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Alameda County
Environmental Health

November 17, 2009

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 "**SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA – Third Quarter 2009 Groundwater Monitoring Report**" are true and correct to the best of my knowledge at the present time.

Submitted by:



Jeffrey Cosgray
Chevron Pipe Line Company

R E P O R T

**THIRD QUARTER 2009
GROUNDWATER MONITORING
REPORT**

**SLIC CASE #RO0002892
CHEVRON PIPELINE COMPANY
SUNOL SPILL
2793 CALAVERAS RD.
SUNOL, CA**

Prepared for
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, CA 94502

November 2009

URS

URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612

26815217



November 17, 2009

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

**Subject: SLIC Case No. RO0002892, Chevron Pipeline Company, Sunol Spill, 2793
Calaveras Rd, Sunol, CA, Third Quarter 2009 Groundwater Monitoring Report**

Dear Mr. Wickham:

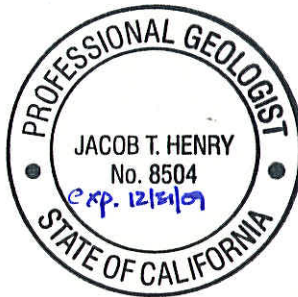
A December 30, 2005 letter provided by the Alameda County Environmental Health staff (ACEH) requested the initiation of a Quarterly Groundwater Monitoring Program. In response to this request, URS, on behalf of Chevron Pipe Line Company (CPL), has prepared this groundwater monitoring report for the CPL Sunol site (Site) for the third quarter of 2009.

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

Sincerely yours,

URS Corporation

Jacob Henry, P.G.
Senior Geologist



Joe Morgan III
Senior Project Manager

cc: Mr. Jeff Johnson, Chevron Pipeline Company
Ms. Rachel Naccarati, URS Oakland

This letter report (“**Third Quarter 2009 Groundwater Monitoring Report**”) was prepared under my direct supervision. The information presented in this report is based on our review of available data obtained during our quarterly sampling activities and our previous subsurface investigation efforts. To the best of our knowledge, we have incorporated into our recommendations all relevant data pertaining to the Chevron Pipeline Release site in Sunol, California.

The third quarter 2009 groundwater monitoring 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 continued field activities were based on our professional experience and protocols reported in the literature for similar investigations.

URS Corporation
Approved by:



Joe Morgan III



Jacob Henry, P.G.



On September 28 and 29, 2009, URS conducted field activities to assess the groundwater conditions at the Site. A Site vicinity map is included as Figure 1. URS measured the fluid levels at groundwater monitoring wells MW-1 through MW-4 and MW-8 through MW-11 and collected samples to be analyzed from groundwater monitoring wells MW-10 and MW-11. URS did not collect a surface water sample from the very small stream, located northwest of the release location, due to the sample location being dry. The monitoring wells and surface water sampling location are provided on Figure 2. Monitoring wells MW-5 through MW-7 were abandoned on June 23, 2008.

1.1 SITE HYDROGEOLOGY

Prior to collecting groundwater samples, the water levels were measured at MW-1 through MW-4 and MW-8 through MW-11 from the top of casing using an electronic oil/water interface probe. Product was not measured in any of the monitoring wells during the quarterly gauging activities using an oil/water interface probe, however product was observed during purging activities at MW-9. The measured groundwater levels are displayed in Table 1 and the calculated groundwater elevations are displayed in Table 2.

Unconfined Water Bearing Zone

The water table elevation decreased since the last sampling event in June 2009, hydraulically disconnecting MW-1 through MW-4 and MW-8. The groundwater elevations for monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-9 were 290.43, 290.53, 290.83, 290.63, and 290.05 feet above average mean sea level (msl), respectively. The groundwater elevation for MW-8, which screens an apparent hillside groundwater recharge source for the Valley Crest Tree Company's (nursery) unconfined water-bearing zone, was 311.35 feet above msl. The groundwater elevations for monitoring wells MW-10 and MW-11 were 289.95 and 290.68 feet above msl, respectively.

The data from MW-1 through MW-4 and MW-9 through MW-11 were insufficient to accurately calculate the groundwater flow direction and gradient. Groundwater measured in MW-1 through MW-4, the south-southeast portion of the site, was below the bedrock and therefore stagnant. The remaining wells, though groundwater was above the bedrock, do not accurately represent the characteristically localized groundwater flow and gradient at the site due to the complex geology and minimal groundwater within the system. Furthermore, monitoring wells MW-9 through MW-11 appear to represent only the northerly portion of the Site. The seasonal groundwater recharge from the hillside appears to flow into the unconfined nursery water-bearing zone in a northwesterly direction. However, the groundwater measured in MW-8 was approximately at the bedrock elevation and therefore stagnant. Figure 3 provides measured groundwater elevations for the unconfined water-bearing zone as well as bedrock surface elevations for the gravel-siltstone contact for comparison.

Confined Water Bearing Zone

As previously stated, MW-5 through MW-7, are no longer a part of the groundwater monitoring program. After four quarters of non-detect analytical results, ACEH agreed, in a letter dated February 1, 2008, that further groundwater monitoring of the confined sandstone water-bearing zone was unnecessary. The monitoring wells were abandoned according to Alameda County Zone 7 Water Agency (Zone 7) standards on June 23, 2008.

2.1 QUARTERLY MONITORING ACTIVITIES

After measuring the fluid levels at each monitoring well, URS conducted groundwater sampling. Third quarter sampling efforts were influenced by the known seasonally low groundwater levels which typically occur from March through December. The rationale for the method used at each monitoring well is described below:

- Free product was removed from monitoring well MW-9 during purging activities that was not measured during gauging activities. When the free product was discovered, purging was stopped and the monitoring well was re-gauged using an oil/water interface probe. Free product was not measured while re-gauging, however, due to the presence of free product, MW-9 was not sampled and a sorbent boom was placed into the monitoring well. Free product was routinely detected in monitoring well MW-9 from August 2006 through March 2007.
- MW-10 and MW-11 were sampled using low-flow methods.
- A surface water sample was not collected from the very small stream northwest of the release location (Figure 2), due to the absence of running water.
- MW-1 through MW-4 and MW-8 were not sampled because measured groundwater elevations were slightly above, at, or below the bedrock elevations and therefore stagnant.

2.1.1 MW-1 and MW-9 Sorbent Booms

Up until May 2009, URS placed sorbent booms (booms) in MW-1 and MW-9 as an interim remedial measure. The booms had been effective in passively collecting and facilitating degradation of hydrocarbons within the monitoring wells and allowed for quarterly groundwater sample collection. Since May 2009, MW-1 and MW-9 have been gauged monthly, including the third quarter 2009 groundwater monitoring event, with no measurable product observed. URS will continue to monitor MW-1 and MW-9 during the monthly groundwater gauging events. A boom was installed in MW-9 during the third quarter 2009 sampling event after product was observed while purging.

2.1.2 MW-9

MW-9 was scheduled for sampling; however product was observed in the purge water removed from the monitoring well during the purging process. Purging was stopped and the monitoring well was re-gauged using an oil/water interface probe. Product was not found while re-gauging the monitoring well so the well was not sampled. Monitoring wells with measurable product are slated to be sampled during the fourth quarter. Therefore, if the monitoring well has measurable product during the fourth quarter 2009, a sample will be collected for analysis.

2.1.3 MW-10 and MW-11

Low-flow purging rates were between 300 to 750 milliliters per minute (mL/min) depending on the rate of recharge at each monitoring well. The low-flow groundwater sampling forms are included in Appendix A.

In addition to monitoring the water level at each monitoring well during low-flow sampling, parameters such as temperature, pH, conductivity, oxidation reduction potential (ORP), and dissolved oxygen (DO) of the groundwater were monitored using an in-line flow-through cell and multi-parameter YSI 556. The multi-parameter device was calibrated before sampling was started. During purging, the parameter readings described above were recorded every 3 minutes until the parameters stabilized.

In both MW-10 and MW-11, the parameters were considered to be stable when three consecutive readings were within the following guidelines: pH +/- 0.2 pH units, conductivity +/- 3% of reading, ORP +/- 20 millivolts (mV), DO +/- 0.2 milligrams per liter (mg/L).

After monitoring all field parameters, the flow through cell was detached from the pump and tubing assembly. Groundwater samples were collected directly from the pump tubing. Tubing, where practical, was dedicated for future groundwater monitoring events.

During the purging process, MW-11 went dry and was left to recharge overnight before a sample was collected using a disposable bailer.

2.1.4 Surface Water Sample

The sampling location along the very small stream is located at the base of the alluvial terrace within the Alameda Creek floodplain and is shown on Figure 2. The former sampling point (SW-Creek, sampled prior to the first quarter of 2007) is also provided on Figure 2 for reference. To the west, beyond the current sampling location, the very small stream fans out into the floodplain and surface flow terminates within floodplain grasses.

A stream sample was not collected during third quarter 2009 groundwater monitoring activities because at the time of sampling the stream was dry.

2.2 GROUNDWATER MONITORING WELL SAMPLING SCHEDULE

In a letter dated October 23, 2009, ACEH requested URS provide a groundwater monitoring sampling schedule. The following outlines the planned groundwater monitoring well sampling schedule.

Based on URS groundwater sampling experience at the Site, groundwater monitoring wells with groundwater slightly above, at, or below the known bedrock elevations have limited, to no recharge if purged for groundwater sampling. Therefore, monitoring wells exhibiting minimal groundwater are not sampled. The reasoning behind this decision is based on known limited groundwater flow through the subsurface at the Site. Furthermore, URS has attempted, during past groundwater monitoring events, to purge and sample monitoring wells with groundwater slightly above, at, or below the known bedrock elevations without success.

URS will attempt to sample all groundwater monitoring wells (MW-1 through MW-4 and MW-8 through MW-11) each quarter, as has been standard practice, starting with the fourth quarter 2009 groundwater sampling event. If URS field personnel encounter groundwater slightly above, at, or below the known bedrock elevations at any of the monitoring wells, that monitoring well will not be sampled. Every effort will be made to sample a monitoring well with sufficient groundwater above the bedrock. Prior to the decision by field personnel to not sample a

monitoring well, Jacob Henry (Senior Geologist) and/or Joe Morgan (Project Manager) will be contacted to discuss monitoring well groundwater elevations.

3.1 ANALYTICAL PROGRAM

The groundwater samples from each monitoring well were collected in clean laboratory-provided containers. The containers were labeled with unique project specific identification, packed to prevent breakage, and placed on ice in a cooler with a trip blank immediately after collection. The samples were submitted to Lancaster Analytical Laboratory in Lancaster, Pennsylvania, a California Certified Laboratory, under URS chain-of-custody procedures. The samples were analyzed on a standard turn-around time.

The groundwater and surface water samples collected during quarterly sampling activities are analyzed for the following parameters:

Gasoline Compounds

- Total petroleum hydrocarbons – gasoline range organics (TPH-GRO) by N. CA LUFT GRO
- Benzene, toluene, ethylbenzene, xylenes (BTEX) by USEPA Method 8260B

3.2 GROUNDWATER ANALYTICAL RESULTS DISCUSSION

A tabulated summary of the analytical results for the gasoline compounds and associated environmental screening levels (ESLs) developed by Regional Water Quality Control Board (RWQCB 2008) are presented in Table 3 and the complete laboratory analytical results and chain of custody forms are included as Appendix B.

3.2.1 Unconfined Water-Bearing Zone Monitoring Wells

The unconfined water bearing zone monitoring wells sampled during third quarter field activities include MW-10 and MW-11. TPH-GRO and BTEX were not detected in either sample during the third quarter groundwater sampling event.

3.2.2 Confined Water-Bearing Zone Monitoring Wells

Monitoring wells MW-5 through MW-7 were abandoned June 23, 2008 as approved by ACEH in the November 29, 2007 ACEH letter.

3.2.3 Surface Water Sample

The surface water sampling location is shown on Figure 2. The surface water sample could not be collected because the stream was dry at the sample location.

3.2.4 Analytical Result Comparison to ESLs

The analytical results for the groundwater samples collected from MW-10 and MW-11 were less than the most stringent ESLs for all constituents analyzed.

3.3 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, blank spikes and surrogate spikes)
- Duplicates (laboratory control sample duplicates and field duplicates)
- Sample Integrity (chain-of-custody documentation, sample preservation, and holding time compliance)

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. All samples were analyzed within the appropriate hold times.

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. None of the method blanks had detections of target analytes.

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. One trip blank was analyzed during this sampling event. The trip blank did not have detections of any target analytes, indicating no evidence of contamination during shipment of the laboratory samples.

Matrix Spikes and Laboratory Control Samples

Matrix spikes (MS), matrix spike duplicates (MSD), laboratory control samples (LCS), laboratory control sample duplicates (LCSD), blank spikes (BS) and blank spike duplicates (BSD) 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:

$$\text{Recovery (\%)} = \frac{\text{spike analysis result} - \text{original sample concentration}}{\text{concentration of spike addition}} \times 100\%$$

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, LCSD, BS and BSD 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, LCSD, BS and BSD 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.

Laboratory Duplicate Analyses

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

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

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

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.

Field Duplicate Analyses

Field duplicate samples are collected in the field and analyzed to evaluate the heterogeneity of the matrices. One field duplicate sample was collected during this sampling event (MW-X). The RPD was within the appropriate limits.

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.

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.

SUMMARY OF QA/QC REVIEW FINDINGS

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

Samples MW-10, MW-11, and MW-X (duplicate of MW-10) were analyzed within the method specific holding times. No data qualifiers were noted. All reported laboratory control sample (LCS), matrix control sample (MS) and surrogate spike recoveries were within laboratory QC limits.

Chain-of-custody documentation is complete and consistent. Samples were preserved as required per method specifications. 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.

The field activities conducted on September 28 and 29, 2009, included assessing the groundwater conditions at the Site and measuring the fluid levels from all monitoring wells and collecting analytical samples from groundwater monitoring wells MW-10 and MW-11. The findings are as follows:

- The water table elevation decreased since the last sampling event in June 2009, hydraulically disconnecting MW-1 through MW-4 and MW-8.
- Free product was not observed in any of the monitoring wells during the third quarter 2009 groundwater gauging activities. However while purging MW-9, free product was observed in the purge water removed from MW-9. MW-9 was re-gauged using an oil/water interface probe, however, no free product was detected. URS field personnel decide to not sample MW-9 due to the removal of free product. The most plausible explanation for the observation of free product in MW-9 purge water is related to the low groundwater levels and complex geology of the Site. URS has hypothesized in the past that the bedrock surface in the nursery portion of the Site is irregular and creates a “bowl”. The irregular “bowl” shape of the bedrock surface acts as a depression allowing groundwater and, in the case of MW-9, free product to accumulate. As purging lowers the groundwater level in the monitoring well, the accumulated free product, located in a narrow permeable lithology, becomes available and is removed. A sorbent boom was once again placed in MW-9 as an interim remedial measure.
- The analytical results collected from MW-10 and MW-11 were below the laboratory reporting limits for all constituents. No ESLs were exceeded during this sampling event.

Based on the September 28 and 29, 2009 field observations and analytical results URS makes the following recommendation:

- Continue quarterly groundwater monitoring to further assess the effect of seasonal groundwater fluctuations on groundwater behavior and contaminant transport within the unconfined water-bearing zone.

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.

TABLE 1
Monitoring Well Groundwater Levels
Third Quarter 2009 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Screen Interval (feet bgs) ¹	Date	Depth to Groundwater (feet TOC-N) ²	Depth to Product (feet TOC-N)	Product Thickness (feet)
MW-1	29.3-39.3	2/21/2006	36.34	--	--
		6/7/2006	34.28	--	--
		8/22/2006	37.11	37.08	0.03
		11/14/2006	37.05	--	--
		2/20/2007	36.14	--	--
		6/5/2007	37.21	--	--
		9/12/2007	37.67	37.55	0.12
		12/11/2007	37.49	37.46	0.03
		3/19/2008	35.94	--	--
		5/20/2008	35.51	--	--
		6/5/2008	35.69	--	--
		9/18/2008	37.62	37.61	0.01
		12/15/2008	37.53	37.52	0.01
		3/27/2009	35.24	--	--
		6/9/2009	37.05	--	--
		9/28/2009	37.61	--	--
MW-2	23.3-38.3	2/21/2006	32.19	--	--
		6/7/2006	30.23	--	--
		8/22/2006	33.11	--	--
		11/14/2006	33.01	--	--
		2/20/2007	31.93	--	--
		6/5/2007	33.23	--	--
		9/12/2007	33.62	--	--
		12/5/2007	33.52	--	--
		3/19/2008	31.76	--	--
		5/20/2008	31.41	--	--
		6/5/2008	31.56	--	--
		9/18/2008	33.65	--	--
		12/15/2008	33.59	--	--
		3/27/2009	31.14	--	--
		6/9/2009	33.08	--	--
		9/28/2009	33.62	--	--
MW-3	21.3-36.3	2/21/2006	31.97	--	--
		6/7/2006	30.91	--	--
		8/22/2006	34.66	--	--
		11/14/2006	34.71	--	--
		2/20/2007	31.66	--	--
		6/5/2007	34.63	--	--
		9/12/2007	34.71	--	--
		12/11/2007	34.77	--	--
		3/19/2008	31.64	--	--
		5/20/2008	31.26	--	--
		6/5/2008	31.45	--	--
		9/18/2008	34.81	--	--
		12/15/2008	34.79	--	--
		3/27/2009	30.87	--	--
		6/9/2009	34.48	--	--
		9/28/2009	34.82	--	--

TABLE 1
Monitoring Well Groundwater Levels
Third Quarter 2009 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Screen Interval (feet bgs) ¹	Date	Depth to Groundwater (feet TOC-N) ²	Depth to Product (feet TOC-N)	Product Thickness (feet)
MW-4	30.7-40.7	2/21/2006	36.72	--	--
		6/7/2006	35.76	--	--
		8/22/2006	38.79	--	--
		11/14/2006	38.84	--	--
		2/20/2007	36.54	--	--
		6/5/2007	38.77	--	--
		9/12/2007	38.93	--	--
		12/11/2008	39.00	--	--
		3/19/2008	36.29	--	--
		5/20/2008	36.27	--	--
		6/5/2008	36.38	--	--
		9/18/2008	39.03	--	--
		12/15/2008	39.03	--	--
		3/27/2009	36.10	--	--
		6/9/2009	38.62	--	--
9/28/2009	39.04	--	--		
MW-8	14.5-24.5	8/22/2006	18.71	--	--
		11/14/2006	18.73	--	--
		2/20/2007	19.23	--	--
		6/5/2007	20.48	--	--
		9/12/2007	21.47	--	--
		12/11/2007	19.58	--	--
		Q1 2008	NM	--	--
		Q2 2008	NM	--	--
		9/18/2008	21.67	--	--
		12/15/2008	20.73	--	--
		3/27/2009	19.54	--	--
		6/9/2009	23.31	--	--
		9/28/2009	22.58	--	--
MW-9	36.0-46.0	8/22/2006	42.59	42.55	0.04
		11/14/2006	42.62	42.54	0.08
		2/20/2007	41.91	41.86	0.05
		6/5/2007	42.71	42.69	0.02
		9/12/2007	43.09	43.01	0.08
		12/11/2007	42.91	--	--
		3/20/2007	41.76	41.75	0.01
		12/11/2007	42.91	--	--
		5/20/2008	41.33	--	--
		6/5/2008	41.57	--	--
		9/18/2008	43.07	--	--
		12/15/2008	43.00	--	--
		3/27/2009	41.02	--	--
		6/9/2009	42.53	--	--
9/28/2009	43.02	--	--		

TABLE 1
Monitoring Well Groundwater Levels
Third Quarter 2009 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Screen Interval (feet bgs) ¹	Date	Depth to Groundwater (feet TOC-N) ²	Depth to Product (feet TOC-N)	Product Thickness (feet)
MW-10	40.3-55.3	9/5/2007	54.86	--	--
		12/12/2007	46.84	--	--
		3/20/2008	44.41	--	--
		5/20/2008	44.09	--	--
		6/5/2008	43.67	--	--
		9/18/2008	45.89	--	--
		12/15/2008	45.91	--	--
		3/27/2009	43.82	--	--
		6/9/2009	45.19	--	--
		9/28/2009	45.94	--	--
MW-11	37.0-47.0	9/6/2007	Dry	--	--
		12/12/2007	42.73	--	--
		3/20/2008	37.29	--	--
		5/20/2008	37.06	--	--
		6/4/2008	37.18	--	--
		9/18/2008	38.97	--	--
		12/15/2008	39.36	--	--
		3/27/2009	36.87	--	--
		6/9/2009	38.30	--	--
		9/28/2009	39.21	--	--

Notes:

NM - Not measured

1. Screen intervals measured from feet below ground surface (feet bgs)
2. Groundwater and product levels measured from top of casing - north (TOC-N).
3. MW-5 through MW-7 abandoned 6/23/08.

TABLE 2
Monitoring Well Groundwater Elevations
Third Quarter 2009 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Date Completed	Ground Surface Elevation (feet msl) ¹	Top of Casing Elevation (feet msl) ^{1, 2}	Date Measured	Groundwater Elevation (feet msl) ¹	Product Elevation (feet msl) ¹	Product Thickness (feet)
MW-1	10/20/2005	328.49	328.04	2/21/2006	291.70	--	--
				6/7/2006	293.76	--	--
				8/22/2006	290.93	290.96	0.03
				11/14/2006	290.99	--	--
				2/20/2007	291.90	--	--
				6/5/2007	290.83	--	--
				9/12/2007	290.37	--	--
				12/11/2007	290.55	290.58	0.03
				3/19/2008	292.10	--	--
				5/20/2008	292.53	--	--
				6/5/2008	292.35	--	--
				9/18/2008	290.42	290.43	0.01
				12/15/2008	290.51	290.52	0.01
				3/27/2009	292.80	--	--
6/9/2009	290.99	--	--				
9/28/2009	290.43	--	--				
MW-2	10/21/2005	324.85	324.15	2/21/2006	291.96	--	--
				6/7/2006	293.92	--	--
				8/22/2006	291.04	--	--
				11/14/2006	291.14	--	--
				2/20/2007	292.22	--	--
				6/5/2007	290.92	--	--
				9/12/2007	290.53	--	--
				12/5/2007	290.63	--	--
				3/19/2008	292.39	--	--
				5/20/2008	292.74	--	--
				6/5/2008	292.59	--	--
				9/18/2008	290.50	--	--
				12/15/2008	290.56	--	--
				3/27/2009	293.01	--	--
6/9/2009	291.07	--	--				
9/28/2009	290.53	--	--				
MW-3	10/21/2005	326.05	325.65	2/21/2006	293.68	--	--
				6/7/2006	294.74	--	--
				8/22/2006	290.99	--	--
				11/14/2006	290.94	--	--
				2/20/2007	293.99	--	--
				6/5/2007	291.02	--	--
				9/12/2007	290.94	--	--
				12/11/2007	290.88	--	--
				3/19/2008	294.01	--	--
				5/20/2008	294.39	--	--
				6/5/2008	294.20	--	--
				9/18/2008	290.84	--	--
				12/15/2008	290.86	--	--
				3/27/2009	294.78	--	--
6/9/2009	291.17	--	--				
9/28/2009	290.83	--	--				
MW-4	1/31/2006	329.97	329.67	2/21/2006	292.95	--	--
				6/7/2006	293.91	--	--
				8/22/2006	290.88	--	--
				11/14/2006	290.83	--	--
				2/20/2007	293.13	--	--
				6/5/2007	290.90	--	--
				9/12/2007	290.74	--	--
				12/11/2007	290.67	--	--
				3/19/2008	293.38	--	--
				5/20/2008	293.40	--	--
				6/5/2008	293.29	--	--
				9/18/2008	290.64	--	--
				12/15/2008	290.64	--	--
				3/27/2009	293.57	--	--
6/9/2009	291.05	--	--				
9/28/2009	290.63	--	--				

TABLE 2
Monitoring Well Groundwater Elevations
Third Quarter 2009 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Date Completed	Ground Surface Elevation (feet msl) ¹	Top of Casing Elevation (feet msl) ^{1, 2}	Date Measured	Groundwater Elevation (feet msl) ¹	Product Elevation (feet msl) ¹	Product Thickness (feet)
MW-8	8/15/2006	335.23	333.93	8/22/2006	315.22	--	--
				11/14/2006	315.20	--	--
				2/20/2007	314.70	--	--
				6/5/2007	313.45	--	--
				9/12/2007	312.46	--	--
				12/11/2007	314.35	--	--
				Q1 2008	NM	--	--
				Q2 2008	NM	--	--
				9/18/2008	312.26	--	--
				12/15/2008	313.20	--	--
				3/27/2009	314.39	--	--
				6/9/2009	310.62	--	--
				9/28/2009	311.35	--	--
MW-9	8/16/2006	333.49	333.07	8/22/2006	290.48	290.52	0.04
				11/14/2006	290.45	290.53	0.08
				2/20/2007	291.16	291.21	0.05
				6/5/2007	290.36	290.38	0.02
				9/12/2007	289.98	290.06	0.08
				12/11/2007	290.16	--	--
				3/20/2007	291.31	--	--
				12/11/2007	290.16	--	--
				5/20/2008	291.74	--	--
				6/5/2008	291.50	--	--
				9/18/2008	290.00	--	--
				12/15/2008	290.07	--	--
				3/27/2009	292.05	--	--
				6/9/2009	290.54	--	--
				9/28/2009	290.05	--	--
MW-10	9/5/2007	336.55	335.89	9/12/2007	281.03	--	--
				12/12/2007	289.05	--	--
				3/20/2008	291.48	--	--
				5/20/2008	291.80	--	--
				6/5/2008	292.22	--	--
				9/18/2008	290.00	--	--
				12/15/2008	289.98	--	--
				3/27/2009	292.07	--	--
				6/9/2009	290.70	--	--
				9/28/2009	289.95	--	--
MW-11	9/6/2007	330.29	329.89	9/12/2007	Dry	--	--
				12/12/2007	287.16	--	--
				3/20/2008	292.60	--	--
				5/20/2008	292.83	--	--
				6/5/2008	292.71	--	--
				9/18/2008	290.92	--	--
				12/15/2008	290.53	--	--
				3/27/2009	293.02	--	--
				6/9/2009	291.59	--	--
9/28/2009	290.68	--	--				

Notes:

NM - Not measured

1. All elevations displayed in feet above average mean sea level (msl).

2. Groundwater and product elevations calculated from depths as measured from top of casing - north.

MW-1 through MW-3 surveyed on October 31, 2006.

MW-4 through MW-7 surveyed on February 14, 2006.

MW-8 and MW-9 surveyed on November 10, 2006.

MW-10 and MW-11 surveyed on September 13, 2007.

MW-5 through MW-7 abandoned 6/23/08.

TABLE 3
 Summary of Groundwater Analytical Results
 Gasoline Compounds
 Third Quarter 2009 Groundwater Monitoring Report
 Chevron Sunol Pipeline

Well ID	Date	Gasoline Compounds				
		TPH-GRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
ESL¹⁾		100	1	40	30	20
MW-1	2/22/2006	57,000	38	2,700	3,000	8,700
	6/8/2006	37,000	10	330	120	8,200
	Q3 2006 ³⁾	NS	NS	NS	NS	NS
	11/15/2006	38,000	14	110	38	5,900
	2/21/2007	18,000	4	7	8	1,600
	6/5/2007	17,000	3	7	4	1,100
	Q3 2007 ³⁾	NS	NS	NS	NS	NS
	Q4 2007 ³⁾	NS	NS	NS	NS	NS
	3/19/2008	12,000	0.8	1	1	320
	6/6/2008	8,200	1	2	3	150
	Q3 2008 ⁴⁾	NS	NS	NS	NS	NS
	Q4 2008 ⁴⁾	NS	NS	NS	NS	NS
	3/31/2009	3,700	<0.5	1	1	44
	6/10/2009	5,000	<0.5	<0.5	0.7	13
Q3 2009 ⁴⁾	NS	NS	NS	NS	NS	
MW-2	2/21/2006 ²⁾	<50 / <50	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5
	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5
	8/23/2006	<50	0.5	<0.5	<0.5	<0.5
	11/14/2006	<50	0.7	<0.5	<0.5	<0.5
	2/21/2007	<50	<0.5	<0.5	<0.5	<0.5
	6/5/2007	<50	<0.5	<0.5	<0.5	<0.5
	Q3 2007 ⁴⁾	NS	NS	NS	NS	NS
	Q4 2007 ⁴⁾	NS	NS	NS	NS	NS
	3/19/2008	<50	<0.5	<0.5	<0.5	<0.5
	6/5/2008 ²⁾	<50 / <50	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5
	Q3 2008 ⁴⁾	NS	NS	NS	NS	NS
	Q4 2008 ⁴⁾	NS	NS	NS	NS	NS
	3/27/2009	<50	<0.5	<0.5	<0.5	<0.5
	Q2 2009 ⁴⁾	NS	NS	NS	NS	NS
	Q3 2009 ⁴⁾	NS	NS	NS	NS	NS
MW-3	2/21/2006	<50	<0.5	<0.5	<0.5	<0.5
	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5
	8/23/2006	170	<0.5	<0.5	<0.5	<0.5
	11/14/2006	86	<0.5	1	<0.5	<0.5
	2/21/2007	<50	<0.5	<0.5	<0.5	<0.5
	Q2 2007 ⁴⁾	NS	NS	NS	NS	NS
	Q3 2007 ⁴⁾	NS	NS	NS	NS	NS
	Q4 2007 ⁴⁾	NS	NS	NS	NS	NS
	3/19/2008	<50	<0.5	<0.5	<0.5	<0.5
	6/5/2008	<50	<0.5	<0.5	<0.5	<0.5
	Q3 2008 ⁴⁾	NS	NS	NS	NS	NS
	Q4 2008 ⁴⁾	NS	NS	NS	NS	NS
	3/31/2009	<50	<0.5	<0.5	<0.5	<0.5
	Q2 2009 ⁴⁾	NS	NS	NS	NS	NS
Q3 2009 ⁴⁾	NS	NS	NS	NS	NS	

TABLE 3
 Summary of Groundwater Analytical Results
 Gasoline Compounds
 Third Quarter 2009 Groundwater Monitoring Report
 Chevron Sunol Pipeline

Well ID	Date	Gasoline Compounds				
		TPH-GRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
ESL¹⁾		100	1	40	30	20
MW-4	2/21/2006	<50	<0.5	<0.5	<0.5	<0.5
	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5
	8/23/2006	70	0.6	<0.5	<0.5	1
	11/15/2006	<50	<0.5	<0.5	<0.5	0.5
	2/21/2007	<50	<0.5	<0.5	<0.5	<0.5
	Q2 2007 ⁴⁾	NS	NS	NS	NS	NS
	Q3 2007 ⁴⁾	NS	NS	NS	NS	NS
	Q4 2007 ⁴⁾	NS	NS	NS	NS	NS
	3/19/2008	<50	<0.5	<0.5	<0.5	<0.5
	6/6/2008	<50	<0.5	<0.5	<0.5	<0.5
	Q3 2008 ⁴⁾	NS	NS	NS	NS	NS
	Q4 2008 ⁴⁾	NS	NS	NS	NS	NS
	3/31/2009	<50	<0.5	<0.5	<0.5	<0.5
	Q2 2009 ⁴⁾	NS	NS	NS	NS	NS
Q3 2009 ⁴⁾	NS	NS	NS	NS	NS	
MW-8/MW-X	8/24/2006	18,000	190	2,600	590	2,800
	11/16/2006	990	76	80	69	190
	2/20/2007	2,000	180	57	170	74
	6/6/2007	3,600	340	92	370	210
	9/12/2007	4,200	470	230	630	320
	12/11/2007	4,900	350	300	490	650
	Q1 2008 ⁵⁾	NS	NS	NS	NS	NS
	Q2 2008 ⁵⁾	NS	NS	NS	NS	NS
	9/18/2008 ²⁾	11,000 / 9,200	740 / 690	320 / 290	790 / 720	2,600 / 2,100
	12/15/2008	12,000	810	920	880	3,300
	3/27/2009	29,000/29,000J	1,500/1,200	7,200/4,500	1,200/1,100	4,700/4,100
	Q2 2009 ⁴⁾	NS	NS	NS	NS	NS
	Q3 2009 ⁴⁾	NS	NS	NS	NS	NS
	MW-9	Q3 2006 ³⁾	NS	NS	NS	NS
11/15/2006		74,000	480	12,000	2,200	17,000
Q1 2007 ³⁾		NS	NS	NS	NS	NS
Q2 2007 ³⁾		NS	NS	NS	NS	NS
Q3 2007 ³⁾		NS	NS	NS	NS	NS
12/11/2007		48,000	62	5,400	1,700	12,000
Q1 2008 ³⁾		NS	NS	NS	NS	NS
6/6/2008		31,000	5	1,000	1,300	9,000
9/18/2008		25,000	6	610	800	4,800
12/16/2008		34,000	6	750	930	6,000
3/31/2009		20,000	3	100	460	3,200
6/10/2009		27,000	<3	66	610	4,100
Q3 2009 ³⁾		NS	NS	NS	NS	NS
MW-10/MW-X⁷⁾	Q3 2007 ⁴⁾	NS	NS	NS	NS	NS
	12/14/2007	<50	<0.5	<0.5	<0.5	<0.5
	3/20/2008	<50	0.9	<0.5	<0.5	<0.5
	6/6/2008	<50	<0.5	<0.5	<0.5	<0.5
	9/18/2008	<50	<0.5	<0.5	<0.5	<0.5
	12/15/2008	<50	<0.5	<0.5	<0.5	<0.5
	3/27/2009	52	<0.5	0.7	<0.5	<0.5
	6/10/2009	<50	<0.5	1	<0.5	<0.5
	9/28/2009	<50/<50	<0.5/<0.5	<0.5/<0.5	<0.5/<0.5	<0.5/<0.5

TABLE 3
Summary of Groundwater Analytical Results
Gasoline Compounds
Third Quarter 2009 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Date	Gasoline Compounds				
		TPH-GRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
ESL¹⁾		100	1	40	30	20
MW-11	Q3 2007 ⁴⁾	NS	NS	NS	NS	NS
	12/14/2007	<50	<0.5	<0.5	<0.5	<0.5
	3/20/2008 ²⁾	<50 / <50	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5
	6/6/2008	<50	<0.5	<0.5	<0.5	<0.5
	9/18/2008	<50	<0.5	<0.5	<0.5	<0.5
	12/15/2008	<50	<0.5	<0.5	<0.5	<0.5
	3/27/2009	<50	<0.5	<0.5	<0.5	<0.5
	6/10/2009	59	<0.5	2	<0.5	3
	9/29/2009	<50	<0.5	<0.5	<0.5	<0.5
SW-Creek	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5
	8/22/2006	<50	<0.5	<0.5	<0.5	<0.5
	11/15/2006	<50	<0.5	<0.5	<0.5	<0.5
	11/15/2006	<50	<0.5	<0.5	<0.5	<0.5
Stream	2/21/2007	<50	<0.5	<0.5	<0.5	<0.5
	6/5/2007	<50	<0.5	<0.5	<0.5	<0.5
	9/12/2007	<50	<0.5	<0.5	<0.5	<0.5
	1/25/2008	<50	<0.5	<0.5	<0.5	<0.5
	3/20/2008	<50	<0.5	<0.5	<0.5	<0.5
	6/5/2008	<50	<0.5	<0.5	<0.5	<0.5
	9/18/2008	<50	<0.5	<0.5	<0.5	<0.5
	12/15/2008	<50	<0.5	<0.5	<0.5	<0.5
	3/31/2009	<50	<0.5	<0.5	<0.5	<0.5
	6/9/2009	<50	<0.5	<0.5	<0.5	<0.5
Q3 2009 ⁶⁾	NS	NS	NS	NS	NS	

Notes:

Bold values exceed laboratory reporting limits.

J qualifier - The reported value is the approximate concentration of the analyte in the sample due to sample heterogeneity.

µg/L - micrograms per liter

NS - Not Sampled

TPH-GRO - Total Petroleum Hydrocarbons as Gasoline Range Organics

1) Environmental Screening Levels (ESLs) for groundwater as a current or potential source of drinking water were obtained from the San Francisco Regional Water Quality Control Board (RWQCB) Interim Final: Table A, May 2008.

2) Both sample and duplicate concentrations from well location are displayed.

3) Sample not collected during quarterly monitoring due to the presence of measurable free product.

4) Sample not collected during quarterly monitoring because well is not hydraulically connected to unconfined water-bearing zone.

5) Sample not collected due to extreme overhead hazards posed by dead trees on the 80-90% grade directly uphill from the sampling location.

6) Sample not collected during quarterly monitoring due to the stream sample location being dry.

7) Duplicate sampled collected from MW-10 during the third quarter 2009 sampling event because MW-8 was not hydraulically connected to the water bearing zone.

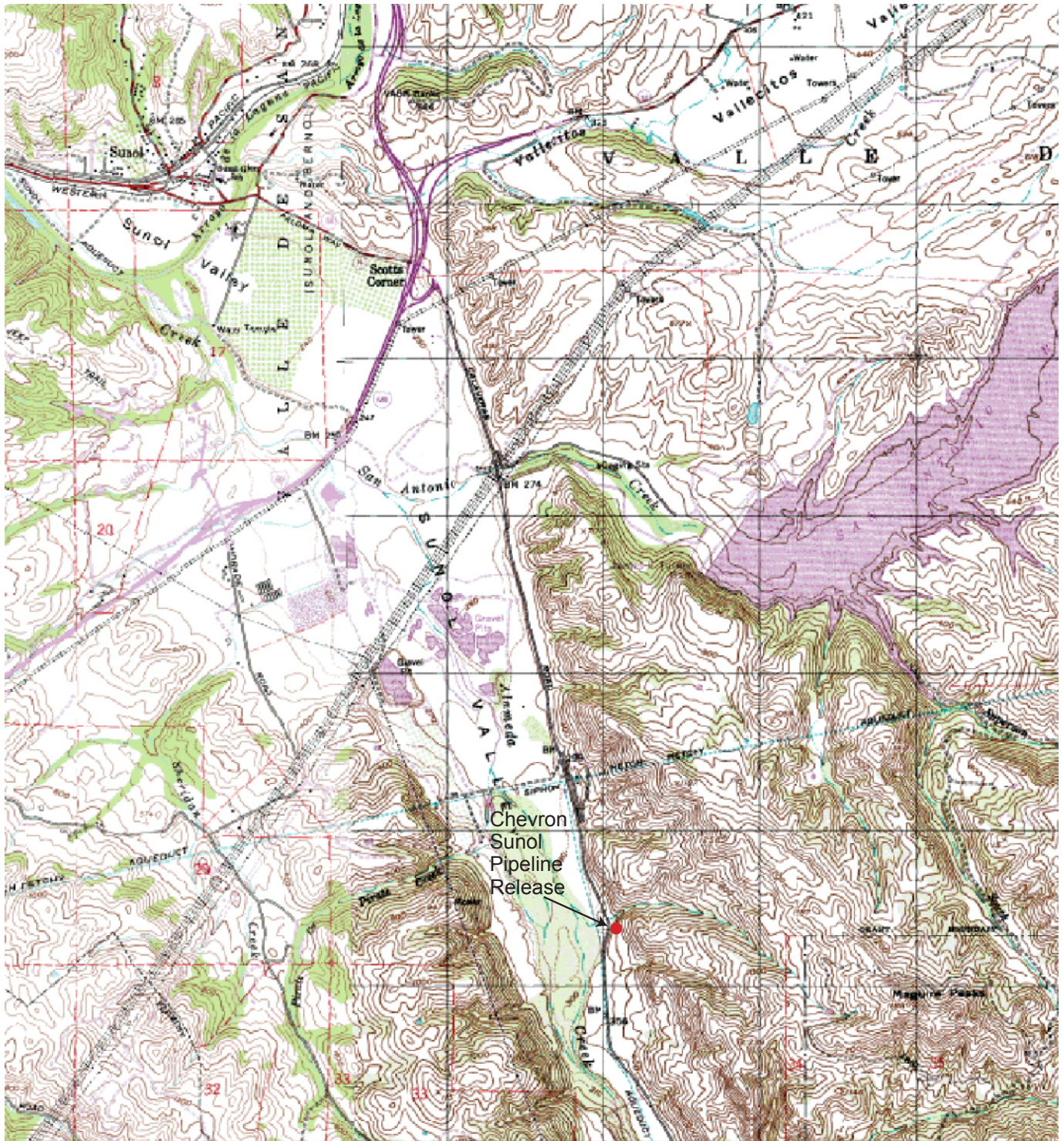
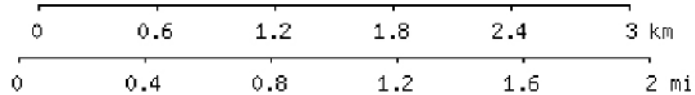


Image obtained from topozone.com



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



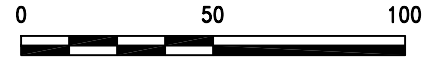
Chevron Pipeline Company
 Project No. 26815217

SITE VICINITY MAP
 CHEVRON SUNOL PIPELINE
 SUNOL, CALIFORNIA

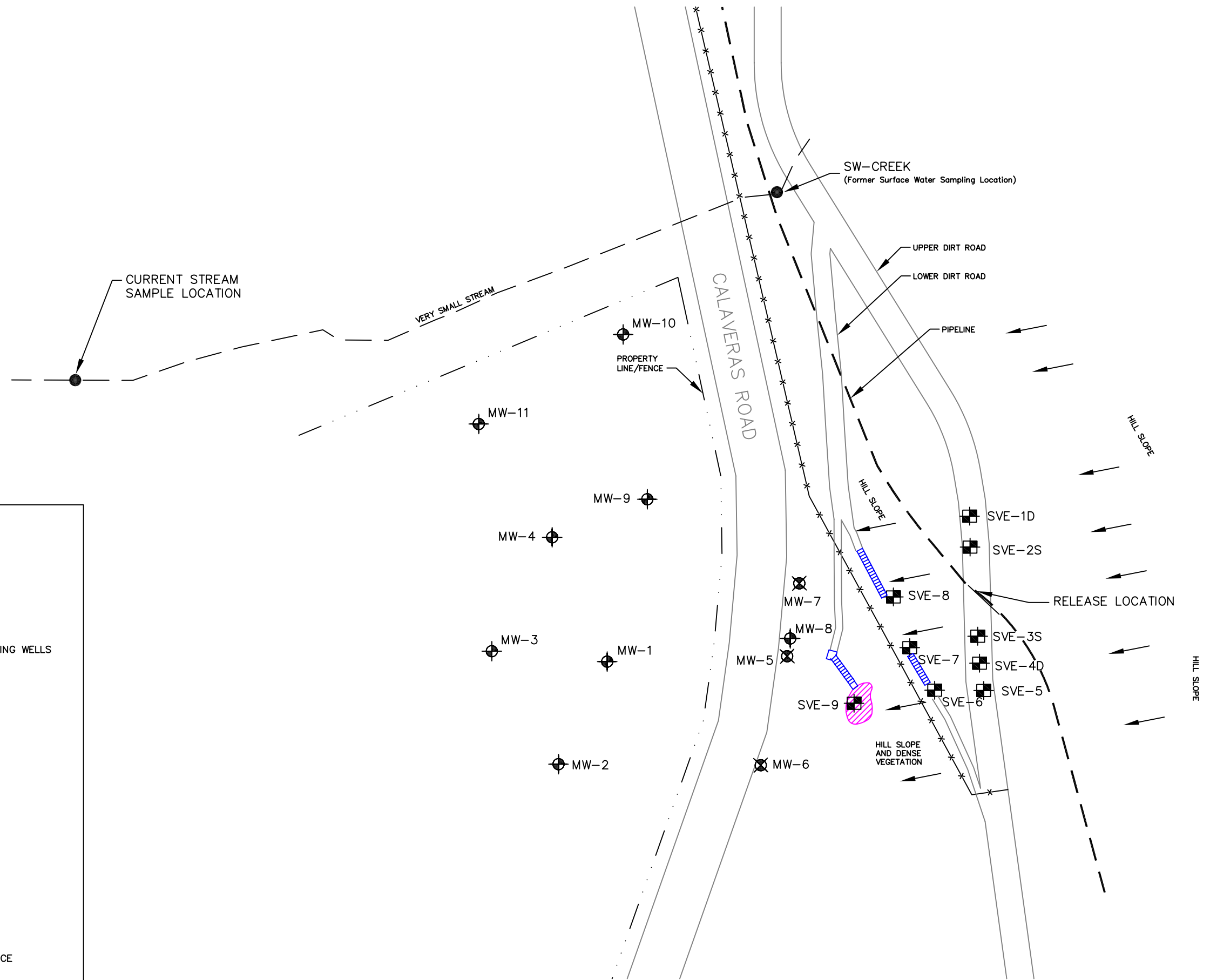
Figure
 1



NORTH



SCALE IN FEET



LEGEND:

- SURFACE WATER SAMPLE LOCATIONS
- MONITORING WELL
- ABANDONED MONITORING WELLS
- SVE WELL
- SHELF
- STAIRS
- FENCE
- PIPELINE
- SMALL STREAM
- PROPERTY LINE/FENCE
- HILL SLOPE 80-90% GRADE



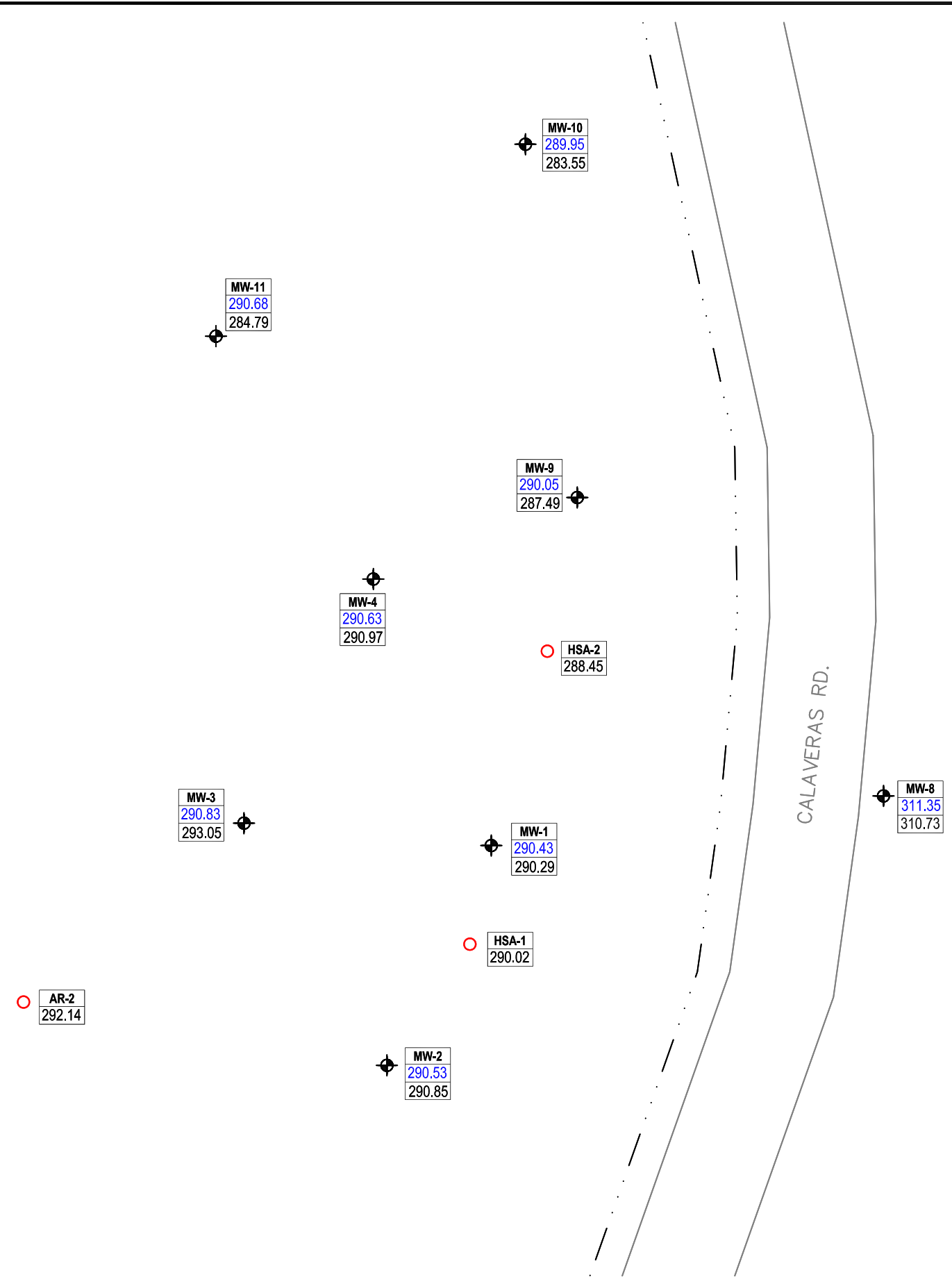
CHEVRON PIPELINE COMPANY

Project No. 26815217

SVE AND GROUNDWATER
MONITORING WELL LOCATIONS
CHEVRON SUNOL PIPELINE

Figure
2

10/06/2009 4:28pm
\\x-env\waste\Chevron Pipeline Company\Sunol Spill\Site Figures\Current CADD\FIGURE 3_102909.dwg

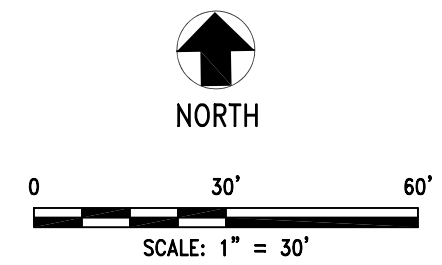


LEGEND:

- MONITORING WELL
- MONITORING WELL LABEL
- GROUNDWATER ELEVATION
- BEDROCK CONTACT ELEVATION
- SOIL BORING
- SOIL BORING LABEL
- BEDROCK CONTACT ELEVATION

NOTES:

1. ELEVATIONS IN FEET ABOVE AVERAGE MEAN SEA LEVEL (msl).
2. GROUNDWATER ELEVATIONS FOR MW-1 THROUGH MW-4 AND MW-8 THROUGH MW-11, AS MEASURED ON SEPTEMBER 28, 2009.
3. BEDROCK ELEVATION DATA OBTAINED FROM THE BORING LOGS OF MW-1 THROUGH MW-4, MW-9 THROUGH MW-11, HSA-1, HSA-2, AND AR-2.
4. THE BEDROCK ELEVATIONS SHOWN REPRESENT THE APPROXIMATE OVERBURDEN CONTACT WITH THE WEATHERED SILTSTONE/CLAYSTONE BEDROCK UNIT (POSSIBLY CRETACEOUS-AGE CLAY SHALE OF THE PANOCHÉ FORMATION).



Appendix A
Groundwater Sampling Forms



Horriba
09/28/09

Low-Flow System
ISI Low-Flow Log

Project Information:

Operator Name Rachel Naccarati/ Jacob Henry
Company Name URS
Project Name Chevron Sunol Pipeline
Site Name Sunol

Pump Information:

Pump Model/Type ES 90 P
Tubing Type Vinyl PVC
Tubing Diameter 0.38 [in]
Tubing Length 48.0 [ft]
Pump placement from TOC 45.0 [ft]

Well Information:

Well Id MW-9
Well diameter 2 [in]
Well total depth 46.0 [ft]
Depth to top of screen 36.0 [ft]
Screen length 10 [ft]
Depth to Water 43.02 [ft]

Pumping information:

Final pumping rate 500 mL/min
Flowcell volume NM
Calculated Sample Rate NM
Sample rate NM
Stabilized drawdown NM

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond. [µS/cm]	Turb [NTU]	DO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-3%	+/-1	+/-0.2	+/-20
Last 5 Readings	14:50	18.77	7.60	1056	--	1.72	-199.4
	14:53	18.37	8.08	1046	--	0.76	-185.4
	14:56	17.77	8.01	1031	--	0.91	-188.5
	14:59	17.77	8.04	1020	--	0.91	-191.9
	15:02	18.02	8.06	1024	--	1.17	-185.1
	15:05	18.42	8.09	1024	--	2.46	-172.0
	15:08	18.50	8.20	1017	--	4.86	-168.8
	15:11	18.50	8.19	1002	--	5.49	-161.6
	15:14	18.51	8.20	994	--	5.41	-162.1
	15:17	18.48	8.20	984	--	5.30	-160.4
Variance in last 3 readings		0.00	-0.01	-15	--	0.63	7.2
		0.01	0.01	-8	--	-0.08	-0.5
		-0.03	0.00	-10	--	-0.11	1.7

Notes:

Starting pumping at 14:50
Initial depth to water = 43.02 ft
Total Volume Purged = 8 gallons
Slight odor observed
Purged water was black to cloudy
During purging process noticed sheen on water and stopped purging. Free product observed in purge water. No sample collected.



Horriba
09/28/09

Low-Flow System
ISI Low-Flow Log

Project Information:

Operator Name Rachel Naccarati/ Jacob Henry
Company Name URS
Project Name Chevron Sunol Pipeline
Site Name Sunol

Pump Information:

Pump Model/Type ES 50 P
Tubing Type Vinyl PVC
Tubing Diameter 0.38 [in]
Tubing Length 57.3 [ft]
Pump placement from TOC 54.3 [ft]

Well Information:

Well Id MW-10
Well diameter 2 [in]
Well total depth 55.3 [ft]
Depth to top of screen 40.3 [ft]
Screen length 15 [ft]
Depth to Water 45.94 [ft]

Pumping information:

Final pumping rate 750 mL/min
Flowcell volume NM
Calculated Sample Rate NM
Sample rate NM
Stabilized drawdown NM

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond. [µS/cm]	Turb [NTU]	DO [mg/L]	ORP [mV]	
Stabilization Settings			+/-0.2	+/-3%	+/-1	+/-0.2	+/-20	
Last 5 Readings	13:40	18.09	8.87	1547	--	0.75	-186.9	
	13:43	17.87	8.39	1483	--	0.49	-135.4	
	13:45	18.31	8.00	1455	--	0.53	-76.5	
	13:48	18.25	7.99	1455	--	0.62	-72.6	
	13:51	18.45	8.01	1454	--	0.69	-71.3	
	13:54	18.85	8.07	1461	--	0.73	-71.5	
	13:55	MW-10 Sample Collected						
Variance in last 3 readings		-0.06	-0.01	0.00	--	0.09	3.90	
		0.20	0.02	-1.00	--	0.07	1.30	
		0.40	0.06	7.00	--	0.04	-0.20	

Notes:

Starting pumping at 13:33
Initial depth to water = 45.94 ft
Total Volume Purged = 3 gallons
Sample collected at 13:55
Final Depth to Water: 50.97 ft
Slight odor
Purge water dark



Horriba
09/28/09

Low-Flow System
ISI Low-Flow Log

Project Information:

Operator Name Rachel Naccarati/ Jacob Henry
Company Name URS
Project Name Chevron Sunol Pipeline
Site Name Sunol

Pump Information:

Pump Model/Type ES 90 P
Tubing Type Vinyl PVC
Tubing Diameter 0.38 [in]
Tubing Length 49.0 [ft]
Pump placement from TOC 46.0 [ft]

Well Information:

Well Id MW-11
Well diameter 2 [in]
Well total depth 47.0 [ft]
Depth to top of screen 37.0 [ft]
Screen length 10 [ft]
Depth to Water 39.21 [ft]

Pumping information:

Final pumping rate 300 mL/min
Flowcell volume NM
Calculated Sample Rate NM
Sample rate NM
Stabilized drawdown NM

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond. [µS/cm]	Turb [NTU]	DO [mg/L]	ORP [mV]	
Stabilization Settings			+/-0.2	+/-3%	+/-1	+/-0.2	+/-20	
Last 5 Readings	13:10	17.22	7.50	1543	--	1.60	-7.1	
	13:13	17.36	7.41	1549	--	1.41	-9.1	
	13:16	17.63	7.40	1558	--	1.16	-11.7	
	13:19	18.44	7.40	1585	--	0.98	-10.5	
	13:22	18.09	7.87	1624	--	1.42	-51.9	
	13:25	17.83	7.99	1670	--	1.65	-72.3	
	13:28	Well Dewatered						
Variance in last 3 readings		0.81	0.00	27.00	--	-0.18	1.20	
		-0.35	0.47	39.00	--	0.44	-41.40	
		-0.26	0.12	46.00	--	0.23	-20.40	

Notes:
Starting pumping at 13:05
Initial depth to water = 39.21 ft
Total Volume Purged = 3 gallons
Sample collected at 10:25 on 9/29/09
Final Depth to water = Dry

Appendix B
Laboratory Analytical Results

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

October 08, 2009

Project: Sunol, CA

Samples arrived at the laboratory on Wednesday, September 30, 2009. The PO# for this group is 0015036686 and the release number is COSGRAY. The group number for this submittal is 1164118.

<u>Client Sample Description</u>	<u>Lancaster Labs (LLI) #</u>
MW-10 Grab Water	5791786
MW-11 Grab Water	5791787
MW-X Grab Water	5791788
Trip Blank NA Water	5791789

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC URS
COPY TO
ELECTRONIC URS
COPY TO
ELECTRONIC URS
COPY TO

Attn: Joe Morgan

Attn: Rachel Naccarati

Attn: Jacob Henry

Questions? Contact your Client Services Representative
Elizabeth A Leonhardt at (510) 232-8894

Respectfully Submitted,



Christine Dulaney
Senior Specialist



Analysis Report

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

Sample Description: MW-10 Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-10

LLI Sample # WW 5791786
LLI Group # 1164118
CA

Project Name: Sunol, CA

Collected: 09/28/2009 13:55 by JH

Account Number: 11875

Submitted: 09/30/2009 08:50

Chevron Pipeline Co.

Reported: 10/08/2009 at 12:18

4800 Fournace Place - E320 D

Discard: 11/08/2009

Bellaire TX 77401

SUN10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS Volatiles			ug/l	ug/l	
06053	Benzene	71-43-2	N.D.	0.5	1
06053	Ethylbenzene	100-41-4	N.D.	0.5	1
06053	Toluene	108-88-3	N.D.	0.5	1
06053	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Volatiles			ug/l	ug/l	
01728	TPH-GRO N. CA water C6-C12	n.a.	N.D.	50	1

General Sample Comments

State of California Lab Certification No. 2501

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06053	BTEX by 8260B	SW-846 8260B	1	D092744AA	10/01/2009 21:30	Michael A Ziegler	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D092744AA	10/01/2009 21:30	Michael A Ziegler	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	09278A20A	10/05/2009 14:56	Matthew S Woods	1
01146	GC VOA Water Prep	SW-846 5030B	1	09278A20A	10/05/2009 14:56	Matthew S Woods	1



Analysis Report

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

Sample Description: MW-11 Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-11

LLI Sample # WW 5791787
LLI Group # 1164118
CA

Project Name: Sunol, CA

Collected: 09/29/2009 10:20 by JH

Account Number: 11875

Submitted: 09/30/2009 08:50

Chevron Pipeline Co.

Reported: 10/08/2009 at 12:18

4800 Fournace Place - E320 D

Discard: 11/08/2009

Bellaire TX 77401

SUN11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS Volatiles			ug/l	ug/l	
06053	Benzene	71-43-2	N.D.	0.5	1
06053	Ethylbenzene	100-41-4	N.D.	0.5	1
06053	Toluene	108-88-3	N.D.	0.5	1
06053	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Volatiles			ug/l	ug/l	
01728	TPH-GRO N. CA water C6-C12	n.a.	N.D.	50	1

General Sample Comments

State of California Lab Certification No. 2501

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06053	BTEX by 8260B	SW-846 8260B	1	D092744AA	10/01/2009 22:39	Michael A Ziegler	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D092744AA	10/01/2009 22:39	Michael A Ziegler	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	09280A20A	10/07/2009 22:39	Matthew S Woods	1
01146	GC VOA Water Prep	SW-846 5030B	1	09280A20A	10/07/2009 22:39	Matthew S Woods	1



Analysis Report

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

Sample Description: MW-X Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-X

LLI Sample # WW 5791788
LLI Group # 1164118
CA

Project Name: Sunol, CA

Collected: 09/28/2009 14:05 by JH

Account Number: 11875

Submitted: 09/30/2009 08:50

Chevron Pipeline Co.

Reported: 10/08/2009 at 12:18

4800 Fournace Place - E320 D

Discard: 11/08/2009

Bellaire TX 77401

SUNMX

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS Volatiles			ug/l	ug/l	
06053	Benzene	71-43-2	N.D.	0.5	1
06053	Ethylbenzene	100-41-4	N.D.	0.5	1
06053	Toluene	108-88-3	N.D.	0.5	1
06053	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Volatiles			ug/l	ug/l	
01728	TPH-GRO N. CA water C6-C12	n.a.	N.D.	50	1

General Sample Comments

State of California Lab Certification No. 2501

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06053	BTEX by 8260B	SW-846 8260B	1	D092744AA	10/01/2009 23:02	Michael A Ziegler	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D092744AA	10/01/2009 23:02	Michael A Ziegler	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	09280A20A	10/07/2009 23:01	Matthew S Woods	1
01146	GC VOA Water Prep	SW-846 5030B	1	09280A20A	10/07/2009 23:01	Matthew S Woods	1



Analysis Report

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

Sample Description: Trip Blank NA Water
NA URSO
Sunol Pipeline SL0600100443 Trip Blank

LLI Sample # WW 5791789
LLI Group # 1164118
CA

Project Name: Sunol, CA

Collected: 09/28/2009

Account Number: 11875

Submitted: 09/30/2009 08:50
Reported: 10/08/2009 at 12:18
Discard: 11/08/2009

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

SUN-T

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS Volatiles			ug/l	ug/l	
06053	Benzene	71-43-2	N.D.	0.5	1
06053	Ethylbenzene	100-41-4	N.D.	0.5	1
06053	Toluene	108-88-3	N.D.	0.5	1
06053	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Volatiles			ug/l	ug/l	
01728	TPH-GRO N. CA water C6-C12	n.a.	N.D.	50	1

General Sample Comments

State of California Lab Certification No. 2501

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06053	BTEX by 8260B	SW-846 8260B	1	D092744AA	10/01/2009 23:26	Michael A Ziegler	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D092744AA	10/01/2009 23:26	Michael A Ziegler	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	09280A20A	10/07/2009 22:17	Matthew S Woods	1
01146	GC VOA Water Prep	SW-846 5030B	1	09280A20A	10/07/2009 22:17	Matthew S Woods	1

Quality Control Summary

 Client Name: Chevron Pipeline Co.
 Reported: 10/08/09 at 12:18 PM

Group Number: 1164118

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

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank MDL</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: D092744AA	Sample number(s): 5791786-5791789							
Benzene	N.D.	0.5	ug/l	90		79-120		
Ethylbenzene	N.D.	0.5	ug/l	86		79-120		
Toluene	N.D.	0.5	ug/l	88		79-120		
Xylene (Total)	N.D.	0.5	ug/l	87		80-120		
Batch number: 09278A20A	Sample number(s): 5791786							
TPH-GRO N. CA water C6-C12	N.D.	50.	ug/l	118	118	75-135	0	30
Batch number: 09280A20A	Sample number(s): 5791787-5791789							
TPH-GRO N. CA water C6-C12	N.D.	50.	ug/l	118	118	75-135	0	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

<u>Analysis Name</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>MS/MSD Limits</u>	<u>RPD</u>	<u>RPD MAX</u>	<u>BKG Conc</u>	<u>DUP Conc</u>	<u>DUP RPD</u>	<u>Dup RPD Max</u>
Batch number: D092744AA	Sample number(s): 5791786-5791789 UNSPK: 5791786								
Benzene	102	98	80-126	4	30				
Ethylbenzene	98	94	71-134	4	30				
Toluene	99	94	80-125	5	30				
Xylene (Total)	97	94	79-125	3	30				
Batch number: 09278A20A	Sample number(s): 5791786 UNSPK: 5791786								
TPH-GRO N. CA water C6-C12	127		63-154						
Batch number: 09280A20A	Sample number(s): 5791787-5791789 UNSPK: 5791787								
TPH-GRO N. CA water C6-C12	100		63-154						

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: BTEX by 8260B

Batch number: D092744AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5791786	103	100	96	103

*- Outside of specification

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

Quality Control Summary

Client Name: Chevron Pipeline Co.
Reported: 10/08/09 at 12:18 PM

Group Number: 1164118

Surrogate Quality Control

5791787	102	102	97	103
5791788	103	102	97	104
5791789	103	103	96	103
Blank	103	105	97	103
LCS	101	101	97	109
MS	102	103	97	109
MSD	102	104	96	109
<hr/>				
Limits:	80-116	77-113	80-113	78-113

Analysis Name: TPH-GRO N. CA water C6-C12
Batch number: 09278A20A
Trifluorotoluene-F

5791786	83
Blank	82
LCS	110
LCSD	113
MS	102

Limits: 63-135

Analysis Name: TPH-GRO N. CA water C6-C12
Batch number: 09280A20A
Trifluorotoluene-F

5791787	71
5791788	72
5791789	78
Blank	70
LCS	105
LCSD	99
MS	99

Limits: 63-135

*- Outside of specification

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

Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only

Acct. # 11875 Group# 1164118 Sample # 5791786-89 **COC #** 213086

Please print. Instructions on reverse side correspond with circled numbers.

For Lab Use Only

FSC: _____
SCR#: _____

1 Client: Sumol Spill Acct. #: _____
 Project Name/ #: Chevron Pipeline PWSID #: _____
 Project Manager: Joe Morgan, WES P.O.#: _____
 Sampler: J Henry / R Naccarato Quote #: _____
 Name of state where samples were collected: CA

Matrix		5 Analyses Requested									
		Preservation Codes									
Soil	Water	Other	H	H							
			H	H							
			X	X							

Preservation Codes
 H=HCl T=Thiosulfate
 N=HNO₃ B=NaOH
 S=H₂SO₄ O=Other

2 Sample Identification	Date Collected	Time Collected	3		Soil	Water	Other	4 Total # of Containers	TPH-90 by LA	BTEX by 8260B	Remarks
			Grab	Composite							
MW-10	9/28/09	1355	X			X		6	X	X	
MW-11	9/29/09	1020	X			X		6	X	X	
MW-X	9/28/09	1405	X			X		6	X	X	

6 Temperature of samples upon receipt (if requested)

7 Turnaround Time Requested (TAT) (please circle): Normal Rush
 (Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
 Date results are needed: _____
 Rush results requested by (please circle): Phone Fax E-mail
 Phone #: _____ Fax #: _____
 E-mail address: _____

Relinquished by:	Date	Time	Received by:	Date	Time
<u>[Signature]</u>	9/29/09	1100			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

8 Data Package Options (please circle if required)

Type I (validation/NJ Reg)	TX TRRP-13	SDG Complete? Yes No
Type II (Tier II)	MA MCP CT RCP	
Type III (Reduced NJ)	Site-specific QC (MS/MSD/Dup)? Yes No	
Type IV (CLP SOW)	(If yes, indicate QC sample and submit triplicate volume.)	
Type VI (Raw Data Only)	Internal COC Required? Yes / No	

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 <u>limit of quantitation</u> , 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 quantitated 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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