



ENVIRONMENTAL MANAGEMENT, INC.

February 7, 2003  
KHM Project C81-1155 Portola

Ms. Danielle Stefani  
Hazardous Materials Coordinator  
Livermore-Pleasanton Fire Department  
3560 Nevada Street  
Pleasanton, CA 94566

**Re: Site Assessment Report  
Shell Service Station  
1155 Portola Ave.  
Livermore, California**

Dear Ms. Stefani

KHM Environmental Management, Inc. (KHM) on behalf of Equilon Enterprises LLC dba Shell Oil Products US (SHELL) has prepared this Site Assessment Report for the above referenced site (Figure 1). The Groundwater Assessment Program (GRASP) activities initiated at the above referenced site on October 21, 2002, revealed detectable concentrations of petroleum hydrocarbons in the groundwater.

## BACKGROUND

GRASP is a voluntary initiative by SHELL to install groundwater monitoring wells at numerous retail service stations nationwide that do not have any active release cases but have been identified to be in close proximity to one or more public water supply wells. The purpose of this program is to proactively monitor the groundwater beneath these sites and, in the event of a subsurface release, to respond quickly to protect public wells from this impact.

## GRASP WELL INSTALLATION

On October 21-23, 2002, KHM Environmental (KHM) supervised the drilling and installation of four groundwater monitoring wells (MW-1 through MW-4). Well locations are shown on Figure 2. KHM obtained a well permit from the Zone 7 Water Agency to install these wells (Appendix A). Well construction details are displayed in the boring logs presented in Appendix B. Well development sheets are included in Appendix C. Site survey data is included as Appendix D.

Alameda County  
JUL 15 2003  
Environmental Health  
**RECEIVED**  
FEB 13 2003  
**FIRE PREVENTION**

## **ANALYTICAL FINDINGS**

Soil samples were collected during the drilling of site wells and were analyzed with a photoionization detector (PID) for the presence of petroleum hydrocarbons at levels greater than 10 parts per million. None of the soil samples analyzed exhibited PID readings above 10 parts per million, and no samples were submitted to a testing laboratory for further analysis.

After well development, on December 5, 2002, the monitoring wells were sampled and analyzed for chemical impacts. Groundwater analytical data is summarized in Table 1 and presented in Figure 3. A groundwater elevation contour map is presented as Figure 2. Well gauging data sheets are included in Appendix E. Certified analytical results and chain-of-custody documentation for groundwater are presented in Appendix F.

## **UNAUTHORIZED RELEASE REPORT**

The previously submitted Unauthorized Release Report dated January 3, 2003 is included as Appendix G for your reference.

If you have any questions regarding this site, please contact Lee Dooley (KHM) at (408) 224-4724 or Lynn Walker (SHELL) at (925) 706-1559.

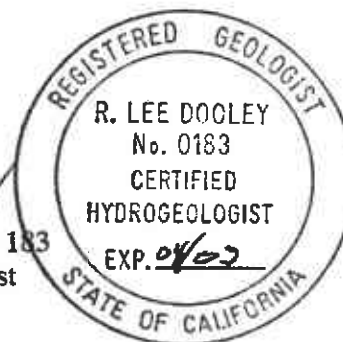
Sincerely,  
**KHM Environmental Management, Inc.**



Debbie Arnold  
Project Geologist



R. Lee Dooley, CHG 183  
Senior Hydrogeologist



CC: Lynn Walker, Shell Oil Products US (PDF by email)  
Karen Petryna, Shell Oil Products US (PDF by email)  
Isabel Mejia, Shell Oil Products US  
Chuck Headlee, RWQCB San Francisco Region

**ATTACHMENTS:**

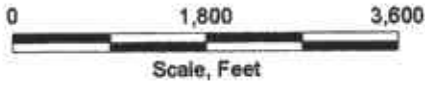
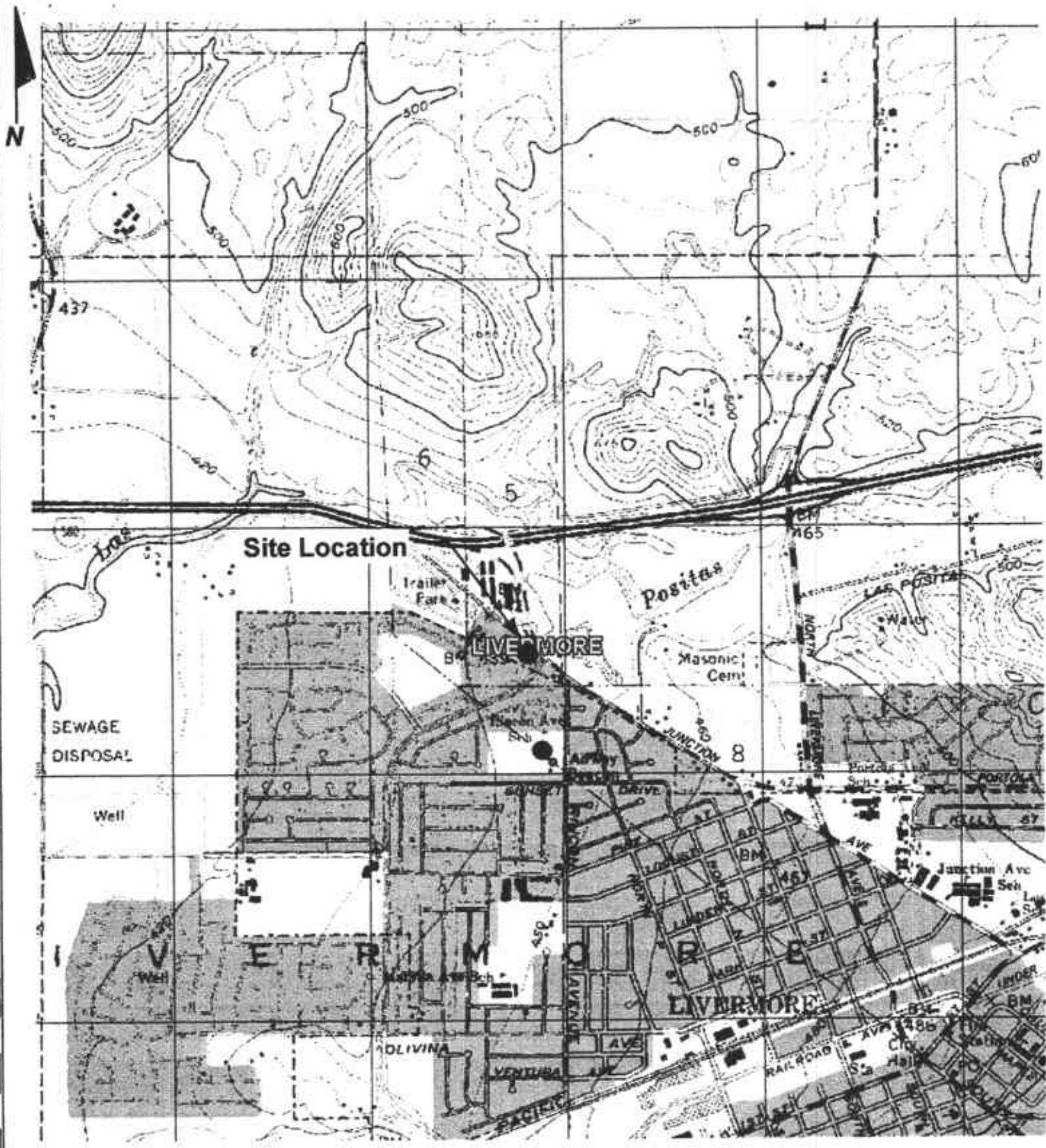
- **Table 1 – Groundwater Gauging and Analytical Data**
- **Figure 1 – Site Location Map**
- **Figure 2 – Groundwater Elevation Contour Map**
- **Figure 3 – Hydrocarbon Distribution in Groundwater Map**
- **Appendix A - Well Permit**
- **Appendix B – Boring Logs**
- **Appendix C – Well Development Field Data Sheets**
- **Appendix D – Site Survey Data**
- **Appendix E – Well Gauging Data**
- **Appendix F – Groundwater Laboratory Report and Chain-of-Custody Documentation**
- **Appendix G – Unauthorized Release Report**

Alameda County  
JUL 13 2003  
Environmental Health

**TABLE 1**  
**GROUNDWATER GAUGING AND ANALYTICAL DATA**  
 1155 Portola Avenue  
 Livermore, California

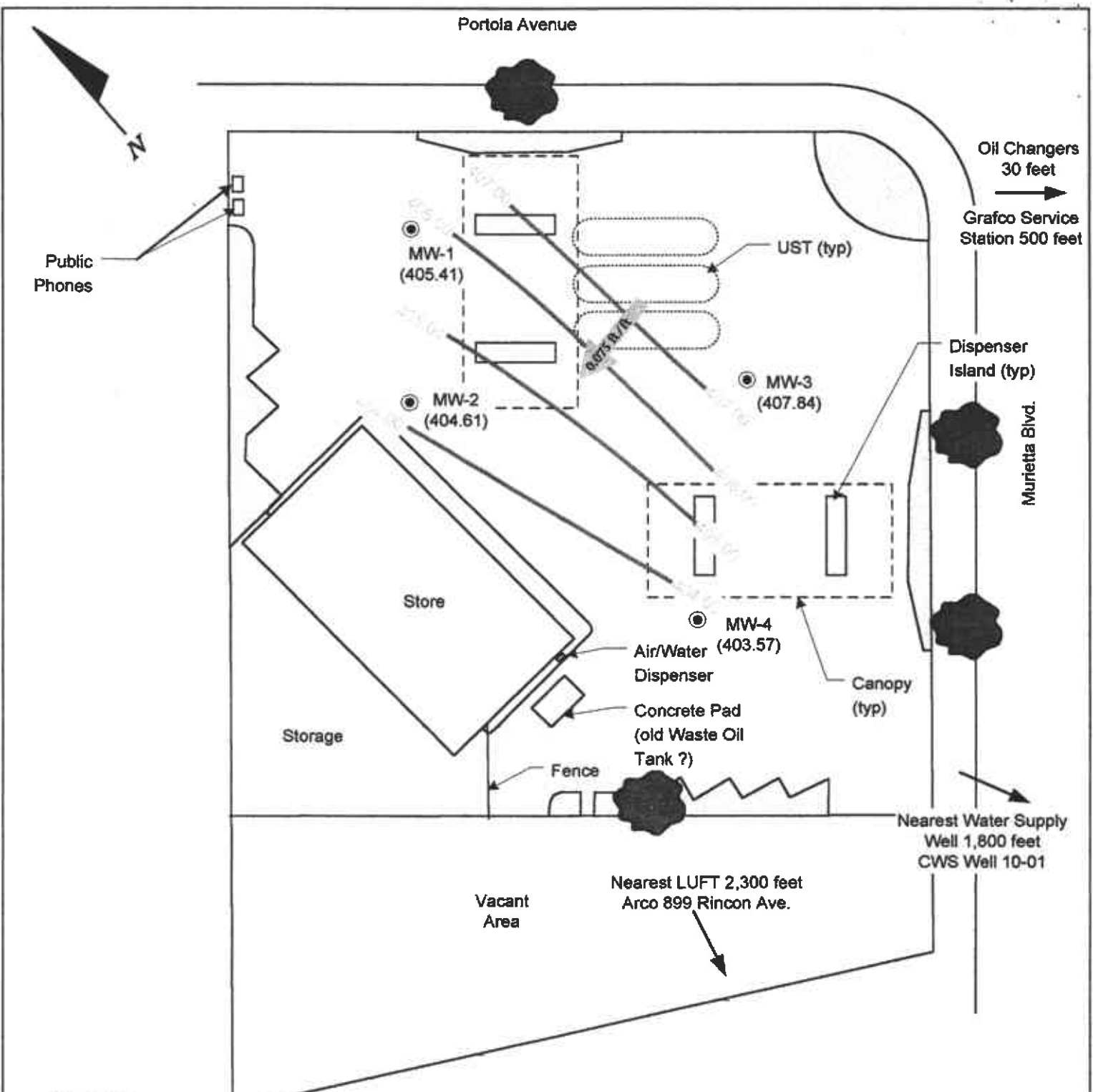
Sample I.D.	Sample Date	TPH-G	TPH-D	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	DIPE	ETBE	TAME	TBA	TOC Elevation <sup>1</sup> (feet)	Depth to GW (feet)	SPH Thickn. (feet)	GW Elev. <sup>1</sup> (feet)
<b>MW-1</b>	12/20/02	<50	<50	<0.50	<0.50	<0.50	<0.50	<b>78</b>	<2.0	<2.0	<2.0	<50	443.81	38.40	0.00	405.41
<b>MW-2</b>	12/20/02	<50	<50	<0.50	<0.50	<0.50	<0.50	<b>190</b>	<2.0	<2.0	<2.0	<50	444.61	40.00	0.00	404.61
<b>MW-3</b>	12/20/02	<50	<50	<0.50	<0.50	<0.50	<0.50	<b>8.7</b>	<2.0	<2.0	<2.0	<50	443.84	36.00	0.00	407.84
<b>MW-4</b>	12/20/02	<50	<b>61</b>	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<2.0	<50	444.18	40.61	0.00	403.57

**Notes:**  
 All data reported in micrograms per liter (µg/l)  
 TOC = Top of well casing  
 SPH = Separate-phase hydrocarbons  
 TPH-G = Total Petroleum Hydrocarbons as Gasoline  
 MTBE = Methyl tert-butyl ether  
 DIPE = Di-isopropyl ether  
 ETBE = Ethyl tert-butyl ether  
 TAME = Tert-amyl methyl ether  
 TBA = Tert-Butanol  
 <n = Below the detection limit  
 TPH-G quantified using EPA Method 8260B  
 BTEX Compounds, MTBE, DIPE, ETBE, TAME, and TBA analyzed using EPA Method 8260B  
<sup>1</sup>TOC elevation and groundwater elevation relative to Mean Sea Level



Map Source: DeLorme, Yarmouth, ME 04096, USGA Topo Map

<h1>KHM</h1> <p>ENVIRONMENTAL MANAGEMENT, INC.</p>	<h2>SITE LOCATION MAP</h2>	
	<p><b>Shell Service Station</b> 1155 Portola Avenue Livermore, California</p>	
<p>DATE 11/25/02</p>	<p>PROJECT C81-1155 Portola</p>	<p>FIGURE 1</p>



**LEGEND**

- MW-2 ● **MONITORING WELL**  
(404.61) **GROUNDWATER ELEVATION (FEET - MSL), 12/20/02**
- **GROUNDWATER ELEVATION CONTOUR**
- ↙ **APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT**

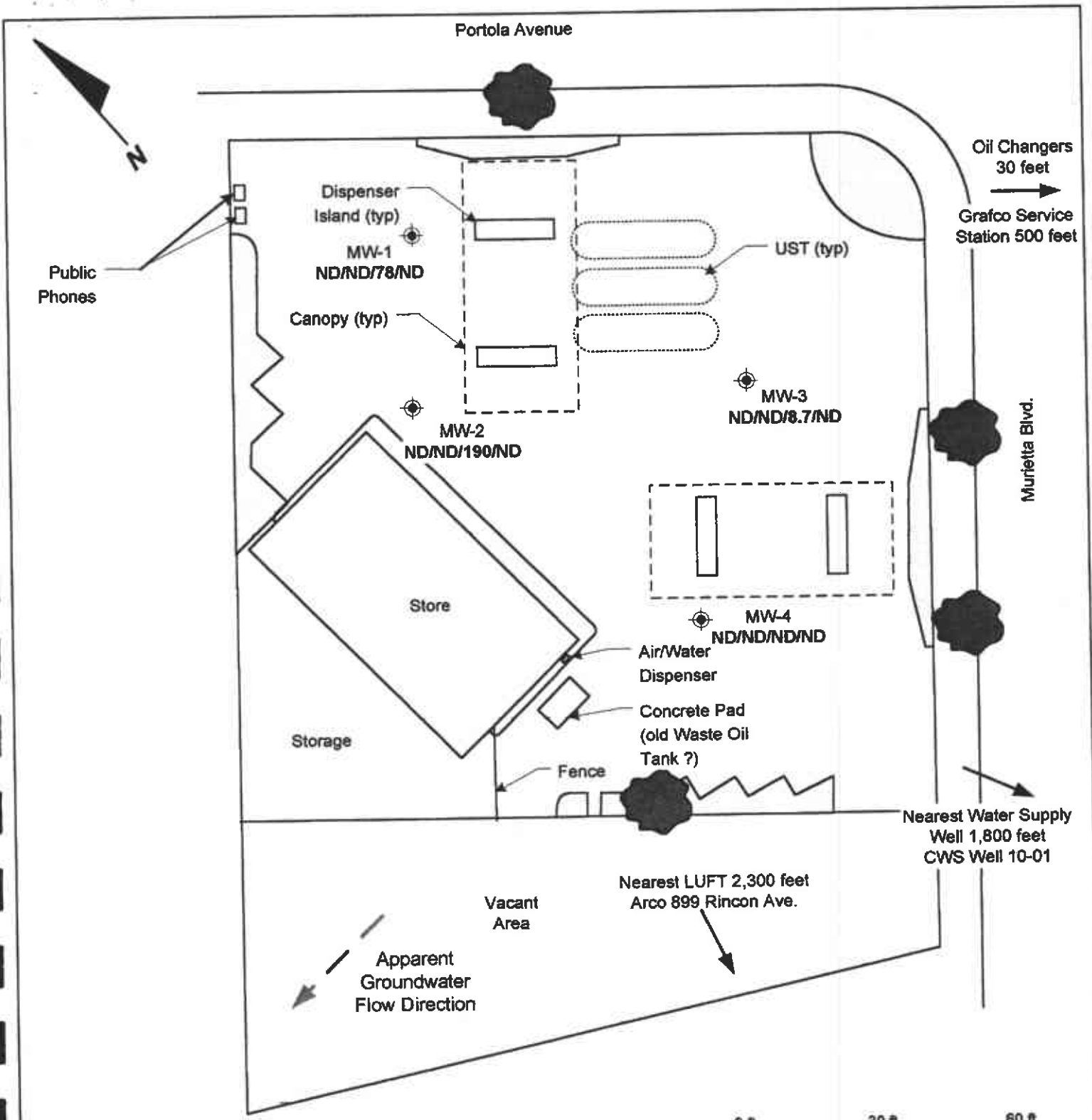


**KHM**  
ENVIRONMENTAL  
MANAGEMENT,  
INC.


**GROUNDWATER ELEVATION CONTOUR  
MAP, DECEMBER 20, 2002**

**Shell-branded Service Station**  
1155 Portola Avenue  
Livermore, California

DATE 1/14/03	PROJECT C81-1155 Portola	FIGURE 2
-----------------	-----------------------------	-------------



**LEGEND**

- 
**GROUNDWATER MONITORING WELL**  
 CONCENTRATIONS OF TPH-G/BENZENE/MTBE/TBA IN GROUNDWATER SAMPLED ON DECEMBER 20, 2002 (ug/L)
- ND/ND/8.7/ND
- ND  
 NOT DETECTED AT LABORATORY LIMITS

**KHM**  
 ENVIRONMENTAL  
 MANAGEMENT,  
 INC.

<b>HYDROCARBON DISTRIBUTION IN GROUNDWATER MAP</b>		
<b>Shell-branded Service Station</b>		
1155 Portola Avenue Livermore, California		
DATE	PROJECT	FIGURE
1/14/03	C81-1155 Portola	3

**APPENDIX A**

---

**WELL PERMIT**





# ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588-5127 VOICE (925) 484-2600 X235 FAX (925) 462-3914

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 1155 Dextola  
Livermore, CA

PERMIT NUMBER 22137  
 WELL NUMBER 3S/2E 5N7 ce 5N10  
 APN \_\_\_\_\_

California Coordinates Source \_\_\_\_\_ Accuracy \_\_\_\_\_ ft  
 CCN \_\_\_\_\_ ft. CCE \_\_\_\_\_ ft  
 APN 99-130-9-11

### PERMIT CONDITIONS

Circled Permit Requirements Apply

CLIENT  
 Name Shell Oil Products U.S.  
 Address P.O. Box Phone \_\_\_\_\_  
 City Burbank Zip \_\_\_\_\_

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

APPLICANT  
 Name KHM Environmental Management, Inc.  
 Address 5307 San Tiguero Ave, Suite E Phone 408-224-4724  
 City San Jose Zip 95112

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

TYPE OF PROJECT:  
 Well Construction  Geotechnical Investigation   
 Well Destruction  Contamination Investigation   
 Cathodic Protection  Other \_\_\_\_\_

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

PROPOSED WELL USE:  
 Domestic  Irrigation   
 Municipal  Remediation   
 Industrial  Groundwater Monitoring   
 Dewatering  Other \_\_\_\_\_

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

DRILLING METHOD:  
 Mud Rotary  Air Rotary  Hollow Stem Auger   
 Cable Tool  Direct Push  Other \_\_\_\_\_

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

DRILLING COMPANY Gregg Drilling  
 DRILLER'S LICENSE NO. CS7048165

- F. WELL DESTRUCTION.** See attached.

WELL SPECIFICATIONS:  
 Drill Hole Diameter 8 in. Maximum Depth 60 ft.  
 Casing Diameter 2 in. Number MW-1 TO  
 Surface Seal Depth 45 ft. MW-4

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

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

ESTIMATED STARTING DATE 10/7/02  
 ESTIMATED COMPLETION DATE 11/15/02

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

Approved Wyman Hong Date 10/1/02  
 Wyman Hong

APPLICANT'S SIGNATURE Scott Fisher Date 9/3/02









ATTACH SITE PLAN OR SKETCH

**APPENDIX B**

---

**BORING LOGS**

## Boring Log Symbol Key

	First Encounter of Groundwater
	Stabilized Depth to Groundwater
	Asphalt
	Cement Grout
	Bentonite
	Sand
	Blank Casing
	Screened Casing

# KHM

ENVIRONMENTAL  
MANAGEMENT  
INCORPORATED

PROJECT NO: C81-1155 Portola  
LOGGED BY: J. Yantis  
DRILLER: Gregg Drilling  
DRILLING METHOD: HSA  
SAMPLING METHOD: SS  
CASING TYPE: PVC  
SLOT SIZE: 0.020"  
GRAVEL PACK: 2/12

CLIENT: Shell OPUS  
LOCATION: 1155 Portola Rd., Livermore  
DATE DRILLED: 10/22/02  
HOLE DIAMETER: 8"  
HOLE DEPTH: 59'  
WELL DIAMETER: 2"  
WELL DEPTH: 59'  
CASING STICKUP: 0

BORING/WELL NO: MW-1  
PAGE 1 OF 3



ELEVATION                      NORTHING                      EASTING

Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION	
Backfill	Casing									
			damp		Air Knifed	1		AF	Asphalt 5"	
			damp			2		GC	Clayey GRAVEL; brown with lighter brown, black and gray mottling, 70% subrounded gravels, 25% medium plasticity fines, 5% fine sand	
			damp			3				
			damp			4		GC	Clayey GRAVEL with Sand; dark brown, 50% subangular gravels up to 2", 25% sand, 25% medium plasticity fines, well graded	
			damp			5		GW	Well Graded GRAVEL with Sand; brown, 80% subrounded gravels, 15% sand, 5% medium plasticity fines	
			damp			6				
			damp			7		GC	Clayey GRAVEL with Sand; brown, 65% subangular gravels, 20% sand, 15% medium plasticity fines	
			damp			8				
			damp			9				
			damp			10	2.7	18 19 21	GW- GC	Well Graded GRAVEL with Clay and Sand; brown, 60% subangular-subrounded gravel, 30% fine to coarse sand, 10% fines
			damp			11				
			damp			12				
			damp			13				
			damp			14				
			damp/ moist			15	1.5	36 29 19	SC	Clayey SAND with Gravel; medium brown, 45% fine to coarse sand, 40-45% fine gravel, 10-15% fines
			damp/ moist			16				
			damp/ moist			17				
			damp/ moist			18				
			damp/ moist			19				
			damp/ moist			20	2.3	6 12 23	CL	Sandy Lean CLAY; medium brown with light brown mottling, 65% low to medium plasticity fines, 35% fine sand
			damp/ moist			21				
			damp/ moist			22				

# KHM

ENVIRONMENTAL  
MANAGEMENT  
INCORPORATED

PROJECT NO: C81-1155 Portola	CLIENT: Shell OPUS	BORING/WELL NO: MW-1
LOGGED BY: J. Yantis	LOCATION: 1155 Portola Rd., Livermore	PAGE 2 OF 3
DRILLER: Gregg Drilling	DATE DRILLED: 10/22/02	
DRILLING METHOD: HSA	HOLE DIAMETER: 8"	
SAMPLING METHOD: SS	HOLE DEPTH: 59'	
CASING TYPE: PVC	WELL DIAMETER: 2"	
SLOT SIZE: 0.020"	WELL DEPTH: 59'	
GRAVEL PACK: 2/12	CASING STICKUP: 0	

ELEVATION	NORTHING	EASTING
-----------	----------	---------

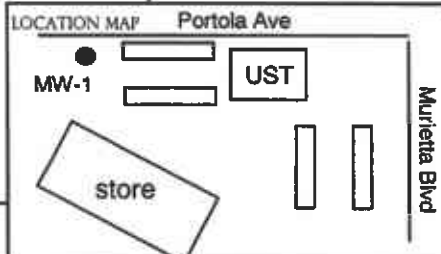
Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Backfill	Casing								
						23		CL	continued
						24			plasticity fines, 5% fine sand
			damp	3.2	16	25		SW	Well Graded SAND with Gravel; brown, 55% very well graded fine to coarse sand, 40% gravel, 5% fines
					23	26			
					50	27			
						28			
						29			
			very moist	5.5	34	30		GC	Clayey GRAVEL with Sand; brown, 50% fractured gravel, 35% fine to coarse sand, 15% medium plasticity fines, occasional highly weathered (FeO) fractured gravel
					50/6	31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
			moist/damp	6.8		40		GW-GC	Well Graded GRAVEL with Clay and Sand; brown, 65% fine and coarse subrounded gravel, 25% fine to coarse sand, 10% medium plasticity fines
						41			
						42			
						43			
						44			

# KHM

ENVIRONMENTAL  
MANAGEMENT  
INCORPORATED

PROJECT NO: C81-1155 Portola CLIENT: Shell OPUS  
 LOGGED BY: J. Yantis LOCATION: 1155 Portola Rd., Livermore  
 DRILLER: Gregg Drilling DATE DRILLED: 10/22/02  
 DRILLING METHOD: HSA HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS HOLE DEPTH: 59'  
 CASING TYPE: PVC WELL DIAMETER: 2"  
 SLOT SIZE: 0.020" WELL DEPTH: 59'  
 GRAVEL PACK: 2/12 CASING STICKUP: 0

BORING/WELL NO: MW-1  
PAGE 3 OF 3



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
		very moist/wet	3.5	22	45	AF		
				50/6	46	GW-GC		cont. (grades finer) plasticity fines, 5% fine sand
	▽	damp			47	CL		Lean CLAY with Sand; medium brown, 65% medium plasticity fines, 25% fine sand, 10% gravel
					48			
					49			
		wet	1.3	25	50	SP		Poorly Graded SAND with Gravel; dark brown, 60% coarse sand, 40% fine gravel, <5% fines
				50/6	51			(increase in fines)
		wet			52			
		v. moist wet		30	53	GC		Clayey GRAVEL with Sand; medium brown, 50% fine to coarse gravel, 40% fine to coarse sand, 10% medium plasticity fines
				50/6	54			
					55			
		v. moist wet wet		36	56			
			1.1	50/6	57			
					58			
		damp-moist			59	CL		Sandy Lean CLAY; brown, 55% medium plasticity fines, 45% fine sand
					60			BOTTOM OF BORING @ 59 ft
					61			
					62			
					63			
					64			
					65			
					66			



PROJECT NO: C81-1155 Portola CLIENT: Shell OPUS  
 LOGGED BY: J. Yantis LOCATION: 1155 Portola Rd., Livermore  
 DRILLER: Gregg Drilling DATE DRILLED: 10/21/02  
 DRILLING METHOD: HSA HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS HOLE DEPTH: 60'  
 CASING TYPE: PVC WELL DIAMETER: 2"  
 SLOT SIZE: 0.020" WELL DEPTH: 60'  
 GRAVEL PACK: 2/12 CASING STICKUP: 0

BORING/WELL NO: MW-2  
PAGE 1 OF 3

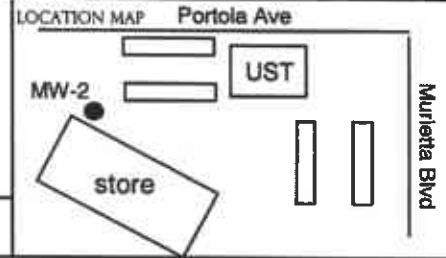


ELEVATION      NORTHING      EASTING

Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Backfill	Casing								
			damp			1	AF	Asphalt 5"	
			damp			1	CL	Gravelly Lean CLAY; brown, 60% medium plasticity fines, 30% gravels, 10% sand, well graded	
			damp			2	CL	Lean CLAY with Sand; brown, 80% medium plasticity fines, 20% fine sand, poorly graded	
			damp			3	GM	Silty GRAVEL; brown, 50% subrounded gravels, 30% medium plasticity fines, 10% fine sand	
			damp			4	GC	Clayey GRAVEL; brown, 75% subrounded gravels up to 2", 15% medium plasticity fines, 10% sand	
			damp			5			
			damp			6			
			damp			7	GW-GC	Well Graded GRAVEL with Clay and Sand; brown, 60% fine gravels, 30% sand, 10% medium plasticity fines	
			damp-moist			8			
			damp-moist			9			
			damp-moist	7.4		10			
			damp			10			
			damp			11	CL	Lean CLAY with Sand; 75% medium plasticity fines, 25% fine sand	
						12			
						13			
			damp-moist	1.3		10	SP-SC	Poorly Graded SAND with Clay and Gravel; brown, 60% coarse sand, 30% fine gravel, 10% medium plasticity fines, occasional FeO coating on gravel	
						11			
						16			
						20			
			damp	3.7		12	CL	Lean CLAY with Sand; reddish brown to brown, 80% medium plasticity fines, 15% fine sand, <5% fine gravel, hard	
						15			
						21			
						24			
						22			



PROJECT NO: C81-1155 Portola      CLIENT: Shell OPUS  
 LOGGED BY: J. Yantis      LOCATION: 1155 Portola Rd., Livermore      BORING/WELL NO: MW-2  
 DRILLER: Gregg Drilling      DATE DRILLED: 10/21/02      PAGE 2 OF 3  
 DRILLING METHOD: HSA      HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS      HOLE DEPTH: 60'  
 CASING TYPE: PVC      WELL DIAMETER: 2"  
 SLOT SIZE: 0.020"      WELL DEPTH: 60'  
 GRAVEL PACK: 2/12      CASING STICKUP: 0



ELEVATION		NORTHING		EASTING	
-----------	--	----------	--	---------	--

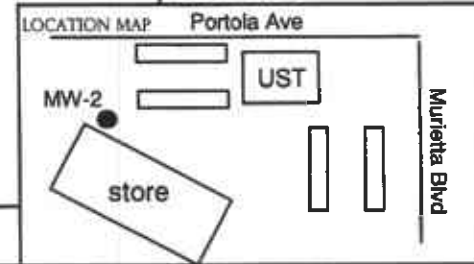
Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Backfill	Casing								
						23		CL	continued
			very moist	4.2	40	24			
					32	25		GC	<b>Clayey GRAVEL with Sand</b> ; brown, 45% fine gravel, 35% fine to coarse sand, 20% medium plasticity fines
			very moist	2.6	36	26			
						27			
						28			
						29			
			very moist			30			
						31			
						32			
						33			
			very moist			34			
						35			
						36			
						37			
						38			
						39			
			very moist	3.7		40		SP-SC	<b>Poorly Graded SAND with Clay and Gravel</b> ; brown, 60% coarse sand, 30% fine gravel, 10% medium plasticity fines, free water on coarse sand and gravel
						41			
						42			
						43			
						44			





PROJECT NO: C81-1155 Portola CLIENT: Shell OPUS  
 LOGGED BY: J. Yantis LOCATION: 1155 Portola Rd., Livermore  
 DRILLER: Gregg Drilling DATE DRILLED: 10/21/02  
 DRILLING METHOD: HSA HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS HOLE DEPTH: 60'  
 CASING TYPE: PVC WELL DIAMETER: 2"  
 SLOT SIZE: 0.020" WELL DEPTH: 60'  
 GRAVEL PACK: 2/12 CASING STICKUP: 0

BORING/WELL NO: MW-2  
 PAGE 3 OF 3



ELEVATION                      NORTHING                      EASTING

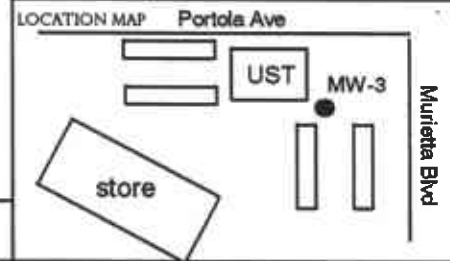
Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION		
Backfill	Casing										
Sand			very moist	4.4	30	45		GP	<b>Poorly Graded GRAVEL with Sand;</b> medium brown, 55% subrounded gravel, 40% coarse sand, 5% fines, free water on sand and gravel  (increase in free water on sand and gravel surfaces)		
							46				
							47				
							48				
							49				
						very moist to wet	40	50			
							50/6	51			
								52			
						wet		53			
								54			
						wet		55			
								56			
						wet		57			
								58			
								59			
						60					
						61			<b>BOTTOM OF BORING @ 60 ft</b>		
						62					
						63					
						64					
						65					
						66					



PROJECT NO: C81-1155 Portola  
 LOGGED BY: J. Yantis  
 DRILLER: Gregg Drilling  
 DRILLING METHOD: HSA  
 SAMPLING METHOD: SS  
 CASING TYPE: PVC  
 SLOT SIZE: 0.020"  
 GRAVEL PACK: 2/12

CLIENT: Shell OPUS  
 LOCATION: 1155 Portola Rd., Livermore  
 DATE DRILLED: 10/21/02  
 HOLE DIAMETER: 8"  
 HOLE DEPTH: 55"  
 WELL DIAMETER: 2"  
 WELL DEPTH: 55"  
 CASING STICKUP: 0

BORING/WELL NO: MW-3  
 PAGE 1 OF 3



ELEVATION                      NORTHING                      EASTING

Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION		
Backfill	Casing										
			dry-damp		↑ Air Knifed ↓ 9 23 41 26 26 14 27 50/6 50/6	1		AF	Asphalt 5"		
			dry-damp			2		GC	Clayey GRAVEL with Sand; brown with dark grey mottling, 60% subrounded gravels, 25% sand, 15% fines		
			dry-damp			3				GW	Well Graded GRAVEL with Sand; brown, 80% subrounded gravels up to 2", 15% sand, 5% medium plasticity fines
			dry-damp			4					
			dry-damp			5					
			dry-damp			6				GW-GM	Well Graded GRAVEL with Silt and Sand; dark brown, 70% subrounded gravel, 20% fine to coarse sand, 10% fines
			dry			7					
						8					
						9					
			damp	4.9		10					
						11					
						12					
						13					
						14					
			damp	1.6		15				GC	Clayey GRAVEL with Sand; brown, 70% gravel, 15% fine to coarse sand, 15% medium plasticity fines, occasional FeO stains
						16					
						17					
						18					
						19					
			dry	4.3		20				GP	Poorly Graded GRAVEL; light grey to brown, 95% gravel
						21					
						22					



PROJECT NO: C81-1155 Portola CLIENT: Shell OPUS  
 LOGGED BY: J. Yantis LOCATION: 1155 Portola Rd., Livermore  
 DRILLER: Gregg Drilling DATE DRILLED: 10/21/02  
 DRILLING METHOD: HSA HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS HOLE DEPTH: 55'  
 CASING TYPE: PVC WELL DIAMETER: 2"  
 SLOT SIZE: 0.020" WELL DEPTH: 55'  
 GRAVEL PACK: 2/12 CASING STICKUP: 0

BORING/WELL NO: MW-3  
 PAGE 2 OF 3

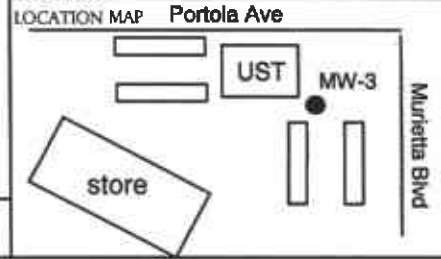


ELEVATION      NORTHING      EASTING

Well Completion	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Backfill Casing					23		GP	continued
		damp-moist	1.6	11 15 23	25 26		GC	Clayey GRAVEL with Sand; medium brown, 45% subrounded gravel, 35% medium plasticity fines, 20% fine to coarse sand
		very moist	4.3	50/6	30 31 32 33 34			(increase in coarse subrounded sand, abundant fractured gravel, free water on sand and gravel surfaces)
		very moist	5.0	43 16 27	35 36			(occasional highly FeO weathered gravel, free water on coarse sand and gravel)
		damp		9 9 50	37 38 39		CL	Lean CLAY with Sand; light grey with FeO mottling, 85% medium plasticity fines, 15% fine sand
		very moist	2.3	20 50/6	40 41		GP-GC	Poorly Graded GRAVEL with Clay and Sand; medium brown, 55% gravel, 35% coarse sand, 10% medium plasticity fines, occasional FeO weathered and fractured gravel
		wet		5 10	42 43 44			



PROJECT NO: C81-1155 Portola      CLIENT: Shell OPUS      BORING/WELL NO: MW-3  
 LOGGED BY: J. Yantis      LOCATION: 1155 Portola Rd., Livermore      PAGE 3 OF 3  
 DRILLER: Gregg Drilling      DATE DRILLED: 10/21/02  
 DRILLING METHOD: HSA      HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS      HOLE DEPTH: 55'  
 CASING TYPE: PVC      WELL DIAMETER: 2"  
 SLOT SIZE: 0.020"      WELL DEPTH: 55'  
 GRAVEL PACK: 2/12      CASING STICKUP: 0



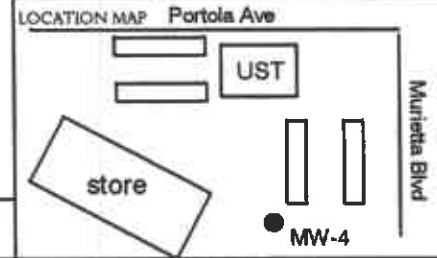
ELEVATION	NORTHING	EASTING
-----------	----------	---------

Well Completion Backfill Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
		wet	2.2	8 40 50	45		GP-GC	cont.
		wet			46			
		moist			47			
					48			
				50/6	49		GC	Clayey GRAVEL with Sand; 40% gravel, 40% fine to coarse sand, 20% medium plasticity fines
		wet			50		GW-GC	Well Graded GRAVEL with Clay and Sand; 45% gravel, 45% fine to coarse sand, 10% medium plasticity fines
					51			
		wet			52			
					53			
					54			
					55			
					56			<b>BOTTOM OF BORING @ 55 ft</b>
					57			
					58			
					59			
					60			
					61			
					62			
					63			
					64			
					65			
					66			



PROJECT NO: C81-1156 Portola CLIENT: Shell OPUS  
 LOGGED BY: J. Yantis LOCATION: 1155 Portola Rd., Livermore  
 DRILLER: Gregg Drilling DATE DRILLED: 10/23/02  
 DRILLING METHOD: HSA HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS HOLE DEPTH: 61'  
 CASING TYPE: PVC WELL DIAMETER: 2"  
 SLOT SIZE: 0.020" WELL DEPTH: 61'  
 GRAVEL PACK: 2/12 CASING STICKUP: 0

BORING/WELL NO: MW-4  
PAGE 1 OF 3



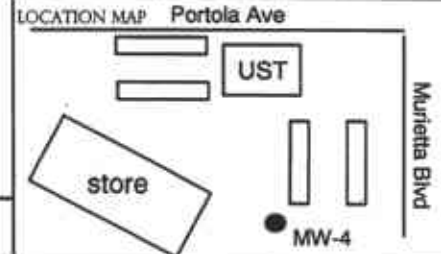
ELEVATION      NORTHING      EASTING

Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Backfill	Casing								
			dry-damp		↑ Air Knifed ↓ 12 15 19	1	AF	Asphalt 5"	
			damp			2	GW	Well Graded GRAVEL with Sand; brown, 85% subangular gravels, 15% coarse sand	
			damp			3	SC	Clayey SAND with Gravel; brown, 65% sand, 20% subrounded gravels, 15% medium plasticity fines	
			damp			4	GW-GC	Well Graded GRAVEL with Clay; brown, 80% subrounded gravels, 10% sand, 10% medium plasticity fines	
			damp			5	GW	Well graded GRAVEL with Sand; brown, 85% subrounded gravels, 15% sand	
			damp			6			
			damp			7		(grades finer, 5% medium plasticity fines)	
			damp			8			
			damp			9			
			damp-dry	4.7		10	SM	Silty SAND; light brown with dark brown mottling, 45% low plasticity fines, 55% fine sand, abundant rootholes	
			damp			11			
			damp			12			
			damp			13			
			damp			14			
			damp			15		(occasional coarse sand)	
			damp	7.1		16			
			damp			17			
			damp			18			
			damp			19			
			damp-moist			20	GC	Clayey GRAVEL with Sand; brown, 55% subangular gravel, 25% fine to coarse sand, 20% medium plasticity fines	
			damp-moist			21			
			damp-moist			22			



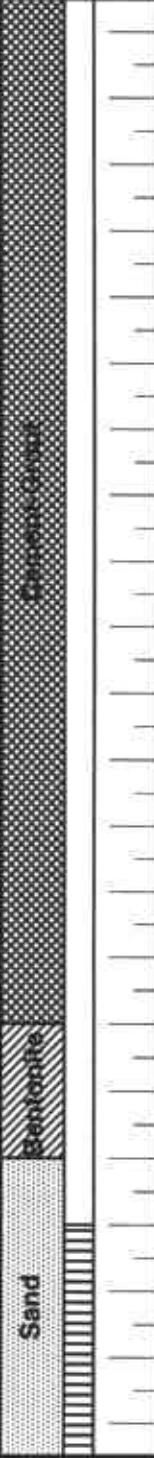
PROJECT NO: C81-1155 Portola      CLIENT: Shell OPUS  
 LOGGED BY: J. Yantis      LOCATION: 1155 Portola Rd., Livermore  
 DRILLER: Gregg Drilling      DATE DRILLED: 10/23/02  
 DRILLING METHOD: HSA      HOLE DIAMETER: 8"  
 SAMPLING METHOD: SS      HOLE DEPTH: 61'  
 CASING TYPE: PVC      WELL DIAMETER: 2"  
 SLOT SIZE: 0.020"      WELL DEPTH: 61'  
 GRAVEL PACK: 2/12      CASING STICKUP: 0

BORING/WELL NO: MW-4  
PAGE 2 OF 3



ELEVATION	NORTHING	EASTING
-----------	----------	---------

Well Completion		Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Backfill	Casing								
			damp-moist	4.3	50/6	23-24		GC	cont.
						25-26			(FeO staining in gravel)
			very moist	3.6	24/50	30-31		GW-GC	Well Graded GRAVEL with Clay and Sand; 60% subangular gravel, 30% fine to coarse sand, 10% medium plasticity fines, occasional FeO staining in gravel
						38-39		GP	Poorly Graded GRAVEL; light grey, 95% subangular gravel at least 2", < 5% sand, <5% fines
			dry		50/6	40-41			



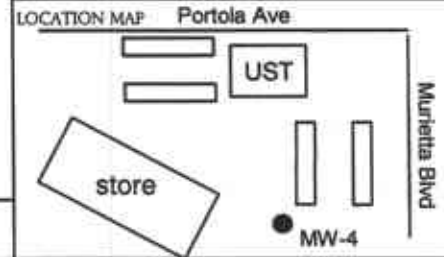
# KHM

ENVIRONMENTAL  
MANAGEMENT  
INCORPORATED

PROJECT NO: C81-1155 Portola  
LOGGED BY: J. Yantis  
DRILLER: Gregg Drilling  
DRILLING METHOD: HSA  
SAMPLING METHOD: SS  
CASING TYPE: PVC  
SLOT SIZE: 0.020"  
GRAVEL PACK: 2/12

CLIENT: Shell OPUS  
LOCATION: 1155 Portola Rd., Livermore  
DATE DRILLED: 10/23/02  
HOLE DIAMETER: 8"  
HOLE DEPTH: 61'  
WELL DIAMETER: 2"  
WELL DEPTH: 61'  
CASING STICKUP: 0

BORING/WELL NO: MW-4  
PAGE 3 OF 3



ELEVATION

NORTHING

EASTING

Well Completion

Static  
Water  
Level

Moisture  
Content

PID Reading  
(ppm)

Penetration  
(blows/6")

Depth (feet)

Sample  
Recovery  
Interval

Soil Type

LITHOLOGY / DESCRIPTION

Backfill Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45		GP	cont.
					46			
					47			
					48			
					49			
		very moist to wet	1.4	31	50	GW-GC	GW-GC	Well Graded GRAVEL with Clay and Sand; brown with faint MnO staining, 70% subrounded gravel, 20% fine to coarse sand, 10% medium plasticity fines
					51			
					52			
					53			
					54			
		wet	2.5		55	GW	GW	Well Graded GRAVEL with Sand; brown, 60% fine to coarse subangular gravel, 35% fine to coarse sand, 5% fines
					56			
					57			
					58			
		very moist			59	SM	SM	Silty SAND; dark brown, 55% fine sand with dark brown bedding planes, 45% non-plastic to low plasticity fines,
					60	SW	SW	Well Graded SAND; dark brown, 95% fine to coarse sand, <5% fines, rare gravel
		wet			61			
					62			BOTTOM OF BORING @ 61 ft
					63			
					64			
					65			
					66			

**APPENDIX C**

---

**WELL DEVELOPMENT  
FIELD DATA SHEETS**



# WELL DEVELOPMENT DATA SHEET

Project #: 021205-RH1	Client: Shell
Developer: Ryan Hansoldt	Date Developed: 12/5/02
Well I.D. MW-1	Well Diameter: (circle one) <u>(2)</u> 3 4 6
Total Well Depth: Before 59.70 After 59.79	Depth to Water: Before 41.12 After 41.68
Reason not developed:	If Free Product, thickness:
Additional Notations: <u>Surged for 15 min before purging</u>	

Volume Conversion Factor (VCF):  
 $(12 \times (d^2/4) \times \pi) / 231$   
 where  
 12 = in / foot  
 d = diameter (in.)  
 $\pi = 3.1416$   
 231 = in<sup>3</sup>/gal

Well dia.	VCF
2"	= 0.16
3"	= 0.37
4"	= 0.65
6"	= 1.47
10"	= 4.08
12"	= 6.87

$$\frac{3.0}{1 \text{ Case Volume}} \times \frac{10}{\text{Specified Volumes}} = \frac{30.0}{\text{gallons}}$$

Purging Device: Bailer  Electric Submersible   
 Middleburg  Suction Pump

Type of Installed Pump \_\_\_\_\_  
 Other equipment used 2" Surge block

TIME	TEMP (F)	pH	Cond. (mS or $\mu$ S)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
855	Bottom feels slightly silty. Start w/ MB pump, agitate bottom while pumping.					
901	65.1	6.8	1041	>200	3.0	brown, very silty
905	65.8	6.7	1008	>200	6.0	" " "
910	66.4	6.8	1001	>200	9.0	" , silty
915	66.6	6.9	1000	>200	12.0	brown, slightly less silty
919	66.3	6.9	999	>200	15.0	Hard bottom, brown, silty
923	66.4	6.9	999	>200	18.0	brown, silty
928	66.3	6.9	998	>200	21.0	brown, slightly less silty
932	66.4	6.9	997	>200	24.0	brown, slightly silty
937	66.4	6.9	997	>200	27.0	" " "
941	66.3	7.0	998	>200	30.0	" " "

Did Well Dewater? <u>NO</u>	If yes, note above.	Gallons Actually Evacuated: <u>30.0</u>
-----------------------------	---------------------	-----------------------------------------

# WELL DEVELOPMENT DATA SHEET

Project #: 021205-RH1	Client: Shell
Developer: Ryan Hanstedt	Date Developed: 12/5/02
Well I.D. mw-2	Well Diameter: (circle one) <u>(2)</u> 3 4 6
Total Well Depth: Before 56.77 After 59.35	Depth to Water: Before 41.57 After 43.73
Reason not developed:	If Free Product, thickness:
Additional Notations: Surged for 15min before purging	

Volume Conversion Factor (VCF):  
 $(12 \times (d^2/4) \times \pi) / 231$   
 where  
 12 = in / foot  
 d = diameter (in.)  
 $\pi = 3.1416$   
 231 = in<sup>3</sup>/gal

Well dia.	VCF
2" =	0.16
3" =	0.37
4" =	0.65
6" =	1.47
10" =	4.08
12" =	6.87

$$\frac{2.4}{1 \text{ Case Volume}} \times \frac{10}{\text{Specified Volumes}} = \frac{24.0}{\text{gallons}}$$

Purging Device: Bailer  Electric Submersible   
 Middleburg  Suction Pump

Type of Installed Pump \_\_\_\_\_  
 Other equipment used 2" Surge block

TIME	TEMP (F)	pH	Cond. (mS or $\mu$ S)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1135						Bottom feels silty. Start w/ MB pump and agitate. Bottom while purging.
1142	68.0	6.9	982	>200	2.4	brown, very silty
1145	68.1	7.0	1012	>200	4.8	" " "
1149	68.0	7.0	1010	>200	7.2	" " "
1153	67.9	7.0	1007	>200	9.6	" " "
<del>1156</del> 1156	67.9	7.0	1003	>200	12.0	Bottom still silty, brown, very silty
1200	68.0	7.0	1012	>200	14.4	brown, slightly less silty
1203	67.6	7.0	1010	>200	16.8	Hard Bottom, brown, silty
1207	67.8	7.0	1012	>200	19.2	brown, silty
1210	68.1	7.0	1009	>200	21.6	" "
1214	68.1	7.0	1007	>200	24.0	" "

Did Well Dewater? NO If yes, note above. Gallons Actually Evacuated: 24.0

# WELL DEVELOPMENT DATA SHEET

Project #: 021205-RH1	Client: Shell
Developer: Ryan Hanstedt	Date Developed: 12/5/02
Well I.D. mw-3	Well Diameter: (circle one) <u>(2)</u> 3 4 6
Total Well Depth: Before 53.95 After 54.75	Depth to Water: Before 40.49 After 40.47
Reason not developed:	If Free Product, thickness:

Additional Notations: Surged for 15 min before purging

Volume Conversion Factor (VCF): $(12 \times (d^2/4) \times \pi) / 231$	Well dia.	VCF
where	2" =	0.16
12 = in / foot	3" =	0.37
d = diameter (in.)	4" =	0.65
$\pi = 3.1416$	6" =	1.47
231 = in 3/gal	10" =	4.08
	12" =	6.87

<u>2.2</u>	X	<u>10</u>	=	<u>22.0</u>
1 Case Volume		Specified Volumes		gallons

Purging Device:    Bailer        Electric Submersible      
                          Middleburg        Suction Pump   

Type of Installed Pump \_\_\_\_\_  
 Other equipment used    2" surge block

TIME	TEMP (F)	pH	Cond. (mS or $\mu$ S)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
732						Bottom is almost hard, start w/ MB pump, agitate pump on bottom.
740	65.5	6.7	1103	>200	2.2	dark brown, very silty
746	66.2	6.6	1153	>200	4.4	" " " "
750	66.5	6.6	1153	>200	6.6	brown, getting less silty
754	66.0	6.7	1156	>200	8.8	bottom feels hard, brown, silty
758	66.7	6.7	1150	>200	11.0	still becoming less silty, brown
803	66.8	6.7	1153	>200	13.2	Hard bottom, brown, silty
807	66.7	6.7	1158	>200	15.4	brown, silty
811	66.2	6.8	1149	>200	17.6	" "
815	66.7	6.8	1150	>200	19.8	still getting less silty, brown
820	66.6	6.8	1146	>200	22.0	brown, silty

Did Well Dewater? <u>NO</u>	If yes, note above.	Gallons Actually Evacuated:	22.0
-----------------------------	---------------------	-----------------------------	------

# WELL DEVELOPMENT DATA SHEET

Project #: 021205-RH1	Client: Shell
Developer: Ryan Hanstedt	Date Developed: 12/5/02
Well I.D. MW-4	Well Diameter: (circle one) (2) 3 4 6
Total Well Depth:	Depth to Water:
Before 56.45 After 59.80 <small>Hand to gauge bottom of well - 2.5 ft</small>	Before 41.45 After 42.78
Reason not developed:	If Free Product, thickness:
Additional Notations: Surged for 15 min before purging	

Volume Conversion Factor (VCF):  
 $(12 \times (d^2/4) \times \pi) / 231$   
 where  
 12 = in / foot  
 d = diameter (in.)  
 $\pi = 3.1416$   
 231 = in<sup>3</sup>/gal

Well dia.	VCF
2"	0.16
3"	0.37
4"	0.65
6"	1.47
10"	4.08
12"	6.87

2.4	X	10	=	24.0
1 Case Volume		Specified Volumes		gallons

Purging Device:    Bailer                        Electric Submersible              
                          Middleburg                Suction Pump                   

Type of Installed Pump \_\_\_\_\_

Other equipment used 2" surge block

TIME	TEMP (F)	pH	Cond. (mS or µS)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1020	Bottom	feels silty	Start	w/ MB pump	Agitate bottom while purging.	
1026	67.0	7.2	1200	>200	2.4	brown, very silty
1029	67.1	7.1	1180	>200	4.8	" " "
1033	67.7	7.1	1145	>200	7.2	" " "
1036	67.9	7.1	1114	>200	9.6	" " "
1040	67.7	7.0	1093	>200	12.0	brown, slightly less silty
1043	67.4	7.0	1085	>200	14.4	brown, silty
1047	67.6	7.0	1073	>200	16.8	Hard bottom, brown, silty
1050	67.4	7.0	1065	>200	19.2	Brown, silty
1054	67.4	7.0	1057	>200	21.6	" "
1057	67.5	7.0	1064	>200	24.0	" "

Did Well Dewater? NO	If yes, note above.	Gallons Actually Evacuated:	24.0
----------------------	---------------------	-----------------------------	------

**APPENDIX D**

---

**SITE SURVEY DATA**



## Mid Coast Engineers

Civil Engineers and Land Surveyors

70 Penny Lane, Suite A - Watsonville, CA 95076  
phone: (831) 724-2580  
fax: (831) 724-8025  
e-mail: lee@midcoastengineers.com

Richard A. Wadsworth  
Civil Engineer

Stanley O. Nielsen  
Land Surveyor

Lee D. Vaage  
Land Surveyor

Jeff S. Nielsen  
Land Surveyor

November 25, 2002

Debbie Arnold  
KHM Environmental Management, Inc.  
6284 San Ignacio Avenue, Suite E  
San Jose, CA 95119

Re: **Shell-branded Service Station, 1155 Portola Avenue, Livermore, California; KHM Project C81-1155 Portola, MCE Job No.02251**

Dear Ms. Arnold,

As you requested, on November 22 we surveyed four monitoring wells located at the referenced site. Our findings are listed on the attached sheets, expressed in State Plane Coordinates and Latitude/Longitude.

A notch was cut in the north rim of the PVC casing (TOC) and a cross chiseled in the north rim of the box (TOB).

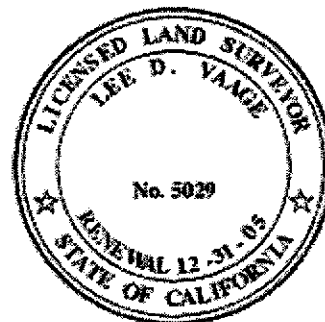
Measurements were obtained from conventional survey techniques in combination with GPS techniques (Code CGPS), using control points AA3813 (HPGN D CA 04 EK), AA3815 (HPGN D CA 04 FK) and HS5408 (HPGN CA 04 07), as published by NGS/NOAA and listed on their web site. Latitude and Longitude as shown were determined from the California Coordinate System, Zone 2, NAD 83 Datum. The accuracy range of the reported information is +/- 5mm. GPS equipment is the Trimble 5700 system (Code T57).

The benchmark used for this survey is City of Livermore H3-21, a city monument at Murrieta Boulevard and Portola Avenue. Elevation = 442.826 feet, NGVD 29.

Please let me know if you have questions or need additional information.

Yours truly,

Lee D. Vaage



**SHELL-BRANDED SERVICE STATIN**  
**1155 Portola Avenue**  
**Livermore, California**

**KHM Project C81-1155 Portola**

Project : 02251

User name MCE Date & Time 11:40:11 AM 11/25/2002  
Coordinate System US State Plane 1983 Zone California Zone 3 0403  
Project Datum NAD 1983 (Conus)  
Vertical Datum NGVD29  
Coordinate Units US survey feet  
Distance Units US survey feet  
Elevation Units US survey feet

Point listing

Name	Latitude	Longitude	Elevation	Description
4	37.695540147°N	121.784520458°W	443.84	MW-3toc
5	37.695541505°N	121.784520205°W	444.38	MW-3tob
6	37.695460150°N	121.784662477°W	444.18	MW-4toc
7	37.695461192°N	121.784663247°W	444.57	MW-4tob
8	37.695662650°N	121.784698501°W	444.61	MW-2toc
9	37.695663621°N	121.784698978°W	444.88	MW-2tob
11	37.695738658°N	121.784614294°W	443.81	MW-1toc
12	37.695739731°N	121.784614366°W	444.19	MW-1tob
3	37.695587233°N	121.784086957°W	442.83	BM

	A	B	C	D	E	F	G	H	I	J	K	L
1	SHELL-BRANDED SERVICE STATIN											
2	1155 Portola Avenue											
3	Livermore, California											
4												
5	KHM Project C81-1155 Portola											
6												
7	Project : 02251											
8	User name MCE			Date & Time 11:40:11 AM 11/25/2002								
9	Coordinate System US State Plane 1983			Zone California Zone 3 0403								
10	Project Datum NAD 1983 (Conus)											
11	Vertical Datum NGVD29											
12	Coordinate Units US survey feet											
13	Distance Units US survey feet											
14	Elevation Units US survey feet											
15												
16		MW-1	MW	11/22/2002	37.6957387	-121.7846143	CGPS	NAD83	0.05	Mid Coast Engineers	T57	top of casing
17		MW-2	MW	11/22/2002	37.6956627	-121.7846985	CGPS	NAD83	0.05	Mid Coast Engineers	T57	top of casing
18		MW-3	MW	11/22/2002	37.6955401	-121.7845205	CGPS	NAD83	0.05	Mid Coast Engineers	T57	top of casing
19		MW-4	MW	11/22/2002	37.6954602	-121.7846625	CGPS	NAD83	0.05	Mid Coast Engineers	T57	top of casing



	A	B	C	D	E	F	G	H	I	J
1	<b>SHELL-BRANDED SERVICE STATIN</b>									
2	<b>1155 Portola Avenue</b>									
3	<b>Livermore, California</b>									
4										
5	<b>KHM Project C81-1155 Portola</b>									
6										
7	Project : 02251									
8	User name MCE Date & Time 11:40:11 AM 11/25/2002									
9	Coordinate System US State Plane 1983 Zone California Zone 3 0403									
10	Project Datum NAD 1983 (Conus)									
11	Vertical Datum NGVD29									
12	Coordinate Units US survey feet									
13	Distance Units US survey feet									
14	Elevation Units US survey feet									
15										
16		MW-1	11/22/2002	443.81	CGPS	29		Mid Coast Engineers		top of casing
17		MW-2	11/22/2002	444.61	CGPS	29		Mid Coast Engineers		top of casing
18		MW-3	11/22/2002	443.84	CGPS	29		Mid Coast Engineers		top of casing
19		MW-4	11/22/2002	444.18	CGPS	29		Mid Coast Engineers		top of casing

**APPENDIX E**

---

**WELL GAUGING DATA**

# WELL GAUGING DATA

Project # 021205-RH1      Date 12/05/02      Client Shell

Site 155 Portola Ave, Livermore

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC
MW-1	2					41.12	59.70	
MW-2	2					41.57	56.77	
MW-3	2					40.49	53.95	
MW-4	2					41.45	56.45 <sup>✓</sup>	

## WELL GAUGING DATA

Project # 021220-553 Date 12/20/02 Client SHELL

Site 1155 PORTOLA AVE. LIVERMORE

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC
MW-1	2					38.40	59.00	↓
MW-2	2					40.00	59.10	
MW-3	2					36.00	54.60	
MW-4	2					40.61	59.20	

**APPENDIX F**

---

**GROUNDWATER LABORATORY REPORT  
AND  
CHAIN-OF-CUSTODY DOCUMENTATION**



Report Number : 30558

Date : 12/31/2002

Leon Gearhart  
Blaine Tech Services  
1680 Rogers Avenue  
San Jose, CA 95112-1105

Subject : 4 Water Samples  
Project Name : 1155 Portola Ave., Livermore  
Project Number : 021220-SS3  
P.O. Number : 97401517

Dear Mr. Gearhart,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is written in a cursive style with a large initial "J".

Joel Kiff



Report Number : 30558

Date : 12/31/2002

Subject : 4 Water Samples  
Project Name : 1155 Portola Ave., Livermore  
Project Number : 021220-SS3  
P.O. Number : 97401517

## Case Narrative

Hydrocarbons reported as TPH as Diesel do not exhibit a typical Diesel chromatographic pattern for sample MW-4.

Approved By:  Joel Kiff



Report Number : 30558

Date : 12/31/2002

Project Name : 1155 Portola Ave., Livermore

Project Number : 021220-SS3

Sample : MW-1

Matrix : Water

Lab Number : 30558-01

Sample Date :12/20/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Methyl-t-butyl ether (MTBE)	78	0.50	ug/L	EPA 8260B	12/26/2002
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-Butanol	< 50	50	ug/L	EPA 8260B	12/26/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/26/2002
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	12/26/2002
4-Bromofluorobenzene (Surr)	98.6		% Recovery	EPA 8260B	12/26/2002
TPH as Diesel	< 50	50	ug/L	M EPA 8015	12/26/2002

Approved By:  Joel Kiff





Report Number : 30558

Date : 12/31/2002

Project Name : 1155 Portola Ave., Livermore

Project Number : 021220-SS3

Sample : MW-2

Matrix : Water

Lab Number : 30558-02

Sample Date :12/20/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Methyl-t-butyl ether (MTBE)	190	0.50	ug/L	EPA 8260B	12/26/2002
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-Butanol	< 50	50	ug/L	EPA 8260B	12/26/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/26/2002
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	12/26/2002
4-Bromofluorobenzene (Surr)	97.2		% Recovery	EPA 8260B	12/26/2002
TPH as Diesel	< 50	50	ug/L	M EPA 8015	12/27/2002

Approved By:  Joel Kiff



Report Number : 30558

Date : 12/31/2002

Project Name : 1155 Portola Ave., Livermore

Project Number : 021220-SS3

Sample : MW-3

Matrix : Water

Lab Number : 30558-03

Sample Date :12/20/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Methyl-t-butyl ether (MTBE)	8.7	0.50	ug/L	EPA 8260B	12/26/2002
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-Butanol	< 50	50	ug/L	EPA 8260B	12/26/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/26/2002
Toluene - d8 (Surr)	97.7		% Recovery	EPA 8260B	12/26/2002
4-Bromofluorobenzene (Surr)	100		% Recovery	EPA 8260B	12/26/2002
TPH as Diesel	< 50	50	ug/L	M EPA 8015	12/28/2002

Approved By:  Joel Kiff



Report Number : 30558

Date : 12/31/2002

Project Name : 1155 Portola Ave., Livermore

Project Number : 021220-SS3

Sample : MW-4

Matrix : Water

Lab Number : 30558-04

Sample Date :12/20/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-Butanol	< 50	50	ug/L	EPA 8260B	12/26/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/26/2002
Toluene - d8 (Surr)	95.2		% Recovery	EPA 8260B	12/26/2002
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	12/26/2002
TPH as Diesel	61	50	ug/L	M EPA 8015	12/27/2002

Approved By:  Joel Kiff

Report Number : 30558

Date : 12/31/2002

**QC Report : Method Blank Data**

Project Name : **1155 Portola Ave., Livermore**

Project Number : **021220-SS3**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	< 50	50	ug/L	M EPA 8015	12/26/2002
TPH as Diesel	< 50	50	ug/L	M EPA 8015	12/27/2002
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-Butanol	< 50	50	ug/L	EPA 8260B	12/26/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/26/2002
Toluene - d8 (Surr)	100		%	EPA 8260B	12/26/2002
4-Bromofluorobenzene (Surr)	97.9		%	EPA 8260B	12/26/2002
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/26/2002
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	12/26/2002
Tert-Butanol	< 50	50	ug/L	EPA 8260B	12/26/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/26/2002
Toluene - d8 (Surr)	104		%	EPA 8260B	12/26/2002
4-Bromofluorobenzene (Surr)	103		%	EPA 8260B	12/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
-----------	----------------	------------------------	-------	-----------------	---------------

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 30558

Date : 12/31/2002

## QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 1155 Portola Ave.,

Project Number : 021220-SS3

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
TPH as Diesel	Blank	<50	1000	1000	962	919	ug/L	M EPA 8015	12/26/02	96.2	91.9	4.54	70-130	25
TPH as Diesel	Blank	<50	1000	1000	904	970	ug/L	M EPA 8015	12/27/02	90.4	97.0	7.05	70-130	25
Benzene	30558-01	<0.50	40.0	40.0	40.4	40.0	ug/L	EPA 8260B	12/26/02	101	100	0.994	70-130	25
Toluene	30558-01	<0.50	40.0	40.0	38.8	38.8	ug/L	EPA 8260B	12/26/02	97.0	97.0	0.0515	70-130	25
Tert-Butanol	30558-01	<5.0	200	200	204	205	ug/L	EPA 8260B	12/26/02	102	103	0.880	70-130	25
Methyl-t-Butyl Ether	30558-01	78	40.0	40.0	115	115	ug/L	EPA 8260B	12/26/02	91.6	90.9	0.740	70-130	25
Benzene	30561-02	<0.50	40.0	40.0	40.0	38.9	ug/L	EPA 8260B	12/26/02	100	97.2	2.86	70-130	25
Toluene	30561-02	<0.50	40.0	40.0	37.5	37.6	ug/L	EPA 8260B	12/26/02	93.8	94.1	0.319	70-130	25
Tert-Butanol	30561-02	<5.0	200	200	199	201	ug/L	EPA 8260B	12/26/02	99.6	101	0.979	70-130	25
Methyl-t-Butyl Ether	30561-02	<0.50	40.0	40.0	42.5	41.8	ug/L	EPA 8260B	12/26/02	106	105	1.54	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 30558

Date : 12/31/2002

QC Report : Laboratory Control Sample (LCS)

Project Name : 1155 Portola Ave.,

Project Number : 021220-SS3

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	12/26/02	95.8	70-130
Toluene	40.0	ug/L	EPA 8260B	12/26/02	96.3	70-130
Tert-Butanol	200	ug/L	EPA 8260B	12/26/02	99.7	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	12/26/02	92.4	70-130
Benzene	40.0	ug/L	EPA 8260B	12/26/02	98.6	70-130
Toluene	40.0	ug/L	EPA 8260B	12/26/02	95.6	70-130
Tert-Butanol	200	ug/L	EPA 8260B	12/26/02	95.2	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	12/26/02	106	70-130

KIFF ANALYTICAL, LLC

Approved By:  \_\_\_\_\_  
Joel Kiff

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

LAB: KIP

# SHELL Chain Of Custody Record

Lab Identification (if necessary):  
Address:  
City, State, Zip:

Shell Project Manager to be invoiced:

- SCIENCE & ENGINEERING
- TECHNICAL SERVICES
- OIL & GAS INDUSTRY

Lynn Walker

30558

INCIDENT NUMBER (SEE ONLY)

9 7 4 0 1 5 1 7

SAP or CRMT NUMBER (15/0000)

DATE: 12/20/02

PAGE: 1 of 1

SAMPLING COMPANY: **Blaine Tech Services** LOG CODE: **BTSS** SITE ADDRESS (Street and City): **1155 Portola Ave., Livermore** GLOBAL ID NO.: **pending**

ADDRESS: **1680 Rogers Avenue, San Jose, CA 95112** EDF DELIVERABLE TO (Responsible Party or Designee): **Debbie Arnold** PHONE NO.: **(408)224-4724** E-MAIL: **darnold@khm1.com** CONSULTANT PROJECT NO.: **BTS# 021220-953**

PROJECT CONTACT (Hardcopy or PDF Report to): **Leon Gearhart** SAMPLER NAME(S) (Print): **SUCHON SURB** LAB USE ONLY

TELEPHONE: **408-573-0555** FAX: **408-573-7771** E-MAIL: **lgearhart@blainetech.com**

TURNAROUND TIME (BUSINESS DAYS):  
 10 DAYS  5 DAYS  72 HOURS  48 HOURS  24 HOURS  LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT  UST AGENCY:

GC/MS MTBE CONFIRMATION: HIGHEST \_\_\_\_\_ HIGHEST per BORING \_\_\_\_\_ ALL \_\_\_\_\_

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED

### REQUESTED ANALYSIS

### FIELD NOTES:

Container/Preservative  
or PID Readings  
or Laboratory Notes

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTX	MTBE (0021B - 5ppb RL)	MTBE (0200B - 0.5ppb RL)	Oxygenates (5) by (0200B)	TPH-D	TEMPERATURE ON RECEIPT C°
		DATE	TIME									
	MW-1	12/20/02	1440	GW	5	X	X			X	X	-01
	MW-2		1535			X	X			X	X	-02
	MW-3		1405			X	X			X	X	-03
	MW-4		1506			X	X			X	X	-04

Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>12/23/02</u>	Time: <u>1015</u>
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) <u>[Signature]</u>	Date: <u>12/23/02</u>	Time: <u>1015</u>

DISTRIBUTION: White with final report, Green to File, Yellow and Pink to Client.

10/18/00 Revision

**APPENDIX G**

---

**UNAUTHORIZED RELEASE REPORT**



# UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FOR LOCAL AGENCY USE ONLY HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM.
----------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

REPORT DATE: <b>01/03/03</b>	CASE #
------------------------------	--------

REPORTED BY	NAME OF INDIVIDUAL FILING REPORT: <b>Karen Petryna</b>	PHONE: <b>(559) 645-9306</b>	SIGNATURE: <i>Karen E. Petryna</i>	
	REPRESENTING: <input checked="" type="checkbox"/> OWNER/OPERATOR <input type="checkbox"/> REGIONAL BOARD <input type="checkbox"/> LOCAL AGENCY <input type="checkbox"/> OTHER	COMPANY OR AGENCY NAME: <b>Shell Oil Products US</b>		
	ADDRESS: <b>P.O. Box 7869 Burbank CA 91510</b>			

RESPONSIBLE PARTY	NAME: <b>Shell Oil Products US</b> <input type="checkbox"/> UNKNOWN	CONTACT PERSON: <b>Karen Petryna</b>	PHONE: <b>(559) 645-9306</b>
	ADDRESS: <b>2255 N. Ontario Burbank CA 91504</b>		

SITE LOCATION	FACILITY NAME (IF APPLICABLE): <b>Shell Service Station</b>	OPERATOR:	PHONE:
	ADDRESS: <b>1155 Portola Ave Livermore CA 94550</b> CROSS STREET: <b>Murietta Blvd.</b>		

IMPLEMENTING AGENCIES	LOCAL AGENCY: <b>Livermore-Pleasanton Fire Department</b>	CONTACT PERSON: <b>Danielle Stefan</b>	PHONE: <b>(925) 451-2338</b>
	REGIONAL BOARD: <b>San Francisco Bay Region, RWQCB</b> <b>Chuck Headlee</b> <b>(510) 286-0435</b>		

SUBSTANCES INVOLVED	NAME: <b>MTBE, TPH-D</b>	QUANTITY LOST (GALLONS): <input checked="" type="checkbox"/> UNKNOWN
	OTHER: <input type="checkbox"/> UNKNOWN	

DISCOVERY/ABATEMENT	DATE DISCOVERED: <b>12/31/02</b>	HOW DISCOVERED: <input type="checkbox"/> TANK TEST <input type="checkbox"/> INVENTORY CONTROL <input checked="" type="checkbox"/> SUBSURFACE MONITORING <input type="checkbox"/> NUISANCE CONDITIONS	OTHER:
	DATE DISCHARGE BEGAN: <input checked="" type="checkbox"/> UNKNOWN		METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY):
	HAS DISCHARGE BEEN STOPPED? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, DATE:		<input type="checkbox"/> REMOVE CONTENTS <input type="checkbox"/> CLOSE TANK & REMOVE <input type="checkbox"/> REPAIR PIPING <input type="checkbox"/> REPAIR TANK <input type="checkbox"/> CLOSE TANK & FILL IN PLACE <input type="checkbox"/> CHANGE PROCEDURE <input type="checkbox"/> REPLACE TANK <input type="checkbox"/> OTHER:

SOURCE/CAUSE	SOURCE OF DISCHARGE: <input type="checkbox"/> TANK LEAK <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> PIPING LEAK <input type="checkbox"/> OTHER	CAUSE(S): <input type="checkbox"/> OVERFILL <input type="checkbox"/> RUPTURE/FAILURE <input type="checkbox"/> SPILL <input type="checkbox"/> CORROSION <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> OTHER
--------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

CASE TYPE	CHECK ONE ONLY: <input type="checkbox"/> UNDETERMINED <input type="checkbox"/> SOIL ONLY <input checked="" type="checkbox"/> GROUNDWATER <input type="checkbox"/> DRINKING WATER (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)
-----------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

CURRENT STATUS	CHECK ONE ONLY: <input type="checkbox"/> NO ACTION TAKEN <input type="checkbox"/> PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED <input type="checkbox"/> POLLUTION CHARACTERIZATION <input checked="" type="checkbox"/> LEAK BEING CONFIRMED <input type="checkbox"/> PRELIMINARY SITE ASSESSMENT UNDERWAY <input type="checkbox"/> POST-CLEANUP MONITORING IN PROGRESS <input type="checkbox"/> REMEDIATION PLAN <input type="checkbox"/> CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) <input type="checkbox"/> CLEANUP UNDERWAY
----------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

REMEDIAL ACTION	CHECK APPROPRIATE ACTION(S) (SEE INSTRUCTIONS FOR DETAILS): <input type="checkbox"/> CAP SITE (CS) <input type="checkbox"/> EXCAVATE & DISPOSE (ED) <input type="checkbox"/> REMOVE FREE PRODUCT (RF) <input type="checkbox"/> ENHANCED BIO-DEGRADATION (EB) <input type="checkbox"/> CONTAMINANT BARRIER (CB) <input type="checkbox"/> EXCAVATE & TREAT (ET) <input type="checkbox"/> PUMP & TREAT GROUNDWATER (GT) <input type="checkbox"/> REPLACE SUPPLY (RS) <input type="checkbox"/> VACUUM EXTRACT (VE) <input checked="" type="checkbox"/> OTHER (OT) <b>Monitor groundwater</b> <input type="checkbox"/> TREATMENT AT SOURCE (TS) <input type="checkbox"/> VENT SOIL (VS)
-----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

COMMENTS: **Groundwater samples from new monitoring wells. MAX MTBE = 190% max TPH-D = 61%**