**Jillian Holloway**
Project Manager
Marketing Business Unit

**Chevron Environmental Management Company**
6101 Bollinger Canyon Road, 5338B
San Ramon, CA 94583
Tel (925) 790-3513
JillianHolloway@chevron.com

February 20, 2014

Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

**Re: RO352, Unocal No. 5484 (351812)**
**18950 Lake Chabot Road, Castro Valley, California**

I have reviewed the attached report dated February 20, 2014.

I agree with the conclusions and recommendations presented in the referenced Case Closure Summary. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by AECOM, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13257(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Jillian Holloway

Jillian Holloway
Project Manager

Attachment: *Case Closure Summary* by AECOM

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www.aecom.com

916 414 5800 tel
916 414 5850 fax

February 20, 2014

Keith Nowell
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

**Subject:** **Case Closure Summary**
**Unocal No. 5484 (351812)**
**18950 Lake Chabot Road, Castro Valley, California**
**Fuel Leak Case No. RO0000352**
**Geotracker Global ID # T0600101453**

Dear Mr. Nowell,

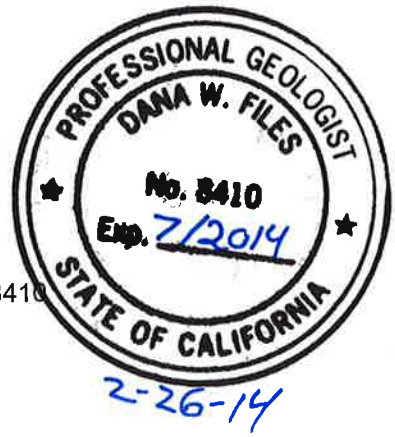
On behalf of Chevron Environmental Management Company's (EMC's) affiliate, Union Oil Company of California ("Union Oil"), AECOM has prepared a Case Closure Summary for the Unocal No. 5484 site located at 18950 Lake Chabot Road in Castro Valley, California .

## Remarks/Signatures

The interpretations in the attached documents represent AECOM's professional opinions which are are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

If you have any questions regarding this project, please contact James Harms at (916) 414-5863.

Sincerely,




James Harms
Project Manager

Dana Files, PG No. 8410
Project Geologist

cc: Jillian Holloway EMC (via electronic copy)
Abdi Fugfugosh and Shukri Noor, property owners (via paper copy)

**Attachments**
Attachment A Case Closure Summary

**CASE CLOSURE SUMMARY**
**LEAKING UNDERGROUND FUEL STORAGE TANK - LOCAL OVERSIGHT PROGRAM**

**I. AGENCY INFORMATION** Date: February 20, 2014

| | |
|---|---|
| Agency Name: Alameda County Environmental Health | Address: 1131 Harbor Bay Parkway |
| City/State/Zip: Alameda, CA 94502-6577 | Phone: (510) 567-6764 |
| Responsible Staff Person: Keith Nowell | Title: Hazardous Materials Specialist |

**II. CASE INFORMATION**

| | | |
|---|---|---|
| Site Facility Name: Unocal No. 5484 | | |
| Site Facility Address: 18950 Lake Chabot Road, Castro Valley, California 94546 | | |
| RB Case No.: 01-1578 | STiD No.: | LOP Case No.: RO0000352 |
| URF Filing Date: 06/15/1989 | Geotracker ID: T0600101453 | APN: 84D-1305-2-3 |
| Current Land Use: Active Fueling Station | | |

| Responsible Parties | Addresses | Phone Numbers |
|---|---|---|
| Jillian Holloway<br>Chevron Environmental Management Company | 6101 Bollinger Canyon Rd, 5338B<br>San Ramon, CA 94583 | (925) 790-3513 |

| Tank I.D. No | Size in Gallons | Contents | Closed In Place/Removed? | Date |
|---|---|---|---|---|
| T1 | 10,000 | Unleaded Gasoline | Removed | 1965 to June 1989 |
| T2 | 10,000 | Premium Gasoline | Removed | 1965 to June 1989 |
| T3 | 280 | Waste Oil | Removed | 1965 to June 1989 |
| T4 | 12,000 | Gasoline | In Place | June 1989 |
| T5 | 12,000 | Gasoline | In Place | June 1989 |
| T6 | 520 | Waste Oil | In Place | June 1989 |
| Piping | | | Removed and Replaced | June 1989 |

**III. RELEASE AND SITE CHARACTERIZATION INFORMATION**

| |
|---|
| Cause and Type of Release: Release from underground storage tank (UST) system discovered in June 1988. |
| Site characterization complete? Yes |

| | | |
|---|---|---|
| Monitoring wells installed? Yes | Number: 7 | Proper screened interval? Yes |
| Highest GW Depth Below Ground Surface: 3.5 feet bgs | Lowest Depth: 12.0 feet bgs | Flow Direction: Southeast |
| Most Sensitive Current Groundwater Use: Potential drinking water source. | | |

Summary of Production Wells in Vicinity: A domestic well (State Well No. 3S/2W 4H 2) was reported to be approximately a half mile south/southeast of the site, and has a total depth of 220 feet bgs. Four residential properties were identified as potentially having wells in the 2006 Sensitive Receptor Survey; questionnaires about well status and use were sent to the properties, but were never returned. Two of the wells are approximately one-half mile from the site to the south and northeast. Based on the extent and decreasing size of the plume, the above wells are not expected to be receptors for the site. No other water supply wells were identified within 2,000 feet of the site.

| | |
|---|---|
| Are drinking water wells affected? No | Aquifer Name: East Bay Plain |
| Is surface water affected? No | Nearest Surface Water Name: Almond Reservoir is approximately 3,080 feet west of the site. |
| Reports on file? Yes | Where are reports filed? Alameda County Environmental Health |

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

| Material | Amount (Include Units) | Action (Treatment or Disposal w/Destination) | Date |
|---|---|---|---|
| Free Product | unknown | Bailing free product | 1988 |
| Soil | 1,800 cubic yards | Aerated on site and then transported to Redwood Sanitary Landfill, Inc. in Novato, CA | June through August 1989 |
| Groundwater | unknown | Purge water | 1988 to 2013 |

| LTCP GROUNDWATER SPECIFIC CRITERIA | | | | | | |
|---|---|---|---|---|---|---|
| LTCP Groundwater Specific Scenario under which case was closed*:* Scenario 1 | | | | | | |
| Site Data | | | LTCP Scenario 1 Criteria (ppb) | LTCP Scenario 2 Criteria (ppb) | LTCP Scenario 3 Criteria (ppb) | LTCP Scenario 4 Criteria (ppb) |
| Plume Length | 65 feet | | <100 feet | <250 feet | <250 feet | <1,000 feet |
| Free Product | No free product | | No free product | No free product | Removed to maximum extent practicable | No free product |
| Plume Stable or Decreasing | decreasing | | Stable or decreasing | Stable or decreasing | Stable or decreasing for minimum of 5 Years | Stable or decreasing |
| Distance to Nearest Water Supply Well | >2,000 feet | | >250 feet | >1,000 feet | >1,000 feet | >1,000 feet |
| Distance to Nearest Surface Water and Direction | 3,080 feet upgradient | | >250 feet | >1,000 feet | >1,000 feet | >1,000 feet |
| Property Owner Willing to Accept a Land Use Restriction? | Not applicable for groundwater specific criteria | | Not applicable | Not applicable | Yes | Not applicable |
| GROUNDWATER CONCENTRATIONS | | | | | | |
| Constituent | Historic Site Maximum (ppb) | Current Site Maximum (ppb) | LTCP Scenario 1 Criteria (ppb) | LTCP Scenario 2 Criteria (ppb) | LTCP Scenario 3 Criteria (ppb) | LTCP Scenario 4 Criteria (ppb) |
| Benzene | 980 | 5.8 | No criteria | 3,000 | No criteria | 1,000 |
| MTBE | 1,600 | 42 | No criteria | 1,000 | No criteria | 1,000 |
| TPHg | 11,000 | 1,900 | | | | |
| Scenario 5: If the site does not meet scenarios 1 through 4, has a determination been made that under current and reasonably expected future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame? | | | | | | |

| LTCP VAPOR SPECIFIC CRITERIA | | | | | | | |
|---|---|---|---|---|---|---|---|
| LTCP Vapor Specific Scenario under which case was closed*:* Active fueling station exempt from vapor specific criteria but meets criteria 3A. | | | | | | | |
| Active Fueling Station | Active as of 2/14/2014. | | | | | | |
| Site Data | | LTCP Scenario 1 Criteria | LTCP Scenario 2 Criteria | LTCP Scenario 3A Criteria | LTCP Scenario 3B Criteria | LTCP Scenario 3C Criteria | LTCP Scenario 4 Criteria |
| Unweathered NAPL | No NAPL | LNAPL in groundwater | LNAPL in soil | No NAPL | No NAPL | No NAPL | No criteria |
| Thickness of Bioattenuation Zone Beneath Foundation | 5 feet | ≥30 feet | ≥30 feet | ≥5 feet | ≥10 feet | ≥5 feet | ≥5 feet |
| Total TPH in Bioattenuation Zone | <100 ppm | <100 ppm | <100 ppm | <100 ppm | <100 ppm | <100 ppm | <100 ppm |
| Maximum Current Benzene Concentration in Groundwater | 5.8 | No criteria | No criteria | <100 ppb | ≥100 and <1,000 ppb | <1,000 ppb | No criteria |
| Oxygen Data within Bioattenuation Zone | No oxygen data | No criteria | No criteria | No oxygen data or <4% | No oxygen data or <4% | ≥4% at lower end of zone | ≥4% at lower end of zone |
| Depth of soil vapor measurement beneath foundation | Not Measured | No criteria | No criteria | No criteria | No criteria | No criteria | ≥5 feet |

| SCENARIO 4 DIRECT MEASUREMENT OF SOIL VAPOR CONCENTRATIONS | | | | | | |
|---|---|---|---|---|---|---|
| Site Soil Vapor Data | | | No Bioattenuation Zone | | Bioattenuation Zone | |
| Constituent | Historic Maximum ($\mu g/m^3$) | Current Maximum ($\mu g/m^3$) | Residential | Commercial | Residential | Commercial |
| Benzene | ---- | ---- | <85 | <280 | <85,000 | <280,000 |
| Ethylbenzene | ---- | ---- | <1,100 | <3,600 | <1,100,000 | <3,600,000 |
| Naphthalene | ---- | ---- | <93 | <310 | <93,000 | <310,000 |
| If the site does not meet scenarios 1 through 4, does a site-specific risk assessment for the vapor intrusion pathway demonstrate that human health is protected? | | | | Active fueling station exempt from vapor specific criteria but meets criteria 3A. | | |
| If the site does not meet scenarios 1 through 4, has a determination been made that petroleum vapors from soil or groundwater will have no significant risk of adversely affecting human health as a result of controlling exposure through the use of mitigation measures or through the use of institutional controls? | | | | Active fueling station exempt from vapor specific criteria but meets criteria 3A. | | |

| LTCP DIRECT CONTACT AND OUTDOOR AIR EXPOSURE CRITERIA | | | | | | |
|---|---|---|---|---|---|---|
| LTCP Direct Contact and Outdoor Air Exposure Specific Scenario under which case was closed*:* A determination been made that the concentrations of petroleum in soil will have no significant risk of adversely affecting human health as a result of controlling exposure through the use of mitigation measures (paved site surfaces). | | | | | | |
| Are maximum concentrations less than those in Table 1 below? | | | | Yes | | |
| Constituent | | Residential | | Commercial/Industrial | | Utility Worker |
| | | 0 to 5 feet bgs (ppm) | Volatilization to outdoor air (5 to 10 feet bgs) ppm | 0 to 5 feet bgs (ppm) | Volatilization to outdoor air (5 to 10 feet bgs) ppm | 0 to 10 feet bgs (ppm) |
| Site Maximum | Benzene | 0.83 | 4.2 | 0.83 | 4.2 | 4.2 |
| LTCP Criteria | Benzene | ≤1.9 | ≤2.8 | ≤8.2 | ≤12 | ≤14 |
| Site Maximum | Ethylbenzene | 3.81 | 160 | 3.81 | 160 | 160 |
| LTCP Criteria | Ethylbenzene | ≤21 | ≤32 | ≤89 | ≤134 | ≤314 |
| Site Maximum | Naphthalene | ---- | ---- | ---- | ---- | ---- |
| LTCP Criteria | Naphthalene | ≤9.7 | ≤9.7 | ≤45 | ≤45 | ≤219 |
| Site Maximum | PAHs | ---- | ---- | ---- | ---- | ---- |
| LTCP Criteria | PAHs | ≤0.063 | NA | ≤0.68 | NA | ≤4.5 |
| If maximum concentrations are greater than those in Table 1, are they less than levels from a site-specific risk assessment? | | | | ----- | | |
| If maximum concentrations are greater than those in Table 1, has a determination been made that the concentrations of petroleum in soil will have no significant risk of adversely affecting human health as a result of controlling exposure through the use of mitigation measures or through the use of institutional controls? | | | | The site is paved minimizing the risk of outdoor air exposure. | | |

**IV. CLOSURE**

| | | |
|---|---|---|
| Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes | | |
| Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes | | |
| Does corrective action protect public health for current land use? Alameda County Environmental Health staff does not make specific determinations concerning public health risk. However, based upon the information available in our files to date, closure of this site appears to be consistent with the policies established by the State Water Resources Control Board Low-Threat Underground Storage Tank Closure Policy which became effective on August 17, 2012. | | |
| Site Management Requirements:<br><br>1) DIRECT CONTACT ISSUE – SITE DOES NOT MEET COMMERCIAL AND RESIDENTIAL<br><br>This fuel leak case has been evaluated for closure consistent with the State Water Resources Control Board Low-Threat Underground Storage Tank Closure Policy (LTCP). Benzene and ethylbenzene concentrations in soil from 5 to 10 feet bgs exceed the numerical criteria for outdoor air exposure prescribed in the LTCP for residential and commercial land use. Under the current land use as an active fueling station, most of the site is paved with minor landscaped areas near the site boundaries resulting in a low potential for direct exposure under the current land use. Therefore, case closure is granted for the current commercial land use as an active fueling station.<br><br>If a change in land use to any residential, commercial other than as an active fueling station, or conservative land use, or if any redevelopment occurs, Alameda County Environmental Health (ACEH) must be notified as required by Government Code Section 65850.2.2. ACEH will re-evaluate the case upon receipt of approved development/construction plans.<br><br>Excavation or construction activities in areas of residual contamination require planning and implementation of appropriate health and safety procedures by the responsible party prior to and during excavation and construction activities. | | |
| Should corrective action be reviewed if land use changes? | | |
| Was a deed restriction or deed notification filed? No | | Date Recorded: ---- |
| Monitoring Wells Decommissioned: Yes | Number Decommissioned: 4 | Number Retained: 0 |

**V. ADDITIONAL COMMENTS AND CONCLUSION**

Additional Comments:

*Naphthalene and PAHs were not analytes in shallow soil samples. However, since the release at the site consisted primarily of gasoline and benzene and ethylbenzene concentrations in shallow soil do not exceed media-specific criteria for direct contact, naphthalene concentrations in shallow soil are not likely to exceed the LTCP media-specific criteria.*

Conclusion:
LAND USE RESTRICTIONS
Alameda County Environmental Health staff believe that the site meets the conditions for case closure under the State Water Resources Control Board Low-Threat Underground Storage Tank Closure Policy. Based upon the information available in our files to date, no further investigation or cleanup for the fuel leak case is necessary at this time. However, as specified in the Site Management Requirements, re-evaluation of this case is required if land uses changes to any residential or other conservative land use, or any redevelopment occurs.

| |
|---|
| |

**VI. LOCAL AGENCY REPRESENTATIVE DATA**

| | |
|---|---|
| Prepared by: Keith Nowell | Title: Hazardous Materials Specialist |
| Signature: | Date: |
| Approved by: Dilan Roe | Title: LOP and SCP Program Manager |
| Signature: | Date: |

| |
|---|
| This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions. |

**VII. REGIONAL BOARD AND PUBLIC NOTIFICATION**

| | |
|---|---|
| Regional Board Staff Name: Cherie McCaulou | Title: Engineering Geologist |
| Regional Board Notification Date: | |
| Public Notification Date: | |

**VIII. MONITORING WELL DECOMMISSIONING**

| | | |
|---|---|---|
| Date Requested by ACEH: | Date of Well Decommissioning Report: | |
| All Monitoring Wells Decommissioned: Yes | Number Decommissioned: 4 | Number Retained: 0 |
| Reason Wells Retained: | | |
| ACEH Concurrence - Signature: | | Date: |

Attachments:

1. Site Vicinity Map and Aerial Photo (2 pp)
2. Site Plan (1 p)
3. Groundwater Contour and Chemical Concentration Maps (2 pp)
4. Soil Analytical Data (5 pp)
5. Groundwater Analytical Data (4 pp)
6. Cross Sections (2 pp)
7. Concentration Graphs (2 pp)
8. Boring Logs (5 pp)

This document and the related CASE CLOSURE LETTER & REMEDIAL ACTION COMPLETION CERTIFICATE shall be retained by the lead agency as part of the official site file.

# Site Vicinity Map and Aerial Photo (1pp)


Map Source: ESRI Data Resource Center 2013.

AECOM

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2020 L Street, Suite 400
Sacramento, CA 958211
916.414.5800

N

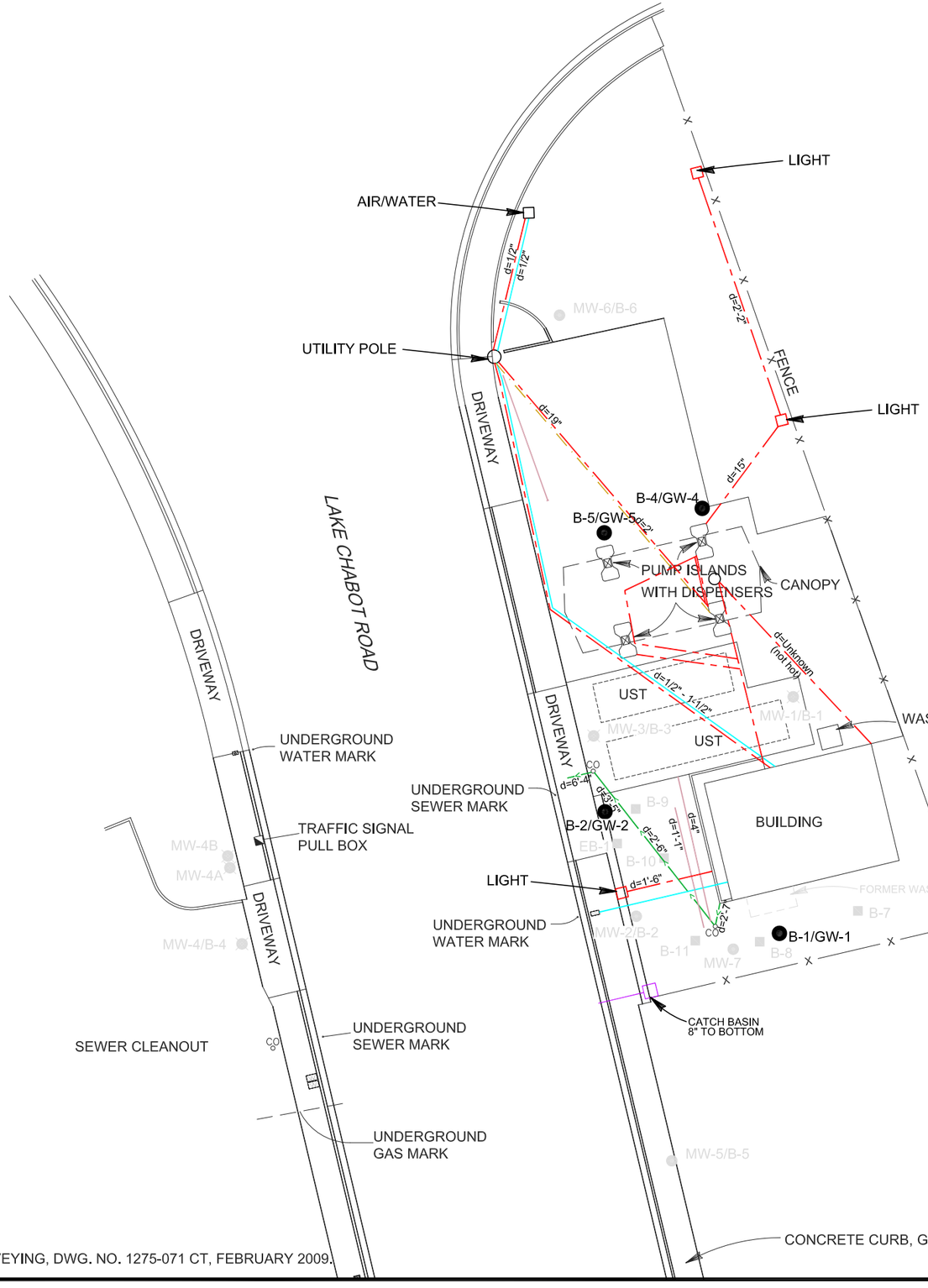
0 0.125 0.25 0.5
Miles

**Figure 3:**Receptor Map

**Unocal No. 5484 (351812), RO352**
**18950 Lake Chabot Road**
**Castro Valley, California**

Path: P:\ENV\01231-Chevron\76Products_transfer_sites\351812_5484_Castro Valley\7.0 Deliverables\7.2 CADD\GIS\Figure 3_Receptor_Map_351812.mxd

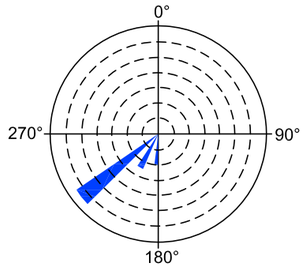
# Site Plan (1pp)




SOURCE: MORROW SURVEYING, DWG. NO. 1275-071 CT, FEBRUARY 2009.

## LEGEND

- MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- SOIL BORING LOCATION
- d DEPTH
- ELECTRIC
- WATER
- SEWER 4" OR LARGER
- PHONE
- UNKNOWN
- STORM




HISTORICAL GROUNDWATER
FLOW DIRECTION
4Q90 TO 1Q13

N

0 30'

SCALE

| REVISIONS | | | |
|---|---|---|---|
| NO.: | DESCRIPTION: | DATE: | BY: |
| | | | |

| DESIGNED BY: | DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|---|
| | RPR | RPR | JH |


AECOM

AECOM TECHNICAL SERVICES
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# UTILITIES PLAN

Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

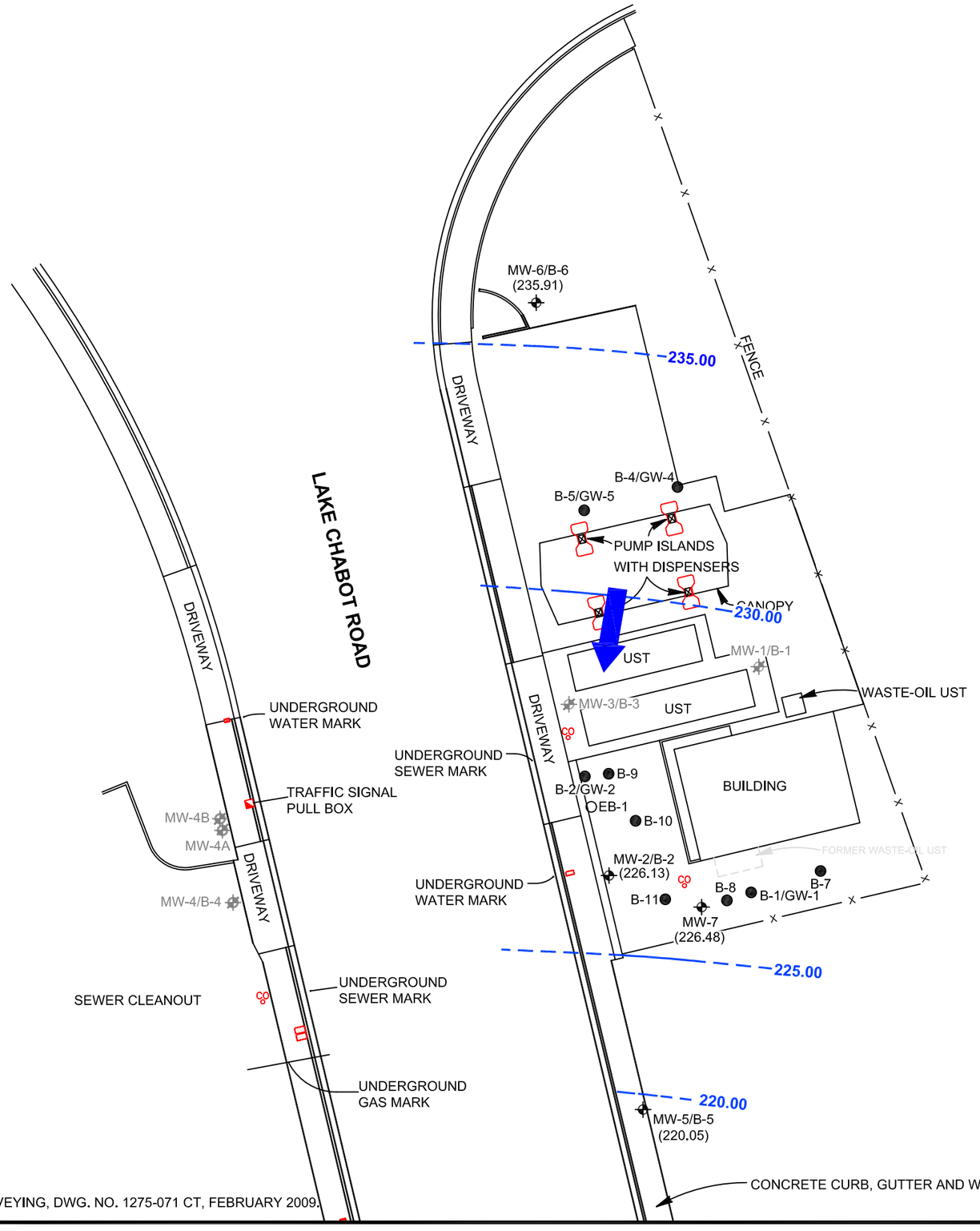
SCALE: 1" = 30'
DATE: 5/07/2013
PROJECT NUMBER: 60267030

FIGURE NUMBER: 5

SHEET NUMBER: 1 of 1

P:\ENV\01231-Chevron\76Products_transfer_sites\351812_5484_Castro Valley\7.0 Deliverables\7.2 CADD\CSM\Figure 5_Site_Plan_Utilities_351812.dwg Feb 13, 2014 - 6:43pm HarmsJ

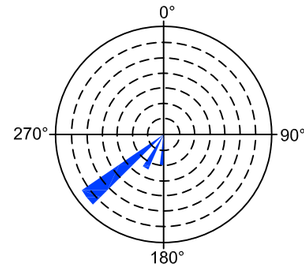
# Groundwater Contour and Chemical Concentration Maps (2pp)



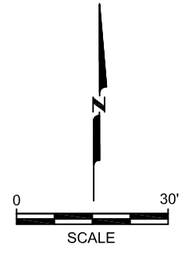

SOURCE: MORROW SURVEYING, DWG. NO. 1275-071 CT, FEBRUARY 2009.

## Legend

- Monitoring Well
- Destroyed Monitoring Well
- Soil Boring
- UST — Underground Storage Tank
- (#) — Groundwater Elevation in Feet Above Mean Sea Level
- 230.00 — Groundwater Contour Line in Feet Above Mean Sea Level (Dashed Where Inferred)
- Groundwater Flow Direction
- Hydraulic Gradient = 0.15 Feet per Foot




HISTORICAL GROUNDWATER
FLOW DIRECTION
4Q90 TO 1Q13




| REVISIONS | | | |
|---|---|---|---|
| NO.: | DESCRIPTION: | DATE: | BY: |

| DESIGNED BY: | DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|---|
| TQ | TQ | JH | JH |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# Groundwater Elevation Contour Map

Unocal Service Station #5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| PROJECT NUMBER: | DATE: | SCALE: |
|---|---|---|
| 60284081 | 2/12/2013 | 1" = 30' |

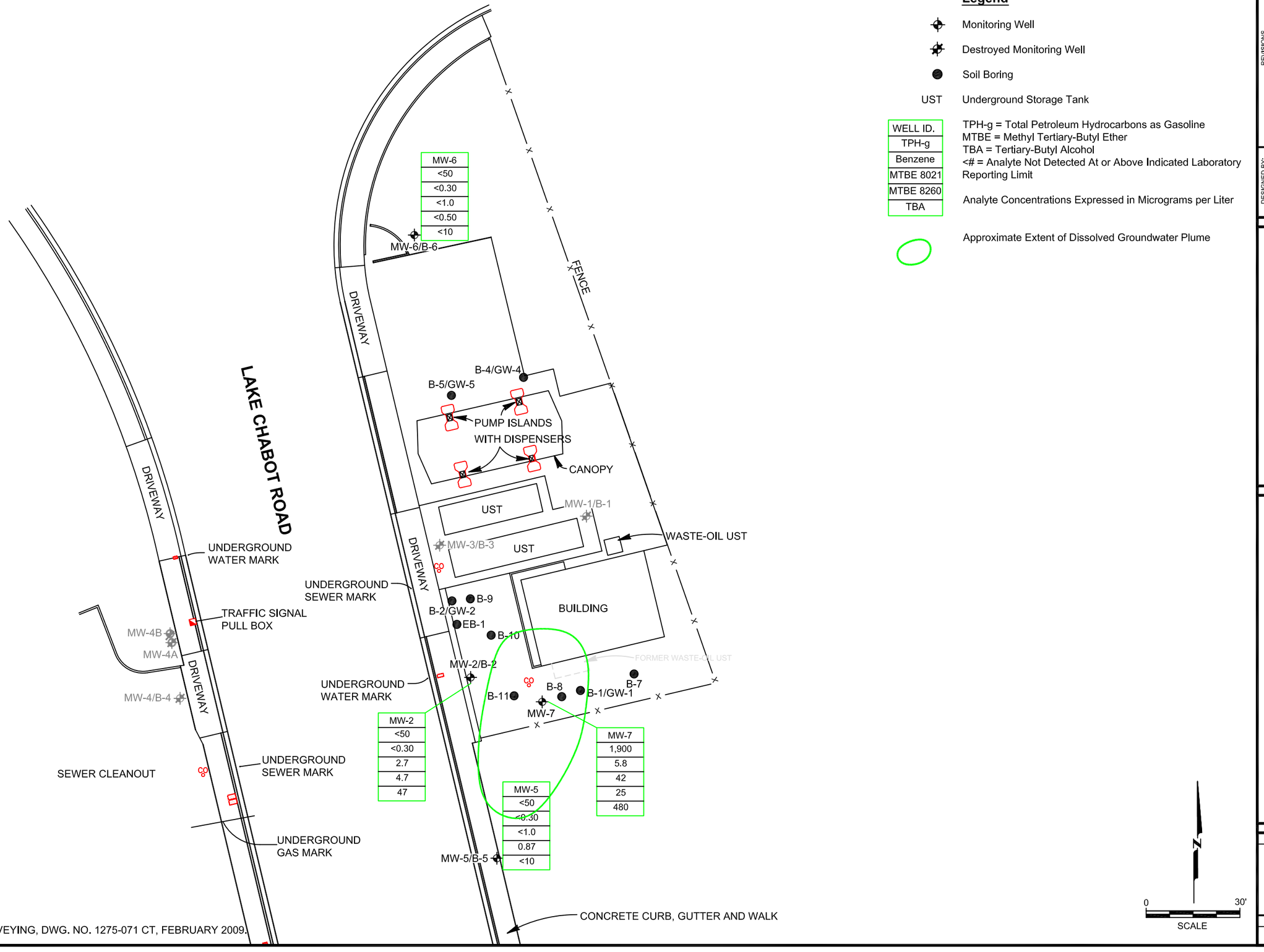
FIGURE NUMBER:

**2**

SHEET NUMBER:

1 of 1

P:\ENV\01231-Chevron\76Products_transfer_sites\351812_5484_Castro Valley\7.0 Deliverables\7.2_CADD\CSM\Fig 2 - GW Elevation.dwg Feb 13, 2014 - 6:58pm HarmsJ




SOURCE: MORROW SURVEYING, DWG. NO. 1275-071 CT, FEBRUARY 2009.

## Legend

- Monitoring Well
- Destroyed Monitoring Well
- Soil Boring
- UST — Underground Storage Tank

| WELL ID. |
|---|
| TPH-g |
| Benzene |
| MTBE 8021 |
| MTBE 8260 |
| TBA |

TPH-g = Total Petroleum Hydrocarbons as Gasoline
MTBE = Methyl Tertiary-Butyl Ether
TBA = Tertiary-Butyl Alcohol
<# = Analyte Not Detected At or Above Indicated Laboratory Reporting Limit

Analyte Concentrations Expressed in Micrograms per Liter

Approximate Extent of Dissolved Groundwater Plume

| REVISIONS NO: | DESCRIPTION: | DATE: | BY: |
|---|---|---|---|
| | | | |

| DESIGNED BY: | DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|---|
| TQ | TQ | JH | JH |

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# Groundwater Concentration Map

Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| SCALE: | DATE: | PROJECT NUMBER: |
|---|---|---|
| 1" = 30' | 03/30/2013 | 60284081 |

FIGURE NUMBER:
7

SHEET NUMBER:
1 of 1

P:\ENV\01231-Chevron\76Products_transfer_sites\351812_5484_Castro Valley\7.0 Deliverables\7.2 CADD\CSM\Fig 7 - GW Analytical Data.dwg Feb 14, 2014 - 12:30pm HarmsJ

# Soil Analytical Data (2pp)

**TABLE 1**
**CUMULATIVE SOIL DATA**
UNOCAL NO. 5484 (351812), RO352
18950 LAKE CHABOT ROAD
CASTRO VALLEY, CALIFORNIA

| Sample Location | Date | Sample Area | Sample Depth (fbg) | TOG (ppm) | TPHd (mg/kg) | TPHg (ppm) | Benzene (ppm) | Toluene (ppm) | Ethyl-benzene (ppm) | Total Xylenes (ppm) | MTBE (mg/kg) | HVOC (ppm) | Lead (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Applied GeoSystems, 1988, Report of Subsurface Environmental Investigation, April 30.*** | | | | | | | | | | | | | |
| S-15-B1 (MW-1) | 7/12-13/1988 | MW-1 | 15 | -- | -- | 3 | 0.06 | 0.56 | 0.24 | 1.21 | -- | -- | -- |
| S-5-B2 (MW-2) | 7/12-13/1988 | MW-2 | 5 | -- | -- | 12 | 0.16 | 0.92 | 0.66 | 3.58 | -- | -- | -- |
| S-5-B3 (MW-3) | 7/12-13/1988 | MW-3 | 5 | -- | -- | 79 | 0.83 | 6.63 | 3.81 | 26.12 | -- | -- | -- |
| ***Applied GeoSystems 1990, Report on Soil Excavation, Aeration, and Sampling, March 30.*** | | | | | | | | | | | | | |
| S-8.5-B4 (MW-4) | 5/23-24/1989 | MW-4 | 8.5 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-13.5-B4 (MW-4) | 5/23-24/1989 | MW-4 | 13.5 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-8.5-B5 (MW-5) | 5/23-24/1989 | MW-5 | 8.5 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-13.5-B5 (MW-5) | 5/23-24/1989 | MW-5 | 13.5 | -- | -- | 2.4 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-8.5-B6 (MW-6) | 5/23-24/1989 | MW-6 | 8 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-13.5-B6 (MW-6) | 5/23-24/1989 | MW-7 | 13.5 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| ***Applied GeoSystems 1990, Report on Soil Excavation, Aeration, and Sampling, March 30.*** | | | | | | | | | | | | | |
| ~~S-6-T1a~~ | ~~6/13/1989~~ | Gasoline UST initial | ~~6~~ | -- | -- | ~~2,100~~ | ~~13.00~~ | ~~110~~ | ~~37~~ | ~~230~~ | -- | -- | -- |
| ~~S-6-T1b~~ | ~~6/13/1989~~ | | ~~6~~ | -- | -- | ~~1,800~~ | ~~5.60~~ | ~~89~~ | ~~35~~ | ~~210~~ | -- | -- | -- |
| ~~S-6-T2a~~ | ~~6/13/1989~~ | | ~~6~~ | -- | -- | ~~4,300~~ | ~~12.00~~ | ~~150~~ | ~~57~~ | ~~350~~ | -- | -- | -- |
| ~~S-6-T2b~~ | ~~6/13/1989~~ | | ~~6~~ | -- | -- | ~~1,400~~ | ~~9.70~~ | ~~100~~ | ~~47~~ | ~~270~~ | -- | -- | -- |
| S-6-T2S | 6/13/1989 | | 6 | -- | -- | 1,800 | 4.20 | 48 | 39 | 240 | -- | -- | -- |
| S-15-Tb1 | 6/16/1989 | | 15 | -- | -- | <2.0 | <0.050 | 0.056 | <0.050 | 0.15 | -- | -- | -- |
| S-14-Tb2 | 6/16/1989 | | 14 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-14-Tb3 | 6/16/1989 | | 14 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-15-Tb4 | 6/16/1989 | Gasoline UST Excavation | 15 | -- | -- | 8.90 | <0.050 | 0.27 | 0.13 | 0.88 | -- | -- | -- |
| S-12-WF | 7/25/1989 | | 12 (?) | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-0728-1A | 7/28/1989 | | + | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-15-PIT | 8/1/1989 | | 15 | -- | -- | 3.4 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-0803-1B | 8/3/1989 | | + | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-0803-1W | 8/3/1989 | | ++ | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-0719-1A/1B | 5/30/1990 | Gasoline UST Excavation | 11.5 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| S-0724-1A/1B | 5/30/1990 | | 12 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | <0.050 | -- | -- | -- |
| ~~S-0628-WT1,2~~ | ~~6/28/1989~~ | Waste Oil UST Initial | ~~7~~ | -- | -- | ~~650~~ | ~~<2.0~~ | ~~8~~ | ~~3~~ | ~~26~~ | -- | -- | -- |
| ~~S-0705-4A-4B~~ | ~~7/5/1989~~ | | ~~7~~ | ~~1,200~~ | -- | ~~110~~ | ~~0.026~~ | ~~0.110~~ | ~~0.065~~ | ~~0.480~~ | -- | -- | -- |
| S-0711-WT1 | 7/11/1989 | Waste Oil UST Excavation | 8 | 1300 | -- | 480 | <1.0 | 12 | 15 | 74 | -- | -- | -- |
| S-0711-WT2 | 7/11/1989 | | 8 | 1800 | -- | 87 | <0.5 | 1.3 | 2.1 | 9.1 | -- | -- | -- |
| ***Applied GeoSystems 1990, Report on Soil Excavation, Aeration, and Sampling, March 30.*** | | | | | | | | | | | | | |
| S-5.0-B7 | 11/17-18/1989 | Southeast of Waste Oil UST | 5 | -- | -- | <2.0 | <0.050 | <0.050 | <0.050 | 0.090 | -- | -- | -- |
| S-10.0-B7 | 11/17-18/1989 | | 10 | -- | -- | 6.1 | 0.062 | 0.54 | 160 | 0.91 | -- | -- | -- |
| S-15.0-B7 | 11/17-18/1989 | | 15 | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- |
| S-20.0-B7 | 11/17-18/1989 | | 20 | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- |
| S-5.0-B8 | 11/17-18/1989 | South of Waste Oil UST | 5 | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- |
| S-9.5-B8 | 11/17-18/1989 | | 9.5 | -- | -- | 200 | 0.34 | 0.91 | 4.1 | 23 | -- | -- | -- |
| S-10.0-B8 | 11/17-18/1989 | | 10 | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- |
| S-15.0-B8 | 11/17-18/1989 | | 15 | -- | -- | 66 | 0.12 | 0.430 | 1.1 | 5.9 | -- | -- | -- |
| S-10.0-B9 | 11/17-18/1989 | South of Gasoline USTs | 10 | -- | -- | 86 | 1.1 | 0.670 | 2 | 3.7 | -- | -- | -- |
| S-17.0-B9 | 11/17-18/1989 | | 17 | -- | -- | 3.7 | <0.050 | 0.092 | 0.076 | 0.13 | -- | -- | -- |

**TABLE 1**
**CUMULATIVE SOIL DATA**
UNOCAL NO. 5484 (351812), RO352
18950 LAKE CHABOT ROAD
CASTRO VALLEY, CALIFORNIA

| Sample Location | Date | Sample Area | Sample Depth (fbg) | TOG (ppm) | TPHd (mg/kg) | TPHg (ppm) | Benzene (ppm) | Toluene (ppm) | Ethyl-benzene (ppm) | Total Xylenes (ppm) | MTBE (mg/kg) | HVOC (ppm) | Lead (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-10.0-B10 | 11/17-18/1989 | South of B-9 | 10 | -- | -- | 220 | 0.27 | <0.050 | 5.6 | 16 | -- | -- | -- |
| S-19.5-B10 | 11/17-18/1989 | | 19.5 | -- | -- | 16 | 0.081 | 0.120 | 0.62 | 1.8 | -- | -- | -- |
| S-10.0-B11 | 11/17-18/1989 | West of Waste Oil UST | 10 | <50 | -- | 45 | 0.074 | 0.330 | 1.2 | 3.1 | -- | -- | -- |
| S-14.5-B11 | 11/17-18/1989 | | 14.5 | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- |
| S-15.0-B11 | 11/17-18/1989 | | 15 | <50 | -- | 3.4 | <0.050 | 0.061 | 0.086 | 2.5 | -- | -- | -- |
| ***Kaprealian Engineering, Inc. (KEI), Results of Soil and Groundwater Investigation, June 27, 1991*** | | | | | | | | | | | | | |
| EB1 (3) | 5/7/1991 | East Along Sidewalk | 3 | -- | -- | 1.8 | ND | 0.0066 | 0.05 | 0.12 | -- | -- | -- |
| EB1 (6.5) | 5/7/1991 | | 6.5 | -- | -- | 33 | 0.16 | 0.13 | 0.73 | 3.6 | -- | -- | -- |
| MW7 (4.5)* | 5/7/1991 | MW-7 | 4.5 | -- | ND | ND | ND | 0.013 | ND | 0.013 | -- | -- | -- |
| MW7 (10)* | 5/7/1991 | MW-7 | 10 | -- | 3.1 | 19 | 0.048 | 0.0086 | 0.5 | 1.6 | -- | -- | -- |
| MW7 (13)* | 5/7/1991 | MW-7 | 13 | -- | 9.1 | 130 | 0.51 | 0.25 | 1.9 | 2.5 | -- | -- | -- |
| **Delta Consultants, Inc., 2005, Baseline Assessment Report, March 3, 2005.** | | | | | | | | | | | | | |
| B-1 | 1/13/2005 | South of Waste Oil UST | 1.5 | -- | -- | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | -- | 21 |
| B-2 | 1/13/2005 | Southeast of Gasoline USTs | 6.5 | -- | -- | 29 | <0.024 | <0.024 | 0.95 | 1.7 | <0.024 | -- | -- |
| B-2 | 1/13/2005 | | 19.5 | -- | -- | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | -- | -- |
| B-4 | 1/13/2005 | North of Gasoline USTs | 7 | -- | -- | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | -- | -- |
| B-5 | 1/13/2005 | | 21.5 | -- | -- | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | -- | -- |
| ***Delta Consultants, Inc., 2009, Well Replacement Report, April 2, 2009.*** | | | | | | | | | | | | | |
| MW-4A@9 | 2/18/2009 | MW-4A | 9 | -- | -- | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | -- | 7.2 |
| MW-4B@10 | 2/18/2009 | MW-4B | 10 | -- | -- | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | -- | 13 |
| MW-4B@14 | 2/18/2009 | MW-4B | 14 | -- | -- | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | -- | 13 |

**Abbreviations and Notes:**

TOG = Total oil and grease by Method SM 503
TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015
TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015
Benzene, toluene ethylbenzene and total xylenes by EPA Method 8020
MTBE = Methyl tert butyl ether by EPA Method 8020
HVOC = Halogenated Volatile Organic Compounds by EPA Method 8010
fbg = Feet below grade
mg/kg = Milligrams per kilogram
ppm = Parts per million
ND = Not detected at or above laboratory detection limits
<x.xx = Not detected at or above laboratory detection limit indicated
* = TOG and all EPA Method 8010 constinuents were nondetectable.
? = Approximate depth
~~1234~~ = Sample point overexcavated
+ = Floor excavation
++ = Sidewall of excavation

# Groundwater Analytical Data (8pp)

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-1** | | 7/88 | 5.16 | -- | 0 | -- | 540 | 6.1 | 82.7 | 35.6 | 180.3 | -- | -- | -- | -- | -- |
| **Screened** | | 10/88 | 7.10 | -- | 0 | -- | 1420 | 13.2 | 4.1 | 163.8 | 58.1 | -- | -- | -- | -- | -- |
| **From** | | 11/02/88 | 6.08 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| **10 to 30** | | 11/09/88 | 6.14 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| **feet bgs** | | 12/15/88 | 6.51 | -- | <0.01 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | | 01/03/89 | 5.10 | -- | 0 | -- | 410 | 6.5 | 10.4 | 11.8 | 44.2 | -- | -- | -- | -- | -- |
| | | 01/16/89 | 4.75 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | | 02/15/89 | 5.13 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | | 03/17/89 | 3.68 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | | 04/14/89 | 3.12 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | | 05/19/89 | 3.46 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | | 6/89 | | Well Destroyed during tank excavation | | | | | | | | | | | | |
| **MW-2** | -- | 7/88 | 6.85 | -- | 0 | -- | 1080 | 72 | 139 | 33 | 157 | -- | -- | -- | -- | -- |
| **Screened** | -- | 10/88 | 7.81 | -- | 0 | -- | 1140 | 80 | 10 | 25 | 26 | -- | -- | -- | -- | -- |
| **From** | -- | 11/02/88 | 7.83 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| **4 to 19** | -- | 11/09/88 | 7.98 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| **feet bgs** | -- | 12/15/88 | 7.89 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | -- | 01/03/89 | 6.50 | -- | 0 | -- | 4040 | 80 | 10 | 26 | 25 | -- | -- | -- | -- | -- |
| | -- | 01/16/89 | 6.02 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | -- | 02/15/89 | 5.22 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | -- | 03/17/89 | 3.98 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | -- | 04/14/89 | 3.83 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | -- | 05/19/89 | 4.85 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | -- | 06/29/89 | 7.24 | -- | 0 | -- | 550 | 2.7 | 1.9 | 10 | 34 | -- | -- | -- | -- | -- |
| | -- | 11/17/89 | 7.73 | -- | 0 | -- | 720 | 1.4 | 1.4 | 5.9 | 34 | -- | -- | -- | -- | -- |
| | -- | 02/28/90 | 4.53 | -- | 0 | -- | 420 | 5.0 | <0.50 | 3 | 17 | -- | -- | -- | -- | -- |
| | -- | 05/08/90 | 5.50 | -- | 0 | -- | 1100 | 9.7 | 0.95 | 14 | 48 | -- | -- | -- | -- | -- |
| | -- | 08/24/90 | 6.04 | -- | 0 | -- | 630 | 13 | 1.0 | 7.2 | 10 | -- | -- | -- | -- | -- |
| | -- | 11/29/90 | 7.48 | -- | 0 | -- | 190 | 1.6 | <0.50 | 0.7 | 0.8 | -- | -- | -- | -- | -- |
| | -- | 02/01/91 | -- | -- | -- | | 280 | 2.6 | <0.50 | 0.7 | 0.9 | | | | | |
| | 229.47 | 05/23/91 | 6.58 | -- | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 229.47 | 07/20/91 | 7.24 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | 229.47 | 08/21/91 | 7.42 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | 229.47 | 09/20/91 | 7.85 | -- | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 229.47 | 12/19/91 | -- | -- | -- | -- | 140 | 0.66 | ND | 0.64 | 1.2 | -- | -- | -- | -- | -- |
| | 229.47 | 03/20/92 | -- | -- | -- | -- | 120 | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 229.47 | 06/18/92 | -- | -- | -- | -- | 140 | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 229.47 | 09/10/92 | 7.44 | 222.03 | 0 | -- | 61 | ND | ND | ND | ND | 110 | -- | -- | -- | -- |
| | 229.47 | 12/10/92 | 7.55 | 221.92 | 0 | -- | 100 | ND | ND | ND | ND | 170 | -- | -- | -- | -- |
| | 229.47 | 03/10/93 | 4.69 | 224.78 | 0 | -- | 110 | ND | ND | ND | ND | 350 | -- | -- | -- | -- |

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-2 cont.** | 229.47 | 06/09/93 | 5.85 | 223.62 | 0 | -- | 120 | ND | ND | ND | ND | 300 | -- | -- | -- | -- |
| | 228.88 | 09/09/93 | 6.59 | 222.29 | 0 | -- | 210 | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.88 | 12/09/93 | 6.94 | 221.94 | 0 | -- | 96 | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.88 | 03/03/94 | 4.91 | 223.97 | 0 | -- | 240 | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.88 | 06/03/94 | 5.71 | 223.17 | 0 | -- | 190 | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.88 | 09/02/94 | 7.05 | 221.83 | 0 | -- | 720 | ND | ND | ND | 4.6 | -- | -- | -- | -- | -- |
| | 228.88 | 12/01/94 | 6.98 | 221.90 | 0 | -- | 200 | 0.7 | ND | 0.58 | ND | -- | -- | -- | -- | -- |
| | 228.88 | 03/01/95 | 4.60 | 224.28 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.88 | 06/01/95 | 4.65 | 224.23 | 0 | -- | 420 | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.88 | 09/05/95 | 5.66 | 223.22 | 0 | -- | ND | ND | 0.8 | ND | 0.74 | -- | -- | -- | -- | -- |
| | 228.88 | 12/05/95 | 6.32 | 222.56 | 0 | -- | ND | ND | ND | ND | ND | 390 | -- | -- | -- | -- |
| | 228.88 | 04/11/96 | 4.22 | 224.66 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/13/97 | 6.58 | 222.30 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/02/98 | 5.18 | 223.70 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/25/99 | 4.84 | 224.04 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/07/00 | 4.92 | 223.96 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/28/01 | 4.37 | 224.51 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/09/02 | 4.29 | 224.59 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/24/03 | 4.24 | 224.64 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/26/04 | 4.66 | 224.22 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 01/13/05 | -- | -- | -- | -- | <50 | <0.5 | <0.5 | <0.5 | <1.0 | -- | 110 | 18 | -- | <0.50 |
| | 228.88 | 03/17/05 | 4.08 | 224.80 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 03/31/06 | 4.06 | 224.82 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 02/16/07 | 4.87 | 224.01 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.88 | 01/21/08 | 4.83 | 224.05 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 231.66 | 02/25/09 | 4.32 | 227.34 | 0 | -- | 260 | 0.64 | <0.30 | 6.9 | <0.60 | 220 | 270 | -- | <2.0 | <0.50 |
| | 231.66 | 06/12/09 | 5.00 | 226.66 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 231.66 | 11/06/09 | 5.62 | 226.04 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 231.66 | 01/13/10 | 5.02 | 226.64 | 0 | -- | 470 | 0.65 | 0.67 | 4.1 | 3.3 | 260 | 350 | -- | <2.0 | -- |
| | 231.66 | 03/30/11 | 4.80 | 226.86 | 0 | -- | <50 | 0.37 | <0.30 | 6.4 | <0.60 | 46 | 47 | -- | -- | -- |
| | 231.66 | 03/30/12 | 5.17 | 226.49 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | 17 | 19 | 150 | -- | <0.50 |
| | **231.66** | **03/08/13** | **5.53** | **226.13** | **0** | **--** | **<50** | **<0.30** | **<0.30** | **<0.30** | **<0.60** | **2.7** | **4.7** | **47** | **<2.0** | **<0.50** |
| **MW-3** | | 7/88 | 7.49 | -- | 0.00 | -- | 7800 | 385 | 640 | 369 | 2258 | -- | -- | -- | -- | -- |
| **Screened** | | 10/88 | 9.06 | -- | 0.75 | | not sampled, due to floating product | | | | | -- | -- | -- | -- | -- |
| **From** | | 11/02/88 | 9.12 | -- | 0.96 | | not sampled,gauging only | | | | | -- | -- | -- | -- | -- |
| **5 to 20** | | 11/09/88 | 7.60 | -- | 0.06 | | not sampled,gauging only | | | | | -- | -- | -- | -- | -- |
| **feet bgs** | | 12/15/88 | 7.97 | -- | 0.56 | | not sampled,gauging only | | | | | -- | -- | -- | -- | -- |
| | | 01/03/89 | 7.20 | -- | 0.09 | | not sampled, due to floating product | | | | | -- | -- | -- | -- | -- |
| | | 01/16/89 | 6.36 | -- | 0.22 | | not sampled, due to floating product | | | | | -- | -- | -- | -- | -- |

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 02/15/89 | 5.16 | -- | 0.01 | | not sampled, due to floating product | | | | | -- | -- | -- | -- | -- |
| **MW-3 cont.** | | 03/17/89 | 5.01 | -- | 0.04 | | not sampled, due to floating product | | | | | -- | -- | -- | -- | -- |
| | | 04/14/89 | 4.71 | -- | <0.01 | | not sampled, due to floating product | | | | | -- | -- | -- | -- | -- |
| | | 05/19/89 | 5.49 | -- | 0.00 | | not sampled,gauging only | | | | | -- | -- | -- | -- | -- |
| | | 6/89 | | Well Destroyed during tank excavation | | | | | | | | | | | | |
| **MW-4** | -- | 06/29/89 | 9.95 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **Screened** | -- | 11/17/89 | 10.56 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **From** | -- | 02/28/90 | 9.40 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **7 to 27** | -- | 05/08/90 | 9.70 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **feet bgs** | -- | 08/24/90 | 10.10 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| | -- | 11/29/90 | 10.90 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| | 228.08 | 05/23/91 | 9.20 | 218.88 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.08 | 07/20/91 | 9.95 | 218.13 | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | 228.08 | 08/21/91 | 10.05 | 218.03 | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | 228.08 | 09/20/91 | 10.50 | 217.58 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.08 | 12/19/91 | -- | -- | -- | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.08 | 06/18/92 | -- | -- | -- | -- | ND | 0.41 | 0.84 | ND | 0.55 | -- | -- | -- | -- | -- |
| | 228.08 | 09/10/92 | 10.54 | 217.54 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 228.08 | 12/10/92 | 9.74 | 218.34 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.08 | 03/10/93 | 7.24 | 220.84 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 228.08 | 06/09/93 | 8.79 | 219.29 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 227.77 | 09/09/93 | 9.91 | 217.86 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 227.77 | 03/03/94 | 6.98 | 220.79 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 227.77 | 06/03/94 | 8.26 | 219.51 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 227.77 | 09/02/94 | 10.08 | 217.69 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 227.77 | 12/01/94 | 10.01 | 217.76 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 227.77 | 03/01/95 | 7.29 | 220.48 | 0 | -- | ND | ND | 1.1 | ND | 0.75 | -- | -- | -- | -- | -- |
| | 227.77 | 06/01/95 | 7.65 | 220.12 | 0 | -- | ND | ND | 0.78 | ND | 1.7 | -- | -- | -- | -- | -- |
| | 227.77 | 09/05/95 | 9.27 | 218.50 | 0 | -- | ND | ND | 0.7 | ND | 0.71 | -- | -- | -- | -- | -- |
| | 227.77 | 12/05/95 | 9.92 | 217.85 | 0 | -- | ND | ND | ND | ND | ND | 0.68 | -- | -- | -- | -- |
| | 227.77 | 04/11/96 | 7.55 | 220.22 | 0 | -- | ND | ND | ND | ND | ND | ND | -- | -- | ND | ND |
| | 227.77 | 03/13/97 | 9.84 | 217.93 | 0 | -- | ND | ND | ND | ND | ND | ND | -- | -- | ND | ND |
| | 227.77 | 03/02/98 | 8.84 | 218.93 | 0 | -- | ND | ND | ND | ND | ND | ND | -- | -- | -- | ND |
| | 227.77 | 03/25/99 | 7.46 | 220.31 | 0 | -- | ND | ND | ND | ND | ND | 7.6 | -- | -- | ND | ND |
| | 227.77 | 03/07/00 | 7.58 | 220.19 | 0 | -- | ND | ND | 1.11 | ND | ND | ND | -- | -- | ND | ND |
| | 227.77 | 03/28/01 | 7.62 | 220.15 | 0 | -- | ND | ND | ND | ND | ND | ND | -- | -- | ND | ND |
| | 227.77 | 03/09/02 | 6.64 | 221.13 | 0 | -- | 270 | 3.1 | <1.0 | 5 | <1.0 | 1,200 | -- | -- | <5.0 | <2.5 |
| | 227.77 | 03/24/03 | Inaccessible | | | | | | | | | -- | -- | -- | -- | -- |
| | 227.77 | 03/26/04 | Unable to Locate | | | | | | | | | -- | -- | -- | -- | -- |

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-4 cont.** | 227.77 | 03/17/05 | Unable to Locate | | | | | | | | | -- | -- | -- | -- | -- |
| | 227.77 | 03/31/06 | Unable to Locate | | | | | | | | | -- | -- | -- | -- | -- |
| | 227.77 | 02/16/07 | Unable to Locate | | | | | | | | | -- | -- | -- | -- | -- |
| | 227.77 | 01/21/08 | Inaccessible | | | | | | | | | -- | -- | -- | -- | -- |
| | | | Well Destroyed | | | | | | | | | | | | | |
| **MW-4A** | 232.55 | 02/25/09 | 7.45 | 225.10 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | -- | <2.0 | <0.50 |
| **Screened** | 232.55 | 06/12/09 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **From** | 232.55 | 08/19/09 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **6 to 10** | 232.55 | 11/06/09 | 6.02 | 226.53 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| **feet bgs** | 232.55 | 01/13/10 | 6.45 | 226.10 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| | | | Well Destroyed | | | | | | | | | | | | | |
| **MW-4B** | 232.91 | 02/25/09 | 8.65 | 224.26 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | -- | <2.0 | <0.50 |
| **Screened** | 232.91 | 06/12/09 | 10.04 | 222.87 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| **From** | 232.91 | 08/19/09 | 10.25 | 222.66 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| **10 to 14** | 232.91 | 11/06/09 | 9.40 | 223.51 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| **feet bgs** | 232.91 | 01/13/10 | 8.84 | 224.07 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| | | | Well Destroyed | | | | | | | | | | | | | |
| **MW-5** | -- | 06/29/89 | 9.03 | -- | 0 | | <20 | 0.83 | <0.50 | 0.57 | 0.94 | -- | -- | -- | -- | -- |
| **Screened** | -- | 11/17/89 | 9.56 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | 0.63 | -- | -- | -- | -- | -- |
| **From** | -- | 02/28/90 | 8.26 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **9 to 24** | -- | 05/08/90 | 8.89 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **feet bgs** | -- | 08/24/90 | 9.93 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| | -- | 11/29/90 | 10.53 | -- | 0 | | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| | 225.42 | 05/23/91 | 9.47 | 215.95 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 225.42 | 07/20/91 | 10.22 | 215.20 | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | 225.42 | 08/21/91 | 10.31 | 215.11 | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| | 225.42 | 09/20/91 | 10.80 | 214.62 | 0 | 450 | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 225.42 | 10/10/91 | 10.98 | 214.44 | 0 | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 225.42 | 12/19/91 | -- | -- | -- | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 225.42 | 03/20/92 | -- | -- | -- | 170 | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 225.42 | 06/18/92 | -- | -- | -- | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 225.42 | 09/10/92 | 9.96 | 215.46 | 0 | 110 | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 225.42 | 12/10/92 | 10.12 | 215.30 | 0 | 83 | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 225.42 | 03/10/93 | 7.67 | 217.75 | 0 | 69 | ND | ND | ND | ND | ND | -- | -- | -- | ND | ND |
| | 225.42 | 06/09/93 | 8.57 | 216.85 | 0 | 64 | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |
| | 225.11 | 09/09/93 | 9.12 | 215.99 | 0 | 58 | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-5 cont.** | 225.11 | 12/09/93 | 9.97 | 215.14 | 0 | 87 | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |
| | 225.11 | 03/03/94 | 7.87 | 217.24 | 0 | ND | ND | ND | ND | 0.71 | 1.7 | ND | -- | -- | -- | ND |
| | 225.11 | 06/03/94 | 9.01 | 216.10 | 0 | 80 | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |
| | 225.11 | 09/02/94 | 9.23 | 215.88 | 0 | 130 | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |
| | 225.11 | 12/01/94 | 9.18 | 215.93 | 0 | 79 | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |
| | 225.11 | 03/01/95 | 7.98 | 217.13 | 0 | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |
| | 225.11 | 06/01/95 | 8.21 | 216.90 | 0 | 57 | ND | ND | ND | ND | ND | -- | -- | -- | -- | ND |
| | 225.11 | 09/05/95 | 9.57 | 215.54 | 0 | 210 | ND | ND | 0.95 | ND | 0.87 | -- | -- | -- | -- | ND |
| | 225.11 | 12/05/95 | 9.60 | 215.51 | 0 | 170 | ND | ND | ND | ND | ND | 27 | -- | -- | -- | ND |
| | 225.11 | 04/11/96 | 7.48 | 217.63 | 0 | -- | ND | ND | ND | ND | ND | 56 | -- | -- | ND | ND |
| | 225.11 | 03/13/97 | 9.56 | 215.55 | 0 | -- | ND | ND | ND | ND | ND | ND | -- | -- | ND | ND |
| | 225.11 | 03/02/98 | 8.96 | 216.15 | 0 | -- | ND | ND | ND | ND | ND | ND | -- | -- | -- | ND |
| | 225.11 | 03/25/99 | 7.53 | 217.58 | 0 | -- | ND | ND | ND | ND | ND | 3.9 | -- | -- | ND | ND |
| | 225.11 | 03/07/00 | 7.49 | 217.62 | 0 | -- | ND | ND | 1.13 | ND | ND | ND | -- | -- | ND | ND |
| | 225.11 | 03/28/01 | 6.83 | 218.28 | 0 | -- | ND | ND | ND | ND | ND | ND | -- | -- | ND | ND |
| | 225.11 | 03/09/02 | 5.85 | 219.26 | 0 | -- | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | -- | -- | <5.0 | <0.50 |
| | 225.11 | 03/24/03 | 5.90 | 219.21 | 0 | -- | 561 | <0.50 | <0.50 | <0.50 | <1.0 | -- | <2.0 | -- | <2.0 | <0.50 |
| | 225.11 | 03/26/04 | 6.93 | 218.18 | 0 | -- | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | -- | -- | <2.0 | <0.50 |
| | 225.11 | 03/17/05 | 6.08 | 219.03 | 0 | -- | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | -- | -- | -- | <0.50 |
| | 225.11 | 03/31/06 | 5.51 | 219.60 | 0 | -- | <50 | <0.50 | <0.50 | 1.7 | <1.0 | -- | 2.9 | -- | <2.1 | <0.50 |
| | 225.11 | 02/16/07 | 6.05 | 219.06 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | 1.5 | 2.6 | -- | <2.0 | <0.50 |
| | 225.11 | 01/21/08 | 7.43 | 217.68 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | 1.3 | -- | <2.0 | <0.50 |
| | 227.90 | 02/25/09 | 6.31 | 221.59 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | 1.5 | 2.1 | -- | <2.0 | <0.50 |
| | 227.90 | 06/12/09 | 7.88 | 220.02 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | | -- | -- |
| | 227.90 | 08/19/09 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 227.90 | 11/06/09 | 8.42 | 219.48 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 227.90 | 01/13/10 | 7.43 | 220.47 | 0 | -- | <50 | <0.30 | 0.48 | <0.30 | 1.7 | 1.3 | 1.9 | <10 | <2.0 | <0.50 |
| | 227.90 | 03/30/11 | 5.47 | 222.43 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | 1.1 | 1.9 | <10 | <2.0 | 8.4 |
| | 227.90 | 03/30/12 | 5.54 | 222.36 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | 1.2 | 2.4 | <10 | <2.0 | <0.50 |
| | **227.90** | **03/08/13** | **7.85** | **220.05** | **0** | **--** | **<50** | **<0.30** | **<0.30** | **<0.30** | **<0.60** | **<1.0** | **0.87** | **<10** | **<2.0** | **<0.50** |
| **MW-6** | -- | 08/01/89 | 7.34 | -- | 0 | -- | 26 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **Screened** | -- | 11/17/89 | 8.36 | -- | 0 | -- | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **From** | -- | 02/28/90 | 7.05 | -- | 0 | -- | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **7 to 27** | -- | 05/08/90 | 7.35 | -- | 0 | -- | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| **feet bgs** | -- | 08/24/90 | 8.15 | -- | 0 | -- | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| | -- | 11/29/90 | 9.40 | -- | 0 | -- | <20 | <0.50 | <0.50 | <0.50 | <0.50 | -- | -- | -- | -- | -- |
| | -- | 05/23/91 | 7.38 | -- | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | -- | 07/20/91 | 8.01 | -- | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-6 cont.** | -- | 08/21/91 | 8.36 | -- | 0 | not sampled,gauging only | | | | | | -- | -- | -- | -- | -- |
| | -- | 09/20/91 | 8.61 | -- | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | -- | 12/19/91 | -- | -- | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | -- | 06/18/92 | -- | -- | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 239.38 | 12/10/92 | 8.07 | 231.31 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 239.38 | 03/10/93 | 5.32 | 234.06 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.38 | 06/09/93 | 5.94 | 233.44 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 239.04 | 09/09/93 | 6.82 | 232.22 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 12/09/93 | 7.43 | 231.61 | 0 | -- | 150 | ND | ND | ND | 1.7 | -- | -- | -- | -- | -- |
| | 239.04 | 03/03/94 | 6.45 | 232.59 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 06/03/94 | 5.81 | 233.23 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 239.04 | 09/02/94 | 6.98 | 232.06 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 12/01/94 | 6.92 | 232.12 | 0 | -- | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- |
| | 239.04 | 01/13/05 | -- | -- | -- | -- | <50 | <0.50 | <0.50 | <0.50 | <1.0 | -- | <0.50 | <5.0 | -- | <0.50 |
| | 239.04 | 03/01/95 | 5.17 | 233.87 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 06/01/95 | 4.76 | 234.28 | 0 | -- | ND | ND | 0.7 | ND | 1.7 | -- | -- | -- | -- | -- |
| | 239.04 | 09/05/95 | 5.69 | 233.35 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 12/05/95 | 6.75 | 232.29 | 0 | -- | ND | ND | ND | ND | ND | 1.4 | -- | -- | -- | -- |
| | 239.04 | 04/11/96 | 4.28 | 234.76 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/13/97 | 7.05 | 231.99 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/02/98 | 5.14 | 233.90 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/25/99 | 5.05 | 233.99 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/07/00 | 5.15 | 233.89 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/28/01 | 5.17 | 233.87 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/09/02 | 5.13 | 233.91 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/24/03 | 5.13 | 233.91 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/26/04 | 5.10 | 233.94 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/17/05 | 4.09 | 234.95 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 03/31/06 | 2.99 | 236.05 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 02/16/07 | 4.07 | 234.97 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 239.04 | 01/21/08 | 4.47 | 234.57 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 241.74 | 02/25/09 | 3.73 | 238.01 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | -- | <2.0 | -- |
| | 241.74 | 06/12/09 | 5.25 | 236.49 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 241.74 | 11/06/09 | 5.64 | 236.10 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <0.50 |
| | 241.74 | 01/13/10 | 5.34 | 236.40 | 0 | -- | 54 | <0.30 | 0.83 | <0.30 | 3.7 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| | 241.74 | 03/30/11 | 4.72 | 237.02 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| | 241.74 | 03/30/12 | 4.99 | 236.75 | 0 | -- | <50 | <0.30 | <0.30 | <0.30 | <0.60 | <1.0 | <0.50 | <10 | <2.0 | <0.50 |
| | **241.74** | **03/08/13** | **5.83** | **235.91** | **0** | **--** | **<50** | **<0.30** | **<0.30** | **<0.30** | **<0.60** | **<1.0** | **<0.50** | **<10** | **<2.0** | **<0.50** |

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

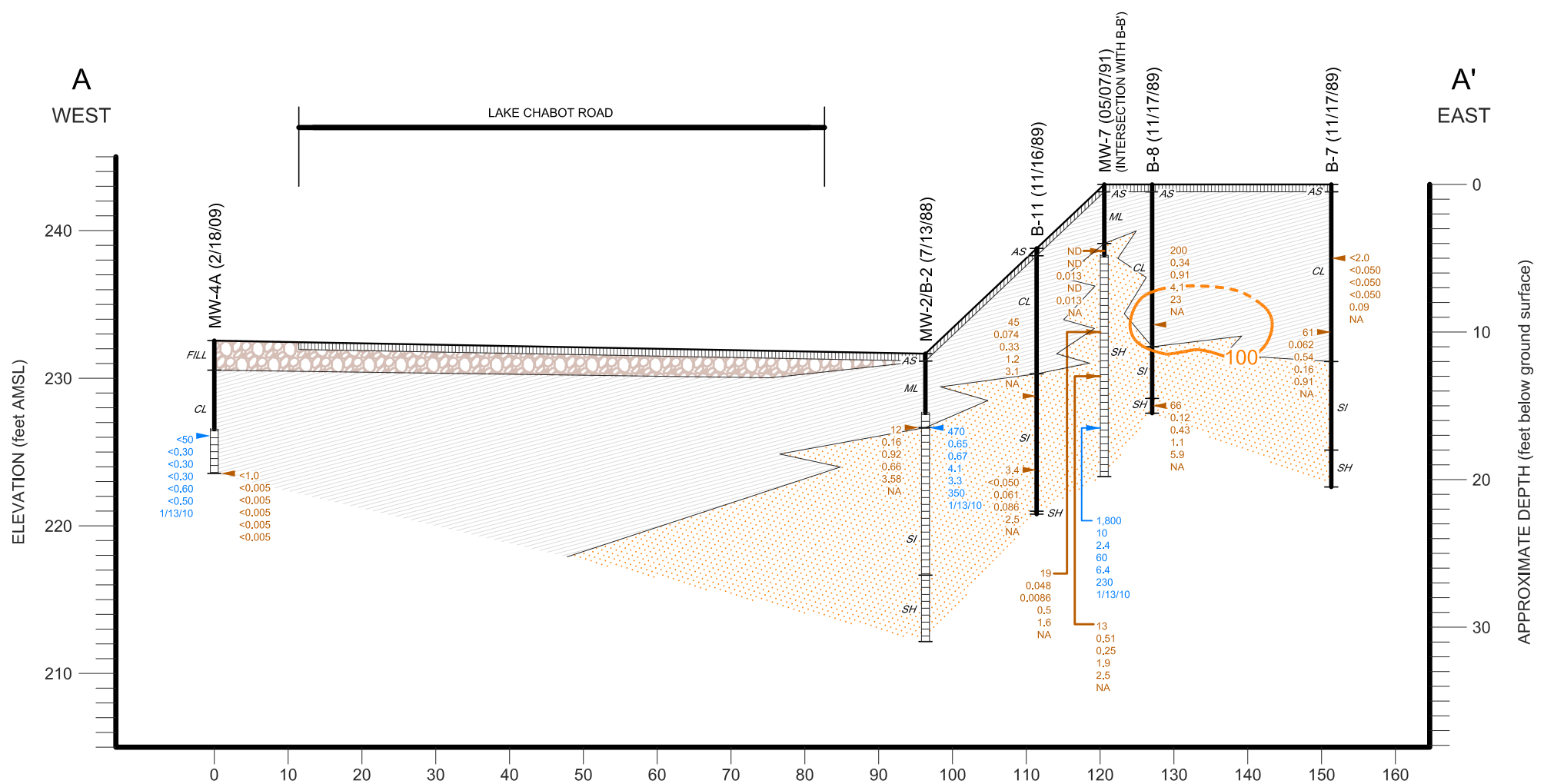
| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-7** | 231.66 | 05/23/91 | 9.63 | 222.03 | 0 | 540 | 3,000 | 160 | 1.2 | 25 | 120 | -- | -- | -- | -- | 3.4 |
| **Screened** | 231.66 | 07/20/91 | 10.70 | 220.96 | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| **From** | 231.66 | 08/21/91 | 11.04 | 220.62 | 0 | | | not sampled,gauging only | | | | -- | -- | -- | -- | -- |
| **4.8 to 19.8** | 231.66 | 09/20/91 | 11.46 | 220.20 | 0 | 580 | 1,400 | 160 | 0.75 | 89 | 130 | -- | -- | -- | -- | ND |
| **feet bgs** | 231.66 | 12/19/91 | -- | -- | -- | 770 | 3,900 | 240 | 2.4 | 280 | 270 | -- | -- | -- | -- | 3.1 |
| | 231.66 | 03/20/92 | -- | -- | -- | 3,200 | 11,000 | 980 | ND | 990 | 1,600 | -- | -- | -- | -- | ND |
| | 231.66 | 06/18/92 | -- | -- | -- | 990 | 5,500 | 340 | 4.2 | 380 | 410 | -- | -- | -- | -- | ND |
| | 231.66 | 09/10/92 | 7.44 | 224.22 | 0 | 290 | 2,100 | 160 | 1.9 | 140 | 150 | -- | -- | -- | -- | 2.3 |
| | 231.66 | 12/10/92 | 11.01 | 220.65 | 0 | 200 | 1,200 | 28 | ND | 37 | 13 | -- | -- | -- | -- | 2 |
| | 231.66 | 03/10/93 | 7.69 | 223.97 | 0 | 1,100 | 4,400 | 310 | ND | 300 | 330 | -- | -- | -- | 83 | 1.3 |
| | 231.66 | 06/09/93 | 8.59 | 223.07 | 0 | 830 | 4,600 | 430 | ND | 510 | 430 | -- | -- | -- | 83 | 1.3 |
| | 231.39 | 09/09/93 | 10.11 | 221.28 | 0 | 550 | 2,600 | 160 | 19 | 250 | 120 | -- | -- | -- | 48 | 1.5 |
| | 231.39 | 12/09/93 | 10.65 | 220.74 | 0 | 250 | 980 | 54 | 4.6 | 71 | 5.6 | -- | -- | -- | 15 | 1.5 |
| | 231.39 | 03/03/94 | 8.17 | 223.22 | 0 | 1,400 | 9,300 | 290 | ND | 590 | 400 | 1.7 | -- | -- | 130 | 1.7 |
| | 231.39 | 06/03/94 | 8.73 | 222.66 | 0 | 2,000 | 9,400 | 380 | 5 | 820 | 240 | -- | -- | -- | 61 | 1.4 |
| | 231.39 | 09/02/94 | 11.00 | 220.39 | 0 | 490 | 3,800 | 77 | ND | 180 | 42 | -- | -- | -- | ND | 1.1 |
| | 231.39 | 12/01/94 | 10.95 | 220.44 | 0 | 260 | 3,100 | 80 | ND | 250 | 190 | -- | -- | -- | 2.5 | 1 |
| | 231.39 | 03/01/95 | 8.03 | 223.36 | 0 | 1,900 | 3,300 | 200 | 3.9 | 300 | 350 | -- | -- | -- | 120 | 1.6 |
| | 231.39 | 06/01/95 | 7.92 | 223.47 | 0 | 1,600 | 3,900 | 170 | ND | 400 | 430 | -- | -- | -- | 83 | 1.4 |
| | 231.39 | 09/05/95 | 8.61 | 222.78 | 0 | ND | 710 | 32 | ND | 85 | 33 | -- | -- | -- | 7 | 1.8 |
| | 231.39 | 12/05/95 | 9.69 | 221.70 | 0 | 110 | 400 | 23 | ND | 34 | 16 | 1,600 | -- | -- | -- | ND |
| | 231.39 | 12/08/95 | 9.59 | 221.80 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 14 | -- |
| | 231.39 | 04/11/96 | 7.31 | 224.08 | 0 | -- | 1,500 | 52 | ND | 160 | 130 | 1,500 | -- | -- | 42 | 0.75 |
| | 231.39 | 03/13/97 | 9.48 | 221.91 | 0 | -- | 460 | 13 | ND | 31 | 4 | 430 | -- | -- | 9 | ND |
| | 231.39 | 03/02/98 | 7.93 | 223.46 | 0 | -- | 1,800 | 63 | ND | 240 | 60 | 790 | -- | -- | -- | 0.92 |
| | 231.39 | 03/25/99 | 7.25 | 224.14 | 0 | -- | 380 | 6.4 | ND | 10 | 4.9 | 1,200 | -- | -- | ND | ND |
| | 231.39 | 03/07/00 | 7.12 | 224.27 | 0 | -- | 199 | 3.51 | ND | 3.3 | 0.697 | 1,250 | -- | -- | ND | ND |
| | 231.39 | 03/28/01 | 6.92 | 224.47 | 0 | -- | 734 | 19.6 | 0.514 | 23.3 | 6.13 | 1,070 | 1,260 | ND | 7.7 | ND |
| | 231.39 | 03/09/02 | 6.48 | 224.91 | 0 | -- | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | -- | -- | <5.0 | <0.50 |
| | 231.39 | 03/24/03 | 6.42 | 224.97 | 0 | -- | -- | <10 | <10 | <10 | <20 | -- | 1,600 | -- | -- | 0.98 |
| | 231.39 | 03/26/04 | 7.25 | 224.14 | 0 | -- | 2,800 | 34 | <25 | 120 | 33 | 1,200 | -- | -- | 17 | <10 |
| | 231.39 | 01/13/05 | -- | -- | -- | -- | 1,200 | 4.9 | <0.5 | 20 | <1.0 | 1,100 | -- | 240 | -- | <5.0 |
| | 231.39 | 03/17/05 | 7.02 | 224.37 | 0 | -- | 2,700 | <5.0 | <5.0 | 160 | 15 | 940 | -- | -- | -- | <10 |
| | 231.39 | 03/31/06 | 6.74 | 224.65 | 0 | -- | 450 | 8.7 | <2.5 | 33 | <5.0 | -- | 260 | -- | 6.2 | <2.5 |
| | 231.39 | 02/16/07 | 6.95 | 224.44 | 0 | -- | 1,600 | 11 | <0.30 | 61 | 4.2 | 350 | 410 | -- | 37 | 0.66 |
| | 231.39 | 01/21/08 | 7.21 | 224.18 | 0 | -- | 1,300 | 11 | <0.60 | 45 | <1.2 | 250 | 240 | -- | 40 | 0.77 |
| | 234.13 | 02/25/09 | 6.61 | 227.52 | 0 | -- | 1,000 | 15 | 0.7 | 70 | <0.60 | 130 | 170 | -- | 27 | <0.50 |
| | 234.13 | 06/12/09 | 7.51 | 226.62 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | 740 | | <0.50 |
| | 234.13 | 08/19/09 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 790 | -- | <5.0 |

**Table 2**
**Groundwater Analytical Results**
Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

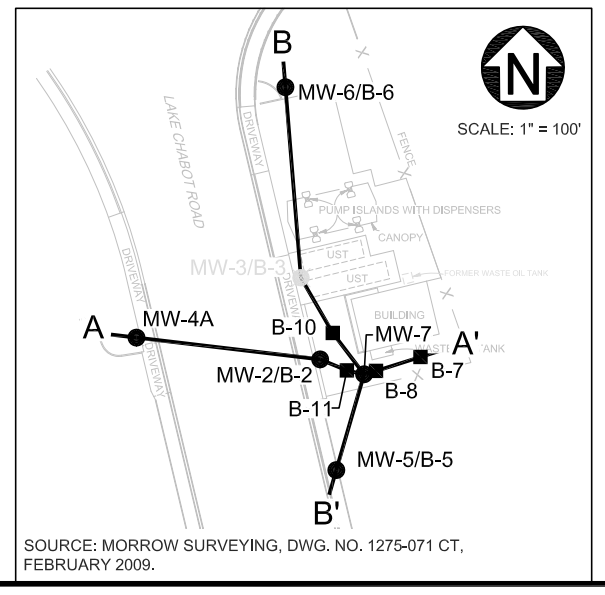
| WELL ID | TOC* (ft) | DATE | DTW (ft) | GWE* (ft) | LNAPL (ft) | TPH-d (µg/L) | TPH-g (µg/L) | B (µg/L) | T (µg/L) | E (µg/L) | X (µg/L) | MTBE 8021 (µg/L) | MTBE 8260 (µg/L) | TBA (µg/L) | Naphthalene (µg/L) | 1,2-DCA (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 234.13 | 11/06/09 | 8.18 | 225.95 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | 160 | -- | <0.50 |
| **MW-7 cont.** | 234.13 | 01/13/10 | 7.50 | 226.63 | 0 | -- | 1,800 | 10 | 2.4 | 60 | 6.4 | 240 | 230 | <10 | 150 | <0.50 |
| | 234.13 | 03/30/11 | 6.27 | 227.86 | 0 | -- | 680 | 4.9 | 0.41 | 7.2 | 0.77 | 44 | 58 | 74 | 8.4 | <0.50 |
| | 234.13 | 03/30/12 | 7.13 | 227.00 | 0 | -- | 1,900 | 13 | 0.87 | 16 | 1.9 | 79 | <1.0 | 370 | 32 | <1.0 |
| | **234.13** | **03/08/13** | **7.65** | **226.48** | **0** | **--** | **1,900** | **5.8** | **<1.5** | **3.9** | **<3.0** | **42** | **25** | **480** | **41** | **<0.50** |
| **GW-1** | **--** | **1/13/2005** | **2.0** | **--** | **0** | **--** | **<50** | **<0.5** | **<0.5** | **<0.5** | **<1.0** | **--** | **<0.5** | **<5.0** | **--** | **<0.50** |
| **GW-2** | **--** | **1/13/2005** | **17.2** | **--** | **0** | **--** | **<250** | **1.4** | **<0.5** | **2.3** | **2.7** | **--** | **1600** | **590** | **--** | **<0.50** |
| **GW-4** | **--** | **1/13/2005** | **4.5** | **--** | **0** | **--** | **<50** | **<0.5** | **<0.5** | **<0.5** | **<1.0** | **--** | **<0.5** | **<5.0** | **--** | **<0.50** |
| **GW-5** | **--** | **1/13/2005** | **22.4** | **--** | **0** | **--** | **<50** | **<0.5** | **<0.5** | **<0.5** | **<1.0** | **--** | **<0.5** | **<5.0** | **--** | **<0.50** |

**NOTES:**
* TOC and GWE are in feet above mean sea level.
<# = Analyte not detected at or above indicated laboratory reporting limit
**Notes:**
TOC = Top of casing
LNAPL = Light Non-Aqueous Phase Liquid
ft = Feet
fbg = feet below grade
DTW = Depth to water below TOC
GWE = Groundwater elevation
-- = Not available
µg/L = Micrograms per liter
ID = Identification
TPH-d = Total Petroleum Hydrocarbons as Diesel
TPH-g = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl tertiary-butyl ether

# Cross Sections (2pp)




SCALE: HORZ. 1" = 20'
VERT. 1" = 10'




SOURCE: MORROW SURVEYING, DWG. NO. 1275-071 CT, FEBRUARY 2009.

## LEGEND

- MW-7 — WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- STRATIGRAPHIC BOUNDARY
- ML — TYPICAL SOIL CLASSIFICATION
- SCREENED INTERVAL
- BOTTOM OF BORING
- TPHg, BENZENE, TOULENE, ETHYLBENZENE, XYLENE, MTBE — APPROXIMATE SOIL SAMPLE LOCATION; HYDROCARBON CONCENTRATIONS IN SOIL (mg/kg)
- TPHg, BENZENE, TOULENE, ETHYLBENZENE, XYLENE, MTBE, DATE — APPROXIMATE GROUNDWATER SAMPLE LOCATION; HYDROCARBON CONCENTRATIONS IN GROUNDWATER (ug/L)

- *FILL*
- *AS* - ASPHALT
- *SI* - SILTSTONE BEDROCK
- *SH* - SHALE BEDROCK
- *ML* - INORGANIC SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
- *CL* - INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS

- NA — CONSTITUENT NOT ANALYZED
- ND — NON DETECT
- < — LESS THAN DETECTION LIMITS
- 100 — TPHg CONTOUR

SCALE: 0 — 20'

| REVISIONS | NO.: | DESCRIPTION: | DATE: | BY: |
|---|---|---|---|---|
| DESIGNED BY: | | | | |
| DRAWN BY: RPR | | | | |
| CHECKED BY: RPR | | | | |
| APPROVED BY: JH | | | | |


AECOM TECHNICAL SERVICES
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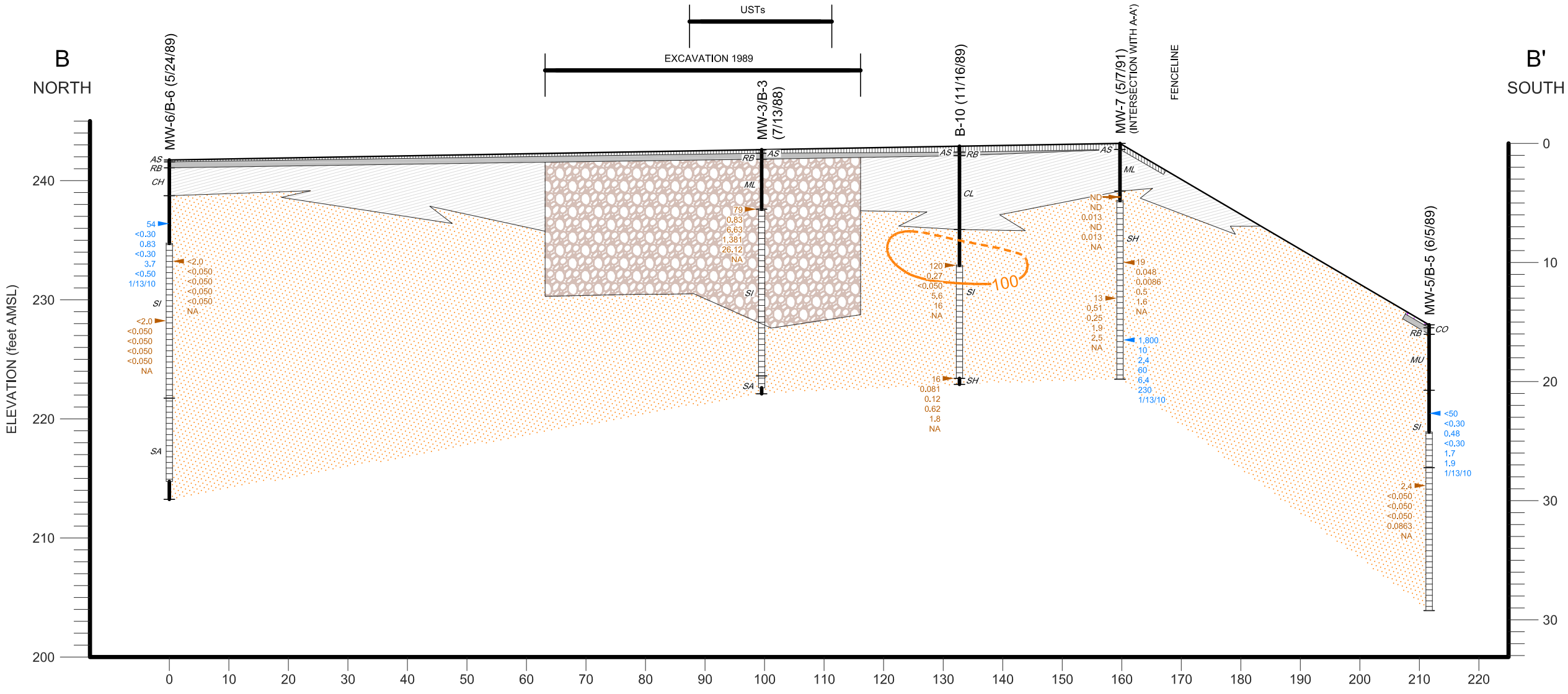
# CROSS-SECTION A-A'

Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

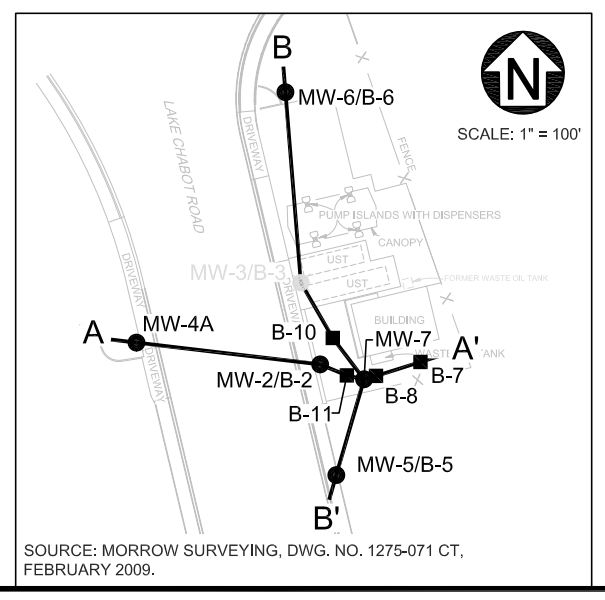
PROJECT NUMBER: 60267030
DATE: 2/12/2013
SCALE: 1" = 20'

FIGURE NUMBER: C-1

SHEET NUMBER: 1 of 1




SCALE: HORZ. 1" = 20'
VERT. 1" = 10'




SOURCE: MORROW SURVEYING, DWG. NO. 1275-071 CT, FEBRUARY 2009.

## LEGEND

- MW-7 — WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- STRATIGRAPHIC BOUNDARY
- ML — TYPICAL SOIL CLASSIFICATION
- SCREENED INTERVAL
- BOTTOM OF BORING

TPHg, BENZENE, TOULENE, ETHYLBENZENE, XYLENE, MTBE — APPROXIMATE SOIL SAMPLE LOCATION; HYDROCARBON CONCENTRATIONS IN SOIL (mg/kg)

TPHg, BENZENE, TOULENE, ETHYLBENZENE, XYLENE, MTBE, DATE — APPROXIMATE GROUNDWATER SAMPLE LOCATION; HYDROCARBON CONCENTRATIONS IN GROUNDWATER (ug/L)

- *FILL*
- *AS* - ASPHALT
- *CO* - CONCRETE
- *RB* - ROAD BASE
- *SA* - SANDSTONE BEDROCK
- *SI* - SILTSTONE BEDROCK
- *SH* - SHALE BEDROCK
- *MU* - MUDSTONE BEDROCK
- *ML* - INORGANIC SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
- *CL* - INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
- *CH* - INORGANIC CLAYS OF HIGH PLASTICITY

- NA — CONSTITUENT NOT ANALYZED
- ND — NON DETECT
- < — LESS THAN DETECTION LIMITS
- —100— TPHg CONTOUR

SCALE: 0 — 20'

REVISIONS

| NO.: | DESCRIPTION: | DATE: | BY: |
|---|---|---|---|
| | | | |

DESIGNED BY:
DRAWN BY: RPR
CHECKED BY: RPR
APPROVED BY: JH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# CROSS-SECTION B-B'

Unocal No. 5484 (351812), RO352
18950 Lake Chabot Road
Castro Valley, California

PROJECT NUMBER: 60267030
DATE: 2/12/2013
SCALE: 1" = 20'

FIGURE NUMBER: C-2

SHEET NUMBER: 1 of 1

# Concentration Graphs (2pp)

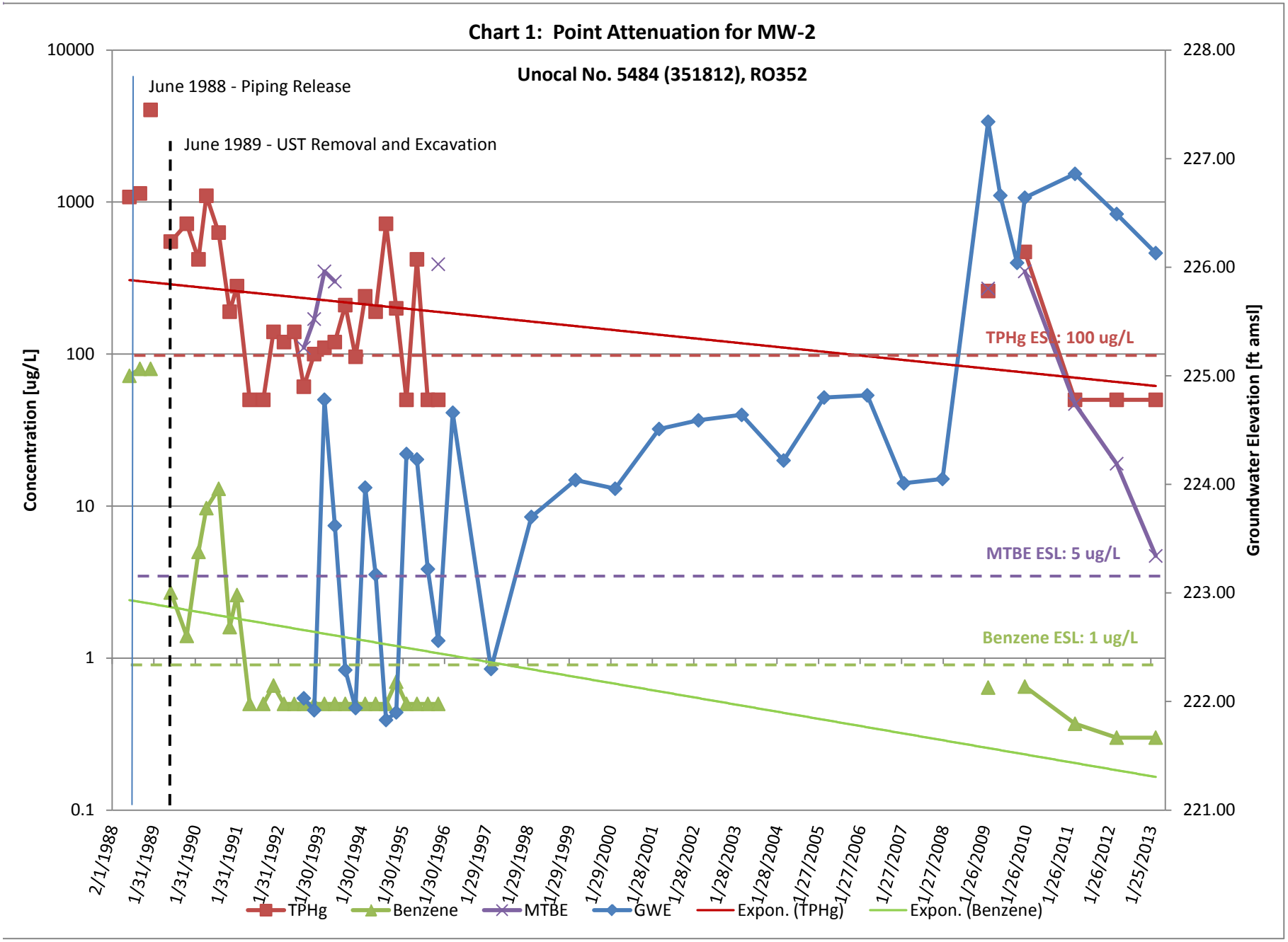


Chart 1: Point Attenuation for MW-2
Unocal No. 5484 (351812), RO352
June 1988 - Piping Release
June 1989 - UST Removal and Excavation
TPHg ESL: 100 ug/L
MTBE ESL: 5 ug/L
Benzene ESL: 1 ug/L
Concentration [ug/L]
Groundwater Elevation [ft amsl]
10000
1000
100
10
1
0.1
228.00
227.00
226.00
225.00
224.00
223.00
222.00
221.00
2/1/1988
1/31/1989
1/31/1990
1/31/1991
1/31/1992
1/30/1993
1/30/1994
1/30/1995
1/30/1996
1/29/1997
1/29/1998
1/29/1999
1/29/2000
1/28/2001
1/28/2002
1/28/2003
1/28/2004
1/27/2005
1/27/2006
1/27/2007
1/27/2008
1/26/2009
1/26/2010
1/26/2011
1/26/2012
1/25/2013
TPHg
Benzene
MTBE
GWE
Expon. (TPHg)
Expon. (Benzene)

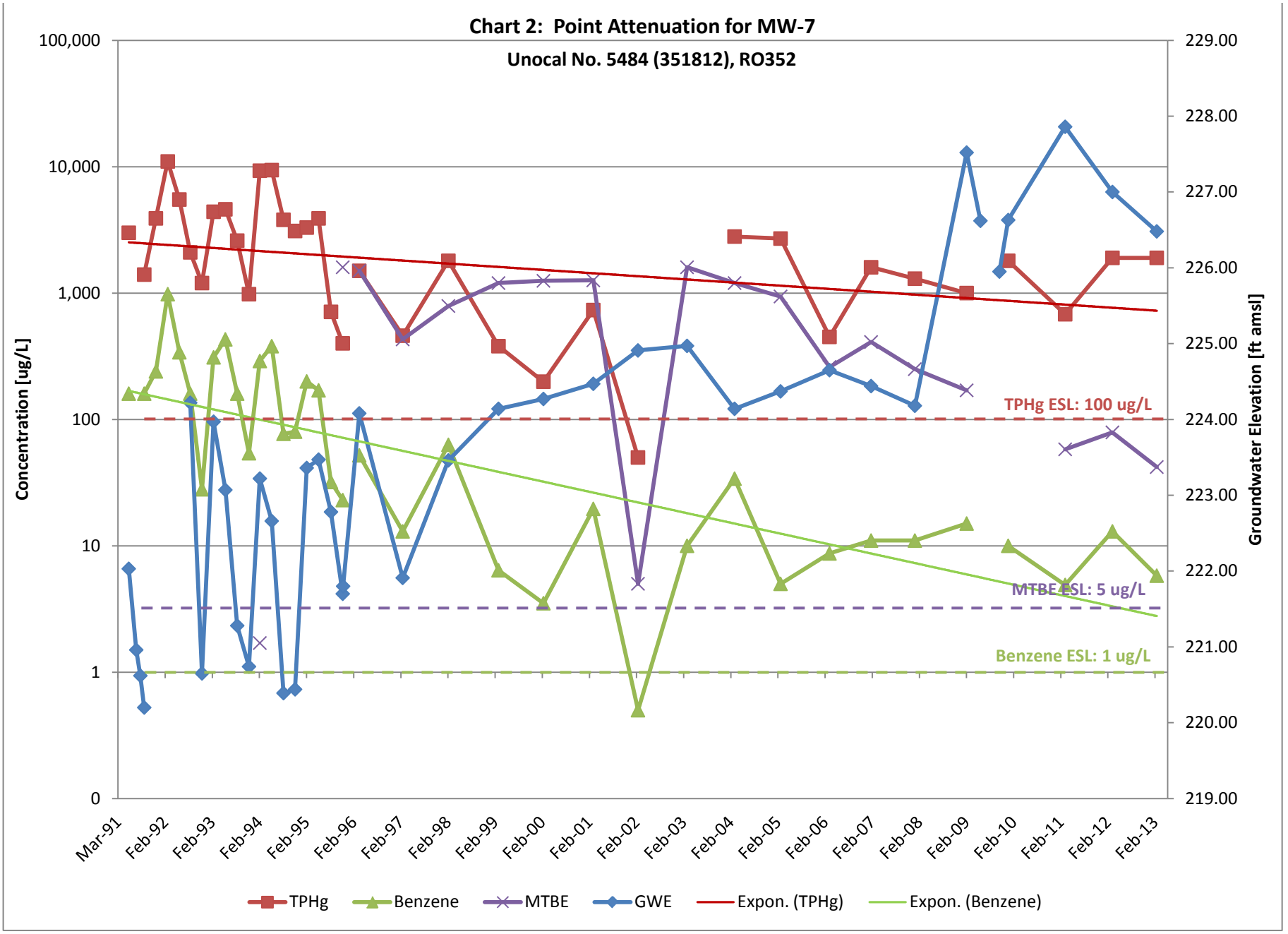
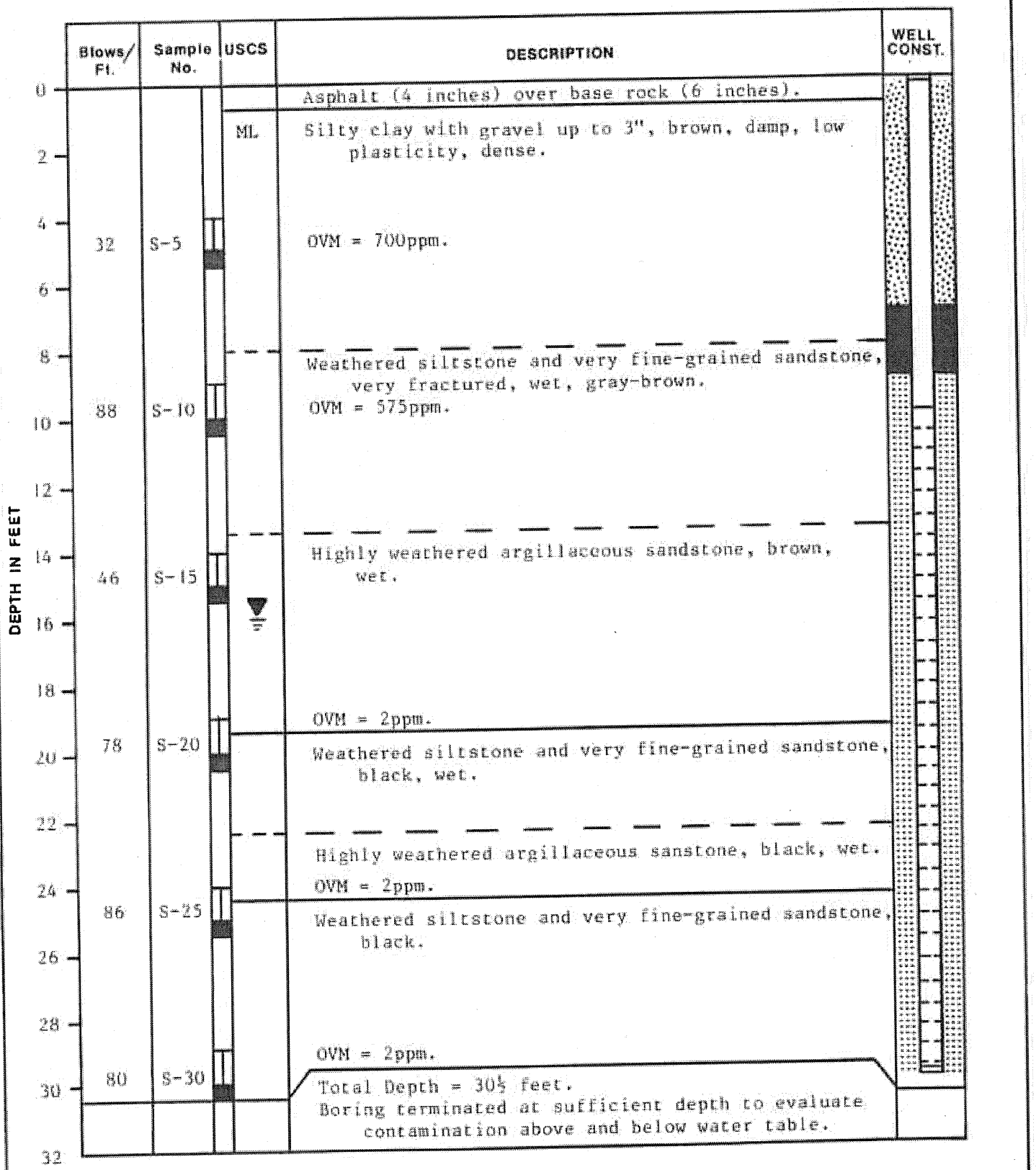


Chart 2: Point Attenuation for MW-7
Unocal No. 5484 (351812), RO352
Concentration [ug/L]
Groundwater Elevation [ft amsl]
100,000
10,000
1,000
100
10
1
0
229.00
228.00
227.00
226.00
225.00
224.00
223.00
222.00
221.00
220.00
219.00
TPHg ESL: 100 ug/L
MTBE ESL: 5 ug/L
Benzene ESL: 1 ug/L
Mar-91
Feb-92
Feb-93
Feb-94
Feb-95
Feb-96
Feb-97
Feb-98
Feb-99
Feb-00
Feb-01
Feb-02
Feb-03
Feb-04
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
TPHg
Benzene
MTBE
GWE
Expon. (TPHg)
Expon. (Benzene)

# Boring Logs (24pp)



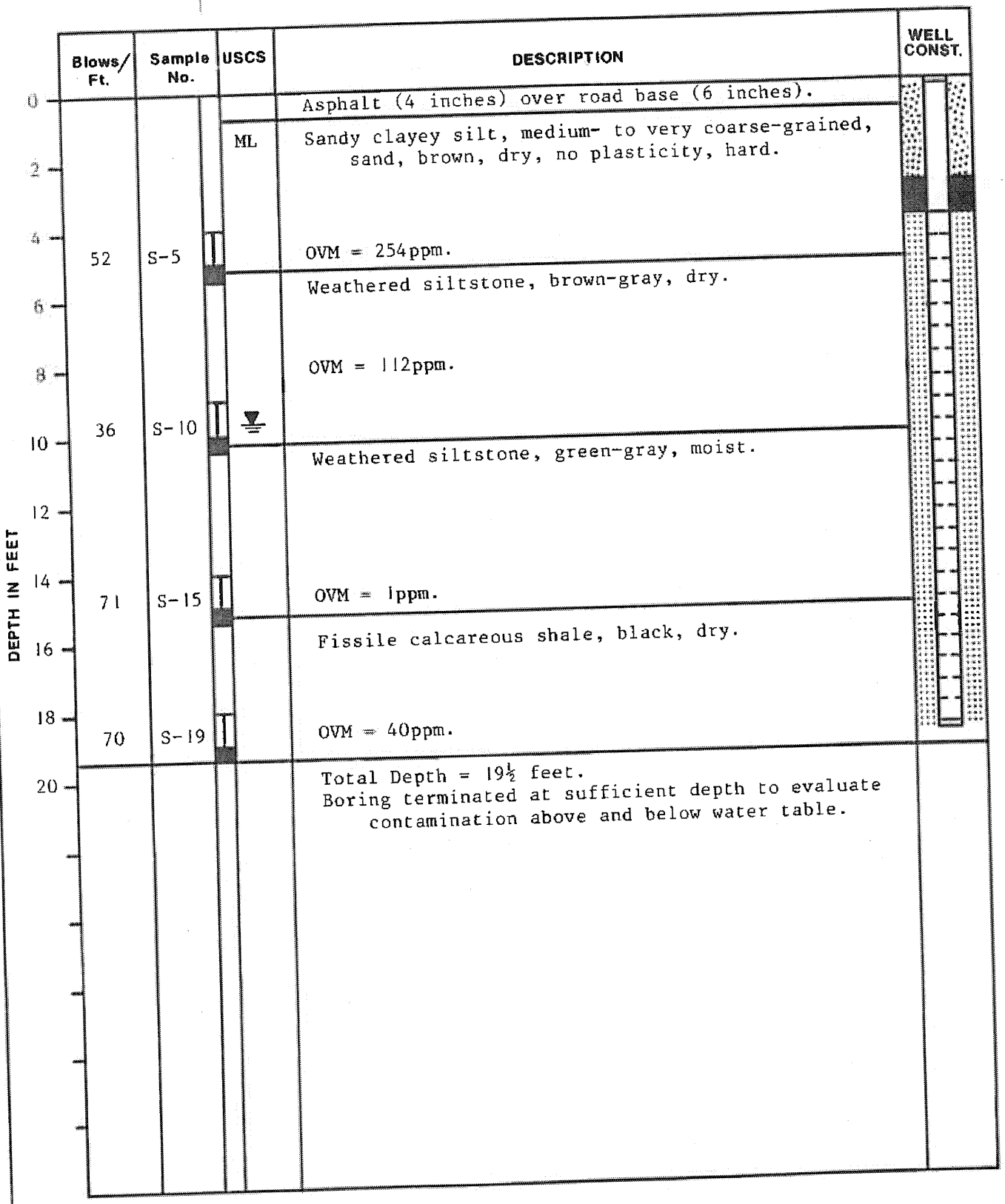

Applied GeoSystems

PROJECT NO. 018061-1

# LOG OF BORING B-1/MW-1

**UNOCAL Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

PLATE
P - 4




Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-3906

PROJECT NO. 018061-1

# LOG OF BORING B-2/MW-2

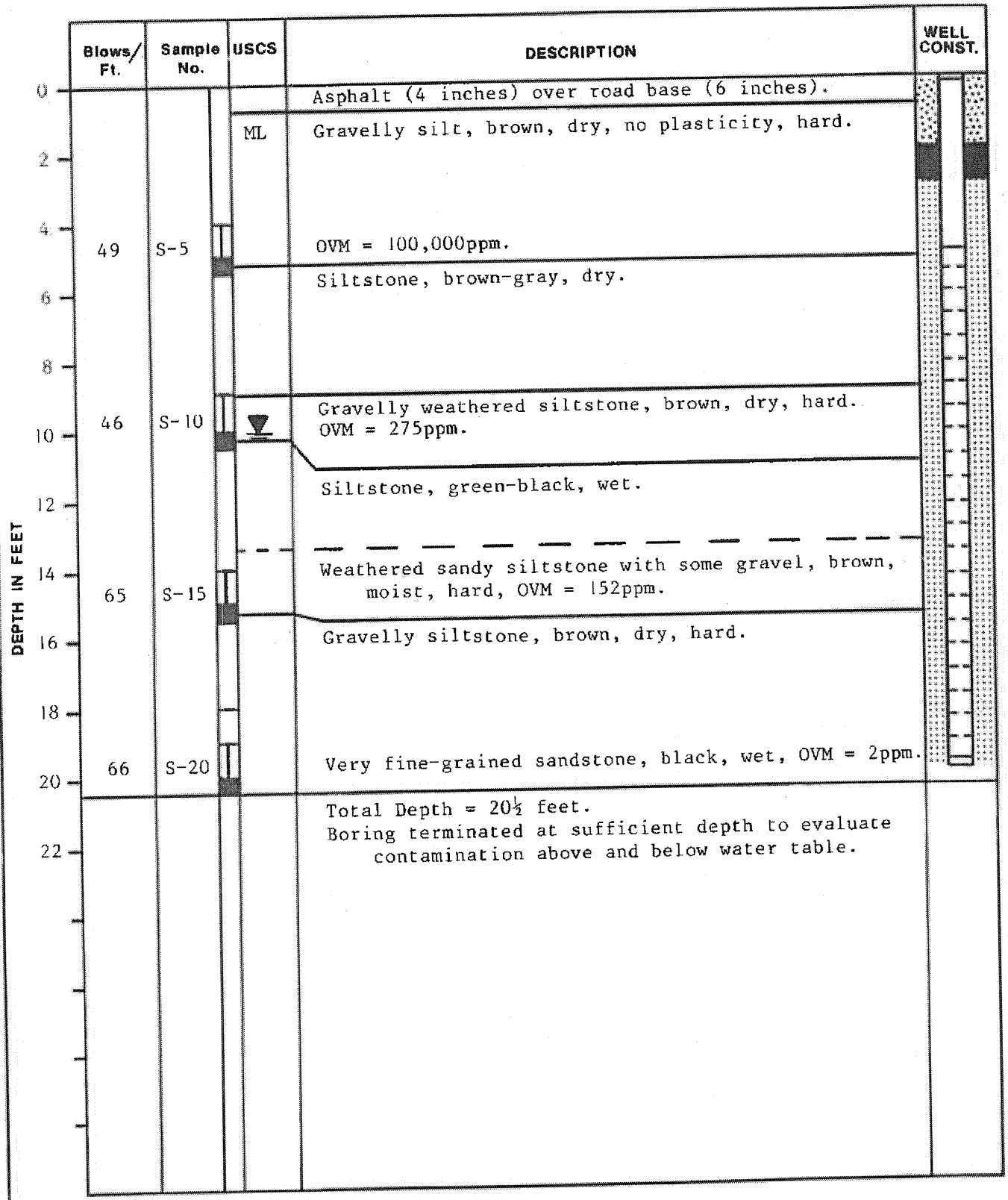
**UNOCAL Station No. 5484**

**18950 Lake Chabot Road**

**Castro Valley, California**

PLATE

P - 5




Applied GeoSystems
1255 Mission Blvd Suite B Fremont CA 94539 (415) 651-1906

PROJECT NO. 018061-1

# LOG OF BORING B-3/MW-3

UNOCAL Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

PLATE P - 6

**Total depth of boring:** 29 feet **Diameter of boring:** 10 inches **Date drilled:** 5-24-89

**Casing diameter:** 4 inches **Length:** 27-1/2 feet **Slot size:** 0.020-inch

**Screen diameter:** 4 inches **Length:** 20 feet **Material type:** Sch 40 PVC

**Drilling Company:** Kvilhaug Well Drilling **Driller:** Rod and Tony

**Method Used:** Hollow-Stem Auger **Field Geologist:** Leigh Beem

**Signature of Registered Professional:** _____

**Registration No.:** _____ **State:** CA

| DEPTH | SAMPLE NO. | BLOWS | P.I.D. | USCS CODE | DESCRIPTION | WELL CONST. |
|---|---|---|---|---|---|---|
| 0 | | | | CL | Sandy clay, with minor gravel and fine- to coarse-grained sand, tan-brown, dry, medium plasticity, hard. | |
| 4 | S-3.5 | 30 | 0.5 | | Weathered, mottled mudstone, green-brown, damp, very fractured with clay in fractures. | |
| 8 | S-8.5 | 25<br>50 | 0.5 | | ▼ | |
| 10 | | | | | Weathered mottled siltstone, green-brown, damp, very fractured. | |
| 12 | | 20 | | | | |
| 14 | S-13.5 | 35<br>40 | 0.1 | | | |
| 16 | | | | | | |
| 18 | S-18.5 | 20<br>40<br>80 | 0.5 | | ▽<br>Siltstone with gray clay and some roots. | |
| 20 | | | | | Weathered mudstone, black, damp, fractured. | |

(Section continues downward)

Applied GeoSystems

**PROJECT NO. 18061-3**

# LOG OF BORING B-4/MW-4

**UNOCAL Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 4**

| Depth | Sample No. | BLOWS | P.I.D. | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 22 | | | | | Weathered mudstone, black, damp, fractured. | |
| 24 | S–23.5 | 80 | 0.7 | | | |
| 26 | | | | | | |
| 28 | S–28.5 | 80 | 0.5 | | Unweathered mudstone, dry. | |
| | | | | | Total Depth = 29 feet. | |
| 30 | | | | | | |
| 32 | | | | | | |
| 34 | | | | | | |
| 36 | | | | | | |
| 38 | | | | | | |
| 40 | | | | | | |
| 42 | | | | | | |
| 44 | | | | | | |
| 46 | | | | | | |
| 48 | | | | | | |
| 50 | | | | | | |

Applied GeoSystems

PROJECT NO. 18061-3

# LOG OF BORING B-4/MW-4

UNOCAL Station No. 5484
18950 Lake Valley Road
Castro Valley, California

PLATE
P - 5

**Total depth of boring:** 24 feet **Diameter of boring:** 10 inches **Date drilled:** 6-5-89

**Casing diameter:** 4 inches **Length:** 24 feet **Slot size:** 0.020-inch

**Screen diameter:** 4 inches **Length:** 15 feet **Material type:** Sch 40 PVC

**Drilling Company:** Kvilhaug Well Drilling **Driller:** Rod and Dan

**Method Used:** Hollow-Stem Auger **Field Geologist:** Leigh Beem

**Signature of Registered Professional:** _____

**Registration No.:** G.E. 2023 **State:** CA

| DEPTH | SAMPLE NO. | BLOWS | P.I.D. | USCS CODE | DESCRIPTION | WELL CONST. |
|---|---|---|---|---|---|---|
| 0 | | | | | Concrete (3 inches) over baserock (6 inches). | |
| 2 | | | | GC | Clayey gravel, with very fine-grained sandstone, brown-black, highly fractured, some rootlets. | |
| 4 | S-3.5 | 24/50 | 0 | | | |
| 6 | | | | | Weathered mudstone, gray-black, damp, very fractured, with clay in fractures. | |
| 8 | S-8.5 | 50 | 0 | ▼ | | |
| 10 | | | | | | |
| 12 | | | | | | |
| 14 | S-13.5 | 50 | 17 | | Weathered siltstone, brown-black, fractured, slightly wet in fractures. | |
| 16 | | | | | Moderately weathered siltstone, black-gray, damp. | |
| 18 | | | | | | |
| 20 | S-18.5 | 50 | 0 | | | |

(Section continues downward)

Applied GeoSystems

**PROJECT NO. 18061-3**

# LOG OF BORING B-5/MW-5

**UNOCAL Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 6**

| Depth | Sample No. | BLOWS | P.I.D. | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 22 | | | | | Moderately weathered siltstone, black–gray, dry to damp, calcite in fractures. | |
| 24 | S–23.5 | 50 | 0 | | Total Depth = 24 feet. | |
| 26 | | | | | | |
| 28 | | | | | | |
| 30 | | | | | | |
| 32 | | | | | | |
| 34 | | | | | | |
| 36 | | | | | | |
| 38 | | | | | | |
| 40 | | | | | | |
| 42 | | | | | | |
| 44 | | | | | | |
| 46 | | | | | | |
| 48 | | | | | | |
| 50 | | | | | | |

Applied GeoSystems

PROJECT NO. 18061-3

# LOG OF BORING B-5/MW-5

UNOCAL Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

PLATE

P - 7

**Total depth of boring:** 29 feet **Diameter of boring:** 10 inches **Date drilled:** 5-24-89

**Casing diameter:** 4 inches **Length:** 27-1/2 feet **Slot size:** 0.020-inch

**Screen diameter:** 4 inches **Length:** 20 feet **Material type:** Sch 40 PVC

**Drilling Company:** Kvilhaug Well Drilling **Driller:** Rod and Tony

**Method Used:** Hollow-Stem Auger **Field Geologist:** Leigh Beem

**Signature of Registered Professional:** _____

**Registration No.:** _____ **State:** CA

| DEPTH | SAMPLE NO. | BLOWS | P.I.D. | USCS CODE | DESCRIPTION | WELL CONST. |
|---|---|---|---|---|---|---|
| 0 | | | | | | |
| | | | | | Asphalt (2 inches) over baserock (6 inches). | |
| 2 | | | | CH | Clay, brown, damp, high plasticity, medium stiff. | |
| | | 20 | | | | |
| 4 | S-3.5 | 35 | 0.5 | | Very weathered mudstone/siltstone, with green-brown mottling, damp, very fractured with clay in fractures. | |
| 6 | | | | | Very weathered siltstone, green-brown, damp, fractured. | |
| | | 10 | | | | |
| 8 | S-8.5 | 18 | 0.3 | | | |
| 10 | | | | | | |
| 12 | | 6 | | | | |
| | | 12 | | | | |
| 14 | S-13.5 | 25 | 0.1 | | | |
| 16 | | | | | | |
| | | 10 | | | | |
| 18 | | 30 | | | | |
| | S-18.5 | 50 | 0.1 | | | |
| 20 | | | | | Sandstone, fine-grained, gray, fractured. | |
| | | | | | (Section continues downward) | |

Applied GeoSystems

**PROJECT NO. 18061-3**

# LOG OF BORING B-6/MW-6

**UNOCAL Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 8**

| Depth | Sample No. | BLOWS | P.I.D. | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 22 | | | | | Sandstone, fine-grained, gray, fractured. | |
| 24 | S-23.5 | 50 | 0.1 | | | |
| 26 | | | | | Unweathered mudstone, black, damp. | |
| 28 | S-28.5 | 50 | 0 | | | |
| | | | | | Total Depth = 29 feet. | |
| 30 | | | | | | |
| 32 | | | | | | |
| 34 | | | | | | |
| 36 | | | | | | |
| 38 | | | | | | |
| 40 | | | | | | |
| 42 | | | | | | |
| 44 | | | | | | |
| 46 | | | | | | |
| 48 | | | | | | |
| 50 | | | | | | |

Applied GeoSystems

PROJECT NO. 18061-3

# LOG OF BORING B-6/MW-6

UNOCAL Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

PLATE

P - 9

Delta
Consultants

| | | | |
|---|---|---|---|
| Project No: | 5484 | Client: | COP |
| Logged By: | E. Weyrens | Location: | Castro Valley |
| Driller: | Gregg | Date Drilled: | 2/18/2009 |
| Drilling Method: | HAS | Hole Diameter: | 8" |
| Sampling Method: | Geoprobe | Hole Depth: | 10' |
| Casing Type: | PVC | Well Diameter: | 2" |
| Slot Size: | 0.02 | Well Depth: | 10' |
| Gravel Pack: | #3 | ▼ First Water Depth: | |
| | | ▽ Static Water Depth: | |
| Elevation: | | Northing: | Easting: |

**Boring/Well No: 4A**
Page 1 of 1

Location Map

| Well Completion (Backfill / Casing) | Water Level | Moisture Content | PID Reading (ppm) | Sample Identification | Depth (feet) | Sample Recovery | Sample Interval | Soil Type | LITHOLOGY / DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Fill | Grass on top of fill down to 1 foot below grade |
| | | Moist | | | 1 | | | CL | Sandy Lean Clay |
| | | | | | 2 | | | | Brown in color, moist, fine grained sand |
| | | | | | | | | | Moist, no odors |
| | | Wet | | | 3 | | | | Water coming in at 3 fbg, possibly due to the rain or irrigation for the grass |
| | | | | | 4 | | | | |
| | | | | | 5 | | | | Increase in Gravel content at 4.5 fbg |
| | | | | | | | | | subangular to angular gravel, up to .5 of an inch in diameter. |
| | | | | | 6 | | | | |
| | | | | | 7 | | | | |
| | | | | | 8 | X | | | Increase in Density at 8 fbg |
| | | wet | 0 | MW-4A@9 | 9 | X | O | | At 9 fbg hit hard material, possibly a large rock, hard pan or bedrock, judging by the angular pieces of gravel, it is bedrock |
| | | dry | | | 10 | | | | |
| | | | | | 11 | | | | |
| | | | | | 12 | | | | |
| | | | | | 13 | | | | |
| | | | | | 14 | | | | |
| | | | | | 15 | | | | |
| | | | | | 16 | | | | |
| | | | | | 17 | | | | |
| | | | | | 18 | | | | |
| | | | | | 19 | | | | |
| | | | | | 20 | | | | |
| | | | | | 21 | | | | |
| | | | | | 22 | | | | |

Delta
Consultants

| | | | |
|---|---|---|---|
| Project No: | 5484 | Client: | COP |
| Logged By: | E. Weyrens | Location: | Castro Valley |
| Driller: | Gregg | Date Drilled: | 2/18/2009 |
| Drilling Method: | HAS | Hole Diameter: | 8" |
| Sampling Method: | Geoprobe | Hole Depth: | 14' |
| Casing Type: | PVC | Well Diameter: | 2" |
| Slot Size: | 0.02 | Well Depth: | 14' |
| Gravel Pack: | #3 | ▼ First Water Depth: | |
| | | ▽ Static Water Depth: | |

**Boring/Well No: 4B**
Page 1 of 1

Location Map

Elevation: Northing: Easting:

| Well Completion (Backfill / Casing) | Water Level | Moisture Content | PID Reading (ppm) | Sample Identification | Depth (feet) | Sample Recovery | Sample Interval | Soil Type | LITHOLOGY / DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | | | Fill | Grass on top of fill down to 1 foot below grade |
| | | Moist | | | 2 | | | CL | Sandy Lean Clay |
| | | | | | | | | | Brown in color, moist, fine grained sand |
| | | | | | 3 | | | | Moist, no odors |
| | | Wet | | | | | | | Water coming in at 3 fbg, possibly due to the rain or irrigation for the grass |
| | | | | | 4 | | | | |
| | | | | | 5 | | | | Increase in Gravel content at 4.5 fbg |
| | | | | | | | | | subangular to angular gravel, up to .5 of an inch in diameter. |
| | | | | | 6 | | | | |
| | | | | | 7 | | | | Fractured bedrock at 7 fbg (Switch to split spoon) |
| | | | | | 8 | | | | |
| | | | | | 9 | X | | | Weathered bedrock |
| | | | | | | X | | | Yellowish brown 10YR 5/4 |
| | | dry | 0.6 | MW-4B@10 | 10 | X | O | | Hard, No odor |
| | | | | | 11 | | | | |
| | | | | | 12 | | | | |
| | | | | | 13 | X | | | Same as above |
| | | | | | | X | | | |
| | | dry | 0.8 | MW-4B@14 | 14 | X | O | | |
| | | | | | 15 | | | | |
| | | | | | 16 | | | | |
| | | | | | 17 | | | | |
| | | | | | 18 | | | | |
| | | | | | 19 | | | | |
| | | | | | 20 | | | | |
| | | | | | 21 | | | | |
| | | | | | 22 | | | | |

# BORING LOG

| | | |
|---|---|---|
| **Project No.** KEI-P90-0806 | **Boring Diameter** 8" | **Logged By** W.W. |
| **Project Name** Unocal Castr. Val. Lake Chab | **Well Cover Elevation** N/A | **Date Drilled** 5/7/91 |
| **Boring No.** EB1 | **Drilling Method** Hollow-stem Auger | **Drilling Company** EGI |

| Penetration blows/6" | G. W. level | Depth (feet) Samples | Strati-graphy USCS | Description |
|---|---|---|---|---|
| | | 0 | | Asphalt pavement over sand and gravel. |
| | | | ML | Silt, trace sand and gravel, moist, grayish brown. |
| 10/30/45 | | | CH | Clay, trace fine-grained sand, moist, hard, olive gray and strong brown mottled, trace rootlets. |
| | | 5 | N/A | Bedrock - shale, highly sheared, variably weathered, dry, gray to olive gray, with strong brown staining, waxy. |
| 88 | | | | Bedrock, as above, less weathered, moist, gray to olive gray with olive brown staining. |
| | | 10 | | |
| | | 15 | | |
| | | 20 | | TOTAL DEPTH: 7' |

# BORING LOG

| | | |
|---|---|---|
| **Project No.** KEI-P90-0806 | **Boring & Casing Diameter** 9" 2" | **Logged By** W.W. |
| **Project Name** Unocal Castr. Val. Lake Chab | **Well Cover Elevation** | **Date Drilled** 5/7/91 |
| **Boring No.** MW7 | **Drilling Method** Hollow-stem Auger | **Drilling Company** EGI |

| Penetration blows/6" | G. W. level | Depth (feet) Samples | Strati-graphy USCS | Description |
|---|---|---|---|---|
| | | 0 | | Asphalt pavement over silty gravel. |
| | | | | Silt, trace sand, trace clay, moist, firm, trace rootlets, dark brown. |
| | | | ML | Clayey silt, with clay and sand, moist, stiff, pale brown. |
| 45/59-4" | | | | Bedrock- |
| | | 5 | | Shale, moderately weathered to highly weathered, highly sheared, slightly moist, gray with dark yellowish brown staining. |
| 80-3" | | | | |
| 70-4" | | | N/A | |
| 80-5" | | 10 | | Shale, highly sheared, variably weathered, slightly moist, gray with dark yellowish brown staining. yellowish brown staining. |
| 35/60-5" | | | | Shale, highly sheared, waxy appearance, slightly moist, dark yellowish brown. |
| | ▽ After 4 hours | | | |
| | | 15 | | |
| 42/50-5" | | | | |
| | | | | Shale, highly sheared, variably weathered, slight waxy appearance, very moist, gray to olive gray. |
| 60-5" | | | | |
| | | 20 | | TOTAL DEPTH: 19.8' |

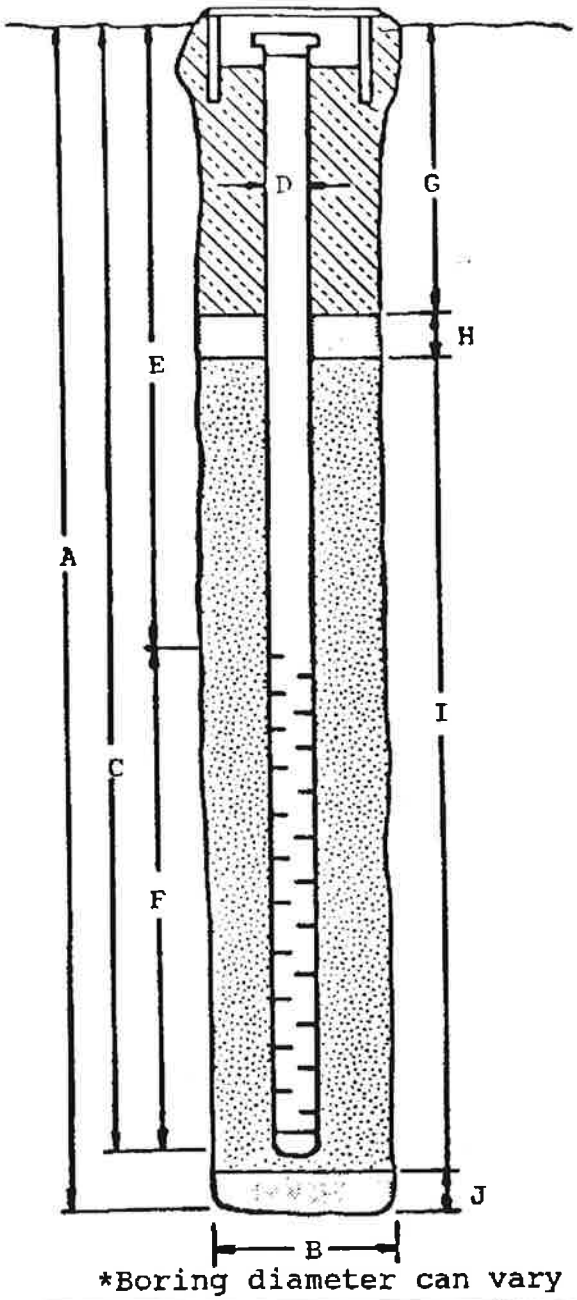
# WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal Castro Valley, 18950 Lake Ch BORING/WELL NO. MW7

PROJECT NUMBER: KEI-P90-0806

WELL PERMIT NO.:

Flush-mounted Well Cover




A. Total Depth: 19.8'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 19.8'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375" ID = 2.067"

E. Depth to Perforations: 4.8'

F. Perforated Length: 15'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 1.8'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 16'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

**Total depth of boring:** 20–1/2 feet **Diameter of boring:** 4 inches **Date drilled:** 11–17–89

**Casing diameter:** N/A **Length:** N/A **Slot size:** N/A

**Screen diameter:** N/A **Length:** N/A **Material type:** N/A

**Drilling Company:** Environmental Exploration, Inc. **Driller:** Tom, Tim and Tom

**Method Used:** Hollow–Stem Auger **Field Geologist:** Mark Armstrong

**Signature of Registered Professional:** _____

**Registration No.:** _____ **State:** CA

| Depth | Sample No. | Blows | P.I.D. | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 0 | | | | | Asphalt underlain by baserock. | |
| 2 | | | | CL | Silty clay, with gravel, tan, damp, medium plasticity, stiff. | |
| 4 | | | | | | |
| 6 | S–5 | 50 | 120 | | Green and brown mottled, hard. | |
| 8 | S–7.5 | 50 | 220 | | Grades more gravelly | |
| 10 | S–10 | 50 | 210 | | | |
| 12 | | | | | Siltstone; brown and green, hard, sandy, weathered. | |
| 14 | | 18 | | | | |
| 16 | S–15 | 45 | 280 | | Green–tan, damp, clayey. | |
| 18 | | | | | Shale, black, dry, hard. | |
| 20 | S–20 | 50 | 18 | | | |
| | | | | | Total Depth = 20–1/2 feet. | |

Applied GeoSystems

**PROJECT NO. 18061-5**

# LOG OF BORING B-7

**Unocal Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 4**

**Total depth of boring:** 15-1/2 feet **Diameter of boring:** 4 inches **Date drilled:** 11-17-89

**Casing diameter:** N/A **Length:** N/A **Slot size:** N/A

**Screen diameter:** N/A **Length:** N/A **Material type:** N/A

**Drilling Company:** Environmental Exploration, Inc. **Driller:** Tom, Tim and Tom

**Method Used:** Hollow-Stem Auger **Field Geologist:** Mark Armstrong

**Signature of Registered Professional:** _____

**Registration No.:** _____ **State:** CA

| Depth | Sample No. | Blows | P.I.D. | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 0 | | | | | Asphalt underlain by baserock. | |
| 2 | | | | CL | Silty clay, with gravel, tan, slightly damp, medium plasticity, hard. | |
| 4 | S-5.5 | 30<br>35<br>35 | 1.0 | | Silty gravelly clay. | |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | S-10 | 31<br>35<br>35 | 7.4 | | | |
| 12 | | | | | Siltstone, gray-brown to tan, hard, weathered. | |
| 14 | | | | | | |
| | S-14.5 | 50 | 18 | | Shale, black, hard. | |
| 16 | | | | | Total Depth = 15-1/2 feet. | |
| 18 | | | | | | |
| 20 | | | | | | |

Applied GeoSystems

PROJECT NO. 18061-5

# LOG OF BORING B-8

**Unocal Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 5**

**Total depth of boring:** 18 feet **Diameter of boring:** 4 inches **Date drilled:** 11-17-89

**Casing diameter:** N/A **Length:** N/A **Slot size:** N/A

**Screen diameter:** N/A **Length:** N/A **Material type:** N/A

**Drilling Company:** Environmental Exploration, Inc. **Driller:** Tom, Tim and Tom

**Method Used:** Hollow-Stem Auger **Field Geologist:** Mark Armstrong

**Signature of Registered Professional:** _____

**Registration No.:** _____ **State:** CA

| Depth | Sample No. | Blows | P.I.D. | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 0 | | | | | Asphalt underlain by baserock. | |
| 2 | | | | CL | Silty sandy clay, with trace gravel, tan, dry, medium plasticity, very stiff. | |
| 4 | S-4.5 | 17<br>28<br>15 | 1.1 | | Green and brown mottled, hard. | |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | S-10 | 18<br>33<br>50 | | | Siltstone, gray-brown, hard, weathered and fractured, green-gray in fractures. | |
| 12 | | | | | | |
| 14 | S-14.5 | 23<br>50 | 1.1 | | Clayey, brown, with fragments of gray siltstone/mudstone. | |
| 16 | | | | | | |
| 18 | S-17 | 32<br>50 | 5.1 | | Shale, black.<br>Total Depth = 18 feet. | |
| 20 | | | | | | |

Applied GeoSystems

**PROJECT NO. 18061-5**

# LOG OF BORING B-9

**Unocal Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 6**

**Total depth of boring:** 20 feet **Diameter of boring:** 4 inches **Date drilled:** 11-16-89

**Casing diameter:** N/A **Length:** N/A **Slot size:** N/A

**Screen diameter:** N/A **Length:** N/A **Material type:** N/A

**Drilling Company:** Environmental Exploration, Inc. **Driller:** Tom, Tim and Tom

**Method Used:** Hollow-Stem Auger **Field Geologist:** Mark Armstrong

**Signature of Registered Professional:** _____

**Registration No.:** _____ **State:** CA

| Depth | Sample No. | Blows | P.I.D. | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 0 | | | | | Asphalt underlain by baserock. | |
| | | | | | Gravel fill. | |
| 2 | | | | CL | Silty sandy clay, with gravel, yellow-brown, damp, medium plasticity, hard, organics. | |
| 4 | S-4.5 | 9<br>18<br>27 | 0 | | | |
| 6 | | | | | | |
| 8 | | | | | Siltstone, dark gray and green mottled, hard, weathered and fractured. | |
| 10 | S-9.5 | 17<br>20<br>22 | 143 | | | |
| 12 | | | | | | |
| 14 | | | | | | |
| 16 | | | | | Clayey, brown, with fragments of gray and brown siltstone/mudstone. | |
| 18 | S-17 | 21<br>24<br>28 | 224 | | Brown-black. | |
| 20 | S-19.5 | 80 | 8.0 | | Shale, black, dry. | |
| | | | | | Total Depth = 20 feet. | |

Applied GeoSystems

**PROJECT NO. 18061-5**

# LOG OF BORING B-10

**Unocal Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 7**

**Total depth of boring:** 18 feet **Diameter of boring:** 4 inches **Date drilled:** 11-16-89

**Casing diameter:** N/A **Length:** N/A **Slot size:** N/A

**Screen diameter:** N/A **Length:** N/A **Material type:** N/A

**Drilling Company:** Environmental Exploration, Inc. **Driller:** Tom, Tim and Tom

**Method Used:** Hollow-Stem Auger **Field Geologist:** Mark Armstrong

**Signature of Registered Professional:**

**Registration No.:** **State:** CA

| Depth | Sample No. | Blows | [illegible] | USCS Code | Description | Well Const. |
|---|---|---|---|---|---|---|
| 0 | | | | | Asphalt underlain by baserock. | |
| | | | | CL | Sandy clay, with gravel, gray-green, dry, medium plasticity, hard. | |
| 2 | | | | | | |
| 4 | S-4.5 | 12<br>20<br>44 | 3.8 | | | |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | S-9.5 | 50 | [illegible] | | Siltstone, dark gray, hard, very weathered and fractured. Grades more sandy. | |
| 12 | | | | | | |
| 14 | | 30 | | | | |
| 16 | S-14.5 | 50 | [illegible] | | Clayey, brown, with fragments of gray-brown siltstone/ mudstone. | |
| 18 | S-17 | 50 | .2 | | Shale, black, slightly damp.<br>Total Depth = 18 feet. | |
| 20 | | | | | | |

Applied GeoSystems

**PROJECT NO. 18061-5**

# LOG OF BORING

B-11

**Unocal Station No. 5484**
**18950 Lake Chabot Road**
**Castro Valley, California**

**PLATE**

**P - 8**

# Delta

**Environmental Consultants, Inc.**

| | | | | |
|---|---|---|---|---|
| Project No: | C1D54-8401-1 | Client: | ConocoPhillips | Well No: B-1 |
| Logged By: | Lia Holden | Location: | 18950 Lake Chabot Rd., Castro V | Page 1 of 1 |
| Driller: | Gregg Drilling | Date Drilled: | 1/13/2005 | |
| Drilling Method: | Geoprobe | Hole Diameter: | 2 inches | |
| Sampling Method: | direct push | Hole Depth: | 4.5 feet | |
| Casing Type: | NA | Well Diameter: | NA | |
| Slot Size: | NA | Well Depth: | NA | |
| Gravel Pack: | NA | Casing Stickup: | NA | |

Location Map

Please See Site Map

| Elevation | Northing | Easting |
|---|---|---|
| | | |

| Well Completion (Backfill / Casing) | Static Water Level | Moisture Content | PID Reading (ppm) | Penetration (blows/6") | Depth (feet) | Sample Recovery | Sample Interval | Soil Type | LITHOLOGY / DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| Concrete / Neat cement grout | ▽ | Moist<br>wet | 0.1<br>0.9<br>0.6 | Cleared to 5 feet — Adjacent Probe | 1–22 | AF | ↑ ↓ | CL | Approximately 6 inches of asphalt<br>~3-4" of angular mixed gravel fill and clay<br>**Sandy Lean CLAY**; medium to dark brown; 20-30% fine sand; minor coarse and medium sand; 70-80% fines; medium plasticity.<br>Clay is lighter near grade and gradually changes to dark brown at bottom of boring.<br>**Bottom of boring at 4.5 feet** |

# Delta

**Environmental Consultants, Inc.**

| | | | | |
|---|---|---|---|---|
| Project No: | C1D54-8401-1 | Client: | ConocoPhillips | Well No: B-2 |
| Logged By: | Lia Holden | Location: | 18950 Lake Chabot Rd., Castro Valley, CA | Page 1 of 1 |
| Driller: | Gregg Drilling | Date Drilled: | 1/13/2005 | |
| Drilling Method: | Geoprobe | Hole Diameter: | 2 inches | |
| Sampling Method: | direct push | Hole Depth: | 20 feet | |
| Casing Type: | NA | Well Diameter: | NA | |
| Slot Size: | NA | Well Depth: | NA | |
| Gravel Pack: | NA | Casing Stickup: | NA | |

Location Map

Please See Site Map

Elevation | Northing | Easting

| Well Completion (Backfill / Casing) | Static Water Level | Moisture Content | PID Reading (ppm) | Penetration (blows/6") | Depth (feet) | Sample Recovery / Interval | Soil Type | LITHOLOGY / DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| Concrete | | | | | | AF | | Approximately 4 inches of asphalt |
| | | moist | 10.2 | Cleared to 5 feet' | 1–5 | | CL | **Lean CLAY with sand**; medium to light orange-brown; 15-25% fine to medium sand; minor coarse sand; 75-85% fines; medium to high plasticity; slow dilatancy. |
| | | damp | | | | | | soil becomes green discolored, more friable, and less moist with depth (saprolite). |
| | | | 2195 | | 5 | | | |
| | | | >4000 | | 6 | | | |
| | | | 2583 | | 7 | | | **Sandy lean CLAY**; medium olive brown to green-brown (silty sandy clay); 20-30% coarse sand 10-20% fine and medium sand; 60-70% fines (friable when dry, plastic when wet). |
| | | damp | | | | | | |
| | | | 2823 | | 8–9 | | | |
| | | | | | | | | Color change to light brown at 9.5 feet. |
| | | | 3427 | | 10 | | | |
| | | | | | | | | As above |
| | | | 1919 | | 11–12 | | | from 10-14 feet below grade: abundant iron oxide staining and caliche deposits. |
| | | damp | | | | | | |
| | | | 2212 | | 13 | | | |
| | | | 486 | | 14 | | | |
| | | | | | | | | As above |
| | | | 872 | | 15–16 | | | |
| | 17.2 ft | damp | 114 | | 17 | | | As above color becomes light brown to tan at 17.5 feet and ash gray at 19.5 feet; caliche deposits still abundant but no iron oxide stains. |
| | | | 119 | | 18 | | | |
| | | | 10.5 | | 19 | | | |
| | | damp | | | 20 | | | **Bottom of boring at 20 feet** |
| | | | | | 21–22 | | | |

Neat Cement Grout

# Delta

**Environmental Consultants, Inc.**

| | | | | |
|---|---|---|---|---|
| Project No: | C1D54-8401-1 | Client: | ConocoPhillips | Well No: B-4 |
| Logged By: | Lia Holden | Location: | 18950 Lake Chabot Rd., Castro V | Page 1 of 1 |
| Driller: | Gregg Drilling | Date Drilled: | 1/13/2005 | |
| Drilling Method: | Geoprobe | Hole Diameter: | 2 inches | |
| Sampling Method: | direct push | Hole Depth: | 20 feet | |
| Casing Type: | NA | Well Diameter: | NA | |
| Slot Size: | NA | Well Depth: | NA | |
| Gravel Pack: | NA | Casing Stickup: | NA | |

Location Map: Please See Site Map

Elevation | Northing | Easting

| Well Completion (Backfill / Casing) | Static Water Level | Moisture Content | PID Reading (ppm) | Penetration (blows/6") | Depth (feet) | Sample Recovery | Sample Interval | Soil Type | LITHOLOGY / DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| Concrete | | | | Cleared to 5 feet | | AF | | | Approximately 4 inches of asphalt |
| | | damp | 0.6 | | 1 | | | | |
| | | | | | 2 | x | | GC | **Clayey GRAVEL with sand**; medium orange-brown; 30-40% gravel (clasts up to 2 cm in diameter); 15-25% coarse to medium sand; 15-25% fine sand; 35-45% fines; low |
| | | | 2.4 | | 3 | | | | |
| | | damp | | | 4 | x | | | |
| | | moist | | | 5 | | | | |
| | | wet | 14.1 | | 6 | | | | As above<br>Saturated pocket at 6 feet (3" thick) |
| | | moist | 47.9 | | 7 | | | | gravel layer (4" thick) at 7 feet with clasts up to 4 cm diameter. |
| | | | 77.9 | | 8 | | | | |
| | | | 5.3 | | | | | | As above |
| | | moist | | | 9 | | | | |
| | | | | | 10 | | | | At 10 feet below grade: 7" section of well indurated yet fractured mudrock; iron oxide stains along parallel joints. |
| | | | 4.0 | | 11 | | | | |
| | | | | | 12 | | | | From 11 to 14 feet: |
| | | | 0.9 | | | | | | **Gravelly lean CLAY with sand**; light to medium orange-brown; 20-30% angular fine gravel; 15 -25% fine to medium sand; 10-20% coarse sand; 40-50% fines; low plasticity; slow to moderate dilatancy (clasts up to 4 cm diameter). |
| | | moist | | | 13 | | | CL | |
| | | | 1.1 | | 14 | | | | |
| | | | 0.8 | | 15 | | | | |
| | | | | | 16 | | | | As above<br>Saturated pocket (3-4" thick) at 16 feet. |
| | | wet | 8.6 | | 17 | | | | |
| | | moist | 1.4 | | 18 | | | | Color change to medium ash brown at 18 feet. |
| | | moist-wet | 0.7 | | 19 | | | | As above<br>Color change last 6 inches of this interval: dark brown-black with orange mottling. |
| Neat Cement Grout | After reaching 19.5 feet, water level quickly rose to 4.5 feet | | | | 20 | | | | |
| | | | | | 21 | | | | **Bottom of boring at 20 feet** |
| | | | | | 22 | | | | |

# Delta

**Environmental Consultants, Inc.**

| | | | | |
|---|---|---|---|---|
| Project No: | C1D54-8401-1 | Client: | ConocoPhillips | Well No: B-5 |
| Logged By: | Lia Holden | Location: | 18950 Lake Chabot Rd., Castro V | Page 1 of 2 |
| Driller: | Gregg Drilling | Date Drilled: | 1/13/2005 | |
| Drilling Method: | direct push | Hole Diameter: | 2 inches | |
| Sampling Method: | continuous core | Hole Depth: | 4.5 feet | |
| Casing Type: | NA | Well Diameter: | NA | |
| Slot Size: | NA | Well Depth: | NA | |
| Gravel Pack: | NA | Casing Stickup: | NA | |
| Elevation | | Northing | | Easting |

Location Map

Please See Site Map

| Well Completion (Backfill / Casing) | Static Water Level | Moisture Content | PID Reading (ppm) | Penetration (blows/6") | Depth (feet) | Sample Recovery | Sample Interval | Soil Type | LITHOLOGY / DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| Concrete | | | | Cleared to 5' | | CNR | | | Aproximately 4 inches concrete |
| | | | | | 1 | | | | |
| | | | | | 2 | x | | CL | **Sandy Lean CLAY with Gravel**; medium orange-brown; 10-20% angular gravel up to 1.5 cm diameter; 15-25% coarse to medium sand; 10-20% fine sand. |
| | | | 2 | | 3 | | | | |
| | | | | | 4 | | | | |
| | | | 2.4 | | 5 | | | | |
| | | | | | 6 | | | | **Gravelly lean CLAY with sand**; medium orange brown; 20-30% angular gravel clasts; 15-25% coarse to medium sand; 10-20% fine sand; 40-50% fines; moderate plasticity; slow dilatancy; hard gravel clasts from 0.5 to 2.5 cm diameter. |
| | | damp | 3.2 | | 7 | | | CL | |
| | | | 4.1 | | 8 | | | | |
| | | | 0.1 | | 9 | | | | As above |
| | | | 0.1 | | 10 | | | | Color change at 10 feet to medium ash-brown |
| | | damp | | | 11 | | | | Color change at 11.5 feet to dark brown |
| | | | 2.4 | | 12 | | | | |
| | | | 3.1 | | 13 | | | | As above |
| | | damp | | | 14 | | | | |
| | | | 2.8 | | 15 | | | | |
| | | | 1.4 | | 16 | | | GC | **Clayey GRAVEL with Sand**; medium ash-brown; 30-40% fine gravel; 15-25% medium to fine sand; 20-30% coarse sand; 20-30% fines; |
| | | | 2.2 | | 17 | | | | |
| | | damp | | | 18 | | | | Color change at 18 feet to ash gray |
| | | | 0.1 | | 19 | | | | |
| | | damp | | | 20 | | | CL | **Gravelly lean CLAY with sand;** ash gray; 20-30% angular gravel; 15-25% coarse to medim sand 10-20% fine sand; 40-50% fines; moderate plasticity. |
| | | | 0.9 | | 21 | | | | saturated zone from 20.5 feet to 21 feet. |
| | | wet | | | 22 | | | | 3 inch thick cravel layer at 22 feet. |
| | | | 2.1 | | | | | | |
| | | moist | | | | | | | |

Neat cement grout

**Delta**
**Environmental Consultants, Inc.**

| | | | | |
|---|---|---|---|---|
| Project No: | C1D54-8401-1 | Client: | ConocoPhillips | Well No: B-5 |
| Logged By: | Lia Holden | Location: | 18950 Lake Chabot Rd., Castro V | Page 2 of 2 |
| Driller: | Gregg Drilling | Date Drilled: | 1/13/2005 | |
| Drilling Method: | Geoprobe | Hole Diameter: | 2 inches | |
| Sampling Method: | direct push | Hole Depth: | 4.5 feet | |
| Casing Type: | NA | Well Diameter: | NA | |
| Slot Size: | NA | Well Depth: | NA | |
| Gravel Pack: | NA | Casing Stickup: | NA | |
| Elevation | | Northing | | Easting |

Location Map

Please See Site Map

| Well Completion (Backfill / Casing) | Static Water Level | Moisture Content | PID Reading (ppm) | Penetration (blows/6") | Depth (feet) | Sample Recovery | Sample Interval | Soil Type | LITHOLOGY / DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | 22.4 | damp | 3<br>2.1 | | 23 | | | CL | **Gravelly lean CLAY with sand** continued |
| | | | | | 24 | | | | Abundant caliche deposits from 19 feet to bottom of boring. |
| | | | | | 25 | | | | Met refusal at 23 feet |
| | | | | | 26 | | | | **Bottom of boring at 23 feet** |
| | | | | | 27 | | | | |
| | | | | | 28 | | | | |
| | | | | | 29 | | | | |
| | | | | | 30 | | | | |