

Prepared for

Signal Hill Holding Company
900 South Norfolk Street, Suite 350
San Mateo, California 94403

**ADDITIONAL OFF-SITE
ENVIRONMENTAL INVESTIGATION
REPORT
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Prepared by

Geosyntec 
consultants

engineers | scientists | innovators

1111 Broadway, 6th Floor
Oakland, California 94607

Project Number: WA1617

11 July 2012

Additional Off-Site Environmental Investigation Report Former Chemoil Refinery Signal Hill, California



Prepared by

Geosyntec Consultants, Inc.
1111 Broadway, 6th Floor
Oakland, California 94607

Michelle Siegel for Robert Cheung

Robert H. Cheung
Senior Toxicologist

S. A. Rehan

Syed Rehan, PE, C67805
Senior Engineer

Project Number: WA1617
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1. INTRODUCTION

On behalf of the Signal Hill Holding Corporation (Signal Hill), Geosyntec Consultants, Inc. (Geosyntec) has prepared this report documenting the results of the additional off-site investigation performed in an area located adjacent to the former Chemoil Refinery at 2020 Walnut Avenue, Signal Hill, California (the site; Figure 1). The investigation was performed in general accordance with Geosyntec's 9 March 2012 *Work Plan for Additional Off-Site Environmental Investigation* (Work Plan). The Work Plan was prepared as part of a response to Investigative Orders issued by the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), on 19 November 2008 and 24 March 2009. The 19 November 2009 Order directed Signal Hill to submit a technical work plan to address data gaps for developing a site closure strategy, and the 24 March 2009 Order directed Signal Hill to submit a soil vapor work plan for all areas with potential receptors. This Work Plan is part of several work plans and investigations conducted by Testa Environmental Corporation (TEC) that have been prepared in response to the Orders. LARWQCB approved this Work Plan on 28 March 2012 (Appendix A) and required the submittal of a report documenting the results of the investigation by 15 July 2012.

Previous investigations performed at the site indicate that petroleum hydrocarbons are present in soil, soil vapor, and groundwater. The purpose of the investigation was to collect additional data to further characterize the lateral extent of petroleum hydrocarbons in soil vapor and groundwater. The additional investigation was focused in an area bounded by Orange Avenue, East Leigh Court, North Walnut Avenue, and East 20th Street, as shown in Figures 1 and 2, and referred to as the study area. The results of the additional investigation will be evaluated with existing data to update the prior assessments of potential health risks associated with soil vapor intrusion and to assist with identifying an appropriate approach to mitigating impacts related to the migration of petroleum hydrocarbons from the former Chemoil Refinery to off-site residential properties south and southwest of the site.

This report presents site background information, the investigation objectives and approach, a description of the investigation methods, a discussion of the results, and a summary of findings and recommendations. Investigation data are summarized in tables and figures. The boring permit, boring logs, and laboratory reports are presented as Appendices C, D, and E, respectively.

2. BACKGROUND INFORMATION

The following sections provide a brief description of the site setting and its geographic location, the regional and site geology and hydrogeology, and historical investigation activities conducted within and in the immediate vicinity of the site by others.

2.1 Site Description and Setting

The site was used as a refinery from 1922 until early 1994. From 1922 to August 1988, the site was owned and operated by the MacMillan-Ring Free Oil Company. The Chemoil Corporation purchased the refinery in August 1988 and operated it until February 1994. The refinery and supporting structures were dismantled between 1997 and 1998 (TEC, 2011). The site is currently vacant.

The site is divided into two parcels: the Eastern Parcel situated immediately east of Walnut Avenue, and the Western Parcel situated immediately west of Walnut Avenue. The Western Parcel is further divided into several parcels (Figure 1). Commercial office and light industrial development is present to the north, east, and west, and residential properties are present to the south and southwest.

2.2 Regional Geology and Hydrogeology

The site is underlain by a thin layer of artificial fill overlying Holocene non-marine terrace and marine terrace deposits of the Upper Pleistocene Formation (TEC, 2011). Terrace deposits consist predominantly of an unconsolidated, stratified, lateral and vertically discontinuous sequence of sand, silty sand, silt and clay (TEC, 2011). The shallow Pleistocene strata gently dip toward the southwest produced by active uplift and deformation of the adjacent southwest flank of the Signal Hill anticline along the Newport-Inglewood Structural Zone (TEC, 2011).

The site is located within the southern portion of the West Coast Groundwater Basin (TEC, 2011), which is bounded on the north by the Ballona Escarpment (erosional channel from the Los Angeles River), to the east by the Newport-Inglewood fault zone, and to the south and west by the Pacific Ocean and the Palos Verdes Hills (DWR, 2004). The aquifers in the West Coast Groundwater Basin include marine and alluvial sediments of Holocene, Pleistocene, and Pliocene ages with thickness ranging from approximately 60 to 140 feet below ground surface (bgs) (DWR, 2004). According to the September 2007 *Groundwater Basin Reports, Los Angeles County*

Coastal Plain Basins – West Coast Basin, regional groundwater flow at depth is toward the south-southwest (TEC, 2011).

2.3 Site Geology and Hydrogeology

Based on investigations conducted by others, the site is underlain by fill that extends to approximately 5 feet bgs underlain by low permeability, fine grained soils consisting of silty clay and clayey silt to approximately 12 feet bgs, and from approximately 35 to 50 feet bgs silt and clayey silt. Between the two low permeability zones are fine to medium grained sand and silty silt (TEC, 2011).

Shallow groundwater beneath the site is encountered within the semi-perched aquifer in the Holocene alluvium (DWR, 2004 and TEC, 2011). Based on the recent groundwater monitoring report (TEC, 2012), depth to groundwater ranged from 11.3 to 41.2 feet bgs in February 2012, as measured in monitoring wells MW-19 and MW-3, respectively. Depth to groundwater beneath the Eastern Parcel is approximately 24 to 26 feet bgs. Groundwater flow beneath the site is generally toward the south-southwest. The hydraulic gradient is approximately of 0.003 to 0.006 feet per foot (ft/ft) (TEC, 2012).

2.4 Summary of Previous Investigations

Subsurface environmental-related activities have been at the site since 1985, with a hiatus from monitoring between July 1999 and October 2001. TEC re-initiated quarterly groundwater quality monitoring at the site in 2001. Since 2008, TEC has performed additional subsurface site characterization related activities, including continuation of quarterly groundwater gauging and quality monitoring, abandonment of three former light non-aqueous phase liquid (LNAPL) hydrocarbon recovery wells and one former monitoring well, installation of nine soil borings that were completed as groundwater monitoring wells (seven of these wells were situated off-site), chemical testing of select soil samples retrieved during drilling, and conducting two soil vapor surveys. In addition, an assessment of potential health risks to off-site receptors associated with potential intrusion of volatile chemicals in soil vapor and groundwater into indoor air was performed and updated with respect to residents south of the site in mid-2010, along with development of a Site Conceptual Model, which was also subsequently updated upon completion of Phase III activities. A listing of previous environmental investigation reports submitted to the LARWQCB and a chronology of environmental activities and regulatory events are presented in Appendix B.

The results of these investigations indicate that the underlying soil and groundwater at the site are impacted by petroleum hydrocarbons. Analytical results of more than 130 soil samples collected from the site indicate that hydrocarbon-impacted soil generally extends from ground surface to the water table (approximately 17 feet to 42 feet bgs), particularly in the central and the southern portion of the Western Parcel. Beneath the eastern parcel, petroleum-affected soil was reported in the northwestern corner of the parcel. Total petroleum hydrocarbon (TPH) concentrations generally increase with depth with the highest concentrations reported in soil samples collected near the water table. The maximum concentrations of TPH as gasoline (TPHg) and diesel (TPHd) in soil are 8,800 and 23,000 milligrams per kilogram (mg/kg), respectively. Benzene, toluene, ethylbenzene, and total xylenes were detected in soil at maximum concentrations of 11, 20, 60.8, and 105 mg/kg, respectively. Accordingly, the volume of hydrocarbon-affected soil exceeding 100 mg/kg between ground surface and 10 feet bgs is approximately 56,000 cubic yards (cy) (TEC, 2011).

Soil vapor samples were collected from 20 locations along the perimeter of the site at 5 ft bgs and 15 ft bgs in July 2009. Additionally, six soil vapor samples were collected south of the site at 5 ft bgs and 10 ft bgs in March 2010. Soil vapor samples were analyzed using EPA Method 8260B; field duplicates were analyzed using EPA Method TO-15. For perimeter and off-site samples, benzene was detected at a maximum concentration of 2,100 $\mu\text{g}/\text{m}^3$ from 5 feet bgs.

In 2009, Exponent completed an initial evaluation of the theoretical health risks to off-site receptors from subsurface vapor intrusion using the maximum detected concentrations in soil vapor along the perimeter of the site, which were assumed to be representative of concentrations to which exposure could occur for 30 years. This assumption is conservative because aromatic hydrocarbons are known to biodegrade. Exponent concluded that the potential for vapor intrusion based on soil vapor data is not likely to be of concern for current off-site receptors (Exponent, 2009). Exponent updated their evaluation for off-site residents south and southwest of the site, again assuming that maximum detected concentrations in the off-site soil vapor samples were representative concentrations for a 30-year period. Exponent again concluded that potential vapor intrusion is not likely to be of concern for current off-site residents south of the site. These latter conclusions also were supported by staff from the Office of Environmental Health Hazard Assessment, a division within the California Environmental Protection Agency (OEHHA, 2011), through their independent review of the updated evaluation.

Groundwater monitoring has been ongoing since 1987 and includes a network of 16 wells, all of which have been sampled quarterly with a hiatus between July 1999 and October 2001 (TEC, 2012). Six of the wells are located southwest of the site to monitor the nature and extent of petroleum affected groundwater. Dissolved TPHd, TPHg, and benzene, ethylbenzene, toluene, and xylene have been detected in groundwater beneath the site. Some of these chemicals also have been detected in off-site wells. Methyl-tert-butyl-ether (MTBE) and tert-butyl alcohol (TBA) also have been detected in groundwater but their presence is likely associated with an off-site source west-northwest of the site (TEC, 2012). Based on the last six quarterly groundwater monitoring events, the maximum concentrations of TPHd and TPHg are 22 and 24 milligrams per liter (mg/L), respectively, in MW-11. Similarly, benzene was detected at a maximum concentration of 6 mg/L in MW-11.

A light non-aqueous phase liquid (LNAPL) recovery system was initiated in three recovery wells from March 1987 to February 1994 with periodic hand bailing up to December 2002 (TEC, 2011). The three recovery wells have since been abandoned and replaced with monitoring wells. The estimated volume of total fluids removed since July 1988 is approximately 253,900 barrels. Of this volume, an estimated volume of 27.9 barrels of LNAPL was recovered. In December 2002, LNAPL was encountered in only one of the recovery wells (R-4). No LNAPL has been detected in any of the wells since 2009 (TEC, 2012).

3. INVESTIGATION OBJECTIVES

The rationale for the additional investigation was based on existing soil, soil vapor, and groundwater data collected by others. The objective was to collect additional data to characterize the lateral extent of petroleum hydrocarbons in soil vapor and groundwater. The results of the additional investigation will be evaluated with existing data to update the prior assessments of potential health risks associated with soil vapor intrusion and assist with identifying an appropriate approach to mitigating impacts related to the migration of petroleum hydrocarbons from the former Chemoil Refinery to off-site residential properties south and southwest of the site. To meet this objective, ten companion borings (Figure 2) were advanced and soil, soil vapor, and grab groundwater samples were collected and analyzed.

4. METHODS

The work was conducted consistent with typical industry standards and Geosyntec protocols under the oversight of a California-licensed Professional Geologist and/or Engineer. The following sections discuss the field investigation activities completed.

4.1 Pre-Investigation Activities

The following activities were completed prior to conducting the investigation:

- A Health and Safety Plan was developed in accordance with local, state, and federal regulations, tailored for the scope of field activities.
- An encroachment and boring permit was obtained from the City of Long Beach Department of Public Works (Appendix C).
- Staff at the LARWQCB was notified at least 10 working days prior to implementation of field activities in the study area.
- Prior to drilling, Underground Service Alert (USA) was notified 48 hours in advance to identify underground utilities by local purveyors.
- A private geophysical survey was conducted by a subcontractor, Goldak, of Sylmar, California in the vicinity of each proposed boring location to identify utilities, pipelines, or other subsurface obstructions.

4.2 Field Sampling and Analytical Programs

Under the direction of a Geosyntec field geologist, Gregg Drilling and Testing, Inc. (Gregg Drilling), of Signal Hill, California, a state-licensed contractor, advanced ten borings (GW/SV-20 through GW/SV-29) for the installation of soil vapor probes and the collection of soil and groundwater samples. To minimize the disturbance of the subsurface for soil vapor sampling, borings for soil vapor sampling were first advanced followed by companion borings for soil and groundwater sampling. Field activities were conducted from May 29 through June 1 and on June 13. Sampling locations may have been adjusted from initial plans because of soil conditions, access considerations, or the results of the utility survey. The final locations (Figure 2) were recorded using a Trimble global positioning system (GPS) unit with an accuracy of approximately ± 3 feet.

Each boring was advanced using hand auger equipment to an approximate depth of 5 feet bgs (to clear subsurface utilities) and to depths ranging from 17 to 21 feet bgs using a track-mounted direct-push drill rig with a Geoprobe dual-tube soil sampling system to collect near-continuous soil cores. The direct-push dual-tube (DPDT) technology utilizes an outer drive casing to maintain borehole stability and limit the potential for cross-contamination, and an inner sample barrel to collect soil samples. Soil samples were collected in approximately 5-foot-long runs within the system's inner sample barrel, which was lined with clean butyrate sample sleeves. The inner sampling tube was simultaneously driven along with the outer drive casing. The inner sample barrel was then pulled to the surface after sample collection. A new butyrate liner was added and the boring was then advanced to collect the next continuous core. Soil samples were collected near continuously to total depth in these borings. The dual-tube samplers were cleaned between sampling intervals by washing with Alconox detergent and then rinsing with tap water.

4.2.1 Soil Sampling and Analytical Program

Under the direction of a California Professional Geologist, a Geosyntec field geologist logged the recovered soil cores using the visual-manual procedures of ASTM Standard D2488 (ASTM, 2000), which is based on the Unified Soil Classification System (USCS), for guidance. Soil cores were screened for organic vapors using a MiniRae 2000 photoionization detector (PID), calibrated with 100 parts per million by volume (ppmv) isobutylene gas. PID measurements were recorded on the boring logs. Soil characteristics, including visual grain-size distribution, color, moisture content, plasticity, density, USCS classification, PID readings, and any other pertinent characteristics were documented by the field geologist and are presented in the soil boring logs (Appendix D).

Soil samples for chemical analysis were collected from depths of 1, 3, and 4.5 feet bgs using a slide hammer during hand auger borehole clearance. Soil samples were collected in clean stainless steel sleeves, sealed with Teflon sheets, plastic end caps, and silicone tape. Soil samples were labeled, sealed in plastic bags, and stored in an ice-cooled chest for transport to the analytical laboratory. The samples were shipped under Geosyntec chain-of-custody protocol to CalScience Environmental Laboratories, Inc. (CalScience), a state-certified analytical laboratory located in Garden Grove, California. Copies of the chain-of-custody records and laboratory reports are presented in Attachment E. Soil samples were analyzed for the following constituents:

- Total petroleum hydrocarbons quantified as gasoline (TPHg) and diesel (TPHd) using U.S. EPA Method 8015C;
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) using U.S. EPA Method 8260C; and
- Volatile organic compounds and fuel oxygenates using U.S. EPA Method 8260C.

Soil samples for BTEX and VOCs analysis were collected according to EPA Method 5035 protocol. The samples were field preserved by placing them into two laboratory-prepared volatile organic analysis (VOA) vials preserved with sodium bisulfate and one laboratory-prepared VOA vial preserved with methanol.

Soil Physical Properties Sampling and Analysis

In addition to chemical analysis, four soil samples were collected in stainless steel sleeves from a depth of approximately 4 and 8 feet bgs adjacent to borings GW/SV-22 and GW/SV-29 (Figure 2) for soil physical properties. The soil samples were packaged, labeled with the name of the adjacent boring (e.g., GW/SV-22), and delivered to PTS Laboratories, Santa Fe Springs, California under Geosyntec chain-of-custody procedures. The soil physical property analysis included:

- Total organic carbon (TOC) using Walkley-Black method;
- Specific gravity using ASTM D 854-98 method;
- Moisture content using API RP 40/ASTM D2216 method;
- Dry bulk density using API RP 40 method;
- Total porosity using API RP 40 method; and
- Grain size distribution using ASTM D422/D4464M method.

4.2.2 Grab Groundwater Sampling and Analytical Program

Grab groundwater samples were collected by placing a temporary well point constructed of 1-inch-diameter polyvinyl chloride (PVC) casing with 5 feet of screen into the bottom of the borehole. First groundwater encountered in most borings was approximately 13 to 14 feet bgs. The drive casing was then retracted approximately 5 to 10 feet from the bottom of the boring to allow groundwater to infiltrate into the

temporary well point. Grab groundwater samples were collected from the well casings using disposable bailers and decanted into sample bottles provided by the analytical laboratory. Sample bottles were labeled, sealed in plastic bags, and stored in an ice-cooled chest for delivery to the laboratory. Special care was taken to pack sample containers to minimize breakage.

Grab groundwater samples were submitted for chemical analysis to CalScience under Geosyntec chain-of-custody procedures. Grab groundwater samples were analyzed for VOCs including fuel oxygenates, and TPH (TPHg and TPHd) using U.S. EPA Methods 8260C and 8015C, respectively. The analyses for TPHd also were performed with and without a silica gel preparation procedure (U.S. EPA Method 3630C).

Following the collection of soil and grab groundwater samples, the temporary well casings were removed and the boreholes were backfilled with cement grout from the total depth of the borehole to ground surface. The borehole locations were completed with an asphalt patch, where appropriate, to match existing conditions.

4.2.3 Soil Vapor Groundwater Sampling and Analytical Program

Soil vapor sampling was conducted in general accordance with applicable agency guidance documents, including the March 2012 California Environmental Protection Agency *Advisory – Active Soil Gas Investigation (Advisory)*. Nested soil vapor probes were installed by Gregg Drilling with sampling points at 5 and 10 feet bgs.

Soil vapor borings were advanced to a total depth of approximately 10.5 feet bgs. Once the total boring depth was achieved, approximately 6 inches of Monterey 30 mesh filter pack sand were placed into the borehole. A new, disposable, 1/4-inch-outside-diameter Teflon[®] tubing fitted with a 1.5-inch-long marine diffuser filter at the bottom to prevent particulate infiltration was placed in the borehole. An additional 6 inches of filter pack sand were then placed above the filter so that the soil vapor probe inlet filter was centered in the sand pack. The total volume of the sand placed in the borehole was measured prior to placing it in the borehole. A 6-inch lift of dry, granular bentonite was placed in the borehole above the sand pack. The borehole was then backfilled with hydrated bentonite lifts to 6 inches below the shallow sample depth. The shallow sample probe was constructed by placing 6 inches of filter pack sand into the borehole above the hydrated bentonite layer and inserting a second Teflon[®] tubing (1/4-inch-outside-diameter) fitted with 1.5-inch-long marine diffuser filter at the bottom. The borehole was backfilled with filter pack sand, dry granular bentonite, and hydrated

bentonite to the ground surface. Each soil vapor probe was fitted with a closed three-way valve and protected with a zip-closure plastic bag during the equilibration period.

Soil vapor probes were allowed to equilibrate for at least two hours before sampling. To obtain a sample, a pre-assembled sampling manifold was connected to the 0.25-inch Teflon[®] well tubing to collect the vapor sample from each boring into 1-liter SUMMA[™] canisters. The manifold consisted of a LuerLock[™] tee that connected the tubing from the boring to the designated canister and pressure gauge.

A five minute pressure integrity test was conducted on the manifold to ensure that all fittings were properly tightened and no leaks existed. The pressure test was conducted by closing the valve on the collection side of the manifold, opening the canister to create a vacuum, closing the canister, and reading the pressure gauge attached to the sampling tube. If no vacuum loss occurred over the five-minute period, the integrity of the manifold was established and a sample collected. If any loss of vacuum was observed on the pressure gauge, all fittings were retightened, and the test repeated.

Prior to sampling, each probe was purged of three casing volumes. Casing volumes were calculated by summing the volume of the well tubing and the volume of the sand pack and bentonite seal, accounting for 30% porosity in annular materials. The probes were purged into Tedlar[®] bags using a LuerLock[™] 60-cubic centimeter capacity syringe and associated fittings.

Subsequent to integrity testing and purging, additional quality control testing was performed using a controlled helium environment surrounding the manifold and soil vapor probe by applying a rigid plastic shroud to cover the probe. A 1/4-inch tube connected to a helium tank and the probe of a MDG 2002 Helium Detector were also placed within the shroud. The shroud was sealed at the ground-surface interface with granular bentonite and hydrated in place to ensure an enriched helium environment of approximately 100% was maintained during sample collection. Once the helium shroud was in place, the canister was opened and the vapor sample was collected. Helium levels were recorded until sample collection was complete.

SUMMA[™] canisters, flow regulators, and related equipment were provided by CalScience. The SUMMA[™] canisters were batch-certified as clean by the laboratory and soil vapor samples were analyzed for VOCs and fixed gases (methane, oxygen, and carbon dioxide) using U.S. EPA Method TO-15 and ASTM - D1946, respectively.

Following sampling activities, the temporary probe was removed and the borehole was backfilled to 1 foot bgs using neat cement grout, which was hydrated with potable water. The borehole locations were completed with an asphalt patch, where appropriate, to match existing conditions.

4.2.4 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) procedures included: adherence to protocols for field sampling and decontamination procedures; collection and laboratory analysis of appropriate field equipment blanks and trip blanks to monitor for contamination of samples in the field or the laboratory; and collection and laboratory analysis of controlled standards, matrix spike samples, and field duplicate samples to evaluate accuracy and precision.

Blind duplicate groundwater samples were collected at the rate of 10%, or one duplicate sample for every ten samples or fraction thereof; trip blanks were prepared by the laboratory and included in each shipment containing samples to be analyzed for VOCs; and equipment decontamination blanks were collected daily or prior to each replacement of the equipment rinse water.

Field QA/QC samples for the soil vapor investigation included blind replicate samples. The blind replicate was collected using the same sampling procedures for both the primary sample and replicate. The soil vapor blind replicate was sampled immediately following the original sample.

Prior to initiating sampling and after sampling was completed at each location, non-dedicated drilling and sampling equipment was steam-cleaned or cleaned with a non-phosphate detergent (e.g., Alconox[®]) and rinsed twice with potable water. Soil cuttings, purge water, and rinse water generated during drilling were temporarily stored at the former Chemoil site in Department of Transportation (DOT) approved 55-gallon drums pending profiling, transportation and off-site disposal or recycling at an appropriate facility. All waste containers were clearly labeled with generator contact and phone number, drilling location(s), and date of generation.

5. RESULTS

This section summarizes the analytical results and distribution of chemicals in soil vapor, soil, and groundwater. Table 1 presents the soil physical data, Table 2 presents the soil analytical data, Table 3 presents the groundwater analytical data, and Table 4 presents the soil vapor data. Analytical laboratory reports are provided in Appendix E.

To evaluate the magnitude and significance of the analytical data, the results are compared to the following regulatory screening levels:

- Soil analytical results are compared to residential Environmental Screening Levels (ESLs) based on direct contact, published by the California Regional Water Quality Control Board, San Francisco Bay (Water Board, 2008).
- Groundwater analytical results are compared to the July 2012 California Department of Public Health's Maximum Contaminant Levels (MCLs) for drinking water (CDPH, 2011).
- Soil vapor analytical results are compared to the 2005 California Environmental Protection Agency's California Human Health Screening Levels (CHHSLs) for shallow (5 feet bgs) soil vapor for residential land use. For constituents with no published CHHSL, the ESLs published by the Water Board were used. Residential CHHSLs and ESLs are conservative and are typically used as a screening method to evaluate environmental data.

5.1 Lithology

Lithology information is recorded on boring logs included in Appendix D. The lithology and hydrogeology observed is generally consistent with previous investigation results. Based on the soil cores observed during drilling, native soil encountered consists primarily of layers of silts and sandy silts to the maximum depths drilled. During the June 2012 investigation, groundwater was encountered at a depth of approximately 13 to 14 feet bgs. PID detections were limited to soil cores collected near the groundwater table at borings GW/SV-22 and GW/SV-25.

5.2 Soil Physical Results

Four soil samples were collected for physical property testing from approximate depths of 4 and 8 feet bgs. These samples were collected from borings GW/SV-22 and

GW/SV-29. The soil samples were analyzed by PTS Laboratories for soil physical properties as per Section 4.2.11. A summary of the soil physical results is presented in Table 1 and is generally consistent with the lithology identified in boring logs.

5.3 Analytical Results

Geosyntec performed a QA/QC review of all analytical data received from the laboratory in accordance with the U.S. EPA National Functional Guidelines. Data were reviewed for completeness, accuracy, precision, sample contamination, conformance with holding times and pressure requirements, and detection limits within acceptable ranges. Where data qualification was required, the appropriate data flag was included in the data tables and also was marked on the original laboratory reports. Overall, the results of the data quality evaluation indicate that the analytical results are valid and usable. The qualified data can be used for decision-making purposes; however, the limitations identified by the data qualifiers should be considered when using the data. Copies of the chain-of-custody records and analytical laboratory reports are presented in Appendix E.

5.3.1 Soil

Graphical summaries of petroleum-based constituent concentrations in soil are presented in Figures 3 through 5. Soil data are summarized in tabular format in Table 2. A summary of the results is presented below.

TPHg was not detected above the laboratory detection limit of 0.5 mg/kg. TPHd was detected in 9 of 20 soil samples at concentrations ranging from 5.9 to 960 mg/kg. When detected, TPHd was generally limited to near surface soil at a depth of 1 foot bgs. For example, the two highest concentrations of TPHd were reported in samples collected from 1 foot bgs at borings GW/SV-23 and GW/SV-29 (the ground surface at GW/SV-29 is exposed with compacted dirt). At these two locations, TPHd was not detected above the laboratory reporting limits at 3 or 4.5 feet bgs suggesting that the presence or petroleum is likely associated with surficial releases.

Benzene was detected in two samples at concentrations of 1 µg/kg (GW/SV-24) and 2.8 µg/kg (GW/SV-23) at 1 foot bgs. However, benzene was not detected at this depth or in any other samples collected. Similarly, toluene was not detected above the laboratory detection limits in soil samples collected at depths greater than 1 foot bgs.

Toluene only was detected in two samples at concentrations of 1.6 µg/kg (GW/SV-24) and 1.9 µg/kg (GW/SV-23) at 1 foot bgs.

Other petroleum-hydrocarbon constituents, including ethylbenzene, xylenes, MTBE, TBA, and naphthalene, were not detected above the laboratory detection limits.

5.3.2 Grab Groundwater

Graphical summaries of petroleum-based constituent concentrations in groundwater are presented in Figures 6 through 8. Grab groundwater data are summarized in tabular format in Table 3. A summary of the results is presented below.

Dissolved TPHg was detected in five of ten samples at concentrations ranging from 73 to 1,300 micrograms per liter (µg/L). Dissolved TPHd was analyzed using standard and silica gel methods to identify the non-petroleum hydrocarbon portion of detected compounds. Dissolved TPHd was detected in all but one sample at concentrations ranging from 130 to 4,500 µg/L using standard methods. With silica gel preparation, dissolved TPHd was not detected in four samples, with detections in six samples at concentrations ranging from 83 to 1,900 µg/L. The significant reduction in measured dissolved TPHd using silica gel indicates that more than half of the reported TPHd concentrations likely do not represent dissolved petroleum hydrocarbons but rather represent polar non-hydrocarbon compounds and that attenuation is occurring due to natural biodegradation.

Benzene, toluene, ethylbenzene, total xylenes, and naphthalene were not detected above the laboratory reporting limits in any of the groundwater samples. Low levels of MTBE were reported in three samples at concentrations ranging from 1.2 to 10 µg/L. TBA was detected in four samples at concentrations ranging from 14 to 38 µg/L. The only other chemicals detected in at least one groundwater sample were chloroform (1 µg/L), isopropylbenzene (17 µg/L) sec-butylbenzene (4.1 µg/L), and n-propylbenzene (2.9 µg/L).

The analytical results for grab groundwater samples indicate that the highest concentrations of petroleum-based constituents were reported in boring GW/SV-22. The only constituents detected in grab groundwater from GW/SV-22 are TPHg, TPHd, TBA, isopropylbenzene, sec-butylbenzene, and n-propylbenzene.

Based on TPHd with silica gel preparation, the lateral extent of TPHd in groundwater is defined. TPHd is constrained by samples collected from GW/SV-28, GW/SV-26, and GW/SV-27 to the south, GW/SV-24 and GW/SV-20 to the west, and GW/SV-20 to the north.

5.3.3 Soil Vapor

Graphical summaries of petroleum-based constituent concentrations in soil vapor are presented in Figure 9. Soil vapor data are summarized in tabular format in Table 4. A summary of the results is presented below.

The results of the soil vapor investigation are generally consistent with existing data. Twenty-six VOCs were detected, of which benzene was the most frequently detected petroleum-based constituent. Benzene was detected in 12 samples at concentrations ranging from 2.3 to 34 $\mu\text{g}/\text{m}^3$, all of which are below the residential CHHSL (36 $\mu\text{g}/\text{m}^3$).

Ethylbenzene was the only other petroleum-based constituent that was detected at one location (GW/SV-22) in 10 feet bgs soil vapor sample at a concentration of 1,000 $\mu\text{g}/\text{m}^3$. However, in this same boring, ethylbenzene was not detected above the laboratory reporting limit at 5 feet bgs indicating vertical attenuation of vapor concentrations is occurring at a sufficient level to mitigate the detection of ethylbenzene at depth in this localized area. Ethylbenzene was not detected above the laboratory detection limit in all 5 feet bgs soil vapor samples collected in this investigation.

MTBE was detected in only one sample at a concentration of 9 $\mu\text{g}/\text{m}^3$ (GW/SV-25). TBA also was detected in one sample at a concentration of 1,500 $\mu\text{g}/\text{m}^3$ (GW/SV-22). In both cases, MTBE and TBA were detected at 10 feet bgs but not detected above the laboratory reporting limits in the shallower depth of 5 feet bgs. Although naphthalene was not detected above the laboratory reporting limits, elevated reporting limits of 1,200 and 2,600 $\mu\text{g}/\text{m}^3$ were reported in samples from GW/SV-22 at 5 and 10 feet bgs, respectively.

Laboratory results of soil vapor samples indicate elevated concentrations of carbon dioxide (CO₂) and methane (i.e., CO₂ concentrations in excess of 14% and methane in excess of 10% by volume) in the vicinity of boring GW/SV-22. In this soil vapor probe, methane was detected at 28.1% by volume and 35.2% from 5 and 10 feet bgs, respectively. CO₂ was detected at 10.7 and 15.9% from 5 and 10 feet bgs, respectively.

It is likely that biodegradation of hydrocarbons by both aerobic and anaerobic bacteria in the subsurface environment is occurring generating elevated concentrations of both CO₂ and methane in areas containing hydrocarbons in soil and/or groundwater. The correlation of elevated TPHg and TPHd in groundwater in the vicinity of GW/SV-22 with elevated CO₂ and methane concentrations in soil vapor suggests that biogenic gases are likely the result of degradation of petroleum hydrocarbons.

Methane also was detected in soil vapor samples from GW/SV-23, and -25 but at much lower concentrations. Except for a soil vapor sample collected at 5 feet bgs from GW/SV-25, methane detections were limited to samples collected from 10 feet bgs. The concentrations of oxygen are all greater than 4% except for samples collected at 10 feet bgs from GW/SV-22 (2.4%) and GW/SV-25 (2.5%). In these two soil vapor probes, the concentrations of oxygen at 5 feet bgs are higher at 4.5 and 5.6% from GW/SV-22 and GW/SV-25, respectively.

The distribution of the results in soil vapor suggests that the extent of petroleum-based constituents has been defined. The highest concentrations of petroleum-based VOCs were reported in soil vapor probes GW/SV-22 and GW/SV-25.

6. SUMMARY OF FINDINGS AND RECOMMENDATIONS

Ten borings were advanced during this investigation for the collection of soil, soil vapor, and grab groundwater samples. The primary objective of the investigation was to provide additional lateral delineation of subsurface petroleum hydrocarbon impacts in soil vapor and groundwater in off-site residential areas from the former Chemoil Refinery.

The results of the additional investigation indicate that sufficient site data have been obtained to reasonably characterize the lateral extent of soil vapor and groundwater. The results suggest that the extent of petroleum-based constituents has been defined with a majority of petroleum impacts limited to an area in the vicinity of sampling points GW/SV-22 and GW/SV-25.

The primary chemical of potential of concern in groundwater is dissolved TPHd. TPHd was analyzed with and without silica gel preparation. A comparison of the results with and without silica gel suggests that the reported TPHd concentrations without silica gel likely do not entirely represent dissolved petroleum hydrocarbons but rather include polar non-hydrocarbon compounds. Polar non-hydrocarbons are present in groundwater as a result of petroleum biodegradation or other factors. Based on TPHd with silica gel, the lateral extent of TPHd in groundwater is defined. The highest concentrations of TPHd with silica gel were reported in grab groundwater samples collected from GW/SV-22 and GW/SV-25. TPHd is constrained by grab groundwater samples collected from GW/SV-28, GW/SV-26, and GW/SV-27 to the south, GW/SV-24 and GW/SV-20 to the west, and GW/SV-20 to the north of the former Chemoil Refinery.

Some stained materials consistent with hydrocarbon impacted soil were observed in shallow soil, as evident by the results of TPHd in soil collected from 1 foot bgs. Below 1 foot bgs, petroleum hydrocarbon affected soil was not observed or reported in samples collected.

The results of the soil vapor sampling program are generally consistent with previous findings. Ethylbenzene was detected at one location (GW/SV-22) in the 10 feet bgs soil vapor sample at a concentration of 1,000 $\mu\text{g}/\text{m}^3$. However, in this same boring, ethylbenzene was not detected above the laboratory reporting limit at 5 feet bgs indicating vertical attenuation of vapor concentrations is occurring at a sufficient level to mitigate the detection of ethylbenzene at depth. Additionally, because ethylbenzene

was not detected in groundwater at this location, the source of ethylbenzene in soil vapor at 10 feet bgs is not clear.

Laboratory results of fixed gases in soil vapor samples indicate elevated concentrations of carbon dioxide and methane in the vicinity of boring GW/SV-22, suggesting that biodegradation of hydrocarbons by both aerobic and anaerobic bacteria in the subsurface environment is occurring. The concentrations of oxygen in soil vapor are all greater than 4% except for two samples collected at 10 feet bgs.

The presence of oxygen at concentrations greater than 4% and non-affected soil in unsaturated soil suggests that the subsurface environment is conducive for bioattenuation, limiting the potential for vapor intrusion at off-site locations.

Based on the results of this investigation, the primary objective has been achieved. Geosyntec recommends the preparation of an updated vapor intrusion evaluation incorporating the results of this investigation. The results from the additional investigation will be evaluated along with existing data to assist with identifying an appropriate and effective approach to mitigation of impacts due to migration of petroleum hydrocarbons from the former Chemoil Refinery to off-site properties south and southwest of the site. A conceptual Feasibility Study (FS) will be prepared to ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning remedial action options can be presented to allow the selection of the appropriate remedy(ies).

7. LIMITATIONS

The conclusions presented herein are professional opinions based solely upon the analytical data described in this report. They are intended exclusively for the purpose outlined herein and the site location and project indicated. Geosyntec makes no warranties or guarantees as to the accuracy or completeness of information provided by others. The results reported herein are applicable to the time the sampling occurred, and are based on current available toxicity criteria and vapor intrusion model. The services performed have been conducted in a manner consistent with the level of care ordinarily exercised by members of our profession practicing under similar conditions.

8. REFERENCES

- American Society for Testing and Materials (ASTM), 2000. ASTM Standard D2488.
- California Department of Public Health (CDPH), 2012. MCLs, DLRs, PHGs for Regulated Drinking Water Contaminants. 15 June.
- California Environmental Protection Agency (EPA), 2005. Use of California Human Health Screening levels (CHHSLs) in Evaluation of Contaminated Properties. January.
- California Environmental Protection Agency (EPA), 2012. Advisory - Active Soil Gas Investigations, April.
- California Regional Water Quality Control Board (Water Board), 2008. SF Bay RWQCB ESLs. Accessed at http://www.waterboards.ca.gov/sanfranciscobay/water_issues/available_documents/ESL_May_2008.pdf
- Department of Water Resources (DWR), 2004. California's Groundwater, Bulletin 118, South Coast Hydrologic Region, Coastal Plain of Los Angeles Groundwater Basin, West Coast Subbasin. 27 February.
- Exponent, 2009. Initial Soil Vapor Intrusion Evaluation, 23 November.
- Exponent, 2010. Updated Soil Vapor Intrusion Evaluation for Southern Boundary, 5 May .
- Office of Environmental Health Hazard Assessment (OEHHA), 2011. Memorandum from Dr. Hristo Hristov to Ms. Ann Lin – Review of “Updated Soil Vapor Intrusion Evaluation for Southern Boundary, Former Chemoil Refinery, Signal Hill, California, 21 January.
- TEC Environmental Corporation (TEC), 2011. Report on Phase III Additional Site Characterization, Former Chemoil Refinery, Signal Hill, California. 30 June.
- TEC Environmental Corporation (TEC), 2012. Report on Quarterly Groundwater Quality Monitoring Program, Former Chemoil Refinery, Signal Hill, California. 15 April.

TABLES

Table 1
Soil Physical Properties
Former Chemoil Refinery
Signal Hill, California

		Walkley-Black		ASTM D 854-98		API RP 40 / ASTM D2216	API RP 40	API RP 40	ASTM D422/ D4464M	
Sample Location	Depth (feet bgs)	Total Organic Carbon (mg/kg)	Fraction Organic Carbon (g/g)	Specific Gravity at 23.8° C	Specific Gravity at 20° C	Moisture Content (% Weight)	Dry Bulk Density (g/cc)	Total Porosity (%Vb)	Mean Grain Size Description	Median Grain Size (mm)
GW/SV-22-3'-4'	3.5-4.0	730	7.30E-04	2.72	2.72	9.7	1.56	42.2	Silt	0.035
GW/SV-29-3'-4'	3.5-4.0	1250	1.25E-03	2.71	2.71	13.2	1.64	39.0	Silt	0.048
GW/SV-29-7'-8'	7.0-8.0	540	5.40E-04	2.76	2.76	14.3	1.74	35.0	Fine Sand	0.023
GW/SV-22-7'-8'	7.0-8.0	880	8.80E-04	2.75	2.74	12.5	1.77	34.6	Silt	0.034

Notes:

1. Bulk soil samples collected by Geosyntec Consultants, Inc. and analyzed by PTS Laboratories, Santa Fe Springs, CA.
2. U.S. EPA. 2004, User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings: Office of Emergency and Remedial Response, February.

Abbreviations:

ASTM = American Society for Testing and Materials

API = American Petroleum Institute

bgs = below ground surface

g/g = gram per gram

mg/kg = milligram per kilogram

% wt = Percent weight

g/cc = grams per cubic centimeter

%VB= percentage of bulk volume

mm = millimeter

Table 2
Analytical Results in Soil
Former Chemoil Refinery
Signal Hill, California

Sample Location	Sample Depth	Date Collected	EPA 8015B (M)		EPA 8260B													
			TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	o-Xylene	p/m-Xylenes	MTBE	TBA	Naphthalene	Chloroform	Acetone	Isopropyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	
Units	ft bgs		mg/kg		µg/kg													
Residential Direct Exposure ESL			540	540	120	320,000	2,300	150,000		30,000	320000000	1,300	680	14,000,000	NE	NE	NE	
GW/SV-20-1	1	6/1/2012	130	HD	<0.50	<0.86	<0.86	<0.86	<0.86	<1.7	<1.7	<17	<8.6	<0.86	<43	<0.86	<0.86	<1.7
GW/SV-20-3	3	6/1/2012	<5.0		<0.50	<0.82	<0.82	<0.82	<0.82	<1.6	<1.6	<16	<8.2	<0.82	<41	<0.82	<0.82	<1.6
GW/SV-20-4.5	4.5	6/1/2012	<5.0		<0.50	<0.89	<0.89	<0.89	<0.89	<1.8	<1.8	<18	<8.9	<0.89	<44	<0.89	<0.89	<1.8
GW/SV-21-1	1	6/4/2012	43	HD	<0.50	<1.0	<1.0	<1.0	<1.0	<2.1	<2.1	<21	<10	<1.0	<52	<1.0	<1.0	<2.1
GW/SV-21-3	3	6/4/2012	<5.0		<0.50	<0.91	<0.91	<0.91	<0.91	<1.8	<1.8	<18	<9.1	<0.91	<45	<0.91	<0.91	<1.8
GW/SV-21-4.5	4.5	6/4/2012	<5.0		<0.50	<0.87	<0.87	<0.87	<0.87	<1.7	<1.7	<17	<8.7	<0.87	<44	<0.87	<0.87	<1.7
GW/SV-22-1	1	6/1/2012	5.9		<0.50	<0.90	<0.90	<0.90	<0.90	<1.8	<1.8	<18	<9.0	<0.90	60	<0.90	<0.90	<1.8
GW/SV-22-3	3	6/1/2012	<5.0		<0.50	<0.81	<0.81	<0.81	<0.81	<1.6	<1.6	<16	<8.1	<0.81	<40	<0.81	<0.81	<1.6
GW/SV-22-4.5	4.5	6/1/2012	<5.0		<0.50	<0.92	<0.92	<0.92	<0.92	<1.8	<1.8	<18	<9.2	<0.92	<46	<0.92	<0.92	<1.8
GW/SV-23-1	1	6/4/2012	960	HD	<0.50	2.8	1.9	<0.96	<0.96	<1.9	<1.9	<19	<9.6	<0.96	83	<0.96	<0.96	<1.9
GW/SV-23-3	3	6/4/2012	<5.0		<0.50	<0.79	<0.79	<0.79	<0.79	<1.6	<1.6	<16	<7.9	<0.79	<39	<0.79	<0.79	<1.6
GW/SV-23-4.5	4.5	6/4/2012	<5.0		<0.50	<0.79	<0.79	<0.79	<0.79	<1.6	<1.6	<16	<7.9	<0.79	<39	<0.79	<0.79	<1.6
GW/SV-24-1	1	6/4/2012	68	HD	<0.50	1.0	1.6	<0.96	<0.96	<1.9	<1.9	<19	<9.6	<0.96	92	<0.96	<0.96	<1.9
GW/SV-24-3	3	6/4/2012	<5.0		<0.50	<0.81	<0.81	<0.81	<0.81	<1.6	<1.6	<16	<8.1	<0.81	<40	<0.81	<0.81	<1.6
GW/SV-24-4.5	4.5	6/4/2012	<5.0		<0.50	<0.90	<0.90	<0.90	<0.90	<1.8	<1.8	<18	<9.0	<0.90	<45	<0.90	<0.90	<1.8
GW/SV-25-1	1	5/31/2012	56	HD	<0.50	<0.89	<0.89	<0.89	<0.89	<1.8	<1.8	<18	<8.9	<0.89	<45	<0.89	<0.89	<1.8
GW/SV-25-3	3	5/31/2012	59	HD	<0.50	<0.82	<0.82	<0.82	<0.82	<1.6	<1.6	<16	<8.2	<0.82	<41	<0.82	<0.82	<1.6
GW/SV-25-4.5	4.5	5/31/2012	<5.0		<0.50	<0.83	<0.83	<0.83	<0.83	<1.7	<1.7	<17	<8.3	<0.83	<42	<0.83	<0.83	<1.7
GW/SV-26-1	1	5/31/2012	<5.0		<0.50	<0.83	<0.83	<0.83	<0.83	<1.7	<1.7	<17	<8.3	<0.83	<42	<0.83	<0.83	<1.7
GW/SV-26-3	3	5/31/2012	32	HD	<0.50	<0.88	<0.88	<0.88	<0.88	<1.8	<1.8	<18	<8.8	<0.88	<44	<0.88	<0.88	<1.8
GW/SV-26-4.5	4.5	5/31/2012	<5.0		<0.50	<0.83	<0.83	<0.83	<0.83	<1.7	<1.7	<17	<8.3	<0.83	<41	<0.83	<0.83	<1.7
GW/SV-27-1	1	6/1/2012	<5.0		<0.50	<0.82	<0.82	<0.82	<0.82	<1.6	<1.6	<16	<8.2	<0.82	<41	<0.82	<0.82	<1.6
GW/SV-27-3	3	6/1/2012	<5.0		<0.50	<0.93	<0.93	<0.93	<0.93	<1.9	<1.9	<19	<9.3	<0.93	<46	<0.93	<0.93	<1.9
GW/SV-27-4.5	4.5	6/1/2012	<5.0		<0.50	<0.89	<0.89	<0.89	<0.89	<1.8	<1.8	<18	<8.9	<0.89	<45	<0.89	<0.89	<1.8
GW/SV-28-1	1	5/30/2012	<5.0		<0.50	<0.99	<0.99	<0.99	<0.99	<2.0	<2.0	<20	<9.9	<0.99	52	<0.99	<0.99	<2.0
GW/SV-28-3	3	5/30/2012	<5.0		<0.50	<0.70	<0.70	<0.70	<0.70	<1.4	<1.4	<14	<7.0	<0.70	38	<0.70	<0.70	<1.4
GW/SV-28-4.5	4.5	5/30/2012	<5.0		<0.50	<0.99	<0.99	<0.99	<0.99	<2.0	<2.0	<20	<9.9	<0.99	<49	<0.99	<0.99	<2.0
GW/SV-29-1	1	6/1/2012	210	HD	<0.50	<0.77	<0.77	<0.77	<0.77	<1.5	<1.5	<15	<7.7	<0.77	57	<0.77	<0.77	<1.5
GW/SV-29-3	3	6/1/2012	<5.0		<0.50	<0.83	<0.83	<0.83	<0.83	<1.7	<1.7	<17	<8.3	<0.83	<41	<0.83	<0.83	<1.7
GW/SV-29-4.5	4.5	6/1/2012	<5.0		<0.50	<0.88	<0.88	<0.88	<0.88	<1.8	<1.8	<18	<8.8	<0.88	<44	<0.88	<0.88	<1.8

Notes:

1. Soil samples collected by Geosyntec Consultants and analyzed by CalScience Environmental Laboratories, Inc. of Garden Grove, California, using EPA Method 8260B.
2. Only petroleum-based constituents (TPH, BTEX, MTBE, TBA, and naphthalene) and constituents detected in at least one groundwater sample (Table 2) are presented. A full list of analytes from EPA Method 8260B is presented in the analytical laboratory reports.

Abbreviations:

mg/kg = milligrams per kilogram µg/kg = micrograms per kilogram

HD = The Chromatographic pattern was inconsistent with the profile of the reference fuel standard according to laboratory reports.

TPH = Total petroluem hydrocarbons

MTBE = Methyl-t-Butyl Ether

TBA = Tert-Butyl Alcohol

ESL = Environmental screening levels from San Francisco Bay Regional Water Quality Control Board Residential Environmental Screening Levels, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwaater, 2008 May.
for noncarcinogens, the screening levels are based on a target hazard quotient of 1.0 (Table K-1).

NE = Not established

Table 3
Analytical Results in Groundwater
Former Chemoil Refinery
Signal Hill, California

Sample Location	Sample Depth (feet bgs)	Date Collected	EPA 8015B (M)					EPA 8260B											
			TPH Diesel		TPH Diesel (with Silica Gel)		TPH Gasoline	Benzene	Toluene	Ethyl- benzene	o-Xylenes	p/m-Xylenes	MTBE	TBA	Naphthalene	Chloroform	Isopropyl- benzene	sec-Butyl- benzene	n-Propyl- benzene
			Concentration (µg/L)																
Cal EPA Primary MCL			NA		NA		NA	1	150	300	1750 ³		13	NA	NA	70	NA	NA	NA
GW/SV-20	14	6/1/2012	130	HD	<69	HD	<50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0
GW/SV-21	14	6/4/2012	490	HD	290	HD	73	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0
GW/SV-22	14	6/1/2012	4,500	HD	1,900	HD	1300	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	38	<10	<1.0	17	4.1	2.9
GW/SV-23	13	6/4/2012	1,300	HD	650	HD	910	<0.50	<1.0	<1.0	<1.0	<1.0	10	17	<10	<1.0	4.5	2.5	<1.0
GW/SV-24	15	6/4/2012	260	HD	<50	HD	<50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	1.0	<1.0	<1.0	<1.0
GW/SV-25	13	5/31/2012	1,000	HD	420	HD	78	<0.50	<1.0	<1.0	<1.0	<1.0	1.2	14	<10	<1.0	<1.0	<1.0	<1.0
GW/SV-25-DUP	13	5/31/2012	1,100	HD	590	HD	160	<0.50	<1.0	<1.0	<1.0	<1.0	1.7	17	<10	<1.0	<1.0	<1.0	<1.0
GW/SV-26	14	5/31/2012	270	HD	100	HD	<50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0
GW/SV-27	14	6/1/2012	<69		<69		<50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0
GW/SV-28	17	5/30/2012	210	HD	83	HD	<50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0
GW/SV-29	14.5	6/1/2012	190	HD	<62	HD	<50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0

- Notes:
- Groundwater samples collected and analyzed by CalScience Environmental Laboratories, Inc. of Garden Grove, California, using EPA Method 8260B.
 - Only petroleum-based constituents (TPH, BTEX, MTBE, TBA, and naphthalene) and constituents detected in at least one groundwater sample are presented. A full list of analytes from EPA Method 8260B is presented in the analytical laboratory reports.
 - The value is for the combined Xylenes.

Abbreviations:

feet bgs = feet below ground surface

µg/L = micrograms per liter

DUP = Duplicate sample

Cal EPA = California Environmental Protection Agency

HD = The TPH diesel chromatographic pattern was inconsistent with the profile of the reference fuel standard according to laboratory reports.

TPH = Total petroluem hydrocarbons

MCL = Maximum Concentration Level

MTBE = Methyl-t-Butyl Ether

TBA = Tert-Butyl Alcohol

Table 4
Analytical Results of Volatile Organic Compounds in Soil Vapor
Former Chemoil Refinery
Signal Hill, California

Sample Location	Sample Depth (ft bgs)	Sample Date	Concentration (µg/m³)																			
			EPA Method TO-15 Volatile Organic Compounds																			
			Acetone	Benzene	Bromo-dichloro-methane	cis-1,2-Dichloro-ethene	Carbon Disulfide	Chloroform	Chloro-methane	Dibromo-chloro-methane	Dichloro-difluoro-methane	Ethanol	Ethyl-benzene	Methyl-tert Butyl Ether (MTBE)	Naphthalene	o-Xylene	p/m-Xylene	Tert-Butyl Alcohol (TBA)	Tetrachloro-ethene	Toluene	Trichloro-fluoro-methane	Vinyl-Chloride
Residential CHHSLs			NA	36.2	NA	NA	NA	NA	NA	NA	NA	420	4,000	31.9	317,000	317,000	NA	180	135,000	NA	13.3	
Residential ESLs			330,000	42	69	3,700	NA	230	NA	NA	NA	490	4,700	36	1,000	1,000	NA	210	31,000	NA	16	
GW/SV-20-5	5	05/30/12	54	3.2	3.6	<2	<6.2	200	<1	<4.3	2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	9.3	2.7	68	<1.3
GW/SV-20-10	10	05/30/12	6.9	<1.6	<3.4	<2	<6.2	220	<1	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	7.3	<1.9	69	<1.3
GW/SV-21-5	5	06/13/12	45	2.4	<3.4	<2	<6.2	6.3	<1.3	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	<3.4	<1.9	<5.6	<1.3
GW/SV-21-10	10	06/13/12	100	<3.3	<6.8	<4	<13	<5.0	<2.7	<8.7	<5.0	60	<4.4	<15	<53	<4.4	<18	<12	<5.5	<3.8	<5.5	<2.6
GW/SV-22-5	5	05/30/12	<220	<74	<150	<92	<290	<110	<48	<200	<110	<440	<100	<330	<1200	<100	<400	<280	<160	<87	<260	<59
GW/SV-22-10	10	05/30/12	1,400	<160	<340	<200	<620	<240	<100	<430	<250	<940	1000	<720	<2600	240	<870	1500	<340	510	<560	<130
GW/SV-22-10/Dup	10	05/30/12	1,800	<160	<340	<200	<620	310	<100	<430	<250	<940	970	<720	<2600	240	<870	<610	<340	320	<560	<130
GW/SV-23-5	5	06/13/12	38	<1.6	<3.4	<2	<6.2	<2.4	<1.3	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	<3.4	2.9	<5.6	<1.3
GW/SV-23-10	10	06/13/12	100	34	<3.4	<2	71	<2.4	<1.3	<4.3	<2.5	<9.4	3.8	<7.2	<26	<2.2	<8.7	<6.1	7.4	14	<5.6	<1.3
GW/SV-23-10/Dup	10	06/13/12	95	11	<11	<6.3	51	<7.8	<4.2	<14	<7.9	<30	<6.9	<23	<83	<6.9	<28	<19	<11	11	<18	<4.1
GW/SV-24-5	5	06/13/12	13	<1.6	<3.4	<2	<6.2	<2.4	<1.3	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	<3.4	2.4	<5.6	<1.3
GW/SV-24-10	10	06/13/12	22	4.1	<3.4	<2	<6.2	17	<1.3	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	9.9	<1.9	<5.6	<1.3
GW/SV-25-5	5	05/30/12	16	19	<3.4	<2	<6.2	3.5	<1	<4.3	<2.5	<9.4	11	<7.2	<26	14	30	<6.1	<3.4	20	<5.6	<1.3
GW/SV-25-10	10	05/30/12	<4.8	1.9	<3.4	<2	<6.2	<2.4	<1	<4.3	<2.5	<9.4	<2.2	9	<26	<2.2	<8.7	<6.1	<3.4	<1.9	<5.6	<1.3
GW/SV-26-5	5	05/31/12	17	3.6	<3.4	4.2	<6.2	<2.4	<1	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	25	3.3	<5.6	<1.3
GW/SV-26-10	10	05/31/12	14	<1.6	<3.4	<2	<6.2	<2.4	<1	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	28	<1.9	<5.6	<1.3
GW/SV-27-5	5	05/31/12	45	9.3	<3.4	<2	<6.2	5.2	<1	<4.3	2.6	<9.4	3.3	<7.2	<26	4.6	12	<6.1	67	16	<5.6	<1.3
GW/SV-27-10	10	05/31/12	21	2.8	<3.4	3.3	<6.2	22	<1	<4.3	<2.5	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	84	2	<5.6	2.9
GW/SV-28-5	5	05/31/12	25	3.9	7.5	<2	<6.2	12	<1	<4.3	<2.5	<9.4	<2.2	<7.2	<26	2.9	<8.7	<6.1	<3.4	5.2	<5.6	<1.3
GW/SV-28-10	10	05/31/12	29	2.3	<3.4	<2	<6.2	11	<1	<4.3	<2.5	12	<2.2	<7.2	<26	<2.2	<8.7	<6.1	<3.4	<1.9	<5.6	<1.3
GW/SV-29-5	5	05/31/12	220	11	5.2	<2	13	14	1.2	4.8	3.3	13	2.8	<7.2	<26	4.2	9.4	<6.1	6.8	11	13	<1.3
GW/SV-29-10	10	05/31/12	15	<1.6	<3.4	<2	<6.2	<2.4	<1	<4.3	2.9	<9.4	<2.2	<7.2	<26	<2.2	<8.7	<6.1	150	<1.9	15	<1.3

- Notes:
1. Soil vapor samples collected in batch-certified 1-liter summa canisters and analyzed by CalScience Environmental Laboratories, Inc. of Garden Grove, California using EPA Method TO-15.
 2. Except for the target petroleum-based chemicals of potential concern (COPCs), only constituents detected in at least one sample are presented. A full list of analytes from EPA Method TO-15 is presented in the analytical laboratory reports.

Abbreviations:

ft bgs = feet below ground surface

< indicates that the compound was not detected at or above the laboratory reporting limit shown.

NA = Not Available

CHHSLs = California Human Health Screening Levels (CHHSLs) for volatile chemicals in soil vapor below residential buildings constructed without engineered fill below sub-slab gravel (California Environmental Protection Agency, 2005).

ESLs = Environmental Screening Levels for residential uses, Update to Environmental Screening Levels for Sites with Impacted Soil and Groundwater, Regional Water Quality Control Board, San Francisco Bay, Table E-4 Shallow Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion Concerns, May 2008.

Table 4
Analytical Results of Volatile Organic Compounds in Soil Vapor
Former Chemoil Refinery
Signal Hill, California

Sample Location	Sample Depth (ft bgs)	Sample Date	Concentration (µg/m ³)						Concentration (% Volume)					
			EPA Method TO-15 Volatile Organic Compounds						Fixed Gases					
			1,1,1-Trichloro-ethane	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	2-Butanone	4-Ethyl-toluene	4-Methyl-2-Pentanone	Carbon Dioxide	Carbon Monoxide	Helium	Oxygen + Argon ³	Methane	Nitrogen
Residential CHHSLs			991,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Residential ESLs			230,000	420	230,000	520,000	NA	310,000	NA	NA	NA	NA	NA	NA
GW/SV-20-5	5	05/30/12	<2.7	<7.4	<2.5	10	<2.5	<6.1	3.75	<0.5	<0.01	16.6	<0.5	79.6
GW/SV-20-10	10	05/30/12	<2.7	<7.4	<2.5	4.9	<2.5	<6.1	<0.5	<0.5	<0.01	21.9	<0.5	78.1
GW/SV-21-5	5	06/13/12	<2.7	<7.4	<2.5	8.7	<2.5	<6.1	<0.5	<0.5	<0.01	21.1	<0.5	78.4
GW/SV-21-10	10	06/13/12	<5.6	<15	<5.0	8.7	<5.0	<13	7.12	<0.5	<0.01	4.76	<0.5	84.8
GW/SV-22-5	5	05/30/12	<130	<340	<110	<200	<110	<280	10.7	<0.5	<0.01	4.52	28.1	56.6
GW/SV-22-10	10	05/30/12	<270	<740	<250	<440	<250	<610	15.9	<0.5	<0.01	2.2	35.2	46.6
GW/SV-22-10/Du	10	05/30/12	<270	<740	<250	<440	<250	<610	15.8	<0.5	<0.01	2.38	34.9	47
GW/SV-23-5	5	06/13/12	<2.7	<7.4	<2.5	9.1	<2.5	<6.1	0.939	<0.5	<0.01	21	<0.5	78
GW/SV-23-10	10	06/13/12	<2.7	<7.4	<2.5	40	<2.5	<6.1	1.23	<0.5	<0.01	14.4	1.43	82.9
GW/SV-23-10/Du	10	06/13/12	<8.7	<23	<7.8	29	<7.8	<20	1.14	<0.5	<0.01	16.1	6.18	76.5
GW/SV-24-5	5	06/13/12	<2.7	<7.4	<2.5	<4.4	<2.5	<6.1	0.866	<0.5	<0.01	20.9	<0.5	78.2
GW/SV-24-10	10	06/13/12	<2.7	<7.4	<2.5	9.3	<2.5	<6.1	3.56	<0.5	<0.01	18.5	<0.5	78
GW/SV-25-5	5	05/30/12	<2.7	8	2.8	18	<2.5	<6.1	9.96	<0.5	<0.01	5.64	3.61	80.8
GW/SV-25-10	10	05/30/12	<2.7	<7.4	<2.5	8.1	<2.5	<6.1	11.9	<0.5	<0.01	2.54	5.64	79.9
GW/SV-26-5	5	05/31/12	<2.7	<7.4	<2.5	<4.4	<2.5	<6.1	7.19	<0.5	<0.01	9.4	<0.5	83.4
GW/SV-26-10	10	05/31/12	<2.7	<7.4	<2.5	<4.4	<2.5	<6.1	6.78	<0.5	<0.01	9.89	<0.5	83.3
GW/SV-27-5	5	05/31/12	3.6	<7.4	<2.5	13	<2.5	<6.1	4.49	<0.5	<0.01	11.6	<0.5	83.9
GW/SV-27-10	10	05/31/12	<2.7	<7.4	<2.5	10	<2.5	<6.1	4.89	<0.5	<0.01	12.1	<0.5	83
GW/SV-28-5	5	05/31/12	<2.7	<7.4	<2.5	6.9	<2.5	<6.1	3.06	<0.5	0.0215	19.3	<0.5	77.7
GW/SV-28-10	10	05/31/12	<2.7	<7.4	<2.5	8.3	<2.5	<6.1	10.1	<0.5	<0.01	11.9	<0.5	78
GW/SV-29-5	5	05/31/12	7	30	8.6	64	4.2	8.4	<0.5	<0.5	<0.01	18	<0.5	82
GW/SV-29-10	10	05/31/12	<2.7	<7.4	<2.5	6.2	<2.5	<6.1	1.58	<0.5	<0.01	15.2	<0.5	83.2

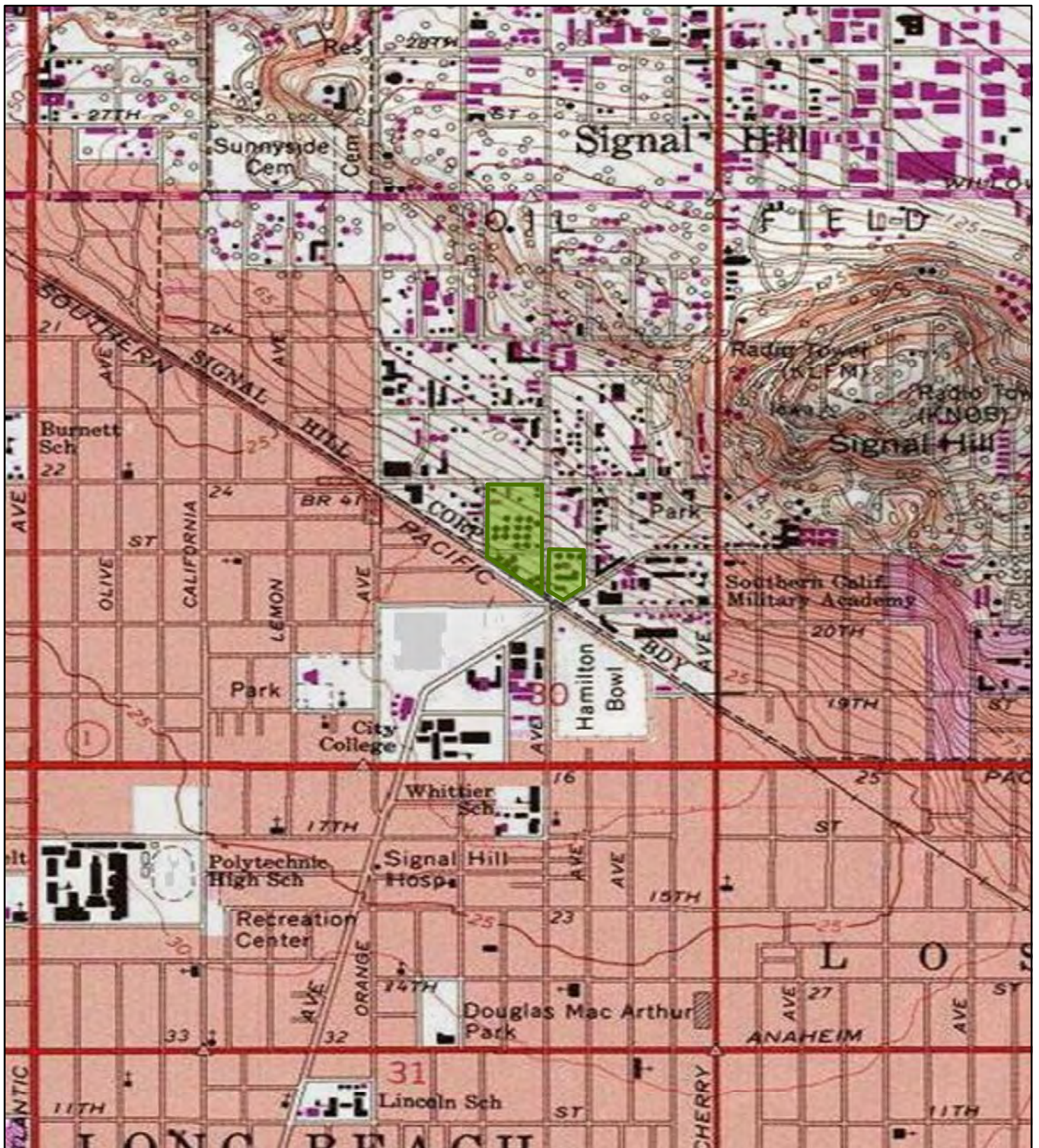
Notes:

- 1. Soil vapor samples collected in batch-certified 1-liter summa canisters and analyzed by CalScience Environmental Laboratories, Inc. of Garden Grove, California using EPA Method TO-15.
- 2. Except for the target petroleum-based chemicals of potential concern (COPCs), only constituents detected in at least one sample are presented. A full list of analytes from EPA Method TO-15 is presented in the analytical laboratory reports.
- 3. Oxygen and Argon gasses are reported together because they convolute with each other and are difficult to separate in the laboratory testing. Typically, Argon is present in insignificant quantities.

Abbreviations:

ft bgs = feet below ground surface
< indicates that the compound was not detected at or above the laboratory reporting limit shown.
NA = Not Available
CHHSLs = California Human Health Screening Levels (CHHSLs) for volatile chemicals in soil vapor below residential buildings constructed without engineered fill below sub-slab gravel (California Environmental Protection Agency, 2005).
ESLs = Environmental Screening Levels for residential uses, Update for Sites with Impacted Soil and Groundwater, Regional Water Quality Control Board, San Francisco Bay, Table E-4 Shallow Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion Concerns, May 2008.

FIGURES



Legend

Site Boundary



0 1,250 2,500 Feet

Site Location Map

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

Figure

1

WA 1617

July 2012



Legend

- Monitoring Well
- ▲ Soil Gas Probe (TEC, 2009 and 2010)
- ⊕ Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec, 2012)

NOTE:

Approximate locations of monitoring well and soil gas probes from Testa Environmental Corporation's (TEC) June 2011 Report on Phase II and Phase III Additional Site Characterization



0 300 600 Feet

Soil, Soil Gas, and Grab Groundwater Sampling Locations

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

WA 1617

July 2012

Figure

2



Legend

- Monitoring Well
- ▲ Soil Gas Probe (TEC, 2009 and 2010)
- ⊕ Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec, 2012)

GW/SV-27	1	3	4.5
DRO	<5.0	<5.0	<5.0
GRO	<0.50	<0.50	<0.50

--- Boring ID and Sample depth interval in feet below ground surface
--- Concentration in milligrams per kilogram (mg/kg)
DRO - Diesel range organics (TPHd)
GRO - Gasoline range organics (TPHg)
<0.05 - Indicates compound not detected at or above the laboratory reporting limit shown.

NOTE:
Approximate locations of monitoring well and soil gas probes from
Testa Environmental Corporation's (TEC) June 2011 Report
on Phase II and Phase III Additional Site Characterization

**Extent of TPHd and TPHg
in Soil**

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

WA 1617

July 2012

Figure
3



Legend

- Monitoring Well
- ▲ Soil Gas Probe (TEC, 2009 and 2010)
- ⊕ Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec, 2012)

NOTE:
Approximate locations of monitoring well and soil gas probes from
Testa Environmental Corporation's (TEC) June 2011 Report
on Phase II and Phase III Additional Site Characterization

GW/SV-26	1	3	4.5
B	<0.83	<0.88	<0.83
T	<0.83	<0.88	<0.83
E	<0.83	<0.88	<0.83
X	<2.53	<2.68	<2.53

--- Boring ID and Sample depth interval in feet below ground surface
--- Concentration in micrograms per kilogram (µg/kg)
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes (sum of m, p, and o-Xylenes or the lowest reporting limit)
<0.81 - Indicates compound not detected at or above the laboratory reporting limit shown.

0 250 500 Feet

N

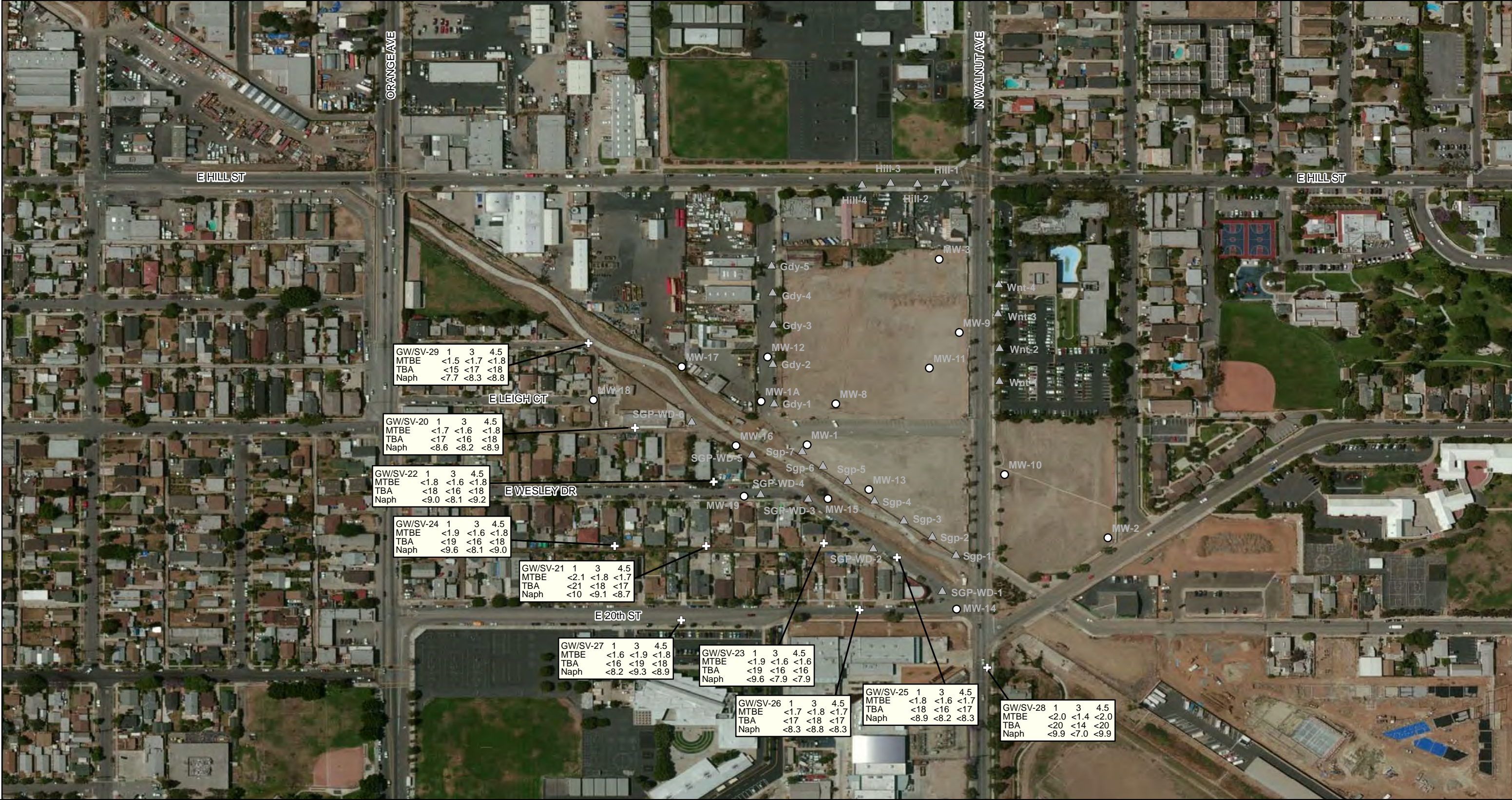
**Extent of VOCs in Soil
BTEX**

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

WA 1617 July 2012

Figure
4



Legend

○

Monitoring Well

▲

Soil Gas Probe (TEC, 2009 and 2010)

⊕

Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec, 2012)

NOTE:

Approximate locations of monitoring well and soil gas probes from Testa Environmental Corporation's (TEC) June 2011 Report on Phase II and Phase III Additional Site Characterization

GW/SV-27	1	3	4.5
MTBE	<1.6	<1.9	<1.8
TBA	<16	<19	<18
Naph	<8.2	<9.3	<8.9

Boring ID and Sample depth interval in feet below ground surface

Concentration in micrograms per kilogram (µg/kg)

MTBE

= Methyl tertiary butyl ether

TBA

= Tertiary butyl alcohol

Naph

= Naphthalene by EPA Method 8260B

<1.9 - Indicates compound not detected at or above the laboratory reporting limit shown.

N

↑

0

250

500

Feet

Extent of VOCs in Soil

MTBE, TBA, and Napthalene

Former Chemoil Refinery

2020 Walnut Avenue, Signal Hill, CA

Geosyntec

consultants

WA 1617

July 2012

Figure

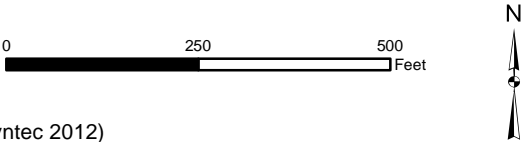
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Legend

- Monitoring Well
- ▲ Soil Gas Probe (TEC, 2009 and 2010)
- ⊕ Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec 2012)



GW/SV-27	DRO	<0.069
	DROsg	<0.069
	GRO	<0.05

DRO - Diesel range organics (TPHd)
DROsg - Diesel range organics with silica gel preparation (TPHd sg)
GRO - Gasoline range organics (TPHg)

- Notes:
- Results presented in milligrams per liter (mg/L) of water.
 - <1.0 indicates compound not detected at or above the laboratory reporting limit shown.
 - The primary/duplicate results for GW/SV-25 are presented.
 - Approximate locations of monitoring well and soil gas probes (SGP) from TEC's June 2011 Report on Phase II and Phase III Additional Site Characterization.

**Extent of TPHd and TPHg
in Groundwater**

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

WA 1617

July 2012

Figure
6



Legend

○

Monitoring Well

▲

Soil Gas Probe (TEC, 2009 and 2010)

⊕

Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec 2012)

0250500
Feet

N

GW/SV-27

B<0.50

T<1.0

E<1.0

X<2.0

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes; total o and p&m isomers

**Extent of VOCs in Groundwater
BTEX**

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec

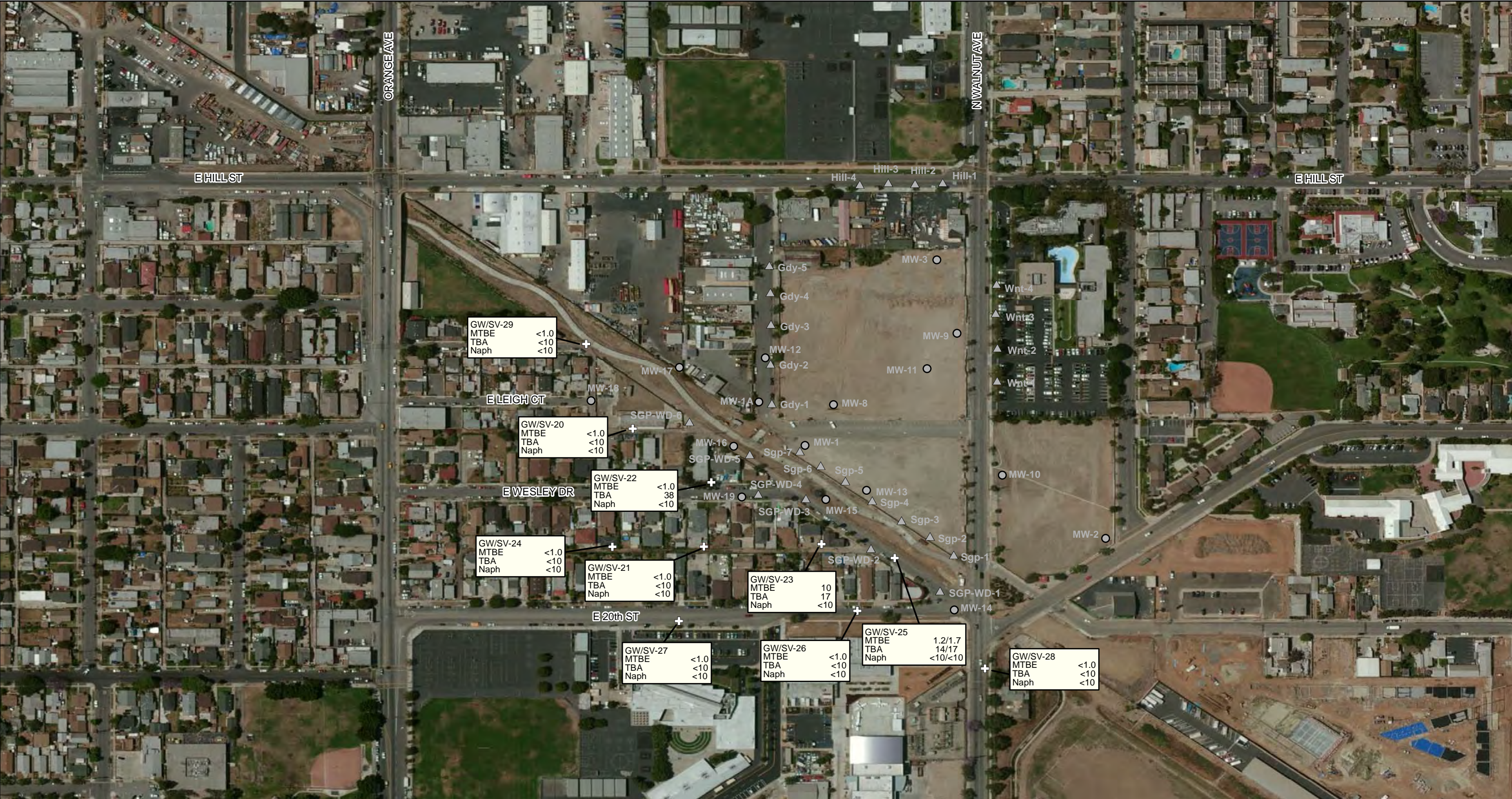
consultants

WA 1617

July 2012

Figure
7

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Legend

○

Monitoring Well

▲

Soil Gas Probe (TEC, 2009 and 2010)

⊕

Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec 2012)

0250500

Feet

N

GW/SV-26

MTBE

TBA

Naph

<1.0

<10

<10

<10

MTBE = Methyl tertiary butyl ether

TBA = Tertiary butyl alcohol

Naph = Naphthalene by EPA Method 8260B

Extent of VOCs in Groundwater

MTBE, TBA, and Naphthalene

Former Chemoil Refinery

2020 Walnut Avenue, Signal Hill, CA

Geosyntec

consultants

WA 1617

July 2012

Figure

8

Notes:

1. Results presented in micrograms per liter (µg/L).
2. <10 indicates compound not detected at or above the laboratory reporting limit shown.
3. The primary/duplicate results for GW/SV-25 are presented.
4. Approximate locations of monitoring well and soil gas probes (SGP) from TEC's June 2011 Report on Phase II and Phase III Additional Site Characterization.

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Legend

Monitoring Well

Soil Gas Probe (TEC, 2009 and 2010)

Soil, Soil Gas, and Grab Goundwater Sampling Locations (Geosyntec, 2012)

GW/SV-26

5

10

B

3.6

<1.6

T

3.3

<1.9

E

<2.2

<2.2

X

<2.2

<2.2

MTBE

<7.2

<7.2

TBA

<6.1

<6.1

Sample depth interval in feet below ground surface

Concentration in micrograms per cubic meter (µg/m³)

B = Benzene

T = Toluene

E = Ethylbenzene

X = Total Xylenes (sum of m, p, and o-Xylenes or the lowest reporting limit)

MTBE = Methyl tertiary butyl ether

TBA = Tertiary butyl alcohol

0

200

400

Feet

N

Extent of VOCs in Soil Vapor

BTEX, MTBE, and TBA

Former Chemoil Refinery

2020 Walnut Avenue, Signal Hill, CA

Geosyntec

consultants

WA 1617

July 2012

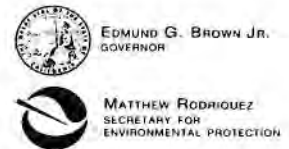
Figure

9

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APPENDIX A

Agency Correspondence



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

March 28, 2012

Mr. Jerome Lorenzo
Signal Hill Holding Corporation
1900 South Norfolk Street, Suite 350
San Mateo, CA 94403

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7009 2820 0001 6537 5531

**SUBJECT: APPROVAL OF WORK PLAN FOR ADDITIONAL OFF-SITE
ENVIRONMENTAL INVESTIGATION, PURSUANT TO CALIFORNIA
WATER CODE SECTION 13267 ORDER**

**SITE: FORMER CHEMOIL REFINERY FACILITY, 2020 WALNUT AVENUE,
SIGNAL HILL, CALIFORNIA (SCP NO. 0453A, SITE ID NO. 2047W00)**

Dear Mr. Lorenzo:

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) staff reviewed a report titled "Work Plan for Additional Off-site Environmental Investigation, Former Chemoil Refinery (work plan)" dated March 9, 2012, prepared by Geosyntec Consultants (Geosyntec) on behalf of the Signal Hill Holding Corporation (SHHC). The work plan is in response to Investigative Orders issued by the Regional Board on November 19, 2008, and March 24, 2009. The November 19, 2008 Order directed SHHC to submit a technical work plan to address data gaps for developing a site closure strategy, and the March 24, 2009 Order directed you to submit a soil gas survey work plan for all areas with potential receptors.

The work plan proposes to advance ten (10) companion borings in offsite residential locations, as illustrated in Figure 2, in order to characterize the off-site extent of petroleum hydrocarbons in soil vapor and groundwater. The results of the proposed investigation will be incorporated into a remedial design to control the migration of petroleum hydrocarbons originating from the Site.

Based on our review of the information submitted to the Regional Board, Regional Board staff concurs with the proposed work plan. Prior to the commencement of any field work, you must develop a site-specific Health and Safety Plan (H&SP) in accordance with section 5192 of the California Code of Regulations (CCR), title 8 and submit it to the Regional Board project staff. The jurisdictional agency, the California Occupational Safety and Health Administration (Cal-OSHA), may inspect the field activities.

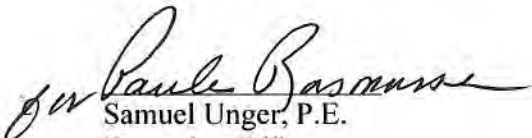
MARIA MEHRANIAN, CHAIR | SAM UNGER, EXECUTIVE OFFICER

320 West 4th St., Suite 200, Los Angeles, CA 90013 | www.waterboards.ca.gov/losangeles

Pursuant to section 13267 of the California Water Code (CWC), you are required to implement the approved Work Plan, and submit the required technical report results to the Regional Board by **July 15, 2012**, for our review and approval. The technical report is required to be submitted under the CWC section 13267 Order. The new due date above is an amendment to the Item No. 4 of the Investigative Order dated March 24, 2009, and the Investigative Order dated November 19, 2008.

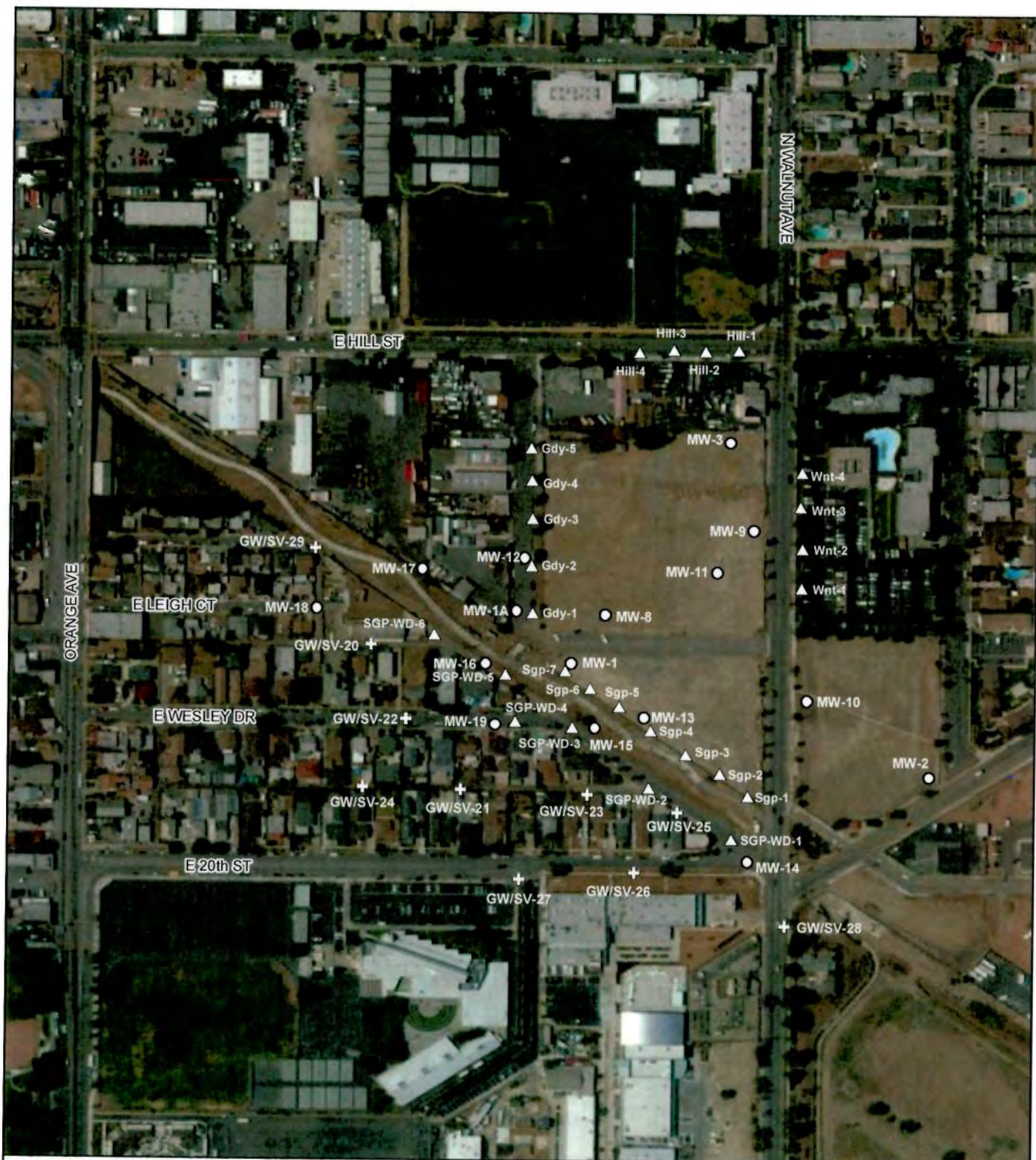
If you have any questions, please contact Ms. Ann Lin at (213) 576-6781.

Sincerely,


Samuel Unger, P.E.
Executive Officer

Enclosed: Figure 2 Proposed Soil, Soil Gas, and Grab Groundwater Sampling Locations.

cc: Dave Roseman, City of Long Beach Traffic Engineer.
Dave.Roseman@longbeach.gov
Russell Caveness, City of Long Beach Encroachment Permitting.
Russell.Caveness@longbeach.gov
Steve Nakauchi, City of Long Beach Boring Permitting.
Steve.Nakauchi@longbeach.gov
Rick McAuley, MPO Walnut Partners, LLC.
rick@aztecgrp.com
Tom Graf, Ground Modifications, Inc. tgraf@groundmod.com
Ravi Arulanantham, Geosyntec. RArulanantham@geosyntec.com



Legend

- Monitoring Well
- △ Soil Gas Probe
- ⊕ Proposed Soil, Soil Gas, and Grab Goundwater Sampling Locations

NOTE: Approximate locations of monitoring well and soil gas probes from Testa Environmental Corporation June 11 Report on Phase II Additional Site Characterization



0 300 600 Feet

Proposed Soil, Soil Gas, and Grab Groundwater Sampling Locations

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

Figure

2

WA 1598

March 2012

APPENDIX B

Chronology and Summary of Documents Submitted to Agency

TABLE 2-1
SUMMARY OF PREVIOUS REPORTS

Date	Report Title
Page 1 of 3	
<u>Engineering Enterprises, Inc. (EEI)</u>	
Dec-85	Groundwater Assessment Phase I Report, MacMillan Ring-Free Oil Company
Aug-86	Groundwater Assessment Phase II Report, MacMillan Ring-Free Oil Company
Oct-86	Groundwater Assessment Phase II Report Clarifications
Mar-87	First Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, CA
Apr-87	Second Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, CA
Sep-87	Third Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, CA
Jan-88	Fourth Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, CA
Jan-88	Revised Workplan to Address Outstanding Issues, California Regional Water Quality Control Board File No 85-15, MacMillan Ring-Free Refinery
Jul-88	Biannual Interim Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, CA
Jan-89	Biannual Interim Monitoring Report, January 1989, Chemoil Refinery, Signal Hill, CA
Jul-89	Biannual Interim Monitoring Report, July 1989, Chemoil Refinery, Signal Hill, CA
Jan-90	Biannual Interim Monitoring Report, January 1990, Chemoil Refinery, Signal Hill, CA
<u>Applied Environmental Services, Inc. (AES)</u>	
Jul-90	Biannual Interim Monitoring Report, July 1990, Chemoil Refinery, Signal Hill, CA
Jan-91	Biannual Interim Monitoring Report, January 1991, Chemoil Refinery, Signal Hill, CA
Jul-91	Biannual Interim Monitoring Report, July 1991, Chemoil Refinery, Signal Hill, CA
Jan-92	Biannual Interim Monitoring Report, January 1992, Chemoil Refinery, Signal Hill, CA
Jul-92	Biannual Interim Monitoring Report, July 1992, Chemoil Refinery, Signal Hill, CA
Jan-93	Biannual Interim Monitoring Report, January 1993, Chemoil Refinery, Signal Hill, CA
Jul-93	Biannual Interim Monitoring Report, July 1993, Chemoil Refinery, Signal Hill, CA
Jan-94	Biannual Interim Monitoring Report, January 1994, Chemoil Refinery, Signal Hill, CA
Jul-94	Biannual Interim Monitoring Report, July 1994, Chemoil Refinery, Signal Hill, CA
<u>Testa Environmental Corporation</u>	
Jan-95	Biannual Interim Monitoring Report, January 1995, Chemoil Refinery, Signal Hill, CA
Jul-95	Biannual Interim Monitoring Report, July 1995, Chemoil Refinery, Signal Hill, CA
Jan-96	Biannual Interim Monitoring Report, January 1996, Chemoil Refinery, Signal Hill, CA
Jul-96	Biannual Interim Monitoring Report, July 1996, Chemoil Refinery, Signal Hill, CA
Jan-97	Biannual Interim Monitoring Report, January 1997, Chemoil Refinery, Signal Hill, CA
Jul-97	Biannual Interim Monitoring Report, July 1997, Chemoil Refinery, Signal Hill, CA
Dec-97	Proposal for Subsurface Soil Quality Assessment, December 1997, Former Chemoil Refinery, Signal Hill, CA
May-98	Report of Additional Subsurface Assessment and Groundwater Monitoring, May 1998, Former Chemoi Refinery, Signal Hill, CA
Nov-98	Proposed Workplan for Off-site Subsurface Soil and Groundwater Quality Conditions, November 6, 1998, Former Chemoil Refinery, Signal Hill, CA
Aug-99	Report on Additional Subsurface Assessment, August 1999, Former Chemoil Refinery, Signal Hill, CA
Sep-01	Proposed Workplan for Subsurface Assessment, Eastern Parcel, Former Chemoil Refinery, Signal Hill, CA
Nov-01	Report on Additional Subsurface Assessment, Eastern Parcel, Former Chemoil Refinery, Signal Hill, CA
Mar-02	Proposed Remedial Action Plan, Eastern Parcel, Former Chemoil Refinery, Signal Hill, CA
Jun-02	Revised Remedial Action Plan, Eastern Parcel, Former Chemoil Refinery, Signal Hill, CA
Jul-02	Report on Quarterly Groundwater Quality, July 2002, Former Chemoil Refinery, Signal Hill, CA

TABLE 2-2

CHRONOLOGY OF PERTINENT ACTIVITIES AND REGULATORY EVENTS

Date	Event/Activity
Pre-1922	Dairy Farm
MacMillan Ring-Free Oil Company Era	
1922/Aug-88	Refinery operated by MacMillan Ring-Free Oil Company.
Late-85/Oct-86	Subsurface assessment and characterization commenced.
Mar-87	Quarterly groundwater quality monitoring program commenced.
Mar-87	LNAPL recovery program implemented with recovery wells R-4 and R-6; both hydrocarbon impacted groundwater and LNAPL is recovered.
Jul-88	Biannual groundwater monitoring program commenced.
Dec-88	LNAPL recovery well R-5 is installed.
Chemoil Refining Corporation - Signal Hill Holding Company (SHHC) Era	
Aug-88	Refinery purchased by Chemoil Refining Corporation.
Aug-88	Biannual groundwater monitoring and LNAPL recovery programs continued.
Dec-94	LNAPL recovery system terminated; continued with episodic hand bailing of LNAPL in R-4 with CRWQCB-LAR approval.
Dec-94	Approximately 253,902 barrels of total fluids recovered, with approximately 27.9 barrels of LNAPL recovered.
Aug-95	Preliminary assessment of Gundry Avenue Property, situated immediately west of the Western Parcel, was performed to evaluate potential off-site environmental impact.
1997	All above and below ground structures dismantled and removed, along with dismantling of the waste water system.
Oct-97	Chemoil Refining Corporation changed its name to Signal Hill Holding Corporation.
May-98	Additional subsurface assessment performed.
Nov-98	Additional subsurface assessment, including off-site to the south, to assess potential health risk to residential area performed.
Jul-99/Oct-01	Hiatus from groundwater monitoring.
Aug-01	Meeting with CRWQCB-LAR on August 29, 2001, to discuss development-driven site closure, or partial closure, of Eastern Parcel and possibly portions of the Western Parcel at request of SHHC.
Fall 2001	Additional subsurface assessment of Eastern Parcel performed.
Jun-02	Remedial Action Plan (RAP) for Eastern Parcel developed to accommodate sale of site for development; RAP not implemented since development considerations were deferred or ceased; CRWQCB-LAR was notified.
Jul-02	Additional subsurface assessment of Western Parcel considered and workplan prepared reflecting development interests; workplan not implemented since development considerations were deferred or ceased; CRWQCB-LAR was notified.
Jul-02	Groundwater quality monitoring revised from biannual to quarterly as a result of deferred development considerations, among other factors, and continues to present at request of CRWQCB-LAR.
Jul-05/Mar-06	SHHC in contract to sell property to an entity managed by Richard McAuley, the current manager of MPO Walnut Partners, pursuant to a Stock Purchase Agreement. The proposed sale of SHHC's stock was terminated in March 2006.
May-06/Aug-06	Subsurface assessment performed by Tetra Tech on behalf of development interests. Results generally confirmed previous understanding of site conditions, with indication of high residual saturation at smear zone along western perimeter of site in proximity of former LNAPL recovery well R-5.
Oct-08	Additional site characterization proposed and subsequently implemented.
Jan-12	Phase I report completed.
Sep-09	Phase II report completed.
Jan-10	Phase III workplan prepared and work commenced; in progress.
Mar-10	Off site soil gas probe survey south of site, and updated Human Health Risk Assessment completed.
Aug-10	Installation of off site well MW-17 west of site.
Dec-10	Installation of off site well MW-18 south of site.
Feb-11	Installation of off site well MW-19 south of site
Jun-11	Phase III Additional Site Characterization Report completed.
Jun 11-Present	Continued quarterly groundwater gauging and water quality monitoring.

TABLE 2-1
SUMMARY OF PREVIOUS REPORTS

Date	Report Title
Page 2 of 3	
Jul-02	Revised Workplan for Subsurface Assessment, Western Parcel, Former Chemoil Refinery, Signal Hill, CA
Oct-02	Report on Quarterly Groundwater Quality, October 2002, Former Chemoil Refinery, Signal Hill, CA
Jan-03	Report on Quarterly Groundwater Quality, January 2003, Former Chemoil Refinery, Signal Hill, CA
Apr-03	Report on Quarterly Groundwater Quality, April 2003, Former Chemoil Refinery, Signal Hill, CA
Jul-03	Report on Quarterly Groundwater Quality, July 2003, Former Chemoil Refinery, Signal Hill, CA
Oct-03	Report on Quarterly Groundwater Quality, October 2003, Former Chemoil Refinery, Signal Hill, CA
Jan-04	Report on Quarterly Groundwater Quality, January 2004, Former Chemoil Refinery, Signal Hill, CA
Apr-04	Report on Quarterly Groundwater Quality, April 2004, Former Chemoil Refinery, Signal Hill, CA
Jul-04	Report on Quarterly Groundwater Quality, July 2004, Former Chemoil Refinery, Signal Hill, CA
Oct-04	Report on Quarterly Groundwater Quality, October 2004, Former Chemoil Refinery, Signal Hill, CA
Jan-05	Report on Quarterly Groundwater Quality, January 2005, Former Chemoil Refinery, Signal Hill, CA
Apr-05	Report on Quarterly Groundwater Quality, April 2005, Former Chemoil Refinery, Signal Hill, CA
Jul-05	Report on Quarterly Groundwater Quality, July 2005, Former Chemoil Refinery, Signal Hill, CA
Oct-05	Report on Quarterly Groundwater Quality, October 2005, Former Chemoil Refinery, Signal Hill, CA
Jan-06	Report on Quarterly Groundwater Quality, January 2006, Former Chemoil Refinery, Signal Hill, CA
Apr-06	Report on Quarterly Groundwater Quality, April 2006, Former Chemoil Refinery, Signal Hill, CA
Jul-06	Report on Quarterly Groundwater Quality, July 2006, Former Chemoil Refinery, Signal Hill, CA
Oct-06	Report on Quarterly Groundwater Quality, October 2006, Former Chemoil Refinery, Signal Hill, CA
Jan-07	Report on Quarterly Groundwater Quality, January 2007, Former Chemoil Refinery, Signal Hill, CA
Apr-07	Report on Quarterly Groundwater Quality, April 2007, Former Chemoil Refinery, Signal Hill, CA
Jul-07	Report on Quarterly Groundwater Quality, July 2007, Former Chemoil Refinery, Signal Hill, CA
Oct-07	Report on Quarterly Groundwater Quality, October 2007, Former Chemoil Refinery, Signal Hill, CA
Jan-08	Report on Quarterly Groundwater Quality, January 2008, Former Chemoil Refinery, Signal Hill, CA
Apr-08	Report on Quarterly Groundwater Quality, April 2008, Former Chemoil Refinery, Signal Hill, CA
Jul-08	Report on Quarterly Groundwater Quality, July 2008, Former Chemoil Refinery, Signal Hill, CA
Oct-08	Report on Quarterly Groundwater Quality, October 2008, Former Chemoil Refinery, Signal Hill, CA
Oct-08	Revised Proposed Workplan, October 12, 2008, Former Chemoil Refinery, Signal Hill, CA
Jan-09	Report on Phase I Additional Site Characterization, January 2009, Former Chemoil Refinery, Signal Hill, CA
Mar-09	Proposed Phase II Workplan, March 2, 2009, Former Chemoil Refinery, Signal Hill, CA
Apr-09	Report on Quarterly Groundwater Quality, April 2009, Former Chemoil Refinery, Signal Hill, CA
May-09	Revised Proposed Workplan for Soil Gas Survey, May 8, 2009, Former Chemoil Refinery, Signal Hill, CA
Sep-09	Report on Phase II Additional Subsurface Characterization, Former Chemoil Refinery, Signal Hill, CA
Oct-09	Report on Quarterly Groundwater Quality, October 2009, Former Chemoil Refinery, Signal Hill, CA
Jan-10	Report on Quarterly Groundwater Quality, January 2010, Former Chemoil Refinery, Signal Hill, CA
Apr-10	Report on Quarterly Groundwater Quality, April 2010, Former Chemoil Refinery, Signal Hill, CA
Apr-10	Report on Off-Site Soil Gas Survey, Former Chemoil Refinery, Signal Hill, CA
May-10	Report on Updated Human Health Risk Assessment, Former Chemoil Refinery, Signal Hill, CA
Jul-10	Report on Quarterly Groundwater Quality, July 2010, Former Chemoil Refinery Site, Signal Hill, CA
Oct-10	Report on Quarterly Groundwater Quality, October 2010, Former Chemoil Refinery, Signal Hill, CA
Jan-11	Report on Quarterly Groundwater Quality, January 2011, Former Chemoil Refinery, Signal Hill, CA
Apr-11	Report on Quarterly Groundwater Quality, April 2011, Former Chemoil Refinery, Signal Hill, CA
Jun-11	Report on Phase III Additional Site Characterization, Former Chemoil Refinery, Signal Hill, CA
Jul-11	Report on Quarterly Groundwater Quality, July 2011, Former Chemoil Refinery, Signal Hill, CA

APPENDIX C

Encroachment and Boring Permit

CITY OF LONG BEACH

DEPARTMENT OF PUBLIC WORKS

CONTRACTOR/APPLICANT DECLARATION - PLEASE READ CAREFULLY

I hereby make application for a permit to construct the following improvements or to temporarily occupy the following street(s) in the City of Long Beach subject to the applicable provisions of the Long Beach Municipal Code. In consideration of the execution of a permit, the applicant hereby agrees to indemnify, hold harmless and defend the City, its officials, agents, employees and volunteers against all liability, cost, losses, suits, claims, demands, settlements, damages, actions and causes of action, including attorneys' fees sustained as a result of, or arising out of, or in any manner connected with any and all operations authorized or permitted by the permit. Applicant further agrees to comply with all applicable insurance requirements of the Long Beach Municipal Code.

TYPE OF PERMIT: ☐ STREET IMPROVEMENT ☐ TEMPORARY STREET OCCUPANCY ☐ SEWER ☒ EXCAVATION
☐ ENCROACHMENT ☐ DEEDS ☐ R.O.W. VACATIONS ☐ REFUSE TRANSPORTATION

TYPE OF IMPROVEMENT: ☐ Driveway ☐ Sidewalk ☐ Curb & Gutter ☐ Paving ☐ Lighting ☐ Traffic Signal
☐ Landscaping ☐ Storm Drain ☐ Land Development ☐ Other (see description)

TYPE OF ST. OCCUPANCY: ☐ Bin ☐ Material ☐ Structure ☐ Equipment ☐ Fence ☐ Ped. Canopy ☐ Other (see desc.)

TYPE OF FACILITY: (excavations:) ☐ Utility ☐ Pipeline ☒ Other (see description)

24 HOUR ADVANCE NOTICE IS REQUIRED FOR INSPECTION
BUSINESS HOURS ARE: 7:30 A.M. TO 4:00 P.M.

For Street/Excavation Call: (562) 570-5160
For Sewers Call: (562) 570-2382

SEE SPECIAL CONDITIONS ATTACHED ☒

Government Code Section 4216.2 requires a "DIG ALERT IDENTIFICATION NUMBER" be issued before a "permit to excavate" be valid. For DIG ALERT I. D. NO. call underground service alert at (800)422-4133 two (2) days before you dig.

Approved by: RC
For City Engineer

Signed: [Signature]
Permittee

LOCATION 2001 WALNUT AVE		RECEIPT NO. 0452469	DATE 05/24/12	PROJECT NO. P0557135
DESCRIPTION 10 SOIL BORINGS @ VARIOUS LOCATIONS FOR SIGNAL HILL HOLDING CO		AREA 4B		
OWNER LAND, SOUTHERN PACIFIC		OCCUPANCY	PLANNING	
ADDRESS 2001 WALNUT AVE		ASSESSOR NO. 7210034903	ZONE I	
CITY LONG BEACH CA 90806		FSB	S	RSB
		CENSUS TR. 5733.00		
PERMITTEE CONSULTANTS, GEOSYNTEC		TRANSACTIONS PUBLIC WORKS Per \$12,330.00		
CONTRACTOR GEOSYNTEC CONSULTANTS, INC.		SURCHARGE \$764.46		
ADDRESS 1111 BROADWAY 600				
CITY OAKLAND	STATE CA	ZIP CODE 94607	PHONE 510-285-2792	
STATE LICENSE NO. P0000379		CITY LICENSE NO.		
ARCHITECT/ENGINEER		LICENSE NO.		
ADDRESS				
CITY	STATE	ZIP CODE	PHONE	
VALUATION	S. R. N. NO. M30002	FRANCHISE/PERMIT NO.		BLDG HEIGHT
LEGAL DESCRIPTION THE AMER.COL.TR. POR.OF LOTS 114 & 121		PAID BY CHECK		FEES \$13,094.46

Paid By: INC., GEOSYNTEC CONSULTANTS

Check # 190804

PUBLIC WORKS	PUBLIC WORKS	TOTAL FEE	12330.00
INPUT SQ FEET	10 @	1233.00 Input Sq Ft Fee	12330.00

SPECIAL CONDITIONS

To be attached and made a part of

Excavation Permit No. 557135

Issued – 5/24/2012

Permittee – Geosyntec Consultants, Inc.

Work Location – 2001 Walnut Avenue

Project Description – Perform one soil boring (each labeled GW/SV) for the Signal Hill Holding Company (regarding a former Chemoil Refinery at 2020 Walnut Avenue) at the following 10 locations:

1. GW/SV-20 on the north side of the east/west alley north of Wesley Drive and 120-feet east of the centerline of Orchard Lane.
2. GW/SV-21 on the north side of the east/west alley north of 20th Street and approx. 440-feet west of the centerline of Wesley Drive.
3. GW/SV-22 on the north side of Wesley Drive approx. 350-feet west of the centerline of where Wesley Drive angles southeasrtly.
4. GW/SV-23 on the north side of the east/west alley north of 20th Street and approx. 180-feet west of the centerline of Wesley Drive.
5. GW/SV-24 on the north side of the east/west alley north of 20th Street and approx. 660-feet west of the centerline of Wesley Drive.
6. GW/SV-25 on the northerly side of Wesley Drive approx. 250-feet northwesterly of the intersection of 20th Street and Walnut Avenue.
7. GW/SV-26 on the south side of 20th Street 320-feet west of the centerline of Walnut Avenue.
8. GW/SV-27 on the south side of 20th Street 600-feet west of the centerline of Walnut Avenue.
9. GW/SV-28 on the west side of Walnut Avenue 130-feet south of the centerline of 20th Street.
10. GW/SV-29 at the intersection of Smith Place and Orchard Lane.

****Permittee is responsible for making all required notifications.****

1. Notify the City of Long Beach, Public Works, Construction Inspection at (562) 570-5160, 48 hours prior to excavation. Please provide the following information:
 - Name of the permittee.
 - The permit number.
 - Type of construction.
 - Starting date and time of construction.
 - The name and telephone number of the permittee's representative who will be present at the work site.
 - The Underground Service Alert ticket number.
 - The permittee shall notify the City inspector of the daily work in progress and the type of inspection required.
2. After work begins, the permittee shall notify the City inspector of the daily work in progress and the type of inspection required. Failure to contact the City inspector or the use of unacceptable materials or unacceptable work shall result in a "Stop Construction Notice," being issued. Work shall not resume until corrections have been made.
3. California Government Code Section 4216.9 (a state law) requires you to obtain a DigAlert identification number before this "permit to excavate" can be valid. To get your DigAlert identification number, call Underground Service Alert of Southern California a.k.a. DigAlert (www.digalert.org) at 8-1-1 at least two working days, but not



more than 14 days before digging. In the case of an emergency, call 1 (800) 922-3459 (24-hrs) or 1 (800) 227-2600, State One Call Center Number.

4. Permittee shall comply with all applicable laws, ordinances, rules and regulations of and obtain permits from all federal, state and local governmental authorities having jurisdiction over the permit area and Permittee's use thereof.
5. If for any reason the City determines that these permit fees (if any) are considered to be inadequate to cover its costs, the City reserves the right to collect additional fees.
6. If and when temporary "NO PARKING" signs are used for this work, they shall be placed at least twenty-four (24) hours before hand and have the following information printed on them:
 - The name of the permittee/company or City Department performing the work.
 - The type of work being done.
 - The phone number to call for information about the work.
 - The starting date and ending date of the parking restriction.
 - The starting time and ending time of the parking restriction.
 - The emergency phone number of the permittee or contractor.
 - The applicable excavation permit number.

Temporary "NO PARKING" signs can be obtained from the City of Long Beach, Public Works, Construction Inspection Section on the 10th Floor of City Hall.

7. Long Beach Municipal Code (LBMC) Chapter 14.08 states that:
 - This permit is not transferable.
 - This permit shall be kept at the work site and be shown on demand to a City representative.
 - The permittee shall comply with California Government Code Section 4216, and following, concerning Underground Service Alert paint markings (and any other construction related markings). These markings shall not be made more than 14 days prior to the start of work and the markings shall be removed upon completion of the work. Consult with the Public Works Inspector for an approved removal method.
 - The City Engineer may revoke this permit unless the work begins within (60) sixty days after its issuance and is diligently performed to completion, in the sole opinion of the City Engineer.
 - All spoils, debris and excess materials shall be removed from the work site within 3 days after the completion of the work.
 - Permittee shall, at their sole expense, within ten (10) days after receipt of written notification from the City Engineer to do so, remove any improvement or facilities or, with the prior approval of the City Engineer, relocate them to a site designated by the City Engineer if at any time the improvement or facilities interfere with the use, repair, improvement, widening, change in grade, or relocation of any right-of-way or highway, or interfere with the construction of any subway, viaduct or other underground conduit or structure of any kind.
 - Any pavement restored by the permittee shall be maintained by permittee for a period of one (1) year after the completion of the work. If the permittee fails to maintain the pavement during this period, the permittee will be given a 5-day notice to repair or restore the pavement. If the permittee does not repair or restore the pavement, the City may have the work done and charge its cost plus 25% to the permittee.
8. General liability insurance and a general liability endorsement shall be maintained by the permittee during the term of this permit. Permittee shall provide renewals before its existing insurance expires. Should permittee's insurance expire before completion of its permitted work, they shall stop all work and make the right-of way safe until they have provided replacement insurance which must be approved by the City Manager and the City Attorney before work may begin again.

9. Standard working hours shall be restricted to between 7:30 a.m. and 3:30 p.m. Additional work hour restrictions for certain streets may be stated further below in these special conditions, in the attached "Traffic Control Requirements" and/or in the attached traffic control plan(s).
10. If this work is not in compliance with the City's noise ordinance, Daniel Philips, Environmental Health Bureau, (562) 570-4297, shall be notified and the work hours shall be revised to be in compliance.
11. The Contractor shall become familiarized with all existing installations, both public and private, on the work site and shall provide adequate safeguards to prevent damage to existing structures and improvements. Any damage to property from any cause, which might have been prevented by the Contractor, the Contractor's employees, agents or subcontractors, shall be repaired within 10 calendar days after such damage at the Contractor's own cost and expense. Any and all water service breaks shall be repaired the same day.
12. Should the contractor damage or find a groundwater monitoring well conflicting with the planned installation, the contractor shall immediately call the City's Franchise Supervisor at (562) 570-6530 with the well's location in order to contact the owner for the well's repair or relocation.
13. Approval of the attached plans by the City of Long Beach does not constitute a representation as to the accuracy of the location or the existence or non-existence of any underground utility pipe or structure within the limits of this project. The contractor is required to take due precautionary measures to protect the utility lines shown and any other line not on record or not shown on these plans. All utility lines and structures that may be damaged on account to the contractor's operations shall be repaired or replaced at the contractor's expense, to the satisfaction of the City.
14. The Contractor shall obtain a permit from California Division of Industrial Safety for the construction of trenches or excavation which are five feet or deeper. Sheeting, shoring and bracing for the trench excavation shall conform to the requirements of "Construction Safety Orders," Title 8, Division of Industrial Safety, State of California. Contact one of the Cal/OSHA Enforcement Unit district office nearest you: **Los Angeles**, 320 West 4th Street, Ste. 850, Los Angeles 90013, (213) 576-7451, fax (213) 576-7461; **Santa Ana**, 2000 E. McFadden Ave., Ste 122, Santa Ana 92705, (714) 558-4451, fax (714) 558-2035; **Torrance**, 680 Knox Street, Ste. 100, Torrance 90502, (310) 516-3734, fax (310) 516-4253. Or check the web at: <http://www.dir.ca.gov/dosh/DistrictOffices.htm>.
15. Any changes made to the approved plan issued with this permit (such as a change in the permitted facility's location or its route) shall require approval by the City Engineer before starting or continuing any work. Provide seven sets of revised plans for approval before starting or continuing any work.
16. Removal, adjustment or relocation of utilities or any work on the area of their recorded easements shall be done only with approval of the utility owners, obtained before starting the work.
17. No water or liquids, except potable water, shall be discharged onto city streets at anytime for any reason without proof of a National Pollutant Discharge Elimination System (NPDES) permit. To obtain a NPDES permit call (213) 576-6600.
18. The contractor is required to perform self-inspections to evaluate if minimum appropriate controls to reduce pollutant discharges from entering the storm drain system are being met. Frequent self-inspections are the most effective method to verify implementation of the Best Management Practices (BMP). The contractor shall make weekly self-inspections during the dry season and daily during the rainy season, October 1st through April 15th.
19. Best Management Practices (BMP's) are attached and are made a part of this permit. If the City Engineer, a Public Works inspector or an authorized city representative determines that additional BMP's or corrective steps for existing ones are necessary, permittee shall immediately comply with the requests.
20. The discharge of liquids from concrete truck washouts into storm drains, open ditches, streets, gutters or catch basins is strictly **prohibited**.

21. Paving, street saw cutting and sidewalk saw cutting are prohibited during a storm event of 0.25 inches or greater (except during emergency conditions).
22. If saw cutting P.C.C. sidewalks, do so on the score marks or as directed. **There shall be full sidewalk panel replacements only-no partial panel replacements.**
23. Concrete thrust blocks exist at all tees, bends, crosses and other water main fittings. Contractor shall work with caution when excavating in the vicinity of any thrust block. Contractor shall not disturb thrust blocks.
24. A minimum of 12-inches clearance shall be provided between the facilities to be installed and any City of Long Beach facility crossed, including concrete encasement or sand cement slurry used as backfill. No part of any City of Long Beach facility is to be included within any concrete encasement or sand cement slurry backfill.
25. If 12-inches of separation cannot be made between the installation and any existing City of Long Beach, Gas & Oil Department gas line, the permittee shall contact the Long Beach Gas & Oil-Corrosion Prevention Section at (562) 570-2083 for specific procedures.
26. Extreme caution shall be exercised to avoid breaking sewer house and gas service lateral connections. In case of accidental or unavoidable breakage or disturbance, reconstruction shall be in accordance with the City of Long Beach Standard Specifications.
27. Do not disturb local depressions, concrete cross gutters or concrete bus stop street pads. If they are disturbed, the entire structure shall be replaced by the permittee.
28. Do not disturb decorative/patterned concrete or decorative/patterned asphaltic or concrete pavement. If encountered, notify the City of Long Beach, Construction Inspection office at (562) 570-5160 for approval to remove and instructions for replacement. If disturbed, the entire decorative/patterned asphaltic or concrete pavement shall be wholly replaced by the permittee.
29. Any landscaping or sprinklers disturbed by the construction shall be restored by the permittee.
30. A "Notice of Construction" shall be written by the permittee, and then shall be approved by a City of Long Beach, Public Works Inspector. After such approval, the notice shall then be delivered to the affected residences, property owners and businesses at least one (1) week in advance of any work. An outline for the notice is attached.
31. The City Traffic Engineer (562) 570-6331 and the Construction Inspection Section (562) 570-5160, shall be notified 24 hours before the removal of any striping, pavement markings, legends or raised pavement markers. All striping, legends and crosswalk striping removal shall be done by grinding. They shall be restored as directed by the City Traffic Engineer. The contractor shall make such replacement with like materials (i.e., thermoplastic replacing thermoplastic, paint replacing paint) and this shall be done in accordance with the City of Long Beach Standards and Specifications.
32. Existing traffic signal loop detectors damaged by construction shall be replaced in kind to match existing within five (5) working days. All loops shall be cut four-inches deep and advance loops shall have four (4) turns.
33. The permittee shall be responsible for resetting any disturbed or destroyed centerline monuments, benchmarks, or property line corners to the satisfaction of the City Engineer. Replace brass cap, spike & washer, etc...with same. See City Standard No. 202 for replacing Type "C" monuments.
34. Notify Long Beach Transit, of any work affecting public bus stops. Contact John Carlson at (562) 808-8801, 48 hours prior to start of work.
35. Slurry seal shall be applied to permanent asphaltic concrete patch unless otherwise directed by the Public Works Inspector.

36. Patch all soil boring/coring holes to match existing conditions.
37. This permit shall be issued pending the review, approval and issuance of a permit for the same borings by the City of Long Beach, Department of Health & Human Services (562) 570-4134.

38. **PARTIAL LIST OF AGENCIES TO CALL IN THE EVENT OF A PIPELINE SPILL:**

You are required by law to report all significant releases or suspected significant releases of hazardous materials including oil.

- To report a spill, call the following agencies:
 1. Dial 911.
 2. Call County of Los Angeles Hotline (800) 303-0003.
 3. Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).
 4. Call City of Long Beach Department of Public Works Inspection (562) 570-6150.
 5. Airport Dispatch (562) 570-2640 for spills on Airport property only.
- For spills of "Federal Reportable Quantities" of oil, chemicals, or other hazardous materials to land, air, or water, notify the National Response Center (800-424-8802). If you are not sure whether the spill is of a "reportable quantity," call the federal Environmental Protection Agency (800) 424-9346 for clarification.
- For further information, see California Hazardous Material Spill/Release Notification Guidance (State Office of Emergency Services, Hazardous Materials Division).
- Agencies to call if you find or suspect contaminated soil or groundwater
 - Regional Water Quality Control Board:
 - Los Angeles Basin (213) 266-7500
 - California Environmental Protection Agency (Cal EPA), Department of Toxic Substances Control (DTSC) (510) 540-3732
- Documents and available resources
 - From State Water Resources Control Board (SWRCB) (916) 341-5250
 - General Construction Activity Storm Water Permit
 - California Storm Water Best Management Practice Handbook Construction Activity
 - From Cal EPA, DTSC (916) 322-3670
 - Waste Minimization for the Building Construction Industry Fact Sheet

39. Either when the permit is issued or at any time thereafter until the completion of work or end of the temporary occupancy, the City Engineer may require additional conditions as he finds reasonably necessary for the protection of the right-of-way or highway, for the prevention of undue interference with traffic, or to assure the safety of persons using the right-of-way or highway.
40. The City Engineer reserves the right to adjust the working days and/or working hours as he finds reasonably necessary for the elimination of operational impacts to any school affected by the work allowed under this permit.
41. In accordance with Long Beach Municipal Code Sections 14.08.120(A.5), 14.08.130 & 14.08.320, the City Engineer reserves the right to: revoke the permit if work does not begin within sixty days, refuse to issue a permit if the permittee has previously failed or refused to comply with Chapter 14.08, or may stop any work if it is dangerous, unsafe, or a menace to life, health or property.

*******41 SPECIAL CONDITIONS ISSUED*******

CONTRACTOR'S LETTERHEAD

(INCLUDING ADDRESS AND PHONE NUMBER)

Date

Dear Resident/Property Owner/Business Owner:

The City of Long Beach has issued a revocable permit to CONTRACTOR'S NAME to DESCRIBE THE WORK TO BE DONE IN DETAIL. The following street(s) will be impacted NAME STREET(S) BOUND BY CROSS STREETS.

Construction work is scheduled to begin on PROPOSED DATE and to end on PROPOSED DATE. Working hours will be restricted to between 7:30 A.M. AND 3:30 P.M. (OR) 8:30 A.M. AND 3:30 P.M. (SEE THE SPECIAL CONDITIONS AND THE TRAFFIC CONTROL REQUIREMENTS FOR ALLOWED TIMES.)

Please use caution when driving in the construction area and obey all construction signs, including the temporary "No Parking" signs. Your help in the prevention of sprinkler run-off from your property into the construction area would be greatly appreciated.

Thank you for your cooperation and patience during construction. We will make every attempt to reduce any inconvenience you may experience.

If you have any inquiries, please call CONTACT NAME AND PHONE NUMBER or the City of Long Beach, Public Work's Inspection Section at (562) 570-5160.

Sincerely,

CONTRACTOR NAME AND TITLE



City of Long Beach

Department of Public Works

Working Together to Serve

STANDARD TRAFFIC CONTROL REQUIREMENTS

1. It is the responsibility of the contractor performing work on a public street to install and maintain the traffic devices during the construction.
2. All signs, delineators, barricades, etc. and their installation shall conform to the FHWA Manual on Traffic Control Devices (MUTCD) 2003, California MUTCD 2006, and the Work Area Traffic Control Handbook (WATCH, latest Edition).
3. All delineators shall be equipped with reflective band at nighttime.
4. The City Public Works Department reserves the right to observe these traffic controls plans in use and to make any necessary changes as field conditions warrant. Any changes shall supersede the traffic control plans. The Engineer shall determine exact location of all equipment and traffic control devices.
5. All traffic control devices, stripes, markings, legends and raised pavement markers shall conform to California MUTCD 2006 and Long Beach Standard plans (most recent edition).
6. Maintain a minimum of one travel lane in each direction and all turning movements. Assign a flagman to direct traffic at all time during the construction when number of lanes reduced below one in each direction.
7. All traffic control devices shall be kept in their proper position at all times, and shall be repaired, replaced, or cleaned as necessary to preserve their appearance and continuity.
8. All temporary traffic control devices shall be removed following completion of each construction stage and the contractor upon completion of project shall restore the permanent traffic control devices.
9. Contractor shall cover all existing speed limit signs in place and install C17 (25 MPH Road Work Speed Limit Sign) during construction.
10. Contractor shall cover or remove all conflicting signs.
11. Maintain existing pedestrian access or establish detour route.
12. Return all roadways to their full traffic usage by plating or backfilling the excavation, when construction is not being performed.

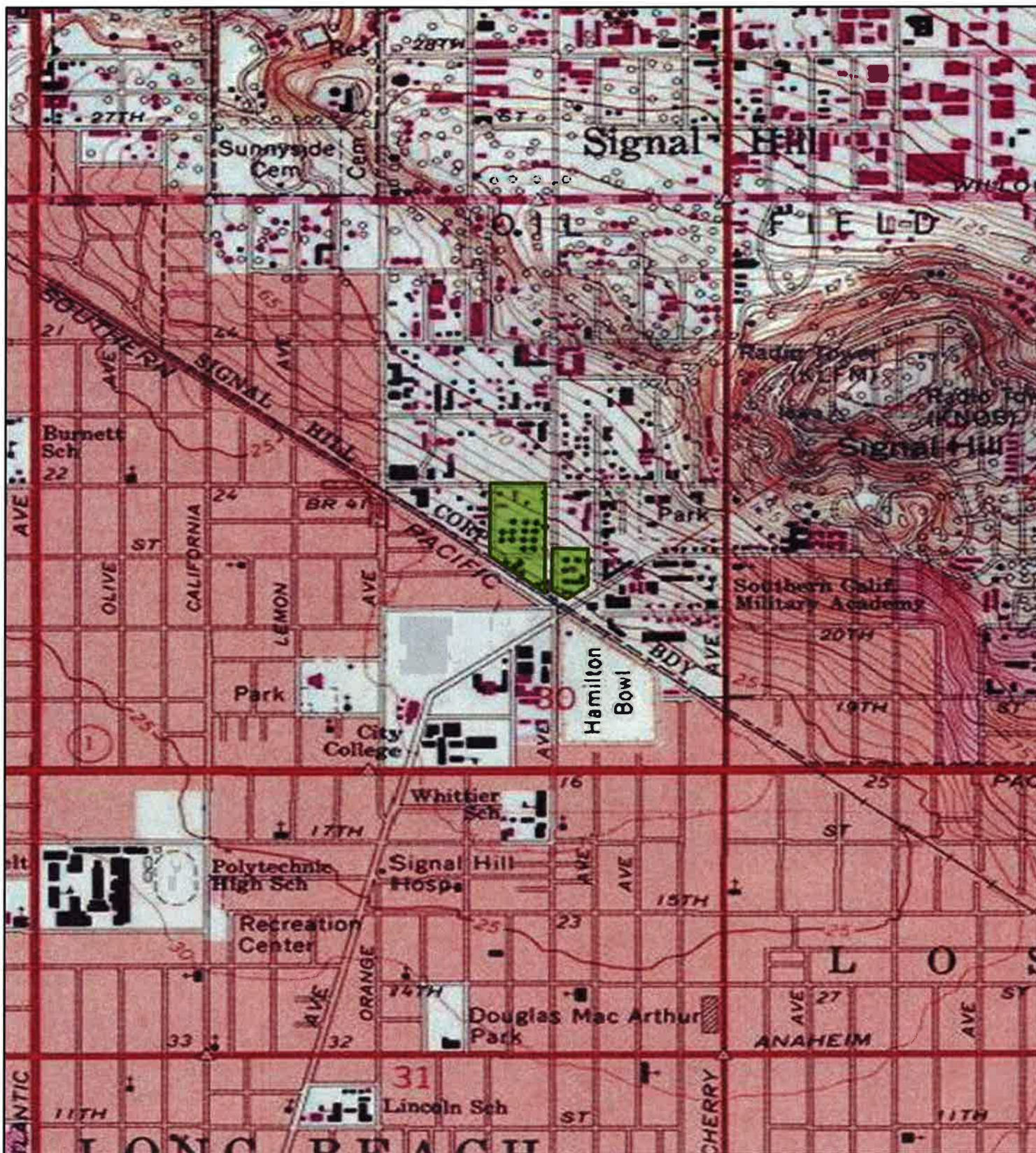


CITY OF LONG BEACH DEPARTMENT OF HEALTH & HUMAN SERVICES

2525 GRAND AVENUE • LONG BEACH, CALIFORNIA 90815 • (562) 570-4000

APPLICATION FOR WELL PERMIT

Type of Delivery: <input type="checkbox"/> mail <input checked="" type="checkbox"/> fax <input checked="" type="checkbox"/> pick-up FEDEX ✓		
Tel. No.: (510) 5224	Fax No.: (510) 836-3036	Date: 5/1/12
Type of Permit: (check) #285-2792 <input type="checkbox"/> New Well Construction <input checked="" type="checkbox"/> Destruction - SOIL BORINGS • TEMPORARY WELL POINTS • SOIL VAPOR PROBES		Type of Well: (check) <input type="checkbox"/> Monitoring <input type="checkbox"/> Cathodic <input type="checkbox"/> Private Domestic <input type="checkbox"/> Vapor Extraction <input type="checkbox"/> Public Domestic <input type="checkbox"/> Other No. of wells: _____ <input checked="" type="checkbox"/> Soil Boring
Well Owner Name: SIGNAL HILL HOLDING CO. Address: 900 SOUTH NORFOLK ST. #350 City: SAN MATEO, CA. Phone: 415 935 8225		Site Address Site Map: _____ <input checked="" type="checkbox"/> Site plan attached RESIDENTIAL AREA NORTHWEST OF E. WESLEY AND E. 20TH ST.
Consulting Firm: GEOCYNTEL CONSULTANTS Address: 1111 BROADWAY, SUITE 600 City, State & Zip: OAKLAND, CA 94607 Phone: 510 836 3034		Construction/Destruction Method Type of casing, method of sealing, etc. (Use additional sheet or attachments) PERONITE GROUT
Drilling Company: GREGG DRILLING + TESTING Address: 2726 WALNUT AVE City: SIGNAL HILL, CA 90755 Phone: 562 427 6899		
Proposed Start Date: MAY 21, 2012		
I hereby agree to comply in every respect with all regulations of the Long Beach Department of Health and Human Services and with all ordinances and laws of the City of Long Beach and of the State of California pertaining to well construction, reconstruction and destruction. Upon completion of well and within ten days thereafter, I will furnish the Long Beach Department of Health and Human Services with a complete log of the well, giving date drilled, depth of well, all perforations in casing, and any other data deemed necessary by other city agencies. Applications Signature: Robert Chen Print Name: ROBERT CHEN		Disposition of Application: (For Office Use Only) <input type="checkbox"/> Approved with Conditions <input type="checkbox"/> Denied Date: _____ If denied or approved with conditions, report reason or conditions here: _____ _____ Approved By: _____



Legend

Site Boundary



0 1,250 2,500 Feet

Site Location Map

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

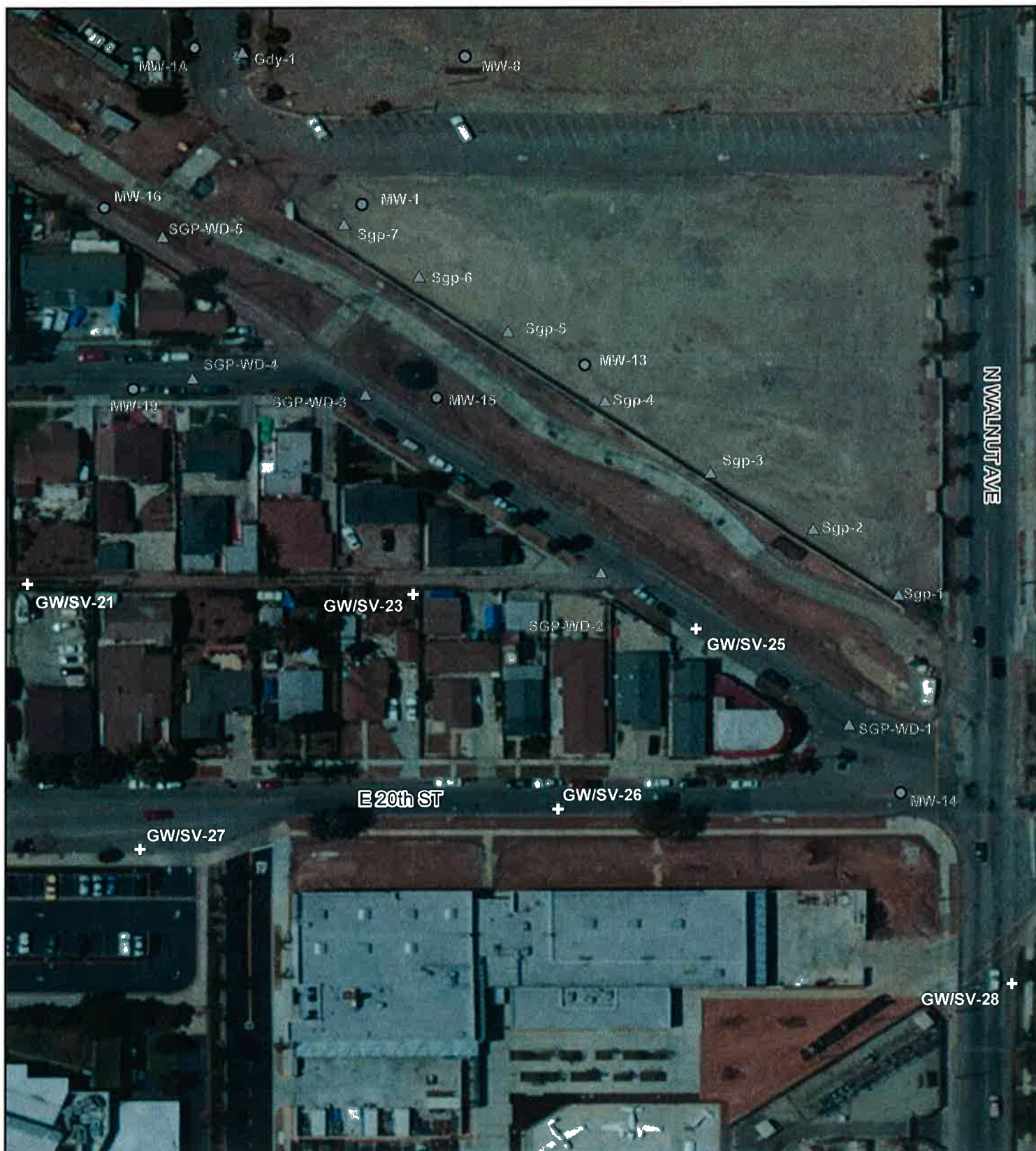
Geosyntec[®]
consultants

Figure

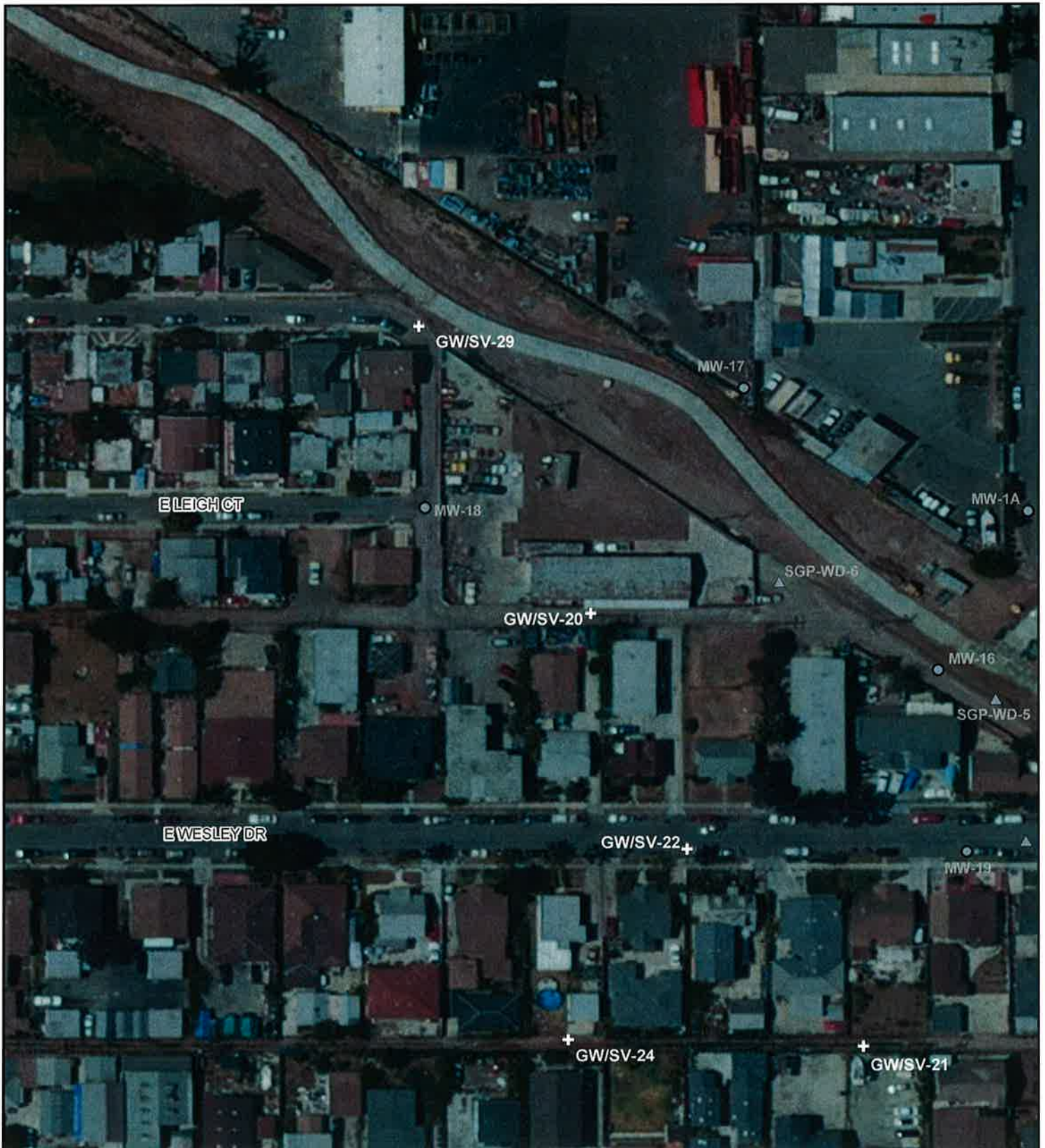
1

WA 1598

March 2012



<p>Legend</p> <ul style="list-style-type: none"> Monitoring Well Soil Gas Probe Proposed Soil, Soil Gas, and Grab Goundwater Sampling Locations <p>NOTE: Approximate locations of monitoring well and soil gas probes from Testa Environmental Corporation June 11 Report on Phase II Additional Site Characterization</p> <p>0 100 200 Feet</p>	<p>Proposed Soil, Soil Gas, and Grab Groundwater Sampling Locations</p> <p>Former Chemoil Refinery 2020 Walnut Avenue, Signal Hill, CA</p>	
	<p>Geosyntec consultants</p>	<p>Figure 2a</p>



Legend

- Monitoring Well
- ▲ Soil Gas Probe
- ⊕ Proposed Soil, Soil Gas, and Grab Goundwater Sampling Locations

NOTE: Approximate locations of monitoring well and soil gas probes from Testa Environmental Corporation June 11 Report on Phase II Additional Site Characterization



Proposed Soil, Soil Gas, and Grab Groundwater Sampling Locations

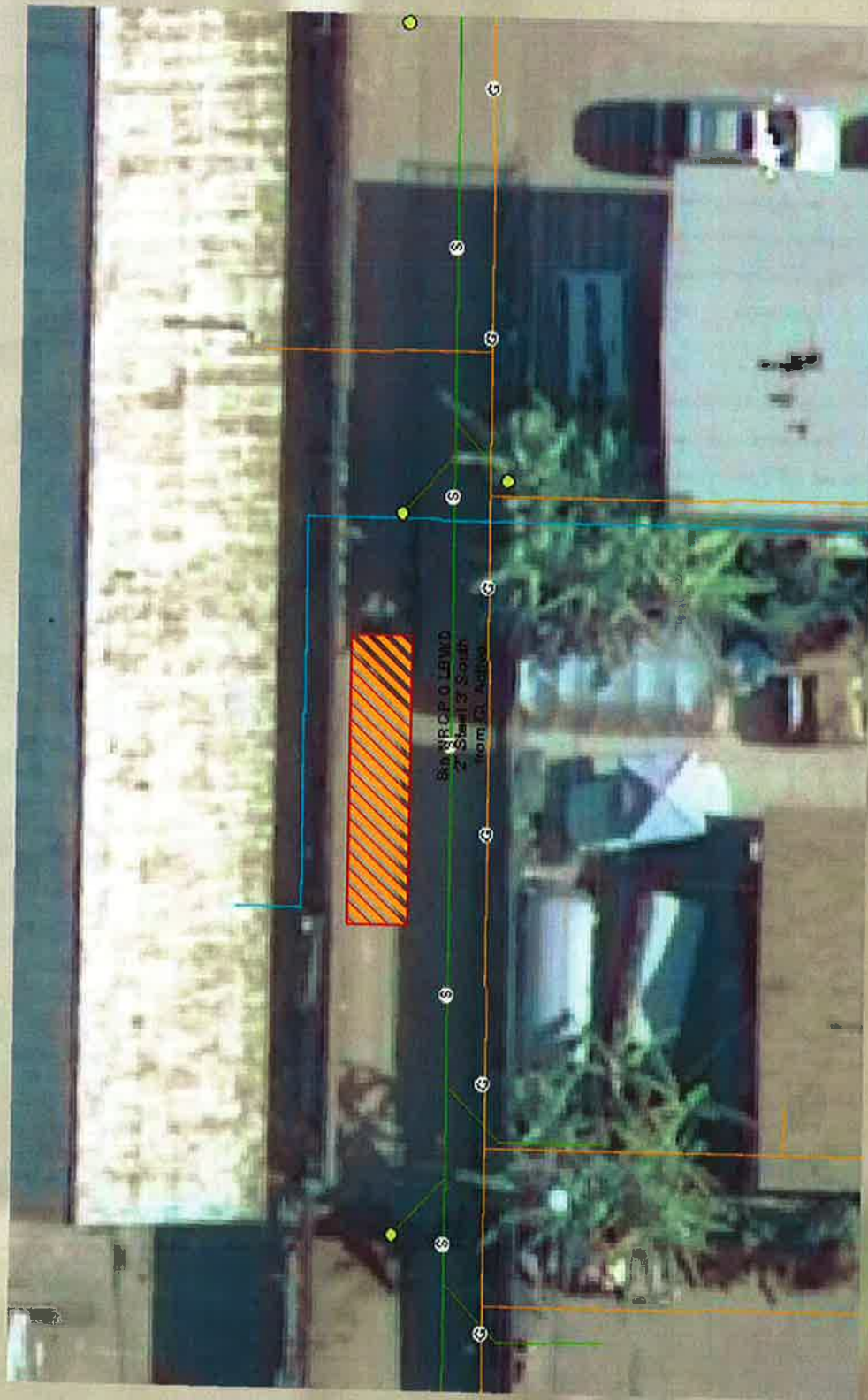
Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants


Figure
2b

WA 1598

April 2012



Legend

 Proposed Work Area



Proposed Work Area Boring GW/SV-20

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

WA 1598

April 2012

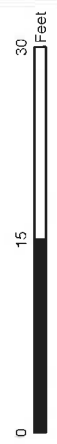
Figure

3



Legend

 Proposed Work Area



Proposed Work Area
Boring GW/SV-21
 Former Chemoil Refinery
 2020 Walnut Avenue, Signal Hill, CA

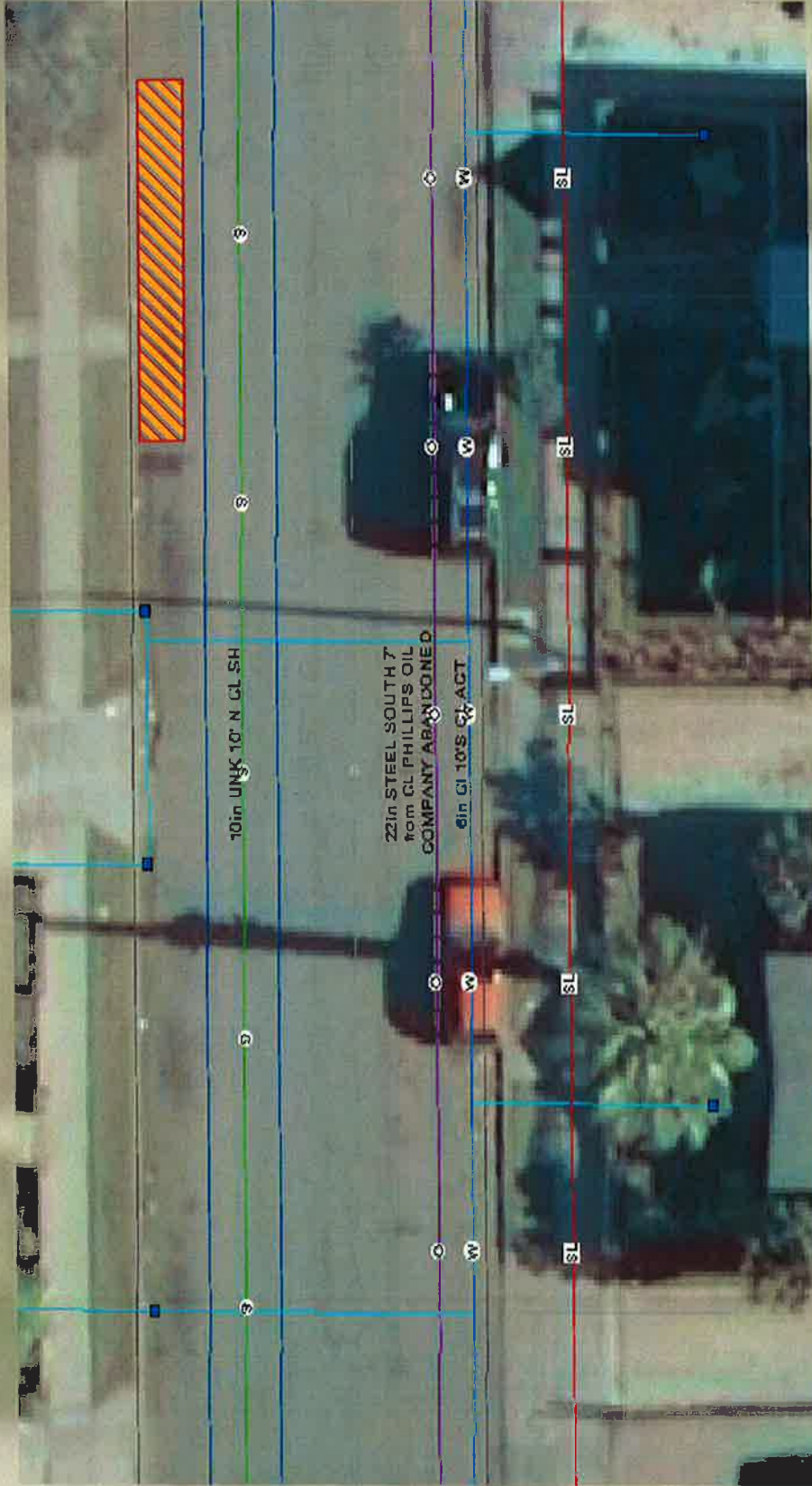
Geosyntec
 consultants

Figure


4

WA 1598

April 2012



Legend

 Proposed Work Area

Proposed Work Area Boring GW/SV-22

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA


Geosyntec
consultants

Figure

5

WA 1598

April 2012



Legend

 Proposed Work Area

**Proposed Work Area
Boring GW/SV-23**

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

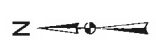
Geosyntec
consultants

Figure

6


WA 1598

April 2012





Legend

 Proposed Work Area

Proposed Work Area Boring GW/SV-24

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec

consultants

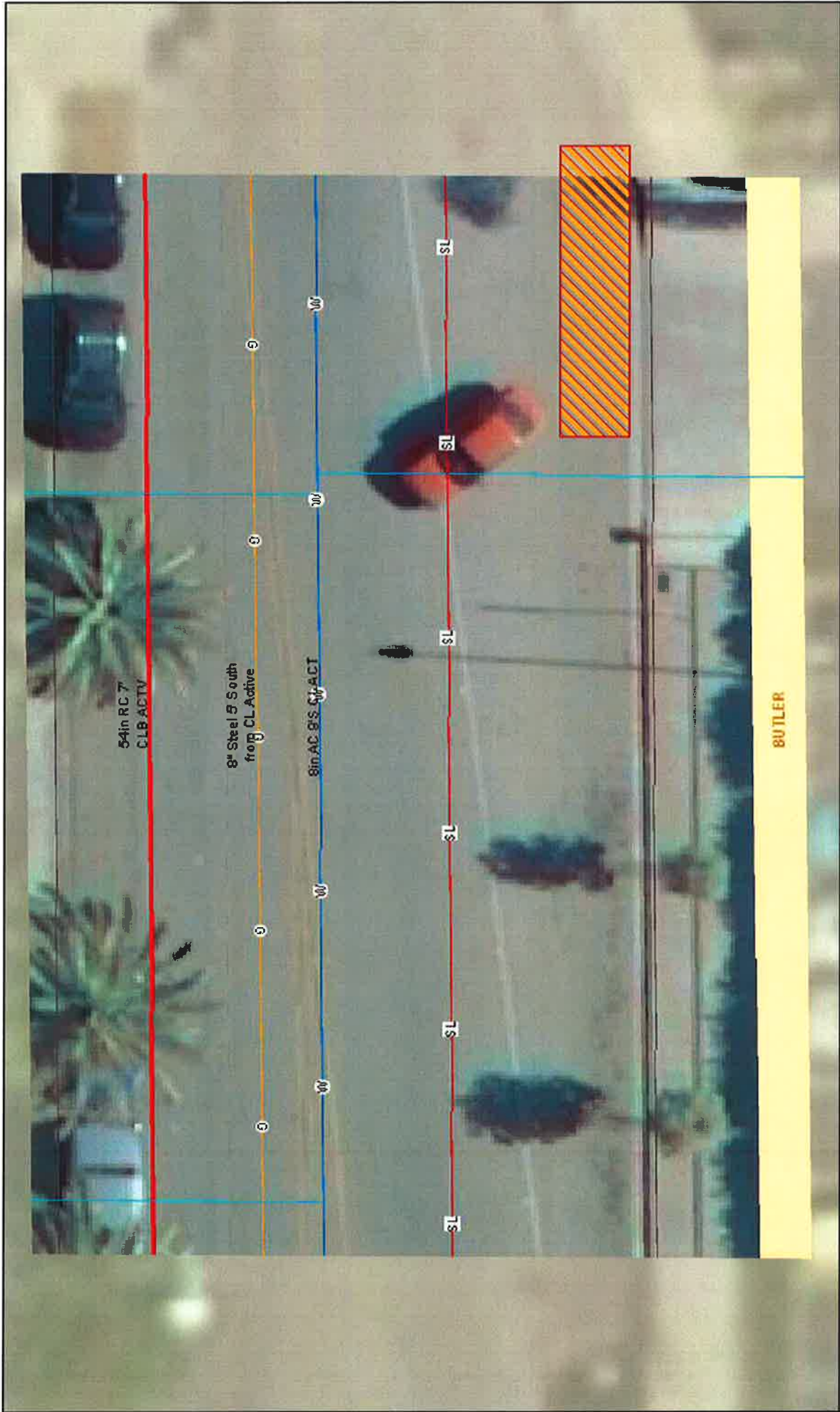
Figure

7


WA 1598

April 2012

0 25 50 Feet



Legend

 Proposed Work Area



**Proposed Work Area
Boring GW/SV-27**

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

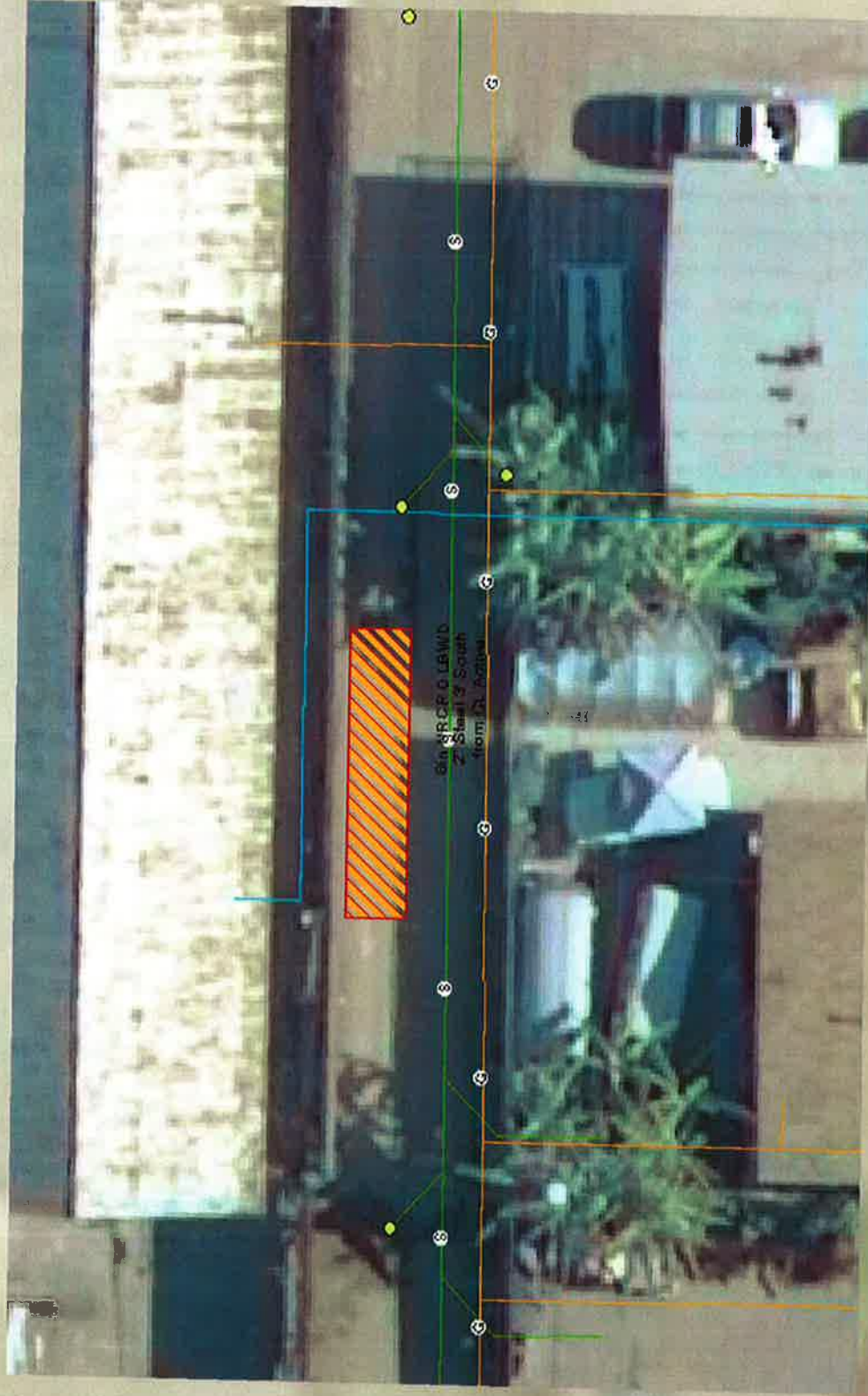
Geosyntec
consultants

WA 1598


April 2012

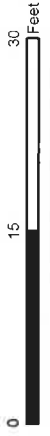
Figure

10



Legend

 Proposed Work Area



Proposed Work Area Boring GW/SV-20

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

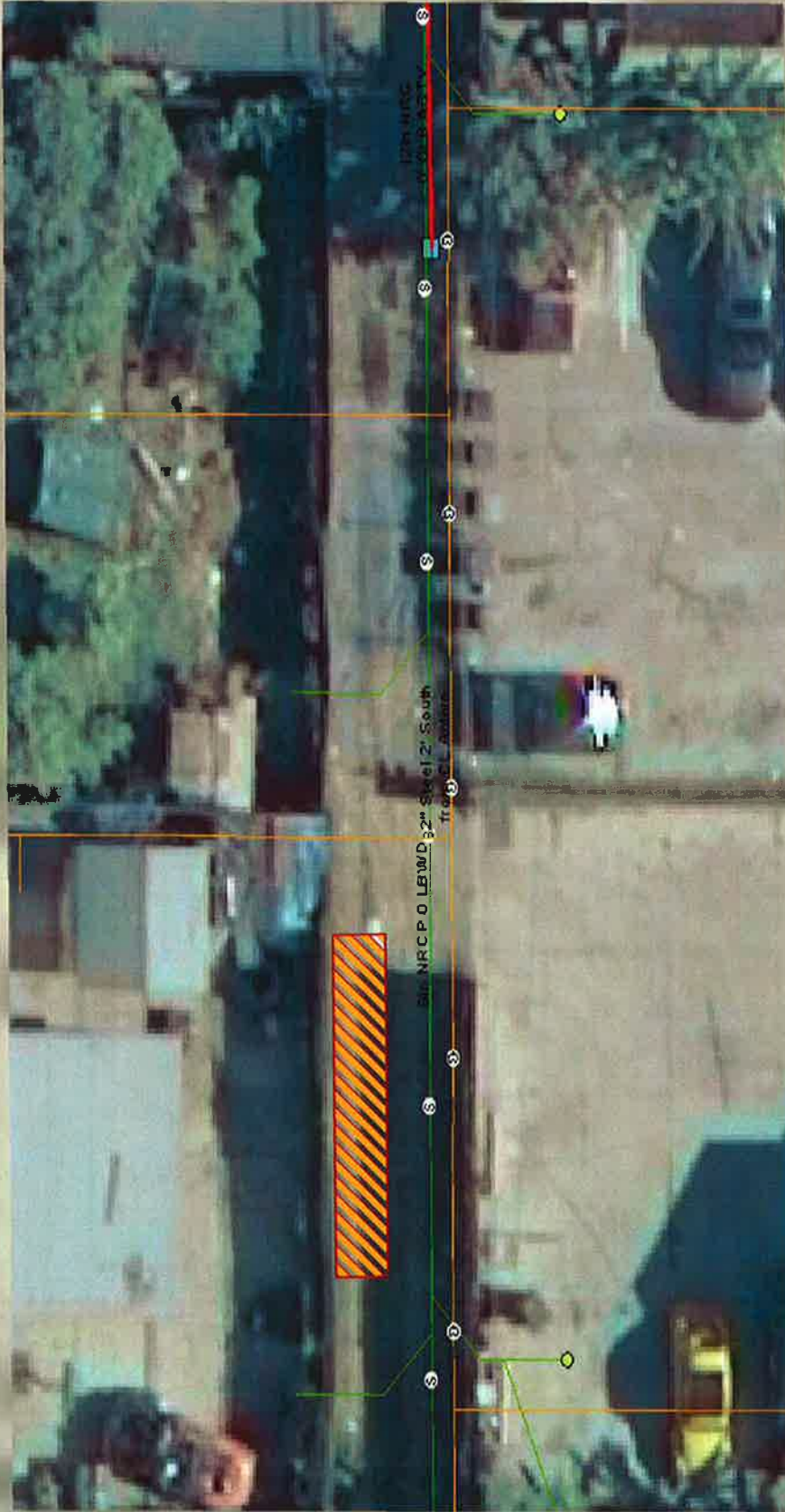
Geosyntec
consultants

Figure


3

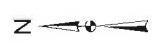
WA 1598

April 2012



Legend

 Proposed Work Area



Proposed Work Area Boring GW/SV-21

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

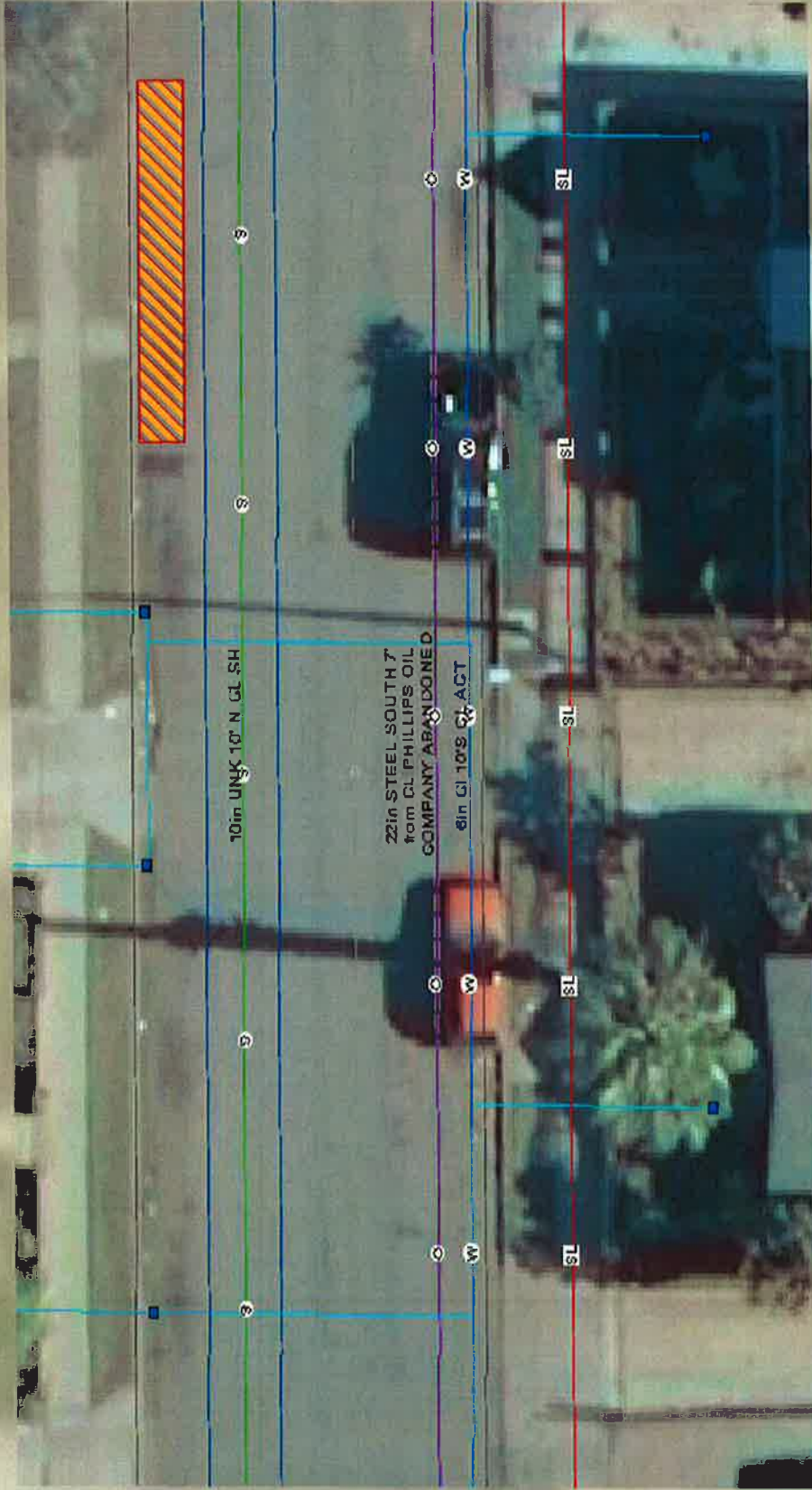
 **Geosyntec**
consultants

Figure


4

WA 1598

April 2012



Legend

 Proposed Work Area



Proposed Work Area Boring GW/SV-22

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

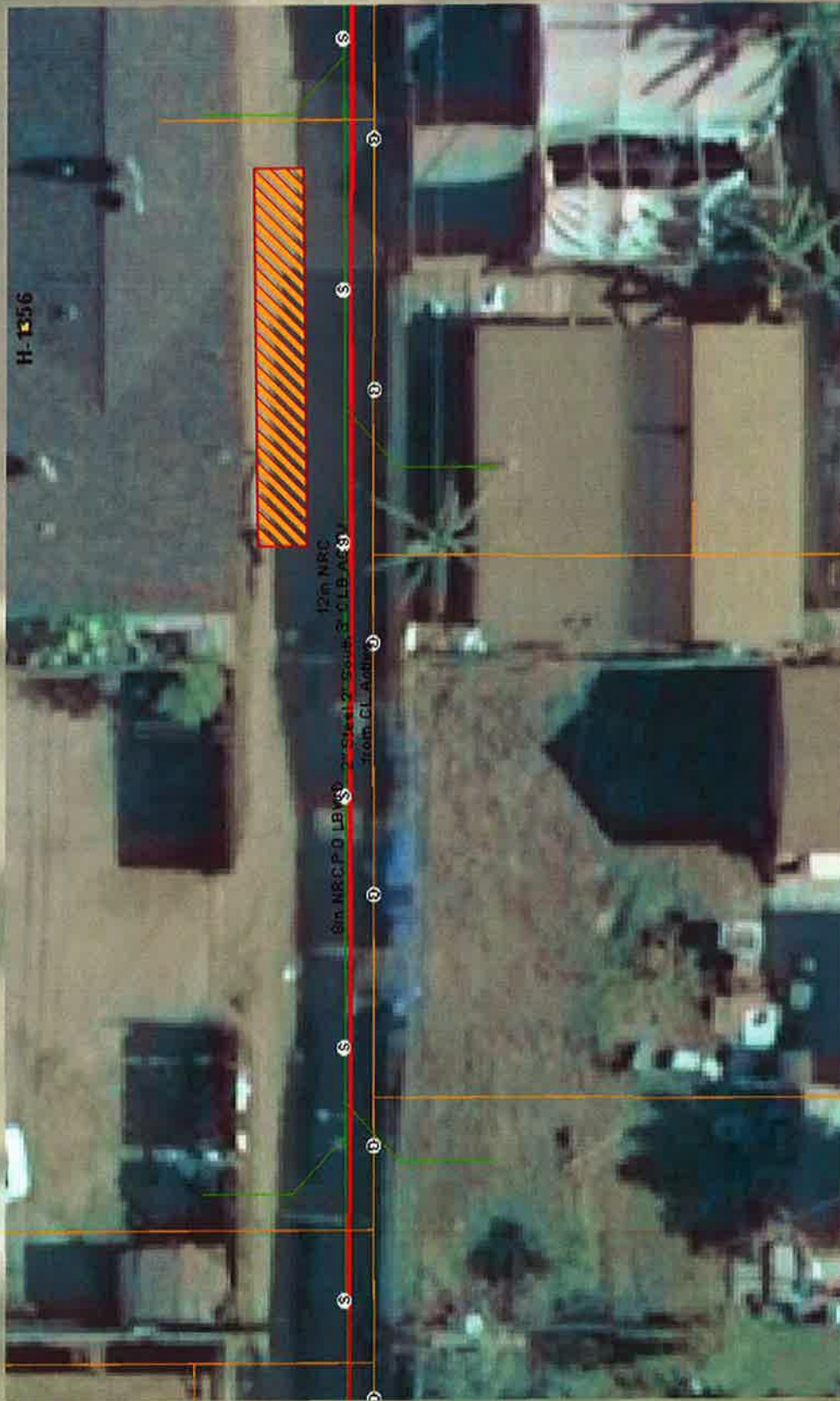
Geosyntec
consultants

Figure

5

WA 1598

April 2012



Legend

Proposed Work Area

Proposed Work Area Boring GW/SV-23

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

Figure


6

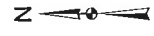
WA 1598

April 2012



Legend

 Proposed Work Area



Proposed Work Area Boring GW/SV-24

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

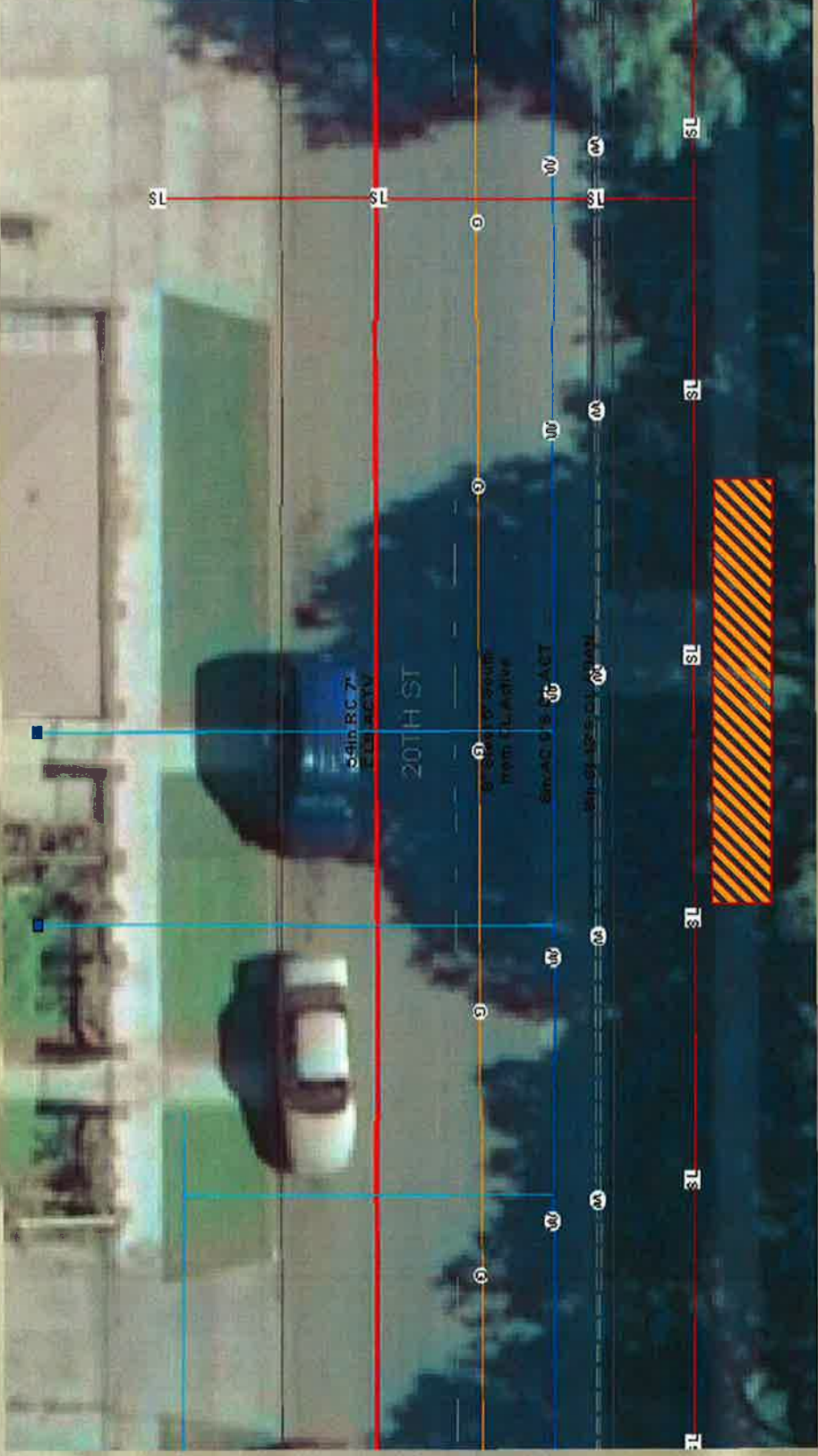
Geosyntec
consultants

Figure


7

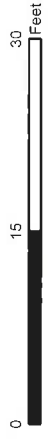
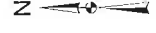
WA 1598

April 2012



Legend

 Proposed Work Area



Proposed Work Area
Boring GW/SV-26
 Former Chemoil Refinery
 2020 Walnut Avenue, Signal Hill, CA

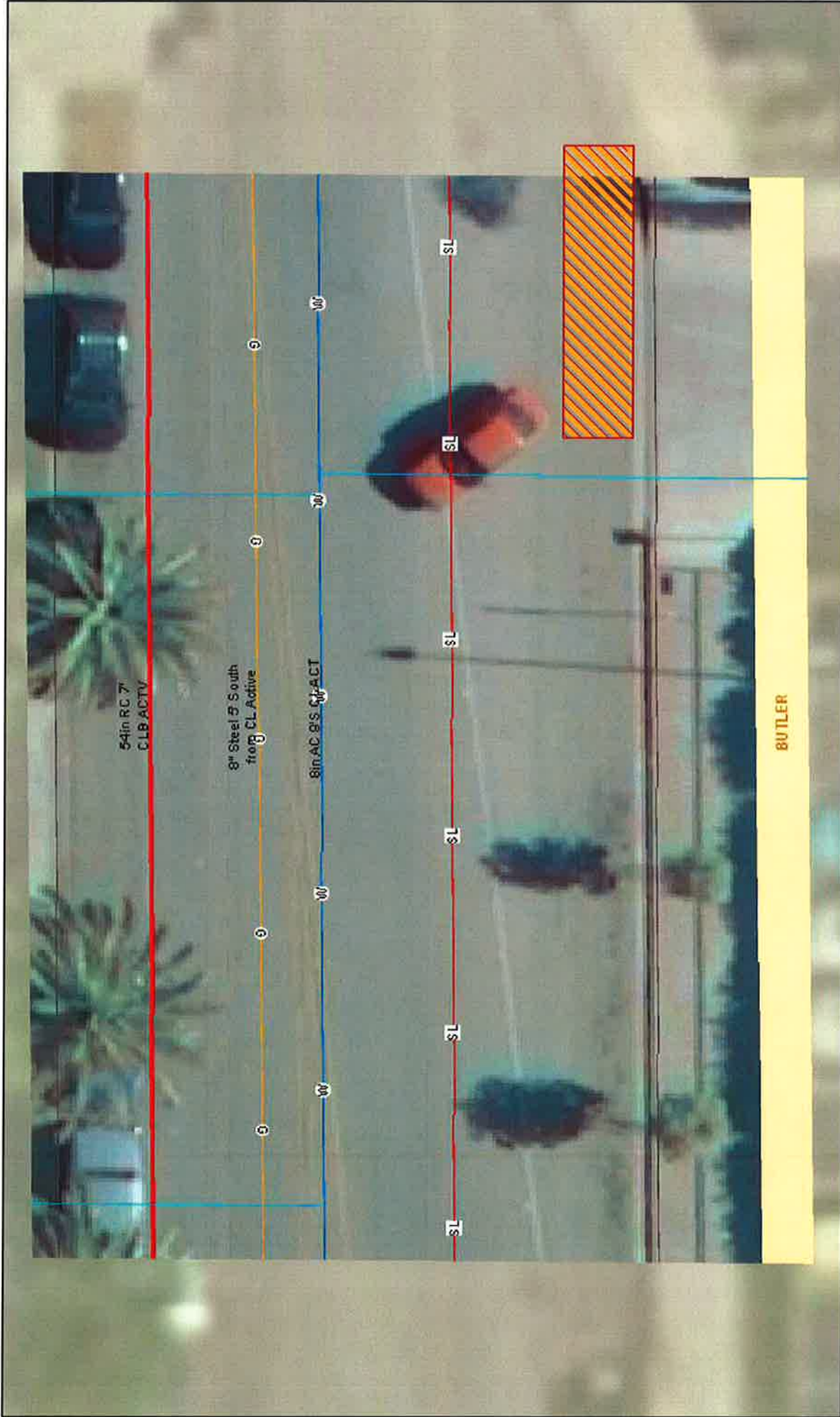
Geosyntec
 consultants

Figure

9

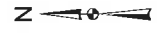
WA 1598

April 2012



Legend

 Proposed Work Area



Proposed Work Area
Boring GW/SV-27
 Former Chemoil Refinery
 2020 Walnut Avenue, Signal Hill, CA

Geosyntec
 consultants

Figure


10

WA 1598

April 2012



Legend

 Proposed Work Area



Proposed Work Area
Boring GW/SV-29
 Former Chemoil Refinery
 2020 Walnut Avenue, Signal Hill, CA

Geosyntec
 consultants

WA 1598

April 2012

Figure

12



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

March 28, 2012

Mr. Jerome Lorenzo
Signal Hill Holding Corporation
1900 South Norfolk Street, Suite 350
San Mateo, CA 94403

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7009 2820 0001 6537 5531

**SUBJECT: APPROVAL OF WORK PLAN FOR ADDITIONAL OFF-SITE
ENVIRONMENTAL INVESTIGATION, PURSUANT TO CALIFORNIA
WATER CODE SECTION 13267 ORDER**

**SITE: FORMER CHEMOIL REFINERY FACILITY, 2020 WALNUT AVENUE,
SIGNAL HILL, CALIFORNIA (SCP NO. 0453A, SITE ID NO. 2047W00)**

Dear Mr. Lorenzo:

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) staff reviewed a report titled "Work Plan for Additional Off-site Environmental Investigation, Former Chemoil Refinery (work plan)" dated March 9, 2012, prepared by Geosyntec Consultants (Geosyntec) on behalf of the Signal Hill Holding Corporation (SHHC). The work plan is in response to Investigative Orders issued by the Regional Board on November 19, 2008, and March 24, 2009. The November 19, 2008 Order directed SHHC to submit a technical work plan to address data gaps for developing a site closure strategy, and the March 24, 2009 Order directed you to submit a soil gas survey work plan for all areas with potential receptors.

The work plan proposes to advance ten (10) companion borings in offsite residential locations, as illustrated in Figure 2, in order to characterize the off-site extent of petroleum hydrocarbons in soil vapor and groundwater. The results of the proposed investigation will be incorporated into a remedial design to control the migration of petroleum hydrocarbons originating from the Site.

Based on our review of the information submitted to the Regional Board, Regional Board staff concurs with the proposed work plan. Prior to the commencement of any field work, you must develop a site-specific Health and Safety Plan (H&SP) in accordance with section 5192 of the California Code of Regulations (CCR), title 8 and submit it to the Regional Board project staff. The jurisdictional agency, the California Occupational Safety and Health Administration (Cal-OSHA), may inspect the field activities.

MARIA MEHRANIAN, CHAIR | SAM UNGER, EXECUTIVE OFFICER

320 West 4th St., Suite 200, Los Angeles, CA 90013 | www.waterboards.ca.gov/losangeles

Mr. Jerome Lorenzo
Signal Hill Holding Corporation

- 2 -

March 28, 2012

Pursuant to section 13267 of the California Water Code (CWC), you are required to implement the approved Work Plan, and submit the required technical report results to the Regional Board by **July 15, 2012**, for our review and approval. The technical report is required to be submitted under the CWC section 13267 Order. The new due date above is an amendment to the Item No. 4 of the Investigative Order dated March 24, 2009, and the Investigative Order dated November 19, 2008.

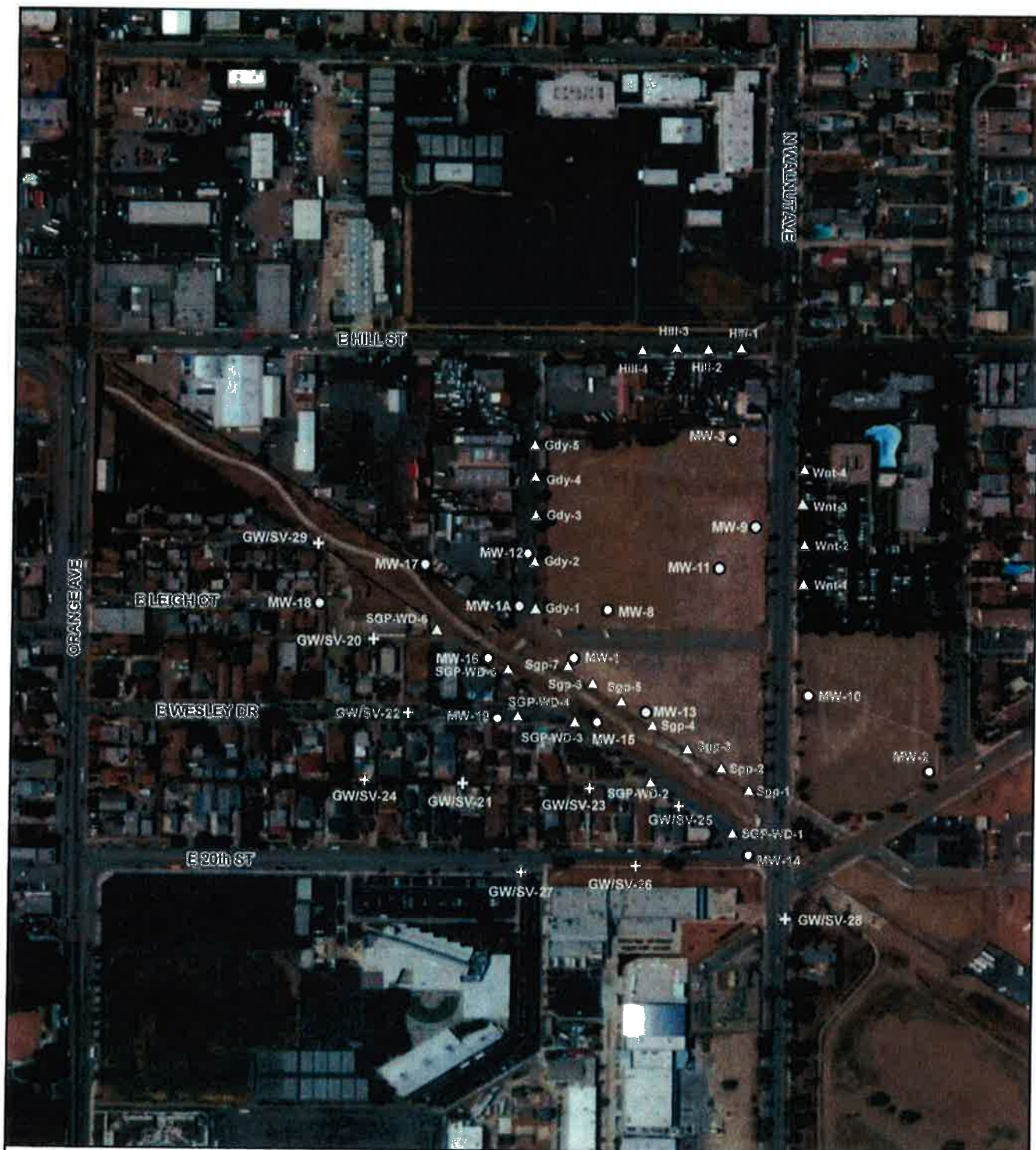
If you have any questions, please contact Ms. Ann Lin at (213) 576-6781.

Sincerely,


Samuel Unger, P.E.
Executive Officer

Enclosed: Figure 2 Proposed Soil, Soil Gas, and Grab Groundwater Sampling Locations.

cc: Dave Roseman, City of Long Beach Traffic Engineer.
Dave.Roseman@longbeach.gov
Russell Caveness, City of Long Beach Encroachment Permitting.
Russell.Caveness@longbeach.gov
Steve Nakauchi, City of Long Beach Boring Permitting.
Steve.Nakauchi@longbeach.gov
Rick McAuley, MPO Walnut Partners, LLC.
rick@aztecgrp.com
Tom Graf, Ground Modifications, Inc. tgraf@groundmod.com
Ravi Arulanantham, Geosyntec. RArulanantham@geosyntec.com



Legend

- Monitoring Well
- △ Soil Gas Probe
- ⊕ Proposed Soil, Soil Gas, and Grab Goundwater Sampling Locations

NOTE: Approximate locations of monitoring well and soil gas probes from Testa Environmental Corporation June 11 Report on Phase II Additional Site Characterization

0 300 600 Feet



Proposed Soil, Soil Gas, and Grab Groundwater Sampling Locations

Former Chemoil Refinery
2020 Walnut Avenue, Signal Hill, CA

Geosyntec
consultants

Figure
2

WA 1598

March 2012

Permit/Project Number _____
Service Request Number _____

Date _____

PUBLIC WORKS PERMIT APPLICATION

PLEASE PRINT

Project Address/Location

RESIDENTIAL AREA - NORTHWEST OF E 20TH ST + WACRECT

Applicant

Firm Name (DBA)

GEOCYNTEC CONSULTANTS

Firm Phone No.

Address

1111 BROADWAY SUITE 600

City

OAKLAND

State

CA

Zip

94607

Contact Name at Job Site

ROBERT CHENG

Contact Phone No.

510 285 2792

State Lic. No.

Class

Expiration Date

City Lic. No.

Expiration Date

Liability Insurance Carrier

GREYLINE INSURANCE

Policy No.

CERTIFICATE 11-12

Expiration Date

9/1/2012

Note: The names listed on the STATE LICENSE, CITY LICENSE, and INSURANCE POLICY must be identical. If they are not, they must be corrected before a permit may be issued.

STREET IMPROVEMENTS

Please indicate quantities for each type of improvement proposed.

IMPROVEMENT	QUANTITY	IMP VALUE
Curb - All Types	LF	
Comb. C & G	LF	
Sidewalk/Apron	SF	
Boring/Coring	#	
TOTAL VALUE		

C.I.B. DWG. NO.

Please complete sketch on back.

TEMPORARY STREET OCCUPANCY

Please indicate type of encroachment required and dimensions of street area to be occupied

- ☐ CONTAINER ☐ FENCE ☐ STRUCTURES
☐ MATERIAL ☐ PED CANOPY ☐ EQUIPMENT

Street area = _____ x _____ = _____ S.F.

The term of the permit is for _____ days beginning on date of issuance. This permit expires on _____.

Please complete sketch on back.

EXCAVATION

Please provide the following information

Purpose of Excavation: _____

Franchise or Permit No. _____

MONITORING WELL DATA

of Mon. Wells _____ Min. Depth B.G.S. _____ Ft.

Print Name _____

Contractor/

Applicant Signature _____

Permit Fee \$ _____

Title/Company _____

Phone No. () _____

24 HOUR EMERGENCY PHONE NUMBER: _____

PERMIT FEE SCHEDULE

EXCAVATION PERMITS FEE SCHEDULE

1. For excavating in streets or other public places, which are surfaced or paved with any surfacing materials or are unimproved, the fee shall be as follows:

Square Feet of Area of Surfacing Removed	Fee
0 to 100	\$ 1,309.45 (1,233.00 + 6.2% surcharge)
101 to 1,000	\$ 1,232.00 + \$1.325/square foot above 100 square feet + 6.2% surcharge
1,001 to 5,000	\$ 1,872.00 + \$0.795/square foot above 1,000 square feet + 6.2% surcharge
5,001 to 10,000	\$ 5,245.00 + \$0.378/square foot above 5,000 square feet + 6.2% surcharge
10,001 +	\$ 7,354.00 + \$0.265/square foot above 10,000 square feet + 6.2% surcharge

2. For excavations in public streets or other public property for the purpose of installing or abandoning groundwater monitoring wells and cathodic protection wells, the fee shall be \$1,463.00 each + 6.2% surcharge.
3. For excavations in public streets or other public property for the purpose of taking soil borings, corings, hydropunches and cone penetration tests, the fee shall be \$1,233.00 each + 6.2% surcharge.
4. For excavations in public streets or other public property for the purpose of adjusting manhole castings, vault frames and well boxes, the fee shall be \$1,233.00 each + 6.2% surcharge.

RES-05-0058 10/6/2005
RES-05-0094 10/27/2005
RES-06-0107 9/12/2006
RES-07-0116 9/11/2007
ORD-31 12/11/2007
RES-08-0107 9/9/2008
RES-09-0007 2/3/2009
RES-09-0099 9/15/2009
RES-11- 0101 9/6/2011

PMT FEE 12.doc

12,330
764.46
13094.46

APPENDIX D

Boring Logs

GS FORM:
OAKLAND

LOG OF GW/SV-20

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT (ML), dark yellowish brown (10YR 3/6), dry, 10% sand, 90% silt, low to medium plasticity, soft, trace mica		0				0		
				GW/SV-20-1					
	Sand content increases slightly, 15% sand, 85% silt			GW/SV-20-3			0		
5			-5	GW/SV-20-4.5			0		
10			-10				0		
	Color change at 12 ft, olive brown (2.5Y 4/4)						0		
	Silty SAND (SM), olive brown (2.5Y 4/4), moist, 80% fine sand, 20% silt, nonplastic fines, soft, mica, quartz, feldspar visible with eye Becomes wet at 14 ft		-15						
15									
	Laminated at 17 ft						0.1		
	Terminate borehole at 17 ft								

CONTRACTOR Gregg Drilling
EQUIPMENT Marl 2.5 Track Mounted
DRILL MTHD Direct Push
DIAMETER (in) 3
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
REVIEWER C. Hernandez
PRINTED 06/29/12

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GS FORM:
OAKLAND

LOG OF GW/SV-21

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT with sand (ML), dark yellowish brown (10YR 4/6), dry, sand is fine, 20% sand, 80% silt, nonplastic, soft, trace mica		0	GW/SV-21-1			0		
				GW/SV-21-3					
5			-5	GW/SV-21-4.5			0		
10	Silty SAND (SM), dark greensih gray (GLEYS 4/1), moist, sand is fine, 80% sand, 20% silt, nonplastic, soft, quartz, mica, feldspar visible		-10				0		
15	Becomes wet at 14 ft		-15				0		
	Terminate borehole at 17 ft						0		

CONTRACTOR Gregg Drilling
EQUIPMENT Warthog HSA
DRILL MTHD HSA
DIAMETER (in) 6
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
REVIEWER C. Hernandez PRINTED 06/29/12

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GS FORM:
OAKLAND

LOG OF GW/SV-22

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT with sand (ML), dark yellowish brown (10YR 3/6), moist, sand is fine, 20% sand, 80% silt, low plasticity, soft, some organic matter, trace mica		0	GW/SV-22-1			0		
				GW/SV-22-3					
				GW/SV-22-3.5					
5			-5	GW/SV-22-4			0		
				GW/SV-22-4.5					
	Color change at 8 ft, olive brown (2.5Y 4/4)								
10			-10				0		
	Silty SAND (SM), olive brown (2.5Y 4/4), moist, 80% sand, 20% silt, low plasticity fines, soft, mica present, trace clay								
	Becomes wet at 14 ft						45.5		
15			-15				81.5		
	Terminate borehole at 17 ft						204		

CONTRACTOR Gregg Drilling
EQUIPMENT Marl 2.5 Track Mounted
DRILL MTHD Direct Push
DIAMETER (in) 3
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
REVIEWER C. Hernandez PRINTED 06/29/12

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GS FORM:
OAKLAND

LOG OF GW/SV-23

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT with sand (ML), dark yellowish brown (10YR 4/4), dry, sand is fine, 20% sand, 80% silt, nonplastic, soft, trace mica, caliche layer at 1 ft		0				0		
				GW/SV-23-1					
				GW/SV-23-3			0		
5			-5	GW/SV-23-4.5			0		
	Color change at 8 ft, very dark grayish brown (2.5 Y 3/2), low plasticity								
10	Silty SAND (SM), very dark greenish gray (Gley 1 3/104), moist, sand is fine, 80% sand, 20% silt, nonplastic fines, very soft, mica, quartz, feldspar visible		-10				0		
	Becomes wet at 13 ft								
15			-15				0		
	Terminate borehole at 17 ft						0		

CONTRACTOR Gregg Drilling
EQUIPMENT Warthog HSA
DRILL MTHD HSA
DIAMETER (in) 6
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
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REMARKS:

COORDINATE SYSTEM:

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GS FORM:
OAKLAND

LOG OF GW/SV-24

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT with sand (ML), dark yellowish brown (10YR 3/6), dry, sand is fine, 20% san, 80% silt, low plasticity, soft, trace mica, caliche present at 1 foot		0				0		
				GW/SV- 24-1					
				GW/SV- 24-3			0		
5	no caliche		-5	GW/SV- 24-4.5			0		
10	Silty SAND (SM), dark yellowish brown (10YR 4/4), dry, sand is fine, 80% fine sand, 20% silt, non plastic fines, soft, mica, quartz, feldspar visible		-10				0		
	Becomes moist at 12 ft								
15	Color change at 14 ft, olive brown (2.5Y 4/4)		-15				0		
	Becomes wet at 15 ft								
	Terminate borehole at 17 ft								

CONTRACTOR Gregg Drilling
EQUIPMENT Warthog HSA
DRILL MTHD HSA
DIAMETER (in) 6
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
REVIEWER C. Hernandez PRINTED 06/29/12

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GS FORM:
OAKLAND

LOG OF GW/SV-25

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT with sand(ML), dark yellowish brown (10YR 3/6), dry, sand is fine, 20% sand, 80% silt, nonplastic, soft, trace mica, mottled		0	GW/SV-25-1			0		
	Color change at 3 ft, very dark grayish brown (2.5Y 3/2), low plasticity			GW/SV-25-3			0		
	Color change at 4 ft, dark brown (10YR 3/3)			GW/SV-25-4.5			0		
5			-5						
	Color change at 9 ft, very dark grayish brown (2.5Y 3/2)								
10	Silty SAND (SM), dark gray (2.5Y 4/1), moist, sand is fine, 95% fine sand, 5% silt, soft, potassium-feldspar mica visible, quartz		-10						
	Becomes wet and slight hydrocarbon odor at 13 ft						0		
15			-15						
	Terminate borehole at 17 ft						24.7		

CONTRACTOR Gregg Drilling
EQUIPMENT Marl 2.5 Track Mounted
DRILL MTHD Direct Push
DIAMETER (in) 3
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
REVIEWER C. Hernandez
PRINTED 06/29/12

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GS FORM:
OAKLAND

LOG OF GW/SV-26

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT with sand (ML), dark yellowish brown (10YR 3/6), dry, sand is fine, 20% sand, 80% silt, low plasticity, soft, trace mica, some iron oxide staining		0				0		
				GW/SV-26-1					
				GW/SV-26-3					
5			-5	GW/SV-26-4.5			0		
10			-10				0		
	Silty SAND (SM), dark yellowish brown, (10YR 4/6), moist, sand is fine, 80% sand, 20% silt, low plasticity fines, soft, mica present								
15	Becomes wet at 14 ft		-15				0		
	Terminate borehole at 17 ft								

CONTRACTOR Gregg Drilling
EQUIPMENT Marl 2.5 Track Mounted
DRILL MTHD Direct Push
DIAMETER (in) 3
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
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REMARKS:

COORDINATE SYSTEM:

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GS FORM:
OAKLAND

LOG OF GW/SV-27

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	SILT with sand (ML), dark yellowish brown (10YR 4/6), dry, sand is fine, 20% sand, 80% silt, low plasticity, soft, trace mica		0				0		
				GW/SV-27-1					
				GW/SV-27-3			0		
5			-5	GW/SV-27-4.5			0		
10			-10				0		
	Silty SAND (SM), olive brown (2.5Y 4/4), moist, sand is fine, 80% fine sand, 20% silt, non plastic fines, soft, abundant mica, quartz, feldspar visible								
	Becomes wet at 14 ft		-15				0		
15									
	Terminate borehole at 17 ft						0		

CONTRACTOR Gregg Drilling
EQUIPMENT Marl 2.5 Track Mounted
DRILL MTHD Direct Push
DIAMETER (in) 3
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
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REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GS FORM:
OAKLAND

LOG OF GW/SV-28

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
	Silty SAND (SM), brown (10YR 5/3), dry, sand is fine, 60% sand, 40% silt, nonplastic, very soft, mica present, some organic material		0	GW/SV-28-1			0		
				GW/SV-28-3					
5			-5	GW/SV-28-4.5					
	SILT (ML), yellowish brown (10YR 5/4), dry, trace fine sand, 5% sand, 95% silt, nonplastic to low plasticity, stiff, mica present						0		
10	Silty SAND (SM), brown (2.5YR 5/3), moist, sand is fine, 70% sand, 30% silt, fines are plastic, medium stiffness, trace mica		-10				0		
	SILT (ML), yellowish brown (10YR 5/4), dry, trace fine sand, 5% sand, 95% silt, nonplastic to low plasticity, stiff, mica present								
15	Silty SAND (SM), brown (2.5YR 5/3), moist, sand is fine, 70% sand, 30% silt, fines are plastic, medium stiffness, trace mica		-15						
	Becomes wet at 17 ft						0		
20			-20						
	Terminate borehole at 21 ft						0		

CONTRACTOR Gregg Drilling
EQUIPMENT Marl 2.5 Track Mounted
DRILL MTHD Direct Push
DIAMETER (in) 3
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
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REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

GS FORM:
OAKLAND

LOG OF GW/SV-29

DEPTH (ft)	MATERIAL DESCRIPTION SOIL NAME (USCS SYMBOL): Color, Moisture, Grain Size and Percentage, Plasticity, Consistency/Density, Other (Odor, Dry Strength, Mineral Content)	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES				TIME	COMMENTS
				NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
0	Sandy SILT (ML), dark yellowish brown (10YR 3/6), dry, sand portion is fine, low to medium plasticity, soft, trace mica		0	GW/SV-29-1			0		
5			-5	GW/SV-29-3 GW/SV-29-3.5 GW/SV-29-4 GW/SV-29-4.5			0		
10	Color change at 11 ft, olive brown (2.5YR 4/4), moist, low to medium plasticity		-10				0		
15	Silty SAND (SM), olive brown (2.5Y 4/4), wet, sand is fine, 70% fine sand, 30% silt, non plastic fines, soft, abundant mica, laminated Becomes wet at 14.5 ft		-15				0		
	Terminate borehole at 17 ft						0		

CONTRACTOR Gregg Drilling
EQUIPMENT Marl 2.5 Track Mounted
DRILL MTHD Direct Push
DIAMETER (in) 3
LOGGER V. Smith

NORTHING
EASTING
ANGLE Vertical
BEARING -----
REVIEWER C. Hernandez PRINTED 06/29/12

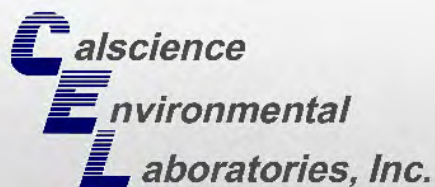
REMARKS:

COORDINATE SYSTEM:

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APPENDIX E

Laboratory Analytical Reports



Supplemental Report 1

The original report has been revised/corrected.



CALSCIENCE

WORK ORDER NUMBER: 12-05-2111

The difference is service



AIR :: SOIL :: WATER :: MARINE CHEMISTRY

Analytical Report For

Client: Geosyntec Consultants

Client Project Name: Former Chemoil Facility / WA1617

Attention: Robert Cheung
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Approved for release on 06/08/2012 by:
Stephen Nowak
Project Manager

ResultLink ▶

Email your PM ▶



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Client Project Name: Former Chemoil Facility / WA1617

Work Order Number: 12-05-2111

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Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946
Units: %v

Project: Former Chemoil Facility / WA1617

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-10	12-05-2111-1-A	05/29/12 17:15	Air	GC 34	N/A	06/01/12 12:10	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	11.9	0.500	1	
Carbon Dioxide	10.1	0.500	1		Nitrogen	78.0	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-28-5	12-05-2111-2-A	05/30/12 09:33	Air	GC 34	N/A	06/01/12 12:48	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	19.3	0.500	1	
Carbon Dioxide	3.06	0.500	1		Nitrogen	77.7	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-26-5	12-05-2111-3-A	05/30/12 10:56	Air	GC 34	N/A	06/01/12 13:21	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	9.40	0.500	1	
Carbon Dioxide	7.19	0.500	1		Nitrogen	83.4	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-26-10	12-05-2111-4-A	05/30/12 11:58	Air	GC 34	N/A	06/01/12 13:53	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	9.89	0.500	1	
Carbon Dioxide	6.78	0.500	1		Nitrogen	83.3	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-25-5	12-05-2111-5-A	05/30/12 14:11	Air	GC 34	N/A	06/01/12 14:28	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	3.61	0.500	1		Oxygen + Argon	5.64	0.500	1	
Carbon Dioxide	9.96	0.500	1		Nitrogen	80.8	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-25-10	12-05-2111-6-A	05/30/12 15:05	Air	GC 34	N/A	06/01/12 21:58	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	5.64	0.500	1		Oxygen + Argon	2.54	0.500	1	
Carbon Dioxide	11.9	0.500	1		Nitrogen	79.9	0.500	1	
Carbon Monoxide	ND	0.500	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
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Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946
Units: %v

Project: Former Chemoil Facility / WA1617

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-5	12-05-2111-7-A	05/31/12 08:15	Air	GC 34	N/A	06/01/12 15:35	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	28.1	0.500	1		Oxygen + Argon	4.52	0.500	1	
Carbon Dioxide	10.7	0.500	1		Nitrogen	56.6	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-22-10	12-05-2111-8-A	05/31/12 09:06	Air	GC 34	N/A	06/01/12 16:07	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	35.2	0.500	1		Oxygen + Argon	2.20	0.500	1	
Carbon Dioxide	15.9	0.500	1		Nitrogen	46.6	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-22-10/Dub	12-05-2111-9-A	05/31/12 09:06	Air	GC 34	N/A	06/01/12 16:53	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	34.9	0.500	1		Oxygen + Argon	2.38	0.500	1	
Carbon Dioxide	15.8	0.500	1		Nitrogen	47.0	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-20-5	12-05-2111-10-A	05/31/12 10:06	Air	GC 34	N/A	06/01/12 17:27	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	16.6	0.500	1	
Carbon Dioxide	3.75	0.500	1		Nitrogen	79.6	0.500	1	
Carbon Monoxide	ND	0.500	1						

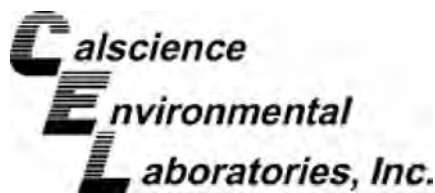
GW/SV-20-10	12-05-2111-11-A	05/31/12 10:46	Air	GC 34	N/A	06/06/12 16:24	120606L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	21.9	0.500	1	
Carbon Dioxide	ND	0.500	1		Nitrogen	78.1	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-29-5	12-05-2111-12-A	05/31/12 11:51	Air	GC 34	N/A	06/01/12 18:32	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	18.0	0.500	1	
Carbon Dioxide	ND	0.500	1		Nitrogen	82.0	0.500	1	
Carbon Monoxide	ND	0.500	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946
Units: %v

Project: Former Chemoil Facility / WA1617

Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-10	12-05-2111-13-A	05/31/12 12:31	Air	GC 34	N/A	06/01/12 19:20	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	15.2	0.500	1	
Carbon Dioxide	1.58	0.500	1		Nitrogen	83.2	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-27-5	12-05-2111-14-A	05/31/12 14:06	Air	GC 34	N/A	06/01/12 19:56	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	11.6	0.500	1	
Carbon Dioxide	4.49	0.500	1		Nitrogen	83.9	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-27-10	12-05-2111-15-A	05/31/12 14:46	Air	GC 34	N/A	06/01/12 20:44	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	12.1	0.500	1	
Carbon Dioxide	4.89	0.500	1		Nitrogen	83.0	0.500	1	
Carbon Monoxide	ND	0.500	1						

Method Blank	099-03-002-1,570	N/A	Air	GC 34	N/A	06/01/12 10:55	120601L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	ND	0.500	1	
Carbon Dioxide	ND	0.500	1		Nitrogen	ND	0.500	1	
Carbon Monoxide	ND	0.500	1						

Method Blank	099-03-002-1,573	N/A	Air	GC 34	N/A	06/06/12 11:27	120606L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	ND	0.500	1	
Carbon Dioxide	ND	0.500	1		Nitrogen	ND	0.500	1	
Carbon Monoxide	ND	0.500	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946 (M)

Project: Former Chemoil Facility / WA1617

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-10	12-05-2111-1-A	05/29/12 17:15	Air	GC 55	N/A	06/01/12 11:48	120601L01

Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-28-5	12-05-2111-2-A	05/30/12 09:33	Air	GC 55	N/A	06/01/12 12:27	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	0.0215	0.0100	1		%v

GW/SV-26-5	12-05-2111-3-A	05/30/12 10:56	Air	GC 55	N/A	06/01/12 12:51	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-26-10	12-05-2111-4-A	05/30/12 11:58	Air	GC 55	N/A	06/01/12 13:14	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-25-5	12-05-2111-5-A	05/30/12 14:11	Air	GC 55	N/A	06/01/12 13:35	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-25-10	12-05-2111-6-A	05/30/12 15:05	Air	GC 55	N/A	06/01/12 14:00	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
1650 Iowa Ave.
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Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946 (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-5	12-05-2111-7-A	05/31/12 08:15	Air	GC 55	N/A	06/01/12 14:28	120601L01

Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-22-10	12-05-2111-8-A	05/31/12 09:06	Air	GC 55	N/A	06/01/12 15:06	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-22-10/Dub	12-05-2111-9-A	05/31/12 09:06	Air	GC 55	N/A	06/01/12 15:32	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-20-5	12-05-2111-10-A	05/31/12 10:06	Air	GC 55	N/A	06/01/12 15:58	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-20-10	12-05-2111-11-A	05/31/12 10:46	Air	GC 55	N/A	06/01/12 18:01	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-29-5	12-05-2111-12-A	05/31/12 11:51	Air	GC 55	N/A	06/01/12 18:27	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946 (M)

Project: Former Chemoil Facility / WA1617

Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-10	12-05-2111-13-A	05/31/12 12:31	Air	GC 55	N/A	06/01/12 18:49	120601L01

Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-27-5	12-05-2111-14-A	05/31/12 14:06	Air	GC 55	N/A	06/01/12 19:16	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-27-10	12-05-2111-15-A	05/31/12 14:46	Air	GC 55	N/A	06/01/12 19:38	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

Method Blank	099-12-872-277	N/A	Air	GC 55	N/A	06/01/12 11:03	120601L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v
Hydrogen	ND	0.0100	1		%v

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Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

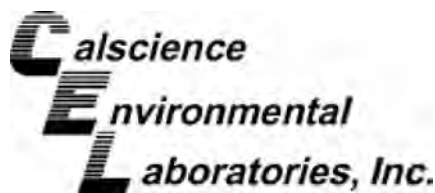
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-10	12-05-2111-1-A	05/29/12 17:15	Air	GC/MS YY	N/A	06/02/12 03:11	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	29	4.8	1		Ethanol	12	9.4	1	
Benzene	2.3	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	8.3	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	11	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	ND	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	93	57-129			1,2-Dichloroethane-d4	82	47-137		
Toluene-d8	94	78-156							

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Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

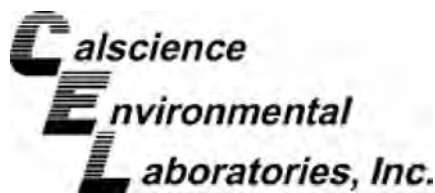
Page 2 of 18

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-5	12-05-2111-2-A	05/30/12 09:33	Air	GC/MS YY	N/A	06/02/12 04:04	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	25	4.8	1		Ethanol	ND	9.4	1	
Benzene	3.9	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	7.5	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	6.9	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	2.9	2.2	1	
Chloroform	12	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	ND	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	5.2	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	93	57-129			1,2-Dichloroethane-d4	84	47-137		
Toluene-d8	97	78-156							

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RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

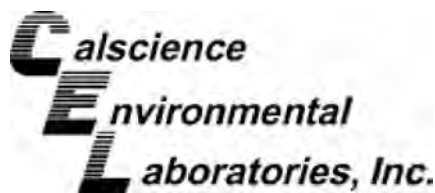
Page 3 of 18

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-5	12-05-2111-3-A	05/30/12 10:56	Air	GC/MS YY	N/A	06/02/12 04:59	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	17	4.8	1		Ethanol	ND	9.4	1	
Benzene	3.6	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	ND	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	ND	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	25	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	3.3	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	4.2	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	57-129			1,2-Dichloroethane-d4	83	47-137		
Toluene-d8	93	78-156							

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RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

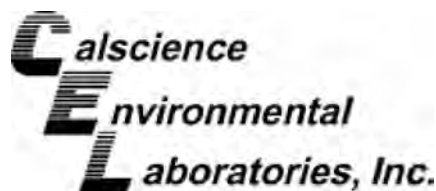
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-10	12-05-2111-4-A	05/30/12 11:58	Air	GC/MS YY	N/A	06/02/12 05:51	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	14	4.8	1		Ethanol	ND	9.4	1	
Benzene	ND	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	ND	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	ND	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	28	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	92	57-129			1,2-Dichloroethane-d4	85	47-137		
Toluene-d8	102	78-156							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

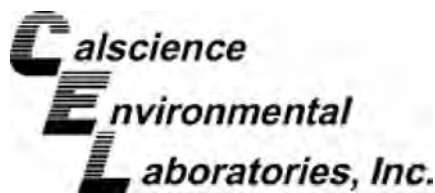
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-5	12-05-2111-5-A	05/30/12 14:11	Air	GC/MS YY	N/A	06/02/12 06:46	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	16	4.8	1		Ethanol	ND	9.4	1	
Benzene	19	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	11	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	18	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	14	2.2	1	
Chloroform	3.5	2.4	1		p/m-Xylene	30	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	ND	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	20	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	2.8	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	8.0	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	131	57-129	2,7		1,2-Dichloroethane-d4	82	47-137		
Toluene-d8	93	78-156							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-10	12-05-2111-6-A	05/30/12 15:05	Air	GC/MS YY	N/A	06/02/12 07:41	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	4.8	1		Ethanol	ND	9.4	1	
Benzene	1.9	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	8.1	4.4	1		Methyl-t-Butyl Ether (MTBE)	9.0	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	ND	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	ND	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	105	57-129			1,2-Dichloroethane-d4	82	47-137		
Toluene-d8	97	78-156							

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RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

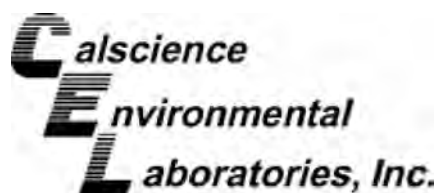
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-5	12-05-2111-7-A	05/31/12 08:15	Air	GC/MS K	N/A	06/06/12 03:13	120605L01

Comment(s): - Reporting limits elevated due to matrix interferences.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	220	46.2		Ethanol	ND	440	46.2	
Benzene	ND	74	46.2		Ethyl-t-Butyl Ether (ETBE)	ND	390	46.2	
Benzyl Chloride	ND	360	46.2		Ethylbenzene	ND	100	46.2	
Bromodichloromethane	ND	150	46.2		4-Ethyltoluene	ND	110	46.2	
Bromoform	ND	240	46.2		Hexachloro-1,3-Butadiene	ND	740	46.2	
Bromomethane	ND	90	46.2		2-Hexanone	ND	280	46.2	
2-Butanone	ND	200	46.2		Methyl-t-Butyl Ether (MTBE)	ND	330	46.2	
Carbon Disulfide	ND	290	46.2		Methylene Chloride	ND	800	46.2	
Carbon Tetrachloride	ND	150	46.2		4-Methyl-2-Pentanone	ND	280	46.2	
Chlorobenzene	ND	110	46.2		Naphthalene	ND	1200	46.2	
Chloroethane	ND	61	46.2		o-Xylene	ND	100	46.2	
Chloroform	ND	110	46.2		p/m-Xylene	ND	400	46.2	
Chloromethane	ND	48	46.2		Styrene	ND	300	46.2	
Dibromochloromethane	ND	200	46.2		Tert-Amyl-Methyl Ether (TAME)	ND	390	46.2	
Dichlorodifluoromethane	ND	110	46.2		Tert-Butyl Alcohol (TBA)	ND	280	46.2	
Diisopropyl Ether (DIPE)	ND	390	46.2		Tetrachloroethene	ND	160	46.2	
1,1-Dichloroethane	ND	93	46.2		Toluene	ND	87	46.2	
1,1-Dichloroethene	ND	92	46.2		Trichloroethene	ND	120	46.2	
1,2-Dibromoethane	ND	180	46.2		Trichlorofluoromethane	ND	260	46.2	
Dichlorotetrafluoroethane	ND	650	46.2		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	530	46.2	
1,2-Dichlorobenzene	ND	140	46.2		1,1,1-Trichloroethane	ND	130	46.2	
1,2-Dichloroethane	ND	93	46.2		1,1,2-Trichloroethane	ND	130	46.2	
1,2-Dichloropropane	ND	110	46.2		1,3,5-Trimethylbenzene	ND	110	46.2	
1,3-Dichlorobenzene	ND	140	46.2		1,1,2,2-Tetrachloroethane	ND	320	46.2	
1,4-Dichlorobenzene	ND	140	46.2		1,2,4-Trimethylbenzene	ND	340	46.2	
c-1,3-Dichloropropene	ND	100	46.2		1,2,4-Trichlorobenzene	ND	690	46.2	
c-1,2-Dichloroethene	ND	92	46.2		Vinyl Acetate	ND	330	46.2	
t-1,2-Dichloroethene	ND	92	46.2		Vinyl Chloride	ND	59	46.2	
t-1,3-Dichloropropene	ND	210	46.2						
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
1,4-Bromofluorobenzene	195	57-129	2,7		1,2-Dichloroethane-d4	85	47-137		
Toluene-d8	54	78-156	2,6						

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Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

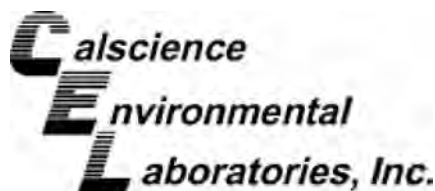
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-10	12-05-2111-8-A	05/31/12 09:06	Air	GC/MS K	N/A	06/05/12 21:10	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	1400	480	100		Ethanol	ND	940	100	
Benzene	ND	160	100		Ethyl-t-Butyl Ether (ETBE)	ND	840	100	
Benzyl Chloride	ND	780	100		Ethylbenzene	1000	220	100	
Bromodichloromethane	ND	340	100		4-Ethyltoluene	ND	250	100	
Bromoform	ND	520	100		Hexachloro-1,3-Butadiene	ND	1600	100	
Bromomethane	ND	190	100		2-Hexanone	ND	610	100	
2-Butanone	ND	440	100		Methyl-t-Butyl Ether (MTBE)	ND	720	100	
Carbon Disulfide	ND	620	100		Methylene Chloride	ND	1700	100	
Carbon Tetrachloride	ND	310	100		4-Methyl-2-Pentanone	ND	610	100	
Chlorobenzene	ND	230	100		Naphthalene	ND	2600	100	
Chloroethane	ND	130	100		o-Xylene	240	220	100	
Chloroform	ND	240	100		p/m-Xylene	ND	870	100	
Chloromethane	ND	100	100		Styrene	ND	640	100	
Dibromochloromethane	ND	430	100		Tert-Amyl-Methyl Ether (TAME)	ND	840	100	
Dichlorodifluoromethane	ND	250	100		Tert-Butyl Alcohol (TBA)	1500	610	100	
Diisopropyl Ether (DIPE)	ND	840	100		Tetrachloroethene	ND	340	100	
1,1-Dichloroethane	ND	200	100		Toluene	510	190	100	
1,1-Dichloroethene	ND	200	100		Trichloroethene	ND	270	100	
1,2-Dibromoethane	ND	380	100		Trichlorofluoromethane	ND	560	100	
Dichlorotetrafluoroethane	ND	1400	100		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1100	100	
1,2-Dichlorobenzene	ND	300	100		1,1,1-Trichloroethane	ND	270	100	
1,2-Dichloroethane	ND	200	100		1,1,2-Trichloroethane	ND	270	100	
1,2-Dichloropropane	ND	230	100		1,3,5-Trimethylbenzene	ND	250	100	
1,3-Dichlorobenzene	ND	300	100		1,1,2,2-Tetrachloroethane	ND	690	100	
1,4-Dichlorobenzene	ND	300	100		1,2,4-Trimethylbenzene	ND	740	100	
c-1,3-Dichloropropene	ND	230	100		1,2,4-Trichlorobenzene	ND	1500	100	
c-1,2-Dichloroethene	ND	200	100		Vinyl Acetate	ND	700	100	
t-1,2-Dichloroethene	ND	200	100		Vinyl Chloride	ND	130	100	
t-1,3-Dichloropropene	ND	450	100						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	210	57-129	2,7		1,2-Dichloroethane-d4	88	47-137		
Toluene-d8	68	78-156	2,6						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

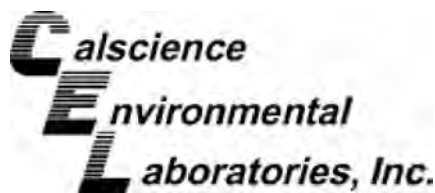
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-10/Dub	12-05-2111-9-A	05/31/12 09:06	Air	GC/MS K	N/A	06/05/12 22:22	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	1800	480	100		Ethanol	ND	940	100	
Benzene	ND	160	100		Ethyl-t-Butyl Ether (ETBE)	ND	840	100	
Benzyl Chloride	ND	780	100		Ethylbenzene	970	220	100	
Bromodichloromethane	ND	340	100		4-Ethyltoluene	ND	250	100	
Bromoform	ND	520	100		Hexachloro-1,3-Butadiene	ND	1600	100	
Bromomethane	ND	190	100		2-Hexanone	ND	610	100	
2-Butanone	ND	440	100		Methyl-t-Butyl Ether (MTBE)	ND	720	100	
Carbon Disulfide	ND	620	100		Methylene Chloride	ND	1700	100	
Carbon Tetrachloride	ND	310	100		4-Methyl-2-Pentanone	ND	610	100	
Chlorobenzene	ND	230	100		Naphthalene	ND	2600	100	
Chloroethane	ND	130	100		o-Xylene	240	220	100	
Chloroform	310	240	100		p/m-Xylene	ND	870	100	
Chloromethane	ND	100	100		Styrene	ND	640	100	
Dibromochloromethane	ND	430	100		Tert-Amyl-Methyl Ether (TAME)	ND	840	100	
Dichlorodifluoromethane	ND	250	100		Tert-Butyl Alcohol (TBA)	ND	610	100	
Diisopropyl Ether (DIPE)	ND	840	100		Tetrachloroethene	ND	340	100	
1,1-Dichloroethane	ND	200	100		Toluene	320	190	100	
1,1-Dichloroethene	ND	200	100		Trichloroethene	ND	270	100	
1,2-Dibromoethane	ND	380	100		Trichlorofluoromethane	ND	560	100	
Dichlorotetrafluoroethane	ND	1400	100		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1100	100	
1,2-Dichlorobenzene	ND	300	100		1,1,1-Trichloroethane	ND	270	100	
1,2-Dichloroethane	ND	200	100		1,1,2-Trichloroethane	ND	270	100	
1,2-Dichloropropane	ND	230	100		1,3,5-Trimethylbenzene	ND	250	100	
1,3-Dichlorobenzene	ND	300	100		1,1,2,2-Tetrachloroethane	ND	690	100	
1,4-Dichlorobenzene	ND	300	100		1,2,4-Trimethylbenzene	ND	740	100	
c-1,3-Dichloropropene	ND	230	100		1,2,4-Trichlorobenzene	ND	1500	100	
c-1,2-Dichloroethene	ND	200	100		Vinyl Acetate	ND	700	100	
t-1,2-Dichloroethene	ND	200	100		Vinyl Chloride	ND	130	100	
t-1,3-Dichloropropene	ND	450	100						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	217	57-129	2,7		1,2-Dichloroethane-d4	84	47-137		
Toluene-d8	66	78-156	2,6						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

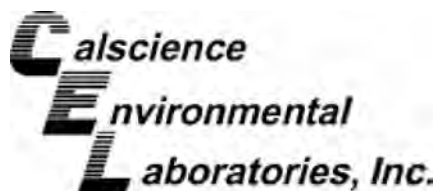
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-5	12-05-2111-10-A	05/31/12 10:06	Air	GC/MS K	N/A	06/05/12 18:37	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	54	4.8	1		Ethanol	ND	9.4	1	
Benzene	3.2	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	3.6	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	10	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	200	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	2.5	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	9.3	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	2.7	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	68	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	57-129			1,2-Dichloroethane-d4	96	47-137		
Toluene-d8	97	78-156							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-10	12-05-2111-11-A	05/31/12 10:46	Air	GC/MS K	N/A	06/03/12 04:04	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	6.9	4.8	1		Ethanol	ND	9.4	1	
Benzene	ND	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	4.9	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	220	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	7.3	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	69	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	101	57-129			1,2-Dichloroethane-d4	93	47-137		
Toluene-d8	97	78-156							

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RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

Page 12 of 18

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-5	12-05-2111-12-A	05/31/12 11:51	Air	GC/MS K	N/A	06/03/12 04:58	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	220	27	5.63		Ethanol	13	9.4	1	
Benzene	11	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	2.8	2.2	1	
Bromodichloromethane	5.2	3.4	1		4-Ethyltoluene	4.2	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	64	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	13	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	8.4	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	4.2	2.2	1	
Chloroform	14	2.4	1		p/m-Xylene	9.4	8.7	1	
Chloromethane	1.2	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	4.8	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	3.3	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	6.8	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	11	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	13	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	7.0	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	8.6	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	30	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	93	57-129			1,2-Dichloroethane-d4	91	47-137		
Toluene-d8	95	78-156							

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Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

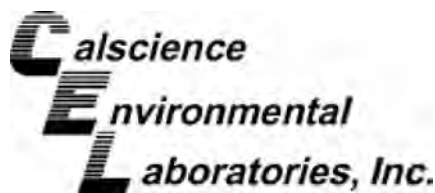
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-10	12-05-2111-13-A	05/31/12 12:31	Air	GC/MS K	N/A	06/03/12 05:53	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	15	4.8	1		Ethanol	ND	9.4	1	
Benzene	ND	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	6.2	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	ND	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	2.9	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	150	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	15	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	89	57-129			1,2-Dichloroethane-d4	89	47-137		
Toluene-d8	95	78-156							

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Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

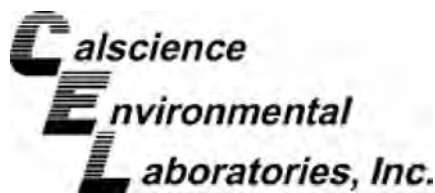
Page 14 of 18

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-5	12-05-2111-14-A	05/31/12 14:06	Air	GC/MS K	N/A	06/03/12 06:47	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	45	4.8	1		Ethanol	ND	9.4	1	
Benzene	9.3	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	3.3	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	13	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	4.6	2.2	1	
Chloroform	5.2	2.4	1		p/m-Xylene	12	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	2.6	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	67	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	16	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	3.6	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	86	57-129			1,2-Dichloroethane-d4	89	47-137		
Toluene-d8	99	78-156							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

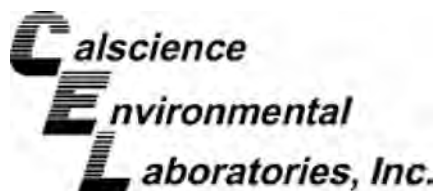
Page 15 of 18

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-10	12-05-2111-15-A	05/31/12 14:46	Air	GC/MS K	N/A	06/03/12 07:42	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	21	4.8	1		Ethanol	ND	9.4	1	
Benzene	2.8	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	10	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	22	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	84	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	2.0	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	3.3	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	2.9	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	90	57-129			1,2-Dichloroethane-d4	89	47-137		
Toluene-d8	97	78-156							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-021-10,119	N/A	Air	GC/MS YY	N/A	06/01/12 14:00	120601L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	4.8	1		Ethanol	ND	9.4	1	
Benzene	ND	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	ND	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	ND	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	ND	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	94	57-129			1,2-Dichloroethane-d4	85	47-137		
Toluene-d8	97	78-156							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

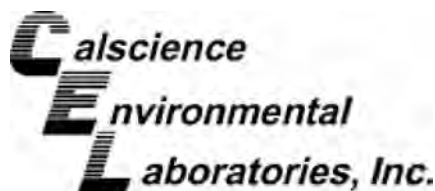
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-021-10,124	N/A	Air	GC/MS K	N/A	06/02/12 13:59	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	4.8	1		Ethanol	ND	9.4	1	
Benzene	ND	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	ND	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	ND	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	ND	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	91	57-129			1,2-Dichloroethane-d4	88	47-137		
Toluene-d8	92	78-156							

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Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

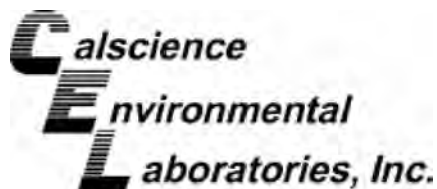
Page 18 of 18

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-021-10,136	N/A	Air	GC/MS K	N/A	06/05/12 16:31	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	4.8	1		Ethanol	ND	9.4	1	
Benzene	ND	1.6	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzyl Chloride	ND	7.8	1		Ethylbenzene	ND	2.2	1	
Bromodichloromethane	ND	3.4	1		4-Ethyltoluene	ND	2.5	1	
Bromoform	ND	5.2	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromomethane	ND	1.9	1		2-Hexanone	ND	6.1	1	
2-Butanone	ND	4.4	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
Carbon Disulfide	ND	6.2	1		Methylene Chloride	ND	17	1	
Carbon Tetrachloride	ND	3.1	1		4-Methyl-2-Pentanone	ND	6.1	1	
Chlorobenzene	ND	2.3	1		Naphthalene	ND	26	1	
Chloroethane	ND	1.3	1		o-Xylene	ND	2.2	1	
Chloroform	ND	2.4	1		p/m-Xylene	ND	8.7	1	
Chloromethane	ND	1.0	1		Styrene	ND	6.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dichlorodifluoromethane	ND	2.5	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Tetrachloroethene	ND	3.4	1	
1,1-Dichloroethane	ND	2.0	1		Toluene	ND	1.9	1	
1,1-Dichloroethene	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,2-Dibromoethane	ND	3.8	1		Trichlorofluoromethane	ND	5.6	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloropropane	ND	2.3	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,3-Dichlorobenzene	ND	3.0	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
c-1,3-Dichloropropene	ND	2.3	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Acetate	ND	7.0	1	
t-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,3-Dichloropropene	ND	4.5	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	89	57-129			1,2-Dichloroethane-d4	91	47-137		
Toluene-d8	97	78-156							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946

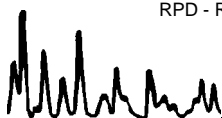
Project: Former Chemoil Facility / WA1617

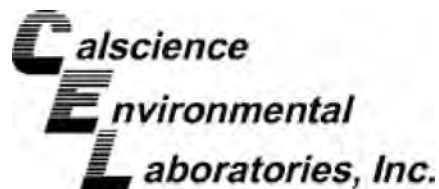
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-03-002-1,570	Air	GC 34	N/A	06/01/12	120601L01

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	10.12	9.007	89	9.303	92	80-120	3	0-30	
Carbon Dioxide	10.07	10.08	100	10.47	104	80-120	4	0-30	
Carbon Monoxide	9.930	10.53	106	10.92	110	80-120	4	0-30	
Oxygen + Argon	3.500	3.549	101	3.575	102	80-120	1	0-30	
Nitrogen	10.02	10.00	100	10.00	100	80-120	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946

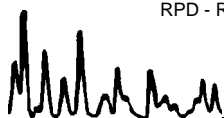
Project: Former Chemoil Facility / WA1617

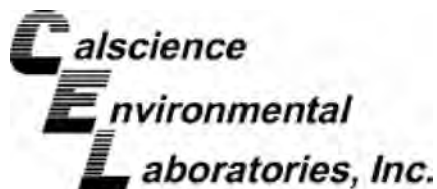
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-03-002-1,573	Air	GC 34	N/A	06/06/12	120606L01

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	10.12	9.044	89	9.016	89	80-120	0	0-30	
Carbon Dioxide	10.07	10.11	100	10.10	100	80-120	0	0-30	
Carbon Monoxide	9.930	10.58	107	10.58	107	80-120	0	0-30	
Oxygen + Argon	3.500	3.572	102	3.572	102	80-120	0	0-30	
Nitrogen	10.02	10.09	101	10.08	101	80-120	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

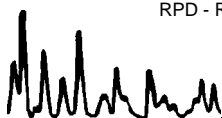
Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: ASTM D-1946 (M)

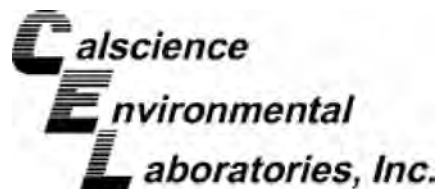
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-872-277	Air	GC 55	N/A	06/01/12	120601L01

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Helium	1.000	0.9522	95	0.9503	95	80-120	0	0-30	
Hydrogen	1.000	1.053	105	1.051	105	80-120	0	0-30	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



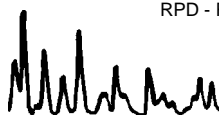
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

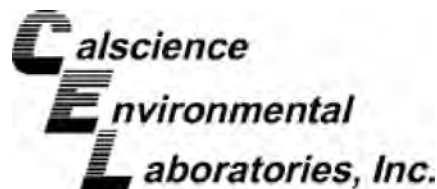
Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument		Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
095-01-021-10,119	Air	GC/MS YY		N/A	06/01/12	120601L01				
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	59.39	56.20	95	56.68	95	50-150	33-167	1	0-35	
Benzene	79.87	83.56	105	83.73	105	60-156	44-172	0	0-40	
Benzyl Chloride	129.4	124.9	97	121.2	94	50-150	33-167	3	0-35	
Bromodichloromethane	167.5	153.4	92	152.8	91	50-150	33-167	0	0-35	
Bromoform	258.4	231.9	90	229.7	89	62-134	50-146	1	0-38	
Bromomethane	97.08	85.24	88	85.85	88	50-150	33-167	1	0-35	
2-Butanone	73.73	68.20	92	69.00	94	50-150	33-167	1	0-35	
Carbon Disulfide	77.85	80.51	103	81.13	104	50-150	33-167	1	0-35	
Carbon Tetrachloride	157.3	137.5	87	137.3	87	64-154	49-169	0	0-32	
Chlorobenzene	115.1	113.3	98	112.9	98	50-150	33-167	0	0-35	
Chloroethane	65.96	59.84	91	60.04	91	50-150	33-167	0	0-35	
Chloroform	122.1	109.4	90	109.7	90	50-150	33-167	0	0-35	
Chloromethane	51.63	44.17	86	44.23	86	50-150	33-167	0	0-35	
Dibromochloromethane	213.0	202.3	95	201.8	95	50-150	33-167	0	0-35	
Dichlorodifluoromethane	123.6	99.74	81	99.76	81	50-150	33-167	0	0-35	
Diisopropyl Ether (DIPE)	104.5	95.53	91	93.99	90	50-150	33-167	2	0-35	
1,1-Dichloroethane	101.2	96.08	95	96.77	96	50-150	33-167	1	0-35	
1,1-Dichloroethene	99.12	90.84	92	91.50	92	50-150	33-167	1	0-35	
1,2-Dibromoethane	192.1	182.5	95	183.2	95	54-144	39-159	0	0-36	
Dichlorotetrafluoroethane	174.8	147.0	84	148.4	85	50-150	33-167	1	0-35	
1,2-Dichlorobenzene	150.3	126.2	84	122.5	81	34-160	13-181	3	0-47	
1,2-Dichloroethane	101.2	85.44	84	85.97	85	69-153	55-167	1	0-35	
1,2-Dichloropropane	115.5	115.5	100	116.7	101	67-157	52-172	1	0-35	
1,3-Dichlorobenzene	150.3	121.9	81	120.4	80	50-150	33-167	1	0-35	
1,4-Dichlorobenzene	150.3	121.6	81	119.9	80	36-156	16-176	1	0-47	
c-1,3-Dichloropropene	113.5	113.4	100	113.7	100	61-157	45-173	0	0-35	
c-1,2-Dichloroethene	99.12	103.2	104	103.5	104	50-150	33-167	0	0-35	
t-1,2-Dichloroethene	99.12	102.9	104	102.5	103	50-150	33-167	0	0-35	
t-1,3-Dichloropropene	113.5	110.4	97	110.2	97	50-150	33-167	0	0-35	
Ethanol	188.4	160.9	85	159.2	84	50-150	33-167	1	0-35	
Ethyl-t-Butyl Ether (ETBE)	104.5	99.73	95	101.5	97	50-150	33-167	2	0-35	
Ethylbenzene	108.6	103.7	96	102.6	95	52-154	35-171	1	0-38	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,119	Air	GC/MS YY	N/A	06/01/12	120601L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
4-Ethyltoluene	122.9	103.3	84	103.1	84	50-150	33-167	0	0-35	
Hexachloro-1,3-Butadiene	266.6	212.8	80	218.5	82	50-150	33-167	3	0-35	
2-Hexanone	102.4	102.2	100	103.2	101	50-150	33-167	1	0-35	
Methyl-t-Butyl Ether (MTBE)	90.13	84.80	94	86.68	96	50-150	33-167	2	0-35	
Methylene Chloride	86.84	85.91	99	86.63	100	50-150	33-167	1	0-35	
4-Methyl-2-Pentanone	102.4	98.73	96	99.64	97	50-150	33-167	1	0-35	
Naphthalene	131.1	109.7	84	112.0	85	40-190	15-215	2	0-35	
o-Xylene	108.6	100.0	92	99.60	92	52-148	36-164	0	0-38	
p/m-Xylene	217.1	201.7	93	200.5	92	42-156	23-175	1	0-41	
Styrene	106.5	101.2	95	100.8	95	50-150	33-167	0	0-35	
Tert-Amyl-Methyl Ether (TAME)	104.5	103.9	99	103.1	99	50-150	33-167	1	0-35	
Tert-Butyl Alcohol (TBA)	151.6	141.0	93	142.8	94	50-150	33-167	1	0-35	
Tetrachloroethene	169.6	167.9	99	167.1	99	56-152	40-168	1	0-40	
Toluene	94.21	95.74	102	95.39	101	56-146	41-161	0	0-43	
Trichloroethene	134.3	130.5	97	130.1	97	63-159	47-175	0	0-34	
Trichlorofluoromethane	140.5	117.9	84	119.1	85	50-150	33-167	1	0-35	
1,1,2-Trichloro-1,2,2-Trifluoroethane	191.6	183.9	96	185.6	97	50-150	33-167	1	0-35	
1,1,1-Trichloroethane	136.4	120.0	88	119.0	87	50-150	33-167	1	0-35	
1,1,2-Trichloroethane	136.4	133.0	97	133.4	98	65-149	51-163	0	0-37	
1,3,5-Trimethylbenzene	122.9	102.4	83	102.1	83	50-150	33-167	0	0-35	
1,1,2,2-Tetrachloroethane	171.6	157.2	92	156.6	91	50-150	33-167	0	0-35	
1,2,4-Trimethylbenzene	122.9	103.0	84	101.5	83	50-150	33-167	1	0-35	
1,2,4-Trichlorobenzene	185.5	166.9	90	170.7	92	50-150	33-167	2	0-35	
Vinyl Acetate	88.03	80.77	92	82.29	93	50-150	33-167	2	0-35	
Vinyl Chloride	63.91	56.73	89	57.30	90	45-177	23-199	1	0-36	

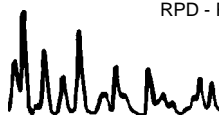
Total number of LCS compounds : 57

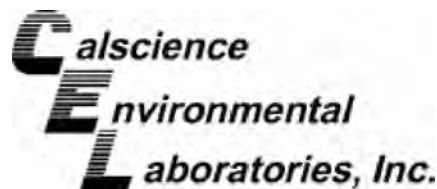
Total number of ME compounds : 0

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



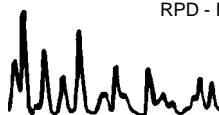
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

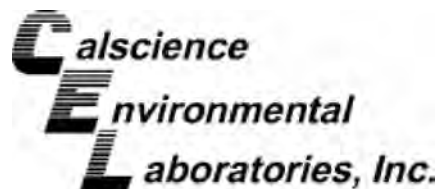
Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,124	Air	GC/MS K	N/A	06/02/12	120602L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	59.39	57.15	96	54.92	92	50-150	33-167	4	0-35	
Benzene	79.87	78.25	98	78.26	98	60-156	44-172	0	0-40	
Benzyl Chloride	129.4	155.2	120	140.9	109	50-150	33-167	10	0-35	
Bromodichloromethane	167.5	165.6	99	165.2	99	50-150	33-167	0	0-35	
Bromoform	258.4	228.6	88	244.1	94	62-134	50-146	7	0-38	
Bromomethane	97.08	101.5	105	98.51	101	50-150	33-167	3	0-35	
2-Butanone	73.73	69.93	95	73.53	100	50-150	33-167	5	0-35	
Carbon Disulfide	77.85	77.30	99	96.91	124	50-150	33-167	23	0-35	
Carbon Tetrachloride	157.3	162.8	104	161.4	103	64-154	49-169	1	0-32	
Chlorobenzene	115.1	117.3	102	116.7	101	50-150	33-167	0	0-35	
Chloroethane	65.96	71.86	109	69.68	106	50-150	33-167	3	0-35	
Chloroform	122.1	116.9	96	114.5	94	50-150	33-167	2	0-35	
Chloromethane	51.63	53.64	104	52.16	101	50-150	33-167	3	0-35	
Dibromochloromethane	213.0	230.3	108	217.6	102	50-150	33-167	6	0-35	
Dichlorodifluoromethane	123.6	122.1	99	119.3	97	50-150	33-167	2	0-35	
Diisopropyl Ether (DIPE)	104.5	94.33	90	94.41	90	50-150	33-167	0	0-35	
1,1-Dichloroethane	101.2	93.89	93	98.81	98	50-150	33-167	5	0-35	
1,1-Dichloroethene	99.12	99.44	100	96.54	97	50-150	33-167	3	0-35	
1,2-Dibromoethane	192.1	201.2	105	190.7	99	54-144	39-159	5	0-36	
Dichlorotetrafluoroethane	174.8	175.9	101	171.5	98	50-150	33-167	3	0-35	
1,2-Dichlorobenzene	150.3	154.9	103	143.1	95	34-160	13-181	8	0-47	
1,2-Dichloroethane	101.2	95.94	95	93.85	93	69-153	55-167	2	0-35	
1,2-Dichloropropane	115.5	109.8	95	109.3	95	67-157	52-172	0	0-35	
1,3-Dichlorobenzene	150.3	146.4	97	144.9	96	50-150	33-167	1	0-35	
1,4-Dichlorobenzene	150.3	146.6	98	143.9	96	36-156	16-176	2	0-47	
c-1,3-Dichloropropene	113.5	116.2	102	116.3	102	61-157	45-173	0	0-35	
c-1,2-Dichloroethene	99.12	100.6	101	99.75	101	50-150	33-167	1	0-35	
t-1,2-Dichloroethene	99.12	91.93	93	103.8	105	50-150	33-167	12	0-35	
t-1,3-Dichloropropene	113.5	120.1	106	123.0	108	50-150	33-167	2	0-35	
Ethanol	188.4	202.9	108	196.1	104	50-150	33-167	3	0-35	
Ethyl-t-Butyl Ether (ETBE)	104.5	98.07	94	97.03	93	50-150	33-167	1	0-35	
Ethylbenzene	108.6	107.3	99	106.6	98	52-154	35-171	1	0-38	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,124	Air	GC/MS K	N/A	06/02/12	120602L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
4-Ethyltoluene	122.9	117.3	95	116.3	95	50-150	33-167	1	0-35	
Hexachloro-1,3-Butadiene	266.6	244.4	92	208.7	78	50-150	33-167	16	0-35	
2-Hexanone	102.4	107.5	105	96.71	94	50-150	33-167	11	0-35	
Methyl-t-Butyl Ether (MTBE)	90.13	80.73	90	82.84	92	50-150	33-167	3	0-35	
Methylene Chloride	86.84	84.41	97	81.66	94	50-150	33-167	3	0-35	
4-Methyl-2-Pentanone	102.4	102.2	100	102.6	100	50-150	33-167	0	0-35	
Naphthalene	131.1	161.8	123	134.3	102	40-190	15-215	19	0-35	
o-Xylene	108.6	103.4	95	106.0	98	52-148	36-164	3	0-38	
p/m-Xylene	217.1	215.0	99	212.2	98	42-156	23-175	1	0-41	
Styrene	106.5	104.6	98	109.0	102	50-150	33-167	4	0-35	
Tert-Amyl-Methyl Ether (TAME)	104.5	95.91	92	96.30	92	50-150	33-167	0	0-35	
Tert-Butyl Alcohol (TBA)	151.6	142.3	94	138.2	91	50-150	33-167	3	0-35	
Tetrachloroethene	169.6	165.1	97	150.8	89	56-152	40-168	9	0-40	
Toluene	94.21	97.39	103	88.93	94	56-146	41-161	9	0-43	
Trichloroethene	134.3	132.0	98	131.5	98	63-159	47-175	0	0-34	
Trichlorofluoromethane	140.5	137.5	98	133.4	95	50-150	33-167	3	0-35	
1,1,2-Trichloro-1,2,2-Trifluoroethane	191.6	190.0	99	245.0	128	50-150	33-167	25	0-35	
1,1,1-Trichloroethane	136.4	129.5	95	127.2	93	50-150	33-167	2	0-35	
1,1,2-Trichloroethane	136.4	133.0	98	136.7	100	65-149	51-163	3	0-37	
1,3,5-Trimethylbenzene	122.9	118.9	97	112.6	92	50-150	33-167	5	0-35	
1,1,2,2-Tetrachloroethane	171.6	164.5	96	156.6	91	50-150	33-167	5	0-35	
1,2,4-Trimethylbenzene	122.9	121.6	99	113.3	92	50-150	33-167	7	0-35	
1,2,4-Trichlorobenzene	185.5	209.3	113	175.3	94	50-150	33-167	18	0-35	
Vinyl Acetate	88.03	83.19	95	85.88	98	50-150	33-167	3	0-35	
Vinyl Chloride	63.91	67.61	106	66.66	104	45-177	23-199	1	0-36	

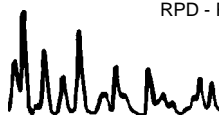
Total number of LCS compounds : 57

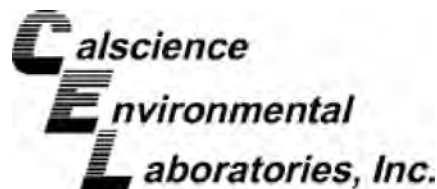
Total number of ME compounds : 0

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



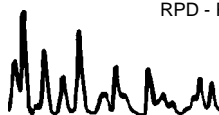
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

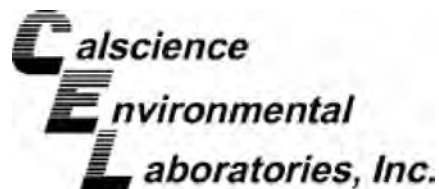
Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
095-01-021-10,136	Air	GC/MS K	N/A		06/05/12		120605L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	59.39	58.63	99	59.49	100	50-150	33-167	1	0-35	
Benzene	79.87	84.18	105	84.42	106	60-156	44-172	0	0-40	
Benzyl Chloride	129.4	133.8	103	140.6	109	50-150	33-167	5	0-35	
Bromodichloromethane	167.5	176.2	105	177.6	106	50-150	33-167	1	0-35	
Bromoform	258.4	235.7	91	245.3	95	62-134	50-146	4	0-38	
Bromomethane	97.08	116.2	120	118.4	122	50-150	33-167	2	0-35	
2-Butanone	73.73	74.78	101	77.48	105	50-150	33-167	4	0-35	
Carbon Disulfide	77.85	100.2	129	102.1	131	50-150	33-167	2	0-35	
Carbon Tetrachloride	157.3	172.6	110	176.3	112	64-154	49-169	2	0-32	
Chlorobenzene	115.1	121.9	106	125.6	109	50-150	33-167	3	0-35	
Chloroethane	65.96	82.62	125	84.92	129	50-150	33-167	3	0-35	
Chloroform	122.1	123.9	102	125.2	103	50-150	33-167	1	0-35	
Chloromethane	51.63	61.69	119	62.60	121	50-150	33-167	1	0-35	
Dibromochloromethane	213.0	238.6	112	245.4	115	50-150	33-167	3	0-35	
Dichlorodifluoromethane	123.6	139.9	113	138.9	112	50-150	33-167	1	0-35	
Diisopropyl Ether (DIPE)	104.5	95.57	91	97.82	94	50-150	33-167	2	0-35	
1,1-Dichloroethane	101.2	99.84	99	107.4	106	50-150	33-167	7	0-35	
1,1-Dichloroethene	99.12	105.7	107	106.3	107	50-150	33-167	1	0-35	
1,2-Dibromoethane	192.1	210.1	109	213.6	111	54-144	39-159	2	0-36	
Dichlorotetrafluoroethane	174.8	168.0	96	171.3	98	50-150	33-167	2	0-35	
1,2-Dichlorobenzene	150.3	157.4	105	160.6	107	34-160	13-181	2	0-47	
1,2-Dichloroethane	101.2	104.8	104	105.4	104	69-153	55-167	1	0-35	
1,2-Dichloropropane	115.5	119.4	103	120.3	104	67-157	52-172	1	0-35	
1,3-Dichlorobenzene	150.3	158.4	105	163.2	109	50-150	33-167	3	0-35	
1,4-Dichlorobenzene	150.3	159.2	106	163.7	109	36-156	16-176	3	0-47	
c-1,3-Dichloropropene	113.5	123.9	109	125.1	110	61-157	45-173	1	0-35	
c-1,2-Dichloroethene	99.12	107.9	109	108.8	110	50-150	33-167	1	0-35	
t-1,2-Dichloroethene	99.12	88.56	89	106.6	108	50-150	33-167	19	0-35	
t-1,3-Dichloropropene	113.5	136.7	120	139.2	123	50-150	33-167	2	0-35	
Ethanol	188.4	169.9	90	170.8	91	50-150	33-167	1	0-35	
Ethyl-t-Butyl Ether (ETBE)	104.5	100.7	96	101.9	98	50-150	33-167	1	0-35	
Ethylbenzene	108.6	113.5	105	115.5	106	52-154	35-171	2	0-38	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2111
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
095-01-021-10,136	Air	GC/MS K	N/A		06/05/12		120605L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC</u> CL	ME CL	RPD	<u>RPD</u> CL	Qualifiers
4-Ethyltoluene	122.9	129.6	105	134.9	110	50-150	33-167	4	0-35	
Hexachloro-1,3-Butadiene	266.6	204.6	77	205.2	77	50-150	33-167	0	0-35	
2-Hexanone	102.4	112.9	110	115.3	113	50-150	33-167	2	0-35	
Methyl-t-Butyl Ether (MTBE)	90.13	87.00	97	91.29	101	50-150	33-167	5	0-35	
Methylene Chloride	86.84	99.72	115	100.9	116	50-150	33-167	1	0-35	
4-Methyl-2-Pentanone	102.4	109.2	107	110.2	108	50-150	33-167	1	0-35	
Naphthalene	131.1	120.2	92	117.3	89	40-190	15-215	2	0-35	
o-Xylene	108.6	109.3	101	113.0	104	52-148	36-164	3	0-38	
p/m-Xylene	217.1	224.7	103	231.6	107	42-156	23-175	3	0-41	
Styrene	106.5	110.1	103	113.8	107	50-150	33-167	3	0-35	
Tert-Amyl-Methyl Ether (TAME)	104.5	97.74	94	98.41	94	50-150	33-167	1	0-35	
Tert-Butyl Alcohol (TBA)	151.6	146.3	96	146.5	97	50-150	33-167	0	0-35	
Tetrachloroethene	169.6	173.1	102	176.1	104	56-152	40-168	2	0-40	
Toluene	94.21	103.7	110	105.7	112	56-146	41-161	2	0-43	
Trichloroethene	134.3	139.8	104	140.2	104	63-159	47-175	0	0-34	
Trichlorofluoromethane	140.5	148.0	105	149.1	106	50-150	33-167	1	0-35	
1,1,2-Trichloro-1,2,2-Trifluoroethane	191.6	205.1	107	208.7	109	50-150	33-167	2	0-35	
1,1,1-Trichloroethane	136.4	140.5	103	142.7	105	50-150	33-167	2	0-35	
1,1,2-Trichloroethane	136.4	142.8	105	142.6	105	65-149	51-163	0	0-37	
1,3,5-Trimethylbenzene	122.9	129.3	105	132.9	108	50-150	33-167	3	0-35	
1,1,2,2-Tetrachloroethane	171.6	171.5	100	176.8	103	50-150	33-167	3	0-35	
1,2,4-Trimethylbenzene	122.9	131.0	107	133.5	109	50-150	33-167	2	0-35	
1,2,4-Trichlorobenzene	185.5	168.8	91	165.7	89	50-150	33-167	2	0-35	
Vinyl Acetate	88.03	79.06	90	84.64	96	50-150	33-167	7	0-35	
Vinyl Chloride	63.91	72.64	114	73.70	115	45-177	23-199	1	0-36	

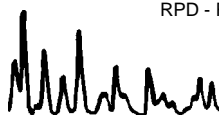
Total number of LCS compounds : 57

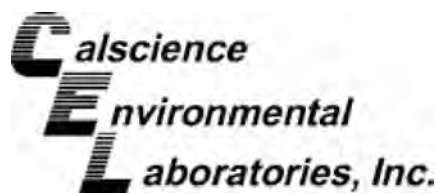
Total number of ME compounds : 0

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Summa Canister Vacuum Summary



Work Order Number: **12-05-2111**

Sample Name	Vacuum In	Vacuum Out	Equipment	Description
GW/SV-28-10	-5.00	-29.60	LC299	Summa Canister 1L
GW/SV-28-5	-4.00	-29.60	LC249	Summa Canister 1L
GW/SV-26-5	-5.00	-29.60	LC253	Summa Canister 1L
GW/SV-26-10	-5.00	-29.60	LC137	Summa Canister 1L
GW/SV-25-5	-5.00	-29.60	LC170	Summa Canister 1L
GW/SV-25-10	-5.00	-29.60	LC515	Summa Canister 1L
GW/SV-22-5	-5.00	-29.60	LC242	Summa Canister 1L
GW/SV-22-10	-4.00	-29.60	LC264	Summa Canister 1L
GW/SV-22-10/Dub	-5.00	-29.70	SLC113	Summa Canister 1L
GW/SV-20-5	-3.00	-29.60	SLC047	Summa Canister 1L
GW/SV-20-10	-6.00	-29.60	LC224	Summa Canister 1L
GW/SV-29-5	-5.00	-29.60	LC229	Summa Canister 1L
GW/SV-29-10	-5.00	-29.60	LC353	Summa Canister 1L
GW/SV-27-5	-5.00	-29.70	LC503	Summa Canister 1L
GW/SV-27-10	-5.00	-29.60	LC052	Summa Canister 1L

Return to Contents

Glossary of Terms and Qualifiers

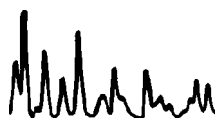


Work Order Number: 12-05-2111

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

MPN - Most Probable Number



WO # / LAB USE ONLY
12-05-2111

LABORATORY CLIENT: Geosyntec Consultants
 ADDRESS: 1650 Iowa Ave, Suite 100
 CITY: Riverside STATE: CA ZIP: 92507
 TEL: 714)393-4498 E-MAIL: rcheung@geosyntec.com
 TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ STANDARD
☐ COELT EDF GLOBAL ID LOG CODE

SPECIAL INSTRUCTIONS:
 * email results to Robert Cheung at rcheung@geosyntec.com, invoice also
 * include naphthalene analysis w/VOLs by TO-15

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.	Field Filtered	Preserved	Unpreserved
		DATE	TIME					
1	GW/SV-28-10	5/29/12	1715	Soil Vapor	1			X
2	GW/SV-28-5	5/30/12	0933		1			X
3	GW/SV-26-5		1056					
4	GW/SV-26-10		1158					
5	GW/SV-25-5		1411					
6	GW/SV-25-10		1505					
7	GW/SV-22-5	5/31/12	815					
8	GW/SV-22-10		906					
9	GW/SV-22-10/DNB		906					
10	GW/SV-20-5		1006					

Relinquished by: (Signature) [Signature]
 Relinquished by: (Signature) [Signature]
 Relinquished by: (Signature) [Signature]

CLIENT PROJECT NAME / NUMBER: Former Chemoil Facility / WA1617
 PROJECT CONTACT: Robert Cheung / Vanessa Fava
 P.O. NO.: WA1617
 SAMPLER(S): (PRINT) V. Smith / WJ

REQUESTED ANALYSES

TPH (g) or GRO		TPH (d) or DRO or (C6C36) or (C6-C44)		TPH ()		Oxygenates (8260)		En Core / Terra Core Prep (5035)		SVOCs (8270)		Pesticides (8081)		PCBs (8082)		PNAs (8310) or (8270)		T22 Metals (6010B/747X)		Cr(VI) (7196 or 7199 or 218.6)		VOCs (EPA TO-15) <u>4</u>		Fixed (C4, Oxygen) ASTM D1946		Helium	
																						X	X	X	X	X	

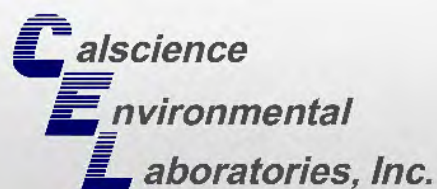
Date: 5/31/12 Time: 1532
 Date: 5/31/12 Time: 17249
 Date: Time:

WORK ORDER #: 12-05-2111

SAMPLE RECEIPT FORMCooler 0 of 0CLIENT: GEO SYNTECDATE: 05/31/12**TEMPERATURE:** Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature _____ °C - 0.3 °C (CF) = _____ °C ☐ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☒ Air ☐ FilterInitial: AM**CUSTODY SEALS INTACT:**☐ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☒ N/AInitial: AM☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: YC**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTAINER TYPE:Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (____) ☐ EnCores® ☐ TerraCores® ☐ _____Water: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 1PB ☐ 1PB_{na} ☐ 500PB☐ 250PB ☐ 250PB_n ☐ 125PB ☐ 125PB_{znna} ☐ 100PJ ☐ 100PJ_{na2} ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☒ Summa® Other: ☐ _____ Trip Blank Lot#: _____ Labeled/Checked by: YCContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: WJCPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure znna: ZnAc₂+NaOH f: Filtered Scanned by: WJC



CALSCIENCE

WORK ORDER NUMBER: 12-05-2112

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Analytical Report For

Client: Geosyntec Consultants

Client Project Name: Former Chemoil Facility / WA1617

Attention: Robert Cheung
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Approved for release on 06/08/2012 by:
Stephen Nowak
Project Manager

ResultLink ▶

Email your PM ▶



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Client Project Name: Former Chemoil Facility / WA1617

Work Order Number: 12-05-2112

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Client: Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Attn: Robert Cheung

Work Order: 12-05-2112
Project name: Former Chemoil Facility / WA1617
Received: 05/31/12 17:49

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
GW/SV-28-1 (12-05-2112-1)						
Acetone	52		50	ug/kg	EPA 8260B	EPA 5035
GW/SV-28-3 (12-05-2112-2)						
Acetone	38		35	ug/kg	EPA 8260B	EPA 5035
GW/SV-28-17 (12-05-2112-4)						
TPH as Diesel	210	HD	50	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Diesel	83	HD,SG	50	ug/L	EPA 8015B (M)	EPA 3510C
GW/SV-26-3 (12-05-2112-7)						
TPH as Diesel	32	HD	5.0	mg/kg	EPA 8015B (M)	EPA 3550B
GW/SV-26-14 (12-05-2112-9)						
TPH as Diesel	270	HD	62	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Diesel	100	HD,SG	62	ug/L	EPA 8015B (M)	EPA 3510C

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-17	12-05-2112-4-F	05/30/12 16:55	Aqueous	GC 45	06/05/12	06/06/12 16:20	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	210	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	117	68-140	

GW/SV-28-17	12-05-2112-4-F	05/30/12 16:55	Aqueous	GC 45	06/05/12	06/06/12 17:58	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	83	50	1	HD,SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	129	68-140	

EB-053112	12-05-2112-5-F	05/31/12 10:50	Aqueous	GC 45	06/05/12	06/06/12 16:35	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	115	68-140	

EB-053112	12-05-2112-5-F	05/31/12 10:50	Aqueous	GC 45	06/05/12	06/06/12 18:14	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1	SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	120	68-140	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-14	12-05-2112-9-F	05/31/12 11:55	Aqueous	GC 45	06/05/12	06/06/12 16:51	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	270	62	1.25	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	100	68-140	

GW/SV-26-14	12-05-2112-9-F	05/31/12 11:55	Aqueous	GC 45	06/05/12	06/06/12 18:29	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	100	62	1.25	HD,SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	103	68-140	

Method Blank	099-12-330-2,246	N/A	Aqueous	GC 45	06/05/12	06/06/12 15:32	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	105	68-140	

Method Blank	099-12-330-2,247	N/A	Aqueous	GC 45	06/05/12	06/06/12 17:12	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	109	68-140	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-1	12-05-2112-1-A	05/30/12 15:45	Solid	GC 46	06/01/12	06/01/12 23:55	120601B15

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	92	61-145	

GW/SV-28-3	12-05-2112-2-A	05/30/12 15:58	Solid	GC 46	06/01/12	06/02/12 00:11	120601B15
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	87	61-145	

GW/SV-28-4.5	12-05-2112-3-A	05/30/12 16:05	Solid	GC 46	06/01/12	06/02/12 00:26	120601B15
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	91	61-145	

GW/SV-26-1	12-05-2112-6-A	05/31/12 11:04	Solid	GC 46	06/01/12	06/02/12 00:41	120601B15
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	91	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-3	12-05-2112-7-A	05/31/12 11:15	Solid	GC 46	06/01/12	06/02/12 00:56	120601B15

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	32	5.0	1	HD	mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	95	61-145	

GW/SV-26-4.5	12-05-2112-8-A	05/31/12 11:21	Solid	GC 46	06/01/12	06/02/12 01:12	120601B15
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	97	61-145	

Method Blank	099-12-275-4,548	N/A	Solid	GC 46	06/01/12	06/01/12 22:39	120601B15
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	90	61-145	

Return to Contents

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
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Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-17	12-05-2112-4-D	05/30/12 16:55	Aqueous	GC 57	06/05/12	06/05/12 20:26	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	109	38-134	

EB-053112	12-05-2112-5-D	05/31/12 10:50	Aqueous	GC 57	06/05/12	06/05/12 20:57	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	93	38-134	

GW/SV-26-14	12-05-2112-9-D	05/31/12 11:55	Aqueous	GC 57	06/05/12	06/05/12 21:28	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	112	38-134	

Method Blank	099-12-436-7,491	N/A	Aqueous	GC 57	06/05/12	06/05/12 11:01	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	82	38-134	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-1	12-05-2112-1-A	05/30/12 15:45	Solid	GC 29	06/04/12	06/05/12 05:01	120604B02

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	62	42-126	

GW/SV-28-3	12-05-2112-2-A	05/30/12 15:58	Solid	GC 29	06/04/12	06/05/12 06:48	120604B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	60	42-126	

GW/SV-28-4.5	12-05-2112-3-A	05/30/12 16:05	Solid	GC 29	06/04/12	06/05/12 07:24	120604B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	60	42-126	

GW/SV-26-1	12-05-2112-6-A	05/31/12 11:04	Solid	GC 29	06/04/12	06/05/12 08:00	120604B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	59	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-3	12-05-2112-7-A	05/31/12 11:15	Solid	GC 29	06/04/12	06/05/12 08:36	120604B02

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	57	42-126	

GW/SV-26-4.5	12-05-2112-8-A	05/31/12 11:21	Solid	GC 29	06/04/12	06/05/12 09:12	120604B02
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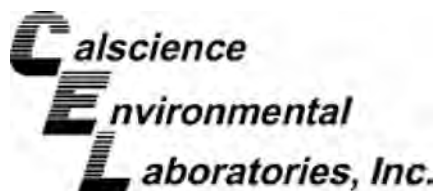
Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	60	42-126	

Method Blank	099-14-571-350	N/A	Solid	GC 29	06/04/12	06/04/12 20:38	120604B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	64	42-126	



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

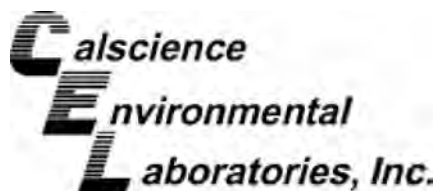
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-1	12-05-2112-1-D	05/30/12 15:45	Solid	GC/MS OO	05/30/12	06/02/12 13:05	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	52	50	0.994		c-1,3-Dichloropropene	ND	0.99	0.994	
Benzene	ND	0.99	0.994		t-1,3-Dichloropropene	ND	2.0	0.994	
Bromobenzene	ND	0.99	0.994		Ethylbenzene	ND	0.99	0.994	
Bromochloromethane	ND	2.0	0.994		2-Hexanone	ND	20	0.994	
Bromodichloromethane	ND	0.99	0.994		Isopropylbenzene	ND	0.99	0.994	
Bromoform	ND	5.0	0.994		p-Isopropyltoluene	ND	0.99	0.994	
Bromomethane	ND	20	0.994		Methylene Chloride	ND	9.9	0.994	
2-Butanone	ND	20	0.994		4-Methyl-2-Pentanone	ND	20	0.994	
n-Butylbenzene	ND	0.99	0.994		Naphthalene	ND	9.9	0.994	
sec-Butylbenzene	ND	0.99	0.994		n-Propylbenzene	ND	2.0	0.994	
tert-Butylbenzene	ND	0.99	0.994		Styrene	ND	0.99	0.994	
Carbon Disulfide	ND	9.9	0.994		1,1,1,2-Tetrachloroethane	ND	0.99	0.994	
Carbon Tetrachloride	ND	0.99	0.994		1,1,2,2-Tetrachloroethane	ND	2.0	0.994	
Chlorobenzene	ND	0.99	0.994		Tetrachloroethene	ND	0.99	0.994	
Chloroethane	ND	2.0	0.994		Toluene	ND	0.99	0.994	
Chloroform	ND	0.99	0.994		1,2,3-Trichlorobenzene	ND	2.0	0.994	
Chloromethane	ND	20	0.994		1,2,4-Trichlorobenzene	ND	2.0	0.994	
2-Chlorotoluene	ND	0.99	0.994		1,1,1-Trichloroethane	ND	0.99	0.994	
4-Chlorotoluene	ND	0.99	0.994		1,1,2-Trichloroethane	ND	0.99	0.994	
Dibromochloromethane	ND	2.0	0.994		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.9	0.994	
1,2-Dibromo-3-Chloropropane	ND	5.0	0.994		Trichloroethene	ND	2.0	0.994	
1,2-Dibromoethane	ND	0.99	0.994		Trichlorofluoromethane	ND	9.9	0.994	
Dibromomethane	ND	0.99	0.994		1,2,3-Trichloropropane	ND	2.0	0.994	
1,2-Dichlorobenzene	ND	0.99	0.994		1,2,4-Trimethylbenzene	ND	2.0	0.994	
1,3-Dichlorobenzene	ND	0.99	0.994		1,3,5-Trimethylbenzene	ND	2.0	0.994	
1,4-Dichlorobenzene	ND	0.99	0.994		Vinyl Acetate	ND	9.9	0.994	
Dichlorodifluoromethane	ND	2.0	0.994		Vinyl Chloride	ND	0.99	0.994	
1,1-Dichloroethane	ND	0.99	0.994		p/m-Xylene	ND	2.0	0.994	
1,2-Dichloroethane	ND	0.99	0.994		o-Xylene	ND	0.99	0.994	
1,1-Dichloroethene	ND	0.99	0.994		Methyl-t-Butyl Ether (MTBE)	ND	2.0	0.994	
c-1,2-Dichloroethene	ND	0.99	0.994		Tert-Butyl Alcohol (TBA)	ND	20	0.994	
t-1,2-Dichloroethene	ND	0.99	0.994		Diisopropyl Ether (DIPE)	ND	0.99	0.994	
1,2-Dichloropropane	ND	0.99	0.994		Ethyl-t-Butyl Ether (ETBE)	ND	0.99	0.994	
1,3-Dichloropropane	ND	0.99	0.994		Tert-Amyl-Methyl Ether (TAME)	ND	0.99	0.994	
2,2-Dichloropropane	ND	5.0	0.994		Ethanol	ND	500	0.994	
1,1-Dichloropropene	ND	2.0	0.994						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	97	79-133		
1,2-Dichloroethane-d4	103	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

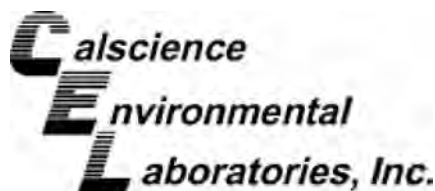
Project: Former Chemoil Facility / WA1617

Page 2 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-3	12-05-2112-2-D	05/30/12 15:58	Solid	GC/MS OO	05/30/12	06/02/12 13:34	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	38	35	0.696		c-1,3-Dichloropropene	ND	0.70	0.696	
Benzene	ND	0.70	0.696		t-1,3-Dichloropropene	ND	1.4	0.696	
Bromobenzene	ND	0.70	0.696		Ethylbenzene	ND	0.70	0.696	
Bromochloromethane	ND	1.4	0.696		2-Hexanone	ND	14	0.696	
Bromodichloromethane	ND	0.70	0.696		Isopropylbenzene	ND	0.70	0.696	
Bromoform	ND	3.5	0.696		p-Isopropyltoluene	ND	0.70	0.696	
Bromomethane	ND	14	0.696		Methylene Chloride	ND	7.0	0.696	
2-Butanone	ND	14	0.696		4-Methyl-2-Pentanone	ND	14	0.696	
n-Butylbenzene	ND	0.70	0.696		Naphthalene	ND	7.0	0.696	
sec-Butylbenzene	ND	0.70	0.696		n-Propylbenzene	ND	1.4	0.696	
tert-Butylbenzene	ND	0.70	0.696		Styrene	ND	0.70	0.696	
Carbon Disulfide	ND	7.0	0.696		1,1,1,2-Tetrachloroethane	ND	0.70	0.696	
Carbon Tetrachloride	ND	0.70	0.696		1,1,2,2-Tetrachloroethane	ND	1.4	0.696	
Chlorobenzene	ND	0.70	0.696		Tetrachloroethene	ND	0.70	0.696	
Chloroethane	ND	1.4	0.696		Toluene	ND	0.70	0.696	
Chloroform	ND	0.70	0.696		1,2,3-Trichlorobenzene	ND	1.4	0.696	
Chloromethane	ND	14	0.696		1,2,4-Trichlorobenzene	ND	1.4	0.696	
2-Chlorotoluene	ND	0.70	0.696		1,1,1-Trichloroethane	ND	0.70	0.696	
4-Chlorotoluene	ND	0.70	0.696		1,1,2-Trichloroethane	ND	0.70	0.696	
Dibromochloromethane	ND	1.4	0.696		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	7.0	0.696	
1,2-Dibromo-3-Chloropropane	ND	3.5	0.696		Trichloroethene	ND	1.4	0.696	
1,2-Dibromoethane	ND	0.70	0.696		Trichlorofluoromethane	ND	7.0	0.696	
Dibromomethane	ND	0.70	0.696		1,2,3-Trichloropropane	ND	1.4	0.696	
1,2-Dichlorobenzene	ND	0.70	0.696		1,2,4-Trimethylbenzene	ND	1.4	0.696	
1,3-Dichlorobenzene	ND	0.70	0.696		1,3,5-Trimethylbenzene	ND	1.4	0.696	
1,4-Dichlorobenzene	ND	0.70	0.696		Vinyl Acetate	ND	7.0	0.696	
Dichlorodifluoromethane	ND	1.4	0.696		Vinyl Chloride	ND	0.70	0.696	
1,1-Dichloroethane	ND	0.70	0.696		p/m-Xylene	ND	1.4	0.696	
1,2-Dichloroethane	ND	0.70	0.696		o-Xylene	ND	0.70	0.696	
1,1-Dichloroethene	ND	0.70	0.696		Methyl-t-Butyl Ether (MTBE)	ND	1.4	0.696	
c-1,2-Dichloroethene	ND	0.70	0.696		Tert-Butyl Alcohol (TBA)	ND	14	0.696	
t-1,2-Dichloroethene	ND	0.70	0.696		Diisopropyl Ether (DIPE)	ND	0.70	0.696	
1,2-Dichloropropane	ND	0.70	0.696		Ethyl-t-Butyl Ether (ETBE)	ND	0.70	0.696	
1,3-Dichloropropane	ND	0.70	0.696		Tert-Amyl-Methyl Ether (TAME)	ND	0.70	0.696	
2,2-Dichloropropane	ND	3.5	0.696		Ethanol	ND	350	0.696	
1,1-Dichloropropene	ND	1.4	0.696						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	100	80-120			Dibromofluoromethane	98	79-133		
1,2-Dichloroethane-d4	109	71-155			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

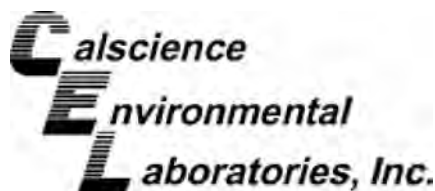
Project: Former Chemoil Facility / WA1617

Page 3 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-4.5	12-05-2112-3-D	05/30/12 16:05	Solid	GC/MS OO	05/30/12	06/02/12 14:02	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	49	0.986		c-1,3-Dichloropropene	ND	0.99	0.986	
Benzene	ND	0.99	0.986		t-1,3-Dichloropropene	ND	2.0	0.986	
Bromobenzene	ND	0.99	0.986		Ethylbenzene	ND	0.99	0.986	
Bromochloromethane	ND	2.0	0.986		2-Hexanone	ND	20	0.986	
Bromodichloromethane	ND	0.99	0.986		Isopropylbenzene	ND	0.99	0.986	
Bromoform	ND	4.9	0.986		p-Isopropyltoluene	ND	0.99	0.986	
Bromomethane	ND	20	0.986		Methylene Chloride	ND	9.9	0.986	
2-Butanone	ND	20	0.986		4-Methyl-2-Pentanone	ND	20	0.986	
n-Butylbenzene	ND	0.99	0.986		Naphthalene	ND	9.9	0.986	
sec-Butylbenzene	ND	0.99	0.986		n-Propylbenzene	ND	2.0	0.986	
tert-Butylbenzene	ND	0.99	0.986		Styrene	ND	0.99	0.986	
Carbon Disulfide	ND	9.9	0.986		1,1,1,2-Tetrachloroethane	ND	0.99	0.986	
Carbon Tetrachloride	ND	0.99	0.986		1,1,2,2-Tetrachloroethane	ND	2.0	0.986	
Chlorobenzene	ND	0.99	0.986		Tetrachloroethene	ND	0.99	0.986	
Chloroethane	ND	2.0	0.986		Toluene	ND	0.99	0.986	
Chloroform	ND	0.99	0.986		1,2,3-Trichlorobenzene	ND	2.0	0.986	
Chloromethane	ND	20	0.986		1,2,4-Trichlorobenzene	ND	2.0	0.986	
2-Chlorotoluene	ND	0.99	0.986		1,1,1-Trichloroethane	ND	0.99	0.986	
4-Chlorotoluene	ND	0.99	0.986		1,1,2-Trichloroethane	ND	0.99	0.986	
Dibromochloromethane	ND	2.0	0.986		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.9	0.986	
1,2-Dibromo-3-Chloropropane	ND	4.9	0.986		Trichloroethene	ND	2.0	0.986	
1,2-Dibromoethane	ND	0.99	0.986		Trichlorofluoromethane	ND	9.9	0.986	
Dibromomethane	ND	0.99	0.986		1,2,3-Trichloropropane	ND	2.0	0.986	
1,2-Dichlorobenzene	ND	0.99	0.986		1,2,4-Trimethylbenzene	ND	2.0	0.986	
1,3-Dichlorobenzene	ND	0.99	0.986		1,3,5-Trimethylbenzene	ND	2.0	0.986	
1,4-Dichlorobenzene	ND	0.99	0.986		Vinyl Acetate	ND	9.9	0.986	
Dichlorodifluoromethane	ND	2.0	0.986		Vinyl Chloride	ND	0.99	0.986	
1,1-Dichloroethane	ND	0.99	0.986		p/m-Xylene	ND	2.0	0.986	
1,2-Dichloroethane	ND	0.99	0.986		o-Xylene	ND	0.99	0.986	
1,1-Dichloroethene	ND	0.99	0.986		Methyl-t-Butyl Ether (MTBE)	ND	2.0	0.986	
c-1,2-Dichloroethene	ND	0.99	0.986		Tert-Butyl Alcohol (TBA)	ND	20	0.986	
t-1,2-Dichloroethene	ND	0.99	0.986		Diisopropyl Ether (DIPE)	ND	0.99	0.986	
1,2-Dichloropropane	ND	0.99	0.986		Ethyl-t-Butyl Ether (ETBE)	ND	0.99	0.986	
1,3-Dichloropropane	ND	0.99	0.986		Tert-Amyl-Methyl Ether (TAME)	ND	0.99	0.986	
2,2-Dichloropropane	ND	4.9	0.986		Ethanol	ND	490	0.986	
1,1-Dichloropropene	ND	2.0	0.986						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	80-120			Dibromofluoromethane	94	79-133		
1,2-Dichloroethane-d4	107	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

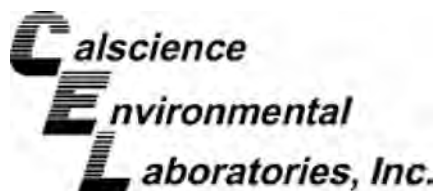
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-1	12-05-2112-6-D	05/31/12 11:04	Solid	GC/MS OO	05/31/12	06/02/12 14:30	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	42	0.831		c-1,3-Dichloropropene	ND	0.83	0.831	
Benzene	ND	0.83	0.831		t-1,3-Dichloropropene	ND	1.7	0.831	
Bromobenzene	ND	0.83	0.831		Ethylbenzene	ND	0.83	0.831	
Bromochloromethane	ND	1.7	0.831		2-Hexanone	ND	17	0.831	
Bromodichloromethane	ND	0.83	0.831		Isopropylbenzene	ND	0.83	0.831	
Bromoform	ND	4.2	0.831		p-Isopropyltoluene	ND	0.83	0.831	
Bromomethane	ND	17	0.831		Methylene Chloride	ND	8.3	0.831	
2-Butanone	ND	17	0.831		4-Methyl-2-Pentanone	ND	17	0.831	
n-Butylbenzene	ND	0.83	0.831		Naphthalene	ND	8.3	0.831	
sec-Butylbenzene	ND	0.83	0.831		n-Propylbenzene	ND	1.7	0.831	
tert-Butylbenzene	ND	0.83	0.831		Styrene	ND	0.83	0.831	
Carbon Disulfide	ND	8.3	0.831		1,1,1,2-Tetrachloroethane	ND	0.83	0.831	
Carbon Tetrachloride	ND	0.83	0.831		1,1,2,2-Tetrachloroethane	ND	1.7	0.831	
Chlorobenzene	ND	0.83	0.831		Tetrachloroethene	ND	0.83	0.831	
Chloroethane	ND	1.7	0.831		Toluene	ND	0.83	0.831	
Chloroform	ND	0.83	0.831		1,2,3-Trichlorobenzene	ND	1.7	0.831	
Chloromethane	ND	17	0.831		1,2,4-Trichlorobenzene	ND	1.7	0.831	
2-Chlorotoluene	ND	0.83	0.831		1,1,1-Trichloroethane	ND	0.83	0.831	
4-Chlorotoluene	ND	0.83	0.831		1,1,2-Trichloroethane	ND	0.83	0.831	
Dibromochloromethane	ND	1.7	0.831		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.3	0.831	
1,2-Dibromo-3-Chloropropane	ND	4.2	0.831		Trichloroethene	ND	1.7	0.831	
1,2-Dibromoethane	ND	0.83	0.831		Trichlorofluoromethane	ND	8.3	0.831	
Dibromomethane	ND	0.83	0.831		1,2,3-Trichloropropane	ND	1.7	0.831	
1,2-Dichlorobenzene	ND	0.83	0.831		1,2,4-Trimethylbenzene	ND	1.7	0.831	
1,3-Dichlorobenzene	ND	0.83	0.831		1,3,5-Trimethylbenzene	ND	1.7	0.831	
1,4-Dichlorobenzene	ND	0.83	0.831		Vinyl Acetate	ND	8.3	0.831	
Dichlorodifluoromethane	ND	1.7	0.831		Vinyl Chloride	ND	0.83	0.831	
1,1-Dichloroethane	ND	0.83	0.831		p/m-Xylene	ND	1.7	0.831	
1,2-Dichloroethane	ND	0.83	0.831		o-Xylene	ND	0.83	0.831	
1,1-Dichloroethene	ND	0.83	0.831		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.831	
c-1,2-Dichloroethene	ND	0.83	0.831		Tert-Butyl Alcohol (TBA)	ND	17	0.831	
t-1,2-Dichloroethene	ND	0.83	0.831		Diisopropyl Ether (DIPE)	ND	0.83	0.831	
1,2-Dichloropropane	ND	0.83	0.831		Ethyl-t-Butyl Ether (ETBE)	ND	0.83	0.831	
1,3-Dichloropropane	ND	0.83	0.831		Tert-Amyl-Methyl Ether (TAME)	ND	0.83	0.831	
2,2-Dichloropropane	ND	4.2	0.831		Ethanol	ND	420	0.831	
1,1-Dichloropropene	ND	1.7	0.831						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	95	79-133		
1,2-Dichloroethane-d4	106	71-155			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

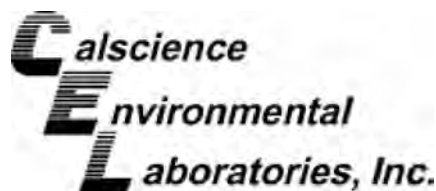
Project: Former Chemoil Facility / WA1617

Page 5 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-3	12-05-2112-7-D	05/31/12 11:15	Solid	GC/MS OO	05/31/12	06/02/12 14:58	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	44	0.88		c-1,3-Dichloropropene	ND	0.88	0.88	
Benzene	ND	0.88	0.88		t-1,3-Dichloropropene	ND	1.8	0.88	
Bromobenzene	ND	0.88	0.88		Ethylbenzene	ND	0.88	0.88	
Bromochloromethane	ND	1.8	0.88		2-Hexanone	ND	18	0.88	
Bromodichloromethane	ND	0.88	0.88		Isopropylbenzene	ND	0.88	0.88	
Bromoform	ND	4.4	0.88		p-Isopropyltoluene	ND	0.88	0.88	
Bromomethane	ND	18	0.88		Methylene Chloride	ND	8.8	0.88	
2-Butanone	ND	18	0.88		4-Methyl-2-Pentanone	ND	18	0.88	
n-Butylbenzene	ND	0.88	0.88		Naphthalene	ND	8.8	0.88	
sec-Butylbenzene	ND	0.88	0.88		n-Propylbenzene	ND	1.8	0.88	
tert-Butylbenzene	ND	0.88	0.88		Styrene	ND	0.88	0.88	
Carbon Disulfide	ND	8.8	0.88		1,1,1,2-Tetrachloroethane	ND	0.88	0.88	
Carbon Tetrachloride	ND	0.88	0.88		1,1,2,2-Tetrachloroethane	ND	1.8	0.88	
Chlorobenzene	ND	0.88	0.88		Tetrachloroethene	ND	0.88	0.88	
Chloroethane	ND	1.8	0.88		Toluene	ND	0.88	0.88	
Chloroform	ND	0.88	0.88		1,2,3-Trichlorobenzene	ND	1.8	0.88	
Chloromethane	ND	18	0.88		1,2,4-Trichlorobenzene	ND	1.8	0.88	
2-Chlorotoluene	ND	0.88	0.88		1,1,1-Trichloroethane	ND	0.88	0.88	
4-Chlorotoluene	ND	0.88	0.88		1,1,2-Trichloroethane	ND	0.88	0.88	
Dibromochloromethane	ND	1.8	0.88		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.8	0.88	
1,2-Dibromo-3-Chloropropane	ND	4.4	0.88		Trichloroethene	ND	1.8	0.88	
1,2-Dibromoethane	ND	0.88	0.88		Trichlorofluoromethane	ND	8.8	0.88	
Dibromomethane	ND	0.88	0.88		1,2,3-Trichloropropane	ND	1.8	0.88	
1,2-Dichlorobenzene	ND	0.88	0.88		1,2,4-Trimethylbenzene	ND	1.8	0.88	
1,3-Dichlorobenzene	ND	0.88	0.88		1,3,5-Trimethylbenzene	ND	1.8	0.88	
1,4-Dichlorobenzene	ND	0.88	0.88		Vinyl Acetate	ND	8.8	0.88	
Dichlorodifluoromethane	ND	1.8	0.88		Vinyl Chloride	ND	0.88	0.88	
1,1-Dichloroethane	ND	0.88	0.88		p/m-Xylene	ND	1.8	0.88	
1,2-Dichloroethane	ND	0.88	0.88		o-Xylene	ND	0.88	0.88	
1,1-Dichloroethene	ND	0.88	0.88		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.88	
c-1,2-Dichloroethene	ND	0.88	0.88		Tert-Butyl Alcohol (TBA)	ND	18	0.88	
t-1,2-Dichloroethene	ND	0.88	0.88		Diisopropyl Ether (DIPE)	ND	0.88	0.88	
1,2-Dichloropropane	ND	0.88	0.88		Ethyl-t-Butyl Ether (ETBE)	ND	0.88	0.88	
1,3-Dichloropropane	ND	0.88	0.88		Tert-Amyl-Methyl Ether (TAME)	ND	0.88	0.88	
2,2-Dichloropropane	ND	4.4	0.88		Ethanol	ND	440	0.88	
1,1-Dichloropropene	ND	1.8	0.88						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	94	79-133		
1,2-Dichloroethane-d4	105	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

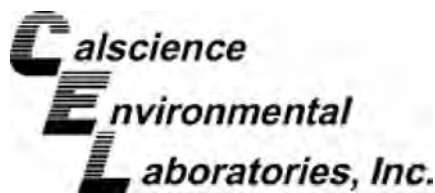
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-4.5	12-05-2112-8-D	05/31/12 11:21	Solid	GC/MS OO	05/31/12	06/02/12 15:27	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	41	0.826		c-1,3-Dichloropropene	ND	0.83	0.826	
Benzene	ND	0.83	0.826		t-1,3-Dichloropropene	ND	1.7	0.826	
Bromobenzene	ND	0.83	0.826		Ethylbenzene	ND	0.83	0.826	
Bromochloromethane	ND	1.7	0.826		2-Hexanone	ND	17	0.826	
Bromodichloromethane	ND	0.83	0.826		Isopropylbenzene	ND	0.83	0.826	
Bromoform	ND	4.1	0.826		p-Isopropyltoluene	ND	0.83	0.826	
Bromomethane	ND	17	0.826		Methylene Chloride	ND	8.3	0.826	
2-Butanone	ND	17	0.826		4-Methyl-2-Pentanone	ND	17	0.826	
n-Butylbenzene	ND	0.83	0.826		Naphthalene	ND	8.3	0.826	
sec-Butylbenzene	ND	0.83	0.826		n-Propylbenzene	ND	1.7	0.826	
tert-Butylbenzene	ND	0.83	0.826		Styrene	ND	0.83	0.826	
Carbon Disulfide	ND	8.3	0.826		1,1,1,2-Tetrachloroethane	ND	0.83	0.826	
Carbon Tetrachloride	ND	0.83	0.826		1,1,2,2-Tetrachloroethane	ND	1.7	0.826	
Chlorobenzene	ND	0.83	0.826		Tetrachloroethene	ND	0.83	0.826	
Chloroethane	ND	1.7	0.826		Toluene	ND	0.83	0.826	
Chloroform	ND	0.83	0.826		1,2,3-Trichlorobenzene	ND	1.7	0.826	
Chloromethane	ND	17	0.826		1,2,4-Trichlorobenzene	ND	1.7	0.826	
2-Chlorotoluene	ND	0.83	0.826		1,1,1-Trichloroethane	ND	0.83	0.826	
4-Chlorotoluene	ND	0.83	0.826		1,1,2-Trichloroethane	ND	0.83	0.826	
Dibromochloromethane	ND	1.7	0.826		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.3	0.826	
1,2-Dibromo-3-Chloropropane	ND	4.1	0.826		Trichloroethene	ND	1.7	0.826	
1,2-Dibromoethane	ND	0.83	0.826		Trichlorofluoromethane	ND	8.3	0.826	
Dibromomethane	ND	0.83	0.826		1,2,3-Trichloropropane	ND	1.7	0.826	
1,2-Dichlorobenzene	ND	0.83	0.826		1,2,4-Trimethylbenzene	ND	1.7	0.826	
1,3-Dichlorobenzene	ND	0.83	0.826		1,3,5-Trimethylbenzene	ND	1.7	0.826	
1,4-Dichlorobenzene	ND	0.83	0.826		Vinyl Acetate	ND	8.3	0.826	
Dichlorodifluoromethane	ND	1.7	0.826		Vinyl Chloride	ND	0.83	0.826	
1,1-Dichloroethane	ND	0.83	0.826		p/m-Xylene	ND	1.7	0.826	
1,2-Dichloroethane	ND	0.83	0.826		o-Xylene	ND	0.83	0.826	
1,1-Dichloroethene	ND	0.83	0.826		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.826	
c-1,2-Dichloroethene	ND	0.83	0.826		Tert-Butyl Alcohol (TBA)	ND	17	0.826	
t-1,2-Dichloroethene	ND	0.83	0.826		Diisopropyl Ether (DIPE)	ND	0.83	0.826	
1,2-Dichloropropane	ND	0.83	0.826		Ethyl-t-Butyl Ether (ETBE)	ND	0.83	0.826	
1,3-Dichloropropane	ND	0.83	0.826		Tert-Amyl-Methyl Ether (TAME)	ND	0.83	0.826	
2,2-Dichloropropane	ND	4.1	0.826		Ethanol	ND	410	0.826	
1,1-Dichloropropene	ND	1.7	0.826						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	95	79-133		
1,2-Dichloroethane-d4	106	71-155			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

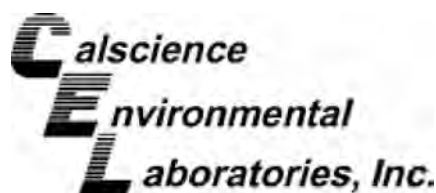
Project: Former Chemoil Facility / WA1617

Page 7 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-312-144	N/A	Solid	GC/MS OO	06/02/12	06/02/12 11:40	120602L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		c-1,3-Dichloropropene	ND	1.0	1	
Benzene	ND	1.0	1		t-1,3-Dichloropropene	ND	2.0	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	2.0	1		2-Hexanone	ND	20	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	5.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	20	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	20	1		4-Methyl-2-Pentanone	ND	20	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	2.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	2.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	2.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	2.0	1	
Chloromethane	ND	20	1		1,2,4-Trichlorobenzene	ND	2.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
Dibromochloromethane	ND	2.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	2.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	2.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	2.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	2.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	2.0	1		Vinyl Chloride	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	2.0	1	
1,2-Dichloroethane	ND	1.0	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	20	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1	
2,2-Dichloropropane	ND	5.0	1		Ethanol	ND	500	1	
1,1-Dichloropropene	ND	2.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	80-120			Dibromofluoromethane	97	79-133		
1,2-Dichloroethane-d4	100	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

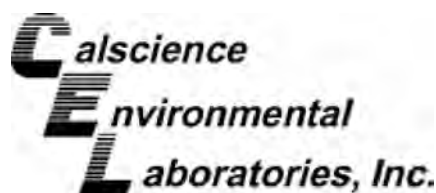
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-28-17	12-05-2112-4-B	05/30/12 16:55	Aqueous	GC/MS GGG	06/05/12	06/05/12 15:48	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	94	80-126		
1,2-Dichloroethane-d4	96	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

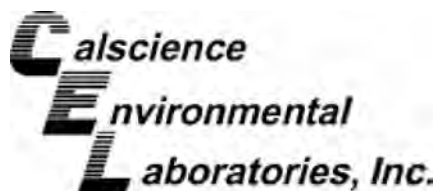
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-053112	12-05-2112-5-A	05/31/12 10:50	Aqueous	GC/MS GGG	06/05/12	06/05/12 18:30	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	97	80-126		
1,2-Dichloroethane-d4	97	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

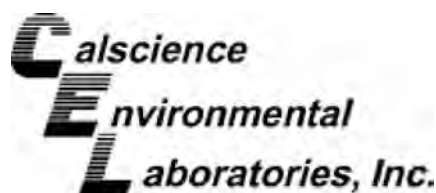
Project: Former Chemoil Facility / WA1617

Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-26-14	12-05-2112-9-B	05/31/12 11:55	Aqueous	GC/MS GGG	06/05/12	06/05/12 17:58	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	97	80-126		
1,2-Dichloroethane-d4	98	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

Project: Former Chemoil Facility / WA1617

Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-316-545	N/A	Aqueous	GC/MS GGG	06/05/12	06/05/12 15:15	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	93	80-126		
1,2-Dichloroethane-d4	95	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

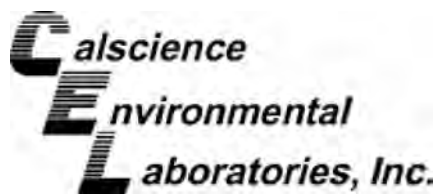
Project: Former Chemoil Facility / WA1617

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
TB-053112	12-05-2112-10-A	05/31/12 15:35	Aqueous	GC/MS GGG	06/05/12	06/05/12 19:02	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	80-120			Dibromofluoromethane	97	80-126		
1,2-Dichloroethane-d4	99	80-134			Toluene-d8	101	80-120		

Return to Contents



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

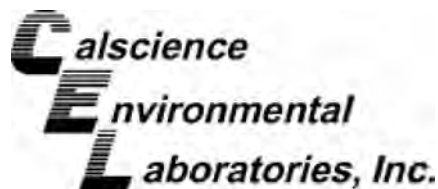
Project: Former Chemoil Facility / WA1617

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-316-545	N/A	Aqueous	GC/MS GGG	06/05/12	06/05/12 15:15	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
Surrogates:	REC (%)	Control Limits	DF	Qual	Surrogates:	REC (%)	Control Limits	DF	Qual
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	93	80-126		
1,2-Dichloroethane-d4	95	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

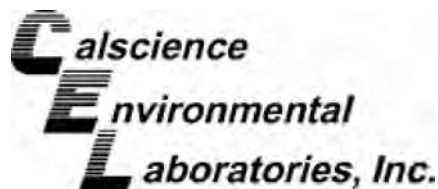
Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-26-4.5	Solid	GC 46	06/01/12	06/01/12	120601S15

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	ND	400.0	336.5	84	354.2	89	64-130	5	0-15	

RPD - Relative Percent Difference , CL - Control Limit



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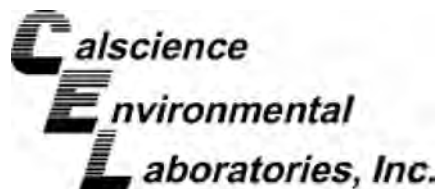
Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-05-1831-8	Aqueous	GC 57	06/05/12	06/05/12	120605S01

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	147.8	2000	1950	90	1998	92	68-122	2	0-18	

RPD - Relative Percent Difference , CL - Control Limit



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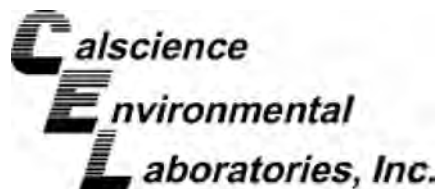
Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-28-1	Solid	GC 29	06/04/12	06/05/12	120604S02

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	ND	10.00	7.295	73	7.483	75	48-114	3	0-23	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



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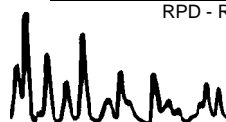
Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B

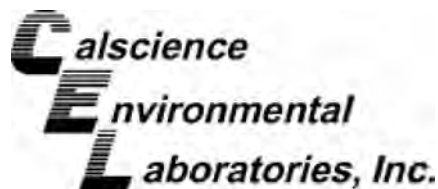
Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-28-17	Aqueous	GC/MS GGG	06/05/12	06/05/12	120605S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Acetone	ND	50.00	50.44	101	51.58	103	70-130	2	0-20	
Benzene	ND	50.00	55.33	111	52.01	104	78-120	6	0-20	
Bromobenzene	ND	50.00	55.43	111	52.42	105	70-130	6	0-20	
Bromochloromethane	ND	50.00	54.34	109	53.65	107	70-130	1	0-20	
Bromodichloromethane	ND	50.00	54.92	110	52.12	104	70-130	5	0-20	
Bromoform	ND	50.00	53.26	107	52.79	106	70-130	1	0-20	
Bromomethane	ND	50.00	29.49	59	30.21	60	70-130	2	0-20	3
2-Butanone	ND	50.00	54.75	109	54.25	109	70-130	1	0-20	
n-Butylbenzene	ND	50.00	54.56	109	50.68	101	70-130	7	0-25	
sec-Butylbenzene	ND	50.00	55.17	110	51.98	104	70-130	6	0-20	
tert-Butylbenzene	ND	50.00	57.12	114	54.11	108	70-130	5	0-20	
Carbon Disulfide	ND	50.00	40.61	81	38.12	76	70-130	6	0-20	
Carbon Tetrachloride	ND	50.00	55.10	110	52.07	104	69-139	6	0-20	
Chlorobenzene	ND	50.00	54.78	110	51.47	103	70-130	6	0-20	
Chloroethane	ND	50.00	53.77	108	50.81	102	70-130	6	0-20	
Chloroform	ND	50.00	54.14	108	52.01	104	70-130	4	0-20	
Chloromethane	ND	50.00	55.66	111	52.23	104	70-130	6	0-20	
2-Chlorotoluene	ND	50.00	55.83	112	52.37	105	70-130	6	0-20	
4-Chlorotoluene	ND	50.00	52.65	105	49.21	98	70-130	7	0-20	
Dibromochloromethane	ND	50.00	55.73	111	52.99	106	70-130	5	0-20	
1,2-Dibromo-3-Chloropropane	ND	50.00	56.91	114	57.30	115	70-130	1	0-20	
1,2-Dibromoethane	ND	50.00	54.89	110	53.04	106	80-123	3	0-20	
Dibromomethane	ND	50.00	54.27	109	52.28	105	70-130	4	0-20	
1,2-Dichlorobenzene	ND	50.00	54.58	109	52.11	104	76-120	5	0-20	
1,3-Dichlorobenzene	ND	50.00	53.13	106	50.49	101	70-130	5	0-20	
1,4-Dichlorobenzene	ND	50.00	51.46	103	48.49	97	70-130	6	0-20	
Dichlorodifluoromethane	ND	50.00	58.34	117	54.78	110	70-130	6	0-20	
1,1-Dichloroethane	ND	50.00	51.83	104	49.06	98	70-130	6	0-20	
1,2-Dichloroethane	ND	50.00	54.62	109	52.28	105	76-130	4	0-20	
1,1-Dichloroethene	ND	50.00	44.16	88	41.65	83	70-130	6	0-27	
c-1,2-Dichloroethene	ND	50.00	54.25	109	51.34	103	70-130	6	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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Suite 180
Riverside, CA 92507-2373

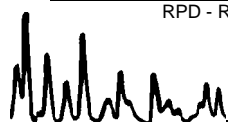
Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B

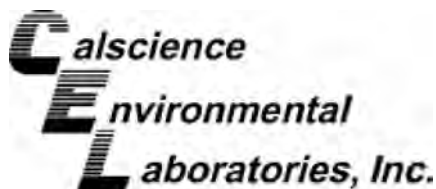
Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-28-17	Aqueous	GC/MS GGG	06/05/12	06/05/12	120605S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
t-1,2-Dichloroethene	ND	50.00	49.85	100	46.68	93	70-130	7	0-20	
1,2-Dichloropropane	ND	50.00	55.88	112	53.47	107	70-130	4	0-25	
1,3-Dichloropropane	ND	50.00	54.83	110	52.90	106	70-130	4	0-20	
2,2-Dichloropropane	ND	50.00	56.93	114	51.38	103	70-130	10	0-20	
1,1-Dichloropropene	ND	50.00	56.07	112	52.37	105	70-130	7	0-20	
c-1,3-Dichloropropene	ND	50.00	59.69	119	56.64	113	70-130	5	0-20	
t-1,3-Dichloropropene	ND	50.00	58.02	116	55.06	110	70-130	5	0-20	
Ethylbenzene	ND	50.00	55.55	111	51.93	104	73-127	7	0-20	
2-Hexanone	ND	50.00	54.06	108	54.03	108	70-130	0	0-20	
Isopropylbenzene	ND	50.00	56.44	113	52.75	106	70-130	7	0-20	
p-Isopropyltoluene	ND	50.00	53.91	108	50.88	102	70-130	6	0-20	
Methylene Chloride	ND	50.00	51.82	104	50.24	100	70-130	3	0-20	
4-Methyl-2-Pentanone	ND	50.00	55.46	111	55.10	110	70-130	1	0-20	
Naphthalene	ND	50.00	58.81	118	58.00	116	70-130	1	0-20	
n-Propylbenzene	ND	50.00	56.30	113	52.17	104	70-130	8	0-20	
Styrene	ND	50.00	55.71	111	52.15	104	70-130	7	0-20	
1,1,1,2-Tetrachloroethane	ND	50.00	57.00	114	53.16	106	70-130	7	0-20	
1,1,2,2-Tetrachloroethane	ND	50.00	61.74	123	61.24	122	70-130	1	0-20	
Tetrachloroethene	ND	50.00	50.34	101	46.77	94	70-130	7	0-20	
Toluene	ND	50.00	56.35	113	52.42	105	72-126	7	0-20	
1,2,3-Trichlorobenzene	ND	50.00	57.19	114	55.00	110	70-130	4	0-20	
1,2,4-Trichlorobenzene	ND	50.00	54.47	109	51.13	102	70-130	6	0-20	
1,1,1-Trichloroethane	ND	50.00	54.99	110	51.71	103	70-130	6	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50.00	45.60	91	42.84	86	70-130	6	0-20	
1,1,2-Trichloroethane	ND	50.00	55.00	110	52.39	105	70-130	5	0-20	
Trichloroethene	ND	50.00	50.53	101	47.11	94	74-122	7	0-20	
Trichlorofluoromethane	ND	50.00	56.32	113	53.56	107	70-130	5	0-20	
1,2,3-Trichloropropane	ND	50.00	55.98	112	54.03	108	70-130	4	0-20	
1,2,4-Trimethylbenzene	ND	50.00	54.30	109	51.03	102	70-130	6	0-20	
1,3,5-Trimethylbenzene	ND	50.00	56.20	112	51.90	104	70-130	8	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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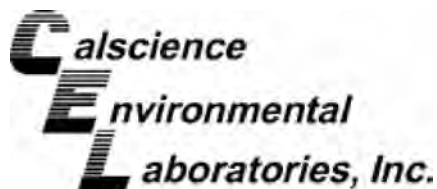
Date Received: 05/31/12
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-28-17	Aqueous	GC/MS GGG	06/05/12	06/05/12	120605S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Vinyl Acetate	ND	50.00	25.34	51	25.72	51	70-130	1	0-20	3
Vinyl Chloride	ND	50.00	53.92	108	49.80	100	65-131	8	0-24	
p/m-Xylene	ND	100.0	109.9	110	102.8	103	70-130	7	0-20	
o-Xylene	ND	50.00	55.15	110	51.88	104	70-130	6	0-20	
Methyl-t-Butyl Ether (MTBE)	ND	50.00	47.93	96	47.24	94	69-123	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
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Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 3550B
Method: EPA 8015B (M)

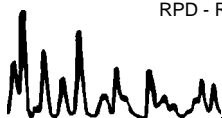
Project: Former Chemoil Facility / WA1617

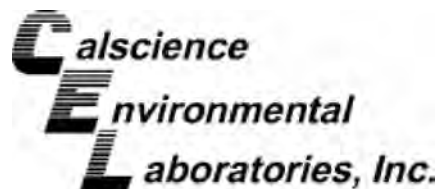
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-275-4,548	Solid	GC 46	06/01/12	06/01/12	120601B15

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	400.0	321.7	80	342.9	86	75-123	6	0-12	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
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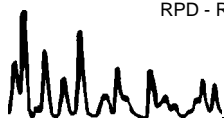
Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 3510C
Method: EPA 8015B (M)

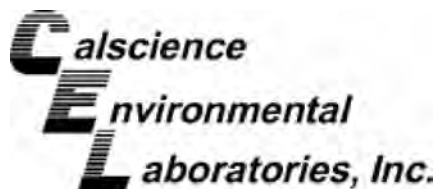
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-330-2,246	Aqueous	GC 45	06/05/12	06/06/12	120605B11

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	2000	1792	90	1976	99	75-117	10	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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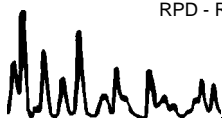
Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 3510C
Method: EPA 8015B (M)

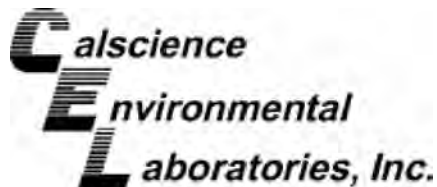
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-330-2,247	Aqueous	GC 45	06/05/12	06/06/12	120605B11S

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	2000	1952	98	2013	101	75-117	3	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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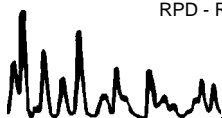
Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8015B (M)

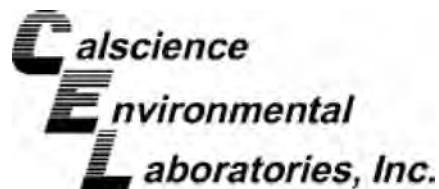
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-436-7,491	Aqueous	GC 57	06/05/12	06/05/12	120605B01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	2000	1772	89	1815	91	78-120	2	0-10	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8015B (M)

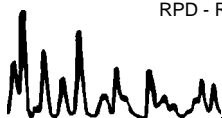
Project: Former Chemoil Facility / WA1617

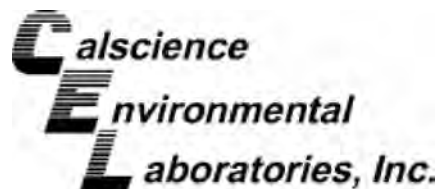
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-571-350	Solid	GC 29	06/04/12	06/04/12	120604B02

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	10.00	8.784	88	8.450	84	70-124	4	0-18	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



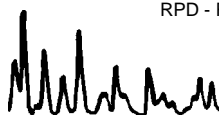
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

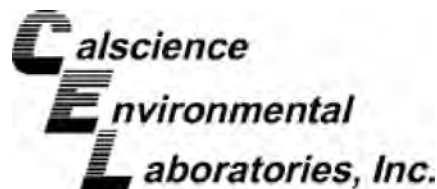
Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-144	Solid	GC/MS OO	06/02/12		06/02/12		120602L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC</u> CL	<u>ME</u> CL	<u>RPD</u>	<u>RPD</u> CL	Qualifiers
Acetone	50.00	55.84	112	53.38	107	80-120	73-127	5	0-20	X
Benzene	50.00	49.56	99	50.61	101	80-120	73-127	2	0-20	
Bromobenzene	50.00	51.51	103	50.76	102	80-120	73-127	1	0-20	
Bromochloromethane	50.00	52.47	105	53.34	107	80-120	73-127	2	0-20	
Bromodichloromethane	50.00	53.43	107	54.13	108	80-120	73-127	1	0-20	
Bromoform	50.00	49.61	99	49.99	100	80-120	73-127	1	0-20	
Bromomethane	50.00	65.76	132	64.71	129	80-120	73-127	2	0-20	
2-Butanone	50.00	55.91	112	53.15	106	80-120	73-127	5	0-20	
n-Butylbenzene	50.00	53.07	106	52.86	106	77-123	69-131	0	0-25	
sec-Butylbenzene	50.00	52.10	104	52.31	105	80-120	73-127	0	0-20	
tert-Butylbenzene	50.00	52.21	104	52.01	104	80-120	73-127	0	0-20	
Carbon Disulfide	50.00	46.66	93	46.48	93	80-120	73-127	0	0-20	
Carbon Tetrachloride	50.00	55.98	112	55.99	112	65-137	53-149	0	0-20	
Chlorobenzene	50.00	51.94	104	51.25	103	80-120	73-127	1	0-20	
Chloroethane	50.00	49.46	99	49.01	98	80-120	73-127	1	0-20	
Chloroform	50.00	51.04	102	51.31	103	80-120	73-127	1	0-20	
Chloromethane	50.00	51.67	103	53.28	107	80-120	73-127	3	0-20	
2-Chlorotoluene	50.00	51.06	102	50.35	101	80-120	73-127	1	0-20	
4-Chlorotoluene	50.00	50.85	102	51.09	102	80-120	73-127	0	0-20	
Dibromochloromethane	50.00	56.78	114	56.34	113	80-120	73-127	1	0-20	
1,2-Dibromo-3-Chloropropane	50.00	49.95	100	50.75	102	80-120	73-127	2	0-20	
1,2-Dibromoethane	50.00	52.43	105	52.75	105	80-120	73-127	1	0-20	
Dibromomethane	50.00	50.80	102	51.70	103	80-120	73-127	2	0-20	
1,2-Dichlorobenzene	50.00	51.81	104	52.33	105	80-120	73-127	1	0-20	
1,3-Dichlorobenzene	50.00	52.06	104	52.15	104	80-120	73-127	0	0-20	
1,4-Dichlorobenzene	50.00	51.80	104	51.68	103	80-120	73-127	0	0-20	
Dichlorodifluoromethane	50.00	57.37	115	57.71	115	80-120	73-127	1	0-20	
1,1-Dichloroethane	50.00	48.57	97	48.47	97	80-120	73-127	0	0-20	
1,2-Dichloroethane	50.00	52.06	104	52.86	106	80-120	73-127	2	0-20	
1,1-Dichloroethene	50.00	43.59	87	43.41	87	68-128	58-138	0	0-20	
c-1,2-Dichloroethene	50.00	50.71	101	51.11	102	80-120	73-127	1	0-20	
t-1,2-Dichloroethene	50.00	48.94	98	48.64	97	80-120	73-127	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



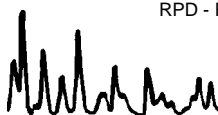
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

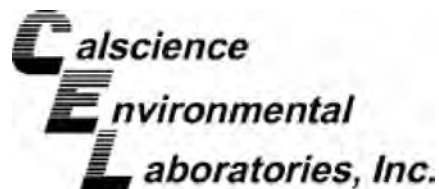
Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-144	Solid	GC/MS OO	06/02/12		06/02/12		120602L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
1,2-Dichloropropane	50.00	51.08	102	52.10	104	79-115	73-121	2	0-25	
1,3-Dichloropropane	50.00	51.44	103	51.48	103	80-120	73-127	0	0-20	
2,2-Dichloropropane	50.00	50.66	101	50.16	100	80-120	73-127	1	0-20	
1,1-Dichloropropene	50.00	53.80	108	53.60	107	80-120	73-127	0	0-20	
c-1,3-Dichloropropene	50.00	50.05	100	51.09	102	80-120	73-127	2	0-20	
t-1,3-Dichloropropene	50.00	46.09	92	46.31	93	80-120	73-127	0	0-20	
Ethylbenzene	50.00	52.09	104	51.68	103	80-120	73-127	1	0-20	
2-Hexanone	50.00	49.55	99	49.19	98	80-120	73-127	1	0-20	
Isopropylbenzene	50.00	52.43	105	51.84	104	80-120	73-127	1	0-20	
p-Isopropyltoluene	50.00	51.60	103	51.21	102	80-120	73-127	1	0-20	
Methylene Chloride	50.00	48.70	97	49.18	98	80-120	73-127	1	0-20	
4-Methyl-2-Pentanone	50.00	49.53	99	51.48	103	80-120	73-127	4	0-20	
Naphthalene	50.00	49.74	99	50.88	102	80-120	73-127	2	0-20	
n-Propylbenzene	50.00	51.93	104	51.13	102	80-120	73-127	2	0-20	
Styrene	50.00	52.07	104	51.66	103	80-120	73-127	1	0-20	
1,1,1,2-Tetrachloroethane	50.00	54.31	109	54.34	109	80-120	73-127	0	0-20	
1,1,2,2-Tetrachloroethane	50.00	53.49	107	53.52	107	80-120	73-127	0	0-20	
Tetrachloroethene	50.00	50.40	101	49.75	99	80-120	73-127	1	0-20	
Toluene	50.00	51.68	103	52.33	105	80-120	73-127	1	0-20	
1,2,3-Trichlorobenzene	50.00	50.84	102	51.67	103	80-120	73-127	2	0-20	
1,2,4-Trichlorobenzene	50.00	49.80	100	50.63	101	80-120	73-127	2	0-20	
1,1,1-Trichloroethane	50.00	51.53	103	51.23	102	80-120	73-127	1	0-20	
1,1,2-Trichloroethane	50.00	50.05	100	50.12	100	80-120	73-127	0	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	49.93	100	49.73	99	80-120	73-127	0	0-20	
Trichloroethene	50.00	50.46	101	50.66	101	80-120	73-127	0	0-20	
Trichlorofluoromethane	50.00	54.92	110	55.13	110	80-120	73-127	0	0-20	
1,2,3-Trichloropropane	50.00	51.74	103	52.25	105	80-120	73-127	1	0-20	
1,2,4-Trimethylbenzene	50.00	51.79	104	52.13	104	80-120	73-127	1	0-20	
1,3,5-Trimethylbenzene	50.00	51.91	104	52.15	104	80-120	73-127	0	0-20	
Vinyl Acetate	50.00	32.23	64	30.25	61	80-120	73-127	6	0-20	X
Vinyl Chloride	50.00	51.44	103	52.36	105	67-127	57-137	2	0-20	
p/m-Xylene	100.0	102.8	103	101.4	101	80-120	73-127	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-144	Solid	GC/MS OO	06/02/12		06/02/12		120602L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	51.13	102	51.03	102	80-120	73-127	0	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	46.53	93	46.21	92	70-124	61-133	1	0-20	
Tert-Butyl Alcohol (TBA)	250.0	253.5	101	242.8	97	73-121	65-129	4	0-20	
Diisopropyl Ether (DIPE)	50.00	49.73	99	49.70	99	69-129	59-139	0	0-20	
Ethyl-t-Butyl Ether (ETBE)	50.00	50.63	101	50.61	101	70-124	61-133	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	50.00	48.79	98	49.19	98	74-122	66-130	1	0-20	
Ethanol	500.0	500.2	100	469.6	94	51-135	37-149	6	0-27	

Total number of LCS compounds : 71

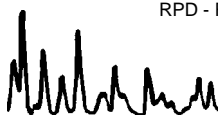
Total number of ME compounds : 0

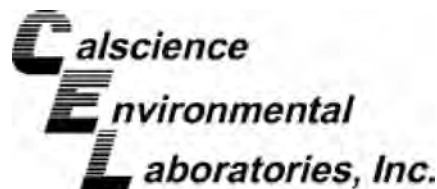
Total number of ME compounds allowed : 4

LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



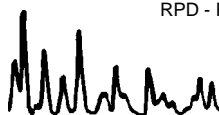
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

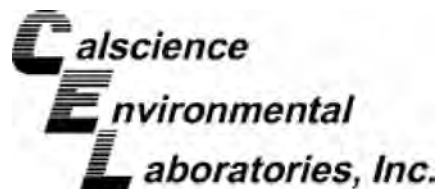
Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-545	Aqueous	GC/MS GGG	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC</u> CL	<u>ME</u> CL	RPD	RPD CL	Qualifiers
Acetone	50.00	42.08	84	45.67	91	70-130	60-140	8	0-20	X
Benzene	50.00	50.38	101	49.58	99	70-130	60-140	2	0-20	
Bromobenzene	50.00	51.58	103	50.47	101	70-130	60-140	2	0-20	
Bromochloromethane	50.00	48.93	98	48.92	98	70-130	60-140	0	0-20	
Bromodichloromethane	50.00	51.79	104	50.15	100	70-130	60-140	3	0-20	
Bromoform	50.00	51.34	103	52.00	104	70-130	60-140	1	0-20	
Bromomethane	50.00	46.66	93	36.79	74	70-130	60-140	24	0-20	
2-Butanone	50.00	45.28	91	47.36	95	70-130	60-140	5	0-20	
n-Butylbenzene	50.00	52.03	104	47.89	96	77-123	69-131	8	0-25	
sec-Butylbenzene	50.00	51.68	103	49.19	98	70-130	60-140	5	0-20	
tert-Butylbenzene	50.00	52.72	105	51.49	103	70-130	60-140	2	0-20	
Carbon Disulfide	50.00	36.92	74	36.08	72	70-130	60-140	2	0-20	
Carbon Tetrachloride	50.00	50.10	100	48.96	98	66-138	54-150	2	0-20	
Chlorobenzene	50.00	51.17	102	49.47	99	70-130	60-140	3	0-20	
Chloroethane	50.00	48.92	98	48.48	97	70-130	60-140	1	0-20	
Chloroform	50.00	48.61	97	48.42	97	70-130	60-140	0	0-20	
Chloromethane	50.00	48.82	98	48.31	97	70-130	60-140	1	0-20	
2-Chlorotoluene	50.00	51.92	104	50.21	100	70-130	60-140	3	0-20	
4-Chlorotoluene	50.00	49.17	98	47.63	95	70-130	60-140	3	0-20	
Dibromochloromethane	50.00	52.79	106	52.32	105	70-130	60-140	1	0-20	
1,2-Dibromo-3-Chloropropane	50.00	51.03	102	53.12	106	70-130	60-140	4	0-20	
1,2-Dibromoethane	50.00	50.68	101	50.82	102	70-130	60-140	0	0-20	
Dibromomethane	50.00	49.94	100	49.84	100	70-130	60-140	0	0-20	
1,2-Dichlorobenzene	50.00	50.73	101	50.10	100	70-130	60-140	1	0-20	
1,3-Dichlorobenzene	50.00	50.63	101	48.66	97	70-130	60-140	4	0-20	
1,4-Dichlorobenzene	50.00	48.75	98	47.45	95	70-130	60-140	3	0-20	
Dichlorodifluoromethane	50.00	52.74	105	51.59	103	70-130	60-140	2	0-20	
1,1-Dichloroethane	50.00	46.17	92	45.88	92	70-130	60-140	1	0-20	
1,2-Dichloroethane	50.00	50.54	101	50.12	100	80-129	72-137	1	0-20	
1,1-Dichloroethene	50.00	39.80	80	39.28	79	71-131	61-141	1	0-20	
c-1,2-Dichloroethene	50.00	47.64	95	47.99	96	70-130	60-140	1	0-20	
t-1,2-Dichloroethene	50.00	43.71	87	42.96	86	70-130	60-140	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



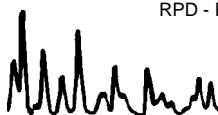
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

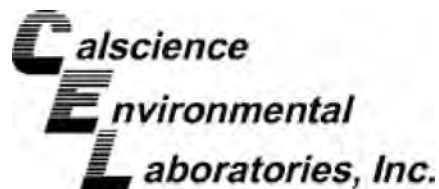
Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-545	Aqueous	GC/MS GGG	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
1,2-Dichloropropane	50.00	51.13	102	51.18	102	79-115	73-121	0	0-25	
1,3-Dichloropropane	50.00	51.04	102	50.71	101	70-130	60-140	1	0-20	
2,2-Dichloropropane	50.00	48.21	96	45.43	91	70-130	60-140	6	0-20	
1,1-Dichloropropene	50.00	50.29	101	49.08	98	70-130	60-140	2	0-20	
c-1,3-Dichloropropene	50.00	56.53	113	55.29	111	70-130	60-140	2	0-20	
t-1,3-Dichloropropene	50.00	54.99	110	53.06	106	70-130	60-140	4	0-20	
Ethylbenzene	50.00	51.03	102	49.53	99	80-123	73-130	3	0-20	
2-Hexanone	50.00	46.33	93	49.08	98	70-130	60-140	6	0-20	
Isopropylbenzene	50.00	52.27	105	50.36	101	70-130	60-140	4	0-20	
p-Isopropyltoluene	50.00	51.45	103	48.53	97	70-130	60-140	6	0-20	
Methylene Chloride	50.00	45.96	92	46.14	92	70-130	60-140	0	0-20	
4-Methyl-2-Pentanone	50.00	48.67	97	50.47	101	70-130	60-140	4	0-20	
Naphthalene	50.00	52.96	106	53.26	107	70-130	60-140	1	0-20	
n-Propylbenzene	50.00	52.41	105	49.37	99	70-130	60-140	6	0-20	
Styrene	50.00	51.98	104	50.86	102	70-130	60-140	2	0-20	
1,1,1,2-Tetrachloroethane	50.00	52.94	106	51.87	104	70-130	60-140	2	0-20	
1,1,2,2-Tetrachloroethane	50.00	54.67	109	56.85	114	70-130	60-140	4	0-20	
Tetrachloroethene	50.00	51.58	103	47.80	96	70-130	60-140	8	0-20	
Toluene	50.00	51.22	102	50.07	100	79-121	72-128	2	0-20	
1,2,3-Trichlorobenzene	50.00	53.43	107	51.30	103	70-130	60-140	4	0-20	
1,2,4-Trichlorobenzene	50.00	52.09	104	48.77	98	70-130	60-140	7	0-20	
1,1,1-Trichloroethane	50.00	49.32	99	48.45	97	70-130	60-140	2	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	42.20	84	40.34	81	70-130	60-140	5	0-20	
1,1,2-Trichloroethane	50.00	49.92	100	50.02	100	70-130	60-140	0	0-20	
Trichloroethene	50.00	47.20	94	45.25	90	70-130	60-140	4	0-20	
Trichlorofluoromethane	50.00	53.65	107	50.90	102	70-130	60-140	5	0-20	
1,2,3-Trichloropropane	50.00	49.78	100	50.56	101	70-130	60-140	2	0-20	
1,2,4-Trimethylbenzene	50.00	51.27	103	49.70	99	70-130	60-140	3	0-20	
1,3,5-Trimethylbenzene	50.00	52.36	105	49.84	100	70-130	60-140	5	0-20	
Vinyl Acetate	50.00	23.62	47	24.41	49	70-130	60-140	3	0-20	X
Vinyl Chloride	50.00	47.14	94	47.34	95	70-136	59-147	0	0-20	
p/m-Xylene	100.0	102.4	102	98.47	98	70-130	60-140	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-05-2112
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-545	Aqueous	GC/MS GGG	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	50.96	102	49.79	100	70-130	60-140	2	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	44.75	90	44.66	89	72-126	63-135	0	0-22	

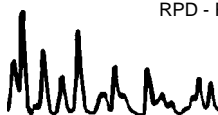
Total number of LCS compounds : 66

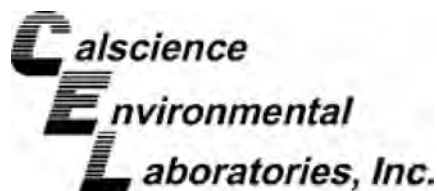
Total number of ME compounds : 0

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Glossary of Terms and Qualifiers



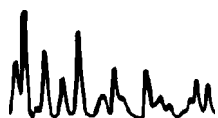
Work Order Number: 12-05-2112

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

MPN - Most Probable Number

Return to Contents





WO # / LAB USE ONLY

12-05-2112

CLIENT PROJECT NAME / NUMBER:

CLIENT PRO:
former

Geosyntec Consultants

ADDRESS: 1650 Iowa Ave. Ste. 180

CITY Riverside STATE CA ZIP 92507

TEL: 714 393-4498	E-MAIL: rcheny@geosyntc.com
-------------------	-----------------------------

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ STANDARD

GLOBAL ID	GLOBAL ID
-----------	-----------

LOG CODE

SPECIAL INSTRUCTIONS:

* email results & send invoice to Robert Cheung
at rcheung@geosyntec.com

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.	Unpres-	Preserv-	Field Fil-	TPH (g)	TPH (d)	TPH (L)	BTEX /	VOCs (g)	Oxygen	En Core	SVOCs	Pesticid	PCBs (g)	PNAs (g)	T22 Met	Cr(VI) [
		DATE	TIME																				
1	GW/SV-28-1	5/30/12	1545	Soil	5	X	X		X	X			X	X									
2	GW/SV-28-3	↓	1550	Soil	5	X	X		X	X			X	X									
3	GW/SV-28-4.5		1605	Soil	5	X	X		X	X				X	X								
4	GW/SV-28-17		↓	1655	Water	6	X	X		X	X			X	X								
5	EB-05311Z	5/31/12	1050	Water	6	X	X		X	X			X	X									
6	GW/SV-26-1	↓	1104	Soil	5	X	X		X	X			X	X									
7	GW/SV-26-3		1115	Soil	5	X	X		X	X				X	X								
8	GW/SV-26-4.5		1121	Soil	5	X	X		X	X				X	X								
9	GW/SV-26-14	↓	1155	Water	6	X	X		X	X			X	X									
10	TB-05311Z		5/31/12	1535	Water	1		X															

Relinquished by: (Signature)

Signature) _____

Received by: (Signature/Affiliation)

iliation)
CFL

Date: /

Time:

Relinquished by: (Signature)

Signature) *Rud V*

Received by: ~~(Signature/Affiliation)~~

myself

Date: / /

Time: 5:13

Relinquished by: (Signature)

Signature)

Received by: (Signature/Affiliation)

liation)

Date: /

Time:

WORK ORDER #: 12-05-2112

SAMPLE RECEIPT FORMCooler 1 of 1CLIENT: GEDSYNTECDATE: 05/31/12**TEMPERATURE:** Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature 2.3 °C - 0.3 °C (CF) = 2.0 °C ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ FilterInitial: AM**CUSTODY SEALS INTACT:**☐ Cooler ☐ _____ ☐ No (Not Intact) ☒ Not Present ☐ N/AInitial: AM☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: AM**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTAINER TYPE:Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☒ Sleeve (P) ☐ EnCores® ☒ TerraCores® ☒ 202PJWater: ☐ VOA ☒ VOAh ☐ VOAna₂ ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 1AGB ☐ 1AGBna₂ ☐ 1AGBs☐ 500AGB ☒ 500AGJ ☐ 500AGJs ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 1PB ☐ 1PBna ☐ 500PB☐ 250PB ☐ 250PBn ☐ 125PB ☐ 125PBznnna ☐ 100PJ ☐ 100PJna₂ ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Summa® Other: ☐ _____ Trip Blank Lot#: 1205212 Labeled/Checked by: APContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: APPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure znnna: ZnAc₂+NaOH f: Filtered Scanned by: AP

WORK ORDER #: 12-05-2112

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:

- ☐ **Sample(s) NOT RECEIVED but listed on COC**
- ☐ **Sample(s) received but NOT LISTED on COC**
- ☐ **Holding time expired** – list sample ID(s) and test
- ☐ **Insufficient quantities for analysis** – list test
- ☐ **Improper container(s) used** – list test
- ☐ **Improper preservative used** – list test
- ☐ **No preservative noted on COC or label** – list test & notify lab
- ☐ **Sample labels illegible** – note test/container type
- ☐ **Sample label(s) do not match COC** – Note in comments
 - ☐ **Sample ID**
 - ☐ **Date and/or Time Collected**
 - ☐ **Project Information**
 - ☐ **# of Container(s)**
 - ☐ **Analysis**
- ☐ **Sample container(s) compromised** – Note in comments
 - ☐ **Water present in sample container**
 - ☐ **Broken**
- ☐ **Sample container(s) not labeled**
- ☐ **Air sample container(s) compromised** – Note in comments
 - ☐ **Flat**
 - ☐ **Very low in volume**
 - ☐ **Leaking (Not transferred - duplicate bag submitted)**
 - ☐ **Leaking (transferred into Calscience Tedlar® Bag*)**
 - ☐ **Leaking (transferred into Client's Tedlar® Bag*)**
- ☐ **Other:**

Comments:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

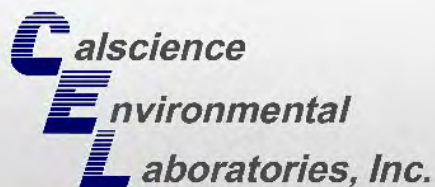
HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

[illegible]

Comments:

*Transferred at Client's request.

Initial / Date: DL 05 / 31 / 12



CALSCIENCE

WORK ORDER NUMBER: 12-06-0054

The difference is service



AIR :: SOIL :: WATER :: MARINE CHEMISTRY

Analytical Report For

Client: Geosyntec Consultants

Client Project Name: Former Chemoil Facility / WA1617 01 1.2

Attention: Robert Cheung
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Approved for release on 06/08/2012 by:
Stephen Nowak
Project Manager

ResultLink ▶

Email your PM ▶



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Client Project Name: Former Chemoil Facility / WA1617 01 1.2

Work Order Number: 12-06-0054

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Client: Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Attn: Robert Cheung

Work Order: 12-06-0054
Project name: Former Chemoil Facility / WA1617 01 1.2
Received: 06/01/12 17:25

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
GW/SV-25-1 (12-06-0054-2)						
TPH as Diesel	56	HD	5.0	mg/kg	EPA 8015B (M)	EPA 3550B
GW/SV-25-3 (12-06-0054-3)						
TPH as Diesel	59	HD	5.0	mg/kg	EPA 8015B (M)	EPA 3550B
GW/SV-25-13 (12-06-0054-5)						
TPH as Diesel	1000	HD	66	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Diesel	420	HD,SG	66	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Gasoline	78	HD	50	ug/L	EPA 8015B (M)	EPA 5030C
Methyl-t-Butyl Ether (MTBE)	1.2		1.0	ug/L	EPA 8260B	EPA 5030C
Tert-Butyl Alcohol (TBA)	14		10	ug/L	EPA 8260B	EPA 5030C
GW/SV-25-13-DUP (12-06-0054-6)						
TPH as Diesel	1100	HD	66	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Diesel	590	HD,SG	66	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Gasoline	160	HD	50	ug/L	EPA 8015B (M)	EPA 5030C
Methyl-t-Butyl Ether (MTBE)	1.7		1.0	ug/L	EPA 8260B	EPA 5030C
Tert-Butyl Alcohol (TBA)	17		10	ug/L	EPA 8260B	EPA 5030C
GW/SV-20-1 (12-06-0054-8)						
TPH as Diesel	130	HD	5.0	mg/kg	EPA 8015B (M)	EPA 3550B
GW/SV-20-14 (12-06-0054-11)						
TPH as Diesel	130	HD	69	ug/L	EPA 8015B (M)	EPA 3510C
GW/SV-29-1 (12-06-0054-12)						
TPH as Diesel	210	HD	10	mg/kg	EPA 8015B (M)	EPA 3550B
Acetone	57		38	ug/kg	EPA 8260B	EPA 5035
GW/SV-29-14.5 (12-06-0054-16)						
TPH as Diesel	190	HD	62	ug/L	EPA 8015B (M)	EPA 3510C
GW/SV-22-1 (12-06-0054-17)						
TPH as Diesel	5.9		5.0	mg/kg	EPA 8015B (M)	EPA 3550B
Acetone	60		45	ug/kg	EPA 8260B	EPA 5035

*MDL is shown.



Client: Geosyntec Consultants
1650 Iowa Ave.
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Work Order: 12-06-0054
Project name: Former Chemoil Facility / WA1617 01 1.2
Received: 06/01/12 17:25

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
GW/SV-22-14 (12-06-0054-20)						
TPH as Diesel	4500	HD	71	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Diesel	1900	HD,SG	56	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Gasoline	1300	HD	50	ug/L	EPA 8015B (M)	EPA 5030C
sec-Butylbenzene	4.1		1.0	ug/L	EPA 8260B	EPA 5030C
Isopropylbenzene	17		1.0	ug/L	EPA 8260B	EPA 5030C
n-Propylbenzene	2.9		1.0	ug/L	EPA 8260B	EPA 5030C
Tert-Butyl Alcohol (TBA)	38		10	ug/L	EPA 8260B	EPA 5030C

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-13	12-06-0054-5-F	05/31/12 17:55	Aqueous	GC 45	06/05/12	06/06/12 18:44	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	1000	66	1.32	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	121	68-140	

GW/SV-25-13	12-06-0054-5-F	05/31/12 17:55	Aqueous	GC 45	06/05/12	06/06/12 21:55	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	420	66	1.32	HD,SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	123	68-140	

GW/SV-25-13-DUP	12-06-0054-6-F	05/31/12 17:55	Aqueous	GC 45	06/05/12	06/06/12 18:59	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	1100	66	1.32	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	126	68-140	

GW/SV-25-13-DUP	12-06-0054-6-F	05/31/12 17:55	Aqueous	GC 45	06/05/12	06/06/12 22:26	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	590	66	1.32	HD,SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	124	68-140	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-060112	12-06-0054-7-F	06/01/12 08:50	Aqueous	GC 45	06/05/12	06/06/12 19:15	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	133	68-140	

EB-060112	12-06-0054-7-F	06/01/12 08:50	Aqueous	GC 45	06/05/12	06/06/12 22:41	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1	SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	134	68-140	

GW/SV-20-14	12-06-0054-11-F	06/01/12 10:00	Aqueous	GC 45	06/05/12	06/06/12 19:48	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	130	69	1.39	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	122	68-140	

GW/SV-20-14	12-06-0054-11-F	06/01/12 10:00	Aqueous	GC 45	06/05/12	06/06/12 22:57	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	69	1.39	SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	123	68-140	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-14.5	12-06-0054-16-F	06/01/12 13:00	Aqueous	GC 45	06/05/12	06/06/12 20:04	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	190	62	1.25	HD	ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
n-Octacosane	132	68-140			

GW/SV-29-14.5	12-06-0054-16-F	06/01/12 13:00	Aqueous	GC 45	06/05/12	06/06/12 23:12	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	62	1.25	SG	ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
n-Octacosane	132	68-140			

GW/SV-22-14	12-06-0054-20-F	06/01/12 15:08	Aqueous	GC 45	06/05/12	06/06/12 20:20	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	4500	71	1.43	HD	ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
n-Octacosane	112	68-140			

GW/SV-22-14	12-06-0054-20-F	06/01/12 15:08	Aqueous	GC 45	06/05/12	06/06/12 23:28	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	1900	56	1.11	HD,SG	ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
n-Octacosane	117	68-140			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-330-2,246	N/A	Aqueous	GC 45	06/05/12	06/06/12 15:32	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	105	68-140	

Method Blank	099-12-330-2,247	N/A	Aqueous	GC 45	06/05/12	06/06/12 17:12	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	109	68-140	

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Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-1	12-06-0054-2-A	05/31/12 16:35	Solid	GC 47	06/05/12	06/05/12 23:24	120605B02

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	56	5.0	1	HD	mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	90	61-145	

GW/SV-25-3	12-06-0054-3-A	05/31/12 16:42	Solid	GC 47	06/05/12	06/05/12 23:40	120605B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	59	5.0	1	HD	mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	93	61-145	

GW/SV-25-4.5	12-06-0054-4-A	05/31/12 16:55	Solid	GC 47	06/05/12	06/05/12 23:55	120605B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	94	61-145	

GW/SV-20-1	12-06-0054-8-A	06/01/12 09:14	Solid	GC 47	06/05/12	06/06/12 00:10	120605B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	130	5.0	1	HD	mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	91	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-3	12-06-0054-9-A	06/01/12 09:22	Solid	GC 47	06/05/12	06/06/12 00:25	120605B02

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	90	61-145	

GW/SV-20-4.5	12-06-0054-10-A	06/01/12 09:29	Solid	GC 47	06/05/12	06/06/12 00:41	120605B02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	93	61-145	

GW/SV-29-1	12-06-0054-12-A	06/01/12 12:00	Solid	GC 47	06/05/12	06/06/12 00:56	120605B02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	210	10	2	HD	mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	90	61-145	

GW/SV-29-3	12-06-0054-13-A	06/01/12 12:22	Solid	GC 47	06/05/12	06/06/12 01:11	120605B02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	95	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-4.5	12-06-0054-14-A	06/01/12 12:30	Solid	GC 47	06/05/12	06/06/12 01:27	120605B02

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	94	61-145	

GW/SV-22-1	12-06-0054-17-A	06/01/12 14:05	Solid	GC 47	06/05/12	06/06/12 01:42	120605B02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	5.9	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	96	61-145	

GW/SV-22-3	12-06-0054-18-A	06/01/12 14:15	Solid	GC 47	06/05/12	06/06/12 02:12	120605B02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	84	61-145	

GW/SV-22-4.5	12-06-0054-19-A	06/01/12 14:32	Solid	GC 47	06/05/12	06/06/12 02:28	120605B02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	91	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-275-4,552	N/A	Solid	GC 47	06/05/12	06/05/12 22:08	120605B02

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	89	61-145	

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Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-13	12-06-0054-5-D	05/31/12 17:55	Aqueous	GC 56	06/07/12	06/07/12 16:27	120607B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	78	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	86	38-134	

GW/SV-25-13-DUP	12-06-0054-6-D	05/31/12 17:55	Aqueous	GC 56	06/07/12	06/07/12 16:58	120607B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	160	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	87	38-134	

EB-060112	12-06-0054-7-D	06/01/12 08:50	Aqueous	GC 56	06/07/12	06/07/12 17:30	120607B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	84	38-134	

GW/SV-20-14	12-06-0054-11-D	06/01/12 10:00	Aqueous	GC 56	06/07/12	06/07/12 18:02	120607B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	84	38-134	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-14.5	12-06-0054-16-D	06/01/12 13:00	Aqueous	GC 56	06/07/12	06/07/12 18:33	120607B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	85	38-134	

GW/SV-22-14	12-06-0054-20-D	06/01/12 15:08	Aqueous	GC 56	06/07/12	06/07/12 19:05	120607B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	1300	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	130	38-134	

Method Blank	099-12-436-7,501	N/A	Aqueous	GC 56	06/07/12	06/07/12 11:42	120607B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	84	38-134	

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-1	12-06-0054-2-A	05/31/12 16:35	Solid	GC 5	06/05/12	06/05/12 13:07	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	77	42-126	

GW/SV-25-3	12-06-0054-3-A	05/31/12 16:42	Solid	GC 5	06/05/12	06/05/12 14:44	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

GW/SV-25-4.5	12-06-0054-4-A	05/31/12 16:55	Solid	GC 5	06/05/12	06/05/12 15:17	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

GW/SV-20-1	12-06-0054-8-A	06/01/12 09:14	Solid	GC 5	06/05/12	06/05/12 15:49	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	75	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-3	12-06-0054-9-A	06/01/12 09:22	Solid	GC 5	06/05/12	06/05/12 16:21	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

GW/SV-20-4.5	12-06-0054-10-A	06/01/12 09:29	Solid	GC 5	06/05/12	06/05/12 16:54	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

GW/SV-29-1	12-06-0054-12-A	06/01/12 12:00	Solid	GC 5	06/05/12	06/05/12 17:26	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

GW/SV-29-3	12-06-0054-13-A	06/01/12 12:22	Solid	GC 5	06/05/12	06/05/12 17:59	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-4.5	12-06-0054-14-A	06/01/12 12:30	Solid	GC 5	06/05/12	06/05/12 18:31	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	74	42-126	

GW/SV-22-1	12-06-0054-17-A	06/01/12 14:05	Solid	GC 5	06/05/12	06/05/12 20:08	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

GW/SV-22-3	12-06-0054-18-A	06/01/12 14:15	Solid	GC 5	06/05/12	06/05/12 20:41	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

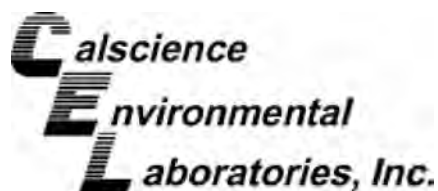
Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	76	42-126	

GW/SV-22-4.5	12-06-0054-19-A	06/01/12 14:32	Solid	GC 5	06/05/12	06/05/12 21:13	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	78	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617 01 1.2

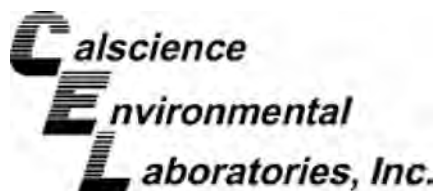
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-571-352	N/A	Solid	GC 5	06/05/12	06/05/12 11:52	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	74	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

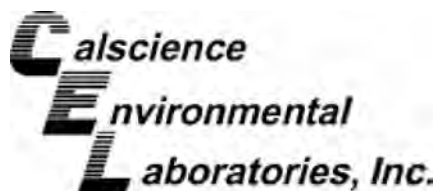
Project: Former Chemoil Facility / WA1617 01 1.2

Page 1 of 14

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-1	12-06-0054-2-D	05/31/12 16:35	Solid	GC/MS Q	05/31/12	06/05/12 18:35	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	45	0.894		c-1,3-Dichloropropene	ND	0.89	0.894	
Benzene	ND	0.89	0.894		t-1,3-Dichloropropene	ND	1.8	0.894	
Bromobenzene	ND	0.89	0.894		Ethylbenzene	ND	0.89	0.894	
Bromochloromethane	ND	1.8	0.894		2-Hexanone	ND	18	0.894	
Bromodichloromethane	ND	0.89	0.894		Isopropylbenzene	ND	0.89	0.894	
Bromoform	ND	4.5	0.894		p-Isopropyltoluene	ND	0.89	0.894	
Bromomethane	ND	18	0.894		Methylene Chloride	ND	8.9	0.894	
2-Butanone	ND	18	0.894		4-Methyl-2-Pentanone	ND	18	0.894	
n-Butylbenzene	ND	0.89	0.894		Naphthalene	ND	8.9	0.894	
sec-Butylbenzene	ND	0.89	0.894		n-Propylbenzene	ND	1.8	0.894	
tert-Butylbenzene	ND	0.89	0.894		Styrene	ND	0.89	0.894	
Carbon Disulfide	ND	8.9	0.894		1,1,1,2-Tetrachloroethane	ND	0.89	0.894	
Carbon Tetrachloride	ND	0.89	0.894		1,1,2,2-Tetrachloroethane	ND	1.8	0.894	
Chlorobenzene	ND	0.89	0.894		Tetrachloroethene	ND	0.89	0.894	
Chloroethane	ND	1.8	0.894		Toluene	ND	0.89	0.894	
Chloroform	ND	0.89	0.894		1,2,3-Trichlorobenzene	ND	1.8	0.894	
Chloromethane	ND	18	0.894		1,2,4-Trichlorobenzene	ND	1.8	0.894	
2-Chlorotoluene	ND	0.89	0.894		1,1,1-Trichloroethane	ND	0.89	0.894	
4-Chlorotoluene	ND	0.89	0.894		1,1,2-Trichloroethane	ND	0.89	0.894	
Dibromochloromethane	ND	1.8	0.894		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.9	0.894	
1,2-Dibromo-3-Chloropropane	ND	4.5	0.894		Trichloroethene	ND	1.8	0.894	
1,2-Dibromoethane	ND	0.89	0.894		Trichlorofluoromethane	ND	8.9	0.894	
Dibromomethane	ND	0.89	0.894		1,2,3-Trichloropropane	ND	1.8	0.894	
1,2-Dichlorobenzene	ND	0.89	0.894		1,2,4-Trimethylbenzene	ND	1.8	0.894	
1,3-Dichlorobenzene	ND	0.89	0.894		1,3,5-Trimethylbenzene	ND	1.8	0.894	
1,4-Dichlorobenzene	ND	0.89	0.894		Vinyl Acetate	ND	8.9	0.894	
Dichlorodifluoromethane	ND	1.8	0.894		Vinyl Chloride	ND	0.89	0.894	
1,1-Dichloroethane	ND	0.89	0.894		p/m-Xylene	ND	1.8	0.894	
1,2-Dichloroethane	ND	0.89	0.894		o-Xylene	ND	0.89	0.894	
1,1-Dichloroethene	ND	0.89	0.894		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.894	
c-1,2-Dichloroethene	ND	0.89	0.894		Tert-Butyl Alcohol (TBA)	ND	18	0.894	
t-1,2-Dichloroethene	ND	0.89	0.894		Diisopropyl Ether (DIPE)	ND	0.89	0.894	
1,2-Dichloropropane	ND	0.89	0.894		Ethyl-t-Butyl Ether (ETBE)	ND	0.89	0.894	
1,3-Dichloropropane	ND	0.89	0.894		Tert-Amyl-Methyl Ether (TAME)	ND	0.89	0.894	
2,2-Dichloropropane	ND	4.5	0.894		Ethanol	ND	450	0.894	
1,1-Dichloropropene	ND	1.8	0.894						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	110	79-133		
1,2-Dichloroethane-d4	117	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

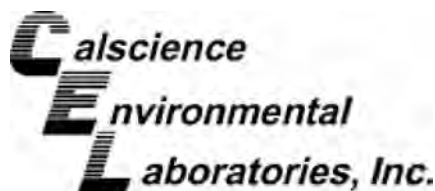
Project: Former Chemoil Facility / WA1617 01 1.2

Page 2 of 14

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-3	12-06-0054-3-D	05/31/12 16:42	Solid	GC/MS Q	05/31/12	06/05/12 19:03	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	41	0.816		c-1,3-Dichloropropene	ND	0.82	0.816	
Benzene	ND	0.82	0.816		t-1,3-Dichloropropene	ND	1.6	0.816	
Bromobenzene	ND	0.82	0.816		Ethylbenzene	ND	0.82	0.816	
Bromochloromethane	ND	1.6	0.816		2-Hexanone	ND	16	0.816	
Bromodichloromethane	ND	0.82	0.816		Isopropylbenzene	ND	0.82	0.816	
Bromoform	ND	4.1	0.816		p-Isopropyltoluene	ND	0.82	0.816	
Bromomethane	ND	16	0.816		Methylene Chloride	ND	8.2	0.816	
2-Butanone	ND	16	0.816		4-Methyl-2-Pentanone	ND	16	0.816	
n-Butylbenzene	ND	0.82	0.816		Naphthalene	ND	8.2	0.816	
sec-Butylbenzene	ND	0.82	0.816		n-Propylbenzene	ND	1.6	0.816	
tert-Butylbenzene	ND	0.82	0.816		Styrene	ND	0.82	0.816	
Carbon Disulfide	ND	8.2	0.816		1,1,1,2-Tetrachloroethane	ND	0.82	0.816	
Carbon Tetrachloride	ND	0.82	0.816		1,1,2,2-Tetrachloroethane	ND	1.6	0.816	
Chlorobenzene	ND	0.82	0.816		Tetrachloroethene	ND	0.82	0.816	
Chloroethane	ND	1.6	0.816		Toluene	ND	0.82	0.816	
Chloroform	ND	0.82	0.816		1,2,3-Trichlorobenzene	ND	1.6	0.816	
Chloromethane	ND	16	0.816		1,2,4-Trichlorobenzene	ND	1.6	0.816	
2-Chlorotoluene	ND	0.82	0.816		1,1,1-Trichloroethane	ND	0.82	0.816	
4-Chlorotoluene	ND	0.82	0.816		1,1,2-Trichloroethane	ND	0.82	0.816	
Dibromochloromethane	ND	1.6	0.816		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.2	0.816	
1,2-Dibromo-3-Chloropropane	ND	4.1	0.816		Trichloroethene	ND	1.6	0.816	
1,2-Dibromoethane	ND	0.82	0.816		Trichlorofluoromethane	ND	8.2	0.816	
Dibromomethane	ND	0.82	0.816		1,2,3-Trichloropropane	ND	1.6	0.816	
1,2-Dichlorobenzene	ND	0.82	0.816		1,2,4-Trimethylbenzene	ND	1.6	0.816	
1,3-Dichlorobenzene	ND	0.82	0.816		1,3,5-Trimethylbenzene	ND	1.6	0.816	
1,4-Dichlorobenzene	ND	0.82	0.816		Vinyl Acetate	ND	8.2	0.816	
Dichlorodifluoromethane	ND	1.6	0.816		Vinyl Chloride	ND	0.82	0.816	
1,1-Dichloroethane	ND	0.82	0.816		p/m-Xylene	ND	1.6	0.816	
1,2-Dichloroethane	ND	0.82	0.816		o-Xylene	ND	0.82	0.816	
1,1-Dichloroethene	ND	0.82	0.816		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.816	
c-1,2-Dichloroethene	ND	0.82	0.816		Tert-Butyl Alcohol (TBA)	ND	16	0.816	
t-1,2-Dichloroethene	ND	0.82	0.816		Diisopropyl Ether (DIPE)	ND	0.82	0.816	
1,2-Dichloropropane	ND	0.82	0.816		Ethyl-t-Butyl Ether (ETBE)	ND	0.82	0.816	
1,3-Dichloropropane	ND	0.82	0.816		Tert-Amyl-Methyl Ether (TAME)	ND	0.82	0.816	
2,2-Dichloropropane	ND	4.1	0.816		Ethanol	ND	410	0.816	
1,1-Dichloropropene	ND	1.6	0.816						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	80-120			Dibromofluoromethane	110	79-133		
1,2-Dichloroethane-d4	120	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

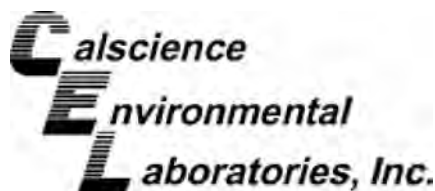
Project: Former Chemoil Facility / WA1617 01 1.2

Page 3 of 14

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-4.5	12-06-0054-4-D	05/31/12 16:55	Solid	GC/MS Q	05/31/12	06/05/12 19:31	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	42	0.832		c-1,3-Dichloropropene	ND	0.83	0.832	
Benzene	ND	0.83	0.832		t-1,3-Dichloropropene	ND	1.7	0.832	
Bromobenzene	ND	0.83	0.832		Ethylbenzene	ND	0.83	0.832	
Bromochloromethane	ND	1.7	0.832		2-Hexanone	ND	17	0.832	
Bromodichloromethane	ND	0.83	0.832		Isopropylbenzene	ND	0.83	0.832	
Bromoform	ND	4.2	0.832		p-Isopropyltoluene	ND	0.83	0.832	
Bromomethane	ND	17	0.832		Methylene Chloride	ND	8.3	0.832	
2-Butanone	ND	17	0.832		4-Methyl-2-Pentanone	ND	17	0.832	
n-Butylbenzene	ND	0.83	0.832		Naphthalene	ND	8.3	0.832	
sec-Butylbenzene	ND	0.83	0.832		n-Propylbenzene	ND	1.7	0.832	
tert-Butylbenzene	ND	0.83	0.832		Styrene	ND	0.83	0.832	
Carbon Disulfide	ND	8.3	0.832		1,1,1,2-Tetrachloroethane	ND	0.83	0.832	
Carbon Tetrachloride	ND	0.83	0.832		1,1,2,2-Tetrachloroethane	ND	1.7	0.832	
Chlorobenzene	ND	0.83	0.832		Tetrachloroethene	ND	0.83	0.832	
Chloroethane	ND	1.7	0.832		Toluene	ND	0.83	0.832	
Chloroform	ND	0.83	0.832		1,2,3-Trichlorobenzene	ND	1.7	0.832	
Chloromethane	ND	17	0.832		1,2,4-Trichlorobenzene	ND	1.7	0.832	
2-Chlorotoluene	ND	0.83	0.832		1,1,1-Trichloroethane	ND	0.83	0.832	
4-Chlorotoluene	ND	0.83	0.832		1,1,2-Trichloroethane	ND	0.83	0.832	
Dibromochloromethane	ND	1.7	0.832		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.3	0.832	
1,2-Dibromo-3-Chloropropane	ND	4.2	0.832		Trichloroethene	ND	1.7	0.832	
1,2-Dibromoethane	ND	0.83	0.832		Trichlorofluoromethane	ND	8.3	0.832	
Dibromomethane	ND	0.83	0.832		1,2,3-Trichloropropane	ND	1.7	0.832	
1,2-Dichlorobenzene	ND	0.83	0.832		1,2,4-Trimethylbenzene	ND	1.7	0.832	
1,3-Dichlorobenzene	ND	0.83	0.832		1,3,5-Trimethylbenzene	ND	1.7	0.832	
1,4-Dichlorobenzene	ND	0.83	0.832		Vinyl Acetate	ND	8.3	0.832	
Dichlorodifluoromethane	ND	1.7	0.832		Vinyl Chloride	ND	0.83	0.832	
1,1-Dichloroethane	ND	0.83	0.832		p/m-Xylene	ND	1.7	0.832	
1,2-Dichloroethane	ND	0.83	0.832		o-Xylene	ND	0.83	0.832	
1,1-Dichloroethene	ND	0.83	0.832		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.832	
c-1,2-Dichloroethene	ND	0.83	0.832		Tert-Butyl Alcohol (TBA)	ND	17	0.832	
t-1,2-Dichloroethene	ND	0.83	0.832		Diisopropyl Ether (DIPE)	ND	0.83	0.832	
1,2-Dichloropropane	ND	0.83	0.832		Ethyl-t-Butyl Ether (ETBE)	ND	0.83	0.832	
1,3-Dichloropropane	ND	0.83	0.832		Tert-Amyl-Methyl Ether (TAME)	ND	0.83	0.832	
2,2-Dichloropropane	ND	4.2	0.832		Ethanol	ND	420	0.832	
1,1-Dichloropropene	ND	1.7	0.832						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	107	79-133		
1,2-Dichloroethane-d4	117	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

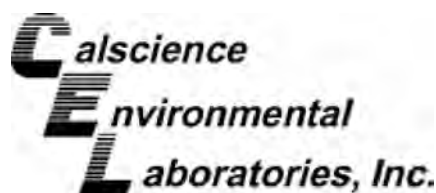
Project: Former Chemoil Facility / WA1617 01 1.2

Page 4 of 14

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-1	12-06-0054-8-D	06/01/12 09:14	Solid	GC/MS Q	06/01/12	06/05/12 19:59	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	43	0.858		c-1,3-Dichloropropene	ND	0.86	0.858	
Benzene	ND	0.86	0.858		t-1,3-Dichloropropene	ND	1.7	0.858	
Bromobenzene	ND	0.86	0.858		Ethylbenzene	ND	0.86	0.858	
Bromochloromethane	ND	1.7	0.858		2-Hexanone	ND	17	0.858	
Bromodichloromethane	ND	0.86	0.858		Isopropylbenzene	ND	0.86	0.858	
Bromoform	ND	4.3	0.858		p-Isopropyltoluene	ND	0.86	0.858	
Bromomethane	ND	17	0.858		Methylene Chloride	ND	8.6	0.858	
2-Butanone	ND	17	0.858		4-Methyl-2-Pentanone	ND	17	0.858	
n-Butylbenzene	ND	0.86	0.858		Naphthalene	ND	8.6	0.858	
sec-Butylbenzene	ND	0.86	0.858		n-Propylbenzene	ND	1.7	0.858	
tert-Butylbenzene	ND	0.86	0.858		Styrene	ND	0.86	0.858	
Carbon Disulfide	ND	8.6	0.858		1,1,1,2-Tetrachloroethane	ND	0.86	0.858	
Carbon Tetrachloride	ND	0.86	0.858		1,1,2,2-Tetrachloroethane	ND	1.7	0.858	
Chlorobenzene	ND	0.86	0.858		Tetrachloroethene	ND	0.86	0.858	
Chloroethane	ND	1.7	0.858		Toluene	ND	0.86	0.858	
Chloroform	ND	0.86	0.858		1,2,3-Trichlorobenzene	ND	1.7	0.858	
Chloromethane	ND	17	0.858		1,2,4-Trichlorobenzene	ND	1.7	0.858	
2-Chlorotoluene	ND	0.86	0.858		1,1,1-Trichloroethane	ND	0.86	0.858	
4-Chlorotoluene	ND	0.86	0.858		1,1,2-Trichloroethane	ND	0.86	0.858	
Dibromochloromethane	ND	1.7	0.858		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.6	0.858	
1,2-Dibromo-3-Chloropropane	ND	4.3	0.858		Trichloroethene	ND	1.7	0.858	
1,2-Dibromoethane	ND	0.86	0.858		Trichlorofluoromethane	ND	8.6	0.858	
Dibromomethane	ND	0.86	0.858		1,2,3-Trichloropropane	ND	1.7	0.858	
1,2-Dichlorobenzene	ND	0.86	0.858		1,2,4-Trimethylbenzene	ND	1.7	0.858	
1,3-Dichlorobenzene	ND	0.86	0.858		1,3,5-Trimethylbenzene	ND	1.7	0.858	
1,4-Dichlorobenzene	ND	0.86	0.858		Vinyl Acetate	ND	8.6	0.858	
Dichlorodifluoromethane	ND	1.7	0.858		Vinyl Chloride	ND	0.86	0.858	
1,1-Dichloroethane	ND	0.86	0.858		p/m-Xylene	ND	1.7	0.858	
1,2-Dichloroethane	ND	0.86	0.858		o-Xylene	ND	0.86	0.858	
1,1-Dichloroethene	ND	0.86	0.858		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.858	
c-1,2-Dichloroethene	ND	0.86	0.858		Tert-Butyl Alcohol (TBA)	ND	17	0.858	
t-1,2-Dichloroethene	ND	0.86	0.858		Diisopropyl Ether (DIPE)	ND	0.86	0.858	
1,2-Dichloropropane	ND	0.86	0.858		Ethyl-t-Butyl Ether (ETBE)	ND	0.86	0.858	
1,3-Dichloropropane	ND	0.86	0.858		Tert-Amyl-Methyl Ether (TAME)	ND	0.86	0.858	
2,2-Dichloropropane	ND	4.3	0.858		Ethanol	ND	430	0.858	
1,1-Dichloropropene	ND	1.7	0.858						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	108	79-133		
1,2-Dichloroethane-d4	119	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

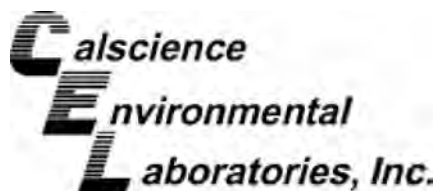
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-3	12-06-0054-9-D	06/01/12 09:22	Solid	GC/MS Q	06/01/12	06/05/12 20:27	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	41	0.822		c-1,3-Dichloropropene	ND	0.82	0.822	
Benzene	ND	0.82	0.822		t-1,3-Dichloropropene	ND	1.6	0.822	
Bromobenzene	ND	0.82	0.822		Ethylbenzene	ND	0.82	0.822	
Bromochloromethane	ND	1.6	0.822		2-Hexanone	ND	16	0.822	
Bromodichloromethane	ND	0.82	0.822		Isopropylbenzene	ND	0.82	0.822	
Bromoform	ND	4.1	0.822		p-Isopropyltoluene	ND	0.82	0.822	
Bromomethane	ND	16	0.822		Methylene Chloride	ND	8.2	0.822	
2-Butanone	ND	16	0.822		4-Methyl-2-Pentanone	ND	16	0.822	
n-Butylbenzene	ND	0.82	0.822		Naphthalene	ND	8.2	0.822	
sec-Butylbenzene	ND	0.82	0.822		n-Propylbenzene	ND	1.6	0.822	
tert-Butylbenzene	ND	0.82	0.822		Styrene	ND	0.82	0.822	
Carbon Disulfide	ND	8.2	0.822		1,1,1,2-Tetrachloroethane	ND	0.82	0.822	
Carbon Tetrachloride	ND	0.82	0.822		1,1,2,2-Tetrachloroethane	ND	1.6	0.822	
Chlorobenzene	ND	0.82	0.822		Tetrachloroethene	ND	0.82	0.822	
Chloroethane	ND	1.6	0.822		Toluene	ND	0.82	0.822	
Chloroform	ND	0.82	0.822		1,2,3-Trichlorobenzene	ND	1.6	0.822	
Chloromethane	ND	16	0.822		1,2,4-Trichlorobenzene	ND	1.6	0.822	
2-Chlorotoluene	ND	0.82	0.822		1,1,1-Trichloroethane	ND	0.82	0.822	
4-Chlorotoluene	ND	0.82	0.822		1,1,2-Trichloroethane	ND	0.82	0.822	
Dibromochloromethane	ND	1.6	0.822		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.2	0.822	
1,2-Dibromo-3-Chloropropane	ND	4.1	0.822		Trichloroethene	ND	1.6	0.822	
1,2-Dibromoethane	ND	0.82	0.822		Trichlorofluoromethane	ND	8.2	0.822	
Dibromomethane	ND	0.82	0.822		1,2,3-Trichloropropane	ND	1.6	0.822	
1,2-Dichlorobenzene	ND	0.82	0.822		1,2,4-Trimethylbenzene	ND	1.6	0.822	
1,3-Dichlorobenzene	ND	0.82	0.822		1,3,5-Trimethylbenzene	ND	1.6	0.822	
1,4-Dichlorobenzene	ND	0.82	0.822		Vinyl Acetate	ND	8.2	0.822	
Dichlorodifluoromethane	ND	1.6	0.822		Vinyl Chloride	ND	0.82	0.822	
1,1-Dichloroethane	ND	0.82	0.822		p/m-Xylene	ND	1.6	0.822	
1,2-Dichloroethane	ND	0.82	0.822		o-Xylene	ND	0.82	0.822	
1,1-Dichloroethene	ND	0.82	0.822		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.822	
c-1,2-Dichloroethene	ND	0.82	0.822		Tert-Butyl Alcohol (TBA)	ND	16	0.822	
t-1,2-Dichloroethene	ND	0.82	0.822		Diisopropyl Ether (DIPE)	ND	0.82	0.822	
1,2-Dichloropropane	ND	0.82	0.822		Ethyl-t-Butyl Ether (ETBE)	ND	0.82	0.822	
1,3-Dichloropropane	ND	0.82	0.822		Tert-Amyl-Methyl Ether (TAME)	ND	0.82	0.822	
2,2-Dichloropropane	ND	4.1	0.822		Ethanol	ND	410	0.822	
1,1-Dichloropropene	ND	1.6	0.822						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	110	79-133		
1,2-Dichloroethane-d4	119	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

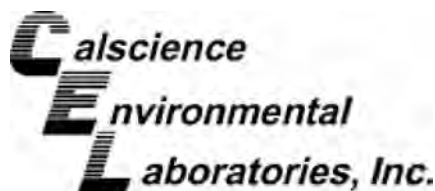
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-4.5	12-06-0054-10-D	06/01/12 09:29	Solid	GC/MS Q	06/01/12	06/05/12 20:56	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	44	0.888		c-1,3-Dichloropropene	ND	0.89	0.888	
Benzene	ND	0.89	0.888		t-1,3-Dichloropropene	ND	1.8	0.888	
Bromobenzene	ND	0.89	0.888		Ethylbenzene	ND	0.89	0.888	
Bromochloromethane	ND	1.8	0.888		2-Hexanone	ND	18	0.888	
Bromodichloromethane	ND	0.89	0.888		Isopropylbenzene	ND	0.89	0.888	
Bromoform	ND	4.4	0.888		p-Isopropyltoluene	ND	0.89	0.888	
Bromomethane	ND	18	0.888		Methylene Chloride	ND	8.9	0.888	
2-Butanone	ND	18	0.888		4-Methyl-2-Pentanone	ND	18	0.888	
n-Butylbenzene	ND	0.89	0.888		Naphthalene	ND	8.9	0.888	
sec-Butylbenzene	ND	0.89	0.888		n-Propylbenzene	ND	1.8	0.888	
tert-Butylbenzene	ND	0.89	0.888		Styrene	ND	0.89	0.888	
Carbon Disulfide	ND	8.9	0.888		1,1,1,2-Tetrachloroethane	ND	0.89	0.888	
Carbon Tetrachloride	ND	0.89	0.888		1,1,2,2-Tetrachloroethane	ND	1.8	0.888	
Chlorobenzene	ND	0.89	0.888		Tetrachloroethene	ND	0.89	0.888	
Chloroethane	ND	1.8	0.888		Toluene	ND	0.89	0.888	
Chloroform	ND	0.89	0.888		1,2,3-Trichlorobenzene	ND	1.8	0.888	
Chloromethane	ND	18	0.888		1,2,4-Trichlorobenzene	ND	1.8	0.888	
2-Chlorotoluene	ND	0.89	0.888		1,1,1-Trichloroethane	ND	0.89	0.888	
4-Chlorotoluene	ND	0.89	0.888		1,1,2-Trichloroethane	ND	0.89	0.888	
Dibromochloromethane	ND	1.8	0.888		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.9	0.888	
1,2-Dibromo-3-Chloropropane	ND	4.4	0.888		Trichloroethene	ND	1.8	0.888	
1,2-Dibromoethane	ND	0.89	0.888		Trichlorofluoromethane	ND	8.9	0.888	
Dibromomethane	ND	0.89	0.888		1,2,3-Trichloropropane	ND	1.8	0.888	
1,2-Dichlorobenzene	ND	0.89	0.888		1,2,4-Trimethylbenzene	ND	1.8	0.888	
1,3-Dichlorobenzene	ND	0.89	0.888		1,3,5-Trimethylbenzene	ND	1.8	0.888	
1,4-Dichlorobenzene	ND	0.89	0.888		Vinyl Acetate	ND	8.9	0.888	
Dichlorodifluoromethane	ND	1.8	0.888		Vinyl Chloride	ND	0.89	0.888	
1,1-Dichloroethane	ND	0.89	0.888		p/m-Xylene	ND	1.8	0.888	
1,2-Dichloroethane	ND	0.89	0.888		o-Xylene	ND	0.89	0.888	
1,1-Dichloroethene	ND	0.89	0.888		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.888	
c-1,2-Dichloroethene	ND	0.89	0.888		Tert-Butyl Alcohol (TBA)	ND	18	0.888	
t-1,2-Dichloroethene	ND	0.89	0.888		Diisopropyl Ether (DIPE)	ND	0.89	0.888	
1,2-Dichloropropane	ND	0.89	0.888		Ethyl-t-Butyl Ether (ETBE)	ND	0.89	0.888	
1,3-Dichloropropane	ND	0.89	0.888		Tert-Amyl-Methyl Ether (TAME)	ND	0.89	0.888	
2,2-Dichloropropane	ND	4.4	0.888		Ethanol	ND	440	0.888	
1,1-Dichloropropene	ND	1.8	0.888						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	109	79-133		
1,2-Dichloroethane-d4	118	71-155			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

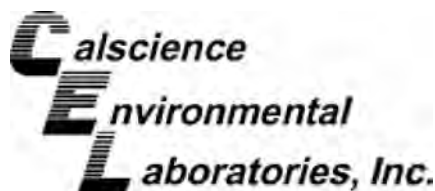
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-1	12-06-0054-12-D	06/01/12 12:00	Solid	GC/MS Q	06/01/12	06/05/12 21:24	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	57	38	0.767		c-1,3-Dichloropropene	ND	0.77	0.767	
Benzene	ND	0.77	0.767		t-1,3-Dichloropropene	ND	1.5	0.767	
Bromobenzene	ND	0.77	0.767		Ethylbenzene	ND	0.77	0.767	
Bromochloromethane	ND	1.5	0.767		2-Hexanone	ND	15	0.767	
Bromodichloromethane	ND	0.77	0.767		Isopropylbenzene	ND	0.77	0.767	
Bromoform	ND	3.8	0.767		p-Isopropyltoluene	ND	0.77	0.767	
Bromomethane	ND	15	0.767		Methylene Chloride	ND	7.7	0.767	
2-Butanone	ND	15	0.767		4-Methyl-2-Pentanone	ND	15	0.767	
n-Butylbenzene	ND	0.77	0.767		Naphthalene	ND	7.7	0.767	
sec-Butylbenzene	ND	0.77	0.767		n-Propylbenzene	ND	1.5	0.767	
tert-Butylbenzene	ND	0.77	0.767		Styrene	ND	0.77	0.767	
Carbon Disulfide	ND	7.7	0.767		1,1,1,2-Tetrachloroethane	ND	0.77	0.767	
Carbon Tetrachloride	ND	0.77	0.767		1,1,2,2-Tetrachloroethane	ND	1.5	0.767	
Chlorobenzene	ND	0.77	0.767		Tetrachloroethene	ND	0.77	0.767	
Chloroethane	ND	1.5	0.767		Toluene	ND	0.77	0.767	
Chloroform	ND	0.77	0.767		1,2,3-Trichlorobenzene	ND	1.5	0.767	
Chloromethane	ND	15	0.767		1,2,4-Trichlorobenzene	ND	1.5	0.767	
2-Chlorotoluene	ND	0.77	0.767		1,1,1-Trichloroethane	ND	0.77	0.767	
4-Chlorotoluene	ND	0.77	0.767		1,1,2-Trichloroethane	ND	0.77	0.767	
Dibromochloromethane	ND	1.5	0.767		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	7.7	0.767	
1,2-Dibromo-3-Chloropropane	ND	3.8	0.767		Trichloroethene	ND	1.5	0.767	
1,2-Dibromoethane	ND	0.77	0.767		Trichlorofluoromethane	ND	7.7	0.767	
Dibromomethane	ND	0.77	0.767		1,2,3-Trichloropropane	ND	1.5	0.767	
1,2-Dichlorobenzene	ND	0.77	0.767		1,2,4-Trimethylbenzene	ND	1.5	0.767	
1,3-Dichlorobenzene	ND	0.77	0.767		1,3,5-Trimethylbenzene	ND	1.5	0.767	
1,4-Dichlorobenzene	ND	0.77	0.767		Vinyl Acetate	ND	7.7	0.767	
Dichlorodifluoromethane	ND	1.5	0.767		Vinyl Chloride	ND	0.77	0.767	
1,1-Dichloroethane	ND	0.77	0.767		p/m-Xylene	ND	1.5	0.767	
1,2-Dichloroethane	ND	0.77	0.767		o-Xylene	ND	0.77	0.767	
1,1-Dichloroethene	ND	0.77	0.767		Methyl-t-Butyl Ether (MTBE)	ND	1.5	0.767	
c-1,2-Dichloroethene	ND	0.77	0.767		Tert-Butyl Alcohol (TBA)	ND	15	0.767	
t-1,2-Dichloroethene	ND	0.77	0.767		Diisopropyl Ether (DIPE)	ND	0.77	0.767	
1,2-Dichloropropane	ND	0.77	0.767		Ethyl-t-Butyl Ether (ETBE)	ND	0.77	0.767	
1,3-Dichloropropane	ND	0.77	0.767		Tert-Amyl-Methyl Ether (TAME)	ND	0.77	0.767	
2,2-Dichloropropane	ND	3.8	0.767		Ethanol	ND	380	0.767	
1,1-Dichloropropene	ND	1.5	0.767						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	80-120			Dibromofluoromethane	111	79-133		
1,2-Dichloroethane-d4	122	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

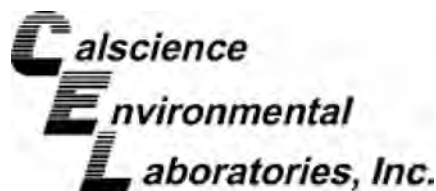
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-3	12-06-0054-13-D	06/01/12 12:22	Solid	GC/MS Q	06/01/12	06/05/12 21:52	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	41	0.829		c-1,3-Dichloropropene	ND	0.83	0.829	
Benzene	ND	0.83	0.829		t-1,3-Dichloropropene	ND	1.7	0.829	
Bromobenzene	ND	0.83	0.829		Ethylbenzene	ND	0.83	0.829	
Bromochloromethane	ND	1.7	0.829		2-Hexanone	ND	17	0.829	
Bromodichloromethane	ND	0.83	0.829		Isopropylbenzene	ND	0.83	0.829	
Bromoform	ND	4.1	0.829		p-Isopropyltoluene	ND	0.83	0.829	
Bromomethane	ND	17	0.829		Methylene Chloride	ND	8.3	0.829	
2-Butanone	ND	17	0.829		4-Methyl-2-Pentanone	ND	17	0.829	
n-Butylbenzene	ND	0.83	0.829		Naphthalene	ND	8.3	0.829	
sec-Butylbenzene	ND	0.83	0.829		n-Propylbenzene	ND	1.7	0.829	
tert-Butylbenzene	ND	0.83	0.829		Styrene	ND	0.83	0.829	
Carbon Disulfide	ND	8.3	0.829		1,1,1,2-Tetrachloroethane	ND	0.83	0.829	
Carbon Tetrachloride	ND	0.83	0.829		1,1,2,2-Tetrachloroethane	ND	1.7	0.829	
Chlorobenzene	ND	0.83	0.829		Tetrachloroethene	ND	0.83	0.829	
Chloroethane	ND	1.7	0.829		Toluene	ND	0.83	0.829	
Chloroform	ND	0.83	0.829		1,2,3-Trichlorobenzene	ND	1.7	0.829	
Chloromethane	ND	17	0.829		1,2,4-Trichlorobenzene	ND	1.7	0.829	
2-Chlorotoluene	ND	0.83	0.829		1,1,1-Trichloroethane	ND	0.83	0.829	
4-Chlorotoluene	ND	0.83	0.829		1,1,2-Trichloroethane	ND	0.83	0.829	
Dibromochloromethane	ND	1.7	0.829		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.3	0.829	
1,2-Dibromo-3-Chloropropane	ND	4.1	0.829		Trichloroethene	ND	1.7	0.829	
1,2-Dibromoethane	ND	0.83	0.829		Trichlorofluoromethane	ND	8.3	0.829	
Dibromomethane	ND	0.83	0.829		1,2,3-Trichloropropane	ND	1.7	0.829	
1,2-Dichlorobenzene	ND	0.83	0.829		1,2,4-Trimethylbenzene	ND	1.7	0.829	
1,3-Dichlorobenzene	ND	0.83	0.829		1,3,5-Trimethylbenzene	ND	1.7	0.829	
1,4-Dichlorobenzene	ND	0.83	0.829		Vinyl Acetate	ND	8.3	0.829	
Dichlorodifluoromethane	ND	1.7	0.829		Vinyl Chloride	ND	0.83	0.829	
1,1-Dichloroethane	ND	0.83	0.829		p/m-Xylene	ND	1.7	0.829	
1,2-Dichloroethane	ND	0.83	0.829		o-Xylene	ND	0.83	0.829	
1,1-Dichloroethene	ND	0.83	0.829		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.829	
c-1,2-Dichloroethene	ND	0.83	0.829		Tert-Butyl Alcohol (TBA)	ND	17	0.829	
t-1,2-Dichloroethene	ND	0.83	0.829		Diisopropyl Ether (DIPE)	ND	0.83	0.829	
1,2-Dichloropropane	ND	0.83	0.829		Ethyl-t-Butyl Ether (ETBE)	ND	0.83	0.829	
1,3-Dichloropropane	ND	0.83	0.829		Tert-Amyl-Methyl Ether (TAME)	ND	0.83	0.829	
2,2-Dichloropropane	ND	4.1	0.829		Ethanol	ND	410	0.829	
1,1-Dichloropropene	ND	1.7	0.829						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	112	79-133		
1,2-Dichloroethane-d4	120	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

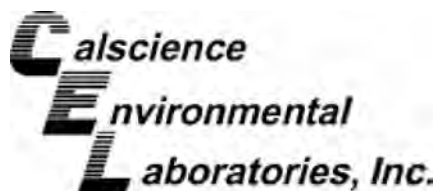
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-4.5	12-06-0054-14-D	06/01/12 12:30	Solid	GC/MS Q	06/01/12	06/05/12 22:20	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	44	0.877		c-1,3-Dichloropropene	ND	0.88	0.877	
Benzene	ND	0.88	0.877		t-1,3-Dichloropropene	ND	1.8	0.877	
Bromobenzene	ND	0.88	0.877		Ethylbenzene	ND	0.88	0.877	
Bromochloromethane	ND	1.8	0.877		2-Hexanone	ND	18	0.877	
Bromodichloromethane	ND	0.88	0.877		Isopropylbenzene	ND	0.88	0.877	
Bromoform	ND	4.4	0.877		p-Isopropyltoluene	ND	0.88	0.877	
Bromomethane	ND	18	0.877		Methylene Chloride	ND	8.8	0.877	
2-Butanone	ND	18	0.877		4-Methyl-2-Pentanone	ND	18	0.877	
n-Butylbenzene	ND	0.88	0.877		Naphthalene	ND	8.8	0.877	
sec-Butylbenzene	ND	0.88	0.877		n-Propylbenzene	ND	1.8	0.877	
tert-Butylbenzene	ND	0.88	0.877		Styrene	ND	0.88	0.877	
Carbon Disulfide	ND	8.8	0.877		1,1,1,2-Tetrachloroethane	ND	0.88	0.877	
Carbon Tetrachloride	ND	0.88	0.877		1,1,2,2-Tetrachloroethane	ND	1.8	0.877	
Chlorobenzene	ND	0.88	0.877		Tetrachloroethene	ND	0.88	0.877	
Chloroethane	ND	1.8	0.877		Toluene	ND	0.88	0.877	
Chloroform	ND	0.88	0.877		1,2,3-Trichlorobenzene	ND	1.8	0.877	
Chloromethane	ND	18	0.877		1,2,4-Trichlorobenzene	ND	1.8	0.877	
2-Chlorotoluene	ND	0.88	0.877		1,1,1-Trichloroethane	ND	0.88	0.877	
4-Chlorotoluene	ND	0.88	0.877		1,1,2-Trichloroethane	ND	0.88	0.877	
Dibromochloromethane	ND	1.8	0.877		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.8	0.877	
1,2-Dibromo-3-Chloropropane	ND	4.4	0.877		Trichloroethene	ND	1.8	0.877	
1,2-Dibromoethane	ND	0.88	0.877		Trichlorofluoromethane	ND	8.8	0.877	
Dibromomethane	ND	0.88	0.877		1,2,3-Trichloropropane	ND	1.8	0.877	
1,2-Dichlorobenzene	ND	0.88	0.877		1,2,4-Trimethylbenzene	ND	1.8	0.877	
1,3-Dichlorobenzene	ND	0.88	0.877		1,3,5-Trimethylbenzene	ND	1.8	0.877	
1,4-Dichlorobenzene	ND	0.88	0.877		Vinyl Acetate	ND	8.8	0.877	
Dichlorodifluoromethane	ND	1.8	0.877		Vinyl Chloride	ND	0.88	0.877	
1,1-Dichloroethane	ND	0.88	0.877		p/m-Xylene	ND	1.8	0.877	
1,2-Dichloroethane	ND	0.88	0.877		o-Xylene	ND	0.88	0.877	
1,1-Dichloroethene	ND	0.88	0.877		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.877	
c-1,2-Dichloroethene	ND	0.88	0.877		Tert-Butyl Alcohol (TBA)	ND	18	0.877	
t-1,2-Dichloroethene	ND	0.88	0.877		Diisopropyl Ether (DIPE)	ND	0.88	0.877	
1,2-Dichloropropane	ND	0.88	0.877		Ethyl-t-Butyl Ether (ETBE)	ND	0.88	0.877	
1,3-Dichloropropane	ND	0.88	0.877		Tert-Amyl-Methyl Ether (TAME)	ND	0.88	0.877	
2,2-Dichloropropane	ND	4.4	0.877		Ethanol	ND	440	0.877	
1,1-Dichloropropene	ND	1.8	0.877						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	110	79-133		
1,2-Dichloroethane-d4	119	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

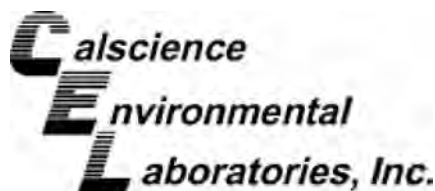
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-1	12-06-0054-17-E	06/01/12 14:05	Solid	GC/MS OO	06/01/12	06/06/12 17:02	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	60	45	0.896		c-1,3-Dichloropropene	ND	0.90	0.896	
Benzene	ND	0.90	0.896		t-1,3-Dichloropropene	ND	1.8	0.896	
Bromobenzene	ND	0.90	0.896		Ethylbenzene	ND	0.90	0.896	
Bromochloromethane	ND	1.8	0.896		2-Hexanone	ND	18	0.896	
Bromodichloromethane	ND	0.90	0.896		Isopropylbenzene	ND	0.90	0.896	
Bromoform	ND	4.5	0.896		p-Isopropyltoluene	ND	0.90	0.896	
Bromomethane	ND	18	0.896		Methylene Chloride	ND	9.0	0.896	
2-Butanone	ND	18	0.896		4-Methyl-2-Pentanone	ND	18	0.896	
n-Butylbenzene	ND	0.90	0.896		Naphthalene	ND	9.0	0.896	
sec-Butylbenzene	ND	0.90	0.896		n-Propylbenzene	ND	1.8	0.896	
tert-Butylbenzene	ND	0.90	0.896		Styrene	ND	0.90	0.896	
Carbon Disulfide	ND	9.0	0.896		1,1,1,2-Tetrachloroethane	ND	0.90	0.896	
Carbon Tetrachloride	ND	0.90	0.896		1,1,2,2-Tetrachloroethane	ND	1.8	0.896	
Chlorobenzene	ND	0.90	0.896		Tetrachloroethene	ND	0.90	0.896	
Chloroethane	ND	1.8	0.896		Toluene	ND	0.90	0.896	
Chloroform	ND	0.90	0.896		1,2,3-Trichlorobenzene	ND	1.8	0.896	
Chloromethane	ND	18	0.896		1,2,4-Trichlorobenzene	ND	1.8	0.896	
2-Chlorotoluene	ND	0.90	0.896		1,1,1-Trichloroethane	ND	0.90	0.896	
4-Chlorotoluene	ND	0.90	0.896		1,1,2-Trichloroethane	ND	0.90	0.896	
Dibromochloromethane	ND	1.8	0.896		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.0	0.896	
1,2-Dibromo-3-Chloropropane	ND	4.5	0.896		Trichloroethene	ND	1.8	0.896	
1,2-Dibromoethane	ND	0.90	0.896		Trichlorofluoromethane	ND	9.0	0.896	
Dibromomethane	ND	0.90	0.896		1,2,3-Trichloropropane	ND	1.8	0.896	
1,2-Dichlorobenzene	ND	0.90	0.896		1,2,4-Trimethylbenzene	ND	1.8	0.896	
1,3-Dichlorobenzene	ND	0.90	0.896		1,3,5-Trimethylbenzene	ND	1.8	0.896	
1,4-Dichlorobenzene	ND	0.90	0.896		Vinyl Acetate	ND	9.0	0.896	
Dichlorodifluoromethane	ND	1.8	0.896		Vinyl Chloride	ND	0.90	0.896	
1,1-Dichloroethane	ND	0.90	0.896		p/m-Xylene	ND	1.8	0.896	
1,2-Dichloroethane	ND	0.90	0.896		o-Xylene	ND	0.90	0.896	
1,1-Dichloroethene	ND	0.90	0.896		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.896	
c-1,2-Dichloroethene	ND	0.90	0.896		Tert-Butyl Alcohol (TBA)	ND	18	0.896	
t-1,2-Dichloroethene	ND	0.90	0.896		Diisopropyl Ether (DIPE)	ND	0.90	0.896	
1,2-Dichloropropane	ND	0.90	0.896		Ethyl-t-Butyl Ether (ETBE)	ND	0.90	0.896	
1,3-Dichloropropane	ND	0.90	0.896		Tert-Amyl-Methyl Ether (TAME)	ND	0.90	0.896	
2,2-Dichloropropane	ND	4.5	0.896		Ethanol	ND	450	0.896	
1,1-Dichloropropene	ND	1.8	0.896						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	89	80-120			Dibromofluoromethane	99	79-133		
1,2-Dichloroethane-d4	105	71-155			Toluene-d8	96	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

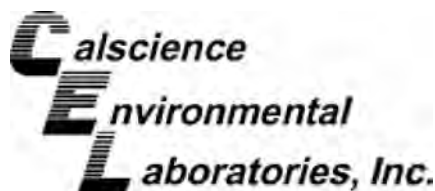
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-3	12-06-0054-18-D	06/01/12 14:15	Solid	GC/MS Q	06/01/12	06/05/12 23:16	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	40	0.806		c-1,3-Dichloropropene	ND	0.81	0.806	
Benzene	ND	0.81	0.806		t-1,3-Dichloropropene	ND	1.6	0.806	
Bromobenzene	ND	0.81	0.806		Ethylbenzene	ND	0.81	0.806	
Bromochloromethane	ND	1.6	0.806		2-Hexanone	ND	16	0.806	
Bromodichloromethane	ND	0.81	0.806		Isopropylbenzene	ND	0.81	0.806	
Bromoform	ND	4.0	0.806		p-Isopropyltoluene	ND	0.81	0.806	
Bromomethane	ND	16	0.806		Methylene Chloride	ND	8.1	0.806	
2-Butanone	ND	16	0.806		4-Methyl-2-Pentanone	ND	16	0.806	
n-Butylbenzene	ND	0.81	0.806		Naphthalene	ND	8.1	0.806	
sec-Butylbenzene	ND	0.81	0.806		n-Propylbenzene	ND	1.6	0.806	
tert-Butylbenzene	ND	0.81	0.806		Styrene	ND	0.81	0.806	
Carbon Disulfide	ND	8.1	0.806		1,1,1,2-Tetrachloroethane	ND	0.81	0.806	
Carbon Tetrachloride	ND	0.81	0.806		1,1,2,2-Tetrachloroethane	ND	1.6	0.806	
Chlorobenzene	ND	0.81	0.806		Tetrachloroethene	ND	0.81	0.806	
Chloroethane	ND	1.6	0.806		Toluene	ND	0.81	0.806	
Chloroform	ND	0.81	0.806		1,2,3-Trichlorobenzene	ND	1.6	0.806	
Chloromethane	ND	16	0.806		1,2,4-Trichlorobenzene	ND	1.6	0.806	
2-Chlorotoluene	ND	0.81	0.806		1,1,1-Trichloroethane	ND	0.81	0.806	
4-Chlorotoluene	ND	0.81	0.806		1,1,2-Trichloroethane	ND	0.81	0.806	
Dibromochloromethane	ND	1.6	0.806		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.1	0.806	
1,2-Dibromo-3-Chloropropane	ND	4.0	0.806		Trichloroethene	ND	1.6	0.806	
1,2-Dibromoethane	ND	0.81	0.806		Trichlorofluoromethane	ND	8.1	0.806	
Dibromomethane	ND	0.81	0.806		1,2,3-Trichloropropane	ND	1.6	0.806	
1,2-Dichlorobenzene	ND	0.81	0.806		1,2,4-Trimethylbenzene	ND	1.6	0.806	
1,3-Dichlorobenzene	ND	0.81	0.806		1,3,5-Trimethylbenzene	ND	1.6	0.806	
1,4-Dichlorobenzene	ND	0.81	0.806		Vinyl Acetate	ND	8.1	0.806	
Dichlorodifluoromethane	ND	1.6	0.806		Vinyl Chloride	ND	0.81	0.806	
1,1-Dichloroethane	ND	0.81	0.806		p/m-Xylene	ND	1.6	0.806	
1,2-Dichloroethane	ND	0.81	0.806		o-Xylene	ND	0.81	0.806	
1,1-Dichloroethene	ND	0.81	0.806		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.806	
c-1,2-Dichloroethene	ND	0.81	0.806		Tert-Butyl Alcohol (TBA)	ND	16	0.806	
t-1,2-Dichloroethene	ND	0.81	0.806		Diisopropyl Ether (DIPE)	ND	0.81	0.806	
1,2-Dichloropropane	ND	0.81	0.806		Ethyl-t-Butyl Ether (ETBE)	ND	0.81	0.806	
1,3-Dichloropropane	ND	0.81	0.806		Tert-Amyl-Methyl Ether (TAME)	ND	0.81	0.806	
2,2-Dichloropropane	ND	4.0	0.806		Ethanol	ND	400	0.806	
1,1-Dichloropropene	ND	1.6	0.806						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	109	79-133		
1,2-Dichloroethane-d4	120	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

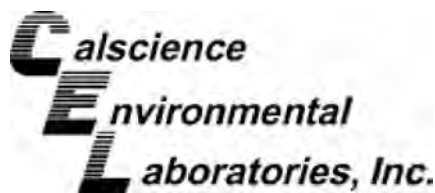
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-4.5	12-06-0054-19-D	06/01/12 14:32	Solid	GC/MS Q	06/01/12	06/05/12 23:44	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	46	0.923		c-1,3-Dichloropropene	ND	0.92	0.923	
Benzene	ND	0.92	0.923		t-1,3-Dichloropropene	ND	1.8	0.923	
Bromobenzene	ND	0.92	0.923		Ethylbenzene	ND	0.92	0.923	
Bromochloromethane	ND	1.8	0.923		2-Hexanone	ND	18	0.923	
Bromodichloromethane	ND	0.92	0.923		Isopropylbenzene	ND	0.92	0.923	
Bromoform	ND	4.6	0.923		p-Isopropyltoluene	ND	0.92	0.923	
Bromomethane	ND	18	0.923		Methylene Chloride	ND	9.2	0.923	
2-Butanone	ND	18	0.923		4-Methyl-2-Pentanone	ND	18	0.923	
n-Butylbenzene	ND	0.92	0.923		Naphthalene	ND	9.2	0.923	
sec-Butylbenzene	ND	0.92	0.923		n-Propylbenzene	ND	1.8	0.923	
tert-Butylbenzene	ND	0.92	0.923		Styrene	ND	0.92	0.923	
Carbon Disulfide	ND	9.2	0.923		1,1,1,2-Tetrachloroethane	ND	0.92	0.923	
Carbon Tetrachloride	ND	0.92	0.923		1,1,2,2-Tetrachloroethane	ND	1.8	0.923	
Chlorobenzene	ND	0.92	0.923		Tetrachloroethene	ND	0.92	0.923	
Chloroethane	ND	1.8	0.923		Toluene	ND	0.92	0.923	
Chloroform	ND	0.92	0.923		1,2,3-Trichlorobenzene	ND	1.8	0.923	
Chloromethane	ND	18	0.923		1,2,4-Trichlorobenzene	ND	1.8	0.923	
2-Chlorotoluene	ND	0.92	0.923		1,1,1-Trichloroethane	ND	0.92	0.923	
4-Chlorotoluene	ND	0.92	0.923		1,1,2-Trichloroethane	ND	0.92	0.923	
Dibromochloromethane	ND	1.8	0.923		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.2	0.923	
1,2-Dibromo-3-Chloropropane	ND	4.6	0.923		Trichloroethene	ND	1.8	0.923	
1,2-Dibromoethane	ND	0.92	0.923		Trichlorofluoromethane	ND	9.2	0.923	
Dibromomethane	ND	0.92	0.923		1,2,3-Trichloropropane	ND	1.8	0.923	
1,2-Dichlorobenzene	ND	0.92	0.923		1,2,4-Trimethylbenzene	ND	1.8	0.923	
1,3-Dichlorobenzene	ND	0.92	0.923		1,3,5-Trimethylbenzene	ND	1.8	0.923	
1,4-Dichlorobenzene	ND	0.92	0.923		Vinyl Acetate	ND	9.2	0.923	
Dichlorodifluoromethane	ND	1.8	0.923		Vinyl Chloride	ND	0.92	0.923	
1,1-Dichloroethane	ND	0.92	0.923		p/m-Xylene	ND	1.8	0.923	
1,2-Dichloroethane	ND	0.92	0.923		o-Xylene	ND	0.92	0.923	
1,1-Dichloroethene	ND	0.92	0.923		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.923	
c-1,2-Dichloroethene	ND	0.92	0.923		Tert-Butyl Alcohol (TBA)	ND	18	0.923	
t-1,2-Dichloroethene	ND	0.92	0.923		Diisopropyl Ether (DIPE)	ND	0.92	0.923	
1,2-Dichloropropane	ND	0.92	0.923		Ethyl-t-Butyl Ether (ETBE)	ND	0.92	0.923	
1,3-Dichloropropane	ND	0.92	0.923		Tert-Amyl-Methyl Ether (TAME)	ND	0.92	0.923	
2,2-Dichloropropane	ND	4.6	0.923		Ethanol	ND	460	0.923	
1,1-Dichloropropene	ND	1.8	0.923						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	111	79-133		
1,2-Dichloroethane-d4	122	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

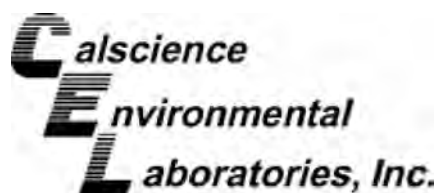
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-312-151	N/A	Solid	GC/MS Q	06/05/12	06/05/12 18:07	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		c-1,3-Dichloropropene	ND	1.0	1	
Benzene	ND	1.0	1		t-1,3-Dichloropropene	ND	2.0	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	2.0	1		2-Hexanone	ND	20	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	5.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	20	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	20	1		4-Methyl-2-Pentanone	ND	20	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	2.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	2.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	2.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	2.0	1	
Chloromethane	ND	20	1		1,2,4-Trichlorobenzene	ND	2.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
Dibromochloromethane	ND	2.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	2.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	2.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	2.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	2.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	2.0	1		Vinyl Chloride	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	2.0	1	
1,2-Dichloroethane	ND	1.0	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	20	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1	
2,2-Dichloropropane	ND	5.0	1		Ethanol	ND	500	1	
1,1-Dichloropropene	ND	2.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	80-120			Dibromofluoromethane	106	79-133		
1,2-Dichloroethane-d4	115	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

Project: Former Chemoil Facility / WA1617 01 1.2

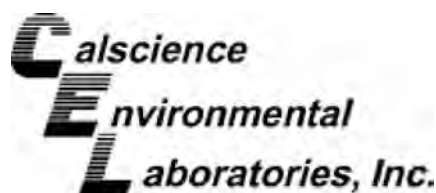
Page 14 of 14

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-312-153	N/A	Solid	GC/MS OO	06/06/12	06/06/12 15:34	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		c-1,3-Dichloropropene	ND	1.0	1	
Benzene	ND	1.0	1		t-1,3-Dichloropropene	ND	2.0	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	2.0	1		2-Hexanone	ND	20	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	5.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	20	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	20	1		4-Methyl-2-Pentanone	ND	20	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	2.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	2.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	2.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	2.0	1	
Chloromethane	ND	20	1		1,2,4-Trichlorobenzene	ND	2.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
Dibromochloromethane	ND	2.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	2.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	2.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	2.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	2.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	2.0	1		Vinyl Chloride	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	2.0	1	
1,2-Dichloroethane	ND	1.0	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	20	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1	
2,2-Dichloropropane	ND	5.0	1		Ethanol	ND	500	1	
1,1-Dichloropropene	ND	2.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	94	79-133		
1,2-Dichloroethane-d4	99	71-155			Toluene-d8	99	80-120		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

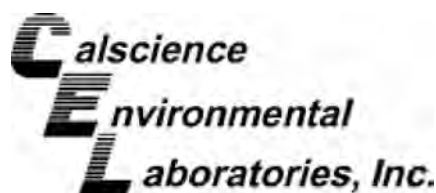
Project: Former Chemoil Facility / WA1617 01 1.2

Page 1 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-13	12-06-0054-5-A	05/31/12 17:55	Aqueous	GC/MS GGG	06/05/12	06/05/12 20:40	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	1.2	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	14	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	80-120			Dibromofluoromethane	100	80-126		
1,2-Dichloroethane-d4	101	80-134			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

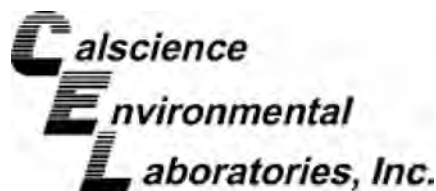
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-25-13-DUP	12-06-0054-6-A	05/31/12 17:55	Aqueous	GC/MS GGG	06/05/12	06/05/12 21:12	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	1.7	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	17	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	104	80-126		
1,2-Dichloroethane-d4	105	80-134			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

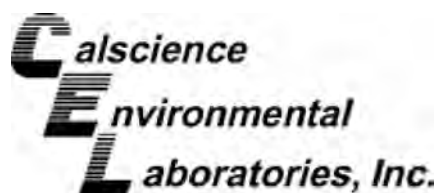
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-060112	12-06-0054-7-A	06/01/12 08:50	Aqueous	GC/MS GGG	06/05/12	06/05/12 21:45	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	80-120			Dibromofluoromethane	100	80-126		
1,2-Dichloroethane-d4	101	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

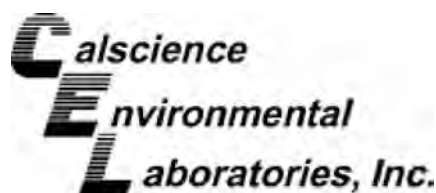
Project: Former Chemoil Facility / WA1617 01 1.2

Page 4 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-20-14	12-06-0054-11-A	06/01/12 10:00	Aqueous	GC/MS GGG	06/05/12	06/05/12 22:17	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	80-120			Dibromofluoromethane	105	80-126		
1,2-Dichloroethane-d4	106	80-134			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

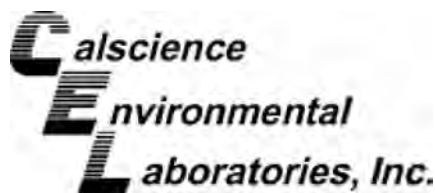
Project: Former Chemoil Facility / WA1617 01 1.2

Page 5 of 7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-29-14.5	12-06-0054-16-A	06/01/12 13:00	Aqueous	GC/MS GGG	06/05/12	06/05/12 22:50	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	104	80-126		
1,2-Dichloroethane-d4	106	80-134			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

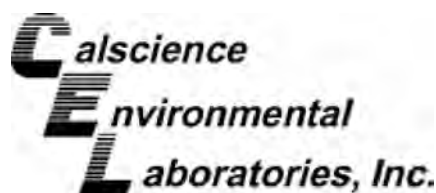
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-22-14	12-06-0054-20-A	06/01/12 15:08	Aqueous	GC/MS GGG	06/05/12	06/05/12 23:22	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	17	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	4.1	1.0	1		n-Propylbenzene	2.9	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	38	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	80-120			Dibromofluoromethane	103	80-126		
1,2-Dichloroethane-d4	105	80-134			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

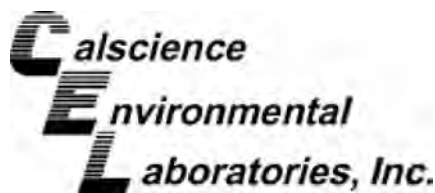
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-316-545	N/A	Aqueous	GC/MS GGG	06/05/12	06/05/12 15:15	120605L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	93	80-126		
1,2-Dichloroethane-d4	95	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

Project: Former Chemoil Facility / WA1617 01 1.2

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
TB-053112-A	12-06-0054-1-A	05/31/12 16:24	Aqueous	GC/MS S	06/06/12	06/07/12 06:46	120606L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	94	80-120			Dibromofluoromethane	94	80-126		
1,2-Dichloroethane-d4	98	80-134			Toluene-d8	100	80-120		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

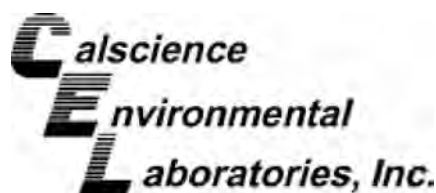
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
TB-060112	12-06-0054-15-A	06/01/12 12:40	Aqueous	GC/MS S	06/06/12	06/07/12 07:19	120606L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	94	80-120			Dibromofluoromethane	96	80-126		
1,2-Dichloroethane-d4	97	80-134			Toluene-d8	99	80-120		

Return to Contents



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

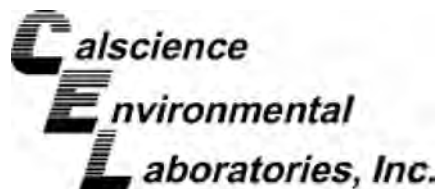
Project: Former Chemoil Facility / WA1617 01 1.2

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-316-554	N/A	Aqueous	GC/MS S	06/06/12	06/07/12 06:12	120606L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	94	80-126		
1,2-Dichloroethane-d4	96	80-134			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

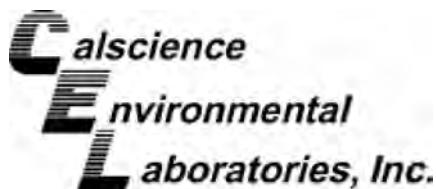
Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-29-3	Solid	GC 47	06/05/12	06/05/12	120605S02

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	ND	400.0	335.4	84	330.1	83	64-130	2	0-15	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



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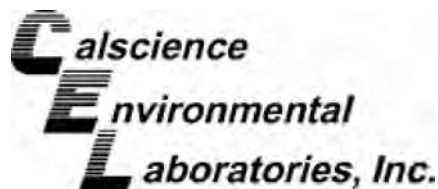
Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0152-1	Aqueous	GC 56	06/07/12	06/07/12	120607S01

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	ND	2000	2133	107	2100	105	70-112	2	0-17	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



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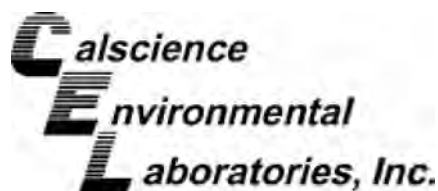
Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-25-1	Solid	GC 5	06/05/12	06/05/12	120605S01

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	ND	10.00	8.001	80	8.664	87	48-114	8	0-23	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



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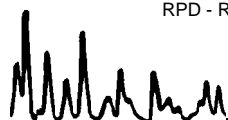
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Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

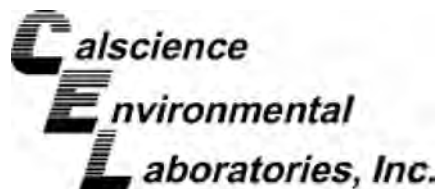
Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0180-1	Aqueous	GC/MS S	06/06/12	06/07/12	120606S02

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Acetone	ND	50.00	50.25	100	52.74	105	70-130	5	0-20	
Benzene	ND	50.00	51.19	102	49.35	99	78-120	4	0-20	
Bromobenzene	ND	50.00	55.66	111	55.40	111	70-130	0	0-20	
Bromochloromethane	ND	50.00	51.74	103	50.99	102	70-130	1	0-20	
Bromodichloromethane	ND	50.00	54.57	109	52.94	106	70-130	3	0-20	
Bromoform	ND	50.00	44.67	89	44.89	90	70-130	0	0-20	
Bromomethane	ND	50.00	34.09	68	30.72	61	70-130	10	0-20	3
2-Butanone	ND	50.00	43.82	88	42.84	86	70-130	2	0-20	
n-Butylbenzene	ND	50.00	52.99	106	50.80	102	70-130	4	0-25	
sec-Butylbenzene	ND	50.00	53.03	106	51.27	103	70-130	3	0-20	
tert-Butylbenzene	ND	50.00	56.10	112	54.17	108	70-130	3	0-20	
Carbon Disulfide	ND	50.00	44.22	88	45.46	91	70-130	3	0-20	
Carbon Tetrachloride	ND	50.00	43.24	86	42.77	86	69-139	1	0-20	
Chlorobenzene	ND	50.00	52.31	105	51.65	103	70-130	1	0-20	
Chloroethane	ND	50.00	55.79	112	48.89	98	70-130	13	0-20	
Chloroform	ND	50.00	49.82	100	48.19	96	70-130	3	0-20	
Chloromethane	ND	50.00	48.62	97	47.55	95	70-130	2	0-20	
2-Chlorotoluene	ND	50.00	55.82	112	55.40	111	70-130	1	0-20	
4-Chlorotoluene	ND	50.00	51.42	103	49.21	98	70-130	4	0-20	
Dibromochloromethane	ND	50.00	49.45	99	49.40	99	70-130	0	0-20	
1,2-Dibromo-3-Chloropropane	ND	50.00	46.88	94	46.02	92	70-130	2	0-20	
1,2-Dibromoethane	ND	50.00	53.79	108	54.25	108	80-123	1	0-20	
Dibromomethane	ND	50.00	53.13	106	51.25	102	70-130	4	0-20	
1,2-Dichlorobenzene	ND	50.00	51.48	103	49.95	100	76-120	3	0-20	
1,3-Dichlorobenzene	ND	50.00	51.46	103	49.98	100	70-130	3	0-20	
1,4-Dichlorobenzene	ND	50.00	49.45	99	48.11	96	70-130	3	0-20	
Dichlorodifluoromethane	1.345	50.00	36.29	70	36.89	71	70-130	2	0-20	
1,1-Dichloroethane	2.151	50.00	44.79	85	42.85	81	70-130	4	0-20	
1,2-Dichloroethane	ND	50.00	50.68	101	49.97	100	76-130	1	0-20	
1,1-Dichloroethene	ND	50.00	41.40	83	42.37	85	70-130	2	0-27	
c-1,2-Dichloroethene	ND	50.00	48.72	97	47.71	95	70-130	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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1650 Iowa Ave.
Suite 180
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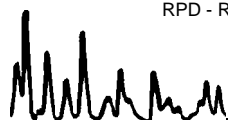
Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

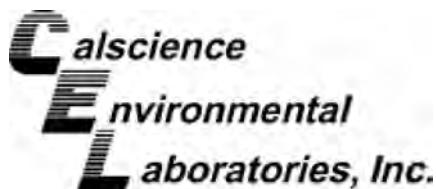
Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0180-1	Aqueous	GC/MS S	06/06/12	06/07/12	120606S02

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
t-1,2-Dichloroethene	ND	50.00	39.99	80	49.66	99	70-130	22	0-20	4
1,2-Dichloropropane	ND	50.00	53.58	107	52.38	105	70-130	2	0-25	
1,3-Dichloropropane	ND	50.00	52.61	105	52.30	105	70-130	1	0-20	
2,2-Dichloropropane	ND	50.00	28.83	58	27.37	55	70-130	5	0-20	3
1,1-Dichloropropene	ND	50.00	48.25	97	46.90	94	70-130	3	0-20	
c-1,3-Dichloropropene	ND	50.00	45.60	91	44.27	89	70-130	3	0-20	
t-1,3-Dichloropropene	ND	50.00	40.79	82	41.23	82	70-130	1	0-20	
Ethylbenzene	ND	50.00	55.31	111	53.95	108	73-127	2	0-20	
2-Hexanone	ND	50.00	45.66	91	46.59	93	70-130	2	0-20	
Isopropylbenzene	ND	50.00	55.41	111	54.41	109	70-130	2	0-20	
p-Isopropyltoluene	ND	50.00	51.63	103	49.83	100	70-130	4	0-20	
Methylene Chloride	ND	50.00	43.33	87	51.91	104	70-130	18	0-20	
4-Methyl-2-Pentanone	ND	50.00	47.51	95	47.91	96	70-130	1	0-20	
Naphthalene	ND	50.00	52.96	106	53.22	106	70-130	0	0-20	
n-Propylbenzene	ND	50.00	56.02	112	55.10	110	70-130	2	0-20	
Styrene	ND	50.00	56.09	112	55.19	110	70-130	2	0-20	
1,1,1,2-Tetrachloroethane	ND	50.00	56.39	113	56.34	113	70-130	0	0-20	
1,1,2,2-Tetrachloroethane	ND	50.00	64.10	128	63.49	127	70-130	1	0-20	
Tetrachloroethene	ND	50.00	35.78	72	34.89	70	70-130	3	0-20	
Toluene	ND	50.00	54.03	108	52.11	104	72-126	4	0-20	
1,2,3-Trichlorobenzene	ND	50.00	51.17	102	50.18	100	70-130	2	0-20	
1,2,4-Trichlorobenzene	ND	50.00	48.99	98	47.82	96	70-130	2	0-20	
1,1,1-Trichloroethane	ND	50.00	49.79	100	49.18	98	70-130	1	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50.00	29.62	59	31.07	62	70-130	5	0-20	3
1,1,2-Trichloroethane	ND	50.00	52.46	105	52.54	105	70-130	0	0-20	
Trichloroethene	ND	50.00	44.63	89	42.99	86	74-122	4	0-20	
Trichlorofluoromethane	ND	50.00	46.81	94	46.24	92	70-130	1	0-20	
1,2,3-Trichloropropane	ND	50.00	51.21	102	52.34	105	70-130	2	0-20	
1,2,4-Trimethylbenzene	ND	50.00	53.63	107	51.72	103	70-130	4	0-20	
1,3,5-Trimethylbenzene	ND	50.00	57.25	115	55.98	112	70-130	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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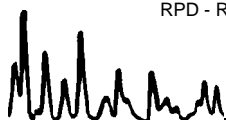
Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

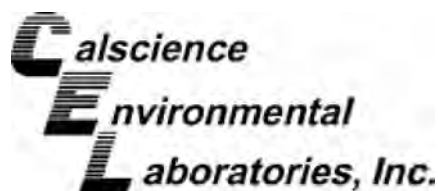
Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0180-1	Aqueous	GC/MS S	06/06/12	06/07/12	120606S02

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Vinyl Acetate	ND	50.00	18.56	37	19.42	39	70-130	5	0-20	3
Vinyl Chloride	ND	50.00	51.27	103	49.95	100	65-131	3	0-24	
p/m-Xylene	ND	100.0	110.8	111	108.0	108	70-130	3	0-20	
o-Xylene	ND	50.00	55.86	112	54.32	109	70-130	3	0-20	
Methyl-t-Butyl Ether (MTBE)	ND	50.00	37.59	75	45.47	91	69-123	19	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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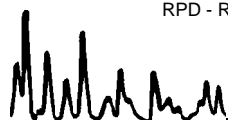
Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

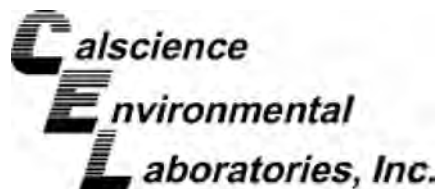
Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-05-2112-4	Aqueous	GC/MS GGG	06/05/12	06/05/12	120605S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Acetone	ND	50.00	50.44	101	51.58	103	70-130	2	0-20	
Benzene	ND	50.00	55.33	111	52.01	104	78-120	6	0-20	
Bromobenzene	ND	50.00	55.43	111	52.42	105	70-130	6	0-20	
Bromochloromethane	ND	50.00	54.34	109	53.65	107	70-130	1	0-20	
Bromodichloromethane	ND	50.00	54.92	110	52.12	104	70-130	5	0-20	
Bromoform	ND	50.00	53.26	107	52.79	106	70-130	1	0-20	
Bromomethane	ND	50.00	29.49	59	30.21	60	70-130	2	0-20	3
2-Butanone	ND	50.00	54.75	109	54.25	109	70-130	1	0-20	
n-Butylbenzene	ND	50.00	54.56	109	50.68	101	70-130	7	0-25	
sec-Butylbenzene	ND	50.00	55.17	110	51.98	104	70-130	6	0-20	
tert-Butylbenzene	ND	50.00	57.12	114	54.11	108	70-130	5	0-20	
Carbon Disulfide	ND	50.00	40.61	81	38.12	76	70-130	6	0-20	
Carbon Tetrachloride	ND	50.00	55.10	110	52.07	104	69-139	6	0-20	
Chlorobenzene	ND	50.00	54.78	110	51.47	103	70-130	6	0-20	
Chloroethane	ND	50.00	53.77	108	50.81	102	70-130	6	0-20	
Chloroform	ND	50.00	54.14	108	52.01	104	70-130	4	0-20	
Chloromethane	ND	50.00	55.66	111	52.23	104	70-130	6	0-20	
2-Chlorotoluene	ND	50.00	55.83	112	52.37	105	70-130	6	0-20	
4-Chlorotoluene	ND	50.00	52.65	105	49.21	98	70-130	7	0-20	
Dibromochloromethane	ND	50.00	55.73	111	52.99	106	70-130	5	0-20	
1,2-Dibromo-3-Chloropropane	ND	50.00	56.91	114	57.30	115	70-130	1	0-20	
1,2-Dibromoethane	ND	50.00	54.89	110	53.04	106	80-123	3	0-20	
Dibromomethane	ND	50.00	54.27	109	52.28	105	70-130	4	0-20	
1,2-Dichlorobenzene	ND	50.00	54.58	109	52.11	104	76-120	5	0-20	
1,3-Dichlorobenzene	ND	50.00	53.13	106	50.49	101	70-130	5	0-20	
1,4-Dichlorobenzene	ND	50.00	51.46	103	48.49	97	70-130	6	0-20	
Dichlorodifluoromethane	ND	50.00	58.34	117	54.78	110	70-130	6	0-20	
1,1-Dichloroethane	ND	50.00	51.83	104	49.06	98	70-130	6	0-20	
1,2-Dichloroethane	ND	50.00	54.62	109	52.28	105	76-130	4	0-20	
1,1-Dichloroethene	ND	50.00	44.16	88	41.65	83	70-130	6	0-27	
c-1,2-Dichloroethene	ND	50.00	54.25	109	51.34	103	70-130	6	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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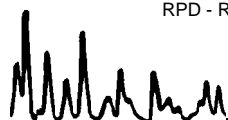
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Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

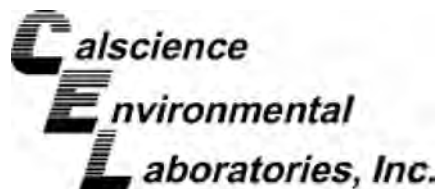
Project Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-05-2112-4	Aqueous	GC/MS GGG	06/05/12	06/05/12	120605S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
t-1,2-Dichloroethene	ND	50.00	49.85	100	46.68	93	70-130	7	0-20	
1,2-Dichloropropane	ND	50.00	55.88	112	53.47	107	70-130	4	0-25	
1,3-Dichloropropane	ND	50.00	54.83	110	52.90	106	70-130	4	0-20	
2,2-Dichloropropane	ND	50.00	56.93	114	51.38	103	70-130	10	0-20	
1,1-Dichloropropene	ND	50.00	56.07	112	52.37	105	70-130	7	0-20	
c-1,3-Dichloropropene	ND	50.00	59.69	119	56.64	113	70-130	5	0-20	
t-1,3-Dichloropropene	ND	50.00	58.02	116	55.06	110	70-130	5	0-20	
Ethylbenzene	ND	50.00	55.55	111	51.93	104	73-127	7	0-20	
2-Hexanone	ND	50.00	54.06	108	54.03	108	70-130	0	0-20	
Isopropylbenzene	ND	50.00	56.44	113	52.75	106	70-130	7	0-20	
p-Isopropyltoluene	ND	50.00	53.91	108	50.88	102	70-130	6	0-20	
Methylene Chloride	ND	50.00	51.82	104	50.24	100	70-130	3	0-20	
4-Methyl-2-Pentanone	ND	50.00	55.46	111	55.10	110	70-130	1	0-20	
Naphthalene	ND	50.00	58.81	118	58.00	116	70-130	1	0-20	
n-Propylbenzene	ND	50.00	56.30	113	52.17	104	70-130	8	0-20	
Styrene	ND	50.00	55.71	111	52.15	104	70-130	7	0-20	
1,1,1,2-Tetrachloroethane	ND	50.00	57.00	114	53.16	106	70-130	7	0-20	
1,1,2,2-Tetrachloroethane	ND	50.00	61.74	123	61.24	122	70-130	1	0-20	
Tetrachloroethene	ND	50.00	50.34	101	46.77	94	70-130	7	0-20	
Toluene	ND	50.00	56.35	113	52.42	105	72-126	7	0-20	
1,2,3-Trichlorobenzene	ND	50.00	57.19	114	55.00	110	70-130	4	0-20	
1,2,4-Trichlorobenzene	ND	50.00	54.47	109	51.13	102	70-130	6	0-20	
1,1,1-Trichloroethane	ND	50.00	54.99	110	51.71	103	70-130	6	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50.00	45.60	91	42.84	86	70-130	6	0-20	
1,1,2-Trichloroethane	ND	50.00	55.00	110	52.39	105	70-130	5	0-20	
Trichloroethene	ND	50.00	50.53	101	47.11	94	74-122	7	0-20	
Trichlorofluoromethane	ND	50.00	56.32	113	53.56	107	70-130	5	0-20	
1,2,3-Trichloropropane	ND	50.00	55.98	112	54.03	108	70-130	4	0-20	
1,2,4-Trimethylbenzene	ND	50.00	54.30	109	51.03	102	70-130	6	0-20	
1,3,5-Trimethylbenzene	ND	50.00	56.20	112	51.90	104	70-130	8	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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Suite 180
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Date Received: 06/01/12
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

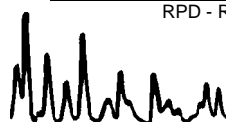
Project Former Chemoil Facility / WA1617 01 1.2

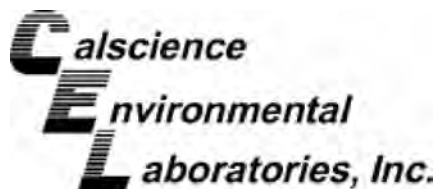
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-05-2112-4	Aqueous	GC/MS GGG	06/05/12	06/05/12	120605S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Vinyl Acetate	ND	50.00	25.34	51	25.72	51	70-130	1	0-20	3
Vinyl Chloride	ND	50.00	53.92	108	49.80	100	65-131	8	0-24	
p/m-Xylene	ND	100.0	109.9	110	102.8	103	70-130	7	0-20	
o-Xylene	ND	50.00	55.15	110	51.88	104	70-130	6	0-20	
Methyl-t-Butyl Ether (MTBE)	ND	50.00	47.93	96	47.24	94	69-123	1	0-20	
Tert-Butyl Alcohol (TBA)	ND	250.0	439.0	176	466.8	187	65-131	6	0-22	3
Diisopropyl Ether (DIPE)	ND	50.00	50.33	101	48.92	98	68-128	3	0-22	
Ethyl-t-Butyl Ether (ETBE)	ND	50.00	52.16	104	50.92	102	69-123	2	0-21	
Tert-Amyl-Methyl Ether (TAME)	ND	50.00	53.35	107	51.29	103	70-124	4	0-20	
Ethanol	ND	500.0	514.9	103	504.6	101	41-155	2	0-35	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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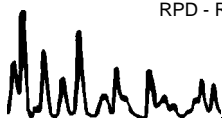
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Preparation: EPA 3550B
Method: EPA 8015B (M)

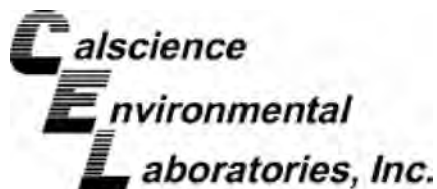
Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-275-4,552	Solid	GC 47	06/05/12	06/05/12	120605B02

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	400.0	354.2	89	348.0	87	75-123	2	0-12	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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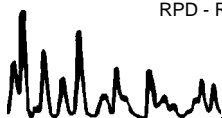
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Method: EPA 8015B (M)

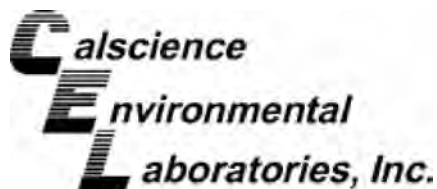
Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-330-2,246	Aqueous	GC 45	06/05/12	06/06/12	120605B11

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	2000	1792	90	1976	99	75-117	10	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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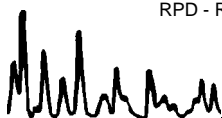
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Work Order No: 12-06-0054
Preparation: EPA 3510C
Method: EPA 8015B (M)

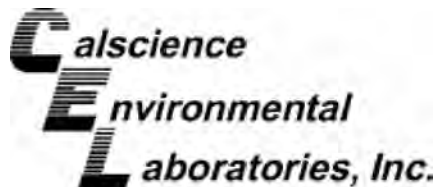
Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-330-2,247	Aqueous	GC 45	06/05/12	06/06/12	120605B11S

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	2000	1952	98	2013	101	75-117	3	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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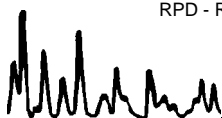
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Preparation: EPA 5030C
Method: EPA 8015B (M)

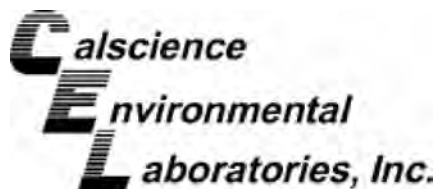
Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-436-7,501	Aqueous	GC 56	06/07/12	06/07/12	120607B01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	2000	2055	103	2076	104	78-120	1	0-10	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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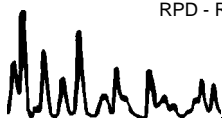
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Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8015B (M)

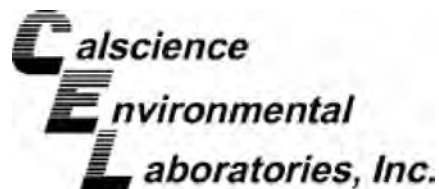
Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-571-352	Solid	GC 5	06/05/12	06/05/12	120605B01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	10.00	10.05	101	10.47	105	70-124	4	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



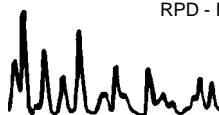
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Suite 180
Riverside, CA 92507-2373

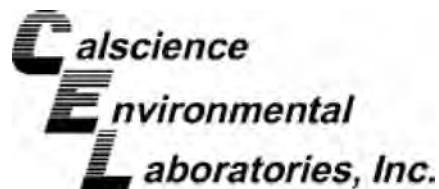
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-151	Solid	GC/MS Q	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	50.00	65.59	131	64.55	129	80-120	73-127	2	0-20	X
Benzene	50.00	50.69	101	49.34	99	80-120	73-127	3	0-20	
Bromobenzene	50.00	51.60	103	52.14	104	80-120	73-127	1	0-20	
Bromochloromethane	50.00	51.02	102	50.95	102	80-120	73-127	0	0-20	
Bromodichloromethane	50.00	53.05	106	52.89	106	80-120	73-127	0	0-20	
Bromoform	50.00	44.69	89	46.27	93	80-120	73-127	3	0-20	
Bromomethane	50.00	50.03	100	50.08	100	80-120	73-127	0	0-20	
2-Butanone	50.00	49.30	99	57.01	114	80-120	73-127	15	0-20	
n-Butylbenzene	50.00	52.40	105	53.54	107	77-123	69-131	2	0-25	
sec-Butylbenzene	50.00	52.42	105	53.35	107	80-120	73-127	2	0-20	
tert-Butylbenzene	50.00	52.73	105	54.48	109	80-120	73-127	3	0-20	
Carbon Disulfide	50.00	46.50	93	46.27	93	80-120	73-127	0	0-20	
Carbon Tetrachloride	50.00	50.55	101	50.16	100	65-137	53-149	1	0-20	
Chlorobenzene	50.00	51.22	102	51.37	103	80-120	73-127	0	0-20	
Chloroethane	50.00	49.40	99	48.19	96	80-120	73-127	2	0-20	
Chloroform	50.00	49.89	100	50.66	101	80-120	73-127	2	0-20	
Chloromethane	50.00	50.30	101	46.70	93	80-120	73-127	7	0-20	
2-Chlorotoluene	50.00	52.09	104	51.90	104	80-120	73-127	0	0-20	
4-Chlorotoluene	50.00	50.82	102	51.83	104	80-120	73-127	2	0-20	
Dibromochloromethane	50.00	52.12	104	52.52	105	80-120	73-127	1	0-20	
1,2-Dibromo-3-Chloropropane	50.00	48.39	97	52.05	104	80-120	73-127	7	0-20	
1,2-Dibromoethane	50.00	51.36	103	52.04	104	80-120	73-127	1	0-20	
Dibromomethane	50.00	50.62	101	49.68	99	80-120	73-127	2	0-20	
1,2-Dichlorobenzene	50.00	51.13	102	52.80	106	80-120	73-127	3	0-20	
1,3-Dichlorobenzene	50.00	50.20	100	51.07	102	80-120	73-127	2	0-20	
1,4-Dichlorobenzene	50.00	46.96	94	48.80	98	80-120	73-127	4	0-20	
Dichlorodifluoromethane	50.00	52.91	106	50.36	101	80-120	73-127	5	0-20	
1,1-Dichloroethane	50.00	47.73	95	47.55	95	80-120	73-127	0	0-20	
1,2-Dichloroethane	50.00	51.23	102	49.79	100	80-120	73-127	3	0-20	
1,1-Dichloroethene	50.00	40.20	80	40.27	81	68-128	58-138	0	0-20	
c-1,2-Dichloroethene	50.00	49.76	100	49.54	99	80-120	73-127	0	0-20	
t-1,2-Dichloroethene	50.00	46.53	93	45.45	91	80-120	73-127	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



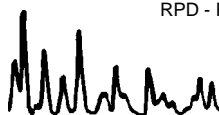
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

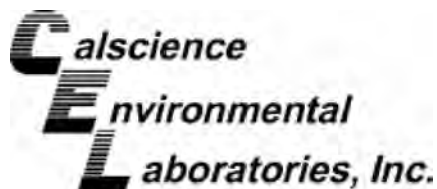
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-151	Solid	GC/MS Q	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
1,2-Dichloropropane	50.00	50.66	101	48.90	98	79-115	73-121	4	0-25	
1,3-Dichloropropane	50.00	51.38	103	51.50	103	80-120	73-127	0	0-20	
2,2-Dichloropropane	50.00	50.10	100	50.81	102	80-120	73-127	1	0-20	
1,1-Dichloropropene	50.00	53.16	106	52.51	105	80-120	73-127	1	0-20	
c-1,3-Dichloropropene	50.00	58.51	117	57.25	114	80-120	73-127	2	0-20	
t-1,3-Dichloropropene	50.00	57.62	115	57.45	115	80-120	73-127	0	0-20	
Ethylbenzene	50.00	53.31	107	53.53	107	80-120	73-127	0	0-20	
2-Hexanone	50.00	48.64	97	51.64	103	80-120	73-127	6	0-20	
Isopropylbenzene	50.00	53.64	107	53.80	108	80-120	73-127	0	0-20	
p-Isopropyltoluene	50.00	50.81	102	51.74	103	80-120	73-127	2	0-20	
Methylene Chloride	50.00	48.64	97	48.89	98	80-120	73-127	1	0-20	
4-Methyl-2-Pentanone	50.00	50.05	100	50.28	101	80-120	73-127	0	0-20	
Naphthalene	50.00	47.71	95	52.09	104	80-120	73-127	9	0-20	
n-Propylbenzene	50.00	53.83	108	53.78	108	80-120	73-127	0	0-20	
Styrene	50.00	53.95	108	54.10	108	80-120	73-127	0	0-20	
1,1,1,2-Tetrachloroethane	50.00	54.14	108	54.63	109	80-120	73-127	1	0-20	
1,1,2,2-Tetrachloroethane	50.00	50.91	102	53.17	106	80-120	73-127	4	0-20	
Tetrachloroethene	50.00	50.24	100	49.93	100	80-120	73-127	1	0-20	
Toluene	50.00	52.17	104	51.12	102	80-120	73-127	2	0-20	
1,2,3-Trichlorobenzene	50.00	47.60	95	51.40	103	80-120	73-127	8	0-20	
1,2,4-Trichlorobenzene	50.00	45.04	90	47.57	95	80-120	73-127	5	0-20	
1,1,1-Trichloroethane	50.00	50.06	100	51.34	103	80-120	73-127	3	0-20	
1,1,2-Trichloroethane	50.00	51.90	104	52.41	105	80-120	73-127	1	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	43.55	87	44.15	88	80-120	73-127	1	0-20	
Trichloroethene	50.00	50.66	101	49.68	99	80-120	73-127	2	0-20	
Trichlorofluoromethane	50.00	51.43	103	50.90	102	80-120	73-127	1	0-20	
1,2,3-Trichloropropane	50.00	48.37	97	49.96	100	80-120	73-127	3	0-20	
1,2,4-Trimethylbenzene	50.00	52.65	105	53.77	108	80-120	73-127	2	0-20	
1,3,5-Trimethylbenzene	50.00	53.83	108	53.45	107	80-120	73-127	1	0-20	
Vinyl Acetate	50.00	39.23	78	39.38	79	80-120	73-127	0	0-20	ME
Vinyl Chloride	50.00	51.51	103	48.76	98	67-127	57-137	5	0-20	
p/m-Xylene	100.0	107.6	108	108.2	108	80-120	73-127	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-151	Solid	GC/MS Q	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	55.39	111	55.35	111	80-120	73-127	0	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	45.70	91	46.59	93	70-124	61-133	2	0-20	
Tert-Butyl Alcohol (TBA)	250.0	259.7	104	246.6	99	73-121	65-129	5	0-20	
Diisopropyl Ether (DIPE)	50.00	46.78	94	47.58	95	69-129	59-139	2	0-20	
Ethyl-t-Butyl Ether (ETBE)	50.00	49.69	99	50.98	102	70-124	61-133	3	0-20	
Tert-Amyl-Methyl Ether (TAME)	50.00	49.80	100	49.36	99	74-122	66-130	1	0-20	
Ethanol	500.0	475.5	95	470.4	94	51-135	37-149	1	0-27	

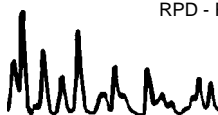
Total number of LCS compounds : 71

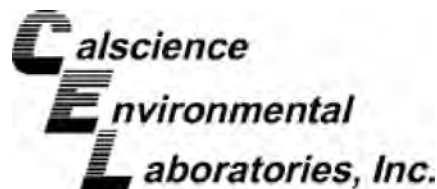
Total number of ME compounds : 1

Total number of ME compounds allowed : 4

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



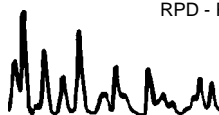
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Suite 180
Riverside, CA 92507-2373

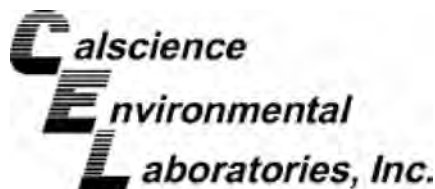
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-153	Solid	GC/MS OO	06/06/12		06/06/12		120606L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	50.00	59.85	120	60.80	122	80-120	73-127	2	0-20	ME
Benzene	50.00	48.88	98	49.39	99	80-120	73-127	1	0-20	
Bromobenzene	50.00	49.58	99	52.02	104	80-120	73-127	5	0-20	X
Bromochloromethane	50.00	52.26	105	51.74	103	80-120	73-127	1	0-20	
Bromodichloromethane	50.00	52.02	104	52.87	106	80-120	73-127	2	0-20	
Bromoform	50.00	48.17	96	50.90	102	80-120	73-127	6	0-20	
Bromomethane	50.00	66.84	134	66.21	132	80-120	73-127	1	0-20	
2-Butanone	50.00	55.58	111	51.80	104	80-120	73-127	7	0-20	
n-Butylbenzene	50.00	45.94	92	51.15	102	77-123	69-131	11	0-25	
sec-Butylbenzene	50.00	47.59	95	51.84	104	80-120	73-127	9	0-20	
tert-Butylbenzene	50.00	47.74	95	51.69	103	80-120	73-127	8	0-20	
Carbon Disulfide	50.00	45.95	92	45.12	90	80-120	73-127	2	0-20	
Carbon Tetrachloride	50.00	54.95	110	55.54	111	65-137	53-149	1	0-20	
Chlorobenzene	50.00	49.81	100	52.02	104	80-120	73-127	4	0-20	
Chloroethane	50.00	50.38	101	49.36	99	80-120	73-127	2	0-20	
Chloroform	50.00	50.44	101	50.20	100	80-120	73-127	0	0-20	
Chloromethane	50.00	52.81	106	53.27	107	80-120	73-127	1	0-20	
2-Chlorotoluene	50.00	48.05	96	50.94	102	80-120	73-127	6	0-20	
4-Chlorotoluene	50.00	46.16	92	49.86	100	80-120	73-127	8	0-20	
Dibromochloromethane	50.00	55.81	112	57.48	115	80-120	73-127	3	0-20	
1,2-Dibromo-3-Chloropropane	50.00	48.16	96	50.79	102	80-120	73-127	5	0-20	
1,2-Dibromoethane	50.00	50.85	102	52.45	105	80-120	73-127	3	0-20	
Dibromomethane	50.00	49.75	100	50.07	100	80-120	73-127	1	0-20	
1,2-Dichlorobenzene	50.00	48.53	97	51.72	103	80-120	73-127	6	0-20	
1,3-Dichlorobenzene	50.00	46.79	94	51.05	102	80-120	73-127	9	0-20	
1,4-Dichlorobenzene	50.00	46.69	93	50.39	101	80-120	73-127	8	0-20	
Dichlorodifluoromethane	50.00	57.11	114	56.87	114	80-120	73-127	0	0-20	
1,1-Dichloroethane	50.00	48.06	96	47.17	94	80-120	73-127	2	0-20	
1,2-Dichloroethane	50.00	49.70	99	51.18	102	80-120	73-127	3	0-20	
1,1-Dichloroethene	50.00	43.40	87	42.52	85	68-128	58-138	2	0-20	
c-1,2-Dichloroethene	50.00	50.93	102	50.69	101	80-120	73-127	0	0-20	
t-1,2-Dichloroethene	50.00	48.12	96	48.21	96	80-120	73-127	0	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



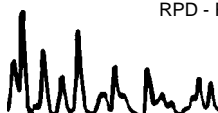
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

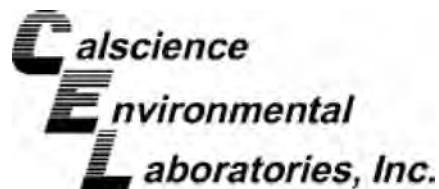
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-153	Solid	GC/MS OO	06/06/12		06/06/12		120606L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
1,2-Dichloropropane	50.00	50.02	100	50.54	101	79-115	73-121	1	0-25	
1,3-Dichloropropane	50.00	50.43	101	52.06	104	80-120	73-127	3	0-20	
2,2-Dichloropropane	50.00	49.01	98	48.24	96	80-120	73-127	2	0-20	
1,1-Dichloropropene	50.00	53.14	106	52.92	106	80-120	73-127	0	0-20	
c-1,3-Dichloropropene	50.00	49.11	98	50.14	100	80-120	73-127	2	0-20	
t-1,3-Dichloropropene	50.00	45.44	91	46.53	93	80-120	73-127	2	0-20	
Ethylbenzene	50.00	50.36	101	51.97	104	80-120	73-127	3	0-20	
2-Hexanone	50.00	48.66	97	52.08	104	80-120	73-127	7	0-20	
Isopropylbenzene	50.00	49.68	99	52.10	104	80-120	73-127	5	0-20	
p-Isopropyltoluene	50.00	45.79	92	50.37	101	80-120	73-127	10	0-20	
Methylene Chloride	50.00	48.61	97	47.39	95	80-120	73-127	3	0-20	
4-Methyl-2-Pentanone	50.00	48.81	98	49.48	99	80-120	73-127	1	0-20	
Naphthalene	50.00	47.90	96	51.80	104	80-120	73-127	8	0-20	
n-Propylbenzene	50.00	48.04	96	51.90	104	80-120	73-127	8	0-20	
Styrene	50.00	49.60	99	51.59	103	80-120	73-127	4	0-20	
1,1,1,2-Tetrachloroethane	50.00	53.46	107	54.79	110	80-120	73-127	2	0-20	
1,1,2,2-Tetrachloroethane	50.00	49.77	100	52.80	106	80-120	73-127	6	0-20	
Tetrachloroethene	50.00	50.58	101	52.16	104	80-120	73-127	3	0-20	
Toluene	50.00	50.21	100	51.11	102	80-120	73-127	2	0-20	
1,2,3-Trichlorobenzene	50.00	46.65	93	51.79	104	80-120	73-127	10	0-20	
1,2,4-Trichlorobenzene	50.00	44.54	89	50.34	101	80-120	73-127	12	0-20	
1,1,1-Trichloroethane	50.00	51.13	102	50.77	102	80-120	73-127	1	0-20	
1,1,2-Trichloroethane	50.00	48.25	96	50.45	101	80-120	73-127	4	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	49.95	100	49.68	99	80-120	73-127	1	0-20	
Trichloroethene	50.00	49.74	99	50.28	101	80-120	73-127	1	0-20	
Trichlorofluoromethane	50.00	54.57	109	53.65	107	80-120	73-127	2	0-20	
1,2,3-Trichloropropane	50.00	50.61	101	53.57	107	80-120	73-127	6	0-20	
1,2,4-Trimethylbenzene	50.00	47.63	95	51.01	102	80-120	73-127	7	0-20	
1,3,5-Trimethylbenzene	50.00	48.45	97	51.77	104	80-120	73-127	7	0-20	
Vinyl Acetate	50.00	29.53	59	29.07	58	80-120	73-127	2	0-20	X
Vinyl Chloride	50.00	52.24	104	51.82	104	67-127	57-137	1	0-20	
p/m-Xylene	100.0	97.89	98	102.0	102	80-120	73-127	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-153	Solid	GC/MS OO	06/06/12		06/06/12		120606L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	48.91	98	51.10	102	80-120	73-127	4	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	45.18	90	45.75	91	70-124	61-133	1	0-20	
Tert-Butyl Alcohol (TBA)	250.0	248.7	99	253.2	101	73-121	65-129	2	0-20	
Diisopropyl Ether (DIPE)	50.00	48.89	98	48.46	97	69-129	59-139	1	0-20	
Ethyl-t-Butyl Ether (ETBE)	50.00	49.26	99	49.38	99	70-124	61-133	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	50.00	46.92	94	48.52	97	74-122	66-130	3	0-20	
Ethanol	500.0	491.0	98	506.7	101	51-135	37-149	3	0-27	

Total number of LCS compounds : 71

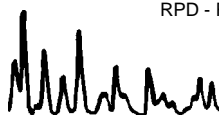
Total number of ME compounds : 1

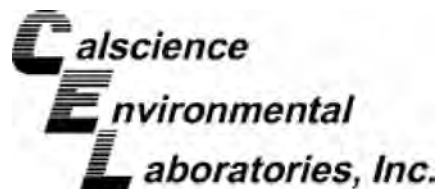
Total number of ME compounds allowed : 4

LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



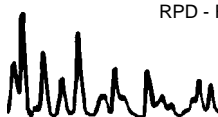
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

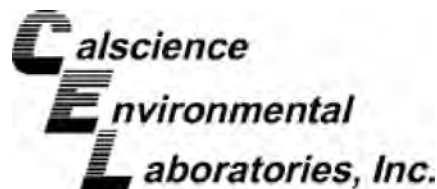
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-554	Aqueous	GC/MS S	06/06/12		06/07/12		120606L02			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	50.00	51.00	102	53.27	107	70-130	60-140	4	0-20	ME
Benzene	50.00	47.62	95	48.75	98	70-130	60-140	2	0-20	
Bromobenzene	50.00	52.26	105	54.44	109	70-130	60-140	4	0-20	
Bromochloromethane	50.00	49.87	100	50.46	101	70-130	60-140	1	0-20	
Bromodichloromethane	50.00	51.02	102	52.87	106	70-130	60-140	4	0-20	
Bromoform	50.00	43.57	87	44.24	88	70-130	60-140	2	0-20	
Bromomethane	50.00	30.60	61	31.40	63	70-130	60-140	3	0-20	
2-Butanone	50.00	43.92	88	44.01	88	70-130	60-140	0	0-20	
n-Butylbenzene	50.00	49.36	99	50.55	101	77-123	69-131	2	0-25	
sec-Butylbenzene	50.00	50.17	100	50.97	102	70-130	60-140	2	0-20	
tert-Butylbenzene	50.00	49.41	99	50.63	101	70-130	60-140	2	0-20	
Carbon Disulfide	50.00	36.81	74	38.02	76	70-130	60-140	3	0-20	
Carbon Tetrachloride	50.00	43.83	88	44.56	89	66-138	54-150	2	0-20	
Chlorobenzene	50.00	49.00	98	50.95	102	70-130	60-140	4	0-20	
Chloroethane	50.00	49.36	99	48.62	97	70-130	60-140	2	0-20	
Chloroform	50.00	47.31	95	48.58	97	70-130	60-140	3	0-20	
Chloromethane	50.00	44.82	90	46.96	94	70-130	60-140	5	0-20	
2-Chlorotoluene	50.00	52.77	106	53.97	108	70-130	60-140	2	0-20	
4-Chlorotoluene	50.00	48.32	97	49.77	100	70-130	60-140	3	0-20	
Dibromochloromethane	50.00	46.37	93	48.15	96	70-130	60-140	4	0-20	
1,2-Dibromo-3-Chloropropane	50.00	45.06	90	46.68	93	70-130	60-140	4	0-20	
1,2-Dibromoethane	50.00	52.24	104	53.93	108	70-130	60-140	3	0-20	
Dibromomethane	50.00	51.04	102	51.36	103	70-130	60-140	1	0-20	
1,2-Dichlorobenzene	50.00	49.27	99	51.36	103	70-130	60-140	4	0-20	
1,3-Dichlorobenzene	50.00	48.51	97	50.20	100	70-130	60-140	3	0-20	
1,4-Dichlorobenzene	50.00	47.54	95	49.24	98	70-130	60-140	4	0-20	
Dichlorodifluoromethane	50.00	57.06	114	50.69	101	70-130	60-140	12	0-20	
1,1-Dichloroethane	50.00	48.80	98	49.78	100	70-130	60-140	2	0-20	
1,2-Dichloroethane	50.00	48.31	97	49.11	98	80-129	72-137	2	0-20	
1,1-Dichloroethene	50.00	40.23	80	39.64	79	71-131	61-141	1	0-20	
c-1,2-Dichloroethene	50.00	46.28	93	48.24	96	70-130	60-140	4	0-20	
t-1,2-Dichloroethene	50.00	49.39	99	38.10	76	70-130	60-140	26	0-20	X

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



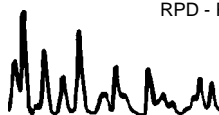
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

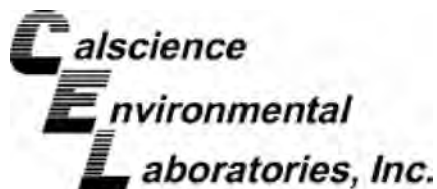
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-554	Aqueous	GC/MS S	06/06/12		06/07/12		120606L02			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	Qualifiers
1,2-Dichloropropane	50.00	50.21	100	51.72	103	79-115	73-121	3	0-25	
1,3-Dichloropropane	50.00	50.52	101	51.73	103	70-130	60-140	2	0-20	
2,2-Dichloropropane	50.00	29.35	59	29.61	59	70-130	60-140	1	0-20	X
1,1-Dichloropropene	50.00	46.72	93	48.06	96	70-130	60-140	3	0-20	
c-1,3-Dichloropropene	50.00	44.09	88	45.56	91	70-130	60-140	3	0-20	
t-1,3-Dichloropropene	50.00	40.27	81	41.88	84	70-130	60-140	4	0-20	
Ethylbenzene	50.00	51.50	103	53.35	107	80-123	73-130	4	0-20	
2-Hexanone	50.00	45.30	91	46.58	93	70-130	60-140	3	0-20	
Isopropylbenzene	50.00	52.08	104	52.96	106	70-130	60-140	2	0-20	
p-Isopropyltoluene	50.00	49.00	98	49.74	99	70-130	60-140	1	0-20	
Methylene Chloride	50.00	49.93	100	43.75	88	70-130	60-140	13	0-20	
4-Methyl-2-Pentanone	50.00	47.06	94	45.75	92	70-130	60-140	3	0-20	
Naphthalene	50.00	51.59	103	52.39	105	70-130	60-140	2	0-20	
n-Propylbenzene	50.00	52.58	105	53.95	108	70-130	60-140	3	0-20	
Styrene	50.00	52.69	105	54.87	110	70-130	60-140	4	0-20	
1,1,1,2-Tetrachloroethane	50.00	53.51	107	54.02	108	70-130	60-140	1	0-20	
1,1,2,2-Tetrachloroethane	50.00	50.05	100	51.16	102	70-130	60-140	2	0-20	
Tetrachloroethene	50.00	52.68	105	53.50	107	70-130	60-140	2	0-20	
Toluene	50.00	49.78	100	50.92	102	79-121	72-128	2	0-20	
1,2,3-Trichlorobenzene	50.00	48.28	97	49.93	100	70-130	60-140	3	0-20	
1,2,4-Trichlorobenzene	50.00	45.84	92	47.60	95	70-130	60-140	4	0-20	
1,1,1-Trichloroethane	50.00	48.18	96	49.23	98	70-130	60-140	2	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	42.95	86	38.95	78	70-130	60-140	10	0-20	
1,1,2-Trichloroethane	50.00	50.06	100	51.78	104	70-130	60-140	3	0-20	
Trichloroethene	50.00	48.51	97	49.05	98	70-130	60-140	1	0-20	
Trichlorofluoromethane	50.00	51.47	103	50.70	101	70-130	60-140	1	0-20	
1,2,3-Trichloropropane	50.00	50.59	101	51.99	104	70-130	60-140	3	0-20	
1,2,4-Trimethylbenzene	50.00	50.44	101	52.10	104	70-130	60-140	3	0-20	
1,3,5-Trimethylbenzene	50.00	53.21	106	54.98	110	70-130	60-140	3	0-20	
Vinyl Acetate	50.00	24.48	49	25.40	51	70-130	60-140	4	0-20	X
Vinyl Chloride	50.00	49.57	99	48.64	97	70-136	59-147	2	0-20	
p/m-Xylene	100.0	102.5	102	107.4	107	70-130	60-140	5	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-554	Aqueous	GC/MS S	06/06/12		06/07/12		120606L02			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	51.97	104	54.21	108	70-130	60-140	4	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	47.75	96	37.51	75	72-126	63-135	24	0-22	X

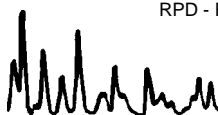
Total number of LCS compounds : 66

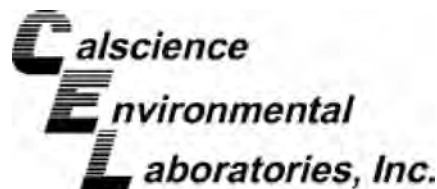
Total number of ME compounds : 1

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



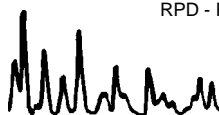
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

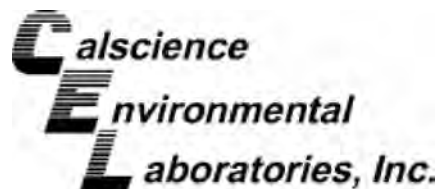
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-545	Aqueous	GC/MS GGG	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	50.00	42.08	84	45.67	91	70-130	60-140	8	0-20	X
Benzene	50.00	50.38	101	49.58	99	70-130	60-140	2	0-20	
Bromobenzene	50.00	51.58	103	50.47	101	70-130	60-140	2	0-20	
Bromochloromethane	50.00	48.93	98	48.92	98	70-130	60-140	0	0-20	
Bromodichloromethane	50.00	51.79	104	50.15	100	70-130	60-140	3	0-20	
Bromoform	50.00	51.34	103	52.00	104	70-130	60-140	1	0-20	
Bromomethane	50.00	46.66	93	36.79	74	70-130	60-140	24	0-20	
2-Butanone	50.00	45.28	91	47.36	95	70-130	60-140	5	0-20	
n-Butylbenzene	50.00	52.03	104	47.89	96	77-123	69-131	8	0-25	
sec-Butylbenzene	50.00	51.68	103	49.19	98	70-130	60-140	5	0-20	
tert-Butylbenzene	50.00	52.72	105	51.49	103	70-130	60-140	2	0-20	
Carbon Disulfide	50.00	36.92	74	36.08	72	70-130	60-140	2	0-20	
Carbon Tetrachloride	50.00	50.10	100	48.96	98	66-138	54-150	2	0-20	
Chlorobenzene	50.00	51.17	102	49.47	99	70-130	60-140	3	0-20	
Chloroethane	50.00	48.92	98	48.48	97	70-130	60-140	1	0-20	
Chloroform	50.00	48.61	97	48.42	97	70-130	60-140	0	0-20	
Chloromethane	50.00	48.82	98	48.31	97	70-130	60-140	1	0-20	
2-Chlorotoluene	50.00	51.92	104	50.21	100	70-130	60-140	3	0-20	
4-Chlorotoluene	50.00	49.17	98	47.63	95	70-130	60-140	3	0-20	
Dibromochloromethane	50.00	52.79	106	52.32	105	70-130	60-140	1	0-20	
1,2-Dibromo-3-Chloropropane	50.00	51.03	102	53.12	106	70-130	60-140	4	0-20	
1,2-Dibromoethane	50.00	50.68	101	50.82	102	70-130	60-140	0	0-20	
Dibromomethane	50.00	49.94	100	49.84	100	70-130	60-140	0	0-20	
1,2-Dichlorobenzene	50.00	50.73	101	50.10	100	70-130	60-140	1	0-20	
1,3-Dichlorobenzene	50.00	50.63	101	48.66	97	70-130	60-140	4	0-20	
1,4-Dichlorobenzene	50.00	48.75	98	47.45	95	70-130	60-140	3	0-20	
Dichlorodifluoromethane	50.00	52.74	105	51.59	103	70-130	60-140	2	0-20	
1,1-Dichloroethane	50.00	46.17	92	45.88	92	70-130	60-140	1	0-20	
1,2-Dichloroethane	50.00	50.54	101	50.12	100	80-129	72-137	1	0-20	
1,1-Dichloroethene	50.00	39.80	80	39.28	79	71-131	61-141	1	0-20	
c-1,2-Dichloroethene	50.00	47.64	95	47.99	96	70-130	60-140	1	0-20	
t-1,2-Dichloroethene	50.00	43.71	87	42.96	86	70-130	60-140	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



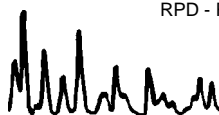
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

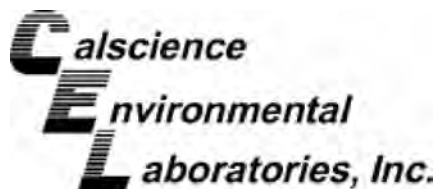
Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-545	Aqueous	GC/MS GGG	06/05/12		06/05/12		120605L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
1,2-Dichloropropane	50.00	51.13	102	51.18	102	79-115	73-121	0	0-25	
1,3-Dichloropropane	50.00	51.04	102	50.71	101	70-130	60-140	1	0-20	
2,2-Dichloropropane	50.00	48.21	96	45.43	91	70-130	60-140	6	0-20	
1,1-Dichloropropene	50.00	50.29	101	49.08	98	70-130	60-140	2	0-20	
c-1,3-Dichloropropene	50.00	56.53	113	55.29	111	70-130	60-140	2	0-20	
t-1,3-Dichloropropene	50.00	54.99	110	53.06	106	70-130	60-140	4	0-20	
Ethylbenzene	50.00	51.03	102	49.53	99	80-123	73-130	3	0-20	
2-Hexanone	50.00	46.33	93	49.08	98	70-130	60-140	6	0-20	
Isopropylbenzene	50.00	52.27	105	50.36	101	70-130	60-140	4	0-20	
p-Isopropyltoluene	50.00	51.45	103	48.53	97	70-130	60-140	6	0-20	
Methylene Chloride	50.00	45.96	92	46.14	92	70-130	60-140	0	0-20	
4-Methyl-2-Pentanone	50.00	48.67	97	50.47	101	70-130	60-140	4	0-20	
Naphthalene	50.00	52.96	106	53.26	107	70-130	60-140	1	0-20	
n-Propylbenzene	50.00	52.41	105	49.37	99	70-130	60-140	6	0-20	
Styrene	50.00	51.98	104	50.86	102	70-130	60-140	2	0-20	
1,1,1,2-Tetrachloroethane	50.00	52.94	106	51.87	104	70-130	60-140	2	0-20	
1,1,2,2-Tetrachloroethane	50.00	54.67	109	56.85	114	70-130	60-140	4	0-20	
Tetrachloroethene	50.00	51.58	103	47.80	96	70-130	60-140	8	0-20	
Toluene	50.00	51.22	102	50.07	100	79-121	72-128	2	0-20	
1,2,3-Trichlorobenzene	50.00	53.43	107	51.30	103	70-130	60-140	4	0-20	
1,2,4-Trichlorobenzene	50.00	52.09	104	48.77	98	70-130	60-140	7	0-20	
1,1,1-Trichloroethane	50.00	49.32	99	48.45	97	70-130	60-140	2	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	42.20	84	40.34	81	70-130	60-140	5	0-20	
1,1,2-Trichloroethane	50.00	49.92	100	50.02	100	70-130	60-140	0	0-20	
Trichloroethene	50.00	47.20	94	45.25	90	70-130	60-140	4	0-20	
Trichlorofluoromethane	50.00	53.65	107	50.90	102	70-130	60-140	5	0-20	
1,2,3-Trichloropropane	50.00	49.78	100	50.56	101	70-130	60-140	2	0-20	
1,2,4-Trimethylbenzene	50.00	51.27	103	49.70	99	70-130	60-140	3	0-20	
1,3,5-Trimethylbenzene	50.00	52.36	105	49.84	100	70-130	60-140	5	0-20	
Vinyl Acetate	50.00	23.62	47	24.41	49	70-130	60-140	3	0-20	X
Vinyl Chloride	50.00	47.14	94	47.34	95	70-136	59-147	0	0-20	
p/m-Xylene	100.0	102.4	102	98.47	98	70-130	60-140	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-06-0054
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617 01 1.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
099-14-316-545	Aqueous	GC/MS GGG	06/05/12	06/05/12	120605L01					
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	50.96	102	49.79	100	70-130	60-140	2	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	44.75	90	44.66	89	72-126	63-135	0	0-22	
Tert-Butyl Alcohol (TBA)	250.0	257.4	103	254.2	102	71-125	62-134	1	0-25	
Diisopropyl Ether (DIPE)	50.00	45.59	91	45.67	91	69-129	59-139	0	0-20	
Ethyl-t-Butyl Ether (ETBE)	50.00	48.82	98	48.54	97	69-129	59-139	1	0-20	
Tert-Amyl-Methyl Ether (TAME)	50.00	50.87	102	50.17	100	67-133	56-144	1	0-20	
Ethanol	500.0	522.7	105	494.0	99	47-155	29-173	6	0-36	

Total number of LCS compounds : 71

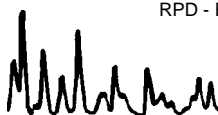
Total number of ME compounds : 0

Total number of ME compounds allowed : 4

LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit



Glossary of Terms and Qualifiers

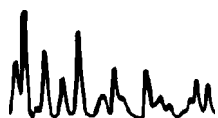


Work Order Number: 12-06-0054

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

MPN - Most Probable Number



CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY
12-06-0054
Date 5/31/12 - 6/1/12
Page 1 of 2

LABORATORY CLIENT: Geosyntec Consultants
ADDRESS: 1050 Iowa Ave, Suite 180
CITY: Riverside STATE: CA ZIP: 92507
TEL: (949) 393-4490 E-MAIL: rchewing@geosyntec.com
TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☒ STANDARD
☐ COELT EDF GLOBAL ID

CLIENT PROJECT NAME / NUMBER: Former Chemoil Facility / WA1617 0112
PROJECT CONTACT: Robert Cheung
P.O. NO.: WA1617
SAMPLER(S): (PRINT) V. Smith

REQUESTED ANALYSES

TURNAROUND TIME: <input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input checked="" type="checkbox"/> 72 HR <input type="checkbox"/> STANDARD																											
<input type="checkbox"/> COELT EDF		GLOBAL ID		LOG CODE																							
SPECIAL INSTRUCTIONS: email Results and invoice to Robert Cheung at rcheung@geosyntec.com																											
LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.	Field Filtered																					
		DATE	TIME			Unpreserved	Preserved	Field Filtered																			
1	TB-053112-A	5/31/12	1624	Water	2			X		TPH (g) or GRO	TPH (g) or DRO or (C6C36) or (C6-C44)	TPH ()	BTEX / MTBE (8260) or ()	VOCs (8260) B	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010B/747X)	Cr(VI) [7196 or 7199 or 218.6]					
2	GW/SV-25-1		1635	Soil	5			X	X	X	X			X	X												
3	GW/SV-25-3		1642	Soil	5			X	X		X			X	X												
4	GW/SV-25-4.5		1655	Soil	5			X	X		X			X	X												
5	GW/SV-25-13		1755	Water	6			X	X		X			X	X												
6	GW/SV-25-13-DUP		1755	Water	6			X	X		X			X	X												
7	GW/SV-25-13-DUP		0850	Water	6			X	X		X			X	X												
8	GW/SV-20-1	6/1/12	0914	Soil	5			X	X		X			X	X												
9	GW/SV-20-3		0922	Soil	5			X	X		X			X	X												
10	GW/SV-20-4.5		0929	Soil	5			X	X		X			X	X												

Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) CSC Date: 6/1/12 Time: 1545
Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) [Signature] Date: 6/1/12 Time: 1725
Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) [Signature] Date: 6/1/12 Time: 1725

LABORATORY CLIENT:		Geesyntec Consultants		P.O. NO.:		WA1617	
ADDRESS:		1650 Iowa Ave Suite 180		PROJECT NAME / NUMBER:		Former Chemical Facility / WA1617 01 1.2	
CITY:		Riverside		PROJECT CONTACT:		Robert Cheung (510) 529-5948 V. Smith	
TEL:		714) 393-4498		E-MAIL:		rcheung@geosyntec.com	
TURNAROUND TIME:		<input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input checked="" type="checkbox"/> 72 HR <input checked="" type="checkbox"/> STANDARD					
<input type="checkbox"/> COELT EDF <input type="checkbox"/> GLOBAL ID		LOG CODE					
SPECIAL INSTRUCTIONS:				REQUESTED ANALYSES			
<p>* email results and invoice to Robert Cheung at rcheung@geosyntec.com.</p> <p>* for water samples for drzbel run one analysis w/ silicea filter.</p>				<div> <div>Unpreserved</div> <div>Preserved</div> <div>Field Filtered</div> </div>			
LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.		
11	GW/SV-20-14	6/1/12	1000	Water	6	TPH (g) or GRO	X
12	GW/SV-29-1		1200	Soil	5	TPH (d) or DRD (or C6C36) or (C6-C44)	X
13	GW/SV-29-3		1222	Soil	5	TPH ()	X
14	GW/SV-29-4.5		1230	Soil	5	TPH ()	X
15	TB-060112		1240	Water	2	TPH ()	X
16	GW/SV-29-14.5		1300	Water	6	VOCs (8260) B	X
17	GW/SV-22-1		1405	Soil	5	VOCs (8260) B	X
18	GW/SV-22-3		1415	Soil	5	VOCs (8260) B	X
19	GW/SV-22-4.5		1432	Soil	5	VOCs (8260) B	X
20	GW/SV-22-14		1508	Water	6	VOCs (8260) B	X
Relinquished by: (Signature)				Received by: (Signature/Affiliation)		Date: 6/1/12 Time: 1545	
Relinquished by: (Signature)				Received by: (Signature/Affiliation)		Date: 6/1/12 Time: 1725	
Relinquished by: (Signature)				Received by: (Signature/Affiliation)		Date: Time:	

WORK ORDER #: 12-06-0654

SAMPLE RECEIPT FORMCooler 1 of 2CLIENT: GEOSYNTECDATE: 06/ /12**TEMPERATURE:** Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature 2.4 °C - 0.3 °C (CF) = 2.1 °C ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ FilterInitial: AM**CUSTODY SEALS INTACT:**☐ Cooler ☐ _____ ☐ No (Not Intact) ☒ Not Present ☐ N/AInitial: AM☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: AP**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTAINER TYPE:Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☒ Sleeve (P) ☐ EnCores® ☒ TerraCores® ³ ☒ 2oz PJWater: ☐ VOA ☒ VOAh ☐ VOAna₂ ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 1AGB ☐ 1AGBna₂ ☐ 1AGBs☐ 500AGB ☒ 500AGJ ☐ 500AGJs ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 1PB ☐ 1PBna ☐ 500PB☐ 250PB ☐ 250PBn ☐ 125PB ☐ 125PBznnna ☐ 100PJ ☐ 100PJna₂ ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Summa® Other: ☐ _____ Trip Blank Lot#: 120521B Labeled/Checked by: APContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: PTPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure znnna: ZnAc₂+NaOH f: Filtered Scanned by: PT

WORK ORDER #: 12-06-0054

SAMPLE RECEIPT FORMCooler 2 of 2CLIENT: GEOSYNTECDATE: 06/1/12**TEMPERATURE:** Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature 2.3 °C - 0.3 °C (CF) = 2.0 °C ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ FilterInitial: AM**CUSTODY SEALS INTACT:**☐ Cooler ☐ _____ ☐ No (Not Intact) ☒ Not Present ☐ N/AInitial: AM☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: AP**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sampler's name indicated on COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours...	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTAINER TYPE:

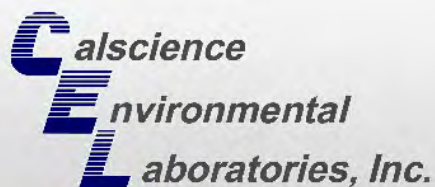
Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☒ Sleeve (P) ☐ EnCores® ☒ TerraCores® ☒ 2oz PJ

Water: ☐ VOA ☒ VOA³h ☐ VOAna₂ ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 1AGB ☐ 1AGBna₂ ☐ 1AGBs

☐ 500AGB ☒ 500AGJ ☐ 500AGJs ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 1PB ☐ 1PBna ☐ 500PB

☐ 250PB ☐ 250PBn ☐ 125PB ☐ 125PBz₂na ☐ 100PJ ☐ 100PJna₂ ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar® ☐ Summa® **Other:** ☐ _____ **Trip Blank Lot#:** 1205218 **Labeled/Checked by:** AP**Container:** C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope **Reviewed by:** PT**Preservative:** h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure z₂na: ZnAc₂+NaOH f: Filtered **Scanned by:** PT



CALSCIENCE

WORK ORDER NUMBER: 12-06-0159

The difference is service



AIR :: SOIL :: WATER :: MARINE CHEMISTRY

Analytical Report For

Client: Geosyntec Consultants

Client Project Name: Former Chemoil Facility / WA1617

Attention: Robert Cheung
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Approved for release on 06/12/2012 by:
Stephen Nowak
Project Manager

ResultLink ▶

Email your PM ▶



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Work Order Number: 12-06-0159

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Client: Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Attn: Robert Cheung

Work Order: 12-06-0159
Project name: Former Chemoil Facility / WA1617
Received: 06/04/12 17:45

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
GW/SV-24-1 (12-06-0159-7)						
TPH as Diesel	68	HD	5.0	mg/kg	EPA 8015B (M)	EPA 3550B
Acetone	92		48	ug/kg	EPA 8260B	EPA 5035
Benzene	1.0		0.96	ug/kg	EPA 8260B	EPA 5035
Toluene	1.6		0.96	ug/kg	EPA 8260B	EPA 5035
GW/SV-24-15 (12-06-0159-10)						
TPH as Diesel	260	HD	50	ug/L	EPA 8015B (M)	EPA 3510C
Chloroform	1.0		1.0	ug/L	EPA 8260B	EPA 5030C
GW/SV-21-1 (12-06-0159-11)						
TPH as Diesel	43	HD	5.0	mg/kg	EPA 8015B (M)	EPA 3550B
GW/SV-21-14 (12-06-0159-14)						
TPH as Diesel	490	HD	50	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Diesel	290	SG,HD	50	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Gasoline	73	HD	50	ug/L	EPA 8015B (M)	EPA 5030C
GW/SV-23-1 (12-06-0159-15)						
TPH as Diesel	960	HD	150	mg/kg	EPA 8015B (M)	EPA 3550B
Acetone	83		48	ug/kg	EPA 8260B	EPA 5035
Benzene	2.8		0.96	ug/kg	EPA 8260B	EPA 5035
Toluene	1.9		0.96	ug/kg	EPA 8260B	EPA 5035
GW/SV-23-13 (12-06-0159-18)						
TPH as Diesel	1300	HD	50	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Diesel	650	SG,HD	50	ug/L	EPA 8015B (M)	EPA 3510C
TPH as Gasoline	910	HD	50	ug/L	EPA 8015B (M)	EPA 5030C
sec-Butylbenzene	2.5		1.0	ug/L	EPA 8260B	EPA 5030C
Isopropylbenzene	4.5		1.0	ug/L	EPA 8260B	EPA 5030C
Methyl-t-Butyl Ether (MTBE)	10		1.0	ug/L	EPA 8260B	EPA 5030C
Tert-Butyl Alcohol (TBA)	17		10	ug/L	EPA 8260B	EPA 5030C

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-1	12-06-0159-2-A	06/01/12 16:04	Solid	GC 48	06/07/12	06/07/12 18:45	120607B03

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	117	61-145	

GW/SV-27-3	12-06-0159-3-A	06/01/12 16:12	Solid	GC 48	06/07/12	06/07/12 19:00	120607B03
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	128	61-145	

GW/SV-27-4.5	12-06-0159-4-A	06/01/12 16:21	Solid	GC 48	06/07/12	06/07/12 19:15	120607B03
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	ND	5.0	1		mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	110	61-145	

GW/SV-24-1	12-06-0159-7-A	06/04/12 09:20	Solid	GC 48	06/07/12	06/07/12 19:31	120607B03
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Diesel	68	5.0	1	HD	mg/kg

<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>
n-Octacosane	115	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-3	12-06-0159-8-A	06/04/12 09:28	Solid	GC 48	06/07/12	06/07/12 20:01	120607B03

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	113	61-145	

GW/SV-24-4.5	12-06-0159-9-A	06/04/12 09:37	Solid	GC 48	06/07/12	06/07/12 20:16	120607B03
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	115	61-145	

GW/SV-21-1	12-06-0159-11-A	06/04/12 11:00	Solid	GC 48	06/07/12	06/07/12 20:31	120607B03
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	43	5.0	1	HD	mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	102	61-145	

GW/SV-21-3	12-06-0159-12-A	06/04/12 11:15	Solid	GC 48	06/07/12	06/07/12 20:46	120607B03
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	108	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-4.5	12-06-0159-13-A	06/04/12 11:28	Solid	GC 48	06/07/12	06/07/12 21:01	120607B03

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	112	61-145	

GW/SV-23-1	12-06-0159-15-A	06/04/12 14:40	Solid	GC 48	06/07/12	06/07/12 21:16	120607B03
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	960	150	30	HD	mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	121	61-145	

GW/SV-23-3	12-06-0159-16-A	06/04/12 14:50	Solid	GC 48	06/07/12	06/07/12 21:31	120607B03
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	111	61-145	

GW/SV-23-4.5	12-06-0159-17-A	06/04/12 15:00	Solid	GC 48	06/07/12	06/07/12 21:47	120607B03
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	115	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-15-422-7	N/A	Solid	GC 48	06/07/12	06/07/12 17:29	120607B03

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	117	61-145	

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Analytical Report



Geosyntec Consultants
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Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-14	12-06-0159-5-F	06/01/12 16:45	Aqueous	GC 45	06/05/12	06/06/12 20:36	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	69	1.39		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	110	68-140	

GW/SV-27-14	12-06-0159-5-F	06/01/12 16:45	Aqueous	GC 45	06/05/12	06/06/12 23:42	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	69	1.39	SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	113	68-140	

EB-060412	12-06-0159-6-F	06/04/12 09:00	Aqueous	GC 45	06/05/12	06/06/12 20:52	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	123	68-140	

EB-060412	12-06-0159-6-F	06/04/12 09:00	Aqueous	GC 45	06/05/12	06/06/12 23:58	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1	SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	127	68-140	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
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Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-15	12-06-0159-10-F	06/04/12 10:20	Aqueous	GC 45	06/05/12	06/06/12 21:08	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	260	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	106	68-140	

GW/SV-24-15	12-06-0159-10-F	06/04/12 10:20	Aqueous	GC 45	06/05/12	06/07/12 00:13	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1	SG	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	109	68-140	

GW/SV-21-14	12-06-0159-14-F	06/04/12 12:00	Aqueous	GC 45	06/05/12	06/06/12 21:24	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	490	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	92	68-140	

GW/SV-21-14	12-06-0159-14-F	06/04/12 12:00	Aqueous	GC 45	06/05/12	06/07/12 00:29	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	290	50	1	SG,HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	92	68-140	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-13	12-06-0159-18-F	06/04/12 15:45	Aqueous	GC 45	06/05/12	06/06/12 21:40	120605B11

Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	1300	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	117	68-140	

GW/SV-23-13	12-06-0159-18-F	06/04/12 15:45	Aqueous	GC 45	06/05/12	06/07/12 00:44	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	650	50	1	SG,HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	119	68-140	

Method Blank	099-15-304-2	N/A	Aqueous	GC 45	06/05/12	06/06/12 15:32	120605B11
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	105	68-140	

Method Blank	099-15-304-3	N/A	Aqueous	GC 45	06/05/12	06/06/12 17:12	120605B11S
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Parameter	Result	RL	DF	Qual	Units
TPH as Diesel	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	109	68-140	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-14	12-06-0159-5-D	06/01/12 16:45	Aqueous	GC 24	06/06/12	06/06/12 23:53	120606B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	77	38-134	

EB-060412	12-06-0159-6-E	06/04/12 09:00	Aqueous	GC 24	06/06/12	06/06/12 15:32	120606B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	78	38-134	

GW/SV-24-15	12-06-0159-10-E	06/04/12 10:20	Aqueous	GC 24	06/06/12	06/07/12 00:27	120606B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	75	38-134	

GW/SV-21-14	12-06-0159-14-E	06/04/12 12:00	Aqueous	GC 24	06/06/12	06/07/12 01:00	120606B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	73	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	76	38-134	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-13	12-06-0159-18-E	06/04/12 15:45	Aqueous	GC 24	06/06/12	06/07/12 02:07	120606B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	910	50	1	HD	ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	88	38-134	

Method Blank	099-12-436-7,495	N/A	Aqueous	GC 24	06/06/12	06/06/12 12:11	120606B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	79	38-134	

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Analytical Report



Geosyntec Consultants
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Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-1	12-06-0159-2-A	06/01/12 16:04	Solid	GC 4	06/05/12	06/05/12 15:01	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	71	42-126	

GW/SV-27-3	12-06-0159-3-A	06/01/12 16:12	Solid	GC 4	06/05/12	06/05/12 16:34	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	71	42-126	

GW/SV-27-4.5	12-06-0159-4-A	06/01/12 16:21	Solid	GC 4	06/05/12	06/05/12 17:05	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	71	42-126	

GW/SV-24-1	12-06-0159-7-A	06/04/12 09:20	Solid	GC 4	06/05/12	06/05/12 17:36	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	73	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-3	12-06-0159-8-A	06/04/12 09:28	Solid	GC 4	06/05/12	06/05/12 18:07	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	70	42-126	

GW/SV-24-4.5	12-06-0159-9-A	06/04/12 09:37	Solid	GC 4	06/05/12	06/05/12 18:38	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	72	42-126	

GW/SV-21-1	12-06-0159-11-A	06/04/12 11:00	Solid	GC 4	06/05/12	06/05/12 19:09	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	70	42-126	

GW/SV-21-3	12-06-0159-12-A	06/04/12 11:15	Solid	GC 4	06/05/12	06/05/12 19:39	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	71	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-4.5	12-06-0159-13-A	06/04/12 11:28	Solid	GC 4	06/05/12	06/05/12 20:10	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	72	42-126	

GW/SV-23-1	12-06-0159-15-A	06/04/12 14:40	Solid	GC 4	06/05/12	06/05/12 21:12	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	69	42-126	

GW/SV-23-3	12-06-0159-16-A	06/04/12 14:50	Solid	GC 4	06/05/12	06/05/12 21:43	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	71	42-126	

GW/SV-23-4.5	12-06-0159-17-A	06/04/12 15:00	Solid	GC 4	06/05/12	06/05/12 22:14	120605B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	72	42-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: Former Chemoil Facility / WA1617

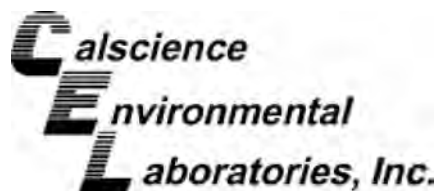
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-571-353	N/A	Solid	GC 4	06/05/12	06/05/12 12:47	120605B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene - FID	74	42-126	

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Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
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Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

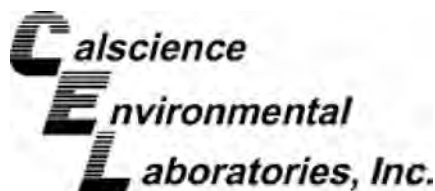
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-1	12-06-0159-2-D	06/01/12 16:04	Solid	GC/MS OO	06/01/12	06/06/12 17:31	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	41	0.816		c-1,3-Dichloropropene	ND	0.82	0.816	
Benzene	ND	0.82	0.816		t-1,3-Dichloropropene	ND	1.6	0.816	
Bromobenzene	ND	0.82	0.816		Ethylbenzene	ND	0.82	0.816	
Bromochloromethane	ND	1.6	0.816		2-Hexanone	ND	16	0.816	
Bromodichloromethane	ND	0.82	0.816		Isopropylbenzene	ND	0.82	0.816	
Bromoform	ND	4.1	0.816		p-Isopropyltoluene	ND	0.82	0.816	
Bromomethane	ND	16	0.816		Methylene Chloride	ND	8.2	0.816	
2-Butanone	ND	16	0.816		4-Methyl-2-Pentanone	ND	16	0.816	
n-Butylbenzene	ND	0.82	0.816		Naphthalene	ND	8.2	0.816	
sec-Butylbenzene	ND	0.82	0.816		n-Propylbenzene	ND	1.6	0.816	
tert-Butylbenzene	ND	0.82	0.816		Styrene	ND	0.82	0.816	
Carbon Disulfide	ND	8.2	0.816		1,1,1,2-Tetrachloroethane	ND	0.82	0.816	
Carbon Tetrachloride	ND	0.82	0.816		1,1,2,2-Tetrachloroethane	ND	1.6	0.816	
Chlorobenzene	ND	0.82	0.816		Tetrachloroethene	ND	0.82	0.816	
Chloroethane	ND	1.6	0.816		Toluene	ND	0.82	0.816	
Chloroform	ND	0.82	0.816		1,2,3-Trichlorobenzene	ND	1.6	0.816	
Chloromethane	ND	16	0.816		1,2,4-Trichlorobenzene	ND	1.6	0.816	
2-Chlorotoluene	ND	0.82	0.816		1,1,1-Trichloroethane	ND	0.82	0.816	
4-Chlorotoluene	ND	0.82	0.816		1,1,2-Trichloroethane	ND	0.82	0.816	
Dibromochloromethane	ND	1.6	0.816		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.2	0.816	
1,2-Dibromo-3-Chloropropane	ND	4.1	0.816		Trichloroethene	ND	1.6	0.816	
1,2-Dibromoethane	ND	0.82	0.816		Trichlorofluoromethane	ND	8.2	0.816	
Dibromomethane	ND	0.82	0.816		1,2,3-Trichloropropane	ND	1.6	0.816	
1,2-Dichlorobenzene	ND	0.82	0.816		1,2,4-Trimethylbenzene	ND	1.6	0.816	
1,3-Dichlorobenzene	ND	0.82	0.816		1,3,5-Trimethylbenzene	ND	1.6	0.816	
1,4-Dichlorobenzene	ND	0.82	0.816		Vinyl Acetate	ND	8.2	0.816	
Dichlorodifluoromethane	ND	1.6	0.816		Vinyl Chloride	ND	0.82	0.816	
1,1-Dichloroethane	ND	0.82	0.816		p/m-Xylene	ND	1.6	0.816	
1,2-Dichloroethane	ND	0.82	0.816		o-Xylene	ND	0.82	0.816	
1,1-Dichloroethene	ND	0.82	0.816		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.816	
c-1,2-Dichloroethene	ND	0.82	0.816		Tert-Butyl Alcohol (TBA)	ND	16	0.816	
t-1,2-Dichloroethene	ND	0.82	0.816		Diisopropyl Ether (DIPE)	ND	0.82	0.816	
1,2-Dichloropropane	ND	0.82	0.816		Ethyl-t-Butyl Ether (ETBE)	ND	0.82	0.816	
1,3-Dichloropropane	ND	0.82	0.816		Tert-Amyl-Methyl Ether (TAME)	ND	0.82	0.816	
2,2-Dichloropropane	ND	4.1	0.816		Ethanol	ND	410	0.816	
1,1-Dichloropropene	ND	1.6	0.816						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	80-120			Dibromofluoromethane	99	79-133		
1,2-Dichloroethane-d4	108	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

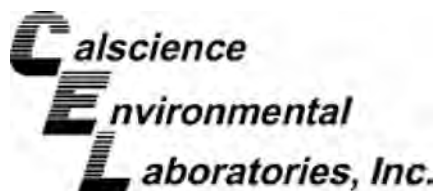
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-3	12-06-0159-3-D	06/01/12 16:12	Solid	GC/MS OO	06/01/12	06/06/12 17:59	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	46	0.926		c-1,3-Dichloropropene	ND	0.93	0.926	
Benzene	ND	0.93	0.926		t-1,3-Dichloropropene	ND	1.9	0.926	
Bromobenzene	ND	0.93	0.926		Ethylbenzene	ND	0.93	0.926	
Bromochloromethane	ND	1.9	0.926		2-Hexanone	ND	19	0.926	
Bromodichloromethane	ND	0.93	0.926		Isopropylbenzene	ND	0.93	0.926	
Bromoform	ND	4.6	0.926		p-Isopropyltoluene	ND	0.93	0.926	
Bromomethane	ND	19	0.926		Methylene Chloride	ND	9.3	0.926	
2-Butanone	ND	19	0.926		4-Methyl-2-Pentanone	ND	19	0.926	
n-Butylbenzene	ND	0.93	0.926		Naphthalene	ND	9.3	0.926	
sec-Butylbenzene	ND	0.93	0.926		n-Propylbenzene	ND	1.9	0.926	
tert-Butylbenzene	ND	0.93	0.926		Styrene	ND	0.93	0.926	
Carbon Disulfide	ND	9.3	0.926		1,1,1,2-Tetrachloroethane	ND	0.93	0.926	
Carbon Tetrachloride	ND	0.93	0.926		1,1,2,2-Tetrachloroethane	ND	1.9	0.926	
Chlorobenzene	ND	0.93	0.926		Tetrachloroethene	ND	0.93	0.926	
Chloroethane	ND	1.9	0.926		Toluene	ND	0.93	0.926	
Chloroform	ND	0.93	0.926		1,2,3-Trichlorobenzene	ND	1.9	0.926	
Chloromethane	ND	19	0.926		1,2,4-Trichlorobenzene	ND	1.9	0.926	
2-Chlorotoluene	ND	0.93	0.926		1,1,1-Trichloroethane	ND	0.93	0.926	
4-Chlorotoluene	ND	0.93	0.926		1,1,2-Trichloroethane	ND	0.93	0.926	
Dibromochloromethane	ND	1.9	0.926		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.3	0.926	
1,2-Dibromo-3-Chloropropane	ND	4.6	0.926		Trichloroethene	ND	1.9	0.926	
1,2-Dibromoethane	ND	0.93	0.926		Trichlorofluoromethane	ND	9.3	0.926	
Dibromomethane	ND	0.93	0.926		1,2,3-Trichloropropane	ND	1.9	0.926	
1,2-Dichlorobenzene	ND	0.93	0.926		1,2,4-Trimethylbenzene	ND	1.9	0.926	
1,3-Dichlorobenzene	ND	0.93	0.926		1,3,5-Trimethylbenzene	ND	1.9	0.926	
1,4-Dichlorobenzene	ND	0.93	0.926		Vinyl Acetate	ND	9.3	0.926	
Dichlorodifluoromethane	ND	1.9	0.926		Vinyl Chloride	ND	0.93	0.926	
1,1-Dichloroethane	ND	0.93	0.926		p/m-Xylene	ND	1.9	0.926	
1,2-Dichloroethane	ND	0.93	0.926		o-Xylene	ND	0.93	0.926	
1,1-Dichloroethene	ND	0.93	0.926		Methyl-t-Butyl Ether (MTBE)	ND	1.9	0.926	
c-1,2-Dichloroethene	ND	0.93	0.926		Tert-Butyl Alcohol (TBA)	ND	19	0.926	
t-1,2-Dichloroethene	ND	0.93	0.926		Diisopropyl Ether (DIPE)	ND	0.93	0.926	
1,2-Dichloropropane	ND	0.93	0.926		Ethyl-t-Butyl Ether (ETBE)	ND	0.93	0.926	
1,3-Dichloropropane	ND	0.93	0.926		Tert-Amyl-Methyl Ether (TAME)	ND	0.93	0.926	
2,2-Dichloropropane	ND	4.6	0.926		Ethanol	ND	460	0.926	
1,1-Dichloropropene	ND	1.9	0.926						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	97	79-133		
1,2-Dichloroethane-d4	105	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

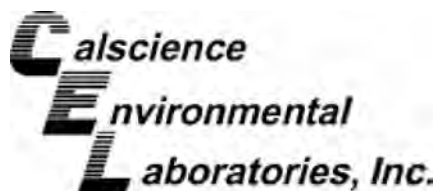
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-4.5	12-06-0159-4-D	06/01/12 16:21	Solid	GC/MS OO	06/01/12	06/06/12 18:28	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	45	0.891		c-1,3-Dichloropropene	ND	0.89	0.891	
Benzene	ND	0.89	0.891		t-1,3-Dichloropropene	ND	1.8	0.891	
Bromobenzene	ND	0.89	0.891		Ethylbenzene	ND	0.89	0.891	
Bromochloromethane	ND	1.8	0.891		2-Hexanone	ND	18	0.891	
Bromodichloromethane	ND	0.89	0.891		Isopropylbenzene	ND	0.89	0.891	
Bromoform	ND	4.5	0.891		p-Isopropyltoluene	ND	0.89	0.891	
Bromomethane	ND	18	0.891		Methylene Chloride	ND	8.9	0.891	
2-Butanone	ND	18	0.891		4-Methyl-2-Pentanone	ND	18	0.891	
n-Butylbenzene	ND	0.89	0.891		Naphthalene	ND	8.9	0.891	
sec-Butylbenzene	ND	0.89	0.891		n-Propylbenzene	ND	1.8	0.891	
tert-Butylbenzene	ND	0.89	0.891		Styrene	ND	0.89	0.891	
Carbon Disulfide	ND	8.9	0.891		1,1,1,2-Tetrachloroethane	ND	0.89	0.891	
Carbon Tetrachloride	ND	0.89	0.891		1,1,2,2-Tetrachloroethane	ND	1.8	0.891	
Chlorobenzene	ND	0.89	0.891		Tetrachloroethene	ND	0.89	0.891	
Chloroethane	ND	1.8	0.891		Toluene	ND	0.89	0.891	
Chloroform	ND	0.89	0.891		1,2,3-Trichlorobenzene	ND	1.8	0.891	
Chloromethane	ND	18	0.891		1,2,4-Trichlorobenzene	ND	1.8	0.891	
2-Chlorotoluene	ND	0.89	0.891		1,1,1-Trichloroethane	ND	0.89	0.891	
4-Chlorotoluene	ND	0.89	0.891		1,1,2-Trichloroethane	ND	0.89	0.891	
Dibromochloromethane	ND	1.8	0.891		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.9	0.891	
1,2-Dibromo-3-Chloropropane	ND	4.5	0.891		Trichloroethene	ND	1.8	0.891	
1,2-Dibromoethane	ND	0.89	0.891		Trichlorofluoromethane	ND	8.9	0.891	
Dibromomethane	ND	0.89	0.891		1,2,3-Trichloropropane	ND	1.8	0.891	
1,2-Dichlorobenzene	ND	0.89	0.891		1,2,4-Trimethylbenzene	ND	1.8	0.891	
1,3-Dichlorobenzene	ND	0.89	0.891		1,3,5-Trimethylbenzene	ND	1.8	0.891	
1,4-Dichlorobenzene	ND	0.89	0.891		Vinyl Acetate	ND	8.9	0.891	
Dichlorodifluoromethane	ND	1.8	0.891		Vinyl Chloride	ND	0.89	0.891	
1,1-Dichloroethane	ND	0.89	0.891		p/m-Xylene	ND	1.8	0.891	
1,2-Dichloroethane	ND	0.89	0.891		o-Xylene	ND	0.89	0.891	
1,1-Dichloroethene	ND	0.89	0.891		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.891	
c-1,2-Dichloroethene	ND	0.89	0.891		Tert-Butyl Alcohol (TBA)	ND	18	0.891	
t-1,2-Dichloroethene	ND	0.89	0.891		Diisopropyl Ether (DIPE)	ND	0.89	0.891	
1,2-Dichloropropane	ND	0.89	0.891		Ethyl-t-Butyl Ether (ETBE)	ND	0.89	0.891	
1,3-Dichloropropane	ND	0.89	0.891		Tert-Amyl-Methyl Ether (TAME)	ND	0.89	0.891	
2,2-Dichloropropane	ND	4.5	0.891		Ethanol	ND	450	0.891	
1,1-Dichloropropene	ND	1.8	0.891						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	100	80-120			Dibromofluoromethane	98	79-133		
1,2-Dichloroethane-d4	109	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

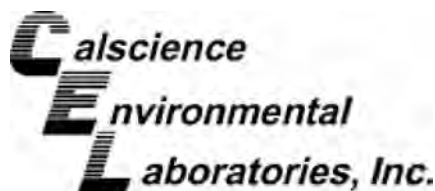
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-1	12-06-0159-7-D	06/04/12 09:20	Solid	GC/MS OO	06/04/12	06/06/12 18:57	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	92	48	0.958		c-1,3-Dichloropropene	ND	0.96	0.958	
Benzene	1.0	0.96	0.958		t-1,3-Dichloropropene	ND	1.9	0.958	
Bromobenzene	ND	0.96	0.958		Ethylbenzene	ND	0.96	0.958	
Bromochloromethane	ND	1.9	0.958		2-Hexanone	ND	19	0.958	
Bromodichloromethane	ND	0.96	0.958		Isopropylbenzene	ND	0.96	0.958	
Bromoform	ND	4.8	0.958		p-Isopropyltoluene	ND	0.96	0.958	
Bromomethane	ND	19	0.958		Methylene Chloride	ND	9.6	0.958	
2-Butanone	ND	19	0.958		4-Methyl-2-Pentanone	ND	19	0.958	
n-Butylbenzene	ND	0.96	0.958		Naphthalene	ND	9.6	0.958	
sec-Butylbenzene	ND	0.96	0.958		n-Propylbenzene	ND	1.9	0.958	
tert-Butylbenzene	ND	0.96	0.958		Styrene	ND	0.96	0.958	
Carbon Disulfide	ND	9.6	0.958		1,1,1,2-Tetrachloroethane	ND	0.96	0.958	
Carbon Tetrachloride	ND	0.96	0.958		1,1,2,2-Tetrachloroethane	ND	1.9	0.958	
Chlorobenzene	ND	0.96	0.958		Tetrachloroethene	ND	0.96	0.958	
Chloroethane	ND	1.9	0.958		Toluene	1.6	0.96	0.958	
Chloroform	ND	0.96	0.958		1,2,3-Trichlorobenzene	ND	1.9	0.958	
Chloromethane	ND	19	0.958		1,2,4-Trichlorobenzene	ND	1.9	0.958	
2-Chlorotoluene	ND	0.96	0.958		1,1,1-Trichloroethane	ND	0.96	0.958	
4-Chlorotoluene	ND	0.96	0.958		1,1,2-Trichloroethane	ND	0.96	0.958	
Dibromochloromethane	ND	1.9	0.958		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.6	0.958	
1,2-Dibromo-3-Chloropropane	ND	4.8	0.958		Trichloroethene	ND	1.9	0.958	
1,2-Dibromoethane	ND	0.96	0.958		Trichlorofluoromethane	ND	9.6	0.958	
Dibromomethane	ND	0.96	0.958		1,2,3-Trichloropropane	ND	1.9	0.958	
1,2-Dichlorobenzene	ND	0.96	0.958		1,2,4-Trimethylbenzene	ND	1.9	0.958	
1,3-Dichlorobenzene	ND	0.96	0.958		1,3,5-Trimethylbenzene	ND	1.9	0.958	
1,4-Dichlorobenzene	ND	0.96	0.958		Vinyl Acetate	ND	9.6	0.958	
Dichlorodifluoromethane	ND	1.9	0.958		Vinyl Chloride	ND	0.96	0.958	
1,1-Dichloroethane	ND	0.96	0.958		p/m-Xylene	ND	1.9	0.958	
1,2-Dichloroethane	ND	0.96	0.958		o-Xylene	ND	0.96	0.958	
1,1-Dichloroethene	ND	0.96	0.958		Methyl-t-Butyl Ether (MTBE)	ND	1.9	0.958	
c-1,2-Dichloroethene	ND	0.96	0.958		Tert-Butyl Alcohol (TBA)	ND	19	0.958	
t-1,2-Dichloroethene	ND	0.96	0.958		Diisopropyl Ether (DIPE)	ND	0.96	0.958	
1,2-Dichloropropane	ND	0.96	0.958		Ethyl-t-Butyl Ether (ETBE)	ND	0.96	0.958	
1,3-Dichloropropane	ND	0.96	0.958		Tert-Amyl-Methyl Ether (TAME)	ND	0.96	0.958	
2,2-Dichloropropane	ND	4.8	0.958		Ethanol	ND	480	0.958	
1,1-Dichloropropene	ND	1.9	0.958						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	93	80-120			Dibromofluoromethane	98	79-133		
1,2-Dichloroethane-d4	106	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

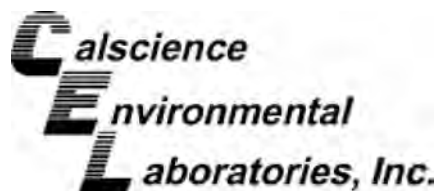
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-3	12-06-0159-8-D	06/04/12 09:28	Solid	GC/MS OO	06/04/12	06/06/12 19:25	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	40	0.806		c-1,3-Dichloropropene	ND	0.81	0.806	
Benzene	ND	0.81	0.806		t-1,3-Dichloropropene	ND	1.6	0.806	
Bromobenzene	ND	0.81	0.806		Ethylbenzene	ND	0.81	0.806	
Bromochloromethane	ND	1.6	0.806		2-Hexanone	ND	16	0.806	
Bromodichloromethane	ND	0.81	0.806		Isopropylbenzene	ND	0.81	0.806	
Bromoform	ND	4.0	0.806		p-Isopropyltoluene	ND	0.81	0.806	
Bromomethane	ND	16	0.806		Methylene Chloride	ND	8.1	0.806	
2-Butanone	ND	16	0.806		4-Methyl-2-Pentanone	ND	16	0.806	
n-Butylbenzene	ND	0.81	0.806		Naphthalene	ND	8.1	0.806	
sec-Butylbenzene	ND	0.81	0.806		n-Propylbenzene	ND	1.6	0.806	
tert-Butylbenzene	ND	0.81	0.806		Styrene	ND	0.81	0.806	
Carbon Disulfide	ND	8.1	0.806		1,1,1,2-Tetrachloroethane	ND	0.81	0.806	
Carbon Tetrachloride	ND	0.81	0.806		1,1,2,2-Tetrachloroethane	ND	1.6	0.806	
Chlorobenzene	ND	0.81	0.806		Tetrachloroethene	ND	0.81	0.806	
Chloroethane	ND	1.6	0.806		Toluene	ND	0.81	0.806	
Chloroform	ND	0.81	0.806		1,2,3-Trichlorobenzene	ND	1.6	0.806	
Chloromethane	ND	16	0.806		1,2,4-Trichlorobenzene	ND	1.6	0.806	
2-Chlorotoluene	ND	0.81	0.806		1,1,1-Trichloroethane	ND	0.81	0.806	
4-Chlorotoluene	ND	0.81	0.806		1,1,2-Trichloroethane	ND	0.81	0.806	
Dibromochloromethane	ND	1.6	0.806		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.1	0.806	
1,2-Dibromo-3-Chloropropane	ND	4.0	0.806		Trichloroethene	ND	1.6	0.806	
1,2-Dibromoethane	ND	0.81	0.806		Trichlorofluoromethane	ND	8.1	0.806	
Dibromomethane	ND	0.81	0.806		1,2,3-Trichloropropane	ND	1.6	0.806	
1,2-Dichlorobenzene	ND	0.81	0.806		1,2,4-Trimethylbenzene	ND	1.6	0.806	
1,3-Dichlorobenzene	ND	0.81	0.806		1,3,5-Trimethylbenzene	ND	1.6	0.806	
1,4-Dichlorobenzene	ND	0.81	0.806		Vinyl Acetate	ND	8.1	0.806	
Dichlorodifluoromethane	ND	1.6	0.806		Vinyl Chloride	ND	0.81	0.806	
1,1-Dichloroethane	ND	0.81	0.806		p/m-Xylene	ND	1.6	0.806	
1,2-Dichloroethane	ND	0.81	0.806		o-Xylene	ND	0.81	0.806	
1,1-Dichloroethene	ND	0.81	0.806		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.806	
c-1,2-Dichloroethene	ND	0.81	0.806		Tert-Butyl Alcohol (TBA)	ND	16	0.806	
t-1,2-Dichloroethene	ND	0.81	0.806		Diisopropyl Ether (DIPE)	ND	0.81	0.806	
1,2-Dichloropropane	ND	0.81	0.806		Ethyl-t-Butyl Ether (ETBE)	ND	0.81	0.806	
1,3-Dichloropropane	ND	0.81	0.806		Tert-Amyl-Methyl Ether (TAME)	ND	0.81	0.806	
2,2-Dichloropropane	ND	4.0	0.806		Ethanol	ND	400	0.806	
1,1-Dichloropropene	ND	1.6	0.806						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	80-120			Dibromofluoromethane	99	79-133		
1,2-Dichloroethane-d4	110	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

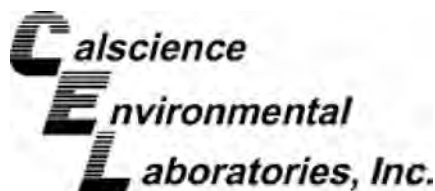
Project: Former Chemoil Facility / WA1617

Page 6 of 13

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-4.5	12-06-0159-9-D	06/04/12 09:37	Solid	GC/MS OO	06/04/12	06/06/12 19:54	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	45	0.904		c-1,3-Dichloropropene	ND	0.90	0.904	
Benzene	ND	0.90	0.904		t-1,3-Dichloropropene	ND	1.8	0.904	
Bromobenzene	ND	0.90	0.904		Ethylbenzene	ND	0.90	0.904	
Bromochloromethane	ND	1.8	0.904		2-Hexanone	ND	18	0.904	
Bromodichloromethane	ND	0.90	0.904		Isopropylbenzene	ND	0.90	0.904	
Bromoform	ND	4.5	0.904		p-Isopropyltoluene	ND	0.90	0.904	
Bromomethane	ND	18	0.904		Methylene Chloride	ND	9.0	0.904	
2-Butanone	ND	18	0.904		4-Methyl-2-Pentanone	ND	18	0.904	
n-Butylbenzene	ND	0.90	0.904		Naphthalene	ND	9.0	0.904	
sec-Butylbenzene	ND	0.90	0.904		n-Propylbenzene	ND	1.8	0.904	
tert-Butylbenzene	ND	0.90	0.904		Styrene	ND	0.90	0.904	
Carbon Disulfide	ND	9.0	0.904		1,1,1,2-Tetrachloroethane	ND	0.90	0.904	
Carbon Tetrachloride	ND	0.90	0.904		1,1,2,2-Tetrachloroethane	ND	1.8	0.904	
Chlorobenzene	ND	0.90	0.904		Tetrachloroethene	ND	0.90	0.904	
Chloroethane	ND	1.8	0.904		Toluene	ND	0.90	0.904	
Chloroform	ND	0.90	0.904		1,2,3-Trichlorobenzene	ND	1.8	0.904	
Chloromethane	ND	18	0.904		1,2,4-Trichlorobenzene	ND	1.8	0.904	
2-Chlorotoluene	ND	0.90	0.904		1,1,1-Trichloroethane	ND	0.90	0.904	
4-Chlorotoluene	ND	0.90	0.904		1,1,2-Trichloroethane	ND	0.90	0.904	
Dibromochloromethane	ND	1.8	0.904		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.0	0.904	
1,2-Dibromo-3-Chloropropane	ND	4.5	0.904		Trichloroethene	ND	1.8	0.904	
1,2-Dibromoethane	ND	0.90	0.904		Trichlorofluoromethane	ND	9.0	0.904	
Dibromomethane	ND	0.90	0.904		1,2,3-Trichloropropane	ND	1.8	0.904	
1,2-Dichlorobenzene	ND	0.90	0.904		1,2,4-Trimethylbenzene	ND	1.8	0.904	
1,3-Dichlorobenzene	ND	0.90	0.904		1,3,5-Trimethylbenzene	ND	1.8	0.904	
1,4-Dichlorobenzene	ND	0.90	0.904		Vinyl Acetate	ND	9.0	0.904	
Dichlorodifluoromethane	ND	1.8	0.904		Vinyl Chloride	ND	0.90	0.904	
1,1-Dichloroethane	ND	0.90	0.904		p/m-Xylene	ND	1.8	0.904	
1,2-Dichloroethane	ND	0.90	0.904		o-Xylene	ND	0.90	0.904	
1,1-Dichloroethene	ND	0.90	0.904		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.904	
c-1,2-Dichloroethene	ND	0.90	0.904		Tert-Butyl Alcohol (TBA)	ND	18	0.904	
t-1,2-Dichloroethene	ND	0.90	0.904		Diisopropyl Ether (DIPE)	ND	0.90	0.904	
1,2-Dichloropropane	ND	0.90	0.904		Ethyl-t-Butyl Ether (ETBE)	ND	0.90	0.904	
1,3-Dichloropropane	ND	0.90	0.904		Tert-Amyl-Methyl Ether (TAME)	ND	0.90	0.904	
2,2-Dichloropropane	ND	4.5	0.904		Ethanol	ND	450	0.904	
1,1-Dichloropropene	ND	1.8	0.904						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	96	79-133		
1,2-Dichloroethane-d4	104	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

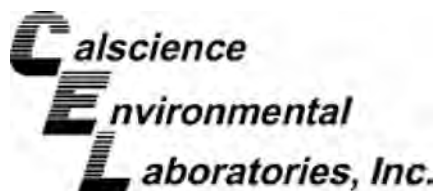
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-1	12-06-0159-11-D	06/04/12 11:00	Solid	GC/MS OO	06/04/12	06/06/12 20:22	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	52	1.04		c-1,3-Dichloropropene	ND	1.0	1.04	
Benzene	ND	1.0	1.04		t-1,3-Dichloropropene	ND	2.1	1.04	
Bromobenzene	ND	1.0	1.04		Ethylbenzene	ND	1.0	1.04	
Bromochloromethane	ND	2.1	1.04		2-Hexanone	ND	21	1.04	
Bromodichloromethane	ND	1.0	1.04		Isopropylbenzene	ND	1.0	1.04	
Bromoform	ND	5.2	1.04		p-Isopropyltoluene	ND	1.0	1.04	
Bromomethane	ND	21	1.04		Methylene Chloride	ND	10	1.04	
2-Butanone	ND	21	1.04		4-Methyl-2-Pentanone	ND	21	1.04	
n-Butylbenzene	ND	1.0	1.04		Naphthalene	ND	10	1.04	
sec-Butylbenzene	ND	1.0	1.04		n-Propylbenzene	ND	2.1	1.04	
tert-Butylbenzene	ND	1.0	1.04		Styrene	ND	1.0	1.04	
Carbon Disulfide	ND	10	1.04		1,1,1,2-Tetrachloroethane	ND	1.0	1.04	
Carbon Tetrachloride	ND	1.0	1.04		1,1,2,2-Tetrachloroethane	ND	2.1	1.04	
Chlorobenzene	ND	1.0	1.04		Tetrachloroethene	ND	1.0	1.04	
Chloroethane	ND	2.1	1.04		Toluene	ND	1.0	1.04	
Chloroform	ND	1.0	1.04		1,2,3-Trichlorobenzene	ND	2.1	1.04	
Chloromethane	ND	21	1.04		1,2,4-Trichlorobenzene	ND	2.1	1.04	
2-Chlorotoluene	ND	1.0	1.04		1,1,1-Trichloroethane	ND	1.0	1.04	
4-Chlorotoluene	ND	1.0	1.04		1,1,2-Trichloroethane	ND	1.0	1.04	
Dibromochloromethane	ND	2.1	1.04		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1.04	
1,2-Dibromo-3-Chloropropane	ND	5.2	1.04		Trichloroethene	ND	2.1	1.04	
1,2-Dibromoethane	ND	1.0	1.04		Trichlorofluoromethane	ND	10	1.04	
Dibromomethane	ND	1.0	1.04		1,2,3-Trichloropropane	ND	2.1	1.04	
1,2-Dichlorobenzene	ND	1.0	1.04		1,2,4-Trimethylbenzene	ND	2.1	1.04	
1,3-Dichlorobenzene	ND	1.0	1.04		1,3,5-Trimethylbenzene	ND	2.1	1.04	
1,4-Dichlorobenzene	ND	1.0	1.04		Vinyl Acetate	ND	10	1.04	
Dichlorodifluoromethane	ND	2.1	1.04		Vinyl Chloride	ND	1.0	1.04	
1,1-Dichloroethane	ND	1.0	1.04		p/m-Xylene	ND	2.1	1.04	
1,2-Dichloroethane	ND	1.0	1.04		o-Xylene	ND	1.0	1.04	
1,1-Dichloroethene	ND	1.0	1.04		Methyl-t-Butyl Ether (MTBE)	ND	2.1	1.04	
c-1,2-Dichloroethene	ND	1.0	1.04		Tert-Butyl Alcohol (TBA)	ND	21	1.04	
t-1,2-Dichloroethene	ND	1.0	1.04		Diisopropyl Ether (DIPE)	ND	1.0	1.04	
1,2-Dichloropropane	ND	1.0	1.04		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1.04	
1,3-Dichloropropane	ND	1.0	1.04		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1.04	
2,2-Dichloropropane	ND	5.2	1.04		Ethanol	ND	520	1.04	
1,1-Dichloropropene	ND	2.1	1.04						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	91	80-120			Dibromofluoromethane	99	79-133		
1,2-Dichloroethane-d4	107	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

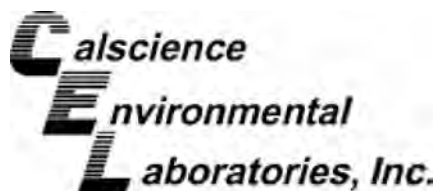
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-3	12-06-0159-12-D	06/04/12 11:15	Solid	GC/MS OO	06/04/12	06/06/12 20:51	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	45	0.907		c-1,3-Dichloropropene	ND	0.91	0.907	
Benzene	ND	0.91	0.907		t-1,3-Dichloropropene	ND	1.8	0.907	
Bromobenzene	ND	0.91	0.907		Ethylbenzene	ND	0.91	0.907	
Bromochloromethane	ND	1.8	0.907		2-Hexanone	ND	18	0.907	
Bromodichloromethane	ND	0.91	0.907		Isopropylbenzene	ND	0.91	0.907	
Bromoform	ND	4.5	0.907		p-Isopropyltoluene	ND	0.91	0.907	
Bromomethane	ND	18	0.907		Methylene Chloride	ND	9.1	0.907	
2-Butanone	ND	18	0.907		4-Methyl-2-Pentanone	ND	18	0.907	
n-Butylbenzene	ND	0.91	0.907		Naphthalene	ND	9.1	0.907	
sec-Butylbenzene	ND	0.91	0.907		n-Propylbenzene	ND	1.8	0.907	
tert-Butylbenzene	ND	0.91	0.907		Styrene	ND	0.91	0.907	
Carbon Disulfide	ND	9.1	0.907		1,1,1,2-Tetrachloroethane	ND	0.91	0.907	
Carbon Tetrachloride	ND	0.91	0.907		1,1,2,2-Tetrachloroethane	ND	1.8	0.907	
Chlorobenzene	ND	0.91	0.907		Tetrachloroethene	ND	0.91	0.907	
Chloroethane	ND	1.8	0.907		Toluene	ND	0.91	0.907	
Chloroform	ND	0.91	0.907		1,2,3-Trichlorobenzene	ND	1.8	0.907	
Chloromethane	ND	18	0.907		1,2,4-Trichlorobenzene	ND	1.8	0.907	
2-Chlorotoluene	ND	0.91	0.907		1,1,1-Trichloroethane	ND	0.91	0.907	
4-Chlorotoluene	ND	0.91	0.907		1,1,2-Trichloroethane	ND	0.91	0.907	
Dibromochloromethane	ND	1.8	0.907		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.1	0.907	
1,2-Dibromo-3-Chloropropane	ND	4.5	0.907		Trichloroethene	ND	1.8	0.907	
1,2-Dibromoethane	ND	0.91	0.907		Trichlorofluoromethane	ND	9.1	0.907	
Dibromomethane	ND	0.91	0.907		1,2,3-Trichloropropane	ND	1.8	0.907	
1,2-Dichlorobenzene	ND	0.91	0.907		1,2,4-Trimethylbenzene	ND	1.8	0.907	
1,3-Dichlorobenzene	ND	0.91	0.907		1,3,5-Trimethylbenzene	ND	1.8	0.907	
1,4-Dichlorobenzene	ND	0.91	0.907		Vinyl Acetate	ND	9.1	0.907	
Dichlorodifluoromethane	ND	1.8	0.907		Vinyl Chloride	ND	0.91	0.907	
1,1-Dichloroethane	ND	0.91	0.907		p/m-Xylene	ND	1.8	0.907	
1,2-Dichloroethane	ND	0.91	0.907		o-Xylene	ND	0.91	0.907	
1,1-Dichloroethene	ND	0.91	0.907		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.907	
c-1,2-Dichloroethene	ND	0.91	0.907		Tert-Butyl Alcohol (TBA)	ND	18	0.907	
t-1,2-Dichloroethene	ND	0.91	0.907		Diisopropyl Ether (DIPE)	ND	0.91	0.907	
1,2-Dichloropropane	ND	0.91	0.907		Ethyl-t-Butyl Ether (ETBE)	ND	0.91	0.907	
1,3-Dichloropropane	ND	0.91	0.907		Tert-Amyl-Methyl Ether (TAME)	ND	0.91	0.907	
2,2-Dichloropropane	ND	4.5	0.907		Ethanol	ND	450	0.907	
1,1-Dichloropropene	ND	1.8	0.907						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	98	79-133		
1,2-Dichloroethane-d4	109	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

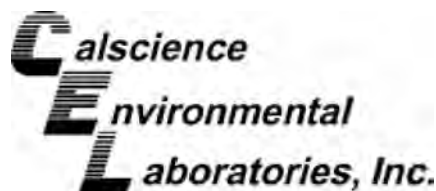
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-4.5	12-06-0159-13-D	06/04/12 11:28	Solid	GC/MS OO	06/04/12	06/06/12 21:19	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	44	0.871		c-1,3-Dichloropropene	ND	0.87	0.871	
Benzene	ND	0.87	0.871		t-1,3-Dichloropropene	ND	1.7	0.871	
Bromobenzene	ND	0.87	0.871		Ethylbenzene	ND	0.87	0.871	
Bromochloromethane	ND	1.7	0.871		2-Hexanone	ND	17	0.871	
Bromodichloromethane	ND	0.87	0.871		Isopropylbenzene	ND	0.87	0.871	
Bromoform	ND	4.4	0.871		p-Isopropyltoluene	ND	0.87	0.871	
Bromomethane	ND	17	0.871		Methylene Chloride	ND	8.7	0.871	
2-Butanone	ND	17	0.871		4-Methyl-2-Pentanone	ND	17	0.871	
n-Butylbenzene	ND	0.87	0.871		Naphthalene	ND	8.7	0.871	
sec-Butylbenzene	ND	0.87	0.871		n-Propylbenzene	ND	1.7	0.871	
tert-Butylbenzene	ND	0.87	0.871		Styrene	ND	0.87	0.871	
Carbon Disulfide	ND	8.7	0.871		1,1,1,2-Tetrachloroethane	ND	0.87	0.871	
Carbon Tetrachloride	ND	0.87	0.871		1,1,2,2-Tetrachloroethane	ND	1.7	0.871	
Chlorobenzene	ND	0.87	0.871		Tetrachloroethene	ND	0.87	0.871	
Chloroethane	ND	1.7	0.871		Toluene	ND	0.87	0.871	
Chloroform	ND	0.87	0.871		1,2,3-Trichlorobenzene	ND	1.7	0.871	
Chloromethane	ND	17	0.871		1,2,4-Trichlorobenzene	ND	1.7	0.871	
2-Chlorotoluene	ND	0.87	0.871		1,1,1-Trichloroethane	ND	0.87	0.871	
4-Chlorotoluene	ND	0.87	0.871		1,1,2-Trichloroethane	ND	0.87	0.871	
Dibromochloromethane	ND	1.7	0.871		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.7	0.871	
1,2-Dibromo-3-Chloropropane	ND	4.4	0.871		Trichloroethene	ND	1.7	0.871	
1,2-Dibromoethane	ND	0.87	0.871		Trichlorofluoromethane	ND	8.7	0.871	
Dibromomethane	ND	0.87	0.871		1,2,3-Trichloropropane	ND	1.7	0.871	
1,2-Dichlorobenzene	ND	0.87	0.871		1,2,4-Trimethylbenzene	ND	1.7	0.871	
1,3-Dichlorobenzene	ND	0.87	0.871		1,3,5-Trimethylbenzene	ND	1.7	0.871	
1,4-Dichlorobenzene	ND	0.87	0.871		Vinyl Acetate	ND	8.7	0.871	
Dichlorodifluoromethane	ND	1.7	0.871		Vinyl Chloride	ND	0.87	0.871	
1,1-Dichloroethane	ND	0.87	0.871		p/m-Xylene	ND	1.7	0.871	
1,2-Dichloroethane	ND	0.87	0.871		o-Xylene	ND	0.87	0.871	
1,1-Dichloroethene	ND	0.87	0.871		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.871	
c-1,2-Dichloroethene	ND	0.87	0.871		Tert-Butyl Alcohol (TBA)	ND	17	0.871	
t-1,2-Dichloroethene	ND	0.87	0.871		Diisopropyl Ether (DIPE)	ND	0.87	0.871	
1,2-Dichloropropane	ND	0.87	0.871		Ethyl-t-Butyl Ether (ETBE)	ND	0.87	0.871	
1,3-Dichloropropane	ND	0.87	0.871		Tert-Amyl-Methyl Ether (TAME)	ND	0.87	0.871	
2,2-Dichloropropane	ND	4.4	0.871		Ethanol	ND	440	0.871	
1,1-Dichloropropene	ND	1.7	0.871						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	95	79-133		
1,2-Dichloroethane-d4	109	71-155			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

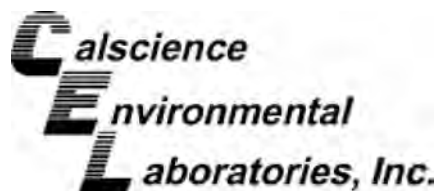
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-1	12-06-0159-15-D	06/04/12 14:40	Solid	GC/MS OO	06/04/12	06/06/12 21:47	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	83	48	0.96		c-1,3-Dichloropropene	ND	0.96	0.96	
Benzene	2.8	0.96	0.96		t-1,3-Dichloropropene	ND	1.9	0.96	
Bromobenzene	ND	0.96	0.96		Ethylbenzene	ND	0.96	0.96	
Bromochloromethane	ND	1.9	0.96		2-Hexanone	ND	19	0.96	
Bromodichloromethane	ND	0.96	0.96		Isopropylbenzene	ND	0.96	0.96	
Bromoform	ND	4.8	0.96		p-Isopropyltoluene	ND	0.96	0.96	
Bromomethane	ND	19	0.96		Methylene Chloride	ND	9.6	0.96	
2-Butanone	ND	19	0.96		4-Methyl-2-Pentanone	ND	19	0.96	
n-Butylbenzene	ND	0.96	0.96		Naphthalene	ND	9.6	0.96	
sec-Butylbenzene	ND	0.96	0.96		n-Propylbenzene	ND	1.9	0.96	
tert-Butylbenzene	ND	0.96	0.96		Styrene	ND	0.96	0.96	
Carbon Disulfide	ND	9.6	0.96		1,1,1,2-Tetrachloroethane	ND	0.96	0.96	
Carbon Tetrachloride	ND	0.96	0.96		1,1,2,2-Tetrachloroethane	ND	1.9	0.96	
Chlorobenzene	ND	0.96	0.96		Tetrachloroethene	ND	0.96	0.96	
Chloroethane	ND	1.9	0.96		Toluene	1.9	0.96	0.96	
Chloroform	ND	0.96	0.96		1,2,3-Trichlorobenzene	ND	1.9	0.96	
Chloromethane	ND	19	0.96		1,2,4-Trichlorobenzene	ND	1.9	0.96	
2-Chlorotoluene	ND	0.96	0.96		1,1,1-Trichloroethane	ND	0.96	0.96	
4-Chlorotoluene	ND	0.96	0.96		1,1,2-Trichloroethane	ND	0.96	0.96	
Dibromochloromethane	ND	1.9	0.96		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.6	0.96	
1,2-Dibromo-3-Chloropropane	ND	4.8	0.96		Trichloroethene	ND	1.9	0.96	
1,2-Dibromoethane	ND	0.96	0.96		Trichlorofluoromethane	ND	9.6	0.96	
Dibromomethane	ND	0.96	0.96		1,2,3-Trichloropropane	ND	1.9	0.96	
1,2-Dichlorobenzene	ND	0.96	0.96		1,2,4-Trimethylbenzene	ND	1.9	0.96	
1,3-Dichlorobenzene	ND	0.96	0.96		1,3,5-Trimethylbenzene	ND	1.9	0.96	
1,4-Dichlorobenzene	ND	0.96	0.96		Vinyl Acetate	ND	9.6	0.96	
Dichlorodifluoromethane	ND	1.9	0.96		Vinyl Chloride	ND	0.96	0.96	
1,1-Dichloroethane	ND	0.96	0.96		p/m-Xylene	ND	1.9	0.96	
1,2-Dichloroethane	ND	0.96	0.96		o-Xylene	ND	0.96	0.96	
1,1-Dichloroethene	ND	0.96	0.96		Methyl-t-Butyl Ether (MTBE)	ND	1.9	0.96	
c-1,2-Dichloroethene	ND	0.96	0.96		Tert-Butyl Alcohol (TBA)	ND	19	0.96	
t-1,2-Dichloroethene	ND	0.96	0.96		Diisopropyl Ether (DIPE)	ND	0.96	0.96	
1,2-Dichloropropane	ND	0.96	0.96		Ethyl-t-Butyl Ether (ETBE)	ND	0.96	0.96	
1,3-Dichloropropane	ND	0.96	0.96		Tert-Amyl-Methyl Ether (TAME)	ND	0.96	0.96	
2,2-Dichloropropane	ND	4.8	0.96		Ethanol	ND	480	0.96	
1,1-Dichloropropene	ND	1.9	0.96						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	84	80-120			Dibromofluoromethane	104	79-133		
1,2-Dichloroethane-d4	112	71-155			Toluene-d8	95	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

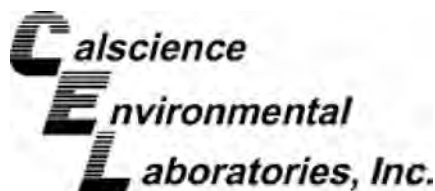
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-3	12-06-0159-16-D	06/04/12 14:50	Solid	GC/MS OO	06/04/12	06/06/12 22:15	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	39	0.787		c-1,3-Dichloropropene	ND	0.79	0.787	
Benzene	ND	0.79	0.787		t-1,3-Dichloropropene	ND	1.6	0.787	
Bromobenzene	ND	0.79	0.787		Ethylbenzene	ND	0.79	0.787	
Bromochloromethane	ND	1.6	0.787		2-Hexanone	ND	16	0.787	
Bromodichloromethane	ND	0.79	0.787		Isopropylbenzene	ND	0.79	0.787	
Bromoform	ND	3.9	0.787		p-Isopropyltoluene	ND	0.79	0.787	
Bromomethane	ND	16	0.787		Methylene Chloride	ND	7.9	0.787	
2-Butanone	ND	16	0.787		4-Methyl-2-Pentanone	ND	16	0.787	
n-Butylbenzene	ND	0.79	0.787		Naphthalene	ND	7.9	0.787	
sec-Butylbenzene	ND	0.79	0.787		n-Propylbenzene	ND	1.6	0.787	
tert-Butylbenzene	ND	0.79	0.787		Styrene	ND	0.79	0.787	
Carbon Disulfide	ND	7.9	0.787		1,1,1,2-Tetrachloroethane	ND	0.79	0.787	
Carbon Tetrachloride	ND	0.79	0.787		1,1,2,2-Tetrachloroethane	ND	1.6	0.787	
Chlorobenzene	ND	0.79	0.787		Tetrachloroethene	ND	0.79	0.787	
Chloroethane	ND	1.6	0.787		Toluene	ND	0.79	0.787	
Chloroform	ND	0.79	0.787		1,2,3-Trichlorobenzene	ND	1.6	0.787	
Chloromethane	ND	16	0.787		1,2,4-Trichlorobenzene	ND	1.6	0.787	
2-Chlorotoluene	ND	0.79	0.787		1,1,1-Trichloroethane	ND	0.79	0.787	
4-Chlorotoluene	ND	0.79	0.787		1,1,2-Trichloroethane	ND	0.79	0.787	
Dibromochloromethane	ND	1.6	0.787		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	7.9	0.787	
1,2-Dibromo-3-Chloropropane	ND	3.9	0.787		Trichloroethene	ND	1.6	0.787	
1,2-Dibromoethane	ND	0.79	0.787		Trichlorofluoromethane	ND	7.9	0.787	
Dibromomethane	ND	0.79	0.787		1,2,3-Trichloropropane	ND	1.6	0.787	
1,2-Dichlorobenzene	ND	0.79	0.787		1,2,4-Trimethylbenzene	ND	1.6	0.787	
1,3-Dichlorobenzene	ND	0.79	0.787		1,3,5-Trimethylbenzene	ND	1.6	0.787	
1,4-Dichlorobenzene	ND	0.79	0.787		Vinyl Acetate	ND	7.9	0.787	
Dichlorodifluoromethane	ND	1.6	0.787		Vinyl Chloride	ND	0.79	0.787	
1,1-Dichloroethane	ND	0.79	0.787		p/m-Xylene	ND	1.6	0.787	
1,2-Dichloroethane	ND	0.79	0.787		o-Xylene	ND	0.79	0.787	
1,1-Dichloroethene	ND	0.79	0.787		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.787	
c-1,2-Dichloroethene	ND	0.79	0.787		Tert-Butyl Alcohol (TBA)	ND	16	0.787	
t-1,2-Dichloroethene	ND	0.79	0.787		Diisopropyl Ether (DIPE)	ND	0.79	0.787	
1,2-Dichloropropane	ND	0.79	0.787		Ethyl-t-Butyl Ether (ETBE)	ND	0.79	0.787	
1,3-Dichloropropane	ND	0.79	0.787		Tert-Amyl-Methyl Ether (TAME)	ND	0.79	0.787	
2,2-Dichloropropane	ND	3.9	0.787		Ethanol	ND	390	0.787	
1,1-Dichloropropene	ND	1.6	0.787						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	96	79-133		
1,2-Dichloroethane-d4	109	71-155			Toluene-d8	101	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

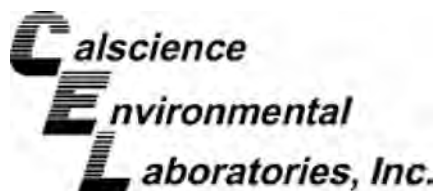
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-4.5	12-06-0159-17-D	06/04/12 15:00	Solid	GC/MS OO	06/04/12	06/06/12 22:43	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	39	0.786		c-1,3-Dichloropropene	ND	0.79	0.786	
Benzene	ND	0.79	0.786		t-1,3-Dichloropropene	ND	1.6	0.786	
Bromobenzene	ND	0.79	0.786		Ethylbenzene	ND	0.79	0.786	
Bromochloromethane	ND	1.6	0.786		2-Hexanone	ND	16	0.786	
Bromodichloromethane	ND	0.79	0.786		Isopropylbenzene	ND	0.79	0.786	
Bromoform	ND	3.9	0.786		p-Isopropyltoluene	ND	0.79	0.786	
Bromomethane	ND	16	0.786		Methylene Chloride	ND	7.9	0.786	
2-Butanone	ND	16	0.786		4-Methyl-2-Pentanone	ND	16	0.786	
n-Butylbenzene	ND	0.79	0.786		Naphthalene	ND	7.9	0.786	
sec-Butylbenzene	ND	0.79	0.786		n-Propylbenzene	ND	1.6	0.786	
tert-Butylbenzene	ND	0.79	0.786		Styrene	ND	0.79	0.786	
Carbon Disulfide	ND	7.9	0.786		1,1,1,2-Tetrachloroethane	ND	0.79	0.786	
Carbon Tetrachloride	ND	0.79	0.786		1,1,2,2-Tetrachloroethane	ND	1.6	0.786	
Chlorobenzene	ND	0.79	0.786		Tetrachloroethene	ND	0.79	0.786	
Chloroethane	ND	1.6	0.786		Toluene	ND	0.79	0.786	
Chloroform	ND	0.79	0.786		1,2,3-Trichlorobenzene	ND	1.6	0.786	
Chloromethane	ND	16	0.786		1,2,4-Trichlorobenzene	ND	1.6	0.786	
2-Chlorotoluene	ND	0.79	0.786		1,1,1-Trichloroethane	ND	0.79	0.786	
4-Chlorotoluene	ND	0.79	0.786		1,1,2-Trichloroethane	ND	0.79	0.786	
Dibromochloromethane	ND	1.6	0.786		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	7.9	0.786	
1,2-Dibromo-3-Chloropropane	ND	3.9	0.786		Trichloroethene	ND	1.6	0.786	
1,2-Dibromoethane	ND	0.79	0.786		Trichlorofluoromethane	ND	7.9	0.786	
Dibromomethane	ND	0.79	0.786		1,2,3-Trichloropropane	ND	1.6	0.786	
1,2-Dichlorobenzene	ND	0.79	0.786		1,2,4-Trimethylbenzene	ND	1.6	0.786	
1,3-Dichlorobenzene	ND	0.79	0.786		1,3,5-Trimethylbenzene	ND	1.6	0.786	
1,4-Dichlorobenzene	ND	0.79	0.786		Vinyl Acetate	ND	7.9	0.786	
Dichlorodifluoromethane	ND	1.6	0.786		Vinyl Chloride	ND	0.79	0.786	
1,1-Dichloroethane	ND	0.79	0.786		p/m-Xylene	ND	1.6	0.786	
1,2-Dichloroethane	ND	0.79	0.786		o-Xylene	ND	0.79	0.786	
1,1-Dichloroethene	ND	0.79	0.786		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.786	
c-1,2-Dichloroethene	ND	0.79	0.786		Tert-Butyl Alcohol (TBA)	ND	16	0.786	
t-1,2-Dichloroethene	ND	0.79	0.786		Diisopropyl Ether (DIPE)	ND	0.79	0.786	
1,2-Dichloropropane	ND	0.79	0.786		Ethyl-t-Butyl Ether (ETBE)	ND	0.79	0.786	
1,3-Dichloropropane	ND	0.79	0.786		Tert-Amyl-Methyl Ether (TAME)	ND	0.79	0.786	
2,2-Dichloropropane	ND	3.9	0.786		Ethanol	ND	390	0.786	
1,1-Dichloropropene	ND	1.6	0.786						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	96	79-133		
1,2-Dichloroethane-d4	107	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B
Units: ug/kg

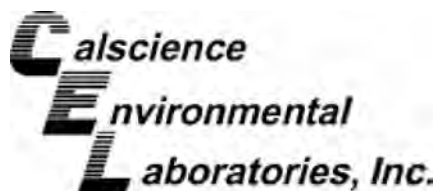
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-312-153	N/A	Solid	GC/MS OO	06/06/12	06/06/12 15:34	120606L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		c-1,3-Dichloropropene	ND	1.0	1	
Benzene	ND	1.0	1		t-1,3-Dichloropropene	ND	2.0	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	2.0	1		2-Hexanone	ND	20	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	5.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	20	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	20	1		4-Methyl-2-Pentanone	ND	20	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	2.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	2.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	2.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	2.0	1	
Chloromethane	ND	20	1		1,2,4-Trichlorobenzene	ND	2.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
Dibromochloromethane	ND	2.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	2.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	2.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	2.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	2.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	2.0	1		Vinyl Chloride	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	2.0	1	
1,2-Dichloroethane	ND	1.0	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	20	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1	
2,2-Dichloropropane	ND	5.0	1		Ethanol	ND	500	1	
1,1-Dichloropropene	ND	2.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	80-120			Dibromofluoromethane	94	79-133		
1,2-Dichloroethane-d4	99	71-155			Toluene-d8	99	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

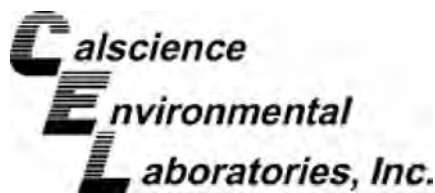
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-27-14	12-06-0159-5-A	06/01/12 16:45	Aqueous	GC/MS S	06/08/12	06/08/12 17:21	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	80-120			Dibromofluoromethane	92	80-126		
1,2-Dichloroethane-d4	92	80-134			Toluene-d8	97	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

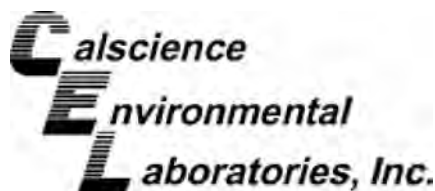
Project: Former Chemoil Facility / WA1617

Page 2 of 6

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-060412	12-06-0159-6-A	06/04/12 09:00	Aqueous	GC/MS S	06/08/12	06/08/12 20:03	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	94	80-120			Dibromofluoromethane	86	80-126		
1,2-Dichloroethane-d4	92	80-134			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

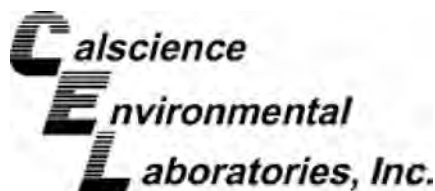
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-15	12-06-0159-10-A	06/04/12 10:20	Aqueous	GC/MS S	06/08/12	06/08/12 17:54	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	1.0	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	91	80-126		
1,2-Dichloroethane-d4	92	80-134			Toluene-d8	97	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

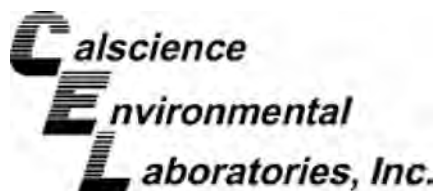
Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-14	12-06-0159-14-A	06/04/12 12:00	Aqueous	GC/MS S	06/08/12	06/08/12 18:26	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	94	80-120			Dibromofluoromethane	92	80-126		
1,2-Dichloroethane-d4	92	80-134			Toluene-d8	97	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

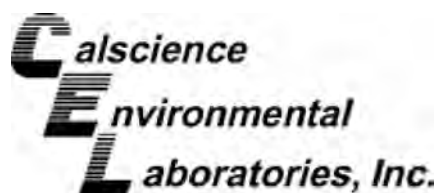
Project: Former Chemoil Facility / WA1617

Page 5 of 6

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-13	12-06-0159-18-A	06/04/12 15:45	Aqueous	GC/MS S	06/08/12	06/08/12 18:59	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	4.5	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	2.5	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	10	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	17	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	80-120			Dibromofluoromethane	93	80-126		
1,2-Dichloroethane-d4	93	80-134			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

Project: Former Chemoil Facility / WA1617

Page 6 of 6

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-316-563	N/A	Aqueous	GC/MS S	06/08/12	06/07/12 14:55	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		c-1,3-Dichloropropene	ND	0.50	1	
Benzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		2-Hexanone	ND	10	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	10	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	10	1		4-Methyl-2-Pentanone	ND	10	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	1.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	5.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Chloromethane	ND	10	1		1,2,4-Trichlorobenzene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromochloromethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	2.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	1	
2,2-Dichloropropane	ND	1.0	1		Ethanol	ND	100	1	
1,1-Dichloropropene	ND	1.0	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	90	80-126		
1,2-Dichloroethane-d4	93	80-134			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

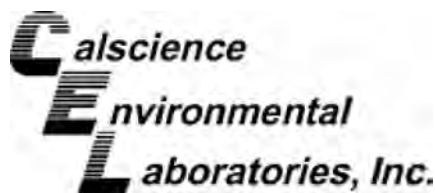
Project: Former Chemoil Facility / WA1617

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
TB-060112-A	12-06-0159-1-A	06/01/12 16:00	Aqueous	GC/MS S	06/08/12	06/08/12 19:31	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	94	80-120			Dibromofluoromethane	88	80-126		
1,2-Dichloroethane-d4	91	80-134			Toluene-d8	97	80-120		

Return to Contents



Analytical Report



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

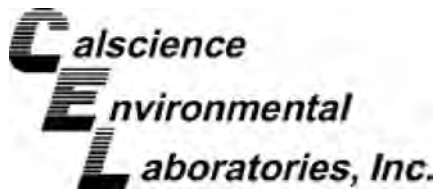
Project: Former Chemoil Facility / WA1617

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-316-563	N/A	Aqueous	GC/MS S	06/08/12	06/07/12 14:55	120608L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	20	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	
Surrogates:	REC (%)	Control Limits	DF	Qual	Surrogates:	REC (%)	Control Limits	DF	Qual
1,4-Bromofluorobenzene	95	80-120			Dibromofluoromethane	90	80-126		
1,2-Dichloroethane-d4	93	80-134			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



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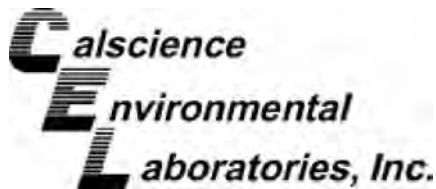
Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-27-3	Solid	GC 48	06/07/12	06/07/12	120607S03

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	ND	400.0	417.5	104	416.9	104	64-130	0	0-15	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



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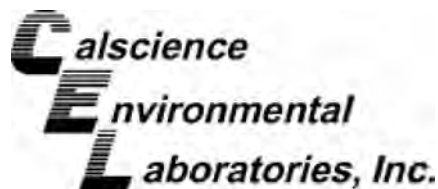
Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0186-1	Aqueous	GC 24	06/06/12	06/06/12	120606S01

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	ND	2000	1993	100	1955	98	68-122	2	0-18	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



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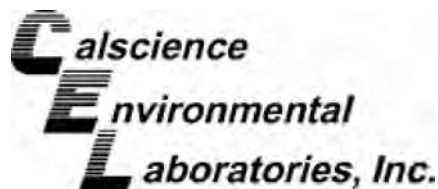
Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GW/SV-27-1	Solid	GC 4	06/05/12	06/05/12	120605S01

Parameter	<u>SAMPLE CONC</u>	<u>SPIKE ADDED</u>	<u>MS CONC</u>	<u>MS %REC</u>	<u>MSD CONC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	ND	10.00	8.674	87	8.472	85	48-114	2	0-23	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



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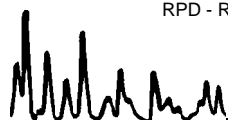
Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B

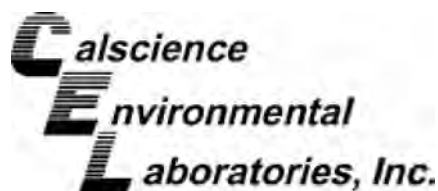
Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0249-1	Aqueous	GC/MS S	06/08/12	06/08/12	120608S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Acetone	ND	50.00	46.26	93	46.14	92	70-130	0	0-20	
Benzene	ND	50.00	41.66	83	40.50	81	78-120	3	0-20	
Bromobenzene	ND	50.00	45.04	90	44.86	90	70-130	0	0-20	
Bromochloromethane	ND	50.00	39.96	80	41.45	83	70-130	4	0-20	
Bromodichloromethane	ND	50.00	43.99	88	43.89	88	70-130	0	0-20	
Bromoform	ND	50.00	39.30	79	40.31	81	70-130	3	0-20	
Bromomethane	ND	50.00	18.62	37	18.33	37	70-130	2	0-20	3
2-Butanone	ND	50.00	38.90	78	40.46	81	70-130	4	0-20	
n-Butylbenzene	ND	50.00	38.39	77	35.30	71	70-130	8	0-25	
sec-Butylbenzene	ND	50.00	41.15	82	37.63	75	70-130	9	0-20	
tert-Butylbenzene	ND	50.00	43.83	88	40.56	81	70-130	8	0-20	
Carbon Disulfide	ND	50.00	35.13	70	33.14	66	70-130	6	0-20	3
Carbon Tetrachloride	ND	50.00	35.86	72	33.61	67	69-139	6	0-20	3
Chlorobenzene	ND	50.00	42.03	84	41.05	82	70-130	2	0-20	
Chloroethane	ND	50.00	41.29	83	39.26	79	70-130	5	0-20	
Chloroform	ND	50.00	38.05	76	38.01	76	70-130	0	0-20	
Chloromethane	ND	50.00	37.29	75	36.57	73	70-130	2	0-20	
2-Chlorotoluene	ND	50.00	44.88	90	42.44	85	70-130	6	0-20	
4-Chlorotoluene	ND	50.00	39.80	80	37.93	76	70-130	5	0-20	
Dibromochloromethane	ND	50.00	41.48	83	42.19	84	70-130	2	0-20	
1,2-Dibromo-3-Chloropropane	ND	50.00	43.41	87	43.88	88	70-130	1	0-20	
1,2-Dibromoethane	ND	50.00	45.55	91	47.55	95	80-123	4	0-20	
Dibromomethane	ND	50.00	43.33	87	43.99	88	70-130	2	0-20	
1,2-Dichlorobenzene	ND	50.00	40.34	81	40.42	81	76-120	0	0-20	
1,3-Dichlorobenzene	ND	50.00	39.68	79	38.32	77	70-130	3	0-20	
1,4-Dichlorobenzene	ND	50.00	38.45	77	37.75	76	70-130	2	0-20	
Dichlorodifluoromethane	ND	50.00	48.07	96	41.01	82	70-130	16	0-20	
1,1-Dichloroethane	ND	50.00	32.63	65	32.25	64	70-130	1	0-20	3
1,2-Dichloroethane	ND	50.00	42.47	85	43.70	87	76-130	3	0-20	
1,1-Dichloroethene	ND	50.00	37.10	74	34.23	68	70-130	8	0-27	3
c-1,2-Dichloroethene	ND	50.00	37.62	75	37.20	74	70-130	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



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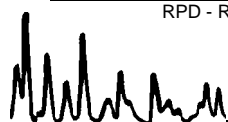
Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B

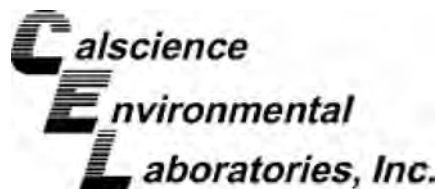
Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0249-1	Aqueous	GC/MS S	06/08/12	06/08/12	120608S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
t-1,2-Dichloroethene	ND	50.00	30.90	62	29.00	58	70-130	6	0-20	3
1,2-Dichloropropane	ND	50.00	43.84	88	43.62	87	70-130	1	0-25	
1,3-Dichloropropane	ND	50.00	44.04	88	45.36	91	70-130	3	0-20	
2,2-Dichloropropane	ND	50.00	37.16	74	35.20	70	70-130	5	0-20	
1,1-Dichloropropene	ND	50.00	37.33	75	33.78	68	70-130	10	0-20	3
c-1,3-Dichloropropene	ND	50.00	39.67	79	40.27	81	70-130	2	0-20	
t-1,3-Dichloropropene	ND	50.00	37.37	75	37.16	74	70-130	1	0-20	
Ethylbenzene	ND	50.00	44.44	89	41.76	84	73-127	6	0-20	
2-Hexanone	ND	50.00	42.88	86	45.19	90	70-130	5	0-20	
Isopropylbenzene	ND	50.00	44.27	89	41.23	82	70-130	7	0-20	
p-Isopropyltoluene	ND	50.00	39.84	80	36.79	74	70-130	8	0-20	
Methylene Chloride	ND	50.00	34.79	70	41.27	83	70-130	17	0-20	
4-Methyl-2-Pentanone	ND	50.00	43.66	87	44.57	89	70-130	2	0-20	
Naphthalene	ND	50.00	42.85	86	43.41	87	70-130	1	0-20	
n-Propylbenzene	ND	50.00	44.13	88	40.60	81	70-130	8	0-20	
Styrene	ND	50.00	45.62	91	43.90	88	70-130	4	0-20	
1,1,1,2-Tetrachloroethane	ND	50.00	46.07	92	46.26	93	70-130	0	0-20	
1,1,2,2-Tetrachloroethane	ND	50.00	54.50	109	55.67	111	70-130	2	0-20	
Tetrachloroethene	ND	50.00	33.27	67	31.57	63	70-130	5	0-20	3
Toluene	ND	50.00	42.67	85	41.28	83	72-126	3	0-20	
1,2,3-Trichlorobenzene	ND	50.00	37.72	75	37.43	75	70-130	1	0-20	
1,2,4-Trichlorobenzene	ND	50.00	34.82	70	33.62	67	70-130	3	0-20	3
1,1,1-Trichloroethane	ND	50.00	39.64	79	37.30	75	70-130	6	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50.00	41.90	84	36.54	73	70-130	14	0-20	
1,1,2-Trichloroethane	ND	50.00	44.03	88	46.10	92	70-130	5	0-20	
Trichloroethene	ND	50.00	37.02	74	34.77	70	74-122	6	0-20	3
Trichlorofluoromethane	ND	50.00	44.99	90	39.91	80	70-130	12	0-20	
1,2,3-Trichloropropane	ND	50.00	46.51	93	47.90	96	70-130	3	0-20	
1,2,4-Trimethylbenzene	ND	50.00	41.60	83	39.61	79	70-130	5	0-20	
1,3,5-Trimethylbenzene	ND	50.00	45.32	91	42.21	84	70-130	7	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



Geosyntec Consultants
1650 Iowa Ave.
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Riverside, CA 92507-2373

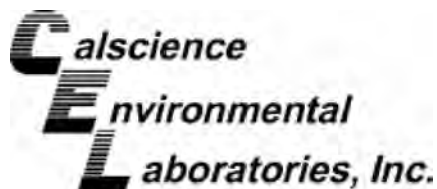
Date Received: 06/04/12
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B

Project Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-06-0249-1	Aqueous	GC/MS S	06/08/12	06/08/12	120608S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Vinyl Acetate	ND	50.00	20.41	41	20.90	42	70-130	2	0-20	3
Vinyl Chloride	ND	50.00	40.17	80	37.65	75	65-131	6	0-24	
p/m-Xylene	ND	100.0	89.16	89	84.34	84	70-130	6	0-20	
o-Xylene	ND	50.00	45.10	90	43.49	87	70-130	4	0-20	
Methyl-t-Butyl Ether (MTBE)	ND	50.00	30.12	60	31.41	63	69-123	4	0-20	3

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



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1650 Iowa Ave.
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Riverside, CA 92507-2373

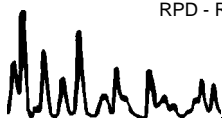
Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 3510C
Method: EPA 8015B (M)

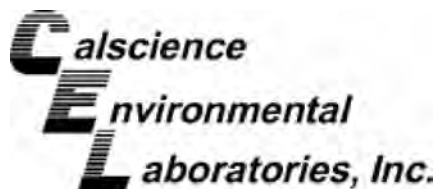
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-304-2	Aqueous	GC 45	06/05/12	06/06/12	120605B11

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	2000	1792	90	1976	99	75-117	10	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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1650 Iowa Ave.
Suite 180
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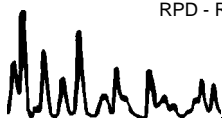
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Work Order No: 12-06-0159
Preparation: EPA 3510C
Method: EPA 8015B (M)

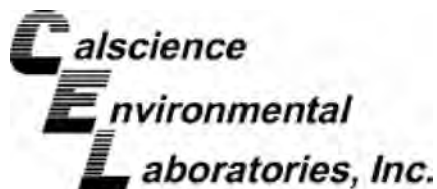
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-304-3	Aqueous	GC 45	06/05/12	06/06/12	120605B11S

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	2000	1952	98	2013	101	75-117	3	0-13	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 3550B
Method: EPA 8015B (M)

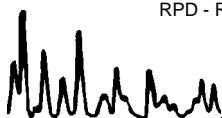
Project: Former Chemoil Facility / WA1617

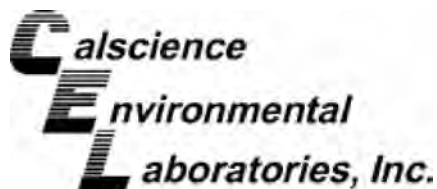
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-422-7	Solid	GC 48	06/07/12	06/07/12	120607B03

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	400.0	403.1	101	403.7	101	75-123	0	0-12	

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RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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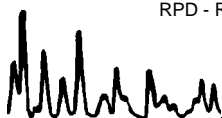
Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

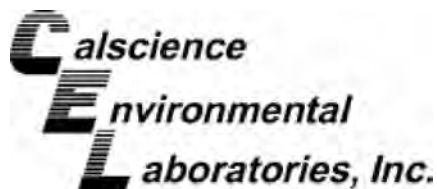
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-436-7,495	Aqueous	GC 24	06/06/12	06/06/12	120606B01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	2000	2060	103	2074	104	78-120	1	0-10	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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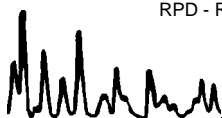
Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8015B (M)

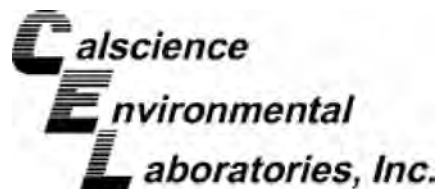
Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-571-353	Solid	GC 4	06/05/12	06/05/12	120605B01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	10.00	8.822	88	9.021	90	70-124	2	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



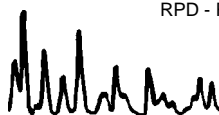
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1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

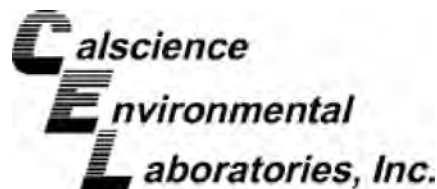
Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-153	Solid	GC/MS OO	06/06/12		06/06/12		120606L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	Qualifiers
Acetone	50.00	59.85	120	60.80	122	80-120	73-127	2	0-20	ME
Benzene	50.00	48.88	98	49.39	99	80-120	73-127	1	0-20	
Bromobenzene	50.00	49.58	99	52.02	104	80-120	73-127	5	0-20	X
Bromochloromethane	50.00	52.26	105	51.74	103	80-120	73-127	1	0-20	
Bromodichloromethane	50.00	52.02	104	52.87	106	80-120	73-127	2	0-20	
Bromoform	50.00	48.17	96	50.90	102	80-120	73-127	6	0-20	
Bromomethane	50.00	66.84	134	66.21	132	80-120	73-127	1	0-20	
2-Butanone	50.00	55.58	111	51.80	104	80-120	73-127	7	0-20	
n-Butylbenzene	50.00	45.94	92	51.15	102	77-123	69-131	11	0-25	
sec-Butylbenzene	50.00	47.59	95	51.84	104	80-120	73-127	9	0-20	
tert-Butylbenzene	50.00	47.74	95	51.69	103	80-120	73-127	8	0-20	
Carbon Disulfide	50.00	45.95	92	45.12	90	80-120	73-127	2	0-20	
Carbon Tetrachloride	50.00	54.95	110	55.54	111	65-137	53-149	1	0-20	
Chlorobenzene	50.00	49.81	100	52.02	104	80-120	73-127	4	0-20	
Chloroethane	50.00	50.38	101	49.36	99	80-120	73-127	2	0-20	
Chloroform	50.00	50.44	101	50.20	100	80-120	73-127	0	0-20	
Chloromethane	50.00	52.81	106	53.27	107	80-120	73-127	1	0-20	
2-Chlorotoluene	50.00	48.05	96	50.94	102	80-120	73-127	6	0-20	
4-Chlorotoluene	50.00	46.16	92	49.86	100	80-120	73-127	8	0-20	
Dibromochloromethane	50.00	55.81	112	57.48	115	80-120	73-127	3	0-20	
1,2-Dibromo-3-Chloropropane	50.00	48.16	96	50.79	102	80-120	73-127	5	0-20	
1,2-Dibromoethane	50.00	50.85	102	52.45	105	80-120	73-127	3	0-20	
Dibromomethane	50.00	49.75	100	50.07	100	80-120	73-127	1	0-20	
1,2-Dichlorobenzene	50.00	48.53	97	51.72	103	80-120	73-127	6	0-20	
1,3-Dichlorobenzene	50.00	46.79	94	51.05	102	80-120	73-127	9	0-20	
1,4-Dichlorobenzene	50.00	46.69	93	50.39	101	80-120	73-127	8	0-20	
Dichlorodifluoromethane	50.00	57.11	114	56.87	114	80-120	73-127	0	0-20	
1,1-Dichloroethane	50.00	48.06	96	47.17	94	80-120	73-127	2	0-20	
1,2-Dichloroethane	50.00	49.70	99	51.18	102	80-120	73-127	3	0-20	
1,1-Dichloroethene	50.00	43.40	87	42.52	85	68-128	58-138	2	0-20	
c-1,2-Dichloroethene	50.00	50.93	102	50.69	101	80-120	73-127	0	0-20	
t-1,2-Dichloroethene	50.00	48.12	96	48.21	96	80-120	73-127	0	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



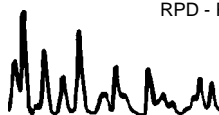
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

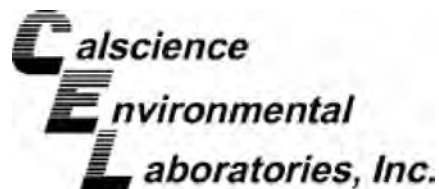
Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-153	Solid	GC/MS OO	06/06/12		06/06/12		120606L01			
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	Qualifiers
1,2-Dichloropropane	50.00	50.02	100	50.54	101	79-115	73-121	1	0-25	
1,3-Dichloropropane	50.00	50.43	101	52.06	104	80-120	73-127	3	0-20	
2,2-Dichloropropane	50.00	49.01	98	48.24	96	80-120	73-127	2	0-20	
1,1-Dichloropropene	50.00	53.14	106	52.92	106	80-120	73-127	0	0-20	
c-1,3-Dichloropropene	50.00	49.11	98	50.14	100	80-120	73-127	2	0-20	
t-1,3-Dichloropropene	50.00	45.44	91	46.53	93	80-120	73-127	2	0-20	
Ethylbenzene	50.00	50.36	101	51.97	104	80-120	73-127	3	0-20	
2-Hexanone	50.00	48.66	97	52.08	104	80-120	73-127	7	0-20	
Isopropylbenzene	50.00	49.68	99	52.10	104	80-120	73-127	5	0-20	
p-Isopropyltoluene	50.00	45.79	92	50.37	101	80-120	73-127	10	0-20	
Methylene Chloride	50.00	48.61	97	47.39	95	80-120	73-127	3	0-20	
4-Methyl-2-Pentanone	50.00	48.81	98	49.48	99	80-120	73-127	1	0-20	
Naphthalene	50.00	47.90	96	51.80	104	80-120	73-127	8	0-20	
n-Propylbenzene	50.00	48.04	96	51.90	104	80-120	73-127	8	0-20	
Styrene	50.00	49.60	99	51.59	103	80-120	73-127	4	0-20	
1,1,1,2-Tetrachloroethane	50.00	53.46	107	54.79	110	80-120	73-127	2	0-20	
1,1,2,2-Tetrachloroethane	50.00	49.77	100	52.80	106	80-120	73-127	6	0-20	
Tetrachloroethene	50.00	50.58	101	52.16	104	80-120	73-127	3	0-20	
Toluene	50.00	50.21	100	51.11	102	80-120	73-127	2	0-20	
1,2,3-Trichlorobenzene	50.00	46.65	93	51.79	104	80-120	73-127	10	0-20	
1,2,4-Trichlorobenzene	50.00	44.54	89	50.34	101	80-120	73-127	12	0-20	
1,1,1-Trichloroethane	50.00	51.13	102	50.77	102	80-120	73-127	1	0-20	
1,1,2-Trichloroethane	50.00	48.25	96	50.45	101	80-120	73-127	4	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	49.95	100	49.68	99	80-120	73-127	1	0-20	
Trichloroethene	50.00	49.74	99	50.28	101	80-120	73-127	1	0-20	
Trichlorofluoromethane	50.00	54.57	109	53.65	107	80-120	73-127	2	0-20	
1,2,3-Trichloropropane	50.00	50.61	101	53.57	107	80-120	73-127	6	0-20	
1,2,4-Trimethylbenzene	50.00	47.63	95	51.01	102	80-120	73-127	7	0-20	
1,3,5-Trimethylbenzene	50.00	48.45	97	51.77	104	80-120	73-127	7	0-20	
Vinyl Acetate	50.00	29.53	59	29.07	58	80-120	73-127	2	0-20	X
Vinyl Chloride	50.00	52.24	104	51.82	104	67-127	57-137	1	0-20	
p/m-Xylene	100.0	97.89	98	102.0	102	80-120	73-127	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5035
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-312-153	Solid	GC/MS OO	06/06/12		06/06/12		120606L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	48.91	98	51.10	102	80-120	73-127	4	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	45.18	90	45.75	91	70-124	61-133	1	0-20	
Tert-Butyl Alcohol (TBA)	250.0	248.7	99	253.2	101	73-121	65-129	2	0-20	
Diisopropyl Ether (DIPE)	50.00	48.89	98	48.46	97	69-129	59-139	1	0-20	
Ethyl-t-Butyl Ether (ETBE)	50.00	49.26	99	49.38	99	70-124	61-133	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	50.00	46.92	94	48.52	97	74-122	66-130	3	0-20	
Ethanol	500.0	491.0	98	506.7	101	51-135	37-149	3	0-27	

Total number of LCS compounds : 71

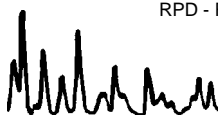
Total number of ME compounds : 1

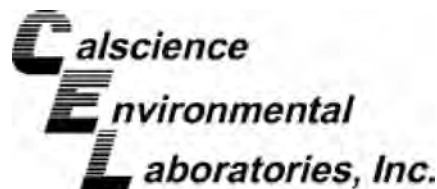
Total number of ME compounds allowed : 4

LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



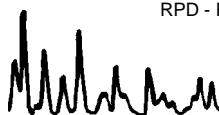
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Riverside, CA 92507-2373

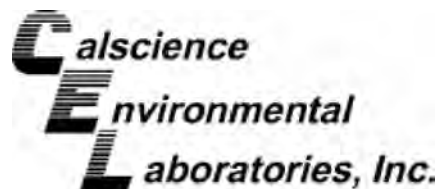
Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-563	Aqueous	GC/MS S	06/08/12		06/08/12		120608L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	Qualifiers
Acetone	50.00	53.34	107	56.93	114	70-130	60-140	6	0-20	ME
Benzene	50.00	46.82	94	48.53	97	70-130	60-140	4	0-20	
Bromobenzene	50.00	53.26	107	55.97	112	70-130	60-140	5	0-20	
Bromochloromethane	50.00	45.59	91	48.79	98	70-130	60-140	7	0-20	
Bromodichloromethane	50.00	50.73	101	53.20	106	70-130	60-140	5	0-20	
Bromoform	50.00	42.00	84	46.25	92	70-130	60-140	10	0-20	
Bromomethane	50.00	31.43	63	30.69	61	70-130	60-140	2	0-20	
2-Butanone	50.00	40.08	80	44.34	89	70-130	60-140	10	0-20	
n-Butylbenzene	50.00	53.47	107	52.13	104	77-123	69-131	3	0-25	
sec-Butylbenzene	50.00	51.38	103	52.46	105	70-130	60-140	2	0-20	
tert-Butylbenzene	50.00	48.97	98	50.63	101	70-130	60-140	3	0-20	
Carbon Disulfide	50.00	39.65	79	38.66	77	70-130	60-140	3	0-20	
Carbon Tetrachloride	50.00	41.80	84	42.80	86	66-138	54-150	2	0-20	
Chlorobenzene	50.00	49.42	99	52.24	104	70-130	60-140	6	0-20	
Chloroethane	50.00	44.44	89	47.52	95	70-130	60-140	7	0-20	
Chloroform	50.00	43.94	88	46.08	92	70-130	60-140	5	0-20	
Chloromethane	50.00	47.00	94	45.71	91	70-130	60-140	3	0-20	
2-Chlorotoluene	50.00	53.64	107	54.88	110	70-130	60-140	2	0-20	
4-Chlorotoluene	50.00	48.56	97	50.46	101	70-130	60-140	4	0-20	
Dibromochloromethane	50.00	47.36	95	49.57	99	70-130	60-140	5	0-20	
1,2-Dibromo-3-Chloropropane	50.00	41.27	83	47.68	95	70-130	60-140	14	0-20	
1,2-Dibromoethane	50.00	51.66	103	54.85	110	70-130	60-140	6	0-20	
Dibromomethane	50.00	48.77	98	51.10	102	70-130	60-140	5	0-20	
1,2-Dichlorobenzene	50.00	48.70	97	52.07	104	70-130	60-140	7	0-20	
1,3-Dichlorobenzene	50.00	49.47	99	51.64	103	70-130	60-140	4	0-20	
1,4-Dichlorobenzene	50.00	48.22	96	49.87	100	70-130	60-140	3	0-20	
Dichlorodifluoromethane	50.00	57.72	115	52.79	106	70-130	60-140	9	0-20	
1,1-Dichloroethane	50.00	40.79	82	38.93	78	70-130	60-140	5	0-20	
1,2-Dichloroethane	50.00	47.51	95	50.16	100	80-129	72-137	5	0-20	
1,1-Dichloroethene	50.00	40.78	82	43.02	86	71-131	61-141	5	0-20	
c-1,2-Dichloroethene	50.00	42.88	86	45.26	91	70-130	60-140	5	0-20	
t-1,2-Dichloroethene	50.00	38.48	77	36.95	74	70-130	60-140	4	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



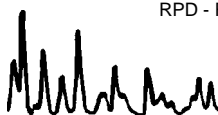
Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

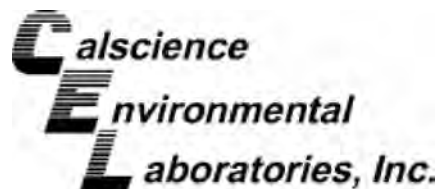
Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-563	Aqueous	GC/MS S	06/08/12		06/08/12		120608L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
1,2-Dichloropropane	50.00	48.92	98	51.15	102	79-115	73-121	4	0-25	
1,3-Dichloropropane	50.00	49.03	98	52.69	105	70-130	60-140	7	0-20	
2,2-Dichloropropane	50.00	42.28	85	42.47	85	70-130	60-140	0	0-20	
1,1-Dichloropropene	50.00	43.88	88	44.92	90	70-130	60-140	2	0-20	
c-1,3-Dichloropropene	50.00	47.19	94	48.99	98	70-130	60-140	4	0-20	
t-1,3-Dichloropropene	50.00	44.31	89	46.19	92	70-130	60-140	4	0-20	
Ethylbenzene	50.00	52.54	105	54.10	108	80-123	73-130	3	0-20	
2-Hexanone	50.00	43.29	87	47.97	96	70-130	60-140	10	0-20	
Isopropylbenzene	50.00	52.88	106	54.34	109	70-130	60-140	3	0-20	
p-Isopropyltoluene	50.00	50.77	102	51.03	102	70-130	60-140	1	0-20	
Methylene Chloride	50.00	41.20	82	39.70	79	70-130	60-140	4	0-20	
4-Methyl-2-Pentanone	50.00	43.31	87	47.04	94	70-130	60-140	8	0-20	
Naphthalene	50.00	49.26	99	53.77	108	70-130	60-140	9	0-20	
n-Propylbenzene	50.00	55.00	110	54.83	110	70-130	60-140	0	0-20	
Styrene	50.00	52.98	106	55.52	111	70-130	60-140	5	0-20	
1,1,1,2-Tetrachloroethane	50.00	53.23	106	57.67	115	70-130	60-140	8	0-20	
1,1,2,2-Tetrachloroethane	50.00	44.01	88	50.87	102	70-130	60-140	14	0-20	
Tetrachloroethene	50.00	56.37	113	57.38	115	70-130	60-140	2	0-20	
Toluene	50.00	49.29	99	51.48	103	79-121	72-128	4	0-20	
1,2,3-Trichlorobenzene	50.00	49.97	100	52.05	104	70-130	60-140	4	0-20	
1,2,4-Trichlorobenzene	50.00	48.94	98	49.72	99	70-130	60-140	2	0-20	
1,1,1-Trichloroethane	50.00	45.47	91	47.48	95	70-130	60-140	4	0-20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.00	46.91	94	44.75	89	70-130	60-140	5	0-20	
1,1,2-Trichloroethane	50.00	49.00	98	51.98	104	70-130	60-140	6	0-20	
Trichloroethene	50.00	49.75	100	50.53	101	70-130	60-140	2	0-20	
Trichlorofluoromethane	50.00	51.36	103	52.86	106	70-130	60-140	3	0-20	
1,2,3-Trichloropropane	50.00	49.14	98	53.01	106	70-130	60-140	8	0-20	
1,2,4-Trimethylbenzene	50.00	50.56	101	52.44	105	70-130	60-140	4	0-20	
1,3,5-Trimethylbenzene	50.00	55.55	111	56.10	112	70-130	60-140	1	0-20	
Vinyl Acetate	50.00	23.02	46	21.85	44	70-130	60-140	5	0-20	X
Vinyl Chloride	50.00	43.37	87	47.72	95	70-136	59-147	10	0-20	
p/m-Xylene	100.0	105.4	105	108.1	108	70-130	60-140	3	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1650 Iowa Ave.
Suite 180
Riverside, CA 92507-2373

Date Received: N/A
Work Order No: 12-06-0159
Preparation: EPA 5030C
Method: EPA 8260B

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared		Date Analyzed		LCS/LCSD Batch Number			
099-14-316-563	Aqueous	GC/MS S	06/08/12		06/08/12		120608L01			
Parameter	<u>SPIKE</u> <u>ADDED</u>	<u>LCS</u> <u>CONC</u>	<u>LCS</u> <u>%REC</u>	<u>LCSD</u> <u>CONC</u>	<u>LCSD</u> <u>%REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
o-Xylene	50.00	52.32	105	54.46	109	70-130	60-140	4	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	36.35	73	36.63	73	72-126	63-135	1	0-22	

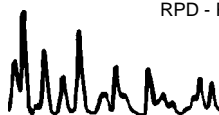
Total number of LCS compounds : 66

Total number of ME compounds : 1

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit



Glossary of Terms and Qualifiers

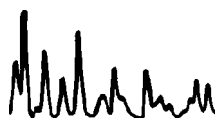


Work Order Number: 12-06-0159

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

MPN - Most Probable Number



LABORATORY CLIENT: Geosyntec Consultants
ADDRESS: 1650 Iowa Ave Suite 100
CITY: Riverside STATE: CA ZIP: 92507
TEL: 714 393-4490 E-MAIL: rcheung@geosyntec.com

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ STANDARD
☐ COELT EDF GLOBAL ID _____ LOG CODE _____

SPECIAL INSTRUCTIONS:
* For diesel water samples, please run one analysis w/ silica Gel.
* Email Results? Invoic to Robert Cheung at rcheung@geosyntec.com

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.	Field Filtered	
		DATE	TIME			Unpreserved	Preserved
1	TB-060112-A	6/1/12	1600	Water	2		X
2	GW/SV-27-1		1604	Soil	5	X	X
3	GW/SV-27-3		1612	Soil	5	X	X
4	GW/SV-27-4.5		1621	Soil	5	X	X
5	GW/SV-27-14		1645	Water	6	X	X
6	TB-060412	6/4/12	0900	Water	6	X	X
7	GW/SV-24-1		0920	Soil	5	X	X
8	GW/SV-24-3		0928	Soil	5	X	X
9	GW/SV-24-4.5		0937	Soil	5	X	X
10	GW/SV-24-15		1020	Water	6	X	X

Received by: (Signature/Affiliation) [Signature]
Relinquished by: (Signature) [Signature]
Received by: (Signature/Affiliation) [Signature]
Relinquished by: (Signature) [Signature]
Received by: (Signature/Affiliation) [Signature]
Relinquished by: (Signature) [Signature]

CLIENT PROJECT NAME / NUMBER: Former Chemoil Facility / WA1617
PROJECT CONTACT: Robert Cheung 510529-5948
P.O. NO.: WA1617
SAMPLER(S): (PRINT) V. Smith

REQUESTED ANALYSES

TPH (g) or GRO	TPH (d) or DRO or (C6C36) or (C6-C44)	TPH ()	BTEX / MTBE (8260) or ()	VOCs (8260) B	Oxygenates (8260) B	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010B/747X)	Cr(VI) [7196 or 7199 or 218.6]
X	X	X	X	X	X	X	X	X	X	X	X	X

Date: 6/4/12 Time: 1640
Date: 06/04/12 Time: 1745
Date: _____ Time: _____

CHAIN OF CUSTODY RECORD

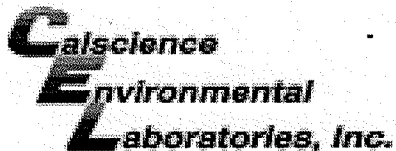
WO # / LAB USE ONLY
 12-06-0159
 Date 6/4/12
 Page 2 of 2

LABORATORY CLIENT: Geosyntec Consultants
 ADDRESS: 1050 Iowa Ave, Suite 180
 CITY: Riverside STATE: CA ZIP: 92507
 TEL: 714) 393-4498 E-MAIL: rcheung@geosyntec.com
 TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☒ 72 HR ☐ STANDARD
☐ COELT EDF GLOBAL ID _____ LOG CODE _____

TURNAROUND TIME: <input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input checked="" type="checkbox"/> STANDARD																					
<input type="checkbox"/> COELT EDF		GLOBAL ID		LOG CODE																	
SPECIAL INSTRUCTIONS: * please email results: invoice to Robert Cheung @ rcheung@grosyntec.com * for diesel water samples, please run one analysis is with Silica gel.																					
LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.	Field Filtered															
		DATE	TIME			Unpreserved	Preserved	Field Filtered													
11	GW/SV-21-1	6/4/12	1100	soil	5	X	X		TPH (g) or GRO 0.015M	TPH (d) or BRO or (C6C36) or (C6-C44)	TPH ()	BTEX / MTBE (8260) or ()	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010B/747X)	Cr(VI) [7196 or 7199 or 218.6]
12	GW/SV-21-3		1115	soil	5	X	X		X	X			X	X							
13	GW/SV-21-4.5		1128	soil	5	X	X		X	X			X	X							
14	GW/SV-21-14		1200	Water	6	X	X		X	X			X	X							
15	GW/SV-23-1		1440	Soil	5	X	X		X	X			X	X							
16	GW/SV-23-3		1450	Soil	5	X	X		X	X			X	X							
17	GW/SV-23-4.5		1500	Soil	5	X	X		X	X			X	X							
18	GW/SV-23-13		1545	Water	6	X	X		X	X			X	X							

SPECIAL INSTRUCTIONS:
 * please email results: invoice to Robert Cheung @ rcheung@geosyntec.com
 * for diesel water samples, please run one analysis is with Silica gel.

Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) [Signature] Date: 6/4/12 Time: 1645
 Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) [Signature] Date: 06/04/12 Time: 1745
 Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) _____ Date: _____ Time: _____



WORK ORDER #: 12-06-0159

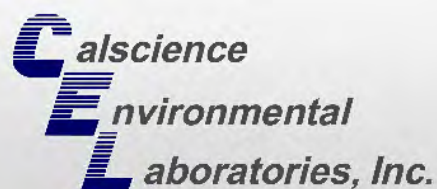
SAMPLE RECEIPT FORMCooler 1 of 1CLIENT: GEOSYNTECDATE: 06/4/12**TEMPERATURE:** Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature 2.4 °C - 0.3 °C (CF) = 2.1 °C ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ FilterInitial: AM**CUSTODY SEALS INTACT:**☐ Cooler ☐ _____☐ No (Not Intact)☒ Not Present☐ N/AInitial: AM☐ Sample ☐ _____☐ No (Not Intact)☒ Not PresentInitial: MR**SAMPLE CONDITION:**

Yes

No

N/A

Chain-Of-Custody (COC) document(s) received with samples.....☒☐☐COC document(s) received complete.....☒☐☐☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.Sampler's name indicated on COC.....☒☐☐Sample container label(s) consistent with COC.....☒☐☐Sample container(s) intact and good condition.....☒☐☐Proper containers and sufficient volume for analyses requested.....☒☐☐Analyses received within holding time.....☒☐☐pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours...☐☐☒Proper preservation noted on COC or sample container.....☒☐☐☐ Unpreserved vials received for Volatiles analysisVolatile analysis container(s) free of headspace.....☒☐☐Tedlar bag(s) free of condensation.....☐☐☒**CONTAINER TYPE:**Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☒ Sleeve (P/B) ☐ EnCores® ☒ TerraCores® ☒ 60ml PBWater: ☐ VOA ☒ VOA⁵h ☐ VOAna₂ ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 1AGB ☐ 1AGBna₂ ☐ 1AGBs☐ 500AGB ☒ 500AGJ ☐ 500AGJs ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 1PB ☐ 1PBna ☐ 500PB☐ 250PB ☐ 250PBn ☐ 125PB ☐ 125PBz₂na ☐ 100PJ ☐ 100PJna₂ ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Summa® Other: ☐ _____ Trip Blank Lot#: 120531A Labeled/Checked by: MRContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: MRPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure z₂na: ZnAc₂+NaOH f: Filtered Scanned by: MR



CALSCIENCE

WORK ORDER NUMBER: 12-06-0989

The difference is service



AIR :: SOIL :: WATER :: MARINE CHEMISTRY

Analytical Report For

Client: Geosyntec Consultants

Client Project Name: Former Chemoil Facility / WA1617

Attention: Robert Cheung
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Approved for release on 06/22/2012 by:
Stephen Nowak
Project Manager

ResultLink ▶

Email your PM ▶



Calscience Environmental Laboratories, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name: Former Chemoil Facility / WA1617

Work Order Number: 12-06-0989

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Client: Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172
Attn: Robert Cheung

Work Order: 12-06-0989
Project name: Former Chemoil Facility / WA1617
Received: 06/14/12 14:00

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
GW/SV-24-5 (12-06-0989-1)						
Carbon Dioxide	0.866		0.500	%v	ASTM D-1946	N/A
Oxygen + Argon	20.9		0.500	%v	ASTM D-1946	N/A
Nitrogen	78.2		0.500	%v	ASTM D-1946	N/A
Acetone	13		4.8	ug/m3	EPA TO-15	N/A
Toluene	2.4		1.9	ug/m3	EPA TO-15	N/A
GW/SV-24-10 (12-06-0989-2)						
Carbon Dioxide	3.56		0.500	%v	ASTM D-1946	N/A
Oxygen + Argon	18.5		0.500	%v	ASTM D-1946	N/A
Nitrogen	78.0		0.500	%v	ASTM D-1946	N/A
Acetone	22		4.8	ug/m3	EPA TO-15	N/A
Benzene	4.1		1.6	ug/m3	EPA TO-15	N/A
2-Butanone	9.3		4.4	ug/m3	EPA TO-15	N/A
Chloroform	17		2.4	ug/m3	EPA TO-15	N/A
Tetrachloroethene	9.9		3.4	ug/m3	EPA TO-15	N/A
GW/SV-21-5 (12-06-0989-3)						
Carbon Dioxide	0.506		0.500	%v	ASTM D-1946	N/A
Oxygen + Argon	21.1		0.500	%v	ASTM D-1946	N/A
Nitrogen	78.4		0.500	%v	ASTM D-1946	N/A
Acetone	45		4.8	ug/m3	EPA TO-15	N/A
Benzene	2.4		1.6	ug/m3	EPA TO-15	N/A
2-Butanone	8.7		4.4	ug/m3	EPA TO-15	N/A
Chloroform	6.3		2.4	ug/m3	EPA TO-15	N/A
GW/SV-21-10 (12-06-0989-4)						
Methane	3.36		0.500	%v	ASTM D-1946	N/A
Carbon Dioxide	7.12		0.500	%v	ASTM D-1946	N/A
Oxygen + Argon	4.76		0.500	%v	ASTM D-1946	N/A
Nitrogen	84.8		0.500	%v	ASTM D-1946	N/A
Acetone	100		9.7	ug/m3	EPA TO-15	N/A
2-Butanone	25		9.0	ug/m3	EPA TO-15	N/A
Ethanol	60		19	ug/m3	EPA TO-15	N/A

*MDL is shown.



Client: Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172
Attn: Robert Cheung

Work Order: 12-06-0989
Project name: Former Chemoil Facility / WA1617
Received: 06/14/12 14:00

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
GW/SV-23-5 (12-06-0989-5)						
Carbon Dioxide	0.939		0.500	%v	ASTM D-1946	N/A
Oxygen + Argon	21.0		0.500	%v	ASTM D-1946	N/A
Nitrogen	78.0		0.500	%v	ASTM D-1946	N/A
Acetone	38		4.8	ug/m3	EPA TO-15	N/A
2-Butanone	9.1		4.4	ug/m3	EPA TO-15	N/A
Toluene	2.9		1.9	ug/m3	EPA TO-15	N/A
GW/SV-23-10 (12-06-0989-6)						
Methane	1.43		0.500	%v	ASTM D-1946	N/A
Carbon Dioxide	1.23		0.500	%v	ASTM D-1946	N/A
Oxygen + Argon	14.4		0.500	%v	ASTM D-1946	N/A
Nitrogen	82.9		0.500	%v	ASTM D-1946	N/A
Acetone	100		4.8	ug/m3	EPA TO-15	N/A
Benzene	34		1.6	ug/m3	EPA TO-15	N/A
2-Butanone	40		4.4	ug/m3	EPA TO-15	N/A
Carbon Disulfide	71		6.2	ug/m3	EPA TO-15	N/A
Chloromethane	2.5		1.0	ug/m3	EPA TO-15	N/A
Ethylbenzene	3.8		2.2	ug/m3	EPA TO-15	N/A
Tetrachloroethene	7.4		3.4	ug/m3	EPA TO-15	N/A
Toluene	14		1.9	ug/m3	EPA TO-15	N/A
GW/SV-23-10-DUP (12-06-0989-7)						
Methane	6.18		0.500	%v	ASTM D-1946	N/A
Carbon Dioxide	1.14		0.500	%v	ASTM D-1946	N/A
Oxygen + Argon	16.1		0.500	%v	ASTM D-1946	N/A
Nitrogen	76.5		0.500	%v	ASTM D-1946	N/A
Acetone	95		15	ug/m3	EPA TO-15	N/A
Benzene	11		5.1	ug/m3	EPA TO-15	N/A
2-Butanone	29		14	ug/m3	EPA TO-15	N/A
Carbon Disulfide	51		20	ug/m3	EPA TO-15	N/A
Toluene	11		6.0	ug/m3	EPA TO-15	N/A

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.



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Oakland, CA 94607-4172

Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: ASTM D-1946
Units: %v

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-5	12-06-0989-1-A	06/13/12 11:55	Air	GC 34	N/A	06/14/12 15:55	120614L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	20.9	0.500	1	
Carbon Dioxide	0.866	0.500	1		Nitrogen	78.2	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-24-10	12-06-0989-2-A	06/13/12 12:45	Air	GC 34	N/A	06/14/12 16:35	120614L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	18.5	0.500	1	
Carbon Dioxide	3.56	0.500	1		Nitrogen	78.0	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-21-5	12-06-0989-3-A	06/13/12 13:45	Air	GC 34	N/A	06/14/12 17:16	120614L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	21.1	0.500	1	
Carbon Dioxide	0.506	0.500	1		Nitrogen	78.4	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-21-10	12-06-0989-4-A	06/13/12 14:35	Air	GC 34	N/A	06/14/12 17:56	120614L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	3.36	0.500	1		Oxygen + Argon	4.76	0.500	1	
Carbon Dioxide	7.12	0.500	1		Nitrogen	84.8	0.500	1	
Carbon Monoxide	ND	0.500	1						

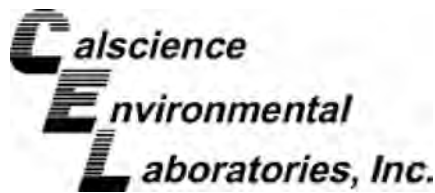
GW/SV-23-5	12-06-0989-5-A	06/13/12 15:35	Air	GC 34	N/A	06/14/12 18:29	120614L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	21.0	0.500	1	
Carbon Dioxide	0.939	0.500	1		Nitrogen	78.0	0.500	1	
Carbon Monoxide	ND	0.500	1						

GW/SV-23-10	12-06-0989-6-A	06/13/12 16:25	Air	GC 34	N/A	06/15/12 17:56	120615L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	1.43	0.500	1		Oxygen + Argon	14.4	0.500	1	
Carbon Dioxide	1.23	0.500	1		Nitrogen	82.9	0.500	1	
Carbon Monoxide	ND	0.500	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



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Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: ASTM D-1946
Units: %v

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-10-DUP	12-06-0989-7-A	06/13/12 16:35	Air	GC 34	N/A	06/15/12 18:30	120615L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	6.18	0.500	1		Oxygen + Argon	16.1	0.500	1	
Carbon Dioxide	1.14	0.500	1		Nitrogen	76.5	0.500	1	
Carbon Monoxide	ND	0.500	1						

Method Blank	099-03-002-1,580	N/A	Air	GC 34	N/A	06/14/12 11:57	120614L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	ND	0.500	1	
Carbon Dioxide	ND	0.500	1		Nitrogen	ND	0.500	1	
Carbon Monoxide	ND	0.500	1						

Method Blank	099-03-002-1,581	N/A	Air	GC 34	N/A	06/15/12 10:51	120615L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	0.500	1		Oxygen + Argon	ND	0.500	1	
Carbon Dioxide	ND	0.500	1		Nitrogen	ND	0.500	1	
Carbon Monoxide	ND	0.500	1						

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RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Geosyntec Consultants
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Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: ASTM D-1946 (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-5	12-06-0989-1-A	06/13/12 11:55	Air	GC 55	N/A	06/14/12 15:52	120614L01

Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-24-10	12-06-0989-2-A	06/13/12 12:45	Air	GC 55	N/A	06/14/12 16:45	120614L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-21-5	12-06-0989-3-A	06/13/12 13:45	Air	GC 55	N/A	06/14/12 17:17	120614L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-21-10	12-06-0989-4-A	06/13/12 14:35	Air	GC 55	N/A	06/14/12 17:38	120614L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-23-5	12-06-0989-5-A	06/13/12 15:35	Air	GC 55	N/A	06/14/12 18:04	120614L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

GW/SV-23-10	12-06-0989-6-A	06/13/12 16:25	Air	GC 55	N/A	06/14/12 19:11	120614L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



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Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: ASTM D-1946 (M)

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-10-DUP	12-06-0989-7-A	06/13/12 16:35	Air	GC 55	N/A	06/14/12 18:47	120614L01

Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v

Method Blank	099-12-872-281	N/A	Air	GC 55	N/A	06/14/12 13:56	120614L01
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Parameter	Result	RL	DF	Qual	Units
Helium	ND	0.0100	1		%v
Hydrogen	ND	0.0100	1		%v

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Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-5	12-06-0989-1-A	06/13/12 11:55	Air	GC/MS HH	N/A	06/16/12 05:40	120615L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	13	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	ND	1.6	1		Ethylbenzene	ND	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	ND	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	ND	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	ND	2.4	1		Styrene	ND	6.4	1	
Chloromethane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	ND	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	2.4	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	96	57-129			1,2-Dichloroethane-d4	96	47-137		
Toluene-d8	98	78-156							

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Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-24-10	12-06-0989-2-A	06/13/12 12:45	Air	GC/MS HH	N/A	06/16/12 06:37	120615L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	22	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	4.1	1.6	1		Ethylbenzene	ND	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	9.3	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	ND	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	17	2.4	1		Styrene	ND	6.4	1	
Chloromethane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	9.9	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	ND	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	57-129			1,2-Dichloroethane-d4	95	47-137		
Toluene-d8	99	78-156							

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Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-5	12-06-0989-3-A	06/13/12 13:45	Air	GC/MS HH	N/A	06/16/12 07:33	120615L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	45	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	2.4	1.6	1		Ethylbenzene	ND	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	8.7	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	ND	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	6.3	2.4	1		Styrene	ND	6.4	1	
Chloromethane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	ND	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	ND	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	57-129			1,2-Dichloroethane-d4	97	47-137		
Toluene-d8	99	78-156							

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Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-21-10	12-06-0989-4-A	06/13/12 14:35	Air	GC/MS HH	N/A	06/16/12 19:34	120616L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	100	9.7	2.04		Ethyl-t-Butyl Ether (ETBE)	ND	17	2.04	
Benzene	ND	3.3	2.04		Ethylbenzene	ND	4.4	2.04	
Benzyl Chloride	ND	16	2.04		4-Ethyltoluene	ND	5.0	2.04	
Bromodichloromethane	ND	6.8	2.04		Hexachloro-1,3-Butadiene	ND	33	2.04	
Bromoform	ND	11	2.04		2-Hexanone	ND	13	2.04	
Bromomethane	ND	4.0	2.04		Methyl-t-Butyl Ether (MTBE)	ND	15	2.04	
2-Butanone	25	9.0	2.04		Methylene Chloride	ND	35	2.04	
Carbon Disulfide	ND	13	2.04		4-Methyl-2-Pentanone	ND	13	2.04	
Carbon Tetrachloride	ND	6.4	2.04		Naphthalene	ND	53	2.04	
Chlorobenzene	ND	4.7	2.04		o-Xylene	ND	4.4	2.04	
Chloroethane	ND	2.7	2.04		p/m-Xylene	ND	18	2.04	
Chloroform	ND	5.0	2.04		Styrene	ND	13	2.04	
Chloromethane	ND	2.1	2.04		Tert-Amyl-Methyl Ether (TAME)	ND	17	2.04	
Dibromochloromethane	ND	8.7	2.04		Tert-Butyl Alcohol (TBA)	ND	12	2.04	
Dichlorodifluoromethane	ND	5.0	2.04		Tetrachloroethene	ND	6.9	2.04	
Diisopropyl Ether (DIPE)	ND	17	2.04		Toluene	ND	3.8	2.04	
1,1-Dichloroethane	ND	4.1	2.04		Trichloroethene	ND	5.5	2.04	
1,1-Dichloroethene	ND	4.0	2.04		Trichlorofluoromethane	ND	11	2.04	
1,2-Dibromoethane	ND	7.8	2.04		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	23	2.04	
Dichlorotetrafluoroethane	ND	29	2.04		1,1,1-Trichloroethane	ND	5.6	2.04	
1,2-Dichlorobenzene	ND	6.1	2.04		1,1,2-Trichloroethane	ND	5.6	2.04	
1,2-Dichloroethane	ND	4.1	2.04		1,3,5-Trimethylbenzene	ND	5.0	2.04	
1,2-Dichloropropane	ND	4.7	2.04		1,1,2,2-Tetrachloroethane	ND	14	2.04	
1,3-Dichlorobenzene	ND	6.1	2.04		1,2,4-Trimethylbenzene	ND	15	2.04	
1,4-Dichlorobenzene	ND	6.1	2.04		1,2,4-Trichlorobenzene	ND	30	2.04	
c-1,3-Dichloropropene	ND	4.6	2.04		Vinyl Acetate	ND	14	2.04	
c-1,2-Dichloroethene	ND	4.0	2.04		Vinyl Chloride	ND	2.6	2.04	
t-1,2-Dichloroethene	ND	4.0	2.04		1,1-Difluoroethane	ND	11	2.04	
t-1,3-Dichloropropene	ND	9.3	2.04		Isopropanol	ND	25	2.04	
Ethanol	60	19	2.04						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	129	57-129			1,2-Dichloroethane-d4	90	47-137		
Toluene-d8	100	78-156							

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Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-5	12-06-0989-5-A	06/13/12 15:35	Air	GC/MS HH	N/A	06/16/12 20:29	120616L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	38	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	ND	1.6	1		Ethylbenzene	ND	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	9.1	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	ND	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	ND	2.4	1		Styrene	ND	6.4	1	
Chloromethane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	ND	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	2.9	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	95	57-129			1,2-Dichloroethane-d4	90	47-137		
Toluene-d8	99	78-156							

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Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-10	12-06-0989-6-A	06/13/12 16:25	Air	GC/MS HH	N/A	06/16/12 21:27	120616L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	100	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	34	1.6	1		Ethylbenzene	3.8	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	40	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	71	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	ND	2.4	1		Styrene	ND	6.4	1	
Chloromethane	2.5	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	7.4	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	14	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	101	57-129			1,2-Dichloroethane-d4	89	47-137		
Toluene-d8	98	78-156							

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Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
GW/SV-23-10-DUP	12-06-0989-7-A	06/13/12 16:35	Air	GC/MS YY	N/A	06/18/12 16:18	120618L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	95	15	3.18		Ethyl-t-Butyl Ether (ETBE)	ND	27	3.18	
Benzene	11	5.1	3.18		Ethylbenzene	ND	6.9	3.18	
Benzyl Chloride	ND	25	3.18		4-Ethyltoluene	ND	7.8	3.18	
Bromodichloromethane	ND	11	3.18		Hexachloro-1,3-Butadiene	ND	51	3.18	
Bromoform	ND	16	3.18		2-Hexanone	ND	20	3.18	
Bromomethane	ND	6.2	3.18		Methyl-t-Butyl Ether (MTBE)	ND	23	3.18	
2-Butanone	29	14	3.18		Methylene Chloride	ND	55	3.18	
Carbon Disulfide	51	20	3.18		4-Methyl-2-Pentanone	ND	20	3.18	
Carbon Tetrachloride	ND	10	3.18		Naphthalene	ND	83	3.18	
Chlorobenzene	ND	7.3	3.18		o-Xylene	ND	6.9	3.18	
Chloroethane	ND	4.2	3.18		p/m-Xylene	ND	28	3.18	
Chloroform	ND	7.8	3.18		Styrene	ND	20	3.18	
Chloromethane	ND	3.3	3.18		Tert-Amyl-Methyl Ether (TAME)	ND	27	3.18	
Dibromochloromethane	ND	14	3.18		Tert-Butyl Alcohol (TBA)	ND	19	3.18	
Dichlorodifluoromethane	ND	7.9	3.18		Tetrachloroethene	ND	11	3.18	
Diisopropyl Ether (DIPE)	ND	27	3.18		Toluene	11	6.0	3.18	
1,1-Dichloroethane	ND	6.4	3.18		Trichloroethene	ND	8.5	3.18	
1,1-Dichloroethene	ND	6.3	3.18		Trichlorofluoromethane	ND	18	3.18	
1,2-Dibromoethane	ND	12	3.18		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	37	3.18	
Dichlorotetrafluoroethane	ND	44	3.18		1,1,1-Trichloroethane	ND	8.7	3.18	
1,2-Dichlorobenzene	ND	9.6	3.18		1,1,2-Trichloroethane	ND	8.7	3.18	
1,2-Dichloroethane	ND	6.4	3.18		1,3,5-Trimethylbenzene	ND	7.8	3.18	
1,2-Dichloropropane	ND	7.3	3.18		1,1,2,2-Tetrachloroethane	ND	22	3.18	
1,3-Dichlorobenzene	ND	9.6	3.18		1,2,4-Trimethylbenzene	ND	23	3.18	
1,4-Dichlorobenzene	ND	9.6	3.18		1,2,4-Trichlorobenzene	ND	47	3.18	
c-1,3-Dichloropropene	ND	7.2	3.18		Vinyl Acetate	ND	22	3.18	
c-1,2-Dichloroethene	ND	6.3	3.18		Vinyl Chloride	ND	4.1	3.18	
t-1,2-Dichloroethene	ND	6.3	3.18		1,1-Difluoroethane	ND	17	3.18	
t-1,3-Dichloropropene	ND	14	3.18		Isopropanol	ND	39	3.18	
Ethanol	ND	30	3.18						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	105	57-129			1,2-Dichloroethane-d4	88	47-137		
Toluene-d8	97	78-156							

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Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-021-10,166	N/A	Air	GC/MS HH	N/A	06/15/12 16:03	120615L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	ND	1.6	1		Ethylbenzene	ND	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	ND	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	ND	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	ND	2.4	1		Styrene	ND	6.4	1	
Chloromethane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	ND	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	ND	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	92	57-129			1,2-Dichloroethane-d4	96	47-137		
Toluene-d8	95	78-156							

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Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: Former Chemoil Facility / WA1617

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-021-10,179	N/A	Air	GC/MS HH	N/A	06/16/12 17:37	120616L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	ND	1.6	1		Ethylbenzene	ND	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	ND	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	ND	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	ND	2.4	1		Styrene	ND	6.4	1	
Chloromethane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	ND	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	ND	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	86	57-129			1,2-Dichloroethane-d4	94	47-137		
Toluene-d8	95	78-156							

Return to Contents

Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: 06/14/12
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

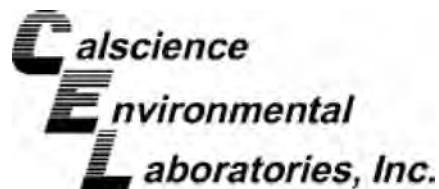
Project: Former Chemoil Facility / WA1617

Page 10 of 10

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-021-10,181	N/A	Air	GC/MS YY	N/A	06/18/12 13:40	120618L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	4.8	1		Ethyl-t-Butyl Ether (ETBE)	ND	8.4	1	
Benzene	ND	1.6	1		Ethylbenzene	ND	2.2	1	
Benzyl Chloride	ND	7.8	1		4-Ethyltoluene	ND	2.5	1	
Bromodichloromethane	ND	3.4	1		Hexachloro-1,3-Butadiene	ND	16	1	
Bromoform	ND	5.2	1		2-Hexanone	ND	6.1	1	
Bromomethane	ND	1.9	1		Methyl-t-Butyl Ether (MTBE)	ND	7.2	1	
2-Butanone	ND	4.4	1		Methylene Chloride	ND	17	1	
Carbon Disulfide	ND	6.2	1		4-Methyl-2-Pentanone	ND	6.1	1	
Carbon Tetrachloride	ND	3.1	1		Naphthalene	ND	26	1	
Chlorobenzene	ND	2.3	1		o-Xylene	ND	2.2	1	
Chloroethane	ND	1.3	1		p/m-Xylene	ND	8.7	1	
Chloroform	ND	2.4	1		Styrene	ND	6.4	1	
Chloromethane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	8.4	1	
Dibromochloromethane	ND	4.3	1		Tert-Butyl Alcohol (TBA)	ND	6.1	1	
Dichlorodifluoromethane	ND	2.5	1		Tetrachloroethene	ND	3.4	1	
Diisopropyl Ether (DIPE)	ND	8.4	1		Toluene	ND	1.9	1	
1,1-Dichloroethane	ND	2.0	1		Trichloroethene	ND	2.7	1	
1,1-Dichloroethene	ND	2.0	1		Trichlorofluoromethane	ND	5.6	1	
1,2-Dibromoethane	ND	3.8	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	1	
Dichlorotetrafluoroethane	ND	14	1		1,1,1-Trichloroethane	ND	2.7	1	
1,2-Dichlorobenzene	ND	3.0	1		1,1,2-Trichloroethane	ND	2.7	1	
1,2-Dichloroethane	ND	2.0	1		1,3,5-Trimethylbenzene	ND	2.5	1	
1,2-Dichloropropane	ND	2.3	1		1,1,2,2-Tetrachloroethane	ND	6.9	1	
1,3-Dichlorobenzene	ND	3.0	1		1,2,4-Trimethylbenzene	ND	7.4	1	
1,4-Dichlorobenzene	ND	3.0	1		1,2,4-Trichlorobenzene	ND	15	1	
c-1,3-Dichloropropene	ND	2.3	1		Vinyl Acetate	ND	7.0	1	
c-1,2-Dichloroethene	ND	2.0	1		Vinyl Chloride	ND	1.3	1	
t-1,2-Dichloroethene	ND	2.0	1		1,1-Difluoroethane	ND	5.4	1	
t-1,3-Dichloropropene	ND	4.5	1		Isopropanol	ND	12	1	
Ethanol	ND	9.4	1						
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
1,4-Bromofluorobenzene	97	57-129			1,2-Dichloroethane-d4	89	47-137		
Toluene-d8	98	78-156							

Return to Contents



Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: ASTM D-1946

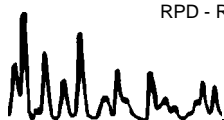
Project: Former Chemoil Facility / WA1617

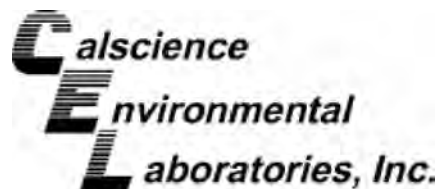
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-03-002-1,580	Air	GC 34	N/A	06/14/12	120614L01

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	10.12	9.273	92	9.244	91	80-120	0	0-30	
Carbon Dioxide	10.07	10.42	103	10.36	103	80-120	1	0-30	
Carbon Monoxide	9.930	10.57	106	10.55	106	80-120	0	0-30	
Oxygen + Argon	3.500	3.487	100	3.511	100	80-120	1	0-30	
Nitrogen	10.02	9.752	97	9.838	98	80-120	1	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: ASTM D-1946

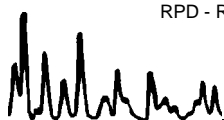
Project: Former Chemoil Facility / WA1617

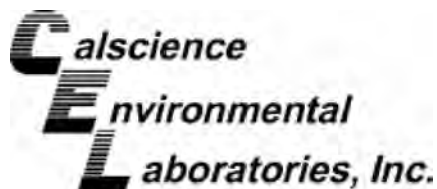
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-03-002-1,581	Air	GC 34	N/A	06/15/12	120615L01

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	10.12	9.228	91	8.961	89	80-120	3	0-30	
Carbon Dioxide	10.07	10.41	103	10.03	100	80-120	4	0-30	
Carbon Monoxide	9.930	10.58	107	10.23	103	80-120	3	0-30	
Oxygen + Argon	3.500	3.502	100	3.480	99	80-120	1	0-30	
Nitrogen	10.02	9.782	98	9.802	98	80-120	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: ASTM D-1946 (M)

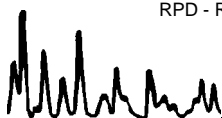
Project: Former Chemoil Facility / WA1617

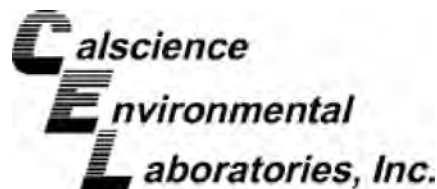
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-872-281	Air	GC 55	N/A	06/14/12	120614L01

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Helium	1.000	0.9674	97	0.9631	96	80-120	0	0-30	
Hydrogen	1.000	1.069	107	1.065	107	80-120	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



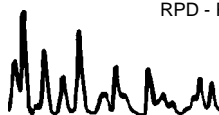
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1111 Broadway, FL 6TH
Oakland, CA 94607-4172

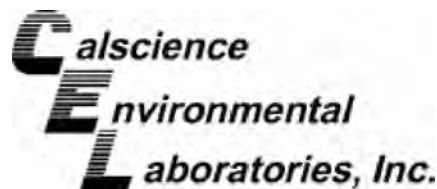
Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,166	Air	GC/MS HH	N/A	06/15/12	120615L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	59.39	60.99	103	58.35	98	50-150	33-167	4	0-35	
Benzene	79.87	87.18	109	82.58	103	60-156	44-172	5	0-40	
Benzyl Chloride	129.4	122.0	94	120.7	93	50-150	33-167	1	0-35	
Bromodichloromethane	167.5	174.8	104	168.9	101	50-150	33-167	3	0-35	
Bromoform	258.4	273.2	106	264.4	102	62-134	50-146	3	0-38	
Bromomethane	97.08	101.3	104	97.90	101	50-150	33-167	3	0-35	
2-Butanone	73.73	76.93	104	73.49	100	50-150	33-167	5	0-35	
Carbon Disulfide	77.85	80.40	103	77.52	100	50-150	33-167	4	0-35	
Carbon Tetrachloride	157.3	158.8	101	157.0	100	64-154	49-169	1	0-32	
Chlorobenzene	115.1	122.2	106	114.9	100	50-150	33-167	6	0-35	
Chloroethane	65.96	70.62	107	68.32	104	50-150	33-167	3	0-35	
Chloroform	122.1	123.1	101	120.1	98	50-150	33-167	2	0-35	
Chloromethane	51.63	54.24	105	51.82	100	50-150	33-167	5	0-35	
Dibromochloromethane	213.0	234.3	110	223.8	105	50-150	33-167	5	0-35	
Dichlorodifluoromethane	123.6	122.5	99	119.2	96	50-150	33-167	3	0-35	
Diisopropyl Ether (DIPE)	104.5	104.6	100	101.6	97	50-150	33-167	3	0-35	
1,1-Dichloroethane	101.2	105.1	104	101.4	100	50-150	33-167	4	0-35	
1,1-Dichloroethene	99.12	96.71	98	97.07	98	50-150	33-167	0	0-35	
1,2-Dibromoethane	192.1	210.9	110	195.6	102	54-144	39-159	8	0-36	
Dichlorotetrafluoroethane	174.8	175.0	100	170.1	97	50-150	33-167	3	0-35	
1,2-Dichlorobenzene	150.3	139.3	93	136.3	91	34-160	13-181	2	0-47	
1,2-Dichloroethane	101.2	98.95	98	97.17	96	69-153	55-167	2	0-35	
1,2-Dichloropropane	115.5	122.0	106	116.8	101	67-157	52-172	4	0-35	
1,3-Dichlorobenzene	150.3	136.7	91	134.8	90	50-150	33-167	1	0-35	
1,4-Dichlorobenzene	150.3	135.5	90	133.8	89	36-156	16-176	1	0-47	
c-1,3-Dichloropropene	113.5	126.4	111	120.6	106	61-157	45-173	5	0-35	
c-1,2-Dichloroethene	99.12	109.3	110	104.8	106	50-150	33-167	4	0-35	
t-1,2-Dichloroethene	99.12	107.8	109	102.8	104	50-150	33-167	5	0-35	
t-1,3-Dichloropropene	113.5	126.6	112	120.6	106	50-150	33-167	5	0-35	
Ethanol	188.4	222.6	118	216.1	115	50-150	33-167	3	0-35	
Ethyl-t-Butyl Ether (ETBE)	104.5	110.1	105	105.3	101	50-150	33-167	4	0-35	
Ethylbenzene	108.6	116.9	108	110.5	102	52-154	35-171	6	0-38	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,166	Air	GC/MS HH	N/A	06/15/12	120615L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
4-Ethyltoluene	122.9	118.3	96	115.4	94	50-150	33-167	2	0-35	
Hexachloro-1,3-Butadiene	266.6	251.1	94	245.5	92	50-150	33-167	2	0-35	
2-Hexanone	102.4	110.0	107	97.40	95	50-150	33-167	12	0-35	
Methyl-t-Butyl Ether (MTBE)	90.13	95.44	106	90.97	101	50-150	33-167	5	0-35	
Methylene Chloride	86.84	85.05	98	84.90	98	50-150	33-167	0	0-35	
4-Methyl-2-Pentanone	102.4	107.4	105	95.53	93	50-150	33-167	12	0-35	
Naphthalene	131.1	124.8	95	123.1	94	40-190	15-215	1	0-35	
o-Xylene	108.6	114.5	106	109.6	101	52-148	36-164	4	0-38	
p/m-Xylene	217.1	232.4	107	222.8	103	42-156	23-175	4	0-41	
Styrene	106.5	110.9	104	105.5	99	50-150	33-167	5	0-35	
Tert-Amyl-Methyl Ether (TAME)	104.5	111.9	107	104.9	100	50-150	33-167	6	0-35	
Tert-Butyl Alcohol (TBA)	151.6	156.3	103	153.4	101	50-150	33-167	2	0-35	
Tetrachloroethene	169.6	190.0	112	175.8	104	56-152	40-168	8	0-40	
Toluene	94.21	102.7	109	96.16	102	56-146	41-161	7	0-43	
Trichloroethene	134.3	142.9	106	137.5	102	63-159	47-175	4	0-34	
Trichlorofluoromethane	140.5	135.1	96	135.3	96	50-150	33-167	0	0-35	
1,1,2-Trichloro-1,2,2-Trifluoroethane	191.6	199.5	104	193.1	101	50-150	33-167	3	0-35	
1,1,1-Trichloroethane	136.4	137.9	101	135.3	99	50-150	33-167	2	0-35	
1,1,2-Trichloroethane	136.4	143.1	105	136.9	100	65-149	51-163	4	0-37	
1,3,5-Trimethylbenzene	122.9	120.7	98	118.6	96	50-150	33-167	2	0-35	
1,1,2,2-Tetrachloroethane	171.6	162.7	95	156.4	91	50-150	33-167	4	0-35	
1,2,4-Trimethylbenzene	122.9	116.5	95	115.6	94	50-150	33-167	1	0-35	
1,2,4-Trichlorobenzene	185.5	186.2	100	180.8	97	50-150	33-167	3	0-35	
Vinyl Acetate	88.03	93.44	106	89.48	102	50-150	33-167	4	0-35	
Vinyl Chloride	63.91	67.96	106	64.44	101	45-177	23-199	5	0-36	
1,1-Difluoroethane	67.54	71.63	106	68.29	101	50-150	33-167	5	0-35	
Isopropanol	61.45	69.47	113	67.60	110	50-150	33-167	3	0-35	

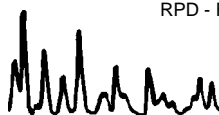
Total number of LCS compounds : 59

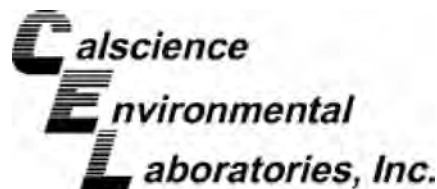
Total number of ME compounds : 0

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



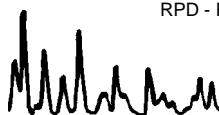
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1111 Broadway, FL 6TH
Oakland, CA 94607-4172

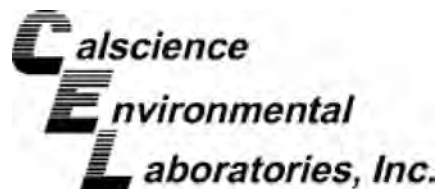
Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,179	Air	GC/MS HH	N/A	06/16/12	120616L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	59.39	58.64	99	58.75	99	50-150	33-167	0	0-35	
Benzene	79.87	85.93	108	86.29	108	60-156	44-172	0	0-40	
Benzyl Chloride	129.4	132.1	102	139.2	108	50-150	33-167	5	0-35	
Bromodichloromethane	167.5	174.4	104	174.7	104	50-150	33-167	0	0-35	
Bromoform	258.4	284.5	110	279.6	108	62-134	50-146	2	0-38	
Bromomethane	97.08	99.26	102	100.3	103	50-150	33-167	1	0-35	
2-Butanone	73.73	75.45	102	75.13	102	50-150	33-167	0	0-35	
Carbon Disulfide	77.85	79.07	102	79.80	102	50-150	33-167	1	0-35	
Carbon Tetrachloride	157.3	158.0	100	158.9	101	64-154	49-169	1	0-32	
Chlorobenzene	115.1	118.5	103	119.6	104	50-150	33-167	1	0-35	
Chloroethane	65.96	68.79	104	68.75	104	50-150	33-167	0	0-35	
Chloroform	122.1	122.0	100	121.5	100	50-150	33-167	0	0-35	
Chloromethane	51.63	52.54	102	53.43	103	50-150	33-167	2	0-35	
Dibromochloromethane	213.0	223.5	105	231.9	109	50-150	33-167	4	0-35	
Dichlorodifluoromethane	123.6	120.9	98	121.3	98	50-150	33-167	0	0-35	
Diisopropyl Ether (DIPE)	104.5	102.6	98	102.4	98	50-150	33-167	0	0-35	
1,1-Dichloroethane	101.2	103.1	102	103.7	102	50-150	33-167	1	0-35	
1,1-Dichloroethene	99.12	94.09	95	96.70	98	50-150	33-167	3	0-35	
1,2-Dibromoethane	192.1	204.5	106	204.9	107	54-144	39-159	0	0-36	
Dichlorotetrafluoroethane	174.8	170.7	98	172.3	99	50-150	33-167	1	0-35	
1,2-Dichlorobenzene	150.3	145.6	97	153.8	102	34-160	13-181	5	0-47	
1,2-Dichloroethane	101.2	98.11	97	97.78	97	69-153	55-167	0	0-35	
1,2-Dichloropropane	115.5	121.0	105	120.9	105	67-157	52-172	0	0-35	
1,3-Dichlorobenzene	150.3	145.0	96	149.9	100	50-150	33-167	3	0-35	
1,4-Dichlorobenzene	150.3	145.3	97	151.7	101	36-156	16-176	4	0-47	
c-1,3-Dichloropropene	113.5	125.9	111	125.7	111	61-157	45-173	0	0-35	
c-1,2-Dichloroethene	99.12	107.4	108	108.0	109	50-150	33-167	1	0-35	
t-1,2-Dichloroethene	99.12	104.5	105	105.8	107	50-150	33-167	1	0-35	
t-1,3-Dichloropropene	113.5	126.3	111	125.2	110	50-150	33-167	1	0-35	
Ethanol	188.4	200.1	106	202.4	107	50-150	33-167	1	0-35	
Ethyl-t-Butyl Ether (ETBE)	104.5	106.3	102	107.1	103	50-150	33-167	1	0-35	
Ethylbenzene	108.6	113.7	105	114.8	106	52-154	35-171	1	0-38	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,179	Air	GC/MS HH	N/A	06/16/12	120616L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
4-Ethyltoluene	122.9	122.0	99	124.7	101	50-150	33-167	2	0-35	
Hexachloro-1,3-Butadiene	266.6	230.1	86	249.6	94	50-150	33-167	8	0-35	
2-Hexanone	102.4	103.5	101	107.4	105	50-150	33-167	4	0-35	
Methyl-t-Butyl Ether (MTBE)	90.13	92.04	102	93.41	104	50-150	33-167	1	0-35	
Methylene Chloride	86.84	83.65	96	84.65	97	50-150	33-167	1	0-35	
4-Methyl-2-Pentanone	102.4	106.4	104	105.7	103	50-150	33-167	1	0-35	
Naphthalene	131.1	117.9	90	126.5	97	40-190	15-215	7	0-35	
o-Xylene	108.6	111.9	103	112.4	104	52-148	36-164	0	0-38	
p/m-Xylene	217.1	225.7	104	227.8	105	42-156	23-175	1	0-41	
Styrene	106.5	113.6	107	110.5	104	50-150	33-167	3	0-35	
Tert-Amyl-Methyl Ether (TAME)	104.5	106.9	102	109.4	105	50-150	33-167	2	0-35	
Tert-Butyl Alcohol (TBA)	151.6	141.9	94	147.5	97	50-150	33-167	4	0-35	
Tetrachloroethene	169.6	177.0	104	182.9	108	56-152	40-168	3	0-40	
Toluene	94.21	95.47	101	99.55	106	56-146	41-161	4	0-43	
Trichloroethene	134.3	140.4	105	140.7	105	63-159	47-175	0	0-34	
Trichlorofluoromethane	140.5	131.6	94	133.0	95	50-150	33-167	1	0-35	
1,1,2-Trichloro-1,2,2-Trifluoroethane	191.6	195.8	102	197.2	103	50-150	33-167	1	0-35	
1,1,1-Trichloroethane	136.4	137.1	101	137.1	100	50-150	33-167	0	0-35	
1,1,2-Trichloroethane	136.4	144.5	106	143.2	105	65-149	51-163	1	0-37	
1,3,5-Trimethylbenzene	122.9	122.8	100	126.5	103	50-150	33-167	3	0-35	
1,1,2,2-Tetrachloroethane	171.6	169.1	99	168.5	98	50-150	33-167	0	0-35	
1,2,4-Trimethylbenzene	122.9	120.6	98	124.8	102	50-150	33-167	3	0-35	
1,2,4-Trichlorobenzene	185.5	177.1	95	190.0	102	50-150	33-167	7	0-35	
Vinyl Acetate	88.03	90.57	103	90.52	103	50-150	33-167	0	0-35	
Vinyl Chloride	63.91	65.72	103	65.96	103	45-177	23-199	0	0-36	
1,1-Difluoroethane	67.54	69.75	103	70.28	104	50-150	33-167	1	0-35	
Isopropanol	61.45	62.55	102	63.53	103	50-150	33-167	2	0-35	

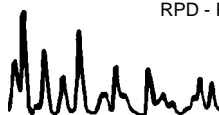
Total number of LCS compounds : 59

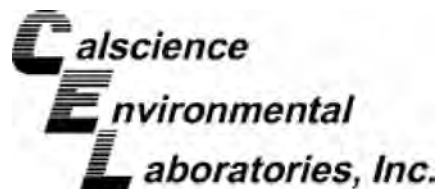
Total number of ME compounds : 0

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



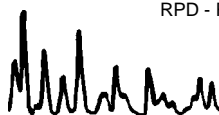
Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

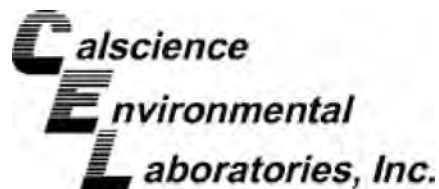
Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,181	Air	GC/MS YY	N/A	06/18/12	120618L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Acetone	59.39	55.34	93	54.67	92	50-150	33-167	1	0-35	
Benzene	79.87	78.69	99	78.38	98	60-156	44-172	0	0-40	
Benzyl Chloride	129.4	118.8	92	113.3	88	50-150	33-167	5	0-35	
Bromodichloromethane	167.5	154.7	92	153.1	91	50-150	33-167	1	0-35	
Bromoform	258.4	229.5	89	230.7	89	62-134	50-146	0	0-38	
Bromomethane	97.08	86.26	89	85.21	88	50-150	33-167	1	0-35	
2-Butanone	73.73	71.19	97	71.00	96	50-150	33-167	0	0-35	
Carbon Disulfide	77.85	76.77	99	76.26	98	50-150	33-167	1	0-35	
Carbon Tetrachloride	157.3	139.2	89	137.7	88	64-154	49-169	1	0-32	
Chlorobenzene	115.1	108.0	94	108.9	95	50-150	33-167	1	0-35	
Chloroethane	65.96	61.10	93	60.68	92	50-150	33-167	1	0-35	
Chloroform	122.1	109.0	89	109.1	89	50-150	33-167	0	0-35	
Chloromethane	51.63	49.27	95	48.70	94	50-150	33-167	1	0-35	
Dibromochloromethane	213.0	202.4	95	202.1	95	50-150	33-167	0	0-35	
Dichlorodifluoromethane	123.6	101.9	82	100.3	81	50-150	33-167	2	0-35	
Diisopropyl Ether (DIPE)	104.5	96.80	93	96.07	92	50-150	33-167	1	0-35	
1,1-Dichloroethane	101.2	94.95	94	95.17	94	50-150	33-167	0	0-35	
1,1-Dichloroethene	99.12	91.23	92	90.21	91	50-150	33-167	1	0-35	
1,2-Dibromoethane	192.1	181.5	94	182.2	95	54-144	39-159	0	0-36	
Dichlorotetrafluoroethane	174.8	149.9	86	148.5	85	50-150	33-167	1	0-35	
1,2-Dichlorobenzene	150.3	118.9	79	113.9	76	34-160	13-181	4	0-47	
1,2-Dichloroethane	101.2	86.70	86	85.96	85	69-153	55-167	1	0-35	
1,2-Dichloropropane	115.5	112.9	98	113.5	98	67-157	52-172	0	0-35	
1,3-Dichlorobenzene	150.3	115.2	77	113.4	75	50-150	33-167	2	0-35	
1,4-Dichlorobenzene	150.3	113.8	76	111.6	74	36-156	16-176	2	0-47	
c-1,3-Dichloropropene	113.5	109.5	97	108.8	96	61-157	45-173	1	0-35	
c-1,2-Dichloroethene	99.12	97.64	99	97.82	99	50-150	33-167	0	0-35	
t-1,2-Dichloroethene	99.12	97.77	99	97.00	98	50-150	33-167	1	0-35	
t-1,3-Dichloropropene	113.5	106.3	94	105.5	93	50-150	33-167	1	0-35	
Ethanol	188.4	173.2	92	170.0	90	50-150	33-167	2	0-35	
Ethyl-t-Butyl Ether (ETBE)	104.5	91.60	88	92.70	89	50-150	33-167	1	0-35	
Ethylbenzene	108.6	99.80	92	101.0	93	52-154	35-171	1	0-38	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Geosyntec Consultants
1111 Broadway, FL 6TH
Oakland, CA 94607-4172

Date Received: N/A
Work Order No: 12-06-0989
Preparation: N/A
Method: EPA TO-15

Project: Former Chemoil Facility / WA1617

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
095-01-021-10,181	Air	GC/MS YY	N/A	06/18/12	120618L01					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
4-Ethyltoluene	122.9	96.70	79	97.08	79	50-150	33-167	0	0-35	
Hexachloro-1,3-Butadiene	266.6	248.9	93	250.3	94	50-150	33-167	1	0-35	
2-Hexanone	102.4	107.6	105	108.3	106	50-150	33-167	1	0-35	
Methyl-t-Butyl Ether (MTBE)	90.13	78.39	87	79.76	88	50-150	33-167	2	0-35	
Methylene Chloride	86.84	82.26	95	81.72	94	50-150	33-167	1	0-35	
4-Methyl-2-Pentanone	102.4	101.1	99	100.0	98	50-150	33-167	1	0-35	
Naphthalene	131.1	136.6	104	137.9	105	40-190	15-215	1	0-35	
o-Xylene	108.6	95.99	88	96.61	89	52-148	36-164	1	0-38	
p/m-Xylene	217.1	195.1	90	196.5	91	42-156	23-175	1	0-41	
Styrene	106.5	97.07	91	98.21	92	50-150	33-167	1	0-35	
Tert-Amyl-Methyl Ether (TAME)	104.5	87.77	84	88.20	84	50-150	33-167	0	0-35	
Tert-Butyl Alcohol (TBA)	151.6	139.3	92	138.7	92	50-150	33-167	0	0-35	
Tetrachloroethene	169.6	165.7	98	166.5	98	56-152	40-168	1	0-40	
Toluene	94.21	92.62	98	93.10	99	56-146	41-161	1	0-43	
Trichloroethene	134.3	127.4	95	126.4	94	63-159	47-175	1	0-34	
Trichlorofluoromethane	140.5	120.4	86	118.3	84	50-150	33-167	2	0-35	
1,1,2-Trichloro-1,2,2-Trifluoroethane	191.6	181.0	94	179.4	94	50-150	33-167	1	0-35	
1,1,1-Trichloroethane	136.4	118.7	87	117.0	86	50-150	33-167	1	0-35	
1,1,2-Trichloroethane	136.4	129.1	95	128.4	94	65-149	51-163	1	0-37	
1,3,5-Trimethylbenzene	122.9	95.94	78	95.49	78	50-150	33-167	0	0-35	
1,1,2,2-Tetrachloroethane	171.6	151.3	88	150.8	88	50-150	33-167	0	0-35	
1,2,4-Trimethylbenzene	122.9	96.27	78	94.56	77	50-150	33-167	2	0-35	
1,2,4-Trichlorobenzene	185.5	201.1	108	202.1	109	50-150	33-167	0	0-35	
Vinyl Acetate	88.03	85.33	97	84.74	96	50-150	33-167	1	0-35	
Vinyl Chloride	63.91	58.64	92	58.16	91	45-177	23-199	1	0-36	
1,1-Difluoroethane	67.54	65.16	96	64.08	95	50-150	33-167	2	0-35	
Isopropanol	61.45	64.04	104	62.84	102	50-150	33-167	2	0-35	

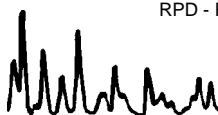
Total number of LCS compounds : 59

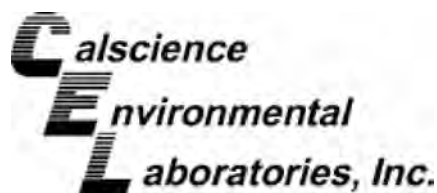
Total number of ME compounds : 0

Total number of ME compounds allowed : 3

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





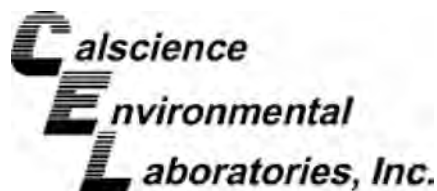
Summa Canister Vacuum Summary



Work Order Number: **12-06-0989**

Sample Name	Vacuum In	Vacuum Out	Equipment	Description
GW/SV-24-5	-5.00	-29.80	SLC033	Summa Canister 1L
GW/SV-24-10	-5.00	-29.80	LC215	Summa Canister 1L
GW/SV-21-5	-5.00	-29.80	LC397	Summa Canister 1L
GW/SV-21-10	-2.00	-29.80	LC409	Summa Canister 1L
GW/SV-23-5	-5.00	-29.80	LC509	Summa Canister 1L
GW/SV-23-10	-6.00	-29.80	LC294	Summa Canister 1L
GW/SV-23-10-DUP	-7.00	-29.80	SLC140	Summa Canister 1L





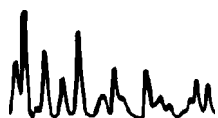
Glossary of Terms and Qualifiers



Work Order Number: 12-06-0989

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number



Date 6/13/12
Page 1 of 1

WO # / LAB USE ONLY
12-06-0989

☒ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

LABORATORY CLIENT: Geosyntec Consultants
ADDRESS: 1111 Broadway, 6th Floor
CITY: Oakland STATE: California ZIP: 94607
TEL: 510-836-3034 E-MAIL: Modonnell@geosyntec.com

CLIENT PROJECT NAME / NUMBER: Former chemoil Facility P.O. NO.: WA1617
PROJECT CONTACT: Robert Cheung / Modonnell SAMPLER(S), (PRINT): MO

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☒ 72 HR ☒ STANDARD
☐ COELT EDF ☐ GLOBAL ID

REQUESTED ANALYSES

SPECIAL INSTRUCTIONS:
* Email results to Robert Cheung at rchung@geosyntec.com, invoice as well
* include naphthalene analysis w/ VOCs

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	TIME	MATRIX	NO OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH ()	BTEX / MTBE (8260) or ()	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	fixed gases (CH ₄ , CO ₂) ASIM	Helium
1	GW/SV-24-5	6/13/12	11:55	gas	1	X																			
2	GW/SV-24-10		12:45			X																			
3	GW/SV-21-5		13:45			X																			
4	GW/SV-21-10		14:35			X																			
5	GW/SV-23-5		15:35			X																			
6	GW/SV-23-10		16:25			X																			
7	GW/SV-23-10-Dug		16:35			X																			

Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) CEL Date: 6/14/12 Time: 13:25
Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) N. N. N. Date: 6/14/12 Time: 1400
Relinquished by: (Signature) [Signature] Received by: (Signature/Affiliation) [Signature] Date: _____ Time: _____

WORK ORDER #: 12-06-0989

SAMPLE RECEIPT FORMCooler 0 of 0CLIENT: GEOSYNTECDATE: 06/14/12**TEMPERATURE:** Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature °C - 0.3 °C (CF) = °C ☐ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by:).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☒ Air ☐ FilterInitial: me**CUSTODY SEALS INTACT:**☐ Cooler ☐ ☐ No (Not Intact) ☐ Not Present ☒ N/AInitial: me☐ Sample ☐ ☐ No (Not Intact) ☒ Not PresentInitial: PS**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.Sampler's name indicated on COC..... ☒ ☐ ☐Sample container label(s) consistent with COC..... ☒ ☐ ☐Sample container(s) intact and good condition..... ☒ ☐ ☐Proper containers and sufficient volume for analyses requested..... ☒ ☐ ☐Analyses received within holding time..... ☒ ☐ ☐pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours... ☐ ☐ ☒Proper preservation noted on COC or sample container..... ☐ ☐ ☒☐ Unpreserved vials received for Volatiles analysisVolatile analysis container(s) free of headspace..... ☐ ☐ ☒Tedlar bag(s) free of condensation..... ☐ ☐ ☒**CONTAINER TYPE:**Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (____) ☐ EnCores® ☐ TerraCores® ☐ _____Water: ☐ VOA ☐ VOAh ☐ VOAna₂ ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 1AGB ☐ 1AGBna₂ ☐ 1AGBs☐ 500AGB ☐ 500AGJ ☐ 500AGJs ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 1PB ☐ 1PBna ☐ 500PB☐ 250PB ☐ 250PBn ☐ 125PB ☐ 125PBz₂na ☐ 100PJ ☐ 100PJna₂ ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☒ Summa® Other: ☐ _____ Trip Blank Lot#: _____ Labeled/Checked by: PSContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: RMPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure z₂na: ZnAc₂+NaOH f: Filtered Scanned by: AM



8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

June 25, 2012

Robert Cheung
Geosyntec Consultants
1111 Broadway, 6th Floor
Oakland, CA 94607

Re: PTS File No: 42419
Physical Properties Data
Former Chemoil Facility; WA1617011.2

Dear Mr. Cheung:

Please find enclosed report for Physical Properties analyses conducted upon samples received from your Former Chemoil Facility; WA1617011.2 project. All analyses were performed by applicable ASTM, EPA, or API methodologies. An electronic version of the report has previously been sent to your attention via the internet. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact Rachel Spitz at (562) 347-2504.

Sincerely,
PTS Laboratories

Michael Mark Brady, P.G.
District Manager

Encl.

TEST PROGRAM - 20120608

CORE ID	Depth ft.	Core Recovery ft.	Grain Size Analysis ASTM D4464M	TOC/foc Walkley- Black	Specific Gravity ASTM D854	Moisture Content ASTM D2216	Dry Bulk Density API RP40	Total Porosity API RP40	Notes
Date Received: 20120607		Plugs:	Grab	Grab	Vert. 1.5"	Vert. 1.5"	Vert. 1.5"	Vert. 1.5"	
GW/SV-22-3'-3.5'	3-3.5	0.50	X	X	X	X	X	X	
GW/SV-22-3.5'-4'	3.5-4	0.50							
GW/SV-29-3'-3.5'	3-3.5	0.50	X	X	X	X	X	X	
GW/SV-29-3.5'-4'	3.5-4	0.50							
GW/SV-29-7'-8'	7-8	1.10	X	X	X	X	X	X	
GW/SV-22-7'-8'	7-8	0.95	X	X	X	X	X	X	
TOTALS:	6 cores	4.05	4	4	4	4	4	4	6

Laboratory Test Program Notes

Contaminant identification: _____

Standard TAT for basic analysis is 10 business days.

PTS File No: 42419
Client: Geosyntec Consultants

PHYSICAL PROPERTIES DATA

PROJECT NAME: Former Chemoll Facility
PROJECT NO: WA1617011.2

SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENTATION (1)	METHODS: ANALYSIS DATE	API RP 40 / ASTM D2216	API RP 40	API RP 40
				MOISTURE CONTENT, % weight	DRY BULK DENSITY, g/cc	TOTAL POROSITY, %Vb (2)
GW/SV-22-3'-4'	3.5-4.0	V	20120620	9.7	1.56	42.2
GW/SV-29-3'-4'	3.5-4.0	V	20120620	13.2	1.64	39.0
GW/SV-29-7'-8'	7.35	V	20120620	14.3	1.74	35.0
GW/SV-22-7'-8'	7.3	V	20120620	12.5	1.77	34.6

(1) Sample Orientation: H = horizontal; V = vertical; R = remold (2) Total Porosity = no pore fluids in place; all interconnected pore channels; Vb = Bulk Volume, cc

SPECIFIC GRAVITY OF SOILS BY PYCNOMETER

(METHODOLOGY: ASTM D 854-98)

PROJECT NAME: Former Chemoil Facility
PROJECT NO: WA1617011.2

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	TEMPERATURE, °C	TEMPERATURE CORRECTION FACTOR	MASS OF PYCNOMETER AND WATER, grams		MASS OF OVEN DRY SOIL, grams	MASS OF PYCNOMETER, OVEN DRY SOIL, AND WATER, grams	SPECIFIC GRAVITY AT TEMPERATURE	SPECIFIC GRAVITY AT 20°C
GW/SV-22-3'-4'	3.5-4	20120619	23.8	0.9991	339.17		235.25	431.0	2.72	2.72
GW/SV-29-3'-4'	3.5-4	20120619	23.8	0.9991	338.97		205.63	411.9	2.71	2.71
GW/SV-29-7'-8'	7-8	20120619	23.8	0.9991	340.89		222.74	424.3	2.76	2.76
GW/SV-22-7'-8'	7-8	20120619	23.8	0.9991	339.31		193.88	405.1	2.75	2.74

PTS File No: 42419
Client: Geosyntec Consultants

ORGANIC CARBON DATA - TOC (foc)

(METHODOLOGY: WALKLEY-BLACK)

PROJECT NAME: Former Chemoil Facility
PROJECT NO: WA1617011.2

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	SAMPLE MATRIX	TOTAL ORGANIC CARBON, mg/kg	FRACTION ORGANIC CARBON, g/g
GW/SV-22-3'-4'	3.5-4	20120615	1032	SOIL	730	7.30E-04
GW/SV-29-3'-4'	3.5-4	20120615	1032	SOIL	1250	1.25E-03
GW/SV-29-7'-8'	7	20120615	1032	SOIL	540	5.40E-04
GW/SV-22-7'-8'	7	20120615	1032	SOIL	880	8.80E-04
Blank	N/A	20120615	1032	BLANK	ND	ND
SRM D076-542	N/A	20120615	1032	SRM	2710	2.71E-03
Reporting Limit:					100	1.00E-04

QC DATA

SRM ID/Lot No.	REC (%)	Control Limits	Certified Concentration mg/kg	QC Performance Acceptance Limits, mg/kg	
				Lower	Upper
D076-542	99	75-125	2750	2063	3438

ND = Not Detected

PARTICLE SIZE SUMMARY
(METHODOLOGY: ASTM D422/D4464M)

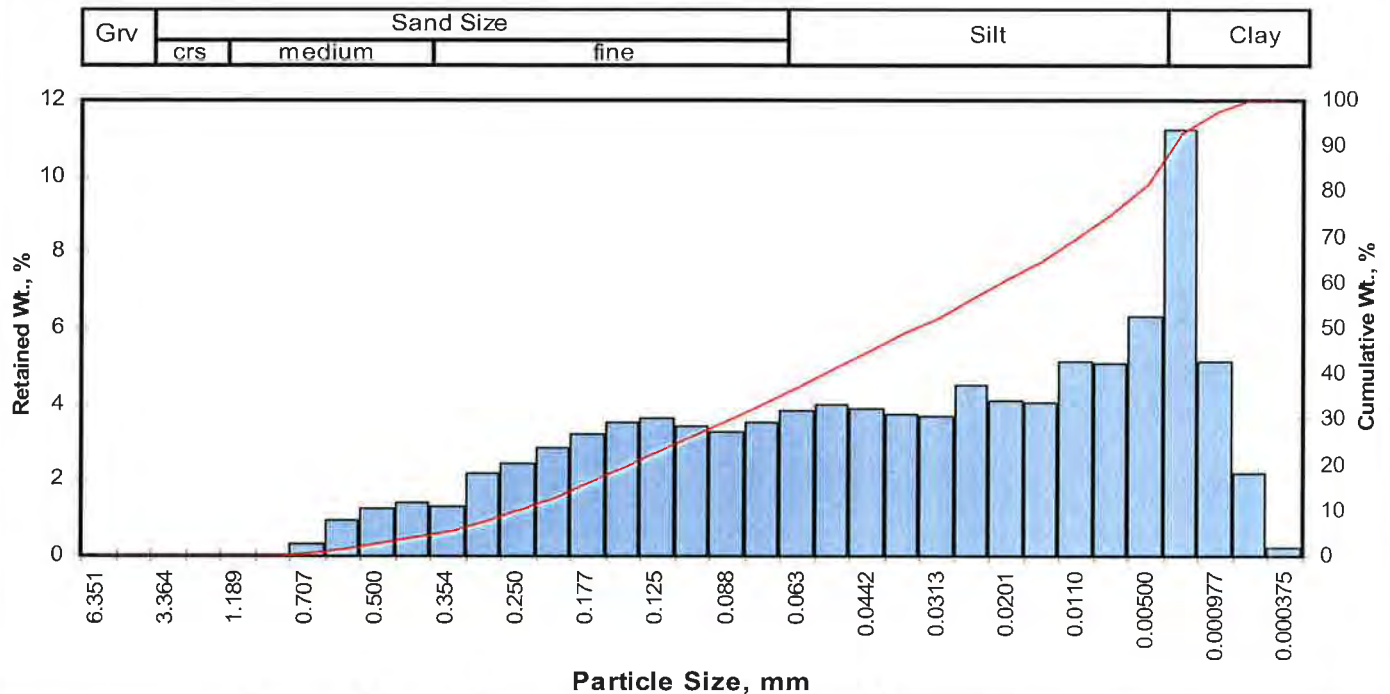
PROJECT NAME: Former Chemoil Facility
PROJECT NO: WA1617011.2

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent					Silt & Clay	
				Gravel	Sand Size			Silt		
					Coarse	Medium	Fine			
GWSV-22-3'-4'	3.5-4	Silt	0.035	0.00	0.00	3.87	29.24	48.17	18.71	66.88
GWSV-29-3'-4'	3.5-4	Fine sand	0.048	0.00	0.00	3.92	37.06	45.06	13.96	59.02
GWSV-29-7'-8'	7-8	Silt	0.023	0.00	0.00	0.00	20.73	61.33	17.94	79.27
GWSV-22-7'-8'	7-8	Silt	0.034	0.00	0.00	1.78	30.89	50.34	17.00	67.33

(1) Based on Mean from Trask

Client: Geosyntec Consultants
Project: Former Chemoil Facility
Project No: WA1617011.2

PTS File No: 42419
Sample ID: GWSV-22-3'-4'
Depth, ft: 3.5-4



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.02	0.02	0.02
0.0278	0.707	0.50	25	0.31	0.31	0.33
0.0234	0.595	0.75	30	0.92	0.92	1.25
0.0197	0.500	1.00	35	1.24	1.24	2.49
0.0166	0.420	1.25	40	1.38	1.38	3.87
0.0139	0.354	1.50	45	1.27	1.27	5.14
0.0117	0.297	1.75	50	2.17	2.17	7.31
0.0098	0.250	2.00	60	2.42	2.42	9.73
0.0083	0.210	2.25	70	2.86	2.86	12.60
0.0070	0.177	2.50	80	3.19	3.19	15.79
0.0059	0.149	2.75	100	3.52	3.52	19.31
0.0049	0.125	3.00	120	3.61	3.61	22.92
0.0041	0.105	3.25	140	3.41	3.41	26.33
0.0035	0.088	3.50	170	3.28	3.28	29.61
0.0029	0.074	3.75	200	3.50	3.50	33.12
0.0025	0.063	4.00	230	3.85	3.85	36.97
0.0021	0.053	4.25	270	3.97	3.97	40.94
0.00174	0.0442	4.50	325	3.86	3.86	44.80
0.00146	0.0372	4.75	400	3.71	3.71	48.51
0.00123	0.0313	5.00	450	3.65	3.65	52.17
0.000986	0.0250	5.32	500	4.51	4.51	56.68
0.000790	0.0201	5.64	635	4.10	4.10	60.78
0.000615	0.0156	6.00		4.02	4.02	64.80
0.000435	0.0110	6.50		5.14	5.14	69.94
0.000308	0.00781	7.00		5.05	5.05	75.00
0.000197	0.00500	7.65		6.29	6.29	81.29
0.000077	0.00195	9.00		11.20	11.21	92.50
0.000038	0.000977	10.00		5.11	5.11	97.61
0.000019	0.000488	11.00		2.19	2.19	99.80
0.000015	0.000375	11.38		0.20	0.20	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.47	0.0142	0.360
10	2.02	0.0097	0.246
16	2.52	0.0069	0.175
25	3.15	0.0044	0.112
40	4.19	0.0022	0.055
50	4.85	0.0014	0.035
60	5.58	0.0008	0.021
75	7.00	0.0003	0.008
84	7.97	0.0002	0.004
90	8.70	0.0001	0.002
95	9.49	0.0001	0.001

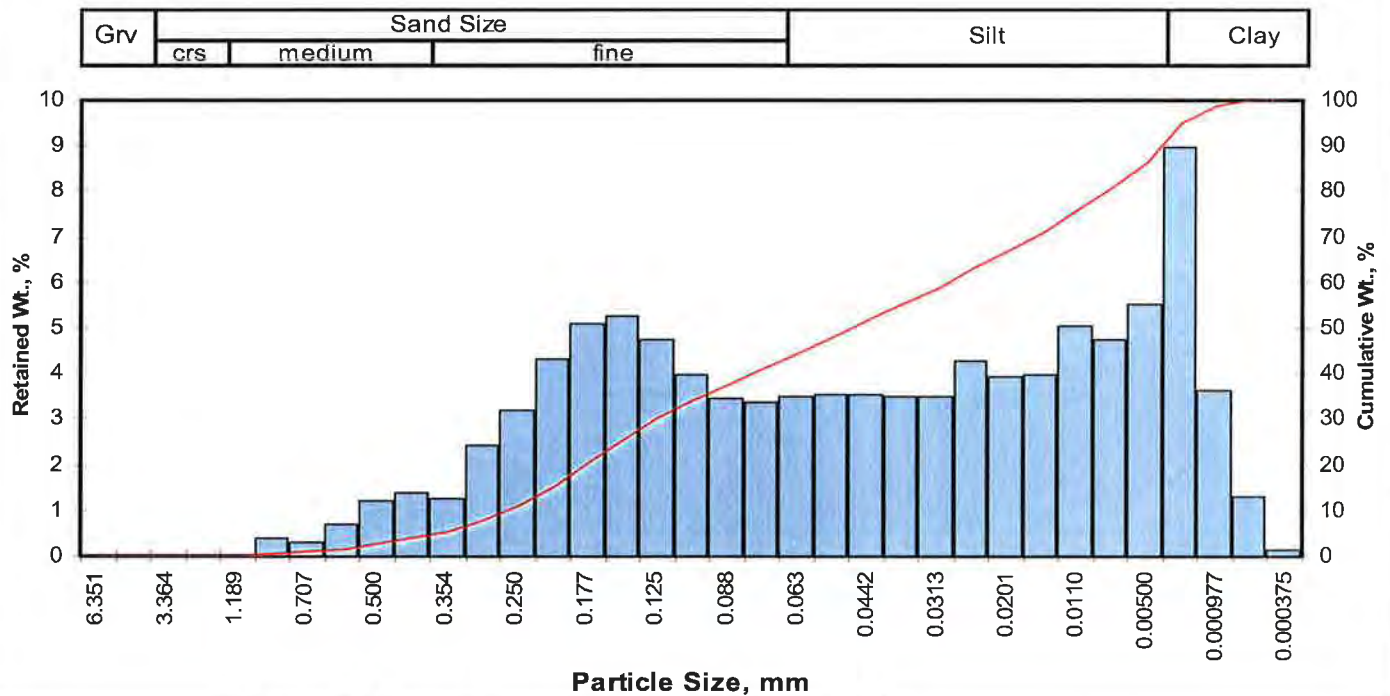
Measure	Trask	Inman	Folk-Ward
Median, phi	4.85	4.85	4.85
Median, in.	0.0014	0.0014	0.0014
Median, mm	0.035	0.035	0.035
Mean, phi	4.06	5.24	5.11
Mean, in.	0.0024	0.0010	0.0011
Mean, mm	0.060	0.026	0.029
Sorting	3.795	2.729	2.579
Skewness	0.856	0.144	0.150
Kurtosis	0.215	0.469	0.854

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.87
Fine Sand	200	29.24
Silt	>0.005 mm	48.17
Clay	<0.005 mm	18.71
Total		100

Client: Geosyntec Consultants
Project: Former Chemoil Facility
Project No: WA1617011.2

PTS File No: 42419
Sample ID: GWSV-29-3'-4'
Depth, ft: 3.5-4



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.02	0.01	0.01
0.0331	0.841	0.25	20	0.37	0.37	0.38
0.0278	0.707	0.50	25	0.30	0.30	0.68
0.0234	0.595	0.75	30	0.67	0.67	1.35
0.0197	0.500	1.00	35	1.19	1.19	2.54
0.0166	0.420	1.25	40	1.38	1.38	3.92
0.0139	0.354	1.50	45	1.27	1.27	5.19
0.0117	0.297	1.75	50	2.43	2.43	7.62
0.0098	0.250	2.00	60	3.20	3.20	10.82
0.0083	0.210	2.25	70	4.33	4.33	15.15
0.0070	0.177	2.50	80	5.07	5.07	20.22
0.0059	0.149	2.75	100	5.24	5.24	25.46
0.0049	0.125	3.00	120	4.73	4.73	30.19
0.0041	0.105	3.25	140	3.97	3.97	34.16
0.0035	0.088	3.50	170	3.46	3.46	37.62
0.0029	0.074	3.75	200	3.36	3.36	40.98
0.0025	0.063	4.00	230	3.49	3.49	44.47
0.0021	0.053	4.25	270	3.55	3.55	48.02
0.00174	0.0442	4.50	325	3.55	3.55	51.57
0.00146	0.0372	4.75	400	3.51	3.51	55.08
0.00123	0.0313	5.00	450	3.48	3.48	58.56
0.000986	0.0250	5.32	500	4.28	4.28	62.84
0.000790	0.0201	5.64	635	3.94	3.94	66.78
0.000615	0.0156	6.00		3.96	3.96	70.74
0.000435	0.0110	6.50		5.05	5.05	75.79
0.000308	0.00781	7.00		4.73	4.73	80.52
0.000197	0.00500	7.65		5.52	5.52	86.04
0.000077	0.00195	9.00		8.96	8.96	95.00
0.000038	0.000977	10.00		3.60	3.60	98.60
0.000019	0.000488	11.00		1.29	1.29	99.89
0.000015	0.000375	11.38		0.11	0.11	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.46	0.0143	0.363
10	1.94	0.0103	0.261
16	2.29	0.0080	0.204
25	2.73	0.0059	0.151
40	3.68	0.0031	0.078
50	4.39	0.0019	0.048
60	5.11	0.0011	0.029
75	6.42	0.0005	0.012
84	7.41	0.0002	0.006
90	8.24	0.0001	0.003
95	9.00	0.0001	0.002

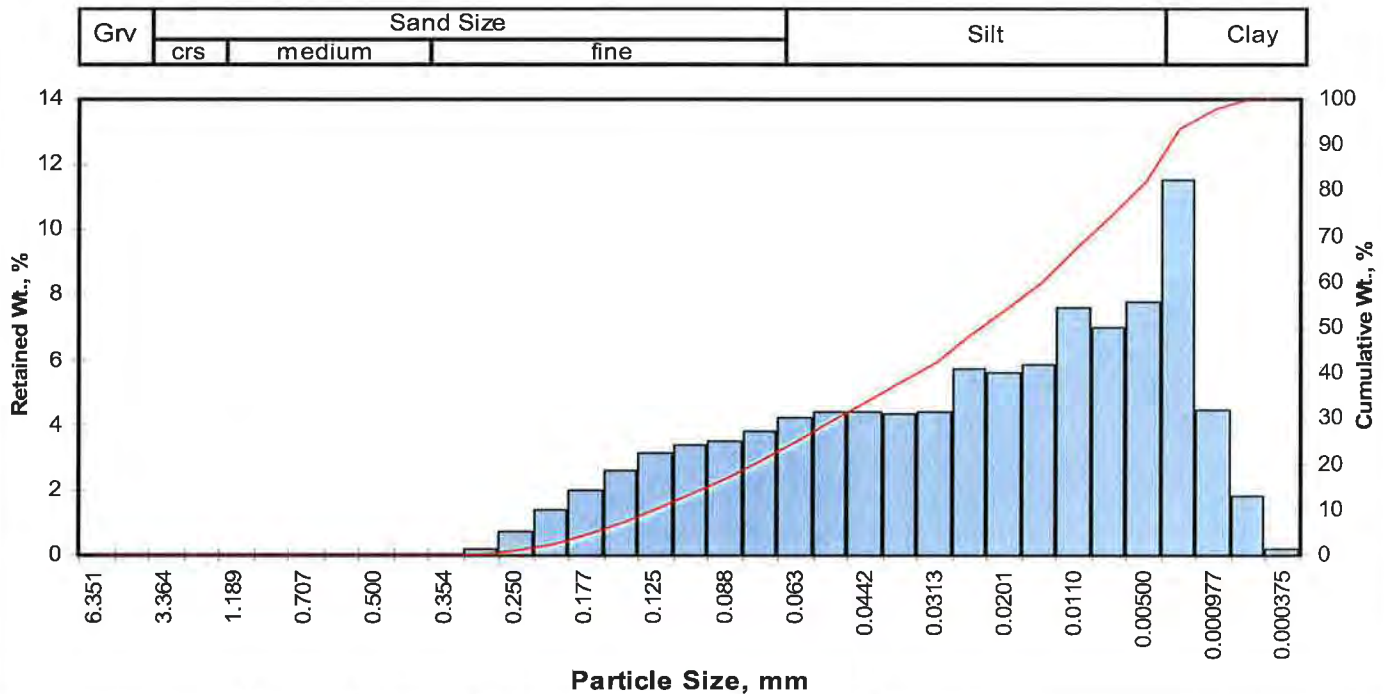
Measure	Trask	Inman	Folk-Ward
Median, phi	4.39	4.39	4.39
Median, in.	0.0019	0.0019	0.0019
Median, mm	0.048	0.048	0.048
Mean, phi	3.62	4.85	4.70
Mean, in.	0.0032	0.0014	0.0015
Mean, mm	0.081	0.035	0.039
Sorting	3.597	2.557	2.421
Skewness	0.879	0.180	0.202
Kurtosis	0.270	0.474	0.836

Grain Size Description (ASTM-USCS Scale)	Fine sand (based on Mean from Trask)
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Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.92
Fine Sand	200	37.06
Silt	>0.005 mm	45.06
Clay	<0.005 mm	13.96
Total		100

Client: Geosyntec Consultants
Project: Former Chemoil Facility
Project No: WA1617011.2

PTS File No: 42419
Sample ID: GWSV-29-7'-8'
Depth, ft: 7-8



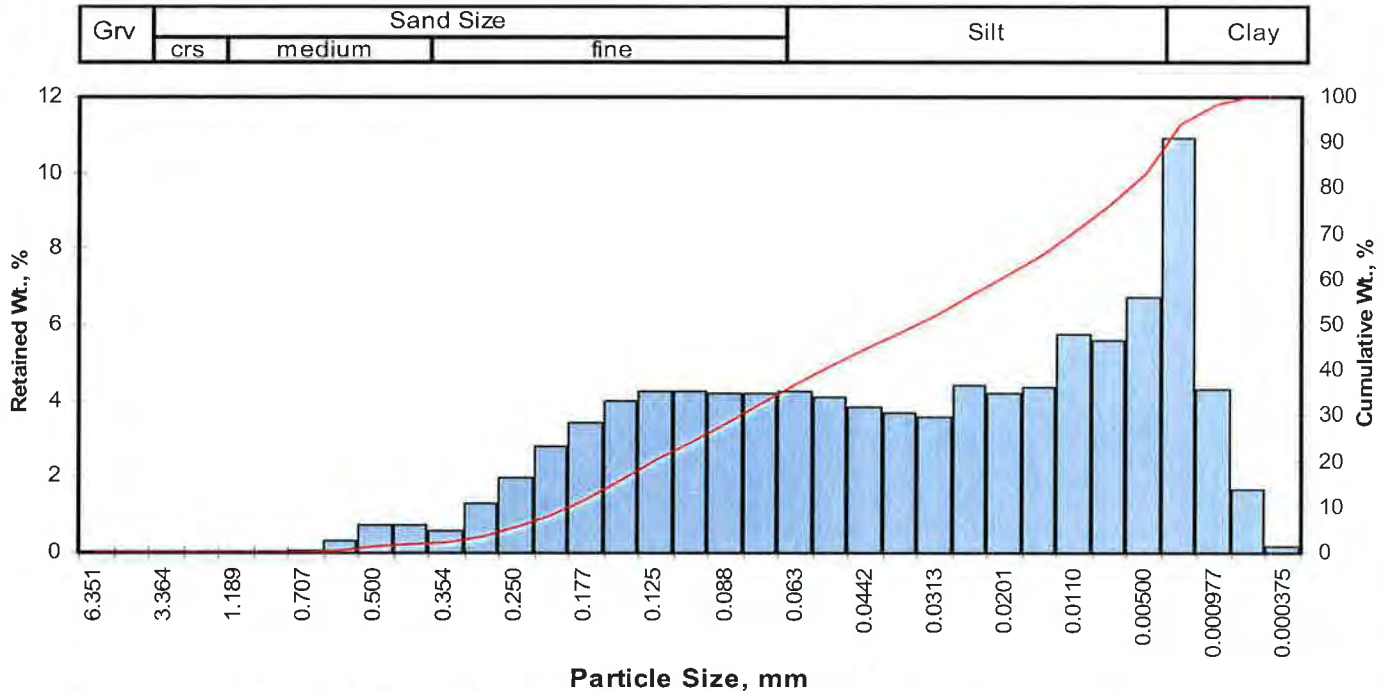
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
								Inches	Millimeters	
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	2.57	0.0066	0.169
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	3.00	0.0049	0.125
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.44	0.0036	0.092
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	4.00	0.0025	0.062
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.86	0.0014	0.034
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	5.42	0.0009	0.023
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	6.02	0.0006	0.015
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	7.06	0.0003	0.007
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	7.87	0.0002	0.004
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	8.58	0.0001	0.003
0.0139	0.354	1.50	45	0.01	0.01	0.01	95	9.32	0.0001	0.002
0.0117	0.297	1.75	50	0.18	0.18	0.19				
0.0098	0.250	2.00	60	0.72	0.72	0.90				
0.0083	0.210	2.25	70	1.39	1.39	2.29				
0.0070	0.177	2.50	80	1.99	1.99	4.28				
0.0059	0.149	2.75	100	2.62	2.62	6.90				
0.0049	0.125	3.00	120	3.12	3.12	10.02				
0.0041	0.105	3.25	140	3.36	3.36	13.38				
0.0035	0.088	3.50	170	3.52	3.52	16.90				
0.0029	0.074	3.75	200	3.83	3.83	20.73				
0.0025	0.063	4.00	230	4.21	4.21	24.94				
0.0021	0.053	4.25	270	4.39	4.39	29.33				
0.00174	0.0442	4.50	325	4.38	4.38	33.71				
0.00146	0.0372	4.75	400	4.33	4.33	38.04				
0.00123	0.0313	5.00	450	4.41	4.41	42.44				
0.000986	0.0250	5.32	500	5.74	5.74	48.18				
0.000790	0.0201	5.64	635	5.63	5.63	53.81				
0.000615	0.0156	6.00		5.86	5.86	59.67				
0.000435	0.0110	6.50		7.61	7.61	67.28				
0.000308	0.00781	7.00		7.00	7.00	74.28				
0.000197	0.00500	7.65		7.79	7.79	82.06				
0.000077	0.00195	9.00		11.50	11.50	93.56				
0.000038	0.000977	10.00		4.49	4.49	98.05				
0.000019	0.000488	11.00		1.79	1.79	99.84				
0.000015	0.000375	11.38		0.16	0.16	100.00				
TOTALS				100.00	100.00	100.00				

Measure	Trask	Inman	Folk-Ward
Median, phi	5.42	5.42	5.42
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.023	0.023	0.023
Mean, phi	4.84	5.65	5.58
Mean, in.	0.0014	0.0008	0.0008
Mean, mm	0.035	0.020	0.021
Sorting	2.884	2.219	2.132
Skewness	0.928	0.104	0.129
Kurtosis	0.224	0.522	0.905
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	20.73
Silt	>0.005 mm	61.33
Clay	<0.005 mm	17.94
Total		100

Client: Geosyntec Consultants
Project: Former Chemoil Facility
Project No: WA1617011.2

PTS File No: 42419
Sample ID: GWSV-22-7'-8'
Depth, ft: 7-8



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than				
Inches	Millimeters						Weight percent	Phi Value	Particle Size		
							Inches	Millimeters			
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	1.92	0.0104	0.264	
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	2.37	0.0076	0.194	
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	2.76	0.0058	0.147	
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.29	0.0040	0.102	
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.19	0.0022	0.055	
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	4.86	0.0014	0.034	
0.0278	0.707	0.50	25	0.04	0.04	0.04	60	5.60	0.0008	0.021	
0.0234	0.595	0.75	30	0.33	0.33	0.37	75	6.89	0.0003	0.008	
0.0197	0.500	1.00	35	0.71	0.71	1.08	84	7.77	0.0002	0.005	
0.0166	0.420	1.25	40	0.70	0.70	1.78	90	8.51	0.0001	0.003	
0.0139	0.354	1.50	45	0.58	0.58	2.36	95	9.25	0.0001	0.002	
0.0117	0.297	1.75	50	1.28	1.28	3.64					
0.0098	0.250	2.00	60	1.96	1.96	5.60					
0.0083	0.210	2.25	70	2.79	2.79	8.39					
0.0070	0.177	2.50	80	3.42	3.42	11.81					
0.0059	0.149	2.75	100	3.97	3.97	15.78					
0.0049	0.125	3.00	120	4.26	4.26	20.05					
0.0041	0.105	3.25	140	4.25	4.25	24.30					
0.0035	0.088	3.50	170	4.17	4.17	28.47					
0.0029	0.074	3.75	200	4.20	4.20	32.67					
0.0025	0.063	4.00	230	4.22	4.22	36.89					
0.0021	0.053	4.25	270	4.06	4.06	40.95					
0.00174	0.0442	4.50	325	3.81	3.81	44.76					
0.00146	0.0372	4.75	400	3.65	3.65	48.41					
0.00123	0.0313	5.00	450	3.57	3.57	51.99					
0.000986	0.0250	5.32	500	4.41	4.41	56.40					
0.000790	0.0201	5.64	635	4.17	4.17	60.57					
0.000615	0.0156	6.00		4.36	4.36	64.93					
0.000435	0.0110	6.50		5.75	5.75	70.68					
0.000308	0.00781	7.00		5.59	5.59	76.27					
0.000197	0.00500	7.65		6.73	6.73	83.00					
0.000077	0.00195	9.00		10.90	10.90	93.91					
0.000038	0.000977	10.00		4.29	4.29	98.20					
0.000019	0.000488	11.00		1.65	1.65	99.85					
0.000015	0.000375	11.38		0.15	0.15	100.00					
TOTALS				100.00	100.00	100.00					

Measure	Trask	Inman	Folk-Ward
Median, phi	4.86	4.86	4.86
Median, in.	0.0014	0.0014	0.0014
Median, mm	0.034	0.034	0.034
Mean, phi	4.18	5.27	5.13
Mean, in.	0.0022	0.0010	0.0011
Mean, mm	0.055	0.026	0.029
Sorting	3.475	2.503	2.362
Skewness	0.854	0.162	0.180
Kurtosis	0.245	0.464	0.836
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	1.78
Fine Sand	200	30.89
Silt	>0.005 mm	50.34
Clay	<0.005 mm	17.00
Total		100

PTS Laboratories, Inc. • 8100 Secura Way • Santa Fe Springs, CA 90670 • Phone (562) 347-2500 • Fax (562) 907-3610
PTS Laboratories, Inc. • 4342 W. 12th St. • Houston, TX 77055 • Phone (713) 316-1800 • Fax (713) 316-1882