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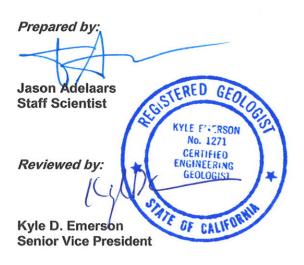
Alameda County Environmental Health 25864-F Business Center Drive Redlands, California 92374 909.335.6116 TEL 909.335.6120 FAX

# SOIL, VAPOR, AND GROUNDWATER INVESTIGATION FOR

OLSON URBAN HOUSING, LLC Former Impulse Motors

1210 Bockman Road San Lorenzo, CA

May 24, 2007 Project Number 040T.29215.68



SECOR INTERNATIONAL INCORPORATED www.secor.com

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May 24, 2007

Steven Plunkett Department of Environmental Protection Environmental Protection Division 1131 Harbor Bay Parkway, 2<sup>nd</sup> Floor Alameda, California 94502

Ms. Marci Rye The Olson Company 3130 Crow Canyon Place, Suite 210 San Ramon, California 94583

## RE: SOIL, VAPOR, AND GROUNDWATER INVESTIGATION

1245 – 1415 Bockman Road San Lorenzo, California (the "Site")

Dear Mr. Plunkett,

At the request and authorization of Olson Urban Housing, LLC (Olson), SECOR International Incorporated (SECOR) has prepared this report detailing the results of a soil, soil vapor, and groundwater investigation performed at the above referenced Site. The completed assessment was conducted in general accordance with SECOR's *Workplan for Soil and Groundwater Investigation*, dated March 12, 2007. In addition, the work was completed in accordance with the terms contained in the Master Consulting Services Agreement (MCSA) with the Olson Company dated November 28, 2001. Notification and approval of proposed field activities was made to the Alameda County Health Care Services Agency (ACHCSA), prior to the implementation of field work. The results of the completed work are summarized in the following Executive Summary, and described in greater detail in the attached report.

## **EXECUTIVE SUMMARY**

Previous environmental assessment and remedial activities completed by SECOR and others (SECOR, 2004, 2005; ACC, 2004) at the Site, suggested that very limited soil and groundwater impact exists in the areas of the former USTs and dispenser islands after removals completed in 2006. Therefore the ACHCS requested that an additional assessment be completed to confirm that these conclusions are valid, that only limited impact remains. In addition, it was requested to evaluate what the residual soil vapor concentrations were in the subsurface in the area of the limited residual release evaluate if they represent a human health risk in light of the proposed residential use of the Site. The following report outlines the investigation to confirm that.

Between April 26 and April 27, 2007, under the oversight of the ACHCSA, SECOR supervised the installation of seven (7) temporary soil borings located down-gradient of the two former fuel dispensers and in the vicinity of the former underground fuel storage tanks (USTs). Soil, soil vapor, and groundwater were collected from the borings and analyzed for gasoline and diesel range hydrocarbons (TPHg and TPHd); Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX); fuel oxygenates; Dibromoethane (EDB), dichloroethane (EDC), and lead. The borings were

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backfilled with a cement/bentonite grout as requested by the Alameda County Public Works Agency.

In addition to the soil borings, SECOR supervised the abandonment of three (3) suspected groundwater monitoring wells, which were located immediately down-gradient of the former USTs. The wells were backfilled with a cement/bentonite grout using a tremmie pipe under the supervision of the ACPWA inspector.

Based on the results of the completed borings, the following were noted:

Encountered soils generally consisted of silt, clay and silt/clay mixtures to the maximum explored depth (approximately 12 feet bgs). First water was encountered at a depth of approximately 7.5 to 8 feet bgs.

SECOR personnel identified what appeared to be a sewer line. The four inch diameter pipe descended from ground surface approximately 2 feet and made a 90 degree turn toward Bockman Road. The length or destination of the pipe is unknown. The sewer line will need to be properly uncovered, capped, and abandoned, as per the request of Alameda County Public Works Agency.

## Down-gradient Assessment of Former Dispenser Islands Soil Borings BA-01, BA-02, and BA-06

## <u>Soil</u>

Most soil samples collected and analyzed from the area near the former dispenser islands exhibited non-detectable concentrations of TPHg, TPHd, BTEX, and Fuel oxygenates. Soil sample BA-01-5 exhibited an MtBE concentration of 0.003 mg/kg and BA-02-7 exhibited a TPHg concentration of 0.68 mg/kg. However, these reported concentrations fall well below USEPA Preliminary Remediation Goals for MtBE and TPHg of 62 and 100 mg/kg, respectively. Concentrations of total lead ranged from 4.16 to 6.98 mg/kg, well within California background concentrations.

## Soil Vapor

Soil vapor collected from BA-01 and BA-02 revealed concentrations of TPHg at 52 and 10  $\mu$ g/L of air, respectively. No concentrations of TPHd, BTEX, fuel oxygenates, and methane were detected in BA-01 or BA-02. The Environmental Screening Levels (ESLs) for TPHg in shallow residential soil is set at 26  $\mu$ g/L of air. One soil vapor sample collected from BA-01 exhibited TPHg concentrations above State ESLs.

## **Groundwater**

Groundwater collected from BA-01 and BA-02 exhibited TPHg concentrations of 21,000 and 1,500  $\mu$ g/L respectively; and TPHd concentrations of 110,000 and 5,300  $\mu$ g/L, respectively. Groundwater collected from BA-01 exhibited MtBE and EtBE concentrations of 9.2 and 5.4  $\mu$ g/L, respectively. Results of groundwater analysis of samples collected from BA-02 were non-detect with respect to concentrations of BTEX and fuel oxygenates. Results of groundwater analysis of samples collected from BA-06 were non-detect with respect to concentrations BA-06 were non-detect with respect to concentrations.

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Based on the borings completed, some impact to groundwater down-gradient form the former pump islands exists. Boring BA-03 (approximately 20 feet further down-gradient from boring BA-02) detected much lower concentrations of TPHg than BA-02 and an absence of TPHd. At BA-06, all compounds were non-detect at a cross gradient location to the dispenser island and boring BA-01. All groundwater samples essentially did not contain any detectable BTEX compounds and very low concentrations of MTBE and ETBE.

It would appear that the groundwater impact is very localized to the area immediately down-gradient from the former dispenser islands. Based on our discussions with the ACHCS, it was requested that the assessment of dissolved phase TPH in groundwater down-gradient from the former dispenser islands be continued, in order to define the plume limits and concentrations. SECOR has proposed three additional borings to continue this assessment on figure 2 (attached). It is requested that the ACHCS review these proposed locations and grant approve to continue the assessment.

#### Assessment of Former UST Locations Soil Borings BA-03, BA-04, BA-05, and BA-07

#### <u>Soil</u>

All soil samples collected and analyzed from the area of the former USTs exhibited nondetectable concentrations of TPHg, TPHd, BTEX, and fuel oxygenates. Concentrations of total lead ranged from 4.25 to 5.33 mg/kg, well within California background concentrations.

## Soil Vapor

Soil vapor collected from BA-03 and BA-04 reported TPHg concentrations of 11 and 13  $\mu$ g/L, respectively. Non-detectable concentrations of TPHd, BTEX, and fuel oxygenates were exhibited in BA-03 and BA-04. The Environmental Screening Levels (ESLs) for TPHg in shallow residential soil is set at 26  $\mu$ g/L of air. As a result, soil vapor collected from BA-03 and BA-04 exhibited TPHg concentrations below State ESLs.

#### Groundwater

Groundwater collected from BA-04, BA-05, and BA-07 exhibited non-detectable concentrations of TPHg, TPHd, BTEX, and fuel oxygenates. Groundwater collected from BA-03 reported a TPHg concentration of 230  $\mu$ g/L and non-detectable concentrations of TPHd, BTEX, and fuel oxygenates.

Soil, soil vapor, and groundwater collected from the vicinity of the former fuel USTs revealed concentrations of contaminants well below regulatory screening levels. As a result, SECOR considers the former fuel USTs adequately assessed and recommends no further action.

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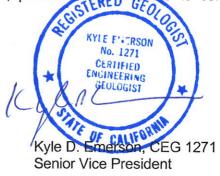
## CLOSURE

It has been a pleasure to provide environmental consulting services for you on this project and we look forward to working with you in the future. Should there be any questions regarding the information provided within the accompanying report, please do not hesitate to contact the undersigned at (909) 335-6116.

Respectfully submitted,

SECOR International Incorporated

Jason Adélaars Staff Scientist



CC:

Mr. Walt Caughlin, The Olson Company Mr. Preston Brooks, Cox, Castle, Nicholson, LLP

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## **1.0 INTRODUCTION**

This report documents the methodology and results of the soil, soil vapor, and groundwater investigation completed by SECOR International Incorporated (SECOR) at the former Impulse Motors, located at 1210 Bockman Road, San Lorenzo, California (the "Site")

The completed work was conducted in general accordance with SECOR's approved *Workplan for Soil and Groundwater Investigation*, dated March 12, 2007 and in accordance with the terms provided in the Olson Company's Master Consulting Services Agreement dated November 28, 2001. The scope of work and the results of the investigation are described in subsequent sections. The following subsections provide the site description and a summary of past operations as well as a description of site geology.

Prior to initiation of remedial actions at the Site, notification was made to Mr. Steven Plunkett of Alameda County Health Care Services Agency (ACHCA) who is providing regulatory oversight. Mr. Plunkett visited the Site to observe remedial actions at the Site on April 26, 2007.

## 1.1 SITE DESCRIPTION AND OPERATIONS

The Site is located on the south side of Bockman Road between Via Chiquita and Via Del Ray in San Lorenzo, California. The approximately three acres of property on the Site is addressed as 1210 through 1366 Bockman Road.

Currently, the Site consists of vacant land which is not being used for any purpose. The Site was formerly the location of the former Impulse Motors which provided automobile repair and fuel services. The facility has, subsequently been demolished in preparation of planned grading and redevelopment of the Site for planned residential purposes.

## 1.2 SITE GEOLOGY AND HYDROGEOLOGY

The Site is located in an area of recent alluvial fan deposits of Quaternary age. These deposits typically consist of tideland and floodplain deposits. Regionally, the Site and surrounding area is located northeast of the San Francisco Bay, the Santa Cruz Mountains, and the Pacific Ocean. The nearest active faults include the Hayward Fault and the San Andreas Fault (Peninsula) Zones, located approximately 2.5 miles northeast and 16 miles southwest, respectively, and the Calaveras Fault, located approximately 10 miles to the northeast.

The elevation of the Site is approximately 22 feet above mean sea level. The surface topography of the site has a minor slope toward the west-southwest at less than one percent. The surface runoff generally flows toward the San Francisco Bay, located approximately ½ mile southwest of the Site.

According to the EDR report, groundwater monitoring well data within a one mile radius indicates that groundwater is expected to be encountered at a depth of approximately 8 to 10 feet below the ground surface. The general groundwater flow direction is towards the west, in the direction of the San Francisco Bay. According to the EDR report, the Site is located within ¼ mile of a 500 year flood zone.

## 2.0 BACKGROUND INFORMATION

Numerous investigations and remedial work have been completed at the Site by SECOR and others (SECOR, 2005a,b; ACC, 2004). Relevant assessment data obtained from those investigations is discussed below.

On December 16-17, 2004, SECOR completed a Phase II ESA at the Site that included the use of a Hydraulic push drilling rig (e.g.,,GeoProbe<sup>™</sup>) and hand auger, to advance eight (8) borings at select locations throughout the Site to a maximum explored depth of approximately 14 feet bgs. The completed scope of work was performed to evaluate the former UST locations, product lines, fuel dispensers and below ground hydraulic lifts at the Site. The results of SECOR's Phase II investigation and subsequent recommendations are as follows:

Groundwater samples HP-1 and HP-2 were proposed to verify the results of the previously completed ACC investigation (ACC, 2004), which indicated that contamination was not significant in the vicinity of the former USTs located at 1210 Bockman Road (see Figure 2). HP-1 and HP-2 were located up-gradient (east) and down-gradient (west) from the former UST location, respectively. The analysis of the groundwater samples from both HP-1 and HP-2 showed no concentrations of either TPH-g or VOCs above laboratory reporting limits.

Based on the results of the completed investigation, SECOR concluded that petroleum impact was limited to shallow soils in the vicinity of the former fuel dispenser islands. As a result, SECOR excavated approximately 300 cubic yards of impacted soil in the vicinity of the former fuel dispenser islands. Based on the results of the completed excavations, the following were noted:

First water was encountered at a depth of approximately 10 feet bgs. The presence of shallow water prevented the continuation of excavation in the vertical direction.

## Excavation 1 (Northern Fuel Dispenser Excavation)

<u>Sidewall Samples</u> - The confirmation samples collected from the sidewalls of the excavation reported no concentrations of TPHg or TPHd above the laboratory detection limits. Low concentrations of the fuel oxygenates, MtBE and TBA were reported in one of the southern sidewall samples at concentrations of 0.015 mg/Kg and 0.057 mg/Kg, respectively. Total lead concentrations ranged from 3.88 mg/Kg to 4.27 mg/Kg, which is well within typical background concentrations.

<u>Bottom Samples</u> – Because of the infiltration of groundwater into the bottom of the excavation, only one bottom sample was collected. The results of the bottom sample reported the presence of TPHg and TPHd at concentrations of 120 and 13 mg/Kg, respectively. MtBE and Ethylbenzene were also reported at concentrations of 0.4 and 0.15 mg/Kg, respectively. Total lead was reported at 6.34 mg/Kg. No other target analytes were reported above laboratory reporting limits.

## Excavation 2 (Southern Fuel Dispenser Excavation)

<u>Sidewall Samples</u> – TPHg and TPHd were reported at very low concentrations in one of the sidewall confirmation samples, S-4-5 at concentrations of 0.78 mg/Kg and 19 mg/Kg, respectively. Very low concentrations of MtBE and TBA were reported at concentrations of 0.015 mg/Kg and 0.028 mg/Kg, respectively in this same sample. Total lead was reported at concentrations ranging from 3.47 mg/Kg to 16.5 mg/Kg, respectively. No other

target analytes were reported in sidewall confirmation samples above laboratory reporting limits.

<u>Bottom Samples</u> – Because of infiltration of groundwater into the open excavation, SECOR was only able to collect one bottom verification sample. The sample was collected from the area where the highest PID readings had been observed at during the excavation process. The sample results reported the presence of TPHg at a concentration of 2.7 mg/Kg. Trace concentrations of MtBE and Ethylbenzene were also reported in this sample at concentration of 3.86 mg/Kg, respectively. No other target analytes were reported in this bottom sample at or above laboratory reporting limits.

Based on the assessment data collected from the remedial excavation and the single down gradient hydropunch sample location, it appeared that very limited soil impact exists in the areas of the form USTs and dispenser island. Therefore, as stated above, the ACHCS requested that a continued assessment occur to confirm that these conclusions are valid, that only limited impact remains, and that any residual soil vapors do not represent a human health risk in light of the proposed residential use of the Site. The following work plan outlines the scope of work to confirm that.

## 3.0 FIELD INVESTIGATION PROGRAM

## 3.1 SCOPE-OF-WORK

The scope of work consisted of the following general elements:

- Obtaining drilling and well abandonment permits from the Alameda County Public Works Agency;
- Preparation of a Site specific health and safety plan;
- Notification of underground service alert (USA);
- Use of a Geoprobe 6600 direct push drill rig.
  - A total of seven (7) soil borings to groundwater which was encountered at approximately 8 feet below ground surface.
- Collection of soil, vapor, and groundwater samples from the boring locations in accordance with the sampling plan required by the ACHCSA for potential chemical analysis;
- Abandonment of three (3) suspected groundwater monitoring wells by tremmie grouting with cement/bentonite mixture;
- Analysis of collected soil samples at a State of California Laboratory for the presence of diesel and gasoline range organics (TPHd and TPHg, respectively) following modified EPA test method 8015B; benzene, toluene, ethylbenzene and total xylenes (collectively BTEX) and the fuel oxygenates following EPA test method 8260B; and, for total lead (Pb) following EPA test method 6010B
- Preparation and submittal of this report documenting the findings and results of the investigation.

## 3.2 SOIL AND GROUNDWATER SAMPLING

Soils were hand augered within the upper five feet for utility clearance. Once the five foot depth has been reached, each of the boring locations, identified as BA-01 through BA-07, were further advanced using the Geoprobe 6600 direct push drill rig. During advancement of each, soil samples were collected starting at a depth of approximately 5 feet bgs using a 24-inch long by 2-inch inner diameter stainless steel sampler. At each sampling interval, the sampler was driven into undisturbed soil using a hydraulic ram on the GeoProbe<sup>™</sup> rig until 24 inches of penetration is achieved. Upon advancement of the sampler to the full 24-inch length, the steel rods were extracted from the boring and the sampler sleeve is removed. The drilling and sampling sequence is then repeated at various intervals for the entire depth of each boring.

Upon extracting the sampler at each depth interval, the soils contained therein were visually examined by SECOR field personnel who classified the soils in accordance with the unified soil classification system (USCS). A photo-ionization detector (PID) was used to monitor the soils collected for volatile organic compound (VOC) vapors. Soil was removed from the plastic sampler and placed in a zip-lock type baggie and the PID probe was inserted into the baggie to monitor the headspace for VOC vapors.

After classification and VOC vapor evaluation, the soil samples were collected from the stainless steel sleeve in plastic tubes. After the tubes were sealed, they were labeled with the appropriate identification information (boring number, sample depth, sample collection date, and sample collection time). The samples were logged on a chain-of-custody form and placed in an ice-filled

cooler for transport to the laboratory.

Upon reaching the approximate groundwater depth interval of 8 feet bgs, a 1.25-inch outerdiameter hydropunch sampling tool was advanced down the open borehole. Upon reaching the base of the boring, the hydropunch sampling tool was advanced approximately two feet into undisturbed saturated sediments using a hydraulic ram on the drilling rig. The outer portion of the sampling tool was then withdrawn approximately four feet to allow the inner slotted stainless steel casing to come into contact with groundwater. Surging and bailing was accomplished using a 3/8-inch diameter poly tubing and a 2-foot long by ½-inch diameter bailer to induce the creation of native filter pack around the slotted section.

Groundwater sampling at each location was performed after approximately 500 milliliters (ml) of water is purged from the stainless steel casing. During sampling, groundwater was transferred directly from the poly tubing into clean, 40mL, glass vials as well as 1 Liter glass jars with HCl preservative provided by the laboratory. Once the containers were full, threaded lids were attached, the containers were labeled and placed into an iced cooler pending transport, under Chain-of-Custody, to a laboratory for chemical analysis.

## 3.3 SOIL VAPOR SAMPLING

Temporary soil gas monitoring points (PRT stainless steel points with Tygon or polyethylene tubing) were pushed into the underlying soils. The sampling points were sealed with hydrated granular bentonite clay to assure that the collected samples were representative of soil pore vapors. In addition, a tracer compound was placed at the surface seal prior to sampling to determine if short-circuiting of the seal had occured during sampling.

Soil gas probes were advanced into near surface soils at the approximate locations depicted on Figure 2 to a depth of approximately 5 feet bgs to assess the potential presence of VOC concentrations in the foundation zone of future buildings.

Prior to sample collection a purge step down test was performed at the first sample collection point (BA-01-V). In order to perform the purge step down test, three samples were collected from the first sampling point. The samples were collected after iteratively purging 1, 3 and 7 tubing volumes prior to collecting the soil gas sample.

Following laboratory analysis of the three samples, the sample exhibiting the highest reported concentrations (in this investigation 7 tubing volumes) was used to determine the required purge volume. All samples were collected at a flow rate between 150-200 milliliters per minute (ml/min) into laboratory provided gas-tight syringes.

Samples were collected in general accordance with the methods and procedures promulgated by the Department of Toxic Substance Control (DTSC) and California Regional Water Quality Control Board—Los Angeles Region (CRWQCB) *Advisory—Active Soil Gas Investigations* dated January 28, 2003. Samples were hand delivered to an on-site mobile laboratory certified by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) to perform the required analyses.

## 3.4 WELL ABANDONMENT

During field operations, SECOR personnel identified one (1) monitoring well in addition to the two already scheduled to be abandoned. SECOR contacted the Alameda County Public Works,

Water Resources Department, and received permission to abandon the well along with the two other wells. A well abandonment permit for the additional well was filed with the county immediately after field operations.

Due to the surface conditions, the suspected monitoring wells were abandoned by tremmie grouting. This method was approved of by Vicky Hamlin, Alameda County Public Works Inspector, who was present during the destruction. The well construction of these wells is unknown, but total depths of the wells measured in April 2007 were recorded at 8 feet bgs and 18 feet bgs. A tremmie pipe was extended to the bottom of the wells and grout was pumped through. The wells were filled with grout up to ground surface.

## 4.0 LABORATORY TESTING PROGRAM

Four (4) soil vapor samples and four (4) groundwater samples collected from borings BA-01 through BA-04 were hand delivered to an on-site mobile laboratory provided by TEG Labs. TEG Labs is certified to perform hazardous waste testing by the State of California Department of Health Services, Environmental Laboratory Accreditation Program.

Sixteen (16) soil samples collected from borings BA-01 through BA-07 and three (3) groundwater samples collected from borings BA-05 through BA-07 were delivered under chain-of-custody (Appendix A) to Centrum Analytical Laboratories, Inc. (Centrum) located in Riverside, California. Centrum is certified to perform hazardous waste testing by the State of California Department of Health Services, Environmental Laboratory Accreditation Program.

Selected soil samples were analyzed for total lead following EPA Test method 6010B; TPHg and TPHd by modified EPA Test method 8015b; and BTEX and fuel oxygenates (BTEX, EDB, EDC, MtBE, TAME, ETBE, DIPE, and TBA) by EPA Test method 8260B. Soil vapor and groundwater samples were analyzed for TPHg and TPHd by modified EPA Test method 8015b; and BTEX and fuel oxygenates. Analytical results are tabulated on Tables 1-7. Analytical laboratory test results are included in Appendix A and discussed in Section 5.0.

## 5.0 INVESTIGATION RESULTS

## 5.1 FIELD OBSERVATIONS

Soils encountered during the remedial effort consisted of clay and silty clay mixtures to the maximum explored depth of approximately 10 feet bgs. Groundwater was encountered at a depth of 8 feet bgs.

In general, native soils had a dark black color and petroleum impacted soils were stained dark greenish gray in color. Measurements of VOCs utilizing a PID calibrated to 100 ppmV Isobutylene reported VOC concentrations ranging from 1-6.8 ppmV.

During field operations, SECOR personnel identified one (1) monitoring well in addition to the two already scheduled to be abandoned. SECOR contacted the Alameda County Public Works, Water Resources Department, and received permission to abandon the well along with the two other wells. A well abandonment permit for the additional well was filed with the county immediately after field operations.

During field operations, SECOR personnel identified what appeared to be a sewer line. The four inch diameter pipe descended from ground surface approximately 2 feet and made a 90 degree turn toward Bockman Road. The length or destination of the pipe is unknown. The sewer line will need to be properly uncovered, capped, and abandoned, as per the request of Alameda County Public Works.

## 5.2 ANALYTICAL RESULTS

The laboratory test results are discussed below. Laboratory test results for primary COPCs are summarized in attached Tables 1 through 7 and the complete laboratory analytical test results are presented on the laboratory data sheets attached as Appendix A.

## Down-gradient Assessment of Former Dispenser Islands Soil Borings BA-01, BA-02, and BA-06

Most soil samples collected and analyzed from the area near the former dispenser islands exhibited non-detectable concentrations of TPHg, TPHd, BTEX, and Fuel oxygenates. Soil sample BA-01-5 exhibited an MtBE concentration of 0.003 mg/kg and BA-02-7 exhibited a TPHg concentration of 0.68 mg/kg. However, these reported concentrations fall well below USEPA Preliminary Remediation Goals for TPHg and MtBE of 100 and 62 mg/kg, respectively. Concentrations of lead in analyzed soils fall within California background concentrations.

Soil vapor collect from BA-01 and BA-02 revealed concentrations of TPHg at 52 and 10  $\mu$ g/L of air, respectively. Non-detectable concentrations of TPHd, BTEX, fuel oxygenates, and methane were exhibited in BA-01 and BA-02. The Environmental Screening Levels (ESLs) for TPHg in shallow residential soil is set at 26  $\mu$ g/L of air. As a result, soil vapor collected from BA-01 exhibited TPHg concentrations above State ESLs.

Groundwater collect from BA-01 and BA-02 exhibited TPHg concentrations of 21,000 and 1,500  $\mu$ g/L respectively; and TPHd concentrations of 110,000 and 5,300  $\mu$ g/L, respectively. Groundwater collected from BA-01 exhibited MtBE and EtBE concentrations of 9.2 and 5.4  $\mu$ g/L, respectively. Groundwater collected from BA-02 revealed exhibited non-detectable

concentrations of BTEX and fuel oxygenates. Groundwater collected from BA-06 revealed nondetectable concentrations of TPHg, TPHd, BTEX, and fuel oxygenates.

## Assessment of Former UST Locations Soil Borings BA-03, BA-04, BA-05, and BA-07

All soil samples collected and analyzed from the area of the former USTs exhibited nondetectable concentrations of TPHg, TPHd, BTEX, and fuel oxygenates. Concentrations of lead in analyzed soils fall within California background concentrations.

Soil vapor collected from BA-03 and BA-04 reported TPHg concentrations of 11 and 13  $\mu$ g/L, respectively. Non-detectable concentrations of TPHd, BTEX, and fuel oxygenates were exhibited in BA-03 and BA-04. The Environmental Screening Levels (ESLs) for TPHg in shallow residential soil is set at 26  $\mu$ g/L of air. As a result, soil vapor collected from BA-03 and BA-04 exhibited TPHg concentrations below State ESLs.

Groundwater collected from BA-04, BA-05, and BA-07 exhibited non-detectable concentrations of TPHg, TPHd, BTEX, and fuel oxygenates. Groundwater collected from BA-03 reported a TPHg concentration of 230  $\mu$ g/L and non-detectable concentrations of TPHd, BTEX, and fuel oxygenates.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

Previous environmental assessment and remedial activities completed by SECOR and others (SECOR, 2004, 2005; ACC, 2004) at the Site, suggested that very limited soil and groundwater impact exists in the areas of the former USTs and dispenser islands after removals completed in 2006. Therefore the ACHCS requested that an additional assessment be completed to confirm that these conclusions are valid, that only limited impact remains. In addition, it was requested to evaluate what the residual soil vapor concentrations were in the subsurface in the area of the limited residual release evaluate if they represent a human health risk in light of the proposed residential use of the Site. The following report outlines the investigation to confirm that.

Between April 26 and April 27, 2007, under the oversight of the ACHCSA, SECOR supervised the installation of seven (7) temporary soil borings located down-gradient of the two former fuel dispensers and in the vicinity of the former underground fuel storage tanks (USTs). Soil, soil vapor, and groundwater were collected from the borings and analyzed for gasoline and diesel range hydrocarbons (TPHg and TPHd); Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX); fuel oxygenates; Dibromoethane (EDB), dichloroethane (EDC), and lead. The borings were backfilled with a cement/bentonite grout as requested by the Alameda County Public Works Agency.

In addition to the soil borings, SECOR supervised the abandonment of three (3) suspected groundwater monitoring wells, which were located immediately down-gradient of the former USTs. The wells were backfilled with a cement/bentonite grout using a tremmie pipe under the supervision of the ACPWA inspector.

Based on the results of the completed borings, the following were noted:

Encountered soils generally consisted of silt, clay and silt/clay mixtures to the maximum explored depth (approximately 12 feet bgs). First water was encountered at a depth of approximately 7.5 to 8 feet bgs.

SECOR personnel identified what appeared to be a sewer line. The four inch diameter pipe descended from ground surface approximately 2 feet and made a 90 degree turn toward Bockman Road. The length or destination of the pipe is unknown. The sewer line will need to be properly uncovered, capped, and abandoned, as per the request of Alameda County Public Works Agency.

## Down-gradient Assessment of Former Dispenser Islands Soil Borings BA-01, BA-02, and BA-06

## <u>Soil</u>

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## Soil Vapor

Soil vapor collected from BA-01 and BA-02 revealed concentrations of TPHg at 52 and 10

 $\mu$ g/L of air, respectively. No concentrations of TPHd, BTEX, fuel oxygenates, and methane were detected in BA-01 or BA-02. The Environmental Screening Levels (ESLs) for TPHg in shallow residential soil is set at 26  $\mu$ g/L of air. One soil vapor sample collected from BA-01 exhibited TPHg concentrations above State ESLs.

## <u>Groundwater</u>

Groundwater collected from BA-01 and BA-02 exhibited TPHg concentrations of 21,000 and 1,500  $\mu$ g/L respectively; and TPHd concentrations of 110,000 and 5,300  $\mu$ g/L, respectively. Groundwater collected from BA-01 exhibited MtBE and EtBE concentrations of 9.2 and 5.4  $\mu$ g/L, respectively. Results of groundwater analysis of samples collected from BA-02 were non-detect with respect to concentrations of BTEX and fuel oxygenates. Results of groundwater analysis of samples collected from BA-06 were non-detect with respect to concentrations BA-06 were non-detect with respect to concentrations.

Based on the borings completed, some impact to groundwater down-gradient form the former pump islands exists. Boring BA-03 (approximately 20 feet further down-gradient from boring BA-02) detected much lower concentrations of TPHg than BA-02 and an absence of TPHd. At BA-06, all compounds were non-detect at a cross gradient location to the dispenser island and boring BA-01. All groundwater samples essentially did not contain any detectable BTEX compounds and very low concentrations of MTBE and ETBE.

It would appear that the groundwater impact is very localized to the area immediately down-gradient from the former dispenser islands. Based on our discussions with the ACHCS, it was requested that the assessment of dissolved phase TPH in groundwater down-gradient from the former dispenser islands be continued, in order to define the plume limits and concentrations. SECOR has proposed three additional borings to continue this assessment on figure 2 (attached). It is requested that the ACHCS review these proposed locations and grant approve to continue the assessment.

## Assessment of Former UST Locations Soil Borings BA-03, BA-04, BA-05, and BA-07

## <u>Soil</u>

All soil samples collected and analyzed from the area of the former USTs exhibited nondetectable concentrations of TPHg, TPHd, BTEX, and fuel oxygenates. Concentrations of total lead ranged from 4.25 to 5.33 mg/kg, well within California background concentrations.

## Soil Vapor

Soil vapor collected from BA-03 and BA-04 reported TPHg concentrations of 11 and 13  $\mu$ g/L, respectively. Non-detectable concentrations of TPHd, BTEX, and fuel oxygenates were exhibited in BA-03 and BA-04. The Environmental Screening Levels (ESLs) for TPHg in shallow residential soil is set at 26  $\mu$ g/L of air. As a result, soil vapor collected from BA-03 and BA-04 exhibited TPHg concentrations below State ESLs.

## <u>Groundwater</u>

Groundwater collected from BA-04, BA-05, and BA-07 exhibited non-detectable concentrations of TPHg, TPHd, BTEX, and fuel oxygenates. Groundwater collected from BA-03 reported a TPHg concentration of 230  $\mu$ g/L and non-detectable concentrations of TPHd, BTEX, and fuel oxygenates.

Soil, soil vapor, and groundwater collected from the vicinity of the former fuel USTs revealed concentrations of contaminants well below regulatory screening levels. As a result, SECOR considers the former fuel USTs adequately assessed and recommends no further action.

## 7.0 CLOSURE

The conclusions presented in this report are professional opinions based on data described in this report. The opinions of this report have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to this location, and are subject to the following inherent limitations. SECOR makes no other warranty, either expressed or implied, concerning the conclusions and professional advice that is contained within the body of this report.

Inherent in most projects performed in a heterogeneous subsurface environment, continuing excavation and assessments may reveal findings that are different than those presented herein. This facet of the environmental profession should be considered when formulating professional opinions on the limited data collected on these projects.

This report has been issued with the clear understanding that it is the responsibility of the owner, or their representative, to make appropriate notifications to regulatory agencies. It is specifically not the responsibility of SECOR to conduct appropriate notifications as specified by current County and State regulations.

The information presented in this report is valid as of the date our exploration was performed. Site conditions may degrade with time; consequently, the findings presented herein are subject to change.

Notwithstanding the foregoing, this report was prepared in accordance with SECOR's Master Services Agreement with this Client, and to the extent any provisions of the report conflicts with the Master Services Agreement, the Master Services Agreement shall control.

## 8.0 REFERENCES

DTSC and LARWQCB, 2003, Advisory – Active Soil Gas Investigations, January 28.

SECOR, 2006, Workplan for Soil and Groundwater Investigation, Former Impulse Motors, 1210 Bockman Road, San Lorenzo, California, December 11

TABLES

Table 1 Summary of Soil Analytical Results TPH by modified EPA 8015B (mg/Kg) Olson - San Lorenzo 1210 Bockman Road San Lorenzo, California SECOR Job No.: 040T.29215.68

Sample ID	Sampling Depth <sup>(1)</sup>	Sampling Date	C4-C12 <sup>(4)</sup>	C22-C40 <sup>(6)</sup>	
RWQCB MCL (mg/Kg	1)		100 <sup>a</sup>	100 <sup>a</sup>	1000 <sup>a</sup>
BA-01-5	5	4/26/2007	<0.5	<10	<20
BA-02-7	7	4/26/2007	0.68	<10	<20
BA-03-7	7	4/26/2007	<0.5	<10	<20
BA-04-7	7	4/26/2007	<0.5	<10	<20
BA-05-8	8	4/27/2007	<0.5	<10	<20
BA-06-7	7	4/27/2007	<0.5	<10	<20
BA-07-7	7	4/27/2007	<0.5	<10	<20

NOTES:

(1) Sample depth is reported as feet below ground surface

(2) Concentrations reported in mg/Kg

(3) EPA Test Method

(4) Characteristic carbon chain of Gasoline

(5) Characteristic carbon chain of Diesel

(6) Characteristic carbon chain of Oil

a - Maximum Soil Screening Levels in mg/Kg; soil located <20 feet above groundwater;

Source: Cal/EPA CRWQCB-LA Interim Site Assessment & Cleanup Guidebook, 1996.

< - Indicates the concentration was not detected above the laboratory method detection limit. Only samples analyzed which reported detections were included on the table.

## ABBREVIATIONS:

TPH - Total petroleum hydrocarbons

RWQCB MCL - Regional Water Quality Control Board Maximum Contaminant Level

Table 2

Summary of Soil Analytical Results VOCs by EPA 8260B (mg/Kg) Olson - San Lorenzo 1245 - 1415 Bockman Road San Lorenzo, California SECOR Job No.: 040T.29215.68

											SECOR JOD		.20210.00
	Sampling	Sampling						VOCs <sup>(2)</sup> (8260) <sup>(3)</sup>					
Sample ID	Depth <sup>(1)</sup>	Date	Methyl-tert- butyl ether (MtBE)	tert-Amyl Methyl Ether (TAME)	Diisopropyl Ether (DIPE)	Ethyl tert- Butyl Ether (EtBE)	tert- Butanol (TBA)	Benzene	Dibromoethane (EDB)	Dichloroethane (EDC)	Ethylbenzene	Toluene	Total Xylenes
USEPA PRG for	Residential S	Soils(mg/Kg)	62	NR	NR	NR	NR	0.6	0.007	120	8.9	5200	2700
Samples													
BA-01-5	5	4/26/2007	0.003	<0.002	<0.002	<0.002	<0.02	< 0.005	<0.001	<0.01	<0.005	<0.001	<0.003
BA-02-7	7	4/26/2007	<0.002	<0.002	<0.002	<0.002	<0.02	< 0.005	<0.001	<0.01	<0.005	<0.001	<0.003
BA-03-7	7	4/26/2007	<0.002	<0.002	<0.002	<0.002	<0.02	< 0.005	<0.001	<0.01	<0.005	<0.001	<0.003
BA-04-7	7	4/26/2007	<0.002	<0.002	<0.002	<0.002	<0.02	< 0.005	<0.001	<0.01	< 0.005	<0.001	<0.003
BA-05-8	8	4/27/2007	<0.002	<0.002	<0.002	<0.002	<0.02	< 0.005	<0.001	<0.01	<0.005	<0.001	<0.003
BA-06-7	7	4/27/2007	<0.002	<0.002	<0.002	<0.002	<0.02	< 0.005	<0.001	<0.01	< 0.005	<0.001	<0.003
BA-07-7	7	4/27/2007	<0.002	<0.002	<0.002	<0.002	<0.02	< 0.005	<0.001	<0.01	<0.005	<0.001	<0.003

NOTES:

(1) Sample depth is reported as feet below ground surface

(2) Concentrations reported in mg/Kg

(3) EPA Test Method

< - Indicates the concentration was not detected above the laboratory method detection limit.

ABBREVIATIONS:

VOCs - volatile organic compounds

USEPA PRG - United States Environmental Protection Agency Preliminary Remediation Goals

NR - Not Reported

Table 3 Summary of Soil Analytical Results Total Lead By EPA 6010B (mg/Kg) Olson - San Lorenzo 1245 - 1415 Bockman Road San Lorenzo, California SECOR Job No.: 040T.29215.68

Sample ID	Sampling Depth <sup>(1)</sup>	Sampling Date	Lead by 6010
USEPA PRG (mg/Kg)			150
Typical Background C	Concentrations	s in California Soils	12.4-97.1
Samples			
BA-01-5	5	4/26/2007	4.28
BA-02-7	7	4/26/2007	4.16
BA-03-7	7	4/26/2007	5.15
BA-04-7	7	4/26/2007	4.25
BA-05-8	8	4/27/2007	5.33
BA-06-7	7	4/27/2007	6.98
BA-07-7	7	4/27/2007	5.14

NOTES:

(1) Sample depth is reported as feet below ground surface

#### Table 4 Summary of Soil Vapor Analytical Results TPH by modified EPA 8015B (μg/L) Olson - San Lorenzo 1210 Bockman Road San Lorenzo, California SECOR Job No.: 040T.29215.68

Sample ID	Sampling Depth <sup>(1)</sup>	Sampling Date	C4-C12 <sup>(4)</sup>	TPH <sup>(2)</sup> (8015) <sup>(3)</sup> C12-C22 <sup>(5)</sup>	Methane
RWQCB ESLs			26	26	NR
BA-01-V	5	4/26/2007	52	<50	<500
BA-02-V	5	4/26/2007	10	<50	<500
BA-03-V	5	4/26/2007	11	<50	<500
BA-04-V	5	4/26/2007	13	<50	<500

NOTES:

(1) Sample depth is reported as feet below ground surface

(2) Concentrations reported in  $\mu$ g/L of air

(3) EPA Test Method

(4) Characteristic carbon chain of Gasoline

(5) Characteristic carbon chain of Diesel

< - Indicates the concentration was not detected about the laboratory method detection limit.

#### ABBREVIATIONS:

TPH - Total petroleum hydrocarbons

RWQCB ESLs - Regional Water Quality Control Board Enviromental Screening Levels

Table 5 Summary of Soil Vapor Analytical Results VOCs by EPA 8260B (μg/L) Olson - San Lorenzo 1210 Bockman Road San Lorenzo, California SECOR Job No.: 040T.29215.68

								′OCs <sup>(2)</sup> (8260) <sup>(3)</sup>					
Sample ID	Sampling Depth <sup>(1)</sup>	Date	Methyl-tert butyl ether (MtBE)		Diisopro pyl Ether (DIPE)		tert-	Benzene	Dibromoe thane (EDB)	Dichloroe thane (EDC)	Ethv/L	Toluene	Total Xylenes
CHHSLs			4	NR	NR	NR	NR	0.036	NR	0.05	NR	135	319
RWQCB ESLs			9.4	NR	NR	NR	2.6	0.085	0.034	0.12	420	63	150
Samples													
BA-01-V	5	4/26/2007	<0.1	<0.1	<0.1	<0.1	<1.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3
BA-02-V	5	4/26/2007	<0.1	<0.1	<0.1	<0.1	<1.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3
BA-03-V	5	4/26/2007	<0.1	<0.1	<0.1	<0.1	<1.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3
BA-04-V	5	4/26/2007	<0.1	<0.1	<0.1	<0.1	<1.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3

NOTES:

(1) Sample depth is reported as feet below ground surface

(2) Concentrations reported in  $\mu$ g/L of air

(3) EPA Test Method

< - Indicates the concentration was not detected about the laboratory method detection limit.

#### ABBREVIATIONS:

VOCs - volatile organic compounds

CHHSLs - California Human Health Screening Levels

RWQCB ESLs - Regional Water Quality Control Board Enviromental Screening Levels

NR - Not Reported

Table 6 Summary of Groundwater Analytical Results TPH by modified EPA 8015B (μg/L) Olson - San Lorenzo 1210 Bockman Road San Lorenzo, California SECOR Job No.: 040T.29215.68

Sample ID	Sampling Depth <sup>(1)</sup>	Sampling Date		00         100           100         110,000           500         5,300           30         <50
USEPA PRG (µg/L)			100	100
BA-01-W	9	4/26/2007	2,100	110,000
BA-02-W	9	4/26/2007	1,500	5,300
BA-03-W	9	4/26/2007	230	<50
BA-04-W	9	4/26/2007	<50	<50
BA-05-W	9	4/27/2007	<0.1	<0.4
BA-06-W	9	4/27/2007	<0.1	<0.4
BA-07-W	9	4/27/2007	<0.1	<0.4

#### NOTES:

(1) Sample depth is reported as feet below ground surface

(2) Concentrations reported in  $\mu$ g/L

(3) EPA Test Method

(4) Characteristic carbon chain of Gasoline

(5) Characteristic carbon chain of Diesel

< - Indicates the concentration was not detected about the laboratory method detection limit.

#### ABBREVIATIONS:

TPH - Total petroleum hydrocarbons

USEPA PRG - United States Environmental Protection Agency Preliminary Remediation Goals

Table 7 Summary of Groundwater Analytical Results VOCs by EPA 8260B (μg/L) Olson - San Lorenzo 1210 Bockman Road San Lorenzo, California SECOR Job No.: 040T.29215.68

Sample ID CA MCLs (µg/L) Fedral MCLs (µg/L) Samples BA-01-W BA-02-W BA-03-W BA-04-W				VOCs <sup>(2)</sup> (8260) <sup>(3)</sup>											
Sample ID	Sampling Depth <sup>(1)</sup>		Methyl- tert-butyl ether (MtBE)	tert-Amyl Methyl Ether (TAME)	Diisoprop yl Ether (DIPE)	Ethyl tert- Butyl Ether (EtBE)	tert- Butanol (TBA)	Benzene	Dibromo ethane (EDB)	Dichloro ethane (EDC)	Ethyl- benzene	Toluene	Total Xylenes		
CA MCLs (µg/L)			13	NR	NR	NR	NR	1	0.5	0.5	700	150	1750		
Fedral MCLs (µg/L	_)		NR	NR	NR	NR	NR	5	0.05	5	700	1000	10000		
Samples															
BA-01-W	9	4/26/2007	9.2	<0.5	<0.5	5.4	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
BA-02-W	9	4/26/2007	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
BA-03-W	9	4/26/2007	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
BA-04-W	9	4/26/2007	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
BA-05-W	9	4/27/2007	<0.002	<0.002	<0.002	<0.002	<0.02	<0.005	<0.001	<0.01	<0.005	<0.001	<0.003		
BA-06-W	9	4/27/2007	<0.002	<0.002	<0.002	<0.002	<0.02	<0.005	<0.001	<0.01	<0.005	0.5	<0.003		
BA-07-W	9	4/27/2007	<0.002	<0.002	<0.002	<0.002	<0.02	<0.005	<0.001	<0.01	<0.005	0.7	<0.003		

NOTES:

(1) Sample depth is reported as feet below ground surface

(2) Concentrations reported in  $\mu$ g/L

(3) EPA Test Method

< - Indicates the concentration was not detected above the laboratory method detection limit.

#### ABBREVIATIONS:

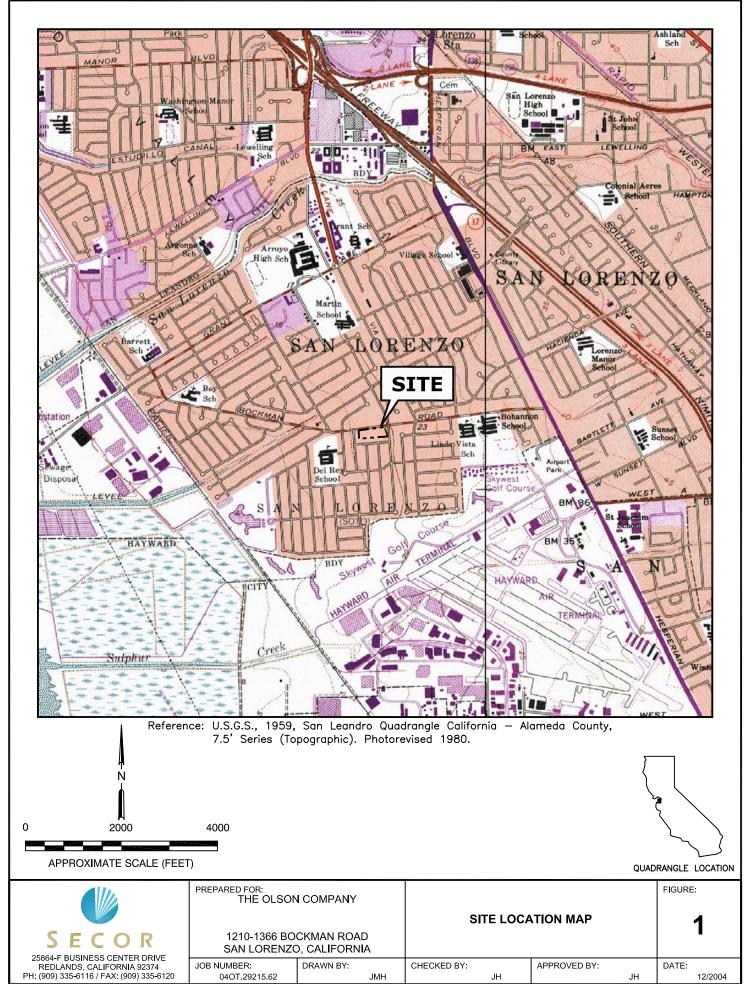
VOCs - volatile organic compounds

CA MCLs - Maximum Contaminant Levels for Drinking Water set by the California Department of Health Services

Federal MCLs - Maximum Contaminant Levels for Drinking Water set by the US Environmental Protection Agency

NR - Not Reported

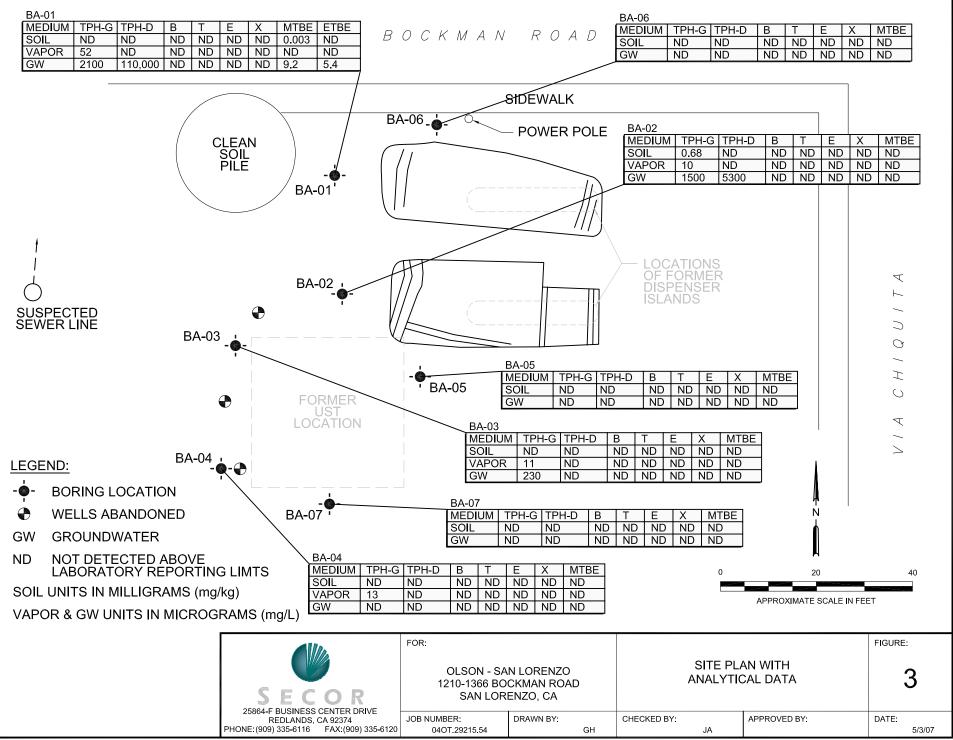
FIGURES



File Path - Q:\CADD-04\CAD Files\Olson-Co\San Lorenzo\OLS-2921561-PH1\_south.dwg - Layout: Figure

BOCKMAN ROAD SIDEWALK BA-06 --**(**)-0. POWER POLE CLEAN SOIL PILE **BA-01** • • • LOCATIONS OF FORMER DISPENSER ISLANDS •**•**;- $\checkmark$ BA-02 !  $\vdash$ SUSPECTED SEWER LINE - $\supset$ BA-03 0 • • HP-1 HP-2<sup>●</sup> ~ I т ВА-05  $\bigcirc$  $\mathbf{\mathbf{O}}$ FORMER UST  $\checkmark$ LOCATION ~ BA-04  $\geq$ BA-07 LEGEND: **BORING LOCATION**  $\mathbf{O}$ WELLS ABANDONED 20 40 •**\$**\_ PROPOSED BORING LOCATION APPROXIMATE SCALE IN FEET ۲ HYDROPUNCH LOCATIONS (2004) FOR: FIGURE: SITE PLAN WITH **OLSON - SAN LORENZO** 2 **BORING LOCATIONS** 1210-1366 BOCKMAN ROAD SE С OR SAN LORENZO, CA 25864-F BUSINESS CENTER DRIVE JOB NUMBER: DRAWN BY: CHECKED BY: APPROVED BY: DATE: REDLANDS, CA 92374 PHONE: (909) 335-6116 FAX: (909) 335-6120 04OT.29215.54 5/3/07 GH JA

FILEPATH:Q:\CADD-08\Projects 2007\Regional\Olson\29215 BORING LOCALS.dwg|rocampo|May 18, 2007 at 16:49|Layout: BORING LOCS



APPENDIX A BORING LOGS

LOCATION	N: 12'	10 B	San Lorenzo ockman Road, San Lorenzo, CA 04OT.29215.68	W	ELL / PRO		HOLE / E					
DATE: STA DRILLING ( DRILLING I DRILLING I	ARTEI COMP EQUIF METH	2: <b>4/2</b> 2ANY: 2MEN 0D: <b>[</b>	26/2007 COMPLETED: 4/26/2007	LA GR INI ST WE	RTHING FITUDE: OUND EI TIAL DTW ATIC DTV ELL CASIN GGED BY	(ft): _EV ( / (ft): V (ft): NG D	ft): <b>8 4/2</b> <b>NE</b> IAMETE <b>Adela</b>	2 <b>6/07</b> ER (in): <b>ars</b>		EASTII LONGI TOC E BOREI WELL BOREI CHECI	DEPTH (ft)	PTH (ft): <b>12.0</b>
Time & Depth (feet)	Graphic Log	NSCS	Description	Sample	Tim Sampl		Measured Recov. (feet)	Blow Count/ft	Headspace PID (ppm)	Depth (feet)		Borehole Backfill
		CL	CL; CLAY, black (5Y 2.5/1), slightly moist, very hard, low plasticity, no odor						0.0	-		
5			Becomes dark greenish gray (GLEY1 4/1), silty, slighty moist, hard to very hard, medium plasticity, slight HC odor		BA-1 133 BA-0 133	0 1-5			6.8	5		<b>≪</b> −Grout
- - - 10		ML	ML; SILT, dark greenish gray (GLEY1 4/1), moist, firm to hard, low plasticity, slight hydrocarbon (HC) odor	$\mathbb{X}$	BA-1 150 BA-1	-7 0			1.0	- ₽ 10- -		
-			Borehole terminated at 12 feet bgs. Groundwater encountered at 8' bgs. Vapor collected at 5' bgs. Groundwater collected at 11' bgs. Backfilled with neat grout 0-12' bgs.							-		
- 15— - -											- - -	
- 20— - -										- 20— -		
-										-		

PROJECT	NUM	BER:	ockman Road, San Lorenzo, CA 04OT.29215.68		ELL / PROBEH	-02		1 OF	1		SECOR
drilling Drilling	Comp Equif Meth	Pany: Pmen <sup>-</sup> Od: <b>C</b>	26/2007 COMPLETED: 4/26/2007 Vironex T: Geoprobe 6600 Direct Push NT: Sleeves	LAT GRO INIT STA WE	RTHING (ft): ITUDE: DUND ELEV ( TAL DTW (ft): NTIC DTW (ft): LL CASING D GGED BY: J	8 4/2 NE	R (in): <b>ars</b>		LONGI TOC E BOREI WELL BOREI CHECI	DEPTH (ft):	TH (ft): <b>12.0</b> : IETER (in): <b>2</b>
Time & Depth (feet)	Graphic Log	nscs	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count/ft	Headspace PID (ppm)	Depth (feet)		Borehole Backfill
- - 5-		CL	CL; CLAY, very dark grayish brown (10YR 3/2), slightly moist, hard, medium to high plasticity, no odor		BA-2-V 1400 BA-2-5			0.0	- - 5-		← Grout
- - 10-		ML CL	ML; SILT, dark greenish gray (GLEY1 5/1), slightly moist, firm to hard, low to medium plasticity, slight HC odor CL; CLAY, very dark greenish gray (GLEY1 3/1), slightly moist, hard, high plasticity, no		1410 BA-2-7			1.3	- ⊻ - 10−		
- - 15- -			odor Borehole terminated at 12 feet bgs. Groundwater encountered at 8' bgs. Vapor collected at 5' bgs. Groundwater collected at 12' bgs. Backfilled with neat grout 0-12' bgs.		1420 BA-2-11 1513 BA-2-W			0.0	- - 15- -		
- - - 20- -									- - 20- -		
-									_		

PROJECT: Olson - San Lorenzo LOCATION: 1210 Bockman Road, San Lorenzo, CA PROJECT NUMBER: 040T.29215.68	WELL / PROBEHOLE / BOREHOLE NO: BA-03 PAGE 1 OF 1 SEC	
DATE: STARTED: 4/26/2007 COMPLETED: 4/26/2007 DRILLING COMPANY: Vironex DRILLING EQUIPMENT: Geoprobe 6600 DRILLING METHOD: Direct Push SAMPLING EQUIPMENT: Sleeves	NORTHING (ft):EASTING (ft):LATITUDE:LONGITUDE:GROUND ELEV (ft):TOC ELEV (ft):INITIAL DTW (ft): NEBOREHOLE DEPTH (ft):STATIC DTW (ft): NEWELL DEPTH (ft):WELL CASING DIAMETER (in):BOREHOLE DIAMETER (	20.0
Depth & Depth & Compare &	LOGGED BY:     J. Adelaars     CHECKED BY:       addustright     Time     Data Service     Data Service       addustright     Time     Data Service     Data Service       Sample ID     Data Service     Data Service     Data Service       Additional     Data Service     Data Service     Data Service       Data Service     Data Service     Data Se	
1       0         0       0         0	J       I <thi< th=""> <thi< th=""> <thi< th=""></thi<></thi<></thi<>	

PROJECT: <b>Olson -</b> LOCATION: <b>1210 B</b> PROJECT NUMBER:	lockman Road, San Lorenzo, CA	WE		HOLE / E				S E C O R
DATE: STARTED: 4/ DRILLING COMPANY: DRILLING EQUIPMEN DRILLING METHOD: 1 SAMPLING EQUIPME	: Vironex ⊓: Geoprobe 6600 Direct Push	LATI GRC INITI STA WEL	RTHING (ft): TUDE: DUND ELEV (f AL DTW (ft): TIC DTW (ft): L CASING DI GED BY: <b>J.</b>	ft): 8 4/2 NE IAMETE Adelaa	2 <b>6/07</b> R (in): <b>ars</b>		EASTIN LONGI TOC E BOREN WELL N BOREN CHECK	NG (ft):
Time & Depth (feet) Graphic Log USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count/ft	Headspace PID (ppm)	Depth (feet)	Borehole Backfill
	CL; CLAY, black (5Y 2.5/1), slightly moist, hard, high plasticity, no odor Becomes dark grayish brown (10YR 4/2), silty Trace sand ML; SILT, olive brown (2.5Y 4/3), moist, firm, low to medium plasticity, no odor Borehole terminated at 12 feet bgs. Groundwater encountered at 8' bgs. Vapor collected at 5' bgs. Groundwater collected at 15' bgs. Backfilled with neat grout 0-12' bgs.		BA-4-V 1540 BA-4-5 1545 BA-4-7 1630 BA-4-W			0.0	- - - - - - - - - - - - - - - - - - -	

LOCATIO	N: 12	10 B	San Lorenzo ockman Road, San Lorenzo, CA 04OT.29215.68	M	/El						S E C O F
drilling Drilling	Comf Equif Meth	Pany: Pmen Iod: <b>[</b>	27/2007         COMPLETED:         4/27/2007           Vironex         T:         Geoprobe         6600           Direct Push         MT:         Sleeves	LA GF IN ST WI	TIT RO ITI/ TAT	THING (ft): TUDE: UND ELEV ( AL DTW (ft): TIC DTW (ft): L CASING DI GED BY: <b>J</b> .	ft): <b>8 4/2</b> <b>NE</b> IAMETE	2 <b>7/07</b> ER (in): <b>ars</b>		EASTII LONGI TOC E BOREI WELL BOREI CHECI	NG (ft): TUDE: LEV (ft): HOLE DEPTH (ft): <b>15.0</b> DEPTH (ft): HOLE DIAMETER (in): <b>2</b> <u>(ED BY:</u>
Time & Depth (feet)	Graphic Log	nscs	Description	Sample		Time Sample ID	Measured Recov. (feet)	Blow Count/ft	Headspace PID (ppm)	Depth (feet)	Borehole Backfill
- - 5-		CL	FILL CL; CLAY, black (5Y 2.5/1), slightly moist, hard to very hard, medium to high plasticity, homogeneous, no odor						0.0	- - - 5	
_		ML	ML; SILT, olive gray (5Y 4/2), slightly moist, firm to hard, low to medium plasticity, no odor	$\mathbb{N}$		0930 BA-5-6			0.0	-	
-			Moist to very moist	ľŇ		0935 BA-5-8			0.0	⊻ -	Grout
10			Becomes dark greenish gray, slight HC odor	<u> </u>		0950 BA-5-10			1.2	10-	
- - 15-						0945 BA-5-W					
-			Borehole terminated at 15 feet bgs. Groundwater encountered at 8' bgs. Backfilled with neat grout 0-15' bgs.							-	
- 20— -										- 20— -	
-										-	

			San Lorenzo ockman Road, San Lorenzo, CA	WE	LL / PROBEH	HOLE / I	BOREH	IOLE N	0:	
			040T.29215.68		BA	-06	PAGE	1 OF	1	SECO
DATE: ST DRILLING DRILLING DRILLING	Comf Equif Meth	D: <b>4/</b> PANY: PMEN IOD: <b>[</b>	27/2007         COMPLETED:         4/27/2007           Vironex         T:         Geoprobe         6600           Direct Push         NT:         Sleeves         Sleeves	LAT GRO INIT STA WEL	RTHING (ft): ITUDE: DUND ELEV ( IAL DTW (ft): TIC DTW (ft): .L CASING D GGED BY: <b>J.</b>	(ft): 8 4/2 NE IAMETE	2 <b>7/07</b> ER (in): <b>ars</b>		EASTII LONGI TOC E BOREI WELL BOREI <u>CHECI</u>	NG (ft): TUDE: LEV (ft): HOLE DEPTH (ft): <b>15.0</b> DEPTH (ft): HOLE DIAMETER (in): <b>2</b> <u>(ED BY:</u>
Time & Depth (feet)	Graphic Log	nscs	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count/ft	Headspace PID (ppm)	Depth (feet)	Borehole Backfill
		CL	CL; FILL; Sandy CLAY, black (5Y 2.5/1), 20% medium to coarse-grained sand, slightly moist, hard to very hard, no plasticity, homogeneous, no odor		-			0.0	-	
5-		ML	ML; SILT, olive gray (5Y 4/2), slightly moist, firm, low to medium plasticity, no odor		0830 BA-6-5			0.0	5-	
-			Moist, firm, medium plasticity, no odor		0835 BA-6-7			0.0	- ⊻	Grout
- 10 - -			Becomes dark greenish gray, silty		1145 BA-6-W				10- - -	
- 15–			Borehole terminated at 15 feet bgs. Groundwater encountered at 8' bgs. Backfilled with neat grout 0-15' bgs.						- 15	
- - 20-									- - 20-	
-										

.

PROJECT		on -	San Lorenzo ockman Road, San Lorenzo, CA	WE	ELL / PROBEH	IOLE / E	BOREH	IOLE N	0:	
PROJECT	N: 1Z	BER	040T.29215.68		BA-	-07	PAGE	1 OF	1	SECOR
date: St Drilling	ARTEI	): <b>4/2</b> ANY:		LAT GR( INIT	RTHING (ft): ITUDE: DUND ELEV (i IAL DTW (ft):	ft): NE			EASTI LONGI TOC E BOREI	NG (ft): ITUDE: :LEV (ft): HOLE DEPTH (ft): <b>15.0</b>
			Direct Push		TIC DTW (ft): L CASING DI		D (in)			DEPTH (ft): HOLE DIAMETER (in): <b>2</b>
			IT: Sleeves		GED BY: <b>J.</b>					KED BY:
	1 1									
Time & Depth (feet)	Graphic Log	NSCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count/ft	Headspace PID (ppm)	Depth (feet)	Borehole Backfill
		CL N	FILL CL; CLAY, black (5Y 2.5/1), slightly moist, hard to very hard, medium to high plasticity, homogeneous, no odor ML; SILT, olive gray (5Y 4/2), slightly moist, firm to hard, low to medium plasticity, no odor Moist to very moist		1245 BA-7-5 1250 BA-7-7			0.0	- - - 5- - -	- Grout
10			Becomes dark greenish gray, slight HC odor Borehole terminated at 15 feet bgs. No Groundwater encountered. Backfilled with neat grout 0-15' bgs.		1300 BA-7-W				10- - - - - - - - - - -	
- 20 — - - -									- 20-	

APPENDIX B LABORATORY DATA SHEETS AND QA/QC RESULTS



Client: SECOR 25864-F Business Center Dr. Redlands, CA 92374-4515 
 Date Sampled:
 04/26-27/07

 Date Received:
 04/30/07

 Job Number:
 29592

Project: Olson - San Lorenzo

## **CASE NARRATIVE**

The following information applies to samples which were received on 04/30/07:

The samples were received at the laboratory chilled and sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 05/04/07.

Report approved by:

Robert R. Clark, PhD President

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions. ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit. NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.

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951•779•0310 or 800•798•9336 fax 951•779•0344 www.centrum-labs.com 1401 Research Park Drive, Suite 100, Riverside, CA 92507



## Lead by EPA 6010B

Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Date Digested:	05/01/07
Matrix:	Soil	Date Analyzed:	05/01/07
Analyst:	TLB	Batch Number:	6010S3966

	Reporting Limit	Lead
Sample ID	mg/Kg	mg/Kg
Method Blank	1.0	ND
BA-01-5	1.0	4.28
BA-02-7	1.0	4.16
BA-03-7	1.0	5.15
BA-04-5	1.0	4.25
BA-05-8	1.0	5.33
BA-06-7	1.0	6.98
BA-07-7	1.0	5.14



## **QC Sample Report - Metals by EPA 6010B**

Matrix: Soil Batch Number: 6010S3966

#### **Batch Accuracy Results**

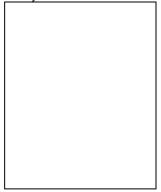
Spike Sample ID: Laborat	ory Control	Sample			Analytical Notes:
Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail	
Lead	50	97	75 - 125	Pass	

## **Batch Precision Results**

#### MS/MSD Sample ID: BA-07-7

Compound	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Lead	46.22	42.48	8%	20%	Pass

Analytical Notes:



MS: Matrix Spike MSD: Matrix Spike Duplicate LCS: Laboratory Control Sample



# Extractable Hydrocarbons as Diesel by mod. EPA 8015B

Client:	SECOR	Date Sampled: 04/26-27/07
Project:	Olson - San Lorenzo	Date Received: 04/30/07
Job No.:	29592	Date Extracted: 05/01/07
Matrix:	Water	Date Analyzed: 05/02/07
Analyst:	AW	Batch Number: 8015DW4076

	Reporting Limit	Diesel	Surrogate (OTP)
Sample ID	mg/L	mg/L	Limit: 50 - 150%
Method Blank	0.40	ND	93 %
BA-05-W	0.40	ND	87 %
BA-06-W	0.40	ND	81 %
BA-07-W	0.40	ND	91 %



## QC Sample Report - Extractable Hydrocarbons as Diesel by mod. EPA 8015B

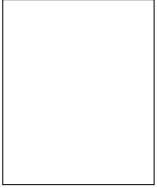
Matrix: Water Batch number: 8015DW4076

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

	Compound	Spike Concentration (mg/L)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Diesel 3.2 <b>71</b> 70 - 130 <b>Pass</b>					

Analytical Notes:



#### **Batch Precision Results**

#### MS/MSD Sample ID: Laboratory Control Sample

Analytical Notes:



MS: Matrix Spike MSD: Matrix Spike Duplicate LCS: Laboratory Control Sample



# C4 to C40 Hydrocarbons by GCMS and GC/FID

Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Batch Number:	MS2TPHGS1125
Matrix:	Soil		8015DS4075
Analyst:	TH / AW		

Carbon Chain Length:	C4-C12	C12-C22	C22-C40
Reporting Limits:	0.50	10	20
Units:	mg/Kg	mg/Kg	mg/Kg
Method Blank	ND	ND	ND
BA-01-5	ND	ND	ND
BA-02-7	0.68	ND	ND
BA-03-7	ND	ND	ND
BA-04-7	ND	ND	ND
BA-05-8	ND	ND	ND
BA-06-7	ND	ND	ND
BA-07-7	ND	ND	ND
Method:	GCMS	GC/FID	GC/FID
Date Extracted:	N/A	05/01/07	05/01/07
Date Analyzed:	05/03/07	05/01-02/07	05/01-02/07



## **QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID**

Matrix: Soil Batch Number: 8015DS4075

#### Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

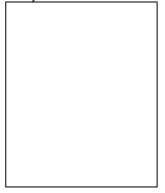
Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Diesel	100	92	70 - 130	Pass

#### **Batch Precision Results**

# MS/MSD Sample ID: BA-01-5 MS/MSD Sample ID: BA-01-5 It in the second to the second t

Analytical Notes:

Analytical Notes:



MS: Matrix Spike MSD: Matrix Spike Duplicate LCS: Laboratory Control Sample



## **QC Sample Report - Volatile Hydrocarbons as Gasoline by GCMS**

Matrix: Soil Batch Number: MS2TPHGS1125

## **Batch Accuracy Results**

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Gasoline	2.0	105	70 - 130	Pass

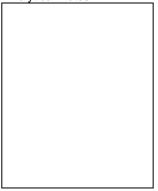
Analytical Notes:

## **Batch Precision Results**

#### MS/MSD Sample ID: Laboratory Control Sample

Compound	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Gasoline	2.16	2.04	6%	25%	Pass

Analytical Notes:



MS: Matrix Spike MSD: Matrix Spike Duplicate LCS: Laboratory Control Sample



# Volatile Hydrocarbons as Gasoline by GCMS

Project:	Water	Date Sampled: Date Received: Date Analyzed: Batch Number:	04/30/07
----------	-------	--	----------

	Reporting Limit	Volatile Hydrocarbons as Gasoline
Sample ID	mg/L	mg/L
Method Blank	0.10	ND
BA-05-W	0.10	ND
BA-06-W	0.10	ND
BA-07-W	0.10	ND



## **QC Sample Report - Volatile Hydrocarbons as Gasoline by GCMS**

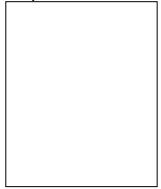
Matrix: Water Batch Number: MS4TPHGW3765

## **Batch Accuracy Results**

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (mg/L)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
Gasoline	2.0	106	70 - 130	Pass

Analytical Notes:

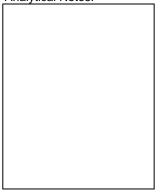


## **Batch Precision Results**

#### MS/MSD Sample ID: Laboratory Control Sample

Compound	MS Sample Result (mg/L)	MSD Sample Result (mg/L)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
Gasoline	2.13	1.81	16%	25%	Pass

Analytical Notes:



MS: Matrix Spike MSD: Matrix Spike Duplicate LCS: Laboratory Control Sample LCSD: Laboratory Control Sample Duplicate



Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Date Analyzed:	05/03/07
Matrix:	Soil	Batch Number:	MS28260S1125
Analyst:	TH		

	Sample ID:	Blank	BA-01-5	BA-02-7	BA-03-7	BA-04-7	BA-05-8
Compounds	RL	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acetone	0.050	ND	ND	0.071	ND	ND	ND
tert-Amyl Methyl Ether (TAN	ИE) 0.002	ND	ND	ND	ND	ND	ND
Benzene	0.001	ND	ND	ND	ND	ND	ND
Bromobenzene	0.005	ND	ND	ND	ND	ND	ND
Bromochloromethane	0.005	ND	ND	ND	ND	ND	ND
Bromodichloromethane	0.001	ND	ND	ND	ND	ND	ND
Bromoform	0.005	ND	ND	ND	ND	ND	ND
Bromomethane	0.005	ND	ND	ND	ND	ND	ND
tert-Butanol (TBA)	0.020	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	0.010	ND	ND	ND	ND	ND	ND
n-Butylbenzene	0.002	ND	0.004	0.006	ND	ND	ND
sec-Butylbenzene	0.002	ND	0.003	0.004	ND	ND	ND
tert-Butylbenzene	0.002	ND	ND	ND	ND	ND	ND
Carbon disulfide	0.010	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	0.001	ND	ND	ND	ND	ND	ND
Chlorobenzene	0.001	ND	ND	ND	ND	ND	ND
Chloroethane	0.005	ND	ND	ND	ND	ND	ND
Chloroform	0.002	ND	ND	ND	ND	ND	ND
Chloromethane	0.001	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	0.002	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	0.002	ND	ND	ND	ND	ND	ND
Dibromochloromethane	0.002	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.002	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropar	ne 0.010	ND	ND	ND	ND	ND	ND
Dibromomethane	0.001	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.001	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.002	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.002	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	0.005	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.001	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.001	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.005	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.002	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.002	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.001	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	0.001	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	0.001	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	0.001	ND	ND	ND	ND	ND	ND



Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Date Analyzed:	05/03/07
Matrix:	Soil	Batch Number:	MS28260S1125
Analyst:	TH		

	Sample ID:	Blank	BA-01-5	BA-02-7	BA-03-7	BA-04-7	BA-05-8
Compounds	RL	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
cis-1,3-Dichloropropene	0.001	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.001	ND	ND	ND	ND	ND	ND
Diisopropyl Ether (DIPE)	0.002	ND	ND	ND	ND	ND	ND
Ethanol	1.0	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.001	ND	ND	ND	ND	ND	ND
Ethyl tert-Butyl Ether (EtBE)	0.002	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.001	ND	ND	ND	ND	ND	ND
2-Hexanone	0.010	ND	ND	ND	ND	ND	ND
Isopropylbenzene	0.001	ND	0.003	0.003	ND	ND	ND
p-Isopropyltoluene	0.002	ND	ND	ND	ND	ND	ND
Methylene chloride	0.050	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	0.010	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether (MtB	E) 0.002	ND	0.003	ND	ND	ND	ND
Naphthalene	0.002	ND	ND	0.017	ND	ND	ND
n-Propylbenzene	0.001	ND	0.009	0.011	ND	ND	ND
Styrene	0.001	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.001	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.002	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.001	ND	ND	ND	ND	ND	ND
Toluene	0.001	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	0.002	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.002	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.001	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.003	ND	ND	ND	ND	ND	ND
Trichloroethene	0.001	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	0.003	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	0.001	ND	ND	ND	ND	ND	ND
Trichlorotrifluoroethane	0.005	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	0.001	ND	0.004	0.011	ND	ND	ND
1,3,5-Trimethylbenzene	0.001	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.002	ND	ND	ND	ND	ND	ND
Xylenes, m-,p-	0.002	ND	ND	ND	ND	ND	ND
Xylene, o-	0.001	ND	ND	ND	ND	ND	ND

## Surrogates in % Recovery (Acceptance Limits: 70 - 130%)

Sample ID:	Blank	BA-01-5	BA-02-7	BA-03-7	BA-04-7	BA-05-8
Dibromofluoromethane	100	100	97	102	97	99
Toluene-d8	94	93	92	93	92	94
Bromofluorobenzene	90	89	91	90	89	88



Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Date Analyzed:	05/03/07
Matrix:	Soil	Batch Number:	MS28260S1125
Analyst:	ТН		

	Sample ID:	BA-06-7	BA-07-7	
Compounds	RL	mg/Kg	mg/Kg	
Acetone	0.050	ND	ND	
tert-Amyl Methyl Ether (TAN	1E) 0.002	ND	ND	
Benzene	0.001	ND	ND	
Bromobenzene	0.005	ND	ND	
Bromochloromethane	0.005	ND	ND	
Bromodichloromethane	0.001	ND	ND	
Bromoform	0.005	ND	ND	
Bromomethane	0.005	ND	ND	
tert-Butanol (TBA)	0.020	ND	ND	
2-Butanone (MEK)	0.010	ND	ND	
n-Butylbenzene	0.002	ND	ND	
sec-Butylbenzene	0.002	ND	ND	
tert-Butylbenzene	0.002	ND	ND	
Carbon disulfide	0.010	ND	ND	
Carbon tetrachloride	0.001	ND	ND	
Chlorobenzene	0.001	ND	ND	
Chloroethane	0.005	ND	ND	
Chloroform	0.002	ND	ND	
Chloromethane	0.001	ND	ND	
2-Chlorotoluene	0.002	ND	ND	
4-Chlorotoluene	0.002	ND	ND	
Dibromochloromethane	0.002	ND	ND	
1,2-Dibromoethane	0.002	ND	ND	
1,2-Dibromo-3-chloropropan	ne 0.010	ND	ND	
Dibromomethane	0.001	ND	ND	
1,2-Dichlorobenzene	0.001	ND	ND	
1,3-Dichlorobenzene	0.002	ND	ND	
1,4-Dichlorobenzene	0.002	ND	ND	
Dichlorodifluoromethane	0.005	ND	ND	
1,1-Dichloroethane	0.001	ND	ND	
1,2-Dichloroethane	0.001	ND	ND	
1,1-Dichloroethene	0.005	ND	ND	
cis-1,2-Dichloroethene	0.002	ND	ND	
trans-1,2-Dichloroethene	0.002	ND	ND	
1,2-Dichloropropane	0.001	ND	ND	
1,3-Dichloropropane	0.001	ND	ND	
2,2-Dichloropropane	0.001	ND	ND	
1,1-Dichloropropene	0.001	ND	ND	



Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Date Analyzed:	05/03/07
Matrix:	Soil	Batch Number:	MS28260S1125
Analyst:	ТН		

	Sample ID:	BA-06-7	BA-07-7	
Compounds	RL	mg/Kg	mg/Kg	
cis-1,3-Dichloropropene	0.001	ND	ND	
trans-1,3-Dichloropropene	0.001	ND	ND	
Diisopropyl Ether (DIPE)	0.002	ND	ND	
Ethanol	1.0	ND	ND	
Ethylbenzene	0.001	ND	ND	
Ethyl tert-Butyl Ether (EtBE)	0.002	ND	ND	
Hexachlorobutadiene	0.001	ND	ND	
2-Hexanone	0.010	ND	ND	
Isopropylbenzene	0.001	ND	ND	
p-Isopropyltoluene	0.002	ND	ND	
Methylene chloride	0.050	ND	ND	
4-Methyl-2-pentanone	0.010	ND	ND	
Methyl tert-Butyl Ether (MtBl	E) 0.002	ND	ND	
Naphthalene	0.002	ND	ND	
n-Propylbenzene	0.001	ND	ND	
Styrene	0.001	ND	ND	
1,1,1,2-Tetrachloroethane	0.001	ND	ND	
1,1,2,2-Tetrachloroethane	0.002	ND	ND	
Tetrachloroethene	0.001	ND	ND	
Toluene	0.001	ND	ND	
1,2,3-Trichlorobenzene	0.002	ND	ND	
1,2,4-Trichlorobenzene	0.002	ND	ND	
1,1,1-Trichloroethane	0.001	ND	ND	
1,1,2-Trichloroethane	0.003	ND	ND	
Trichloroethene	0.001	ND	ND	
1,2,3-Trichloropropane	0.003	ND	ND	
Trichlorofluoromethane	0.001	ND	ND	
Trichlorotrifluoroethane	0.005	ND	ND	
1,2,4-Trimethylbenzene	0.001	ND	ND	
1,3,5-Trimethylbenzene	0.001	ND	ND	
Vinyl chloride	0.002	ND	ND	
Xylenes, m-,p-	0.002	ND	ND	
Xylene, o-	0.001	ND	ND	

## Surrogates in % Recovery (Acceptance Limits: 70 - 130%)

	•	,
Sample ID:	BA-06-7	BA-07-7
Dibromofluoromethane	97	98
Toluene-d8	93	94
Bromofluorobenzene	87	89



## **QC Sample Report - Volatile Organic Compounds by EPA 8260B**

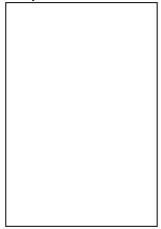
Matrix: Soil Batch Number: MS28260S1125

## **Batch Accuracy Results**

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (mg/Kg)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
1,1-Dichloroethene	0.050	109	70 - 130	Pass
Benzene	0.050	116	70 - 130	Pass
Trichloroethene	0.050	105	70 - 130	Pass
Toluene	0.050	110	70 - 130	Pass
Chlorobenzene	0.050	105	70 - 130	Pass

Analytical Notes:



## **Batch Precision Results**

MS/MSD Sample ID: BA-07-7							
Compound	MS Sample Result (mg/Kg)	MSD Sample Result (mg/Kg)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail		
1,1-Dichloroethene	0.0532	0.0541	2%	25%	Pass		
Benzene	0.0505	0.0523	4%	25%	Pass		
Trichloroethene	0.0493	0.0505	3%	25%	Pass		
Toluene	0.0494	0.0501	2%	25%	Pass		
Chlorobenzene	0.0461	0.0475	3%	25%	Pass		

Analytical Notes:

MS: Matrix Spike MSD: Matrix Spike Duplicate LCS: Laboratory Control Sample LCSD: Laboratory Control Sample Duplicate



Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Date Analyzed:	05/01/07
Matrix:	Water	Batch Number:	MS48260W3765
Analyst:	TH		

	Sample ID:	Blank	BA-05-W	BA-06-W	BA-07-W	
Compounds	RL	μg/L	μg/L	μg/L	μg/L	
Acetone	50	ND	ND	ND	ND	
tert-Amyl Methyl Ether (TAI	ME) 1.0	ND	ND	ND	ND	
Benzene	0.5	ND	ND	ND	ND	
Bromobenzene	1.0	ND	ND	ND	ND	
Bromochloromethane	1.0	ND	ND	ND	ND	
Bromodichloromethane	0.5	ND	ND	ND	ND	
Bromoform	0.5	ND	ND	ND	ND	
Bromomethane	2.0	ND	ND	ND	ND	
tert-Butanol (TBA)	10	ND	ND	ND	ND	
2-Butanone (MEK)	10	ND	ND	ND	ND	
n-Butylbenzene	1.0	ND	ND	ND	ND	
sec-Butylbenzene	0.5	ND	ND	ND	ND	
tert-Butylbenzene	0.5	ND	ND	ND	ND	
Carbon disulfide	10	ND	ND	ND	ND	
Carbon tetrachloride	0.5	ND	ND	ND	ND	
Chlorobenzene	0.5	ND	ND	ND	ND	
Chloroethane	0.5	ND	ND	ND	ND	
Chloroform	0.5	ND	ND	ND	ND	
Chloromethane	2.0	ND	ND	ND	ND	
2-Chlorotoluene	0.5	ND	ND	ND	ND	
4-Chlorotoluene	0.5	ND	ND	ND	ND	
Dibromochloromethane	0.5	ND	ND	ND	ND	
1,2-Dibromoethane	0.5	ND	ND	ND	ND	
1,2-Dibromo-3-chloropropa	ne 10	ND	ND	ND	ND	
Dibromomethane	0.5	ND	ND	ND	ND	
1,2-Dichlorobenzene	0.5	ND	ND	ND	ND	
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND	
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	
Dichlorodifluoromethane	0.5	ND	ND	ND	ND	
1,1-Dichloroethane	0.5	ND	ND	ND	ND	
1,2-Dichloroethane	0.5	ND	ND	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	ND	ND	
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND	
1,2-Dichloropropane	0.5	ND	ND	ND	ND	
1,3-Dichloropropane	0.5	ND	ND	ND	ND	
2,2-Dichloropropane	0.5	ND	ND	ND	ND	
1,1-Dichloropropene	0.5	ND	ND	ND	ND	



Client:	SECOR	Date Sampled:	04/26-27/07
Project:	Olson - San Lorenzo	Date Received:	04/30/07
Job No.:	29592	Date Analyzed:	05/01/07
Matrix:	Water	Batch Number:	MS48260W3765
Analyst:	TH		

	Sample ID:	Blank	BA-05-W	BA-06-W	BA-07-W	
Compounds	RL	μg/L	μg/L	μg/L	μg/L	
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND	
trans-1,3-Dichloropropene	0.5	ND	ND	ND	ND	
Diisopropyl Ether (DIPE)	1.0	ND	ND	ND	ND	
Ethanol	1,000	ND	ND	ND	ND	
Ethylbenzene	0.5	ND	ND	ND	ND	
Ethyl tert-Butyl Ether (EtBE)	1.0	ND	ND	ND	ND	
Hexachlorobutadiene	0.5	ND	ND	ND	ND	
2-Hexanone	10	ND	ND	ND	ND	
Isopropylbenzene	0.5	ND	ND	0.5	ND	
p-Isopropyltoluene	0.5	ND	ND	ND	ND	
Methylene chloride	50	ND	ND	ND	ND	
4-Methyl-2-pentanone	5.0	ND	ND	ND	ND	
Methyl-tert-butyl ether (MtBB	Ξ) 1.0	ND	ND	ND	ND	
Naphthalene	0.5	ND	ND	ND	ND	
n-Propylbenzene	0.5	ND	ND	1.4	ND	
Styrene	0.5	ND	ND	ND	ND	
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND	
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND	
Tetrachloroethene	0.5	ND	ND	ND	ND	
Toluene	0.5	ND	ND	0.5	0.7	
1,2,3-Trichlorobenzene	0.5	ND	ND	ND	ND	
1,2,4-Trichlorobenzene	0.5	ND	ND	ND	ND	
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	
1,1,2-Trichloroethane	0.5	ND	ND	ND	ND	
Trichloroethene	0.5	ND	ND	ND	ND	
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND	
Trichlorofluoromethane	0.5	ND	ND	ND	ND	
Trichlorotrifluoroethane	5.0	ND	ND	ND	ND	
1,2,4-Trimethylbenzene	0.5	ND	ND	ND	ND	
1,3,5-Trimethylbenzene	0.5	ND	ND	ND	ND	
Vinyl chloride	0.5	ND	ND	ND	ND	
Xylenes, m-,p-	1.0	ND	ND	ND	ND	
Xylene, o-	0.5	ND	ND	ND	ND	

## Surrogates in % Recovery (Acceptance Limits: 70 - 130%)

		,			
Sample ID	: Blank	BA-05-W	BA-06-W	BA-07-W	
Dibromofluoromethane	99	102	100	100	
Toluene-d8	101	101	100	101	
Bromofluorobenzene	99	100	97	99	



## **QC Sample Report - Volatile Organic Compounds by EPA 8260B**

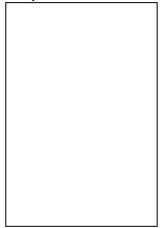
Matrix: Water Batch Number: MS48260W3765

## **Batch Accuracy Results**

Spike Sample ID: Laboratory Control Sample

Compound	Spike Concentration (µg/L)	Spike Sample % Recovery	% Recovery Acceptance Limits	Pass/Fail
1,1-Dichloroethene	50	88	70 - 130	Pass
Benzene	50	105	70 - 130	Pass
Trichloroethene	50	113	70 - 130	Pass
Toluene	50	105	70 - 130	Pass
Chlorobenzene	50	102	70 - 130	Pass

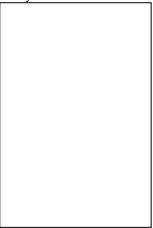
Analytical Notes:



## **Batch Precision Results**

MS/MSD Sample ID: Laborator	y Control	Sample			
Compound	MS Sample Result (µg/L)	MSD Sample Result (µg/L)	Relative Percent Difference (RPD)	RPD Acceptance Limit	Pass/Fail
1,1-Dichloroethene	43.76	42.23	4%	25%	Pass
Benzene	52.33	52.04	1%	25%	Pass
Trichloroethene	56.28	56.52	0%	25%	Pass
Toluene	52.70	53.92	2%	25%	Pass
Chlorobenzene	50.81	52.85	4%	25%	Pass

Analytical Notes:



MS: Matrix Spike MSD: Matrix Spike Duplicate LCS: Laboratory Control Sample LCSD: Laboratory Control Sample Duplicate

	Centrum Analytical				Cha	in of Cust	ody	y F	Rec	or	ď	ĸ			:	;	C	entr	um Job # 29592
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Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	LUFT Die	LUFT Gas,	5	80218: 6	VOCS: (B)		svocs:	8081A/8082:	N .	Metals: 7			Remarks/Special Instructions
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3	BA-02-5		1400														_		HOLD INSIDE
4	BA-02-7	$\square$	1410				_		А		X >				X				sm. amount of water, inside skeve - ok to run-per JA 4/30
5	BA-02-11		1420				_		$\square$										Hoch
iq_	BA-03-7		1450						X		XX	1			X				
7	BA-03-9		1445																HOLD
B	BA-04-5		1540																HOLD
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