TPH C_5-C_{10}	TPH C_{10}-C_{20}	TPH C_{20}-C_{30}	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	VOCs
Sampling performed by Lowney, 1998																
EB-1-12'	4/7/1998	ND	ND	ND	-	-	-	-	-	-	ND	ND	ND	ND	-	-
EB-1-16'	4/7/1998	ND	**3,800**	ND	-	-	-	-	-	-	ND	ND	ND	ND	-	-
EB-2-16'	4/7/1998	ND	ND	ND	-	-	-	-	-	-	ND	ND	ND	ND	-	-
EB-2-20'	4/7/1998	ND	**9,500**	ND	-	-	-	-	-	-	ND	ND	ND	ND	-	-
EB-3-13'	4/7/1998	ND	ND	ND	-	-	-	-	-	-	ND	ND	ND	ND	-	-
EB-3-17'	4/7/1998	ND	**1,300**	ND	-	-	-	-	-	-	ND	ND	ND	ND	-	-
EB-4-8'	4/7/1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND
EB-4-12'	4/7/1998	ND	ND	ND	ND	ND	ND	-	-	-	ND	ND	ND	ND	-	ND
EB-5-6'	4/7/1998	ND	**79**	ND	ND	**2.5**	ND	-	-	-	ND	ND	ND	ND	-	ND
EB-5-14'	4/7/1998	**530**	ND	ND	ND	**240***	**280**	-	-	-	ND	ND	ND	**0.41**	-	ND
EB-6-11'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-6-17'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-7-10'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-7-14'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-8-9'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-8-11'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-9-11'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-9-15'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-10-11'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-10-16'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-11-9'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-11-13'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-12-9'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-12-13'	5/12/1998	ND	ND	ND	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
Sampling performed by Secor, 1998																
EB-13-7'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	**0.019 (1)**
EB-13-16'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-14-4'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-14-7'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-15-6'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-15-13'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-16-7'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-16-13'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-18-4'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-18-16'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-18-22'	11/9/1998	-	-	-	-	-	ND	-	-	-	ND	ND	ND	ND	-	-
EB-19-22'	11/10/1998	**5.8**	ND	-	ND	-	ND	-	-	-	ND	ND	ND	ND	-	ND
EB-20-7'	11/10/1998	**160**	ND	-	**70**	-	ND	-	-	-	ND	ND	**0.044**	ND	-	**0.045 (2)**
EB-20-13'	11/10/1998	**140**	ND	-	ND	-	ND	-	-	-	ND	ND	ND	ND	-	ND
EB-20-22'	11/10/1998	**4**	ND	-	ND	-	ND	-	-	-	ND	ND	ND	ND	-	ND
EB-21-22'	11/10/1998	**4.7**	ND	-	ND	-	ND	-	-	-	ND	ND	ND	ND	-	ND
Sampling performed by URS, 2000																
FOMW-1-11'	5/18/2000	ND	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-1-16'	5/18/2000	ND	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-1-20'	5/18/2000	ND	**3200**	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-2-6'	5/19/2000	ND	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-2-11'	5/19/2000	ND	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-2-16'	5/19/2000	ND	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-3-6'	5/19/2000	**51**	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-3-11'	5/19/2000	**1900**	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
FOMW-3-16'	5/19/2000	**19**	ND	-	-	-	-	-	-	-	ND	ND	ND	ND	ND	-
Sampling performed by URS, 2002																
FOMW 4 @ 5'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
FOMW 4 @ 10'	2/13/2002	**4.3***	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
FOMW 4 @ 15'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
FOMW 4 @ 20'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
FOMW 4 @ 25'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
FOMW 4 @ 30'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
FOMW5 @ 5'	2/12/2002	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	--
FOMW 5 @ 10'	2/12/2002	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	--
FOMW 5 @ 15'	2/12/2002	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	--
FOMW 5 @ 20'	2/12/2002	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	--
FOMW 5 @ 25'	2/12/2002	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	--
FOMW 5 @ 30'	2/12/2002	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	--
EB-22-6'-8'	2/13/2002	NA	NA	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--
EB-22-10'-12'	2/13/2002	NA	NA	--	--	--	--	**0.45**	**340**	**580**	ND	ND	ND	**0.017**	ND	--
EB-22-14'-16'	2/13/2002	NA	NA	--	--	--	--	**2.3**	**130**	**260**	ND	**0.020**	ND	**0.071**	ND	--
EB-22-18'-20'	2/13/2002	NA	NA	--	--	--	--	**0.84**	ND	ND	ND	ND	ND	ND	ND	--
EB-22-22'-24'	2/13/2002	NA	NA	--	--	--	--	**0.18**	ND	ND	ND	ND	ND	ND	ND	--
EB-22-26'-28'	2/13/2002	NA	NA	--	--	--	--	**0.12**	ND	ND	ND	ND	ND	ND	ND	--
EB-23-10'-12'	2/13/2002	NA	NA	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	--
EB-23-16'-18'	2/13/2002	NA	NA	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	--
EB-23-20'-22'	2/13/2002	NA	NA	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	--
EB-23-24'-26'	2/13/2002	NA	NA	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	--
EB 24 @ 5'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
EB 24 @ 10'	2/13/2002	**5.8***	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
EB 24 @ 15'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
EB 24 @ 20'	2/13/2002	**2.4***	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
EB 24 @ 25'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
EB 24 @ 30'	2/13/2002	ND	ND	--	--	--	--	-	-	-	ND	ND	ND	ND	ND	--
Sampling performed by URS, 2008																
EB-25-5	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
DUP-1	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
EB-25-10	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
EB-25-15	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
EB-25-20	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
EB-27-5	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
EB-27-10	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
EB-27-15	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-
EB-27-20	12/23/2008	ND	ND	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-

Notes:
All concentrations in mg/kg
ND = Not Detected at or above the state laboratory reporting limit
- = Not Analyzed
* TPH-Gasoline or TPH-diesel reported does not match typical standard.
[1] Tetrachloroethene
[2] Isopropyl-benzene
MTBE = methyl tertiary butyl ether
VOCs = volatile organic compounds other than BTEX or MTBE

APPENDIX C

HISTORICAL GROUNDWATER GRAB SAMPLE ANALYTICAL RESULTS

APPENDIX C
HISTORICAL GROUNDWATER GRAB SAMPLE ANALYTICAL RESULTS
FORMER SEARS RETAIL CENTER #1058A
2633 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

Sample Number	Sample Date	TPH-Diesel	TPH-Bunker Oil	TPH-Fuel Oil	TPH-Motor Oil	TPH-Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-Stoddard Solvent	VOCs
Sampling performed by Lowney, 1998												
EB-1	4/7/1998	ND	**38,000**	ND	-	-	ND	ND	ND	ND	-	-
EB-2	4/7/1998	ND	**480,000**	ND	-	-	**4.8**	**1.8**	**1.4**	**5.2**	-	-
EB-3	4/7/1998	ND	**150,000**	ND	-	-	ND	ND	ND	ND	-	-
EB-4	4/7/1998	ND	ND	ND	ND	**1,600**	**4.3**	**3.7**	ND	ND	**9,100**	ND
EB-5	4/7/1998	ND	**330,000**	ND	ND	**100***	ND	ND	ND	ND	ND	**(1)**
EB-6	5/12/1998	ND	ND	-	-	-	ND	ND	ND	ND	ND	-
EB-10	5/12/1998	ND	ND	-	-	-	ND	ND	ND	ND	ND	-
EB-11	5/12/1998	ND	ND	-	-	-	ND	ND	ND	ND	ND	-
EB-12	5/12/1998	ND	ND	-	-	-	ND	ND	ND	ND	ND	-
Sampling performed by Secor, 1998												
EB-13	11/9/1998	-	-	-	-	-	ND	ND	ND	ND	ND	-
EB-14	11/9/1998	-	-	-	-	-	ND	ND	**3.2**	**6.1**	**2,300**	**(2,3,4)**
EB-15	11/9/1998	-	-	-	-	-	ND	ND	ND	ND	ND	-
EB-18	11/9/1998	-	-	-	-	-	ND	ND	ND	ND	ND	-
Sampling performed by URS, 2002												
EB-22	2/12/2002	**4600***	ND	-	-	-	ND	ND	ND	ND	-	-
EB-23	2/12/2002	**150***	ND	-	-	-	ND	ND	ND	ND	-	-
Sampling performed by URS, 2008												
EB-27W-10-20	12/23/2008	ND	-	-	ND	ND	ND	ND	ND	ND	-	-
EB-EB-25	12/23/2008	-	-	-	-	ND	ND	ND	ND	ND	-	-

Notes:
Results in µg/L
ND = Not Detected at or above laboratory reporting limits
- = Not Analyzed
* TPH-Gasoline chromatogram, although within reporting limits, does not match gasoline/diesel standard.
[1] Tetrachloroethene detected at 0.6 µg/L.
[2] Naphthalene detected at 11 µg/L.
[3] Trichloroethene detected at 5.7 µg/L.
[4] Isopropylbenzene detected at 62 µg/L.
VOCs = volatile organic compounds other than benzene, toluene, ethylbenzene, or xylenes

APPENDIX D

HISTORICAL GROUNDWATER MONITORING RESULTS

APPENDIX D-1
HISTORICAL GROUNDWATER LEVELS AND FIELD PARAMETERS
FORMER SEARS RETAIL CENTER #1058A
OAKLAND, CALIFORNIA

			GROUNDWATER LEVELS				GROUNDWATER SAMPLING FIELD PARAMETERS						
Monitoring Well ID	Date Collected	Notes	Product Thickness (feet)	Depth to Groundwater (feet bgs)	Casing Elevation (MSL)	Groundwater Elevation (MSL)	Temp. (Celsius)	pH (Units)	Cond (µS/cm)	Turbidity (NTU)	ORP (mV)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)
FOMW-1	6/8/2000	1,2	0.00	9.59	27.81	18.22	18.3	6.72	659	NA	13.0	0.28	NA
	10/10/2000	SP	0.01	9.91	27.81	17.90	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	SP	0.01	9.44	27.81	18.37	NA	NA	NA	NA	NA	NA	NA
	3/27/2001	SP	0.01	9.00	27.81	18.81	NA	NA	NA	NA	NA	NA	NA
	6/22/2001	SP	NA	NA	27.81	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/2001	SP	0.01	10.85	27.81	16.96	NA	NA	NA	NA	NA	NA	NA
	12/7/2001	3	NA	NA	27.81	NA	NA	NA	NA	NA	NA	NA	NA
	3/6/2002	SP,6	0.01	8.70	26.21	17.51	NA	NA	NA	NA	NA	NA	NA
	6/6/2002	SP,7	--	8.10	26.21	18.11	NA	NA	NA	NA	NA	NA	NA
	9/6/2002	SP,7	NA	9.00	26.21	17.21	NA	NA	NA	NA	NA	NA	NA
	12/11/2002	SP,7	0.01	8.30	26.21	17.91	NA	NA	NA	NA	NA	NA	NA
	3/21/2005	SP,7	0.23	8.83	26.21	17.38	NA	NA	NA	NA	NA	NA	NA
	11/14/2008	1,2	0.00	7.97	26.21	18.24	NA	NA	NA	NA	NA	NA	NA
FOMW-2	6/8/2000	--	0.00	11.14	26.65	15.51	14.7	7.00	673	NA	10.0	2.92	NA
	10/10/2000	--	0.00	12.34	26.65	14.31	15.8	7.58	420	NA	0.0	NA	NA
	12/15/2000	--	0.00	11.05	26.65	15.60	14.0	7.09	1210	NA	NA	0.15	NA
	3/27/2001	--	0.00	10.91	26.65	15.74	15.4	7.62	305	NA	92.0	0.61	NA
	6/22/2001	--	0.00	11.30	26.65	15.35	15.3	5.33	340	NA	0.2	0.25	NA
	9/26/2001	3	NA	NA	26.65	NA	NA	NA	NA	NA	NA	NA	NA
	12/7/2001	4	NA	NA	26.65	NA	NA	NA	NA	NA	NA	NA	NA
	3/6/2002	4,5	NA	11.25	26.65	15.40	NA	NA	NA	NA	NA	NA	NA
	6/6/2002	4,5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/6/2002	4,5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/11/2002	3,4,5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/21/2005	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/14/2008	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-3	6/8/2000	2	0.00	10.48	26.80	16.32	15.0	6.87	689	NA	23.0	0.22	NA
	10/10/2000	--	0.00	11.15	26.80	15.65	15.6	7.66	430	NA	39.0	NA	NA
	12/15/2000	--	0.00	10.36	26.80	16.44	14.1	7.31	1400	NA	45.0	0.15	NA
	3/27/2001	--	0.00	10.12	26.80	16.68	NA	NA	NA	NA	NA	NA	NA
	6/22/2001	--	0.00	10.65	26.80	16.15	15.7	5.11	330	NA	0.1	0.50	NA
	9/26/2001	--	0.00	11.74	26.80	15.06	17.5	6.81	528	NA	23.8	0.78	NA
	12/7/2001	--	0.00	9.59	26.80	17.21	16.8	6.71	432	228.9	34.2	0.18	0.32
	3/6/2002	6	0.00	10.59	26.70	16.11	16.3	6.76	471	NA	45.6	0.3	0.11
	6/6/2002	--	0.00	10.78	26.70	15.92	15.91	6.63	538	2.1	NA	NA	NA
	9/6/2002	--	0.00	11.19	26.70	15.51	18.75	6.56	495	77.7	NA	NA	0.0
	12/11/2002	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/21/2005	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/14/2008	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-4	3/6/2002	5,6	0.00	10.08	26.20	16.12	15.90	6.75	376	NA	78.2	0.18	0.47
	6/6/2002	6	0.00	10.23	26.20	15.97	15.91	6.63	538	18.1	NA	NA	NA
	9/6/2002	--	0.00	10.58	26.20	15.62	19.88	6.47	454	1099.9	NA	NA	0.0
	12/11/2002	--	0.00	10.46	26.20	15.74	19.36	6.26	249	31.2	115.2	0.12	0.0
	3/21/2005	--	0.00	9.44	26.20	16.76	18.99	6.45	401	4.1	90.5	0.00	NA
	11/14/2008	--	0.00	10.46	26.20	15.74	22.68	6.35	506	68.6	105.9	0.55	NA
FOMW-5	3/6/2002	5,6	0.00	12.91	26.23	13.32	16.63	6.62	386	NA	77.9	0.09	0.3
	6/6/2002	6	0.00	12.60	26.23	13.63	16.54	6.02	464	43.5	NA	NA	NA
	9/6/2002	--	0.00	12.55	26.23	13.68	18.62	6.38	409	71.4	NA	NA	0.0
	12/11/2002	--	0.00	12.65	26.23	13.58	18.87	6.21	179	127.8	58.6	0.31	0.0
	3/21/2005	--	0.00	12.43	26.23	13.80	19.25	6.35	432	34.8	106.0	0.00	NA
	11/14/2008	--	0.00	12.53	26.23	13.70	19.99	6.25	449	59.3	117.6	0.45	NA

Notes:
1. Sheen observed on water surface.
2. Petroleum odor in groundwater.
3. Well covered by recent construction. Could not be accessed.
4. Well casing damaged.
5. Reference point for DTW measurement has not been surveyed.
6. Well resurveyed by Mariscal and Associates on May 13, 2002 .
7. Product too viscous to obtain accurate measurement.
8. Well damaged/inaccessible/not found

MSL - Mean Sea Level
bgs - Below ground surface
NA - Not analyzed/Not available.

Groundwater Elevation reference to MSL
Groundwater Elevation = Top of Casing Elevation - Depth to Water.
SP - Separate phase product in well
Cond - electrical conductivity
NTU - nephelometric turbidity units
µS/cm - microSiemens per centimeter
mV - millivolt
mg/L - milligrams per liter
Temp. - temperature

APPENDIX D-2
HISTORICAL SUMMARY OF GROUNDWATER MONITORING RESULTS
FORMER SEARS RETAIL CENTER #1058A
OAKLAND, CALIFORNIA

Monitoring Well ID	Sample Date	Notes	LABORATORY ANALYTICAL RESULTS									PHYSICAL PARAMETERS						
			TPH by 8015M				Volatile Organics by GC/MS 8021A/8260B											
			TPHg (µg/L)	TPHd (µg/L)	TPHo (µg/L)	TPHss (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Total Alkalinity (mg/L)	Dissolved Methane (µg/L)	Hydrocarbon Degraders (CFU/ML)	Heterotrophic Plate Count (CFU/ML)
FOMW-1	6/8/2000		NA	< 50	J 1200	NA	< 0.5	< 0.5	< 0.5	< 1	< 5	NA	NA	360	230	< 0.01	390	4,000
	10/10/2000	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	SP	NA	260	< 50	NA	< 0.5	< 0.5	< 0.5	< 1	< 5	NA	NA	NA	NA	NA	NA	NA
	12/15/2000	1	NA	370	< 50	NA	< 0.5	< 0.5	< 0.5	< 1	< 5	NA	NA	NA	NA	NA	NA	NA
	3/27/2001	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/22/2001	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/26/2001	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/7/2001	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/6/2002	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/6/2002	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/6/2002	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/11/2002	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/21/2005	SP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/14/2008	SH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-2	6/8/2000		NA	< 50	< 50	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	NA	NA	250	150	< 0.01	1	110
	10/10/2000		NA	< 50	< 50	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	NA	NA	260	140	< 0.01	170	1600
	12/15/2000		NA	< 50	< 50	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	7.8	30	210	190	< 0.01	550	1000
	3/27/2001		NA	< 50	NA	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	8.4	47	290	130	< 0.01	30	170
	3/27/2001	1	NA	< 50	NA	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	9.1	47	320	130	< 0.01	40	70
	6/22/2001		NA	< 250	< 250	NA	< 1	< 1	< 1	< 1	< 5.0	NA	NA	220	110	< 0.01	4,000	400,000
	9/26/2001	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/7/2001	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/6/2002	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/6/2002	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/6/2002	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/11/2002	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/21/2005	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/14/2008	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-3	6/8/2000		NA	< 50	J 1200	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	NA	NA	330	190	< 0.01	440	110,000
	6/8/2000	1	NA	< 50	J 1100	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	NA	NA	330	180	< 0.01	50	8,000
	10/10/2000		NA	230	< 50	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	NA	NA	300	170	< 0.01	800	4,000
	12/15/2000		NA	100	< 50	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	3.2	30	290	190	< 0.01	1,200	1,800
	3/27/2001		NA	170	NA	NA	< 0.5	< 0.5	< 0.5	< 1	< 5.0	3.3	51	420	130	< 0.01	400	300
	6/22/2001		NA	260	< 250	NA	< 1	< 1	< 1	< 1	< 5.0	NA	NA	250	150	< 0.01	4,000	350,000
	9/26/2001		NA	95	< 500	NA	0.72	1	< 0.5	< 0.5	< 5.0	5.0	55	NA	150	0.011	30	170
	12/7/2001		NA	110	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	7.1	66	NA	130	NA	260	1,000
	3/6/2002		< 50	53	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	6.8	84	NA	140	NA	--	--
	6/6/2002		< 50	302 J	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	9.08	39.3	NA	160	NA	200	400

APPENDIX D-2
HISTORICAL SUMMARY OF GROUNDWATER MONITORING RESULTS
FORMER SEARS RETAIL CENTER #1058A
OAKLAND, CALIFORNIA

Monitoring Well ID	Sample Date	Notes	LABORATORY ANALYTICAL RESULTS									PHYSICAL PARAMETERS						
			TPH by 8015M				Volatile Organics by GC/MS 8021A/8260B											
			TPHg (µg/L)	TPHd (µg/L)	TPHo (µg/L)	TPHss (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Total Alkalinity (mg/L)	Dissolved Methane (µg/L)	Hydrocarbon Degraders (CFU/ML)	Heterotrophic Plate Count (CFU/ML)
	9/6/2002		< 50	< 500	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	1.54	26.9	NA	165	NA	20	100
	12/11/2002	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/21/2005	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11/14/2008	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FOMW-4	3/6/2002		< 50	< 50	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	9.7	53	--	100	--	--	--
	3/6/2002	1	< 50	52	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	9.7	53	--	110	--	--	--
	6/6/2002		< 50	120 J	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	12.7	25.6	NA	146	NA	1,000	4,000
	6/6/2002	1	< 50	< 500	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	--	--	NA	--	NA	--	--
	9/6/2002		< 50	< 500	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	7.64	21.2	NA	144	NA	40	5,000
	9/6/2002	1	< 50	< 500	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	7.48	11.8	NA	126	NA	--	--
	12/11/2002		< 50	< 500	< 2000	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	17.3	35.1	NA	125	NA	10	400
	12/11/2002	1	< 50	< 500	< 2000	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	NA	NA	NA	NA	NA	NA	NA
	3/21/2005		< 50	< 500	NA	< 2000	< 1	< 1	< 1	< 2	< 2	NA	NA	NA	NA	NA	NA	NA
	11/14/2008		< 50	< 500	NA	< 500	< 0.5	< 0.5	< 0.5	< 1	< 1	NA	NA	NA	NA	NA	NA	NA
FOMW-5	3/6/2002		< 50	< 50	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0	15	41	--	120	--	--	--
	6/6/2002		< 50	< 500	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	11.4	25.9	NA	130	NA	200	1,600
	9/6/2002		< 50	< 500	< 500	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	7.48	11.8	NA	124	NA	30	100
	12/11/2002		< 50	< 500	< 2000	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	14.4	29.6	NA	121	NA	10	600
	3/21/2005		< 50	< 500	NA	< 2000	< 1	< 1	< 1	< 2	< 2	NA	NA	NA	NA	NA	NA	NA
	11/14/2008		< 50	< 500	NA	< 500	< 0.5	< 0.5	< 0.5	< 1	< 1	NA	NA	NA	NA	NA	NA	NA

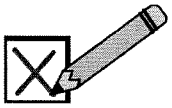
Notes: 1: Duplicate sample
2: Well covered by recent construction. Could not be accessed.
3: Well casing is damaged.
4: Well damaged/inaccessible/not found.
J - Bunker-C detections were quantitated against the diesel standard and flagged as estimated concentrations
< - Analyte not detected above indicated method detection limit
NA or --: Not analyzed/Not available.
SP: Separate Phase Product
SH: Sheen Present

TPH - Total petroleum hydrocarbons
B T E X - Benzene, Toluene, Ethylbenzene, Total Xylenes
MTBE - methyl tertiary butyl ether
TDS = Total Dissolved Solids
TPHg = Total Petroleum Hydrocarbons as gasoline range hydrocarbons by EPA Method 8015 (modified)
TPHd = Total Petroleum Hydrocarbons as diesel range hydrocarbons by EPA Method 8015 (modified)
TPHo = Total Petroleum Hydrocarbons as oil range by EPA Method 8015 (modified)
TPHss = Total Petroleum Hydrocarbons as stoddard solvent range by EPA Method 8015 (modified)
µg/L - micrograms per liter
mg/L - milligrams per liter
(CFU/ML)- colony forming unit per millliliter

APPENDIX E

OAKLAND RBCA ELIGIBILITY CHECKLIST

Oakland RBCA Eligibility Checklist



The Oakland Tier 1 RBSLs and Tier 2 SSTLs are intended to address human health concerns at the majority of sites in Oakland where commonly-found contaminants are present. Complicated sites—especially those with continuing releases, ecological concerns or unusual subsurface conditions—will likely require a Tier 3 analysis. The following checklist is designed to assist you in determining your site's eligibility for the Oakland RBCA levels.

CRITERIA	YES	NO
1. Is there a continuing, *primary* source of a chemical of concern, such as a leaking container, tank or pipe? (This does *not* include residual sources.)	☐	☒
2. Is there any mobile or potentially-mobile free product?	☐	☒
3. Are there more than five chemicals of concern at the site at a concentration greater than the lowest applicable Oakland RBCA level?	☐	☒
4. Are there any preferential vapor migration pathways—such as gravel channels or utility corridors—that are potential conduits for the migration, on-site or off-site, of a volatilized chemical of concern?	☐	☒
5. Do both of the following conditions exist? (a) Groundwater is at depths less than 300 cm (10 feet) (b) Inhalation of volatilized chemicals of concern from groundwater in indoor or outdoor air is a pathway of concern but groundwater ingestion is *not**	☐	☒
6. Are there any existing on-site or off-site structures intended for future use where exposure to indoor air vapors from either soil or groundwater is of concern *and* one of the following three conditions is present? (a) A slab-on-grade foundation that is less than 15 cm (6 inches) thick (b) An enclosed, below-grade space (e.g., a basement) that has floors or walls less than 15 cm (6 inches) thick (c) A crawl space that is not ventilated	☐	☒
7. Are there any immediate, acute health risks to humans associated with contamination at the site, including explosive levels of a chemical?	☐	☒
8. Are there any complete exposure pathways to nearby ecological receptors, such as endangered species, wildlife refuge areas, wetlands, surface water bodies or other protected areas?	☐	☒

*If groundwater ingestion *is* a pathway of concern, the associated Oakland RBCA levels will be more stringent than those for any groundwater-related inhalation scenario, rendering depth to groundwater irrelevant in the risk analysis.

If you answer "no" to all questions, your site is eligible for the Oakland RBCA levels. If you answer "yes" to any of the questions, your site is *not* eligible for the Oakland RBCA levels at this time.

APPENDIX F

SEPARATE PHASE PRODUCT ANALYTICAL RESULTS

APPENDIX F
SEPARATE PHASE PRODUCT ANALYTICAL RESULTS
FORMER SEARS RETAIL CENTER #1058A
OAKLAND, CALIFORNIA

Monitoring Well No.	Sample Date	LABORATORY ANALYTICAL RESULTS							
		Volatile Organics by GC/MS 8021B					TPH by 8015M		
		B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	C8-C12 (mg/kg)	C13-C23 (mg/kg)	C24-C40 (mg/kg)
FOMW-1	9/26/2001	< 0.002	< 0.002	< 0.002	< 0.004	< 0.005	46,000	393,000	385,000

Notes:
TPH - Total Petroleum Hydrocarbons
B T E X - Benzene, Toluene, Ethylbenzene, Total Xylenes
MTBE - Methyl tertiary-butyl ether
< - Analyte not detected above indicated method detection limit
mg/kg : milligram per kilogram
SP: Separate Phase Product

APPENDIX G

OAKLAND TIER 1 RBSLs and TIER 2 SSTLs

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaph-thene	Acenaph-thylene	Acetone	Anthracene	Arsenic	Barium	Benz(a)-anthracene	Benzene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic					3.2E-01		2.5E-01	2.7E+00
			Hazard	3.1E+03	3.1E+03	4.8E+03	1.6E+04	2.0E+01	5.2E+03		8.1E+01
		Commercial/ Industrial	Carcinogenic					1.5E+00		7.9E-01	8.5E+00
			Hazard	2.0E+04	2.0E+04	3.0E+04	1.0E+05	2.5E+02	9.4E+04		5.1E+02
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	6.9E-02
			Hazard	SAT	SAT	1.5E+03	SAT				2.3E+00
		Commercial/ Industrial	Carcinogenic							SAT	1.1E+00
			Hazard	SAT	SAT	4.4E+04	SAT				6.6E+01
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							SAT	1.9E-01
			Hazard	SAT	SAT	5.0E+03	SAT				7.6E+00
		Commercial/ Industrial	Carcinogenic							SAT	7.3E-01
			Hazard	SAT	SAT	2.9E+04	SAT				4.4E+01
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic					*4.4E+00*	*1.2E+02*	6.8E-01	*2.1E-03*
			Hazard	2.0E+02	1.4E+02	3.6E-01	SAT	*4.4E+00*	*1.2E+02*		*2.1E-03*
		Commercial/ Industrial	Carcinogenic					*4.4E+00*	*1.2E+02*	2.9E+00	*2.1E-03*
			Hazard	SAT	SAT	2.4E+00	SAT	*4.4E+00*	*1.2E+02*		*2.1E-03*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>SOL	1.1E-01
			Hazard	>SOL	>SOL	2.0E+04	>SOL				3.7E+00
		Commercial/ Industrial	Carcinogenic							>SOL	1.8E+00
			Hazard	>SOL	>SOL	5.8E+05	>SOL				1.1E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							>SOL	5.6E+00
			Hazard	>SOL	>SOL	2.1E+05	>SOL				2.2E+02
		Commercial/ Industrial	Carcinogenic							>SOL	2.1E+01
			Hazard	>SOL	>SOL	>SOL	>SOL				1.3E+03
	Ingestion of Groundwater	Residential	Carcinogenic					*5.0E-02*	*1.0E+00*	5.6E-05	*1.0E-03*
			Hazard	9.4E-01	9.4E-01	1.6E+00	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
		Commercial/ Industrial	Carcinogenic					*5.0E-02*	*1.0E+00*	2.4E-04	*1.0E-03*
			Hazard	>SOL	>SOL	1.0E+01	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic					2.0E-03		1.6E-05	6.3E-03
			Hazard	1.1E+00	1.7E+00	4.2E+01	>SOL	1.2E-01	2.8E+01		1.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Beryllium	Bis (2-ethylhexyl) phthalate	Butyl benzyl phthalate
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.5E-02	2.5E-01		2.5E-01	4.5E+03	3.6E+01	
			Hazard			2.1E+02		3.7E+02	1.0E+03	1.0E+04
		Commercial/ Industrial	Carcinogenic	7.9E-02	7.9E-01		7.9E-01	1.7E+04	1.1E+02	
			Hazard			1.4E+03		6.8E+03	6.8E+03	6.8E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*6.2E+00*	2.1E+00		2.1E+00	9.6E+00	3.7E+03	
			Hazard	*6.2E+00*		SAT		9.6E+00	SAT	SAT
		Commercial/ Industrial	Carcinogenic	*6.2E+00*	8.9E+00		8.9E+00	9.6E+00	1.6E+04	
			Hazard	*6.2E+00*		SAT		9.6E+00	SAT	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-04*	5.6E-05		5.6E-05	4.0E-03	8.0E-03	
			Hazard	*2.0E-04*		>SOL		4.0E-03	3.1E-01	>SOL
		Commercial/ Industrial	Carcinogenic	*2.0E-04*	2.4E-04		2.4E-04	4.0E-03	3.4E-02	
			Hazard	*2.0E-04*		>SOL		4.0E-03	>SOL	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.1E-06	1.1E-05		1.2E-05		5.1E-02	
			Hazard			>SOL		2.0E+00	>SOL	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Cadmium	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroform	Chromium (III)	Chromium (VI)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.1E+03		1.8E+00		9.1E+00		1.3E+00
			Hazard	3.7E+01	1.2E+03	3.3E+01	7.9E+02	4.8E+02	7.4E+04	3.7E+02
		Commercial/ Industrial	Carcinogenic	7.9E+03		5.6E+00		2.9E+01		8.7E+00
			Hazard	6.8E+02	6.4E+03	2.1E+02	4.7E+03	3.0E+03	1.4E+06	6.8E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			2.7E-02		3.3E-01		
			Hazard		1.1E+00	4.6E-01	6.2E-01	1.2E+01		
		Commercial/ Industrial	Carcinogenic			4.3E-01		5.2E+00		
			Hazard		3.3E+01	1.3E+01	1.8E+01	3.5E+02		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			7.6E-02		9.2E-01		
			Hazard		3.8E+00	1.5E+00	2.1E+00	4.1E+01		
		Commercial/ Industrial	Carcinogenic			2.9E-01		3.5E+00		
			Hazard		2.2E+01	8.8E+00	1.2E+01	2.4E+02		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.1E+00*		*3.0E-03*	*6.6E-02*	*1.5E-01*		2.9E+00
			Hazard	*1.1E+00*	2.9E+00	*3.0E-03*	*6.6E-02*	*1.5E-01*	8.5E+07	2.9E+00
		Commercial/ Industrial	Carcinogenic	*1.1E+00*		*3.0E-03*	*6.6E-02*	*1.5E-01*		2.9E+00
			Hazard	*1.1E+00*	1.9E+01	*3.0E-03*	*6.6E-02*	*1.5E-01*	5.6E+08	2.9E+00
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			1.6E-02		7.5E-01		
			Hazard		2.1E+00	2.7E-01	2.4E+00	2.8E+01		
		Commercial/ Industrial	Carcinogenic			2.6E-01		1.2E+01		
			Hazard		6.2E+01	7.8E+00	6.9E+01	8.0E+02		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			1.1E+00		3.4E+01		
			Hazard		1.7E+02	2.2E+01	2.0E+02	1.5E+03		
		Commercial/ Industrial	Carcinogenic			4.2E+00		1.3E+02		
			Hazard		9.6E+02	1.3E+02	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.6E+00	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.6E+01	5.0E-02
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.0E+01	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.0E+02	5.0E-02
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.1E-03		3.9E-02		6.8E-03
			Hazard	2.0E-01	9.4E+00	7.1E-02	1.2E+00	1.9E+00	3.8E+02	1.9E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Chrysene	Copper	Cresol(-m)	Cresol(-o)	Cresol(-p)	Cyanide	Dibenz(a,h)-anthracene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.5E+00						7.4E-02
			Hazard		2.8E+03	2.6E+03	2.6E+03	2.6E+02	3.0E+03	
		Commercial/ Industrial	Carcinogenic	7.9E+00						2.3E-01
			Hazard		5.0E+04	1.7E+04	1.7E+04	1.7E+03	5.5E+04	
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	SAT	*2.8E-01*				6.0E+00	1.9E+00
			Hazard		*2.8E-01*	2.2E+00	2.3E+00	2.1E-01	6.0E+00	
		Commercial/ Industrial	Carcinogenic	SAT	*2.8E-01*				6.0E+00	8.0E+00
			Hazard		*2.8E-01*	1.5E+01	1.5E+01	1.4E+00	6.0E+00	
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	5.6E-04	*1.3E+00*				2.0E-01	1.6E-05
			Hazard		*1.3E+00*	7.8E-01	7.8E-01	7.8E-02	2.0E-01	
		Commercial/ Industrial	Carcinogenic	>SOL	*1.3E+00*				2.0E-01	7.0E-05
			Hazard		*1.3E+00*	5.1E+00	5.1E+00	5.1E-01	2.0E-01	
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.6E-04						1.4E-06
			Hazard		1.5E+01	6.7E+00	6.4E+00	5.9E-01	7.0E+00	

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Dichloro- ethane (1,1-)	Dichloro- ethane (1,2-) (EDC)	Dichloro- ethylene (1,1-)	Dichloro- ethylene (cis 1,2-)	Dichloro- ethene (trans 1,2)	Dimethylbenza- (a)anthracene (7,12)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	4.7E+01	3.9E+00	4.9E-01			
			Hazard	4.9E+03	1.4E+02	4.3E+02	4.8E+02	9.5E+02	1.6E+03
		Commercial/ Industrial	Carcinogenic	1.5E+02	1.2E+01	1.5E+00			
			Hazard	3.1E+04	8.8E+02	2.7E+03	3.0E+03	6.1E+03	1.0E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	8.6E-01	1.7E-01	9.4E-03			
			Hazard	1.3E+02	6.8E+00	3.0E+00	1.4E+01	1.9E+01	
		Commercial/ Industrial	Carcinogenic	1.4E+01	2.7E+00	1.5E-01			
			Hazard	SAT	2.0E+02	8.7E+01	4.1E+02	5.4E+02	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	2.4E+00	4.8E-01	2.6E-02			
			Hazard	4.5E+02	2.3E+01	9.9E+00	4.7E+01	6.2E+01	
		Commercial/ Industrial	Carcinogenic	9.1E+00	1.8E+00	1.0E-01			
			Hazard	SAT	1.3E+02	5.8E+01	2.8E+02	3.6E+02	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*	*2.0E-02*	
			Hazard	6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*	*2.0E-02*	SAT
		Commercial/ Industrial	Carcinogenic	6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*	*2.0E-02*	
			Hazard	6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*	*2.0E-02*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	2.3E+00	7.2E-01	1.4E-02			
			Hazard	3.6E+02	2.9E+01	4.3E+00	3.5E+01	3.2E+01	
		Commercial/ Industrial	Carcinogenic	3.6E+01	1.1E+01	2.2E-01			
			Hazard	>SOL	8.3E+02	1.2E+02	1.0E+03	9.4E+02	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	1.1E+02	1.8E+01	9.3E-01			
			Hazard	>SOL	8.6E+02	3.5E+02	1.6E+03	2.0E+03	
		Commercial/ Industrial	Carcinogenic	4.0E+02	6.9E+01	3.5E+00			
			Hazard	>SOL	5.0E+03	2.0E+03	>SOL	>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
		Commercial/ Industrial	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	2.1E-01	2.4E-02	1.3E-03			
			Hazard	1.9E+01	7.2E-01	1.2E+00	1.8E+00	3.5E+00	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Dimethyl-phenol (2,4)	di-n-Butyl-phthalate	di-n-octyl phthalate	Dinitro-toluene (2,4)	Dioxane (1,4)	Ethyl-benzene	Ethylene Dibromide	Flouran-thene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic				9.7E-01	1.0E+01		8.4E-02	
			Hazard	1.0E+03	5.2E+03	1.0E+03			5.1E+03	2.7E+00	2.1E+03
		Commercial/ Industrial	Carcinogenic				3.0E+00	3.1E+01		2.6E-01	
			Hazard	6.7E+03	3.4E+04	6.8E+03			3.3E+04	1.7E+01	1.4E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				SAT	SAT		2.8E-01	
			Hazard	SAT	SAT	SAT			SAT	7.8E-01	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		4.5E+00	
			Hazard	SAT	SAT	SAT			SAT	2.3E+01	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				SAT	SAT		7.9E-01	
			Hazard	SAT	SAT	SAT			SAT	2.6E+00	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		3.0E+00	
			Hazard	SAT	SAT	SAT			SAT	1.5E+01	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic				6.7E-04	1.8E-03	*8.0E+00*	*7.8E-05*	
			Hazard	2.0E+00	3.9E+06	SAT			*8.0E+00*	*7.8E-05*	SAT
		Commercial/ Industrial	Carcinogenic				2.9E-03	SAT	*8.0E+00*	*7.8E-05*	
			Hazard	1.3E+01	SAT	SAT			*8.0E+00*	*7.8E-05*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		5.7E-01	
			Hazard	>SOL	>SOL	>SOL			>SOL	1.6E+00	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		9.0E+00	
			Hazard	>SOL	>SOL	>SOL			>SOL	4.6E+01	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		8.7E+00	
			Hazard	>SOL	>SOL	>SOL			>SOL	2.9E+01	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		3.3E+01	
			Hazard	>SOL	>SOL	>SOL			>SOL	1.7E+02	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic				2.2E-04	2.5E-03	*7.0E-01*	*5.0E-05*	
			Hazard	3.1E-01	1.6E+00	>SOL			*7.0E-01*	*5.0E-05*	>SOL
		Commercial/ Industrial	Carcinogenic				9.2E-04	1.1E-02	*7.0E-01*	*5.0E-05*	
			Hazard	2.0E+00	1.0E+01	>SOL			*7.0E-01*	*5.0E-05*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic				6.4E-03	>SOL		5.9E-04	
			Hazard	2.7E+00	7.3E+00	2.1E-03			3.6E+00	1.7E-02	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Fluorene	Indeno-(1,2,3-CD)-pyrene	Mercury	Methanol	Methyl ethyl ketone	Methylene Chloride	Methyl-napthalene (2-)	MTBE
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		2.5E-01				2.1E+01		
			Hazard	2.1E+03		4.7E+00	2.4E+04	2.6E+04	3.1E+03	2.0E+03	2.6E+02
		Commercial/ Industrial	Carcinogenic		7.9E-01				6.6E+01		
			Hazard	1.4E+04		3.0E+01	1.5E+05	1.6E+05	2.0E+04	1.3E+04	1.7E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		SAT				1.3E+00		
			Hazard	SAT		1.2E+01	4.5E+04	6.9E+03	7.4E+02	SAT	4.4E+03
		Commercial/ Industrial	Carcinogenic		SAT				2.0E+01		
			Hazard	SAT			SAT	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		SAT				3.5E+00		
			Hazard	SAT		4.0E+01	SAT	2.3E+04	2.5E+03	SAT	SAT
		Commercial/ Industrial	Carcinogenic		SAT				1.3E+01		
			Hazard	SAT		2.3E+02	SAT	SAT	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic		SAT	*3.2E-01*			3.1E-03		*7.6E-03*
			Hazard	2.6E+02		*3.2E-01*	1.7E+00	3.3E+00	3.1E-03	1.6E+02	*7.6E-03*
		Commercial/ Industrial	Carcinogenic		SAT	*3.2E-01*			3.1E-03		*7.6E-03*
			Hazard	SAT		*3.2E-01*	1.1E+01	2.2E+01	3.1E-03	1.1E+03	*7.6E-03*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		>SOL				6.7E+00		
			Hazard	>SOL		2.6E-01	6.5E+05	6.0E+04	4.0E+03	>SOL	2.4E+04
		Commercial/ Industrial	Carcinogenic		>SOL				1.1E+02		
			Hazard	>SOL		7.6E+00	>SOL	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		>SOL				2.3E+02		
			Hazard	>SOL		1.6E+01	>SOL	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic		>SOL				8.7E+02		
			Hazard	>SOL		9.5E+01	>SOL	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	6.3E-01		*2.0E-03*	7.8E+00	9.4E+00	5.0E-03	6.3E-01	*1.3E-02*
		Commercial/ Industrial	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	>SOL		*2.0E-03*	5.1E+01	6.1E+01	5.0E-03	4.1E+00	*1.3E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic		7.0E-06				1.3E-01		
			Hazard	3.1E-01		3.6E-02	2.2E+02	1.5E+02	1.6E+01	6.1E-01	1.5E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Naphthalene	Nickel	Nitro-benzene	PCBs	Phenan-threne	Phenol	Pyrene	Pyridine	Selenium
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		3.4E+04	5.5E+02	5.0E-02				2.8E+02	
			Hazard	2.0E+03	1.5E+03		1.2E+00	1.6E+04	3.1E+04	1.6E+03		3.7E+02
		Commercial/ Industrial	Carcinogenic		1.3E+05	1.7E+03	1.8E-01				8.9E+02	
			Hazard	1.3E+04	2.7E+04		1.0E+01	1.0E+05	2.0E+05	1.0E+04		6.8E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			SAT	6.9E+01				2.9E+03	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	1.1E+03				4.6E+04	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			SAT	1.9E+02				8.1E+03	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	7.3E+02				3.1E+04	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.2E+00*	*2.0E+01*	2.9E-01	*4.7E+00*				1.2E-01	*7.7E-01*
			Hazard	*1.2E+00*	*2.0E+01*		*4.7E+00*	SAT	1.0E+01	SAT		*7.7E-01*
		Commercial/ Industrial	Carcinogenic	*1.2E+00*	*2.0E+01*	1.2E+00	*4.7E+00*				5.3E-01	*7.7E-01*
			Hazard	*1.2E+00*	*2.0E+01*		*4.7E+00*	SAT	6.7E+01	SAT		*7.7E-01*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			>SOL	2.3E-02				4.8E+03	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	3.6E-01				7.7E+04	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			>SOL	3.2E-01				4.1E+04	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				1.5E+05	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-02*	*1.0E-01*	1.3E-01	*5.0E-04*				6.7E-02	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	9.4E+00	>SOL		*5.0E-02*
		Commercial/ Industrial	Carcinogenic	*2.0E-02*	*1.0E-01*	5.7E-01	*5.0E-04*				2.9E-01	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	6.1E+01	>SOL		*5.0E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			2.8E+00	1.6E-06				2.6E+00	
			Hazard	1.5E+00	7.9E+00		4.4E-05	>SOL	1.5E+02	>SOL		2.0E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Silver	Stryene	Tetrachloro-ethane (1,1,2,2 -)	Tetrachloro-ethylene (PCE)	Tetraethyl Lead	Toluene	Trichloro-ethane (1,1,1-)	Trichloro-ethane (1,1,2-)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic			1.0E+00	5.7E+00				3.8E+00
			Hazard	3.7E+02	9.8E+03	1.2E+03	4.8E+02	5.2E-03	9.0E+03	1.8E+03	1.9E+02
		Commercial/ Industrial	Carcinogenic			3.1E+00	1.8E+01				1.2E+01
			Hazard	6.8E+03	6.3E+04	7.9E+03	3.0E+03	3.4E-02	5.6E+04	1.2E+04	1.2E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			7.4E-01	3.0E-01				5.4E-01
			Hazard		SAT	1.0E+03	1.2E+01		3.6E+02	2.6E+02	3.1E+01
		Commercial/ Industrial	Carcinogenic			1.2E+01	4.8E+00				8.7E+00
			Hazard		SAT	SAT	SAT		SAT	SAT	8.9E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			2.1E+00	8.4E-01				1.5E+00
			Hazard		SAT	SAT	4.1E+01		SAT	8.7E+02	1.0E+02
		Commercial/ Industrial	Carcinogenic			7.8E+00	3.2E+00				5.8E+00
			Hazard		SAT	SAT	2.4E+02		SAT	SAT	5.9E+02
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.5E+00*	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*
			Hazard	*2.5E+00*	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*
		Commercial/ Industrial	Carcinogenic	*2.5E+00*	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*
			Hazard	*2.5E+00*	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			7.5E-01	2.0E-01				9.9E-01
			Hazard		>SOL	1.0E+03	8.4E+00		2.1E+02	2.4E+02	5.6E+01
		Commercial/ Industrial	Carcinogenic			1.2E+01	3.3E+00				1.6E+01
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	1.6E+03
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			1.1E+01	1.3E+01				2.2E+01
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	1.5E+03
		Commercial/ Industrial	Carcinogenic			4.1E+01	5.1E+01				8.4E+01
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
		Commercial/ Industrial	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.5E-03	6.0E-03				1.8E-02
			Hazard	2.1E+00	9.3E+00	4.9E+00	5.3E-01	6.7E-06	1.1E+01	4.3E+00	7.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 5. Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Trichloro-ethylene (TCE)	Vanadium	Vinyl Chloride	Xylenes	Zinc
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.9E+01		5.0E-01		
			Hazard	2.9E+02	5.2E+02		5.4E+04	2.2E+04
		Commercial/ Industrial	Carcinogenic	5.9E+01		1.6E+00		
			Hazard	1.8E+03	9.5E+03		3.0E+05	4.1E+05
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.1E+00		1.3E-03		
			Hazard	1.3E+01			SAT	
		Commercial/ Industrial	Carcinogenic	1.7E+01		2.1E-02		
			Hazard	3.6E+02			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	3.0E+00		3.7E-03		
			Hazard	4.2E+01			SAT	
		Commercial/ Industrial	Carcinogenic	1.1E+01		1.4E-02		
			Hazard	2.4E+02			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.7E-02*		*6.5E-04*	*1.3E+01*	
			Hazard	*2.7E-02*	3.3E+02	*6.5E-04*	*1.3E+01*	8.8E+02
		Commercial/ Industrial	Carcinogenic	*2.7E-02*		*6.5E-04*	*1.3E+01*	
			Hazard	*2.7E-02*	2.2E+03	*6.5E-04*	*1.3E+01*	5.8E+03
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	6.9E-01		3.7E-03		
			Hazard	8.1E+00			>SOL	
		Commercial/ Industrial	Carcinogenic	1.1E+01		5.9E-02		
			Hazard	2.3E+02			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	4.1E+01		2.5E-01		
			Hazard	5.7E+02			>SOL	
		Commercial/ Industrial	Carcinogenic	1.5E+02		9.6E-01		
			Hazard	>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	1.1E-01	*5.0E-04*	*1.8E+00*	4.7E+00
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	7.2E-01	*5.0E-04*	*1.8E+00*	3.1E+01
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	4.6E-03		2.6E-03		
			Hazard	7.2E-02	2.8E+00		6.6E+01	1.2E+02

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

APPENDIX F: TIER 2 SITE-SPECIFIC TARGET LEVELS

This appendix contains the complete set of Oakland Tier 2 SSTLs for Merritt sands, sandy silts and clayey silts. The Oakland Tier 2 SSTLs may be applied only at sites that meet the eligibility criteria specified in Section 2.2 *and* where one or more of the three soil types has been shown to prevail (see Section 2.3.4).

Please note that the Oakland RBCA look-up tables will be updated whenever new or better information becomes available. It is recommended that you consult the ULR Program web page at www.oaklandpw.com to make sure that you have the latest version of the look-up tables before applying the Oakland Tier 2 SSTLs at your site.

For step-by-step assistance in reading the look-up tables, refer back to Section 2.4.

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaph-thene	Acenaph-thylene	Acetone	Anthracene	Arsenic	Barium	Benz(a)-anthracene	Benzene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic					3.8E+00		3.7E+00	3.7E+01
			Hazard	3.9E+03	3.9E+03	5.8E+03	1.9E+04	2.2E+01	5.3E+03		9.9E+01
		Commercial/ Industrial	Carcinogenic					2.4E+01		1.6E+01	1.5E+02
			Hazard	4.0E+04	4.0E+04	5.4E+04	2.0E+05	3.8E+02	1.2E+05		9.2E+02
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	7.0E-01
			Hazard	SAT	SAT	1.8E+03	SAT				2.3E+00
		Commercial/ Industrial	Carcinogenic							SAT	1.1E+01
			Hazard	SAT	SAT	5.3E+04	SAT				6.7E+01
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							SAT	3.9E+00
			Hazard	SAT	SAT	1.2E+04	SAT				1.6E+01
		Commercial/ Industrial	Carcinogenic							SAT	1.5E+01
			Hazard	SAT	SAT	7.0E+04	SAT				9.1E+01
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic					*2.1E+01*	*6.0E+02*	3.2E+01	*1.0E-02*
			Hazard	SAT	SAT	2.1E+00	SAT	*2.1E+01*	*6.0E+02*		*1.0E-02*
		Commercial/ Industrial	Carcinogenic					*2.1E+01*	*6.0E+02*	SAT	*1.0E-02*
			Hazard	SAT	SAT	1.4E+01	SAT	*2.1E+01*	*6.0E+02*		*1.0E-02*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>SOL	1.4E+00
			Hazard	>SOL	>SOL	2.0E+04	>SOL				4.7E+00
		Commercial/ Industrial	Carcinogenic							>SOL	2.2E+01
			Hazard	>SOL	>SOL	5.9E+05	>SOL				1.4E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							>SOL	1.8E+02
			Hazard	>SOL	>SOL	4.2E+05	>SOL				7.2E+02
		Commercial/ Industrial	Carcinogenic							>SOL	6.9E+02
			Hazard	>SOL	>SOL	>SOL	>SOL				>SOL
	Ingestion of Groundwater	Residential	Carcinogenic					*5.0E-02*	*1.0E+00*	5.6E-04	*1.0E-03*
			Hazard	9.4E-01	9.4E-01	1.6E+00	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
		Commercial/ Industrial	Carcinogenic					*5.0E-02*	*1.0E+00*	2.4E-03	*1.0E-03*
			Hazard	>SOL	>SOL	1.0E+01	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic					2.0E-02		1.6E-04	6.3E-02
			Hazard	1.1E+00	1.7E+00	4.2E+01	>SOL	1.2E-01	2.8E+01		1.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Beryllium	Bis (2-ethylhexyl) phthalate	Butyl benzyl phthalate
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	3.7E-01	3.7E+00		3.7E+00	4.5E+04	5.3E+02	
			Hazard			2.6E+02		3.8E+02	1.3E+03	1.3E+04
		Commercial/ Industrial	Carcinogenic	1.6E+00	1.6E+01		1.6E+01	1.7E+05	2.3E+03	
			Hazard			2.7E+03		8.5E+03	1.4E+04	1.4E+05
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*SAT*	SAT		SAT	4.6E+01	SAT	
			Hazard	*SAT*		SAT		4.6E+01	SAT	SAT
		Commercial/ Industrial	Carcinogenic	*SAT*	SAT		SAT	4.6E+01	SAT	
			Hazard	*SAT*		SAT		4.6E+01	SAT	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-04*	5.6E-04		5.6E-04	4.0E-03	8.0E-02	
			Hazard	*2.0E-04*		>SOL		4.0E-03	3.1E-01	>SOL
		Commercial/ Industrial	Carcinogenic	*2.0E-04*	>SOL		>SOL	4.0E-03	>SOL	
			Hazard	*2.0E-04*		>SOL		4.0E-03	>SOL	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.1E-05	1.1E-04		1.2E-04		>SOL	
			Hazard			>SOL		2.0E+00	>SOL	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Cadmium	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroform	Chromium (III)	Chromium (VI)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.1E+04		2.5E+01		1.3E+02		1.4E+01
			Hazard	3.8E+01	1.3E+03	4.0E+01	9.2E+02	5.8E+02	7.7E+04	3.8E+02
		Commercial/ Industrial	Carcinogenic	7.9E+04		1.0E+02		5.3E+02		1.1E+02
			Hazard	8.5E+02	7.0E+03	3.6E+02	7.2E+03	5.4E+03	1.7E+06	8.5E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			2.7E-01		3.4E+00		
			Hazard		1.1E+00	4.5E-01	6.5E-01	1.3E+01		
		Commercial/ Industrial	Carcinogenic			4.3E+00		5.4E+01		
			Hazard		3.3E+01	1.3E+01	1.9E+01	3.7E+02		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			1.5E+00		1.9E+01		
			Hazard		7.6E+00	3.0E+00	4.4E+00	8.5E+01		
		Commercial/ Industrial	Carcinogenic			5.8E+00		7.2E+01		
			Hazard		4.4E+01	1.8E+01	2.5E+01	4.9E+02		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*5.5E+00*		*1.4E-02*	*3.3E-01*	*7.3E-01*		1.4E+01
			Hazard	*5.5E+00*	1.4E+01	*1.4E-02*	*3.3E-01*	*7.3E-01*	4.1E+08	1.4E+01
		Commercial/ Industrial	Carcinogenic	*5.5E+00*		*1.4E-02*	*3.3E-01*	*7.3E-01*		1.4E+01
			Hazard	*5.5E+00*	9.1E+01	*1.4E-02*	*3.3E-01*	*7.3E-01*	2.7E+09	1.4E+01
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			2.7E-01		9.1E+00		
			Hazard		3.3E+00	4.5E-01	4.0E+00	3.4E+01		
		Commercial/ Industrial	Carcinogenic			4.3E+00		1.4E+02		
			Hazard		9.5E+01	1.3E+01	1.2E+02	9.8E+02		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			5.6E+01		1.0E+03		
			Hazard		7.3E+02	1.1E+02	>SOL	4.5E+03		
		Commercial/ Industrial	Carcinogenic			2.1E+02		3.9E+03		
			Hazard		>SOL	6.5E+02	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.6E+00	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.6E+01	5.0E-02
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.0E+01	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.0E+02	5.0E-02
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.1E-02		3.9E-01		6.8E-02
			Hazard	2.0E-01	9.4E+00	7.1E-02	1.2E+00	1.9E+00	3.8E+02	1.9E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Chrysene	Copper	Cresol(-m)	Cresol(-o)	Cresol(-p)	Cyanide	Dibenz(a,h)-anthracene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	3.7E+01						1.1E+00
			Hazard		2.8E+03	3.2E+03	3.2E+03	3.2E+02	3.1E+03	
		Commercial/ Industrial	Carcinogenic	1.6E+02						4.7E+00
			Hazard		6.3E+04	3.3E+04	3.3E+04	3.3E+03	6.8E+04	
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	SAT	*1.7E+00*				2.9E+01	9.1E+01
			Hazard		*1.7E+00*	1.1E+01	1.1E+01	1.0E+00	2.9E+01	
		Commercial/ Industrial	Carcinogenic	SAT	*1.7E+00*				2.9E+01	SAT
			Hazard		*1.7E+00*	7.1E+01	7.4E+01	6.7E+00	2.9E+01	
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	>SOL	*1.3E+00*				2.0E-01	1.6E-04
			Hazard		*1.3E+00*	7.8E-01	7.8E-01	7.8E-02	2.0E-01	
		Commercial/ Industrial	Carcinogenic	>SOL	*1.3E+00*				2.0E-01	7.0E-04
			Hazard		*1.3E+00*	5.1E+00	5.1E+00	5.1E-01	2.0E-01	
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	>SOL						1.4E-05
			Hazard		1.5E+01	6.7E+00	6.4E+00	5.9E-01	7.0E+00	

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Dichloro- ethane (1,1-)	Dichloro- ethane (1,2-) (EDC)	Dichloro- ethylene (1,1-)	Dichloro- ethylene (cis 1,2-)	Dichloro- ethene (trans 1,2)	Dimethylbenza- (a)anthracene (7,12)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	6.6E+02	5.3E+01	7.0E+00			
			Hazard	6.0E+03	1.7E+02	5.2E+02	5.8E+02	1.2E+03	2.0E+03
		Commercial/ Industrial	Carcinogenic	2.7E+03	2.2E+02	3.0E+01			
			Hazard	5.8E+04	1.6E+03	4.9E+03	5.4E+03	1.1E+04	2.0E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	8.8E+00	1.8E+00	9.2E-02			
			Hazard	1.4E+02	7.2E+00	2.9E+00	1.5E+01	1.9E+01	
		Commercial/ Industrial	Carcinogenic	1.4E+02	2.9E+01	1.5E+00			
			Hazard	SAT	2.1E+02	8.5E+01	4.3E+02	5.5E+02	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	5.0E+01	1.0E+01	5.2E-01			
			Hazard	9.3E+02	4.8E+01	2.0E+01	9.9E+01	1.3E+02	
		Commercial/ Industrial	Carcinogenic	1.9E+02	3.9E+01	2.0E+00			
			Hazard	SAT	2.8E+02	1.1E+02	5.7E+02	7.4E+02	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	3.1E-02	*1.9E-03*	*7.0E-02*	*4.0E-02*	*9.6E-02*	
			Hazard	3.1E-02	*1.9E-03*	*7.0E-02*	*4.0E-02*	*9.6E-02*	SAT
		Commercial/ Industrial	Carcinogenic	3.1E-02	*1.9E-03*	*7.0E-02*	*4.0E-02*	*9.6E-02*	
			Hazard	3.1E-02	*1.9E-03*	*7.0E-02*	*4.0E-02*	*9.6E-02*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	2.8E+01	7.7E+00	2.2E-01			
			Hazard	4.3E+02	3.1E+01	7.0E+00	4.0E+01	4.2E+01	
		Commercial/ Industrial	Carcinogenic	4.4E+02	1.2E+02	3.5E+00			
			Hazard	>SOL	8.9E+02	2.0E+02	1.2E+03	1.2E+03	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	3.2E+03	4.1E+02	4.5E+01			
			Hazard	>SOL	2.0E+03	1.7E+03	>SOL	>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	1.6E+03	1.7E+02			
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
		Commercial/ Industrial	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	2.1E+00	2.4E-01	1.3E-02			
			Hazard	1.9E+01	7.2E-01	1.2E+00	1.8E+00	3.5E+00	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Dimethyl-phenol (2,4)	di-n-Butyl-phthalate	di-n-octyl phthalate	Dinitro-toluene (2,4)	Dioxane (1,4)	Ethyl-benzene	Ethylene Dibromide	Flouran-thene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic				1.4E+01	1.4E+02		1.2E+00	
			Hazard	1.3E+03	6.5E+03	1.3E+03			6.3E+03	3.3E+00	2.6E+03
		Commercial/ Industrial	Carcinogenic				6.0E+01	5.6E+02		5.2E+00	
			Hazard	1.3E+04	6.8E+04	1.4E+04			6.3E+04	3.1E+01	2.7E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				SAT	SAT		2.9E+00	
			Hazard	SAT	SAT	SAT			SAT	8.1E-01	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		4.6E+01	
			Hazard	SAT	SAT	SAT			SAT	2.4E+01	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				SAT	SAT		1.6E+01	
			Hazard	SAT	SAT	SAT			SAT	5.4E+00	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		6.2E+01	
			Hazard	SAT	SAT	SAT			SAT	3.2E+01	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic				3.3E-02	SAT	*3.8E+01*	*3.8E-04*	
			Hazard	9.9E+00	SAT	SAT			*3.8E+01*	*3.8E-04*	SAT
		Commercial/ Industrial	Carcinogenic				1.4E-01	SAT	*3.8E+01*	*3.8E-04*	
			Hazard	6.5E+01	SAT	SAT			*3.8E+01*	*3.8E-04*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		5.9E+00	
			Hazard	>SOL	>SOL	>SOL			>SOL	1.6E+00	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		9.3E+01	
			Hazard	>SOL	>SOL	>SOL			>SOL	4.8E+01	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		1.8E+02	
			Hazard	>SOL	>SOL	>SOL			>SOL	6.0E+01	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		6.9E+02	
			Hazard	>SOL	>SOL	>SOL			>SOL	3.5E+02	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic				2.2E-03	>SOL	*7.0E-01*	*5.0E-05*	
			Hazard	3.1E-01	1.6E+00	>SOL			*7.0E-01*	*5.0E-05*	>SOL
		Commercial/ Industrial	Carcinogenic				9.2E-03	>SOL	*7.0E-01*	*5.0E-05*	
			Hazard	2.0E+00	1.0E+01	>SOL			*7.0E-01*	*5.0E-05*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic				6.4E-02	>SOL		5.9E-03	
			Hazard	2.7E+00	7.3E+00	2.1E-03			3.6E+00	1.7E-02	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Fluorene	Indeno-(1,2,3-CD)-pyrene	Mercury	Methanol	Methyl ethyl ketone	Methylene Chloride	Methyl-napthalene (2-)	MTBE
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		3.7E+00				3.0E+02		
			Hazard	2.6E+03		5.8E+00	2.9E+04	3.1E+04	3.9E+03	2.5E+03	3.3E+02
		Commercial/ Industrial	Carcinogenic		1.6E+01				1.3E+03		
			Hazard	2.7E+04		5.5E+01	2.7E+05	2.7E+05	4.0E+04	2.6E+04	3.4E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		SAT				1.3E+01		
			Hazard	SAT		1.2E+01	5.6E+04	7.9E+03	8.0E+02	SAT	4.8E+03
		Commercial/ Industrial	Carcinogenic		SAT				2.1E+02		
			Hazard	SAT			SAT	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		SAT				7.6E+01		
			Hazard	SAT		8.2E+01	SAT	SAT	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic		SAT				2.9E+02		
			Hazard	SAT		4.7E+02	SAT	SAT	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic		SAT	*1.5E+00*			1.6E-02		*4.0E-02*
			Hazard	SAT		*1.5E+00*	9.9E+00	1.8E+01	1.6E-02	7.7E+02	*4.0E-02*
		Commercial/ Industrial	Carcinogenic		SAT	*1.5E+00*			1.6E-02		*4.0E-02*
			Hazard	SAT		*1.5E+00*	6.5E+01	1.2E+02	1.6E-02	SAT	*4.0E-02*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		>SOL				7.6E+01		
			Hazard	>SOL		3.4E-01	6.6E+05	6.2E+04	4.5E+03	>SOL	2.5E+04
		Commercial/ Industrial	Carcinogenic		>SOL				1.2E+03		
			Hazard	>SOL		9.8E+00	>SOL	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		>SOL				5.8E+03		
			Hazard	>SOL		5.4E+01	>SOL	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic		>SOL				>SOL		
			Hazard	>SOL		3.1E+02	>SOL	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	6.3E-01		*2.0E-03*	7.8E+00	9.4E+00	5.0E-03	6.3E-01	*1.3E-02*
		Commercial/ Industrial	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	>SOL		*2.0E-03*	5.1E+01	6.1E+01	5.0E-03	4.1E+00	*1.3E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic		>SOL				1.3E+00		
			Hazard	3.1E-01		3.6E-02	2.2E+02	1.5E+02	1.6E+01	6.1E-01	1.5E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Naphthalene	Nickel	Nitro-benzene	PCBs	Phenan-threne	Phenol	Pyrene	Pyridine	Selenium
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		3.4E+05	7.8E+03	6.5E-01				4.1E+03	
			Hazard	2.5E+03	1.5E+03		1.4E+00	1.9E+04	3.8E+04	2.0E+03		3.8E+02
		Commercial/ Industrial	Carcinogenic		1.3E+06	3.3E+04	3.3E+00				1.7E+04	
			Hazard	2.5E+04	3.4E+04		1.8E+01	2.0E+05	3.9E+05	2.0E+04		8.5E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			SAT	6.9E+02				3.0E+04	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	SAT				4.8E+05	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			SAT	SAT				1.6E+05	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	SAT				6.1E+05	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*5.8E+00*	*9.5E+01*	1.4E+01	*2.2E+01*				6.1E+00	*3.7E+00*
			Hazard	*5.8E+00*	*9.5E+01*		*2.2E+01*	SAT	5.1E+01	SAT		*3.7E+00*
		Commercial/ Industrial	Carcinogenic	*5.8E+00*	*9.5E+01*	6.1E+01	*2.2E+01*				2.6E+01	*3.7E+00*
			Hazard	*5.8E+00*	*9.5E+01*		*2.2E+01*	SAT	3.3E+02	SAT		*3.7E+00*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			>SOL	2.4E-01				4.9E+04	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				7.8E+05	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			>SOL	>SOL				7.7E+05	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				>SOL	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-02*	*1.0E-01*	1.3E+00	*5.0E-04*				6.7E-01	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	9.4E+00	>SOL		*5.0E-02*
		Commercial/ Industrial	Carcinogenic	*2.0E-02*	*1.0E-01*	5.7E+00	*5.0E-04*				2.9E+00	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	6.1E+01	>SOL		*5.0E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			2.8E+01	1.6E-05				2.6E+01	
			Hazard	1.5E+00	7.9E+00		4.4E-05	>SOL	1.5E+02	>SOL		2.0E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Silver	Stryene	Tetrachloro-ethane (1,1,2,2 -)	Tetrachloro-ethylene (PCE)	Tetraethyl Lead	Toluene	Trichloro-ethane (1,1,1-)	Trichloro-ethane (1,1,2-)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic			1.4E+01	8.1E+01				5.2E+01
			Hazard	3.8E+02	1.2E+04	1.5E+03	5.8E+02	6.5E-03	1.1E+04	2.2E+03	2.3E+02
		Commercial/ Industrial	Carcinogenic			5.6E+01	3.4E+02				2.1E+02
			Hazard	8.5E+03	1.2E+05	1.4E+04	5.4E+03	6.8E-02	9.4E+04	2.3E+04	2.2E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			7.5E+00	3.0E+00				5.6E+00
			Hazard		SAT	1.0E+03	1.2E+01		3.7E+02	2.6E+02	3.2E+01
		Commercial/ Industrial	Carcinogenic			1.2E+02	4.8E+01				9.0E+01
			Hazard		SAT	SAT	SAT		SAT	SAT	9.2E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			4.3E+01	1.7E+01				3.2E+01
			Hazard		SAT	SAT	8.3E+01		SAT	SAT	2.1E+02
		Commercial/ Industrial	Carcinogenic			1.6E+02	6.5E+01				1.2E+02
			Hazard		SAT	SAT	SAT		SAT	SAT	1.2E+03
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.2E+01*	*1.1E+01*	1.5E-02	*1.3E-01*	*SAT*	*4.2E+00*	*3.7E+00*	*4.3E-02*
			Hazard	*1.2E+01*	*1.1E+01*	1.5E-02	*1.3E-01*	*SAT*	*4.2E+00*	*3.7E+00*	*4.3E-02*
		Commercial/ Industrial	Carcinogenic	*1.2E+01*	*1.1E+01*	1.5E-02	*1.3E-01*	*SAT*	*4.2E+00*	*3.7E+00*	*4.3E-02*
			Hazard	*1.2E+01*	*1.1E+01*	1.5E-02	*1.3E-01*	*SAT*	*4.2E+00*	*3.7E+00*	*4.3E-02*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			7.8E+00	3.1E+00				1.1E+01
			Hazard		>SOL	1.1E+03	1.3E+01		2.8E+02	3.7E+02	5.9E+01
		Commercial/ Industrial	Carcinogenic			1.2E+02	5.0E+01				1.7E+02
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	1.7E+03
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			2.2E+02	>SOL				4.9E+02
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	3.3E+03
		Commercial/ Industrial	Carcinogenic			8.5E+02	>SOL				1.9E+03
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
		Commercial/ Industrial	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.5E-02	6.0E-02				1.8E-01
			Hazard	2.1E+00	9.3E+00	4.9E+00	5.3E-01	6.7E-06	1.1E+01	4.3E+00	7.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 6. Oakland Tier 2 SSTLs for Merritt Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Trichloro-ethylene (TCE)	Vanadium	Vinyl Chloride	Xylenes	Zinc
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.6E+02		6.9E+00		
			Hazard	3.5E+02	5.4E+02		6.0E+04	2.3E+04
		Commercial/ Industrial	Carcinogenic	1.1E+03		2.8E+01		
			Hazard	3.3E+03	1.2E+04		3.8E+05	5.1E+05
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.1E+01		1.3E-02		
			Hazard	1.3E+01			SAT	
		Commercial/ Industrial	Carcinogenic	1.7E+02		2.0E-01		
			Hazard	3.7E+02			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	6.1E+01		7.1E-02		
			Hazard	8.5E+01			SAT	
		Commercial/ Industrial	Carcinogenic	2.3E+02		2.7E-01		
			Hazard	4.9E+02			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.3E-01*		*2.9E-03*	*6.4E+01*	
			Hazard	*1.3E-01*	1.6E+03	*2.9E-03*	*6.4E+01*	4.2E+03
		Commercial/ Industrial	Carcinogenic	*1.3E-01*		*2.9E-03*	*6.4E+01*	
			Hazard	*1.3E-01*	1.0E+04	*2.9E-03*	*6.4E+01*	2.8E+04
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	9.6E+00		6.0E-02		
			Hazard	1.1E+01			>SOL	
		Commercial/ Industrial	Carcinogenic	1.5E+02		9.6E-01		
			Hazard	3.3E+02			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL		1.2E+01		
			Hazard	>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL		4.7E+01		
			Hazard	>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	1.1E-01	*5.0E-04*	*1.8E+00*	4.7E+00
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	7.2E-01	*5.0E-04*	*1.8E+00*	3.1E+01
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	4.6E-02		2.6E-02		
			Hazard	7.2E-02	2.8E+00		6.6E+01	1.2E+02

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaph-thene	Acenaph-thylene	Acetone	Anthracene	Arsenic	Barium	Benz(a)-anthracene	Benzene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic					3.2E+00		2.5E+00	2.7E+01
			Hazard	3.1E+03	3.1E+03	4.8E+03	1.6E+04	2.0E+01	5.2E+03		8.2E+01
		Commercial/ Industrial	Carcinogenic					1.5E+01		7.9E+00	8.5E+01
			Hazard	2.0E+04	2.0E+04	3.0E+04	1.0E+05	2.5E+02	9.4E+04		5.2E+02
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	1.1E+00
			Hazard	SAT	SAT	3.3E+03	SAT				3.6E+00
		Commercial/ Industrial	Carcinogenic							SAT	1.7E+01
			Hazard	SAT	SAT	9.7E+04	SAT				1.1E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							SAT	2.0E+01
			Hazard	SAT	SAT	5.7E+04	SAT				8.0E+01
		Commercial/ Industrial	Carcinogenic							SAT	7.7E+01
			Hazard	SAT	SAT	SAT	SAT				4.7E+02
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic					*8.9E+00*	*2.5E+02*	2.0E+01	*6.5E-03*
			Hazard	SAT	SAT	1.6E+00	SAT	*8.9E+00*	*2.5E+02*		*6.5E-03*
		Commercial/ Industrial	Carcinogenic					*8.9E+00*	*2.5E+02*	SAT	*6.5E-03*
			Hazard	SAT	SAT	1.0E+01	SAT	*8.9E+00*	*2.5E+02*		*6.5E-03*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>SOL	3.4E+00
			Hazard	>SOL	>SOL	2.2E+04	>SOL				1.1E+01
		Commercial/ Industrial	Carcinogenic							>SOL	5.3E+01
			Hazard	>SOL	>SOL	6.2E+05	>SOL				3.2E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							>SOL	1.0E+03
			Hazard	>SOL	>SOL	>SOL	>SOL				>SOL
		Commercial/ Industrial	Carcinogenic							>SOL	>SOL
			Hazard	>SOL	>SOL	>SOL	>SOL				>SOL
	Ingestion of Groundwater	Residential	Carcinogenic					*5.0E-02*	*1.0E+00*	5.6E-04	*1.0E-03*
			Hazard	9.4E-01	9.4E-01	1.6E+00	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
		Commercial/ Industrial	Carcinogenic					*5.0E-02*	*1.0E+00*	2.4E-03	*1.0E-03*
			Hazard	>SOL	>SOL	1.0E+01	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic					2.0E-02		1.6E-04	6.3E-02
			Hazard	1.1E+00	1.7E+00	4.2E+01	>SOL	1.2E-01	2.8E+01		1.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Beryllium	Bis (2-ethylhexyl) phthalate	Butyl benzyl phthalate
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.5E-01	2.5E+00		2.5E+00	4.5E+04	3.6E+02	
			Hazard			2.1E+02		3.7E+02	1.0E+03	1.0E+04
		Commercial/ Industrial	Carcinogenic	7.9E-01	7.9E+00		7.9E+00	1.7E+05	1.1E+03	
			Hazard			1.4E+03		6.8E+03	6.8E+03	6.8E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.9E+01*	SAT		SAT	1.9E+01	SAT	
			Hazard	*1.9E+01*		SAT		1.9E+01	SAT	SAT
		Commercial/ Industrial	Carcinogenic	*1.9E+01*	SAT		SAT	1.9E+01	SAT	
			Hazard	*1.9E+01*		SAT		1.9E+01	SAT	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-04*	5.6E-04		5.6E-04	4.0E-03	8.0E-02	
			Hazard	*2.0E-04*		>SOL		4.0E-03	3.1E-01	>SOL
		Commercial/ Industrial	Carcinogenic	*2.0E-04*	>SOL		>SOL	4.0E-03	>SOL	
			Hazard	*2.0E-04*		>SOL		4.0E-03	>SOL	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.1E-05	1.1E-04		1.2E-04		>SOL	
			Hazard			>SOL		2.0E+00	>SOL	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Cadmium	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroform	Chromium (III)	Chromium (VI)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.1E+04		1.8E+01		9.1E+01		1.3E+01
			Hazard	3.7E+01	1.3E+03	3.3E+01	8.0E+02	4.8E+02	7.4E+04	3.7E+02
		Commercial/ Industrial	Carcinogenic	7.9E+04		5.7E+01		2.9E+02		8.7E+01
			Hazard	6.8E+02	6.7E+03	2.1E+02	4.8E+03	3.0E+03	1.4E+06	6.8E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			4.1E-01		5.3E+00		
			Hazard		1.7E+00	6.8E-01	1.0E+00	2.0E+01		
		Commercial/ Industrial	Carcinogenic			6.5E+00		8.5E+01		
			Hazard		5.0E+01	2.0E+01	3.0E+01	5.8E+02		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			7.6E+00		9.9E+01		
			Hazard		3.8E+01	1.5E+01	2.3E+01	4.4E+02		
		Commercial/ Industrial	Carcinogenic			2.9E+01		3.8E+02		
			Hazard		2.2E+02	8.8E+01	1.3E+02	2.5E+03		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.3E+00*		*8.8E-03*	*2.1E-01*	*4.7E-01*		5.8E+00
			Hazard	*2.3E+00*	8.5E+00	*8.8E-03*	*2.1E-01*	*4.7E-01*	1.7E+08	5.8E+00
		Commercial/ Industrial	Carcinogenic	*2.3E+00*		*8.8E-03*	*2.1E-01*	*4.7E-01*		5.8E+00
			Hazard	*2.3E+00*	5.6E+01	*8.8E-03*	*2.1E-01*	*4.7E-01*	1.1E+09	5.8E+00
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			1.3E+00		1.9E+01		
			Hazard		1.2E+01	2.2E+00	2.1E+01	7.2E+01		
		Commercial/ Industrial	Carcinogenic			2.1E+01		3.1E+02		
			Hazard		3.6E+02	6.4E+01	>SOL	2.1E+03		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			5.0E+02		5.4E+03		
			Hazard		>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL		>SOL		
			Hazard		>SOL	>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.6E+00	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.6E+01	5.0E-02
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.0E+01	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.0E+02	5.0E-02
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.1E-02		3.9E-01		6.8E-02
			Hazard	2.0E-01	9.4E+00	7.1E-02	1.2E+00	1.9E+00	3.8E+02	1.9E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Chrysene	Copper	Cresol(-m)	Cresol(-o)	Cresol(-p)	Cyanide	Dibenz(a,h)-anthracene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.5E+01						7.4E-01
			Hazard		2.8E+03	2.6E+03	2.6E+03	2.6E+02	3.0E+03	
		Commercial/ Industrial	Carcinogenic	7.9E+01						2.3E+00
			Hazard		5.0E+04	1.7E+04	1.7E+04	1.7E+03	5.5E+04	
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	SAT	*1.2E+00*				1.2E+01	5.7E+01
			Hazard		*1.2E+00*	7.0E+00	7.3E+00	6.5E-01	1.2E+01	
		Commercial/ Industrial	Carcinogenic	SAT	*1.2E+00*				1.2E+01	SAT
			Hazard		*1.2E+00*	4.5E+01	4.7E+01	4.3E+00	1.2E+01	
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	>SOL	*1.3E+00*				2.0E-01	1.6E-04
			Hazard		*1.3E+00*	7.8E-01	7.8E-01	7.8E-02	2.0E-01	
		Commercial/ Industrial	Carcinogenic	>SOL	*1.3E+00*				2.0E-01	7.0E-04
			Hazard		*1.3E+00*	5.1E+00	5.1E+00	5.1E-01	2.0E-01	
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	>SOL						1.4E-05
			Hazard		1.5E+01	6.7E+00	6.4E+00	5.9E-01	7.0E+00	

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Dichloro- ethane (1,1-)	Dichloro- ethane (1,2-) (EDC)	Dichloro- ethylene (1,1-)	Dichloro- ethylene (cis 1,2-)	Dichloro- ethene (trans 1,2)	Dimethylbenza- (a)anthracene (7,12)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	4.8E+02	3.9E+01	4.9E+00			
			Hazard	4.9E+03	1.4E+02	4.3E+02	4.8E+02	9.6E+02	1.6E+03
		Commercial/ Industrial	Carcinogenic	1.5E+03	1.2E+02	1.5E+01			
			Hazard	3.1E+04	8.8E+02	2.7E+03	3.0E+03	6.1E+03	1.0E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.4E+01	3.0E+00	1.4E-01			
			Hazard	2.2E+02	1.2E+01	4.3E+00	2.3E+01	2.9E+01	
		Commercial/ Industrial	Carcinogenic	2.2E+02	4.7E+01	2.2E+00			
			Hazard	SAT	3.4E+02	1.2E+02	6.7E+02	8.4E+02	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	2.6E+02	5.5E+01	2.5E+00			
			Hazard	SAT	2.6E+02	9.5E+01	5.1E+02	6.4E+02	
		Commercial/ Industrial	Carcinogenic	9.7E+02	2.1E+02	9.6E+00			
			Hazard	SAT	1.5E+03	5.5E+02	SAT	3.7E+03	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	2.0E-02	*1.3E-03*	*4.2E-02*	*2.6E-02*	*6.0E-02*	
			Hazard	2.0E-02	*1.3E-03*	*4.2E-02*	*2.6E-02*	*6.0E-02*	SAT
		Commercial/ Industrial	Carcinogenic	2.0E-02	*1.3E-03*	*4.2E-02*	*2.6E-02*	*6.0E-02*	
			Hazard	2.0E-02	*1.3E-03*	*4.2E-02*	*2.6E-02*	*6.0E-02*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	6.0E+01	1.1E+01	1.0E+00			
			Hazard	9.4E+02	4.4E+01	3.2E+01	7.5E+01	1.0E+02	
		Commercial/ Industrial	Carcinogenic	9.6E+02	1.7E+02	1.6E+01			
			Hazard	>SOL	1.3E+03	9.2E+02	2.2E+03	3.0E+03	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL	1.8E+03	3.7E+02			
			Hazard	>SOL	8.4E+03	>SOL	>SOL	>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	6.7E+03	1.4E+03			
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
		Commercial/ Industrial	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	2.1E+00	2.4E-01	1.3E-02			
			Hazard	1.9E+01	7.2E-01	1.2E+00	1.8E+00	3.5E+00	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Dimethyl-phenol (2,4)	di-n-Butyl-phthalate	di-n-octyl phthalate	Dinitro-toluene (2,4)	Dioxane (1,4)	Ethyl-benzene	Ethylene Dibromide	Flouran-thene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic				9.6E+00	1.0E+02		8.4E-01	
			Hazard	1.0E+03	5.2E+03	1.0E+03			5.1E+03	2.7E+00	2.1E+03
		Commercial/ Industrial	Carcinogenic				3.0E+01	3.2E+02		2.6E+00	
			Hazard	6.7E+03	3.4E+04	6.8E+03			3.3E+04	1.7E+01	1.4E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				SAT	SAT		4.6E+00	
			Hazard	SAT	SAT	SAT			SAT	1.3E+00	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		7.4E+01	
			Hazard	SAT	SAT	SAT			SAT	3.8E+01	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				SAT	SAT		8.4E+01	
			Hazard	SAT	SAT	SAT			SAT	2.8E+01	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		3.2E+02	
			Hazard	SAT	SAT	SAT			SAT	1.6E+02	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic				2.1E-02	SAT	*2.4E+01*	*2.5E-04*	
			Hazard	6.3E+00	1.2E+07	SAT			*2.4E+01*	*2.5E-04*	SAT
		Commercial/ Industrial	Carcinogenic				8.9E-02	SAT	*2.4E+01*	*2.5E-04*	
			Hazard	4.1E+01	SAT	SAT			*2.4E+01*	*2.5E-04*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		7.0E+00	
			Hazard	>SOL	>SOL	>SOL			>SOL	2.0E+00	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		1.1E+02	
			Hazard	>SOL	>SOL	>SOL			>SOL	5.7E+01	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		6.8E+02	
			Hazard	>SOL	>SOL	>SOL			>SOL	2.2E+02	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		2.6E+03	
			Hazard	>SOL	>SOL	>SOL			>SOL	1.3E+03	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic				2.2E-03	>SOL	*7.0E-01*	*5.0E-05*	
			Hazard	3.1E-01	1.6E+00	>SOL			*7.0E-01*	*5.0E-05*	>SOL
		Commercial/ Industrial	Carcinogenic				9.2E-03	>SOL	*7.0E-01*	*5.0E-05*	
			Hazard	2.0E+00	1.0E+01	>SOL			*7.0E-01*	*5.0E-05*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic				6.4E-02	>SOL		5.9E-03	
			Hazard	2.7E+00	7.3E+00	2.1E-03			3.6E+00	1.7E-02	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Fluorene	Indeno-(1,2,3-CD)-pyrene	Mercury	Methanol	Methyl ethyl ketone	Methylene Chloride	Methyl-napthalene (2-)	MTBE
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		2.5E+00				2.1E+02		
			Hazard	2.1E+03		5.0E+00	2.4E+04	2.7E+04	3.1E+03	2.1E+03	2.6E+02
		Commercial/ Industrial	Carcinogenic		7.9E+00				6.6E+02		
			Hazard	1.4E+04		3.2E+01	1.6E+05	1.7E+05	2.0E+04	1.3E+04	1.7E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		SAT				2.2E+01		
			Hazard	SAT		1.3E+01	1.0E+05	1.4E+04	1.3E+03	SAT	8.1E+03
		Commercial/ Industrial	Carcinogenic		SAT				3.5E+02		
			Hazard	SAT			SAT	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		SAT				4.1E+02		
			Hazard	SAT		2.8E+02	SAT	SAT	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic		SAT				1.6E+03		
			Hazard	SAT		1.6E+03	SAT	SAT	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic		SAT	*6.3E-01*			1.0E-02		*2.7E-02*
			Hazard	SAT		*6.3E-01*	7.5E+00	1.3E+01	1.0E-02	4.9E+02	*2.7E-02*
		Commercial/ Industrial	Carcinogenic		SAT	*6.3E-01*			1.0E-02		*2.7E-02*
			Hazard	SAT		*6.3E-01*	4.9E+01	8.4E+01	1.0E-02	SAT	*2.7E-02*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		>SOL				1.3E+02		
			Hazard	>SOL		8.4E-01	6.6E+05	6.6E+04	7.5E+03	>SOL	3.0E+04
		Commercial/ Industrial	Carcinogenic		>SOL				2.0E+03		
			Hazard	>SOL		2.4E+01	>SOL	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		>SOL				>SOL		
			Hazard	>SOL		3.1E+02	>SOL	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic		>SOL				>SOL		
			Hazard	>SOL		1.8E+03	>SOL	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	6.3E-01		*2.0E-03*	7.8E+00	9.4E+00	5.0E-03	6.3E-01	*1.3E-02*
		Commercial/ Industrial	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	>SOL		*2.0E-03*	5.1E+01	6.1E+01	5.0E-03	4.1E+00	*1.3E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic		>SOL				1.3E+00		
			Hazard	3.1E-01		3.6E-02	2.2E+02	1.5E+02	1.6E+01	6.1E-01	1.5E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Naphthalene	Nickel	Nitro-benzene	PCBs	Phenan-threne	Phenol	Pyrene	Pyridine	Selenium
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		3.4E+05	5.6E+03	5.0E-01				2.9E+03	
			Hazard	2.1E+03	1.5E+03		1.2E+00	1.6E+04	3.1E+04	1.6E+03		3.7E+02
		Commercial/ Industrial	Carcinogenic		1.3E+06	1.8E+04	1.9E+00				9.3E+03	
			Hazard	1.3E+04	2.7E+04		1.0E+01	1.0E+05	2.0E+05	1.0E+04		6.8E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			SAT	1.1E+03				4.7E+04	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	SAT				7.4E+05	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			SAT	SAT				4.5E+05	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	SAT				SAT	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*3.7E+00*	*4.0E+01*	9.2E+00	*1.4E+01*				3.9E+00	*1.6E+00*
			Hazard	*3.7E+00*	*4.0E+01*		*1.4E+01*	SAT	3.4E+01	SAT		*1.6E+00*
		Commercial/ Industrial	Carcinogenic	*3.7E+00*	*4.0E+01*	3.9E+01	*1.4E+01*				1.7E+01	*1.6E+00*
			Hazard	*3.7E+00*	*4.0E+01*		*1.4E+01*	SAT	2.2E+02	SAT		*1.6E+00*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			>SOL	2.8E-01				5.0E+04	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				8.0E+05	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			>SOL	>SOL				>SOL	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				>SOL	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-02*	*1.0E-01*	1.3E+00	*5.0E-04*				6.7E-01	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	9.4E+00	>SOL		*5.0E-02*
		Commercial/ Industrial	Carcinogenic	*2.0E-02*	*1.0E-01*	5.7E+00	*5.0E-04*				2.9E+00	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	6.1E+01	>SOL		*5.0E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			2.8E+01	1.6E-05				2.6E+01	
			Hazard	1.5E+00	7.9E+00		4.4E-05	>SOL	1.5E+02	>SOL		2.0E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Silver	Stryene	Tetrachloro-ethane (1,1,2,2 -)	Tetrachloro-ethylene (PCE)	Tetraethyl Lead	Toluene	Trichloro-ethane (1,1,1-)	Trichloro-ethane (1,1,2-)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic			1.0E+01	5.7E+01				3.8E+01
			Hazard	3.7E+02	1.0E+04	1.3E+03	4.8E+02	5.2E-03	9.0E+03	1.8E+03	1.9E+02
		Commercial/ Industrial	Carcinogenic			3.3E+01	1.8E+02				1.2E+02
			Hazard	6.8E+03	6.4E+04	8.2E+03	3.0E+03	3.4E-02	5.6E+04	1.2E+04	1.2E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			1.2E+01	4.6E+00				8.9E+00
			Hazard		SAT	1.6E+03	1.9E+01		5.7E+02	4.0E+02	5.0E+01
		Commercial/ Industrial	Carcinogenic			1.9E+02	7.3E+01				1.4E+02
			Hazard		SAT	SAT	SAT		SAT	SAT	1.5E+03
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			2.1E+02	8.6E+01				1.6E+02
			Hazard		SAT	SAT	4.2E+02		SAT	SAT	1.1E+03
		Commercial/ Industrial	Carcinogenic			8.0E+02	3.3E+02				6.2E+02
			Hazard		SAT	SAT	SAT		SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*5.1E+00*	*7.2E+00*	9.5E-03	*7.8E-02*	*6.9E+00*	*2.7E+00*	*2.3E+00*	*2.8E-02*
			Hazard	*5.1E+00*	*7.2E+00*	9.5E-03	*7.8E-02*	*6.9E+00*	*2.7E+00*	*2.3E+00*	*2.8E-02*
		Commercial/ Industrial	Carcinogenic	*5.1E+00*	*7.2E+00*	9.5E-03	*7.8E-02*	*6.9E+00*	*2.7E+00*	*2.3E+00*	*2.8E-02*
			Hazard	*5.1E+00*	*7.2E+00*	9.5E-03	*7.8E-02*	*6.9E+00*	*2.7E+00*	*2.3E+00*	*2.8E-02*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			9.2E+00	1.2E+01				1.4E+01
			Hazard		>SOL	1.3E+03	5.1E+01		>SOL	>SOL	8.0E+01
		Commercial/ Industrial	Carcinogenic			1.5E+02	2.0E+02				2.3E+02
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	2.3E+03
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			8.1E+02	>SOL				2.0E+03
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				>SOL
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
		Commercial/ Industrial	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.5E-02	6.0E-02				1.8E-01
			Hazard	2.1E+00	9.3E+00	4.9E+00	5.3E-01	6.7E-06	1.1E+01	4.3E+00	7.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 7. Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Trichloro-ethylene (TCE)	Vanadium	Vinyl Chloride	Xylenes	Zinc
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.9E+02		5.0E+00		
			Hazard	2.9E+02	5.2E+02		5.6E+04	2.2E+04
		Commercial/ Industrial	Carcinogenic	5.9E+02		1.6E+01		
			Hazard	1.8E+03	9.5E+03		3.1E+05	4.1E+05
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.7E+01		1.8E-02		
			Hazard	2.0E+01			SAT	
		Commercial/ Industrial	Carcinogenic	2.6E+02		2.8E-01		
			Hazard	5.7E+02			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	3.1E+02		3.3E-01		
			Hazard	4.3E+02			SAT	
		Commercial/ Industrial	Carcinogenic	1.2E+03		1.2E+00		
			Hazard	2.5E+03			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*8.2E-02*		*1.6E-03*	*4.0E+01*	
			Hazard	*8.2E-02*	6.7E+02	*1.6E-03*	*4.0E+01*	1.8E+03
		Commercial/ Industrial	Carcinogenic	*8.2E-02*		*1.6E-03*	*4.0E+01*	
			Hazard	*8.2E-02*	4.4E+03	*1.6E-03*	*4.0E+01*	1.2E+04
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	2.9E+01		2.8E-01		
			Hazard	3.4E+01			>SOL	
		Commercial/ Industrial	Carcinogenic	4.6E+02		4.4E+00		
			Hazard	9.9E+02			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL		1.0E+02		
			Hazard	>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL		3.9E+02		
			Hazard	>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	1.1E-01	*5.0E-04*	*1.8E+00*	4.7E+00
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	7.2E-01	*5.0E-04*	*1.8E+00*	3.1E+01
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	4.6E-02		2.6E-02		
			Hazard	7.2E-02	2.8E+00		6.6E+01	1.2E+02

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaph-thene	Acenaph-thylene	Acetone	Anthracene	Arsenic	Barium	Benz(a)-anthracene	Benzene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic					2.6E+00		1.7E+00	1.9E+01
			Hazard	2.3E+03	2.3E+03	3.7E+03	1.2E+04	1.8E+01	5.0E+03		6.3E+01
		Commercial/ Industrial	Carcinogenic					9.5E+00		4.3E+00	4.9E+01
			Hazard	1.1E+04	1.1E+04	1.8E+04	5.6E+04	1.5E+02	7.1E+04		3.0E+02
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	1.9E+00
			Hazard	SAT	SAT	6.3E+03	SAT				6.2E+00
		Commercial/ Industrial	Carcinogenic							SAT	3.0E+01
			Hazard	SAT	SAT	1.8E+05	SAT				1.8E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							SAT	1.6E+02
			Hazard	SAT	SAT	1.2E+05	SAT				6.5E+02
		Commercial/ Industrial	Carcinogenic							SAT	6.2E+02
			Hazard	SAT	SAT	SAT	SAT				SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic					*4.4E+00*	*1.3E+02*	1.4E+01	*4.5E-03*
			Hazard	4.0E+02	2.7E+02	1.5E+00	SAT	*4.4E+00*	*1.3E+02*		*4.5E-03*
		Commercial/ Industrial	Carcinogenic					*4.4E+00*	*1.3E+02*	5.8E+01	*4.5E-03*
			Hazard	SAT	SAT	9.7E+00	SAT	*4.4E+00*	*1.3E+02*		*4.5E-03*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>SOL	5.6E+00
			Hazard	>SOL	>SOL	2.1E+04	>SOL				1.9E+01
		Commercial/ Industrial	Carcinogenic							>SOL	8.9E+01
			Hazard	>SOL	>SOL	6.2E+05	>SOL				5.4E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							>SOL	>SOL
			Hazard	>SOL	>SOL	9.5E+05	>SOL				>SOL
		Commercial/ Industrial	Carcinogenic							>SOL	>SOL
			Hazard	>SOL	>SOL	>SOL	>SOL				>SOL
	Ingestion of Groundwater	Residential	Carcinogenic					*5.0E-02*	*1.0E+00*	5.6E-04	*1.0E-03*
			Hazard	9.4E-01	9.4E-01	1.6E+00	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
		Commercial/ Industrial	Carcinogenic					*5.0E-02*	*1.0E+00*	2.4E-03	*1.0E-03*
			Hazard	>SOL	>SOL	1.0E+01	>SOL	*5.0E-02*	*1.0E+00*		*1.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic					2.0E-02		1.6E-04	6.3E-02
			Hazard	1.1E+00	1.7E+00	4.2E+01	>SOL	1.2E-01	2.8E+01		1.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Beryllium	Bis (2-ethylhexyl) phthalate	Butyl benzyl phthalate
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.7E-01	1.7E+00		1.7E+00	4.5E+04	2.4E+02	
			Hazard			1.6E+02		3.6E+02	7.8E+02	7.8E+03
		Commercial/ Industrial	Carcinogenic	4.3E-01	4.3E+00		4.3E+00	1.7E+05	6.2E+02	
			Hazard			7.4E+02		5.1E+03	3.7E+03	3.7E+04
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
		Commercial/ Industrial	Carcinogenic	SAT	SAT		SAT		SAT	
			Hazard			SAT			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.2E+01*	SAT		SAT	9.6E+00	7.3E+04	
			Hazard	*1.2E+01*		SAT		9.6E+00	SAT	SAT
		Commercial/ Industrial	Carcinogenic	*1.2E+01*	SAT		SAT	9.6E+00	SAT	
			Hazard	*1.2E+01*		SAT		9.6E+00	SAT	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL		>SOL		>SOL	
			Hazard			>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-04*	5.6E-04		5.6E-04	4.0E-03	8.0E-02	
			Hazard	*2.0E-04*		>SOL		4.0E-03	3.1E-01	>SOL
		Commercial/ Industrial	Carcinogenic	*2.0E-04*	>SOL		>SOL	4.0E-03	>SOL	
			Hazard	*2.0E-04*		>SOL		4.0E-03	>SOL	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.1E-05	1.1E-04		1.2E-04		>SOL	
			Hazard			>SOL		2.0E+00	>SOL	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Cadmium	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroform	Chromium (III)	Chromium (VI)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.1E+04		1.2E+01		6.2E+01		1.2E+01
			Hazard	3.6E+01	1.4E+03	2.6E+01	6.6E+02	3.7E+02	7.1E+04	3.6E+02
		Commercial/ Industrial	Carcinogenic	7.9E+04		3.3E+01		1.6E+02		6.6E+01
			Hazard	5.1E+02	6.5E+03	1.2E+02	3.1E+03	1.8E+03	1.0E+06	5.1E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			6.7E-01		9.3E+00		
			Hazard		2.9E+00	1.1E+00	1.9E+00	3.5E+01		
		Commercial/ Industrial	Carcinogenic			1.1E+01		1.5E+02		
			Hazard		8.4E+01	3.2E+01	5.5E+01	1.0E+03		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			6.1E+01		8.1E+02		
			Hazard		3.1E+02	1.2E+02	2.1E+02	3.6E+03		
		Commercial/ Industrial	Carcinogenic			2.3E+02		3.1E+03		
			Hazard		SAT	7.0E+02	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.1E+00*		*5.9E-03*	*1.6E-01*	*3.4E-01*		2.9E+00
			Hazard	*1.1E+00*	6.0E+00	*5.9E-03*	*1.6E-01*	*3.4E-01*	8.5E+07	2.9E+00
		Commercial/ Industrial	Carcinogenic	*1.1E+00*		*5.9E-03*	*1.6E-01*	*3.4E-01*		2.9E+00
			Hazard	*1.1E+00*	3.9E+01	*5.9E-03*	*1.6E-01*	*3.4E-01*	5.6E+08	2.9E+00
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			3.3E+00		3.1E+01		
			Hazard		2.6E+01	5.5E+00	5.5E+01	1.2E+02		
		Commercial/ Industrial	Carcinogenic			5.2E+01		5.0E+02		
			Hazard		7.5E+02	1.6E+02	>SOL	3.4E+03		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			>SOL		>SOL		
			Hazard		>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL		>SOL		
			Hazard		>SOL	>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.6E+00	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.6E+01	5.0E-02
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02
			Hazard	*5.0E-03*	1.0E+01	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.0E+02	5.0E-02
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.1E-02		3.9E-01		6.8E-02
			Hazard	2.0E-01	9.4E+00	7.1E-02	1.2E+00	1.9E+00	3.8E+02	1.9E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Chrysene	Copper	Cresol(-m)	Cresol(-o)	Cresol(-p)	Cyanide	Dibenz(a,h)-anthracene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.7E+01						4.9E-01
			Hazard		2.6E+03	1.9E+03	1.9E+03	1.9E+02	2.8E+03	
		Commercial/ Industrial	Carcinogenic	4.3E+01						1.3E+00
			Hazard		3.8E+04	9.2E+03	9.2E+03	9.2E+02	4.1E+04	
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	5.1E+04		
		Commercial/ Industrial	Carcinogenic	SAT						SAT
			Hazard			SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	SAT	*1.2E+00*				6.2E+00	3.8E+01
			Hazard		*1.2E+00*	4.8E+00	5.0E+00	4.6E-01	6.2E+00	
		Commercial/ Industrial	Carcinogenic	SAT	*1.2E+00*				6.2E+00	1.6E+02
			Hazard		*1.2E+00*	3.2E+01	3.3E+01	3.0E+00	6.2E+00	
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic	>SOL						>SOL
			Hazard			>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	>SOL	*1.3E+00*				2.0E-01	1.6E-04
			Hazard		*1.3E+00*	7.8E-01	7.8E-01	7.8E-02	2.0E-01	
		Commercial/ Industrial	Carcinogenic	>SOL	*1.3E+00*				2.0E-01	7.0E-04
			Hazard		*1.3E+00*	5.1E+00	5.1E+00	5.1E-01	2.0E-01	
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	>SOL						1.4E-05
			Hazard		1.5E+01	6.7E+00	6.4E+00	5.9E-01	7.0E+00	

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Dichloro- ethane (1,1-)	Dichloro- ethane (1,2-) (EDC)	Dichloro- ethylene (1,1-)	Dichloro- ethylene (cis 1,2-)	Dichloro- ethene (trans 1,2)	Dimethylbenza- (a)anthracene (7,12)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	3.3E+02	2.7E+01	3.3E+00			
			Hazard	3.8E+03	1.1E+02	3.3E+02	3.7E+02	7.4E+02	1.2E+03
		Commercial/ Industrial	Carcinogenic	8.7E+02	7.1E+01	8.5E+00			
			Hazard	1.8E+04	5.1E+02	1.6E+03	1.8E+03	3.5E+03	5.6E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	2.4E+01	5.4E+00	2.3E-01			
			Hazard	3.8E+02	2.1E+01	7.2E+00	4.0E+01	4.9E+01	
		Commercial/ Industrial	Carcinogenic	3.9E+02	8.6E+01	3.6E+00			
			Hazard	SAT	6.2E+02	2.1E+02	1.2E+03	1.4E+03	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	2.1E+03	4.2E+02	2.1E+01			
			Hazard	SAT	2.0E+03	7.8E+02	SAT	5.2E+03	
		Commercial/ Industrial	Carcinogenic	SAT	1.6E+03	7.8E+01			
			Hazard	SAT	SAT	SAT	SAT	SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	1.4E-02	*9.9E-04*	*2.8E-02*	*1.9E-02*	*4.2E-02*	
			Hazard	1.4E-02	*9.9E-04*	*2.8E-02*	*1.9E-02*	*4.2E-02*	SAT
		Commercial/ Industrial	Carcinogenic	1.4E-02	*9.9E-04*	*2.8E-02*	*1.9E-02*	*4.2E-02*	
			Hazard	1.4E-02	*9.9E-04*	*2.8E-02*	*1.9E-02*	*4.2E-02*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	9.8E+01	1.5E+01	2.3E+00			
			Hazard	1.5E+03	6.0E+01	7.5E+01	1.2E+02	1.8E+02	
		Commercial/ Industrial	Carcinogenic	1.6E+03	2.4E+02	3.7E+01			
			Hazard	>SOL	1.7E+03	2.2E+03	3.4E+03	5.1E+03	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL	3.5E+03	9.4E+02			
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL	>SOL	>SOL			
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
		Commercial/ Industrial	Carcinogenic	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	
			Hazard	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*	*1.0E-02*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	2.1E+00	2.4E-01	1.3E-02			
			Hazard	1.9E+01	7.2E-01	1.2E+00	1.8E+00	3.5E+00	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Dimethyl-phenol (2,4)	di-n-Butyl-phthalate	di-n-octyl phthalate	Dinitro-toluene (2,4)	Dioxane (1,4)	Ethyl-benzene	Ethylene Dibromide	Flouran-thene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic				6.3E+00	7.0E+01		5.5E-01	
			Hazard	7.7E+02	3.9E+03	7.8E+02			3.9E+03	2.2E+00	1.6E+03
		Commercial/ Industrial	Carcinogenic				1.7E+01	1.8E+02		1.4E+00	
			Hazard	3.7E+03	1.9E+04	3.7E+03			1.8E+04	1.0E+01	7.4E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				SAT	SAT		7.5E+00	
			Hazard	SAT	SAT	SAT			SAT	2.1E+00	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		1.2E+02	
			Hazard	SAT	SAT	SAT			SAT	6.1E+01	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				SAT	SAT		4.5E+02	
			Hazard	SAT	SAT	SAT			SAT	1.5E+02	SAT
		Commercial/ Industrial	Carcinogenic				SAT	SAT		1.7E+03	
			Hazard	SAT	SAT	SAT			SAT	8.7E+02	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic				1.5E-02	SAT	*1.6E+01*	*1.8E-04*	
			Hazard	4.3E+00	7.9E+06	SAT			*1.6E+01*	*1.8E-04*	SAT
		Commercial/ Industrial	Carcinogenic				6.2E-02	SAT	*1.6E+01*	*1.8E-04*	
			Hazard	2.8E+01	SAT	SAT			*1.6E+01*	*1.8E-04*	SAT
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		8.5E+00	
			Hazard	>SOL	>SOL	>SOL			>SOL	2.4E+00	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		1.4E+02	
			Hazard	>SOL	>SOL	>SOL			>SOL	6.9E+01	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				>SOL	>SOL		1.3E+03	
			Hazard	>SOL	>SOL	>SOL			>SOL	4.3E+02	>SOL
		Commercial/ Industrial	Carcinogenic				>SOL	>SOL		>SOL	
			Hazard	>SOL	>SOL	>SOL			>SOL	2.5E+03	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic				2.2E-03	>SOL	*7.0E-01*	*5.0E-05*	
			Hazard	3.1E-01	1.6E+00	>SOL			*7.0E-01*	*5.0E-05*	>SOL
		Commercial/ Industrial	Carcinogenic				9.2E-03	>SOL	*7.0E-01*	*5.0E-05*	
			Hazard	2.0E+00	1.0E+01	>SOL			*7.0E-01*	*5.0E-05*	>SOL
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic				6.4E-02	>SOL		5.9E-03	
			Hazard	2.7E+00	7.3E+00	2.1E-03			3.6E+00	1.7E-02	>SOL

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Fluorene	Indeno-(1,2,3-CD)-pyrene	Mercury	Methanol	Methyl ethyl ketone	Methylene Chloride	Methyl-napthalene (2-)	MTBE
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		1.7E+00				1.4E+02		
			Hazard	1.6E+03		3.9E+00	1.9E+04	2.2E+04	2.3E+03	1.6E+03	2.0E+02
		Commercial/ Industrial	Carcinogenic		4.3E+00				3.7E+02		
			Hazard	7.4E+03		1.8E+01	8.9E+04	1.0E+05	1.1E+04	7.4E+03	9.3E+02
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		SAT				4.2E+01		
			Hazard	SAT		1.5E+01	1.9E+05	2.4E+04	2.5E+03	SAT	1.4E+04
		Commercial/ Industrial	Carcinogenic		SAT				6.7E+02		
			Hazard	SAT			SAT	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		SAT				3.5E+03		
			Hazard	SAT		1.6E+03	SAT	SAT	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic		SAT				SAT		
			Hazard	SAT		9.4E+03	SAT	SAT	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic		SAT	*3.2E-01*			8.2E-03		*2.1E-02*
			Hazard	5.2E+02		*3.2E-01*	7.1E+00	1.1E+01	8.2E-03	3.2E+02	*2.1E-02*
		Commercial/ Industrial	Carcinogenic		SAT	*3.2E-01*			8.2E-03		*2.1E-02*
			Hazard	SAT		*3.2E-01*	4.7E+01	7.3E+01	8.2E-03	2.1E+03	*2.1E-02*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		>SOL				1.9E+02		
			Hazard	>SOL		1.4E+00	6.4E+05	6.5E+04	1.1E+04	>SOL	3.6E+04
		Commercial/ Industrial	Carcinogenic		>SOL				3.0E+03		
			Hazard	>SOL		4.1E+01	>SOL	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		>SOL				>SOL		
			Hazard	>SOL		6.0E+02	>SOL	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic		>SOL				>SOL		
			Hazard	>SOL		3.5E+03	>SOL	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	6.3E-01		*2.0E-03*	7.8E+00	9.4E+00	5.0E-03	6.3E-01	*1.3E-02*
		Commercial/ Industrial	Carcinogenic		>SOL	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	>SOL		*2.0E-03*	5.1E+01	6.1E+01	5.0E-03	4.1E+00	*1.3E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic		>SOL				1.3E+00		
			Hazard	3.1E-01		3.6E-02	2.2E+02	1.5E+02	1.6E+01	6.1E-01	1.5E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Naphthalene	Nickel	Nitro-benzene	PCBs	Phenan-threne	Phenol	Pyrene	Pyridine	Selenium
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		3.4E+05	3.7E+03	3.6E-01				2.0E+03	
			Hazard	1.6E+03	1.4E+03		9.8E-01	1.2E+04	2.3E+04	1.2E+03		3.6E+02
		Commercial/ Industrial	Carcinogenic		1.3E+06	9.9E+03	1.1E+00				5.1E+03	
			Hazard	7.4E+03	2.0E+04		5.8E+00	5.6E+04	1.1E+05	5.6E+03		5.1E+03
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			SAT	1.6E+03				6.6E+04	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	SAT				1.1E+06	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			SAT	SAT				3.9E+05	
			Hazard	SAT			SAT	SAT	SAT	SAT		
		Commercial/ Industrial	Carcinogenic			SAT	SAT				SAT	
			Hazard	SAT			SAT	SAT	SAT	SAT		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.4E+00*	*2.0E+01*	6.5E+00	*9.4E+00*				2.8E+00	*8.0E-01*
			Hazard	*2.4E+00*	*2.0E+01*		*9.4E+00*	SAT	2.5E+01	SAT		*8.0E-01*
		Commercial/ Industrial	Carcinogenic	*2.4E+00*	*2.0E+01*	2.8E+01	*9.4E+00*				1.2E+01	*8.0E-01*
			Hazard	*2.4E+00*	*2.0E+01*		*9.4E+00*	SAT	1.6E+02	SAT		*8.0E-01*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			>SOL	3.2E-01				4.9E+04	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				7.8E+05	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			>SOL	>SOL				6.6E+05	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				>SOL	
			Hazard	>SOL			>SOL	>SOL	>SOL	>SOL		
	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-02*	*1.0E-01*	1.3E+00	*5.0E-04*				6.7E-01	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	9.4E+00	>SOL		*5.0E-02*
		Commercial/ Industrial	Carcinogenic	*2.0E-02*	*1.0E-01*	5.7E+00	*5.0E-04*				2.9E+00	*5.0E-02*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>SOL	6.1E+01	>SOL		*5.0E-02*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			2.8E+01	1.6E-05				2.6E+01	
			Hazard	1.5E+00	7.9E+00		4.4E-05	>SOL	1.5E+02	>SOL		2.0E+00

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Silver	Stryene	Tetrachloro-ethane (1,1,2,2 -)	Tetrachloro-ethylene (PCE)	Tetraethyl Lead	Toluene	Trichloro-ethane (1,1,1-)	Trichloro-ethane (1,1,2-)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic			7.2E+00	3.8E+01				2.7E+01
			Hazard	3.6E+02	7.7E+03	1.0E+03	3.7E+02	3.9E-03	7.1E+03	1.4E+03	1.5E+02
		Commercial/ Industrial	Carcinogenic			1.9E+01	1.0E+02				7.0E+01
			Hazard	5.1E+03	3.7E+04	4.7E+03	1.8E+03	1.9E-02	3.4E+04	6.5E+03	7.2E+02
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			1.8E+01	7.6E+00				1.5E+01
			Hazard		SAT	2.5E+03	3.1E+01		9.3E+02	6.6E+02	8.4E+01
		Commercial/ Industrial	Carcinogenic			2.9E+02	1.2E+02				2.4E+02
			Hazard		SAT	SAT	SAT		SAT	SAT	2.4E+03
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			1.0E+03	6.9E+02				1.1E+03
			Hazard		SAT	SAT	SAT		SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic			3.9E+03	SAT				4.2E+03
			Hazard		SAT	SAT	SAT		SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.6E+00*	*4.8E+00*	6.6E-03	*5.2E-02*	*4.6E+00*	*1.8E+00*	*1.5E+00*	*2.0E-02*
			Hazard	*2.6E+00*	*4.8E+00*	6.6E-03	*5.2E-02*	*4.6E+00*	*1.8E+00*	*1.5E+00*	*2.0E-02*
		Commercial/ Industrial	Carcinogenic	*2.6E+00*	*4.8E+00*	6.6E-03	*5.2E-02*	*4.6E+00*	*1.8E+00*	*1.5E+00*	*2.0E-02*
			Hazard	*2.6E+00*	*4.8E+00*	6.6E-03	*5.2E-02*	*4.6E+00*	*1.8E+00*	*1.5E+00*	*2.0E-02*
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			1.1E+01	2.6E+01				1.9E+01
			Hazard		>SOL	1.5E+03	1.1E+02		>SOL	>SOL	1.1E+02
		Commercial/ Industrial	Carcinogenic			1.7E+02	>SOL				3.0E+02
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	3.1E+03
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			1.5E+03	>SOL				4.0E+03
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic			>SOL	>SOL				>SOL
			Hazard		>SOL	>SOL	>SOL		>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
		Commercial/ Industrial	Carcinogenic	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
			Hazard	*1.0E-01*	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			4.5E-02	6.0E-02				1.8E-01
			Hazard	2.1E+00	9.3E+00	4.9E+00	5.3E-01	6.7E-06	1.1E+01	4.3E+00	7.8E-01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Table 8. Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Trichloro-ethylene (TCE)	Vanadium	Vinyl Chloride	Xylenes	Zinc
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.3E+02		3.5E+00		
			Hazard	2.2E+02	5.0E+02		5.3E+04	2.1E+04
		Commercial/ Industrial	Carcinogenic	3.3E+02		9.1E+00		
			Hazard	1.1E+03	7.2E+03		2.6E+05	3.1E+05
Subsurface Soil [mg/kg]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	2.7E+01		3.0E-02		
			Hazard	3.2E+01			SAT	
		Commercial/ Industrial	Carcinogenic	4.4E+02		4.8E-01		
			Hazard	9.3E+02			SAT	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	2.5E+03		2.7E+00		
			Hazard	3.4E+03			SAT	
		Commercial/ Industrial	Carcinogenic	SAT		1.0E+01		
			Hazard	SAT			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*5.5E-02*		*1.1E-03*	*2.7E+01*	
			Hazard	*5.5E-02*	3.3E+02	*1.1E-03*	*2.7E+01*	8.9E+02
		Commercial/ Industrial	Carcinogenic	*5.5E-02*		*1.1E-03*	*2.7E+01*	
			Hazard	*5.5E-02*	2.2E+03	*1.1E-03*	*2.7E+01*	5.8E+03
Groundwater [mg/l]	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	5.4E+01		6.6E-01		
			Hazard	6.3E+01			>SOL	
		Commercial/ Industrial	Carcinogenic	8.6E+02		1.0E+01		
			Hazard	>SOL			>SOL	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL		2.7E+02		
			Hazard	>SOL			>SOL	
		Commercial/ Industrial	Carcinogenic	>SOL		1.0E+03		
			Hazard	>SOL			>SOL	
	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	1.1E-01	*5.0E-04*	*1.8E+00*	4.7E+00
		Commercial/ Industrial	Carcinogenic	*5.0E-03*		*5.0E-04*	*1.8E+00*	
			Hazard	*5.0E-03*	7.2E-01	*5.0E-04*	*1.8E+00*	3.1E+01
Water Used for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	4.6E-02		2.6E-02		
			Hazard	7.2E-02	2.8E+00		6.6E+01	1.2E+02

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

APPENDIX H

WELL SURVEY DATA

Survey of Monitoring Wells
@ Sears Site 1058A

As of: 5/13/02

Sears Site 1058A: 2633 Telegraph Ave, Oakland CA

Point No	Northing	Easting	Elevation	Description
210	1489608.409	483785.761	26.23	FOMW-5
211	1489812.541	483756.546	26.70	FOMW-3
214	1489783.229	483863.805	26.20	FOMW-4
215	1489828.977	483933.968	26.21	FOMW-1

APPENDIX I

LABORATORY REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

ANNUAL GROUNDWATER MONITORING

Alpha Scientific Corporation
Environmental Laboratories

11-21-2008

Mr. Joe Liles
URS Corporation
2020 E. First Street, Suite 400
Santa Ana, CA 92705

Project: 25363708/Sears Oakland 1058A
Project Site: 2633 Telegraph Ave., Oakland, CA
Sample Date: 11-14-2008
Lab Job No.: UR811057

Dear Mr. Liles:

Enclosed please find the analytical report for the sample(s) received by Alpha Scientific Corporation on 11-17-2008 and analyzed by the following EPA methods:

EPA 8015M (Gasoline & Diesel Range TPH)
EPA 8015M (Stoddard Solvent)
EPA 8260B (VOCs by GC/MS)

AAll analyses have met the QA/QC criteria of this laboratory.

The sample(s) arrived in good conditions (i.e., chilled at 4^{o}C, intact) and with a chain of custody record attached.

Alpha Scientific Corporation is a CA DHS certified laboratory (Certificate Number 2633). Thank you for giving us the opportunity to serve you. Please feel free to call me at (562) 809-8880 if our laboratory can be of further service to you.

Sincerely,

Roger Wang, Ph. D.
Laboratory Director

Enclosures

This cover letter is an integral part of this analytical report.

Client:	URS Corporation	Lab Job No.:	UR811057
Project:	25363708/Sears Oakland 1058A		
Project Site:	2633 Telegraph Ave., Oakland, CA	Date Sampled	11-14-2008
Matrix:	Water	Date Received:	11-17-2008
Batch No. for TPH-g: EMK19-GW1		Date Analyzed:	11-19-2008
Batch No.for TPH-d: EK18-DW1		Date Analyzed:	11-18-2008
		Date Reported:	11-21-2008

EPA 8015M (Gasoline, Diesel & Stoddard Solvent)
Reporting Unit: µg/L (ppb)

Sample ID	Lab ID	DF for TPH-g	C4-C12 (Gasoline Range)*	Surrog Rec.% (TPH-g)	DF for TPHd&SS	C13-C23 (Diesel Range)	TPH-Stoddard Solvent	Surrog Rec.% (TPHd&SS)
MDL			50			500	500	
PQL			100			750	750	
Method Blank		1	ND	91	1	ND	ND	118
FOMW-4	UR811057-1	1	ND	95	1	ND	ND	118
FOMW-5	UR811057-2	1	ND	98	1	ND	ND	116
DUP-1	UR811057-3	1	ND	94	NA	NA	NA	
EB-1	UR811057-4	1	ND	94	NA	NA	NA	

*Gasoline Range TPH result is obtained from purge and trap analysis using LUFT-GCMS Method.
MDL:Method Detection Limit; PQL:Practical Quantitation Limit;
DF:Dilution Factor (DF × PQL = Reporting Limit for the sample); ND: Not Detected (below DF × MDL);
J:Trace Value, result is below DF × PQL but above DF × MDL. NA:Not Analyzed
Note:Surrogate recovery acceptance limits are 70-130%.

Client: URS Corporation | Lab Job No.: UR811057 | Date Reported: 11-21-2008
Project: 25363708/Sears Oakland 1058A | Matrix: Water | Date Sampled: 11-14-2008

EPA 8260B (VOCs by GC/MS, Page 1 of 2) Reporting Unit: µg/L(ppb)

Date ANALYZED			11-19-08	11-19-08	11-19-08	11-19-08	11-19-08	
DILUTION FACTOR			1	1	1	1	1	
LAB SAMPLE I.D.				UR811057-1	UR811057-2	UR811057-3	UR811057-4	
CLIENT SAMPLE I.D.				FOMW-4	FOMW-5	DUP-1	EB-1	
COMPOUND	**MDL**	**PQL**	MB					
Dichlorodifluoromethane	1	5	ND	ND	ND	ND	ND	
Chloromethane	1	5	ND	ND	ND	ND	ND	
Vinyl Chloride	0.5	1	ND	ND	ND	ND	ND	
Bromomethane	1	5	ND	ND	ND	ND	ND	
Chloroethane	1	5	ND	ND	ND	ND	ND	
Trichlorofluoromethane	1	5	ND	ND	ND	ND	ND	
1,1-Dichloroethene	1	5	ND	ND	ND	ND	ND	
Iodomethane	1	5	ND	ND	ND	ND	ND	
Methylene Chloride	2	10	ND	ND	ND	ND	ND	
trans-1,2-Dichloroethene	1	5	ND	ND	ND	ND	ND	
1,1-Dichloroethane	1	5	ND	ND	ND	ND	ND	
2,2-Dichloropropane	1	5	ND	ND	ND	ND	ND	
cis-1,2-Dichloroethene	1	5	ND	ND	ND	ND	ND	
Bromochloromethane	1	5	ND	ND	ND	ND	ND	
Chloroform	1	5	ND	ND	ND	ND	ND	
1,2-Dichloroethane	0.5	5	ND	ND	ND	ND	ND	
1,1,1-Trichloroethane	1	5	ND	ND	ND	ND	ND	
Carbon tetrachloride	0.5	5	ND	ND	ND	ND	ND	
1,1-Dichloropropene	1	5	ND	ND	ND	ND	ND	
Benzene	0.5	1	ND	ND	ND	ND	ND	
Trichloroethene	1	2	ND	ND	ND	ND	ND	
1,2-Dichloropropane	1	5	ND	ND	ND	ND	ND	
Bromodichloromethane	1	5	ND	ND	ND	ND	ND	
Dibromomethane	1	5	ND	ND	ND	ND	ND	
Trans-1,3-Dichloropropene	1	5	ND	ND	ND	ND	ND	
cis-1,3-Dichloropropene	1	5	ND	ND	ND	ND	ND	
1,1,2-Trichloroethane	1	5	ND	ND	ND	ND	ND	
1,3-Dichloropropane	0.5	5	ND	ND	ND	ND	ND	
Dibromochloromethane	1	5	ND	ND	ND	ND	ND	
2-Chloroethylvinyl ether	1	10	ND	ND	ND	ND	ND	
Bromoform	1	5	ND	ND	ND	ND	ND	
Isopropylbenzene	1	5	ND	ND	ND	ND	ND	
Bromobenzene	1	5	ND	ND	ND	ND	ND	
Toluene	0.5	1.0	ND	ND	ND	ND	ND	
Tetrachloroethene	1	2	ND	ND	ND	ND	ND	
1,2-Dibromoethane(EDB)	1	5	ND	ND	ND	ND	ND	

Client: URS Corporation | Lab Job No.: UR811057 | Date Reported: 11-21-2008
Project: 25363708/Sears Oakland 1058A | Matrix: Water | Date Sampled: 11-14-2008

EPA 8260B (VOCs by GC/MS, Page 2 of 2) Reporting Unit: ppb

COMPOUND	MDL	PQL	MB	FOMW-4	FOMW-5	DUP-1	EB-1	
Chlorobenzene	1	5	ND	ND	ND	ND	ND	
1,1,1,2-Tetrachloroethan	1	5	ND	ND	ND	ND	ND	
Ethylbenzene	0.5	1	ND	ND	ND	ND	ND	
Total Xylenes	1	2	ND	ND	ND	ND	ND	
Styrene	1	5	ND	ND	ND	ND	ND	
1,1,2,2-Tetrachloroethan	1	5	ND	ND	ND	ND	ND	
1,2,3-Trichloropropane	1	5	ND	ND	ND	ND	ND	
n-Propylbenzene	1	5	ND	ND	ND	ND	ND	
2-Chlorotoluene	1	5	ND	ND	ND	ND	ND	
4-Chlorotoluene	1	5	ND	ND	ND	ND	ND	
1,3,5-Trimethylbenzene	1	2	ND	ND	ND	ND	ND	
tert-Butylbenzene	1	5	ND	ND	ND	ND	ND	
1,2,4-Trimethylbenzene	1	5	ND	ND	ND	ND	ND	
Sec-Butylbenzene	1	5	ND	ND	ND	ND	ND	
1,3-Dichlorobenzene	1	5	ND	ND	ND	ND	ND	
p-Isopropyltoluene	1	5	ND	ND	ND	ND	ND	
1,4-Dichlorobenzene	1	2	ND	ND	ND	ND	ND	
1,2-Dichlorobenzene	1	2	ND	ND	ND	ND	ND	
n-Butylbenzene	1	5	ND	ND	ND	ND	ND	
1,2,4-Trichlorobenzene	1	5	ND	ND	ND	ND	ND	
1,2-Dibromo-3-Chloropropane	1	5	ND	ND	ND	ND	ND	
Hexachlorobutadiene	1	5	ND	ND	ND	ND	ND	
Naphthalene	1	5	ND	ND	ND	ND	ND	
1,2,3-Trichlorobenzene	1	5	ND	ND	ND	ND	ND	
Acetone	25	50	ND	ND	ND	ND	ND	
2-Butanone (MEK)	25	50	ND	ND	ND	ND	ND	
Carbon disulfide	25	50	ND	ND	ND	ND	ND	
4-Methyl-2-pentanone	25	50	ND	ND	ND	ND	ND	
2-Hexanone	25	50	ND	ND	ND	ND	ND	
Vinyl Acetate	25	50	ND	ND	ND	ND	ND	
MTBE	1	2	ND	ND	ND	ND	ND	
ETBE	1	2	ND	ND	ND	ND	ND	
DIPE	1	2	ND	ND	ND	ND	ND	
TAME	1	2	ND	ND	ND	ND	ND	
t-Butyl Alcohol	10	20	ND	ND	ND	ND	ND	
SURROGATE	**Accept Limit%**		**%RC**	**%RC**	**%RC**	**%RC**	**%RC**	
Dibromofluoro-methane	79-126		101	102	113	103	99	
Toluene-d8	79-121		100	98	98	98	98	
Bromofluoro-benzene	71-131		97	100	103	99	99	

MDL=Method Detection Limit, PQL= Practical Quantitation Limit;DF=Dilution Factor (DF × PQL = Reporting Limit for the sample);
ND=Not Detected (below DF × MDL),J=Trace Value, result is below DF × PQL but above DF × MDL;
%RC=Percent Recovery; MB=Method Blank; * obtained from a higher dilution analysis.

Note: Surrogate spike concentrations are 25 µg/L for all the compounds.

11-21-2008

EPA 8015M (TPH)
Batch QA/QC Report

Client:	URS Corporation	Lab Job No.:	UR811057
Project:	25363708/Sears Oakland 1058A		
Matrix:	Water	Lab Sample ID:	UR811056-1
Batch No.:	EMK19-GW1	Date Analyzed:	11-19-2008

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH-G	ND	1000	949	920	94.9	92.0	3.1	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Report Value	True Value	Rec.%	%Rec Accept. Limit
TPH-G	944	1000	94.4	80-120

ND: Not Detected (at the specified limit).

11-21-2008

EPA 8015M (TPH)
Batch QA/QC Report

Client:	URS Corporation	Lab Job No.:	UR811057
Project:	25363708/Sears Oakland 1058A		
Matrix:	Water	Lab Sample ID:	UR811056-2
Batch No.:	EK18-DW1	Date Analyzed:	11-18-2008

I. MS/MSD Report
Unit: ppm

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH-d	ND	20	18.7	18.5	93.5	92.5	1.1	30	70-130

II. LCS Result
Unit: ppm

Analyte	LCS Report Value	True Value	Rec.%	%Rec Accept. Limit
TPH-d	57.3	50	114.6	80-120

ND: Not Detected (at the specified limit).

ND: Not Detected (at the specified limit).

11-21-2008

EPA 8260B
Batch QA/QC Report

Client:	URS Corporation	Lab Job No.:	UR811057
Project:	25363708/Sears Oakland 1058A		
Matrix:	Water	Sample ID:	UR811056-1
Batch No:	1119-VOEW1	Date Analyzed:	11-19-2008

I. MS/MSD Report
Unit: ppb

Compound	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
1,1-Dichloroethene	ND	20	15.6	16.3	78.0	81.5	4.4	30	70-130
Benzene	ND	20	19.3	16.6	96.5	83.0	15.0	30	70-130
Trichloro-ethene	ND	20	18.0	16.4	90.0	82.0	9.3	30	70-130
Toluene	ND	20	17.6	17.0	88.0	85.0	3.5	30	70-130
Chlorobenzene	ND	20	17.7	16.8	88.5	84.0	5.2	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Value	True Value	Rec.%	Accept. Limit
1,1-Dichloroethene	49.5	50.0	99.0	80-120
Benzene	53.0	50.0	106.0	80-120
Trichloro-ethene	53.0	50.0	106.0	80-120
Toluene	52.8	50.0	105.6	80-120
Chlorobenzene	52.6	50.0	105.2	80-120

ND: Not Detected.

URS CORPORATION

2020 East First Street, Suite 400
Santa Ana, CA 92705
(714) 835-6886
FAX (714) 667-7147

CHAIN OF CUSTODY RECORD

Date: 11/14/08

Page 1 of 1

☐ Data Requested in GISKey Format

UR 811057

Lab Name: Alpha Scientific	URS Project/PO Number: 25363708
Client Name/Project Name/Location: Sears Oakland 1058A	Geo Tracker Information:
URS Project Manager: Joe Liles	EDF Reporting: Y N Global ID:
Sampler Name and Signature: Stavro Pilafas	COELT Log Number:

Requested Analyses: TPHg-8015M; TPHd-8015M; TRHSS-8015M; BTEX + Fuel Oxys including Naphthalene, EDB, EDC-8260B; HOLD; Special Instructions:

	Sample Name	Sample Date:	Sample Time:	Preserved:	Matrix:	Container type:	# of Cont.:	TPHg	TPHd	TRHSS	BTEX	HOLD
1	FOmw-5 811057-2	11/14/08	1251	Y N	S L G	Acetate SS. Brass Jar Encore 500 ml Amb. Plas. Glass VOA	5	X	X	X	X	
2	FOmw-4 1		1352	Y N	S L G	Acetate SS. Brass Jar Encore 500 ml Amb. Plas. Glass VOA	5	X	X	X	X	
3	EB-1 3		—	Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA	3	X			X	
4	TB-1 4		—	Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA	2	X			X	
5				Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA						
6				Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA						
7				Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA						
8				Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA						
9				Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA						
10				Y N	S L G	Acetate SS. Brass Jar Encore ____ml Amb. Plas. Glass VOA						

Relinquished By:	Date: 4/17/08	Received By: ASC	Date/Time: 11-17-08
Relinquished By:	Date:	Received By:	Date/Time:
Relinquished By:	Date:	Received By:	Date/Time:

Turnaround Time: (Check)

Same Day:____ 72 Hour:____

24 Hour:____ 5 Day:____

48 Hour:____ Standard:____

Lab Use Only

Cooler Temperature*:____

*Record upon arrival

URS

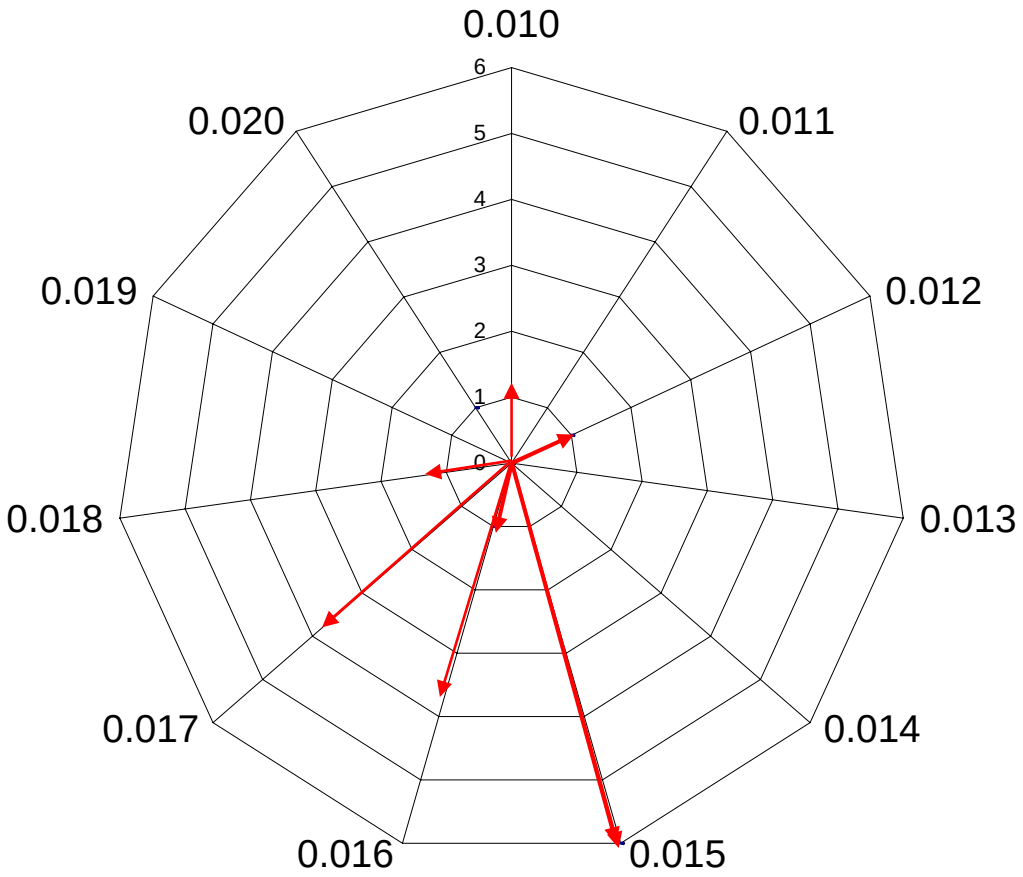
S=Solid L=Liquid G=Gas

White Copy in Final Report, Yellow to File, Pink to URS at Dropoff

APPENDIX J

ROSE DIAGRAMS FOR HISTORICAL GROUNDWATER GRADIENT AND FLOW DIRECTION

Appendix J
Historic Hydraulic Gradient Diagram
Sears Auto Center #1058A
2633 Telegraph Avenue, Oakland, CA
December 15, 2000 - November 14, 2008



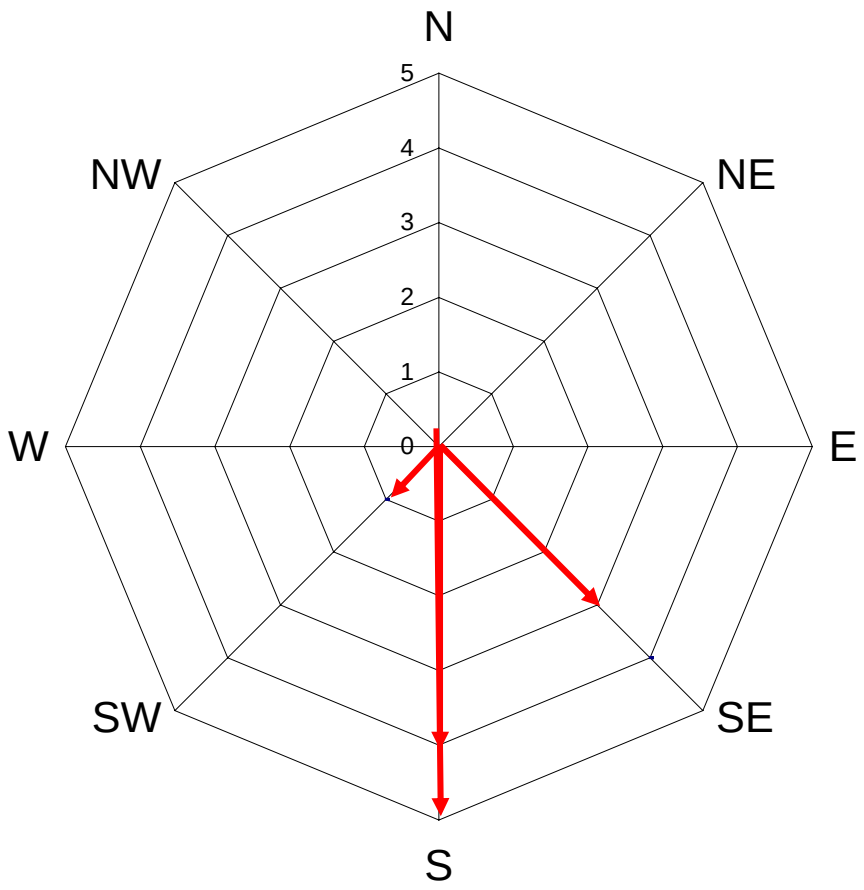
Legend

0.015 Groundwater Gradient

5 Frequency

URS

Appendix J
Historic Hydraulic Flow Direction Diagram
Sears Auto Center #1058A
2633 Telegraph Avenue, Oakland, CA
December 15, 2000 - November 14, 2008



Legend

S Groundwater Flow Direction

4 Frequency

URS

APPENDIX K

SOIL BORING LOGS

Project: Former Sears Auto Center #1058A **Project Location:** 2633 Telegraph Avenue, Oakland, CA **Project Number:** 25363708	**Log of Boring EB-25** Sheet 1 of 1

Date(s) Drilled **12/23/08**	Logged By **J. Henry**	Checked By
Drilling Method **Direct Push**	Drilling Contractor **Gregg Drilling**	Total Depth of Borehole (feet) **20.0**
Drill Rig Type **MARL 25**	Borehole Diameter (inches) **2 1/4"**	Approx. Surface Elevation (feet msl)
Approximate Depth to Groundwater (ft bgs) **12 feet bgs**	Sampler Type **Macrocore**	Borehole Backfill
Comments		

Elevation, feet MSL / Depth, feet	SAMPLES: Type / Number	SAMPLES: Inches Recovered	Graphic Log	MATERIAL DESCRIPTION	PID Headspace (ppm)	PID Background (ppm)	Sample Time	REMARKS
0				Roadbase				Hand augered to 5 feet bgs
				Black (2.5Y 2.5/1), CLAY (CL), hard, dry				
				Becomes olive brown (2.5Y 4/4)				
				Becomes dark greenish gray (GLEY 1 4/10Y)				
5	EB-25-5 EB-25-5 (Dup-1)			Dark greenish gray (GLEY 1 4/10Y), Silty fine SAND (SM), low density, moist, trace medium sand	0.0		1430	
				Very dark greenish gray (GLEY 1 4/10Y), fine to coarse SAND (SP), very dense, trace fine to coarse gravel				
10	EB-25-10			Increased coarse sand and fine gravel, Becomes olive brown (2.5Y 4/3), dry to moist	0.0		1445	
				Grades to grayish brown (2.5Y 5/2), fine to medium Sandy CLAY (CL), very hard, moist to wet, trace coarse sand, trace fine gravel ▽				
				Grades to grayish brown (2.5Y 5/2), Clayey fine to coarse SAND (SC), very dense, moist, trace fine gravel				
15	EB-25-15			Grades to grayish brown (2.5Y 5/2), fine to coarse SAND with Clay (SP-SC), very dense, moist, trace fine gravel	0.0		1500	
20	EB-25-20				0.0		1520	
				Completed boring to 20 feet bgs.				
25								
30								

URS

Project: Former Sears Auto Center #1058A **Project Location:** 2633 Telegraph Avenue, Oakland, CA **Project Number:** 25363708	**Log of Boring EB-27** Sheet 1 of 1

Date(s) Drilled **12/23/08**	Logged By **J. Henry**	Checked By
Drilling Method **Direct Push**	Drilling Contractor **Gregg Drilling**	Total Depth of Borehole (feet) **20.0**
Drill Rig Type **MARL 25**	Borehole Diameter (inches) **2 1/4"**	Approx. Surface Elevation (feet msl)
Approximate Depth to Groundwater (ft bgs) **8.5 feet bgs**	Sampler Type **Macrocore**	Borehole Backfill
Comments		

Elevation, feet MSL	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Inches Recovered	Graphic Log	MATERIAL DESCRIPTION	PID Headspace (ppm)	PID Background (ppm)	Sample Time	REMARKS
	0					Roadbase Brown (7.5YR 4/3), fine to coarse gravel, loose, angular				Hand augered to 5 feet bgs
						Olive brown (2.5Y 4/3), Silty CLAY to Clayey SILT (CL-ML), hard, trace fine sand				
	5		EB-27-5			Olive brown (2.5Y 4/3), Silty fine SAND (SM), medium dense, dry to moist	0.0		1210	
						Trace medium to coarse sand Increased medium to coarse sand ▽				
	10		EB-27-10			Olive brown (2.5Y 4/3), fine to coarse Sandy GRAVEL with SILT (GM), medium dense, moist	0.0		1225	
						Olive brown (2.5Y 4/3), Silty fine SAND (SM), medium dense, wet, trace medium sand, angular to subangular				
						Olive brown (2.5Y 4/3), fine to coarse Sandy GRAVEL with SILT (GM), medium dense, wet, angular to subangular				
	15		EB-27-15				0.0		1245	
						Olive brown (2.5Y 4/3), coarse SAND (SP), wet, trace fine to medium sand				
						Olive brown (2.5Y 4/3), fine to coarse Sandy GRAVEL with SILT (GM), medium dense, wet, angular to subangular				
	20		EB-27-20			Olive brown (2.5Y 4/3), Silty fine SAND (SM), dense, wet, trace medium sand	0.0		1255	
						Completed boring to 20 feet bgs.				
	25									
	30									

URS

APPENDIX L

LABORATORY REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

SUPPLEMENTAL SOIL BORINGS

Alpha Scientific Corporation
Environmental Laboratories

01-06-2009

Mr. Joe Liles
URS Corporation
2020 E. First Street, Suite 400
Santa Ana, CA 92705

Project: Sears 1058A
Project Site: 2633 Telegraph Ave., Oakland, CA
Sample Date: 12-23-2008
Lab Job No.: UR812113

Dear Mr. Liles:

Enclosed please find the analytical report for the sample(s) received by Alpha Scientific Corporation on 12-24-2008 and analyzed by the following EPA methods:

EPA 8015M (Total Petroleum Hydrocarbons)
EPA 8260B (BTEX & MTBE by GC/MS)

All analyses have met the QA/QC criteria of this laboratory.

The sample(s) arrived in good conditions (i.e., chilled at 4^{o}C, intact) and with a chain of custody record attached.

Alpha Scientific Corporation is a CA DHS certified laboratory (Certificate Number 2633). Thank you for giving us the opportunity to serve you. Please feel free to call me at (562) 809-8880 if our laboratory can be of further service to you.

Sincerely,

Roger Wang, Ph. D.
Laboratory Director

Enclosures

This cover letter is an integral part of this analytical report.

Client:	URS Corporation	Lab Job No.:	UR812113
Project:	Sears 1058A		
Project Site:	2633 Telegraph Ave., Oakland, CA	Date Sampled	12-23-2008
Matrix:	Soil	Date Received:	12-24-2008
Prepared Method for TPH-g: EPA 5035		Date Prepared:	12-23-2008
Batch No. for TPH-g:	GML24-GS1	Date Analyzed:	12-24-2008
		Date Reported:	01-06-2009

TPH-Gasoline by LUFT-GC/MS Method
Reporting Unit: mg/kg (ppm)

Sample ID	Lab ID	DF for TPH-g	C4-C12 (Gasoline Range)*	Surrog Rec.% (TPH-g)
MDL			0.2	
PQL			0.5	
Method Blank		1	ND	99
EB-27-5'	UR812113-2	1	ND	101
EB-27-10'	UR812113-3	1	ND	95
EB-27-15'	UR812113-4	1	ND	98
EB-27-20'	UR812113-5	1	ND	100
EB-25-5'	UR812113-6	1	ND	104
EB-25-10'	UR812113-7	1	ND	97
EB-25-15'	UR812113-8	1	ND	90
EB-25-20'	UR812113-9	1	ND	103
DUP-1	UR812113-10	1	ND	94

MDL: Method Detection Limit;
PQL: Practical Quantitation Limit;
DF: Dilution Factor (DF × PQL = Reporting Limit for the sample);
ND: Not Detected (below DF × MDL);
Note: Surrogate recovery acceptance limits are 70-130%.

Client:	URS Corporation	Lab Job No.:	UR812113
Project:	Sears 1058A		
Project Site:	2633 Telegraph Ave., Oakland, CA	Date Sampled	12-23-2008
Matrix:	Soil	Date Received:	12-24-2008
Prepared Method for TPH-g: EPA 5035		Date Prepared:	12-23-2008
Batch No. for TPH-g:	GML24-GS1	Date Analyzed:	12-24-2008
Batch No. for TPH-d & o:	EL24-DS1	Date Analyzed:	12-24-2008
		Date Reported:	01-06-2009

EPA 8015M (Petroleum Hydrocarbon Chain)
Reporting Unit: mg/kg (ppm)

Sample ID	Lab ID	DF	C10-20	C21-C30	C31 & Above	Surrog Rec.%
MDL			5	5	25	
PQL			10	10	50	
Method Blank		1	ND	ND	ND	90
EB-27-5'	UR812113-2	1	ND	ND	ND	80
EB-27-10'	UR812113-3	1	ND	ND	ND	90
EB-27-15'	UR812113-4	1	ND	ND	ND	82
EB-27-20'	UR812113-5	1	ND	ND	ND	92
EB-25-5'	UR812113-6	1	ND	ND	ND	114
EB-25-10'	UR812113-7	1	ND	ND	ND	90
EB-25-15'	UR812113-8	1	ND	ND	ND	112
EB-25-20'	UR812113-9	1	ND	ND	ND	92
DUP-1	UR812113-10	1	ND	ND	ND	118

MDL: Method Detection Limit;
PQL: Practical Quantitation Limit;
DF: Dilution Factor (DF × PQL = Reporting Limit for the sample);
ND: Not Detected (below DF × MDL);
Note: Surrogate recovery acceptance limits are 70-130%.

Client:	URS Corporation	Lab Job No.:	UR812113
Project:	Sears 1058A		
Project Site:	2633 Telegraph Ave., Oakland, CA	Date Sampled	12-23-2008
Matrix:	Water	Date Received:	12-24-2008
Batch No. for TPH-g:	EML29-GW1	Date Analyzed:	12-29-2008
Batch No for TPH-d:	EL24-DW1	Date Analyzed:	12-24-2008
		Date Reported:	01-06-2009

EPA 8015M (Gasoline, Diesel & Oil Range TPH)
Reporting Unit: µg/L (ppb)

Sample ID	Lab ID	DF for TPH-g	C4-C12 (Gasoline Range)*	Surrog Rec.% (TPH-g)	DF for TPHd&o	C13-C23 (Diesel Range)	C24-C40 (Oil Range)	Surrog Rec.% (TPHd&o)
MDL			50			500	2500	
PQL			100			750	4000	
Method Blank		1	ND	89	1	ND	ND	98
EB-27W-10-20	UR812113-1	1	ND	88	1	ND	ND	88
EB-EB-25	UR812113-11	1	ND	87		NA	NA	

* Gasoline Range TPH result is obtained from purge and trap analysis using LUFT-GCMS Method.
MDL: Method Detection Limit;
PQL: Practical Quantitation Limit;
DF: Dilution Factor (DF × PQL = Reporting Limit for the sample);
ND: Not Detected (below DF × MDL);
NA: Not Analyzed
Note: Surrogate recovery acceptance limits are 70-130%.

01-06-2009

Client: URS Corporation
Project: Sears 1058A
Project Site: 2633 Telegraph Ave., Oakland, CA
Matrix: Soil
Prepared Method: EPA 5035
Batch No.: 1224-VOGS1

Lab Job No.: UR812113
Date Sampled 12-23-2008
Date Received: 12-24-2008
Date Prepared: 12-23-2008
Date Analyzed: 12-24-2008

EPA 8260B (BTEX & MTBE by GC/MS)
Reporting Units: mg/kg (ppm)

Lab ID	Method Blank	UR812113-2	UR812113-3	UR812113-4	UR812113-5	UR812113-6	MDL	PQL
Sample ID		EB-27-5'	EB-27-10'	EB-27-15'	EB-27-20'	EB-25-5'		
DF	1	1	1	1	1	1		
Benzene	ND	ND	ND	ND	ND	ND	0.001	0.002
Toluene	ND	ND	ND	ND	ND	ND	0.001	0.002
Ethylbenzene	ND	ND	ND	ND	ND	ND	0.001	0.002
Total Xylenes	ND	ND	ND	ND	ND	ND	0.002	0.004
MTBE	ND	ND	ND	ND	ND	ND	0.002	0.005
SURRO-GATE	**MB %RC**	**%RC**	**%RC**	**%RC**	**%RC**	**%RC**	Accept Limit%	
Dibromofluoro-methane	90	100	125	98	97	107	79-126	
Toluene-d8	102	103	98	105	100	102	79-121	
Bromofluoro-benzene	107	108	93	105	108	112	71-121	

MDL: Method Detection Limit;
PQL: Practical Quantitation Limit;
DF: Dilution Factor (DF × PQL = Reporting Limit for the sample);
MB: Method Blank;
ND: Not Detected (below DF × MDL);
NA: Not Analyzed
J: Trace Value, result is below DF × PQL but above DF × MDL;
%RC Percent Recovery;
Note: Surrogate spike concentrations are 25 µg/L for all the compounds.

01-06-2009

Client: URS Corporation
Project: Sears 1058A
Project Site: 2633 Telegraph Ave., Oakland, CA
Matrix: Soil
Prepared Method: EPA 5035
Batch No.: 1224-VOBS1

Lab Job No.: UR812113
Date Sampled 12-23-2008
Date Received: 12-24-2008
Date Prepared: 12-23-2008
Date Analyzed: 12-24-2008

EPA 8260B (BTEX & MTBE by GC/MS)
Reporting Units: mg/kg (ppm)

Lab ID	Method Blank	UR812113-7	UR812113-8	UR812113-9	UR812113-10		MDL	PQL
Sample ID		EB-25-10'	EB-25-15'	EB-25-20'	DUP-1			
DF	1	1	1	1	1			
Benzene	ND	ND	ND	ND	ND		0.001	0.002
Toluene	ND	ND	ND	ND	ND		0.001	0.002
Ethylbenzene	ND	ND	ND	ND	ND		0.001	0.002
Total Xylenes	ND	ND	ND	ND	ND		0.002	0.004
MTBE	ND	ND	ND	ND	ND		0.002	0.005
SURRO-GATE	**MB %RC**	**%RC**	**%RC**	**%RC**	**%RC**		Accept Limit%	
Dibromofluoro-methane	90	98	85	105	95		79-126	
Toluene-d8	102	103	100	103	101		79-121	
Bromofluoro-benzene	107	104	97	111	100		71-121	

MDL: Method Detection Limit;
PQL: Practical Quantitation Limit;
DF: Dilution Factor (DF × PQL = Reporting Limit for the sample);
MB: Method Blank;
ND: Not Detected (below DF × MDL);
NA: Not Analyzed
J: Trace Value, result is below DF × PQL but above DF × MDL;
%RC Percent Recovery;
Note: Surrogate spike concentrations are 25 µg/L for all the compounds.

01-06-2009

Client: URS Corporation
Project: Sears 1058A
Project Site: 2633 Telegraph Ave., Oakland, CA
Matrix: Water
Batch No.: 1229-VOEW1

Lab Job No.: UR812113
Date Sampled 12-23-2008
Date Received: 12-24-2008
Date Analyzed: 12-29-2008

EPA 8260B (BTEX & MTBE by GC/MS)
Reporting Units: µg/L (ppb)

Lab ID	Method Blank	UR812113-1	UR812113-11				MDL	PQL
Sample ID		EB-27W-10-20	EB-EB-25					
DF	1	1	1					
Benzene	ND	ND	ND				0.5	1
Toluene	ND	ND	ND				0.5	1
Ethylbenzene	ND	ND	ND				0.5	1
Total Xylenes	ND	ND	ND				1	2
MTBE	ND	ND	ND				1	2
SURRO-GATE	**MB %RC**	**%RC**	**%RC**				Accept Limit%	
Dibromofluoro-methane	120	124	112				79-126	
Toluene-d8	99	103	104				79-121	
Bromofluoro-benzene	88	88	84				71-121	

MDL: Method Detection Limit;
PQL: Practical Quantitation Limit;
DF: Dilution Factor (DF × PQL = Reporting Limit for the sample);
MB: Method Blank;
ND: Not Detected (below DF × MDL);
NA: Not Analyzed
J: Trace Value, result is below DF × PQL but above DF × MDL;
%RC Percent Recovery;
Note: Surrogate spike concentrations are 25 µg/L for all the compounds.

01-06-2009

TPH-Gasoline
Batch QA/QC Report

Client: URS Corporation
Project: Sears 1058A
Matrix: Soil
Batch No.: GML24-GS1

Lab Job No.: UR812113
Lab Sample ID: UR812113-2
Date Analyzed: 12-24-2008

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH-G	ND	1000	929	860	92.9	86.0	7.7	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Report Value	True Value	Rec.%	%Rec Accept. Limit
TPH-G	860	1000	86.0	80-120

ND: Not Detected (at the specified limit).

01-06-2009

TPH-Gasoline
Batch QA/QC Report

Client: URS Corporation
Project: Sears 1058A
Matrix: Water
Batch No.: EML29-GW1

Lab Job No.: UR812113
Lab Sample ID: G812117-6
Date Analyzed: 12-29-2008

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH-g	ND	1000	998	932	99.8	93.2	6.8	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Report Value	True Value	Rec.%	Accept. Limit
TPH-g	907	1,000	90.7	80-120

ND: Not Detected (at the specified limit).

01-06-2009

EPA 8015M (TPH)
Batch QA/QC Report

Client: URS Corporation
Project: Sears 1058A
Matrix: Soil
Batch No.: EL24-DS1

Lab Job No.: UR812113
Lab Sample ID: SS81224-1
Date Analyzed: 12-24-2008

I. MS/MSD Report
Unit: ppm

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH-d	ND	200	219	232	109.5	116.0	5.8	30	70-130

II. LCS Result
Unit: ppm

Analyte	LCS Report Value	True Value	Rec.%	%Rec Accept. Limit
TPH-d	563	500	112.6	80-120

ND: Not Detected (at the specified limit).

01-06-2009

EPA 8015M (TPH)
Batch QA/QC Report

Client: URS Corporation
Project: Sears 1058A
Matrix: Water
Batch No.: EL24-DW1

Lab Job No.: UR812113
Lab Sample ID: G812117-1
Date Analyzed: 12-24-2008

I. MS/MSD Report
Unit: ppm

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
TPH-D	ND	20	22.8	22.4	114.0	112.0	1.8	30	70-130

II. LCS Result
Unit: ppm

Analyte	LCS Value	True Value	Rec.%	Accept. Limit
TPH-D	57.1	50	114.2	80-120

ND: Not Detected (at the specified limit)

01-06-2009

EPA 8260B
Batch QA/QC Report

Client: URS Corporation
Project: Sears 1058A
Matrix: Soil
Batch No: 1224-VOGS1

Lab Job No.: UR812113
Sample ID: UR812113-2
Date Analyzed: 12-24-2008

I. MS/MSD Report
Unit: ppb

Compound	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
1,1-Dichloroethene	ND	20	17.3	18.3	86.5	91.5	5.6	30	70-130
Benzene	ND	20	19.5	19.1	97.5	95.5	2.1	30	70-130
Trichloro-ethene	ND	20	17.5	17.6	87.5	88.0	0.6	30	70-130
Toluene	ND	20	19.7	18.9	98.5	94.5	4.1	30	70-130
Chlorobenzene	ND	20	19.9	19.0	99.5	95.0	4.6	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Value	True Value	Rec.%	Accept. Limit
1,1-Dichloroethene	21.1	20.0	105.5	80-120
Benzene	23.1	20.0	115.5	80-120
Trichloro-ethene	20.2	20.0	101.0	80-120
Toluene	22.1	20.0	110.5	80-120
Chlorobenzene	22.8	20.0	114.0	80-120

ND: Not Detected.

01-06-2009

EPA 8260B
Batch QA/QC Report

Client: URS Corporation
Project: Sears 1058A
Matrix: Water
Batch No: 1229-VOEW1

Lab Job No.: UR812113
Lab Sample ID: G812117-6
Date Analyzed: 12-29-2008

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
1,1-Dichloroethene	ND	20	17.8	17.0	89.0	85.0	4.6	30	70-130
Benzene	ND	20	19.1	18.2	95.5	91.0	4.8	30	70-130
Trichloro-ethene	ND	20	20.1	17.3	100.5	86.5	15.0	30	70-130
Toluene	ND	20	18.1	17.6	90.5	88.0	2.8	30	70-130
Chlorobenzene	ND	20	18.0	17.6	90.0	88.0	2.2	30	70-130

II. LCS Result
Unit: ppb

Analyte	LCS Report Value	True Value	Rec.%	Accept. Limit
1,1-Dichloroethene	22.5	20	112.5	80-120
Benzene	19.6	20	98.0	80-120
Trichloro-ethene	17.1	20	85.5	80-120
Toluene	19.4	20	97.0	80-120
Chlorobenzene	18.7	20	93.5	80-120

ND: Not Detected (at the specified limit).

ALPHA SCIENTIFIC CORPORATION

CHAIN OF CUSTODY RECORD

Lab Job Number 408121113

Client: URS Corp.

Address: 2020 E. First Street, Santa Ana, CA 92705

Report Attention: Joe Liles | Phone: 7146976400 | Fax: - | Sampled by: Jacob Henry

Project Name/No.: Sears 1058A | Project Site: 2633 Telegraph Ave. Oakland, CA

T.A.T. Requested: ☐ Rush 8 12 24 hrs ☐ 2-3 days ☒ Normal

Sample Condition: ☒ Chilled ☒ Intact ☐ Sample seals

Client Sample ID	Lab Sample ID	Sample Collect Date	Sample Collect Time	Matrix Type	Sample Preserv	No., type* & size of container	8015M (Gasoline)	8015M(Diesel)	8260B(BTEX, Oxygenates) MTBE	8260B (VOCs)	8270C(SVOCs)	CAM Metals	TPH Carbon Chain 8015M	TPH Bunker C 8015M	TPH Motor Oil 8015M	BTEX 8260B			Remark
EB-27W40-20	408121113-1	12/23/08	1255	H_2O	HCl	6 VOAs 1 Amber	X	X	X						X				
EB-27-5'	-2		1210	Soil	NaHSO4	2 VOAs 4oz Jar		X	X				X	X					
EB-27-10'	-3		1225																
EB-27-15'	-4		1245																
EB-27-20'	-5		1255																
EB-25-5'	-6		1430																
EB-25-10'	-7		1445																
EB-25-15'	-8		1500																
EB-25-20'	-9		1520																
Dup-1	-10		1440																
EB-EB-25	-11		1610	H_2O	HCl	4 VOAs	X									X			

Relinquished by	Company	Date	Time	Received by	Company	Date	Time
J Henry	URS	12/23/08	1630		ASC	12/24/08	10:30 Am
Relinquished by	Company	Date	Time	Received by	Company	Date	Time

Container types: M=Metal Tube, A=Air Bag, P=Plastic bottle, G=Glass bottle, V=VOA vial

Alpha Scientific Corporation
16760 Gridley Road
Cerritos, CA 90703

Email: ascorp@verizon.net
Tel: (562) 809-8880
Fax: (562) 809-8801

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.
Distribution: WHITE with report, PINK to courier.

APPENDIX M

URS DATA VALIDATION REPORT

SUPPLEMENTAL SOIL BORINGS

Level III Data Validation Summary

PROJECT: Sears Oakland 1058A
LABORATORY: Alpha Scientific Corporation
MATRIX: Soil / Water
LAB PROJECT #: UR812113
SAMPLES: See table below

Field ID	Matrix	QC Designations	Lab ID	TPH-Gasoline	TPH-Diesel/Oil	TPH-Carbon Range	BTEX/ MTBE
EB-27W-10-20	Water		UR812113-1	X	X		X
EB-27-5'	Soil		UR812113-2	X		X	X
EB-27-10'	Soil		UR812113-3	X		X	X
EB-27-15'	Soil		UR812113-4	X		X	X
EB-27-20'	Soil		UR812113-5	X		X	X
EB-25-5'	Soil		UR812113-6	X		X	X
EB-25-10'	Soil		UR812113-7	X		X	X
EB-25-15'	Soil		UR812113-8	X		X	X
EB-25-20'	Soil		UR812113-9	X		X	X
DUP-1	Soil	Field Duplicate of EB-25-5'	UR812113-10	X		X	X
EB-EB-25	Water	Equipment blank	UR812113-11	X	X		X

Date Sampled = 12/23/08
TPH-Gasoline= Total petroleum hydrocarbon – gasoline range (C_4-C_{12}), TPH-Diesel= Total petroleum hydrocarbon – diesel range (C_{13}-C_{23})
TPH-Oil= Total petroleum hydrocarbon – oil range (C_{24}-C_{40}) TPH-Carbon Range= Total petroleum hydrocarbon – carbon range (C_{10}-C20, C21-C30, C31+), BTEX= Benzene, Toluene, Ethylbenzene, Total Xylenes MTBE=Methyl tertiary butyl ether
Alpha Scientific Corporation is certified by California Department of Health Services (Certificate Number 2633)

DATA REVIEW MATRIX

QC Parameter	TPH-Gasoline LUFT-GC/MS	TPH-Diesel/Oil EPA 8015M	TPH-Carbon Range EPA 8015M	BTEX/ MTBE EPA 8260B
Chain-of-custody (COC)	✓	✓	✓	✓
Sample Receipt	✓	✓	✓	✓
Holding Times	✓	✓	✓	✓
Method Blank	✓	✓	✓	✓
Surrogate Recovery	✓	✓	✓	✓
Laboratory Control Sample	✓	✓	✓	✓
Matrix Spike	✓(1)	NPS	NPS	✓(1)
Duplicate or Spike Duplicate	✓(1)	NPS	NPS	✓(1)
Equipment Blank	✓	✓	NA	✓

✓ = Quality control evaluation criteria met NA = Not Applicable or not analyzed NPS = Non-project sample

Notes:
1. MS/MSD was conducted on sample EB-27-5'. The results were within acceptance criterion.

Summary: Based on a Limited validation covering the QC parameters listed in the table above, these data are considered to be useable for meeting project objectives. However, the data user must evaluate the ultimate usability of the data based on the reporting limits obtained. The table below lists the detection limits obtained for undiluted samples.

Water		
Parameter	**MDL**	**PQL**
TPH-Diesel	500	750
TPH-Oil	2500	4000
TPH-Gasoline	50	100
Benzene	0.5	1
Toluene	0.5	1
Ethylbenzene	0.5	1
Total Xylenes	1	2
MTBE	1	2

Aqueous units are in micrograms per liter (µg/L)
MDL = Method Detection limit
PQL = Practical Quantitation Limit

Soil		
Parameter	**MDL**	**PQL**
TPH-Gasoline	0.2	0.5
TPH-Carbon Range	5 to 25	10 to 50
Benzene	0.001	0.002
Toluene	0.001	0.002
Ethylbenzene	0.001	0.002
Total Xylenes	0.002	0.004
MTBE	0.002	0.005

Soil units are in milligrams per kilograms (mg/kg)

Samples did not require dilution for the requested analyses.