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ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

ANNUAL GROUNDWATER MONITORING REPORT
NEW MEXICO "F" STATE TANK BATTERY
LEA COUNTY, NEW MEXICO

Prepared for:

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Annual Groundwater Monitoring Report

New Mexico "F" State Tank Battery

Lea County, New Mexico

1.0 INTRODUCTION

ChevronTexaco Exploration and Production (ChevronTexaco), as successor to Texaco Exploration and Production Inc. (Texaco) has retained Larson and Associates, Inc. (LA) to conduct groundwater remediation and monitoring activities at the former location of the New Mexico "F" State Tank Battery (Site). The Site is located approximately 2.6 miles northwest of Monument, New Mexico, and is situated in the northeast quarter (NE/4) of the southeast quarter (SE/4), Section 24, Township 19 South, Range 36 East, Lea County, New Mexico. Figure 1 presents a Site location and topographic map.

2.0 BACKGROUND

In July 1998, eight monitoring wells were installed, in order to investigate soil and groundwater contamination at the Site. Details of that investigation were submitted to the New Mexico Oil Conservation Division (NMOCD) in a Subsurface Investigation Report dated September 1998. In that report, Texaco made three proposals, as follows:

- Remove phase separated hydrocarbon (PSH) observed on the groundwater at well MW-1 and MW-2, by utilizing wells MW-1 and MW-2 as extraction wells.
- Place stockpiled soil from the excavation and monitoring well installations in the excavation, with a clay liner at the bottom of the pit.
- Conduct semi-annual groundwater monitoring at the Site.

The proposed activities were approved by the NMOCD in a letter dated January 20, 1999, with several conditions. The NMOCD agreed that the compacted clay should be placed over the filled excavation and compacted to 95% proctor density. A copy of the letter is included in Appendix A.

3.0 CURRENT ACTIVITIES

3.1 Recovery Wells

On October 13 and 14, 1999, LA supervised the installation of three (3) recovery wells (RW-1, RW-2 and RW-3), replacing MW-1, MW-2 and MW-9, respectively. Monitoring well MW-9 was installed on April 28, 1999 to delineate the PSH plume associated with MW-1 and MW-2. Scarborough Drilling, Inc., located in Lamesa, Texas, drilled the recovery wells from 67 to 75 feet below ground surface (bgs), using a truck mounted air rotary drilling rig. Water was used in the drilling process to expedite drilling, since the lithology had been described in the original wells (MW-1, MW-2 and MW-9). The recovery wells were constructed with 4-inch diameter schedule 40 PVC casing and screen. The well screen, approximately 20 feet in length, was placed in the boring with approximately 3 to 5 feet extending above the groundwater surface observed during drilling, and approximately 15 to 17 feet of the well screen was placed into groundwater. Graded silica sand was placed in the annular space between the boring and screen to approximately two (2) feet above the screen. A layer of bentonite chips, approximately three (3) feet thick, was placed above the sand, and hydrated with potable water. The remainder of the annulus was filled with cement and bentonite grout to approximately 1-foot bgs. The surface completion will be performed after approval by the New Mexico State Engineer (NMSE) to initiate remediation. Table 1 presents a summary of well drilling and installation details. Appendix B presents the well logs and well construction diagrams. Figure 2 presents the well locations.

3.2 Groundwater Monitoring

3.2.1 Groundwater Assessment

LA completed monitoring at the Site for the period of June 2002 through November 2002. Depth to groundwater measurements were collected from all monitoring wells (MW-3 through MW-8), recovery wells (RW-1 through RW-3) and two water wells (WW-1 and WW-2) on June 11, 2002 and November 26, 2002. Depth to groundwater ranged from 52.91 feet (RW-3) to 66.18 feet

(WW-2) below top of casing (TOC) on the June 11 event, and from 53.22 feet (RW-3) to 66.18 feet (WW-2) on the November 26 event. The groundwater gradient was approximately 0.005 feet per foot during each monitoring event. Groundwater flow at the Site has remained consistent, and is to the southeast. Table 2 provides a summary of depth to groundwater measurements. Figure 3 shows the groundwater gradient on June 11, 2002. Figure 4 shows the groundwater gradient on November 26, 2002.

Groundwater samples were collected on June 11 and 12, 2002, from all monitoring wells (MW-3 through MW-8), recovery well RW-3, and water wells WW-1 and WW-2. The groundwater samples were submitted under chain-of-custody control to TraceAnalysis, Inc., and analyzed for benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX), and chloride. Prior to sample collection, the wells were purged of a minimum of three (3) casing volumes of groundwater. The groundwater samples were collected using dedicated disposable PVC bailers. Table 3 presents a summary of the BTEX analysis. Table 4 presents a summary of the chloride analysis. Appendix C presents the laboratory report.

Referring to Table 3, BTEX was not reported above test method detection limits in any groundwater sample. Referring to Table 4, the highest reported chloride concentration was 180 milligrams per liter (mg/L) in MW-8. Chloride was below the WQCC standard (250 mg/L) in groundwater from all wells.

On November 26, 2002, groundwater samples were collected from all monitoring wells (MW-3 through MW-8), and water wells WW-1 and WW-2. A duplicate sample was also obtained from MW-4. The groundwater samples were submitted under chain-of-custody control to Environmental Lab of Texas I, Ltd., and analyzed for BTEX and chloride. Prior to sample collection, the wells were purged of a minimum of three (3) casing volumes of groundwater. The groundwater samples were

collected using dedicated disposable PVC bailers. Table 3 presents a summary of the BTEX analysis. Table 4 presents a summary of the chloride analysis. Appendix C presents the laboratory report.

Referring to Table 3, the only detectable benzene concentrations were reported in groundwater samples from wells MW-4 and MW-5, which reported 0.002 mg/L. The duplicate sample from MW-4 also reported
0.002 mg/L. The Water Quality Conservation Commission (WQCC) human health standard for benzene is 0.01 mg/L. Toluene and xylene were not observed in the groundwater samples above the method detection limit. Ethylbenzene (0.003 mg/L) was reported in the sample from well MW-5, and was below the WQCC human health standard of 0.75 mg/L. Referring to Table 4, the highest reported chloride concentration was 239 mg/L in MW-8. Chloride was below the WQCC standard (250 mg/L) in groundwater from all wells.

3.2.2 Waste Management and Disposition

Purged groundwater from the sampling activities was disposed at an NMOCD permitted salt water disposal facility operated by Chapparel Services, Inc., located in Eunice, New Mexico. Approximately 57.75 gallons of purged groundwater was disposed following each sampling event, for a total of approximately 115.50 gallons.

3.3 Phase-Separated Hydrocarbons

Phase-separated hydrocarbons were observed in two (2) recovery wells (RW-1 and RW-2) on June 11, 2002. Wells RW-1 and RW-2, installed in the vicinity of the pit, reported an apparent PSH thickness of 0.40 and 0.03 feet, respectively. Figure 5 presents a drawing showing the apparent thickness of PSH on June 11, 2002. Table 2 presents a summary of PSH thicknesses.

Phase-separated hydrocarbons were observed in three (3) recovery wells (RW-1, RW-2 and RW-3) on November 26, 2002. Wells RW-1, RW-2 and RW-3 reported an apparent PSH thickness of 0.53 feet, 0.21 feet and 0.07 feet, respectively. The PSH appears to be restricted to the area in the immediate vicinity of the former tank battery and pit. Figure 6 presents a drawing showing the apparent thickness of PSH on November 26, 2002. Table 2 presents a summary of PSH thicknesses.

3.4 Excavation Closure Activities

Stockpiled soil from the excavation and monitoring well installations was blended on Site and used to backfill the main excavation. A clay liner was placed near the surface and properly compacted to 95% proctor. At this time, testing has not been conducted to insure that the compaction design criteria have been met. Testing information will be submitted to the NMOCD under separate cover at a later date.

3.5 Remediation System Installation and Start-up

On February 17, 2003, the State of New Mexico, Office of the State Engineer (NMSE) approved an application submitted by Texaco for allocating water resources for remediation of the phase-separated hydrocarbons, subject to conditions. Texaco will initiate phase separated hydrocarbon remediation in accordance with the conditions stipulated by the NMSE.

4.0 CONCLUSIONS

1. Depth to groundwater ranged from 52.91 feet (RW-3) to 66.18 feet (WW-2) below top of casing (TOC) on the June 11,2002 monitoring event.
2. Depth to groundwater ranged from 53.22 feet (RW-3) to 66.18 feet (WW-2) on the November 26, 2002 monitoring event.

3. The groundwater gradient was approximately 0.005 feet per foot during each monitoring event.
4. Groundwater flow at the Site has remained consistent, and is from the northwest to the southeast.
5. From the June 11 and 12, 2002 sampling event, BTEX was not reported above test method detection limits in any groundwater sample. The highest reported chloride concentration was 180 milligrams per liter (mg/L) in MW-8. Chloride was below the WQCC standard (250 mg/L) in groundwater from all wells.
6. From the November 26, 2002 sampling event, the only detectable benzene concentrations were in groundwater from wells MW-4 and MW-5, which reported 0.002 mg/L. The duplicate sample from MW-4 also reported 0.002 mg/L. Toluene and xylene were not observed in the groundwater samples above the method detection limit. Ethylbenzene (0.003 mg/L) was reported in the sample from well MW-5. The highest reported chloride concentration was 239 mg/L in MW-8. Chloride was below the WQCC standard (250 mg/L) in groundwater from all wells.
7. Phase-separated hydrocarbons were observed in two (2) recovery wells (RW-1 and RW-2) on June 11, 2002, at an apparent thickness of 0.40 feet and 0.03 feet, respectively.
8. Phase-separated hydrocarbons were observed in three (3) recovery wells (RW-1, RW-2 and RW-3) on November 26, 2002, at an apparent thickness of 0.53 feet, 0.21 feet and 0.07 feet, respectively.

TABLES

Table 1: **Summary of Monitoring and Recovery Well Drilling and Completion Details**
Texaco Exploration and Production Inc., State of New Mexico "F" Tank Battery
NE/4, SE/4, Section 24, Township 19 South, Range 36 East
Lea County, New Mexico

Monitor Well	Installation Date	Drilled Depth, feet BGS	Well Depth Feet TOC	Ground Elevation, feet AMSL	Top of Casing Elevation, feet AMSL	Screen Interval, feet BGS
*MW-1	7/7/1998	73.0	--	3796.63	3696.65	51.87 - 72.27
**MW-2	7/21/1998	65.0	--	3689.73	3692.48	45.0 - 65.0
MW-3	7/21/1998	75.0	70.81	3696.95	3696.85	55.0 - 75.0
MW-4	7/21/1998	75.0	69.27	3696.15	3699.5	55.0 - 75.0
MW-5	7/22/1998	68.0	68.47	3691.13	3693.52	48.0 - 68.0
MW-6	7/22/1998	76.0	78.32	3704.51	3704.81	56.0 - 76.0
MW-7	7/22/1998	69.0	69.57	3691.63	3694.58	49.0 - 69.0
MW-8	7/22/1998	66.0	67.60	3692.63	3695.61	46.0 - 66.0
***MW-9	04/28/1999	65.7	--	--	--	45.64 - 65.7
RW-1	10/14/1999	74.0	--	--	--	54-73
RW-2	10/13/1999	72.0	--	--	--	47-66
RW-3	10/13/1999	65.0	-	-	-	47-66

Notes:

1. BGS: Denotes depth in feet below ground surface
2. AMSL: Denotes elevation in feet above mean sea level
3. TOC: Denotes depth in feet below top of well casing
4. ( ): Depth-to-groundwater corrected for PSH Thickness - PSH thinkness shown in parenthesis
5. *: Well replace by recovery well RW-1
6. **: Well replace by recovery well RW-2
7. ***: Well replaced by recovery well RW-3

Table 2: **Summary of Depth-to-Groundwater Measurements from Monitoring and Recovery Wells**
Texaco Exploration and Production Inc., State of New Mexico "F" Tank Battery
NE/4, SE/4, Section 24, Township 19 South, Range 36 East
Lea County, New Mexico

Date	*MW-1	**MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	***MW-9	RW-1	RW-2	RW-3	WW-1	WW-2
07/07/98	61.05	--	--	--	--	--	--	--	--	--	--	--	--	--
07/17/98	60.15 (4.78)	--	--	--	--	--	--	--	--	--	--	--	--	--
07/28/98	60.09 (4.96)	54.77 (1.71)	59.53	69.72	56.53	67.86	58.08	56.84	--	--	--	--	--	--
03/23/99	--	--	--	--	56.30	--	--	--	--	--	--	--	--	--
06/25/99	59.61 (4.44)	54.59 (3.06)	59.06	62.31	56.21	67.25	57.96	56.56	52.40	--	--	--	--	--
10/14/99	--	--	--	--	--	--	--	--	--	--	53.28	45.82	--	--
11/03/99	--	--	--	--	--	--	--	--	--	62.17	53.95	52.82	--	--
02/16/01	--	--	59.53	62.52	56.31	67.45	58.09	56.49	--	62.37 (0.04)	54.01	52.88	--	--
06/11/02	--	--	59.18	62.39	56.29	67.19	58.07	56.56	--	62.26 (0.40)	54.01 (0.03)	52.91	66.35	66.18
11/26/02	--	--	59.54	62.76	56.13	67.09	57.92	56.88	--	62.60 (0.53)	54.28 (0.21)	53.22 (0.07)	67.18****	66.18

Notes: All measurements in feet from top-of-casing

1. ( ): Depth-to-groundwater corrected for PSH Thickness - PSH thickness shown in parenthesis
2. *: Well replace by recovery well RW-1
3. **: Well replace by recovery well RW-2
4. ***: Well replaced by recovery well RW-3
5. --: No data available
6. ****: Questionable data

Table 3: **Summary of BTEX Analysis of Groundwater Samples from Monitoring and Water Wells**
Texaco Exploration and Production Inc., State of New Mexico "F" Tank Battery
NE/4, SE/4, Section 24, Township 19 South, Range 36 East
Lea County, New Mexico

Well Number	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylene mg/L	Total BTEX mg/L
NMWQCC Standard		0.01 mg/L	0.75 mg/L	0.75 mg/L	0.62 mg/L	
*MW-1	28-July-98	N/S	N/S	N/S	N/S	N/S
**MW-2	28-July-98	N/S	N/S	N/S	N/S	N/S
MW-3	28-July-98	0.003	<0.001	<0.001	0.002	0.005
	16-Feb-01	<0.005	<0.005	<0.005	<0.005	<0.020
	12-June-02	<0.005	<0.005	<0.005	<0.005	<0.005
	26-Nov-02	<0.001	<0.001	<0.001	<0.002	<0.005
MW-4	28-July-98	<0.001	<0.001	<0.001	<0.001	<0.001
	16-Feb-01	<0.005	<0.005	<0.005	0.008	0.008
	12-June-02	<0.005	<0.005	<0.005	<0.005	<0.005
	26-Nov-02	0.002	<0.001	<0.001	<0.005	<0.009
MW-5	28-July-98	<0.001	<0.001	<0.001	<0.001	<0.001
	16-Feb-01	<0.005	<0.005	<0.005	<0.005	<0.020
	12-June-02	<0.005	<0.005	<0.005	<0.005	<0.005
	26-Nov-02	0.002	<0.001	0.003	<0.002	<0.008
MW-6	28-July-98	<0.001	<0.001	<0.001	<0.001	<0.001
	16-Feb-01	<0.005	<0.005	0.006	0.006	0.012
	12-June-02	<0.001	<0.001	<0.001	<0.001	<0.001
	26-Nov-02	<0.001	<0.001	<0.001	<0.002	<0.005
MW-7	28-July-98	<0.001	<0.001	<0.001	<0.001	<0.001
	16-Feb-01	<0.005	<0.005	<0.005	<0.005	<0.020
	12-June-02	<0.005	<0.005	<0.005	<0.005	<0.005
	26-Nov-02	<0.001	<0.001	<0.001	<0.002	<0.005

Table 3: **Summary of BTEX Analysis of Groundwater Samples from Monitoring and Water Wells**
Texaco Exploration and Production Inc., State of New Mexico "F" Tank Battery
NE/4, SE/4, Section 24, Township 19 South, Range 36 East
Lea County, New Mexico

Well Number	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylene mg/L	Total BTEX mg/L
NMWQCC Standard		**0.01 mg/L**	**0.75 mg/L**	**0.75 mg/L**	**0.62 mg/L**	
MW-8	28-July-98	<0.001	<0.001	<0.001	<0.001	<0.001
	16-Feb-01	<0.005	<0.005	<0.005	<0.005	<0.020
	11-June-02	<0.005	<0.005	<0.005	<0.005	<0.005
	26-Nov-02	<0.001	<0.001	<0.001	<0.002	<0.005
***MW-9	--	--	--	--	--	--
RW-3	11-June-02	<0.005	<0.005	<0.005	<0.005	<0.005
WW-1	28-July-98	<0.001	<0.001	<0.001	<0.001	<0.001
	12-June-02	<0.001	<0.001	<0.001	<0.001	<0.001
	26-Nov-02	<0.001	<0.001	<0.001	<0.002	<0.005
WW-2	12-June-02	<0.001	<0.001	<0.001	<0.001	<0.001
	26-Nov-02	<0.001	<0.001	<0.001	<0.002	<0.005
Duplicate (MW-3)	28-July-98	0.003	<0.001	<0.001	0.002	0.005
Duplicate (MW-6)	16-Feb-01	<0.005	<0.005	<0.005	<0.005	<0.020
Duplicate (MW-4)	26-Nov-02	0.002	<0.001	<0.001	<0.004	<0.008

Notes: Analysis performed by Trace Analysis, Inc., Lubbock, Texas

Analysis of 11/26/02 performed by Environmental Lab of Texas I, Ltd., Odessa, Texas

1. mg/L: Milligrams per liter
2. N/S: Phase-separated hydrocarbons in well - no sample collected
3. <: Denotes analyte concentration below test method detection limit
4. --: No data available
5. *: Well replaced by recovery well RW-1
6. **: Well replaced by recovery well RW-2
7. ***: Well replaced by recovery well RW-3

Table 4: Summary of General Chemistry Analysis of Groundwater Samples from Monitoring and Water Wells
Texaco Exploration and Production Inc., State of New Mexico "F" Tank Battery (Closed)
NE/4, SE/4, Section 24, Township 19 South, Range 36 East
Lea County, New Mexico

Well Number	Sample Date	pH s.u.	Cabonate Alkalinity mg/L	Bicarbonate Alkalinity mg/L	Total Alkalinity mg/L	Chloride mg/L	Fluoride mg/L	Nitrate mg/L	Sulfate mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Hardness mg/L	TDS mg/L
NMWQCC Standards						**250**	**1.6**	**10**							**1000**
*MW-1	28-July-98	N/S	N/S	N/S	N/S	N/S	--	--	N/S	N/S	N/S	N/S	N/S	N/S	N/S
**MW-2	28-July-98	N/S	N/S	N/S	N/S	N/S	--	--	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MW-3	28-July-98	7.6	<1.0	160	160	36	--	--	58	76	6.5	3.8	27	--	330
	16-Feb-01	--	<1.0	204	204	31	1.9	3.6	55	83.3	9.75	<5.0	29.8	--	420
	12-June-02	--	--	--	--	27.1	--	--	--	--	--	--	--	--	--
	26-Nov-02		--	--	--	31.9	--	--	--	--	--	--	--	--	--
MW-4	28-July-98	7.6	<1.0	170	170	94	--	--	42	69	5.9	3.9	63	--	410
	16-Feb-01	--	<1.0	236	236	170	2.0	1.7	42	115	11.3	5.52	86.6	--	640
	12-June-02	--	--	--	--	85.6	--	--	--	--	--	--	--	--	--
	26-Nov-02		--	--	--	160	--	--	--	--	--	--	--	--	--
MW-5	28-July-98	7.6	<1.0	150	150	360	--	--	93	240	20	5.6	46	--	1,000
	16-Feb-01	--	<1.0	192	192	120	1.7	4.4	91	149	15.2	<5.0	34.0	--	640
	12-June-02	--	--	--	--	90.2	--	--	--	--	--	--	--	--	--
	26-Nov-02		--	--	--	59.1	--	--	--	--	--	--	--	--	--
MW-6	28-July-98	7.2	<1.0	140	140	43	--	--	90	86	7.9	3.5	28	--	360
	16-Feb-01	--	<1.0	170	170	52	1.6	4.4	120	118	12.7	<5.0	32.2	--	520
	12-June-02	--	--	--	--	54.1	--	--	--	--	--	--	--	--	--
	26-Nov-02		--	--	--	65	--	--	--	--	--	--	--	--	--

Table 4: Summary of General Chemistry Analysis of Groundwater Samples from Monitoring and Water Wells
Texaco Exploration and Production Inc., State of New Mexico "F" Tank Battery (Closed)
NE/4, SE/4, Section 24, Township 19 South, Range 36 East
Lea County, New Mexico

Well Number	Sample Date	pH s.u.	Cabonate Alkalinity mg/L	Bicarbonate Alkalinity mg/L	Total Alkalinity mg/L	Chloride mg/L	Fluoride mg/L	Nitrate mg/L	Sulfate mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Hardness mg/L	TDS mg/L
NMWQCC Standards						**250**	**1.6**	**10**							**1000**
MW-7	28-July-98	7.6	<1.0	160	160	82	--	--	93	117	10	3.9	36	--	510
	16-Feb-01	--	<1.0	200	200	150	1.6	6.7	96	170	17.5	<5.0	38.7	--	700
	12-June-02	--	--	--	--	96.7	--	--	--	--	--	--	--	--	--
	26-Nov-02		--	--	--	133	--	--	--	--	--	--	--	--	--
MW-8	28-July-98	7.5	<1.0	170	170	29	--	--	100	96	8.3	3.6	27	--	390
	16-Feb-01	--	<1.0	172	172	94	1.7	4.2	75	129	12.8	<5.0	31.3	--	560
	11-June-02	--	--	--	--	180	--	--	--	--	--	--	--	--	--
	26-Nov-02		--	--	--	239	--	--	--	--	--	--	--	--	--
***MW-9		--	--	--	--	--	--	--	--	--	--	--	--	--	--
WW-1	28-July-98	7.4	<1.0	180	180	100	--	--	71	102	14	3.2	33	313	480
	12-June-02	--	--	--	--	43.6	--	--	--	--	--	--	--	--	--
	26-Nov-02		--	--	--	80	--	--	--	--	--	--	--	--	--
WW-2	11-June-02	--	--	--	--	53.7	--	--	--	--	--	--	--	--	--
	26-Nov-02	--	--	--	--	70.9	--	--	--	--	--	--	--	--	--
RW-3	11-June-02	--	--	--	--	25.9	--	--	--	--	--	--	--	--	--

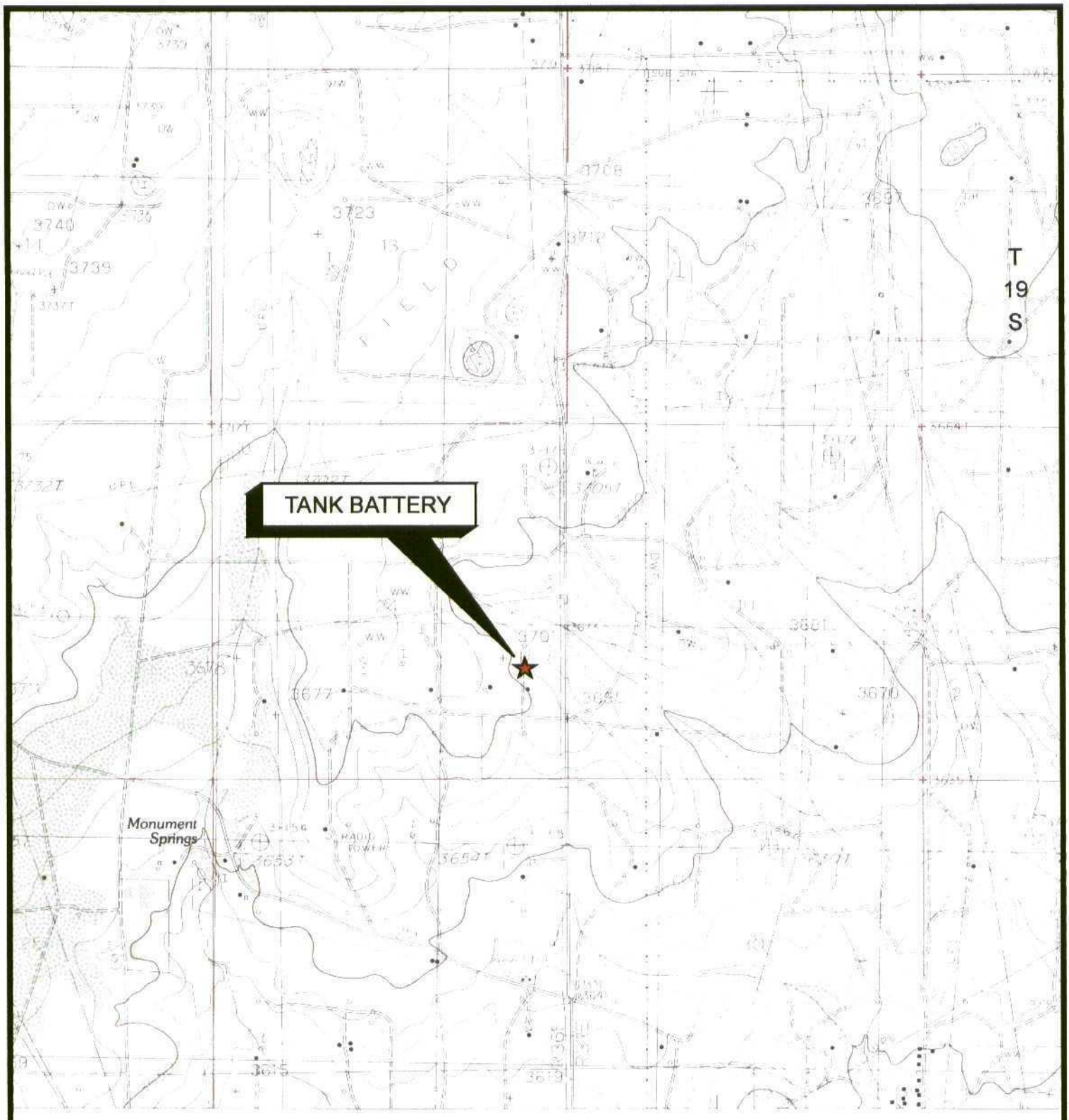
Table 4: Summary of General Chemistry Analysis of Groundwater Samples from Monitoring and Water Wells
Texaco Exploration and Production Inc., State of New Mexico "F" Tank Battery (Closed)
NE/4, SE/4, Section 24, Township 19 South, Range 36 East
Lea County, New Mexico

Well Number	Sample Date	pH s.u.	Cabonate Alkalinity mg/L	Bicarbonate Alkalinity mg/L	Total Alkalinity mg/L	Chloride mg/L	Fluoride mg/L	Nitrate mg/L	Sulfate mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Hardness mg/L	TDS mg/L
NMWQCC Standards						**250**	**1.6**	**10**							**1000**
Duplicate (MW-3)	28-July-98	8	<1.0	160	160	35	--	--	57	75	6.5	3.7	26	--	310
Duplicate (MW-6)	16-Feb-01	--	<1.0	168	168	51	1.6	4.3	120	118	12.5	<5.0	32.0	--	510
Duplicate (MW-4)	26-Nov-02		--	--	--	160	--	--	--	--	--	--	--	--	--

Notes:

1. mg/L: Milligrams per liter
2. S.U. Standard units
3. N/S: No sample collected.
4. *: Well replaced by recovery well RW-1 on 10/14/99
5. **: Well replaced by recovery well RW-2 on 10/13/99
6. ***: Well installed for monitoring PSH, and replaced by recovery well RW-3 on 10/13/99
7. NMWQCC: New Mexico Water Quality Control Standards presented in mg/L

FIGURES



TAKEN FROM U.S.G.S.
MONUMENT NORTH, NEW MEXICO 1985
7.5' QUADRANGLES

SCALE: 1"=2000'

FIGURE #1

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION, INC.

STATE of NEW MEXICO "F" TANK BATTERY
NE/4, SE/4, SEC. 24, T19S, R36E

TOPOGRAPHIC MAP

DATE: 2/11/03
NAME:
FILE: 0-0114

Aarson & Associates, Inc.
Environmental Consultants

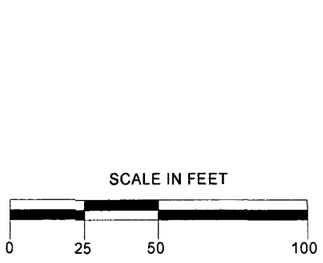
MONITORING WELL DATA

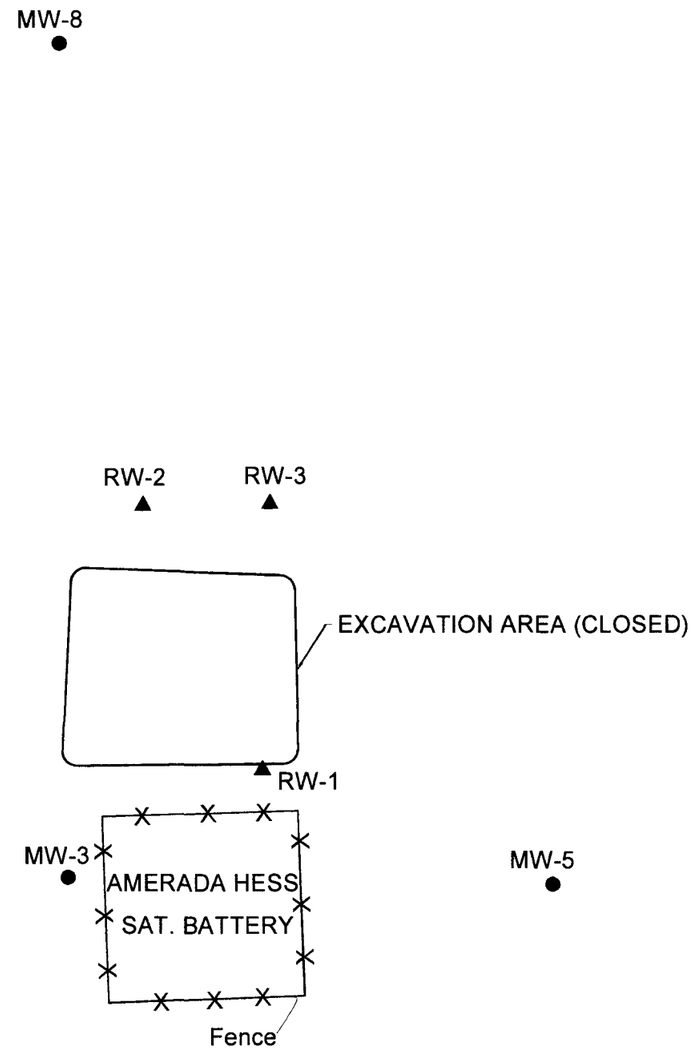
Monitoring Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
✱ MW-1	3796.63	3696.65
✱ MW-2	3689.73	3692.48
MW-3	3696.95	3696.85
MW-4	3696.15	3699.50
MW-5	3691.13	3693.52
MW-6	3704.51	3704.81
MW-7	3691.63	3694.58
MW-8	3692.63	3695.61
✱ MW-9	-	-

✱ WELL REPLACED by RECOVERY WELL

WATER WELL DATA

WATER WELL	GROUND ELEV. FEET AMSL	TOP-OF-CASING ELEV., FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84





EXPLANTION

- MW-3 ● MONITORING WELL LOCATION
- WW-1 ◆ WATER WELL LOCATION
- RW-1 ▲ RECOVERY WELL LOCATION

FIGURE NO.2

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION, INC.

STATE of NEW MEXICO "F" TANK BATTERY
NE/4, SE/4, SECTION 24, T19S, R36E

SITE DRAWING

DATE: 2/11/03
DWN. BY:
FILE: 0-0114

LAarson & Associates, Inc.
Environmental Consultants

MONITORING WELL DATA

Monitoring Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
MW-1	3796.63	3696.65
MW-2	3689.73	3692.48
MW-3	3696.95	3696.85
MW-4	3696.15	3699.50
MW-5	3691.13	3693.52
MW-6	3704.51	3704.81
MW-7	3691.63	3694.58
MW-8	3692.63	3695.61
MW-9	-	-

WELL REPLACED by RECOVERY WELL

WATER WELL DATA

WATER WELL	GROUND ELEV. FEET AMSL	TOP-OF-CASING ELEV., FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

EXPLANATION

MW-3 / 3637.67 — MONITORING WELL LOCATION, and GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 6/11/02

WW-1 — WATER WELL LOCATION

RW-1 — RECOVERY WELL LOCATION

3637.5 — CONTOUR OF GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 6/11/02

GROUNDWATER FLOW DIRECTION

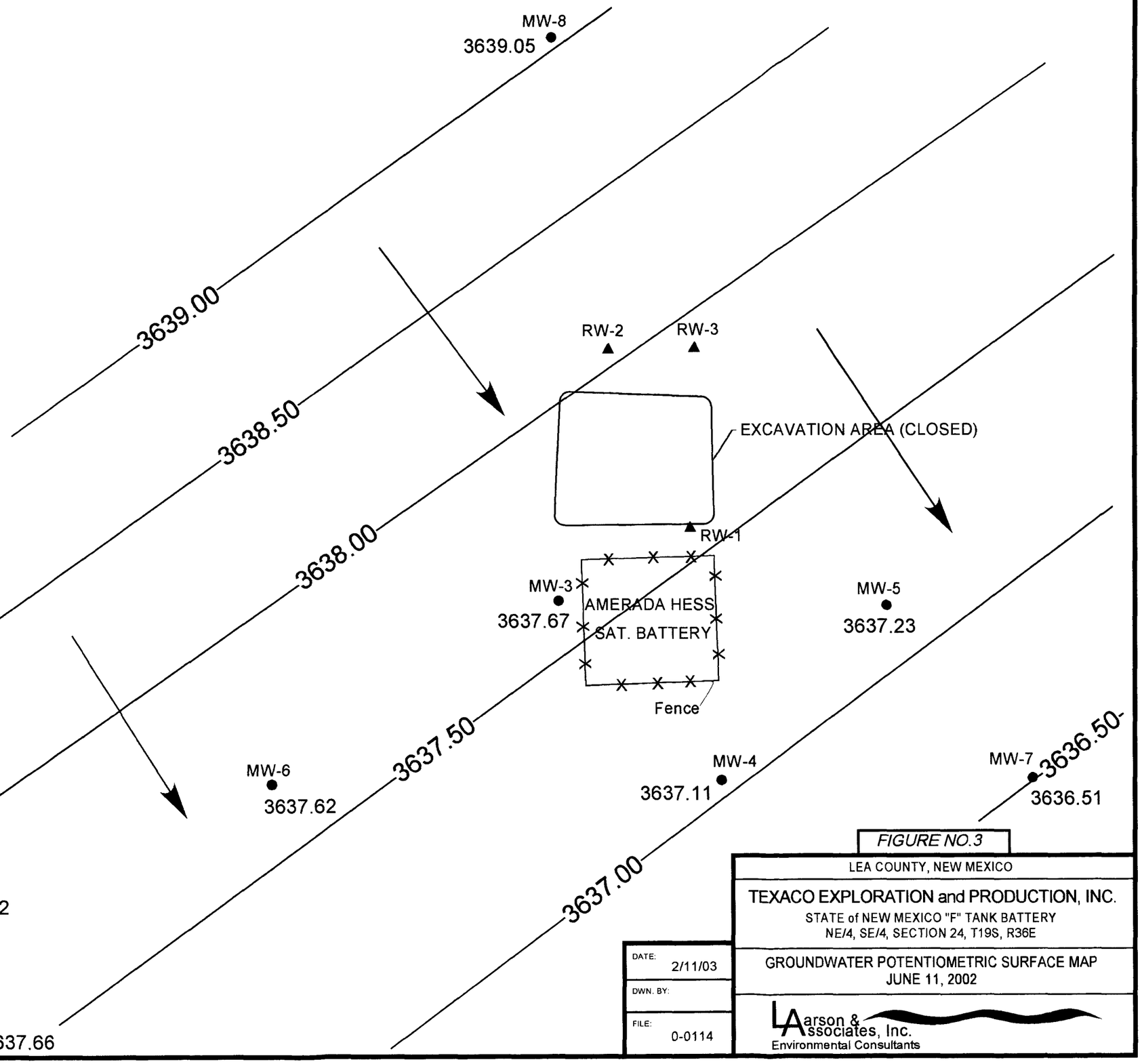


FIGURE NO.3

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION, INC.

STATE of NEW MEXICO "F" TANK BATTERY
NE/4, SE/4, SECTION 24, T19S, R36E

GROUNDWATER POTENTIOMETRIC SURFACE MAP
JUNE 11, 2002

DATE: 2/11/03
DWN. BY:
FILE: 0-0114

Larson & Associates, Inc.
Environmental Consultants

MONITORING WELL DATA

Monitoring Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
MW-1	3796.63	3696.65
MW-2	3689.73	3692.48
MW-3	3696.95	3696.85
MW-4	3696.15	3699.50
MW-5	3691.13	3693.52
MW-6	3704.51	3704.81
MW-7	3691.63	3694.58
MW-8	3692.63	3695.61
MW-9	-	-

WELL REPLACED by RECOVERY WELL

WATER WELL DATA

WATER WELL	GROUND ELEV. FEET AMSL	TOP-OF-CASING ELEV., FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

EXPLANATION

MW-3 ● 3637.31 — MONITORING WELL LOCATION, and GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 11/26/02

WW-1 ◆ — WATER WELL LOCATION

RW-1 ▲ — RECOVERY WELL LOCATION

3637.5 — CONTOUR OF GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 11/26/02

GROUNDWATER FLOW DIRECTION

MW-8 ● 3638.73

3639.0

3638.5

3638.0

3637.5

3637.0

RW-2 ▲

RW-3 ▲

EXCAVATION AREA (CLOSED)

RW-1 ▲

MW-3 ● 3637.31

AMERADA HESS SAT. BATTERY

Fence

MW-5 ● 3637.39

MW-6 ● 3637.72

MW-4 ● 3636.74

MW-7 ● 3636.66

WW-1 ◆

WW-2 ◆ 3637.66

SCALE IN FEET

0 25 50 100

NORTH

FIGURE NO.4

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION, INC.

STATE of NEW MEXICO "F" TANK BATTERY
NE/4, SE/4, SECTION 24, T19S, R36E

GROUNDWATER POTENTIOMETRIC SURFACE MAP
NOVEMBER 26, 2002

DATE: 2/11/03

DWN. BY:

FILE: 0-0114

Larson & Associates, Inc.
Environmental Consultants

MONITORING WELL DATA

	Monitoring Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
✱	MW-1	3796.63	3696.65
✱	MW-2	3689.73	3692.48
	MW-3	3696.95	3696.85
	MW-4	3696.15	3699.50
	MW-5	3691.13	3693.52
	MW-6	3704.51	3704.81
	MW-7	3691.63	3694.58
	MW-8	3692.63	3695.61
✱	MW-9	-	-

✱ WELL REPLACED by RECOVERY WELL

WATER WELL DATA

WATER WELL	GROUND ELEV. FEET AMSL	TOP-OF-CASING ELEV., FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

EXPLANATION

MW-3 ● MONITORING WELL LOCATION

WW-1 ◆ WATER WELL LOCATION

RW-1 ▲ RECOVERY WELL LOCATION, AND
0.40 APPARENT PSH THICKNESS, FEET 6/11/02

~0.1~ CONTOUR OF APPARENT PSH THICKNESS, FEET, 6/11/02

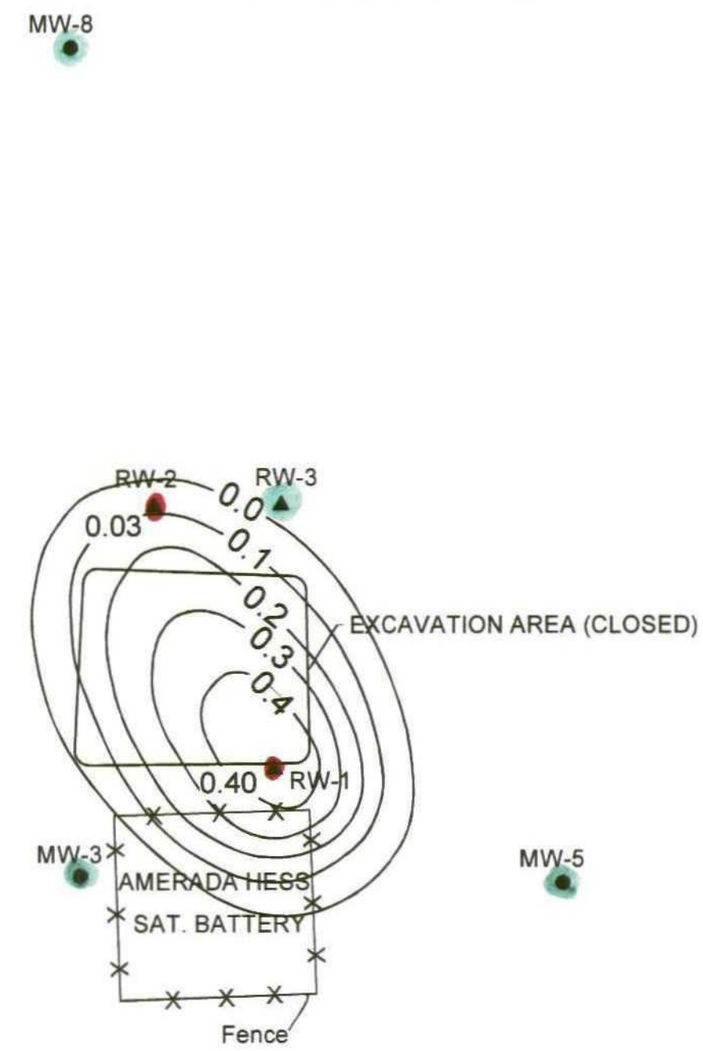


FIGURE NO.5

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION, INC.

STATE of NEW MEXICO "F" TANK BATTERY
NE/4, SE/4, SECTION 24, T19S, R36E

APPARENT PSH THICKNESS MAP
JUNE 11, 2002

DATE: 2/11/03
DWN. BY:
FILE: 0-0114

Larson & Associates, Inc.
Environmental Consultants

MONITORING WELL DATA

	Monitoring Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
✱	MW-1	3796.63	3696.65
✱	MW-2	3689.73	3692.48
	MW-3	3696.95	3696.85
	MW-4	3696.15	3699.50
	MW-5	3691.13	3693.52
	MW-6	3704.51	3704.81
	MW-7	3691.63	3694.58
	MW-8	3692.63	3695.61
✱	MW-9	-	-

✱ WELL REPLACED by RECOVERY WELL

WATER WELL DATA

WATER WELL	GROUND ELEV. FEET AMSL	TOP-OF-CASING ELEV., FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

EXPLANATION

MW-3 ● MONITORING WELL LOCATION

WW-1 ◆ WATER WELL LOCATION

RW-1 ▲ RECOVERY WELL LOCATION, AND
0.40 APPARENT PSH THICKNESS, FEET 11/26/02

~0.1~ CONTOUR OF APPARENT PSH THICKNESS, FEET, 11/26/02

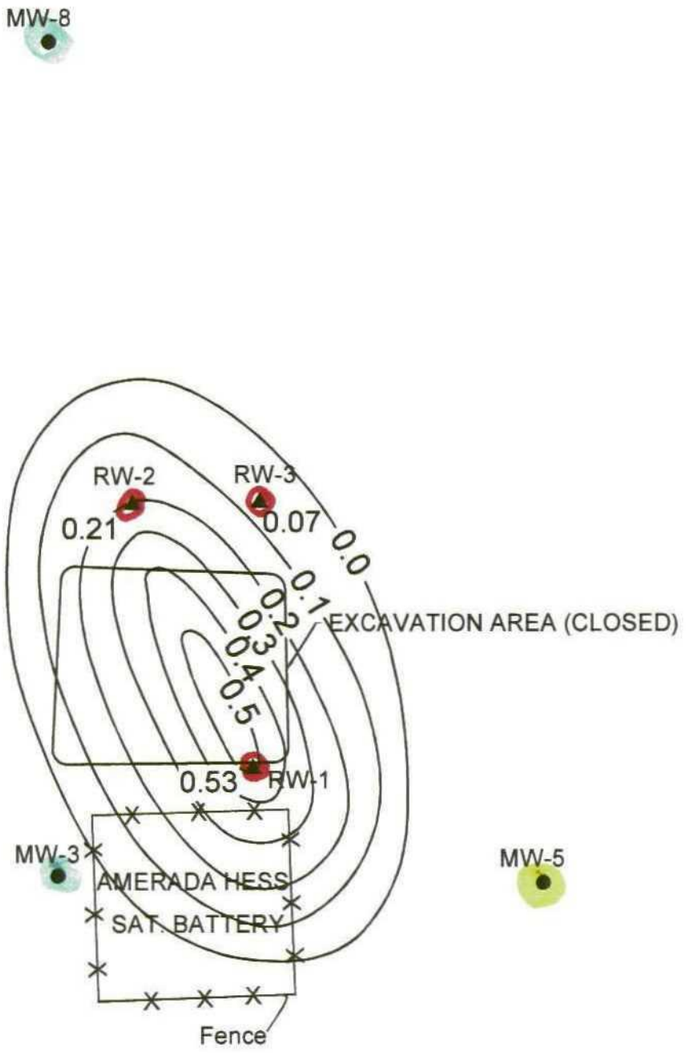


FIGURE NO.6

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION, INC.

STATE of NEW MEXICO "F" TANK BATTERY
NE/4, SE/4, SECTION 24, T19S, R36E

APPARENT PSH THICKNESS MAP
NOVEMBER 26, 2002

DATE: 2/11/03
DWN. BY:
FILE: 0-0114

Larson & Associates, Inc.
Environmental Consultants

APPENDIX A

NMOCD Correspondence

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

January 20, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-595

Mr. Rodney Bailey
Texaco Exploration and Production, Inc.
205 E. Bender Blvd.
Hobbs, New Mexico 88240

RE: SOIL AND GROUND WATER REMEDIATION
NEW MEXICO "F" STATE TANK BATTERY

Dear Mr. Bailey:

The New Mexico Oil Conservation Division (OCD) has reviewed Texaco Exploration and Production, Inc.'s (TEPI) January 7, 1999 "SUBSURFACE INVESTIGATION REPORT, TEXACO EXPLORATION AND PRODUCTION, INC., NEW MEXICO "F" STATE TANK BATTERY, LEA COUNTY, NEW MEXICO, SEPTEMBER 1998" and September 22, 1998 "SUBSURFACE INVESTIGATION REPORT, TEXACO EXPLORATION AND PRODUCTION, INC., NEW MEXICO "F" STATE TANK BATTERY, LEA COUNTY, NEW MEXICO, SEPTEMBER 1998" which were submitted on behalf of TEPI by their consultant Highlander Environmental Corp. These documents contain the results of TEPI's investigation of soil and ground water contamination at TEPI's New Mexico "F" State Tank Battery. The documents also contain TEPI's plan for remediation of soils and ground water.

The above referenced remediation plan is approved with the following conditions:

1. The clay liner to be placed in the former excavation will be placed near the surface instead of at the base of the excavation so that it can be properly compacted and will be covered at the surface with a minimum of 1 foot of top soil. The liner will be compacted to 95% proctor and TEPI will supply the OCD with testing certification that the compaction design criteria have been met.

2. All below grade piping used to convey contaminated fluids will be pressure tested to three psi above operating pressure prior to operation.

Apt -4 A

3. All wastes generated will be disposed of at an OCD approved facility.

4. The annual report will be submitted to the OCD Santa Fe Office on April 1 of each year with a copy provided to the OCD Hobbs District Office. The report will contain the following information:

   a. A summary of all remediation and monitoring activities which occured during the past calendar year including conclusions and recommendations

   b. A summary of the laboratory analytic results of water quality sampling of the monitor and recovery wells including copies of the laboratory analytical data and associated quality assurance/quality control (QA/QC) data for the past calendar year. The summary data from each monitoring point will be presented in tabular form and will list all past and present sampling results.

   c. A ground water potentiometric map showing the direction and magnitude of the hydraulic gradient.

   d. A product thickness map based on the thickness of free phase product on ground water in all monitor and recovery wells.

   e. Isopleth maps for all contaminants of concern (ie. BTEX, chloride, etc.)

   f. The total semiannual volume of fluid pumped from each recovery well and the total pumped to date.

   g. The total semiannual volume of product recovered and the total volume recovered to date.

   h. The disposition of all wastes generated.

   i. As built construction details of the recovery system.

   j. The results of all below grade line testing and the final liner compaction results.

5. The OCD cannot consider the site for final closure until ground water monitoring from all monitoring wells is below New Mexico Water Quality Control Commission standards for 8 consecutive quarters.

6. TEPI will notify the OCD Santa Fe Office at least one week in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples.

Please be advised that OCD approval does not relieve TEPI of liability if the remediation plan fails to adequately remediate or monitor contamination related to TEPI's activities. In addition, OCD approval does not relieve TEPI of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mark Larson, Highlander Environmental Corp.

APPENDIX B

Boring Logs and Well Construction Records

Project No: 1135

Project: New Mexico "F" State

Client: Texaco Exploration and Production Inc.

Location: Lea County, Ne Mexico

Well ID: RW-1

Enclosure: 1 of 1

Engineer: MJL

SUBSURFACE PROFILE

Depth	Symbol	Description	Depth/Elev.	Well Construction	Remarks
0		Ground Surface	100		
		Caliche 7.5YR 8/2 to 8/3, pinkish white to pink, fill material	94		Locking Water-Tight Cap
		Sandstone 7.5YR 8/2, pinkish white, very fine grained quartz sand, interbedded with indurated caliche	88		
		Caliche 7.5YR 7/3 to 6/3, pink to light brown, indurated, hard	81		
20		*Sandstone* 7.5YR 6/3, light brown, very fine grained quartz sand, moderately well cemented	79 / 76		4' Sch. 40 PVC Riser (Threaded)
		Caliche 7.5YR 7/3 to 6/3, pink to brown, indurated, hard			
		Sandstone 10YR 6/4, light yellowish brown, very fine grained quartz sand, dry to slightly moist, organic odor, interbedded with minor indurated caliche units			
40		Coarse grained quartz sand below 55', drill bit wet @ 60', organic odor			Bentonite Chips
					8-16 Silica Sand
60					4" Sch. 40 PVC Screen, 0.02" Slot (Threa4"
					4" Sch. 40 PVC Cap (Threaded)
			25		
		TD: 75'			
80					

Drilled By: Scarborough Drilling, Inc.

Drill Method: Rotary (Water)

Drill Date: 14-Oct-99

Highlander Environmental
1910 N. Big Spring
Midland, Texas 79705
(915) 682-4559

Hole Size: 7 7/8"

Datum: 100 Feet

Sheet: 1 of 1

Project No: 1135

Project: New Mexico "F" State

Client: Texaco Exploration and Production Inc.

Location: Lea County, Ne Mexico

Well ID: RW-2

Enclosure: 1 of 1

Engineer: MJL

SUBSURFACE PROFILE

Depth	Symbol	Description	Depth/Elev	Well Construction	Remarks
0		Ground Surface	100		
		Caliche White, dense, with some consolidated limestone *Interbedded with tan, fine grained sand at 15'* Dense at 25'			Locking Water-Tight Cap 4' Sch. 40 PVC Riser (Threaded)
20			72		
		Sand and Sandstone Tan, fine grained sand and cemented sandstone, dense at 35' Damp at 51', loose, with traces of gravel			Bentonite Chips 8-16 Silica Sand 4" Sch. 40 PVC Screen, 0.02" Slot (Threa4" 4" Sch. 40 PVC Cap (Threaded)
40					
60			33		
		TD: 67'			
80					

Drilled By: Scarborough Drilling, Inc.

Drill Method: Rotary (Water)

Drill Date: 13-Oct-99

Highlander Environmental
1910 N. Big Spring
Midland, Texas 79705
(915) 682-4559

Hole Size: 7 7/8"

Datum: 100 Feet

Sheet: 1 of 1

Project No: 1135

Project: New Mexico "F" State

Client: Texaco Exploration and Production Inc.

Location: Lea County, Ne Mexico

Well ID: RW-3

Enclosure: 1 of 1

Engineer: MJL

SUBSURFACE PROFILE

Depth	Symbol	Description	Depth/Elev.	Well Construction	Remarks
0		Ground Surface	100		
		Caliche 7.5YR 7/2 to 5/4, pinkish gray to brown, dense, indurated layers of crystalline limestone			Locking Cover and Water-Tight Cap
			80		4" Sch. 40 PVC Riser (Threaded)
20		*Sand* 7.5YR 5/6 to 6/6, strong brown to reddish yellow, very fine grained quartz sand, dry, loose	78		
			76		
		Caliche 7.5YR 7/2 to 5/4, pinkish gray to brown, massive, hard			Cement/Bentonite Grout
		Sand 7.5YR 5/4 to 5/6, brown to strong brown, very fine to fine grained quartz sand, soft, moderately cemented Interbedded with thin beds of czaliche, approximately 0.5 to 1 feet thick			
40					Bentonite Chips
			50		
		Clayey Sand 7.5YR 5/3 to 6/3, brown to light brown, very fine grained quartz sand, moderately soft, moist			8-16 Silica Sand
			44.5		4" Sch. PVC Screen, 0.02" Slot (Threaded4
60		*Sand* 7.5YR 6/3, brown, very fine to fine grained quartz sand, interbedded with minor clay, moderately sorted, loose			
			35		4" Sch. PVC Cap (Threaded)
		TD: 67'			
80					

Drilled By: Scarborough Drilling, Inc.

Drill Method: Rotary (Air)

Drill Date: 13-Oct-99

Highlander Environmental
1910 N. Big Spring
Midland, Texas 79705
(915) 682-4559

Hole Size: 7 7/8"

Datum: 100 Feet

Sheet: 1 of 1

APPENDIX C

Laboratory Analyses and Chain of Custody Documentation

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, Tx. 79710

Report Date: July 8, 2002

Order ID Number: A02061323

Project Number: 01-0114
Project Name: Texaco-New Mexico F
Project Location: New Mexico

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
199212	MW-8	Water	6/11/02	13:00	6/13/02
199213	RW-3	Water	6/11/02	14:00	6/13/02
199214	MW-7	Water	6/12/02	11:05	6/13/02
199215	MW-3	Water	6/12/02	11:50	6/13/02
199216	MW-5	Water	6/12/02	12:22	6/13/02
199217	MW-4	Water	6/12/02	12:57	6/13/02
199218	MW-6	Water	6/12/02	13:35	6/13/02
199219	WW-2	Water	6/12/02	13:50	6/13/02
199220	WW-1	Water	6/12/02	14:00	6/13/02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed. Note: the RDL is equal to MQL for all organic analytes including TPH.
The test results contained within this report meet all requirements of LAC 33:I unless otherwise noted.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 199212 - MW-8

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21094	Date Analyzed:	6/15/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20078	Date Prepared:	6/15/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.104	mg/L	5	0.10	104	70 - 130
4-BFB		0.0989	mg/L	5	0.10	98	70 - 130

Sample: 199212 - MW-8

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC21131	Date Analyzed:	6/14/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB20110	Date Prepared:	6/14/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		180	mg/L	5	1

Sample: 199213 - RW-3

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21033	Date Analyzed:	6/13/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20033	Date Prepared:	6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0915	mg/L	5	0.10	91	70 - 130
4-BFB		0.0911	mg/L	5	0.10	91	70 - 130

Sample: 199213 - RW-3

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC21179	Date Analyzed:	6/18/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB20151	Date Prepared:	6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		25.9	mg/L	5	1

Sample: 199214 - MW-7

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21033 Date Analyzed: 6/13/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20033 Date Prepared: 6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0933	mg/L	5	0.10	93	70 - 130
4-BFB		0.0912	mg/L	5	0.10	91	70 - 130

Sample: 199214 - MW-7

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC21179 Date Analyzed: 6/18/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB20151 Date Prepared: 6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		96.7	mg/L	5	1

Sample: 199215 - MW-3

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21033 Date Analyzed: 6/13/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20033 Date Prepared: 6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0899	mg/L	5	0.10	89	70 - 130
4-BFB		0.0904	mg/L	5	0.10	90	70 - 130

Sample: 199215 - MW-3

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC21179 Date Analyzed: 6/18/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB20151 Date Prepared: 6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		27.1	mg/L	5	1

Sample: 199216 - MW-5

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21033 Date Analyzed: 6/13/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20033 Date Prepared: 6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.091	mg/L	5	0.10	91	70 - 130
4-BFB		0.0906	mg/L	5	0.10	90	70 - 130

Sample: 199216 - MW-5

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC21179 Date Analyzed: 6/18/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB20151 Date Prepared: 6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		90.2	mg/L	5	1

Sample: 199217 - MW-4

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21033 Date Analyzed: 6/13/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20033 Date Prepared: 6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0873	mg/L	5	0.10	87	70 - 130
4-BFB		0.0877	mg/L	5	0.10	87	70 - 130

Sample: 199217 - MW-4

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC21179 Date Analyzed: 6/18/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB20151 Date Prepared: 6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		85.6	mg/L	5	1

Sample: 199218 - MW-6

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21033 Date Analyzed: 6/13/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20033 Date Prepared: 6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.001	mg/L	1	0.001
Toluene		<0.001	mg/L	1	0.001
Ethylbenzene		<0.001	mg/L	1	0.001
M,P,O-Xylene		<0.001	mg/L	1	0.001
Total BTEX		<0.001	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0953	mg/L	1	0.10	95	70 - 130
4-BFB		0.0957	mg/L	1	0.10	96	70 - 130

Sample: 199218 - MW-6

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC21179 Date Analyzed: 6/18/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB20151 Date Prepared: 6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		54.1	mg/L	5	1

Sample: 199219 - WW-2

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21033 Date Analyzed: 6/13/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20033 Date Prepared: 6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.001	mg/L	1	0.001
Toluene		<0.001	mg/L	1	0.001
Ethylbenzene		<0.001	mg/L	1	0.001
M,P,O-Xylene		<0.001	mg/L	1	0.001
Total BTEX		<0.001	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0964	mg/L	1	0.10	96	70 - 130
4-BFB		0.0959	mg/L	1	0.10	96	70 - 130

Sample: 199219 - WW-2

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC21179 Date Analyzed: 6/18/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB20151 Date Prepared: 6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		53.7	mg/L	5	1

Sample: 199220 - WW-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21033	Date Analyzed:	6/13/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20033	Date Prepared:	6/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.001	mg/L	1	0.001
Toluene		<0.001	mg/L	1	0.001
Ethylbenzene		<0.001	mg/L	1	0.001
M,P,O-Xylene		<0.001	mg/L	1	0.001
Total BTEX		<0.001	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.097	mg/L	1	0.10	97	70 - 130
4-BFB		0.0966	mg/L	1	0.10	97	70 - 130

Sample: 199220 - WW-1

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC21179	Date Analyzed:	6/18/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB20151	Date Prepared:	6/18/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		43.6	mg/L	5	1

Quality Control Report
Method Blank

Method Blank

QCBatch: QC21033

Param	Flag	Results	Units	Reporting Limit
Benzene		<0.001	mg/L	0.001
Toluene		<0.001	mg/L	0.001
Ethylbenzene		<0.001	mg/L	0.001
M,P,O-Xylene		<0.001	mg/L	0.001
Total BTEX		<0.001	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.090	mg/L	1	0.10	90	70 - 130
4-BFB		0.0881	mg/L	1	0.10	88	70 - 130

Method Blank

QCBatch: QC21094

Param	Flag	Results	Units	Reporting Limit
Benzene		<0.001	mg/L	0.001
Toluene		<0.001	mg/L	0.001
Ethylbenzene		<0.001	mg/L	0.001
M,P,O-Xylene		<0.001	mg/L	0.001
Total BTEX		<0.001	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.111	mg/L	1	0.10	111	70 - 130
4-BFB		0.103	mg/L	1	0.10	103	70 - 130

Method Blank

QCBatch: QC21131

Param	Flag	Results	Units	Reporting Limit
Chloride		<1.0	mg/L	1

Method Blank

QCBatch: QC21179

Param	Flag	Results	Units	Reporting Limit
Chloride		<1.0	mg/L	1

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC21033

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.0911	0.0934	mg/L	1	0.10	<0.001	91	2	70 - 130	20
Benzene	0.0925	0.0952	mg/L	1	0.10	<0.001	92	3	70 - 130	20
Toluene	0.090	0.0933	mg/L	1	0.10	<0.001	90	4	70 - 130	20
Ethylbenzene	0.089	0.093	mg/L	1	0.10	<0.001	89	4	70 - 130	20
M,P,O-Xylene	0.266	0.277	mg/L	1	0.30	<0.001	89	4	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.0895	0.0909	mg/L	1	0.10	90	91	70 - 130
4-BFB	0.0906	0.0911	mg/L	1	0.10	91	91	70 - 130

Laboratory Control Spikes

QCBatch: QC21094

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.108	0.109	mg/L	1	0.10	<0.001	108	1	70 - 130	20
Benzene	0.103	0.103	mg/L	1	0.10	<0.001	103	0	70 - 130	20
Toluene	0.102	0.102	mg/L	1	0.10	<0.001	102	0	70 - 130	20
Ethylbenzene	0.101	0.102	mg/L	1	0.10	<0.001	101	1	70 - 130	20
M,P,O-Xylene	0.293	0.295	mg/L	1	0.30	<0.001	98	1	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.108	0.110	mg/L	1	0.10	108	110	70 - 130
4-BFB	0.106	0.108	mg/L	1	0.10	106	108	70 - 130

Laboratory Control Spikes

QCBatch: QC21131

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	11.33	11.26	mg/L	1	12.50	<1.0	90	0	90 - 110	20
Fluoride	2.45	2.45	mg/L	1	2.50	<0.2	98	0	90 - 110	20
Sulfate	11.88	11.87	mg/L	1	12.50	<1.0	95	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC21179

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	11.23	11.26	mg/L	1	12.50	<1.0	89	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report
Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC21131

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	[1] 736	740	mg/L	1	625	185	88	0	48 - 127	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC21179

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	99.6	99.3	mg/L	1	62.50	43.6	89	0	48 - 127	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report
Continuing Calibration Verification Standards

CCV (1)

QCBatch: QC21033

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0934	93	85 - 115	6/13/02
Benzene		mg/L	0.10	0.0933	93	85 - 115	6/13/02
Toluene		mg/L	0.10	0.0914	91	85 - 115	6/13/02
Ethylbenzene		mg/L	0.10	0.0899	90	85 - 115	6/13/02
M,P,O-Xylene		mg/L	0.30	0.269	90	85 - 115	6/13/02

CCV (2)

QCBatch: QC21033

[1]This sample was spiked at a *50, but the *5 was reported. The %EA = 83 and RPD = 1 for chloride

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0943	94	85 - 115	6/13/02
Benzene		mg/L	0.10	0.0946	94	85 - 115	6/13/02
Toluene		mg/L	0.10	0.0918	91	85 - 115	6/13/02
Ethylbenzene		mg/L	0.10	0.0907	90	85 - 115	6/13/02
M,P,O-Xylene		mg/L	0.30	0.269	89	85 - 115	6/13/02

ICV (1) QCBatch: QC21033

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0932	93	85 - 115	6/13/02
Benzene		mg/L	0.10	0.0943	94	85 - 115	6/13/02
Toluene		mg/L	0.10	0.0939	94	85 - 115	6/13/02
Ethylbenzene		mg/L	0.10	0.0937	94	85 - 115	6/13/02
M,P,O-Xylene		mg/L	0.30	0.280	93	85 - 115	6/13/02

CCV (1) QCBatch: QC21094

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.104	104	85 - 115	6/15/02
Benzene		mg/L	0.10	0.103	103	85 - 115	6/15/02
Toluene		mg/L	0.10	0.101	101	85 - 115	6/15/02
Ethylbenzene		mg/L	0.10	0.102	102	85 - 115	6/15/02
M,P,O-Xylene		mg/L	0.30	0.297	99	85 - 115	6/15/02

ICV (1) QCBatch: QC21094

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.112	112	85 - 115	6/15/02
Benzene		mg/L	0.10	0.104	104	85 - 115	6/15/02
Toluene		mg/L	0.10	0.101	101	85 - 115	6/15/02
Ethylbenzene		mg/L	0.10	0.101	101	85 - 115	6/15/02
M,P,O-Xylene		mg/L	0.30	0.291	97	85 - 115	6/15/02

CCV (1) QCBatch: QC21131

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.29	90	90 - 110	6/14/02
Fluoride		mg/L	2.50	2.49	99	90 - 110	6/14/02
Sulfate		mg/L	12.50	11.95	95	90 - 110	6/14/02

ICV (1)

QCBatch: QC21131

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.29	90	90 - 110	6/14/02
Fluoride		mg/L	2.50	2.49	99	90 - 110	6/14/02
Sulfate		mg/L	12.50	12.04	96	90 - 110	6/14/02

CCV (1)

QCBatch: QC21179

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.27	90	90 - 110	6/18/02

ICV (1)

QCBatch: QC21179

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.23	89	90 - 110	6/18/02

A02061323

CHAIN—OF—CUSTODY RECORD

Larson & Associates, Inc.
Environmental Consultants
Fax: 915-687-0456
915-687-0901
507 N. Marienfeld, Ste. 202 • Midland, TX 79701

CLIENT NAME: Texaco
SITE MANAGER: Mark Larson
PROJECT NO.: D-0114
PROJECT NAME: New Mexico "F"
PAGE 1 OF 1
LAB. PO #

DATE	TIME	WATER	SOIL	OTHER	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	BTEX	CHLORIDE	LAB. I.D. NUMBER (LAB USE ONLY)	REMARKS (I.E., FILTERED, UNFILTERED, PRESERVED, UNPRESERVED, GRAB COMPOSITE)
6-11-02	1:00	X			MW-8	3	X	X	199212	HCL + unpreserved
6-11-02	2:00	↓			RW-3	↓	↓	↓	213	
6-12-02	11:05	↓			MW-7	↓	↓	↓	214	
↓	11:50	↓			MW-3	↓	↓	↓	215	
↓	12:22	↓			MW-5	↓	↓	↓	216	
↓	12:57	↓			MW-4	↓	↓	↓	217	
↓	1:35	↓			MW-6	↓	↓	↓	218	
↓	1:50	↓			WW-2	↓	↓	↓	219	
↓	2:00	↓			WW-1	↓	↓	↓	220	

SAMPLED BY: (Signature) [signature] DATE: 6-12-02 TIME: 5:00
RELINQUISHED BY: (Signature) [signature] DATE: 6-12-02 TIME: 5:00
RECEIVED BY: (Signature) Helen Shelton DATE: 6/12/02 TIME: 1700

RELINQUISHED BY: (Signature) Helen Shelton DATE: 6/12/02 TIME: 1830
RECEIVED BY: (Signature) DATE: TIME:

SAMPLE SHIPPED BY: (Circle)
FEDEX 4P BUS (circled) UPS AIRBILL #: 14104 (Greyhound)
HAND DELIVERED OTHER:

COMMENTS:
TURNAROUND TIME NEEDED

RECEIVING LABORATORY: Trace Analysis, Inc.
ADDRESS: 6701 Aberdeen Ave. Ste #9
CITY: Lubbock STATE: Tx ZIP: 79424
CONTACT: Helen PHONE (806) 794-1296
RECEIVED BY: (Signature)
DATE: TIME:

WHITE – RECEIVING LAB
YELLOW – RECEIVING LAB (TO BE RETURNED TO LA AFTER RECEIPT)
PINK – PROJECT MANAGER
GOLD – QA/QC COORDINATOR

5.9°C

SAMPLE CONDITION WHEN RECEIVED:
LA CONTACT PERSON: Mark Larson
SAMPLE TYPE:

27 samples - HS

ANALYTICAL REPORT

Prepared for:

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Project:	Texaco / New Mexico "F" State
PO#:	
Order#:	G0205132
Report Date:	12/05/2002

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710
915-687-0456

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
0205132-01	MW-3	WATER	11/26/02 10:24	11/26/02 15:45	See COC	Ice
	Lab Testing:	**Rejected:** No		**Temp:** 2.5 C		
	8021B/5030 BTEX					
	Chloride					
0205132-02	MW-8	WATER	11/26/02 11:00	11/26/02 15:45	See COC	Ice
	Lab Testing:	**Rejected:** No		**Temp:** 2.5 C		
	8021B/5030 BTEX					
	Chloride					
0205132-03	MW-4	WATER	11/26/02 11:41	11/26/02 15:45	See COC	Ice
	Lab Testing:	**Rejected:** No		**Temp:** 2.5 C		
	8021B/5030 BTEX					
	Chloride					
0205132-04	MW-5	WATER	11/26/02 12:10	11/26/02 15:45	See COC	Ice
	Lab Testing:	**Rejected:** No		**Temp:** 2.5 C		
	8021B/5030 BTEX					
	Chloride					
0205132-05	MW-7	WATER	11/26/02 12:40	11/26/02 15:45	See COC	Ice
	Lab Testing:	**Rejected:** No		**Temp:** 2.5 C		
	8021B/5030 BTEX					
	Chloride					
0205132-06	MW-6	WATER	11/26/02 13:15	11/26/02 15:45	See COC	Ice
	Lab Testing:	**Rejected:** No		**Temp:** 2.5 C		
	8021B/5030 BTEX					
	Chloride					
0205132-07	WW-1	WATER	11/26/02 13:58	11/26/02 15:45	See COC	Ice
	Lab Testing:	**Rejected:** No		**Temp:** 2.5 C		

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710
915-687-0456

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
	8021B/5030 BTEX Chloride					
0205132-08	WW-2	WATER	11/26/02 14:25	11/26/02 15:45	See COC	Ice
	Lab Testing: 8021B/5030 BTEX Chloride	**Rejected:** No		**Temp:** 2.5 C		
0205132-09	Duplicate	WATER	11/26/02	11/26/02 15:45	See COC	Ice
	Lab Testing: 8021B/5030 BTEX Chloride	**Rejected:** No		**Temp:** 2.5 C		

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

Lab ID: 0205132-01
Sample ID: MW-3

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003935-02		12/2/02 21:05	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Ethylbenzene	<0.001	0.001
Toluene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	105%	80	120
Bromofluorobenzene	110%	80	120

Lab ID: 0205132-02
Sample ID: MW-8

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003935-02		12/2/02 21:24	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Ethylbenzene	<0.001	0.001
Toluene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	114%	80	120
Bromofluorobenzene	118%	80	120

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

Lab ID: 0205132-03
Sample ID: MW-4

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003935-02		12/2/02 21:43	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.002**	0.001
Ethylbenzene	**<0.001**	0.001
Toluene	**<0.001**	0.001
p/m-Xylene	**0.004**	0.001
o-Xylene	**<0.001**	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	108%	80	120
Bromofluorobenzene	119%	80	120

Lab ID: 0205132-04
Sample ID: MW-5

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003935-02		12/2/02 22:02	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.002**	0.001
Ethylbenzene	**0.003**	0.001
Toluene	**<0.001**	0.001
p/m-Xylene	**<0.001**	0.001
o-Xylene	**<0.001**	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	110%	80	120
Bromofluorobenzene	116%	80	120

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

Lab ID: 0205132-05
Sample ID: MW-7

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003952-02		12/3/02	1	1	RKT	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Ethylbenzene	<0.001	0.001
Toluene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	105%	80	120
Bromofluorobenzene	107%	80	120

Lab ID: 0205132-06
Sample ID: MW-6

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003952-02		12/3/02	1	1	RKT	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Ethylbenzene	<0.001	0.001
Toluene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	110%	80	120
Bromofluorobenzene	114%	80	120

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

Lab ID: 0205132-07
Sample ID: WW-1

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003952-02		12/3/02	1	1	RKT	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Ethylbenzene	<0.001	0.001
Toluene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	110%	80	120
Bromofluorobenzene	119%	80	120

Lab ID: 0205132-08
Sample ID: WW-2

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003952-02		12/3/02	1	1	RKT	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Ethylbenzene	<0.001	0.001
Toluene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	127%	80	120
Bromofluorobenzene	128%	80	120

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

Lab ID: 0205132-09
Sample ID: Duplicate

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0003976-02		12/4/02 12:51	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.002**	0.001
Ethylbenzene	**<0.001**	0.001
Toluene	**<0.001**	0.001
p/m-Xylene	**0.003**	0.001
o-Xylene	**<0.001**	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	**114%**	**80**	**120**
Bromofluorobenzene	**116%**	**80**	**120**

Approval: Raland K Tuttle 12-06-02
Raland K. Tuttle, Lab Director, QA Officer — Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

Lab ID: 0205132-01
Sample ID: MW-3

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	31.9	mg/L	1	5.00	9253	12/4/02	SB

Lab ID: 0205132-02
Sample ID: MW-8

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	239	mg/L	1	5.00	9253	12/4/02	SB

Lab ID: 0205132-03
Sample ID: MW-4

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	160	mg/L	1	5.00	9253	12/4/02	SB

Lab ID: 0205132-04
Sample ID: MW-5

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	59.1	mg/L	1	5.00	9253	12/4/02	SB

Lab ID: 0205132-05
Sample ID: MW-7

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	133	mg/L	1	5.00	9253	12/4/02	SB

Lab ID: 0205132-06
Sample ID: MW-6

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	65.0	mg/L	1	5.00	9253	12/4/02	SB

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CINDY CRAIN
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0205132
Project: 0-0114
Project Name: Texaco / New Mexico "F" State
Location: None Given

Lab ID: 0205132-07
Sample ID: WW-1

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	80.0	mg/L	1	5.00	9253	12/4/02	SB

Lab ID: 0205132-08
Sample ID: WW-2

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	70.9	mg/L	1	5.00	9253	12/4/02	SB

Lab ID: 0205132-09
Sample ID: Duplicate

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	160	mg/L	1	5.00	9253	12/4/02	SB

Approval: Raland K Tuttle 12-06-02
Raland K. Tuttle, Lab Director, QA Officer Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8021B/5030 BTEX

Order#: G0205132

BLANK WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L	0003935-02			<0.001		
Benzene-mg/L	0003952-02			<0.001		
Benzene-mg/L	0003976-02			<0.001		
Ethylbenzene-mg/L	0003935-02			<0.001		
Ethylbenzene-mg/L	0003952-02			<0.001		
Ethylbenzene-mg/L	0003976-02			<0.001		
Toluene-mg/L	0003935-02			<0.001		
Toluene-mg/L	0003952-02			<0.001		
Toluene-mg/L	0003976-02			<0.001		
p/m-Xylene-mg/L	0003935-02			<0.001		
p/m-Xylene-mg/L	0003952-02			<0.001		
p/m-Xylene-mg/L	0003976-02			<0.001		
o-Xylene-mg/L	0003935-02			<0.001		
o-Xylene-mg/L	0003952-02			<0.001		
o-Xylene-mg/L	0003976-02			<0.001		
CONTROL WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L	0003952-03		0.1	0.100	100.%	
Benzene-mg/L	0003976-03		0.1	0.094	94.%	
Ethylbenzene-mg/L	0003952-03		0.1	0.104	104.%	
Ethylbenzene-mg/L	0003976-03		0.1	0.097	97.%	
Toluene-mg/L	0003952-03		0.1	0.104	104.%	
Toluene-mg/L	0003976-03		0.1	0.097	97.%	
p/m-Xylene-mg/L	0003952-03		0.2	0.220	110.%	
p/m-Xylene-mg/L	0003976-03		0.2	0.207	103.5%	
o-Xylene-mg/L	0003952-03		0.1	0.105	105.%	
o-Xylene-mg/L	0003976-03		0.1	0.098	98.%	
CONTROL DUP WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L	0003952-04		0.1	0.094	94.%	6.2%
Benzene-mg/L	0003976-04		0.1	0.100	100.%	6.2%
Ethylbenzene-mg/L	0003952-04		0.1	0.097	97.%	7.%
Ethylbenzene-mg/L	0003976-04		0.1	0.104	104.%	7.%
Toluene-mg/L	0003952-04		0.1	0.097	97.%	7.%
Toluene-mg/L	0003976-04		0.1	0.104	104.%	7.%
p/m-Xylene-mg/L	0003952-04		0.2	0.207	103.5%	6.1%
p/m-Xylene-mg/L	0003976-04		0.2	0.220	110.%	6.1%
o-Xylene-mg/L	0003952-04		0.1	0.098	98.%	6.9%
o-Xylene-mg/L	0003976-04		0.1	0.105	105.%	6.9%
MS WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8021B/5030 BTEX

Order#: G0205132

MS WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L	0205132-04	0.002	0.1	0.098	96.%	
Ethylbenzene-mg/L	0205132-04	0.003	0.1	0.098	95.%	
Toluene-mg/L	0205132-04	0	0.1	0.099	99.%	
p/m-Xylene-mg/L	0205132-04	0	0.2	0.210	105.%	
o-Xylene-mg/L	0205132-04	0	0.1	0.100	100.%	
MSD WATER	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/L	0205132-04	0.002	0.1	0.098	96.%	0.%
Ethylbenzene-mg/L	0205132-04	0.003	0.1	0.100	97.%	2.%
Toluene-mg/L	0205132-04	0	0.1	0.100	100.%	1.%
p/m-Xylene-mg/L	0205132-04	0	0.2	0.213	106.5%	1.4%
o-Xylene-mg/L	0205132-04	0	0.1	0.101	101.%	1.%
SRM WATER	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/L	0003935-05		0.1	0.099	99.%	
Benzene-mg/L	0003952-05		0.1	0.101	101.%	
Benzene-mg/L	0003976-05		0.1	0.099	99.%	
Ethylbenzene-mg/L	0003935-05		0.1	0.100	100.%	
Ethylbenzene-mg/L	0003952-05		0.1	0.102	102.%	
Ethylbenzene-mg/L	0003976-05		0.1	0.100	100.%	
Toluene-mg/L	0003935-05		0.1	0.100	100.%	
Toluene-mg/L	0003952-05		0.1	0.103	103.%	
Toluene-mg/L	0003976-05		0.1	0.100	100.%	
p/m-Xylene-mg/L	0003935-05		0.2	0.215	107.5%	
p/m-Xylene-mg/L	0003952-05		0.2	0.216	108.%	
p/m-Xylene-mg/L	0003976-05		0.2	0.215	107.5%	
o-Xylene-mg/L	0003935-05		0.1	0.102	102.%	
o-Xylene-mg/L	0003952-05		0.1	0.103	103.%	
o-Xylene-mg/L	0003976-05		0.1	0.102	102.%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0205132

BLANK WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/L	0003968-01			<5.00		
MS WATER	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/L	0205132-01	31.9	100	131	99.1%	
MSD WATER	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/L	0205132-01	31.9	100	129	97.1%	1.5%
SRM WATER	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/L	0003968-04		5000	4960	99.2%	

CHAIN—OF—CUSTODY RECORD

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 202 • Midland, TX 79701
Fax: 915-687-0456
915-687-0901

CLIENT NAME: Texaco

SITE MANAGER: Cindy Crain

PROJECT NO.: 0-0114

PROJECT NAME: New Mexico "F" State

PAGE 1 OF 1

LAB. PO #

DATE	TIME	WATER	SOIL	OTHER	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	Chloride	BTEX (8021B)	LAB. I.D. NUMBER (LAB USE ONLY)	REMARKS (I.E., FILTERED, UNFILTERED, PRESERVED, UNPRESERVED, GRAB COMPOSITE)
					0205132					
11-26-02	1024	✓			MW-3 01	3	✓	✓		
" "	1100	✓			MW-8 02	3	✓	✓		
" "	1141	✓			MW-4 03	3	✓	✓		
" "	1220	✓			MW-5 04	3	✓	✓		
" "	1240	✓			MW-7 05	3	✓	✓		
" "	1315	✓			MW-6 06	3	✓	✓		
" "	1358	✓			WW-1 07	3	✓	✓		
" "	1425	✓			WW-2 08	3	✓	✓		
" "		✓			Duplicate 09	3	✓	✓		

SAMPLED BY: (Signature) Michael Johnson
DATE: 11-26-02 TIME: 1530

RELINQUISHED BY: (Signature) Michael Johnson
DATE: 11-26-02 TIME: 1543

RECEIVED BY: (Signature) Nawaf M. Candelo
DATE: 11/26/02 TIME: 1545

RELINQUISHED BY: (Signature)
DATE: TIME:

RECEIVED BY: (Signature)
DATE: TIME:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS AIRBILL #:
HAND DELIVERED UPS OTHER:

COMMENTS:
* Run BTEX & Cl on Duplicate as per R.T. 11/26/02 2.5C

TURNAROUND TIME NEEDED

WHITE – RECEIVING LAB
YELLOW – RECEIVING LAB (TO BE RETURNED TO LA AFTER RECEIPT)
PINK – PROJECT MANAGER
GOLD – QA/QC COORDINATOR

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature)
DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 1 250mL PLASTIC / 2 / 40mL VOAs

LA CONTACT PERSON: Cindy Crain

SAMPLE TYPE: