Nahas Company, LLC
Real Estate Services

1111 Stone Valley Rd.
Alamo, CA 94507
P. O. Box 3059
San Ramon, CA 94583
925-855-1978
Fax. 925-855-1414

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9:40 am, Feb 25, 2011
Alameda County
Environmental Health

February 22, 2011

Alameda County Environmental Health
Attn: Barbara Jakub, P.G.
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Status Report
Second Half 2010
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Dear Ms. Jakub:

Enclosed please find a copy of the subject Status Report dated February 11, 2011, prepared by BSK Associates.

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.

Sincerely,

Randall Nahas

BSK Associates
Engineers & Laboratories

STATUS REPORT
SECOND HALF 2010

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

BSK PROJECT E0805401S

PREPARED FOR:

MR. RANDALL NAHAS
P.O. BOX 3049
SAN RAMON, CA 94583

FEBRUARY 11, 2011

STATUS REPORT
SECOND HALF 2010
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

Prepared for:

Mr. Randall Nahas
P.O. Box 3059
San Ramon, CA 94583

BSK Project: E0805401S

February 11, 2011

Erin Basel
Staff Scientist

Jeffrey Yeazell, P.E.
Project Manager

BSK Associates
3140 Gold Camp Drive, Suite 160
Rancho Cordova, CA 95670
(916) 853-9293
(916) 853-9297 FAX
www.bskinc.com

BSK

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STATUS REPORT
SECOND HALF 2010
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

1.0 INTRODUCTION

At the request of Mr. Randall Nahas, BSK Associates performed groundwater monitoring and prepared this report summarizing data collected from the semi-annual monitoring of six groundwater monitoring wells located at the Former Unocal Service Station, 20405 Redwood Road, Castro Valley, California (the site). The site vicinity is shown on Figure 1.

2.0 PROJECT SITE DESCRIPTION AND HISTORY

December 1989, Soil Investigation and Monitoring Well Installation: In December 1989, three groundwater monitoring wells (MW-2, MW-3 and MW-4) were installed at the locations shown on Figure 2. Soil samples were collected from soil borings MW-1 and MW-1A; however, they were not converted to monitoring wells (BSK, 1995). Summaries of soil sample analytical results are presented in Table 1 (petroleum hydrocarbons) and Table 2 (volatile and semi-volatile organic compounds). Monitoring well groundwater sample analytical results are summarized in Table 3.

March 1991, Soil Investigation: Thirteen soil borings (SB-1 through SB-13) were advanced at the locations shown on Figure 2 to depths ranging between approximately 10 and 20 feet bgs (BSK, 1996). Soil sample analytical results are summarized in Table 1.

March through April 1992, Soil Borings and Monitoring Well Installation: Soil borings MW-5, MW-6, MW-7, SB-14, and SB-15 were drilled at the locations shown on Figure 2. A summary of soil sample analytical results is presented in Table 1. Borings MW-5, MW-6, and MW-7 were completed as groundwater monitoring wells.

October 1992, Chromatograph Evaluation: BSK identified a non-standard peak in the chromatograph from a groundwater sample from well MW-7. The peak was not typical of petroleum hydrocarbons.

November 1992, Groundwater Sampling: Groundwater samples from monitoring well MW-7 were analyzed for volatile halocarbons by EPA Method 601. Analytical results are summarized in Table 3. Tetrachloroethylene (PCE) and trichloroethylene (TCE) were detected in groundwater samples from well MW-7 at concentrations of 14,000 µg/L and 660 µg/L, respectively. BSK Associates attributed the previous concentrations of TPHg to the presence of PCE and concluded gasoline contamination may not occur in a significant quantity in monitoring well MW-7. As a result, BSK Associates recommended ceasing any further investigation of the gasoline plume south of well MW-7 (BSK, 1992b).

November 1993, Soil Borings: Soil borings SP-1 and SP-2 were advanced at the locations shown on Figure 2. Soil and groundwater samples were collected from each boring. Summaries of soil sample analytical results are presented in Table 1 (petroleum hydrocarbons) and Table 2 (volatile and semi-volatile organic compounds). Monitoring well groundwater sample analytical results are summarized in Table 3 (Philip Environmental, 1996).

December 1995, Feasibility Study: Excavation and on-site treatment of excavated soil was selected as the remedial alternative for soil impacts. As a part of the feasibility study, an aquifer pump test was conducted. Groundwater extraction well MW-101 was installed at the location shown on Figure 2. Pump-and-treat was determined to be a feasible remedial alternative for groundwater impacts at the site. (BSK, 1995).

June 1996, Revised Corrective Action Plan: Philip Environmental prepared a Revised Corrective Action Plan. The plan stated that the site operator and property owner planned to cease operation of the site as a service station, which would require closure of the underground storage tanks. Philip Environmental recommended removal of the USTs, soil excavation and limited groundwater extraction (Philip Environmental, 1996).

As part of the Revised Corrective Action Plan, Tier I and Tier II Risk Assessments were conducted. Results of the Tier I Risk Assessment show benzene levels in soil at the site exceeded the risk based screening levels for volatilization from soil to outdoor air, vapor intrusion from soil to on-site buildings, soil ingestion, and leachate from soil to water exposure pathways. Toluene levels in soil at the site exceeded the risk based screening levels for the vapor intrusion from soil to on-site buildings exposure pathway. Results of the Tier II Risk Assessment indicated that concentrations of phase separated hydrocarbons and benzene in soil and groundwater exceed Tier II site specific screening levels in the area adjacent to the USTs and the southern property boundary (Philip Environmental, 1996).

Summer 1997, Service Station Building Demolition: The service station building was demolished and fuel dispensers removed (Life Springs Environmental Inc., 1999).

November 1998, UST Removal: The concrete slabs and foundation of the building, fueling area, and pump islands, were broken up and hauled to a recycling facility. The three USTs and associated piping were removed and transported to Ecology Control Industries (ECI) in Richmond, California. Two hydraulic hoists and clarifier sump were also removed. No holes were observed in the gasoline USTs, but small holes were observed in the waste oil UST. The excavated soil (approximately 175 cubic yards) was stockpiled. Figure 3 shows the approximate extent of the excavation.

Soil samples were collected after excavation. Sample locations are shown on Figure 3. Tables 1 and 2 provide summaries of soil sample analytical results. The release of petroleum hydrocarbons at the site appears to have primarily impacted the backfill material surrounding the two 10,000 gallon gasoline USTs (Life Springs Environmental Inc., 1999).

The UST pit was backfilled with aggregate base to within 5 feet of ground surface. Winter weather conditions led Life Springs Environmental Inc. to place impacted soil back in the excavations of the waste oil UST and clarifier sump (Life Springs Environmental Inc., 1999).

April 1999, Stockpiled Soil Remediation: Beginning in April 1999, impacted soil from the main UST excavation was laid out in shallow beds and aerated by periodic tilling.

May 1999, Soil Re-Excavation and Sampling: The waste oil UST and clarifier sump areas were re-excavated, with the second excavation extending slightly deeper then the first. Excavated soil from the waste oil UST and clarifier sump pits was disposed of at Vasco Road Sanitary Landfill in Livermore, California (Life Springs Environmental Inc., 2000). Soil samples were collected from native soil in both pits and analyzed for TPHd and total oil and grease. A section of the pipe trench area was excavated to a depth of 3 feet bgs. Excavated soil from the trench was laid out in shallow beds for aeration. A soil sample was collected from the trench re-excavation (sample name: GASLINE). The sample was analyzed for TPHg/BTEX and MTBE. Table 1 provides a summary of soil sample analytical results. Figure 3 shows the approximate extent of re-excavation and sample locations.

August 1999, Waste Oil and Clarifier Sump Pit Sampling and Soil Stockpiling: The aerated soil from precious excavations was stockpiled. Soil samples were collected from the bottom of the waste oil and clarifier sump pits at depths of 10 and 7 feet bgs respectively (Life Springs Environmental Inc., 1999). Table 1 provides a summary of soil sample analytical results, Figure 3 shows the approximate sample locations.

September 1999, Waste Oil Pit Sampling: A soil sample was collected from within the waste oil pit at a depth of 11.5 bgs and analyzed for chlorinated hydrocarbons and TPHd. Table 1 provides a summary of soil sample analytical results, Figure 3 shows the approximate sample location.

October 1999, Clarifier Sump Pit Sampling: A soil sample was collected within the clarifier sump pit at a depth of 9.5 feet bgs. Table 1 provides a summary of soil sample analytical results, Figure 3 shows the approximate sample location.

November 1999, Permission to Re-Use Stockpiled Soil: Permission was granted by Alameda County Environmental Health Services for the re-use of the stockpiled soil that had been remediated by aeration (Life Springs Environmental Inc., 2000).

December 1999, Waste Oil and Clarifier Sump Pit Deepening and Sampling: The waste oil pit was deepened to 10 feet bgs and the clarifier sump pit was deepened to 14 feet bgs. Soil removed from the over-excavation was also transported to the Vasco Road Sanitary Landfill in Livermore, California. Approximately 36.1 tons of soil were removed from both the waste oil pit and the clarifier sump pit during both re-excavation and over-excavation events. Soil samples were collected from the native soil in the bottom of each pit. The two excavations along with the final five feet of the main excavation were filled in with the remediated soil from the main excavation. Table 1 provides a summary of soil sample analytical results. Figure 3 shows the approximate extent of the over-excavation and sample locations.

Monitoring well MW-4 was abandoned by pressure grouting and drilling out. The vault boxes for monitoring wells MW-2 and MW-101 were replaced (Life Springs Environmental Inc., 2000).

Groundwater Monitoring Program: From August 1990 through 1999, groundwater monitoring activities were performed on a quarterly basis. Groundwater monitoring was performed semi-annually starting in 1999 through September 2003. Groundwater monitoring was not conducted from the third quarter of 2003 through the third quarter of 2008. Groundwater monitoring analytical data are summarized in Table 3 (petroleum hydrocarbon constituents) and Table 4 (volatile organic hydrocarbons). Groundwater elevation data are summarized in Table 5. Currently, groundwater monitoring is conducted on a semi-annual basis.

3.0 PURPOSE AND SCOPE

The purpose of groundwater monitoring is to collect data on groundwater quality, groundwater depths, and direction of flow beneath the subject property with the intention of evaluating residual hydrocarbon contamination in groundwater beneath the site. Due to scheduling conflicts, we were unable to conduct the second-half monitoring event, planned for December 2010, until January 7, 2011. BSK performed the following tasks:

- Measured depth to groundwater in three of the six monitoring wells on January 7, 2011. At the time of sampling, monitoring wells MW-2 and MW-3 were inaccessible. Monitoring wells MW-2 and MW-3 were covered by a layer of mulch and could not be located.
- Purged and sampled four of the six groundwater monitoring wells.
- Analyzed groundwater samples from each accessible monitoring well, for:
  - Total petroleum hydrocarbons as diesel (TPHd)
  - Total petroleum hydrocarbons as gasoline (TPHg)
  - Benzene, toluene, ethylbenzene, and xylenes (BTEX)
  - Fuel Oxygenates
  - Lead Scavengers
- Prepared this status report summarizing the condition of the wells, depth to groundwater, groundwater flow direction, and laboratory analytical results.

4.0 GROUNDWATER FLOW DIRECTION

Groundwater depths were measured in the four accessible monitoring wells prior to purging and sampling on January 7, 2011. Depths were measured relative to the north side of the top of each well casing.

Based on our measurements, groundwater generally flowed southeast with an approximate hydraulic gradient of 0.02 feet/foot. Figure 4 presents a groundwater elevation contour map for the recent monitoring event, and includes a rose diagram depicting a summary of groundwater flow directions since 1992. Table 5 summarizes groundwater elevations recorded during the investigation. Table 6 summarizes associated groundwater gradient and flow direction data.

5.0 GROUNDWATER SAMPLING AND ANALYTICAL RESULTS

Groundwater sampling was conducted on January 7, 2011. Each well was purged of a minimum of three casing volumes using an electric submersible pump. Water temperature, pH, and conductivity were measured after removal of each approximate casing volume. Water sample logs are included in Appendix A.

After purging, water samples were collected from each well using a clean disposable bailer. The samples were labeled with the sample identification, date and time collected, and project identification. Samples were preserved in a chilled cooler and transported with completed chain-of-custody forms to BSK's state-certified analytical laboratory. The samples were analyzed for TPHd and TPHg by EPA Method 8015B, BTEX by EPA Method 8021B, and fuel oxygenates and lead scavengers by EPA Method 8260B. Equipment used during purging and sampling activities was cleaned with non-phosphate detergent wash and rinsed prior to use at each well location. The purged groundwater was stored in appropriately-labeled 55-gallon drums at the site.

Tables 3 and 4 summarize past quarterly monitoring analytical results. Figures 5 through 9 present time series plots for monitoring wells MW-2, MW-3, MW-6, MW-7, and MW-101, respectively. Appendix B contains laboratory data reports and chain-of-custody documentation for the samples collected this quarter.

6.0 DISCUSSION AND RECOMMENDATIONS

BSK has had significant difficulties in efficiently locating monitoring wells MW-2 and MW-3. Between sampling events, the wells become covered with bark and debris, and we have had minimal success in locating them with GPS devices and metal detectors.

BSK recommends the following:

1. Locate monitoring wells MW-2 and MW-3 and install a crash post next to their vault boxes. The crash posts will allow us to readily locate the wells in the future and also help in protecting the vault boxes from potential damage in the future.

7.0 LIMITATIONS

This report has been prepared for the exclusive use of Mr. Randall Nahas. Unauthorized use of or reliance on the information contained in this report by others, unless given the express written consent by BSK Associates, is prohibited.

The conclusions presented in this report are professional opinions based on the indicated data described in this report. This report has been prepared in accordance with generally accepted methodologies and standards of professional practice. No other warranties, either expressed or implied, are made as to the findings or conclusions included in the report. Conclusions and recommendations are intended only for the purpose, site location and project indicated.

Opinions presented in this report apply to site conditions existing at the time of our study and those reasonably foreseeable. They cannot necessarily apply to site changes of which this office is not aware and has not evaluated. Changes in the conditions of the subject property may occur with time, because of natural processes or the works of man, on the subject site or on adjacent properties.

8.0 REFERENCES

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TABLES

Table 1
Soil Sample Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Location	Depth (feet)	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	Oil and Grease	Total Lead	MTBE
December 1989, Soil Investigation and Monitoring Well Installation										
MW-1	5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	10	**89**	-	**1.8**	**7.8**	**3.8**	**20**	-	-	-
	15	<10	-	**0.09**	<0.02	<0.02	<0.02	-	-	-
	19	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
MW-1A	5	<10	<10	<0.02	<0.02	<0.02	<0.02	-	<2.0	-
	10	**110**	**50**[b]	**2.2**	**11**	**5.4**	**25**	-	<2.0	-
	13	**11**	<10	**0.64**	**0.71**	**0.64**	**3.5**	-	<2.0	-
	16.5	<10	<10	<0.02	<0.02	<0.02	<0.02	-	<2.0	-
MW-2	5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	10	<10	-	**0.05**	<0.02	<0.02	**0.03**	-	-	-
	15	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	20	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
MW-3	5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	10	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	15	**92**	-	ND	ND	**0.97**	**4.0**	-	-	-
	19	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
MW-4[a]	5	-	<10	<0.02	<0.02	<0.02	<0.02	<100	-	-
	8.5	-	<10	<0.02	<0.02	<0.02	<0.02	<100	-	-
	13	-	<10	<0.02	<0.02	<0.02	<0.02	<100	-	-
March 1991, Soil Investigation										
SB-1	14.5	<10	-	**0.05**	**0.03**	<0.02	**0.06**	-	-	-
SB-2	10.5	**440**	-	**4.5**	**18**	**11**	**55**	-	<2.0	-
	13	**810**	**340**[b]	**5.3**	**4.2**	**13**	**76**	-	-	-
SB-3	13.5	**15**	<10	**0.09**	**0.18**	**0.19**	**1.1**	-	<2.0	-
	17	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-4	14	<10	<10	<0.02	<0.02	<0.02	**0.1**	-	-	-
SB-5	14.5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-6	15	**310**	-	**0.8**	**15**	**6.2**	**36**	-	-	-
SB-8	20.5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-10	16	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-11	10.5	**31**	-	**0.09**	**0.03**	**0.49**	**1.8**	-	-	-
SB-12	15.5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-13	10.5	**1100**	-	**5.5**	**67**	**27**	**140**	-	-	-
	14	**530**	-	**7.8**	**48**	**14**	**73**	-	-	-

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Table 1
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Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Location	Depth (feet)	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	Oil and Grease	Total Lead	MTBE
March through April 1992, Soil Borings and Monitoring Well Installation										
SB-14	21	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
SB-15	20.5	<1	**3**	<0.005	**0.007**	<0.005	<0.008	-	-	-
MW-5	21	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
MW-6	16	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
MW-7	15.5	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
November 1993, Soil Borings										
SP-2	14	**9**	-	**0.14**	**0.52**	**0.19**	**1.0**	-	-	-
SP-1	16	-	-	**0.18**	<0.005	**0.075**	**0.055**	-	-	-
December 1995, Monitoring Well Installation										
MW-101	10	**120**	-	<0.005	**0.95**	**2.1**	**11**	-	-	-
	15	**63**	-	ND	**1.5**	**0.87**	**9.8**	-	-	-
November 1998, UST Removal										
WO	8	<1.0	**270**	<0.005	**0.0061**	**0.027**	**0.079**	**2300**	**9.0**	<0.005
PIT NE COR	12	**47**	-	<0.62	<0.62	**0.74**	**3.4**	-	-	<0.62
PIT NE BOT	13	**14**	-	<0.62	<0.62	<0.62	<0.62	-	-	<0.62
PIT SE	12	**31**	-	<0.62	**1.8**	<0.62	**3.0**	-	-	<0.62
PIT SE	unk	**100**	-	<2.5	<2.5	**2.6**	**14**	-	-	<2.5
PIT SW	11.5	**22**	-	<0.62	<0.62	<0.62	**3.0**	-	-	<0.62
PIT NW	12	**2.6**	-	**0.088**	**0.0054**	**0.11**	**0.52**	-	-	**0.014**
WL NW	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	**0.018**
WL J	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
WIS S	2	**410**	-	**3.6**	**11**	**12**	**72**	-	-	**0.80**
WIS N	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
EJ	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
EIS S	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
EIS N	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
CJ	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
WEST HOIST[3]	8.5	-	**1000*,**[1]	-	-	-	-	-	-	-
EAST HOIST[3]	8.5	-	<1.0**	-	-	-	-	-	-	-
SUMP	4.5	<1.0	**120**[1]	<0.005	<0.005	<0.005	<0.005	**96**	**7.9**	<0.005

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Table 1
Soil Sample Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Location	Depth (feet)	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	Oil and Grease	Total Lead	MTBE
May 1999, Soil Re-excavation and Sampling										
GASLINE	3	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	-
SUMP	4	-	**2700[1]/4800[c]**	-	-	-	-	-	-	-
WO	9	-	**38[1]**	-	-	-	-	**140**	-	-
August 1999, Waste Oil and Clarifier Sump Pit Sampling										
SUMP	7	-	**84**	-	-	-	-	**88**	-	-
WO	10	-	**560**	-	-	-	-	**1400**	-	-
September 1999, Waste Oil Pit Sampling										
WO	11.5	<1.0	**1.2[1]**	<0.005	<0.005	<0.005	<0.005	<50	-	-
October 1999, Clarifier Sump Pit Sampling										
SUMP[3]	9.5	**71[1]**	**270[2]**	<0.62	<0.62	<0.62	<0.62	**220**	-	<0.62
December 1999, Waste Oil and Clarifier Sump Pit Deepening and Sampling										
WO[3]	11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<50	-	<0.005
SUMP[3]	15	**6.3[1]**	**690[1]**	<0.005	<0.005	**0.14**	**0.25**	**1200**	-	<0.005

Notes:
-: Not analyzed.
unk: Unknown.
[1]: Hydrocarbon reported does not match the pattern of Chromalab, Inc. standard.
[2]: Estimated concentration reported due to overlapping fuel patterns.
[3]: Exact location not mapped.
* West Hoist also had 2000 mg/kg hydraulic oil.
**East Hoist <50 mg/kg hydraulic oil.
[a]: Soil samples at were also analyzed for VOCs by EPA method 8010. None were detected.
[b]: Sample contains lower molecular weight hydrocarbons.
[c]: Reported as motor oil

Table 2
Soil Sample Analytical Results
Volatile and Semi-Volatile Organic Compounds
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Well	Depth	Phenanthrene	Fluoranthene	Pyrene	bis(2-Ethylhexyl) phthalate
December 1989, Soil Investigation and Monitoring Well Installation					
MW-4*	5	-	-	-	-
	8.5	-	-	-	-
	13	-	-	-	-
November 1993, Soil Borings					
SP-2*	1	-	-	-	-
SP-1*	16	-	-	-	-
November 1998, UST Removal					
WO	8	**0.10**	**0.17**	**0.22**	**0.6**
SUMP	4.5	<0.10	<0.10	<0.10	<0.50
August 1999, Waste Oil and Clarifier Sump Pit Sampling					
SUMP	7	<0.10	<0.10	<0.10	<0.50
WO	10	<0.10	**0.13**	**0.20**	**0.82**
September 1999, Waste Oil Pit Sampling					
WO	11.5	<0.10	<0.10	<0.10	<0.50

Notes:
-: Not analyzed
*: Samples were analyzed for VOCs by EPA Method 8260 only; none were detected above reportable detection limits

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-2	12/89	72	-	-	<0.5	<0.5	<0.5	<0.5	-
	8/90	180	-	-	21	3.9	7.2	28	-
	1/91	430	-	-	50	33	22	110	-
	4/91	4,800	-	-	640	520	140	790	-
	7/91	220	-	-	14	1	17	8	-
	10/91	170	-	-	2.9	ND	2.5	6	-
	1/92	5,200	-	-	480	870	160	860	-
	4/20/92	300	-	-	70	0.3	15	7	-
	7/9/92	84	-	-	10	ND	0.6	2.3	-
	10/8/92	ND	-	-	2.3	ND	2.3	3	-
	1/12/93	170	-	-	11	5.1	1.4	6.3	-
	3/4/93	720	-	-	110	32	67	28	-
	7/1/93	220	-	-	17	1.1	6	12	-
	10/19/93	98	-	-	4.0	ND	2.3	3.1	-
	1/12/94	130	-	-	13	3.4	4.9	9.2	-
	4/25/94	270	-	-	23	1.1	8.2	17	-
	7/28/94	180	-	-	14	0.7	5.8	12	-
	10/13/94	97	-	-	2.8	ND	2.9	1.8	-
	1/10/95	440	-	-	48	2.8	15	27	-
	4/19/95	480	-	-	72	2.8	47	22	-
	10/12/95	450	-	-	7.4	ND	5.1	5.5	-
	4/12/96	690	-	-	41	2.8	27	50	-
	10/8/96	180	-	-	9.4	0.5	7.2	9.4	1,400
	4/9/97	470	-	-	23	1.6	21	31.4	1,800
	11/5/97	360	-	-	6.8	0.64	4.7	8.2	1,200
	3/1/00	560	-	-	14	0.92	16	24	1,400
	9/00	180	-	-	0.89	ND	1	0.65	620
	3/22/01	1,000	-	-	ND	ND	ND	ND	1,300[1]/1,200
	8/23/01	160	-	-	22	1.5	17	27	690[1]/820
	3/02	140	-	-	2.6	0.31	2	1.7	420
	10/02	92	-	-	ND	ND	ND	ND	280
	03/03	IA	IA	IA	IA	IA	IA	IA	IA
	9/17/03	IA	IA	IA	IA	IA	IA	IA	IA
	11/20/08	IA	IA	IA	IA	IA	IA	IA	IA
	2/11/09*	<50	<50	-	<0.3	<0.3	<0.3	<0.3	62
	8/25/09	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
	8/4/10	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
	1/7/11	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-3	12/89	<50	-	-	<0.5	<0.5	<0.5	<0.5	-
	8/90	290	-	-	55	3.8	20	59	-
	1/91	110	-	-	29	3.3	9.7	34	-
	4/91	3,600	-	-	450	270	150	760	-
	7/91	220	-	-	14	14	33	8.0	-
	10/91	ND	ND	ND	ND	ND	ND	ND	-
	1/92	60	-	-	4.0	10	2.0	8.0	-
	4/20/92	ND	-	-	1.0	0.4	ND	0.9	-
	7/9/92	ND	-	-	1.3	0.40	ND	1.3	-
	10/8/92	ND	-	-	2.1	ND	ND	0.30	-
	1/12/93	ND	-	-	1.2	1.0	0.60	4.1	-
	3/4/93	330	-	-	32	0.90	64	13	-
	7/1/93	330	-	-	24	11	14	82	-
	10/19/93	ND	-	-	5.0	ND	0.60	1.2	-
	1/12/94	69	-	-	13	3.4	4.9	9.2	-
	4/25/94	62	-	-	17	1.0	4.9	24	-
	7/28/94	52	-	-	7.2	0.4	1.6	4.6	-
	10/13/94	ND	-	-	0.9	ND	ND	ND	-
	1/10/95	250	-	-	26	0.60	14	45	-
	4/19/95	450	-	-	26	0.60	40	19	-
	10/12/95	340	-	-	9.0	3.9	8.5	34	-
	4/12/96	170	-	-	41	2.8	27	50	-
	10/8/96	79	-	-	3.8	1.5	2.1	6.8	55
	4/9/97	120	-	-	7.3	ND	3.3	5.4	230
	11/5/97	62	-	-	1.7	1.4	2.3	8.3	65
	3/1/00	96	-	-	0.61	ND	ND	ND	240
	9/00	ND	-	-	ND	ND	ND	ND	98
	3/22/01	ND	-	-	ND	ND	ND	ND	190
	8/23/01	ND	-	-	ND	ND	ND	ND	26
	3/02	ND	-	-	ND	ND	ND	ND	26
	10/02	ND	-	-	ND	ND	ND	ND	15
	3/03	IA	IA	IA	IA	IA	IA	IA	IA
	9/17/03	ND	-	-	ND	ND	ND	ND	13
	11/20/08	IA	IA	IA	IA	IA	IA	IA	IA
	2/11/09*	<50	<50	-	<0.3	<0.3	<0.3	<0.3	12
	8/25/09	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
	8/4/10	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
	1/7/11	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL

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Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-4	12/89	<50	<100	<5,000	<0.5	<0.5	<0.5	<0.5	-
	08/90	ND	ND	ND	ND	ND	ND	ND	-
	1/91	-	-	-	-	-	-	-	-
	4/91	ND	ND	ND	ND	ND	ND	ND	-
	7/91	-	-	-	-	-	-	-	-
	10/91	ND	ND	ND	ND	ND	ND	ND	-
	1/92	-	-	-	-	-	-	-	-
	4/20/92	ND	ND	ND	ND	ND	ND	ND	-
	7/9/92	-	-	-	-	-	-	-	-
	10/8/92	ND	**120**	ND	ND	ND	ND	ND	-
	1/12/93	ND	ND	ND	ND	ND	ND	ND	-
	3/4/93	ND	ND	ND	ND	ND	ND	ND	-
	7/1/93	ND	ND	**1,000**	ND	ND	ND	ND	-
	10/19/93	ND	ND	ND	**0.40**	ND	ND	**0.40**	-
	4/25/94	ND	ND	ND	ND	ND	ND	**0.40**	-
	7/28/94	ND	**86**	ND	ND	**0.60**	ND	ND	-
	10/13/94	**70**	ND	ND	ND	**36**	ND	**1.3**	-
	1/10/95	ND	ND	**2,000**	ND	ND	ND	ND	-
	4/19/95	ND	ND	ND	ND	ND	ND	ND	-
	10/12/95	ND	ND	-	ND	ND	ND	ND	-
	4/12/96	ND	ND	-	ND	ND	ND	ND	-
	10/8/96	ND	ND	-	ND	ND	ND	ND	ND
	4/9/97	ND	ND	-	ND	ND	ND	ND	ND
	11/5/97	ND	ND	-	ND	ND	ND	ND	ND
	Abandoned December 1999.								

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-5	4/13/92	ND	-	-	ND	ND	ND	ND	-
	4/27/92	ND	-	-	ND	ND	ND	ND	-
	7/9/92	ND	-	-	ND	ND	ND	ND	-
	10/8/92	ND	-	-	ND	**0.40**	ND	ND	-
	1/12/93	ND	-	-	ND	ND	ND	ND	-
	3/4/93	ND	-	-	ND	ND	ND	ND	-
	7/1/93	ND	-	-	ND	ND	ND	ND	-
	10/19/93	ND	-	-	ND	ND	ND	ND	-
	4/25/94	ND	-	-	ND	**0.40**	ND	**1.0**	-
	7/94	-	-	-	-	-	-	-	-
	10/13/94	**87**	ND	ND	ND	**36**	ND	**1.3**	-
	1/95	-	-	-	-	-	-	-	-
	4/19/95	ND	-	-	ND	ND	ND	ND	-
	10/12/95	ND	-	-	ND	ND	ND	ND	-
	4/12/96	ND	-	-	ND	ND	ND	ND	-
	10/8/96	ND	-	-	ND	ND	ND	ND	ND
	4/9/97	ND	-	-	ND	ND	ND	ND	ND
	11/5/97	ND	ND	-	ND	ND	ND	ND	ND
	3/1/00	ND	-	-	ND	ND	ND	ND	ND
	9/00	ND	-	-	ND	ND	ND	ND	ND
	3/22/01	ND	-	-	ND	ND	ND	ND	ND
	8/23/01	NS	NS	NS	NS	NS	NS	NS	NS
	3/02	NS	NS	NS	NS	NS	NS	NS	NS
	10/02	NS	NS	NS	NS	NS	NS	NS	NS
	3/03	NS	NS	NS	NS	NS	NS	NS	NS
	9/17/03	NS	NS	NS	NS	NS	NS	NS	NS
	11/20/08*	<50	<50	-	**0.31**	<0.3	<0.3	**0.38**	<5.0
	2/6/09*	<50	<50	-	<0.3	<0.3	<0.3	<0.3	<5.0
	8/25/09	<50	<50	-	<0.5	<0.5	<0.5	<0.5	<5.0
	8/4/10	<50	<100	-	<0.3	<0.3	<0.3	<0.3	<1.0
	1/7/11	<50	<50	-	<0.3	<0.3	<0.3	**0.64**	<1.0

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-6	4/13/92	ND	-	-	ND	**0.30**	ND	ND	-
	4/27/92	ND	-	-	ND	ND	ND	ND	-
	7/9/92	ND	-	-	ND	ND	ND	ND	-
	10/8/92	ND	-	-	ND	ND	ND	ND	-
	1/12/93	ND	-	-	ND	ND	ND	ND	-
	3/4/93	ND	-	-	ND	ND	ND	ND	-
	7/1/93	ND	-	-	ND	ND	ND	ND	-
	10/19/93	ND	-	-	ND	ND	ND	ND	-
	4/25/94	ND	-	-	ND	**0.30**	ND	**0.40**	-
	7/94	-	-	-	-	-	-	-	-
	10/13/94	**160**	-	-	**0.40**	**140**	**0.5**	**2.3**	-
	1/95	-	-	-	-	-	-	-	-
	4/19/95	ND	-	-	ND	ND	ND	ND	-
	10/12/95	ND	-	-	ND	ND	ND	ND	-
	4/12/96	ND	-	-	**2.9**	**2.9**	ND	ND	-
	10/8/96	ND	-	-	ND	ND	ND	ND	**17**
	4/9/97	ND	-	-	ND	ND	ND	ND	ND
	11/5/97	ND	ND	-	ND	ND	ND	ND	**9.0**
	3/1/00	**78**	-	-	ND	**0.49**	ND	ND	**260**
	9/00	**54**	-	-	ND	ND	ND	ND	**170**
	3/22/01	**130**	-	-	ND	ND	ND	ND	**440**
	8/23/01	**79**	-	-	ND	ND	ND	ND	**280[1]/350**
	3/02	**91**	-	-	ND	ND	ND	ND	**370**
	10/02	**83**	-	-	ND	ND	ND	ND	**260**
	3/03	**61**	-	-	ND	ND	ND	ND	**200**
	9/17/03	**140**	-	-	ND	ND	ND	ND	**440**
	11/20/08*	<50	<50	-	**0.81**	<0.3	<0.3	<0.3	**300**
	2/6/09*	**97**	<50	-	<0.3	<0.3	<0.3	<0.3	**200**
	8/25/09	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/10	<50	<100	-	<0.3	<0.3	<0.3	<0.3	**54**
	1/7/11	<50	<50	-	<0.3	<0.3	<0.3	**0.44**	**40**

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-7	4/13/92	**1,300**	-	-	**0.40**	**0.30**	**0.30**	**0.9**	-
	4/27/92	**1,100**	-	-	ND	ND	ND	ND	-
	7/9/92	**830**	-	-	ND	ND	ND	ND	-
	10/8/92	**3,900**	-	-	ND	ND	ND	ND	-
	11/30/92	**2,700**	ND	-	-	-	-	-	-
	1/12/93	U	U	U	U	U	U	U	U
	1/93	**1,900**	-	-	ND	ND	ND	ND	-
	3/4/93	**830**	-	-	ND	ND	ND	ND	-
	7/1/93	**680**	-	-	ND	ND	ND	ND	-
	10/19/93	**360**	-	-	ND	ND	ND	**0.70**	-
	1/12/94	**330**	-	-	ND	ND	ND	ND	-
	4/25/94	**360**	-	-	ND	ND	ND	ND	-
	7/28/94	-	-	-	-	-	-	-	-
	10/13/94	-	-	-	-	-	-	-	-
	1/95	-	-	-	-	-	-	-	-
	4/19/95	-	-	-	ND	ND	ND	ND	-
	10/12/95	-	-	-	ND	ND	ND	ND	-
	4/12/96	-	-	-	ND	ND	ND	ND	-
	10/8/96	-	-	-	-	-	-	-	-
	4/9/97	-	-	-	-	-	-	-	-
	11/5/97	-	-	-	-	-	-	-	-
	3/1/00	ND	-	-	**890**	ND	ND	ND	ND
	9/00	**770**	-	-	**3.0**	**0.32**	**13**	**27**	ND
	3/22/01	**630**	-	-	ND	ND	ND	ND	ND
	8/23/01	**800**	-	-	ND	ND	ND	ND	**7.3[1]/ND**
	3/02	**280**	-	-	**0.35**	ND	**0.91**	**2.2**	**7.7**
	10/02	IA	IA	IA	IA	IA	IA	IA	IA
	3/03	IA	IA	IA	IA	IA	IA	IA	IA
	9/17/03	IA	IA	IA	IA	IA	IA	IA	IA
	11/20/08	**520**	**70**	-	<0.3	<0.3	<0.3	<0.3	<5.0
	2/6/09*	**400**	<50	-	<0.3	<0.3	<0.3	<0.3	<5.0
	8/25/09	IA	IA	IA	IA	IA	IA	IA	IA
	8/4/10	**430**	<100	-	<0.3	<0.3	<0.3	<0.3	<1
	1/7/11	**250**	<50	-	<0.3	<0.3	<0.3	<0.3	<1

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-101	9/95	**9,400**	-	-	**170**	**94**	**150**	**710**	-
	3/01/00	**40,000**	-	-	**2,500**	**490**	**4,300**	**10,000**	**2,400[1]/1,400**
	9/00	**770**	-	-	**3.0**	**0.32**	**13**	**27**	-
	3/01	**34,000**	-	-	**1,400**	**62**	**3,400**	**7,700**	**970**
	8/23/01	**12,000**	-	-	**630**	ND	**1,500**	**480**	**1,400**
	3/02	**19,000**	-	-	**600**	**25**	**1,600**	**3,100**	**1,600[1]/870**
	10/02	**5,200**	-	-	**240**	**0.74**	**230**	**76**	**1,500[1]/1,400**
	3/03	**6,300**	-	-	**330**	ND	**440**	**370**	**1,400[1]/840**
	9/17/03	**3,000**	-	-	**150**	ND	**100**	**110**	**850[1]/1,100**
	11/20/08*	**2,800**	**5,400**	-	**61**	<0.3	**38**	**1.6**	**570**
	2/6/09*	<50	**3,600**	-	<0.3	<0.3	<0.3	<0.3	**630**
	8/25/09	**2,200**	**1,500**	-	**9.9**	<0.5	**14**	**5.6**	**440**
	8/4/10	**1,100**	<100	-	**11**	<0.3	**12**	**4.8**	**280**
	1/7/11	**1,600**	**2,300**	-	**75**	**0.72**	**150**	**110**	**420**
SP-1	11/1993	**49,000**	-	-	**3,900**	**13,000**	**2,800**	**15,000**	-
SP-2	11/1993	**1,400**	-	-	**54**	**240**	**87**	**390**	-

Notes:
ND: Not detected.
<: Not detected above laboratory's indicated reportable detection limit.
NS: No sample collected.
IA: Well inaccessible at time of sampling.
CNL: Could not locate well.
U: Unavailable.
-: Not analyzed.
*: Other fuel oxygenates and 1,2-DCA not detected above 5 µg/L (50 µg/L for TBA).
[1]: MTBE by EPA method 8015/8020; otherwise by EPA Method 8260.

Table 4
Groundwater Monitoring Analytical Results
Volatile Organic Compounds
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	Chlorobenzene	Chloroform	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloroethane	Tetrachloroethene	Trichloroethene
MW-2	3/4/93	<0.5	<0.5	<0.5	<0.5	**0.6**	<0.5	<0.5
	10/19/93	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4	12/14/89	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	3/4/93	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/19/93	<0.5	<0.5	<0.5	<0.5	<0.5	**0.7**	**0.9**
MW-5	3/4/93	<0.5	<0.5	<0.5	<0.5	<0.5	**0.8**	<0.5
MW-6	3/4/93	<0.5	<0.5	<0.5	<0.5	<0.5	**3.5**	<0.5
MW-7	11/30/92	**2.0**	**2.0**	**180**	**1.5**	-	**14,000**	**660**
	3/4/93	-	<20	-	<20	<20	**3,700**	**210**
SP-1	11/18/93	unknown	unknown	**28**	**15**	**12**	**22**	**20**
SP-2	11/18/93	unknown	unknown	ND	ND	ND	ND	ND

Notes:
<: Not detected above laboratory's indicated reportable detection limit.
-: Not analyzed

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-101	09/95	U	U	-
	3/1/00		9.75	-
	09/00		U	-
	03/01		U	-
	08/23/01		9.70	-
	03/02		U	-
	10/02		U	-
	03/03		U	-
	9/17/03		9.80	-
	11/20/08		10.69	-
	2/6/09		10.46	-
	8/25/09		10.53	-
	8/4/10		11.47	-
MW-2	12/89	U	U	-
	08/90		U	-
	01/91		U	-
	04/91		U	-
	07/91		U	-
	10/91		U	-
	01/92		U	-
	4/20/92	183.10	10.36	172.74
	7/9/92		10.65	172.45
	10/8/92	183.47	11.60	171.87
	1/12/93		9.11	174.36
	3/4/93		9.28	174.19
	7/1/93		10.37	173.10
	10/19/93		10.82	172.65
	1/12/94		10.66	172.81
	4/25/94		10.23	173.24
	7/28/94		10.70	172.77
	10/13/94		14.19	169.28
	1/10/95		8.12	175.35
	4/19/95		9.24	174.23
	10/12/95		10.66	172.81
	4/12/96		10.05	173.42
	10/8/96		10.61	172.86
	4/9/97		10.40	173.07
	11/5/97		10.88	172.59
	3/1/00		8.49	174.98
	09/00		U	-
	3/22/01		9.65	173.82
	8/23/01		9.65	173.82
	03/2002		U	-
	10/2002		U	-
	03/2003		IA	-
	9/17/03		IA	-
	11/20/08		IA	-
	2/11/09		U	-
	8/25/09		CNL	-
	8/4/10		CNL	-
	1/7/11		CNL	-

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-3	12/89	U	U	-
	08/90		U	-
	01/91		U	-
	04/91		U	-
	07/91		U	-
	10/91		U	-
	01/92		U	-
	4/20/92	183.52	10.34	173.18
	7/9/92		10.84	172.68
	10/8/92	184.03	11.96	172.07
	1/12/93		9.28	174.75
	3/4/93		9.53	174.50
	7/1/93		10.56	173.47
	10/19/93		11.04	172.99
	1/12/94		10.90	173.13
	4/25/94		10.37	173.66
	7/28/94		10.95	173.08
	10/13/94		14.37	169.66
	1/10/95		8.23	175.80
	4/19/95		9.54	174.49
	10/12/95		10.97	173.06
	4/12/96		10.06	173.97
	10/8/96		10.87	173.16
	4/9/97		10.40	173.63
	11/5/97		10.97	173.06
	3/1/00		8.68	175.35
	09/00		U	-
	3/22/01		10.22	173.81
	8/23/01		10.02	174.01
	03/02		U	-
	10/02		U	-
	03/03		U	-
	9/17/03		10.00	174.03
	11/20/08		IA	-
	2/11/09		U	-
	8/25/09		CNL	-
	8/4/10		CNL	-
	1/7/11		CNL	-

Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-4	12/89	U	U	-
	08/90		U	-
	01/91		U	-
	04/91		U	-
	07/91		U	-
	10/91		U	-
	01/92		U	-
	4/20/92		10.89	-
	7/9/92	184.33	10.65	173.68
	10/8/92	184.61	12.78	171.83
	1/12/93		9.67	174.94
	3/4/93		10.20	174.41
	7/1/93		11.41	173.20
	10/19/93		11.92	172.69
	4/25/94		10.94	173.67
	7/28/94		11.74	172.87
	10/13/94		15.31	169.30
	1/10/95		8.02	176.59
	4/19/95		9.97	174.64
	10/12/95		11.70	172.91
	4/12/96		10.33	174.28
	10/8/96		11.65	172.96
	4/9/97		10.93	173.68
	11/5/97		11.82	172.79

MW-4 abandoned December 1999.

Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-5	4/27/92	183.62	11.72	171.90
	7/9/92		12.24	171.38
	10/8/92	183.92	13.24	170.68
	1/12/93		10.30	173.62
	3/4/93		10.53	173.39
	7/1/93		11.85	172.07
	10/19/93		12.32	171.60
	4/25/94		11.58	172.34
	07/94		U	-
	10/13/94		15.71	168.21
	01/95		U	-
	4/19/95		10.41	173.51
	10/12/95		12.12	171.80
	4/12/96		10.85	173.07
	10/8/96		12.00	171.92
	4/9/97		11.40	172.52
	11/5/97		12.19	171.73
	3/1/00		9.45	174.47
	09/00		U	-
	3/22/01		11.04	172.88
	8/23/01		11.06	172.86
	03/02		NS	-
	10/02		NS	-
	03/03		NS	-
	9/17/03		11.03	172.89
	11/20/08		11.80	172.12
	2/6/09		11.56	172.36
	8/25/09		11.90	172.02
	8/4/10		11.61	172.31
	1/7/11		10.45	173.47

Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-6	4/27/92	U	11.90	171.80
	7/9/92	183.70	12.34	171.36
	10/8/92	183.96	13.3	170.66
	1/12/93	183.60	10.59	173.01
	3/4/93		10.86	172.74
	7/1/93		12.00	171.60
	10/19/93		12.48	171.12
	4/25/94		11.86	171.74
	07/94		U	-
	10/13/94		15.87	167.73
	01/95		U	-
	4/19/95		10.70	172.90
	10/12/95		12.32	171.28
	4/12/96		11.09	172.51
	10/8/96		12.19	171.41
	4/9/97		11.70	171.90
	11/5/97		12.33	171.27
	3/1/00		9.73	173.87
	09/00		U	-
	3/22/01		11.01	172.59
	8/23/01		11.21	172.39
	03/02		U	-
	10/02		U	-
	03/03		U	-
	9/17/03		11.50	172.10
	11/20/08		12.10	171.50
	2/6/09		11.83	171.77
	8/25/09		Dry	-
	8/4/10		12.85	170.75
	1/7/11		10.75	172.85

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-7	4/27/92	182.52	10.97	171.55
	7/9/92		11.43	171.09
	10/8/92	182.78	12.40	170.38
	11/30/92		12.00	170.78
	1/12/93		9.51	173.27
	01/93		U	-
	3/4/93		9.88	172.90
	7/1/93		11.07	171.71
	10/19/93		11.55	171.23
	1/12/94	182.42	11.36	171.06
	4/25/94		10.85	171.57
	7/28/94		NS	-
	10/13/94		NS	-
	01/95		U	-
	4/19/95		9.66	172.76
	10/12/95		11.34	171.08
	4/12/96		10.06	172.36
	10/8/96		11.16	171.26
	4/9/97		11.70	170.72
	11/5/97		11.36	171.06
	3/1/00		8.72	173.70
	09/00		U	-
	3/22/01		10.04	172.38
	8/23/01		10.18	172.24
	03/02		U	-
	10/02		IA	-
	03/03		IA	-
	9/17/03		IA	-
	11/20/08		11.05	171.37
	2/6/09		10.76	171.66
	8/25/09		IA	-
	8/4/10		10.76	171.66
	1/7/11		9.67	172.25

Notes:
IA: Well Inaccessible
CNL: Could not locate well
NS: Well Not Sampled
U: Data Unavailable
-: Unable to calculate elevation

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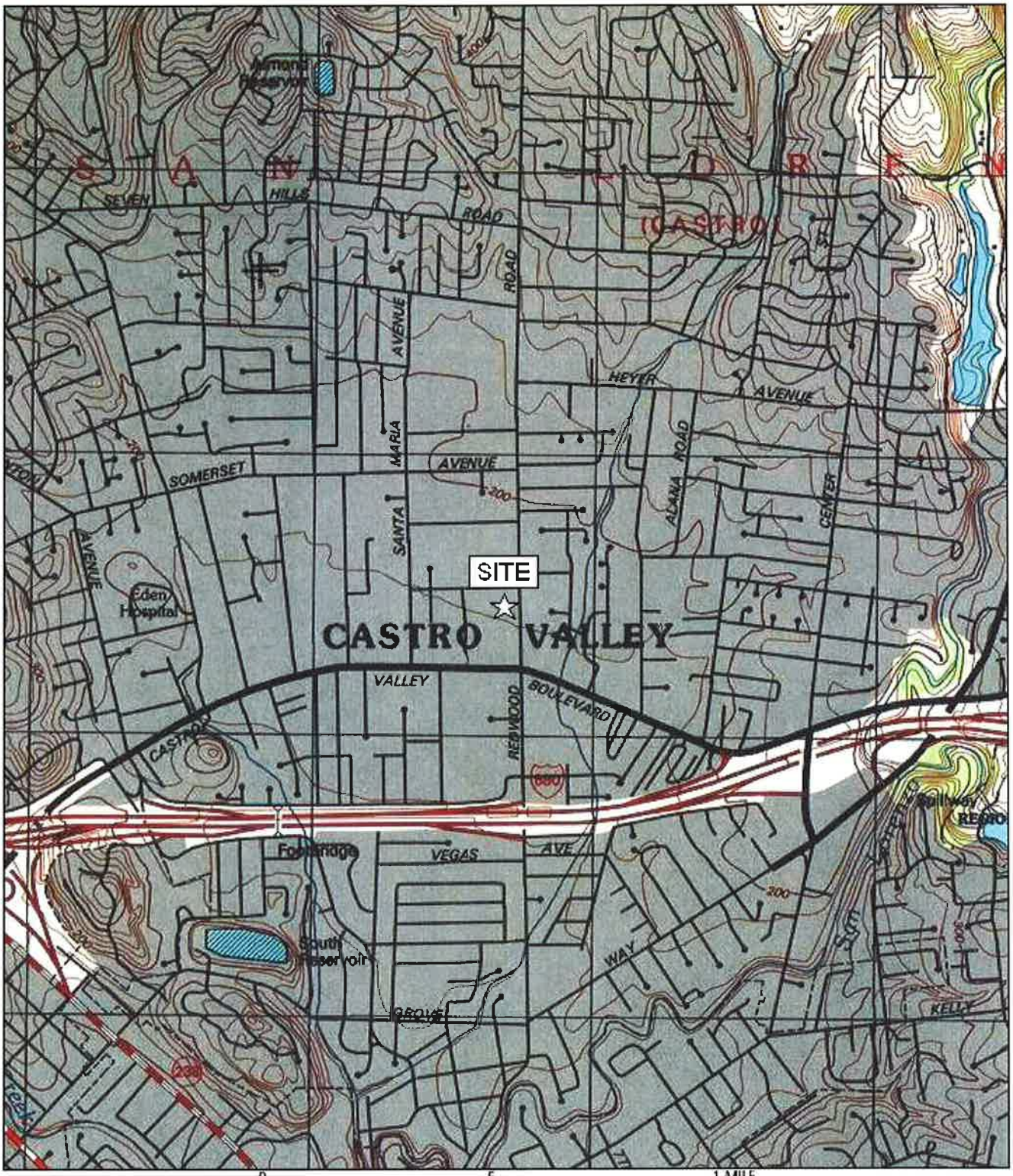
Table 6
Summary of Groundwater Flow Direction and Gradient Data
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California

Date	Flow Direction	Gradient (Feet/Foot)
11/1/92	Southeast	0.006
1/27/93	Southeast	0.01
3/4/93	Southeast	0.01
7/1/93	Southeast	0.01
10/19/93	South	0.005
1/12/94	South	0.001
5/13/94	Southwest	0.007
10/13/94	South	0.001
1/31/95	South	0.002
5/17/95	South	0.009
10/30/95	South	0.007
4/12/96	South	0.008
11/5/96	South	0.008
4/9/97	South	0.01
8/23/01	South	0.008
9/17/03	Southeast	0.01
11/20/08	Southeast	0.01
2/5/09	South-southeast	0.01
8/25/09	-	-
8/4/10	East-southeast	0.01
1/7/11		0.02

Notes:
-: Unable to calculate flow direction

FIGURES



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

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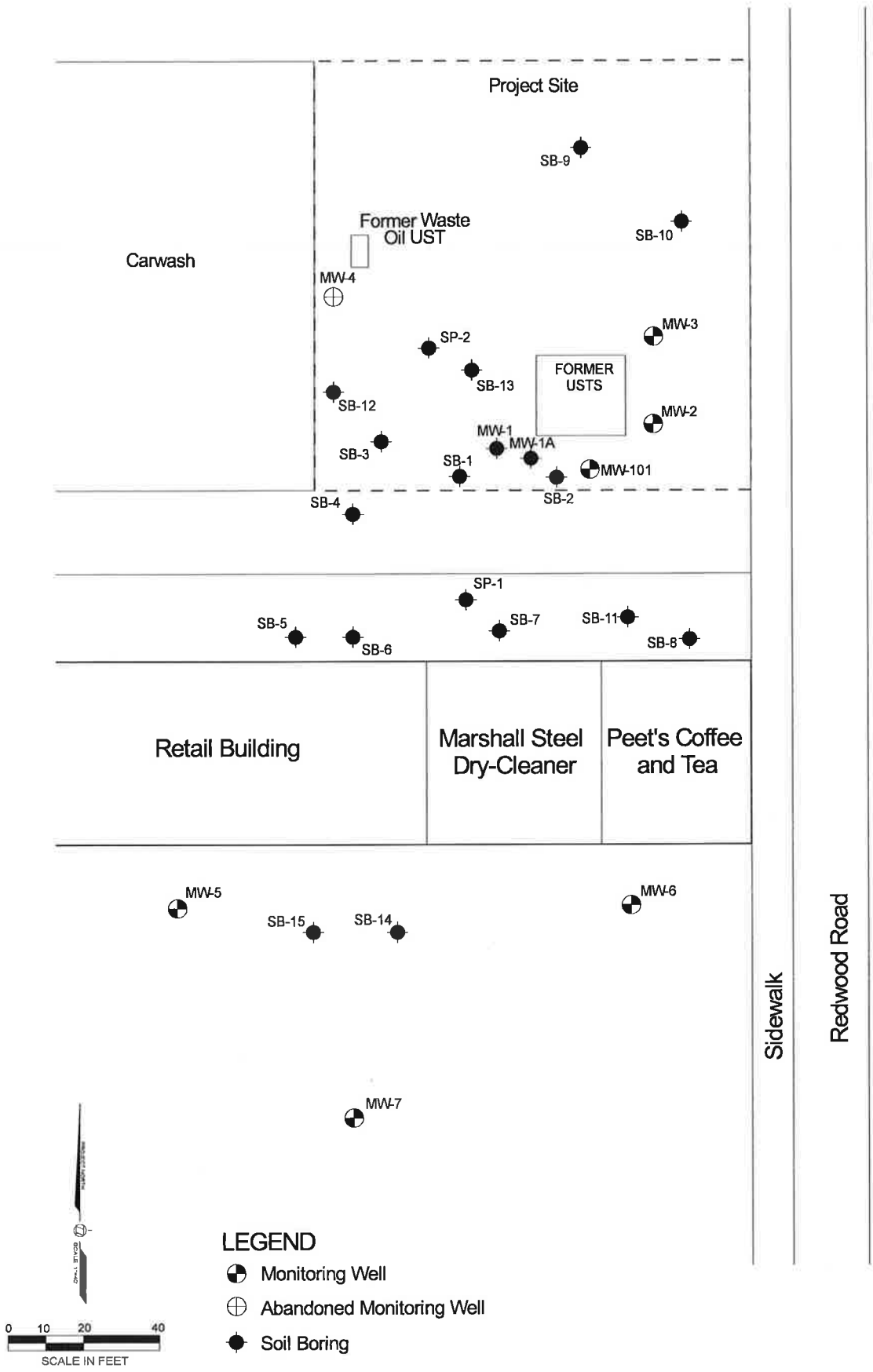
SITE VICINITY

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 1

PROJECT: E0805401S



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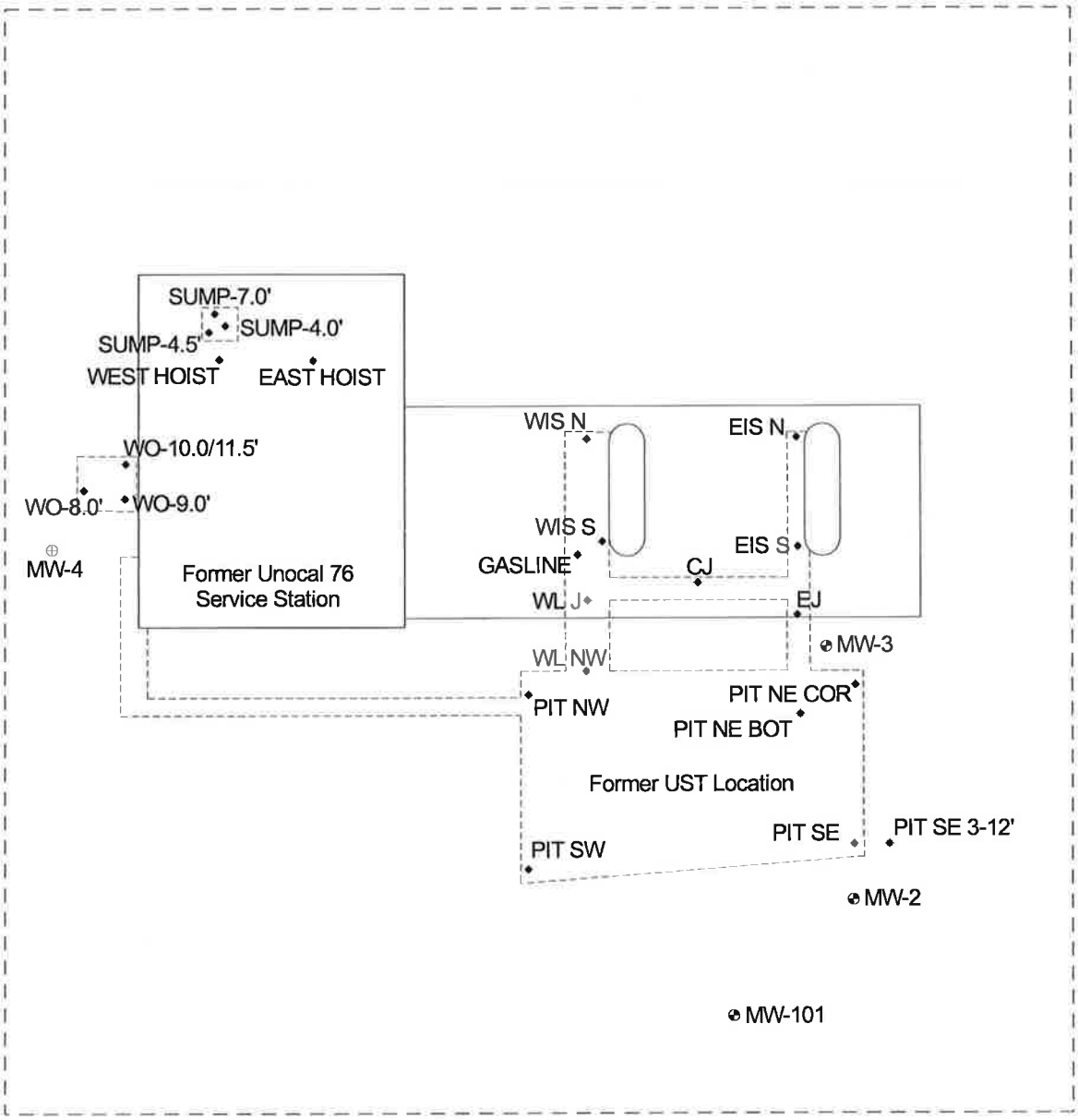
SITE PLAN

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 2

PROJECT: E0805401S

DATE: 1/6/10



0 5 10 20

SCALE IN FEET

LEGEND	
•	Soil Sample Location
⬚	Approximate Extent of Excavation
◉	Monitoring Well Location
⊕	Abandoned Monitoring Well Location

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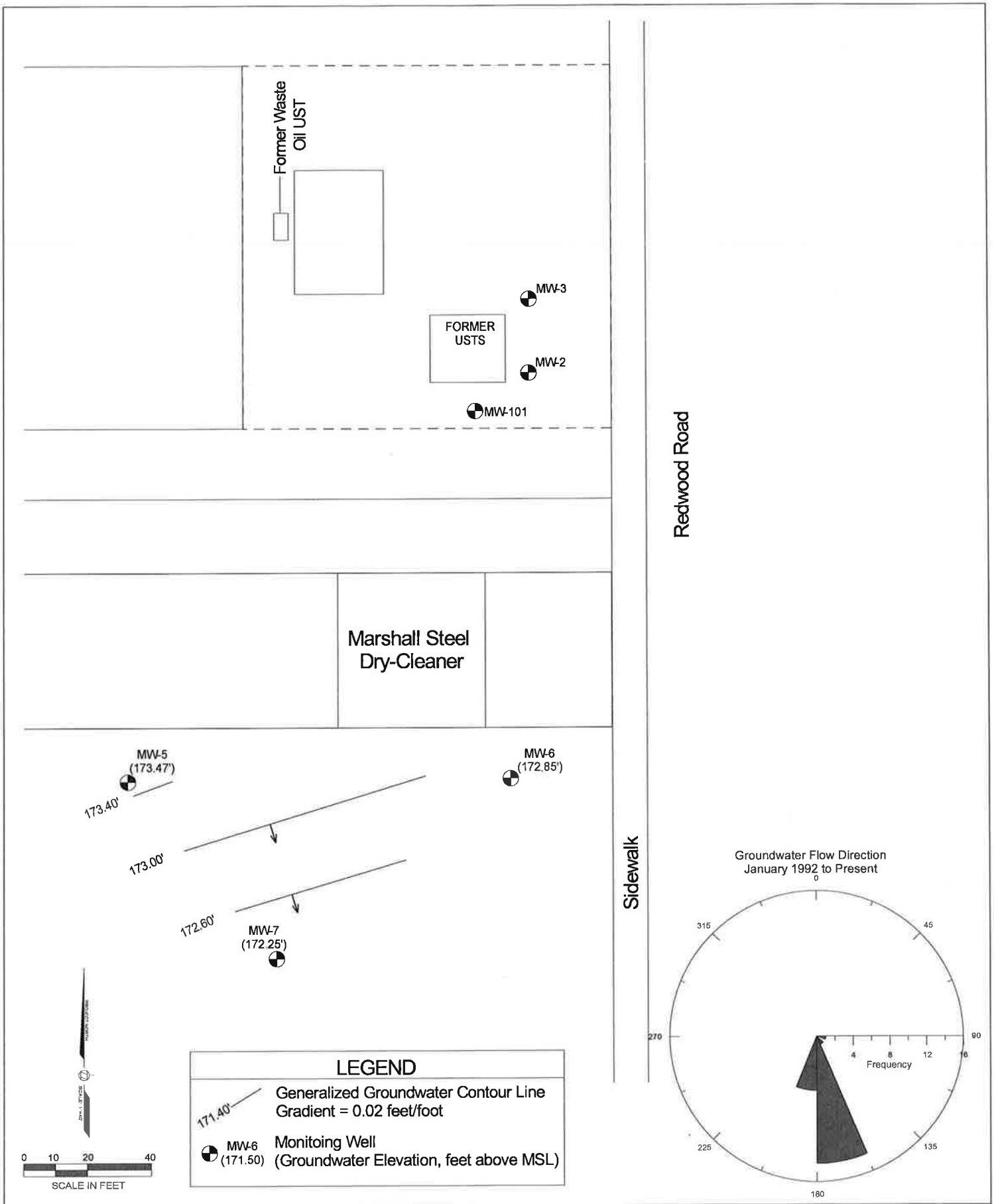
EXTENT OF EXCAVATIONS AND EXCAVATION SOIL SAMPLE LOCATIONS

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 3

PROJECT: E0805401S

DATE: 2/12/09



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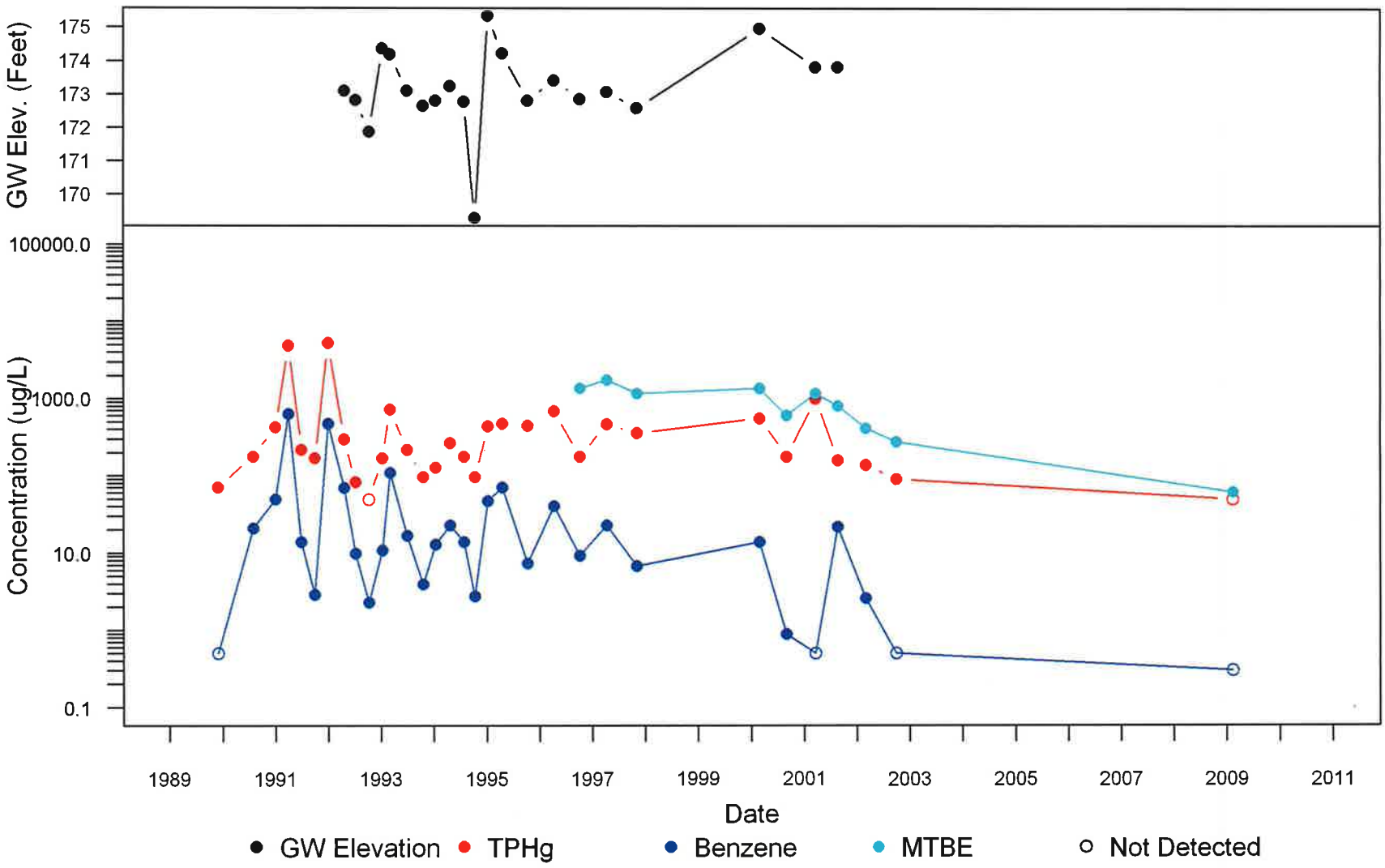
GENERALIZED GROUNDWATER ELEVATION MAP
AUGUST 2010

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 4

PROJECT: E0805401S

DATE: 2/8/11



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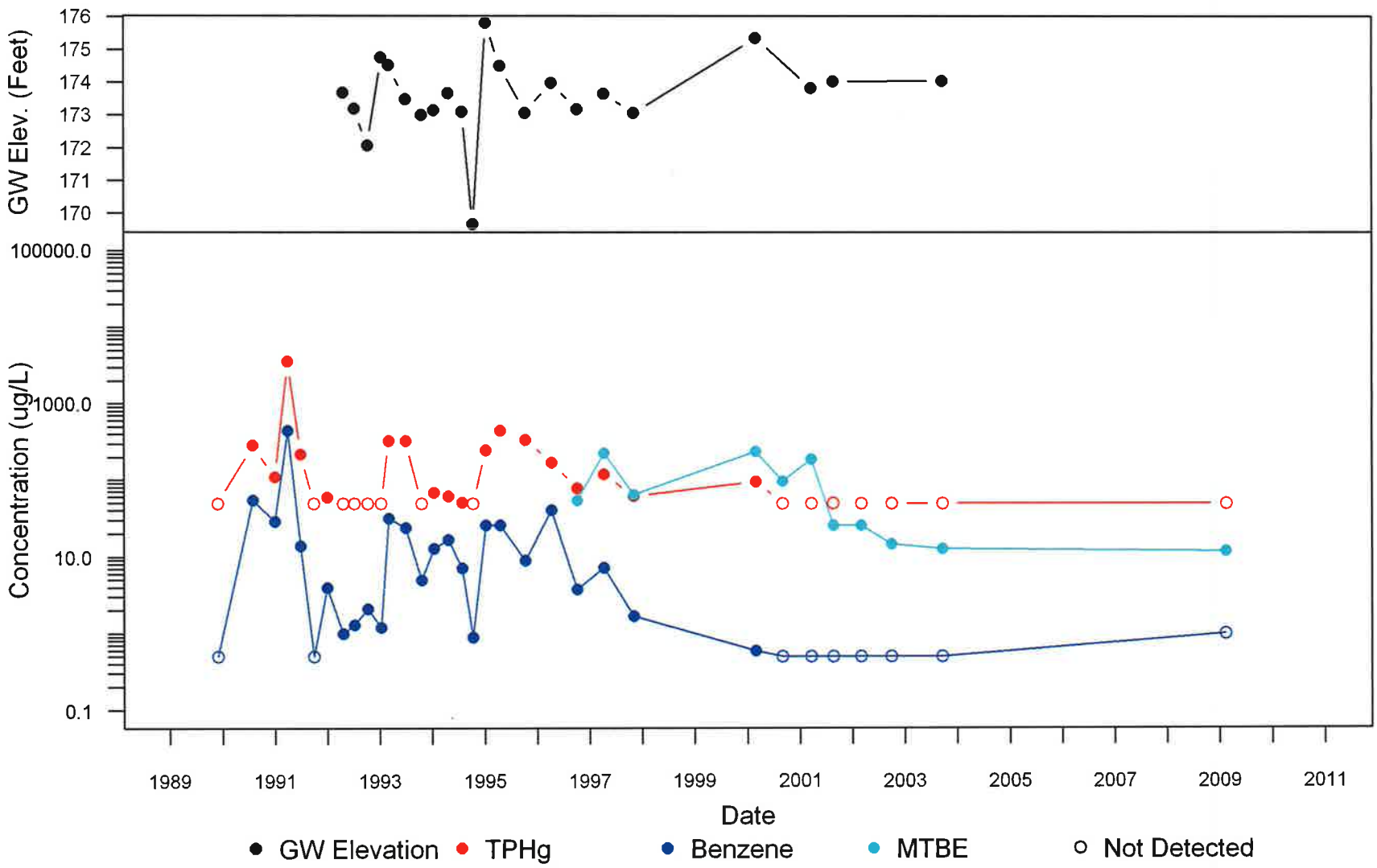
MW-2 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 5

PROJECT: E0805401S

DATE: 2/11/11



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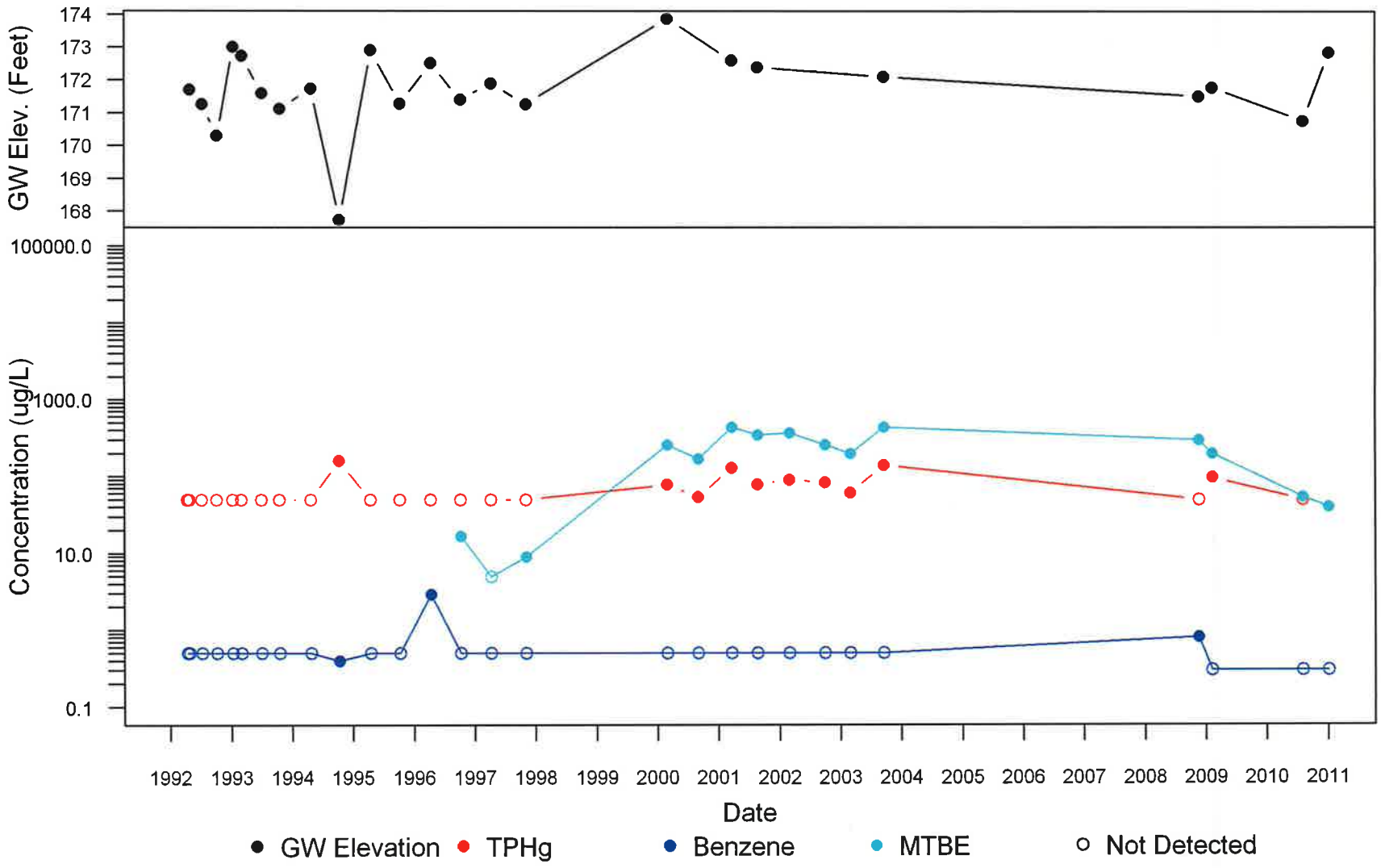
MW-3 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 6

PROJECT: E0503102S

DATE: 2/11/11



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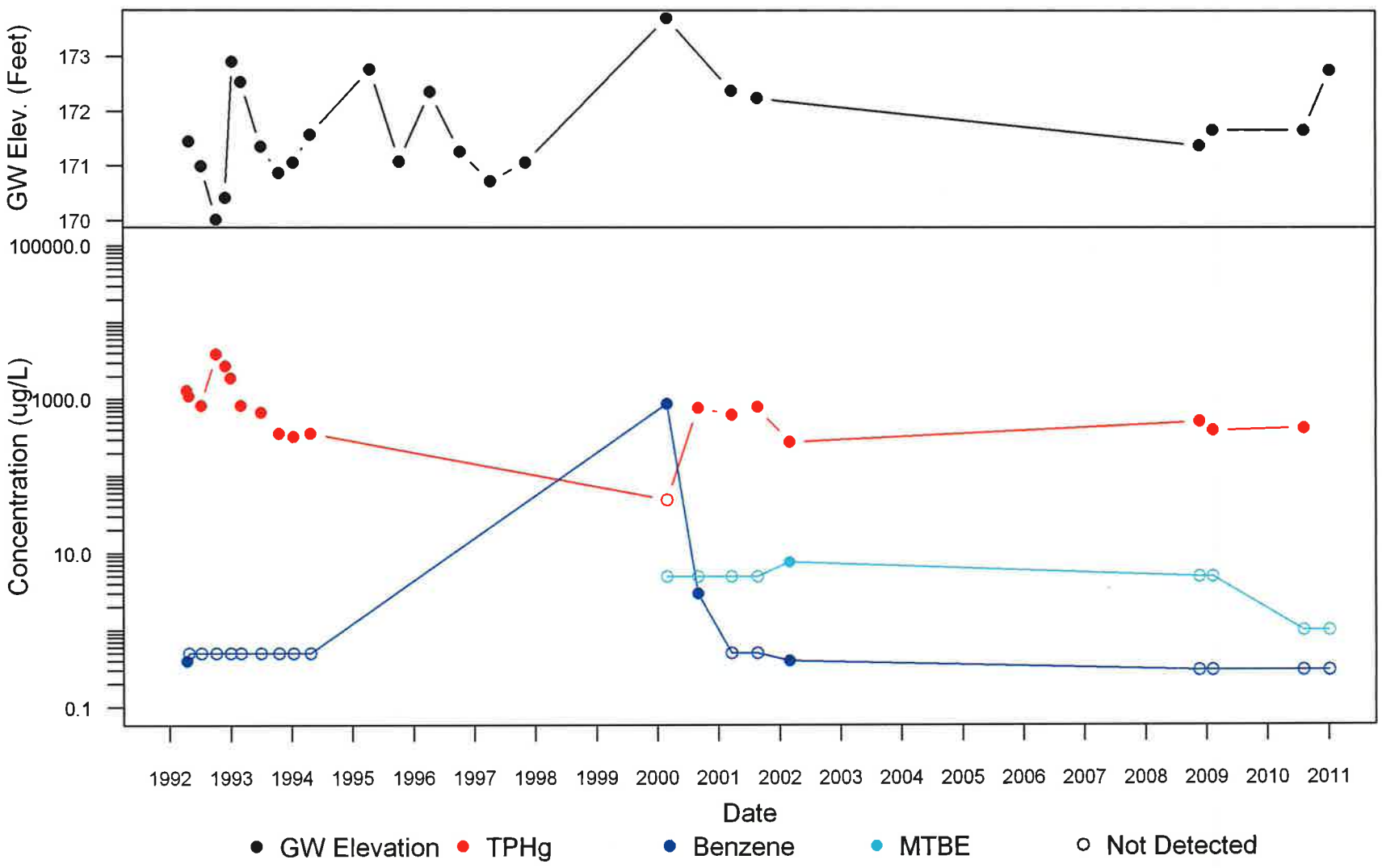
MW-6 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 7

PROJECT: E0805401S

DATE: 2/11/11



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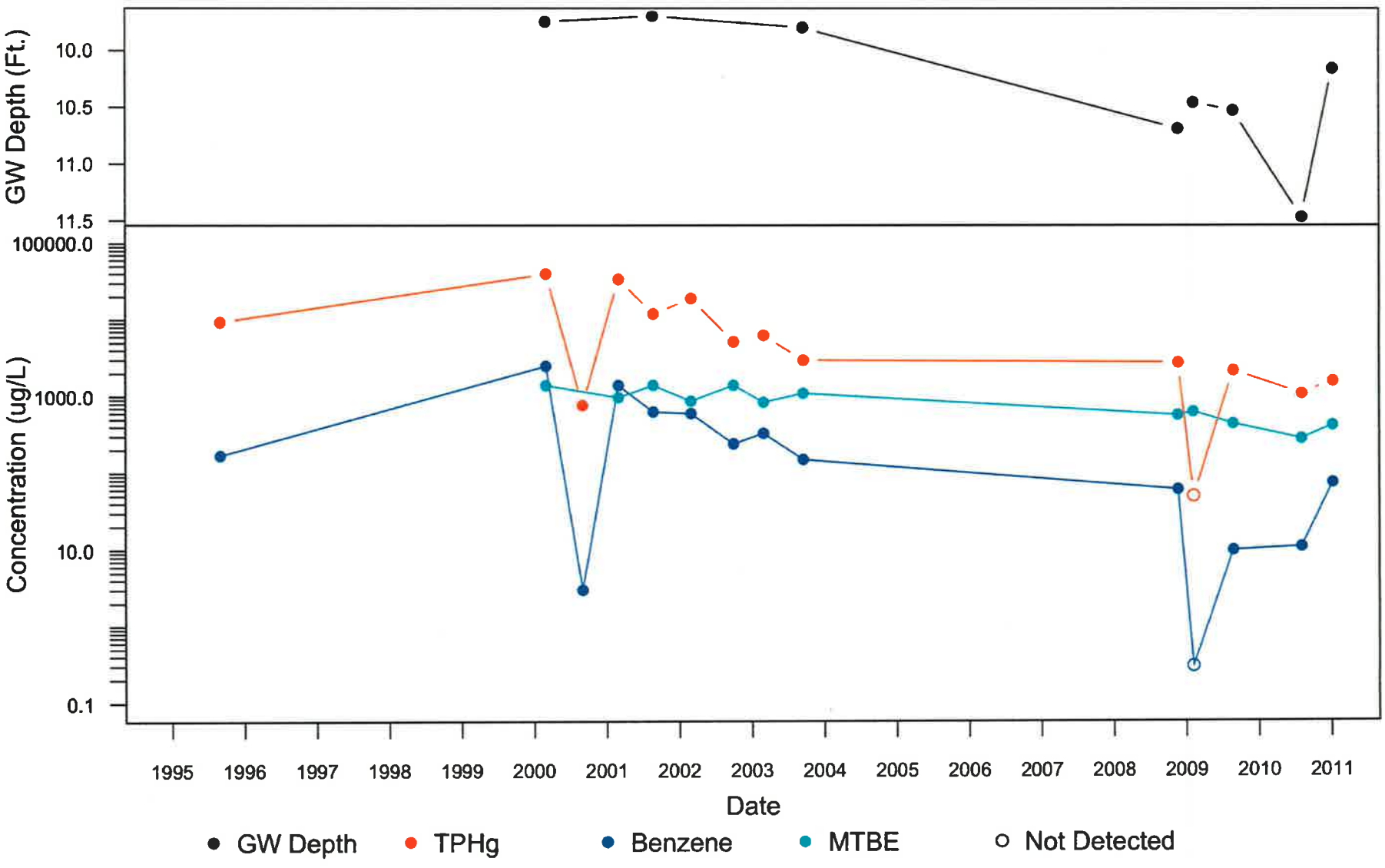
MW-7 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 8
PROJECT: E0805401S
DATE: 2/11/11



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MW-101 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 9
PROJECT: E0805401S
DATE: 2/11/11

APPENDIX A

WATER SAMPLE LOG

Project Name: Unocal	**Job #:** E0805401S	**Field Personnel:** E. Basel
Day: Mon Tu Wed Thur (Fri) Sat Sun (circle one)	**Date:** 1/7/10	**Weather:** (circle) Clear Partly Cloudy Overcast Rain; Cold (Cool) Warm Hot Very Hot

Well:	MW-101	**Water Level Measurement Technique:** (Circle) Electric Sounder Ser # _____ Not Measured
Static Depth to Water-Ft. (A)	10.16	**Purge Method:** Grundfos Submersible Pump Pneumatic Pump
Total Depth of Casing-Ft. (B)	29.29	(Circle) Electric Pump Hand Bailed
Total Ft. of Water (B-A)	19.13	Other _____
Casing Dia-in.	2" (4") 6" 8"	**Dedicated System:** Yes X No
Casing Capacity-gal/ft (C)	.163 (.653) 1.46 2.50	**Dedicated System:** ___ Yes X No
Gallons per Casing Volume	(B-A)*C 12.49	**pH Calibration:** X 4.0 X 7.0 X 10.0 **EC Calibration(µmhos)** 1413

Time	Gallons Purged	Casing Volumes	PH	EC (µmhos)	Temp (EF) (EC)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
12:58	0	0	-----	-----	-----	-----	Started Purge/Opened Sample Port
13:01	12.5	1	6.86	685	20.2	—	clear, slight NC odor
13:06	25	2	6.88	683	20.5	-	cloudy, v slight odor
13:11	37.5	3	6.86	691	20.2	—	cloudy " odor some black sediment

							Sampled/Stopped
Chloride		**Sulfate**		**Nitrate**	X4.4		Other Field Results:

Purge Pump On	12:58	**Discharge Measurement:** (Circle) (Bucket) Tank Flowmeter	
Purge Pump Off	13:11	**Sample Collection Method:** X Direct From Discharge Hose	
Total Gallons Purged	37.5	___ Teflon Bailer X Disposable Bailer	
Purge Rate (gpm)	2.9	**Ice Chest Coolant** ___ Crushed Ice X Blue Ice	**Ice Chest Temp (EC)** ___

Sample Time	Analyses	Amount/Container Used	Sample Description
13:21			

Well Vault Type:	Flush	**Floating Product:** ___ Yes ___ No ___ NA	
Lock Number/Type:	0	**Thickness:** ___	
Drums Filled/Used:	yes	**Description:** ___	

Notes: _____

WATER SAMPLE LOG

Project Name: # Unocal	Job #: E080540115	Field Personnel:
Day: Mon Tu Wed Thur (Fri) Sat Sun (circle one)	Date: 1/7/10	Weather: Clear Partly Cloudy ~~Overcast~~ Rain (circle) (Cold) Cool Warm ~~Hot~~ Very Hot

Well:	MW-5	Water Level Measurement Technique: (Circle) Electric Sounder Ser # _____ Not Measured
Static Depth to Water-Ft. (A)	16.45	Purge Method: ~~Grundfos Submersible Pump~~ ~~Pneumatic Pump~~
Total Depth of Casing-Ft. (B)	34.03	(Circle) ~~Electric~~ Pump Hand Bailed
Total Ft. of Water (B-A)	23.58	Other _____
Casing Dia-in.	(2") 4" 6" 8"	Dedicated System: Yes ~~No~~
Casing Capacity-gal/ft (C)	(.163) .653 1.46 2.50	Dedicated System: ____ Yes X No
Gallons per Casing Volume	(B-A)*C 3.84	pH Calibration: ____ 4.0 X 7.0 X 10.0 EC Calibration(µmhos) _____

Time	Gallons Purged	Casing Volumes	PH	EC (µmhos)	Temp (EF) (EC)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
10:55	0	0	-----	-----	-----	-----	Started Purge/Opened Sample Port
10:57	4	1	6.70	457	17.3	—	clear, odorless
10:59	8	2	6.66	454	18.9	—	" "
11:01	12	3	6.60	441	19.9	—	" "

							Sampled/Stopped
Chloride		Sulfate		Nitrate	X4.4		Other Field Results:

Purge Pump On	10:55	Discharge Measurement: (Circle) Bucket Tank Flowmeter
Purge Pump Off	11:01	Sample Collection Method: X Direct From Discharge Hose
Total Gallons Purged	12	____ Teflon Bailer X Disposable Bailer
Purge Rate (gpm)	2	Ice Chest Coolant ____ Crushed Ice X Blue Ice Ice Chest Temp (EC) _____

Sample Time	Analyses	Amount/Container Used	Sample Description
11:03	TPH-d	250mL amber H_2SO_4	
	TPH-g BTEX	4x 40mL VOAs HCl	
	Fuel Oxygenates		
	Lead Scavengers		

Well Vault Type:	flush	Floating Product: ___ Yes ___ No ___ NA
Lock Number/Type:	∅	Thickness: _____
Drums Filled/Used:	yes	Description: _____

Notes: all drums on site are full

WATER SAMPLE LOG

Project Name: Unocal	Job #: E08054015	Field Personnel: E. Basel
Day: Mon Tu Wed Thur (Fri) Sat Sun (circle one)	Date: 11/7/19	Weather: Clear Partly Cloudy Overcast Rain (circle) Cold (Cool) Warm Hot Very Hot

Well:	MW-6	Water Level Measurement Technique: (Circle)	Electric Sounder Ser # _____ Not Measured
Static Depth to Water-Ft. (A)	10.75	Purge Method: (Circle)	Grundfos Submersible Pump Pneumatic Pump
Total Depth of Casing-Ft. (B)	26.53		Electric Pump Hand Bailed
Total Ft. of Water (B-A)	15.78		Other _____
Casing Dia-in.	(2") 4" 6" 8"		Dedicated System: Yes No
Casing Capacity-gal/ft (C)	(.163) .653 1.46 2.50	Dedicated System:	____Yes X No
Gallons per Casing Volume	(B-A)*C 2.57	pH Calibration:	X 4.0 X 7.0 X 10.0 EC Calibration(µmhos) 1413

Time	Gallons Purged	Casing Volumes	PH	EC (µmhos)	Temp (EF) (EC)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
11:51	0	0	-----	-----	-----	-----	Started Purge/Opened Sample Port
11:53	2.75	1	6.71	501	18.8	—	cloudy, odorless
11:54	5.5	2	6.69	530	19.7	—	slightly " "
11:56	8.25	3	6.65	547	20.3	—	" " "

							Sampled/Stopped
Chloride		Sulfate		Nitrate	X4.4		Other Field Results:

Purge Pump On	11:51	Discharge Measurement: (Circle)	(Bucket) Tank Flowmeter
Purge Pump Off	11:56	Sample Collection Method:	X Direct From Discharge Hose
Total Gallons Purged	8.25		____Teflon Bailer X Disposable Bailer
Purge Rate (gpm)	1.65	Ice Chest Coolant	____Crushed Ice X Blue Ice Ice Chest Temp (EC)_____

Sample Time	Analyses	Amount/Container Used	Sample Description
12:00			

Well Vault Type:	flush	Floating Product: ___ Yes ___ No ___ NA	
Lock Number/Type:	Ø	Thickness: _____	
Drums Filled/Used:	yes	Description: _____	

Notes: _____

WATER SAMPLE LOG

Project Name: Unocal	**Job #:** E0805401S	**Field Personnel:** E. Basel
Day: Mon Tu Wed Thur (Fri) Sat Sun (circle one)	**Date:** 1/7/11	**Weather:** (circle) Clear (Partly Cloudy) Overcast Rain; Cold (Cool) Warm Hot Very Hot

Well:	MW-7	**Water Level Measurement Technique:** (Circle) Electric Sounder Ser # _____ Not Measured
Static Depth to Water-Ft. (A)	9.67	**Purge Method:** Grundfos Submersible Pump Pneumatic Pump
Total Depth of Casing-Ft. (B)	27.08	(Circle) Electric Pump Hand Bailed
Total Ft. of Water (B-A)	17.41	Other _____
Casing Dia-in.	(2") 4" 6" 8"	**Dedicated System:** Yes No
Casing Capacity-gal/ft (C)	(.163) .653 1.46 2.50	**Dedicated System:** ____Yes X No
Gallons per Casing Volume	(B-A)*C 2.83	**pH Calibration:** X 4.0 X 7.0 X 10.0 **EC Calibration(µmhos)** 1413

Time	Gallons Purged	Casing Volumes	PH	EC (µmhos)	Temp (EF) (EC)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
	0	0	----	----	----	----	Started Purge/Opened Sample Port
15:04	3	1	6.84	436	18.8	—	slightly turbid, no odor
15:10	6	2	6.72	484	20.0	—	
15:16	9	3	6.76	506	20.1	—	

							Sampled/Stopped
Chloride		**Sulfate**		**Nitrate**	X4.4		Other Field Results:

Purge Pump On	/	**Discharge Measurement:** (Circle) (Bucket) Tank Flowmeter
Purge Pump Off	/	**Sample Collection Method:** ____Direct From Discharge Hose
Total Gallons Purged	/	____Teflon Bailer X Disposable Bailer
Purge Rate (gpm)	/	**Ice Chest Coolant** ____Crushed Ice X Blue Ice **Ice Chest Temp (EC)**_____

Sample Time	Analyses	Amount/Container Used	Sample Description
15:20			

Well Vault Type:	Flush	**Floating Product:** ____ Yes ____ No ____ NA
Lock Number/Type:	Ø	**Thickness:**_____
Drums Filled/Used:	yes	**Description:**_____

Notes: _____

APPENDIX B

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Engineers & Laboratories

A1A0596

01/26/2011

Jeff Yeazell
BSK Associates - Sacramento
3140 Gold Camp Drive Suite 160
Rancho Cordova, CA 95670

Dear Jeff Yeazell,

Thank you for selecting BSK Analytical Laboratories for your analytical testing needs. We have prepared this report in response to your request for analytical services. Enclosed are the results of analyses for samples received by the laboratory on 01/11/2011 09:55.

If additional clarification of any information is required, please contact your Client Services Representative, Joni Blankfield at (800) 877-8310 or (559) 497-2888.

BSK ANALYTICAL LABORATORIES

Joni Blankfield
Client Services Representative

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com

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01/26/2011

Case Narrative

Work Order Information

Client Name:	BSK Associates - Sacramento	**Submitted by:**	Erin Basel
Client Code:	BSKAs9293	**Shipped by:**	ONTRAC
Work Order:	A1A0596	**COC Number:**	
Project:	Unocal Castro Valley	**TAT:**	10
Client Project:	E0805401S	**PO #:**	

Sample Receipt Conditions

Cooler: **Default Cooler** **Temp. °C:** 0

Containers Intact
COC/Labels Agree
Received On Wet Ice
Packing Material - Bubble Wrap
Packing Material - Foam
Sample(s) were received in temperature range.
Initial receipt at BSK-SAC

Report Manager
Jeff Yeazell

Report Format
FAL Final MultiOrder.rpt

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Certificate of Analysis

Jeff Yeazell
BSK Associates - Sacramento
3140 Gold Camp Drive Suite 160
Rancho Cordova, CA 95670

Report Issue Date: 01/26/2011 10:31
Received Date: 01/11/2011
Received Time: 09:55

Lab Sample ID: A1A0596-01
Sample Date: 01/07/2011 11:03
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-5

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
BTEX, TPH-Gasoline by GC-PID/FID									
*Benzene	EPA 8015B/8021 B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*Ethylbenzene	EPA 8015B/8021 B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*Toluene	EPA 8015B/8021 B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*TPH as Gasoline	EPA 8015B/8021 B	ND	50	ug/L	1	A100536	01/14/11	01/14/11	
***Xylene (Total) (2C)**	EPA 8015B/8021 B	**0.64**	0.30	ug/L	1	A100536	01/14/11	01/14/11	
Surrogate: Fluorobenzene	EPA 8015B/8021B	89 %		*Acceptable range: 70-130 %*					
Surrogate: Fluorobenzene (2C)	EPA 8015B/8021B	100 %		*Acceptable range: 70-130 %*					
Volatile Organics (Oxygenates, Pb Scav.) by GC-MS									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*1,2-Dichloroethane	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Methyl-t-butyl ether	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A100472	01/12/11	01/12/11	
Surrogate: Toluene-d8	EPA 8260B	92 %		*Acceptable range: 70-130 %*					
TPH-Diesel by GC-FID									
*TPH as Diesel	EPA 8015B	ND	50	ug/L	1	A100391	01/11/11	01/12/11	BL04
Surrogate: Tetracosane	EPA 8015B	119 %		*Acceptable range: 45-189 %*					

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Report Issue Date: 01/26/2011 10:31
Received Date: 01/11/2011
Received Time: 09:55

Lab Sample ID: A1A0596-02
Sample Date: 01/07/2011 12:00
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-6

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
BTEX, TPH-Gasoline by GC-PID/FID									
*Benzene	EPA 8015B/8021B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*Ethylbenzene	EPA 8015B/8021B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*Toluene	EPA 8015B/8021B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*TPH as Gasoline	EPA 8015B/8021B	ND	50	ug/L	1	A100536	01/14/11	01/14/11	
***Xylene (Total) (2C)**	EPA 8015B/8021B	**0.44**	0.30	ug/L	1	A100536	01/14/11	01/14/11	
Surrogate: Fluorobenzene	EPA 8015B/8021B	90 %		*Acceptable range: 70-130 %*					
Surrogate: Fluorobenzene (2C)	EPA 8015B/8021B	100 %		*Acceptable range: 70-130 %*					
Volatile Organics (Oxygenates, Pb Scav.) by GC-MS									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*1,2-Dichloroethane	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
***Methyl-t-butyl ether**	EPA 8260B	**40**	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A100472	01/12/11	01/12/11	
Surrogate: Toluene-d8	EPA 8260B	90 %		*Acceptable range: 70-130 %*					
TPH-Diesel by GC-FID									
*TPH as Diesel	EPA 8015B	ND	50	ug/L	1	A100391	01/11/11	01/12/11	BL04
Surrogate: Tetracosane	EPA 8015B	126 %		*Acceptable range: 45-189 %*					

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Report Issue Date: 01/26/2011 10:31
Received Date: 01/11/2011
Received Time: 09:55

Lab Sample ID: A1A0596-03
Sample Date: 01/07/2011 13:21
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-101

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
BTEX, TPH-Gasoline by GC-PID/FID									
***Benzene (2C)**	EPA 8015B/8021B	**75**	1.2	ug/L	4	A100536	01/14/11	01/19/11	
***Ethylbenzene (2C)**	EPA 8015B/8021B	**150**	1.2	ug/L	4	A100536	01/14/11	01/19/11	
***Toluene**	EPA 8015B/8021B	**0.72**	0.30	ug/L	1	A100536	01/14/11	01/14/11	
***TPH as Gasoline**	EPA 8015B/8021B	**1600**	50	ug/L	1	A100536	01/14/11	01/14/11	
***Xylene (Total)**	EPA 8015B/8021B	**110**	0.30	ug/L	1	A100536	01/14/11	01/14/11	
Surrogate: Fluorobenzene	EPA 8015B/8021B	87 %		*Acceptable range: 70-130 %*					
Surrogate: Fluorobenzene (2C)	EPA 8015B/8021B	104 %		*Acceptable range: 70-130 %*					
Volatile Organics (Oxygenates, Pb Scav.) by GC-MS									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
***1,2-Dichloroethane**	EPA 8260B	**5.5**	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
***Methyl-t-butyl ether**	EPA 8260B	**420**	50	ug/L	50	A100472	01/12/11	01/12/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A100472	01/12/11	01/12/11	
Surrogate: Toluene-d8	EPA 8260B	113 %		*Acceptable range: 70-130 %*					
TPH-Diesel by GC-FID									
***TPH as Diesel**	EPA 8015B	**2300**	50	ug/L	1	A100391	01/11/11	01/12/11	BL05
Surrogate: Tetracosane	EPA 8015B	129 %		*Acceptable range: 45-189 %*					

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Report Issue Date: 01/26/2011 10:31
Received Date: 01/11/2011
Received Time: 09:55

Lab Sample ID: A1A0596-04
Sample Date: 01/07/2011 15:20
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-7

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
BTEX, TPH-Gasoline by GC-PID/FID									
*Benzene (2C)	EPA 8015B/8021B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*Ethylbenzene (2C)	EPA 8015B/8021B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
*Toluene (2C)	EPA 8015B/8021B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
***TPH as Gasoline**	EPA 8015B/8021B	**250**	50	ug/L	1	A100536	01/14/11	01/14/11	
*Xylene (Total) (2C)	EPA 8015B/8021B	ND	0.30	ug/L	1	A100536	01/14/11	01/14/11	
Surrogate: Fluorobenzene (2C)	EPA 8015B/8021B	98 %		*Acceptable range: 70-130 %*					
Volatile Organics (Oxygenates, Pb Scav.) by GC-MS									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*1,2-Dichloroethane	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*Methyl-t-butyl ether	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A100472	01/12/11	01/12/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A100472	01/12/11	01/12/11	
Surrogate: Toluene-d8	EPA 8260B	92 %		*Acceptable range: 70-130 %*					
TPH-Diesel by GC-FID									
*TPH as Diesel	EPA 8015B	ND	50	ug/L	1	A100391	01/11/11	01/12/11	BL04
Surrogate: Tetracosane	EPA 8015B	124 %		*Acceptable range: 45-189 %*					

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
Batch: A100391				Analyst: PYA		Prepared: 01/11/2011					
Blank (A100391-BLK1) EPA 8015B - Quality Control											
TPH as Diesel	52	50	ug/L							01/11/11	B
Surrogate: Tetracosane	*60*			*50*		*120*	*45-189*			01/11/11	
Blank Spike (A100391-BS1) EPA 8015B - Quality Control											
TPH as Diesel	2200	50	ug/L	2500		89	70-130			01/11/11	
Surrogate: Tetracosane	*70*			*50*		*140*	*45-189*			01/11/11	
Blank Spike Dup (A100391-BSD1) EPA 8015B - Quality Control											
TPH as Diesel	2200	50	ug/L	2500		87	70-130	3	30	01/11/11	
Surrogate: Tetracosane	*69*			*50*		*137*	*45-189*			01/11/11	
Matrix Spike (A100391-MS1) EPA 8015B - Quality Control						**Source: A1A0325-01**					
TPH as Diesel	2100	50	ug/L	2500	ND	86	70-130			01/11/11	
Surrogate: Tetracosane	*67*			*50*		*134*	*45-189*			01/11/11	
Batch: A100472				Analyst: AMN		Prepared: 01/12/2011					
Blank (A100472-BLK1) EPA 8260B - Quality Control											
1,2-Dibromoethane (EDB)	ND	1.0	ug/L							01/12/11	
1,2-Dichloroethane	ND	1.0	ug/L							01/12/11	
Di-isopropyl ether (DIPE)	ND	1.0	ug/L							01/12/11	
Ethyl tert-Butyl Ether (ETBE)	ND	1.0	ug/L							01/12/11	
Methyl-t-butyl ether	ND	1.0	ug/L							01/12/11	
tert-Amyl Methyl Ether (TAME)	ND	1.0	ug/L							01/12/11	
tert-Butyl alcohol (TBA)	ND	50	ug/L							01/12/11	
Surrogate: Toluene-d8	*ND*			*2.0*		*91*	*70-130*			01/12/11	
Blank Spike (A100472-BS1) EPA 8260B - Quality Control											
1,2-Dibromoethane (EDB)	10	1.0	ug/L	10		103	70-130			01/12/11	
1,2-Dichloroethane	9.4	1.0	ug/L	10		94	70-130			01/12/11	
Di-isopropyl ether (DIPE)	8.7	1.0	ug/L	10		87	70-130			01/12/11	
Ethyl tert-Butyl Ether (ETBE)	8.7	1.0	ug/L	10		87	70-130			01/12/11	
Methyl-t-butyl ether	18	1.0	ug/L	20		88	70-130			01/12/11	
tert-Amyl Methyl Ether (TAME)	8.9	1.0	ug/L	10		89	70-130			01/12/11	
tert-Butyl alcohol (TBA)	110	50	ug/L	100		105	60-140			01/12/11	
Surrogate: Toluene-d8	*2.2*			*2.0*		*108*	*70-130*			01/12/11	
Blank Spike Dup (A100472-BSD1) EPA 8260B - Quality Control											
1,2-Dibromoethane (EDB)	11	1.0	ug/L	10		106	70-130	3	30	01/12/11	
1,2-Dichloroethane	9.8	1.0	ug/L	10		98	70-130	4	30	01/12/11	
Di-isopropyl ether (DIPE)	8.9	1.0	ug/L	10		89	70-130	2	30	01/12/11	
Ethyl tert-Butyl Ether (ETBE)	9.3	1.0	ug/L	10		93	70-130	7	30	01/12/11	
Methyl-t-butyl ether	19	1.0	ug/L	20		94	70-130	7	30	01/12/11	
tert-Amyl Methyl Ether (TAME)	9.6	1.0	ug/L	10		96	70-130	8	30	01/12/11	
tert-Butyl alcohol (TBA)	110	50	ug/L	100		109	60-140	3	30	01/12/11	

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
Batch: A100472				Analyst: AMN		Prepared: 01/12/2011					
Blank Spike Dup (A100472-BSD1)	**EPA 8260B - Quality Control**										
Surrogate: Toluene-d8	*2.1*			*2.0*		*105*	*70-130*			01/12/11	
Batch: A100536				Analyst: PYA		Prepared: 01/14/2011					
Blank (A100536-BLK1)	**EPA 8015B/8021B - Quality Control**										
Benzene	ND	0.30	ug/L							01/14/11	
Benzene (2C)	ND	0.30	ug/L							01/14/11	
Ethylbenzene	ND	0.30	ug/L							01/14/11	
Ethylbenzene (2C)	ND	0.30	ug/L							01/14/11	
Toluene	ND	0.30	ug/L							01/14/11	
Toluene (2C)	ND	0.30	ug/L							01/14/11	
TPH as Gasoline	ND	50	ug/L							01/14/11	
Xylene (Total)	ND	0.30	ug/L							01/14/11	
Xylene (Total) (2C)	ND	0.30	ug/L							01/14/11	
Surrogate: Fluorobenzene	*26*			*30*		*88*	*70-130*			01/14/11	
Surrogate: Fluorobenzene (2C)	*29*			*30*		*98*	*70-130*			01/14/11	
Blank Spike (A100536-BS1)	**EPA 8015B/8021B - Quality Control**										
Benzene	19	0.30	ug/L	20		93	70-130			01/14/11	
Benzene (2C)	20	0.30	ug/L	20		99	70-130			01/14/11	
Ethylbenzene	19	0.30	ug/L	20		96	70-130			01/14/11	
Ethylbenzene (2C)	19	0.30	ug/L	20		94	70-130			01/14/11	
Toluene	18	0.30	ug/L	20		90	70-130			01/14/11	
Toluene (2C)	20	0.30	ug/L	20		98	70-130			01/14/11	
TPH as Gasoline	470	50	ug/L	500		94	70-130			01/14/11	
Xylene (Total)	57	0.30	ug/L	60		96	70-130			01/14/11	
Xylene (Total) (2C)	57	0.30	ug/L	60		96	70-130			01/14/11	
Surrogate: Fluorobenzene	*27*			*30*		*91*	*70-130*			01/14/11	
Surrogate: Fluorobenzene (2C)	*30*			*30*		*99*	*70-130*			01/14/11	
Blank Spike Dup (A100536-BSD1)	**EPA 8015B/8021B - Quality Control**										
Benzene	18	0.30	ug/L	20		90	70-130	3	20	01/14/11	
Benzene (2C)	20	0.30	ug/L	20		99	70-130	0	20	01/14/11	
Ethylbenzene	19	0.30	ug/L	20		95	70-130	2	20	01/14/11	
Ethylbenzene (2C)	19	0.30	ug/L	20		94	70-130	0	20	01/14/11	
Toluene	17	0.30	ug/L	20		85	70-130	6	20	01/14/11	
Toluene (2C)	19	0.30	ug/L	20		97	70-130	1	20	01/14/11	
Xylene (Total)	56	0.30	ug/L	60		93	70-130	3	20	01/14/11	
Xylene (Total) (2C)	57	0.30	ug/L	60		96	70-130	0	20	01/14/11	
Surrogate: Fluorobenzene	*27*			*30*		*89*	*70-130*			01/14/11	
Surrogate: Fluorobenzene (2C)	*30*			*30*		*99*	*70-130*			01/14/11	
Matrix Spike (A100536-MS1)	**EPA 8015B/8021B - Quality Control**				**Source: A1A0596-01**						
Benzene	17	0.30	ug/L	20	ND	85	70-130			01/14/11	
Ethylbenzene	18	0.30	ug/L	20	ND	89	70-130			01/14/11	
Toluene	16	0.30	ug/L	20	ND	81	70-130			01/14/11	

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
Batch: A100536				Analyst: PYA		Prepared: 01/14/2011					
Matrix Spike (A100536-MS1)	**EPA 8015B/8021B - Quality Control**					**Source: A1A0596-01**					
Xylene (Total) (2C)	54	0.30	ug/L	60	0.64	88	70-130			01/14/11	
Surrogate: Fluorobenzene	*25*			*30*		*84*	*70-130*			01/14/11	
Surrogate: Fluorobenzene (2C)	*28*			*30*		*95*	*70-130*			01/14/11	

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Certificate of Analysis

01/26/2011

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
- Sample(s) received, prepared, and analyzed within the method specified criteria unless otherwise noted within this report.
- The results relate only to the samples analyzed in accordance with test(s) requested by the client on the Chain of Custody document. Any analytical quality control exceptions to method criteria that are to be considered when evaluating these results have been flagged and are defined in the data qualifiers section.
- All results are expressed on wet weight basis unless otherwise specified.
- All positive results for EPA Methods 504.1, 502.2, and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Results contained in this analytical report must be reproduced in its entirety.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- BSK Analytical Laboratories certifies that the test results contained in this report meet all requirements of the NELAC Standards for applicable certified drinking water chemistry analyses unless qualified or noted in the Case Narrative.
- Analytical data contained in this report may be used for regulatory purposes to meet the requirements of the Federal or State drinking water, wastewater, and hazardous waste programs.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals. Samples submitted to the laboratory have been analyzed outside of this holding time requirement.
- * - This is not a NELAP accredited analyte.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- (2) The digestion used to produce this result deviated from EPA 200.2 by excluding hydrochloric acid in order to produce acceptable recoveries for affected metals.
- (2C) Result reported from secondary analytical column.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.

Certifications:

State of California - CDPH - ELAP	1180
State of California - CDPH - NELAP	04227CA
State of New Mexico - NMED-DWB	
State of Nevada - NDEP	CA000792009A

Definitions and Flags for Data Qualifiers

mg/L:	Milligrams/Liter (ppm)	M:	Method Detection Limit	MDA:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)		:DL x Dilution	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	ND:	None Detected at RL	Absent:	Less than 1 CFU/100mLs
%:	Percent Recovered (surrogates)	pCi/L:	Picocuries per Liter	Present:	1 or more CFU/100mLs
		NR:	Non-Reportable	RL Mult:	RL Multiplier

BL05 Target analyte detected in method blank at or above reporting limit. Concentration found in the sample was >10 times that found in the blank.

BL04 Detected in the method blank. All associated samples were non-detect for this analyte.

B Analyte exceeds laboratory acceptance limit for blank contamination.

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com

A1A0596

BSK Associates - Sacramento

BSKAs9293 01112011

Turnaround: Standard
Due Date: 01/25/2011

BSK ANALYTICAL LABORATORIES
1414 Stanislaus, Fresno CA 93706
(559) 497-2888, (800) 877-8310, FAX (559) 485-6935

Page: 1 of 1

BSK Submission:
COC Number:
Global ID Number: T0600101370

A1A0596
BSKAs9293

01/11/2011
10

Facility/Project Name: Unocal Castro Valley	Report Attention: Jeff Yeazell
Address	BSK Job No.: E0805401S
City, State, Zip	Copy to:
Phone	FAX
	Sampled by: E. Bagsi

Lab Use Only			Sampling Info			Method Preserved																			
S#	T	#C	Date	Time	Field Point Name	HCl	HNO3	H2SO4	NONE	OTHER (List)	BTEX/TPH-G (8020/8015M)	TPH-Diesel (8015M)	Fuel Oxygenates (8260B)	Lead Scavengers (8260B)											Rush Priority (1-Day, 2-D
1			1/7/11	11:05	MW-5						X	X	X	X											
2			1/7/11	12:05	MW-6						X	X	X	X											
3			1/7/11	13:25	MW-10						X	X	X	X											
4			1/7/11	15:20	MW-7						X	X	X	X											

QC Report Type: Level [X] 2 [ ] 3 [ ] 4 Formal COC Required: [ ]

Electronic Data Format Required: [X] Email EDF To:jyeazell@bskinc.com Low Level Fuel Oxygenats Detection Limits Req: [ ]

Signature	Print Name	Company	Date/Time
Received / Reliquished by:	E. Bagsi	BSK	1/10/11 8:30
Received / Reliquished by:			
Received / Reliquished by:			
Received / Reliquished by:			
Received / Reliquished by:		BSK	1/11/11 9:05

Sample Integrity

Pg. 1 of 2 **WORK** A1A0596 BSKAs9293

01/11/2011
10

Date Received 1/11/11

Section 1- Receiving Information

Sample Transport: ONTRAC UPS PMS Walk-In BSK-Courier GSO Fed Exp. Other: _____

Samples arrived at lab on same day sampled: Yes _____ No ✓ (If Yes- Temperature is not needed)

Coolers/Ice Chests Description/Temperature(s): (If more than 4 received, list information in comment section)

1) 0 2) _____ 3) NA 4) _____

Was Temperature In Range: Y N N/A Received On Ice: Wet Blue Received Ambient: Y N

Describe type of packing materials: Bubble Wrap Foam Packing Peanuts Paper Other: _____

Initial Receipt: BSK-Visalia BSK-Bakersfield BSK-SAC BSK-FDL BSK-FAL

Were ice chest custody seals present? Y N Intact: Y N

Section 2- COC Info.	Completed Yes	Completed No	Info From Container		Completed Yes	Completed No	Info From Container
Was COC Received	✓			Analysis Requested	✓		
Date Sampled	✓			Any hold times less than 72hr		✓	
Time Sampled	✓			Client Name	✓		
Sample ID	✓			Address	✓		
Special Storage/Handling Ins.		✓		Telephone #	✓		

Section 3- Bottles / Analysis	Yes	No	N/A	Comment
Did all bottles arrive unbroken and intact?	✓			
Were bottle custody seals present?			✓	
Were bottle custody seals intact?			✓	
Did all bottle labels agree with COC?	✓			
Were correct containers used for the tests requested?	✓			
Were correct preservations used for the tests requested?	✓			
Was a sufficient amount of sample sent for tests indicated?	✓			
Were bubbles present in VOA Vials? (**Volatile Methods Only**)		✓		
Were Ascorbic Acid Bottles received with the VOAs?		✓		

Section 4- Comments / Discrepancies

Sample(s) Split/Preserve: Yes (No) Container: _____ Preservation: _____ Dt/Time/Init _____

Container: _____ Preservation: _____ Dt/Time/Init _____

Was Client Service Rep. notified of discrepancies: Yes No (N/A) CSR: Notified By:

Explanations / Comments

Report Comment Entered:

Labeled by: S @ 1215 Labels checked by: NA @ 1244

Sample Integrity Pg 2 of 2

WC A1A0596 BSKAs9293

01/11/2011 10

BSK Bottles Yes

250ml (A) 500ml (B) 1Liter (C) Amber Glass (AG)

Container(s) Received	1-4	
Bacti $Na_2S_2O_3$		
None (p) White Cap		
None (p) Blue Cap w/NH4 + Buffer		
HNO_3 (p) Red Cap		
H_2SO_4 (p) Yellow Cap		
NaOH (p) Green Cap		
Other:		
Dissolved Oxygen 300ml (g)		
Centrifuge Tube HNO_3		
250ml (AG) None		
250ml (AG) H_2SO_4 COD Yellow Label	1	
250ml (AG) $Na_2S_2O_3$ 515,547 Blue Label		
250ml (AG) $Na_2S_2O_3$+ MCAA 531.1 Orange Label		
250ml (AG) NH_4Cl 552 Purple Label		
250ml (AG) EDA DBPs Brown Label		
250ml (AG) Other:		
500ml (AG) None		
500ml (AG) H_2SO_4 TPH-Diesel Yellow Label		
1 Liter (AG) None		
1 Liter (AG) H_2SO_4 O&G Yellow Label		
1 Liter (AG) $Na_2S_2O_3$ 548 / 525 / 521 Blue Label		
1 Liter (P) $Na_2S_2O_3$ / H_2SO_4 549		
1 Liter (AG) NaOH+ZnAc Sulfide		
1 Liter (AG) Ascorbic/EDTA/Pot Citrate 527 Grey Label		
1 Liter (AG) CuSO4/Trizma 529 Turquoise Label		
1 Liter (AG) Na_2SO_3 / HCL 525 UCMR Neon Green Label		
1 Liter (AG) Ammonium Chloride 535 Purple Label		
40ml VOA Vial Clear – HCL	4	
40ml VOA Vial Amber – $Na_2S_2O_3$		
40ml VOA Vial Clear – None		
40ml VOA Vial Clear - $Na_2S_2O_3$ 504, 505		
40ml VOA Vial Clear – H_3PO_4		
Other:		
Asbestos 1Liter Plastic/Foil		
Radon 200ml Clear (g)		
Low Level Hg/Metals Double Baggie		
Bioassay Jug		
250 Clear Glass Jar		
500 Clear Glass Jar		
1 Liter Clear Glass Jar		
Plastic Bag		
Soil Tube Brass / Steel / Plastic		
Tedlar Bags		