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March 29, 2012

Mr. Jerry Wickham
Alameda County Department of
Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **Fuel Leak Case#RO0000276**
Site Located at 2844 Mountain Boulevard, Oakland, California

Dear Mr. Wickham:

SOMA's "Further Soil and Groundwater Investigation Report and Interim Source Removal Workplan" for the subject property has been uploaded to the State's GeoTracker database and Alameda County's FTP site for your review.

Thank you for your time in reviewing our report. Please do not hesitate to call me at (925) 734-6400, if you have any questions or comments.

Sincerely,

Mansour Sepehr, Ph.D., PE
Principal Hydrogeologist

cc: Mr. Tejindar Singh w/enclosure

Further Soil and Groundwater Investigation Report and Interim Source Removal Workplan

2844 Mountain Boulevard
Oakland, California

March 29, 2012

Project 5080-02

Prepared for:

Mr. Tejindar P. Singh
6400 Dublin Blvd.
Dublin, California

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PERJURY STATEMENT

Site Location: 2844 Mountain Boulevard, Oakland, California

"I declare under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge".

Tejindar Singh
6400 Dublin Boulevard
Dublin, California 94568
Responsible Party

CERTIFICATION

SOMA Environmental Engineering, Inc. has prepared this report on behalf of Mr. Tejindar P. Singh for the site located at 2844 Mountain Blvd., Oakland, California. The report was prepared in accordance with SOMA's workplan dated October 28, 2011 and in compliance with Alameda County Environmental Health Services correspondence of November 28, 2011, granting approval of the workplan.

Mansour Sepehr, PhD, PE
Principal Hydrogeologist

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1. INTRODUCTION

SOMA Environmental Engineering, Inc. (SOMA) has prepared this report on behalf of Mr. Tejindar P. Singh for the site located at 2844 Mountain Blvd., Oakland, California. The report was prepared in accordance with SOMA's workplan dated October 28, 2011 and in compliance with correspondence from Alameda County Environmental Health Services (ACEHS) dated November 28, 2011, granting approval of the workplan. This report documents results of further soil and groundwater investigation conducted downgradient from the former USTs and proposes plans and schedule for requested contaminant source removal.

The subject property is located in Alameda County, California. Figure 1 shows the location of the site and vicinity. The site is located on the eastern corner of the intersection of Mountain Boulevard and Werner Court in a commercial/residential area (Figure 2). The Warren Freeway is adjacent to Mountain Boulevard, and lies approximately 50 feet southwest of the site. The property was a historical retail gasoline station, and is currently fenced in and non-operational. The historical underground storage tanks (USTs), installed in 1994, contained various grades of unleaded gasoline and diesel and had individual storage capacities of 3,000, 4,000, and 10,000 gallons. In August 2011, under SOMA's oversight, the two remaining USTs were removed and disposed of off-site. UST removal activities are documented in SOMA's report dated September 14, 2011. Site history is summarized in Appendix A.

2. FURTHER SOIL AND GROUNDWATER INVESTIGATION

The purpose of this investigation was to accomplish the following.

1. Delineate the extent of soil contamination near the former USTs.
2. Define the vertical and lateral extent of contamination.
3. Evaluate the potential for contaminant migration along preferential pathways in the vicinity of the site.

The following tasks were implemented to conduct the scope of work:

Task 1:	Permit acquisition, Health and Safety Plan preparation, and subsurface utility clearance
Task 2:	Field activities - CPT/MIP and DPT studies
Task 3:	Evaluation of site geology and preferential pathways
Task 4:	Soil and groundwater analytical results

Following are brief descriptions of the above-mentioned tasks.

2.1 Permit Acquisition, Health and Safety Plan Preparation, and Subsurface Utility Clearance

Prior to commencing field activities, SOMA obtained a drilling permit (No. W2012-0150) from the Alameda County Public Works Department (ACPW). In addition to drilling permits, excavation and obstruction permits were obtained from the City of Oakland (Permits X1200394 and OB120223) since some borings were to be advanced in the public right of way. furthermore SOMA prepared a traffic control plan which was submitted to the City of Oakland Transportation Services Division for approval. In accordance with permit requirements, a written 72-hour notification to businesses and residences in the vicinity of the site was provided. In addition, “no parking” signs were posted 72 hours in advance of drilling. Permits and permit-related documentation is included in Appendix B.

Before initiating field activities, SOMA prepared a site-specific Health and Safety Plan (HASP). The HASP is a requirement of the Occupational Safety and Health Administration (OSHA), “Hazardous Waste Operation and Emergency Response” guidelines (29 CFR 1910.120) and the California Occupational Safety and Health Administration (Cal/OSHA) “Hazardous Waste Operation and Emergency Response” guidelines (CCR Title 8, section 5192). The HASP is designed to address safety provisions during field activities and protect the field crew from physical and chemical hazards resulting from drilling and sampling. The HASP establishes personnel responsibilities, general safe work practices, field procedures, personal protective equipment standards, decontamination procedures, and emergency action plans. The HASP was reviewed and signed by field staff and contractors prior to beginning field operations at the site.

On March 6, 2012, written drilling notifications and grouting inspection requests were emailed to ACEHS and ACPW. On March 9, 2012, the city inspector was notified. AC Transit was notified in writing 72 hours in advance of drilling, because a bus stop is located near the public right of way work area. Oakland Police and Oakland Fire were notified the day of the off-site drilling.

On March 6, 2012 all proposed drilling locations were marked with washable white paint. To protect the field crew from underground utility hazards, on March 6, 2012, SOMA contacted Underground Service Alert (USA ticket No 077097), to request USA to provide information about the location, mark or stake the horizontal path, and provide or advise on clearance for facilities owned by utilities. On March 9, 2012, following USA clearance, SOMA retained a private utility locator to survey proposed drilling areas and locate any additional subsurface conduits. Several additional underground conduits, not identified on historical site maps, were located beneath Mountain Boulevard; however, PG&E and AT&T did not respond to the USA ticket until after private utility clearance was conducted on March 9. Photographic documentation illustrating the utility locating and drilling activities is cataloged in Appendix C.

On March 12, 2012, SOMA notified ACEHS that, due to the very large number of subsurface utilities in the street and the shoulder area, and based on driller recommendation, the cone penetrometer testing / membrane interface probe (CPT/MIP) advancement on Mountain Boulevard was not possible. Borings, utilizing direct push technology (DPT) were advanced on Mountain Boulevard in lieu of the CPT/MIP borings.

2.2 CPT/MIP and DPT Studies

As mentioned earlier, due to the large number of subsurface utilities in the area of originally proposed off-site borings, the following workplan modification took place with concurrence from ACEHS: in lieu of off-site CPT/MIP (CPT/MIP-3 and CPT/MIP-4) borings, continuously logged DPT borings were advanced. During DPT advancement, SOMA recorded photoionization (PID) readings and collected appropriate soil and groundwater samples.

Borings CPT/MIP-1 and CPT/MIP-2 were advanced on-site to total depth of 50 feet below ground surface (bgs) to delineate the vertical and horizontal extent of contamination at the test pit area and near the former USTs.

In addition, two DPT boreholes (CPT/DPT-1, CPT/DPT-2), were also advanced to 50 feet bgs for collection of soil and groundwater samples from each water-bearing zone (WBZ) and/or each zone where the MIP indicated contamination, and to correlate the CPT/MIP data. DPT-3 and DPT-4 were also advanced to 50 feet bgs (in lieu of the originally proposed CPT/MIP-3 and CPT/MIP-4) in order to continuously log subsurface geology and collect appropriate soil and groundwater samples.

2.2.1 CPT/MIP Study

Under SOMA's oversight, Fisch Drilling (Fisch) advanced on-site borings CPT/MIP-1 and CPT/MIP-2 on March 12, 2012, and borings DPT-1 through DPT-4 on March 15 and 16. Borings DPT-1 and DPT-2 were advanced adjacent to CPT/MIP-1 and CPT/MIP-2. Boring DPT-1 was renamed CPT/DPT-1 and was continuously logged to verify the CPT obtained data. Boring DPT-2 was renamed CPT/DPT-2. Boring locations are shown on Figure 2.

To evaluate the hydrogeologic conditions, SOMA utilized CPT technology to continuously log the subsurface lithology and stratigraphy up to approximately 50 feet bgs (CPT/MIP-1 and CPT/MIP-2). CPT is a process whereby subsurface soil characteristics are determined when a cone penetrometer attached to a data acquisition system is pushed into the subsurface, using a hydraulic ram. The cone takes measurements of cone bearing (q_c), sleeve friction (f_s) and dynamic pore water pressure (u_2) at approximately 5-centimeter intervals during penetration to provide a nearly continuous hydrogeologic log. In addition, the cone also contains a porous filter element located directly behind the cone tip

(u_2). The filter element is used to obtain dynamic pore pressure as the cone is advanced. By qualitatively integrating these parameters, CPT provides a rapid means of determining relative soil lithology and hydrogeologic information. The CPT data reduction and interpretation is performed in real time, facilitating on-site decision making by a field geologist. The hydrogeological information gathered is used to identify different WBZs using pore pressure data, as well as any confining layers beneath the site.

Concurrent with the CPT study, SOMA conducted an MIP study (CPT/MIP-1 and CPT/MIP-2) to evaluate presence and vertical extent of petroleum hydrocarbons (PHCs). MIP is a high-resolution, direct-sensing downhole screening tool capable of providing information regarding residual levels of PHCs that may exist at different depth intervals. MIP uses a thin film fluorocarbon polymer membrane, which stays in direct contact with the soil during MIP logging. The downhole membrane serves as an interface to a detector at the surface. Volatiles in the subsurface are transferred across the membrane and partition into a stream of carrier gas where they are swept to the detector. The used detectors included PID, electron capture detector (ECD), EC, and flame ionization detector (FID). Each detector is designed for sensitivity to a group or type of contaminant. ECD is used for chlorinated contaminant (trichloroethylene [TCE], perchloroethylene [PCE]) detection; PID is best used for the detection of aromatic hydrocarbons (BTEX compounds); FID is best used for straight-chained hydrocarbons (methane, butane). As the MIP module collects information about contaminant characteristics, the CPT module characterizes sediment types (e.g., clay, silt, silty clay) in the subsurface. Therefore, at each CPT location an integrated vertical profile of approximate soil/sediments stratigraphy, contaminant location, and relative contaminant concentration is generated. CPT/MIP borings logs are included in Appendix C.

After advancing the boreholes, SOMA's field geologist reviewed the CPT/MIP borehole logs and determined the potential WBZs and areas of elevated PID/FID readings. Upon completion, each boring was grouted to surface grade in accordance with ACPW guidelines, and off-site borings were completed to grade with asphalt patch.

Soil and wastewater generated during boring activities was temporarily stored on-site in one DOT-rated and labeled, 55-gallon steel drum pending characterization, profiling, and transport to an approved disposal/recycling facility. Since an interim soil excavation and disposal is being proposed at this site, these wastes were not disposed at this time but will be disposed under appropriate waste manifest during the excavation activities.

CPT/MIP boring logs are included in Appendix C.

2.2.2 DPT Study

As mentioned earlier, some modification to off-site drilling locations was made to allow drilling at a safe distance from the existing utility lines. Due to this modification, the traffic control plan was modified from the previously approved lane shift to a lane closure. The revised traffic plan was submitted to the City of Oakland Transportation Services Division for approval prior to field mobilization.

On March 15 and 16, two boreholes (CPT/DPT-1, CPT/DPT-2) were drilled adjacent to each corresponding CPT/MIP borehole to verify CPT/MIP data and collect soil and groundwater samples. Furthermore, as previously discussed, boreholes DPT-3, and DPT-4 were advanced in lieu of the originally proposed CPT/MIP-3 and CPT/MIP-4. Soil samples having PHC odors and/or higher PID readings, and/or located at or near the capillary fringe were selected for analysis. Significant MIP response (elevated PID and FID readings) was observed in CPT/MIP-1 from 3 to 18 feet bgs, slowly decreasing thereafter to the total depth. Lower MIP response was observed in CPT/MIP-2 at shallower depths; however it was still pronounced at approximately 28 feet bgs, when it dissipated.

Groundwater samples were collected from on-site borings CPT/DPT-1 at two different depths, although no distinct water-bearing units were encountered. The shallow groundwater appears to be perched and somewhat discontinuous, and the entire explored interval appears to be a leaky hydrogeologic unit composed mainly of fine grained materials. Perched groundwater appears to be accumulated at depths correlating to depth of the former UST pit and nearby underground utility corridors.

An attempt was made to collect groundwater samples at similar intervals in the off-site borings; however, due to lack of groundwater (likely due to clayey conditions and very slow recoveries) and after allowing several hours for groundwater recoveries, samples could not be collected at all the same intervals as in the on-site borings. Therefore, groundwater samples were collected only from the shallow area from DPT-4 and from the deeper area WBZ at DPT-3. Table 2 summarizes depths at which groundwater samples were collected.

During boring advancement, where appropriate, SOMA's field geologist logged continuous soil cores, characterizing the content of each soil-filled tube using the Unified Soil Classification System (USCS). Encountered subsurface lithologies were recorded on the geologic borehole logs. The contents of each sediment-filled tube were screened using a PID at each screened depth and results were noted on respective boring logs (Appendix C). PID screening results did not show elevated PHC vapors, PID readings are documented on geological boring logs. Each sample was labeled with a unique sample ID that reference borehole location and sampling interval. In order to minimize costs, some collected samples were submitted to the laboratory and put on-hold pending results from the shallower depths.

Upon completion, all the DPT boreholes were grouted to surface grade in accordance with ACPW requirements and completed to grade to match existing ground pavement.

2.2.2.1 Soil Sample Collection

Soil samples were collected by advancing a 1-inch-diameter DP sampler lined with 4-foot-long clear polybutryate sleeves into the undisturbed soil profile at the base of the boring. A handsaw was used to cut the plastic liner into 1-foot sections for laboratory submittal. Soil samples were examined for visible signs of PHCs, odors, and soil composition, and screened for presence of PHC vapors using a PID. Each soil core was screened for PHCs using a calibrated PID. PID screening was conducted by removing soil from the polybutryate sleeve and placing the soil in a freezer-grade, resalable plastic bag, then placing the bag in sunlight for a minimum of 5 minutes to allow fuel hydrocarbons in the soil to volatilize. The bag was opened to allow the PID probe to be inserted to detect volatilized fuel hydrocarbon concentrations in parts per million in vapor (ppmv).

2.2.2.2 Grab Groundwater Collection

To collect grab groundwater samples, a hydropunch sampler was used, where rods must be pulled up and water allowed to recover, a temporary 1-inch-diameter casing and a 5-foot-long well screen were installed over the desired depth-discrete interval. Depth of each soil boring as well as depth to water at the time of grab groundwater sampling is documented in Table 2.

Depth to groundwater during the latest groundwater monitoring event (February 2012) was recorded between 8.11 and 5.52 feet bgs. During advancement of DPT borings, SOMA's geologist also waited for water to accumulate at shallow depths to 10 feet bgs, corresponding to groundwater observed in site wells. After a reasonable time, no water had accumulated at these shallow depths.

Where enough groundwater had accumulated, the WaTerra sampler was utilized to collect groundwater samples. Equipment utilized in sample collection was field decontaminated, and new, unused polyethylene tubing and check valves were utilized, to avoid cross-contaminating groundwater samples.

Each collected grab groundwater sample was transferred to appropriate vials with Teflon septa with no headspace. The samples were then labeled, logged on a chain-of-custody form, placed in an ice-filled cooler, and kept at 4^0C pending transport to Curtis & Tompkins, Laboratories for analysis.

2.3 Evaluation of Site Geology and Preferential Pathways

The distribution of groundwater contamination and the apparent hydraulic gradients previously measured at the site indicate that groundwater flows toward

Highway 13. A retaining wall is present at base of the slope that separates Mountain Boulevard from Highway 13; this retaining wall is not directly perpendicular or in the direct path of approximate groundwater flow direction. The stormwater line that is present beneath the Mountain Boulevard and extends beneath the Highway 13 does not appear to extend below that first retaining wall. A second retaining wall is located between the highway on-ramp and the first westbound lane of Highway 13.

This second retaining wall appears be located above the existing stormwater line. Groundwater is encountered at the site at an elevation above the top of the retaining wall. Each retaining wall has drain holes at its base. The location and flow line depth and elevation of this stormwater line is illustrated in Figures 2 and 3, and a cross-sectional view of this utility line is illustrated in geological cross-section A-A' (Figure 4). This cross-section illustrates the CPT/DPT locations, tank pit, site hydrogeology, groundwater elevations, analytical data, utilities beneath Mountain Boulevard including the stormwater line, and the retaining wall. CPT/MIP study results and borehole logs of the former groundwater monitoring wells were used to construct this geological cross-section along the approximate groundwater flow direction. Since no off-site monitoring wells currently exist, the off-site flow patterns were inferred. CPT/MIP logs are included in Appendix C.

Previous reports (Aqua Science Engineers May 24, 2000) have suggested that the retaining wall may act as a barrier to groundwater flow, and indicated that the stormwater line that extends below Mountain Boulevard and continues beneath Highway 13 may act as a preferential pathway. In order to evaluate the preferential flow pathways in the site vicinity, SOMA reviewed all previous data and reports regarding preferential pathways and obtained copies of storm and sewer maps from the City of Oakland preferential flow pathways evaluation in the vicinity of the site. Since the as-built maps of the adjacent freeway were not readily available heights of existing retaining walls were approximated.

Sediments encountered during the most recent drilling activities consisted predominantly of sandy clay, silty clay, sandy clay with gravel, as well as some small sandy gravel stringers. Groundwater was not consistently seen in the soil borings and was very slow to recover.

The upper portion of the explored interval is composed of sandy clay with some gravel extending to a depth of approximately 32 feet bgs. Existing on-site groundwater monitoring wells are completed to 25 or 30 feet bgs. Underlying soils also found to be comprised of sandy clay extending from approximately 32 to 36 feet bgs. A small hardpan areas (identified as very stiff fine grained material during CPT drilling) were observed on CPT logs - at 38 to 39 feet bgs and 47 to 48 feet bgs in CPT/MIP-1, and 31 to 32 feet bgs in CPTMIP-2). Beneath this very stiff and fine-grained layer the lithology is composed mostly of sandy clay (with some gravel) extending from approximately 36 to 50 feet bgs.

Groundwater samples were collected from shallow depths, where groundwater was stabilized to depths between 21.9 and 29 feet bgs. Samples were collected from greater depth where water stabilized at depths between 39 and 41.9 feet bgs. Depth to groundwater in on-site monitoring wells ranges between 5.52 and 6.8 feet bgs, which coincides with the depth to the nearby stormwater line. Furthermore, no shallow groundwater was observed between 5 and 10 feet bgs during advancement of these borings, although time was allowed for water accumulation. Review of the stabilized depth to water and the elevation of the nearby stormwater line suggest that this line is submerged and likely influencing the shallow hydrogeology near the site and acting as potential preferential flow pathway for the contaminant plume beneath the site. Furthermore, several other utility lines along the Mountain Blvd (particularly sewer and water lines) also appear to be submerged.

Furthermore, no groundwater was collected from the shallow area in boring DPT-3, advanced in the off-site area between the storm water line and the slope leading to the nearby highway. This suggests that the storm water line may be acting as an intercept drain for the shallow groundwater beneath the site, likely channeling the groundwater flow along coarser backfill often placed around subsurface utilities.

Based on geological cross-section A-A' (Figure 4), the retaining wall located closer to the site starts farther northwest from the path of approximate groundwater flow (Figure 2). The second retaining wall is located in the path of the stormwater drain line and may act as a barrier to shallow groundwater flow; however, due to its position in relation to the site and the on-site contamination, and the underlying very clayey soils in the vicinity of the site, the groundwater movement is likely along the preferential flow pathways. Note also that, trees and dense ground cover in the form of shrubs are present on the slope leading to Highway 13. These trees likely utilize any shallow groundwater encountered beneath the site, and their roots may uptake groundwater and aid the passive contaminant phytoremediation. Phytoremediation mitigates pollutant concentrations in contaminated soils, water, or air, by plants able to contain, degrade, or eliminate contaminants or their derivatives from the media that contain them.

No sampling of discharge from the drain holes at the base of the retaining wall(s) is proposed at this time, since no sign of significant seepage or discharge from these areas was observed. However, such sampling may be proposed in the future if additional evidence in support of such becomes available.

2.4 Soil and Groundwater Analytical Results

Collected soil and groundwater samples were submitted to a California state-certified environmental laboratory for chemical analysis of the following:

- Total PHCs as gasoline and diesel (TPH-g and TPH-d)

- Benzene, toluene, ethylbenzene and xylenes (BTEX)
- Fuel oxygenates, additives and lead scavengers including methyl tertiary-butyl ether (MtBE), tertiary-butyl alcohol (TBA), ethyl tertiary-butyl ether (ETBE), diisopropyl ether (DIPE), tertiary-amyl methyl ether (TAME), 1,2-dichloroethane (1,2-DCA), 1,2-dibromomethane (EDB), and ethanol.

Analyses employed USEPA Methods 8015 and Full 8260B.

The following sections describe field investigation results. Results of this and prior investigative data were used to evaluate hydrogeology of the site and characterize the nature and distribution of PHCs in soil and groundwater at the site.

2.4.1 Extent of Soil Contamination

During UST pit confirmation soil sampling (August 2011), maximum TPH-g was detected at 2,300 mg/kg in soil sample SS-1, and maximum TPH-d at 800 mg/kg in sample SS-2. The composite soil sample CS-1-CS-4, collected from stockpiled soils, exhibited TPH-g and TPH-d concentrations of 570 mg/kg and 180 mg/kg, respectively; both detections were flagged “Y” by the analytical laboratory to denote chromatograms that did not resemble standard. In addition, concentrations of BTEX, MtBE, TBA, naphthalene, chromium and nickel were detected in excess of respective Environmental Screening Levels (ESLs) (residential exposure scenario) (Table 1). During fuel piping confirmation soil sampling, maximum TPH-g and TPH-d were 29 mg/kg and 160 mg/kg, respectively, in sample SS-2. In general, soils beneath fuel piping exhibited much lower contaminants of concern (COCs) than those collected from the UST pit, except for chromium and nickel which were generally detected at comparable concentrations (Table 1).

During this investigation, TPH-g was detected in various soil samples (Table 1), maximum TPH-g concentration in soil was detected in sample from CPT/DPT-1 at 8 ft (1,300 mg/kg). TPH-d was below laboratory reporting-limit in soil samples from CPT/DPT-2 at 16 ft, DPT-3, DPT-4 at 8 ft, and 43 ft. Detectable TPH-d concentrations ranged from 1.1 mg/kg in CPT/DPT-2 at 48 ft to 99 mg/kg in CPT/DPT-1 at 8ft.

BTEX analytes were below laboratory reporting-limits in all soil samples except for ethylbenzene and total xylenes in CPT/DPT-1 at 8 ft at 16 mg/kg and 58 mg/kg and total xylenes in CPT/DPT-2 at 10 ft at 0.26 mg/kg. MtBE was below laboratory reporting-limit in DPT-4 at 8 ft. and was detected in concentrations ranging from 0.025 mg/kg in DPT-4 at 43 ft. to 16 mg/kg in CPT/DPT-1 at 8 ft.

TBA was below laboratory reporting-limit in all DPT-3 and DPT-4 samples. TBA was also below laboratory reporting-limit in CPT/DPT-1 at 8 ft and CPT/DPT-2 at 48 ft. Detectable TBA concentrations ranged from 0.27 mg/kg in CPT-1 at 42 ft to

38 mg/kg in CPT/DPT-1 at 15 ft. TAME was below laboratory reporting-limit in CPT/DPT-1 at 15 ft, CPT/DPT-2 at 10 and 16 ft, and all DPT-4 samples. Detectable TAME concentrations ranged from 0.013 mg/kg in CPT/DPT-2 at 48 ft to 1.6 mg/kg in CPT/DPT -1 at 8 ft.

As illustrated in Table 1, in the CPT/DPT-1 soil sample at 8 ft, TPH-g, TPH-d, ethylbenzene, total xylenes, and MtBE exceeded their ESLs (shallow soil, residential land use, potential drinking water). Also, all detectable MtBE and TBA concentrations were above their ESLs. Figures 5 through 7 illustrate the extent of soil contamination (TPH-g and MtBE) from 0 to 20 feet bgs.

It appears that significant soil contamination still exists in the area of removed USTs and immediate downgradient areas, as illustrated by COCs in excess of ESLs (Table 1). Based on results of this and historical investigation, an interim source removal utilizing remedial excavation is proposed.

2.4.2 Extent of Groundwater Contamination

During the most recent UST removal activities in August 2011, TPH-g, TPH-d and benzene were detected at 76,000 µg/L, 14,000 µg/L, and 1,600 µg/L, respectively, in groundwater sample T-1 from the northern region of the UST pit. MtBE was detected in this sample at 5,700 µg/L. Total metals such as lead, nickel, and zinc were also detected in T-1 in excess of ESLs established by California Regional Water Quality Control Board (CRWQCB), San Francisco Bay region. TPH-g, TPH-d and benzene were detected at 890 µg/L, 1,500 µg/L, and 8 µg/L, respectively, in groundwater sample T-2 from the southern region of the UST pit. MtBE was detected in this sample at 5,700 µg/L. Total metals such as lead and nickel were also detected in T-2 in excess of ESLs.

Appendix D contains the complete laboratory analytical report. The following summarizes the contaminant detections in each WBZ.

TPH-g was below the laboratory reporting limit in all shallow groundwater samples during this investigation, Table 2. Reporting limits in CPT-1 and CPT-2 were raised due to higher dilutions. TPH-d was detected in a range of 140 µg/L in CPT-1 to 820 µg/L in CPT-2. BTEX analytes were below laboratory reporting limits in shallow groundwater samples except for benzene and toluene detected in CPT-1 at 94 µg/L and 64 µg/L, respectively. MtBE was detected in a range of 2,600 µg/L in DPT-4 to 52,000 µg/L in CPT-2. TBA detections ranged from 28 µg/L in DPT-4 to 92,000 µg/L in CPT/MIP-2. TAME was detected in concentrations ranging from 210 µg/L in DPT-4 to 3,000 µg/L in CPT-2. As illustrated in Table 2, all detectable concentrations (TPH-d, benzene, toluene, MtBE, and TBA) were above their ESLs (potential drinking water) in shallow groundwater. Figures 8 through 11 illustrate contour maps of TPH-d, TPH-g, MtBE and TBA concentrations

TPH-g was below laboratory reporting limit in deeper groundwater samples in DPT-3 and was detected in CPT/DPT-1 and CPT/DPT-2 at 96,000 µg/L and 4,500 µg/L, respectively. TPH-d was detected in concentrations ranging from 53 µg/L in DPT-3 to 3,200 µg/L in CPT/DPT-1. BTEX analytes were below laboratory reporting limits in DPT-3. The highest BTEX concentrations were detected in CPT/DPT-1 at 2,400 µg/L, 11,000 µg/L, 3,100 µg/L, and 14,700 µg/L, respectively. As shown in Table 2, TPH-g, TPH-d, and BTEX concentrations were higher than their ESLs in CPT/DPT-1 and CPT/DPT-2. MtBE was detected in a range of 9,800 µg/L in DPT-3 to 95,000 µg/L in CPT/MIP-1. TBA detections ranged from 1,000 µg/L in DPT-3 to 78,000 µg/L in CPT/DPT-1. TAME was detected in a range of 690 µg/L in DPT-3 to 7,400 µg/L in CPT/DPT-1. As shown in Table 2, all MtBE and TBA concentrations were higher than their ESLs. Figures 12 through 15 illustrate contour maps of TPH-d, TPH-g, MtBE and TBA concentrations in deeper groundwater samples.

Figure 16 illustrates the historical contaminant (TPH-g and MtBE) and groundwater level fluctuation in existing groundwater monitoring wells RS-1 though RS-4. As seen from these graphs, significant groundwater fluctuation has been observed in these wells; groundwater has been observed as shallow as 3.52 feet bgs (RS-1) and as deep as 22.11 feet bgs (RS-2). A significant decrease of TPH-g concentrations has been observed in wells RS-1 and RS-2. Furthermore, a significant concentration increase was observed during the most recent groundwater monitoring event in well RS-4, indicating that either the contaminant plume has been migrating to this well from the former UST pit, or a release occurred in the vicinity of pump islands since the previous monitoring conducted in 1999. Results of historical and the most recent groundwater monitoring are summarized in Table 3.

2.5 Evaluation of Sensitive Receptors

According to historical site documentation, a historical ½-mile well survey was conducted for this site. According to this historical survey one irrigation well is located at 4315 Lincoln Avenue approximately 2,150 feet southwest of the site in the general downgradient flow direction. This well was installed in 1989 and is 9 inches in diameter, approximately 260 feet deep and had a reported depth to water at 240 feet bgs at the time of this survey, no updated survey was conducted at this time, but is recommended for the near future.

3. WORKPLAN FOR INTERIM SOURCE REMOVAL

Between July 29 and August 18, 2011 two USTs, one 10,000-gallon and one 3,000-gallon capacity, were excavated and disposed of off-site. During this event, associated fuel piping was also excavated and disposed of off-site. Depth to the bottom of the excavation pit was recorded at 11.5 feet bgs. The UST pit was lined and backfilled with existing material and concrete rubble. The site is currently fenced in, which limits public access to the property. Confirmation soil

samples were collected from beneath removed USTs and associated piping. Two groundwater samples were collected from the UST pit. It appeared that soil and groundwater contamination still exists in the area of removed USTs, as illustrated by COC levels in excess of ESLs. Lesser soil contamination exists in the area beneath the removed fuel piping.

Based on chemical concentrations in soil and groundwater, an interim remedial excavation to address residual contamination in the area of the former USTs is proposed. The primary objective of this remediation is shallow soil removal; COCs are PHCs and the medium to be addressed is soil. The source of contamination is associated with the former USTs (location in Figure 2). Figure 17 shows the proposed excavation extent. Investigation results indicate that residual impact southwest of the UST pit does not extends beyond approximately 12 feet bgs. However the extent of residual impact immediately below the removed UST is unknown, and excavation beyond 12 feet bgs may be required.

Note that due to the proximity of sidewalks and city streets, deepening of the proposed excavation beyond 15 feet bgs may not be feasible.

Furthermore, some uncertainties exist with regard to soil contamination near well RS-4. Due to elevated contaminant concentrations in this well, it is likely that residual soil contamination also exists in its vicinity. Therefore, SOMA proposes advancing two shallow soil borings in the vicinity of RS-4 in order to finalize delineation of the proposed excavation.

Based on the anticipated excavation depth (with no additional excavation in the vicinity of RS-4), the excavation will entails removal and off-site disposal of approximately 550 cubic yards of impacted soil. During proposed excavation, the pump canopy may need to be reinforced for the duration of excavation activities, and shoring will be installed within the excavation pit. Once excavated soil is disposed of off-site and confirmation soil samples are collected, the site will be restored with new fill and resurfaced with concrete. During this excavation, several existing groundwater monitoring wells will be destroyed. SOMA will retained licensed subcontractors to carry out necessary excavation, off-haul, backfilling and site restoration activities.

SOMA will review available utility maps to determine whether any piping will be disturbed during excavation activities. SOMA will also evaluate positioning of any utility lines prior to mobilization, to determine whether any special provisions are needed to avoid damaging any utility lines. Figure 2 shows approximate locations of underground utility lines in relation to the site.

Below are descriptions of excavation-related activities:

Task 1: Permit acquisitions, notifications, Health and Safety Plan preparation, and pre-excavation activities

Task 2: Waste profiling

Task 3: Dewatering activities

Task 4: Well destruction

Task 5: Western dispenser shut-down procedures

Task 6: Excavation procedures

Task 7: Excavation shoring and canopy reinforcement

Task 8: Grading and erosion control

Task 9: Stockpiling, dust, and noise control

Task 10: Confirmation soil sampling

Task 11: Soil transportation and disposal

Task 12: Backfilling, compaction, and surface restoration

Task 13: Anticipated work schedule

Task 14: Report preparation

3.1 Permit Acquisitions, Notifications, Health and Safety Plan Preparation, and Pre-Excavation Activities

Before initiating field activities, SOMA will prepare a site-specific Health and Safety Plan (HASP). The HASP is a requirement of the Occupational Safety and Health Administration (OSHA), "Hazardous Waste Operation and Emergency Response" guidelines (29 CFR 1910.120) and the California Occupational Safety and Health Administration (Cal/OSHA) "Hazardous Waste Operation and Emergency Response" guidelines (CCR Title 8, section 5192). The HASP is designed to address safety provisions during field activities and protect the field crew from physical and chemical hazards resulting from drilling and sampling. The HASP establishes personnel responsibilities, general safe work practices, field procedures, personal protective equipment standards, decontamination procedures, and emergency action plans. The HASP will be reviewed and signed by field staff and contractors prior to beginning field operations at the site.

Prior to initiating field activities, SOMA will submit an Excavation Plan for Grading Permit to the City of Oakland. As-built plans will be reviewed during the permitting process to determine whether any manual excavation is necessary in the vicinity of utility or fuel lines. SOMA will obtain well destruction permits. Appropriate notification will be made to Bay Area Air Quality Management District (BAAQMD) and ACEHS prior to commencement of all excavation activities and after all site restoration activities are completed. If required by the City of Oakland, SOMA will prepare and submit a traffic control plan for approval. Because the proposed excavation abuts the sidewalk area, a temporary sidewalk closure will be necessary to maintain safe working conditions. SOMA will retain a traffic management company to provide traffic control services for the duration of excavation and soil transportation activities. The CUPA will be notified of the

work schedule and the designated operator will be available for on-site inspection during the work. Furthermore, written notification will be provided at least 2 weeks in advance of proposed excavation activities, to businesses and residences in the close proximity of the site.

Due to the presence of shallow groundwater, SOMA recommends evaluating pumping rates in on-site wells and obtaining a temporary discharge permit, which could be utilized for disposal of groundwater generated during dewatering activities. Note, however, that based on the current site drilling, very slow water discharge rates are anticipated. If necessary, prior to discharge (to the sanitary sewer), effluent samples will be collected and analyzed for contaminants, as required by the sewer district.

Prior to field activities, SOMA's field crew will mark the proposed excavation area using chalk-based white paint. SOMA will notify Underground Service Alert (USA) for verification that excavation areas are clear of underground utilities and will retain a private utility locator to conduct an extensive survey of proposed areas to locate any additional subsurface conduits. Utility companies will be notified for any utility that may be impacted or located near the excavation work.

If any utility lines cross the proposed excavation area, SOMA will notify ACEHS and determine whether any significant changes to the proposed excavation are necessary. SOMA will also take appropriate action during excavation activities to protect or temporarily reroute the lines.

Areas located in concrete will be saw cut. Perimeter temporary fencing will be maintained throughout excavation and backfilling activities. A sign providing emergency contact information will be displayed throughout remedial excavation activities. A state-licensed waste hauler will transport waste to an appropriate landfill facility.

3.2 Excavation Extent and Waste Profiling

Due to limited space, stockpiling of excavated materials on-site pending off-site disposal will not be feasible. Therefore, SOMA will secure preapproval for soil disposal at a licensed facility prior to excavation, based on existing soil analytical results. Laboratory analytical results from waste profiling along with completed Third Party Authorization and Generator Waste Profiles forms will be submitted to the landfill for preapproval, and will be made part of the remedial excavation report.

In order to determine whether soils in the vicinity of well RS-4 adjacent to the pump canopy require excavation, SOMA proposes advancing two shallow soil borings SB-1 and SB-2, utilizing either DPT or hand augering methods and collecting soils samples, to further delineate the extent of proposed soil

excavation and obtain soils samples necessary to finalize the waste profiling. SOMA proposes advancing these borings to approximately 14 feet bgs, or slightly deeper based on field observations.

Soil samples, at minimum, will be analyzed for TPH-g, TPH-d, BTEX, MtBE, and lead. Drilling methodology and general field procedures described in SOMA's workplan dated October 28, 2011 will be followed during this proposed drilling and sampling. Proposed boring locations are shown on Figure 17. General field procedures are summarized in Appendix E.

3.3 Dewatering Provisions

Due to presence of shallow groundwater beneath the site (depths to water ranging from 5.52 to 8.11 feet bgs during the most recent monitoring event) SOMA proposes conducting excavation activities during the dry season, to minimize dewatering cost. Note that, historically, groundwater in existing wells has fluctuated between 22.11 feet bgs and 3.51 feet bgs, likely due to corresponding dry and wet seasons.

Prior to planned excavation, depth to groundwater in existing monitoring wells will be evaluated. Furthermore, overlapping sheeting, which will be used to shore the excavation area, will prevent groundwater from freely entering the excavation, minimizing the need for water extraction and disposal. Due to the clayey subsurface conditions a significant water recharge is not anticipated at this time. However, in order to verify the impact on excavation activities of the high water table, SOMA will purge site wells some time prior to excavation, to evaluate pumping rates as well as recovery rates, and determine whether any dedicated dewatering wells are necessary. If pumping rates support dewatering well installation (above 2 gpm with consistent recovery), one or two well points (4 inches in diameter) maybe be installed, under appropriate well permitting, upgradient from the targeted excavation area, in order to lower the water table below the excavation floor. As necessary, the dewatering will be implemented utilizing dewatering wells similarly to techniques used for dewatering conventional excavations for building construction, several days prior to excavation activities.

Whether extracted directly from excavation or the dewatering well, extracted groundwater will be treated utilizing granular activated carbons (GAC) and discharged to the local sewer system under a temporary discharge permit or off-hauled (if recharge is minimal) and disposed of at an appropriate waste disposal facility. If necessary, a temporary treatment unit will be assembled on-site consisting of a holding tank, transfer pump, GAC, and associated piping. Once excavation is complete, the dewatering well(s), if installed, will be either retained for use in place of decommissioned monitoring wells or decommissioned according to applicable state and local regulations, and the temporary treatment unit disassembled.

3.4 Well Destruction

Based on the projected location of the excavation area, it appears that wells RS-1, RS-2 and possibly RS-4 will be destroyed by excavation. Therefore, before initiating excavation activities, SOMA will apply for appropriate well permits, and follow appropriate HASP procedures outlined above, to decommission these wells. If decommissioning by excavation is not approved by the permitting agency, these wells will be decommissioned by pressure grouting prior to excavation. Type I/II cement grout will be tremmied into each well, followed by application of 25-psi pressure maintained for five minutes. Once each well is pressure grouted, the well ring will be removed and the location will be completed to grade with a neat cement and bentonite mixture. The top of each location will be finished with concrete to match the existing grade. Decommissioned wells will be allowed to set for at least a week before initiating excavation activities. All appropriate permits and well completion (destruction) records will be included in the excavation report.

3.5 Excavation Procedures

Shoring will be installed on all four sides of the excavation and adjacent to the canopy footing. SOMA will utilize mechanical and manual (hand digging) excavation techniques during remedial activities.

Below are steps that will be taken prior to conducting field activities and standard procedures to be used during excavation activities. Throughout field activities, SOMA will ensure that all applicable municipal code and best management practices and standards are followed.

- A competent person trained to identify hazardous conditions, with authority to take corrective action, will be in charge of excavation. This person will inspect excavations daily and after every rain event, and ensure that all equipment and materials are in good, working condition.
- Excavated or other materials as required will be retained 2 feet or more from the edge of the excavation. Workers will stay away from any equipment loading or unloading material. Perimeter protection will be provided at all times.
- Stockpiles of topsoil materials will not be placed within a public right of way, will not obstruct drainage ways, will not be subject to erosion, will not endanger other properties, and will not create a public nuisance or safety hazard
- To ensure a safe working environment, any excavation deeper than 5 feet bgs will be shored to comply with Cal/OSHA requirements.

- Workers will have all appropriate training and wear the required personal protective equipment including hardhats, safety footwear, gloves, eye protection, hearing protection, and fall protection devices, as needed.
- Excavated material and the excavation pit will be monitored by hand-held screening instrumentation, (e.g., PID), as well as visual and olfactory indications of soil impact from PHCs (e.g., visible green or gray staining, odor). Observations will be noted on field notes. Excavation activities will be documented by photographs that will be included in the excavation report.

3.6 Excavation Shoring and Canopy Reinforcement

Based on the most recent soil and groundwater investigation, excavated material will consist predominantly of sandy lean clay. Boring logs are attached as Appendix C. Shoring system will remain in place throughout backfilling activities. Calculations for shoring and support system for canopy footing will be submitted to the City of Oakland for approval and included in the excavation report.

3.7 Grading and Erosion Control

Proposed grading is deemed to have no significant environmental impact, as determined pursuant to provisions of the California Environmental Quality Act, since it is not located within 100 feet of the centerline of any watercourse, the waterline of any water body, or the Bay at high tide.

A stormwater catch basin is located in close proximity to the proposed excavation, therefore, SOMA will implement the following procedures designed to ensure that grading and erosion control practices proposed for the above project comply with best management practices and standards.

A. Any catch basin will be protected by silt fencing or other erosion-sedimentation prevention devices at all times.

B. Erosion control devices will not be moved or modified without approval of the project manager.

C. All removable erosion protective devices shall be in place at the beginning and end of each working day at all times.

D. All silt and debris shall be removed from streets and public right of way immediately.

E. All immediate downstream inlets will be protected.

3.8 Stockpiling Dust and Noise Control

It is anticipated that excavated soil will be immediately loaded onto trucks and routed to the disposal facility. If any soil is not off-hauled from the site the same day, it will be stockpiled and covered at the end of each working day, or immediately in the event of rain, suspicious odors, or if visible dust is being generated from the stockpiles. A PID reading will be taken periodically to ensure stockpiles meet regulations on volatile organic compound emissions. Based on existing soil concentrations, short-term nuisance odors are anticipated, therefore, SOMA proposes utilizing vapor suppressants during the proposed excavation activities. Debris (brick, rubble, etc.) encountered during excavation as well as concrete and/or asphalt cuttings will be separated from the excavated soil and disposed of separately.

Dust control measures during excavation, backfilling, and handling of contaminated soil will consist of spraying the minimum amount of water needed to suppress the dust onto the soil and work area. Noise generated during excavation will be monitored and modified accordingly, to ensure compliance with the City of Oakland Noise Ordinance.

3.9 Confirmation Soil Sampling

When final excavation limits have been reached as outlined in Figure 17, soil samples will be collected from the bottom of the excavation for analysis at a state-licensed off-site laboratory. SOMA will collect confirmation soil samples from the bottom of the excavation (minimum one sample from 20x20 square foot area) for laboratory analysis. Since shoring will be installed to secure the excavation area, no sidewall sampling is planned at this time. To a certain extent (limited by installed shoring and equipment limitation), confirmation soil samples will be utilized solely to guide the vertical extent of excavation.

To minimize volatilization, each soil sample will be collected using a slide hammer and a stainless steel tube. Samples will be sealed, labeled, and placed in a chilled ice chest pending delivery to the off-site laboratory under chain-of-custody protocol. Results of this assessment will be documented in SOMA's remedial excavation report. Confirmation soil samples will be analyzed for the following:

- TPH-g and TPH-d
- BTEX
- Fuel oxygenates, additives and lead scavengers including MtBE, TBA, ETBE, DIPE, TAME, 1,2-DCA, EDB, and ethanol.

Analyses employed include USEPA Methods 8015 and Full 8260B.

3.10 Proposed Addition of ORC Slurry During Excavation Activities

Since the proposed area of excavation is restricted by site boundary, canopy, etc., expansion of excavation horizontally and even vertically, based on confirmation sampling and field observation, will not feasible at this time;. Therefore, it is anticipated that residual contamination will remain in the subsurface after completion of excavation activities. To increase effectiveness of the proposed excavation, SOMA proposes addition of oxygen release compound (ORC) in the final excavation stages, after confirmation sampling is conducted and just before introduction of backfill material and compaction. Addition of ORC compound will ensure a more complete and effective remedial effort. ORC is a fine powdery material that is typically mixed with water before application. Once hydrated, this food-based calcium oxy-hydroxide based material releases up to 17 percent of its weight as molecular oxygen. This release of oxygen is governed by specialized ORC chemistry that allows for a gradual, controlled release of oxygen over periods of up to 12 months. The available oxygen is then utilized by indigenous microbial populations to naturally degrade or break down contaminants into harmless end products such as CO_2 and H_20. If this approach is approved, SOMA will obtain all appropriate permitting in advance of excavation.

Typically, for excavation applications, the ratio of applied ORC is 1 to 1.5 lbs of ORC compound per square foot of excavation footprint. The amount of ORC varies based on the apparent residual contamination at the excavation site. SOMA recommends applying ORC in areas of apparent residual contamination at the bottom of the excavation and immediately adjacent to the sidewall areas (applied at different depths) during backfilling and compaction. If windy conditions are present during ORC application, the ORC powder, which resembles Portland cement, will be mixed with tap water on-site, just prior to introducing the resulting slurry mixture into the subsurface. Where feasible, the slurry will be mixed, utilizing backhoe, with the native soil at the bottom of the excavation prior backfilling. If there are no winds, the following application may be utilized:

1. Put the dry ORC powder in the backhoe bucket.
2. Lower it to the bottom of the pit.
3. Gently deposit the ORC evenly on the remaining soil.
4. Use the bucket to mix the powder into the soil.
5. To mitigate dusting, if necessary, spray water into the excavation during the process.

Instructions for ORC application and ORC MSDS are included in Appendix E.

SOMA will utilize PID readings and visual observations to determine which areas require ORC application. Excavation dewatering, if any, will be halted prior to application of ORC and not restarted, to avoid removal of ORC from the subsurface. PID readings along with ORC volumes and locations will be documented in the final excavation report.

3.11 Soil Transportation and Disposal

Laboratory analytical results from waste profiling along with completed Third Party Authorization and Generator Waste Profiles forms will be submitted to the landfill for preapproval, and made part of remedial excavation report.

Because the proposed excavation abuts the sidewalk area, a temporary sidewalk closure will be necessary to maintain safe working conditions. SOMA will retain a traffic management company to provide traffic control services for the duration of excavation and soil transportation activities. A state-licensed waste hauler will transport waste to an appropriate landfill facility.

All trucks will be loaded with soil, watered, cleaned of all loose debris, and covered with tarps prior to leaving the site. Each truck will follow a preapproved route, which will minimize travel of trucks over city streets. Copies of signed manifests along with weight tickets will be included in the remedial excavation report.

No replacement USTs are planned at this time.

3.12 Backfilling, Compaction, and Surface Restoration

Excavated areas will be backfilled and compacted in appropriate lifts to achieve the required degree of compaction with either pea gravel or pre-tested imported clayey fill material to 2 feet bgs and then backfilled with 8 to 12 inches of compacted Class II aggregate base rock (AB) to below the concrete level. A #4 rebar (16” O.C.) will be installed prior to resurfacing the excavated area with concrete. Unless otherwise required by the City of Oakland, a 2,500-psi concrete mixture will be installed to restore the excavated area to surface.

3.13 Anticipated Work Schedule

Once all appropriate permitting and notifications, and dewatering provisions are in place the actual excavation should take at least 10 to 12 working days depending on the weather conditions, sampling turn-around, and inspections scheduling and occurrence.

The anticipated excavation schedule is as follows:

Day 1: Site preparation, fencing installation, utilities evaluation
Day 2: Mobilization, breaking of concrete/asphalt
Day 3: Shoring installation
Day 4-7: Excavation activities
Day 8: Backfilling activities

Day 9: Forming of concrete resurfacing slab
Day 10-12: Pouring of concrete and demobilization

Once the concrete has cured, all excavation-related equipment will be removed, and the site restored to pre-excavation conditions.

4. SUMMARY AND CONCLUSIONS

- As part of this investigation, two CPT/MIP and four DPT borings were advanced, and soil and groundwater samples were collected. It appears that soil and groundwater contamination still exists in the area of removed USTs and in the explored downgradient (off-site) areas, as illustrated by COCs in excess of ESLs. This contamination is likely related to the historical PHC release associated with this site.
- The sediments encountered during these drilling activities consisted predominantly of sandy clay, silty clay, sandy clay with gravel, and some small sandy gravel stringers.
- Shallow and deep groundwater samples were collected during this investigation, explored areas that yielded groundwater could be characterized by moist fine-grained sediments. Although it should be noted that very slow water recoveries were observed and no clear geological definition of water bearing units was observed in the recovered cores.
- The existing storm water line, located downgradient from the site, is likely acting as a preferential flow pathway for the dissolved contaminant plume beneath the site.
- According to historical site documentation, a historical ½-mile well survey was conducted for this site. According to this survey, one irrigation well is located at 4315 Lincoln Avenue approximately 2,150 feet southwest of the site in the general downgradient flow direction. This well was installed in 1989 and is 9 inches in diameter, approximately 260 feet deep and had a reported depth to water at 240 feet bgs at the time of this survey.
- In order to address residual soil contamination, SOMA proposes conducting a shallow soil excavation and ORC application in the vicinity of former USTs.
- As part of this proposed excavation, SOMA proposes advancing two additional shallow soil borings in the vicinity of RS-4 to complete the delineation for the proposed excavation and waste profiling in preparation for the proposed excavation event.
- A brief excavation workplan addendum (finalizing excavation extent) will be prepared if warranted by results of the proposed excavation delineation activities.

- Upon completion of proposed excavation activities, SOMA will prepare a report documenting all excavation-related and confirmation soil sampling activities and outline further steps and recommendations.

FIGURES

Source: Google (R) 2012

N

approximate scale in feet

0 100 200

Figure 1: Site Vicinity Map

SOMA ENVIRONMENTAL ENGINEERING, INC.

N

Former UST 10,000 gallons

UST Pit

Werner Court

sewer line

gas line

SS-4

T-2

SS-3

670.51

RS-3

Station Building

Former UST 3,000 gallons

SS-2

~11.5' bgs

T-1

RS-2

669.76

SS-1

B-3

D-2

2.35

2.2'

B-4

2.8'

3.3' bgs

removed fuel piping

T-Junction

2.6'

B-2

CPT/MIP/DPT-1

2.6'

2.3

B-1

D-1

2.6'

Pump Islands

FL 671.8

~3.6' bgs

RS-1

668.87

667.31

RS-4

BH-H

BH-G

BH-I

CPT/MIP/DPT-2

Fence

BH-J

BH-K

BH-L

BH-M

FL 667.21'

8"

~8.2 FT BGS

~5-6' bgs

sewer line

sidewalk

water line

gas line

DPT-3

stormwater line 18"

DPT-4

water line

phone lines

Range of AT&T Installations

FL 667.2'

~8.2' bgs

curb

BH-D

BH-C

BH-B

BH-A

BH-E

Power Pole

BH-F

dirt area near curb

Fence

generalized groundwater flow direction

Trees and shrubs

starts at 1.5-2' in height (height increase direction)

18"

Retaining Wall

Surface Storm Inlet

6"

on-ramp (sloping)

FL 644.5'

starts at 2' in height (height increase direction)

Retaining Wall

18"

k-rail

Warren Fwy 13

FL 644.3'

Additional Connections Beneath the Fwy

CPT/MIP/DPT borings

Soil borings advanced in 2000

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

0.00 GWE (Feb 2012)

approximate scale in feet

0 20 40

Figure 2: Site map showing location of removed UST, piping and confirmation soil sampling during UST removal activities, and advanced soil borings

SOMA ENVIRONMENTAL ENGINEERING, INC.

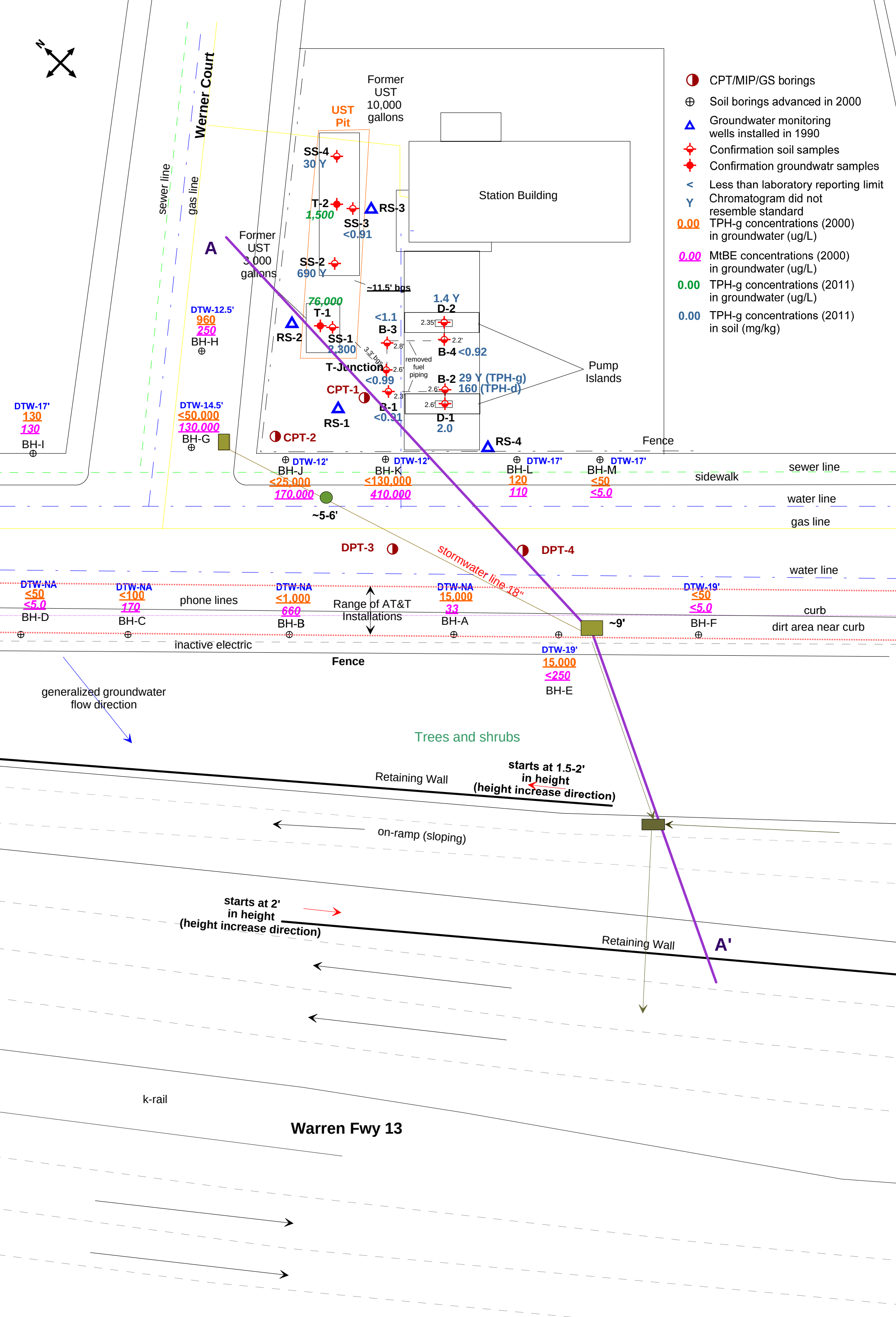
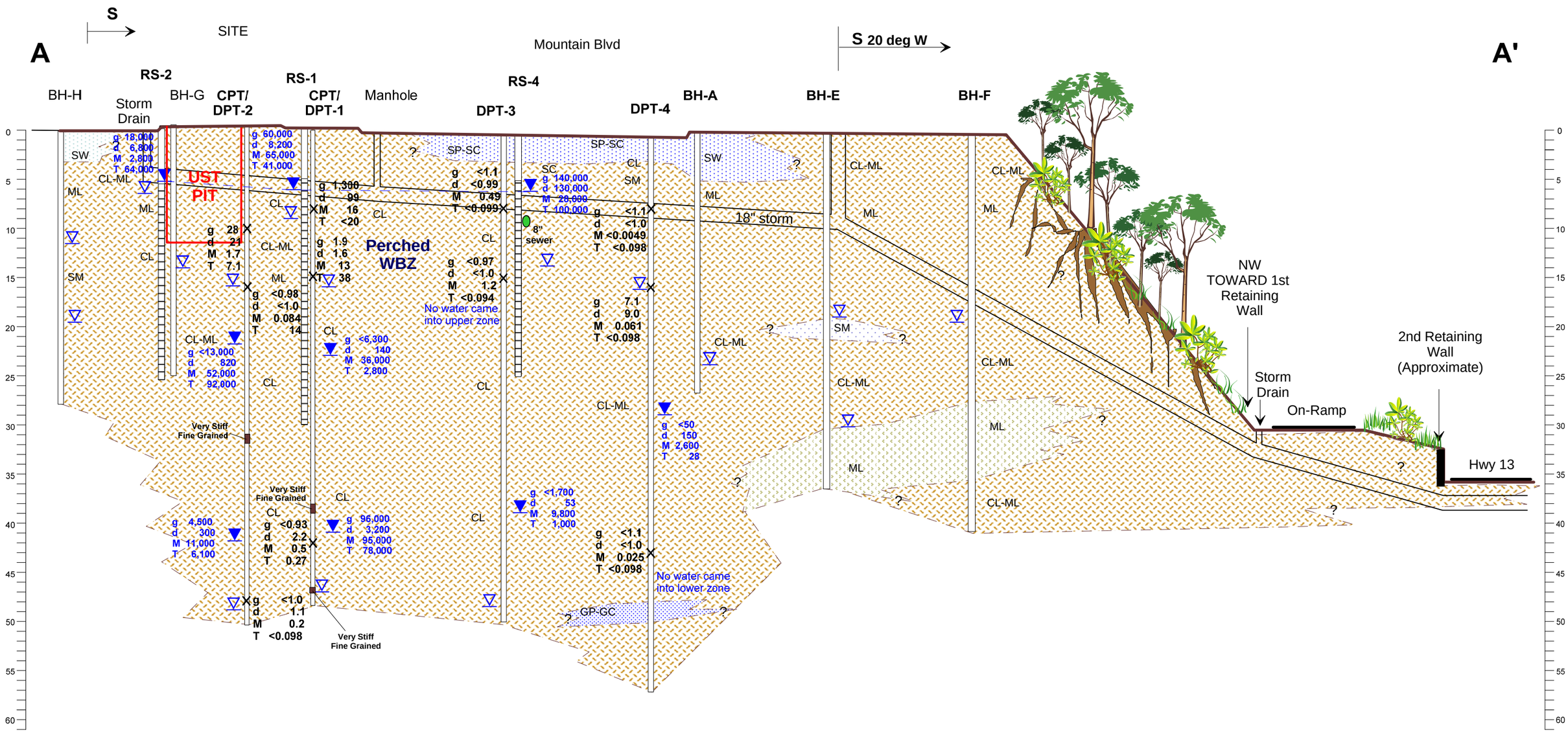


Figure 3: Location of geological cross-section A-A'

ENVIRONMENTAL ENGINEERING, INC.



10
0
15
approximate scale in feet

EXPLANATION

First groundwater observed in sediment cores

Stabilized Groundwater

Stabilized Groundwater Level in Wells

100 Soil Sampling (mg/kg)
g - TPH-g
d - TPH-d
M - MtBE
T - TBA

100 GW Monitoring Data (ug/L) February 2012
BTEX data found on Tables
g - TPH-g
d - TPH-d
M - MtBE
T - TBA

Note: Several borings and physical features were projected, refer to Figure 3

Figure 4: Geological Cross-Section A-A'

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

Y Chromatogram did not resemble standard

CPT/MIP/DPT borings (2012)

(0.00) TPH-g concentrations in soil (mg/kg) underneath fuel piping during 2011 UST removal

0.00 TPH-g concentrations in soil (mg/kg) during 2011 UST removal and 2012 investigation

TPH-g mg/Kg

2,100
1,800
1,500
1,200
900
600
300
0

N

UST Pit

SS-4 30 Y

UST 10,000 gallons

Station Building

RS-3

T-2

SS-3 <0.91

Sewer line

gas line

Werner Court

UST 3,000 gallons

SS-2 690 Y 2,300

~11.5' bgs

SS-1

RS-2

T-1

(1.4 Y) D-2

(<1.1) B-3

B-4 (<0.92)

T-Junction (<0.99)

removed fuel piping

B-2 (29 Y)

Pump Islands

CPT/MIP/DPT-1

B-1 1,300 (<0.91)

D-1 (2)

RS-1

CPT/MIP/DPT-2 28

RS-4

Fence

generalized groundwater flow direction

water line

DPT-3 <1.1

DPT-4 <1.0

stormwater line

Mountain Boulevard

phone lines

fence

Trees and shrubs

Trees and shrubs

Toward Warren Fwy 13

Note: For a complete list of utilities refer to Figure 2

approximate scale in feet

0 20 40

Figure 5: Contour map of TPH-g concentrations in soil at 0-12 ft bgs

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

Y Chromatogram did not resemble standard

CPT/MIP/DPT borings (2012)

(0.00) MtBE concentrations in soil (mg/kg) underneath fuel piping during 2011 UST removal

0.00 MtBE concentrations in soil (mg/kg) during 2011 UST removal and 2012 investigation

MtBE mg/Kg

16
14
12
10
8
6
4
2
0

N

UST Pit

SS-4 0.31

UST 10,000 gallons

Station Building

RS-3

T-2

SS-3 0.54

UST 3,000 gallons

SS-2 <2.0

~11.5' bgs

(0.095) D-2

SS-1 (<0.0045)

B-3

RS-2

T-1 3.3

3.3' bgs

removed fuel piping

T-Junction (0.5)

(<0.0049) B-4

B-2 (0.41)

Pump Islands

CPT/MIP/DPT-1

B-1 (0.013)

RS-1 16

D-1 (0.96)

RS-4

Fence

CPT/MIP/DPT-2 1.7

generalized groundwater flow direction

Sewer line

gas line

Werner Court

water line

DPT-3 0.49

DPT-4 <0.0049

stormwater line

Mountain Boulevard

phone lines

fence

Fence/

?

Trees and shrubs

Trees and shrubs

Toward Warren Fwy 13

Note: For a complete list of utilities refer to Figure 2

approximate scale in feet

0 20 40

Figure 6: Contour map of MtBE concentrations in soil at 0-12 ft bgs

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990
Confirmation soil samples
Confirmation groundwatr samples
< Less than laboratory reporting limit
Y Chromatogram did not resemble standard
CPT/MIP/DPT borings (2012)
0.00 TPH-g concentrations in soil (mg/kg) during 2012 investigation

MtBE mg/Kg

N

UST Pit
UST 10,000 gallons
UST 3,000 gallons
Station Building
Werner Court
sewer line
gas line
SS-4
T-2
SS-3
RS-3
SS-2
~11.5' bgs
SS-1
RS-2
T-1
3.3' bgs
T-Junction
B-3
B-4
B-2
B-1
D-2
D-1
removed fuel piping
Pump Islands
CPT/MIP/DPT-1
RS-1 1.9
CPT/MIP/DPT-2
<0.98
RS-4
Fence
generalized groundwater flow direction
water line
DPT-3 <0.97
DPT-4 7.1
stormwater line
Mountain Boulevard
phone lines
Old electric fence
Fence/
Trees and shrubs
Trees and shrubs
Toward Warren Fwy 13

Note: For a complete list of utilities refer to Figure 2

approximate scale in feet
0 20 40

Figure 7: Map of TPH-g concentrations in soil (12-20) ft bgs

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

CPT/MIP/DPT borings (2012)

0.00 TPH-d concentrations 2011/2012 in groundwater (ug/L)

TPH-d ug/L

130,000
117,000
104,000
91,000
78,000
65,000
52,000
39,000
26,000
13,000
0

N

UST Pit

SS-4

UST 10,000 gallons

Station Building

SS-3

T-2 1,500

RS-3 <42

Sewer line

gas line

Werner Court

UST 3,000 gallons

SS-2

~11.5' bgs

SS-1

RS-2 6,800

T-1 14,000

3.3' bgs

D-2

2.35'

2.2'

B-3

2.8'

B-4

removed fuel piping

T-Junction

2.6'

Pump Islands

B-2

2.6'

CPT/MIP/DPT-1

2.3'

B-1

2.6'

D-1

RS-1 8,200

140

26,000

CPT/MIP/DPT-2

820

Fence

RS-4 130,000

52,000

water line

26,000

0

DPT-3

DPT-4 150

generalized groundwater flow direction

Mountain Boulevard

phone lines

stormwater line

fence

Trees and shrubs

Trees and shrubs

Toward Warren Fwy 13

approximate scale in feet

0 20 40

Figure 8: Contour map of TPH-d concentrations in groundwater (5-29 ft bgs)

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

CPT/MIP/DPT borings (2012)

0.00 / 0.00 TPH-g/Benzene concentrations (2011/2012) in groundwater (ug/L)

TPH-g ug/L

- 140,000
- 126,000
- 112,000
- 98,000
- 84,000
- 70,000
- 56,000
- 42,000
- 28,000
- 14,000
- 0

N

generalized groundwater flow direction

UST Pit

SS-4

UST 10,000 gallons

Station Building

SS-3

T-2 890 8

RS-3 130 <0.13

Werner Court

sewer line

gas line

UST 3,000 gallons

SS-2

28,000

~11.5' bgs

SS-1

RS-2 18,000 540

T-1 76,000 1,600

B-3 2.8'

3.3' bgs

T-Junction 2.6'

removed fuel piping

D-2 2.35 2.2'

B-4

B-2 2.6' 2.6'

D-1

Pump Islands

CPT/MIP/DPT-1

B-1 2.3'

RS-1 <6,300 60,000 94 790

CPT/MIP/DPT-2

28,000

56,000

28,000

0

Fence

RS-4 140,000 120

<13,000 <130

water line

DPT-3

DPT-4 <50 <0.5

stormwater line

Mountain Boulevard

phone lines

fence

Trees and shrubs

Trees and shrubs

Toward Warren Fwy 13

approximate scale in feet

0 20 40

Figure 9: Contour map of TPH-g concentrations and map of benzene concentrations in groundwater (5-29 ft bgs)

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

CPT/MIP/GS borings (2012)

0.00 MtBE concentrations (2011/2012) in groundwater (ug/L)

MtBE ug/L

65,000
54,000
45,000
36,000
27,000
18,000
9,000
0

N

UST Pit
SS-4
UST 10,000 gallons
Station Building
SS-3
T-2 12
RS-3 7.9
SS-2
UST 3,000 gallons
~11.5' bgs
Werner Court
sewer line
gas line
SS-1
RS-2 2,800
T-1 5,700
B-3
B-4
T-Junction
removed fuel piping
B-2
B-1
CPT-1 36,000
RS-1 65,000
CPT-2 52,000
D-2
D-1
Pump Islands
Fence
RS-4 28,000
water line
DPT-3
DPT-4 2,600
generalized groundwater flow direction
stormwater line
Mountain Boulevard
phone lines
fence
Fence/
?
Trees and shrubs
Trees and shrubs
Toward Warren Fwy 13

approximate scale in feet
0 20 40

Figure 10: Contour map of MtBE concentrations in groundwater (5-29 ft bgs)

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

CPT/MIP/DPT borings (2012)

0.00 TBA concentrations (2011/2012) in groundwater (ug/L)

TBA ug/L

100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0

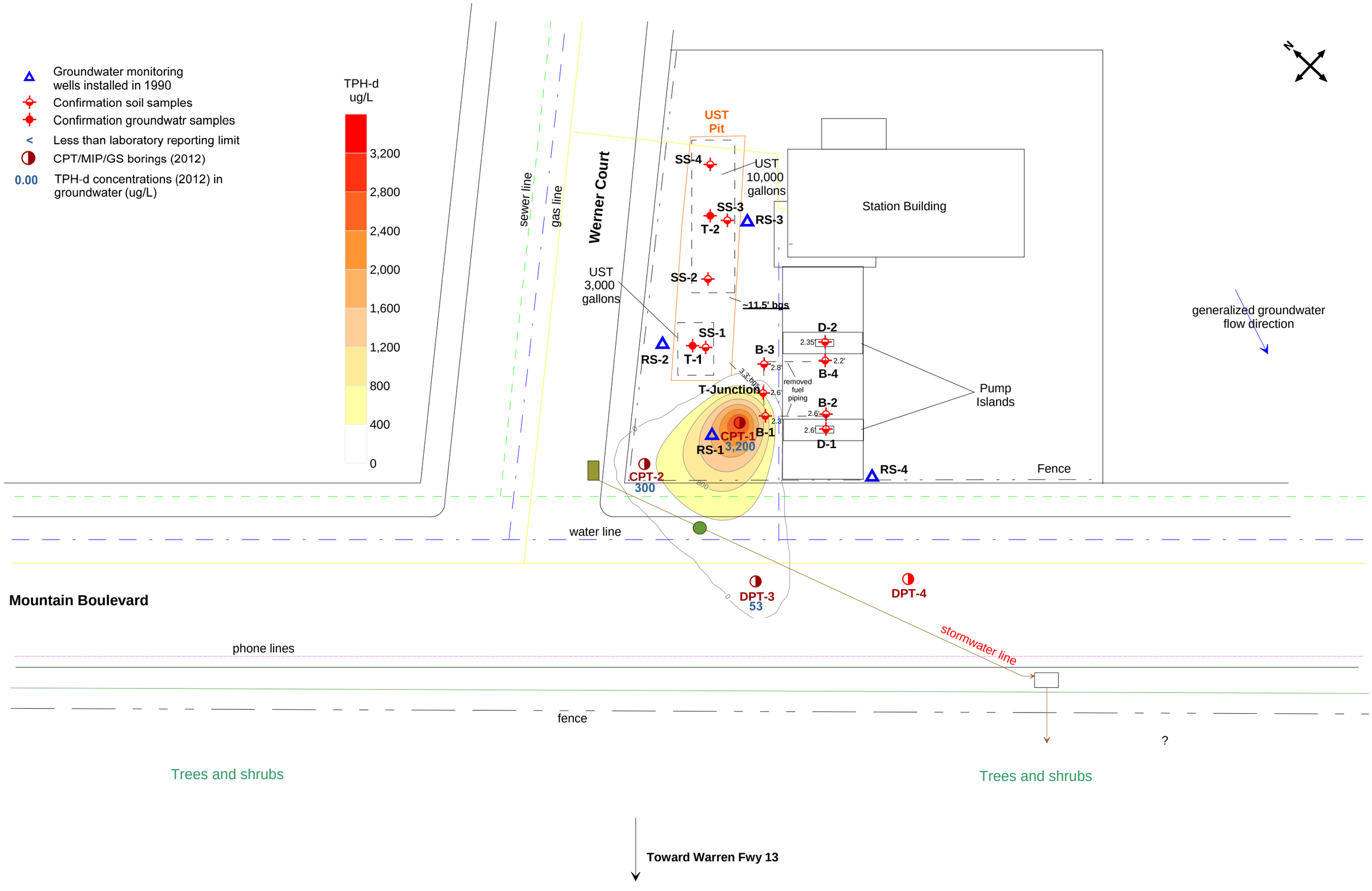
N

UST Pit
SS-4
UST 10,000 gallons
Station Building
SS-3
T-2 650
RS-3 <1.5
SS-2
UST 3,000 gallons
~11.5' bgs
SS-1
RS-2 64,000
T-1 <1,700
B-3
D-2
2.35'
2.2'
B-4
3.3' bgs
2.8'
removed fuel piping
T-Junction
2.6'
Pump Islands
B-2
2.6'
CPT/MIP/DPT-1
2.3'
B-1
2.6'
D-1
CPT/MIP/DPT-2
RS-1 2,800 41,000
92,000
RS-4 100,000
Fence
20,000
40,000
0
Werner Court
sewer line
gas line
water line
generalized groundwater flow direction
DPT-3
DPT-4 28
stormwater line
9-10 ft bgs
Mountain Boulevard
phone lines
fence
Trees and shrubs
Trees and shrubs
Toward Warren Fwy 13

approximate scale in feet
0 20 40

Figure 11: Contour map of TBA concentrations in groundwater (5-29 ft bgs)

SOMA ENVIRONMENTAL ENGINEERING, INC.



approximate scale in feet

0 20 40

Figure 12: Contour map of TPH-d concentrations in groundwater (39-42 ft bgs)

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

CPT/MIP/DPT borings (2012)

0.00 TPH-g concentrations (2012) in groundwater (ug/L)

0.00 Benzene concentrations (2012) in groundwater (ug/L)

TPH-g ug/L

96,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0

N

UST Pit
UST 10,000 gallons
UST 3,000 gallons
Station Building
Werner Court
sewer line
gas line
SS-4
SS-3
T-2
RS-3
SS-2
~11.5' bgs
SS-1
RS-2
T-1
B-3
D-2
B-4
B-2
D-1
RS-4
Fence
T-Junction
removed fuel piping
Pump Islands
CPT/MIP/DPT-1
CPT/MIP/DPT-2
B-1
RS-1
96,000
2,400
4,500
160
water line
DPT-3
<1,700
<17
DPT-4
generalized groundwater flow direction
stormwater line
Mountain Boulevard
phone lines
fence
?
Trees and shrubs
Trees and shrubs
Toward Warren Fwy 13

approximate scale in feet
0 20 40

Figure 13: Contour map of TPH-g concentrations and map of benzene concentrations in groundwater (39-42 ft bgs)

SOMA ENVIRONMENTAL ENGINEERING, INC.

Groundwater monitoring wells installed in 1990

Confirmation soil samples

Confirmation groundwatr samples

< Less than laboratory reporting limit

CPT/MIP/DPT borings (2012)

0.00 MtBE concentrations (2012) in groundwater (ug/L)

MtBE ug/L

95,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
50

N

UST Pit

UST 10,000 gallons

UST 3,000 gallons

~11.5' bgs

Station Building

Werner Court

sewer line

gas line

SS-4
SS-3
T-2
RS-3
SS-2
SS-1
RS-2
T-1
B-3
2.8'
3.3' bgs
T-Junction
2.6'
removed fuel piping
D-2
2.35'
2.2'
B-4
B-2
2.6'
2.3'
2.6'
D-1
Pump Islands
CPT/MIP/DPT-1
B-1
RS-1
95,000
CPT/MIP/DPT-2
11,000
RS-4
Fence
20000
50
water line

generalized groundwater flow direction

DPT-3
9,800

DPT-4

Mountain Boulevard

stormwater line

phone lines

fence

?

Trees and shrubs

Trees and shrubs

Toward Warren Fwy 13

approximate scale in feet
0 20 40

Figure 14: Contour map of MtBE concentrations in groundwater (39-42 ft bgs)

SOMA ENVIRONMENTAL ENGINEERING, INC.

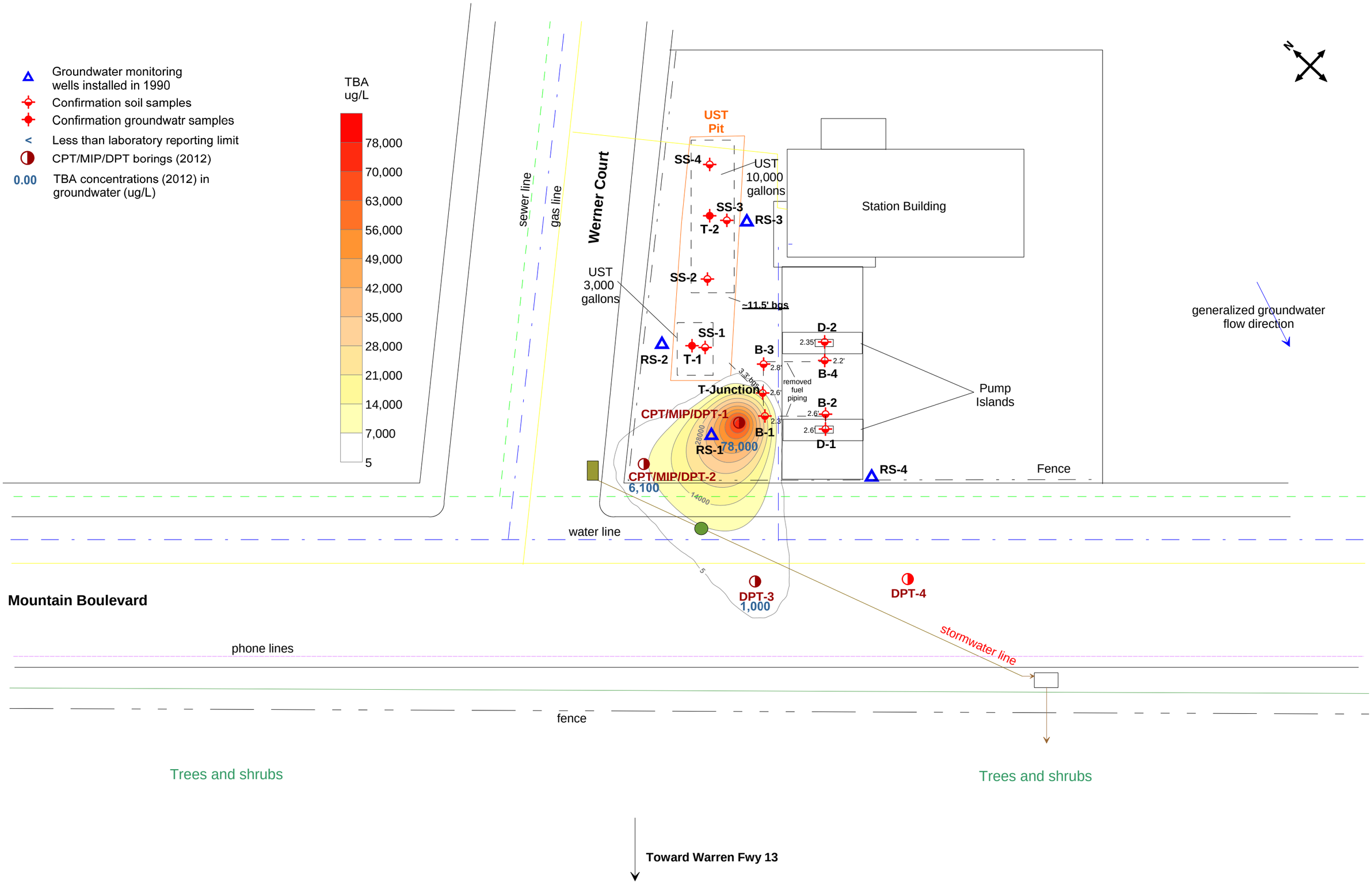
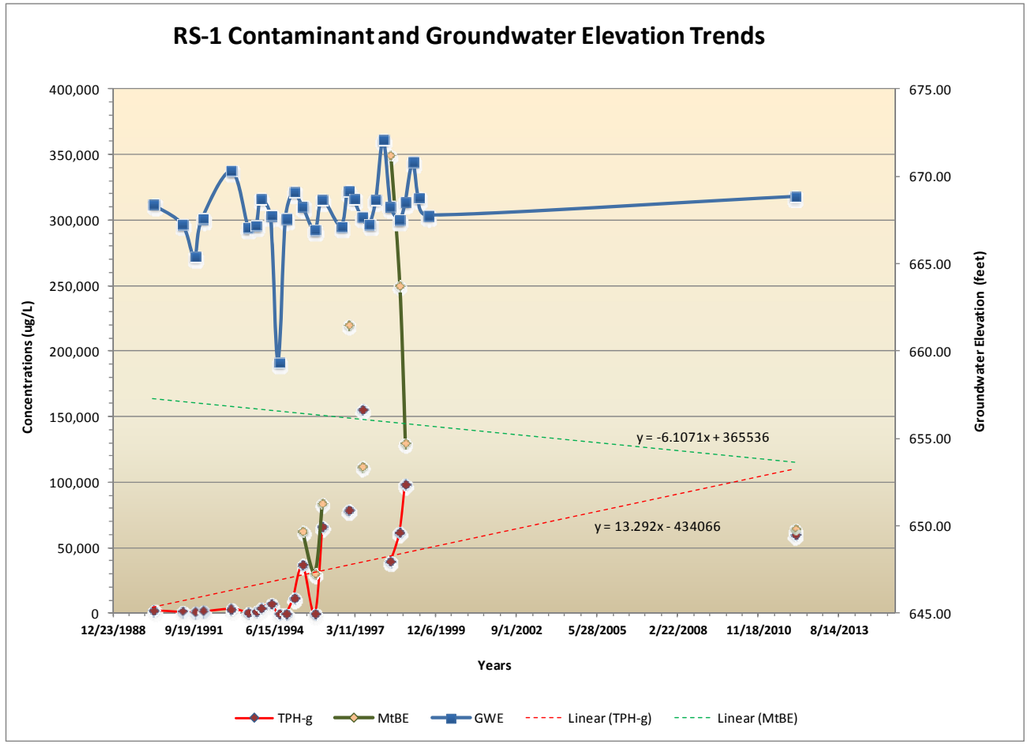
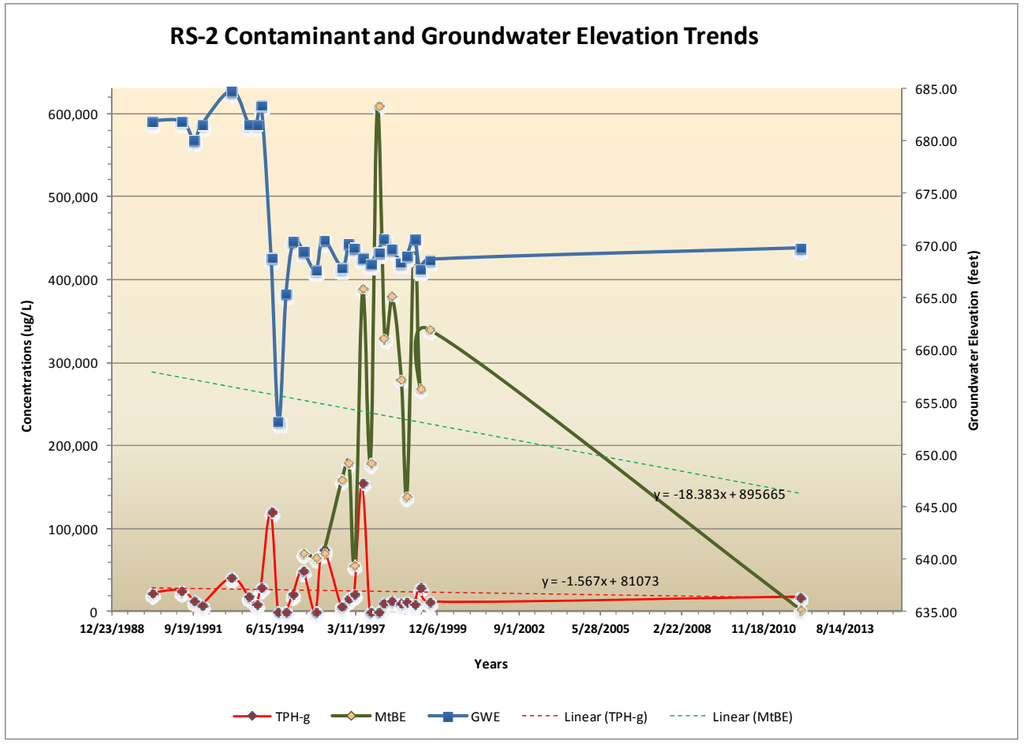
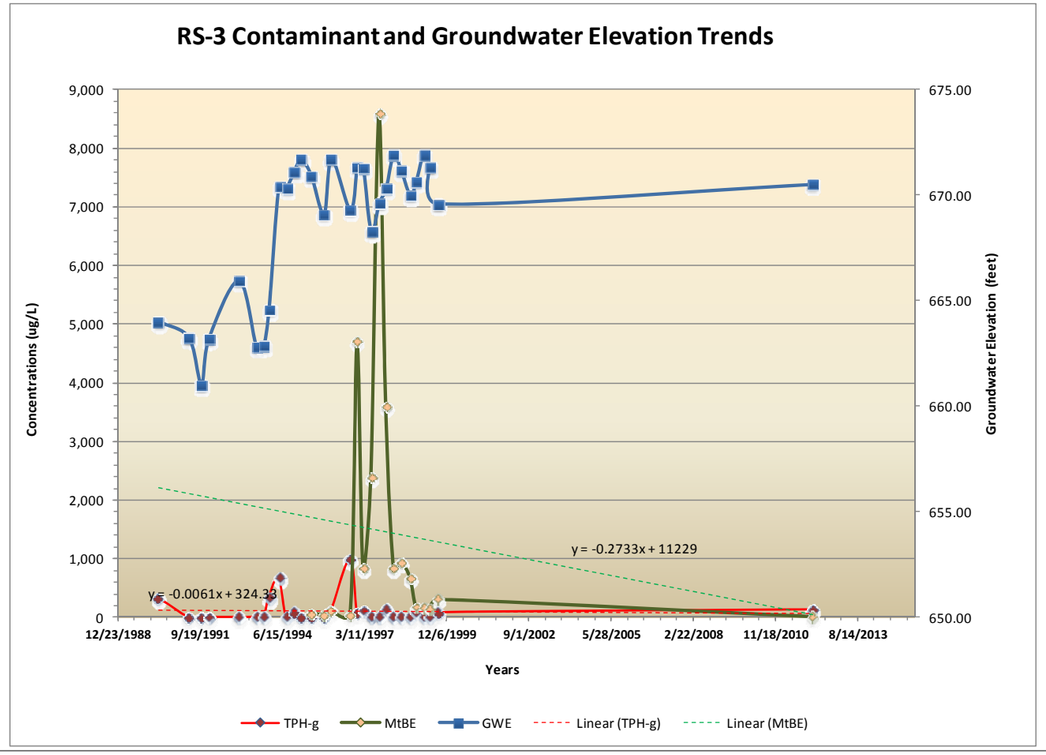


Figure 15: Contour map of TBA concentrations in groundwater (39-42 ft bgs)







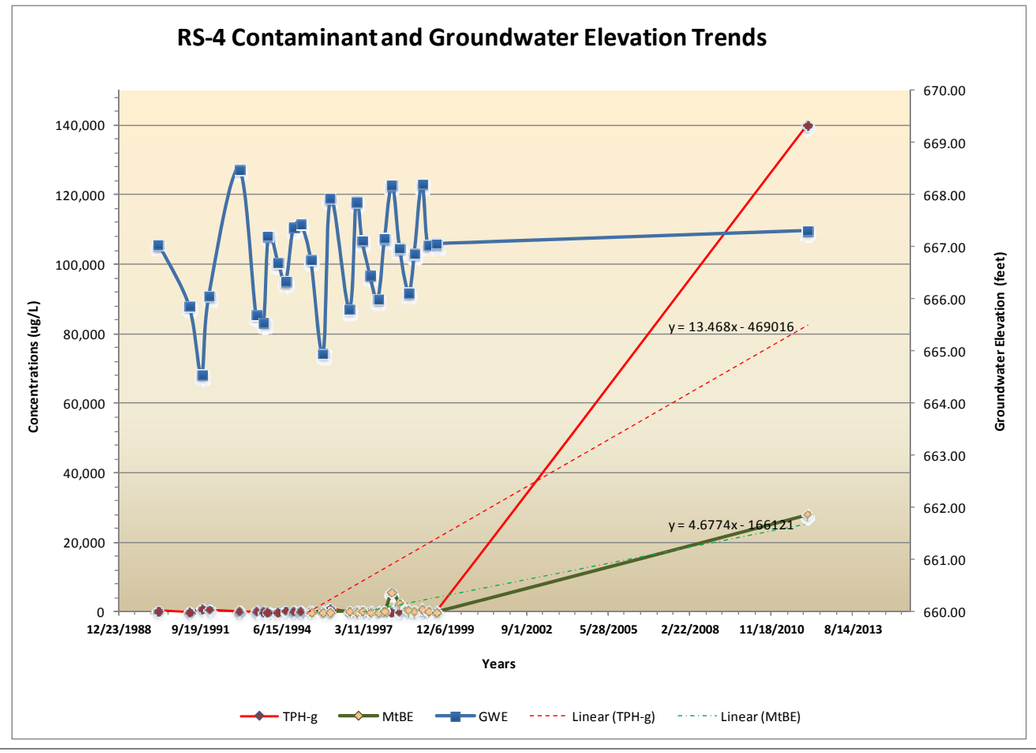
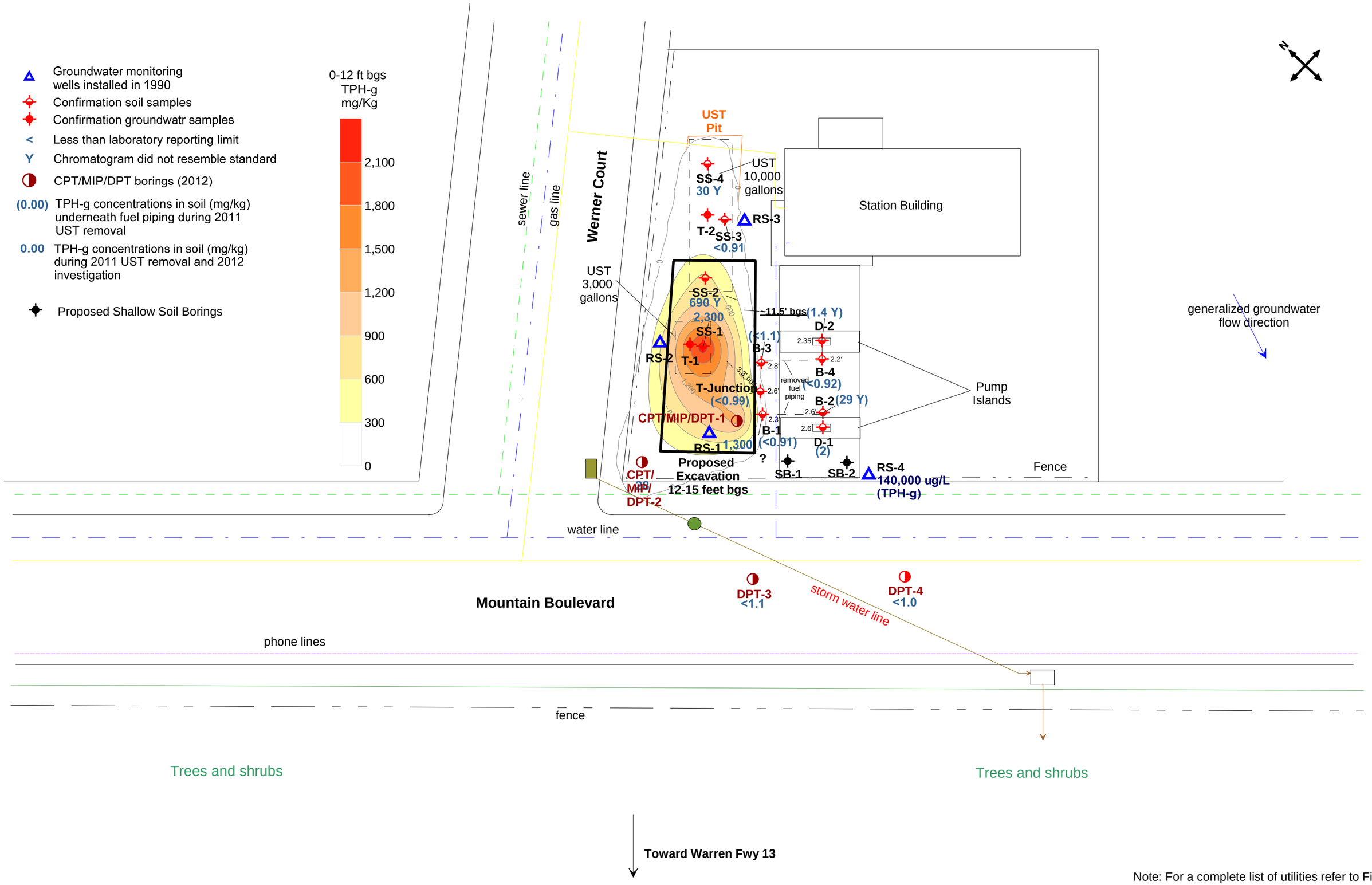


Figure 16: Concentration Trends in Monitoring Wells



Note: For a complete list of utilities refer to Figure 2

approximate scale in feet
0 20 40

Figure 17: Site map showing locations of proposed borings and extent of proposed excavation

SOMA ENVIRONMENTAL ENGINEERING, INC.

TABLES

Table 1:
Soil Analytical Data
2844 Mountain Blvd, Oakland, CA

Sample ID	Date	Sample Depth (feet)	TPH-g (mg/kg)	TPH-d (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MtBE (mg/kg)	TBA (mg/kg)	TAME (mg/kg)	Methanol(mg/kg)
Sampling Beneath USTs												
SS-1	8/9/2011	11.50	**2,300**	**630 Y**	<2.5	**15**	**17**	**123**	**3.3**	<50	<2.5	1.5 C
SS-2	8/9/2011	11.50	**690 Y**	**800**	<2.0	<2.0	<2.0	<2.0	<2.0	<40	<2.0	<1.0
SS-3	8/9/2011	11.50	<0.91	<1.0	0.0053	0.06	0.0078	0.0430	**0.54**	**0.11**	0.14	<1.0
SS-4	8/9/2011	11.50	30 Y	51 Y	0.0054	0.055	0.011	0.054	**0.310**	<0.1	0.064	<1.0
CS-1-CS-4 Composite	8/9/2011	NA	**570 Y**	**180 Y**	<1.3	2.1	**4.8**	**35**	<1.3	<25	<1.3	<1.0
Sampling Beneath Fuel Piping												
T-Junction	8/18/2011	2.6-3.3	<0.99	11 Y	<0.0047	<0.0047	<0.0047	<0.0047	**0.5**	**0.82**	0.031	<0.98
B-1	8/18/2011	2.30	<0.91	1.4 Y	<0.005	<0.005	<0.005	<0.005	0.013	<0.1	<5	<1
B-2	8/18/2011	2.60	29 Y	**160**	<0.033	<0.033	<0.033	<0.033	**0.410**	**1.6**	0.044	<1
B-3	8/18/2011	2.80	<1.1	25 Y	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.091	<0.0045	<0.99
B-4	8/18/2011	2.20	<0.92	18 Y	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.097	<0.0049	<0.98
D-1	8/18/2011	2.60	2	4.0 Y	<0.026	<0.026	<0.026	0.050	**0.96**	**3.1**	0.140	1.4 C
D-2	8/18/2011	2.35	1.4 Y	2.7 Y	<0.0048	<0.0048	<0.0048	<0.0048	**0.095**	**0.57**	<0.0048	<0.99
CPT/DPT-1	3/16/2012	8	**1,300**	**99 Y**	<1.0	<1.0	**16**	**58**	**16**	<20	1.6	NA
CPT/DPT-1	3/16/2012	15	1.9	1.6 Y	<1.0	<1.0	<1.0	<1.0	**13**	**38**	<1.0	NA
CPT/DPT-1	3/16/2012	42	<0.93	2.2 Y	<0.0049	<0.0049	<0.0049	<0.0049	**0.50**	**0.27**	0.020	NA
CPT/DPT-2	3/16/2012	10	28	21 Y	<0.25	<0.25	<0.25	0.260	**1.7**	**7.10**	<0.25	NA
CPT/DPT-2	3/16/2012	16	<0.98	<1.0	<0.046	<0.046	<0.046	<0.046	**0.084**	**14.00**	<0.046	NA
CPT/DPT-2	3/16/2012	48	<1.0	1.1 Y	<0.0049	<0.0049	<0.0049	<0.0049	**0.200**	<0.098	0.013	NA
DPT-3	3/15/2012	8	<1.1	<0.99	<0.0049	<0.0049	<0.0049	<0.0049	**0.490**	<0.099	0.027	NA
DPT-3	3/15/2012	15	<0.97	<1.0	<0.0047	<0.0047	<0.0047	<0.0047	**1.200**	<0.094	0.026	NA
DPT-4	3/15/2012	8	<1.1	<1.0	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.098	<0.0049	NA
DPT-4	3/15/2012	16	7.1 Y	9.0 Y	<0.0049	<0.0049	<0.0049	<0.0049	**0.061**	<0.098	<0.0049	NA
DPT-4	3/15/2012	43	<1.1	<1.0	<0.0049	<0.0049	<0.0049	<0.0049	**0.025**	<0.098	<0.0049	NA
ESL - Shallow Soil Residential, Potential Drinking			**83**	**83**	**0.044**	**2.9**	**2.3**	**2.3**	**0.023**	**0.075**	NA	NA
ESL-Deep Soil Residential, Potential Drinking			**83**	**83**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**0.075**	NA	NA

Table 1:
Soil Analytical Data
2844 Mountain Blvd, Oakland, CA

Sample ID	Date	Sample Depth (feet)	Acetone (mg/kg)	Methylene chloride (mg/kg)	Isopropylbenzene (mg/kg)	Propylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)	n-Butylbenzene (mg/kg)	Naphthalene (mg/kg)	Ethanol (mg/kg)
Sampling Beneath USTs												
SS-1	8/9/2011	11.50	<10	<10	2.7	12	29	93	<2.5	7.5	**19**	2
SS-2	8/9/2011	11.50	<8.0	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.4	**3.8**	<1.0
SS-3	8/9/2011	11.50	0.057	0.026	<0.0046	<0.0046	<0.0046	0.0059	<0.0046	<0.0046	<0.0046	<1.0
SS-4	8/9/2011	11.50	0.045	<0.02	<0.005	0.005	<0.005	<0.005	0.0066	0.011	<0.005	<1.0
CS-1-CS-4 Composite	8/9/2011	NA	<5.0	<5.0	<1.3	3.3	9.8	30	<1.3	1.8	**4.5**	<1.0
Sampling Beneath Fuel Piping												
T-Junction	8/18/2011	2.6-3.3	0.087	<0.019	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.98
B-1	8/18/2011	2.30	0.025	<0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<1
B-2	8/18/2011	2.60	0.320	<0.130	0.048	0.250	<0.033	<0.033	0.055	0.250	0.670	1.4
B-3	8/18/2011	2.80	<0.018	<0.018	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.99
B-4	8/18/2011	2.20	<0.019	<0.019	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.98
D-1	8/18/2011	2.60	**0.710**	**<0.1**	<0.26	0.038	<0.026	0.099	<0.026	<0.026	<0.026	<0.98
D-2	8/18/2011	2.35	0.170	<0.019	<0.0048	0.0072	0.0054	0.029	<0.0048	<0.0048	<0.0048	<0.99
ESL - Shallow Soil Residential, Potential Drinking			0.500	0.077	NA	NA	NA	NA	NA	NA	1.3	NA
ESL-Deep Soil Residential, Potential Drinking			0.500	0.077	NA	NA	NA	NA	NA	NA	3.4	NA

Table 1:
Soil Analytical Data
2844 Mountain Blvd, Oakland, CA

Sample ID	Date	Sample Depth (feet)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)
Sampling Beneath USTs							
SS-1	8/9/2011	NA	<0.25	**190**	3.7	**800**	45
SS-2	8/9/2011	NA	0.26	**320**	1.9	**1,400**	36
SS-3	8/9/2011	NA	<0.25	**250**	1.0	**1,000**	36
SS-4	8/9/2011	NA	<0.25	**230**	1.6	**1,000**	39
CS-1-CS-4 Composite	8/9/2011	NA	<0.25	**280**	2.5	**1,100**	39
Sampling Beneath Fuel Piping							
T-Junction	8/18/2011	NA	<0.25	**260**	4.10	**890**	40
B-1	8/18/2011	NA	<0.25	**240**	3.00	**840**	38
B-2	8/18/2011	NA	<0.25	**260**	5.10	**860**	39
B-3	8/18/2011	NA	<0.25	**260**	2.70	**900**	400
B-4	8/18/2011	NA	<0.25	**280**	2.50	**940**	36
D-1	8/18/2011	NA	<0.25	**220**	2.50	**800**	35
D-2	8/18/2011	NA	<0.25	**280**	3.10	**980**	37
ESL - Shallow Soil Residential, Potential Drinking			1.70	100.00	200.00	150.00	600.00
ESL-Deep Soil Residential, Potential Drinking			39.00	250.00	750.00	260.00	2,500.00

Note:

C: Presence confirmed, but RPD between columns exceeds 40%

Y: Sample exhibits chromatographic pattern which does not resemble standard

<: Below laboratory-reporting limit

ESL: California Regional Water Quality Control Board, Environmental Screening Levels, Shallow/Deep Soil, Commercial, Groundwater is a current or potential source of drinking water, Tables A and C. Interim Final November 2007,

NA: Not Applicable

Table 2:
Grab Groundwater Analytical Data
2844 Mountain Blvd, Oakland, CA

Sample ID	Date	Depth of Boring at the time of sampling (feet)	Depth to water at the time of sampling (feet)	TPH-d (µg/L)	TPH-g (µg/L)	Benzene (µg/L)	Toluene(µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MtBE (µg/L)	TBA (µg/L)	TAME (µg/L)	Naphthalene (µg/L)
T-1	8/9/2011	NA	11.50	**14,000**	**76,000**	**1,600**	**11,000**	**2,000**	**10,000**	**5,700**	<1,700	5,600	**530**
T-2	8/9/2011	NA	11.50	**1,500**	**890**	**8**	7.3	<0.5	**157**	**12**	**650**	<0.5	7.6
CPT/DPT-1-1	3/16/2012	24	23.1	**140** [Y]	<6,300	**94**	**64**	<63	<63	**36,000**	**2,800**	2,300	NA
CPT/DPT-2-1	3/16/2012	24	21.9	**820**	<13,000	<130	<130	<130	<130	**52,000**	**92,000**	3,000	NA
DPT-4-1	3/15/2012	32	29	**150** [Y]	<50	<0.5	<0.5	<0.5	<0.5	**2,600**	**28**	210	NA
CPT/DPT-1-2	3/16/2012	48	41.1	**3,200**	**96,000**	**2,400**	**11,000**	**3,100**	**14,700**	**95,000**	**78,000**	7,400	NA
CPT/DPT-2-2	3/16/2012	48	41.9	**300** [Y]	**4,500**	**160**	**390**	**170**	**800**	**11,000**	**6,100**	1,500	NA
DPT-3-2	3/15/2012	49	39	53 [Y]	<1,700	<17	<17	<17	<17	**9,800**	**1,000**	690	NA
ESL - Potential Drinking Water				**100**	**100**	**1.0**	**40.0**	**30.0**	**20.0**	**5.0**	**12**	**NA**	**17.0**

Sample ID	Date	Depth of Boring at the time of sampling (feet)	Depth to water at the time of sampling (feet)	Propylbenzene (µg/L)	1,3,5-Trimethylbenzene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	Methanol (mg/L)	Ethanol (mg/L)	*Cadmium (µg/L)*	*Chromium (µg/L)*	*Lead (µg/L)*	*Nickel (µg/L)*	*Zinc (µg/L)*
T-1	8/9/2011	NA	11.50	240	520	1,800	<1.0	<1.0	<5.0	11	**39**	**140**	**210**
T-2	8/9/2011	NA	11.50	<0.5	13	24	<1.0	<1.0	<5.0	6.1	**8**	**43**	73
ESL - Potential Drinking Water				**NA**	**NA**	**NA**	**NA**	**NA**	**0.25**	**50.0**	**2.5**	**8.2**	**81.0**

Notes:
< : below Laboratory Detection Limits
NA- Not Applicable

ESL: California Regional Water Quality Control Board, Environmental Screening Levels, Shallow/Deep Soil, Commercial, Groundwater is a current or potential source of drinking water, Tables A and C. Interim Final November 2007, Revised May 2008

Table 3
Groundwater Analytical Results
2844 Mountain Boulevard, Oakland, CA

Monitoring Well	Date	Casing Elevation (Ft.)	Depth to Top Fluid (Ft.)	Depth to Groundwater (Ft.)	Free-Product Thickness	Groundwater Elevation	TPH-g µg/L	TPH-d µg/L	TPH-mo µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MtBE µg/L	TBA µg/L	TAME µg/L
RS-1	May-90	675.63	7.20	7.20	0.00	668.43	2,700			370	420	40	320			
	May-91	675.63	8.35	8.35	0.00	667.28	1,300			580	130	62	240			
	Oct-91	675.63	10.22	10.22	0.00	665.41	1,100			140	100	45	210			
	Jan-92	675.63	8.06	8.06	0.00	667.57	1,700			9.9	31	9.7	170			
	Jan-93	675.63	5.30	5.30	0.00	670.33	3,700			650	9.2	51	170			
	Aug-93	675.63	8.56	8.56	0.00	667.07	900			14	0.6	2.1	8			
	Nov-93	675.63	8.44	8.44	0.00	667.19	1,400			9.6	ND	0.9	5			
	Jan-94	675.63	6.88	6.88	0.00	668.75	4,200			95	3.1	58	130			
	May-94	675.63	7.87	7.87	0.00	667.76	7,500			270	11	37	96			
	Aug-94	675.63	16.28	16.28	0.00	659.35	130			12	0.5	2.6	5			
	Nov-94	675.63	8.02	8.02	0.00	667.61	270			4.7	0.7	0.6	15			
	Feb-95	675.63	6.51	6.51	0.00	669.12	12,000			81	2.3	1	12			
	Jun-95	675.63	7.34	7.34	0.00	668.29	37,000			460	ND	ND	ND	63,000		
	Nov-95	675.63	8.71	8.71	0.00	666.92	ND			660	16	140	330	31,000		
	Feb-96	675.63	6.95	6.95	0.00	668.68	66,000			110	ND	12	21	84,000		
	9/18/1996	675.63	8.44	8.52	0.08	667.17	1 INCH FLOATING PRODUCT									
	#########	675.63	6.42	6.62	0.20	669.17	79,000			4,000	37,000	8,000	45,000	220,000		
	2/21/1997	675.63	6.88	6.92	0.04	668.74	1/2 INCH FLOATING PRODUCT									
	5/28/1997	675.63	7.88	7.96	0.08	667.73	156,000			9,400	51,000	7,000	45,000	112,000		
	9/2/1997	675.63	8.34	8.38	0.04	667.28	1/2 INCH FLOATING PRODUCT									
	#########	675.63	6.98	7.00	0.02	668.65	1/4 INCH FLOATING PRODUCT									
	2/25/1998	675.63	3.51	3.52	0.01	672.12	1/8 INCH FLOATING PRODUCT									
	5/27/1998	675.63	7.31	7.31	0.00	668.32	40,000			2,200	4,000	2,300	19,000	350,000		
	9/16/1998	675.63	8.10	8.10	0.00	667.53	62,000			2,400	2,300	2,100	14,000	250,000		
	#########	675.63	7.10	7.10	0.00	668.53	99,000			2,600	5,800	2,500	18,000	130,000		
	2/23/1999	675.67	4.82	4.87	0.05	670.84	5/8 INCH FLOATING PRODUCT									
	5/5/1999	675.67	6.86	6.90	0.04	668.80	FLOATING PRODUCT									
	8/24/1999	675.67	7.87	7.90	0.03	667.80	FLOATING PRODUCT									
	2/8/2012	**675.67**	**6.80**	**6.80**	**0.00**	**668.87**	**60,000 x**	**8,200 x**	**<936**	**790**	**<6.4**	**2,000**	**430**	**65,000**	**41,000**	**5,100**
RS-2	May-90	689.00	7.06	7.06	0.00	681.94	23,000			7,200	4,800	300	3,300			
	May-91	689.00	7.14	7.14	0.00	681.86	26,000			14,000	1,800	750	2,900			
	Oct-91	688.89	8.84	8.84	0.00	680.05	13,000			4,300	910	300	2,300			
	Jan-92	688.89	7.34	7.34	0.00	681.55	8,300			1,800	920	140	1,700			
	Jan-93	688.89	4.10	4.10	0.00	684.79	41,000			7,000	210	1,200	4,200			
	Aug-93	688.89	7.32	7.32	0.00	681.57	19,000			5,300	62	810	1,600			
	Nov-93	688.89	7.34	7.34	0.00	681.55	9,300			2,400	3.90	46	800			
	Jan-94	688.89	5.52	5.52	0.00	683.37	30,000			4,900	ND	880	2,600			
	May-94	675.25	6.40	6.40	0.00	668.85	120,000			3,300	330	ND	2,200			
	Aug-94	675.25	22.11	22.11	0.00	653.14	510			7.30	3.80	3.50	32			
	Nov-94	675.25	9.82	9.82	0.00	665.43	620			6.60	3.90	1.10	47			
	Feb-95	675.25	4.81	4.81	0.00	670.44	22,000			228	80	2	463			
	Jun-95	675.25	5.80	5.80	0.00	669.45	49,000			1,300	160	200	1,600	71,000		
	Nov-95	675.25	7.64	7.64	0.00	667.61	ND			670	25	150	360	65,000		

Table 3
Groundwater Analytical Results
2844 Mountain Boulevard, Oakland, CA

Monitoring Well	Date	Casing Elevation (Ft.)	Depth to Top Fluid (Ft.)	Depth to Groundwater (Ft.)	Free-Product Thickness	Groundwater Elevation	TPH-g µg/L	TPH-d µg/L	TPH-mo µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MtBE µg/L	TBA µg/L	TAME µg/L
RS-2 cont.	Feb-96	675.25	4.69	4.69	0.00	670.56	75,000			1,400	170	59	460	71,000		
	9/18/1996	675.25	7.34	7.34	0.00	667.91	6,300			2,000	48	350	570	160,000		
	#########	675.25	5.08	5.08	0.00	670.17	16,000			2,000	840	200	3,200	180,000		
	2/21/1997	675.25	5.42	5.42	0.00	669.83	22,000			2,100	1,300	600	5,100	56,000		
	5/28/1997	675.25	6.40	6.40	0.00	668.85	156,000			4,200	89	1,000	6,900	390,000		
	9/2/1997	675.25	6.93	6.93	0.00	668.32	<50			1,300	25	360	1,400	180,000		
	#########	675.25	5.93	5.93	0.00	669.32	<50			600	ND	ND	ND	610,000		
	2/25/1998	675.25	4.59	4.59	0.00	670.66	11,000			1,100	<50	320	2,400	330,000		
	5/27/1998	675.25	5.61	5.61	0.00	669.64	13,000			2,000	150	600	2,700	380,000		
	9/16/1998	675.25	6.84	6.84	0.00	668.41	11,000			1,600	20	1,600	1,600	280,000		
	#########	675.25	6.24	6.24	0.00	669.01	12,000			1,200	84	<5	960	140,000		
	2/23/1999	675.28	4.62	4.62	0.00	670.66	8,800			1,500	650	640	1,500	450,000		
	5/5/1999	675.28	7.55	7.55	0.00	667.73	29,000			2,000	1,300	500	3,700	270,000		
	8/24/1999	675.28	6.62	6.62	0.00	668.66	12,000			1,900	20	370	980	340,000		
	2/8/2012	**675.28**	**5.52**	**5.52**	**0.00**	**669.76**	**18,000 x**	**6,800 x**	**<378**	**540**	**<6.4**	**120**	**710**	**2,800**	**64,000**	**420**
RS-3	May-90	670.00	6.00	6.00	0.00	664.00	330			2	1	1	150			
	May-91	670.00	6.76	6.76	0.00	663.24	ND			0.40	ND	0.80	8			
	Oct-91	670.00	8.98	8.98	0.00	661.02	ND			ND	ND	ND	ND			
	Jan-92	670.00	6.81	6.81	0.00	663.19	ND			2.20	7.20	0.60	4			
	Jan-93	670.00	4.05	4.05	0.00	665.95	ND			ND	ND	ND	ND			
	Aug-93	670.00	7.19	7.19	0.00	662.81	ND			30	6	2.40	5			
	Nov-93	670.00	7.12	7.12	0.00	662.88	ND			4.80	0.40	0.60	2			
	Jan-94	670.00	5.42	5.42	0.00	664.58	330			25	3.20	3.90	12			
	May-94	676.20	5.78	5.78	0.00	670.42	670			34	4	28	70			
	Aug-94	676.20	5.86	5.86	0.00	670.34	ND			ND	ND	ND	ND			
	Nov-94	676.20	5.08	5.08	0.00	671.12	69			2.50	3.10	1	4			
	Feb-95	676.20	4.51	4.51	0.00	671.69	ND			0.30	0.40	ND	1			
	Jun-95	676.20	5.29	5.29	0.00	670.91	ND			ND	ND	ND	ND	66		
	Nov-95	676.20	7.10	7.10	0.00	669.10	ND			ND	ND	ND	ND	44		
	Feb-96	676.20	4.48	4.48	0.00	671.72	120			ND	ND	ND	ND	110		
	9/18/1996	676.20	6.92	6.92	0.00	669.28	1,000			13	8.60	10	17	33		
	#########	676.20	4.90	4.90	0.00	671.30	85			20	2	<0.5	14	4,700		
	2/21/1997	676.20	4.94	4.94	0.00	671.26	120			5	2	2	6	850		
	5/28/1997	676.20	7.92	7.92	0.00	668.28	<50			6	<0.5	<0.5	<2	2,400		
	9/2/1997	676.20	6.60	6.60	0.00	669.60	<50			0.90	<0.5	<0.5	<2	8,600		
	#########	676.20	5.89	5.89	0.00	670.31	140			13	2	1	12	3,600		
	2/25/1998	676.20	4.29	4.29	0.00	671.91	<50			<0.5	<0.5	<0.5	4	850		
	5/27/1998	676.20	5.01	5.01	0.00	671.19	<50			7	<0.5	<0.5	11	940		
	9/16/1998	676.20	6.21	6.21	0.00	669.99	<50			2	2	2	10	670		
	#########	676.20	5.58	5.58	0.00	670.62	85			9	23	<0.5	19	180		

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RS-3 cont.	2/24/1999	676.23	4.30	4.30	0.00	671.93	<50			<0.5	0.90	<0.5	<1.0	150		
	5/5/1999	676.23	4.92	4.92	0.00	671.31	<50			1	2	1	6	130		
	8/24/1999	676.23	6.64	6.64	0.00	669.59	80			0.80	<0.5	0.60	<1	300		
	2/8/2012	**676.23**	**5.72**	**5.72**	**0.00**	**670.51**	**130 x**	**<42**	**<94**	**<0.13**	**0.59**	**2.90**	**18.1**	**7.9**	**<1.5**	**<0.17**
RS-4	May-90	675.38	8.34	8.34	0.00	667.04	440			9	11	9	49			
	May-91	675.38	9.50	9.50	0.00	665.88	ND			8	4	3	5			
	Oct-91	675.38	10.82	10.82	0.00	664.56	830			280	120	24	170			
	Jan-92	675.38	9.31	9.31	0.00	666.07	620			34	8.30	2.10	21			
	Jan-93	675.38	6.89	6.89	0.00	668.49	150			32	1.70	5.80	13			
	Aug-93	675.38	9.68	9.68	0.00	665.70	ND			0.90	0.70	ND	0			
	Nov-93	675.38	9.83	9.83	0.00	665.55	ND			ND	ND	ND	ND			
	Jan-94	675.38	8.17	8.17	0.00	667.21	ND			1.70	ND	0.81	2			
	May-94	675.38	8.69	8.69	0.00	666.69	ND			ND	ND	ND	1			
	Aug-94	675.38	9.04	9.04	0.00	666.34	420			6.50	4.10	1.90	40			
	Nov-94	675.38	8.00	8.00	0.00	667.38	130			4.10	0.70	1.70	8			
	Feb-95	675.38	7.93	7.93	0.00	667.45	ND			6	1.20	3.50	13			
	Jun-95	675.38	8.61	8.61	0.00	666.77	ND			ND	ND	ND	ND	69		
	Nov-95	675.38	10.43	10.43	0.00	664.95	ND			ND	ND	ND	ND	47		
	Feb-96	675.38	7.44	7.44	0.00	667.94	960			ND	ND	0.60	ND	80		
	9/18/1996	675.38	9.58	9.58	0.00	665.80	<50			<0.5	<0.5	<0.5	<2	200		
	#########	675.38	7.50	7.50	0.00	667.88	75			<0.5	0.60	<0.5	<0.5	104		
	2/21/1997	675.38	8.26	8.26	0.00	667.12	<50			1	1	<0.5	1	190		
	5/28/1997	675.38	8.92	8.92	0.00	666.46	<50			6	<0.5	<0.5	<2	110		
	9/2/1997	675.38	9.39	9.39	0.00	665.99	100			3	<0.5	<0.5	<2	39		
	#########	675.38	8.22	8.22	0.00	667.16	41			<0.5	2	<0.5	<2	210		
	2/25/1998	675.38	7.19	7.19	0.00	668.19	<50			3	<0.5	<0.5	<1	5,600		
	5/27/1998	675.38	8.40	8.40	0.00	666.98	<50			<0.5	<0.5	<0.5	<1	2,400		
	9/16/1998	675.38	9.26	9.26	0.00	666.12	<50			<0.5	<0.5	<0.5	<1	230		
	#########	675.38	8.50	8.50	0.00	666.88	<50			2	<0.5	<0.5	<1	100		
	2/24/1999	675.42	7.20	7.20	0.00	668.22	<50			2	3	0.80	5	670		
	5/5/1999	675.42	8.37	8.37	0.00	667.05	100			<0.5	<0.5	<0.5	<1	440		
	8/24/1999	675.42	8.36	8.36	0.00	667.06	<50			<0.5	<0.5	<0.5	<1	<500		
	2/8/2012	**675.42**	**8.11**	**8.11**	**0.00**	**667.31**	**140,000**	**130,000 x**	**<9,360**	**120**	**2,600**	**4,700**	**28,200**	**28,000**	**100,000**	**1,800**
ESLs (µg/L)	**Groundwater**			22.11			100	100	100	1.00	40	30	20	5.00	12	NL
	Vapor Intrusion			3.52			Use soil gas	Use soil gas	Use soil gas	540	380,000	170,000	160,000	24,000	Use soil gas	NL

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Note:

< : Below Laboratory Reporting Limit (Method Detection Limit)

x : Does not match pattern of reference Gasoline standard/ Not typical of diesel standard pattern (possibly fuel lighter than diesel)

ESL: Environmental Screening Level by California Regional Water Quality Control Board San Francisco Bay Region Interim Final revised May 2008 (Table-F1a, groundwater is a current or potential drinking water source)

NL: Not Listed

Table 3
Additional VOC Detections
2844 Mountain Boulevard, Oakland, CA

Monitoring Well	Date	Isopropyl benzene µg/L	n-Propylbenzene µg/L	1,3,5-Trimethyl benzene µg/L	1,2,4-Trimethyl benzene µg/L	p-Isopropyltoluene µg/L	n-Butylbenzene µg/L	Naphthalene µg/L
RS-1	2/8/2012	110	340	97	600	<4.1	25	460
RS-2	2/8/2012	56	130	340	800	<4.1	<3.6	200
RS-3	2/8/2012	<0.097	0.85	4.3	13	<0.093	<0.081	0.72
RS-4	2/8/2012	290	880	2,700	7,600	130	110	290

Note:

< : Below Laboratory Reporting Limit (Method Detection Limit)

APPENDIX A

SITE HISTORY

Site History and Use

Soil contamination was initially identified at the site in March 1989, during the replacement of the product lines by Diablo Tank and Equipment. Up to 8,400 mg/kg of total petroleum hydrocarbons as gasoline (TPH-g) were identified in soil samples collected from the southern edge of the USTs.

In July 1989, On-Site Technologies excavated and disposed of between 90 and 150 cubic yards of contaminated soil from the southern end of the UST that then contained premium unleaded fuel. Up to 3,300 mg/kg of total petroleum hydrocarbons as gasoline (TPH-g) were detected in samples collected from excavation sidewalls.

In May 1990, Remediation Service International (RSI) conducted a soil and groundwater assessment at the site including installation of four groundwater monitoring wells (RS-1 through RS-4). Hydrocarbons were detected in both soil and groundwater during this assessment.

In June 1991, soil remediation began at the site using soil vapor extraction (SVE). In October 1991, groundwater remediation began at the site using RSI's remedial system. Remediation was suspended in 1992, apparently due to Desert Petroleum's financial problems.

In 1994 a 280-gallon waste oil UST was removed along with approximately 40 cubic yards of contaminated soil and in 1998 the 4,000-gallon gasoline UST was removed along with approximately 40 cubic yards of contaminated soil.

Reportedly the site has been monitored on a quarterly basis since May 1990, monitoring was discontinued in 1999. A Corrective Action Plan for the site was prepared in February 1995.

Beginning in 1995, hydrocarbon concentrations started to rise and free hydrocarbons appeared in monitoring well RS-1. During interim free-product removal, between October and December 1996, 30.4 gallons of gasoline and 1,077 gallons of contaminated groundwater were removed from monitoring well RS-1.

In March 1999, Western Geo-Engineers of Woodland, California prepared a quarterly groundwater monitoring report and subsurface conduit study for the site. This subsurface conduit study identified a sewer line that was partially submerged below the typical depth to groundwater at the site. This sewer line could potentially act as a conduit for migration of groundwater contamination.

A Report for Soil and Groundwater Assessment was prepared by Agua Science

Engineers, Inc in May 24, 2000 which documented further delineation of the soil and groundwater contamination extent in the off-site area.

“Out-of-compliance” correspondence dated June 18, 2009, was issued by Alameda County Environmental Health Services (ACEHS) for the site; this letter was related to a workplan dated December 7, 2000 for installation of five monitoring wells in both on- and off-site areas where elevated concentrations of fuel hydrocarbons had been detected.

Between July 29 and August 18, 2011 two underground storage tanks (USTs), one 10,000-gallon and one 3,000-gallon capacity, were excavated and disposed of off-site. During this event, associated fuel piping was also excavated and disposed of off-site. Depth to the bottom of excavation pit was recorded at 11.5 feet bgs. The UST pit and trenches were not backfilled to grade with clean (imported) fill material or resurfaced because the owner indicated he intends to install new USTs and piping in the near future. The UST pit was lined and backfilled with existing material and concrete rubble. The site is currently fenced in, which limits public access to the property. Confirmation soil samples were collected from beneath removed USTs and associated piping. Two groundwater samples were collected from the UST pit. It appeared that soil and groundwater contamination still exists in the area of removed USTs, as illustrated by levels of chemicals of concern (COCs) in excess of Environmental Screening Levels (ESLs). Lesser soil contamination exists in the area beneath the removed fuel piping.

APPENDIX B

PERMITS AND NOTIFICATIONS

Alameda County Public Works Agency - Water Resources Well Permit

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 03/01/2012 By jamesy

Permit Numbers: W2012-0150
Permits Valid from 03/09/2012 to 04/09/2012

Application Id:	1330391860052	**City of Project Site:**Oakland
Site Location:	2844 Mountain Blvd	
Project Start Date:	03/09/2012	**Completion Date:**04/09/2012
Assigned Inspector:	Contact Vicky Hamlin at (510) 670-5443 or vickyh@acpwa.org	
Applicant:	SOMA Environmental Engineering, Inc - Mansour Sepehr 6620 Owens Drive, Suite A, Pleasanton, CA 94588	**Phone:** 925-734-6400
Property Owner:	Tejindar Singh 640 Dublin Blvd, Dublin, CA 94568	**Phone:** --
Client:	** same as Property Owner **	
Contact:	Elena Manzo	**Phone:** -- **Cell:** --

	Total Due:	$265.00
Receipt Number: WR2012-0064	**Total Amount Paid:**	$265.00
Payer Name : Mansour Sepehr	Paid By: VISA	**PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Investigation-Geotechnical Study/CPT's - 12 Boreholes
Driller: Fisch Drilling - Lic #: 683865 - Method: CPT

Work Total: $265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2012-0150	03/01/2012	06/07/2012	12	2.00 in.	55.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Alameda County Public Works Agency - Water Resources Well Permit

5. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

6. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

7. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# OB120223 Job Site 2844 MOUNTAIN BL Parcel# 029 -1255-022-00

Divert Traffic Lanes per approved TSD12-0037 and reserve parking. Ref permit No: X1200394 1 space No Fee. Permit Issued 03/07/12
Non-Consecutive Days. POST 72 Hours Prior !!

NON-CONSECUTIVE DAYS

Nbr of days: 2 Linear feet: 275
Effective: 03/12/12 Expiration: 03/15/12

SHORT TERM NON-METERED

		Applcnt	Phone#	Lic#	--License Classes--
Owner	SINGH FAMILY PROPERTIES LP				
Contractor	FISCH ENVIRONMENTAL CONSTRUCTI	X	(707)768-9800	683865 A	C57
Arch/Engr					
Agent	SOMA ENVIRO/E HIGHTOWER		(925)734-6400		

Applic Addr 3150 JOHNSON ROAD, HYDESVILLE, CA, 95547

$516.95 FEES TO BE PAID AT FILING $.00 FEES TO BE PAID AT ISSUANCE

$71.00	Applic	$379.50	Permit
$.00	Process	$42.80	Rec Mgmt
$.00	Gen Plan	$.00	Invstg
$.00	Other	$23.65	Tech Enh

JOB SITE

TCP needs to be approved by Transportation Services every 30 days or whenever deviated from the previously approved plan.

ADDRESS: _____

Applicant: _____ _____

Issued by: _____ _____

DIST: _____

CITY OF OAKLAND

Date: 03/07/12 Amt Paid: $953.00
By: MKH Register R02 Receipt# 158391

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# X1200394 Job Site 2844 MOUNTAIN BL Parcel# 029 -1255-022-00

Descr Soil boring(s) on Mountain Blvd CPT-3 and CPT-4. Permit Issued 03/07/12
Impact on traffic lane per TSD-12-xxxxx
Call PWA INSPECTION prior to start: 510-238-3651. 4th FLOOR.
Work Type EXCAVATION-PRIVATE P

USA # Util Co. Job # Acctg#:
Util Fund #:

		Applcnt	Phone#	Lic#	--License Classes--
Owner	SINGH FAMILY PROPERTIES LP				
Contractor	FISCH ENVIRONMENTAL CONSTRUCTI	X	(707)768-9800	683865 A	C57
Arch/Engr					
Agent	SOMA ENVIRO/E MANZO		(925)734-6400		

Applic Addr 3150 JOHNSON ROAD, HYDESVILLE, CA, 95547

$436.05 FEES TO BE PAID AT ISSUANCE

$71.00	Applic	$309.00	Permit
$.00	Process	$36.10	Rec Mgmt
$.00	Gen Plan	$.00	Invstg
$.00	Other	$19.95	Tech Enh

Permit Issued By _____ Date: _____

Finaled By _____ Date: _____

JOB SITE

ADDRESS:

DIST:

CITY OF OAKLAND

Date: 03/07/12 Amt Paid: $953.00
By: MKH Register R02 Receipt# 158391

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Permit No. X1200394 Parcel #: 029 -1255-022-00
Project Address: 2844 MOUNTAIN BL

Licensed Contractors' Declaration
I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Construction Lending Agency Declaration
I hereby affirm under penalty of perjury that there is a construction-lending agency for the performance of the work for which this permit is issued, as provided by Section 3097 of the Business and Professions Code. N/A under Lender implies No Lending Agency.

Lender_____ Address_____

Workers' Compensation Declaration

I hereby affirm under penalty of perjury one of the following declarations:

[ ] I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

[ ] I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

CARRIER:_____POLICY NO. _____

[ ] I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS, IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3707 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

Hazardous Materials Declaration

I hereby affirm that the intended occupancy [ ] WILL [ ] WILL NOT use, handle or store any hazardous, or acutely hazardous, materials. (Checking "WILL" acknowledges that Sections 25505, 25533, & 25534 of the Health & Safety Code, as well as filing instructions, were made available to you.)

I HEREBY CERTIFY THE FOLLOWING: That I have read this document; that the above information is correct; and that I have truthfully affirmed all applicable declarations contained in this document. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection. I am fully authorized by the owner and to perform the work authorized by this permit.

PRINT NAME _____ Signature [ ] Contractor, or [ ] Agent _____ Date _____

ADDRESS: _____

DIST: _____

SPECIAL PROVISION 7-10.1 TRAFFIC REQUIREMENTS

Project Name: _____
Project Number: TSD 12-0037
Reviewed By: B.Chang 3/7/12
Date: 3/7/2012
Permit good from 3/7/2012
to 4/6/2012

ADD NEW SUBSECTION TO READ:
SP 7-10.1.4 Vehicular Traffic

Attention is directed to Section 7-10. Public Convenience and Safety, of the City of Oakland Standard Specification for Public Works Construction, 2006 Edition (Include this paragraph for p-jobs, excavation permits or obstruction permits).

The Contractor shall conduct its work in such a manner as to provide public convenience and safety and according to the provisions in this subsection. The provisions shall not be modified or altered without written approval from the Engineer.

Standard traffic control devices shall be placed at the construction zone according to the latest edition of the Work Area Traffic Control Handbook or Manual on Uniform Traffic Control Devices (MUTCD), Chapter 6 – "Traffic Controls for Construction and Maintenance Work Zone," or as directed by the Engineer.

All trenches and excavations in any public street or roadway shall be back filled and opened to traffic, or covered with suitable steel plates securely placed and opened to traffic at all times except during actual construction operations unless otherwise permitted by the Engineer.

Each section of work shall be completed or temporarily paved and open to traffic in not more than 5 days after commencing work unless otherwise permitted in writing by the Engineer.

Where construction encroaches into the sidewalk area, a minimum of 5 ½ feet of unobstructed sidewalk shall be maintained at all times for pedestrian use. Pedestrian barricades, shelter, and detour signs per Caltrans standards may be required.

The contractor shall conduct its operation in such a manner as to leave the following traffic lanes unobstructed and in a condition satisfactory for vehicular travel during the Obstruction Period. At all times traffic lanes will be restricted and reopened to travel. Emergency access shall be provided at all times.

Street Name Limits	Obstruction Period	North Bound	South Bound	East Bound	West Bound
2844 Mountain Blvd between Kearny Ave and Joaquin Miller Rd	Mon. – Fri. 9am – 4pm	Lane Shift	Lane Shift Shoulder Closed	N/A	N/A

The Contractor Shall Also include all check item:

1. ☐ Design a construction traffic control plan and submit (2) copies to the Engineer for approval prior to starting any work.
2. ☒ Replace all signs, pavement markings, and traffic detector loops damaged or removed due to construction within 3 days of completion of work or the final pavement lift. tomorrow morning 3/15/2012
3. ☒ Provide advance notice to Oakland Police at (510) 777-3333 (24-hrs) and Oakland Fire at (510) 238-3331 (2-rhs) when a single lane of traffic or less is provided on any street.
4. ☒ Provide 72-hour advance notice to AC Transit at (510) 891-4750 when affecting a bus stop. (message 3/9/2012)
5. ☒ For Caltrans roadways, ramps, or maintained facilities, the Contractor shall obtain appropriate permits and notify the Traffic Management Center 24 hours in advance of any work. message 3/14/2012 + email 3/14/2012
6. ☒ Flagger control is required. Certified Flagger is required. ✓
7. ☐ Pedestrian walkway by K-rail, Canopy or Plywood is required. (See detour plan)
8. ☒ Pedestrian traffic shall be maintained and guided through the project at all times.
9. ☒ Provide advance notice to Business and Residence within 72-hours. (3/9/2012)
10. ☒ Allow all traffic movement at intersection.

Nothing specified herein shall prohibit emergency work and/or repair necessary to ensure public health and safety.

Proposed CPT/MIP/GS borings

A FLAGGER, a trained individuall assisting with traffic flow (optional, if reported street dimentions are slightly different, and therefore prohibitive of current plan and 2-way flagging is needed)

TRAFFIC SIGN FACING RIGHT

CONES

Flashing Sign (optional)

W20-1 (C23)-Road Work Ahead

G20-2 (C14) - End Road Work

R4-7a- Keep Right (w/ arrow)

NOTES:
-Traffic sign spacing will be in accordance with the Chapter 6 of the Caltrans MUTCD with respect to the established speed limit of 30 MPH in the vicinity of proposed work

NOTE PLACE "NO PARKING SIGNS" (72 hours in advance of closure)

Contractor:
FISCH DRILLING
3150 JOHNSON ROAD
HYDESVILLE, CA 95547
PHONE: (707) 768-9800
FAX (707) 768-9801

Consultant:
SOMA Environmental Engineering
6620 Owens Drive, Suite A
Pleasanton, CA
925-734-6400
24-Hour 925-381-3247

Work Days:
March 16 and 19, 2012

Woodside Glen Ct

W20-1 (C23)

Werner Court

G20-2 (C14)

one way

San Joaquin Miller Rd

W20-1 (C23)

W20-1 (C23)

G20-2 (C14)

Mountain Boulevard

W20-1 (C23)

R4-7a

R4-7a

R4-7a

R4-7a

RS-1

RS-2

RS-3

RS-4

Red curb/ driveway

No Parking Signs ~100'

10 ft

10 ft

21 ft

16 ft

parking lane

CPT-3

CPT-4

work area 1 (~25'x10')

work area 2 (~25'x10')

Trees and shrubs

Each drilling location is 3-inches in diameter DRILLING WILL OCCUR AT ONE LOCATION AT A TIME

G20-2 (C14)

on-ramp

200' lane

Note: Buses may use Route and require 11' lane width or more.

Warren Freeway

APPROVED: Bert Chang 3/7/2012
Transportation Services Division
CITY OF OAKLAND TSD 12-0037

approximate scale in feet
0 50 100

Figure 1: Site map showing proposed drilling location CPT-3 and CPT-4

ENVIRONMENTAL ENGINEERING, INC.

Lane Closure on Two Lane Road Using Flaggers (TA-10)

Proposed CPT/MIP/GS borings

A FLAGGER, a trained individuall assisting with traffic flow (optional, if reported street dimentions are slightly different, and therefore prohibitive of current plan and 2-way flagging is needed)

TRAFFIC SIGN FACING RIGHT

CONES

Flashing Sign (optional)

W20-1 (C23)-Road Work Ahead

W20-4 - One Lane Road

W3-4- Be Prepared to Stop

G20-2- End Road Work

NOTES:
-Traffic sign spacing will be in accordance with the Chapter 6 of the Caltrans MUTCD with respect to the established speed limit of 30 MPH in the vicinity of proposed work. SIGN SPACING IS NOT TO SCALE

NOTE PLACE "NO PARKING SIGNS" (72 hours in advance of closure)

Contractor:
FISCH DRILLING
3150 JOHNSON ROAD
HYDESVILLE, CA 95547
PHONE: (707) 768-9800
FAX (707) 768-9801

Consultant:
SOMA Environmental Engineering
6620 Owens Drive, Suite A
Pleasanton, CA
925-734-6400
24-Hour 925-381-3247

Work Days:
March 16 and 19, 2012

Woodside Glen Ct

W20-1 (C23)

W20-4

Werner Court

W20-4

G20-2 (C14)

Mountain Boulevard

W20-1 (C23)

W20-4

W16-2 optional

W3-4 optional

RS-3

RS-2

RS-1

RS-4

Red curb/ driveway

No Parking Signs ~100'

Red curb/ parking lane

21 ft

16 ft

CPT-3

CPT-4

Trees and shrubs

work areas (~25'x10')

Each drilling location is 3-inches in diameter DRILLING WILL OCCUR AT ONE LOCATION AT A TIME

G20-2 (C14)

on-ramp

Warren Freeway

one way

W20-1 (C23)

San Joaquin Miller Rd

W20-4

W3-4

W20-1 (C23)

4-way STOP

W20-1 (C23)

approximate scale in feet

0 50 100

Figure 1: Site map showing proposed drilling location CPT-3 and CPT-4

SOMA ENVIRONMENTAL ENGINEERING, INC.

APPLICATION FOR TRAFFIC CONTROL PLAN

Transportation Services Fee: $123/hour
(Check or Money Order Only)

City of Oakland

Public Works Agency
Transportation Services Division

Check the box that apply:
- ☑ **New Application** (Utility, Excavation)
- ☐ **Renewal Application**
- ☐ **New Development w/ Mgmt Plan**
- ☐ **City of Oakland Project**

Please Read the Following Statements Below:

1. Processing time for a Traffic Control Application is a **minimum of 10 business days**.
2. Traffic Control review is scheduled **only** on **Tuesdays** and **Thursdays from 8:30am thru 11:30am by appointment only**.
3. A scheduled **appointment** by phone or email with a TSD staff member is necessary to discuss any and all traffic control application and plans.
4. Please **call ahead** to confirm that the traffic control application is ready for pickup @ 510-238-3467.
5. Businesses and residences adjacent to the work area must be provided **72 hour advance notice**.
6. **A completed** traffic control application may be faxed to (510) 238-7415.
7. **Incomplete** traffic control applications will not be processed and returned to applicant immediately.
8. The initial approval for a traffic control plan is 1 month, the renewal submittal may be approved up to 3 months.
9. The traffic control provision dates cannot be changed or extended if work has already commenced.
10. After receiving TSD approval of the traffic control application, contractor shall proceed to the Permit Center to obtain an obstruction permit. **" Obstruction Per**

Contact Person: **Elena Manzo** Phone: **925-734-6400**

Name of Company: SOMA Environmental Engineering, Inc and Traffic Management, Inc Fax: **925-734-6401**

Address of Company: **6620 Owens Drive Suite A, Pleasanton, CA**

Describe type of work to be performed: **Eastbound lane shift and parking lane (on north side) closure on Mountain Boulevard, south of 2844 Mountain Blvd, Oakland, CA, for purposes of environmental drilling.**

Location of work: **south of 2844 Mountain Blvd** Between* **Woodside Glen Ct** And* **Joaquin Miller Rd**

Work date (s): **Tentative March 15, 16, and 19th** ☑ Mon-Fri ☐ Sat-Sun Work Hours: **8:00 AM** to **6:00 PM**

Please Follow these Steps in Order to Complete a Traffic Control Plan:

A. **Drawing Area**: The full width of all streets adjacent to the site MUST be included in the drawing. Include the entire block in which your work is located for every street that is adjacent to your site.

B. **Include Street Names, Direction of Traffic on the Street, and North Arrow**

C. **Show Existing Number of Lanes in all Directions** (with any pavement arrows)

D. **Check the Box(s) that Apply:** All checked items **MUST** be shown on the drawing

- ☑ Lane Closure (Shift)
- ☐ Street Closures **(must provide detour plan)**
- ☐ Use of Median
- ☑ Use Parking Lane
- ☐ Sidewalk Closure **(must provide pedestrian walk way)**

E. **Show All Dimensions** of street widths (curb to curb), lane widths, sidewalk widths, and work area dimension.
(Note: Traffic Control Application / Plans missing the above information will not be accepted or processed.)

F. **Show the Name and Locations** of all advanced warning devices, flaggers, delineators , warning and construction signs to be used.

RENEWAL PROCESS: Resubmit a completed Traffic Control Application with the old approved plan (with the necessary modifications / changes to the plans).

FOR HELP in preparing a traffic control plan, see Temporary Traffic Control Pocket Reference Guide 2007, Work Area Traffic Control Handbook 2006, or the California Manual on Uniform Traffic Control (MUTCD) 2003, Chapter 6.
http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm
For City website: http://www.oaklandpw.com/Page548.aspx

* Name the streets that are the boundaries of your work area.

CRUZ BROTHERS LOCATORS, INC.

JOB#: 25100

P.O.Box 66768
Scotts Valley, CA 95067
dispatch@cruzbrothers.com

(831) 461-1468 Dispatch
(831) 461-1470 Fax

INVOICE AGREEMENT

This agreement is made between Cruz Brothers Locators hereinafter referred to as "C.B.L." and the undersigned client.

Requestor: Elena Manzo Company: Soma Env

Billing Address: Phone: 925-734-6400

C.B.L. agrees to perform the following scope of work for the above mentioned client. In consideration of said scope of work the client agrees to pay C.B.L. the sum of $ 145 per hr. Note that there is a minimum charge of two hours and is incurred upon office departure to office return. Additional material expenses will be added to that amount. The client also agrees to compensate C.B.L. in the event it is proven that the problem noted in the scope of work does not exist such as a proven pressure test indicating no water or gas leak where one was believed to be. C.B.L. will not be held liable for any actions taken by any other person performing work after C.B.L.'s findings or recommendations. In any event that it is determined C.B.L. is liable for its actions the liability shall be limited to the amount of its fee. The surveying of existing utility lines are only guaranteed for utilities located and marked. Customers should never assume that 100% of said utilities have been deteced and marked. Some utilities are undetectable. The final proof of location of leak or utility line requires a small excavation from the surface called a "pothole". The property owner or construction contractor performs this work according to California State Law. For all excavation call USA 48 hr.s ahead, 1-800-227-2600 to be safe. Please approve and forward this invoice to your A/P department. Payment is due upon receipt unless other arrangements have been made. Initials: X EM

Job Name: PO/Proj: 5082

Job Address: 2844 Mountain Blvd. City: Oakland

Contact Person: Same Phone #: 516-381-3457

Service & Scope of work: Locate utilities

Date: 3/9/12 Start: 12:30 End: 2:30 Total Hrs: 2 Charges: #290

Expense/Credit: 1 Hour mob Total: #145

Authorizing Signature: X Total Due: #435

Results: Technician: Sergio

Elect Red	→ (2) Locations onsite ← Cleared for Hot electric (Power & Radio). Marked metalic utility in white paint. marked trench line (Remediation) in pink paint. Cleared onto water line at Meter marked utility in blue. Unable to confirm Sewer from building (No access)
Gas Yellow	
Comm/TV Orange	→ Borings in Street (Mountain Blvd) → Marked metalic utility in pink paint. Marked unknown utility in white. Cleared for Hot electric (Power & Radio) Ran Sonde through manhole, Located & marked Storm Drain line in Green. PG&E still needs to respond to USA ticket.
Water Blue	
Sewer/Drain Green	
Other Pink/Purple	

Job Complete: ✓ Return Trip Advised: On Going:

Utility Location ★ Vacuum Extraction

SOMA
ENVIRONMENTAL ENGINEERING, INC.
6620 Owens Drive, Suite A • Pleasanton, CA 94588
TEL (925)734-6400 • FAX (925)734-6401

ROADWORK NOTICE

WORK DATES: **March 12 and March 15, 2012**

TO: Neighbors and Community Members interested in activities associated with the proposed soil and groundwater investigation at and near 2844 Mountain Blvd, Oakland, CA

SOMA Environmental Engineering, Inc would like to provide you with advance notice of upcoming roadwork associated with an environmental investigation that will be conducted near the Mountain Blvd and Werner Court intersection. Field activities, which will result in a traffic lane shift and a shoulder closure on the northern side of Mountain Blvd, are anticipated to begin on March 12, 2012 and continue between the hours of 9:00 am and 4:00 pm on above specified dates. Minor traffic delays are anticipated.

This work is mandated by Alameda County Health Care Services Agency and State Regional Water Quality Control Board and permitted under the City of Oakland Engineering Department and Alameda County Public Works, and is being conducted in connection with a leaking underground storage tank clean-up at 2844 Mountain Blvd, Oakland, CA.

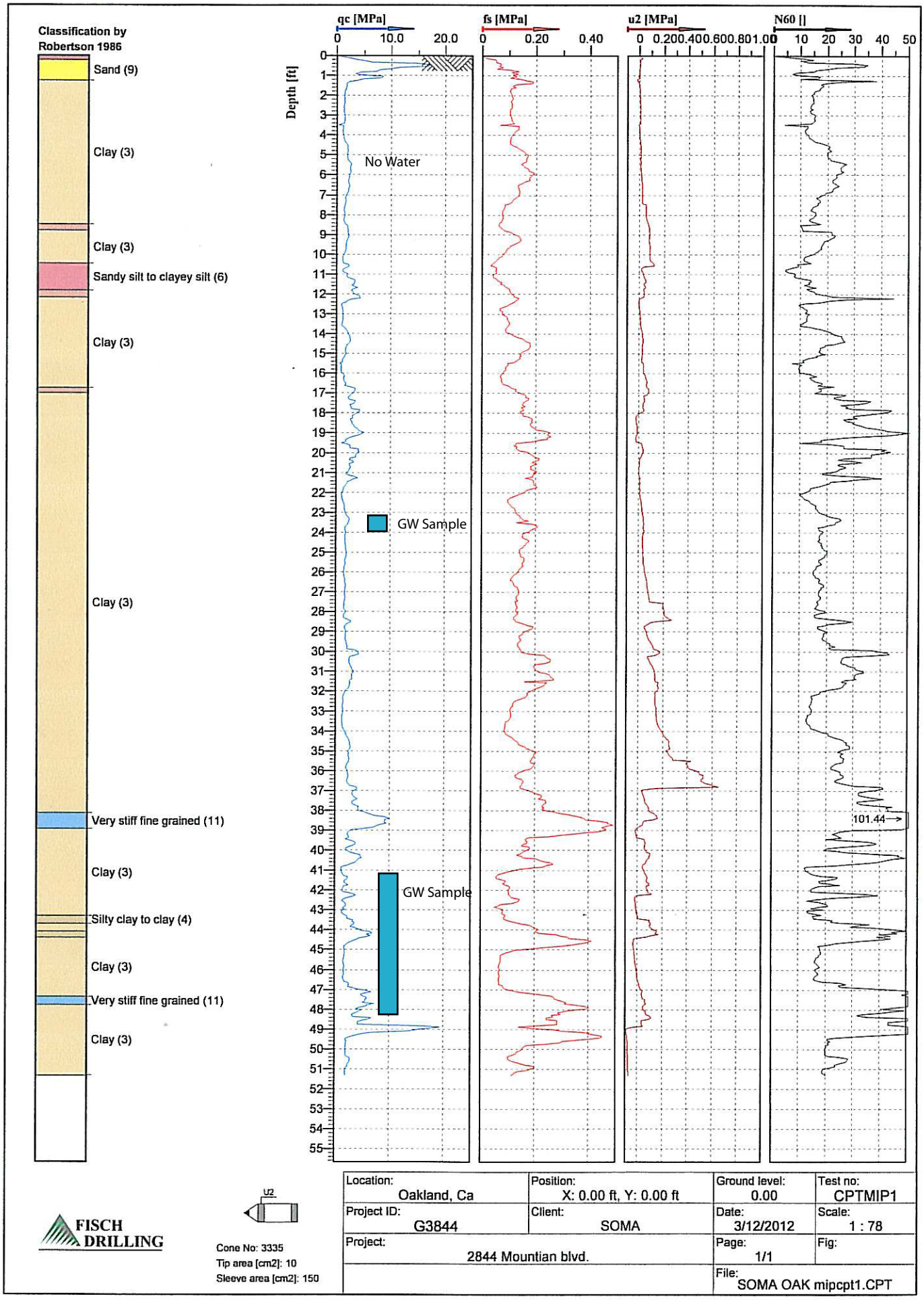
"No Parking" signs will be posted approximately 72-hours prior to drilling in the vicinity of the site. If you have any questions or concerns about these activities please call me at (925) 734-6400.

Sincerely,

Mansour Sepehr, Ph.D., PE
Principal Hydrogeologist
SOMA Environmental Engineering, Inc

APPENDIX C

BORINGS LOGS AND PHOTOGRAPHIC DOCUMENTATION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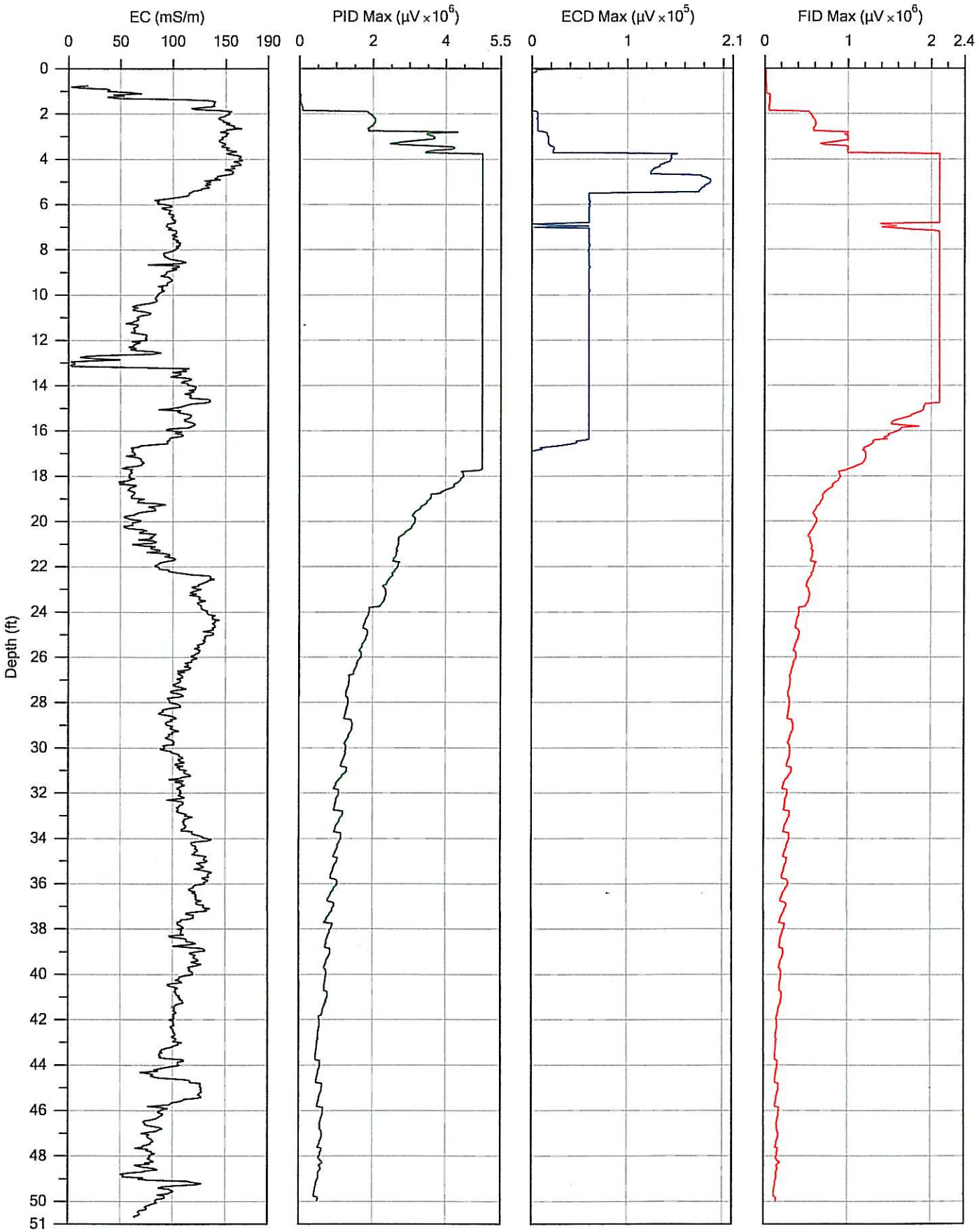
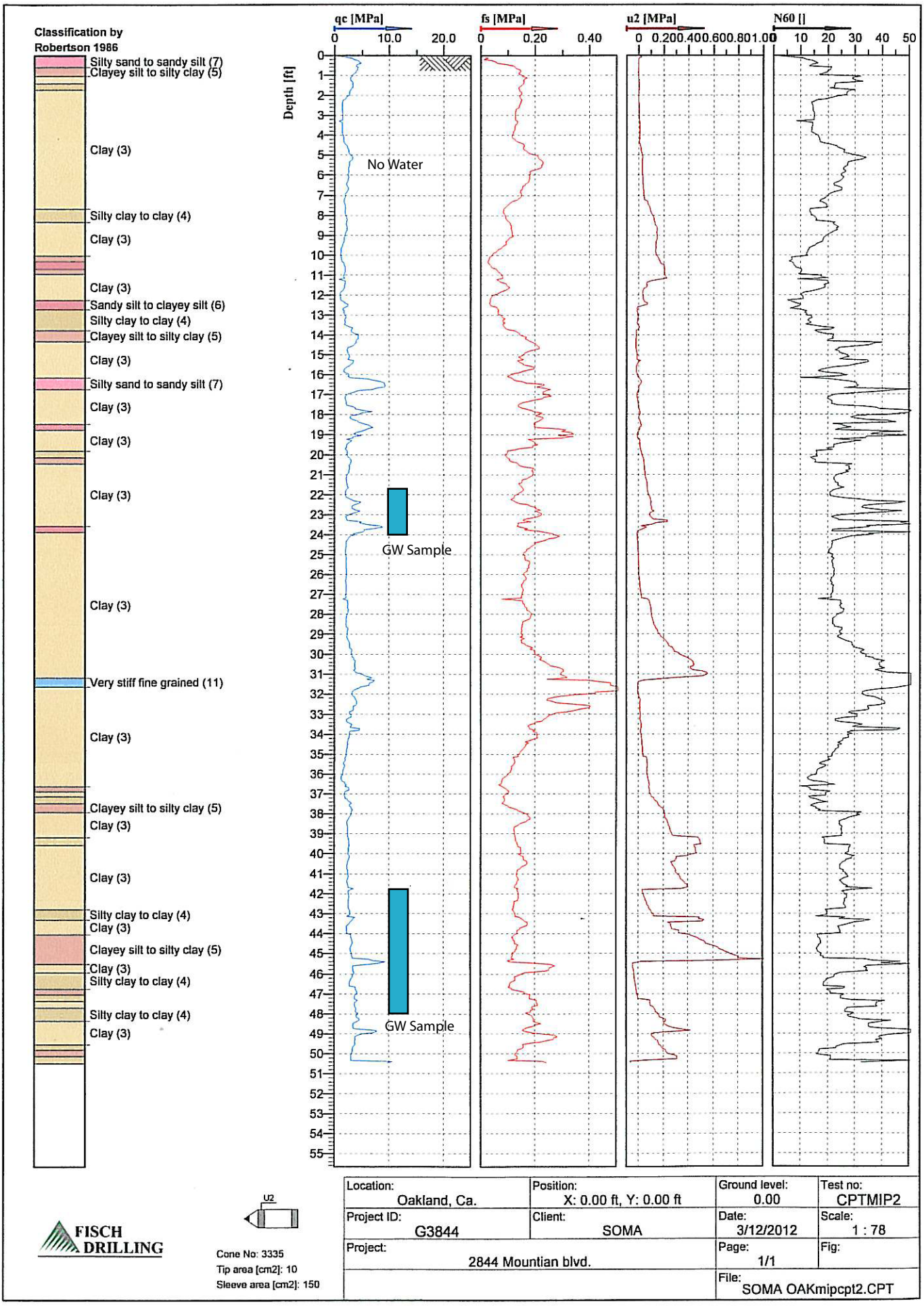
Clay (3)
Clay (3)
Sandy silt to clayey silt (6)
Clay (3)
Clay (3)
Very stiff fine grained (11)
Clay (3)
Silty clay to clay (4)
Clay (3)
Very stiff fine grained (11)
Clay (3)
qc [MPa]
fs [MPa]
u2 [MPa]
N60 []
Depth [ft]
No Water
GW Sample
GW Sample
101.44
U2
Cone No: 3335
Tip area [cm2]: 10
Sleeve area [cm2]: 150
FISCH DRILLING
Location: Oakland, Ca
Position: X: 0.00 ft, Y: 0.00 ft
Ground level: 0.00
Test no: CPTMIP1
Project ID: G3844
Client: SOMA
Date: 3/12/2012
Scale: 1 : 78
Project: 2844 Mountian blvd.
Page: 1/1
Fig:
File: SOMA OAK mipcpt1.CPT

CPT/MIP-1



FISCH DRILLING

Company: soma	Operator: Fisch	File: SOMAOK1.DAT	
Project ID: 2844 mountian blvd. oakland	Client:	Date: 1/1/1999	Location:


Classification by
Robertson 1986
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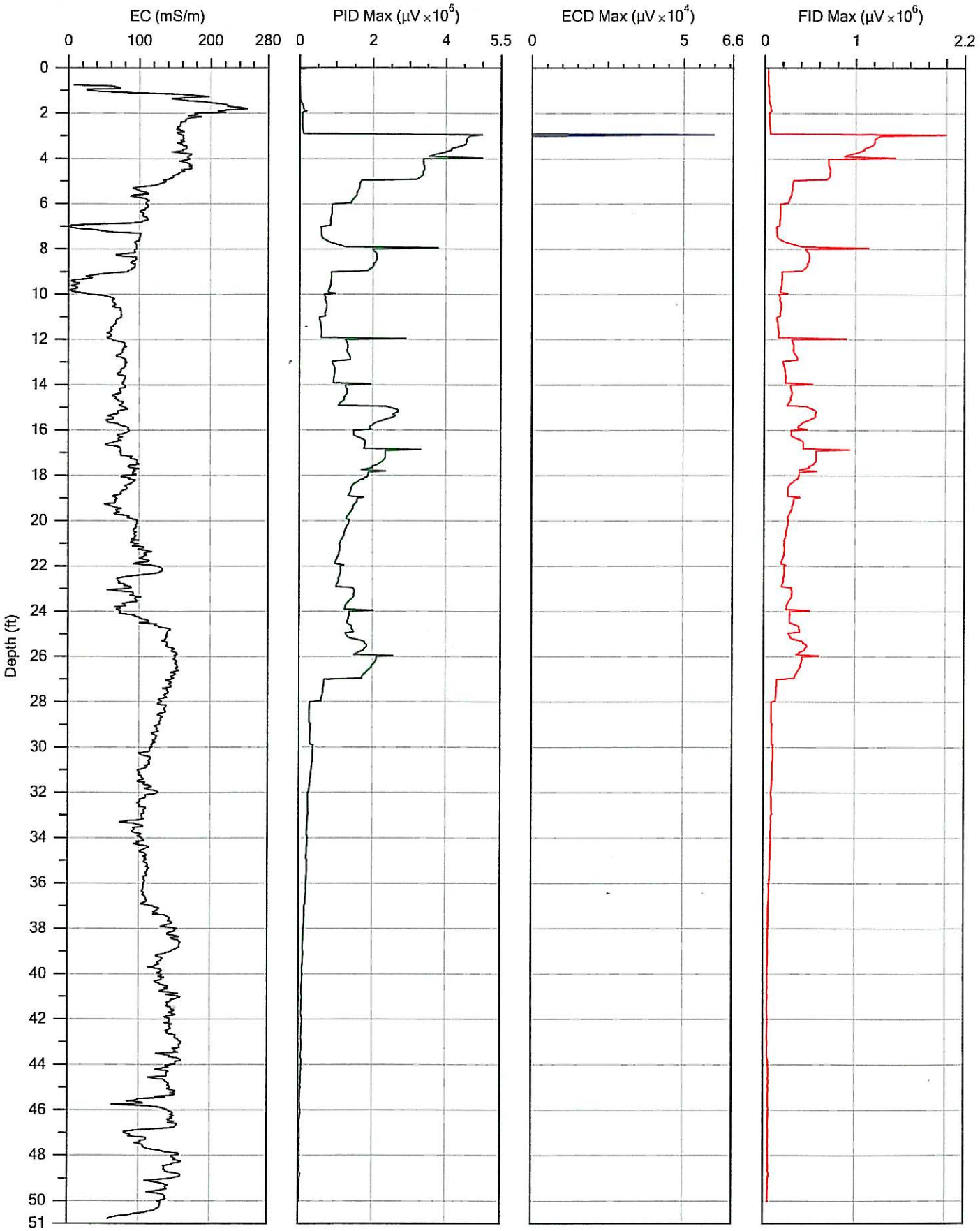
Clayey silt to silty clay (5)
Clay (3)
Silty clay to clay (4)
Clay (3)
Clay (3)
Sandy silt to clayey silt (6)
Silty clay to clay (4)
Clayey silt to silty clay (5)
Clay (3)
Silty sand to sandy silt (7)
Clay (3)
Clay (3)
Clay (3)
Clay (3)
Very stiff fine grained (11)
Clay (3)
Clayey silt to silty clay (5)
Clay (3)
Clay (3)
Silty clay to clay (4)
Clay (3)
Clayey silt to silty clay (5)
Clay (3)
Silty clay to clay (4)
Silty clay to clay (4)
Clay (3)
qc [MPa]
fs [MPa]
u2 [MPa]
N60 []
Depth [ft]
No Water
GW Sample
GW Sample
U2
Cone No: 3335
Tip area [cm2]: 10
Sleeve area [cm2]: 150
FISCH DRILLING
Location: Oakland, Ca.
Position: X: 0.00 ft, Y: 0.00 ft
Ground level: 0.00
Test no: CPTMIP2
Project ID: G3844
Client: SOMA
Date: 3/12/2012
Scale: 1 : 78
Project: 2844 Mountian blvd.
Page: 1/1
Fig:
File: SOMA OAKmipcpt2.CPT

CPT/MIP-2



FISCH DRILLING

Company: soma	Operator: Fisch	File: SOMAOK2.DAT	
Project ID: 2844 mountian blvd. oakland	Client:	Date: 1/1/1999	Location:

ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE: CPT/DPT-1

PROJECT: 5082

DATE DRILLED: March 16, 2012

SITE LOCATION: 2844 Mountain Blvd., Oakland, CA

CASING ELEVATION: N/A

DRILLER: Fisch Drilling

First Encountered GW:
Stablized GW:

DRILLING METHOD: Direct Push

T.O.C. TO SCREEN: N/A

BORING DIAMETER: 2.25 inches

SCREEN LENGTH: N/A

LOGGED BY: E. Hightower

APPROVED BY: M. Sepehr

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	SAMPLED: SPLIT SPOON / CORE	GW LEVEL	BLOWCOUNTS	WELL DIAGRAM
			CL	Hand Augered to 5 ft bgs SANDY LEAN CLAY: Dark brown, moist, ~30% fine- to coarse-grained sand, medium dry strength, no dilatancy, medium toughness, no HCl reaction, firm, no Petroleum Hydrocarbon (PHC) odor.				
	5		CL	SANDY LEAN CLAY: Greenish-brown, moist, ~30% fine- to coarse-grained sand, medium dry strength, no dilatancy, medium toughness, no HCl reaction, firm, strong PHC odor.				
				As above, moist, no PHC odor.				
	10			As above, very moist from 11 ft to 12 ft, no PHC odor.				
	15		CL	SANDY LEAN CLAY WITH GRAVEL: Brown, moist, ~30% fine- to coarse-grained sand, ~15% gravel up to 1/2-inch, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, medium plasticity, slight PHC odor.				
	20			As above, moist, slight PHC odor.				
				As above, moist, less gravel, slight PHC odor.				
	25							

COMMENTS: TD @ 49 ft bgs

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE: CPT/DPT-1

PROJECT: 5082

DATE DRILLED: March 16, 2012

SITE LOCATION: 2844 Mountain Blvd., Oakland, CA

CASING ELEVATION: NA

DRILLER: Fisch Drilling

First Encountered GW:
Stablized GW:

DRILLING METHOD: Direct Push

T.O.C. TO SCREEN: NA

BORING DIAMETER: 2.25 inches

SCREEN LENGTH: NA

LOGGED BY: E. Hightower

APPROVED BY: M. Sepehr

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	SAMPLED: SPLIT SPOON / CORE	GW LEVEL	BLOWCOUNTS	WELL DIAGRAM
			CL	SANDY LEAN CLAY WITH GRAVEL: Brown, moist, ~30% fine- to coarse-grained sand, ~15% gravel up to 1/2-inch, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, medium plasticity, slight PHC odor.				
				As above, moist, light brown, no PHC odor.				
	30							
			CL	SANDY LEAN CLAY: Greenish-gray, moist, ~40% fine- to coarse-grained sand, medium dry strength, no dilatancy, medium toughness, no HCl reaction, firm, low plasticity, no PHC odor.				
	35			As above, no PHC odor, moist.				
	40			As above, no PHC odor, moist.		▼		
				As above, moist, no PHC odor, brown at 43 ft.				
	45							
	50							

COMMENTS: TD @ 48 ft bgs

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE: DPT-3

PROJECT: 5082

DATE DRILLED: March 15, 2012

SITE LOCATION: 2844 Mountain Blvd., Oakland, CA

CASING ELEVATION: N/A

DRILLER: Fisch Drilling

First Encountered GW:
Stablized GW:

DRILLING METHOD: Direct Push

T.O.C. TO SCREEN: N/A

BORING DIAMETER: 2.25 inches

SCREEN LENGTH: N/A

LOGGED BY: E. Hightower

APPROVED BY: M. Sepehr

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	SAMPLED: SPLIT SPOON / CORE	GW LEVEL	BLOWCOUNTS	WELL DIAGRAM
0.0	5		GW	Hand Augered to 5 ft bgs WELL GRADED GRAVEL SAND: Reddish-brown, moist, no Petroleum Hydrocarbon (PHC) odor, 70% fine gravel, 20% fine- to coarse-grained sand.				
			CL	LEAN CLAY WITH SAND: Greenish-brown, moist, ~25% fine- to coarse-grained sand, ~75% clay with medium dry strength, slow dilatancy, medium toughness, no HCl reaction, firm, no PHC odor.				
0.0			CL	SANDY LEAN CLAY: Light brown, moist, ~30% fine- to coarse-grained sand, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, medium plasticity, no PHC odor.				
0.0	10			As above, moist, no PHC odor.				
0.0				As above, very moist from 11 ft to 12 ft, no PHC odor.				
0.0	15							
5.5	20		CL	SANDY LEAN CLAY: Brown, very moist to wet, ~30% fine- to coarse-grained sand, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, medium plasticity, no PHC odor, some coarse sand stringers with gravel up to 1-inch.		▽		
				As above, saturated from 24 ft to 26 ft bgs				
	25							

COMMENTS: TD @ 49 ft bgs

PROJECT: 5082

DATE DRILLED: March 15, 2012

SITE LOCATION: 2844 Mountain Blvd., Oakland, CA

CASING ELEVATION: NA

DRILLER: Fisch Drilling

First Encountered GW:
Stablized GW:

DRILLING METHOD: Direct Push

T.O.C. TO SCREEN: NA

BORING DIAMETER: 2.25 inches

SCREEN LENGTH: NA

LOGGED BY: E. Hightower

APPROVED BY: M. Sepehr

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	SAMPLED: SPLIT SPOON / CORE	GW LEVEL	BLOWCOUNTS	WELL DIAGRAM
63.0	30		CL	SANDY LEAN CLAY: Brown, very moist to wet, ~30% fine- to coarse-grained sand, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, medium plasticity, no PHC odor, some coarse sand stringers with gravel up to 1-inch.	X			
				As above, moist, no PHC odor.				
	35		CL	SANDY LEAN CLAY WITH GRAVEL: Greenish-gray, moist, ~30% fine- to coarse-grained sand, ~15% fine gravel, medium dry strength, no dilatancy, medium toughness, no HCl reaction, firm, low plasticity, no PHC odor.				
				As above, no PHC odor, moist.		▼		
	40			As above, no PHC odor, moist.				
				As above, moist, no PHC odor, some wet sandy gravel stringers.		▽		
	45							
	50							

COMMENTS: TD @ 49 ft bgs

ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE: DPT-4

PROJECT: 5082

DATE DRILLED:

SITE LOCATION: 2844 Mountain Blvd., Oakland, CA

CASING ELEVATION: N/A

DRILLER: Fisch Drilling

First Encountered GW:
Stablized GW:

DRILLING METHOD: Direct Push

T.O.C. TO SCREEN: N/A

BORING DIAMETER: 2.25 inches

SCREEN LENGTH: N/A

LOGGED BY: E. Hightower

APPROVED BY: M. Sepehr

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
0.0			CP-CG	Hand Augered to 5 ft bgs WELL GRADED GRAVEL WITH CLAY & SAND: Reddish-brown, moist, no Petroleum Hydrocarbon (PHC) odor, 70% fine gravel, 20% fine- to coarse-grained sand, 10% fines.
0.0			CL	LEAN CLAY WITH SAND: Greenish-brown, moist, ~25% fine- to coarse-grained sand, ~75% clay with medium dry strength, slow dilatancy, medium toughness, no HCl reaction, firm, no PHC odor.
0.0	5		SP-SM	POORLY GRADED SAND WITH SILT AND GRAVEL: Light brown, moist, loose, ~60% fine- to coarse-grained sand, ~25% silt, ~15% fine gravel, no PHC odor.
0.0			CL	SANDY LEAN CLAY: Light brown, moist, ~30% fine- to coarse-grained sand, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, medium plasticity, no PHC odor.
0.0	10			As above, moist, no PHC odor.
0.0			CL	SANDY LEAN CLAY: Greenish-brown, moist (very moist from 12 ft to 13 ft), ~30% fine- to coarse-grained sand, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, medium plasticity, PHC odor.
79.5	15			Only recovered ~6-inches of sample from sleeve As above, very moist to wet, ~40% sand.
	20			No Recovery - a rock was stuck in sample liner
0.8			CL-ML	SILTY LEAN CLAY WITH SAND: Light brown, moist, ~20% sand, medium dry strength, no dilatancy, medium toughness, no HCl reaction, firm, low plasticity, no PHC odor.
	25			

SAMPLED: SPLIT SPOON, CORE

GW LEVEL

BLOWCOUNTS

WELL DIAGRAM

COMMENTS: TD @ 56 ft bgs

PROJECT: 5082

DATE DRILLED: March 16, 2012

SITE LOCATION: 2844 Mountain Blvd., Oakland, CA

CASING ELEVATION: NA

DRILLER: Fisch Drilling

First Encountered GW:
Stablized GW:

DRILLING METHOD: Direct Push

T.O.C. TO SCREEN: NA

BORING DIAMETER: 2.25 inches

SCREEN LENGTH: NA

LOGGED BY: E. Hightower

APPROVED BY: M. Sepehr

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
0.0	30		CL-ML	SILTY LEAN CLAY WITH SAND: Light brown, moist, ~20% sand, medium dry strength, no dilatancy, medium toughness, no HCl reaction, firm, low plasticity, no PHC odor.
				As above, moist, no PHC odor.
0.0	35		CL	SANDY LEAN CLAY WITH GRAVEL: Greenish-gray, moist, ~30% fine- to coarse-grained sand, ~15% fine gravel, medium dry strength, no dilatancy, medium toughness, no HCl reaction, firm, low plasticity, no PHC odor.
				As above, no PHC odor, moist.
0.0	40			As above, no PHC odor, moist.
0.0	45			As above, no PHC odor, very moist from 44 ft to 45 ft.
0.0			GP-GC	POORLY GRADED GRAVEL WITH CLAY AND SAND: Greenish-brown, moist, ~30% fine- to coarse-grained sand, ~10% fines, moist, no PHC odor.
	50		CL	SANDY LEAN CLAY: Tan, moist, ~30% fine- to coarse-grained sand, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, noPHC odor.

No water accumulated at this depth for sampling

SAMPLED: SPLIT SPOON	SAMPLED: CORE	GW LEVEL	BLOWCOUNTS	WELL DIAGRAM
	X	▼		
	X			
	X			

COMMENTS: TD @ 56 ft bgs

ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE: DPT-4

PROJECT: 5082

DATE DRILLED: March 15, 2012

SITE LOCATION: 2844 Mountain Blvd., Oakland, CA

CASING ELEVATION: NA

DRILLER: Fisch Drilling

First Encountered GW:
Stablized GW:

DRILLING METHOD: Direct Push

T.O.C. TO SCREEN: NA

BORING DIAMETER: 2.25 inches

SCREEN LENGTH: NA

LOGGED BY: E. Hightower

APPROVED BY: M. Sepehr

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	SAMPLED: SPLIT SPOON / CORE	GW LEVEL	BLOWCOUNTS	WELL DIAGRAM
	55		CL	SANDY LEAN CLAY: Tan, moist, ~30% fine- to coarse-grained sand, medium dry strength, slow dilatancy, medium toughness, no HCl reaction, hard, noPHC odor.				
	60							
	65							
	70							
	75							

COMMENTS: TD @ 56 feet bgs

Plate 1. Cruz Bros. Utility Locators onsite for utility clearance

Plate 2. Utility clearance markings next to CPT-2

Plate 3. Utility clearance markings on Mountain Blvd.

Plate 4. Utility clearance markings on Mountain Blvd.

Plate 5. Utility clearance markings on Mountain Blvd.

Plate 6. Utility clearance markings on Mountain Blvd.

Plate 7. View of storm water manhole adjacent to the site

Plate 8. View of storm water manhole dirt shoulder area on Mountain Blvd.

Plate 9. Inside view of storm water manhole dirt shoulder area on Mountain Blvd; no flowing water was visible

Plate 10. Overhead utilities along Mountain Blvd

Plate 1. View of the site fence, showing posted “no parking” signs and the adjacent bus stop

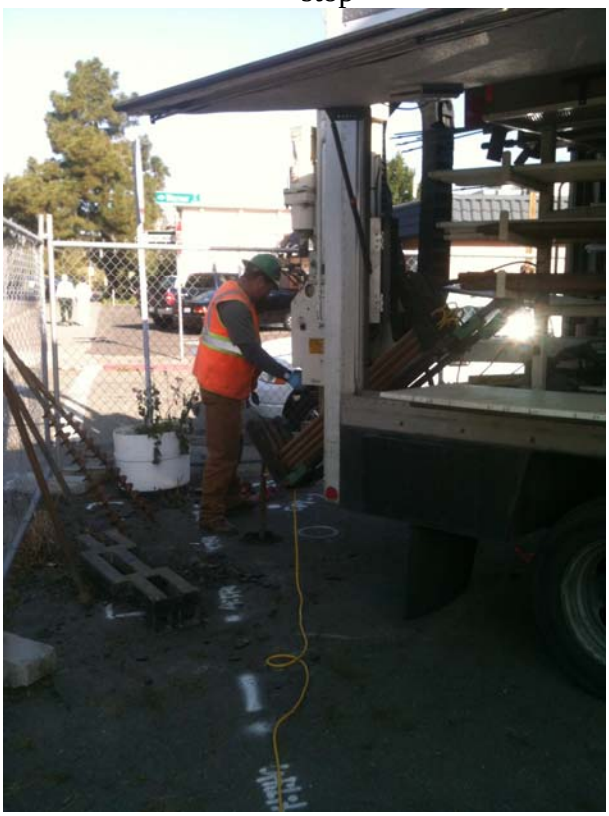


Plate 2. Fisch Drilling setting up CPT/MIP on CPT/MIP-2, view facing northwest

Plate 3. Bracing system for CPT/MIP

Plate 4. Fisch Drilling set up for CPT/MIP on CPT-1, view facing east

Plate 5. Fisch drilling set up on DPT-4, view facing southwest

Plate 6. Fisch Drilling preparing to grout DPT-4

Plate 7. DPT-4 grouted to grade, finished to surface with asphalt patch

Plate 8. DPT-3 grouted to grade, finished to surface with asphalt patch

APPENDIX D

LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 235040
ANALYTICAL REPORT

SOMA Environmental Engineering Inc.
6620 Owens Dr.
Pleasanton, CA 94588

Project : 5082
Location : 2844 Mountain Blvd, Oakland
Level : II

Sample ID	Lab ID	Sample ID	Lab ID
CPT/DPT-1-1	235040-001	DPT-4@24FT	235040-019
CPT/DPT-1-2	235040-002	DPT-4@28FT	235040-020
CPT/DPT-2-1	235040-003	DPT-4@32FT	235040-021
CPT/DPT-2-2	235040-004	DPT-4@43FT	235040-022
DPT-4-1	235040-005	DPT-3@8FT	235040-023
DPT-3-2	235040-006	DPT-3@10FT	235040-024
CPT-1@8FT	235040-007	DPT-3@15FT	235040-025
CPT-1@10FT	235040-008	DPT-3@18FT	235040-026
CPT-1@15FT	235040-009	DPT-3@20FT	235040-027
CPT-1@18FT	235040-010	DPT-3@22FT	235040-028
CPT-1@22FT	235040-011	DPT-3@28FT	235040-029
CPT-1@28FT	235040-012	CPT-2@10FT	235040-030
CPT-1@42FT	235040-013	CPT-2@16FT	235040-031
DPT-4@8FT	235040-014	CPT-2@18FT	235040-032
DPT-4@10FT	235040-015	CPT-2@22FT	235040-033
DPT-4@12FT	235040-016	CPT-2@28FT	235040-034
DPT-4@16FT	235040-017	CPT-2@48FT	235040-035
DPT-4@18FT	235040-018		

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: Trig Bolton
Project Manager

Date: 03/26/2012

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**235040**
Client:	**SOMA Environmental Engineering Inc.**
Project:	**5082**
Location:	**2844 Mountain Blvd, Oakland**
Request Date:	**03/19/12**
Samples Received:	**03/19/12**

This data package contains sample and QC results for eleven soil samples and six water samples, requested for the above referenced project on 03/19/12. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
Matrix spikes QC632595,QC632596 (batch 184769) were not reported because the concentration of the target analyte in the parent sample was more than four times the amount spiked, rendering the spike recovery not meaningful. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
High surrogate recoveries were observed for o-terphenyl in a number of samples. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
CPT/DPT-1-2 (lab # 235040-002), CPT/DPT-2-2 (lab # 235040-004), and DPT-3-2 (lab # 235040-006) had pH greater than 2. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
Matrix spikes QC633163,QC633164 (batch 184906) were not reported because the autosampler had an error that stopped the sequence. High recoveries were observed for 1,2-dichloroethane and ethylbenzene in the LCS for batch 184756; these analytes were not detected at or above the RL in the associated sample. High surrogate recovery was observed for 1,2-dichloroethane-d4 in CPT-2@16FT (lab # 235040-031). CPT-2@10FT (lab # 235040-030) was diluted due to high hydrocarbons. No other analytical problems were encountered.

CHAIN OF CUSTODY

Curtis & Tompkins, Ltd
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

LOGIN # 235040

Sampler: Lizzie Hightower

Project No: 5082

Report To: Joyce Bobek

Project Name: 2844 Mountain Blvd., Oakland

Company : SOMA Environmental

Turnaround Time: Standard (Rush)

Telephone: 925-734-6400

Fax: 925-734-6401

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Analyses: TPH-g, BTEX, MtBE 8260	Analyses: Gasoline Oxygenates, Lead Scavengers 8260	Analyses: TPH-d 8015	Analyses: BTEX, MtBE 8260	Analyses: Gasoline Oxygenates, Lead Scavengers 8260	Analyses: TPH-g, TPH-d 8015	Analyses: Hold
1	CPT-1-1	3/16/12 15:08		*		4 VOAs, 2-500 mL	*			*	*	*	*				
2	CPT-1-2	3/16/12 17:13		*		4 VOAs, 2-500 mL	*			*	*	*	*				
3	CPT-2-1	3/16/12 9:45		*		4 VOAs, 2-500 mL	*			*	*	*	*				
4	CPT-2-2	3/16/12 11:10		*		4 VOAs, 2-500 mL	*			*	*	*	*				
5	DPT-4-1	3/15/12 11:43		*		4 VOAs, 2-500 mL	*			*	*	*	*				
6	DPT-3-2	3/15/12 17:34		*		4 VOAs, 2-500 mL	*			*	*	*	*				
7	CPT-1@8ft	3/16/12 12:28	*			6-inch sleeve				*				*	*	*	
8	CPT-1@10ft	3/16/12 12:25	*			6-inch sleeve				*				*	*	*	* Hold *
9	CPT-1@15ft	3/16/12 13:43	*			6-inch sleeve				*				*	*	*	
10	CPT-1@18ft	3/16/12 13:53	*			6-inch sleeve				*				*	*	*	* Hold *
11	CPT-1@22ft	3/16/12 13:59	*			6-inch sleeve				*				*	*	*	* Hold *
12	CPT-1@28ft	3/16/12 14:04	*			6-inch sleeve				*				*	*	*	* Hold *

Notes: EDF OUTPUT REQUIRED

RELINQUISHED BY:

3/19/12 DATE/TIME

3/19/12 1600 DATE/TIME

DATE/TIME

RECEIVED BY:

3/19/12 1437 DATE/TIME

3/19/12 1600 DATE/TIME

DATE/TIME

intact cold RC

CHAIN OF CUSTODY

Curtis & Tompkins, Ltd
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

LOGIN # 235040

Sampler: Lizzie Hightower

Project No: 5082

Project Name: 2844 Mountain Blvd., Oakland

Turnaround Time: Standard (Rush)

Report To: Joyce Bobek

Company : SOMA Environmental

Telephone: 925-734-6400

Fax: 925-734-6401

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Analyses: TPH-g, BTEX, MtBE 8260	Analyses: Gasoline Oxygenates, Lead Scavengers 8260	Analyses: TPH-d 8015	Analyses: BTEX, MtBE 8260	Analyses: Gasoline Oxygenates, Lead Scavengers 8260	Analyses: TPH-g, TPH-d 8015	Analyses:
13	CPT-1@42ft	3/16/12 17:08	*			6-inch sleeve				*				*	*	*	
14	DPT-4@8ft	3/15/12 10:00	*			6-inch sleeve				*				*	*	*	
15	DPT-4@10ft	3/15/12 10:07	*			6-inch sleeve				*				*	*	*	* Hold *
16	DPT-4@12ft	3/15/12 10:10	*			6-inch sleeve				*				*	*	*	* Hold *
17	DPT-4@16ft	3/15/12 10:14	*			6-inch sleeve				*				*	*	*	
18	DPT-4@18ft	3/15/12 10:26	*			6-inch sleeve				*				*	*	*	* Hold *
19	DPT-4@24ft	3/15/12 10:32	*			6-inch sleeve				*				*	*	*	* Hold *
20	DPT-4@28ft	3/15/12 10:35	*			6-inch sleeve				*				*	*	*	* Hold *
21	DPT-4@32ft	3/15/12 10:42	*			6-inch sleeve				*				*	*	*	* Hold *
22	DPT-4@43ft	3/15/12 13:00	*			6-inch sleeve				*				*	*	*	
23	DPT-3@8ft	3/15/12 14:30	*			6-inch sleeve				*				*	*	*	
24	DPT-3@10ft	3/15/12 14:22	*			6-inch sleeve				*				*	*	*	* Hold *
25	DPT-3@15ft	3/15/12 14:30	*			6-inch sleeve				*				*	*	*	

Notes: EDF OUTPUT REQUIRED

RELINQUISHED BY:

E-Hight 3/19/12 62:04 DATE/TIME

3/19/12 1600 DATE/TIME

DATE/TIME

RECEIVED BY:

3/19/12 1437 DATE/TIME

3/19/12 1600 DATE/TIME

DATE/TIME

Note at cold RC

CHAIN OF CUSTODY

Curtis & Tompkins, Ltd
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

LOGIN # 235040

Sampler: Lizzie Hightower

Project No: 5082

Project Name: 2844 Mountain Blvd., Oakland

Turnaround Time: Standard (Rush)

Report To: Joyce Bobek

Company : SOMA Environmental

Telephone: 925-734-6400

Fax: 925-734-6401

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	
26	DPT-3@18ft	3/15/12 14:38	*			6-inch sleeve				*	
27	DPT-3@20ft	3/15/12 14:44	*			6-inch sleeve				*	
28	DPT-3@22ft	3/15/12 14:50	*			6-inch sleeve				*	
29	DPT-3@28ft	3/15/12 15:42	*			6-inch sleeve				*	
30	CPT-2@10ft	3/16/12 8:47	*			6-inch sleeve				*	
31	CPT-2@16ft	3/16/12 8:50	*			6-inch sleeve				*	
32	CPT-2@18ft	3/16/12 8:57	*			6-inch sleeve				*	
33	CPT-2@22ft	3/16/12 9:06	*			6-inch sleeve				*	
34	CPT-2@28ft	3/16/12 10:06	*			6-inch sleeve				*	
35	CPT-2@48ft	3/16/12 11:09	*			6-inch sleeve				*	

Analyses

TPH-g, BTEX, MtBE 8260	Gasoline Oxygenates, Lead Scavengers 8260	TPH-d 8015		BTEX, MtBE 8260	Gasoline Oxygenates, Lead Scavengers 8260	TPH-g, TPH-d 8015					
				*	*	*		* Hold			
				*	*	*		* Hold			
				*	*	*		* Hold			
				*	*	*		* Hold			
				*	*	*					
				*	*	*					
				*	*	*		* Hold			
				*	*	*		* Hold			
				*	*	*		* Hold			
				*	*	*		*			

Notes: **EDF OUTPUT REQUIRED**

RELINQUISHED BY:

E Hightower 3/19/12 DATE/TIME

3/19/12 1600 DATE/TIME

DATE/TIME

RECEIVED BY:

3/19/12 1437 DATE/TIME

3/19/12 1600 DATE/TIME

DATE/TIME

rush at cold RL

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 235040 Date Received 3/19/12 Number of coolers 2
Client SCMA Project 0082

Date Opened 3/19/12 By (print) I. CHOY (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
   Shipping info

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many Name Date
2B. Were custody seals intact upon arrival? YES NO (N/A)
3. Were custody papers dry and intact when received? (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe)

☐ Bubble Wrap ☒ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 1.3, 1.5°C

☐ Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
   If YES, what time were they transferred to freezer?
9. Did all bottles arrive unbroken/unopened? (YES) NO
10. Are there any missing / extra samples? (YES) NO
11. Are samples in the appropriate containers for indicated tests? (YES) NO
12. Are sample labels present, in good condition and complete? (YES) NO
13. Do the sample labels agree with custody papers? (YES) NO
14. Was sufficient amount of sample sent for tests requested? (YES) NO
15. Are the samples appropriately preserved? (YES) NO N/A
16. Did you check preservatives for all bottles for each sample? (YES) NO N/A
17. Did you document your preservative check? (YES) NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? (YES) NO N/A
19. Did you change the hold time in LIMS for preserved terracores? (YES) NO N/A
20. Are bubbles > 6mm absent in VOA samples? (YES) NO N/A
21. Was the client contacted concerning this sample delivery? YES (NO)
   If YES, Who was called? By Date:

COMMENTS
HEAVY SEDIMENTS -002, -004, -006
10) COC states 2 bottles for (-001) but recd only 1

Rev 10, 11/11

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	184769
Units:	mg/Kg	Received:	03/19/12
Basis:	as received		

Field ID:	CPT-1@8FT	Diln Fac:	250.0
Type:	SAMPLE	Sampled:	03/16/12
Lab ID:	235040-007	Analyzed:	03/21/12

Analyte	Result	RL
Gasoline C7-C12	1,300	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	61-136

Field ID:	CPT-1@15FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/16/12
Lab ID:	235040-009	Analyzed:	03/21/12

Analyte	Result	RL
Gasoline C7-C12	1.9	1.1

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	61-136

Field ID:	CPT-1@42FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/16/12
Lab ID:	235040-013	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	ND	0.93

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	61-136

Field ID:	DPT-4@8FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/15/12
Lab ID:	235040-014	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	93	61-136

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	184769
Units:	mg/Kg	Received:	03/19/12
Basis:	as received		

Field ID:	DPT-4@16FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/15/12
Lab ID:	235040-017	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	7.1 Y	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	104	61-136

Field ID:	DPT-4@43FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/15/12
Lab ID:	235040-022	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	61-136

Field ID:	DPT-3@8FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/15/12
Lab ID:	235040-023	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	61-136

Field ID:	DPT-3@15FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/15/12
Lab ID:	235040-025	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	ND	0.97

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	61-136

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	184769
Units:	mg/Kg	Received:	03/19/12
Basis:	as received		

Field ID:	CPT-2@10FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/16/12
Lab ID:	235040-030	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	28	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	115	61-136

Field ID:	CPT-2@16FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/16/12
Lab ID:	235040-031	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	ND	0.98

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	61-136

Field ID:	CPT-2@48FT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	03/16/12
Lab ID:	235040-035	Analyzed:	03/21/12

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	61-136

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC632594	Analyzed:	03/20/12

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	61-136

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	184769
Units:	mg/Kg	Analyzed:	03/20/12
Diln Fac:	1.000		

Type: BS Lab ID: QC632593

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	1.048	105	79-120

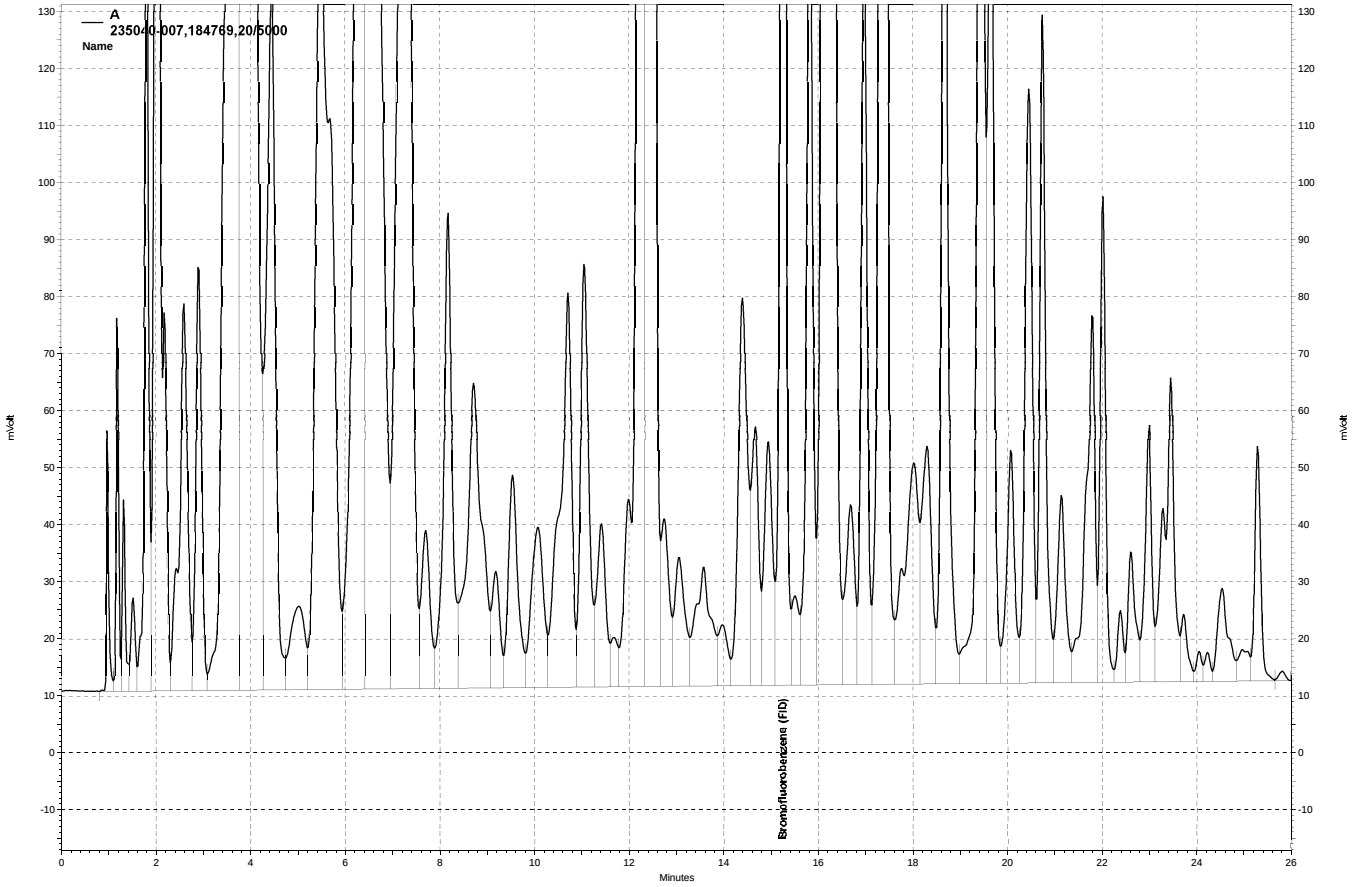
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	61-136

Type: BSD Lab ID: QC632711

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2.000	1.998	100	79-120	5	22

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	61-136

RPD= Relative Percent Difference



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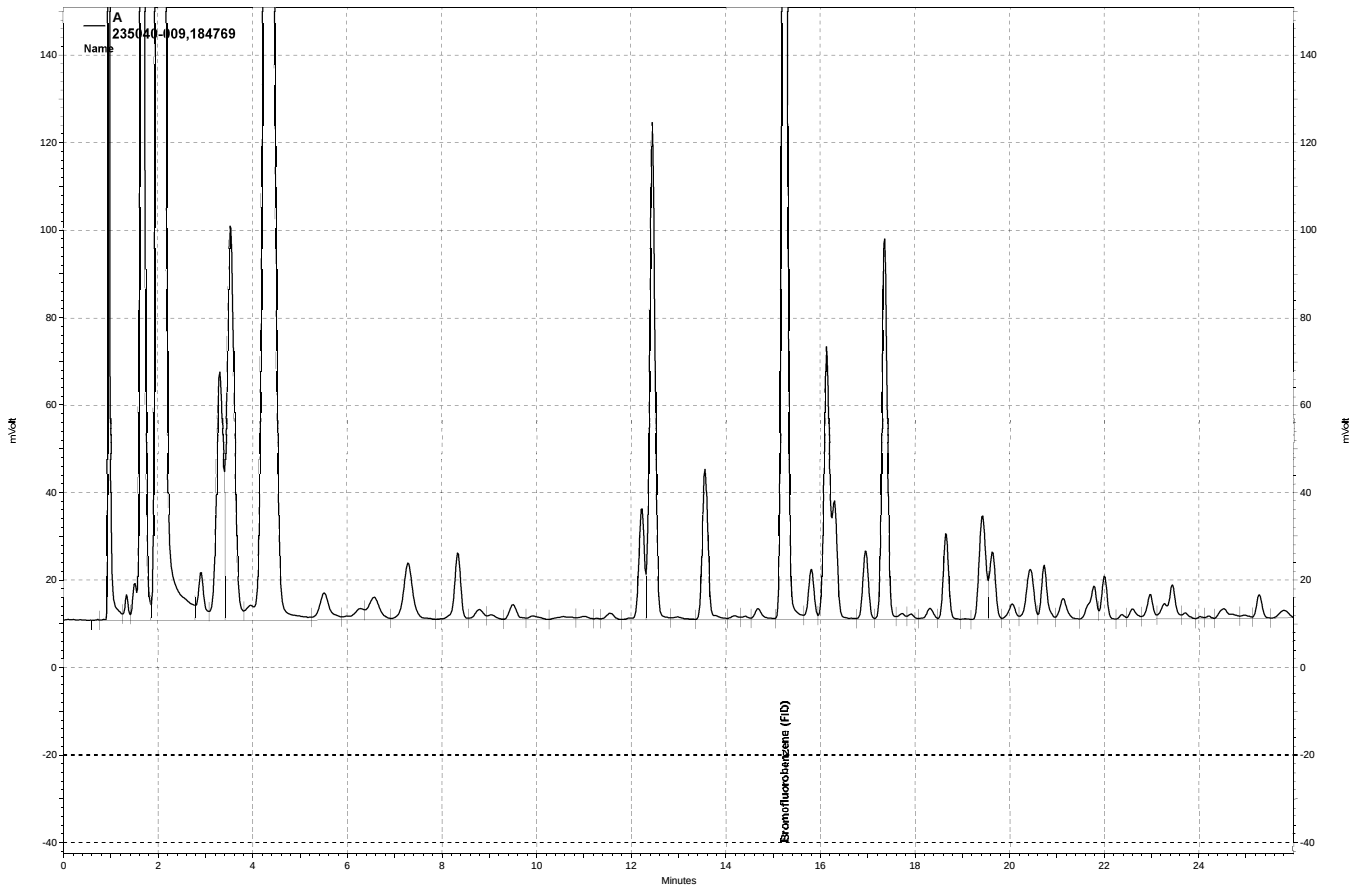

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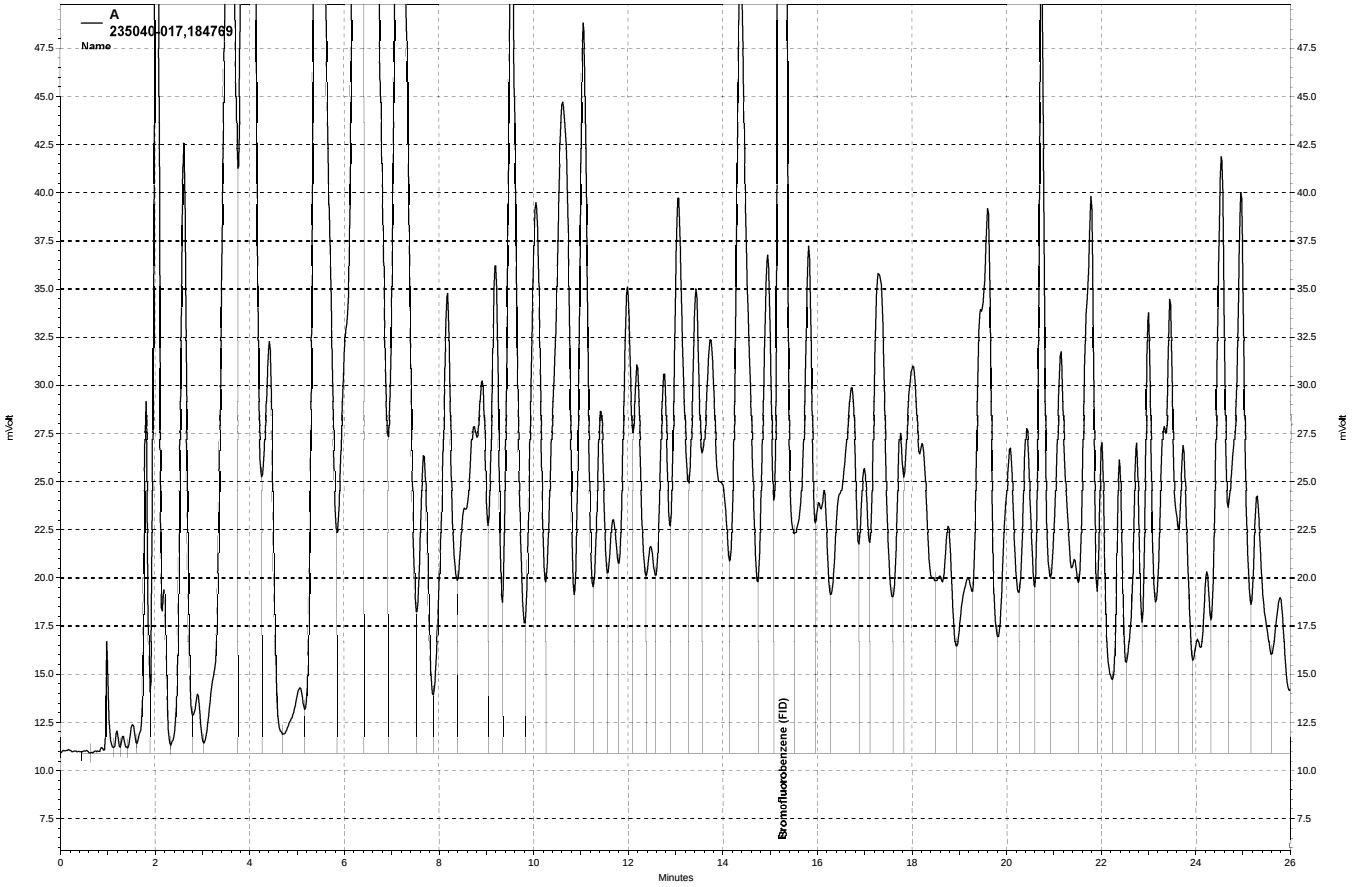

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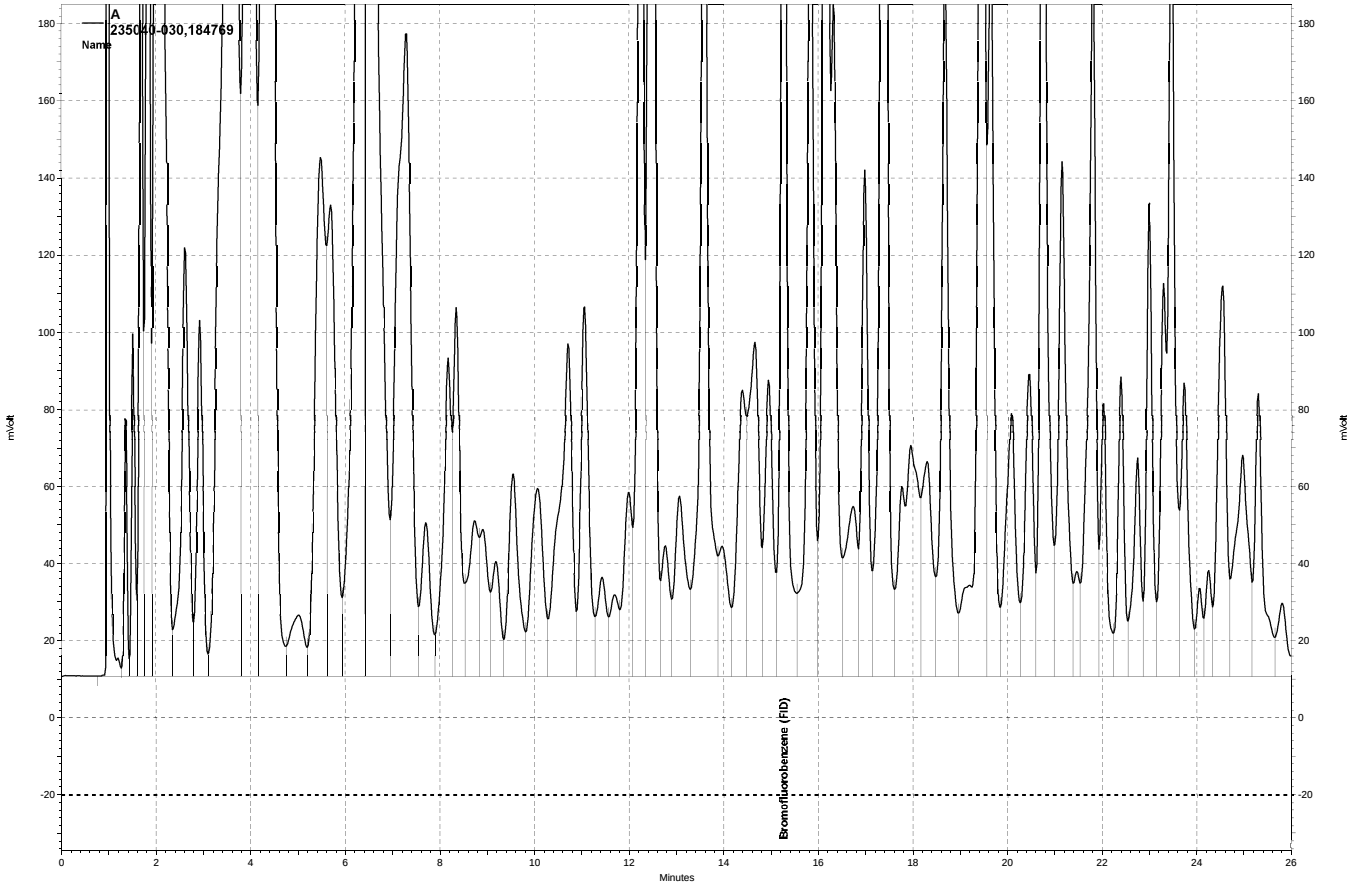

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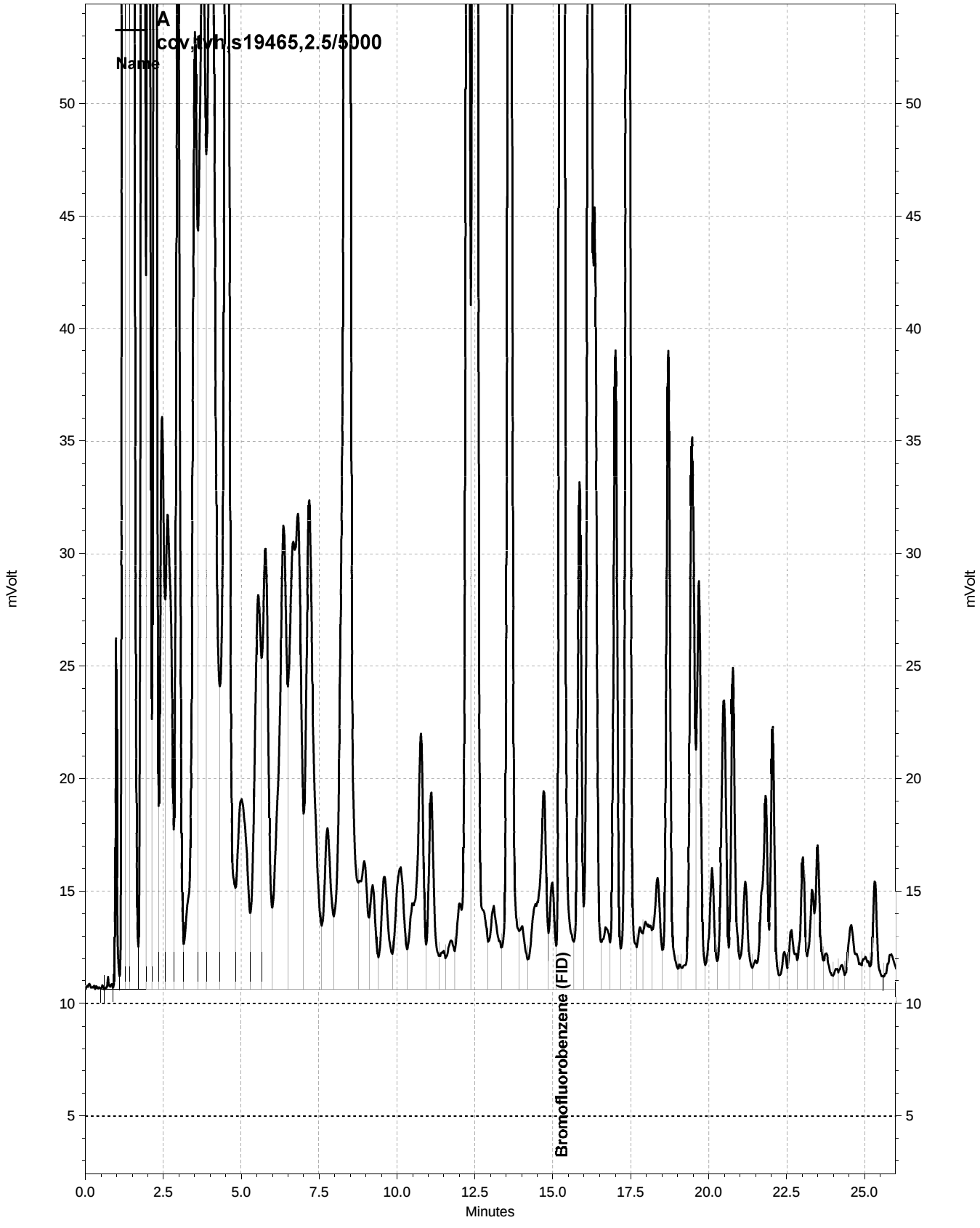

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3520C
Project#:	5082	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	184779
Units:	ug/L	Received:	03/19/12
Diln Fac:	1.000	Prepared:	03/20/12

Field ID: CPT/DPT-1-1 Sampled: 03/16/12
Type: SAMPLE Analyzed: 03/21/12
Lab ID: 235040-001

Analyte	Result	RL
Diesel C10-C24	140 Y	50

Surrogate	%REC	Limits
o-Terphenyl	120	61-129

Field ID: CPT/DPT-1-2 Sampled: 03/16/12
Type: SAMPLE Analyzed: 03/21/12
Lab ID: 235040-002

Analyte	Result	RL
Diesel C10-C24	3,200	50

Surrogate	%REC	Limits
o-Terphenyl	101	61-129

Field ID: CPT/DPT-2-1 Sampled: 03/16/12
Type: SAMPLE Analyzed: 03/21/12
Lab ID: 235040-003

Analyte	Result	RL
Diesel C10-C24	820	50

Surrogate	%REC	Limits
o-Terphenyl	103	61-129

Field ID: CPT/DPT-2-2 Sampled: 03/16/12
Type: SAMPLE Analyzed: 03/22/12
Lab ID: 235040-004

Analyte	Result	RL
Diesel C10-C24	300 Y	50

Surrogate	%REC	Limits
o-Terphenyl	93	61-129

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3520C
Project#:	5082	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	184779
Units:	ug/L	Received:	03/19/12
Diln Fac:	1.000	Prepared:	03/20/12

Field ID: DPT-4-1 Sampled: 03/15/12
Type: SAMPLE Analyzed: 03/22/12
Lab ID: 235040-005

Analyte	Result	RL
Diesel C10-C24	150 Y	50

Surrogate	%REC	Limits
o-Terphenyl	108	61-129

Field ID: DPT-3-2 Sampled: 03/15/12
Type: SAMPLE Analyzed: 03/22/12
Lab ID: 235040-006

Analyte	Result	RL
Diesel C10-C24	53 Y	50

Surrogate	%REC	Limits
o-Terphenyl	106	61-129

Type: BLANK Analyzed: 03/21/12
Lab ID: QC632636

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	109	61-129

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3520C
Project#:	5082	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	184779
Units:	ug/L	Prepared:	03/20/12
Diln Fac:	1.000	Analyzed:	03/21/12

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC632637

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,598	64	59-120

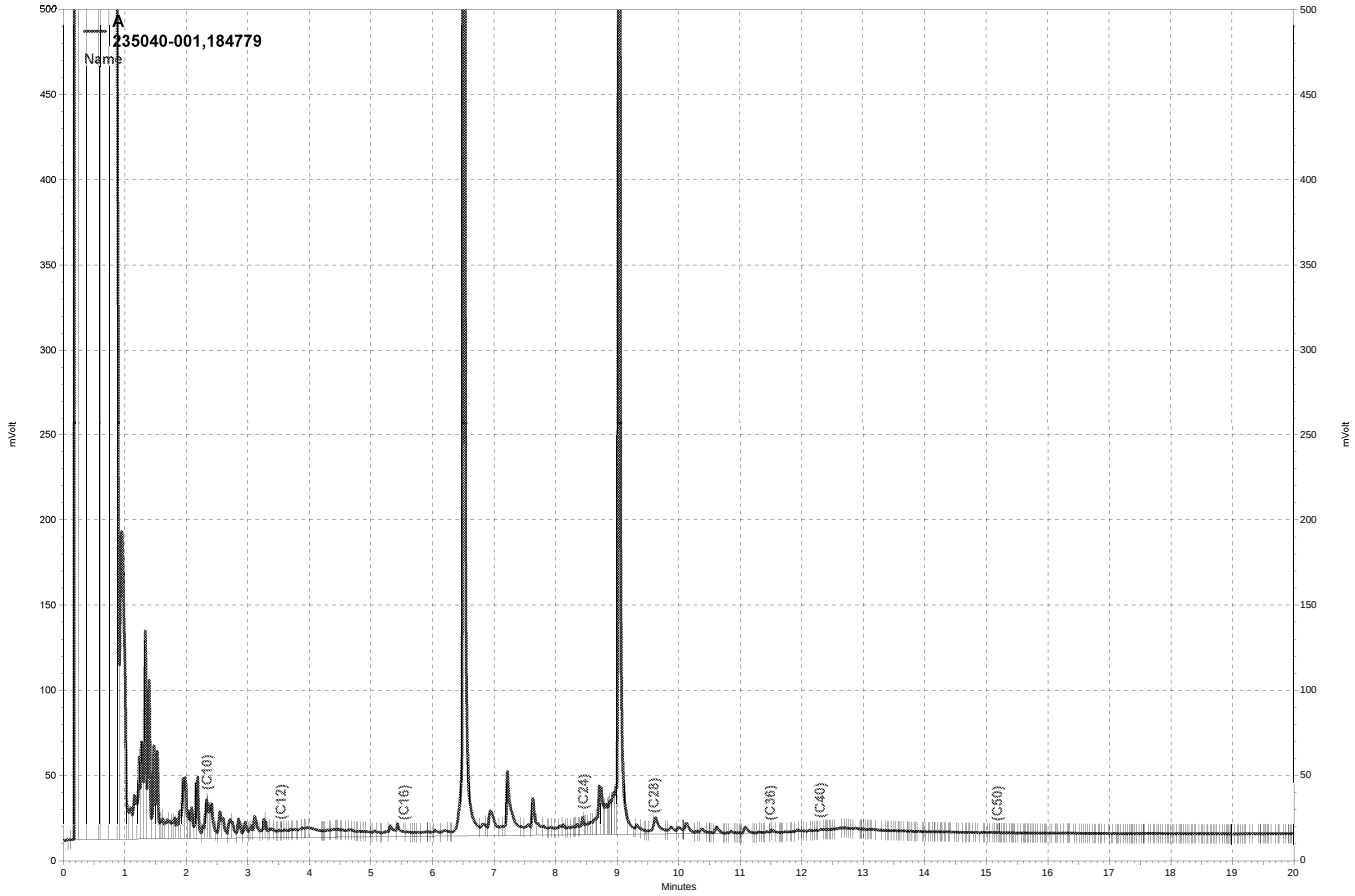
Surrogate	%REC	Limits
o-Terphenyl	89	61-129

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC632638

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	1,897	76	59-120	17	52

Surrogate	%REC	Limits
o-Terphenyl	102	61-129

RPD= Relative Percent Difference



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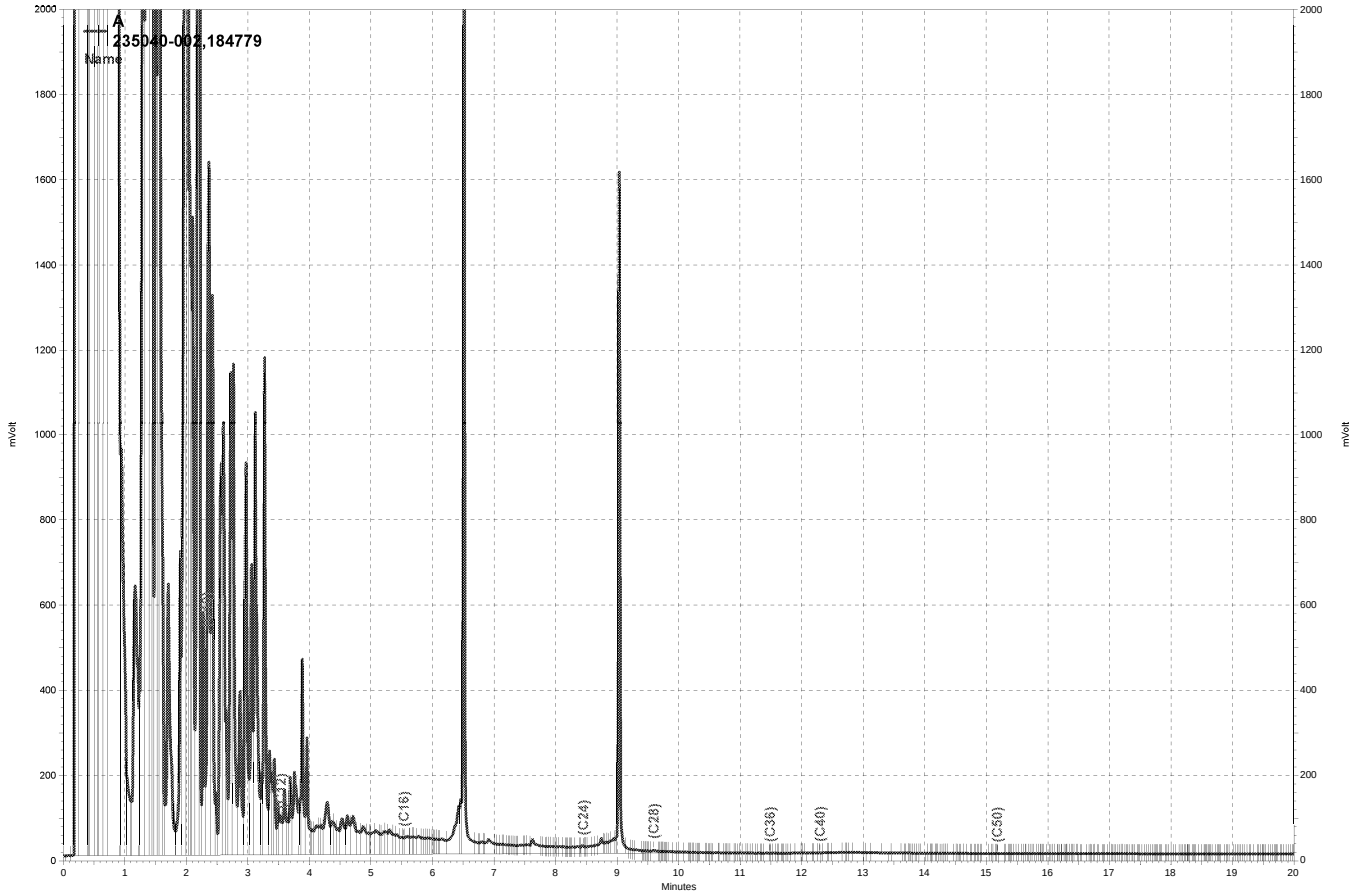

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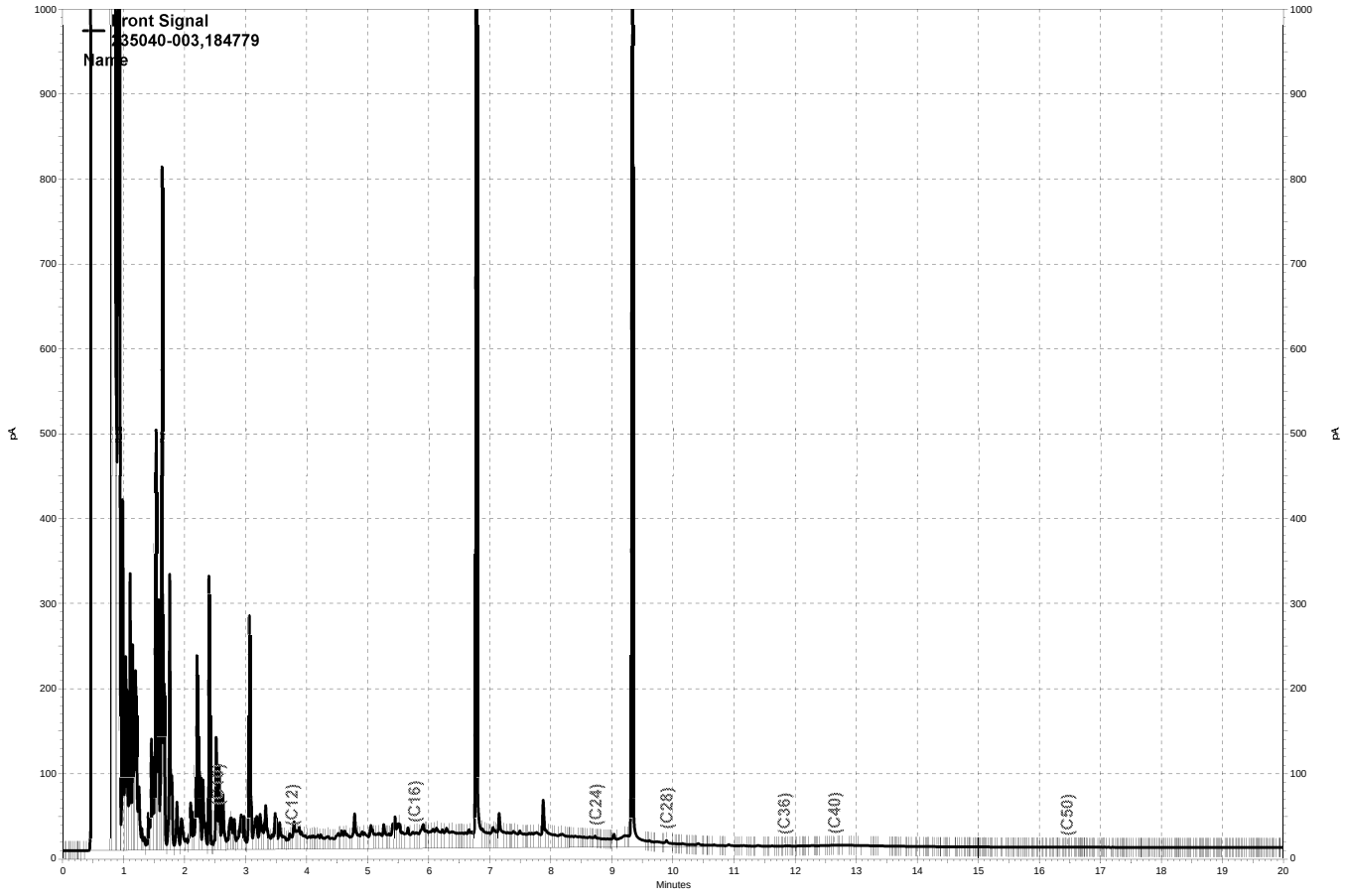

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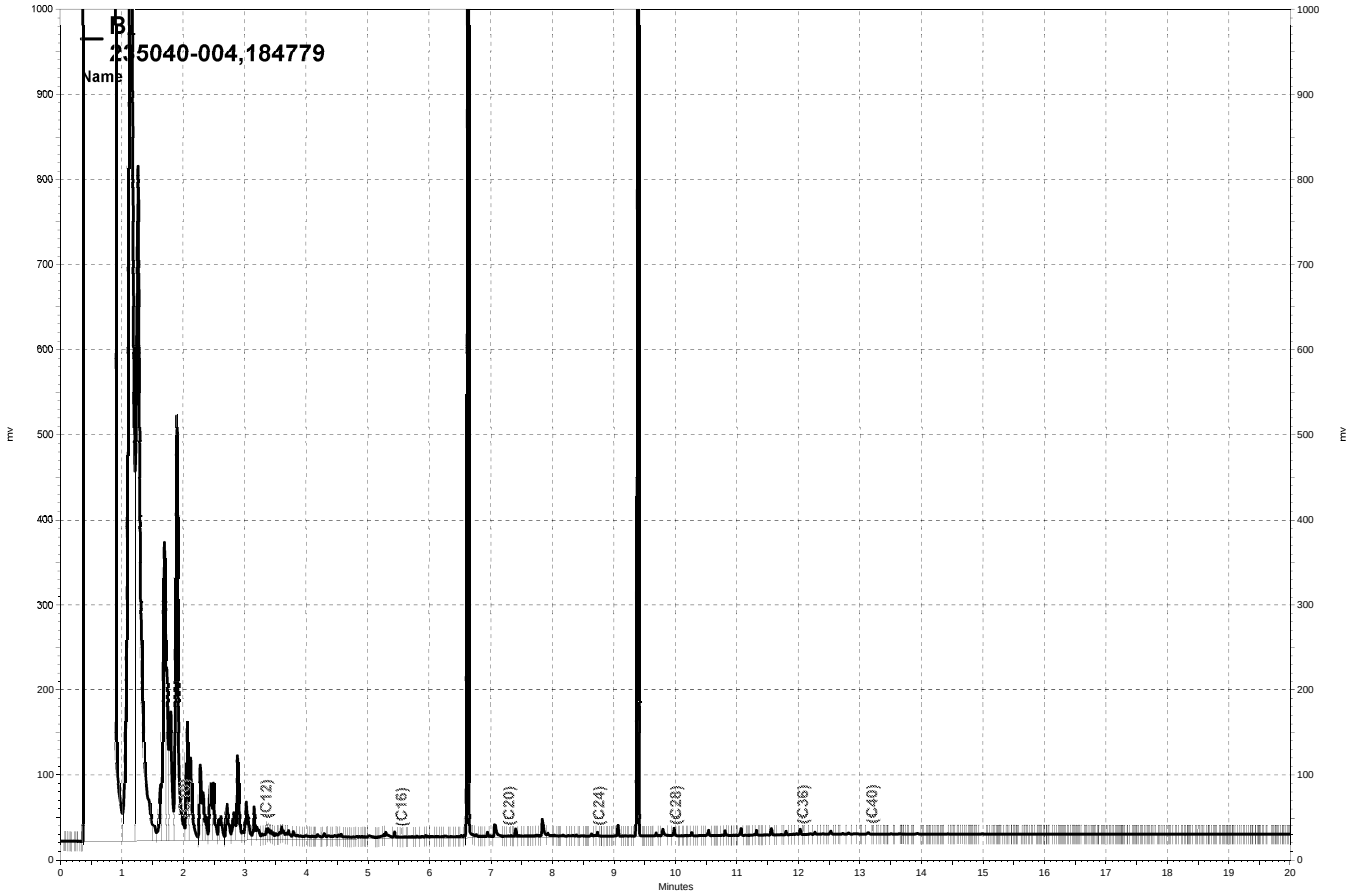

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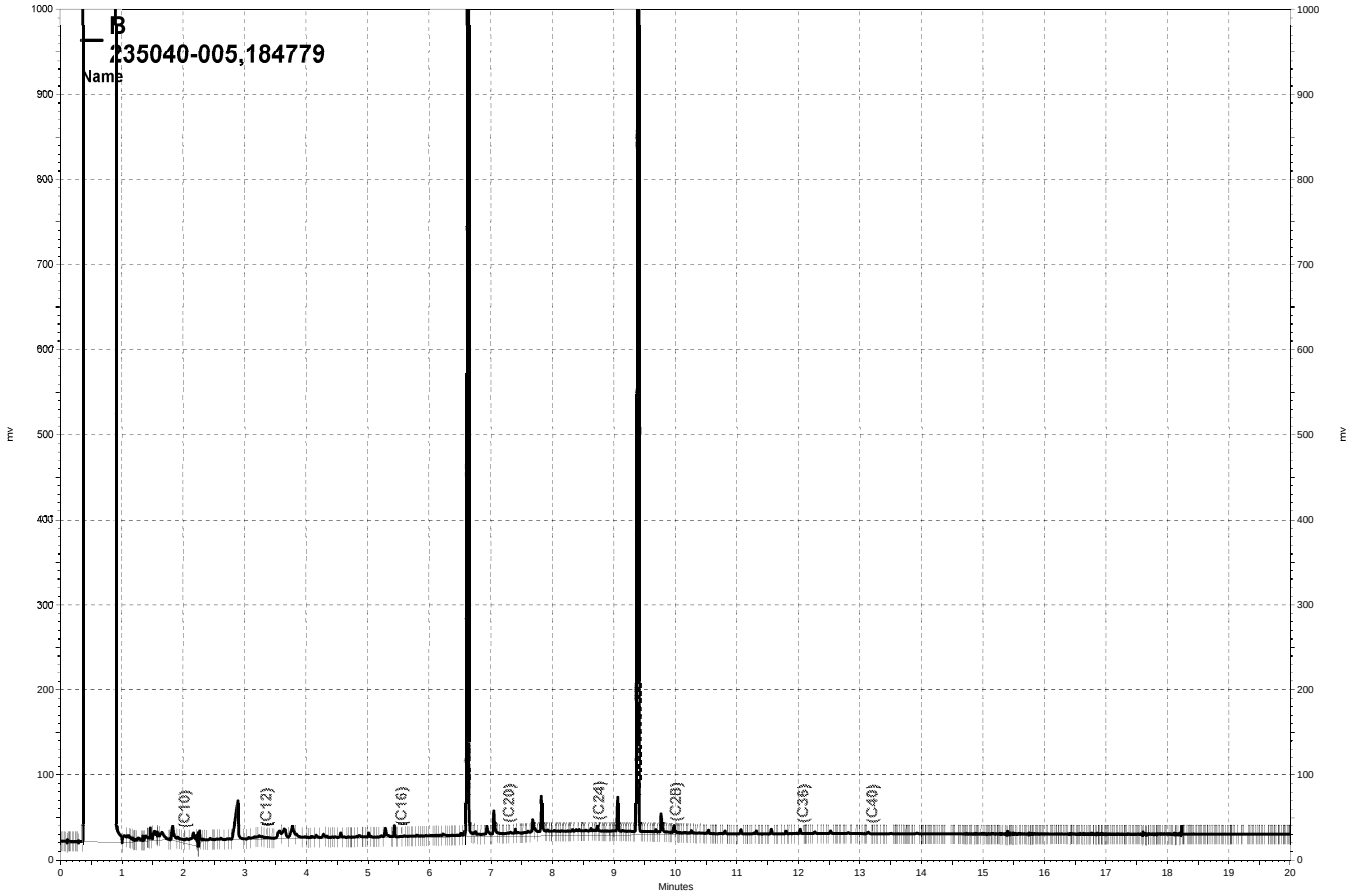

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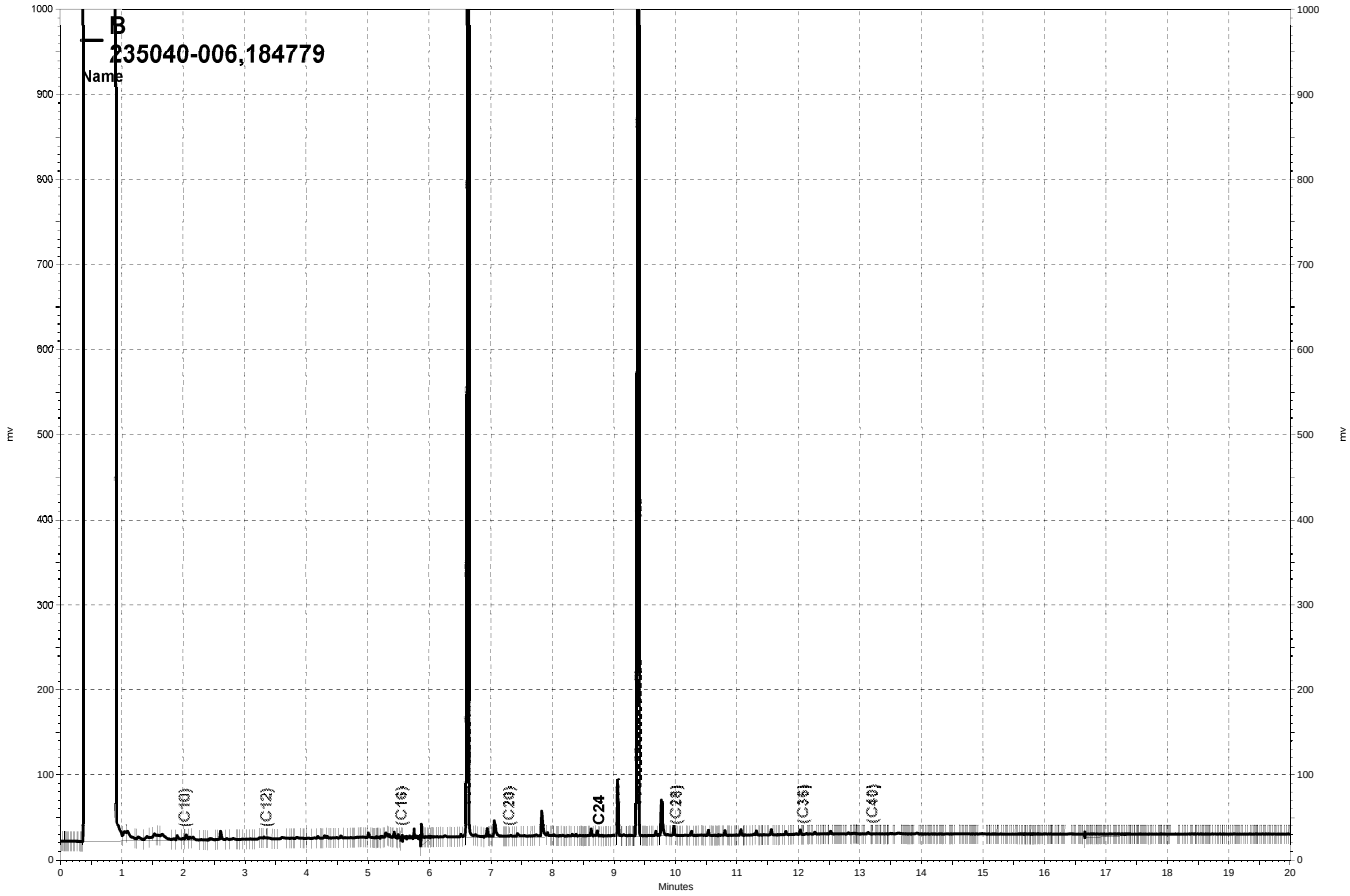

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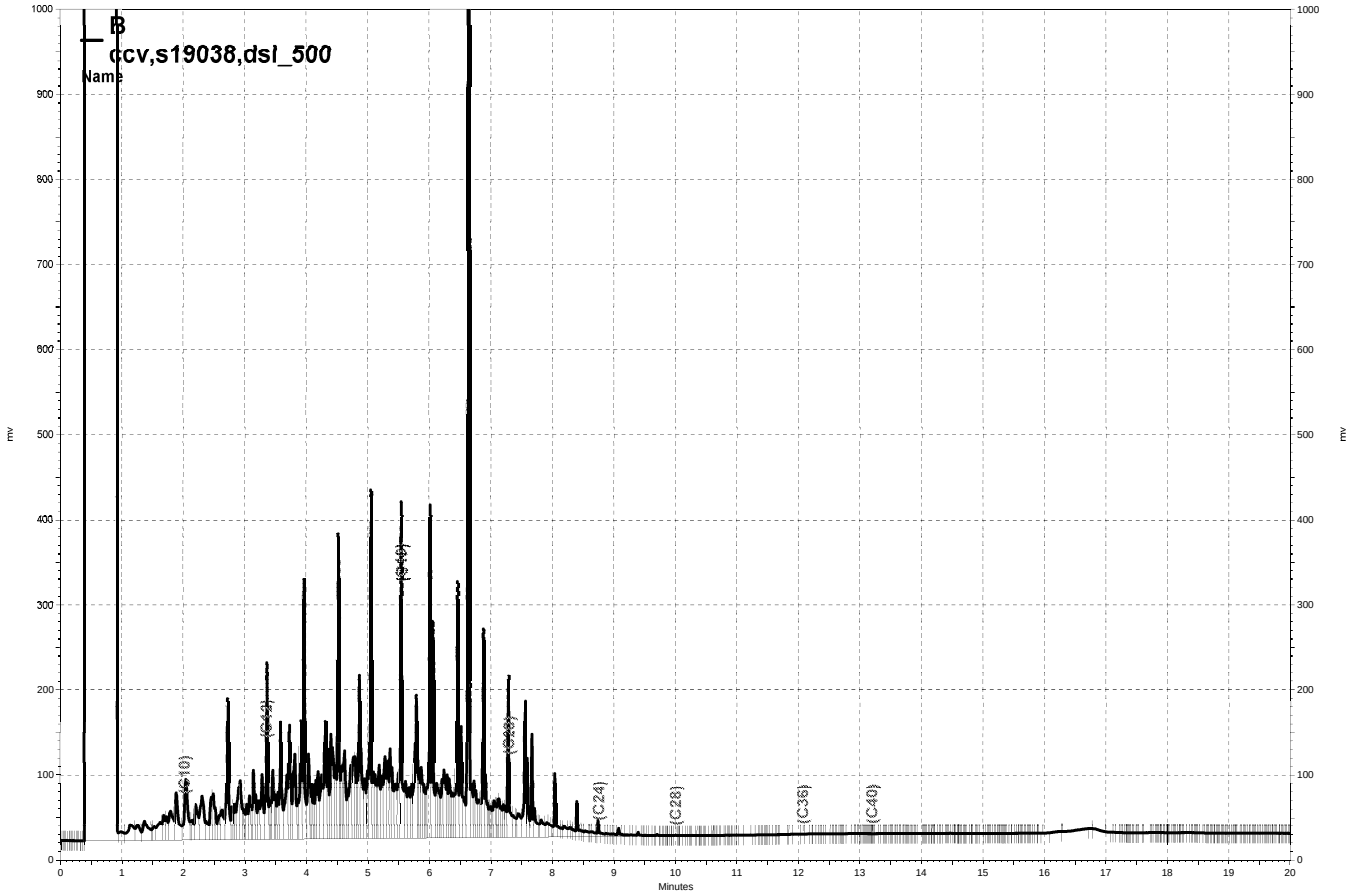

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Analysis:	EPA 8015B
Project#:	5082		
Matrix:	Soil	Dil'n Fac:	1.000
Units:	mg/Kg	Received:	03/19/12
Basis:	as received		

Field ID:	CPT-1@8FT	Sampled:	03/16/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-007	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	99 Y	0.99

Surrogate	%REC	Limits
o-Terphenyl	111	49-128

Field ID:	CPT-1@15FT	Sampled:	03/16/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-009	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	1.6 Y	1.0

Surrogate	%REC	Limits
o-Terphenyl	108	49-128

Field ID:	CPT-1@42FT	Sampled:	03/16/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-013	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	2.2 Y	1.0

Surrogate	%REC	Limits
o-Terphenyl	107	49-128

Field ID:	DPT-4@8FT	Sampled:	03/15/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-014	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	107	49-128

*= Value outside of QC limits; see narrative
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Analysis:	EPA 8015B
Project#:	5082		
Matrix:	Soil	Dil'n Fac:	1.000
Units:	mg/Kg	Received:	03/19/12
Basis:	as received		

Field ID:	DPT-4@16FT	Sampled:	03/15/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-017	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	9.0 Y	1.0

Surrogate	%REC	Limits
o-Terphenyl	119	49-128

Field ID:	DPT-4@43FT	Sampled:	03/15/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-022	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	139 *	49-128

Field ID:	DPT-3@8FT	Sampled:	03/15/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-023	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	ND	0.99

Surrogate	%REC	Limits
o-Terphenyl	134 *	49-128

Field ID:	DPT-3@15FT	Sampled:	03/15/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-025	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	136 *	49-128

*= Value outside of QC limits; see narrative
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Analysis:	EPA 8015B
Project#:	5082		
Matrix:	Soil	Dil'n Fac:	1.000
Units:	mg/Kg	Received:	03/19/12
Basis:	as received		

Field ID:	CPT-2@10FT	Sampled:	03/16/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-030	Analyzed:	03/22/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	21 Y	1.0

Surrogate	%REC	Limits
o-Terphenyl	107	49-128

Field ID:	CPT-2@16FT	Sampled:	03/16/12
Type:	SAMPLE	Prepared:	03/20/12
Lab ID:	235040-031	Analyzed:	03/21/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	128	49-128

Field ID:	CPT-2@48FT	Sampled:	03/16/12
Type:	SAMPLE	Prepared:	03/21/12
Lab ID:	235040-035	Analyzed:	03/22/12
Batch#:	184806	Prep:	SHAKER TABLE

Analyte	Result	RL
Diesel C10-C24	1.1 Y	1.0

Surrogate	%REC	Limits
o-Terphenyl	97	49-128

Type:	BLANK	Prepared:	03/20/12
Lab ID:	QC632632	Analyzed:	03/20/12
Batch#:	184778	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	ND	0.99

Surrogate	%REC	Limits
o-Terphenyl	104	49-128

*= Value outside of QC limits; see narrative
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Analysis:	EPA 8015B
Project#:	5082		
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Received:	03/19/12
Basis:	as received		

Type:	BLANK	Prepared:	03/21/12
Lab ID:	QC632742	Analyzed:	03/21/12
Batch#:	184806	Prep:	SHAKER TABLE

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	92	49-128

*= Value outside of QC limits; see narrative
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3550B
Project#:	5082	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC632633	Batch#:	184778
Matrix:	Soil	Prepared:	03/20/12
Units:	mg/Kg	Analyzed:	03/20/12

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.18	45.41	90	47-132

Surrogate	%REC	Limits
o-Terphenyl	104	49-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3550B
Project#:	5082	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	184778
MSS Lab ID:	235052-010	Sampled:	03/20/12
Matrix:	Soil	Received:	03/20/12
Units:	mg/Kg	Prepared:	03/20/12
Basis:	as received	Analyzed:	03/21/12
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC632634

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	0.7177	50.21	49.56	97	32-143

Surrogate	%REC	Limits
o-Terphenyl	109	49-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC632635

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.15	48.53	95	32-143	2	54

Surrogate	%REC	Limits
o-Terphenyl	102	49-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	SHAKER TABLE
Project#:	5082	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC632743	Batch#:	184806
Matrix:	Soil	Prepared:	03/21/12
Units:	mg/Kg	Analyzed:	03/21/12

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.57	44.48	90	47-132

Surrogate	%REC	Limits
o-Terphenyl	100	49-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	SHAKER TABLE
Project#:	5082	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	184806
MSS Lab ID:	235023-001	Sampled:	03/15/12
Matrix:	Soil	Received:	03/16/12
Units:	mg/Kg	Prepared:	03/21/12
Basis:	as received	Analyzed:	03/22/12
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC632744

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	0.4449	49.62	28.64	57	32-143

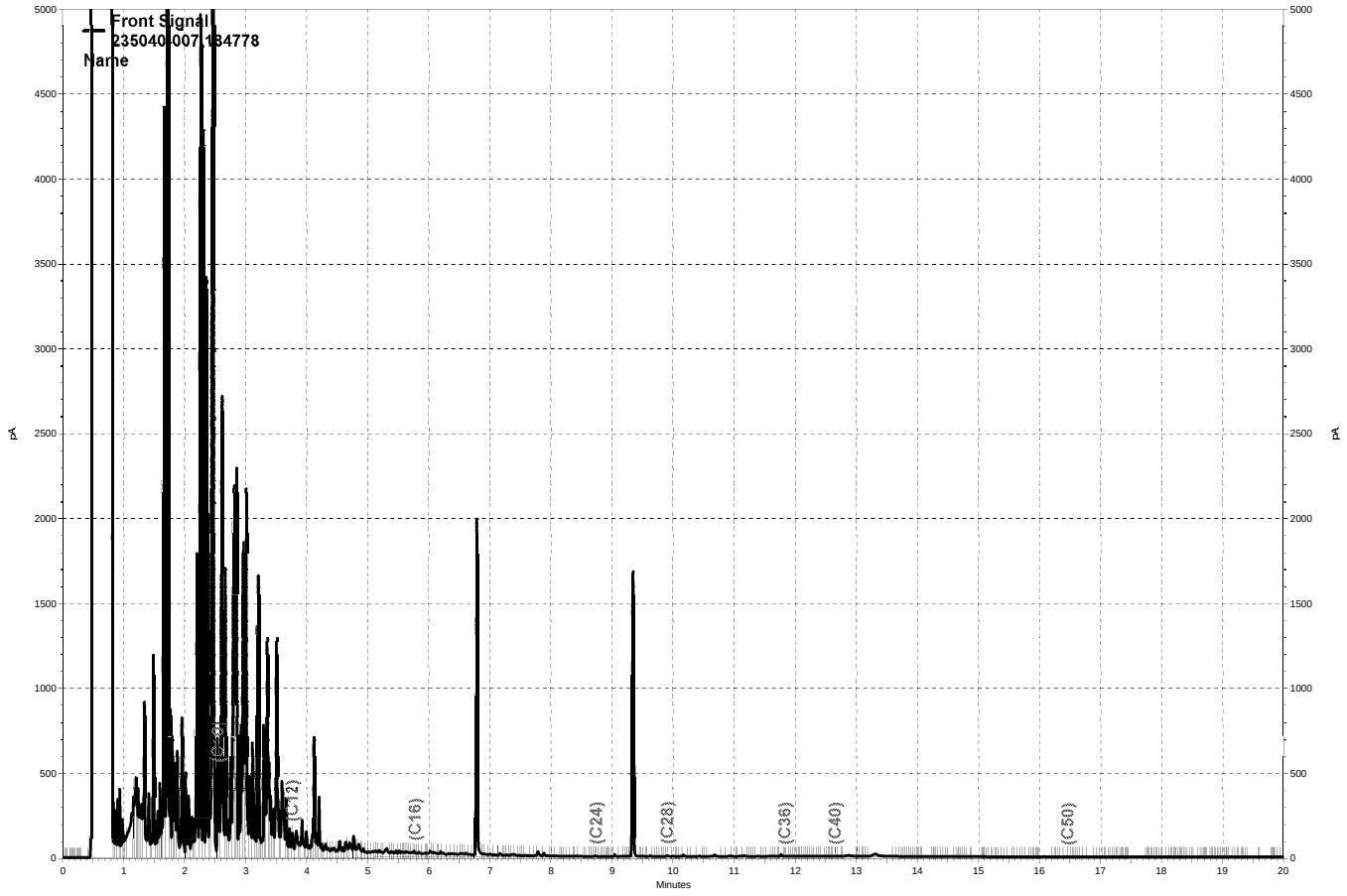
Surrogate	%REC	Limits
o-Terphenyl	132 *	49-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC632745

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.18	31.29	61	32-143	8	54

Surrogate	%REC	Limits
o-Terphenyl	70	49-128

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference



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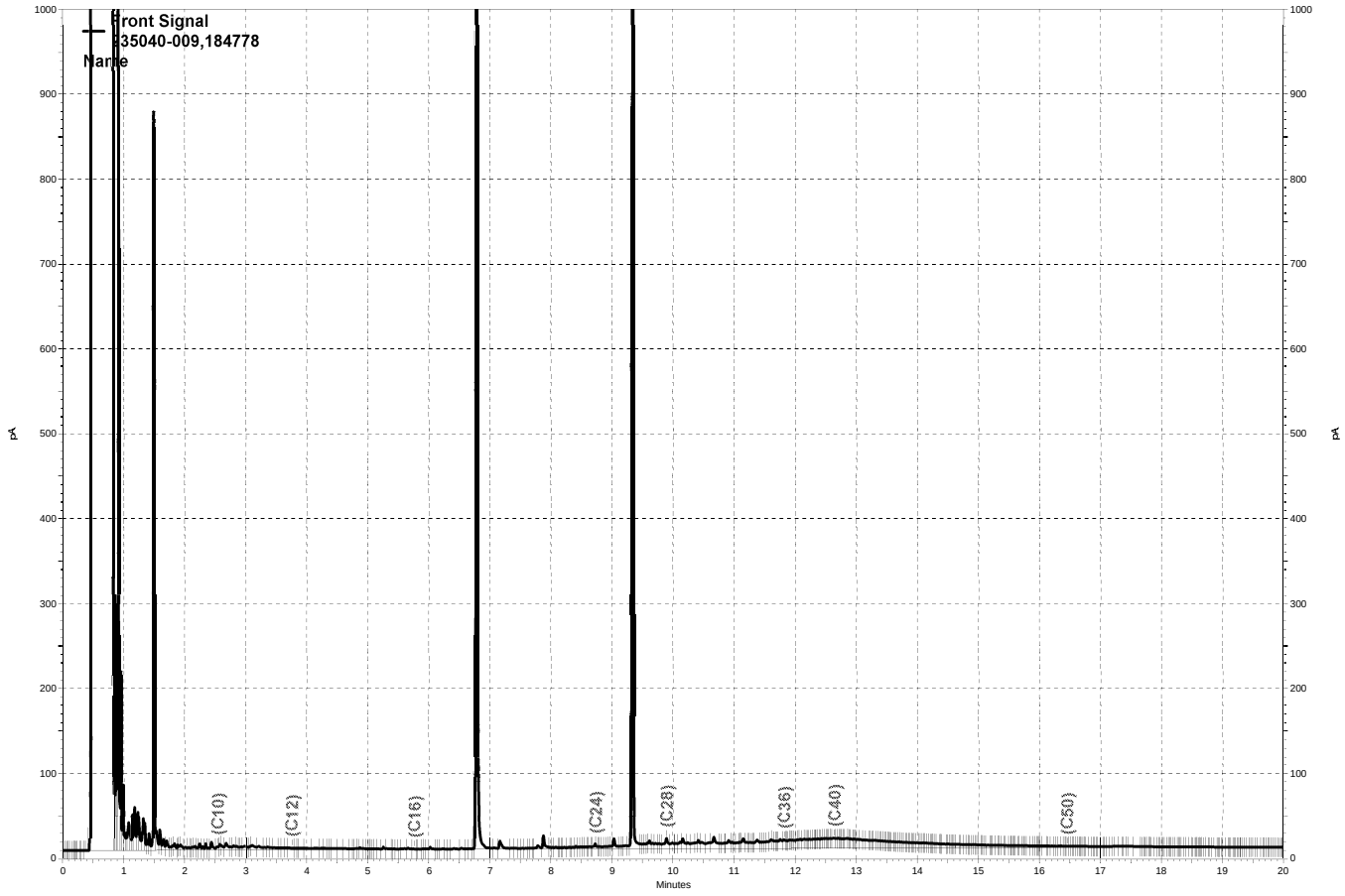

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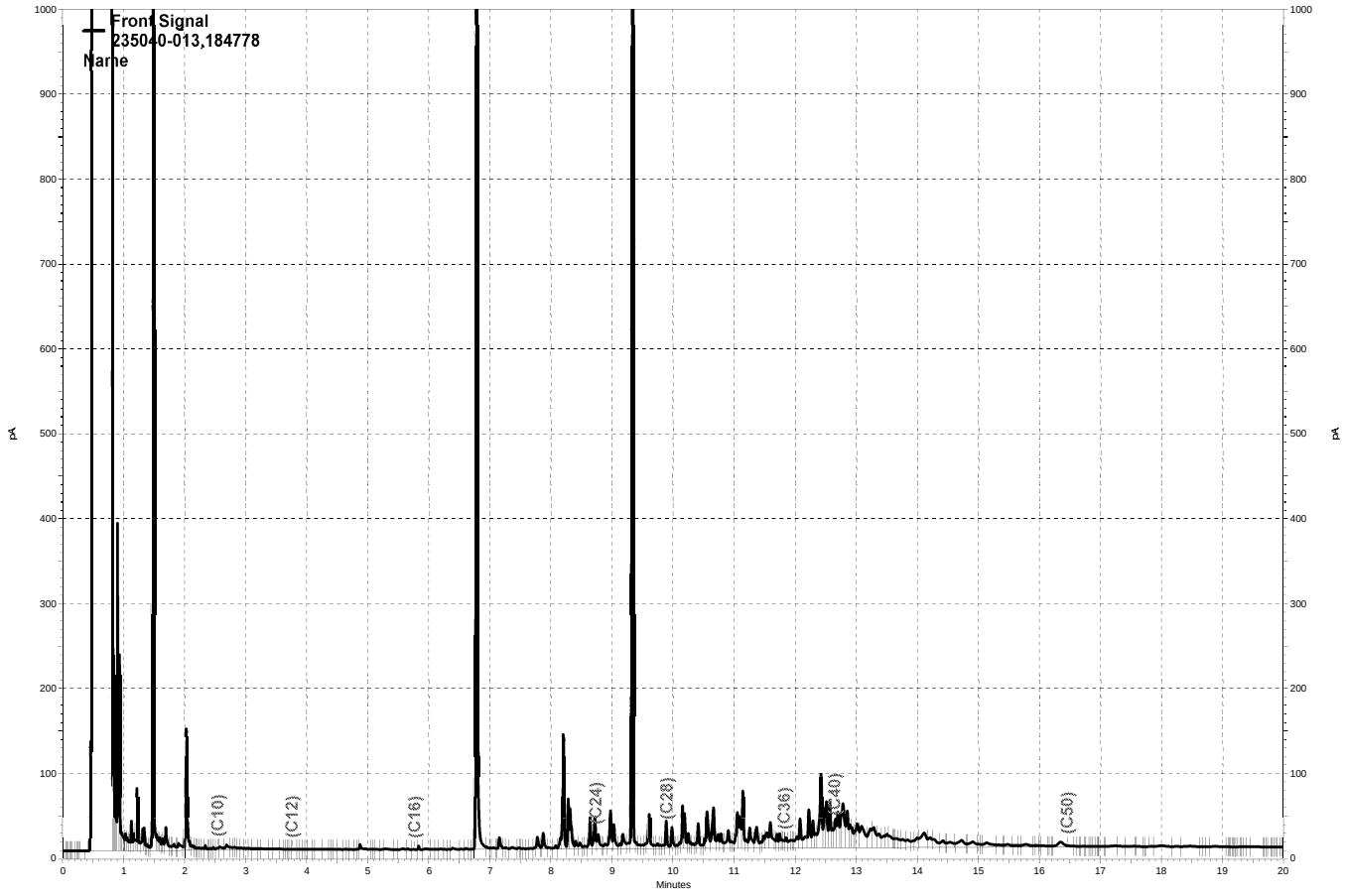

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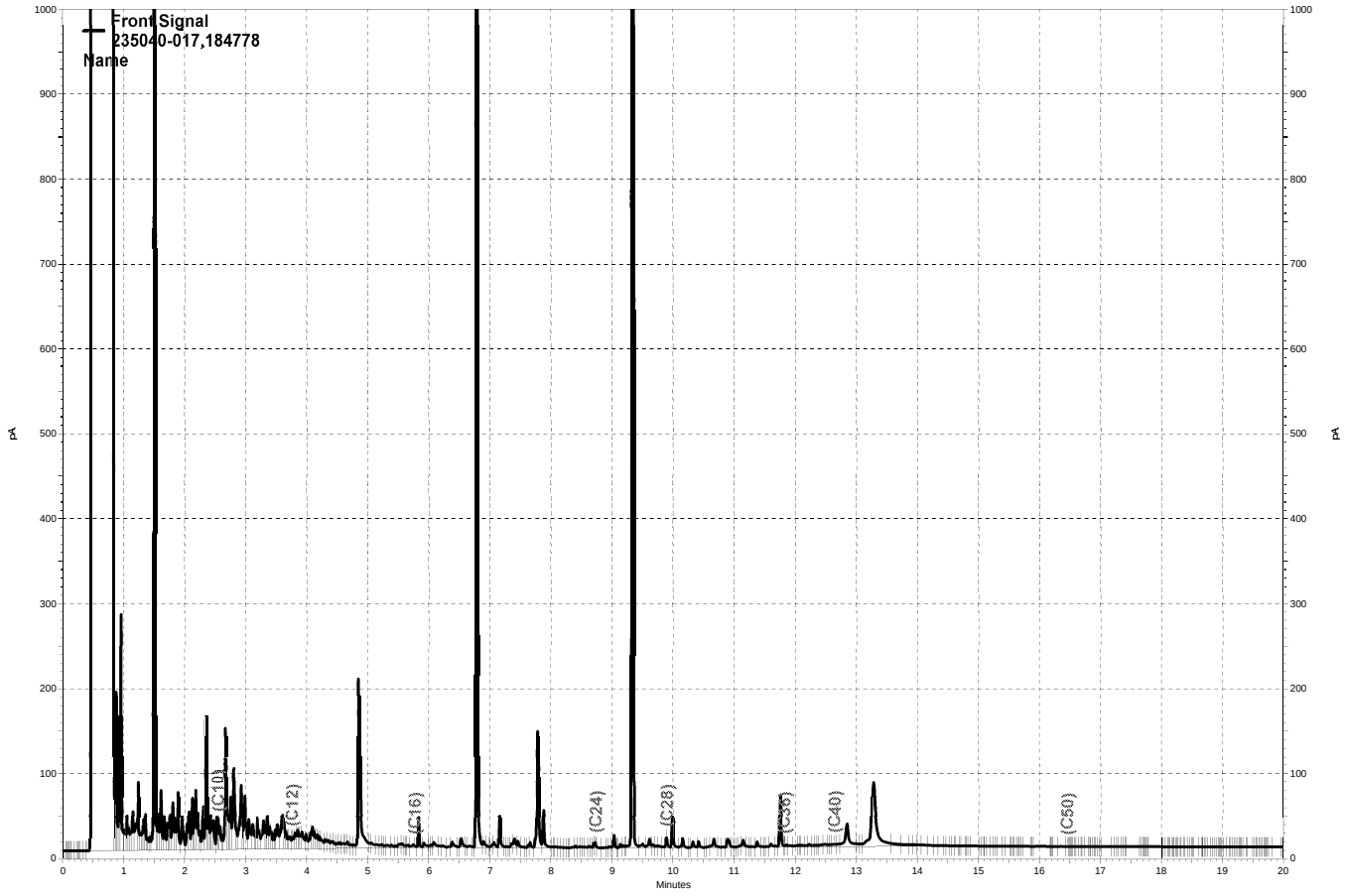

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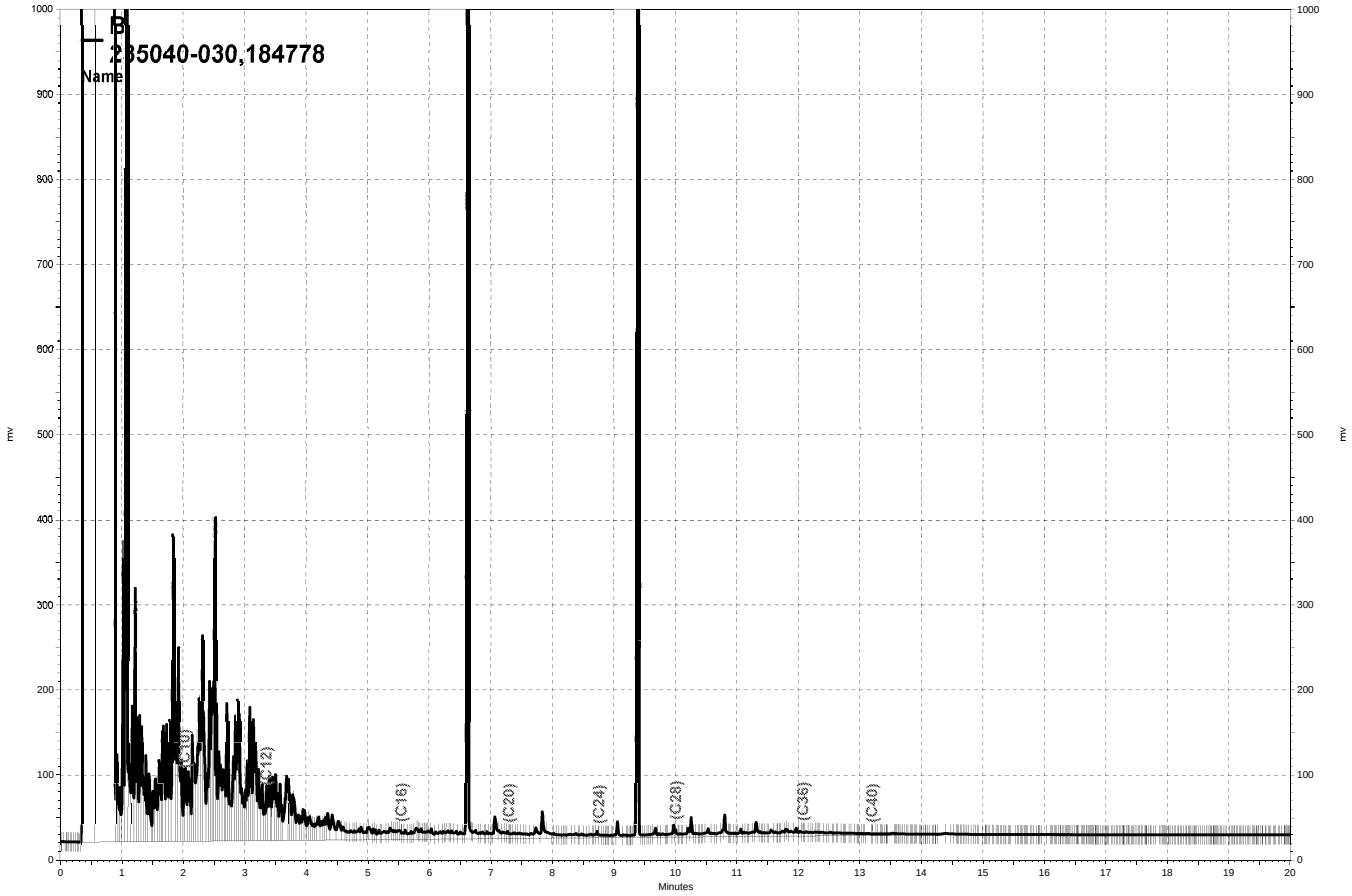

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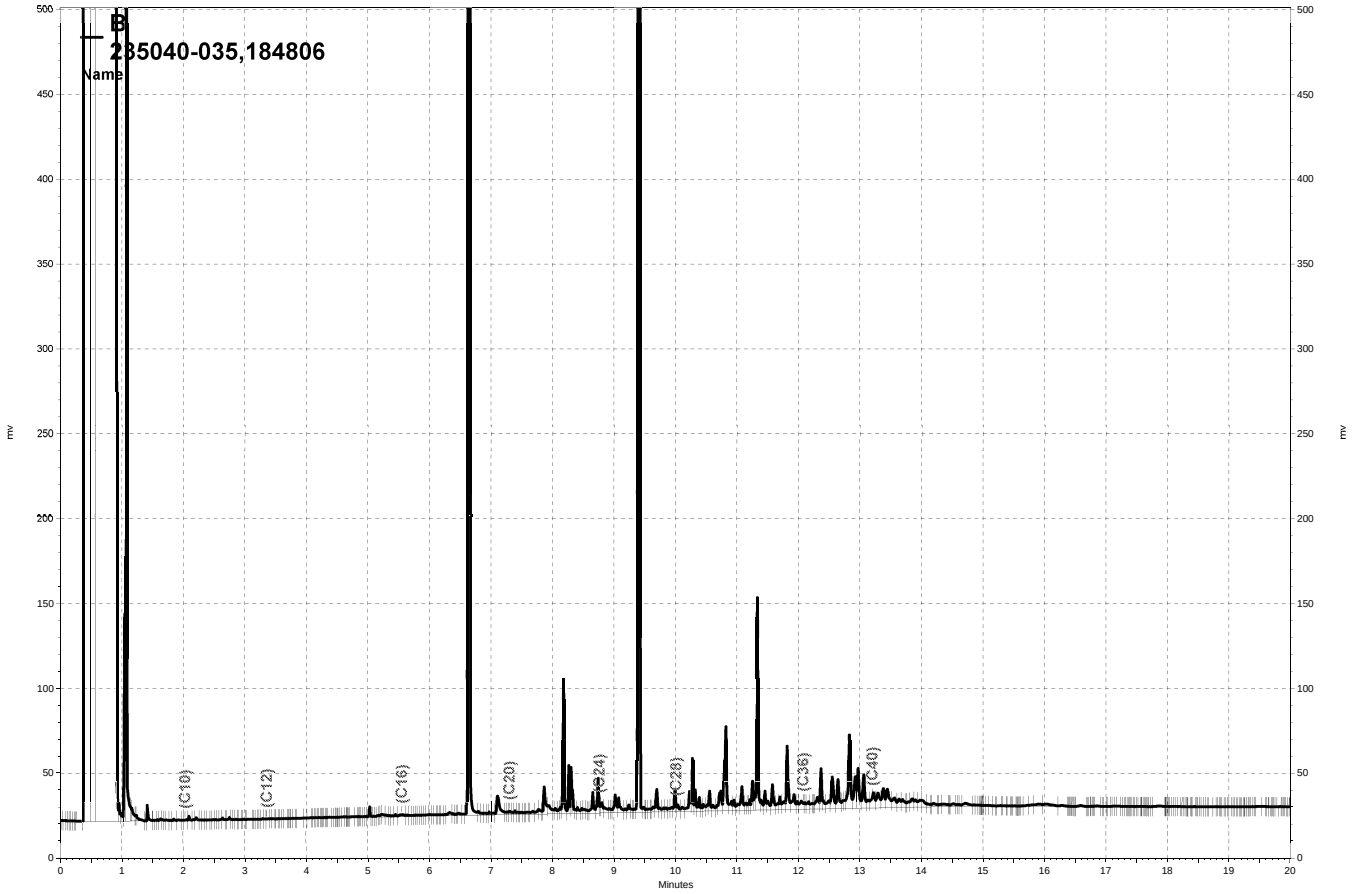

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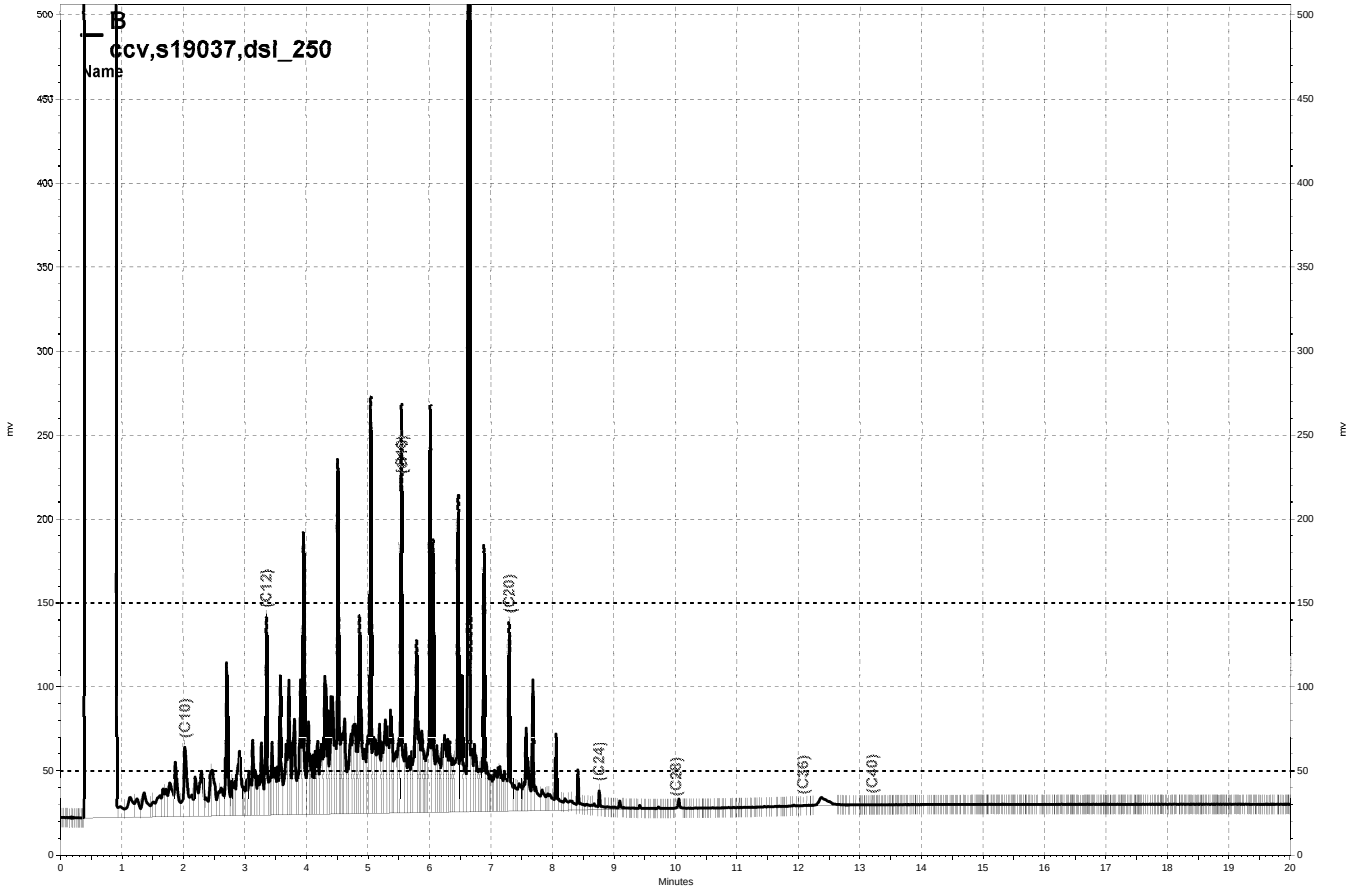

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Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT/DPT-1-1	Units:	ug/L
Lab ID:	235040-001	Sampled:	03/16/12
Matrix:	Water	Received:	03/19/12

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	ND	6,300	125.0	184751	03/20/12
tert-Butyl Alcohol (TBA)	2,800	1,300	125.0	184751	03/20/12
Isopropyl Ether (DIPE)	ND	63	125.0	184751	03/20/12
Ethyl tert-Butyl Ether (ETBE)	ND	63	125.0	184751	03/20/12
Methyl tert-Amyl Ether (TAME)	2,300	63	125.0	184751	03/20/12
MTBE	36,000	250	500.0	184793	03/21/12
1,2-Dichloroethane	ND	63	125.0	184751	03/20/12
Benzene	94	63	125.0	184751	03/20/12
Toluene	64	63	125.0	184751	03/20/12
1,2-Dibromoethane	ND	63	125.0	184751	03/20/12
Ethylbenzene	ND	63	125.0	184751	03/20/12
m,p-Xylenes	ND	63	125.0	184751	03/20/12
o-Xylene	ND	63	125.0	184751	03/20/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	94	80-125	125.0	184751	03/20/12
1,2-Dichloroethane-d4	96	69-145	125.0	184751	03/20/12
Toluene-d8	97	80-120	125.0	184751	03/20/12
Bromofluorobenzene	96	80-120	125.0	184751	03/20/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT/DPT-1-2	Units:	ug/L
Lab ID:	235040-002	Sampled:	03/16/12
Matrix:	Water	Received:	03/19/12

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	96,000	36,000	714.3	184751	03/20/12
tert-Butyl Alcohol (TBA)	78,000	7,100	714.3	184751	03/20/12
Isopropyl Ether (DIPE)	ND	360	714.3	184751	03/20/12
Ethyl tert-Butyl Ether (ETBE)	ND	360	714.3	184751	03/20/12
Methyl tert-Amyl Ether (TAME)	7,400	360	714.3	184751	03/20/12
MTBE	95,000	1,000	2,000	184793	03/21/12
1,2-Dichloroethane	ND	360	714.3	184751	03/20/12
Benzene	2,400	360	714.3	184751	03/20/12
Toluene	11,000	360	714.3	184751	03/20/12
1,2-Dibromoethane	ND	360	714.3	184751	03/20/12
Ethylbenzene	3,100	360	714.3	184751	03/20/12
m,p-Xylenes	11,000	360	714.3	184751	03/20/12
o-Xylene	3,700	360	714.3	184751	03/20/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	93	80-125	714.3	184751	03/20/12
1,2-Dichloroethane-d4	95	69-145	714.3	184751	03/20/12
Toluene-d8	96	80-120	714.3	184751	03/20/12
Bromofluorobenzene	99	80-120	714.3	184751	03/20/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT/DPT-2-1	Units:	ug/L
Lab ID:	235040-003	Sampled:	03/16/12
Matrix:	Water	Received:	03/19/12

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	ND	13,000	250.0	184751	03/20/12
tert-Butyl Alcohol (TBA)	92,000	2,500	250.0	184751	03/20/12
Isopropyl Ether (DIPE)	ND	130	250.0	184751	03/20/12
Ethyl tert-Butyl Ether (ETBE)	ND	130	250.0	184751	03/20/12
Methyl tert-Amyl Ether (TAME)	3,000	130	250.0	184751	03/20/12
MTBE	52,000	420	833.3	184793	03/21/12
1,2-Dichloroethane	ND	130	250.0	184751	03/20/12
Benzene	ND	130	250.0	184751	03/20/12
Toluene	ND	130	250.0	184751	03/20/12
1,2-Dibromoethane	ND	130	250.0	184751	03/20/12
Ethylbenzene	ND	130	250.0	184751	03/20/12
m,p-Xylenes	ND	130	250.0	184751	03/20/12
o-Xylene	ND	130	250.0	184751	03/20/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	92	80-125	250.0	184751	03/20/12
1,2-Dichloroethane-d4	104	69-145	250.0	184751	03/20/12
Toluene-d8	98	80-120	250.0	184751	03/20/12
Bromofluorobenzene	100	80-120	250.0	184751	03/20/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT/DPT-2-2	Units:	ug/L
Lab ID:	235040-004	Sampled:	03/16/12
Matrix:	Water	Received:	03/19/12

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	4,500	3,600	71.43	184751	03/20/12
tert-Butyl Alcohol (TBA)	6,100	710	71.43	184751	03/20/12
Isopropyl Ether (DIPE)	ND	36	71.43	184751	03/20/12
Ethyl tert-Butyl Ether (ETBE)	ND	36	71.43	184751	03/20/12
Methyl tert-Amyl Ether (TAME)	1,500	36	71.43	184751	03/20/12
MTBE	11,000	100	200.0	184793	03/21/12
1,2-Dichloroethane	ND	36	71.43	184751	03/20/12
Benzene	160	36	71.43	184751	03/20/12
Toluene	390	36	71.43	184751	03/20/12
1,2-Dibromoethane	ND	36	71.43	184751	03/20/12
Ethylbenzene	170	36	71.43	184751	03/20/12
m,p-Xylenes	570	36	71.43	184751	03/20/12
o-Xylene	230	36	71.43	184751	03/20/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	93	80-125	71.43	184751	03/20/12
1,2-Dichloroethane-d4	100	69-145	71.43	184751	03/20/12
Toluene-d8	96	80-120	71.43	184751	03/20/12
Bromofluorobenzene	99	80-120	71.43	184751	03/20/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-4-1	Units:	ug/L
Lab ID:	235040-005	Sampled:	03/15/12
Matrix:	Water	Received:	03/19/12

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	ND	50	1.000	184751	03/20/12
tert-Butyl Alcohol (TBA)	28	10	1.000	184751	03/20/12
Isopropyl Ether (DIPE)	ND	0.50	1.000	184751	03/20/12
Ethyl tert-Butyl Ether (ETBE)	ND	0.50	1.000	184751	03/20/12
Methyl tert-Amyl Ether (TAME)	210	20	40.00	184793	03/21/12
MTBE	2,600	20	40.00	184793	03/21/12
1,2-Dichloroethane	ND	0.50	1.000	184751	03/20/12
Benzene	ND	0.50	1.000	184751	03/20/12
Toluene	ND	0.50	1.000	184751	03/20/12
1,2-Dibromoethane	ND	0.50	1.000	184751	03/20/12
Ethylbenzene	ND	0.50	1.000	184751	03/20/12
m,p-Xylenes	ND	0.50	1.000	184751	03/20/12
o-Xylene	ND	0.50	1.000	184751	03/20/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	96	80-125	1.000	184751	03/20/12
1,2-Dichloroethane-d4	91	69-145	1.000	184751	03/20/12
Toluene-d8	96	80-120	1.000	184751	03/20/12
Bromofluorobenzene	97	80-120	1.000	184751	03/20/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-3-2	Units:	ug/L
Lab ID:	235040-006	Sampled:	03/15/12
Matrix:	Water	Received:	03/19/12

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	ND	1,700	33.33	184751	03/20/12
tert-Butyl Alcohol (TBA)	1,000	330	33.33	184751	03/20/12
Isopropyl Ether (DIPE)	ND	17	33.33	184751	03/20/12
Ethyl tert-Butyl Ether (ETBE)	ND	17	33.33	184751	03/20/12
Methyl tert-Amyl Ether (TAME)	690	17	33.33	184751	03/20/12
MTBE	9,800	71	142.9	184793	03/21/12
1,2-Dichloroethane	ND	17	33.33	184751	03/20/12
Benzene	ND	17	33.33	184751	03/20/12
Toluene	ND	17	33.33	184751	03/20/12
1,2-Dibromoethane	ND	17	33.33	184751	03/20/12
Ethylbenzene	ND	17	33.33	184751	03/20/12
m,p-Xylenes	ND	17	33.33	184751	03/20/12
o-Xylene	ND	17	33.33	184751	03/20/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	93	80-125	33.33	184751	03/20/12
1,2-Dichloroethane-d4	94	69-145	33.33	184751	03/20/12
Toluene-d8	94	80-120	33.33	184751	03/20/12
Bromofluorobenzene	94	80-120	33.33	184751	03/20/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	184751
Units:	ug/L	Analyzed:	03/20/12
Diln Fac:	1.000		

Type: BS Lab ID: QC632528

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	111.1	89	47-136
Isopropyl Ether (DIPE)	25.00	19.53	78	54-136
Ethyl tert-Butyl Ether (ETBE)	25.00	20.04	80	57-133
Methyl tert-Amyl Ether (TAME)	25.00	20.54	82	65-120
MTBE	25.00	21.04	84	61-121
1,2-Dichloroethane	25.00	23.88	96	70-136
Benzene	25.00	24.32	97	80-121
Toluene	25.00	25.59	102	80-120
1,2-Dibromoethane	25.00	24.12	96	80-120
Ethylbenzene	25.00	25.39	102	80-120
m,p-Xylenes	50.00	50.67	101	80-121
o-Xylene	25.00	24.33	97	80-121

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-125
1,2-Dichloroethane-d4	95	69-145
Toluene-d8	96	80-120
Bromofluorobenzene	92	80-120

Type: BSD Lab ID: QC632529

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	125.0	102.8	82	47-136	8	28
Isopropyl Ether (DIPE)	25.00	18.41	74	54-136	6	20
Ethyl tert-Butyl Ether (ETBE)	25.00	18.63	75	57-133	7	20
Methyl tert-Amyl Ether (TAME)	25.00	19.01	76	65-120	8	20
MTBE	25.00	20.93	84	61-121	1	20
1,2-Dichloroethane	25.00	22.95	92	70-136	4	20
Benzene	25.00	22.06	88	80-121	10	20
Toluene	25.00	24.26	97	80-120	5	20
1,2-Dibromoethane	25.00	24.43	98	80-120	1	20
Ethylbenzene	25.00	25.96	104	80-120	2	20
m,p-Xylenes	50.00	48.65	97	80-121	4	20
o-Xylene	25.00	23.78	95	80-121	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-125
1,2-Dichloroethane-d4	89	69-145
Toluene-d8	99	80-120
Bromofluorobenzene	92	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC632530	Batch#:	184751
Matrix:	Water	Analyzed:	03/20/12
Units:	ug/L		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	ND	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	91	80-125
1,2-Dichloroethane-d4	93	69-145
Toluene-d8	97	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	184751
Units:	ug/L	Analyzed:	03/20/12
Diln Fac:	1.000		

Type: BS Lab ID: QC632531

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,030	103	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-125
1,2-Dichloroethane-d4	94	69-145
Toluene-d8	95	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC632532

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	986.5	99	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-125
1,2-Dichloroethane-d4	93	69-145
Toluene-d8	91	80-120
Bromofluorobenzene	94	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	184793
Units:	ug/L	Analyzed:	03/21/12
Diln Fac:	1.000		

Type: BS Lab ID: QC632698

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	100.0	59.44	59	47-136
Isopropyl Ether (DIPE)	20.00	16.55	83	54-136
Ethyl tert-Butyl Ether (ETBE)	20.00	16.23	81	57-133
Methyl tert-Amyl Ether (TAME)	20.00	15.31	77	65-120
MTBE	20.00	14.91	75	61-121
1,2-Dichloroethane	20.00	17.99	90	70-136
Benzene	20.00	18.92	95	80-121
Toluene	20.00	22.46	112	80-120
1,2-Dibromoethane	20.00	20.81	104	80-120
Ethylbenzene	20.00	22.59	113	80-120
m,p-Xylenes	40.00	42.32	106	80-121
o-Xylene	20.00	20.55	103	80-121

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-125
1,2-Dichloroethane-d4	100	69-145
Toluene-d8	109	80-120
Bromofluorobenzene	103	80-120

Type: BSD Lab ID: QC632699

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	100.0	60.17	60	47-136	1	28
Isopropyl Ether (DIPE)	20.00	15.59	78	54-136	6	20
Ethyl tert-Butyl Ether (ETBE)	20.00	15.79	79	57-133	3	20
Methyl tert-Amyl Ether (TAME)	20.00	15.67	78	65-120	2	20
MTBE	20.00	14.99	75	61-121	0	20
1,2-Dichloroethane	20.00	17.73	89	70-136	1	20
Benzene	20.00	17.30	87	80-121	9	20
Toluene	20.00	19.28	96	80-120	15	20
1,2-Dibromoethane	20.00	19.14	96	80-120	8	20
Ethylbenzene	20.00	19.52	98	80-120	15	20
m,p-Xylenes	40.00	36.49	91	80-121	15	20
o-Xylene	20.00	18.32	92	80-121	11	20

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-125
1,2-Dichloroethane-d4	104	69-145
Toluene-d8	110	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Batch QC Report

Gasoline by GC/MS

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC632700	Batch#:	184793
Matrix:	Water	Analyzed:	03/21/12
Units:	ug/L		

Analyte	Result	RL
Gasoline C7-C12	NA	
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	ND	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-125
1,2-Dichloroethane-d4	106	69-145
Toluene-d8	109	80-120
Bromofluorobenzene	106	80-120

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Data File: \\Gcmsserver\DD\chem\MSVOA10.i\032012.b\JCK17TVH.D

Date : 20-MAR-2012 19:31

Client ID: DYNA P&T

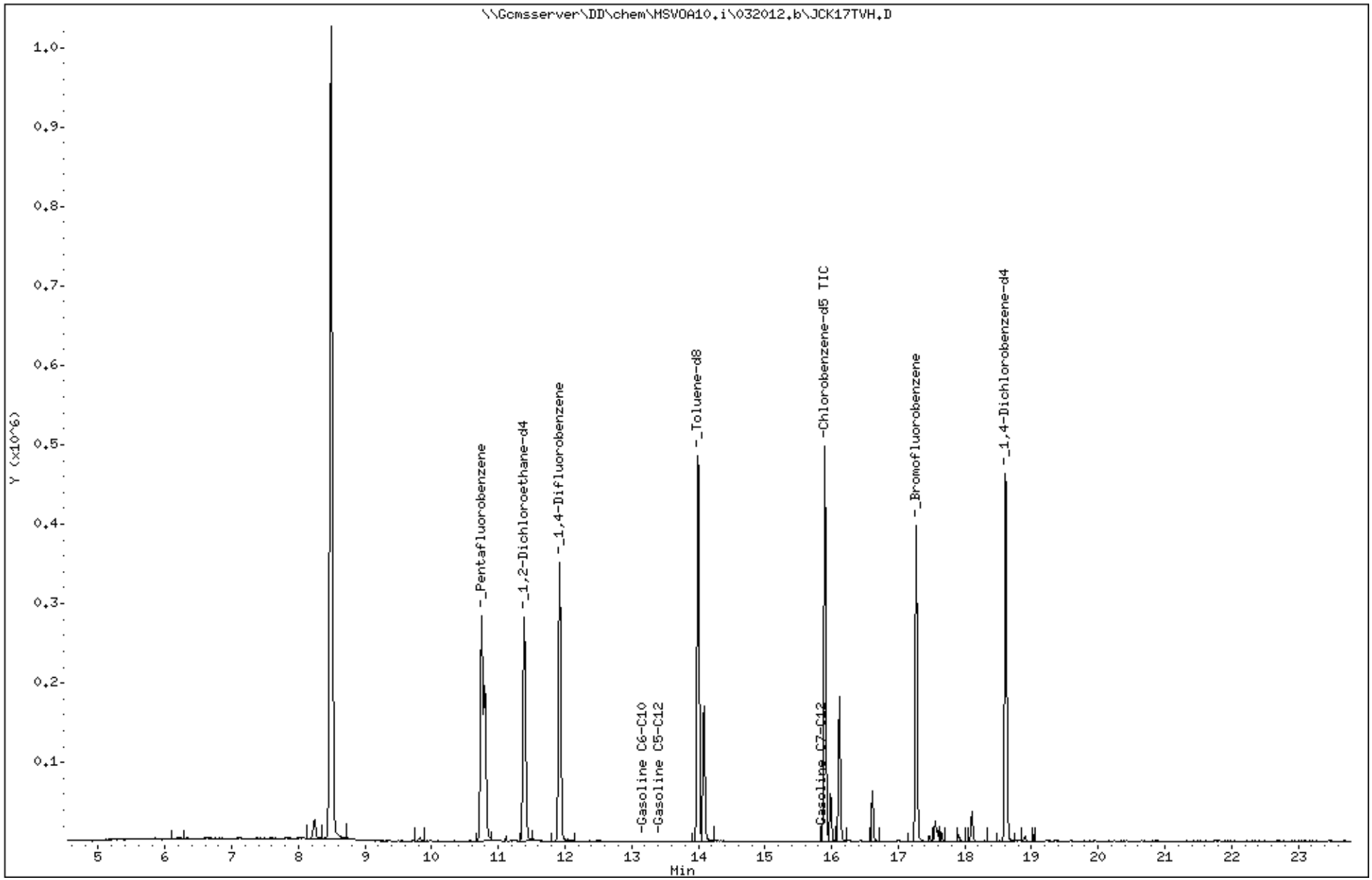
Instrument: MSVOA10.i

Sample Info: S,235040-002

Operator: VOA

Column phase:

Column diameter: 2.00



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Date : 20-MAR-2012 17:40

Client ID: DYNA P&T

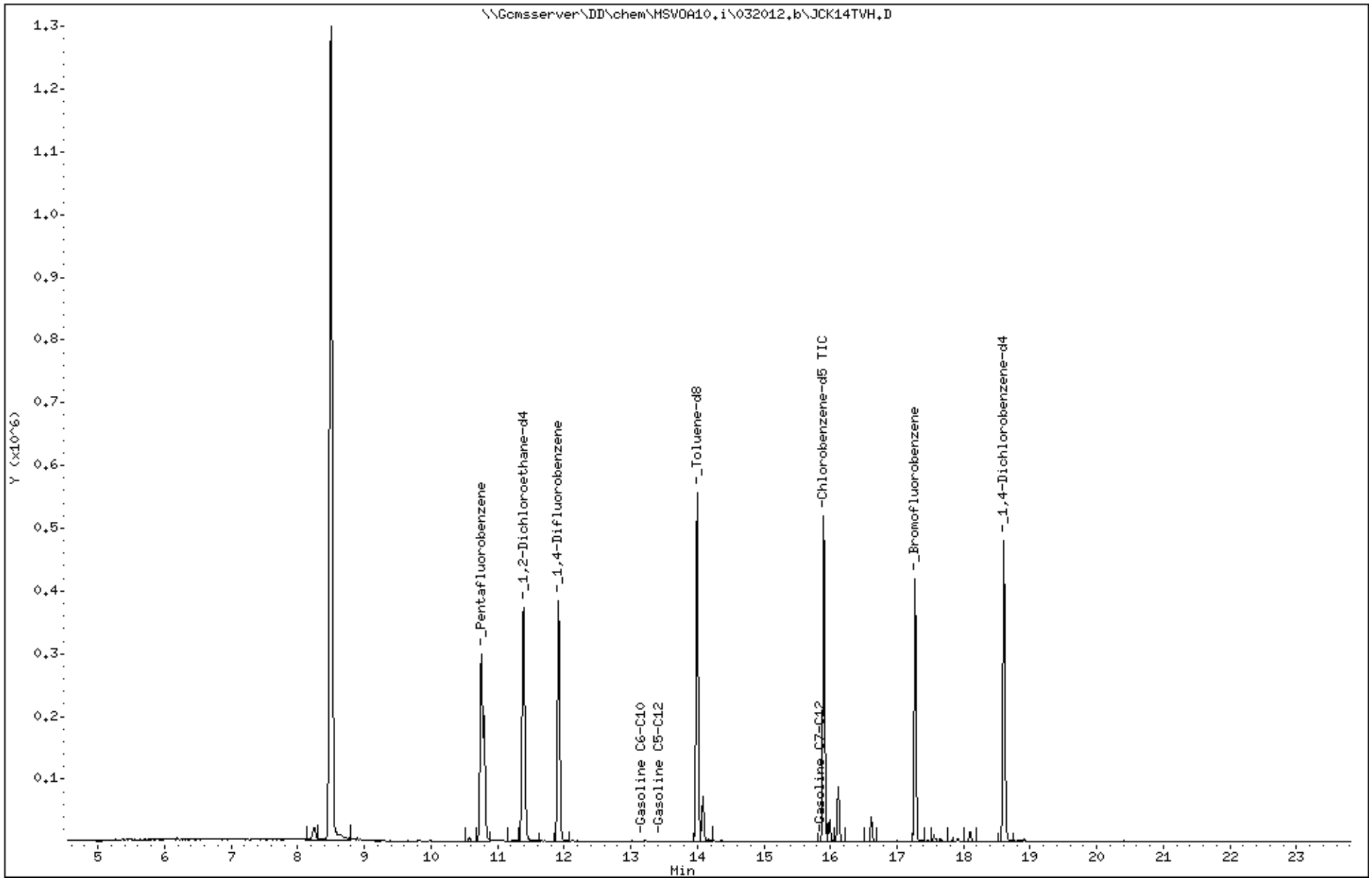
Instrument: MSVOA10.i

Sample Info: S,235040-004

Operator: VOA

Column phase:

Column diameter: 2.00



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Date : 20-MAR-2012 12:19

Client ID: DYNA P&T

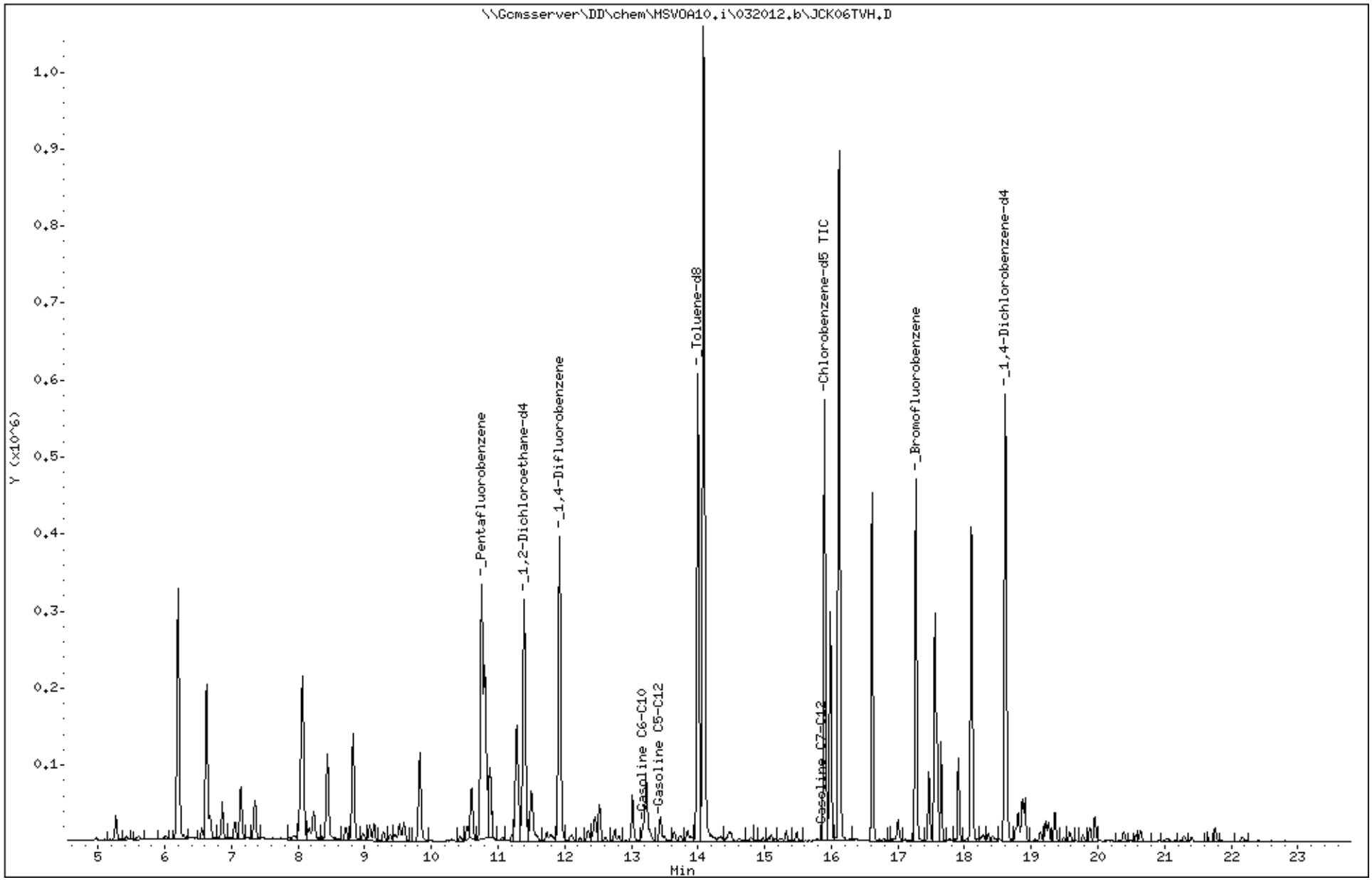
Instrument: MSVOA10.i

Sample Info: BS,QC632531,184751,S18583,.01/100

Operator: VOA

Column phase:

Column diameter: 2.00



Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT-1@8FT	Diln Fac:	200.0
Lab ID:	235040-007	Batch#:	184895
Matrix:	Soil	Sampled:	03/16/12
Units:	ug/Kg	Received:	03/19/12
Basis:	as received	Analyzed:	03/23/12

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	20,000
MTBE	16,000	1,000
Isopropyl Ether (DIPE)	ND	1,000
Ethyl tert-Butyl Ether (ETBE)	ND	1,000
1,2-Dichloroethane	ND	1,000
Benzene	ND	1,000
Methyl tert-Amyl Ether (TAME)	1,600	1,000
Toluene	ND	1,000
1,2-Dibromoethane	ND	1,000
Ethylbenzene	16,000	1,000
m,p-Xylenes	58,000	1,000
o-Xylene	ND	1,000

Surrogate	%REC	Limits
Dibromofluoromethane	101	74-133
1,2-Dichloroethane-d4	103	74-136
Toluene-d8	99	80-120
Bromofluorobenzene	103	77-130
Trifluorotoluene (MeOH)	105	60-135

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT-1@15FT	Diln Fac:	200.0
Lab ID:	235040-009	Batch#:	184895
Matrix:	Soil	Sampled:	03/16/12
Units:	ug/Kg	Received:	03/19/12
Basis:	as received	Analyzed:	03/23/12

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	38,000	20,000
MTBE	13,000	1,000
Isopropyl Ether (DIPE)	ND	1,000
Ethyl tert-Butyl Ether (ETBE)	ND	1,000
1,2-Dichloroethane	ND	1,000
Benzene	ND	1,000
Methyl tert-Amyl Ether (TAME)	ND	1,000
Toluene	ND	1,000
1,2-Dibromoethane	ND	1,000
Ethylbenzene	ND	1,000
m,p-Xylenes	ND	1,000
o-Xylene	ND	1,000

Surrogate	%REC	Limits
Dibromofluoromethane	99	74-133
1,2-Dichloroethane-d4	99	74-136
Toluene-d8	101	80-120
Bromofluorobenzene	98	77-130
Trifluorotoluene (MeOH)	98	60-135

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT-1@42FT	Basis:	as received
Lab ID:	235040-013	Sampled:	03/16/12
Matrix:	Soil	Received:	03/19/12
Units:	ug/Kg		

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
tert-Butyl Alcohol (TBA)	270	98	0.9843	184756	03/20/12
MTBE	500	49	9.804	184846	03/23/12
Isopropyl Ether (DIPE)	ND	4.9	0.9843	184756	03/20/12
Ethyl tert-Butyl Ether (ETBE)	ND	4.9	0.9843	184756	03/20/12
1,2-Dichloroethane	ND	4.9	0.9843	184756	03/20/12
Benzene	ND	4.9	0.9843	184756	03/20/12
Methyl tert-Amyl Ether (TAME)	20	4.9	0.9843	184756	03/20/12
Toluene	ND	4.9	0.9843	184756	03/20/12
1,2-Dibromoethane	ND	4.9	0.9843	184756	03/20/12
Ethylbenzene	ND	4.9	0.9843	184756	03/20/12
m,p-Xylenes	ND	4.9	0.9843	184756	03/20/12
o-Xylene	ND	4.9	0.9843	184756	03/20/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	96	74-133	0.9843	184756	03/20/12
1,2-Dichloroethane-d4	121	74-136	0.9843	184756	03/20/12
Toluene-d8	99	80-120	0.9843	184756	03/20/12
Bromofluorobenzene	97	77-130	0.9843	184756	03/20/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-4@8FT	Diln Fac:	0.9766
Lab ID:	235040-014	Batch#:	184846
Matrix:	Soil	Sampled:	03/15/12
Units:	ug/Kg	Received:	03/19/12
Basis:	as received	Analyzed:	03/22/12

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	98
MTBE	ND	4.9
Isopropyl Ether (DIPE)	ND	4.9
Ethyl tert-Butyl Ether (ETBE)	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Methyl tert-Amyl Ether (TAME)	ND	4.9
Toluene	ND	4.9
1,2-Dibromoethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	105	74-133
1,2-Dichloroethane-d4	124	74-136
Toluene-d8	98	80-120
Bromofluorobenzene	102	77-130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-4@16FT	Diln Fac:	0.9785
Lab ID:	235040-017	Batch#:	184846
Matrix:	Soil	Sampled:	03/15/12
Units:	ug/Kg	Received:	03/19/12
Basis:	as received	Analyzed:	03/22/12

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	98
MTBE	61	4.9
Isopropyl Ether (DIPE)	ND	4.9
Ethyl tert-Butyl Ether (ETBE)	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Methyl tert-Amyl Ether (TAME)	ND	4.9
Toluene	ND	4.9
1,2-Dibromoethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	100	74-133
1,2-Dichloroethane-d4	116	74-136
Toluene-d8	97	80-120
Bromofluorobenzene	105	77-130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-4@43FT	Diln Fac:	0.9843
Lab ID:	235040-022	Batch#:	184846
Matrix:	Soil	Sampled:	03/15/12
Units:	ug/Kg	Received:	03/19/12
Basis:	as received	Analyzed:	03/22/12

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	98
MTBE	25	4.9
Isopropyl Ether (DIPE)	ND	4.9
Ethyl tert-Butyl Ether (ETBE)	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Methyl tert-Amyl Ether (TAME)	ND	4.9
Toluene	ND	4.9
1,2-Dibromoethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-133
1,2-Dichloroethane-d4	117	74-136
Toluene-d8	97	80-120
Bromofluorobenzene	101	77-130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-3@8FT	Basis:	as received
Lab ID:	235040-023	Sampled:	03/15/12
Matrix:	Soil	Received:	03/19/12
Units:	ug/Kg		

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
tert-Butyl Alcohol (TBA)	ND	99	0.9881	184846	03/22/12
MTBE	490	46	9.259	184895	03/23/12
Isopropyl Ether (DIPE)	ND	4.9	0.9881	184846	03/22/12
Ethyl tert-Butyl Ether (ETBE)	ND	4.9	0.9881	184846	03/22/12
1,2-Dichloroethane	ND	4.9	0.9881	184846	03/22/12
Benzene	ND	4.9	0.9881	184846	03/22/12
Methyl tert-Amyl Ether (TAME)	27	4.9	0.9881	184846	03/22/12
Toluene	ND	4.9	0.9881	184846	03/22/12
1,2-Dibromoethane	ND	4.9	0.9881	184846	03/22/12
Ethylbenzene	ND	4.9	0.9881	184846	03/22/12
m,p-Xylenes	ND	4.9	0.9881	184846	03/22/12
o-Xylene	ND	4.9	0.9881	184846	03/22/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	104	74-133	0.9881	184846	03/22/12
1,2-Dichloroethane-d4	121	74-136	0.9881	184846	03/22/12
Toluene-d8	98	80-120	0.9881	184846	03/22/12
Bromofluorobenzene	105	77-130	0.9881	184846	03/22/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-3@15FT	Basis:	as received
Lab ID:	235040-025	Sampled:	03/15/12
Matrix:	Soil	Received:	03/19/12
Units:	ug/Kg		

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
tert-Butyl Alcohol (TBA)	ND	94	0.9363	184846	03/22/12
MTBE	1,200	48	9.615	184906	03/23/12
Isopropyl Ether (DIPE)	ND	4.7	0.9363	184846	03/22/12
Ethyl tert-Butyl Ether (ETBE)	ND	4.7	0.9363	184846	03/22/12
1,2-Dichloroethane	ND	4.7	0.9363	184846	03/22/12
Benzene	ND	4.7	0.9363	184846	03/22/12
Methyl tert-Amyl Ether (TAME)	26	4.7	0.9363	184846	03/22/12
Toluene	ND	4.7	0.9363	184846	03/22/12
1,2-Dibromoethane	ND	4.7	0.9363	184846	03/22/12
Ethylbenzene	ND	4.7	0.9363	184846	03/22/12
m,p-Xylenes	ND	4.7	0.9363	184846	03/22/12
o-Xylene	ND	4.7	0.9363	184846	03/22/12

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	108	74-133	0.9363	184846	03/22/12
1,2-Dichloroethane-d4	122	74-136	0.9363	184846	03/22/12
Toluene-d8	101	80-120	0.9363	184846	03/22/12
Bromofluorobenzene	106	77-130	0.9363	184846	03/22/12

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT-2@10FT	Diln Fac:	50.00
Lab ID:	235040-030	Batch#:	184895
Matrix:	Soil	Sampled:	03/16/12
Units:	ug/Kg	Received:	03/19/12
Basis:	as received	Analyzed:	03/23/12

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	7,100	5,000
MTBE	1,700	250
Isopropyl Ether (DIPE)	ND	250
Ethyl tert-Butyl Ether (ETBE)	ND	250
1,2-Dichloroethane	ND	250
Benzene	ND	250
Methyl tert-Amyl Ether (TAME)	ND	250
Toluene	ND	250
1,2-Dibromoethane	ND	250
Ethylbenzene	ND	250
m,p-Xylenes	260	250
o-Xylene	ND	250

Surrogate	%REC	Limits
Dibromofluoromethane	103	74-133
1,2-Dichloroethane-d4	98	74-136
Toluene-d8	96	80-120
Bromofluorobenzene	98	77-130
Trifluorotoluene (MeOH)	99	60-135

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT-2@16FT	Diln Fac:	9.259
Lab ID:	235040-031	Batch#:	184906
Matrix:	Soil	Sampled:	03/16/12
Units:	ug/Kg	Received:	03/19/12
Basis:	as received	Analyzed:	03/23/12

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	14,000	930
MTBE	84	46
Isopropyl Ether (DIPE)	ND	46
Ethyl tert-Butyl Ether (ETBE)	ND	46
1,2-Dichloroethane	ND	46
Benzene	ND	46
Methyl tert-Amyl Ether (TAME)	ND	46
Toluene	ND	46
1,2-Dibromoethane	ND	46
Ethylbenzene	ND	46
m,p-Xylenes	ND	46
o-Xylene	ND	46

Surrogate	%REC	Limits
Dibromofluoromethane	120	74-133
1,2-Dichloroethane-d4	140 *	74-136
Toluene-d8	104	80-120
Bromofluorobenzene	103	77-130

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	CPT-2@48FT	Basis:	as received
Lab ID:	235040-035	Sampled:	03/16/12
Matrix:	Soil	Received:	03/19/12
Units:	ug/Kg	Analyzed:	03/23/12

Analyte	Result	RL	Diln Fac	Batch#
tert-Butyl Alcohol (TBA)	ND	98	0.9766	184846
MTBE	200	10	2.030	184906
Isopropyl Ether (DIPE)	ND	4.9	0.9766	184846
Ethyl tert-Butyl Ether (ETBE)	ND	4.9	0.9766	184846
1,2-Dichloroethane	ND	4.9	0.9766	184846
Benzene	ND	4.9	0.9766	184846
Methyl tert-Amyl Ether (TAME)	13	4.9	0.9766	184846
Toluene	ND	4.9	0.9766	184846
1,2-Dibromoethane	ND	4.9	0.9766	184846
Ethylbenzene	ND	4.9	0.9766	184846
m,p-Xylenes	ND	4.9	0.9766	184846
o-Xylene	ND	4.9	0.9766	184846

Surrogate	%REC	Limits	Diln Fac	Batch#
Dibromofluoromethane	90	74-133	0.9766	184846
1,2-Dichloroethane-d4	93	74-136	0.9766	184846
Toluene-d8	95	80-120	0.9766	184846
Bromofluorobenzene	97	77-130	0.9766	184846

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC632547	Batch#:	184756
Matrix:	Soil	Analyzed:	03/20/12
Units:	ug/Kg		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
Toluene	ND	5.0
1,2-Dibromoethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-133
1,2-Dichloroethane-d4	124	74-136
Toluene-d8	98	80-120
Bromofluorobenzene	96	77-130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC632548	Batch#:	184756
Matrix:	Soil	Analyzed:	03/20/12
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	100.0	106.2	106	46-135
MTBE	20.00	22.57	113	62-120
Isopropyl Ether (DIPE)	20.00	14.03	70	59-120
Ethyl tert-Butyl Ether (ETBE)	20.00	16.12	81	64-120
1,2-Dichloroethane	20.00	25.87	129 *	74-126
Benzene	20.00	21.42	107	78-125
Methyl tert-Amyl Ether (TAME)	20.00	17.62	88	68-120
Toluene	20.00	22.76	114	79-120
1,2-Dibromoethane	20.00	22.64	113	77-120
Ethylbenzene	20.00	24.54	123 *	80-120
m,p-Xylenes	40.00	46.78	117	80-120
o-Xylene	20.00	21.20	106	79-120

Surrogate	%REC	Limits
Dibromofluoromethane	93	74-133
1,2-Dichloroethane-d4	120	74-136
Toluene-d8	100	80-120
Bromofluorobenzene	94	77-130

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	DPT-4@8FT	Basis:	as received
MSS Lab ID:	235040-014	Batch#:	184756
Matrix:	Soil	Sampled:	03/15/12
Units:	ug/Kg	Received:	03/19/12

Type:	MS	Diln Fac:	0.9823
Lab ID:	QC632549	Analyzed:	03/20/12

Analyte	MSS Result	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	<17.25	245.6	176.4	72	44-128
MTBE	14.34	49.12	53.34	79	51-120
Isopropyl Ether (DIPE)	<1.399	49.12	25.26	51	50-120
Ethyl tert-Butyl Ether (ETBE)	<0.5557	49.12	28.41	58	55-120
1,2-Dichloroethane	<0.6772	49.12	45.31	92	55-121
Benzene	<0.6649	49.12	38.07	78	58-122
Methyl tert-Amyl Ether (TAME)	0.5709	49.12	32.46	65	55-120
Toluene	<0.4475	49.12	39.15	80	54-120
1,2-Dibromoethane	<0.4745	49.12	40.47	82	52-120
Ethylbenzene	<0.5888	49.12	43.07	88	47-120
m,p-Xylenes	<1.270	98.23	81.35	83	47-120
o-Xylene	<0.6544	49.12	37.63	77	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	93	74-133
1,2-Dichloroethane-d4	118	74-136
Toluene-d8	100	80-120
Bromofluorobenzene	95	77-130

Type:	MSD	Diln Fac:	0.9328
Lab ID:	QC632550	Analyzed:	03/21/12

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	233.2	227.7	98	44-128	30	39
MTBE	46.64	52.91	83	51-120	3	32
Isopropyl Ether (DIPE)	46.64	28.02	60	50-120	15	32
Ethyl tert-Butyl Ether (ETBE)	46.64	32.88	71	55-120	20	32
1,2-Dichloroethane	46.64	47.07	101	55-121	9	33
Benzene	46.64	39.34	84	58-122	8	37
Methyl tert-Amyl Ether (TAME)	46.64	37.51	79	55-120	20	34
Toluene	46.64	41.61	89	54-120	11	35
1,2-Dibromoethane	46.64	43.17	93	52-120	12	35
Ethylbenzene	46.64	45.10	97	47-120	10	40
m,p-Xylenes	93.28	84.87	91	47-120	9	40
o-Xylene	46.64	39.12	84	47-120	9	40

Surrogate	%REC	Limits
Dibromofluoromethane	93	74-133
1,2-Dichloroethane-d4	118	74-136
Toluene-d8	100	80-120
Bromofluorobenzene	94	77-130

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC632920	Batch#:	184846
Matrix:	Soil	Analyzed:	03/22/12
Units:	ug/Kg		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
Toluene	ND	5.0
1,2-Dibromoethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	112	74-133
1,2-Dichloroethane-d4	123	74-136
Toluene-d8	99	80-120
Bromofluorobenzene	102	77-130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC632921	Batch#:	184846
Matrix:	Soil	Analyzed:	03/22/12
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	100.0	106.6	107	46-135
MTBE	20.00	20.14	101	62-120
Isopropyl Ether (DIPE)	20.00	15.78	79	59-120
Ethyl tert-Butyl Ether (ETBE)	20.00	16.73	84	64-120
1,2-Dichloroethane	20.00	22.62	113	74-126
Benzene	20.00	21.35	107	78-125
Methyl tert-Amyl Ether (TAME)	20.00	16.34	82	68-120
Toluene	20.00	20.33	102	79-120
1,2-Dibromoethane	20.00	19.93	100	77-120
Ethylbenzene	20.00	21.70	108	80-120
m,p-Xylenes	40.00	41.78	104	80-120
o-Xylene	20.00	19.06	95	79-120

Surrogate	%REC	Limits
Dibromofluoromethane	104	74-133
1,2-Dichloroethane-d4	112	74-136
Toluene-d8	95	80-120
Bromofluorobenzene	97	77-130

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	184846
MSS Lab ID:	235054-005	Sampled:	03/20/12
Matrix:	Soil	Received:	03/20/12
Units:	ug/Kg	Analyzed:	03/23/12
Basis:	as received		

Type: MS Diln Fac: 0.9579
Lab ID: QC632922

Analyte	MSS Result	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	<17.15	239.5	158.8	66	44-128
MTBE	<0.9610	47.89	30.45	64	51-120
Isopropyl Ether (DIPE)	<1.391	47.89	25.76	54	50-120
Ethyl tert-Butyl Ether (ETBE)	<0.5525	47.89	27.22	57	55-120
1,2-Dichloroethane	<0.6733	47.89	39.54	83	55-121
Benzene	<0.6611	47.89	40.05	84	58-122
Methyl tert-Amyl Ether (TAME)	<0.5543	47.89	27.19	57	55-120
Toluene	<0.4449	47.89	39.05	82	54-120
1,2-Dibromoethane	<0.4718	47.89	38.85	81	52-120
Ethylbenzene	<0.5854	47.89	40.95	85	47-120
m,p-Xylenes	<1.263	95.79	77.19	81	47-120
o-Xylene	<0.6506	47.89	35.73	75	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	95	74-133
1,2-Dichloroethane-d4	100	74-136
Toluene-d8	96	80-120
Bromofluorobenzene	97	77-130

Type: MSD Diln Fac: 0.9823
Lab ID: QC632923

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	245.6	194.7	79	44-128	18	39
MTBE	49.12	37.13	76	51-120	17	32
Isopropyl Ether (DIPE)	49.12	36.09	73	50-120	31	32
Ethyl tert-Butyl Ether (ETBE)	49.12	37.68	77	55-120	30	32
1,2-Dichloroethane	49.12	41.23	84	55-121	2	33
Benzene	49.12	40.77	83	58-122	1	37
Methyl tert-Amyl Ether (TAME)	49.12	36.99	75	55-120	28	34
Toluene	49.12	38.59	79	54-120	4	35
1,2-Dibromoethane	49.12	37.71	77	52-120	5	35
Ethylbenzene	49.12	39.66	81	47-120	6	40
m,p-Xylenes	98.23	73.87	75	47-120	7	40
o-Xylene	49.12	34.05	69	47-120	7	40

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-133
1,2-Dichloroethane-d4	102	74-136
Toluene-d8	96	80-120
Bromofluorobenzene	100	77-130

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC633113	Batch#:	184895
Matrix:	Soil	Analyzed:	03/23/12
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	129.2	103	46-135
MTBE	25.00	23.46	94	62-120
Isopropyl Ether (DIPE)	25.00	23.14	93	59-120
Ethyl tert-Butyl Ether (ETBE)	25.00	23.58	94	64-120
1,2-Dichloroethane	25.00	23.69	95	74-126
Benzene	25.00	24.77	99	78-125
Methyl tert-Amyl Ether (TAME)	25.00	22.24	89	68-120
Toluene	25.00	24.36	97	79-120
1,2-Dibromoethane	25.00	22.43	90	77-120
Ethylbenzene	25.00	25.28	101	80-120
m,p-Xylenes	50.00	49.25	99	80-120
o-Xylene	25.00	23.60	94	79-120

Surrogate	%REC	Limits
Dibromofluoromethane	103	74-133
1,2-Dichloroethane-d4	101	74-136
Toluene-d8	100	80-120
Bromofluorobenzene	104	77-130

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC633114	Batch#:	184895
Matrix:	Soil	Analyzed:	03/23/12
Units:	ug/Kg		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
Toluene	ND	5.0
1,2-Dibromoethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	101	74-133
1,2-Dichloroethane-d4	101	74-136
Toluene-d8	102	80-120
Bromofluorobenzene	103	77-130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC633156	Batch#:	184906
Matrix:	Soil	Analyzed:	03/23/12
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	152.2	122	46-135
MTBE	25.00	26.15	105	62-120
Isopropyl Ether (DIPE)	25.00	20.56	82	59-120
Ethyl tert-Butyl Ether (ETBE)	25.00	21.16	85	64-120
1,2-Dichloroethane	25.00	28.99	116	74-126
Benzene	25.00	25.05	100	78-125
Methyl tert-Amyl Ether (TAME)	25.00	20.87	83	68-120
Toluene	25.00	24.94	100	79-120
1,2-Dibromoethane	25.00	24.68	99	77-120
Ethylbenzene	25.00	26.16	105	80-120
m,p-Xylenes	50.00	50.89	102	80-120
o-Xylene	25.00	22.67	91	79-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	74-133
1,2-Dichloroethane-d4	120	74-136
Toluene-d8	102	80-120
Bromofluorobenzene	99	77-130

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC633157	Batch#:	184906
Matrix:	Soil	Analyzed:	03/23/12
Units:	ug/Kg		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
Toluene	ND	5.0
1,2-Dibromoethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	114	74-133
1,2-Dichloroethane-d4	131	74-136
Toluene-d8	102	80-120
Bromofluorobenzene	100	77-130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

BTXE & Oxygenates

Lab #:	235040	Location:	2844 Mountain Blvd, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	5082	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	184895
MSS Lab ID:	235072-001	Sampled:	03/19/12
Matrix:	Soil	Received:	03/21/12
Units:	ug/Kg	Analyzed:	03/23/12
Basis:	as received		

Type: MS Diln Fac: 0.9901
Lab ID: QC633172

Analyte	MSS Result	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	<15.02	247.5	250.2	101	44-128
MTBE	<1.452	49.50	45.13	91	51-120
Isopropyl Ether (DIPE)	<1.239	49.50	42.49	86	50-120
Ethyl tert-Butyl Ether (ETBE)	<0.9337	49.50	40.93	83	55-120
1,2-Dichloroethane	<0.8977	49.50	40.72	82	55-121
Benzene	<0.9314	49.50	42.46	86	58-122
Methyl tert-Amyl Ether (TAME)	<0.6082	49.50	41.45	84	55-120
Toluene	<1.257	49.50	41.74	84	54-120
1,2-Dibromoethane	<0.5777	49.50	41.10	83	52-120
Ethylbenzene	<1.156	49.50	42.82	86	47-120
m,p-Xylenes	<0.5930	99.01	79.14	80	47-120
o-Xylene	<1.083	49.50	37.62	76	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	103	74-133
1,2-Dichloroethane-d4	100	74-136
Toluene-d8	100	80-120
Bromofluorobenzene	102	77-130

Type: MSD Diln Fac: 0.9823
Lab ID: QC633173

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	245.6	276.5	113	44-128	11	39
MTBE	49.12	48.34	98	51-120	8	32
Isopropyl Ether (DIPE)	49.12	45.92	93	50-120	9	32
Ethyl tert-Butyl Ether (ETBE)	49.12	44.23	90	55-120	9	32
1,2-Dichloroethane	49.12	40.68	83	55-121	1	33
Benzene	49.12	42.62	87	58-122	1	37
Methyl tert-Amyl Ether (TAME)	49.12	44.91	91	55-120	9	34
Toluene	49.12	42.60	87	54-120	3	35
1,2-Dibromoethane	49.12	42.84	87	52-120	5	35
Ethylbenzene	49.12	42.57	87	47-120	0	40
m,p-Xylenes	98.23	80.11	82	47-120	2	40
o-Xylene	49.12	39.44	80	47-120	5	40

Surrogate	%REC	Limits
Dibromofluoromethane	103	74-133
1,2-Dichloroethane-d4	103	74-136
Toluene-d8	100	80-120
Bromofluorobenzene	103	77-130

RPD= Relative Percent Difference

APPENDIX E

EXCAVATION RELATED DOCUMENTATION

REGENESIS

Oxygen Release Compound (ORC®) Installation Instructions

(Excavation Applications)

SAFETY:

Pure ORC is shipped to you as a fine powder, which is rated at -325 mesh (passes through a 44 micron screen). It is considered to be a mild oxidizer and as such should be handled with care while in the field. Field personnel should take precautions while applying the pure ORC. Typically, the operator should work up wind of the product as well as use appropriate safety equipment. These would include eye, respiratory protection and gloves as deemed appropriate by exposure duration and field conditions.

Although two options are discussed, application of ORC should never be applied by personnel within the tank excavation, unless proper shoring or sidewall cutback is in place.

GENERAL GUIDELINES:

ORC can be applied in a dry powder form or as a slurry. Field conditions dictate which form of ORC can be used most effectively.

Installation of ORC should be within the tank excavation floor and/or in an adequate backfill section thickness to account for the anticipated groundwater "smear zone".

Maximum treatment effect is obtained when ORC is mixed as thoroughly as possible within the backfill material. The more dispersed the ORC slurry/powder within the excavation backfill, the more effective the treatment.

The quantity of ORC to be used is generally calculated prior to moving into the field for installation. Generally it is applied at a rate of between 0.1% and 1.0% by weight of the soil matrix. The following illustrates a dilute application rate calculation:

> Use a weight/weight percent of ORC/backfill material to ensure distribution of the ORC into the desired aquifer section. For example: a 0.15% weight of ORC to weight of backfill for the standard ORC weight (30 pounds) per container calculates as follows: 30 lb. ORC/0.15% = 20,000 lbs. of soil matrix. Thus, to achieve a 0.15% mixture of ORC in the backfill material, 30 lb. of pure ORC should be mixed into 10 tons (20,000 lbs. ÷2,000 lbs./ton) of backfill, or approximately 7 - 10 cubic yards of soil depending on field conditions. Professional judgment should be used to select the appropriate soil mass per cubic yard for designing each site treatment.

CHOOSING THE FORM OF INSTALLATION:

Pure ORC is shipped to you in a powder form. Weather conditions (especially wind) may have a direct effect on the application of ORC as a tank backfill amendment.

Application of the dry powder may be difficult in windy conditions. To counter the effects of wind (and the subsequent potential loss of ORC), Regenesis recommends that a water source or a spray tank be on-site to wet down the ORC and the backfill material as ORC is applied.

Application of ORC in a slurry format is a very effective method and eliminates the wind issue.

Four somewhat different installation conditions can be encountered in the field:

- ORC in a pea gravel back-fill. ("Type 1")
- ORC in a soil back-fill. ("Type 2")
- ORC mixed in native soil in the bottom of a tank pit. ("Type 3")
- ORC installed in soil under standing water in the bottom of a tank pit. ("Type 4")

A single tank pit excavation can include more than one of these conditions, depending on the site and extent of treatment. Instructions for each condition are discussed separately in the following sections. After the installation instructions are detailed instructions for mixing the slurry, if that is the option chosen.

INSTALLATION INSTRUCTIONS:

"Type 1," ORC in a Pea Gravel Back-fill

The easiest method for installing ORC in pea gravel back-fill is to mix the ORC in the material in a backhoe or skiploader bucket before placing it in the excavation.

- **Dry Powder method**

Into each scoop of back-fill material add the appropriate portion of ORC being installed. Generally, it is advisable to moisten the material in the bucket to reduce wind blown ORC loss. Excessive winds make this method not feasible.

After mixing the dry powder in the bucket, it is dumped into the bottom of the excavation. The backhoe bucket can be used for further mixing in the excavation.

- **Slurry method**

Mix a 63% solids slurry of ORC and water (see "Steps to make ORC slurry). This relatively thick slurry is used to help keep the ORC dispersed through the pea gravel, even when it contacts water in the bottom of the excavation during installation. It is generally desirable to avoid having the ORC run down through the pea gravel and collect in the bottom of the excavation. The thick slurry addresses this issue.

In each scoop of back-fill material, add the appropriate amount of ORC slurry. Pre-mix the materials in the backhoe bucket After mixing, dump the slurry and back-fill into the bottom of the excavation. The backhoe bucket can be used for further mixing in the

excavation.

If the slurry method is being used, observe the physical behavior of the ORC in the fill material. If the ORC collects at the bottom of the back-fill material, increase the percent solids content by reducing the amount of water being used to make the slurry.

"Type 2," ORC in a Soil Back-fill

Follow the instructions for the pea gravel back-fill method, except:

If the slurry method is being used, the solids content should be reduced. Typically a 50% solids is appropriate, although soil conditions sometimes dictate lower solids contents (see "Steps to make ORC slurry").

" Type 3," ORC Mixed in Native Soil in the Bottom of the Tank Pit

When ORC is added to the bottom of a tank pit it may be done by backhoe or injection.
CAUTION: Personnel should never work within the tank excavation, unless proper shoring or sidewall cutback is in place.

- **Backhoe method**

A skilled backhoe operator can distribute the ORC around the bottom of the tank excavation and, using the bucket, mix it thoroughly. If there are no winds, it may be possible to:

1. Put the dry ORC powder in the backhoe bucket,
2. Lower it to the bottom of the pit,
3. Gently deposit the ORC evenly on the remaining soil,
4. Use the bucket to mix the powder into the soil,
5. To mitigate dusting, if necessary, spray water into the excavation during the process.

An alternative backhoe method is to use a 50% (or less) solids ORC slurry (see "Steps to make ORC slurry) in place of the dry powder. This eliminates the dusting problem, and in some cases enhances the even distribution of ORC into the soil. Observe the slurry mixing behavior in the bottom of the excavation, and adjust the water content of the slurry to optimize mixing, if necessary.

- **Injection method**

If available, a pump and root feeder may be used to inject an ORC slurry into the excavation floor. This may require a more dilute slurry mix, and care should be taken to assure that the solids do not settle out of the slurry prior to injection.

" Type 4." ORC installed in standing water in the bottom of a tank pit

Application of ORC into tank excavations with standing water requires the operator apply ORC in a slurry form. ORC powder application in this scenario is not advised because a portion of the ORC particle fraction is not likely to pass through the surface tension of the standing water. Caution: Personnel should never work within the tank excavation, unless proper shoring or sidewall cutback is in place.

- **Backhoe method**

A skilled backhoe operator can distribute the ORC slurry within the excavation, and mix it into the soil underlying the standing water with the bucket. Steps for installation:

1. Mix a high solids content ORC slurry (63% solids). See ("Steps to make ORC slurry").
2. Pour slurry into the backhoe bucket.
3. Lower the bucket to the standing water level in the excavation, and deposit the slurry as evenly as possible across the excavation floor. The dense slurry (63%solids is 1.6 grams per ml) will tend to make the majority of the slurry sink quickly to the bottom of the water layer.
4. Use the bucket to mix the slurry into the soil.
5. Water in the vicinity of the ORC slurry will often turn white and milky, since some of the ORC is dispersed within the standing water. This provides additional dispersion within the standing water and back-fill material as it is added to the excavation.

- **Injection method**

If available, a pump and root feeder may be used to inject an ORC slurry into the soil in an excavation. This may require a more dilute slurry mix, and care should be taken to assure that the solids do not settle out of the slurry prior to injection.

MIXING ORC SLURRY:

ORC powder is shipped to you in pre-measured batches. Each batch is contained in a plastic bag which is shipped in a 5-gallon bucket.

Remove the pre-measured ORC bag from the 5-gallon bucket and open
Measure and pour the appropriate amount of water from the following table into the 5 gallon bucket

Slurry Solids Content (%)	Pounds of ORC	Gallons of Water
63%	30 lbs.	2.1 gal. (2 gal. + 2 cups)
50%	30 lbs.	3.6 gal. (3 gal + 2 1/2 qts.)

Add the entire ORC pre-measured bag to the water (30 pounds). If the slurry solids contents of less than 50% are desired, the quantity of ORC per batch mixed in the bucket must be reduced. For example, a bucket containing four gallons of water would require 22.4 pounds of ORC to make a 40% solids slurry, and 16.6 pounds of ORC to make a 33% slurry.

Use an appropriate mixing device to thoroughly mix ORC and water. Regenesis

recommends use of a 0.5 Horsepower (minimum) hand held drill with a “jiffy mixer” or stucco mixer. A common paint paddle can be used to scrape the bottom and sides of the container to ensure thorough mixing. Standard environmental slurry mixers may also be used.

After mixing, small amounts of water can be added to adjust the consistency of the slurry.

When slurries are used, the early batches should be observed in the process of mixing with the soil. Each site can vary, due to soil type and moisture content. Based on professional judgment, additional water can be added to subsequent slurry batches.

ORC slurry should be used ASAP; if the ORC slurry has been standing more than 15 minutes, it should be remixed immediately before using. Do not let stand more than 30 minutes without stirring. Otherwise, the slurry will begin to harden into a weak cement.

For direct assistance or answers to any questions you may have regarding these instructions, contact Regenesis Technical Services at 949-366-8000.

Oxygen Release Compound – Advanced (ORC *Advanced*™)
MATERIAL SAFETY DATA SHEET (MSDS)

Last Revised: March 13, 2007

Section 1 - Material Identification

Supplier:

REGENESIS

1011 Calle Sombra
San Clemente, CA 92673

Phone: **949.366.8000**

Fax: **949.366.8090**

E-mail: **info@regenesis.com**

Chemical Description:	A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_2$].
Chemical Family:	Inorganic Chemical
Trade Name:	Advanced Formula Oxygen Release Compound (ORC *Advanced*™)
Chemical Synonyms	Calcium Hydroxide Oxide; Calcium Oxide Peroxide
Product Use:	Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Composition

CAS No.	Chemical
682334-66-3	**Calcium Hydroxide Oxide [$CaO(OH)_2$]**
1305-62-0	**Calcium Hydroxide [$Ca(OH)_2$]**
7758-11-4	**Dipotassium Phosphate (HK_2O_4P)**
7778-77-0	**Monopotassium Phosphate (H_2KO_4P)**

Section 3 – Physical Data

Form:	Powder
Color:	White to Pale Yellow
Odor:	Odorless
Melting Point:	527 °F (275 °C) – Decomposes
Boiling Point:	Not Applicable (NA)
Flammability/Flash Point:	NA
Auto- Flammability:	NA
Vapor Pressure:	NA
Self-Ignition Temperature:	NA
Thermal Decomposition:	527 °F (275 °C) – Decomposes
Bulk Density:	0.5 – 0.65 g/ml (Loose Method)
Solubility:	1.65 g/L @ 68° F (20° C) for calcium hydroxide.
Viscosity:	NA
pH:	11-13 (saturated solution)
Explosion Limits % by Volume:	Non-explosive
Hazardous Decomposition Products:	Oxygen, Hydrogen Peroxide, Steam, and Heat
Hazardous Reactions:	None

Section 4 – Reactivity Data

Stability:	Stable under certain conditions (see below).
Conditions to Avoid:	Heat and moisture.
Incompatibility:	Acids, bases, salts of heavy metals, reducing agents, and flammable substances.
Hazardous Polymerization:	Does not occur.

Section 5 – Regulations

TSCA Inventory List:	Listed

CERCLA Hazardous Substance (40 CFR Part 302)

Listed Substance:	No
Unlisted Substance:	Yes
Reportable Quantity (RQ):	100 pounds
Characteristic(s):	Ignitibility
RCRA Waste Number:	D001

SARA, Title III, Sections 302/303 (40 CFR Part 355 – Emergency Planning and Notification)

Extremely Hazardous Substance:	No

SARA, Title III, Sections 311/312 (40 CFR Part 370 – Hazardous Chemical Reporting: Community Right-To-Know

Hazard Category:	Immediate Health Hazard Fire Hazard
Threshold Planning Quantity:	10,000 pounds

Section 5 – Regulations (cont)

SARA, Title III, Section 313 (40 CFR Part 372 – Toxic Chemical Release Reporting: Community Right-To-Know

Extremely Hazardous Substance:	No	
WHMIS Classification:	C	Oxidizing Material Poisonous and Infectious Material
	D	Material Causing Other Toxic Effects – Eye and Skin Irritant
Canadian Domestic Substance List:	Not Listed	

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Keep in tightly closed container. Store in dry area, protected from heat sources and direct sunlight.
Handling:	Clean and dry processing pipes and equipment before operation. Never return unused product to the storage container. Keep away from incompatible products. Containers and equipment used to handle this product should be used exclusively for this material. Avoid contact with water or humidity.

Section 6 – Protective Measures, Storage and Handling (cont)

Personal Protective Equipment (PPE)

Engineering Controls:	Calcium Hydroxide ACGIH® TLV® (2000) 5 mg/m^3 TWA OSHA PEL Total dust–15 mg/m^3 TWA Respirable fraction– 5 mg/m^3 TWA NIOSH REL (1994) 5 mg/m^3
Respiratory Protection:	For many conditions, no respiratory protection may be needed; however, in dusty or unknown atmospheres use a NIOSH approved dust respirator.
Hand Protection:	Impervious protective gloves made of nitrile, natural rubbber or neoprene.
Eye Protection:	Use chemical safety goggles (dust proof).
Skin Protection:	For brief contact, few precautions other than clean clothing are needed. Full body clothing impervious to this material should be used during prolonged exposure.
Other:	Safety shower and eyewash stations should be present. Consultation with an industrial hygienist or safety manager for the selection of PPE suitable for working conditions is suggested.
Industrial Hygiene:	Avoid contact with skin and eyes.
Protection Against Fire & Explosion:	NA

Section 7 – Hazards Identification

Emergency Overview:	Oxidizer – Contact with combustibles may cause a fire. This material decomposes and releases oxygen in a fire. The additional oxygen may intensify the fire.
Potential Health Effects:	Irritating to the mucous membrane and eyes. If the product splashes in ones face and eyes, treat the eyes first. Do not dry soiled clothing close to an open flame or heat source. Any

	clothing that has been contaminated with this product should be submerged in water prior to drying.
Inhalation:	High concentrations may cause slight nose and throat irritation with a cough. There is risk of sore throat and nose bleeds if one is exposed to this material for an extended period of time.
Eye Contact:	Severe eye irritation with watering and redness. There is also the risk of serious and/or permanent eye lesions.
Skin Contact:	Irritation may occur if one is exposed to this material for extended periods.
Ingestion:	Irritation of the mouth and throat with nausea and vomiting.

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage/Gas Leakage:	Collect in suitable containers. Wash remainder with copious quantities of water.
Extinguishing Media:	See next.
Suitable:	Large quantities of water or water spray. In case of fire in close proximity, all means of extinguishing are acceptable.
Further Information:	Self contained breathing apparatus or approved gas mask should be worn due to small particle size. Use extinguishing media appropriate for surrounding fire. Apply cooling water to sides of transport or storage vessels that are exposed to flames until the fire is extinguished. Do not approach hot vessels that contain this product.
First Aid:	After contact with skin, wash immediately with plenty of water and soap. In case of contact with eyes, rinse immediately with plenty of water and seek medical attention. Consult an opthalmologist in all cases.

Section 8 – Measures in Case of Accidents and Fire

Eye Contact:	Flush eyes with running water for 15 minutes, while keeping the eyelids wide open. Consult with an ophthalmologist in all cases.
Inhalation:	Remove subject from dusty environment. Consult with a physician in case of respiratory symptoms.

Ingestion:	If the victim is conscious, rinse mouth and admnister fresh water. DO NOT induce vomiting. Consult a physician in all cases.
Skin Contact:	Wash affected skin with running water. Remove and clean clothing. Consult with a physician in case of persistent pain or redness.
Special Precautions:	Evacuate all non-essential personnel. Intervention should only be done by capable personnel that are trained and aware of the hazards associated with this product. When it is safe, unaffected product should be moved to safe area.
Specific Hazards:	Oxidizing substance. Oxygen released on exothermic decomposition may support combustion. Confined spaces and/or containers may be subject to increased pressure. If product comes into contact with flammables, fire or explosion may occur.

Section 9 – Accidental Release Measures

Precautions:	Observe the protection methods cited in Section 3. Avoid materials and products that are incompatible with product. Immediately notify the appropriate authorities in case of reportable discharge (> 100 lbs).
Cleanup Methods:	Collect the product with a suitable means of avoiding dust formation. All receiving equipment should be clean, vented, dry, labeled and made of material that this product is compatible with. Because of the contamination risk, the collected material should be kept in a safe isolated place. Use large quantities of water to clean the impacted area. See Section 12 for disposal methods.

Section 10 – Information on Toxicology

Toxicity Data

Acute Toxicity:	Oral Route, LD_{50}, rat, > 2,000 mg/kg (powder 50%) Dermal Route, LD_{50}, rat, > 2,000 mg/kg (powder 50%) Inhalation, LD_{50}, rat, > 5,000 mg/m^3 (powder 35%)
Irritation:	Rabbit (eyes), severe irritant

Sensitization:	No data
Chronic Toxicity:	In vitro, no mutagenic effect (Powder 50%)
Target Organ Effects:	Eyes and respiratory passages.

Section 11 – Information on Ecology

Ecology Data	
	10 mg $Ca(OH)_2$/L: pH = 9.0 100 mg $Ca(OH)_2$/L: pH = 10.6
Acute Exotoxicity:	Fishes, Cyprinus carpio, LC_{50}, 48 hrs, 160 mg/L Crustaceans, Daphnia sp., EC_{50}, 24 hours, 25.6 mg/L (Powder 16%)
Mobility:	Low Solubility and Mobility
Abiotic Degradation:	Water – Slow Hydrolysis. Degradation Products: Calcium Hydroxide Water/soil – complexation/precipitation. Carbonates/sulfates present at environmental concentrations. Degradation products: carbonates/sulfates sparingly soluble
Biotic Degradation:	NA (inorganic compound)
Potential for Bioaccumulation:	NA (ionizable inorganic compound)

Section 11 – Information on Ecology (cont)

Comments:	Observed effects are related to alkaline properties of the product. Hazard for the environment is limited due to the product properties of: • No bioaccumulation • Weak solubility and precipatation as carbonate or sulfate in an aquatic environment. Diluted product is rapidly neutralized at environmental pH.
Further Information:	NA

Section 12 – Disposal Considerations

Waste Disposal Method:	Consult current federal, state and local regulations regarding the proper disposal of this material and its emptied containers.

Section 13 – Shipping/Transport Information

D.O.T Shipping Name:	Oxidizing Solid, N.O.S [A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_2$].
UN Number:	1479
Hazard Class:	5.1
Label(s):	5.1 (Oxidizer)
Packaging Group:	II
STCC Number:	4918717

Section 14 – Other Information

HMIS® Rating	Health – 2 Flammability – 0	Reactivity – 1 PPE - Required

HMIS® is a registered trademark of the National Painting and Coating Association.

NFPA® Rating	Health – 2 Flammability – 0	Reactivity – 1 OX

NFPA® is a registered trademark of the National Fire Protection Association.

Reason for Issue: Update toxicological and ecological data

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available.

Direct Push (GEOPROBE) Drilling

Utility Locating

Prior to drilling, boring locations are marked with white paint or other discernible marking and cleared for underground utilities through Underground Service Alert (USA). In addition, the first five feet of each borehole are air-knifed, or carefully advanced with a hand auger if shallow soil samples are necessary, to help evaluate the borehole location for underground structures or utilities.

Borehole Advancement

Pre-cleaned push rods (typically one to two inches in diameter) are advanced using a hydraulic push type rig for the purpose of collecting samples and evaluating subsurface conditions. The drill rod serves as a soil sampler, and an acetate liner is inserted into the annulus of the drill rod prior to advancement. Once the sample is collected, the rods and sampler are retracted and the sample tubes are removed from the sampler head. The sampler head is then cleaned, filled with clean sample tubes, inserted into the borehole and advanced to the next sampling point where the sample collection process is repeated.

Soil Sample Collection

The undisturbed soil samples intended for laboratory analysis are cut away from the acetate sample liner using a hacksaw, or equivalent tool, in sections approximately 6 inches in length. The 6 inch samples are lined at each end with Teflon® sheets and capped with plastic caps. Labels documenting job number, borehole identification, collection date, and depth are affixed to each sample. The samples are then placed into an ice-filled cooler for delivery under chain-of-custody to a laboratory certified by the State of California to perform the specified tests. The remaining collected soil that has not been selected for laboratory analysis is logged using the United Soil Classification System (USCS) under the direction of a State Registered Professional Geologist, and is field screened for organic vapors using a photo ionization detector (PI D), or an equivalent tool. Soil cuttings generated are stored in Department of Transportation (DOT) approved 55-gallon steel drums, or an equivalent storage container.

Grab Groundwater Sample Collection

Once the desired groundwater sampling depth has been reached, a Hydropunch tip is affixed to the head of the sampling rods. The Hydropunch tip is advanced between approximately 6 inches to one foot within the desired groundwater sampling zone (effort is made to emplace the Hydropunch screen across the center of the water table), and retracted to expose the Hydropunch screen. Grab groundwater samples are collected by lowering a pre-cleaned, single-sample polypropylene, disposable bailer down the annulus of the sampler rod. The groundwater sample is discharged from the bailer to the sample container through a bottom emptying flow control valve to minimize volatilization.

Alternatively, groundwater samples are collected by lowering a disposable bailer through the sampler rod or into the borehole.

Collected water samples are discharged directly into laboratory provided, pre-cleaned, vials or containers and sealed with Teflon-lined septum, screw-on lids. Labels documenting sample number, well identification, collection date, and type of preservative (if applicable. i.e. HCI for TPPH, BTEX, and fuel oxygenates) are affixed to each sample. The samples are then placed into an ice-filled cooler for delivery under chain-of-custody to a laboratory certified by the State of California to perform the specified tests.

Borehole Completion

Upon completion of drilling and sampling, the rods are retracted. Neat cement grout, mixed at a ratio of 6 gallons of water per 94 pounds of Portland cement, is introduced, *via* a tremmie pipe, and pumped to displace standing water in the borehole. Displaced groundwater is collected at the surface into DOT approved 55-gallon steel drums, or an equivalent storage container. In areas where the borehole penetrates asphalt or concrete, the borehole is capped with an equivalent thickness of asphalt or concrete patch to match finished grade.

Organic Vapor Procedures

Soil samples are collected for analysis in the field for ionizable organic compounds using a PID with a 10.2 eV lamp. The test procedure *involves* measuring approximately 30 grams from an undisturbed soil sample, placing this subsample in a Ziploc--type bag or in a clean glass jar, and sealing the jar with aluminum foil secured under a ring-type threaded lid. The container is warmed for approximately 20 minutes (in the sun); then the head-space within the container is tested for total organic *vapor,* measured in parts per million as benzene (ppm; volume/volume). The instrument is calibrated prior to drilling. The results of the field-testing are noted on the boring logs. PID readings are useful for indicating relative levels of contamination, but cannot be used to evaluate petroleum hydrocarbon levels with the confidence of laboratory analyses.

Equipment Decontamination

Equipment that could potentially contact subsurface media and compromise the integrity of the samples is carefully decontaminated prior to drilling and sampling. Drill augers and other large pieces of equipment are decontaminated using high pressure hot water spray. Samplers, groundwater pumps, liners and other equipment are decontaminated in an Alconox scrub solution and double rinsed in clean tap water rinse followed by a final distilled water rinse.

The rinsate and other wastewater are contained in 55-gallon DOT-approved drums, labeled (to identify the contents, generation date and project) and stored on-site pending waste profiling and disposal.

Soil Cuttings and Rinsate/Purge Water

Soil cuttings and rinsate/purge water generated during drilling and sampling are stored onsite in DOT-approved 55-gallon steel drums pending characterization. A label is affixed to the drums indicating the contents of the drum, suspected contaminants, date of generation,
and the boring number from which the waste is generated. The drums are removed from the site

by a licensed waste disposal contractor under manifest to an appropriate facility for treatment/recycling.