SOIL VAPOR EXTRACTION SYSTEM START-UP REPORT

CHEVRON SUNOL PIPELINE SUNOL, CALIFORNIA

Prepared for

Chevron Pipe Line Company
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December 2006

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URS

December 19, 2006

Mr. Jerry Wickham
Department of Environmental Health
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA – **Soil Vapor Extraction System Start-up Report**

Dear Mr. Wickham:

On behalf of the Chevron Pipe Line Company (CPL), URS Corporation (URS) installed five additional soil vapor extraction (SVE) wells (SVE-5 through SVE-9) expanding the existing SVE well network to include the impacted steep hillside area below the release location resulting from the August 14, 2005, gasoline pipeline release at the Chevron Sunol Pipeline site (Site) in Sunol, California. The SVE expansion was conducted to comply with the requests stated in the June 5, 2006 Alameda County Environmental Health (ACEH) comment letter to CPL (Appendix A). The expansion effort was conducted in accordance with *Work Plan for Additional Groundwater Monitoring Well Installation and SVE System Expansion and Operation* (Work Plan) (URS 2006a), which was submitted to ACEH on July 26, 2006.

This report describes site improvement activities necessary to safely access the additional SVE well locations, installation of the five additional SVE wells, associated soil sampling results, SVE start-up and subsequent monitoring procedures, and initial gasoline mass removal calculations for the SVE system operation. Specifically, this report is intended to fulfill the ACEH's technical report request to submit a SVE system start-up report by December 29, 2006.

If you have any questions on this report, please call Mr. Joe Morgan at 510-874-3201.

Sincerely yours,

URS CORPORATION

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DISCLOSURE

This report ("Soil Vapor Extraction System Start-up Report, Chevron Sunol Pipeline, Sunol, California") was prepared under my direct supervision. The information and results presented in this report are based on our review of available data obtained from numerous sources, including studies performed by others, laboratory data produced by independent laboratories, and data generated by URS. To the best of our knowledge we have collected and incorporated into our findings and recommendations all relevant data from previous groundwater and soil quality studies of the Benicia Refinery.

The study reported herein was performed in accordance with the standard of care used for this type of study. The assumptions that were made and the interpretation of the data were based on our experience and on protocols reported in the literature for similar studies.

URS Corporation
Approved by:

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December 15, 2006

Mr. Jerry Wickham
Department of Environmental Health
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, California 94502

Dear Mr. Wickham:

I declare, under penalty of perjury, that the information and/or recommendations contained in URS' report titled "**Soil Vapor Extraction System Start-up Report, Chevron Sunol Pipeline, Sunol, California**" are true and correct to the best of my knowledge at the present time.

Submitted by:

Jeffrey Cosgray

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ACEH	Alameda County Department of Environmental Health
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CPL	Chevron Pipe Line Company
HASP	Health and Safety Plan
HSA	hollow-stem auger
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
µg/L	microgram(s) per liter
mg/kg	milligram(s) per kilogram
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
PID	photoionization detector
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RPD	relative percent difference
SFPUC	San Francisco Public Utilities Commission
Site	Chevron Sunol Pipeline site
SVE	soil vapor extraction
TPH-GRO	total petroleum hydrocarbons quantified as gasoline range organics
URS	URS Corporation
USEPA	U.S. Environmental Protection Agency
Work Plan	*Work Plan for Additional Groundwater Monitoring Well Installation and SVE System Expansion and Operation* (URS 2006a)

On behalf of the Chevron Pipe Line Company (CPL), URS Corporation (URS) installed five additional soil vapor extraction (SVE) wells (SVE-5 through SVE-9) expanding the existing SVE well network to include the impacted steep hillside area below the release location resulting from the August 14, 2005, gasoline pipeline release at the Chevron Sunol Pipeline site (Site) in Sunol, California. The SVE expansion was conducted to comply with the requests stated in the June 5, 2006 Alameda County Environmental Health (ACEH) comment letter to CPL (Appendix A). The expansion effort was conducted in accordance with *Work Plan for Additional Groundwater Monitoring Well Installation and SVE System Expansion and Operation* (Work Plan) (URS 2006a), which was submitted to ACEH on July 26, 2006.

This report describes site improvement activities necessary to safely access the additional SVE well locations, installation of the five additional SVE wells, associated soil sampling results, SVE start-up and subsequent monitoring procedures, and initial gasoline mass removal calculations for the SVE system operation. Specifically, this report is intended to fulfill the ACEH's technical report request to submit a SVE system start-up report by December 29, 2006.

The remainder of this report is organized as follows:

- Section 2 provides a summary of the release history as well as the previous subsurface investigation and remediation activities at the Site.
- Section 3 describes the field activities involved in expanding the SVE system network, presents the local lithologies encountered at the additional well locations, discusses the soil analytical results, and summarizes the SVE start-up and subsequent monitoring activities.
- Section 4 discusses quality assurance / quality control assessment for the soil analytical results.
- Section 5 discusses the initial mass removal calculations.
- Section 6 presents the findings and recommendations.
- Section 7 describes the limitations applicable to this report.
- Section 8 presents a list of the reference materials used to prepare this report.

This section provides a summary of the release history as well as the previous investigation and remediation activities at the Site.

2.1 RELEASE HISTORY AND LOCATION

A release of unleaded gasoline occurred at the Site on August 14, 2005, when a third party damaged an underground pipeline (the Bay Area Product Line) during dirt road grading activities. CPL estimated that approximately 700 barrels (29,400 gallons) of unleaded gasoline were released. Approximately 85 barrels of gasoline were recovered while draining the line and approximately 615 barrels were released as a spray downslope of the pipeline onto the adjacent hillside and Calaveras Road. A portion of the 615 barrels released downslope was recovered along with 152 tons of gasoline-impacted soil and debris, which were disposed of as part of the emergency remedial activities.

The location of the pipeline release is approximately 2.7 miles south of the intersection of Interstate 680 and Calaveras Road, between Mileposts 2.7 and 2.8 of Calaveras Road, in Sunol Valley, Valle de San Jose Mexican land grant (La Costa Valley Quadrangle) in Alameda County, California. The release location is approximately 4 miles southeast of the city of Sunol, California (Figure 1). The pipeline extends along Calaveras Road and traverses a steep hillside above the east side of the road (Figure 2). The San Francisco Public Utilities Commission (SFPUC) owns the property where the release occurred and leases it to a cattle rancher. A tree nursery (Valley Crest Tree Company) is located immediately west of Calaveras Road at the Site. This operation also leases the property from the SFPUC.

The release location is on a steep, west-facing slope with a grade of 80 to 90 percent in some locations. The grade directly beneath the release location was measured to be 84 percent using an inclinometer on August 25, 2005. Vegetation at the release location is predominantly oak woodlands. An unnamed creek is located approximately 150 to 200 feet north of and downhill from the release location. This creek flows into the Alameda Creek floodplain and joins Alameda Creek seasonally. URS and CPL staff observed no visible impacts to this creek immediately after the release. A surface-water sample was collected on October 19, 2005, and the sample results confirmed these visual observations (URS 2005). URS' report of *First Quarter 2006 Groundwater Monitoring Report* included a recommendation for continued quarterly surface-water sampling of the unnamed creek (URS 2006b).

CPL conducted emergency remedial activities immediately after the release occurred. The pipeline rupture was repaired and surface soils surrounding the release were excavated, characterized, and disposed of off site at an appropriate landfill according to CPL's spill response contractor. In total, 152 tons of gasoline-impacted soil and debris were disposed of as part of the emergency remedial activities. The excavation for the repaired section of the pipeline was left open and exposed. The impacted portion of Calaveras Road was repaved.

2.2 PREVIOUS INVESTIGATION AND REMEDIAL ACTIVITIES

In response to ACEH's request to evaluate the soil and groundwater impacts of the release, CPL retained URS to conduct an initial subsurface investigation. The purpose of the initial subsurface investigation was to evaluate the lateral and vertical extent of gasoline impacts to soil and groundwater at the release location. As part of this investigation, URS advanced 19 Geoprobe® borings, nine hand-augered borings, two hollow-stem auger (HSA) borings, and four air-rotary auger borings to collect soil and groundwater samples. These activities were conducted between August 25 and November 10, 2005. Three of the air-rotary borings were completed as groundwater monitoring wells (MW-1 through MW-3). The soil boring and monitoring well locations are shown on Figure 2. The investigation results were presented in the *Subsurface Investigation Report* (URS 2005), which was submitted to ACEH on December 15, 2005.

URS conducted the first phase of the initial investigation (10 soil borings [SB-1 through SB-10]) along Calaveras Road in the right-of-way of the County of Alameda Public Works Agency. Typically, the direct-push sampling equipment encountered refusal at approximately 20 feet below ground surface (bgs). No groundwater was encountered during this sampling effort.

The second phase of the investigation was conducted on SFPUC property on the east side of Calaveras Road on the hillside where the release occurred. This phase of the investigation included advancing nine direct-push borings and nine hand-augered borings (SB-11 through SB-27, and SB-13R). During this investigation high photoionization detector (PID) readings and strong gasoline odors were noted in soils from the borings located closest to the spill location. Reduced PID readings and weaker gasoline odors were noted in soils collected farther away from the spill location.

In the nursery on the west side of Calaveras Road, URS advanced two borings with an auger rig in an attempt to locate groundwater (HSA-1 and HSA-2). Groundwater was apparently encountered in HSA-1 at 37 feet bgs, but not enough water was present to collect a sample. Groundwater was not encountered at HSA-2.

Although groundwater was not sampled, this drilling effort was successful in evaluating site geology to the depths of 37 and 50.5 feet bgs, where refusal was encountered for the two borings. In both borings a gravel layer was encountered where gasoline odors were present. The top of the gravel layer varied in depth from 17–23 feet bgs and the bottom of the layer varied from 37–43 feet bgs. Highly weathered clayey bedrock was encountered at 43 feet bgs at HSA-2; this bedrock was underlain by increasingly less weathered sandy siltstone bedrock from 45 feet bgs to the total explored depth of 50.5 feet bgs.

Due to the difficult drilling conditions encountered at the nursery (i.e., cobbles and refusal with the auger rig), an air-rotary casing hammer drill rig was used to drill four exploratory borings (AR-1 through AR-4) to a maximum depth of 108 feet bgs (AR-2) and complete three of them as monitoring wells (MW-1 through MW-3) to approximately 40 feet bgs. Groundwater was initially encountered in only two of the wells (MW-1 and MW-2), but was present in all three wells after winter rainfall. Although groundwater was not encountered at AR-2, a 75-foot-thick siltstone/claystone confining layer beneath the unconsolidated gravel layer was identified. As discussed in the Work Plan (URS 2006a), one monitoring well, MW-1, frequently had a thin sheen of gasoline on the groundwater surface prior to January 17, 2006. MW-1 displayed the greatest product thickness of 0.17 foot on November 10, 2005. No sheen or measurable free product has been encountered in any of the other monitoring wells.

On November 5 and 8, 2005, as part of site remediation activities, URS installed four soil vapor extraction (SVE) wells (SVE-1D through SVE-4D) on the dirt road where the spill occurred. URS installed and ran a mobile SVE system experimentally for the week beginning November 8, 2005. After the system was determined to be successful, URS continued to operate the system through February 13, 2006. Over the 3 months of operation the SVE system removed approximately 1,041 gallons of hydrocarbons. URS documented the design strategy, operation, monitoring, sampling activities, evaluation, and future recommendations of the SVE system in

Interim Remediation Report, Soil Vapor Extraction System for the Chevron Pipeline Release Location, Sunol, California (URS 2006c).

URS conducted a fifth phase of subsurface investigation from January 17 to 31, 2006 to address the ACEH's request to fully define the extent of contamination in soil and groundwater at the site. As part of the additional subsurface investigation activities URS installed four additional groundwater monitoring wells (MW-4 through MW-7, Figure 2). Three of the wells were installed along Calaveras Road into the confined sandstone water-bearing zone. One well was installed to the west of Calaveras Road to the north of MW-1 and MW-3 into the unconfined nursery water-bearing zone (URS 2006d).

The most recent phase of subsurface investigation was conducted on August 16 and 17, 2006 and included installing two additional groundwater monitoring wells (MW-8 and MW-9). MW-8 was installed along Calaveras Road within unconsolidated soils overlying the confined sandstone water-bearing zone. MW-8 was installed to monitor potential shallow contaminant migration from the hillside below the release location to the nursery unconfined water-bearing zone. MW-9 was installed to the northeast of MW-4 and to the north of MW-1 on the nursery property. MW-9 was installed to monitor potential northward contaminant migration observed at MW-1 during quarterly groundwater monitoring activities. MW-8 and MW-9 have been incorporated into the quarter groundwater monitoring program. The details of this investigation are discussed in *Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report* (URS 2006e).

In response to the ACEH staff's request to expand the SVE network to include additional wells downslope from the release location, URS conducted field activities between October 23, 2006 and November 28, 2006.

The field activities included:

- Constructing pathways and stairs to safely access the new well locations
- Advancing five soil borings and installing soil vapor extraction wells (SVE-5 through SVE-9) at each boring location
- Connecting all nine SVE wells (SVE-1D through SVE-9) to the SVE system

3.1 PERMITS AND PRE-FIELDWORK PROCEDURES

Before initiating field activities, URS obtained soil boring permits from the Zone 7 Alameda County Flood Control and Water Conservation District and an encroachment permit from the County of Alameda Public Works Agency. Copies of these permits are provided in Appendix B. URS also coordinated with the San Francisco Public Utilities Commission (SFPUC) on road and stair construction, tree-trimming, limited re-vegetation of the hillside in areas disturbed by this scope of work, if needed, and other land use matters.

URS notified Underground Service Alert 48 hours before initiating field activities. Also, Cruz Brothers Locators, Inc., a private utility locator from Scotts Valley, California, used electromagnetic methods to delineate the pipeline location and clear all boring locations and associated pathways for the presence of underground utilities.

URS developed a site Health and Safety Plan (HASP) that described the potential hazards associated with the proposed field activities (working on the steep hillside, cutting paths into the hillside, road grading, constructing stairs, advancing soil borings, collecting soil samples, constructing wells, and starting up the SVE system). The HASP also provided safe work procedures to mitigate the potential work hazards. A copy of the HASP was available on site at all times. The URS site supervisor held tailgate safety meetings each morning to discuss the relevant aspects of the HASP for the day's scheduled work. Job safety analyses were developed for specific work tasks and were discussed during the daily tailgate safety meetings.

3.2 SAFE SITE ACCESS FACILITATION

Due to the steep hillside located downslope from the release location, URS' conducted site improvements prior to installing the additional SVE wells. URS subcontracted Cornerstone Environmental Contractors, Inc. (Cornerstone) to conduct site improvement activities from October 23, 2006 to November 1, 2006.

Before beginning construction of the pathways and stairs, two of the four existing bollards emplaced by CPL around the pipeline on the upper dirt road were removed to provide road access to the SVE-5 well location. The holes generated by removing the bollards were backfilled to prevent hazards of slips, trips, and falls. No additional site improvements were required to safely access SVE-5.

The barbed-wire fence running up the hillside was covered with foam pipe insulation to protect personnel working around well locations SVE-6, SVE-7, and SVE-8 (Figure 2). A water truck was maintained on-site throughout site improvement activities and the construction area was sprayed on a daily basis prior to the start of work to address the fire hazard at the site.

In order to safely access well locations SVE-6 and SVE-7, a pathway approximately 3 feet wide was cut into the hillside extending from the existing top dirt road to the SVE-7 well location. Several steps were also installed to reduce the slope of the pathway. The steps were reinforced with 2x12-inch treated wooden planks, and anchored with 3 foot lengths of rebar. The pathway was completed with a compacted crushed gravel base and 4x4-inch treated wooden posts joined with a rope handrail running along the downslope side of the entire path. Once the pathway was completed, approximately 6x6-foot platforms were cut into the hillside to facilitate well installation and subsequent monitoring activities (Appendix C, Photo 1).

To access SVE-8, a lower dirt road was graded along the bottom of the hillside from just south of the unnamed creek to the base of the steep slope below the SVE-8 location (Figure 2). Stairs were then cut into the steep slope from the lower dirt road to the SVE-8 well location. The stairs were approximately 3 feet wide, reinforced with 2x12-inch treated wooden planks, and anchored with 3 foot lengths of rebar. The stairs were completed with a compacted crushed gravel base and 4x4-inch treated wooden posts joined with a rope handrail running along the downslope side of the entire stairway. Once the stairs were completed, an approximately 4x6-foot platform was cut into the hillside to facilitate well installation and subsequent monitoring activities. Due to the

extremely steep grade of the slope in this location, a wooden retaining wall was also built with 2x12-inch and 4x4-inch treated wooden planks and posts on the upslope side of the platform to prevent slope instability (Appendix C, Picture 2).

To access the SVE-9 location on the natural shelf upslope from Calaveras Road, Cornerstone cut a pathway across the hillside extending from the lower dirt road to approximately 15 feet below the SVE-9 shelf location. A wooden platform and stairs were then constructed from the end of the pathway to the shelf location.

The pathway is approximately 3 feet wide and was completed with a compacted crushed gravel base and 4x4-inch treated wooden posts joined with a rope handrail running along the downslope side of the entire path. The pathway was also reinforced with 2x12-inch treated wooden planks anchored with 3 foot lengths of rebar on the downhill side to help prevent erosion. An approximately 5x5-foot wooden platform was constructed at the end of the pathway out of 2x12-inch treated wooden planks. The platform was anchored into the ground using concrete piers and acts as a lower anchoring point for the stairs. The stairs are approximately 3 feet wide and were constructed with 2x12-inch treated wooden planks for the frame and footboards. The stairs are anchored into the platform at the bottom of the span and into the ground with concrete piers at the top of the span. A wooden railing was constructed along the downhill side of the platform, the stairs, and the natural shelf with 2x4-inch treated wooden planks. The shelf was cleared of vegetation and loose cobbles to minimize slips, trips, and falls. A latch was also installed on the bared-wire fence to allow a section of the fence to be easily opened and closed to access SVE-9 from SFPUC property rather than from Calaveras Road (Appendix C, Photos 3 through 5).

3.3 BORINGS AND SAMPLE COLLECTION

URS subcontracted RSI Drilling (Woodland, California) to advance borings SVE-5 through SVE-9 from November 7 through 10, 2006. Because SVE-5 is located on the upper dirt road, it was possible to advance this boring with a Geoprobe® 6620DT track-mounted hollow stem auger (HSA) drill rig equipped with 8-inch outer diameter augers. Boring SVE-5 was advanced to a depth of 40 feet below ground surface (bgs). Due to access issues with larger drilling equipment and safety concerns with portable powered equipment, SVE-6 through SVE-9 were advanced to the maximum depths possible with an AMS 4-inch outer diameter hand auger and a pry bar to

loosen large gravel and cobbles. SVE-6 through SVE-9 were advanced to depths of 14, 9.7, 7, and 7.2 feet below ground surface (bgs), respectively.

Soil cores and samples were not collected from SVE-5 because of its proximity to boring SB-20, advanced during URS' initial subsurface investigation in October 2005 (URS 2005). Refusal was encountered at SVE-5 at 26 feet bgs in tight sandy silt (based on log from SB-20), so a pilot hole was drilled from 26 to 40 feet bgs using 4-inch outer diameter solid stem augers. The pilot hole was then over-drilled to the desired depth of 40 feet bgs with the 8-inch HSAs to facilitate well installation.

Soils cuttings collected from the hand auger bucket for borings SVE-6 through SVE-9 were logged using the Unified Soil Classification System (ASTM D2487). A portion of the soil was collected at various depths for headspace analysis to test for the presence of volatile organic compounds using a PID. Any visual evidence of contamination or odors were noted on the boring log along with the lithologic information (Appendix D). Soil samples were collected for laboratory analysis when indications of impacts were observed. Three soil samples were collected from SVE-6 and SVE-8, two soil samples were collected from SVE-7, and one soil sample was collected from SVE-9. Soil samples intended for possible laboratory analysis were collected using EnCore™ soil sampling kits in accordance with U.S. Environmental Protection Agency (USEPA) Method 5035.

URS placed all soil samples in an ice-filled cooler and transported them under chain-of-custody procedures to Lancaster Laboratories, Inc., of Lancaster, Pennsylvania. The California Department of Health Services has certified this laboratory (California Certification No. 2116). The chain-of-custody forms and the complete laboratory analytical results are provided in Appendix E.

The samples were analyzed for the following:

- Total Petroleum Hydrocarbons: Gasoline Range Organics (TPH-GRO) by N. CA LUFT GRO
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B

Investigation-derived waste, including soil cuttings and decontamination rinsate, was stored on site in 55-gallon drums. All solid and liquid investigation-derived waste is pending analysis for disposal off site at a CPL-approved facility.

3.4 SOIL ANALYTICAL RESULTS

Table 1 provides a summary of the soil analytical results for the samples collected during the additional investigation. The complete laboratory analytical results are provided in Appendix E.

Three soil samples were collected from boring SVE-6 at depths of 3.2, 10, and 14 feet bgs. The TPH-GRO concentrations ranged from 2.2 milligrams per kilogram (mg/kg) at 3 feet bgs to below laboratory reporting limits at both 10 and 14 feet bgs. All BTEX constituents were below laboratory reporting limits at all three sample depths.

Two soil samples were collected from boring SVE-7 at depths of 1 and 8 feet bgs. TPH-GRO concentrations ranged from 17,000 mg/kg at 8 feet bgs to 4,800 mg/kg at 1 foot bgs. The benzene concentrations ranged from 26 mg/kg at 8 feet bgs to below laboratory detection limits at 1 foot bgs. The toluene concentrations ranged from 1,100 mg/kg at 8 feet bgs to 1.7 mg/kg at 1 foot bgs. The ethylbenzene concentrations ranged from 420 mg/kg at 8 feet bgs to below laboratory reporting limits at 1 foot bgs. The total xylenes concentrations ranged from 3,800 mg/kg at 8 feet bgs to 210 mg/kg at 1 foot bgs.

Three soil samples were collected from boring SVE-8 at depths of 2.5, 4, and 6.5 feet bgs. TPH-GRO concentrations ranged from 2,300 mg/kg at 2.5 feet bgs to below laboratory detection limits at 6.5 feet bgs. Benzene concentrations were below laboratory reporting limits at all three sample depths. Toluene concentrations ranged from 0.93 mg/kg at 2.5 feet bgs to below laboratory reporting limits at both 4 and 6.5 feet bgs. Ethylbenzene concentrations ranged from 0.56 mg/kg at 2.5 feet bgs to below laboratory reporting limits at both 4 and 6.5 feet bgs. Xylenes concentrations ranged from 47 mg/kg at 2.5 feet bgs to below laboratory reporting limits at both 4 and 6.5 feet bgs.

The soil sample collected from boring SVE-9 was collected at a depth of 4 feet bgs. The concentrations of TPH-GRO and BTEX constituents were 23,000, 0.38, 47, 20, and 2,100 mg/kg, respectively.

3.5 GEOLOGY

A URS geologist logged soil borings SVE-6 through SVE-9, advanced as part of the additional SVE well installation activities. Soils from boring SVE-5 were not logged because lithologic information was obtained from the adjacent soil boring SB-20 advanced during URS' initial investigation in October 2005 (URS 2005). The logs for borings SVE-5 through SVE-9 are presented in Appendix D.

Based on the log from SVE-6 the local lithology consists of sandy silt and silty sand layers extending from ground surface to 14 feet bgs, the maximum possible depth with the hand auger assembly. No groundwater was encountered at SVE-6.

Based on the log from SVE-7 the local lithology consists of sandy silt and silty sand layers from ground surface to a depth of 8.5 feet bgs. A fine to coarse gravel and cobble layer with a silty, sandy matrix underlies the sandy and silty layers to the total explored depth of 9.7 feet bgs. Refusal was encountered on gravel. No groundwater was encountered at SVE-7.

Based on the log from SVE-8 the local lithology consists of a silty sandy gravel and cobble zone extending from ground surface to a depth of 4 feet bgs. Silty sand and sandy silt layers underlie the gravel and cobble zone to the total explored depth of 7 feet bgs. Refusal was encountered on a large cobble. Perched groundwater zones were encountered at 3.5 feet bgs within the gravel and cobble zone and again at 7 feet bgs, just before encountering refusal. The groundwater level after well installation was measured at 2.28 feet bgs on November 28, 2006.

Based on the log from SVE-9 the local lithology consists of sandy silt and silty sand extending from ground surface to a total explored depth of 7.2 feet bgs. Refusal was encountered on a large cobble. No groundwater was encountered at SVE-9.

3.6 SVE WELL INSTALLATION

After boring completion, borings SVE-5 through SVE-9 were completed as soil vapor extraction wells. SVE-5 was constructed with 2-inch-diameter, flush-threaded, Schedule 40 polyvinyl chloride (PVC) blank casing and a 0.020-inch-slot PVC well screen. A PVC bottom cap extends 0.4 foot below the well screen. The screened interval extends from 29.6 to 39.6 feet bgs. SVE-6 through SVE-9 were constructed with 1-inch diameter flush-threaded, Schedule 40 PVC blank casings and 0.010-inch-slot PVC well screens surrounded by 2.5-inch outer diameter stainless

steel mesh containing pre-packed #1/20 sand. The screened intervals at SVE-6 through SVE-9 extend from 9 to14, 4.7 to 9.7, 2 to 7, and 2.2 to 7.2 feet bgs, respectively.

All five wells were then completed with #3 RMC™ sand filter packs placed around the well screen within the annulus of each borehole from the bottom of the casing to approximately 0.5 to 1 foot above the top of the screened interval. The annulus of each well was sealed with approximately 0.5 to 1 foot of hydrated bentonite chips on top of the filter pack and a Portland cement and 5 percent bentonite grout slurry seal, tremied to the surface. All wells were completed above ground to connect them to the SVE system. Copies of the soil boring logs and the well construction details are provided in Appendix D. The well completion details for all nine SVE wells at the Site (SVE-1D through SVE-9) are summarized in Table 2.

3.7 SVE TREATMENT SYSTEM CONNECTION

On November 28, 2006, the previously installed wells (SVE-1D through SVE-4D) and newly installed wells (SVE-5 through SVE-9) were connected to a SVE treatment system provided by URS subcontractor Stratus, Inc. (Stratus). The treatment system consists of the following components:

- A trailer-mounted 200-cubic-feet-per-minute (cfm) thermal oxidizer (manufactured by CBA Equipment, LLC) that includes a 15-horsepower (hp) liquid ring blower and a 100-gallon knockout pot
- A 25 kilowatt-rated propane electrical generator
- Conveyance pipes and manifolds
- A 1000-gallon propane tank

The SVE treatment system is located north of the release location on SFPUC property (Figure 2). The SFPUC property is fenced and has a locked gate for security. An additional separate 8-foot-high, slatted chain-link fence with a locked gate encloses the SVE equipment compound (Appendix C, Photo 6). Vapors are extracted from the SVE wells with the liquid ring blower and conveyed to the treatment compound through two separate sets of piping. The first set of piping connects SVE-1D through SVE-5 to the treatment system and the second set of piping connects SVE-6 through SVE-9 to the treatment system. Both sets of piping are comprised of 2-inch-

diameter Schedule 40 PVC conveyance pipes running from each well head to the appropriate manifold (specified above). The manifold for each set of piping consists of valves to regulate the flow to each well. A single 1.5-inch diameter Schedule 40 PVC conveyance pipe connects each manifold to the treatment system (Appendix C, Photos 7 and 8). The extracted vapor stream is conveyed from the manifold to the knockout pot, which separates and collects moisture from the vapor stream. Hydrocarbon-impacted vapors are abated by the thermal oxidizer before discharge to the atmosphere.

A copy of the permit for the SVE system from the Bay Area Air Quality Management District (BAAQMD) is provided in Appendix F. The required notification letters to the BAAQMD are included in Appendix G.

4.1 SUMMARY OF QA/QC REVIEW PARAMETERS

The quality assurance/quality control (QA/QC) program includes using standard sample collection procedures in the field and established analytical methodologies in the laboratory. Laboratory and field QC sample results were evaluated to assess the quality of the individual sample results and overall method performance. Analytical performance was evaluated on a "batch QC" basis by evaluating the QC sample results for groups of samples that were prepared and analyzed together. The data evaluation performed included review of:

- Blanks (laboratory method blanks and trip blanks)
- Spikes (laboratory control sample spikes, matrix control spikes, and surrogate spikes)
- Duplicates (laboratory control sample duplicates and field duplicates)
- Sample Integrity (chain-of-custody documentation, sample preservation, and holding time compliance)

4.1.1 Method Holding Times

Analytical methods have prescribed holding times. The method holding time is defined as the maximum amount of time after collection that a sample may be held prior to extraction and/or analysis. Sample integrity becomes questionable for samples extracted and/or analyzed outside of the prescribed holding times due to degradation and/or volatilization of the sample. The QA/QC review identifies results with exceeded method holding times. No analytical method holding times were exceeded during the groundwater sample analysis during the current reporting period.

4.1.2 Method Blanks

Method blanks are prepared in the laboratory using deionized, distilled (Reagent Grade Type II) water. Method blanks are extracted and/or analyzed following the same procedures as an environmental sample. Analysis of the method blank indicates potential sources of contamination from laboratory procedures (e.g. contaminated reagents, improperly cleaned laboratory equipment) or persistent contamination due to the presence of certain compounds in the ambient

laboratory environment. The QA/QC review identifies method blanks with detections of target analytes and evaluates the effect of the detections on associated sample results.

4.1.3 Trip Blanks

Trip blanks are samples of deionized, distilled (Reagent Grade Type II) water that are prepared in the laboratory, taken to the field, retained on site throughout sample collection, returned to the laboratory, and analyzed with the environmental samples. The QA/QC review identifies trip blanks with detections of target analytes and evaluates the effect of the detections on associated sample results. Trip blanks were not collected for this project.

4.1.4 Matrix Spikes and Laboratory Control Samples

Matrix spikes (MS), matrix spike duplicates (MSD), laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) are analyzed by the laboratory to evaluate the accuracy and precision of the sample extraction and analysis procedures and to evaluate potential matrix interference. Matrix interference, the effect of the sample matrix on the analysis, may partially or completely mask the response of analytical instrumentation to the target analyte(s). Matrix interference may have a varying impact on the accuracy and precision of the extraction and/or analysis procedures, and may bias the sample results high or low.

The MS or MSD is prepared by adding a known quantity of the target compound(s) to a sample. The sample is then extracted and/or analyzed as a typical environmental sample and the results are reported as percent recovery. The spike percent recovery is defined as:

$$\text{Recovery (\%)} = \frac{\text{spike analysis result - original sample concentration}}{\text{concentration of spike addition}} \text{ x100\%}$$

MS and MSD recoveries are reviewed for compliance with laboratory-established control limits to evaluate the accuracy of the extraction and/or analysis procedures.

LCS and LCSD are prepared exactly like MS and MSD using a clean control matrix rather than an environmental sample. Typical control matrices include Reagent Grade Type II water and clean sand. LCS and LCSD are used to evaluate laboratory accuracy independent of matrix effects.

The QA/QC review identifies spike recoveries outside laboratory control limits and evaluates the effect of these recoveries on the associated sample results.

4.1.5 Laboratory Duplicate Analyses

Duplicate analyses are performed by the laboratory to evaluate the precision of analytical procedures. The laboratory may perform MSD and/or LCSD analyses.

Precision is evaluated by calculating a relative percent difference (RPD) using the following equation:

$$\text{RPD (\%)} = \left| \frac{(\text{Spike Concentration} - \text{Spike Duplicate Concentration})}{\frac{1}{2}(\text{Spike Concentration} + \text{Spike Duplicate Concentration})} \right| \text{ x } 100\%$$

The RPD is compared to laboratory-established control limits to evaluate analytical precision. The QA/QC review identifies RPDs outside laboratory control limits and evaluates the effect of these recoveries on the associated sample results.

4.1.6 Field Duplicate Analyses

Field duplicate samples are collected in the field and analyzed to evaluate the heterogeneity of the matrices. Field duplicate samples were not collected for this project.

4.1.7 Surrogate Recoveries

Surrogates are organic compounds that are similar to the target analytes in terms of their chemical structures and response to the analytical instrumentation, but are not usually detected in environmental samples. Surrogates are added to each environmental and laboratory QC sample to monitor the effect of the matrix on the accuracy of the extraction and/or analysis of organic analytes. Results for surrogate analyses are reported in terms of percent recovery (defined above). Reported recoveries are compared to laboratory-established control limits to evaluate sample-specific accuracy. The QA/QC review identifies surrogate recoveries outside laboratory control limits and evaluates the effect of these recoveries on the sample results.

4.2 EXPLANATION OF ANALYTICAL DATA QUALIFIERS

The analytical data were reviewed and qualified following USEPA guidelines for organic data review (USEPA, 1999). A "J" qualifier indicates that the analyte was positively identified, but that the associated numerical value is an approximate concentration of the analyte in the sample. A "UJ" qualifier indicates that the analyte was not detected above the reported sample quantitation limit (i.e., the laboratory reporting limit), however, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. An "R" qualifier indicates that the sample results were rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria, and therefore, the presence or absence of the analyte could not be verified.

4.3 SUMMARY OF QA/QC REVIEW FINDINGS

The results of the data evaluation are summarized in the following paragraphs.

The temperature of samples SVE-8-2.5, SVE-8-4, SVE-8-6.5 and SVE-9-4 was 7.3 degrees Celsius upon receipt at the laboratory on November 10, 2006. The samples may not have been packed in enough ice in the cooler to keep the sample temperature at or below 4 degrees Celsius during shipment to the laboratory or may have been insulated from the ice by the packaging used to protect the sample containers. The data was not qualified based on elevated sample temperature, since sample integrity was probably not compromised during shipment to the laboratory.

All reported results for the laboratory method blanks were non-detect (less than the laboratory reporting limit), indicating no evidence of contamination from laboratory instrumentation. Since field duplicate samples were not collected, it was not possible to verify that the sample matrix was homogeneous and the results repeatable.

All reported laboratory control sample (LCS), matrix control sample (MS) and surrogate spike recoveries were within laboratory QC limits, with the exception of the following surrogate spike issues, which required qualification.

- Low trifluorotoluene surrogate recoveries were observed in samples SVE-7-1, SVE-7-8, SVE-8-2.5 and SVE-9-4. The TPH-gas results in these samples were qualified with a

"J", indicating that the analyte was positively identified, but that the associated numerical value is an approximate concentration of the analyte in the sample.

- Low 1,2-dichloroethane surrogate recovery and high toluene and 4-bromofluorobenzene surrogate recoveries were observed in sample SVE-7-8. The BTEX results in this sample were qualified with a "J", indicating that the analyte was positively identified, but that the associated numerical value is an approximate concentration of the analyte in the sample.
- High toluene and 4-bromofluorobenzene surrogate recoveries were observed in sample SVE-9-4. The BTEX results in this sample were qualified with a "J", indicating that the analyte was positively identified, but that the associated numerical value is an approximate concentration of the analyte in the sample.

Chain-of-custody documentation is complete and consistent. Samples were preserved as required per method specifications, however sample temperature was noted as being 7.3 degrees Celsius upon receipt at the laboratory. All samples were analyzed within method specified holding times. Based on the data quality evaluation, no systematic problems were detected and the overall data objectives for sample contamination, precision, accuracy, and sample integrity were met. These analytical data are of acceptable quality and may be used for their intended purposes.

This section describes the system start-up and the initial operation results of the SVE system. The operational parameters, sampling results, and mass removal calculations for Wells SVE-1D through SVE-9 are presented in Table 3.

5.1 SVE SYSTEM START-UP

Prior to start-up, the BAAQMD was notified in writing on November 2, 2006, regarding the operation of the SVE system (Appendix F). The system was started up on November 28, 2006. Upon start-up, the system was verified to be in compliance with the requirements of the BAAQMD permit (Appendix G) and monitored for several hours to ensure that the system readings stabilized.

After stabilization, URS collected air samples on the day of start-up and then once a week for the first two weeks. Site visits were conducted twice a week for the first two weeks of operation to demonstrate that the system was operating properly and to record system readings.

During the site visit on November 30, 2006, ice and water was observed in both piping runs, which restricted airflow to the SVE System. Airflow from the lower piping run network, which connects wells SVE-6 through SVE-9, was completely stopped due to perched groundwater pulled from SVE-8. Ice and water were drained from the piping, and SVE-8 was closed off. Airflow from the upper piping run network, which connects wells SVE-1D through SVE-5, was not at its full capacity. The restriction of airflow might have resulted from extreme ambient temperature fluctuations. After both piping runs were cleared, the system was restarted up and monitored to ensure that the system re-stabilized. System readings were stable in the follow-up site visits on December 4 and 8, 2006. SVE-8 remains closed due to perched water at this location.

Subsequent site visits to confirm proper system operation and to collect air samples are planned on a weekly and biweekly basis, respectively.

5.2 SYSTEM OPERATION RESULTS

System readings were taken at the wellheads on November 28, November 30, December 4, and December 8, 2006. Gasoline mass removal was calculated based on the PID readings collected at the wellheads. Figure 3 shows the PID readings at each well for the initial operation. Figure 4

shows the cumulative mass of hydrocarbons removed from the wells. As of December 8, 2006, a total of 920 pounds (approximately 131 gallons) of hydrocarbons were removed from the SVE well locations since the SVE system startup on November 28, 2006, a period of 10 days.

5.3 MASS REMOVAL CALCULATIONS

The assumptions used in the mass removal calculations were as follows:

- The relative vapor density of gasoline is approximately 3.3 (unit less).
- The vapor density of pure, dry air is 1,200 grams per cubic meter (g/m^3) at 68° Fahrenheit (F).

The vapor density of gasoline is therefore calculated as 3.3 x 1,200 g/m^3 = 3,960 g/m^3 at 68°F.

Air flow in standard cubic foot per minute (SCFM) at 14.7 pounds per square inch atmosphere (psia) and 68°F is converted from air flow in cubic feet per minute as follows:

SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])

where

- *Pg* is the gauge pressure at the wellhead
- *Patm* is the atmospheric pressure
- *Tact* is the actual temperature
- *460* is the temperature conversion factor from Fahrenheit to Kelvin.

The mass removed in pounds is calculated as follows:

Pounds of Petroleum Hydrocarbons Removed = (flowrate in SCFM)(average concentration in ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time in hr)/1000000/379*

The SVE system was successfully started up and operated since November 28, 2006. As of December 8, 2006, a total of 920 pounds (approximately 131 gallons) of hydrocarbons have been removed from the SVE well locations since the SVE system startup. SVE-8 remains closed due to the accumulation of rainwater at the bottom of the well. URS will continue to monitor the groundwater in well SVE-8. If the groundwater level drops, URS still start soil vapor extraction through this well again.

URS recommends that the SVE system be operated for up to a total of 6 months. URS will continue monitoring the system biweekly. URS will review the PID readings and analytical results collected at each wellhead and determine the optimal duration for the SVE system operation.

No evaluation is thorough enough to preclude the possibility that materials that are currently considered hazardous or materials that may be considered hazardous in the future may be present at a site. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants presently considered nonhazardous may, in the future, fall under different regulatory standards and require remediation. Opinions and judgments expressed herein, which are based on understanding and interpretation of current regulatory standards, should not be construed as legal opinions. This document and the information contained herein have been prepared solely for CPL's use, and reliance on this report by third parties will be at such party's sole risk.

The report discussed herein was developed in accordance with the standard of care used to develop this type of report. The assumptions that were made and the recommendations for additional field activities were based on our professional experience and protocols reported in the literature for similar investigations.

URS Corporation. 2005. *Subsurface Investigation Report, Chevron Pipeline Release, Sunol, California*. December. (Referred to as Subsurface Investigation Report in text)

URS Corporation. 2006a. *Work Plan for Additional Groundwater Monitoring Well Installation and SVE System Expansion and Operation, Chevron Sunol Pipeline, Sunol California.* July. (Referred to as Work Plan in the text)

URS Corporation. 2006b. *SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA: First Quarter 2006 Groundwater Monitoring Report*. Memorandum to Jerry Wickham, Alameda County Environmental Health, April 13. (Referred to as *First Quarter 2006 Groundwater Monitoring Report* in Text)

URS Corporation. 2006c. *Interim Remediation Report, Soil Vapor Extraction System for the Chevron Pipeline Release Location, Sunol, California*. February.

URS Corporation. 2006d. *Additional Subsurface Investigation Report, Chevron Sunol Pipeline, Sunol California.* May.

URS Corporation. 2006e. *Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report, Chevron Sunol Pipeline, Sunol, California.* December.

U.S. Environmental Protection Agency (USEPA). 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. October.

Tables

TABLE 1
Summary of Soil Analytical Results
SVE System Start-Up Report
Chevron Sunol Pipeline

Well ID	Depth (feet bgs)	TPH-GRO mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes (Total) mg/kg
SVE-6	3.2	**2.2**	<0.022	<0.045	<0.045	<0.045
	10	<0.9	<0.024	<0.048	<0.048	<0.048
	14	<1	<0.026	<0.051	<0.051	<0.051
SVE-7	1	**4,800 J**	<0.23	**1.7**	<0.45	**210**
	8	**17,000 J**	**26 J**	**1,100 J**	**420 J**	**3,800 J**
SVE-8	2.5	**2,300 J**	<0.019	**0.93**	**0.56**	**47**
	4	**3.1**	<0.023	<0.045	<0.045	<0.045
	6.5	<1	<0.022	<0.045	<0.045	<0.045
SVE-9	4	**23,000 J**	**0.38 J**	**47 J**	**20 J**	**2,100 J**

Notes:
Bold values exceed laboratory reporting limits.
bgs - below ground surface
TPH-GRO - total petroleum hydrocarbons quantified as gasoline range organics
"J" Qualifier - The analyte was positively identified, but that the associated numerical value is an approximate concentration of the analyte in the sample.

TABLE 2
SVE Well Construction Details
SVE Start-Up Report
Chevron Sunol Pipeline

Well ID	Date Completed	Easting	Northing	Ground Surface Elevation (feet msl)	Top of Casing Elevation (feet msl)	TOC-GS (ft)	Screen Top (feet bgs)	Screen Bottom (feet bgs)	Well Diameter	Comments
SVE-1D	11/5/2005	6168313.98	2025831.92	377.37	377.02	-0.35	12.6	19.6	4" PVC	
SVE-2S	11/5/2005	6168314.18	2025817.01	380.54	379.84	-0.70	5.4	10.4	4" PVC	
SVE-3S	11/5/2005	6168317.87	2025774.02	391.61	391.16	-0.45	5.6	10.6	4" PVC	
SVE-4D	11/8/2005	6168318.74	2025761.01	394.46	393.99	-0.47	17.6	27.6	4" PVC	
SVE-5	11/10/2006	6168320.76	2025747.84	396.52	396.62	0.10	29.6	39.6	2" PVC	
SVE-6	11/7/2006	6168297.14	2025747.97	384.51	385.49	0.98	9	14	1" PVC	Prepacked Well Screen
SVE-7	11/7/2006	6168285.07	2025768.50	375.41	376.35	0.94	4.7	9.7	1" PVC	Prepacked Well Screen
SVE-8	11/8/2006	6168277.22	2025792.96	361.33	362.30	0.97	2	7	1" PVC	Prepacked Well Screen
SVE-9	11/9/2006	6168258.23	2025741.67	355.53	356.80	1.27	2.2	7.2	1" PVC	Prepacked Well Screen

Notes:
bgs - below ground surface
msl - average mean sea level

1. Northing and Easting coordinates based on the California Coordinate System Zone 3 NAD83 Datum.
2. Elevation coordinates based on the NAVD88 Datum.
3. SVE-1Dthrough SVE-4D surveyed on February 14, 2006.
4. SVE-5 through SVE-9 surveyed on November 10, 2006.

TABLE 3A
SVE-1D
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	465	54	3.4	10.14	10.33	2.4	1,120	0.17	0.41	0.41
11/30/06	808	61	6.85	17.63	17.56	44.6	803	0.25	11.17	11.59
12/04/06	864	58	8.08	18.85	18.83	138.8	422	0.17	23.34	34.93
12/08/06	854	62	7.4	18.63	18.50	234.6	1,793	0.30	29.12	64.05

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

TABLE 3B
SVE-2S
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	475	53	3.2	10.36	10.58	2.4	239	0.038	0.09	0.09
11/30/06	1056	60	6.74	23.04	23.01	44.6	417	0.112	4.99	5.08
12/04/06	1377	56	7.82	30.04	30.15	138.8	104	0.117	15.89	20.97
12/08/06	1453	57	7.1	31.70	31.81	234.6	953	0.249	23.89	44.87

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

TABLE 3C
SVE-3S
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	180	52	3.3	3.93	4.02	2.4	3,170	0.19	0.45	0.45
11/30/06	325	60	7.1	7.09	7.07	44.6	3,674	0.36	16.02	16.47
12/04/06	547	55	8.47	11.93	11.98	138.8	2,971	0.59	80.54	97.01
12/08/06	474	56	7.8	10.34	10.38	234.6	4,754	0.59	56.97	153.98

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

TABLE 3D
SVE-4D
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	190	51	3.30	4.15	4.25	2.4	1,857	0.12	0.28	0.28
11/30/06	327	57	7.16	7.13	7.16	44.6	2,602	0.24	10.56	10.84
12/04/06	316	48	8.54	6.89	7.02	138.8	2,088	0.24	33.87	44.71
12/08/06	296	53	7.9	6.46	6.52	234.6	2,921	0.24	23.20	67.91

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

TABLE 3E
SVE-5
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	500	50	3.10	10.91	11.21	2.4	1,499	0.25	0.60	0.60
11/30/06	734	54	6.63	16.01	16.18	44.6	2,292	0.46	20.29	20.89
12/04/06	835	47	7.83	18.22	18.61	138.8	2,172	0.62	85.51	106.40
12/08/06	807	51	7.2	17.61	17.87	234.6	2,307	0.59	56.87	163.28

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

TABLE 3F
SVE-6
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	640	53	9.60	13.96	14.03	2.4	1,908	0.40	0.95	0.95
11/30/06	987	54	14.20	21.53	21.35	44.6	2,800	0.75	33.25	34.20
12/04/06	935	46	17.84	20.40	20.35	138.8	2,514	0.80	111.35	145.55
12/08/06	808	47	17.1	17.63	17.59	234.6	3,619	0.80	76.64	222.19

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

TABLE 3G
SVE-7
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	500	54	9.50	10.91	10.94	2.4	2,057	0.33	0.80	0.80
11/30/06	647	50	14.08	14.12	14.11	44.6	2,760	0.50	22.48	23.28
12/04/06	720	45	17.60	15.71	15.71	138.8	2,727	0.64	88.77	112.05
12/08/06	833	50	16.8	18.17	18.04	234.6	4,351	0.95	90.72	202.77

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

Table 3H
SVE-8
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	300	53	10.00	6.54	6.57	2.4	1,923	0.19	0.45	0.45
11/30/06	0			0.00	0.00	44.6		0.00	0.00	0.00
12/04/06	0			0.00	0.00	138.8		0.00	0.00	0.00
12/08/06	0			0.00	0.00	234.6		0.00	0.00	0.00

Notes:
1. Inlet pipe diameter is 2".
2. Shaded areas indicate that measurements were not taken because flow to the well was shut off.

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

TABLE 3I
SVE-9
Operation Parameters, Sampling Results, and Mass Removal Calculations
Chevron Sunol Pipeline

Sample Date	Flowrate (fpm)	Temp (F)	Vacuum (inch water)	Flowrate (cfm)	Flowrate (scfm)	Total Operation Time (hr)	TPH-g Concentration (ppm)	Mass Removal Rate (lbs/hr)	Mass Removed Since Last Sampling Event (lbs)	Cumulative Mass Removal (lbs)
11/28/06	610	53	10.00	13.31	13.36	2.4	3,623	0.72	1.72	1.72
11/30/06	1010	55	13.30	22.03	21.85	44.6	3,747	1.19	53.28	55.00
12/04/06	1357	52	15.50	29.61	29.37	138.8	2,443	1.35	187.16	242.16
12/08/06	1179	53	15	25.72	25.50	234.6	2,612	0.96	91.59	333.75

Note:
1. Inlet pipe diameter is 2".

Assumptions:
1. Relative vapor density of gasoline is approximately 3.3.
2. Vapor density of pure, dry air is 1,200 g/m3 at 20C.
3. Vapor density of gasoline is calculated to be 3,960 g/m3 at 20C.
4. SCFM(at 14.7psia and 68°F) = CFM x([(Pg + Patm)/(Patm)] x [(68 +460)/(Tact +460)])
5. **Mass Removed Since Last Sampling Event (lbs)** = (flowrate scfm)*(avg. conc. ppmv)*(60 min/hr)*(106.88 lbs/molecule)*(Operation Time hr)/1000000/379

Figures

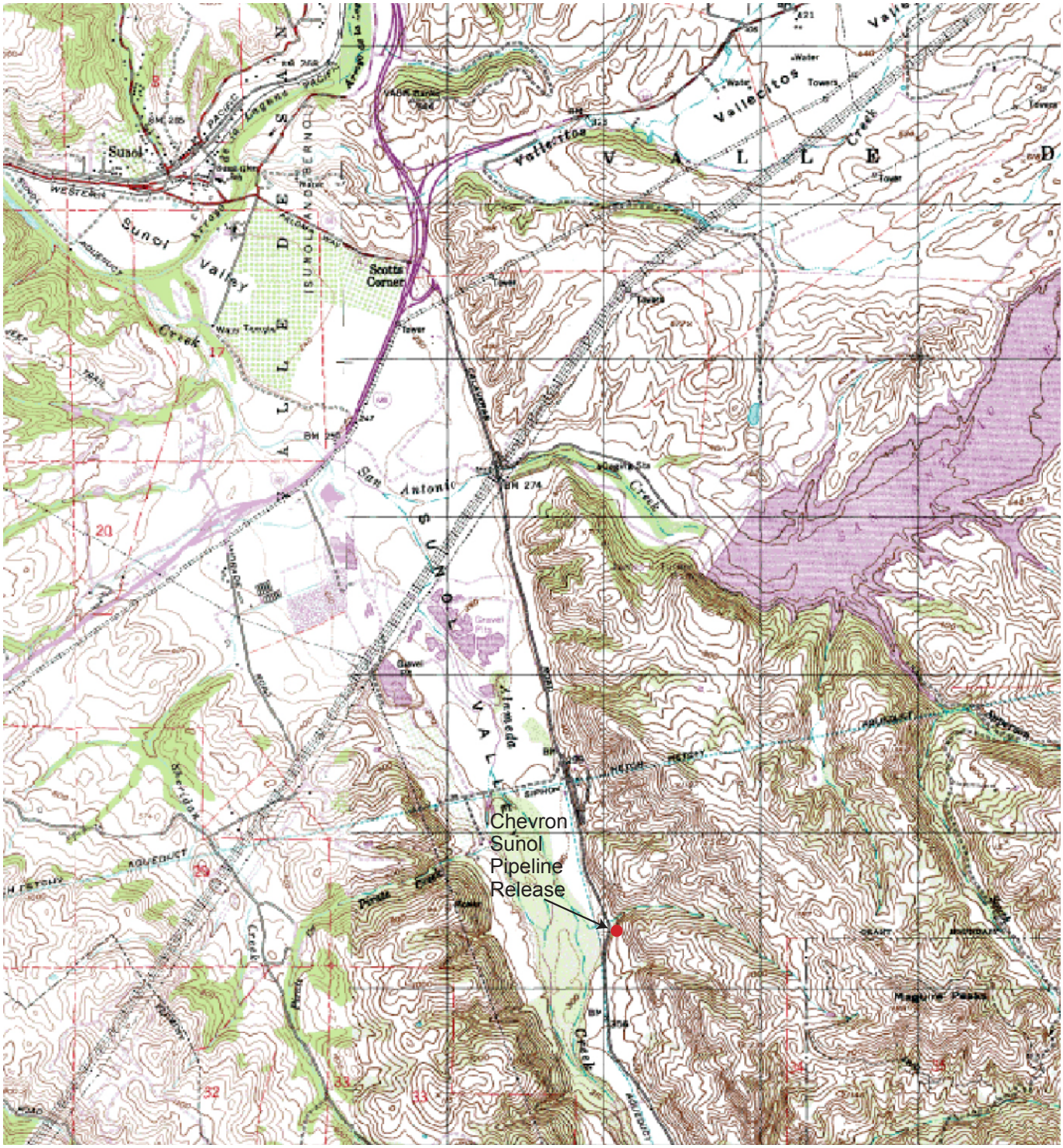


Image obtained from topozone.com

N

MAP REFERENCE:

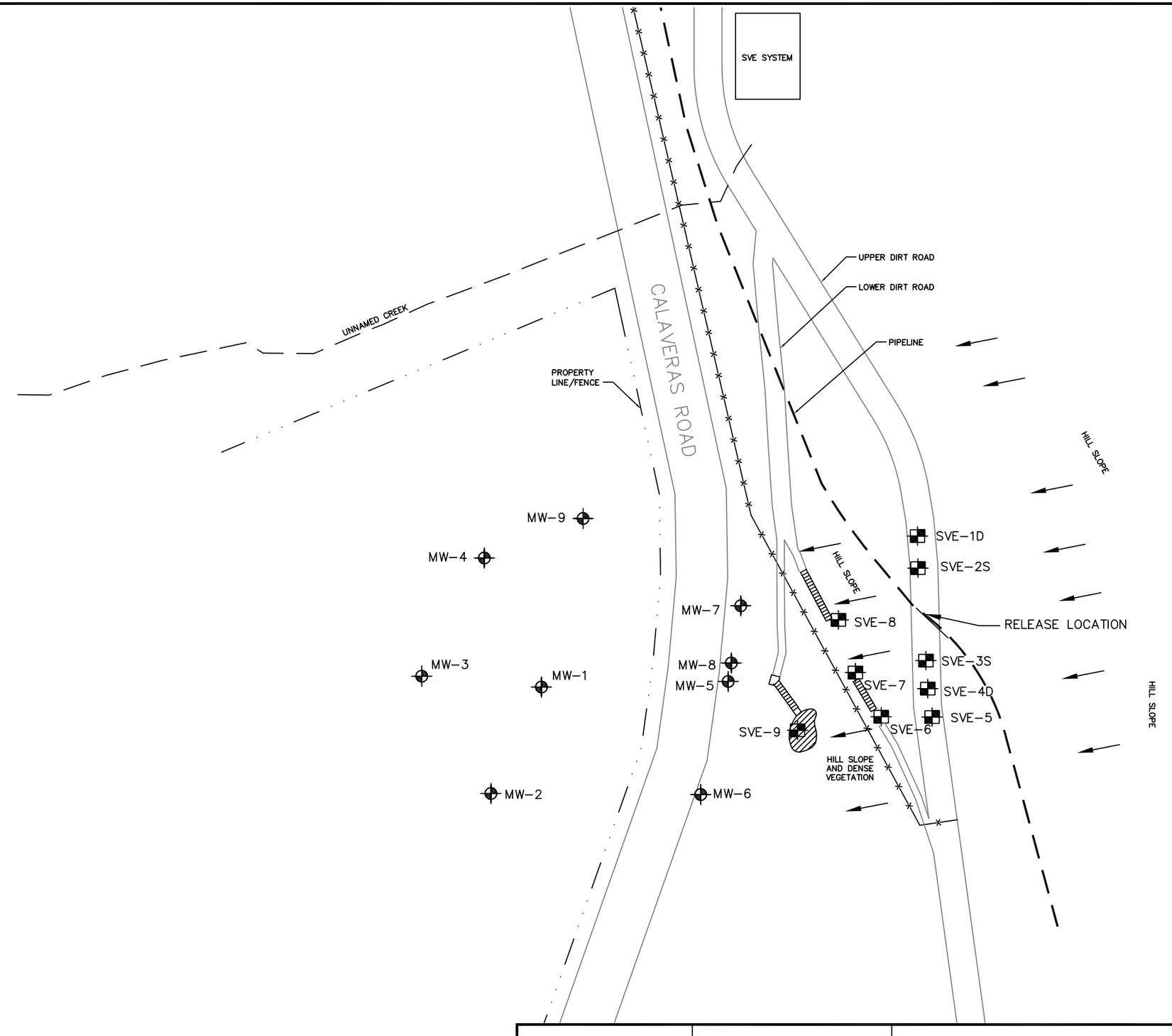
PORTION OF U.S.G.S. QUANDRANGLE MAP
7 1/2 MINUTE SERIES (TOPOGRAPHIC)
LA COSTA VALLEY QUADRANGLE

URS	Chevron Pipeline Company Project No. 26815217	SITE VICINITY MAP CHEVRON SUNOL PIPELINE SUNOL, CALIFORNIA	Figure 1

LEGEND:

- MONITORING WELL
- SVE WELL
- SHELF
- FENCE
- PIPELINE
- HILL SLOPE 80–90% GRADE

NORTH

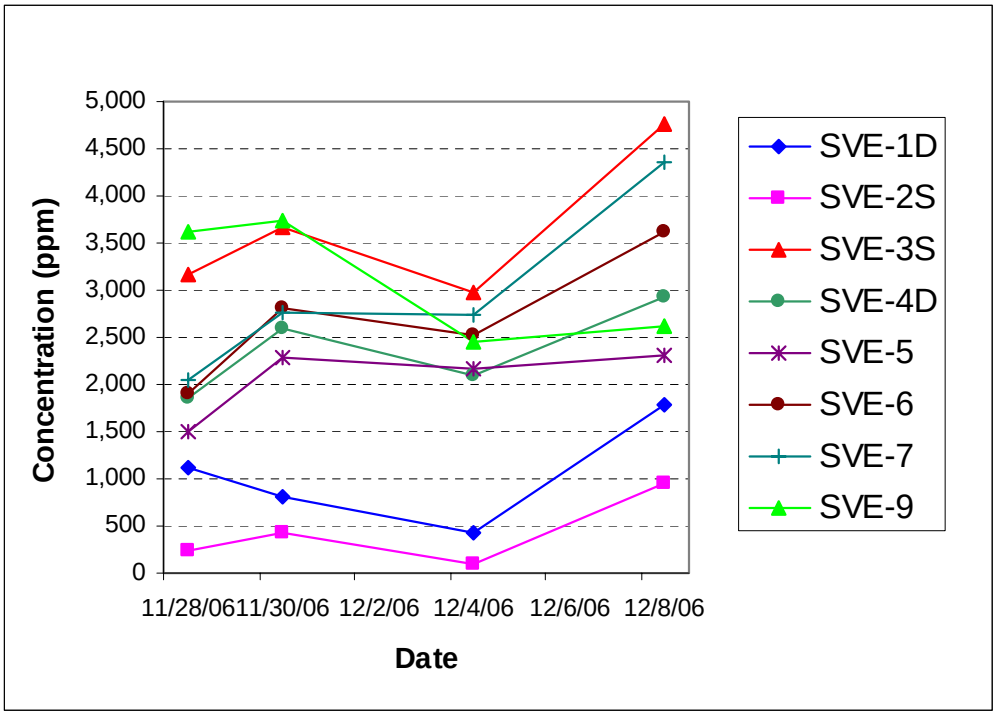


50' 0 50'

SCALE 1"= 50'

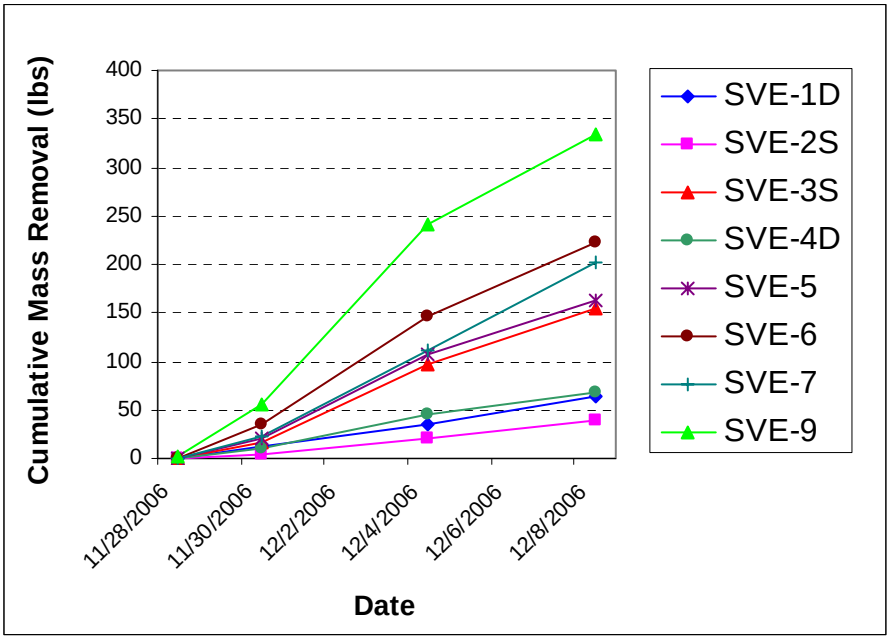
URS	CHEVRON PIPELINE COMPANY Project No. 26815217	SVE AND GROUNDWATER MONITORING WELL LOCATIONS CHEVRON SUNOL PIPELINE	Figure 2

Dec 08, 2006 - 5:01pm
X:\x_env_waste\Chevron Pipe Line Company\Sunol Spill\Additional Well Installation 1-06\Add. Investigation Report\Figures\Figure 2.dwg



URS	Chevron Pipe Line Company Project No. 26815217	Hydrocarbon Concentrations at Wellheads Chevron Sunol Pipeline	Figure 3

X:\x_env_waste\Chevron Pipe Line Company\Sunol Spill\Remediation\SVE\SVE Starup Nov 2006\Figures\Fig 3.doc



URS	Chevron Pipe Line Company Project No. 26815217	**Cumulative Hydrocarbon Mass Removal at Wellheads** **Chevron Sunol Pipeline**	**Figure 4**

X:\x_env_waste\Chevron Pipe Line Company\Sunol Spill\Remediation\SVE\SVE Starup Nov 2006\Figures\Fig 4.doc

Appendix A
ACEH Letters
June 5, 2006, July 14, 2006, and October 20, 2006

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

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

June 5, 2006

Mr. Jeff Cosgray
Chevron Pipe Line Company
4800 Fournace Place
Bellaire, TX 77401-2324

Subject: SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA

Dear Mr. Cosgray:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site and the document entitled, "Additional Subsurface Investigation Report, Chevron Sunol Pipeline Release, Sunol, California," dated May 22, 2006. The report was prepared on your behalf by URS Corporation and discusses site investigation activities conducted from January 17 through January 31, 2006. The report presents recommendations regarding the operation of the soil vapor extraction (SVE) system, quarterly monitoring, and free product recovery. In correspondence dated March 14, 2006, ACEH requested that the SVE system be expanded into the area downslope from the release. Logistical issues related to the steepness of the hillside have prevented the installation of SVE wells on the hillside. The issues related to possible expansion of the SVE system were discussed during a meeting conducted on May 26, 2006 between Jeff Cosgray (Chevron Pipe Line Company), Joe Morgan (URS), Greg White URS), Angela Liang (URS), Ariu Levi (ACEH), Donna Drogos (ACEH), and myself. ACEH believes that continued operation of the SVE system without the addition of SVE wells on the hillside would not address a significant long-term source of contamination at the site. Based on discussions during the May 26, 2006 meeting, Chevron and URS will conduct further evaluation of the feasibility of potential technologies that will allow the installation of SVE wells on the slope.

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

1. **Gravel Layer as Preferential Pathway.** ACEH concurs with the finding in Section 4 of the "Additional Subsurface Investigation Report," that the gravel zone near the top of the bedrock on the hillside and apparently continuing to the west across Calaveras Road, is a preferential pathway. The gravel zone appears to be a preferential pathway for contaminant movement from perched zones beneath the hillside to the shallow gravel zone west of Calaveras Road where free product has been observed intermittently in well MW-1. Monitoring wells MW-5 through MW-7, which were planned to monitor the water table at the top of the bedrock, were screened entirely within sandstone bedrock 10 to 15 feet below the gravel zone and therefore do not monitor this preferential pathway. Although groundwater was not encountered in the gravel layer during installation of wells MW-5 through MW-7, the gravel layer appears to act as a preferential pathway for groundwater and contaminant migration, at least seasonally. In

order to monitor potential contaminant migration within the gravel layer, we request that monitoring wells be installed within the gravel layer at the base of the hillside east of Calaveras Road. Please present plans for well installation in the Work Plan requested below. Please also consider the potential for the fault/unconformity identified along Calaveras Road to affect groundwater and contaminant movement.

2. **Groundwater and Contaminant Migration West of Calaveras Road.** The "Additional Subsurface Investigation Report," concludes that groundwater contamination does not extend as far west as MW-3 and MW-4. We concur that wells MW-3 and MW-4 appear to be properly installed to monitor groundwater contamination at the top of the bedrock and that groundwater contamination does not appear to extend west to these wells. A bedrock surface that slopes to the east and northeast in this area is presumed to be influencing groundwater movement within the unconfined water-bearing zone west of Calaveras Road (Figure 10). Therefore, we request that you install a minimum of one additional monitoring well in a location northeast of MW-1 on the west side of Calaveras Road to monitor contaminant movement along the sloping bedrock surface.

3. **Cross Section D-D' on Figure 7.** On cross section D-D', please correct the length of the screen interval for MW-5 to 10 feet rather than 25 feet in future reports. In addition, please correct the label in the upper left corner to D rather than D'.

4. **Quarterly Groundwater Monitoring.** Please collect groundwater samples from all monitoring wells and the unnamed creek on a quarterly basis. We concur with the proposed analyses for total petroleum hydrocarbons as gasoline and benzene, toluene, ethylbenzene, and xylenes.

5. **Expansion of the SVE System.** We have no objection to continued operation of the existing SVE system. However, as we stated in our March 14, 2006 correspondence, the area downslope of the release has been significantly affected by the release and the SVE system must be expanded to remove the mass of hydrocarbons downslope from the release. We previously requested a Work Plan by May 2, 2006 to install additional SVE wells downslope from the release and continue operations of the SVE system. In follow-up to the discussions during our May 26, 2006 meeting, we now request that you submit a proposal to expand the SVE system by July 26, 2006.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **July 14, 2006** – Proposal for SVE System Expansion and Operation
- **August 11, 2006** – Work Plan for Additional Subsurface Investigation
- **August 15, 2006** – Quarterly Monitoring Report for the Second Quarter 2006

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the

responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

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

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

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

AGENCY OVERSIGHT

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

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Joe Morgan III, URS Corporation, 1333 Broadway, Suite 800, Oakland, CA 94612

Joe Naras, San Francisco Public Utilities Commission, Natural Resources Division, 1657 Rollins Road, Burlingame, CA 94010

Matt Katen, QIC 80201, Zone 7 Water Agency, 100 North Canyons Parkway, Livermore, CA 94551

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

)UNTY
CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

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

July 14, 2006

Mr. Jeff Cosgray
Chevron Pipe Line Company
4800 Fournace Place
Bellaire, TX 77401-2324

Subject: SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA

Dear Mr. Cosgray:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site and the document entitled, "Response to ACEH June 5, 2006 Letter – Technical comment 1. Gravel layer as Preferential Pathway," dated July 10, 2006. The correspondence was prepared on your behalf by URS Corporation and recommends that monitoring wells not be installed within the shallow gravel zone along Calaveras Road. The technical comments below provide our responses to the correspondence.

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

1. **Hypothesis Regarding Groundwater in the Gravel Layer.** The URS correspondence concludes that since groundwater was not observed at the time of drilling in January that groundwater would not be present in the future to collect a representative sample and goes on to conclude that "groundwater appears to be present for very limited periods of time, if at all." The two hypotheses that groundwater is: 1) present at very limited times or 2) not at all, could be tested by the installation of a well in the gravel layer. If groundwater is observed in the gravel layer for short periods during the year, the hypothesis that groundwater is present at very limited times would be confirmed and the mass of contaminants being transported through the migration pathway could be roughly estimated based on the duration of flow and concentration of hydrocarbons in the groundwater. If groundwater is not observed at any time in a well in the gravel layer, the hypothesis that groundwater is not present "at all" would be confirmed. If groundwater never moved through the gravel layer, the observed impact to the gravel layer is likely the result of free phase product flow that affected approximately three feet of the gravel layer above the bedrock (as observed in boring MW-5). This information would also be useful in understanding past and future contaminant migration.

2. **Benefit from Monitoring Groundwater East of Well MW-1.** The URS correspondence states, "Because the locations of the requested borings/wells are between the source area and MW-1 (located approximately 80 feet to the west), it is unclear if any benefit would be gained in monitoring a zone that lies in the middle of the impacted area." This statement appears to be contradictory to widely accepted guidance documents on placement of

monitoring wells at hazardous waste sites, which recommend the placement of wells within a plume or directly downgradient from a source to identify the distribution of contaminant concentrations and monitor contaminant flux from the source area. Well MW-1 is approximately 185 feet west of the source and on the opposite side of a postulated fault from the source. The proposal to monitor the source using only data from well MW-1 is unacceptable.

3. **Requested Groundwater Monitoring Well Installation for Gravel Layer.** We request that you install a minimum of one well (adjacent to MW-5) to monitor the gravel layer above bedrock to address technical comments 1 and 2 or propose an alternative approach to monitor and estimate contaminant flux from the source area to groundwater using sampling locations in addition to well MW-1. Please note the additional request in our June 8, 2006 correspondence to monitor contaminant migration in groundwater along the sloping bedrock surface west of Calaveras Road. Please present your proposals in the Work Plan requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **July 26, 2006** – Proposal for SVE System Expansion and Operation
- **August 11, 2006** – Work Plan for Additional Subsurface Investigation
- **August 15, 2006** – Quarterly Monitoring Report for the Second Quarter 2006

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

ELECTRONIC SUBMITTAL OF REPORTS

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

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locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

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

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

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

AGENCY OVERSIGHT

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

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Joe Morgan III, URS Corporation, 1333 Broadway, Suite 800, Oakland, CA 94612

Joe Naras, San Francisco Public Utilities Commission, Natural Resources Division, 1657 Rollins Road, Burlingame, CA 94010

Matt Katen, QIC 80201, Zone 7 Water Agency, 100 North Canyons Parkway, Livermore, CA 94551

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

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

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

October 20, 2006

Mr. Jeff Cosgray
Chevron Pipe Line Company
4800 Fournace Place
Bellaire, TX 77401-2324

Subject: SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA

Dear Mr. Cosgray:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site and the document entitled, "Update on Monitoring Well Installation and SVE System Expansion and Operation, Chevron Sunol Pipeline, Sunol, California," dated October 16, 2006. The correspondence was prepared on your behalf by URS Corporation and provides information on the installation of two groundwater monitoring wells and proposed installation of five soil vapor extraction (SVE) wells. Thank you for providing the status update. Groundwater monitoring wells MW-8 and MW-9 were installed in August 2006 and sampling of the two additional wells will be incorporated into the quarterly monitoring events.

The correspondence describes in detail the efforts that have been made to install SVE wells on the steep hillside near the release where the highest PID readings were observed in the subsurface. URS concludes that drilling equipment cannot be used to install the SVE wells safely and proposes making minor modifications to the hillside and installing the SVE wells using a hand auger. We have no objection to the installation of SVE wells using a hand auger provided that the borings for the SVE wells are a minimum of 4 inches in diameter and the borings are installed to a sufficient depth to achieve effective contaminant removal and avoid short circuiting with the surface.

Based upon your request for a schedule extension and the time required to review and assess the various methods for SVE well installation, the schedule for submittal of the SVE System Start-up Report is extended to December 29, 2006. We request that you complete the proposed work and send us the reports described below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **December 4, 2006** – Groundwater Monitoring Well Installation and Quarterly Monitoring Report for the Third Quarter 2006

- **December 29, 2006** – SVE System Start-up Report

- **60 days following the end of each quarter** – Quarterly Monitoring Reports

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

ELECTRONIC SUBMITTAL OF REPORTS

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PERJURY STATEMENT

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PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

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AGENCY OVERSIGHT

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If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Colleen Winey, QIC 80201
Zone 7 Water Agency
100 North Canyons Parkway,
Livermore, CA 94551

Joe Morgan III
URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612

Joe Naras
San Francisco Public Utilities Commission
Natural Resources Division
1657 Rollins Road
Burlingame, CA 94010

Craig Freeman
San Francisco Public Utilities Commission
Environmental and Regulatory Compliance Division
1145 Market Street, Suite 500
San Francisco, CA 94103

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

Appendix B
Permits

County of Alameda Public Works Agency: Roadway Encroachment Permit

Work Order Number:* 80001
*This WO is ___ / is not ✓ open for charges

Permit Number: R05LD6800
Permit Issuance Date: 8-24-05
Permit Expiration Date: 8-23-06

Extension 8/23/07

COUNTY OF ALAMEDA PUBLIC WORKS AGENCY
ROADWAY ENCROACHMENT PERMIT

This Permit is issued in accordance with Chapter 12.08 of the Alameda County General Ordinance Code

Name & Address of Property Owner:
San Francisco Public Utilities Commission
525 Paloma Way, P.O. Box 5390
Phone Number: (925) 862-2233

Name & Address of Contractor:
WLS Corporation
1333 Broadway, Ste 800
Oakland, CA 94612
Phone Number: (510) 893-3600

Job Site Address:
Milepost 2.7 on Calaveras Rd.
Alameda County

(This statement to be completed by the Agency)
This permit is issued to the owner ___ / contractor ✓; if "owner" is checked, he/she is ___ / is not ___ exempt from the requirement that work in the roadway be performed by a licensed contractor.

The Applicant intends to perform the following work scope:
Soil and groundwater investigation along Calaveras Rd. with lane closure and traffic control.

Licensed Contractor Declaration:
I hereby affirm, under penalty of perjury, that I hold the following contractor's license, which is in full force and effect, under the applicable provisions of the State Business and Professions Code.
License Class and No.
Contractor's Signature:

Worker's Compensation Insurance Declaration:
I hereby affirm, under penalty of perjury, that I will, during the performance of any and all work authorized by this permit, satisfy the requirements of the State Labor Code with regard to Worker's Compensation Insurance, as declared below:
___ I will maintain a certificate of consent to self-insure.
___ I will maintain the following insurance policy:
Carrier's Name and Policy No.:
___ I will not employ any person in any manner so as to become subject to the worker's compensation laws of the State.
Owner's/Contractor's Signature:

All work and/or access shall be performed in accordance with the requirements of Chapter 12.08 and, unless otherwise specified below, shall be fully compliant with each of the terms and conditions of the attached General Provisions.

TOM PINGOT

CALL THIS NUMBER FOR INSPECTIONS: 670 5979

Bond Information:

BY: _____ Alameda County

Insp. Fee ✓ or Deposit ___: $74
250 ⁻⁻

Work Completed (Date): _____

Inspector:

I certify that the information that I have entered into this permit application is correct, and I agree to comply with all of the terms and conditions and rules/requirements of the issued Permit.

Shawn Plant Agent for WLS
Signature of Applicant

8/23/05
Date

THIS PERMIT IS INCOMPLETE WITHOUT THE ATTACHED GENERAL PROVISIONS

Zone 7 Alameda County Flood Control and Water Conservation District: Drilling Permit

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

100 NORTH CANYONS PARKWAY, LIVERMORE, CA 94551 PHONE (925) 454-5000

August 24, 2006

Mr. Greg White
URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612

Dear Mr. White:

Enclosed is drilling permit 26145 for a monitoring well construction project at Calaveras Road (milepost 2.7) near Sunol for Chevron Pipeline Company. Drilling permit applications for future projects can be downloaded from www.zone7water.com.

Please note that permit conditions A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, permit number and any analysis of the soil and water samples. Please submit the original of your completion report. We will forward your submittal to the California Department of Water Resources.

If you have any questions, please contact me at extension 5056 or Matt Katen at extension 5071.

Sincerely,

Wyman Hong

Wyman Hong
Water Resources Specialist

Enc.

P:\WRE\GPOs\GPO1\GPO1.MONITORING.wpd

ZONE 7 WATER AGENCY

100 NORTH CANYONS PARKWAY, LIVERMORE, CALIFORNIA 94551 VOICE (925) 454-5000 FAX (925) 454-5728

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Milepost 2.7 Calaveras Road
Sunol, California - PUC Property

California Coordinates Source _____ Accuracy± _____ ft.
CCN _____ ft. CCE _____ ft.
APN _____

37°, 33', 02" N, 121°, 51', 26" W

CLIENT
Name Chevron Pipeline Company
Address 4800 Fournace Place, E320C Phone _____
City Bellaire, TX Zip 77401

APPLICANT
Name URS Corporation
Greg White Fax 510-874-3268
Address 1333 Broadway Suite 800 Phone 510-874-3347
City Oakland Zip 94612

TYPE OF PROJECT:

Well Construction	☒	Geotechnical Investigation	☐
Well Destruction	☐	Contamination Investigation	☐
Cathodic Protection	☐	Other _____	☐

PROPOSED WELL USE:

Domestic	☐	Irrigation	☐
Municipal	☐	Remediation - S	☒
Industrial	☐	Groundwater Monitoring - 1	☒
Dewatering	☐	Other _____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Hollow Stem Auger	☒
Cable Tool	☐	Direct Push	☐	Other Solid Flights	☒

DRILLING COMPANY Cleerheart Drilling & Gregg Drilling
DRILLER'S LICENSE NO. C-57 780357 & C-57 485165

WELL SPECIFICATIONS:
Drill Hole Diameter 6-10 in. Maximum Depth 45 ft.
Casing Diameter 2-4 in. Number 8
Surface Seal Depth ≥10 ft.

SOIL BORINGS:
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE ~~July 24, 2006~~ August 15 2006
ESTIMATED COMPLETION DATE ~~August 31, 2006~~ November 3, 2006

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE _____ Date 8/9/06

ATTACH SITE PLAN OR SKETCH

FOR OFFICE USE

PERMIT NUMBER 26145
WELL NUMBER _____
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal diameter is four inches greater than the well casing diameter.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.
3. Grout placed by tremie.
4. An access port at least 0.5 inches in diameter is required on the wellhead for water level measurements.
5. A sample port is required on the discharge pipe near the wellhead.

(C.) GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal diameter is four inches greater than the well or piezometer casing diameter.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.
3. Grout placed by tremie.

D. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION. See attached.

G. SPECIAL CONDITIONS. Submit to Zone 7 within 60 days after completion of permitted work the well installation report **including all soil and water laboratory analysis results**.

Approved Wyman Hong Date 8/23/06
Wyman Hong

Appendix C
Site Photographs

Photo 1 Facing southeast
Pathway & Stairs to SVE-6 and SVE-7

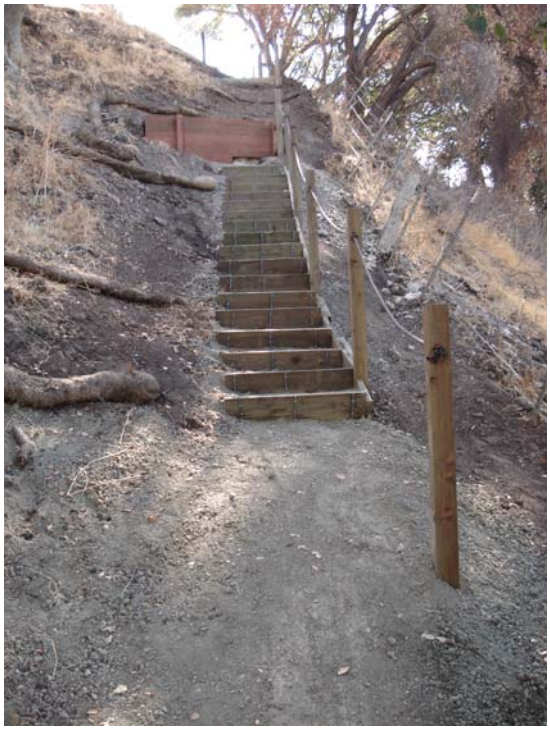

Photo 2 Facing southeast
Stairway to SVE-8

Photo 3 Facing south
Pathway to SVE-9

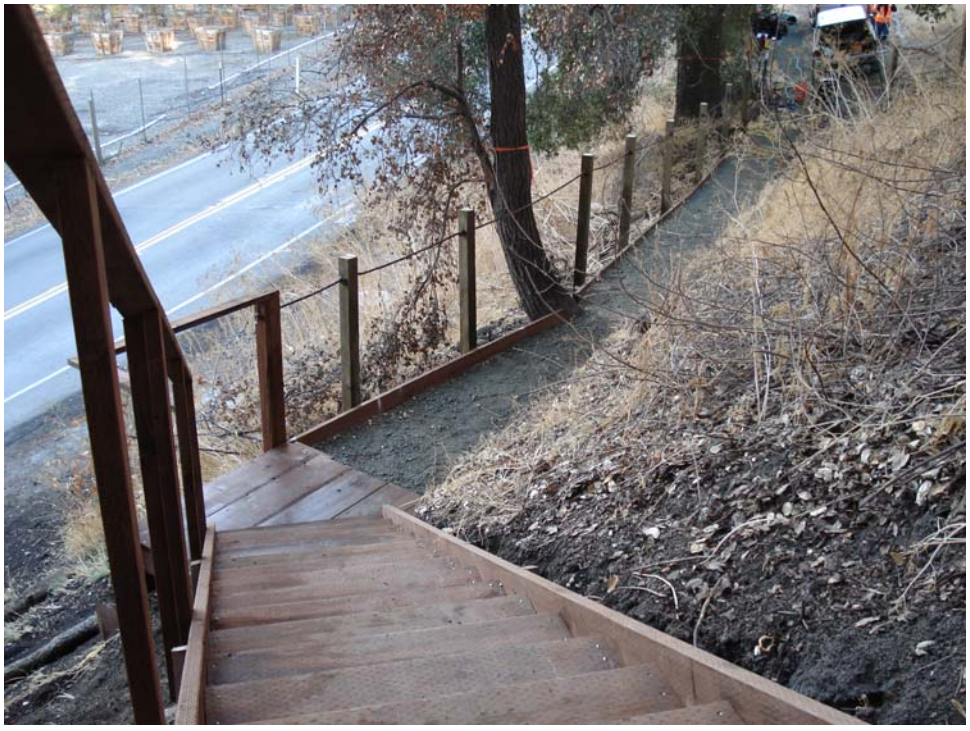

Photo 4 Facing northwest
Stairway, Platform, and Pathway to SVE-9

Photo 5 Facing southeast from across Calaveras Road
Stairway and Platform to SVE-9

Photo 6 Facing southeast
SVE Treatment System

Photo 7 Facing south
Piping Manifold, SVE-1D through SVE-5

Photo 8 Facing south
Piping Manifold, SVE-6 through SVE-9

Appendix D
Boring Logs – Additional SVE Well Installation

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING & WELL CONSTRUCTION

Borehole ID: SVE-5

Total Depth: 40 ft bgs

PROJECT INFORMATION	DRILLING INFORMATION
Client: Chevron Pipeline	**Drilling Company:** Resonant Sonic International
Site Location: Milepost 2.7 Calaveras Road, Sunol, California	**Driller:** George Morales
Project Manager: Joe Morgan	**Type of Drilling Rig:** Geoprobe 6620DT
RG: Leonard Niles	**Drilling Method:** Hollow Stem Auger
Geologist: Gregory White	**Sampling Method:** Blind Drilling - No Sampling
Job Number: 26815217.02400	**Date(s) Drilled:** November 9-10, 2006

BORING & WELL INFORMATION

Groundwater Depth: Not Encountered	**Boring Location:** Above steep hillside east of Calaveras Road
Air Knife or Hand Auger Depth:	**Boring Diameter:** 8 inches, 4 inch pilot from 20'
Coordinates: **X** 6168320.76 **Y** 2025747.84 **Z** 396.62 (TOC)	**Boring Type:** Soil Vapor Extraction Well

Depth (ft bgs)	USCS	Symbol	Lithologic Description	% Recovery	PID Reading	Well Construction Details	Drilling Comments
0							09:20 (11/9/06) Begin drilling. Ambient PID: 0.0 ppm
2						+0.4-29.6 ft bgs: 2" ID Sch. 40 PVC riser.	
4							
6			BLIND DRILL WITH HSA RIG FROM 0-20 FT BGS. (SEE LOG OF CP-SB-20 FOR LITHOLOGY)			0-27 ft bgs: 5% bentonite-cement grout.	
8							
10							
12							
14							
16							09:40 Auger grinding on gravel/coarse sediment at 19 ft bgs.
18							11:15 Refusal at `20 ft bgs in tight silt.
20							08:50 (11/10/06) Begin drilling pilot hole from 20 ft bgs with 4" SSA.
22							

URS

LOG OF BORING

Borehole ID: SVE-5

Depth (ft bgs)	USCS	Symbol	Lithologic Description	% Recovery	PID Reading	Well Construction Details	Comments
24							
26							
28						27-28.5 ft bgs: hydrated bentonite chips.	
30							
32							
34							
36						29.6-39.6 ft bgs: 2" ID PVC 0.02" slot screen.	09:10 Reach 40 ft bgs. Pulled augers and advanced 8" HSAs to 40 ft bgs.
38						28.5-40 ft bgs: #3 RMC sand.	15:45 End of boring at 40 ft bgs.
40			**END OF BORING AT 40 FT BGS**			39.6-40 ft bgs: 2" ID PVC silt trap.	
42							

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING & WELL CONSTRUCTION

Borehole ID: SVE-6

Total Depth: 14 ft bgs

PROJECT INFORMATION	DRILLING INFORMATION
Client: Chevron Pipeline	**Drilling Company:** Resonant Sonic International
Site Location: Milepost 2.7 Calaveras Road, Sunol, California	**Driller:** George and Michael
Project Manager: Joe Morgan	**Type of Drilling Rig:**
RG: Leonard Niles	**Drilling Method:** Hand Auger
Geologist: Gregory White	**Sampling Method:** Auger Cuttings
Job Number: 26815217.02400	**Date(s) Drilled:** November 7, 2006

BORING & WELL INFORMATION

Groundwater Depth: Not Encountered	**Boring Location:** Above steep hillside east of Calaveras Road
Air Knife or Hand Auger Depth:	**Boring Diameter:** 4"
Coordinates: **X** 6168297.14 **Y** 2025747.97 **Z** 385.49 (TOC)	**Boring Type:** Soil Vapor Extraction Well

Depth (ft bgs)	USCS	Lithologic Description	% Recovery	PID Reading	Well Construction Details	Drilling Comments
0						
2	ML	SANDY SILT: Very dark grayish brown (2.5YR3/2) moist, 85% soft, low plasticity silt, 15% fine sand, some roots and organic material		2.1		08:10 Begin hand augering. Ambient PID: 0.0 ppm
		SANDY SILT: Olive brown (2.5YR4/3) moist, 80% soft, low- to non-plasticity silt, 20% fine sand, trace organic material		1.2		
4		SANDY SILT: Olive brown (2.5YR4/3) moist, 55% soft, low-plasticity silt, 45% fine sand, trace organic material		0.4	+0.98-9 ft bgs: 1" ID PVC riser	09:15 Collect SVE-6-3.2
				0.2		
6	SM	SILTY SAND: Olive brown (2.5YR4/3) moist, loose fine sand, 45% low-plasticity silt			0-7 ft bgs: bentonite/ Portland cement grout	
8					7-8 ft bgs: bentonite chips	
	ML	SANDY SILT: Olive brown (2.5YR4/3) moist, 60% soft, non-plastic silt, 35% fine sand, trace clay, trace caliche nodules		0.9		
10		Same as above, but 75% silt, 20% sand, 5% clay		13.2	8-14 ft bgs: #3 sand filter pack	09:30 Collect SVE-6-10
12		SILT: Olive brown (2.5YR4/3) dry, 95% non-plastic silt, trace fine sand and clay, very slight sweet odor		9.1	9-14 ft bgs: 1" ID (2" filter prepack) PVC 0.01" slot screen	09:50 Collect SVE-6-14
14				54.8		09:45 End of boring at 14 ft bgs

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING & WELL CONSTRUCTION

Borehole ID: SVE-7

Total Depth: 9.7 ft bgs

PROJECT INFORMATION	DRILLING INFORMATION
Client: Chevron Pipeline	**Drilling Company:** Resonant Sonic International
Site Location: Milepost 2.7 Calaveras Road, Sunol, California	**Driller:** George and Michael
Project Manager: Joe Morgan	**Type of Drilling Rig:**
RG: Leonard Niles	**Drilling Method:** Hand Auger
Geologist: Gregory White	**Sampling Method:** Auger Cuttings
Job Number: 26815217.02400	**Date(s) Drilled:** November 7, 2006

BORING & WELL INFORMATION	
Groundwater Depth: Not Encountered	**Boring Location:** Above steep hillside east of Calaveras Road
Air Knife or Hand Auger Depth:	**Boring Diameter:** 4"
Coordinates: **X** 6168313.98 **Y** 2025831.92 **Z** 376.35 (TOC)	**Boring Type:** Soil Vapor Extraction Well

Depth (ft bgs)	USCS	Symbol	Lithologic Description	% Recovery	PID Reading	Well Construction Details	Drilling Comments
0	ML		SANDY SILT: Very dark grayish brown (2.5YR3/2) moist, 50% soft, low plasticity silt, 35% fine sand, some roots and organic material, trace clay, strong odor		1046	+0.94-4.7 ft bgs: 1" ID PVC riser 0-3.5 ft bgs: bentonite/ Portland cement grout	11:30 Begin hand augering. Ambient PID: 1.7 ppm Noticable odor
2							
4			SANDY SILT: Olive gray (5Y4/2) moist, 55% soft, low-plasticity silt, 45% fine sand, trace clay and organic material, strong odor		950	3.5-4.2 ft bgs: hydrated bentonite chips	11:45 Collect SVE-7-1
6	SM		SILTY SAND: Olive gray (5Y4/2) moist, 60% fine to medium sand (fine sand dominates), 40% low-plasticity silt, trace clay, strong odor		843	4.7-9.7 ft bgs: 1" ID (2" filter prepack) PVC 0.01" slot screen	12:00 Collect SVE-7-8
8			Increased sand at 8 ft; 70% fine to medium sand, 30% silt		875		12:50 End of boring at 9.7 ft bgs. Refusal on gravel
10	GM		SILTY SANDY GRAVEL: Gray, dark brown, and black, moist, fine to coarse rounded to well rounded gravels and cobbles, olive grey (5Y4/2) silty sandy matrix, strong odor			4.2-9.7 ft bgs: #3 sand pack	13:40 Install well
12			**END OF BORING AT 9.7 FT BGS**				

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING & WELL CONSTRUCTION

Borehole ID: SVE-8

Total Depth: 7 ft bgs

PROJECT INFORMATION	DRILLING INFORMATION
Client: Chevron Pipeline	**Drilling Company:** Resonant Sonic International
Site Location: Milepost 2.7 Calaveras Road, Sunol, California	**Driller:** George and Michael
Project Manager: Joe Morgan	**Type of Drilling Rig:**
RG: Leonard Niles	**Drilling Method:** Hand Auger
Geologist: Gregory White	**Sampling Method:** Auger Cuttings
Job Number: 26815217.02400	**Date(s) Drilled:** November 8, 2006

BORING & WELL INFORMATION

Groundwater Depth: 3.5 ft bgs, 7 ft bgs	**Boring Location:** Above steep hillside east of Calaveras Road
Air Knife or Hand Auger Depth:	**Boring Diameter:** 4"
Coordinates: **X** 6168277.22 **Y** 2025792.96 **Z** 362.30 (TOC)	**Boring Type:** Soil Vapor Extraction Well

Depth (ft bgs)	USCS	Symbol	Lithologic Description	% Recovery	PID Reading	Well Construction Details	Drilling Comments
0	GM		SILTY SANDY GRAVEL: Pale olive, olive, and black (5Y6/3,4/3,2/2) silt and medium sand, white, black, dark brown, and red, fine to coarse rounded to subangular gravel and cobbles (cobbles reach 10" in diameter), trace clay, strong HC odor, product coating below 2.5 ft bgs, moist to wet below 3.5 ft bgs		274 698 606	+0.97-2 ft bgs: 1" ID PVC riser 0-1.25 ft bgs: bentonite/ Portland grout 1.25-1.75 ft bgs: hydrated bentonite chips 2-7 ft bgs: 1" ID (2" filter prepack) 0.01" slot PVC screen 1.5-7 ft bgs: #3 sand pack	08:00 Begin hand augering. Ambient PID: 0.3 ppm 08:40 Collect SVE-8-2.5 10:45 Encountered perched groundwater at 3.5 ft bgs 11:00 Collect SVE-8-4 11:15 End of boring at 7 ft bgs. Perched zone encountered at 7 ft bgs. 4" of water in boring after 15 min. 11:30 Collect SVE-8-6.5
2							
4	SM		SILTY SAND: Olive (5Y5/3) moist, 55% fine to medium sand, 45% non-plastic silt, faint HC odor		449 308		
6	ML		SANDY SILT: Olive gray (5Y5/2) moist, 60% low- to non-plastic silt, 40% fine to medium sand, trace clay, no noticable HC odor		90.7		
8			Same as above but dark gray (5Y4/1), moist to wet, 55% silt, 45% fine sand at 7 ft bgs		17.4		
10			**END OF BORING AT 7 FT BGS**				
12							

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING & WELL CONSTRUCTION

Borehole ID: SVE-9

Total Depth: 7 ft bgs

PROJECT INFORMATION	DRILLING INFORMATION
Client: Chevron Pipeline	**Drilling Company:** Resonant Sonic International
Site Location: Milepost 2.7 Calaveras Road, Sunol, California	**Driller:** George Morales
Project Manager: Joe Morgan	**Type of Drilling Rig:**
RG: Leonard Niles	**Drilling Method:** Hand Auger
Geologist: Gregory White	**Sampling Method:** Auger Cuttings
Job Number: 26815217.02400	**Date(s) Drilled:** November 8-9, 2006

BORING & WELL INFORMATION	
Groundwater Depth: Not Encountered	**Boring Location:** Above steep hillside east of Calaveras Road
Air Knife or Hand Auger Depth:	**Boring Diameter:** 4"
Coordinates: **X** 6168258.23 **Y** 2025741.67 **Z** 356.80 (TOC)	**Boring Type:** Soil Vapor Extraction Well

Depth (ft bgs)	USCS	Symbol	Lithologic Description	% Recovery	PID Reading	Well Construction Details	Drilling Comments
0							
2	ML		SANDY SILT: Olive brown (2.5YR4/3), moist, 70% soft, medium plasticity silt, 30% fine to medium sand, trace clay, strong sweet odor		898	+1.5-2.2 ft bgs: 1" ID PVC riser 0-1.2 ft bgs: bentonite/ Portland cement grout 1.2-1.7 ft bgs: hydrated bentonite seal 2.2-7.2 ft bgs: 1" ID (2" filter prepack) 0.01" slot PVC screen 1.7-7.2 ft bgs: #3 sand pack	11:30 (11/8/06) Begin hand augering. Ambient PID: 2.2 ppm
4	SM		SILTY SAND: Olive (5Y5/4) moist, 55% fine to medium sand, 45% low-plasticity silt, very strong odor		1097		12:00 Collect SVE-9-4
6	GM		Large cobble encountered at 7.2 ft bgs; refusal **END OF BORING AT 7.2 FT BGS**				12:30 Refusal with hand auger at 6 ft bgs 13:10 (11/9/06) Step 1' to west and begin digging new boring. End of boring when large cobble encountered at 7.2 ft bgs
8							
10							
12							

Appendix E
Laboratory Analytical Results

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

713-432-3335

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1013571. Samples arrived at the laboratory on Thursday, November 09, 2006. The PO# for this group is 0015010091 and the release number is COSGRAY.

Client Description			Lancaster Labs Number
SVE-6-3.2	Grab	Soil	4911664
SVE-6-10	Grab	Soil	4911665
SVE-6-14	Grab	Soil	4911666
SVE-7-1	Grab	Soil	4911667
SVE-7-8	Grab	Soil	4911668

ELECTRONIC COPY TO	URS	Attn: Angela Liang
ELECTRONIC COPY TO	URS	Attn: Joe Morgan
ELECTRONIC COPY TO	URS	Attn: Greg White

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Marla S. Lord
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. SW 4911664

SVE-6-3.2 Grab Soil
NA URSO
Sunol Pipeline SL0600100443 SVE-6
Collected:11/07/2006 09:15 by GW Account Number: 11875

Submitted: 11/09/2006 09:35
Reported: 11/21/2006 at 12:47
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

S6-32

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	2.2	0.9	mg/kg	23.41
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.022	mg/kg	44.56
05466	Toluene	108-88-3	N.D.	0.045	mg/kg	44.56
05474	Ethylbenzene	100-41-4	N.D.	0.045	mg/kg	44.56
06301	Xylene (Total)	1330-20-7	N.D.	0.045	mg/kg	44.56

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/10/2006 18:30	Linda C Pape	23.41
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/15/2006 18:51	Angela D Sneeringer	44.56
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/09/2006 18:05	Lisa J Cooke	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/09/2006 18:05	Lisa J Cooke	n.a.

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. SW 4911665

SVE-6-10 **Grab** **Soil**
NA **URSO**
Sunol Pipeline **SL0600100443 SVE-6**
Collected:11/07/2006 09:30 by GW Account Number: 11875

Submitted: 11/09/2006 09:35
Reported: 11/21/2006 at 12:47
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

S6-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	N.D.	0.9	mg/kg	23.23
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.024	mg/kg	47.89
05466	Toluene	108-88-3	N.D.	0.048	mg/kg	47.89
05474	Ethylbenzene	100-41-4	N.D.	0.048	mg/kg	47.89
06301	Xylene (Total)	1330-20-7	N.D.	0.048	mg/kg	47.89

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/10/2006 14:49	Linda C Pape	23.23
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/15/2006 19:14	Angela D Sneeringer	47.89
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/09/2006 18:07	Lisa J Cooke	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/09/2006 18:07	Lisa J Cooke	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4911666

SVE-6-14 **Grab** **Soil**
NA **URSO**
Sunol Pipeline **SL0600100443 SVE-6**
Collected:11/07/2006 09:50 by GW Account Number: 11875

Submitted: 11/09/2006 09:35
Reported: 11/21/2006 at 12:47
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

S6-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	N.D.	1.	mg/kg	24.18
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.026	mg/kg	51.02
05466	Toluene	108-88-3	N.D.	0.051	mg/kg	51.02
05474	Ethylbenzene	100-41-4	N.D.	0.051	mg/kg	51.02
06301	Xylene (Total)	1330-20-7	N.D.	0.051	mg/kg	51.02

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/10/2006 15:29	Linda C Pape	24.18
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/15/2006 19:38	Angela D Sneeringer	51.02
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/09/2006 18:08	Lisa J Cooke	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/09/2006 18:08	Lisa J Cooke	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4911667

SVE-7-1 **Grab** **Soil**
NA **URSO**
Sunol Pipeline **SL0600100443 SVE-7**
Collected:11/07/2006 11:45 by GW Account Number: 11875

Submitted: 11/09/2006 09:35
Reported: 11/21/2006 at 12:47
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

S7-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	4,800.	360.	mg/kg	8960.57
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.23	mg/kg	450.45
05466	Toluene	108-88-3	1.7	0.45	mg/kg	450.45
05474	Ethylbenzene	100-41-4	N.D.	0.45	mg/kg	450.45
06301	Xylene (Total)	1330-20-7	210.	2.3	mg/kg	2252.25

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/10/2006 20:36	Linda C Pape	8960.57
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/15/2006 20:24	Angela D Sneeringer	450.45
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/16/2006 12:47	Stephanie A Selis	2252.25
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/09/2006 18:10	Lisa J Cooke	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/09/2006 18:10	Lisa J Cooke	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4911668

SVE-7-8 **Grab** **Soil**
NA **URSO**
Sunol Pipeline **SL0600100443 SVE-7**
Collected:11/07/2006 12:00 by GW

Account Number: 11875

Submitted: 11/09/2006 09:35
Reported: 11/21/2006 at 12:47
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

S7-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	17,000.	1,800.	mg/kg	45537.34
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	26.	2.3	mg/kg	4638.22
05466	Toluene	108-88-3	1,100.	4.6	mg/kg	4638.22
05474	Ethylbenzene	100-41-4	420.	4.6	mg/kg	4638.22
06301	Xylene (Total)	1330-20-7	3,800.	9.3	mg/kg	9276.44

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/10/2006 21:16	Linda C Pape	45537.34
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/17/2006 01:00	Angela D Sneeringer	4638.22
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/17/2006 22:42	Roy R Mellott Jr	9276.44
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/09/2006 18:12	Lisa J Cooke	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/09/2006 18:12	Lisa J Cooke	n.a.

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Analysis Report

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1013571
Reported: 11/21/06 at 12:47 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06315A02A	Sample number(s): 4911664-4911668							
TPH-GRO - Soils	N.D.	1.0	mg/kg	84		67-119		
Batch number: R063192AB	Sample number(s): 4911664-4911667							
Benzene	N.D.	25.	ug/kg	104	102	77-119	2	30
Toluene	N.D.	50.	ug/kg	105	103	81-116	2	30
Ethylbenzene	N.D.	50.	ug/kg	108	106	82-115	2	30
Xylene (Total)	N.D.	50.	ug/kg	107	105	82-117	2	30
Batch number: R063201AA	Sample number(s): 4911667							
Xylene (Total)	N.D.	50.	ug/kg	107	108	82-117	1	30
Batch number: R063201AB	Sample number(s): 4911668							
Benzene	N.D.	25.	ug/kg	96	96	77-119	0	30
Toluene	N.D.	50.	ug/kg	104	104	81-116	0	30
Ethylbenzene	N.D.	50.	ug/kg	108	108	82-115	1	30
Batch number: R063201AC	Sample number(s): 4911668							
Xylene (Total)	N.D.	50.	ug/kg	107	108	82-117	1	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 06315A02A	Sample number(s): 4911664-4911668 UNSPK: P910513								
TPH-GRO - Soils	102	95	39-118	7	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO - Soils
Batch number: 06315A02A

	Trifluorotoluene-F
4911664	110
4911665	94
4911666	90

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1013571
Reported: 11/21/06 at 12:47 PM

Surrogate Quality Control

4911667	7*
4911668	15*
Blank	97
LCS	97
MS	99
MSD	93
Limits:	61-122

Analysis Name: BTEX+MTBE by 8260B
Batch number: R063192AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4911664	91	85	88	79
4911665	88	83	87	79
4911666	92	89	93	83
4911667	84	77	102	101
Blank	92	89	91	81
LCS	90	86	93	88
LCSD	90	86	92	86
Limits:	71-114	70-109	70-123	70-111

Analysis Name: 8260 Master Scan (soil)
Batch number: R063201AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
Blank	88	86	96	88
LCS	85	84	93	89
LCSD	85	81	93	87
Limits:	71-114	70-109	70-123	70-111

Analysis Name: BTEX+MTBE by 8260B
Batch number: R063201AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4911668	76	0*	189*	163*
Blank	86	82	91	83
LCS	85	84	93	89
LCSD	85	81	93	87
Limits:	71-114	70-109	70-123	70-111

Analysis Name: 8260 Master Scan (soil)
Batch number: R063201AC

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
Blank	86	84	90	83
LCS	85	84	93	89
LCSD	85	81	93	87
Limits:	71-114	70-109	70-123	70-111

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11875 Sample #: 4911664-68 SCR#: 242096 1013571

Facility #: Chevron Sunol Pipeline
Site Address: Milepost 2.7 Calaveras Rd Sunol CA
Chevron PM: _____ Lead Consultant: URS
Consultant/Office: URS- Oakland
Consultant Prj. Mgr.: Joe Morgan
Consultant Phone #: 510-874-3201 Fax #: 510-874-3268
Sampler: Greg Wilde
Service Order #: _____ ☐ Non SAR: _____

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Field Point Name	Matrix	Repeat Sample	Top Depth	Year Month Day	Time Collected	New Field Pt.	Grab	Composite	Total Number of Containers	BTEX MTBE 8260 ☒ 8021 ☐	TPH 8015 MOD GRO	TPH 8015 MOD DRO ☐ Silica Gel Cleanup	8260 full scan	Oxygenates ____	Lead 7420 ☐ 7421 ☐
SVE-6-3.2	S			11/7/06	0915		X		3	X	X				
SVE-6-10	↓			↓	0930		X		3	X	X				
SVE-6-14					0950		X		3	X	X				
SVE-7-1					1145		X		3	X	X				
SVE-7-8					1200		X		3	X	X				

Comments / Remarks
BTEX Only

Email Results to
Angela Liang, Joe Morgan
Greg Wilde
of URS

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I – Full
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

Relinquished by:	Date	Time	Received by:	Date	Time
GW	11/8/06	0600			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by: Kathy Binkley	11-9-06	0935
Temperature Upon Receipt 5.9° C°			Custody Seals Intact? Yes No	N/A	

3460 Rev. 10/04/01

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

713-432-3335

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1013712. Samples arrived at the laboratory on Friday, November 10, 2006. The PO# for this group is 0015010091 and the release number is COSGRAY.

Client Description	Lancaster Labs Number
SVE-8-2.5 Grab Soil Sample	4912359
SVE-8-4 Grab Soil Sample	4912360
SVE-8-6.5 Grab Soil Sample	4912361
SVE-9-4 Grab Soil Sample	4912362

ELECTRONIC COPY TO	URS	Attn: Angela Liang
ELECTRONIC COPY TO	URS	Attn: Joe Morgan
ELECTRONIC COPY TO	URS	Attn: Greg White

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Marla S. Lord
Senior Specialist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4912359

SVE-8-2.5 Grab Soil Sample

Sunol, CA
Collected:11/08/2006 08:40 by GW

Account Number: 11875

Submitted: 11/10/2006 09:45
Reported: 11/21/2006 at 12:41
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN82

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	2,300.	170.	mg/kg	4251.7
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.019	mg/kg	38.05
05466	Toluene	108-88-3	0.93	0.038	mg/kg	38.05
05474	Ethylbenzene	100-41-4	0.56	0.038	mg/kg	38.05
06301	Xylene (Total)	1330-20-7	47.	0.38	mg/kg	380.52

State of California Lab Certification No. 2116
The temperature of the sample upon receipt at the lab was 7.3 C.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/13/2006 03:13	Linda C Pape	4251.7
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/16/2006 23:18	Angela D Sneeringer	38.05
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/16/2006 23:41	Angela D Sneeringer	380.52
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/10/2006 11:16	Larry E Bevins	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/10/2006 11:17	Larry E Bevins	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4912360

SVE-8-4 Grab Soil Sample

Sunol, CA
Collected:11/08/2006 11:00 by GW

Account Number: 11875

Submitted: 11/10/2006 09:45
Reported: 11/21/2006 at 12:41
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN84

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	3.1	0.9	mg/kg	22.56
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.023	mg/kg	45.45
05466	Toluene	108-88-3	N.D.	0.045	mg/kg	45.45
05474	Ethylbenzene	100-41-4	N.D.	0.045	mg/kg	45.45
06301	Xylene (Total)	1330-20-7	N.D.	0.045	mg/kg	45.45

State of California Lab Certification No. 2116
The temperature of the sample upon receipt at the lab was 7.3 C.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/13/2006 03:54	Linda C Pape	22.56
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/16/2006 22:32	Angela D Sneeringer	45.45
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/10/2006 11:21	Larry E Bevins	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/10/2006 11:22	Larry E Bevins	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4912361

SVE-8-6.5 Grab Soil Sample

Sunol, CA
Collected:11/08/2006 11:30 by GW

Account Number: 11875

Submitted: 11/10/2006 09:45
Reported: 11/21/2006 at 12:41
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN86

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	N.D.	1.	mg/kg	23.81
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.022	mg/kg	44.56
05466	Toluene	108-88-3	N.D.	0.045	mg/kg	44.56
05474	Ethylbenzene	100-41-4	N.D.	0.045	mg/kg	44.56
06301	Xylene (Total)	1330-20-7	N.D.	0.045	mg/kg	44.56

State of California Lab Certification No. 2116
The temperature of the sample upon receipt at the lab was 7.3 C.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/13/2006 04:35	Linda C Pape	23.81
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/16/2006 22:55	Angela D Sneeringer	44.56
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/10/2006 11:20	Larry E Bevins	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/10/2006 11:20	Larry E Bevins	n.a.

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. SW 4912362

SVE-9-4 Grab Soil Sample

Sunol, CA
Collected:11/08/2006 12:00 by GW

Account Number: 11875

Submitted: 11/10/2006 09:45
Reported: 11/21/2006 at 12:41
Discard: 12/22/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN94

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	23,000.	1,700.	mg/kg	43706.29
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	0.38	0.23	mg/kg	453.72
05466	Toluene	108-88-3	47.	0.45	mg/kg	453.72
05474	Ethylbenzene	100-41-4	20.	0.45	mg/kg	453.72
06301	Xylene (Total)	1330-20-7	2,100.	9.1	mg/kg	9074.41

State of California Lab Certification No. 2116
The temperature of the sample upon receipt at the lab was 7.3 C.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/13/2006 05:15	Linda C Pape	43706.29
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/17/2006 00:04	Angela D Sneeringer	453.72
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/17/2006 22:19	Roy R Mellott Jr	9074.41
06130	GC - 5 g HL Encore Prep	SW-846 5035	1	11/10/2006 11:18	Larry E Bevins	n.a.
08390	GC/MS - HL Encore Prep	SW-846 5035	1	11/10/2006 11:19	Larry E Bevins	n.a.

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1013712
Reported: 11/21/06 at 12:41 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06315A02B	Sample number(s): 4912359-4912362							
TPH-GRO - Soils	N.D.	1.0	mg/kg	84		67-119		
Batch number: R063201AB	Sample number(s): 4912359-4912362							
Benzene	N.D.	25.	ug/kg	96	96	77-119	0	30
Toluene	N.D.	50.	ug/kg	104	104	81-116	0	30
Ethylbenzene	N.D.	50.	ug/kg	108	108	82-115	1	30
Xylene (Total)	N.D.	50.	ug/kg	107	108	82-117	1	30
Batch number: R063201AC	Sample number(s): 4912362							
Xylene (Total)	N.D.	50.	ug/kg	107	108	82-117	1	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 06315A02B	Sample number(s): 4912359-4912362 UNSPK: P910513								
TPH-GRO - Soils	102	95	39-118	7	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO - Soils
Batch number: 06315A02B

	Trifluorotoluene-F
4912359	8*
4912360	90
4912361	93
4912362	12*
Blank	97
LCS	97
MS	99
MSD	93
Limits:	61-122

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1013712
Reported: 11/21/06 at 12:41 PM

Surrogate Quality Control

Analysis Name: BTEX+MTBE by 8260B
Batch number: R063201AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4912359	80	77	96	96
4912360	82	76	87	78
4912361	84	83	91	80
4912362	72	73	150*	112*
Blank	86	82	91	83
LCS	85	84	93	89
LCSD	85	81	93	87
Limits:	71-114	70-109	70-123	70-111

Analysis Name: 8260 Master Scan (soil)
Batch number: R063201AC

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
Blank	86	84	90	83
LCS	85	84	93	89
LCSD	85	81	93	87
Limits:	71-114	70-109	70-123	70-111

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11875 Sample #: 4912359-62 SCR#: 242097

1013712

Facility #: Chevron Sunol Pipeline
Site Address: Milepost 2.7 Calaveras Rd Sunol CA
Chevron PM: _____ Lead Consultant: URS-Oakland
Consultant/Office: Oakland - CA
Consultant Prj. Mgr.: Joe Morgan
Consultant Phone #: 510-874-3281 Fax #: 510-874-3268
Sampler: Greg White
Service Order #: _____ ☐ Non SAR: _____

Analyses Requested

Preservation Codes

Field Point Name	Matrix	Repeat Sample	Top Depth	Year Month Day	Time Collected	New Field Pt.	Grab	Composite	Total Number of Containers	BTEX + MTBE 8260 ☒ 8021 ☐	TPH 8015 MOD GRO	TPH 8015 MOD DRO ☐ Silica Gel Cleanup	8260 full scan	Oxygenates	Lead 7420 ☐ 7421 ☐
SVE-8-2.5	S			11/8/06	0840		X		3	X	X				
SVE-8-4	↓			↓	1100		X		3	X	X				
SVE-8-6.5					1130		X		3	X	X				
SVE-8-4	↓			↓	1200		X		3	X	X				

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks
BTEX by 8260 only (No MTBE)

Email Results to Joe Morgan, Angela Liang, Greg White of URS

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I – Full
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

	Date	Time		Date	Time
Relinquished by:	11/9/06	0600	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other			Received by: Kathy Binkley	11/9/06	0945
Temperature Upon Receipt 7.3° C°			Custody Seals Intact? Yes No	N/A	

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

Appendix F
BAAQMD Permit for the SVE System

BAY AREA AIR QUALITY
MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CALIFORNIA 94109
(415) 771-6000

PERMIT TO OPERATE

Plant# 17101 Page: 1 Expires: SEP 1, 2007

CBA Equipment, LLC
24988 Blue Ravine, Ste 108 181
Folsom, Ca 95630

Location: 24988 Blue Ravine, Ste 108 181
Folsom, Ca 95630

S#	DESCRIPTION	[Schedule]	PAID
1	CHEM> Contaminated soil remediation, Contaminated soil vapor Portable SVE System Abated by: A1 Afterburner	[G1, 382 days]	751

1 Permit Source, 0 Exempt Sources

*** See attached Permit Conditions ***

The operating parameters described above are based on information supplied by permit holder and may differ from the limits set forth in the attached conditions of the Permit to Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of District regulations subject to enforcement action.

*** PERMIT CONDITIONS ***

==========

CONDITION ID #22399

1. The operator of this source shall provide written notification to the Engineering Division at least 3 days prior to start-up of operation at any new location. The notification shall include:

   a. Application Number (12773) and Plant Number (17101).
   b. Street address, including zip code, for the location where the equipment will be operated.
   c. The name and telephone number of a contact person where the equipment will be operated.
   d. The date of initial start-up and estimated duration of operations at that location.
   e. The distance from the source to the outer boundary of the nearest K-12 school, or indication that the distance is greater than 1500 feet.

   In the event that the start-up is delayed less than 5 days, the operator may provide telephone notice of said change to the assigned Plant Engineer in the Engineering Division. If the start-up is delayed more than 5 days, written notification must be resubmitted.

2. This equipment shall not remain at any single location for a period in excess of 12 consecutive months, following the date of initial operation except as allowed under Section 2-1-220.10. If this portable equipment remains at any fixed location for more than 12 months, the portable permit will automatically revert to a conventional permanent location permit and will lose its portability. [basis: Reg. 2-1-220.2]

3. This portable equipment, S-1, shall operate at all times in conformance with the eligibility requirements set forth in Regulation 2-1-220 for portable equipment.

*** PERMIT CONDITIONS ***

4. This equipment is not to be operated within 1000 feet of the outer boundary of any K-12 school, unless the applicable requirements of the California Health and Safety Code Section 42301.6 have been met. This will require the submittal of an application for a revised permit to operate. [basis: Reg. 2-1-220.4]

5. This equipment shall be used exclusively for the removal of non-chlorinated volatile organic compounds associated with petroleum products from extracted soil vapor. This shall be demonstrated by onsite sampling required in condition 10 below. [basis: Health Risk Management Policy]

6. Precursor Organic Compound (POC) emissions from Source S-1 shall be abated by abatement device A-1, dual-mode thermal/catalytic oxidizer during all periods of operation. Soil vapor flow rate shall not exceed 200 scfm. [basis: Reg. 8-47-301.1,2]

7. The POC abatement efficiency of abatement device A-1 shall be maintained at a minimum of 98.5% by weight for inlet POC concentrations greater than or equal to 2000 ppmv (measured as C6). For inlet concentrations below 2000 ppmv and greater than or equal to 200 ppmv, a minimum abatement efficiency of 97% shall be maintained. For inlet concentrations below 200 ppmv, a minimum abatement efficiency of 90% shall be maintained. The minimum abatement efficiency shall be waived if outlet POC concentrations are shown to be less than 10 ppmv (measured as C6). In no event shall benzene emissions to the atmosphere exceed 0.250 pounds per day. Annual emissions of benzene shall not exceed 6.70 pounds per year. [basis: BACT; Health Risk Management Policy]

8. While operating as a Thermal Oxidizer, the minimum operating temperature of A-1 shall not be less than 1400 degrees Fahrenheit. While operating as a Catalytic Oxidizer, the minimum

*** PERMIT CONDITIONS ***

operating temperature of A-1 shall not be less than 600 degrees Fahrenheit.

9. To determine compliance with Condition Number 8, the dual-mode thermal/catalytic oxidizer shall be equipped with continuous measuring and temperature recording instrumentation. The temperature data collected from the temperature recorder shall be maintained in a file which shall be available for District inspection for a period of at least 2 years following the date on which such data are recorded.

10. To determine compliance with Condition 7, within 24 hours after start-up of the catalytic oxidizer and within 24 hours after start-up of the thermal oxidizer at any new location, the operator of this source shall:

    a. Analyze the inlet gas stream to determine the vapor flow rate and concentration of POC present.
    b. Analyze exhaust gas to determine the flow rate, and the concentration of benzene and POC present.
    c. Calculate the benzene emission rate in pounds per day based on the exhaust gas analysis and the operating exhaust flow rate. The soil vapor flow rate shall be decreased, if necessary, to demonstrate compliance with Condition 7.
    d. Calculate the POC abatement efficiency based on the inlet and exhaust gas sampling analysis. For the purpose of determining compliance with condition 7, the POC concentration shall be reported as hexane.
    e. Submit to the District's Engineering Division the test results and emission calculations within one month from the testing date. Samples shall be analyzed according to modified EPA test methods 8015 and 8021 or their equivalent to determine the concentrations of POC and benzene.

11. Within 30 days from the completion of each

*** PERMIT CONDITIONS ***

treatment operation at a given location, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division with a summary showing the following information:

a. The dates and total number of days that the equipment was at that location and the dates, and total number of days that the equipment was operated at that location.
b. A summary of the abatement efficiency and benzene emission rate as determined and reported in the start-up sampling report required by condition 10e above.
c. The results of any additionally performed emission test, analysis, or monitoring result logged in for the day of operation they were taken.
d. The total throughput of contaminated soil vapor processed by S-1 at that location (indicated in cubic feet).
e. The total emissions of benzene at that location based on the sampling results required by condition 10 above. [basis: Reg. 1-523]

12. Within 30 days after the end of every calendar year, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division a year end summary showing the following information:

a. The location(s) at which the equipment was operated including the dates operated at each location.
b. The total throughput of contaminated soil vapor for the previous four quarters (indicated in cubic feet).
c. The total benzene emissions for the previous four quarters (indicated in pounds). [basis Reg. 1-523]

13. The operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the

*** PERMIT CONDITIONS ***

various provisions of this conditional Permit to Operate. All measurements, records and data required to be maintained by the operator shall be retained for at least two years following the date the data is recorded. [basis Reg. 1-523]

14. Any non-compliance with these conditions shall be reported to the Compliance and Enforcement Division at the time that it is first discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence.

~~~~~~~~~~~~~~~~~~~~~~~~~~~ END OF CONDITIONS ~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~~~~~~~~~~~~~~~~~~~

S#	Source Description	Annual Average lbs/day PART	ORG	NOx	SO2	CO
1	Portable SVE System	-	1.23	-	-	-
	T O T A L S		1.23			

Appendix G
Notification Letter to BAAQMD

COPY

STRATUS ENVIRONMENTAL, INC.
3330 Cameron Park Drive, Ste 550
Cameron Park, California 95682
(530) 676-6004 ~ Fax: (530) 676-6005

November 2, 2006
Project No. U2042-2627-01

Mr. Robert Cave
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Re: Notification of Proposed SVE Event
(BAAQMD Application No. 12773 & Plant No. 17101)
Chevron Pipeline Company
Sunol Pipeline Spill Area
Sunol, California

Dear Mr. Cave:

Stratus Environmental, Inc. (Stratus), on behalf of CBA Equipment, LLC (CBA), has prepared this letter to notify the Bay Area Air Quality Management District (BAAQMD) regarding a 6-month soil vapor extraction (SVE) event at Calaveras Road, Sunol, California (Figure 1). The SVE event is scheduled to be conducted between November 13, 2006, and May 13, 2006. The proposed SVE system will be operated 24 hours a day during the testing period, using a 30-horsepower (hp) rated propane generator, under a various location permit (Plant No. 17101).

An SVE event was conducted at this site for approximately three months between November 2005 and February 2006. CBA has been retained to conduct an additional 6-month SVE event to reduce the subsurface petroleum hydrocarbon mass.

During the proposed 6-month SVE event, petroleum hydrocarbon laden soil vapors will be extracted from existing vapor extraction wells (see Figure 1) using the 15-hp rated liquid ring blower of a CBA 200 cubic feet per minute (cfm) thermal oxidizer. The extracted soil vapors will be abated in a thermal oxidizer before discharging into the atmosphere (see Figure 2). A 25 kilowatt (30-hp) propane generator or similar will be used to be energize the control panel of the SVE system.

SYSTEM START-UP AND OPERATION

Stratus will conduct routine site visits during the 6-month period to verify system operation, optimize system performance, and conduct maintenance if warranted. In addition, influent and effluent air samples will be collected on a monthly basis to verify compliance with BAAQMD permit requirements.

November 2, 2006

During the system start-up and subsequent site visits, the following parameters will be monitored and recorded on field data sheets:

- Influent, operating, and effluent temperatures,
- Vapor extraction rate,
- Applied vacuum at each vapor extraction well,
- Influent flow into the system, and
- Photo-ionization detector (PID) measurements for organic vapors from the extraction wells.

Air samples will be collected on a monthly basis and forwarded to a state certified laboratory to be analyzed for gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8015, and for benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tertiary butyl ether (MTBE) by USEPA Method 8020. Analytical results and field data collected will be used to calculate and verify the destruction efficiency of the system. The first set of influent and effluent air samples will be analyzed on a 24-hour turnaround time; the results will be forwarded to BAAQMD via facsimile. The remainder of the air samples will be analyzed on a standard turnaround time (2 to 3 weeks).

Stratus will prepare and submit quarterly reports to BAAQMD that will include a tabulated analytical summary, estimated mass emission rates, and destruction efficiency of the system.

If you have any questions regarding this notification, please call Kiran Nagaraju at (530) 676-6007.

Sincerely,

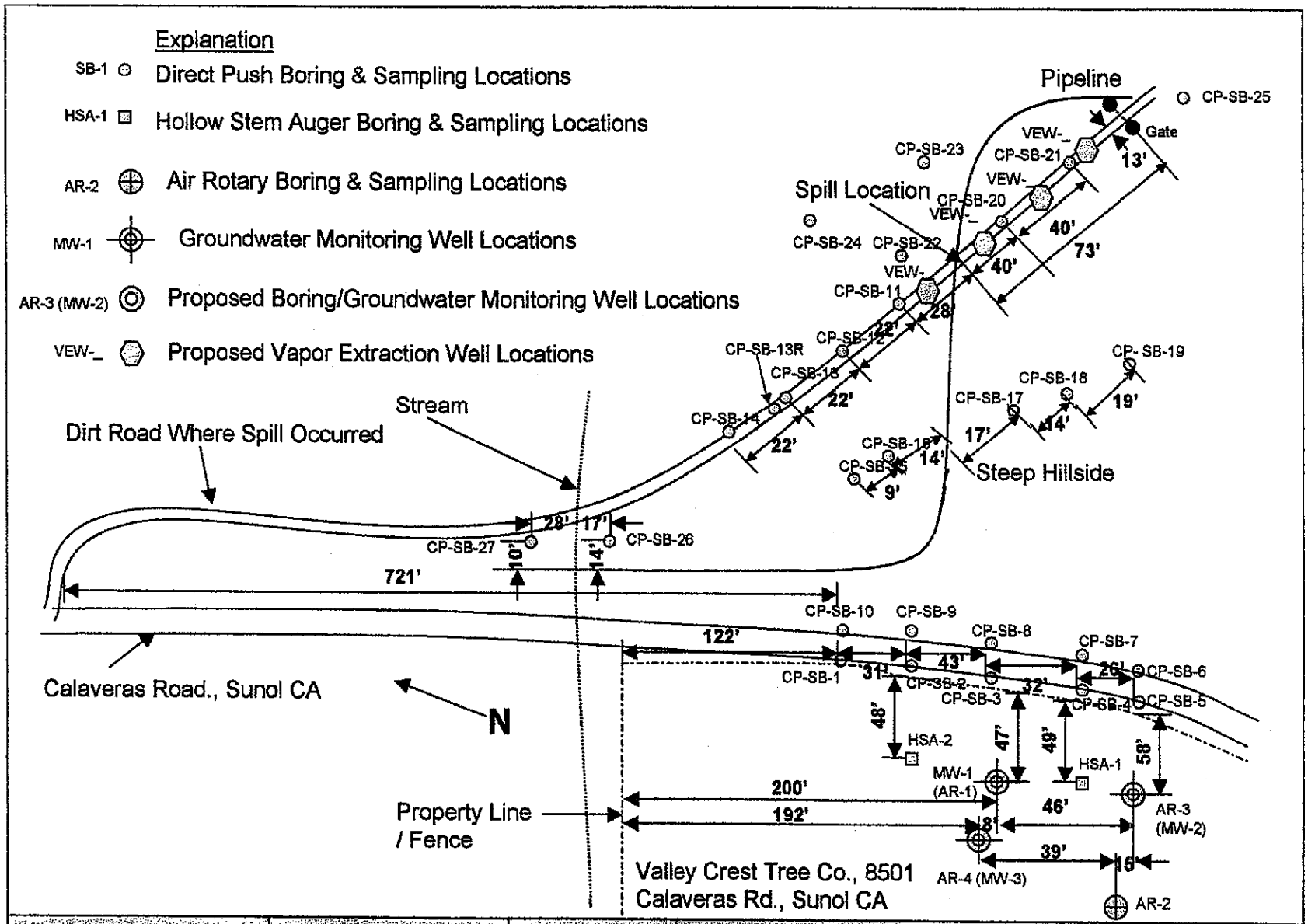
STRATUS ENVIRONMENTAL, INC.

Kiran Nagaraju
Project Engineer

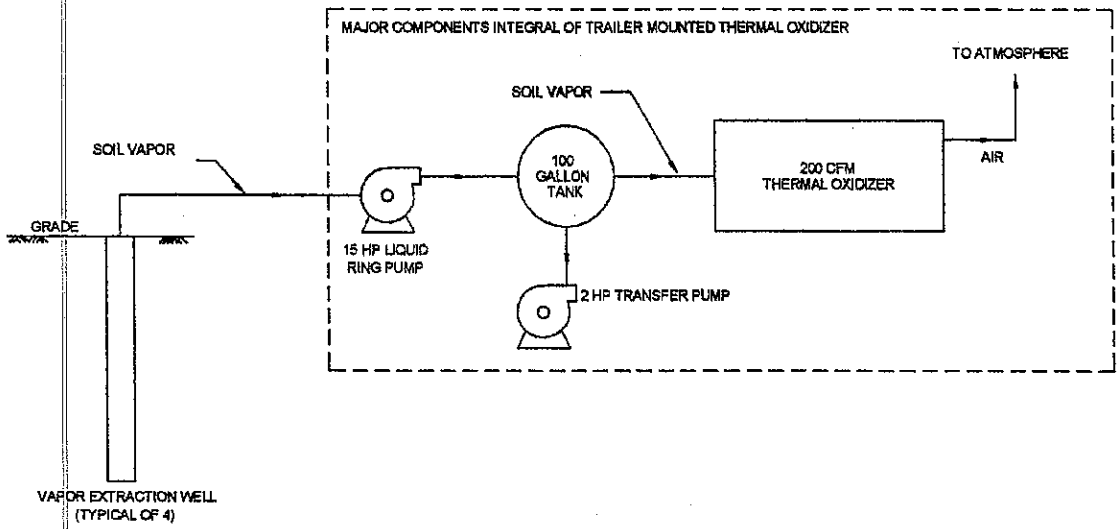
Jay R. Johnson
Project Manager

Attachments Figure 1 Site Plan – Boring and Proposed Well Locations
Figure 2 Process Flow Diagram

cc: Ms. Angela Liang, URS Corporation Americas



URS Corporation Oakland, CA	Not to Scale Revised 11/3/05	**Boring and Proposed Well Locations** **Chevron Pipeline Company** **Sunol Pipeline Spill Area, Sunol, California**	Figure 1



SOIL VAPOR EXTRACTION & ABATEMENT
NOT TO SCALE

THIS IS A PROCESS FLOW DIAGRAM, THEREFORE INSTRUMENTATION AND CONTROL EQUIPMENT DETAILS ARE NOT SHOWN.
INSTRUMENT FUNCTIONS AND INTERACTIONS ARE ALSO NOT SHOWN.
EQUIPMENT SIZES ARE NOT PROPORTIONAL AND ARE NOT INDICATIVE OF FINAL SIZES.

STRATUS ENVIRONMENTAL, INC.

CHEVRON PIPELINE COMPANY
SUNOL PIPELINE SPILL AREA
SUNOL, CALIFORNIA

PROCESS FLOW DIAGRAM

FIGURE
2

PROJECT NO.
USUNOL