GW - 28

MONITORING REPORTS

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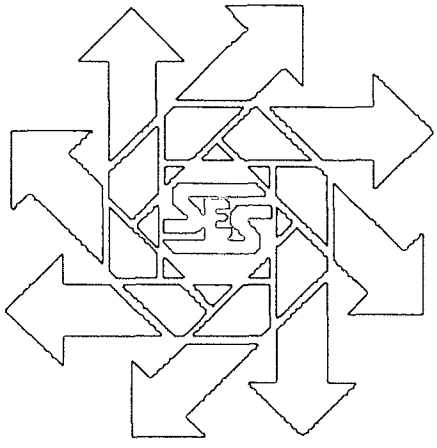
Groundwater Monitoring and Remediation System Performance Report July 2001 – June 2002 Navajo Refining Company – Lea Refinery Lovington, New Mexico

August 15, 2002



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I. Introduction

Safety and Environmental Solutions, Inc. (SESI) performs groundwater monitoring, sampling, and product recovery at Navajo Refining Company's Lea Refinery in Lovington, New Mexico (Figure 1). The work performed at the refinery includes quarterly measurement of water and product levels, sampling of monitor wells for water quality in accordance with the requirements of the New Mexico Oil Conservation Division (OCD), and maintenance of the hydrocarbon product recovery system installed at the facility. This report documents the results of sampling conducted at the site during the period from July 1, 2001 through June 30, 2002, and includes product recovery data for the remediation system. The groundwater sampling and monitoring events, and operation and maintenance activities for the remediation system were performed by SESI under the direction of Mr. David Boyer, P.G.

II. Work Performed

The following activities were conducted to document the groundwater quality conditions and remediation system performance in accordance with the remediation work plan, and the OCD letters dated November 21, 1996 and March 26, 1998. The locations of the referenced wells are shown on Figure 2.

- Measured depth to groundwater in monitoring wells MW-1 through MW-10.
- Collected quarterly groundwater samples from MW-3, MW-6, MW-8, MW-9 and MW-10 for BTEX analysis (EPA Method 8021B).
- Collected annual groundwater samples from MW-2, MW-3, MW-4, MW-5, MW-6, MW-8, MW-9, and MW-10 for BTEX analysis, metals, and anions/TDS.
- Measured free product thickness in monitoring wells RW-1, MW-1 and MW-7. All three wells had a measurable thickness of free product and groundwater from these wells was not sampled.
- Collected groundwater samples from the refinery's North and South water wells.
- In May 2002 installed a deeper replacement well (MW-6R) adjacent to MW-6, which has become unusable do to a declining water table.

Groundwater measurement and sampling activities were conducted on August 28, 2001, December 19, 2001, March 12, 2002, and June 20, 2002. The annual groundwater sampling of all monitor wells for BTEX, metals, and anions/TDS was performed on December 19, 2001. Prior to sampling, the monitoring wells at the Lea Refinery were gauged for depth to groundwater and total depth using a Solinst Model 101 water level meter. Where present, thickness of free product (phase-separated hydrocarbons) was measured using an oil/water interface probe (Solinst Model 122).

Immediately prior to collecting groundwater samples, the monitoring wells were purged of a minimum of three well casing volumes of water using clean, decontaminated PVC bailers. Monitoring wells MW-1 and MW-7 were not sampled due to the presence of free product. During each sampling event, an approximate total of 25 gallons of water was

purged from those monitoring wells that were sampled. Groundwater parameters of conductivity, temperature and pH were measured during purging operations.

Samples taken for benzene, toluene, ethylbenzene, and total xylene (BTEX) analyses were transferred into air-tight, septum-sealed, 40-milliliter (ml) glass volatile organic analyte (VOA) sample vials with zero head space and preserved with HCl. Samples were placed in an ice-filled cooler immediately after collection and shipped to TraceAnalysis, Inc., in Lubbock, Texas. The samples were analyzed for BTEX using EPA Method 8021B. Chain of custody (COC) forms documenting sample identification numbers, collection times, and delivery times to the laboratory were completed for each set of samples.

Samples collected for metals and anion/Total Dissolved Solids (TDS) analysis were collected in separate containers. Metals were collected in a 500-ml plastic bottle and preserved with HNO_3. Samples for anion/TDS analysis were collected in liter plastic bottles and placed on ice. The samples were analyzed using methods EPA methods 6010B for metals, and methods 300.0 and 160.1, respectively, for anions and TDS.

III. Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater elevations for the current year and for previous monitoring events are summarized in Table 1. Water table elevation maps (potentiometric surface) and direction of groundwater flow for each quarter are depicted in Figures 3 through 6.

Based on past measurements, the water table elevations have been declining at the rate of approximately 1.35 feet per year for the past five years. Measurements for the past year indicate a decline of 1.15 feet. Depth to groundwater occurs at approximately 77 to 98 feet below ground surface across the site. The direction of flow is to the southeast with an average hydraulic gradient across the site of approximately 0.004 ft./ft. However, the gradient is slightly steeper to the southeast with an approximate gradient of 0.005 ft./ft. and slightly flatter to the northwest (0.003 ft./ft.). A possible explanation is drawdown due to the refinery's North and South water wells, which supply water for domestic use and crude oil processing. These two wells are approximately 500 ft. southeast and downgradient from monitor well MW-3. Because MW-3 may be within the pumping cone of depression for these wells, quarterly monitoring for BTEX in these wells is now conducted as described below.

IV. Distribution of Hydrocarbons in Groundwater

Analytical results for BTEX in groundwater for the current and previous sampling events are summarized in Table 2. Constituents with concentrations above the New Mexico Water Quality Control Commission (WQCC) standards are highlighted in boldface type. The laboratory reports and COC documentation for samples obtained by SESI are included in the Appendix.

Based on the most recent analytical data for samples collected by SESI on June 20, 2002 (or on December 19, 2001 for those wells sampled annually), the distribution of hydrocarbons at the Lea Refinery is described below:

- BTEX concentrations in upgradient monitoring wells MW-2 and MW-4, and downgradient wells MW-3, MW-5, MW-6, MW-8, MW-9 and MW-10 were below the laboratory detection limit and below WQCC standards. The method reporting limit for all analyses is 0.001 mg/L except for well MW-4 (0.005 mg/L). As described above and absent hydrocarbon product, wells MW-1, MW-3, MW-6, MW-7, MW-8, MW-9 and MW-10 are sampled quarterly while the others (MW-2, MW-4, MW-5) listed in this group are sampled annually.

- Benzene concentrations in downgradient well MW-9 declined from a high of 1.69 mg/L in April 1996 to below the WQCC standard (0.01 mg/L) in August 1998. The benzene concentration in MW-9 has remained below the WQCC standard since 1998 and below the laboratory detection limits of 0.005 mg/L since August 1999. Since installation and monitoring of this well began in April 1996, all BTEX constituents other than benzene have remained near or below laboratory detection limits and below WQCC standards. Results for the most recent sampling (June 2002) show all BTEX constituents are less than detection limits (<0.001 mg/L).

- BTEX concentrations in downgradient well MW-3 were measured at levels near or below the laboratory detection limit and below WQCC standards from the initial sampling event in September 1995 through August 1999. From November 1999 through August 2001, the benzene concentrations in MW-3 have exceeded the WQCC standard and the xylene concentrations have exceeded the laboratory detection limit. In December 2001, all BTEX constituents were below the laboratory detection limit of 0.005 mg/L. However, in March 2002, benzene again was detected at a value of 0.0159 mg/L. No BTEX was detected in the June 2002 sampling at a reporting level of 0.001 mg/L.

  It is suspected that the 1999 increase in dissolved hydrocarbons represents the downgradient movement of a limited slug of contaminants that was observed in upgradient well MW-9 during the period from April 1996 through August 1998. Based on the maximum benzene levels observed in each well, it appears that the benzene slug is migrating at approximately 0.35 feet per day and attenuating at a rate of approximately one half-life per 150 feet. At this rate the benzene slug could impact the North water supply well in approximately 2.5 years at an estimated concentration of 0.05 mg/L. It should be noted that this estimate assumes that the production from the water well occurs only in the upper 10 feet (mixing zone) of the aquifer, which is not the case for a large volume production water well.

- During the past year the refinery's North water well exhibited a maximum benzene concentration of 0.003 mg/L while other BTEX constituents were not detected. This value is less than both the WQCC limit of 0.010 mg/L and the EPA drinking water standard of 0.005 mg/L. The most recent sampling (June 2002) detected benzene in the North well at the laboratory detection level of 0.001 mg/L. The South water well

remains unimpacted. A June 2001 sample from the refinery fresh water system (used for drinking, worker showers, process water) did not detect BTEX at 0.001 mg/L.

- Measurable free product in MW-7 was observed following installation in April 1996 and continuing through November of 1999. Hydrocarbon product was again observed in this well in June 2001. During the past year, the thickness of hydrocarbon product in this well has continued to increase, and Navajo is investigating whether the product is the result of delayed drainage from the earlier release or represents a new leak.

- During the past year monitoring wells MW-1 and RW-1 had measurable hydrocarbon product and were not sampled. At the time of the June 2002 sampling, fluid levels in MW-1 had declined below the bottom of the well and no further measurements, sampling or hydrocarbon recovery are possible from the well.

V. Sampling Results for Inorganic Constituents

The annual sampling for WQCC anions, TDS, and selected metals was conducted in December 2001. The results for 2000 and 2001 are shown in Table 3. In 2001, two wells (MW-5 and MW-6) exceeded WQCC standards for iron and MW-3 exceeded the standard for manganese. Several wells in 2001 exceeded one or more WQCC standards for chloride, fluoride and TDS. The standard for chloride was exceeded in MW-3, MW-8 and MW-9. Fluoride was exceeded in MW-6, MW-8, and MW-9. MW-3 and MW-8 had exceedances for TDS. Although several wells have slightly elevated levels of fluoride, Navajo does not utilize hydrofluoric acid at the Lea Refinery and the levels are thought to be naturally occurring.

VI. Total Fluids Recovery

Approximately 241 gallons of free product has been recovered between January 1998 and June 2002. A summary of the recovery methods and the volumes of product recovered are listed in Table 4. Figure 7 is a graph showing cumulative hydrocarbon product recovery.

VII. Groundwater Temperature

Since April 1996, temperatures have been measured in the monitoring wells. Groundwater temperatures during the past sample year ranged from 60°F at MW-2 in December 2001 to 83.1°F at MW-9 in August 2001 (Table 5). Although still elevated at some wells, temperatures during the last four sampling events have decreased compared to measurements made in 2000 and earlier.

VIII. Systems Status

Air Sparge/Vapor Extraction System

The previous contractor shut down the air sparge/vapor extraction system and above ground equipment has been removed. Based on information provided in earlier monitoring reports, the system worked as intended to reduce dissolved-phase BTEX and hydrocarbon vapors in the vicinity of the leak.

Hydrocarbon Product Recovery System

During the past year, the operation of the product recovery system was interrupted by debris entering the well through a hole in the PVC pipe. The hole was cut for installation of electric and discharge cables when a submersible pump was used several years ago for recovery of fluids. Insects (beetles) in the well vault fell into the well through the hole. The hole was sealed with a pipe clamp and the well bailed several times to remove the insects. However pieces of the exoskeleton remain floating and occasionally clog the pump float restricting its ability to move up and down with a change in fluid level. These stoppages are becoming more infrequent as fewer beetle parts are now present.

IX. Conclusions

- Benzene concentrations in downgradient well MW-3 continue to decrease. Concentrations were below WQCC and EPA standards in two of the four last analyses.

- Benzene and other BTEX constituents remain absent in MW-9. The last time these contaminants were detected in this well was the third quarter of 1999.

- Analysis of a water sample from well MW-6R (the replacement well for nearly dry MW-6), did not detect any BTEX constituents at a detection level of 0.001 mg/L.

- Based on the groundwater flow map and sample results, the leading edge of the benzene plume has reached the North refinery well and is impacting groundwater at the drinking water standard of 0.005 mg/L. This well is the refinery's auxiliary well and not pumped continuously. Because water from these wells is used for human consumption (drinking water, hand washing, showering, etc.), the wells are now monitored for BTEX on at least a quarterly basis.

- Hydrocarbon product continues to be present in RW-1 and MW-7. Hydrocarbon product was present in MW-1 until fluid levels dropped below the bottom of the well in June 2002.

- The operation of the product recovery system was sometimes intermittent due to a continuing problem with insect parts preventing the free movement of the float. A hole in the PVC well pipe has been clamped and the well bailed twice to remove floating insect parts.

- Not withstanding improvement in water quality at MW-3, the continued presence of hydrocarbon product at RW-1, and MW-1 and reappearance of product at MW-7 is troublesome. Navajo has performed extensive remedial work at the location to eliminate leaks from the oil/water separator boxes. Possible remaining sources of the problem are an unknown crude line in the area or delayed drainage of previously released oil through preferential pathways in the near-surface caliche.

X. Future Work

Navajo is continuing quarterly monitoring with the next sampling event scheduled for September 2002. Navajo is continuing to investigate the occurrence of hydrocarbon product and additional work in support of this effort could include surface excavation in the vicinity of the separator and installation of additional product recovery wells.

XI. Report Tables and Figures

Table 1. Summary of Water Level Measurements and Groundwater Elevations, Navajo Refining Company, Lea Refinery

Monitor Well No., Depth Below TOC, & Depth Below Surface (feet)	Elevation Top of Casing (TOC, feet)	Measure-ment Date	Depth to Product (feet)	Depth to Water Below TOC (feet)	Product Thickness (feet)	Corrected Depth to Water (feet)	Corrected Water Level Elev. (feet)
MW-1	3,835.67	09/10/95	102.33	95.89	6.44	90.29	3,745.38
97.5		04/22/96	102.97	96.49	6.48	90.85	3,744.82
		11/19/96	95.94	93.57	2.37	91.51	3,744.16
		02/07/97	95.54	93.39	2.15	91.52	3,744.15
		04/16/97	99.19	95.49	3.70	92.27	3,743.40
		08/14/97	99.89	96.23	3.66	93.05	3,742.62
		10/28/97	100.74	96.88	3.86	93.52	3,742.15
		01/20/98	97.48	95.07	2.41	92.97	3,742.70
		04/23/98	96.56	94.75	1.81	93.18	3,742.49
		08/04/98	100.75	97.13	3.62	93.98	3,741.69
		10/29/98	95.65	94.98	0.67	94.40	3,741.27
		02/16/99	96.21	95.35	0.86	94.60	3,741.07
		04/21/99	96.73	95.60	1.13	94.62	3,741.05
		08/16/99	97.60	96.50	1.10	95.54	3,740.13
		11/23/99	97.42	96.60	0.82	95.89	3,739.78
		01/26/00	97.25	96.37	0.88	95.60	3,740.07
		04/25/00	97.30	96.64	0.66	96.07	3,739.60
		08/14/00	96.46	96.45	0.01	96.44	3,739.23
		11/02/00	97.25	96.90	0.35	96.60	3,739.07
		02/22/01	96.51	97.03	0.52	96.58	3,739.09
		06/01/01	96.18	97.04	0.86	96.29	3,739.38
		08/28/01	96.78	97.05	0.27	96.82	3,738.85
		12/21/01	96.66	97.06	0.40	96.71	3,738.96
		03/12/02	96.61	97.08	0.47	96.67	3,739.00
		04/24/02	96.72	97.06	0.34	96.77	3,738.90
		05/11/02	96.88	97.06	0.18	96.90	3,738.77
(dry)		06/20/02	--	--	--	--	--
(dry)		08/05/02	--	--	--	--	--
Note 1: Corrected depth to water = Static DTW - (Prod. Thickness x SG), SG = 0.8665 (0.87 prior to 2001)							
Note 2: Well depth approximate -- soft bottom prevents accurate reading							
MW-2	3,834.94	09/10/95	--	89.18	0	89.18	3,745.76
98.75		04/22/96	--	89.42	0	89.42	3,745.52
		11/19/96	--	89.83	0	89.83	3,745.11
		02/07/97	--	89.71	0	89.71	3,745.23
		04/16/97	--	90.16	0	90.16	3,744.78
		08/14/97	--	91.05	0	91.05	3,743.89
		10/28/97	--	91.05	0	91.05	3,743.89
		01/20/98	--	90.79	0	90.79	3,744.15
		04/23/98	--	91.33	0	91.33	3,743.61
		08/04/98	--	92.51	0	92.51	3,742.43
		10/28/98	--	92.67	0	92.67	3,742.27
		02/16/99	--	92.83	0	92.83	3,742.11
		04/21/99	--	92.96	0	92.96	3,741.98
		08/16/99	--	94.15	0	94.15	3,740.79

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MW-2		11/23/99	--	94.16	0	94.16	3,740.78
		01/26/00	--	93.76	0	93.76	3,741.18
		04/25/00	--	93.59	0	93.59	3,741.35
		08/14/00	--	94.72	0	94.72	3,740.22
		11/02/00	--	95.05	0	95.05	3,739.89
		02/22/01	--	94.83	0	94.83	3,740.11
		05/31/01	--	95.41	0	95.41	3,739.53
		08/28/01	--	95.98	0	95.98	3,738.96
		12/19/01	--	95.37	0	95.37	3,739.57
		03/12/02	--	94.88	0	94.88	3,740.06
		06/20/02	--	96.23	0	96.23	3,738.71
MW-3	3,829.55	09/10/95	--	87.53	0	87.53	3,742.02
97.70		04/22/96	--	87.90	0	87.90	3,741.65
		11/19/96	--	88.72	0	88.72	3,740.83
		02/07/97	--	88.98	0	88.98	3,740.57
		04/16/97	--	89.00	0	89.00	3,740.55
		08/14/97	--	89.56	0	89.56	3,739.99
		10/28/97	--	89.62	0	89.62	3,739.93
		01/20/98	--	90.18	0	90.18	3,739.37
		04/23/98	--	90.58	0	90.58	3,738.97
		08/04/98	--	90.72	0	90.72	3,738.83
		10/28/98	--	91.03	0	91.03	3,738.52
		02/16/99	--	91.42	0	91.42	3,738.13
		04/21/99	--	91.42	0	91.42	3,738.13
		08/16/99	--	92.14	0	92.14	3,737.41
		11/23/99	--	92.67	0	92.67	3,736.88
		01/26/00	--	92.09	0	92.09	3,737.46
		04/25/00	--	93.25	0	93.25	3,736.30
		08/14/00	--	92.61	0	92.61	3,736.94
		11/02/00	--	92.75	0	92.75	3,736.80
		02/22/01	--	92.55	0	92.55	3,737.00
		05/31/01	--	92.95	0	92.95	3,736.60
		08/28/01	--	93.90	0	93.90	3,735.65
		12/19/01	--	93.46	0	93.46	3,736.09
		03/12/02	--	93.78	0	93.78	3,735.77
		06/20/02	--	94.33	0	94.33	3,735.22
MW-4	3,837.56	09/10/95	--	91.40	0	91.40	3,746.16
102.90		04/22/96	--	91.84	0	91.84	3,745.72
		11/19/96	--	92.67	0	92.67	3,744.89
		02/07/97	--	92.54	0	92.54	3,745.02
		04/16/97	--	92.80	0	92.80	3,744.76
		08/14/97	--	93.43	0	93.43	3,744.13
		10/28/97	--	93.73	0	93.73	3,743.83

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MW-4		01/20/98	- -	93.59	0	93.59	3,743.97
		04/23/98	- -	93.84	0	93.84	3,743.72
		08/04/98	- -	94.65	0	94.65	3,742.91
		10/28/98	- -	95.14	0	95.14	3,742.42
		02/16/99	- -	95.27	0	95.27	3,742.29
		04/21/99	- -	95.30	0	95.30	3,742.26
		08/16/99	- -	96.15	0	96.15	3,741.41
		11/23/99	- -	96.51	0	96.51	3,741.05
		01/26/00	- -	96.11	0	96.11	3,741.45
		04/25/00	- -	96.08	0	96.08	3,741.48
		08/14/00	- -	96.83	0	96.83	3,740.73
		11/02/00	- -	97.45	0	97.45	3,740.11
		02/22/01	- -	97.32	0	97.32	3,740.24
		05/31/01	- -	97.50	0	97.50	3,740.06
		08/28/01	- -	98.30	0	98.30	3,739.26
		12/19/01	- -	98.22	0	98.22	3,739.34
		03/12/02	- -	97.89	0	97.89	3,739.67
		06/20/02	- -	98.65	0	98.65	3,738.91
MW-5	3,816.88	09/10/95	- -	75.82	0	75.82	3,741.06
92.73		04/22/96	- -	74.58	0	74.58	3,742.30
		11/19/96	- -	74.95	0	74.95	3,741.93
		02/07/97	- -	75.23	0	75.23	3,741.65
		04/16/97	- -	75.43	0	75.43	3,741.45
		10/28/97	- -	76.47	0	76.47	3,740.41
		01/20/98	- -	76.71	0	76.71	3,740.17
		04/23/98	- -	76.95	0	76.95	3,739.93
		08/04/98	- -	77.74	0	77.74	3,739.14
		10/28/98	- -	78.36	0	78.36	3,738.52
		02/16/99	- -	78.25	0	78.25	3,738.63
		04/21/99	- -	78.28	0	78.28	3,738.60
		08/16/99	- -	78.85	0	78.85	3,738.03
		11/23/99	- -	79.35	0	79.35	3,737.53
		01/26/00	- -	79.37	0	79.37	3,737.51
		04/25/00	- -	79.31	0	79.31	3,737.57
		08/14/00	- -	79.85	0	79.85	3,737.03
		11/02/00	- -	80.27	0	80.27	3,736.61
		02/22/01	- -	79.93	0	79.93	3,736.95
		06/01/01	- -	79.94	0	79.94	3,736.94
		08/28/01	- -	80.64	0	80.64	3,736.24
		12/19/01	- -	80.63	0	80.63	3,736.25
		03/12/02	- -	79.96	0	79.96	3,736.92
		06/25/02	- -	80.60	0	80.60	3,736.28

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MW-6	3,835.50	04/22/96	- -	91.18	0	91.18	3,744.32
98.63		11/19/96	- -	90.64	0	90.64	3,744.86
		02/07/97	- -	90.91	0	90.91	3,744.59
		04/16/97	- -	92.23	0	92.23	3,743.27
		08/14/97	- -	92.93	0	92.93	3,742.57
		10/28/97	- -	93.23	0	93.23	3,742.27
		01/20/98	- -	93.23	0	93.23	3,742.27
		04/23/98	- -	93.54	0	93.54	3,741.96
		08/04/98	- -	94.25	0	94.25	3,741.25
		10/28/98	- -	94.48	0	94.48	3,741.02
		02/16/99	- -	94.71	0	94.71	3,740.79
		04/21/99	- -	94.78	0	94.78	3,740.72
		08/16/99	- -	95.61	0	95.61	3,739.89
		11/23/99	- -	96.03	0	96.03	3,739.47
		01/26/00	- -	95.61	0	95.61	3,739.89
		04/25/00	- -	95.91	0	95.91	3,739.59
		08/14/00	- -	96.24	0	96.24	3,739.26
		11/02/00	- -	96.68	0	96.68	3,738.82
		02/22/01	- -	- -	- -	- -	- -
		06/01/01	- -	96.80	0	96.80	3,738.70
		08/28/01	- -	Dry	- -	- -	- -
		09/09/01	- -	97.61	0	97.61	3,737.89
		12/19/01	- -	97.39	0	97.39	3,738.11
		03/12/02	- -	97.18	0	97.18	3,738.32
		06/20/02	- -	97.93	0	97.93	3,737.57
Note: MW-6 not measured 2/22/01. Previous map omitted RW-1 and RW-1 measured in lieu of MW-6.							
On 8/28, MW-6 was dry, moist dirt on probe, possible sanding in of well							
MW-6R		06/20/02	- -	98.01	0	98.01	
109.96							
MW-7	3,835.84	04/22/96	91.19	96.56	5.37	91.89	3,743.95
102.89		11/19/96	91.34	93.13	1.79	91.57	3,744.27
		02/07/97	91.50	93.05	1.55	91.70	3,744.14
		04/16/97	91.92	95.57	3.65	92.39	3,743.45
		08/14/97	92.35	96.30	3.95	92.86	3,742.98
		10/28/97	93.85	96.38	2.53	94.18	3,741.66
		01/20/98	92.90	94.82	1.92	93.15	3,742.69
		04/23/98	93.14	94.68	1.54	93.34	3,742.50
		08/04/98	94.13	96.49	2.36	94.44	3,741.40
		10/28/98	94.42	95.49	1.07	94.56	3,741.28
		02/16/99	94.76	94.91	0.15	94.78	3,741.06
		04/21/99	94.75	94.83	0.08	94.76	3,741.08
		08/16/99	95.58	95.59	0.01	95.58	3,740.26

Table 1. Summary of Water Level Measurements and Groundwater Elevations, Navajo Refining Company, Lea Refinery

Monitor Well No., Depth Below TOC, & Depth Below Surface (feet)	Elevation Top of Casing (TOC, feet)	Measure-ment Date	Depth to Product (feet)	Depth to Water Below TOC (feet)	Product Thickness (feet)	Corrected Depth to Water (feet)	Corrected Water Level Elev. (feet)
MW-7		11/23/99	95.80	95.94	0.14	95.82	3,740.02
		01/26/00	- -	95.56	0	95.56	3,740.28
		04/25/00	- -	95.87	0	95.87	3,739.97
		08/14/00	- -	96.24	0	96.24	3,739.60
		11/02/00	- -	96.71	0	96.71	3,739.13
		02/22/01	- -	96.58	0	96.58	3,739.26
		06/01/01	96.92	97.08	0.16	96.94	3,738.90
		08/28/01	97.56	98.69	1.13	97.71	3,738.13
		12/19/02	96.83	97.10	0.27	96.87	3,738.97
		03/12/02	96.75	100.68	3.93	97.27	3,738.57
		04/24/02	96.95	101.04	4.09	97.50	3,738.34
		05/11/02	97.08	101.55	4.47	97.68	3,738.16
		06/20/02	97.37	102.38	5.01	98.04	3,737.80
		08/05/02	97.74	102.71	4.97	98.40	3,737.44
Note: Corrected depth to water = Static DTW - (Prod. Thickness x SG), SG = 0.8665 (0.87 prior to 2001)							
MW-8	3,838.09	04/22/96	- -	94.73	0	94.73	3,743.36
105.43		11/19/96	- -	95.50	0	95.50	3,742.59
		02/07/97	- -	95.50	0	95.50	3,742.59
		04/16/97	- -	95.66	0	95.66	3,742.43
		08/14/97	- -	96.25	0	96.25	3,741.84
		10/28/97	- -	96.45	0	96.45	3,741.64
		01/20/98	- -	96.68	0	96.68	3,741.41
		04/23/98	- -	96.97	0	96.97	3,741.12
		08/04/98	- -	97.52	0	97.52	3,740.57
		10/28/98	- -	97.94	0	97.94	3,740.15
		02/16/99	- -	98.14	0	98.14	3,739.95
		04/21/99	- -	98.21	0	98.21	3,739.88
		08/16/99	- -	99.02	0	99.02	3,739.07
		11/23/99	- -	99.45	0	99.45	3,738.64
		01/26/00	- -	99.05	0	99.05	3,739.04
		04/25/00	- -	99.47	0	99.47	3,738.62
		08/14/00	- -	99.68	0	99.68	3,738.41
		11/02/00	- -	100.01	0	100.01	3,738.08
		02/22/01	- -	99.81	0	99.81	3,738.28
		05/31/01	- -	100.08	0	100.08	3,738.01
		08/28/01	- -	100.96	0	100.96	3,737.13
		12/19/01	- -	100.64	0	100.64	3,737.45
		03/12/02	- -	100.52	0	100.52	3,737.57
		06/20/02	- -	101.22	0	101.22	3,736.87

Table 1. Summary of Water Level Measurements and Groundwater Elevations, Navajo Refining Company, Lea Refinery

Monitor Well No., Depth Below TOC, & Depth Below Surface (feet)	Elevation Top of Casing (TOC, feet)	Measure-ment Date	Depth to Product (feet)	Depth to Water Below TOC (feet)	Product Thickness (feet)	Corrected Depth to Water (feet)	Corrected Water Level Elev. (feet)
MW-9	3,832.82	04/22/96	--	89.60	0	89.60	3,743.22
100.82		11/19/96	--	90.34	0	90.34	3,742.48
		02/07/97	--	90.41	0	90.41	3,742.41
		04/16/97	--	90.52	0	90.52	3,742.30
		08/14/97	--	91.06	0	91.06	3,741.76
		10/28/97	--	91.27	0	91.27	3,741.55
		01/20/98	--	91.54	0	91.54	3,741.28
		04/23/98	--	91.82	0	91.82	3,741.00
		08/04/98	--	92.29	0	92.29	3,740.53
		10/28/98	--	92.70	0	92.70	3,740.12
		02/16/99	--	92.93	0	92.93	3,739.89
		04/21/99	--	93.00	0	93.00	3,739.82
		08/16/99	--	93.75	0	93.75	3,739.07
		11/23/99	--	94.24	0	94.24	3,738.58
		01/26/00	--	93.80	0	93.80	3,739.02
		04/25/00	--	94.31	0	94.31	3,738.51
		08/14/00	--	94.38	0	94.38	3,738.44
		11/02/00	--	94.73	0	94.73	3,738.09
		02/22/01	--	94.55	0	94.55	3,738.27
		03/31/01	--	94.52	0	94.52	3,738.30
		05/31/01	--	94.82	0	94.82	3,738.00
		08/28/01	--	95.71	0	95.71	3,737.11
		12/19/01	--	95.43	0	95.43	3,737.39
		03/12/02	--	95.41	0	95.41	3,737.41
		06/20/02	--	96.03	0	96.03	3,736.79
(Note: Incorrect water level measurement on 22-Feb 2001, water level off 1 ft., original reading 95.55)							
MW-10	3,831.10	04/22/96	--	87.68	0	87.68	3,743.42
98.42		11/19/96	--	88.51	0	88.51	3,742.59
		02/07/97	--	88.54	0	88.54	3,742.56
		04/16/97	--	88.68	0	88.68	3,742.42
		08/14/97	--	89.21	0	89.21	3,741.89
		10/28/97	--	89.40	0	89.40	3,741.70
		01/20/98	--	89.64	0	89.64	3,741.46
		04/23/98	--	89.90	0	89.90	3,741.20
		08/04/98	--	90.32	0	90.32	3,740.78
		10/28/98	--	90.78	0	90.78	3,740.32
		02/16/99	--	91.05	0	91.05	3,740.05
		04/21/99	--	91.07	0	91.07	3,740.03
		08/16/99	--	91.78	0	91.78	3,739.32
		11/23/99	--	92.29	0	92.29	3,738.81
		01/26/00	--	91.86	0	91.86	3,739.24
		04/25/00	--	92.37	0	92.37	3,738.73
		08/14/00	--	92.43	0	92.43	3,738.67
		11/02/00	--	94.73	0	94.73	3,736.37

Table 1. Summary of Water Level Measurements and Groundwater Elevations, Navajo Refining Company, Lea Refinery

Monitor Well No., Depth Below TOC, & Depth Below Surface (feet)	Elevation Top of Casing (TOC, feet)	Measure-ment Date	Depth to Product (feet)	Depth to Water Below TOC (feet)	Product Thickness (feet)	Corrected Depth to Water (feet)	Corrected Water Level Elev. (feet)
MW-10		02/22/01	--	92.71	0	92.71	3,738.39
		03/31/01	--	92.67	0	92.67	3,738.43
		05/31/01	--	92.89	0	92.89	3,738.21
		08/28/01	--	93.80	0	93.80	3,737.30
		12/19/01	--	93.66	0	93.66	3,737.44
		03/12/02	--	93.59	0	93.59	3,737.51
		06/20/02	--	94.14	0	94.14	3,736.96
(Note: Incorrect water level measurement on 22-Feb 2001, water level off 1 ft., original reading 93.71)							
RW-1	3,835.91	02/22/01	96.56	99.76	3.20	96.99	3,738.92
109.96		06/01/01	97.37	97.87	0.50	97.44	3,738.47
		08/28/01	97.23	101.73	4.50	97.83	3,738.08
		09/10/01	97.90	99.51	1.61	98.11	3,737.80
		12/21/01	97.29	101.03	3.74	97.79	3,738.12
		04/24/02	97.73	97.98	0.25	97.76	3,738.15
		05/11/02	97.54	99.97	2.43	97.86	3,738.05
		06/24/02	97.80	101.54	3.74	98.30	3,737.61
		08/05/02	98.63	99.09	0.46	98.69	3,737.22
Note: Corrected depth to water = Static DTW - (Prod. Thickness x SG), SG = 0.8665 (0.87 prior to 2001)							
Notes:							
1. Monitoring wells MW-1 through MW-7 installed September 1995							
2. Monitoring wells MW-8 through MW-10 installed March and April 1996							
3. Monitoring well MW-6R installed May 2002							
4. Elevations surveyed by John W. West Engineering of Hobbs; measurement from north side of casing.							

Table 2. BTEX Concentrations in Groundwater, Navajo Refining Company, Lea Refinery

Monitoring Well	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (total, mg/L)	Total BTEX (mg/L)
MW-1	N/S [1]	--	--	--	--	--
MW-2	09/10/95	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/96	<0.001	<0.001	<0.001	<0.001	<0.001
	08/14/97	<0.001	<0.001	<0.001	<0.001	<0.001
	10/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
	11/23/99	<0.005	<0.005	<0.005	<0.005	<0.005
	11/02/00	<0.005	<0.005	<0.005	0.007	0.007
	05/31/01	<0.001	<0.001	<0.001	<0.001	<0.001
	12/19/01	<0.005	<0.005	<0.005	<0.005	<0.005
(duplicate)	12/19/01	<0.001	<0.001	<0.001	<0.001	<0.001
MW-3	09/10/95	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/96	<0.001	<0.001	<0.001	<0.001	<0.001
	11/19/96	<0.001	<0.001	<0.001	<0.001	<0.001
	11/19/96 [2]	<0.001	<0.001	<0.001	<0.001	<0.001
	01/20/97	<0.001	<0.001	<0.001	<0.001	<0.001
	04/16/97	<0.001	<0.001	<0.001	<0.001	<0.001
	08/14/97	<0.001	<0.001	<0.001	<0.001	<0.001
	10/28/97	<0.001	<0.001	<0.001	<0.001	<0.001
	01/21/98	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/98	<0.005	<0.005	<0.005	0.008	0.008
	04/23/98 [3]	<0.005	<0.005	<0.005	0.008	0.008
	10/29/98	<0.001	<0.001	<0.001	<0.001	<0.001
	02/16/99	0.006	<0.001	0.001	<0.001	0.007
	04/21/99	<0.005	<0.005	<0.005	<0.005	<0.005
	08/16/99	<0.001	<0.001	<0.001	<0.001	<0.004
	11/23/99	**0.314**	<0.005	0.005	0.102	0.421
	01/26/00	**0.482**	<0.005	0.007	0.091	0.580
	04/25/00	**0.433**	<0.005	<0.005	0.109	0.542
	08/14/00	**0.340**	<0.005	<0.005	0.137	0.477
	11/02/00	**0.208**	<0.005	<0.005	0.162	0.370
	02/22/01	**0.131**	<0.001	<0.001	0.020	0.151
	05/31/01	**0.0685**	<0.001	<0.001	0.0151	0.0836
	08/28/01	**0.037**	0.001	<0.001	0.004	0.042
	12/19/01	<0.005	<0.005	<0.005	<0.005	<0.005
	03/12/02	**0.0159**	<0.001	<0.001	<0.001	0.0159
	06/20/02	<0.001	<0.001	<0.001	<0.001	<0.001
MW-4	09/10/95	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/96	<0.001	<0.001	<0.001	<0.001	<0.001
	08/14/97	<0.001	<0.001	<0.001	<0.001	<0.001
	10/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
	11/23/99	<0.005	<0.005	<0.005	<0.005	<0.005
	11/02/00	<0.005	<0.005	<0.005	0.007	0.007
	05/31/01	0.0011	<0.001	<0.001	<0.001	0.0011
	12/19/01	<0.005	<0.005	<0.005	<0.005	<0.005

Table 2. BTEX Concentrations in Groundwater, Navajo Refining Company, Lea Refinery

Monitoring Well	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (total, mg/L)	Total BTEX (mg/L)
MW-5	09/10/95	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/96	<0.001	<0.001	<0.001	<0.001	<0.001
	08/14/97	<0.001	<0.001	<0.001	<0.001	<0.001
	10/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
	11/23/99	<0.005	<0.005	<0.005	<0.005	<0.005
	11/02/00	<0.005	<0.005	<0.005	0.016	0.016
	06/01/01	<0.005	<0.005	<0.005	<0.005	<0.005
	12/19/01	<0.001	<0.001	<0.001	<0.001	<0.001
MW-6	09/10/95	**1.741**	0.021	**0.962**	**0.972**	3.696
	04/23/96	**1.150**	<0.001	0.599	0.462	2.211
	11/19/96	0.002	<0.001	0.011	0.002	0.015
	01/20/97	0.004	<0.001	0.003	0.007	0.014
	04/16/97	<0.001	<0.001	<0.001	<0.001	<0.001
	08/14/97	<0.001	<0.001	<0.001	<0.001	<0.001
	10/28/97	<0.001	<0.001	<0.001	<0.001	<0.001
	01/21/98	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/98	<0.001	<0.001	<0.001	<0.001	<0.001
	08/04/98	<0.001	<0.001	<0.001	<0.001	<0.001
	10/29/98	<0.001	<0.001	<0.001	<0.001	<0.001
	02/16/99	<0.001	<0.001	<0.001	<0.001	<0.001
	04/21/99	<0.001	<0.001	<0.001	<0.001	<0.001
	08/16/99	<0.001	<0.001	<0.001	<0.001	<0.001
	11/23/99	<0.005	<0.005	<0.005	<0.005	<0.005
	01/26/00	<0.005	<0.005	<0.005	<0.005	<0.005
	04/25/00	<0.005	<0.005	<0.005	<0.005	<0.005
	08/14/00	<0.005	<0.005	<0.005	0.005	0.005
	11/02/00	<0.001	<0.001	<0.001	<0.001	<0.001
	02/22/01	(Not sampled due to mislocation on map)				
	06/01/01	<0.001	<0.001	<0.001	<0.001	<0.001
	08/28/01	(Not sampled due to lack of measurable water)				
	12/19/01	<0.001	<0.001	<0.001	<0.001	<0.001
	03/12/02	0.0016	<0.001	0.0108	<0.001	0.0124
	06/12/02	(Not sampled due to lack of water; replaced by adjacent well MW-6R)				
MW-6R	06/22/02	<0.001	<0.001	<0.001	<0.001	<0.001
MW-7	08/14/00	<0.005	0.006	0.033	0.062	0.101
	11/02/00	**0.025**	0.006	0.012	<0.005	0.043
	02/22/01	<0.005	<0.005	0.032	0.101	0.133
	06/01/01 [1]	(Not sampled subesquent to 02/22/01 due to hydrocarbon product)				

Table 2. BTEX Concentrations in Groundwater, Navajo Refining Company, Lea Refinery

Monitoring Well	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (total, mg/L)	Total BTEX (mg/L)
MW-8	04/23/96	0.002	<0.001	<0.001	<0.001	0.002
	11/19/96	<0.001	<0.001	<0.001	<0.001	<0.001
	11/19/96 [2]	<0.001	<0.001	<0.001	<0.001	<0.001
	01/20/97	<0.001	<0.001	<0.001	<0.001	<0.001
	04/16/97	<0.001	<0.001	<0.001	<0.001	<0.001
	08/14/97	<0.001	<0.001	<0.001	<0.001	<0.001
	10/28/97	<0.001	<0.001	<0.001	<0.001	<0.001
	01/21/98	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/98	<0.001	<0.001	<0.001	<0.001	<0.001
	08/04/98	<0.001	<0.001	<0.001	<0.001	<0.001
	10/29/98	<0.001	<0.001	<0.001	<0.001	<0.001
	02/16/99	<0.001	<0.001	<0.001	<0.001	<0.001
	04/21/99	<0.005	<0.005	<0.005	<0.005	<0.005
	08/16/99	<0.001	<0.001	<0.001	<0.001	<0.001
	11/23/99	<0.005	<0.005	<0.005	<0.005	<0.005
	01/26/00	<0.005	<0.005	<0.005	<0.005	<0.005
	04/25/00	<0.005	<0.005	<0.005	<0.005	<0.005
	08/14/00	<0.005	<0.005	<0.005	<0.005	<0.005
	11/02/00	<0.005	<0.005	<0.005	<0.005	<0.005
	02/22/01	<0.001	<0.001	<0.001	<0.001	<0.001
	05/31/01	<0.001	<0.001	<0.001	<0.001	<0.001
	08/28/01	<0.001	0.001	<0.001	<0.001	0.001
	12/19/01	<0.001	<0.001	<0.001	<0.001	<0.001
	03/12/02	<0.001	<0.001	<0.001	<0.001	<0.001
	06/20/02	<0.001	<0.001	<0.001	<0.001	<0.001
MW-9	04/23/96	**1.690**	<0.010	<0.010	<0.001	1.690
	11/19/96	**0.679**	<0.005	<0.005	<0.005	0.679
	01/20/97	**0.340**	<0.001	0.002	0.003	0.345
	04/16/97	**0.347**	<0.002	<0.002	0.007	0.354
	08/14/97	**1.680**	<0.010	<0.010	<0.010	1.680
	10/28/97	**0.516**	<0.010	<0.010	<0.010	0.516
	10/28/97 [3]	**0.474**	<0.010	<0.010	<0.010	0.474
	01/21/98	**0.146**	0.005	<0.001	0.002	0.153
	01/21/98 [3]	**0.125**	0.004	<0.001	<0.001	0.129
	04/23/98	**0.013**	<0.001	<0.001	<0.001	0.013
	04/23/98 [3]	**0.012**	<0.001	<0.001	<0.001	0.012
	08/04/98	**0.010**	<0.001	<0.001	<0.001	0.010
	08/04/98 [3]	0.007	<0.001	<0.001	<0.001	0.007
	10/29/98	0.007	0.006	<0.001	0.002	0.015
	10/29/98 [3]	0.006	0.004	0.002	0.002	0.014
	02/16/99	<0.001	0.004	0.001	0.022	0.027
	02/16/99 [3]	<0.001	0.004	0.002	0.008	0.014
	04/21/99	0.008	0.002	<0.001	0.005	0.015
	04/21/99 [3]	0.006	0.001	<0.001	0.004	0.011
	08/16/99	<0.001	<0.001	<0.001	0.002	0.002

Table 2. BTEX Concentrations in Groundwater, Navajo Refining Company, Lea Refinery

Monitoring Well	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (total, mg/L)	Total BTEX (mg/L)
MW-9	11/23/99	<0.005	<0.005	<0.005	<0.005	<0.005
	01/26/00	<0.005	<0.005	<0.005	<0.005	<0.005
	04/25/00	<0.005	<0.005	<0.005	<0.005	<0.005
	08/14/00	<0.005	<0.005	<0.005	<0.005	<0.005
	11/02/00	<0.005	<0.005	<0.005	<0.005	<0.005
	02/22/01	<0.001	<0.001	<0.001	<0.001	<0.001
	05/31/01	<0.001	<0.001	<0.001	<0.001	<0.001
	05/31/01 [3]	<0.001	<0.001	<0.001	<0.001	<0.001
	08/28/01	<0.001	<0.001	<0.001	<0.001	<0.001
	12/19/01	<0.005	<0.005	<0.005	<0.005	<0.005
	03/12/02	<0.001	<0.001	<0.001	<0.001	<0.001
	06/20/02	<0.001	<0.001	<0.001	<0.001	<0.001
(Duplicate #1)	06/20/02	<0.005	<0.005	<0.005	<0.005	<0.005
MW-10	04/23/96	<0.001	<0.001	<0.001	<0.001	<0.001
	11/19/96	<0.001	<0.001	<0.001	<0.001	<0.001
	11/19/96 [2]	<0.001	<0.001	<0.001	<0.001	<0.001
	01/20/97	<0.001	<0.001	<0.001	<0.001	<0.001
	04/16/97	<0.001	<0.001	<0.001	<0.001	<0.001
	08/14/97	<0.001	<0.001	<0.001	<0.001	<0.001
	10/28/97	<0.001	<0.001	<0.001	<0.001	<0.001
	01/21/98	<0.001	<0.001	<0.001	<0.001	<0.001
	04/23/98	<0.001	<0.001	<0.001	<0.001	<0.001
	08/04/98	<0.001	<0.001	<0.001	<0.001	<0.001
	10/29/98	<0.001	<0.001	<0.001	<0.001	<0.001
	02/16/99	<0.001	<0.001	<0.001	<0.001	<0.001
	04/21/99	<0.005	<0.005	<0.005	<0.005	<0.005
	08/16/99	<0.001	<0.001	<0.001	<0.001	<0.001
	11/22/99	<0.005	<0.005	<0.005	<0.005	<0.005
	01/26/00	<0.005	<0.005	<0.005	<0.005	<0.005
	04/25/00	<0.005	<0.005	<0.005	<0.005	<0.005
	08/14/00	<0.005	<0.005	<0.005	<0.005	<0.005
	11/02/00	<0.001	<0.001	<0.001	<0.001	<0.001
	02/22/01	<0.001	<0.001	<0.001	<0.001	<0.001
	05/31/01	<0.001	<0.001	<0.001	<0.001	<0.001
	08/28/01	<0.001	<0.001	<0.001	<0.001	<0.001
	12/19/01	<0.001	<0.001	<0.001	<0.001	<0.001
	03/12/02	<0.001	<0.001	<0.001	<0.001	<0.001
(Duplicate #1)	03/12/02	<0.001	<0.001	<0.001	<0.001	<0.001
	06/20/02	<0.001	<0.001	<0.001	<0.001	<0.001
North Water Well	06/09/01	0.0051	<0.001	<0.001	<0.001	0.0051
	08/28/01	0.003	<0.001	<0.001	<0.001	0.003
	12/19/01	<0.001	<0.001	<0.001	<0.001	<0.001
	03/12/02	0.0021	<0.001	<0.001	<0.001	0.0021
	06/20/02	0.001	<0.001	<0.001	<0.001	0.001

Table 2. BTEX Concentrations in Groundwater, Navajo Refining Company, Lea Refinery

Monitoring Well	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (total, mg/L)	Total BTEX (mg/L)
South Water Well	08/28/01	<0.001	<0.001	<0.001	<0.001	<0.001
	12/19/01	<0.001	<0.001	<0.001	<0.001	<0.001
	03/12/02	<0.001	<0.001	<0.001	<0.001	<0.001
	06/20/02	<0.001	<0.001	<0.001	<0.001	<0.001
System Composite	06/09/01	<0.001	<0.001	<0.001	<0.001	<0.001
Field Blank	02/22/01	<0.001	<0.001	<0.001	<0.001	<0.001
	06/01/01 [4]	<0.001	<0.001	<0.001	0.0012	0.0012
	12/19/2001 [5]	<0.001	<0.001	<0.001	<0.001	<0.004
Trip Blank	11/02/00	<0.001	<0.001	<0.001	<0.001	<0.001
	03/12/02	<0.001	<0.001	<0.001	<0.001	<0.001
NM WQCC Groundwater Standards:		**0.010**	**0.750**	**0.750**	**0.620**	--
Notes:						
Samples analyzed for BTEX using EPA Method 8021B.						
Analyses performed by TraceAnalysis, Lubbock, Texas, unless otherwise noted						
The following wells are sampled quarterly (unless hydrocarbon product is present), all others are sampled annually:						
	MW-1, MW-3, MW-6 (-6R), MW-7, MW-8, MW-9, MW-10, North water well, South water well					
Voluntary sampling for North and South water wells began June 2001						
1. N/S - Monitoring well not sampled due to presence of phase-separated hydrocarbon						
2. Analyses performed by American Environmental Newtwork, Inc., Albuquerque, NM						
3. Duplicate analysis						
4. ShurFine distilled water						
5. Magic Mountain distilled water						

Table 3. Inorganic Constituents Concentrations in Groundwater, Navajo Refining Company, Lea Refinery

Monitoring Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Iron (mg/L)	Manganese (mg/L)	Vanadium (mg/L)
NM WQCC Groundwater Standards:		**250**	**1.6**	**10.0**	**600**	**1,000**	**0.10**	**1.0**	**0.75**	**1.0**	**0.20**	--
MW-1	N/S [1]	--	--	--	--	--	--	--	--	--	--	--
MW-2	11/02/00	93	**1.9**	3.9	69	530	<0.01	0.169	<0.5	**1.24**	0.0175	0.0134
	05/31/01	94	**1.65**	3.09	69.4	541	--	--	--	--	--	--
	12/19/01	79.0	1.57	3.38	62.8	549	<0.010	0.119	0.644	0.243	<0.02	<0.02
MW-3	11/02/00	**490**	1.1	1.0	50	**1,500**	<0.01	0.381	<0.5	**2.4**	**0.677**	<0.01
	05/31/01	**464**	1.18	<1.00	42.9	**1,310**	--	--	--	--	--	--
	12/19/01	**548**	1.01	<1.00	29.0	**1,400**	<0.010	0.389	0.555	0.952	**0.688**	<0.02
MW-4	11/02/00	23	1.6	2.8	80	370	<0.01	0.784	<0.5	**11.4**	0.18	0.0576
	05/31/01	23.4	**1.61**	2.62	73.6	368	--	--	--	--	--	--
	12/19/01	21.9	1.58	2.87	76.4	394	<0.010	0.153	0.181	0.930	<0.02	0.0266
MW-5	11/02/00	74	1.1	1.9	52	570	<0.01	0.585	<0.5	**16.4**	**0.213**	0.0665
	06/01/01	44	1.13	1.67	46.3	--	--	--	--	--	--	--
	12/19/01	68.8	1.03	1.9	49.7	603	<0.010	0.187	0.158	**1.64**	<0.02	<0.02
MW-6	11/02/00	**330**	**3.3**	<1.0	99	860	0.0939	0.122	<0.5	0.649	0.0465	0.188
	06/01/01	241	**2.99**	<1.00	68.0	--	--	--	--	--	--	--
	12/19/01	171	**3.97**	<1.00	61.4	667	0.0821	0.102	0.112	**1.11**	0.0489	0.222
MW-7	11/02/00	91	**3.3**	<1.0	72	590	0.02	0.34	<0.5	8.73	0.212	<0.01
	12/19/01 [1]	--	--	--	--	--	--	--	--	--	--	--
MW-8	11/02/00	**490**	**2.5**	7.2	110	**1,400**	<0.01	0.28	0.704	**1.96**	0.0378	0.0151
	05/31/01	**418**	**2.05**	3.82	93.7	--	--	--	--	--	--	--
	12/19/01	**397**	**1.76**	5.41	101	**1,160**	<0.010	0.132	0.676	0.180	<0.02	0.025
MW-9	11/02/00	150	**4.7**	1.0	100	750	<0.01	0.137	<0.5	**1.02**	0.06	<0.01
	05/31/01	169	**4.37**	1.51	73.4	--	--	--	--	--	--	--
	12/19/01	**269**	**3.93**	3.71	70.1	944	0.0156	0.182	0.181	0.528	0.112	0.0396

Table 3. Inorganic Constituents Concentrations in Groundwater, Navajo Refining Company, Lea Refinery

Monitoring Well	Sample Date	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Iron (mg/L)	Manganese (mg/L)	Vanadium (mg/L)
MW-10	11/02/00	39	1.4	3.1	94	460	<0.01	0.151	<0.5	0.907	0.0159	0.0135
	05/31/01	- -	1.51	2.81	87.2	449	- -	- -	- -	- -	- -	- -
	12/19/01	29.8	1.49	3.09	91.2	450	<0.010	0.136	0.170	0.408	<0.02	0.0263
NM WQCC Groundwater Standards:		**250**	**1.6**	**10.0**	**600**	**1,000**	**0.10**	**1.0**	**0.75**	**1.0**	**0.20**	**- -**
Notes:												
Data prior to 2000 not available for inclusion in this table.												
Samples 11/02/00 field filtered; others are total.												
Analyses performed by TraceAnalysis, Lubbock, Texas												
Sampling and analyses for inorganic constituents performed annually (11/02/00, 12/19/01)												
Additional sampling performed 05/31/01 and 06/01/01												
1. N/S - Monitoring well not sampled due to presence of phase-separated hydrocarbon												

Table 4. Total Fluids and Product Recovery Volumes, Navajo Refining Company, Lea Refinery

Date	Recovery Method	Cumulative Total Fluids Recovered (gallons)	Barrel Reading (feet)	Product Recovered (gallons)	Cumulative Product Recovered (gallons)
12/28/97	Sub. Pump	699,033	N/A	Unknown	Unknown
01/21/98	PRS	N/A	N/A	0.50	0.5
01/27/98	PRS	N/A	N/A	2.00	2.5
02/11/98	PRS	N/A	N/A	1.10	3.6
02/24/98	PRS	N/A	N/A	1.50	5.1
03/13/98	PRS	N/A	N/A	2.60	7.7
03/23/98	PRS	N/A	N/A	10.60	18.3
04/10/98	PRS	N/A	N/A	15.80	34.1
04/22/98	PRS	N/A	N/A	0.50	34.6
05/06/98	PRS	N/A	N/A	7.50	42.1
06/23/98	PRS	N/A	N/A	19.50	61.6
08/04/98	PRS	N/A	N/A	5.50	67.1
09/18/98	PRS	N/A	N/A	44.20	111.3
10/29/98	PRS	N/A	N/A	15.50	126.8
11/18/98	PRS	N/A	N/A	6.60	133.4
02/16/99	PRS	N/A	N/A	10.66	144.1
04/21/99	PRS	N/A	N/A	4.42	148.5
09/14/99	PRS	N/A	N/A	11.81	160.3
10/26/99	PRS	N/A	N/A	3.31	163.6
11/23/99	PRS	N/A	N/A	1.65	165.3
12/21/99	PRS	N/A	N/A	1.65	166.9
01/26/00	PRS	N/A	N/A	7.28	174.2
02/23/00	PRS	N/A	N/A	2.62	176.8
04/03/00	PRS	N/A	N/A	1.46	178.3
04/25/00	PRS	N/A	N/A	2.87	181.1
06/13/00	PRS	N/A	N/A	1.86	183.0
07/19/00	PRS	N/A	N/A	4.10	187.1
08/14/00	PRS	N/A	N/A	1.18	188.3
04/07/01	PRS	N/A	0.33	6.42	194.7
04/21/01	PRS	N/A	0.50	3.31	198.0
04/28/01	PRS	N/A	0.60	1.95	199.9
05/12/01	PRS	N/A	0.73	2.53	202.5
06/01/01	PRS	N/A	0.81	1.56	204.0
06/09/01	PRS	N/A	0.88	1.36	205.4
08/28/01	PRS	N/A	0.92	0.78	206.2
09/09/01	PRS	N/A	1.03	2.14	208.3
12/19/01	PRS	N/A	1.32	5.64	214.0
02/15/02	PRS	N/A	1.92	11.68	225.6
03/12/02	PRS	N/A	2.10	3.50	229.1
04/24/02	PRS	N/A	2.44	6.62	235.8
05/09/02	PRS	N/A	2.44	0.00	235.8
05/10/02	PRS	N/A	0.60	(barrel emptied)	
05/11/02	PRS	N/A	0.72	2.34	238.1
06/22/02	PRS	N/A	0.72	0.00	238.1
06/24/02	PRS	N/A	0.89	3.31	241.4
		Total Measured Volume of Product Recovered:			**241.4**

Notes:

Product recovery methods used:

Submersible Pump, 3/4 HP Grundfos for total fluids recovery (10/01/96 - 12/28/97)

Product Recovery System (PRS), Xitech ADJ 1000 Smart Skimmer

Volume product recovered during total fluids recovery (10/96-12/97) unknown

Volume recovered (beginning 04/01) calculated using drum diameter of 1.82 ft., or 19.46 gallons per foot barrel depth

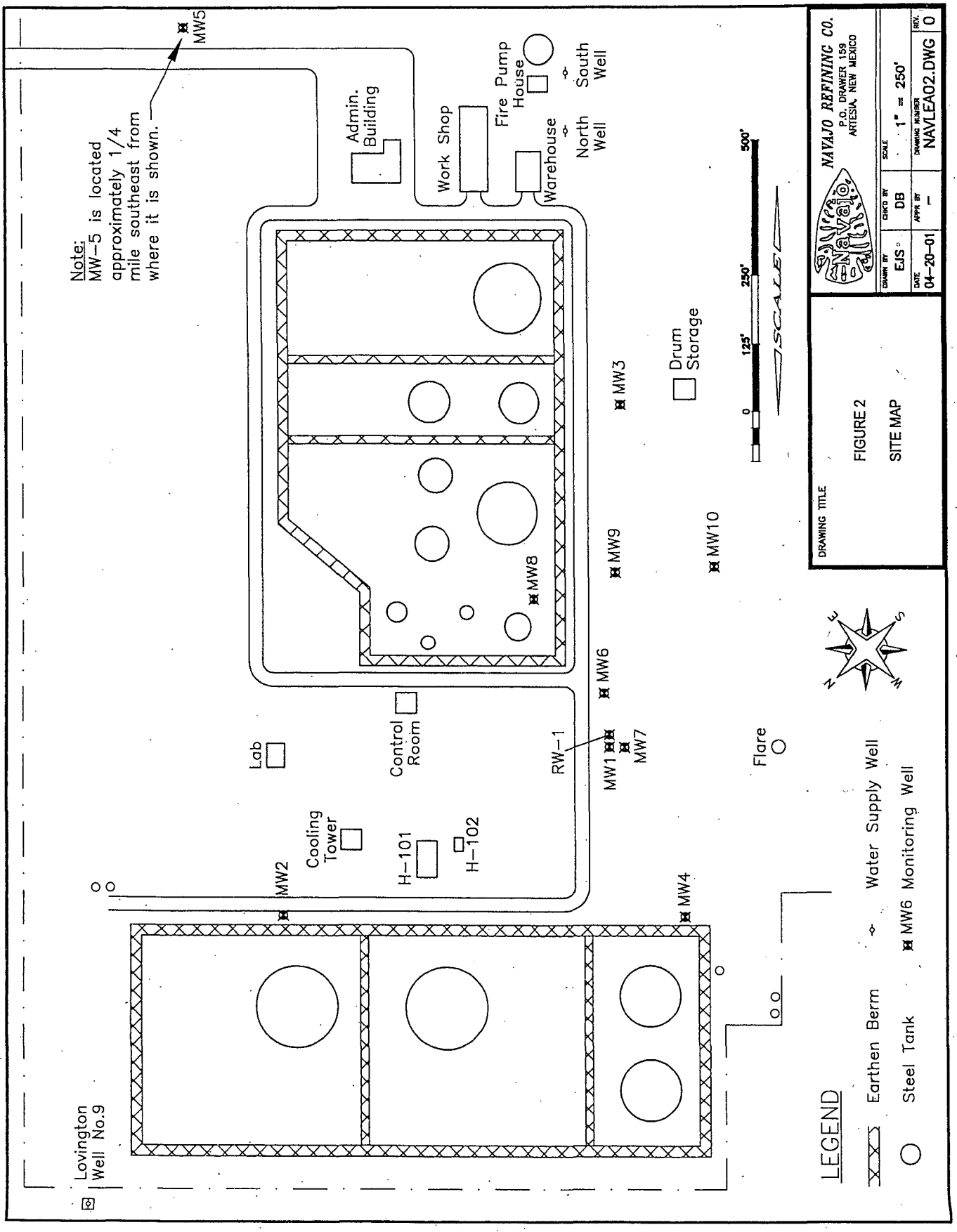
Table 5. Groundwater Temperatures (°F), 2000-2002, Navajo Refining Company, Lea Refinery

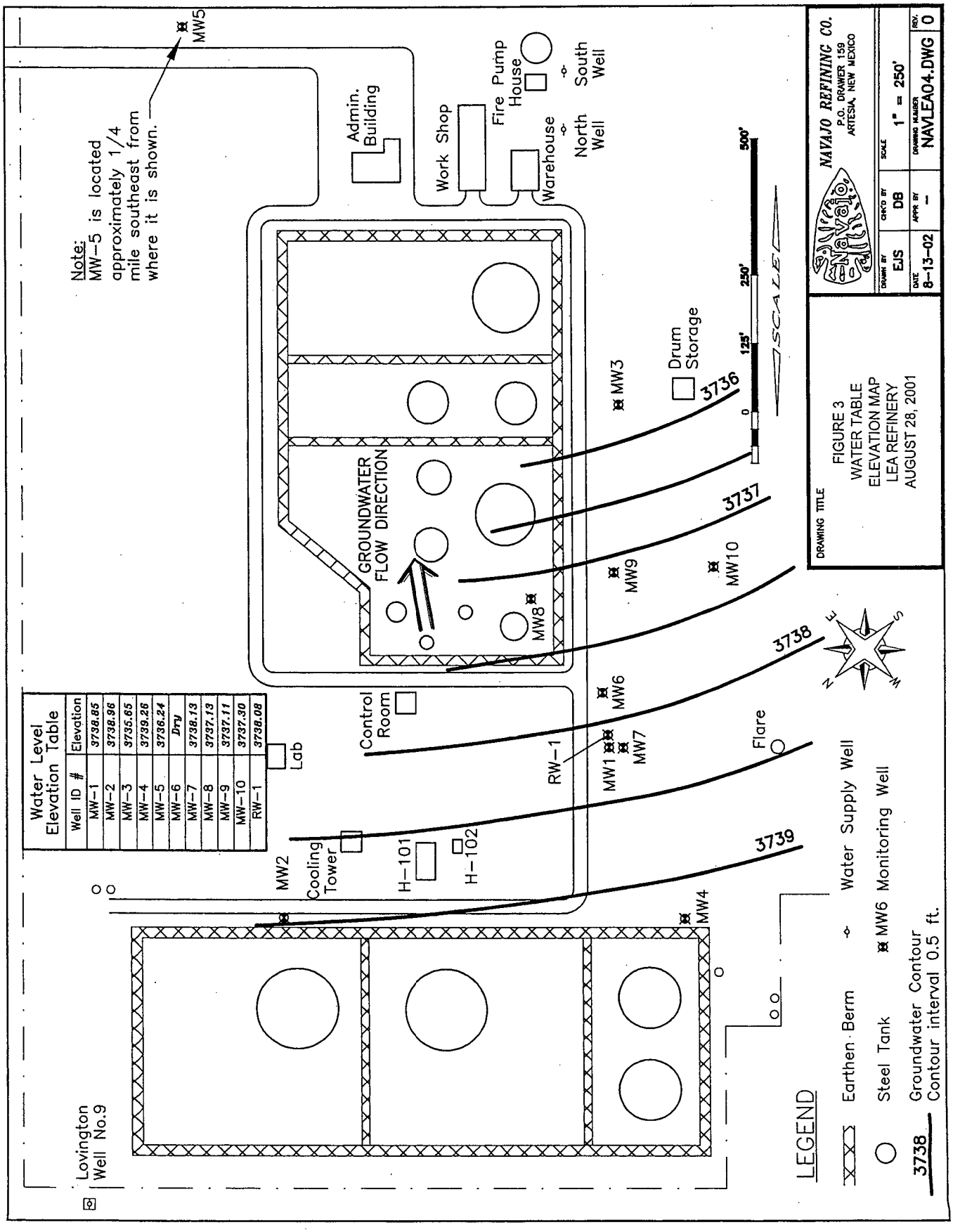
Measure-ment Date	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6 [1]	MW-7	MW-8	MW-9	MW-10
01/26/00	84	--	64.6	--	--	81.3	82	69.6	77.4	66.9
04/25/00	84	--	70.7	--	--	84.7	83	75.0	84.4	69.1
08/14/02	84	--	68.7	--	--	85.1	81.0	76.1	81.9	70.0
11/02/00	HP	64.9	64.6	65.1	63.9	77.2	73.9	70.2	76.8	67.8
02/22/01	HP	--	NM	--	--	NM	HP	NM	NM	NM
05/31/01	HP	69	69	68	67	83	HP	75	81	70
08/28/01	HP	--	73.0	--	--	NS	HP	74.1	83.1	71.8
12/19/01	HP	60.0	61.4	56.8	61.4	73.7	HP	64.2	71.0	62.7
03/12/02	HP	--	73.9	--	--	74.9	HP	68.9	76.3	72.5
06/20/02	HP	--	70.4	--	--	NM	HP	78.1	81.7	72.6
Average:	84.0	64.6	68.5	63.3	64.1	80.0	80.0	72.4	79.3	69.3
Notes:										
Temperatures in degrees Fahrenheit										
HP - Hydrocarbon product, temperature not measured; NM - Not measured; NS - Not sampled										
1. MW-6R sampled beginning 06/20/02; water sample taken following well development, temperature not measured.										

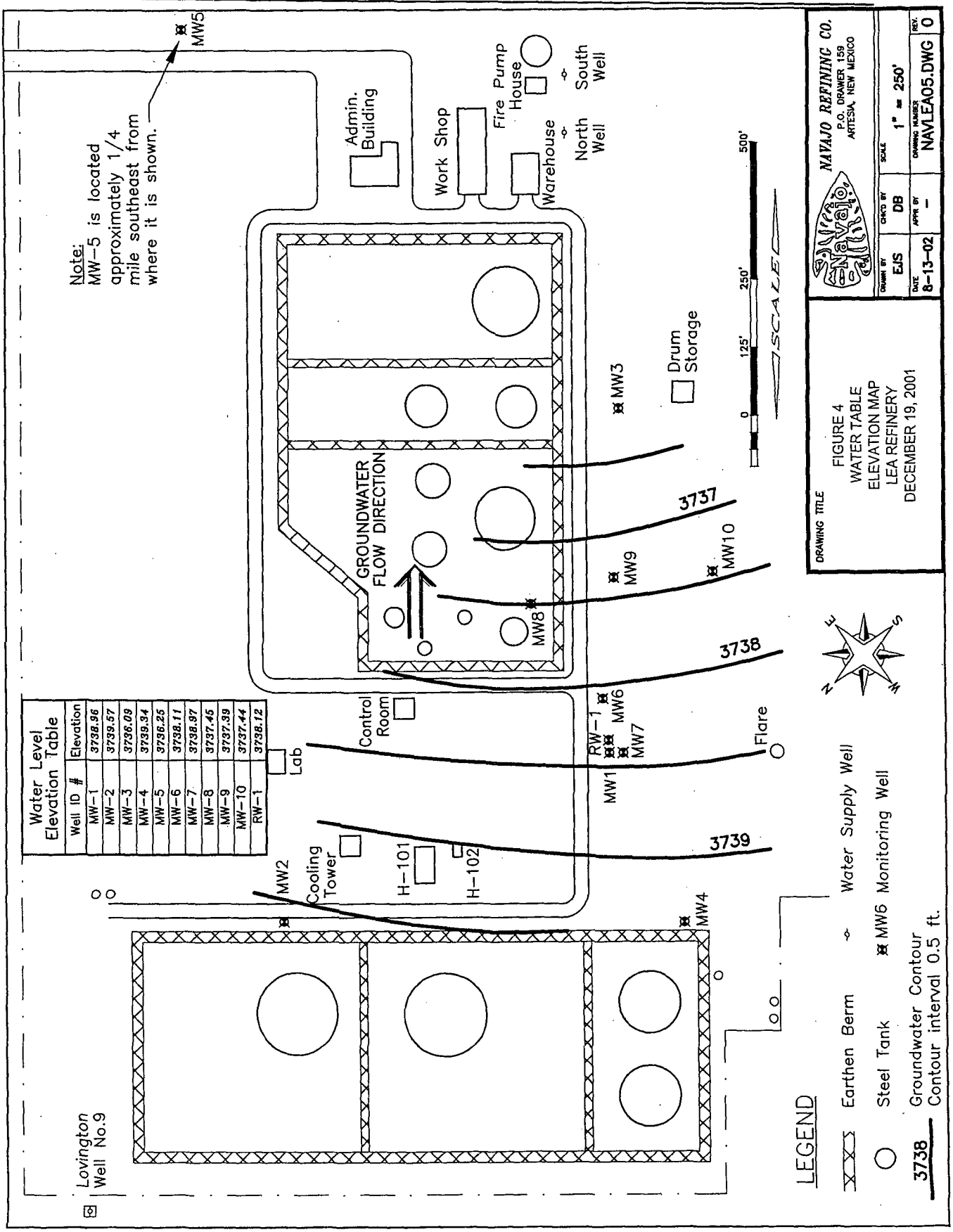
Figure 1. Location Map
Navajo Refining Company, Lea Refinery

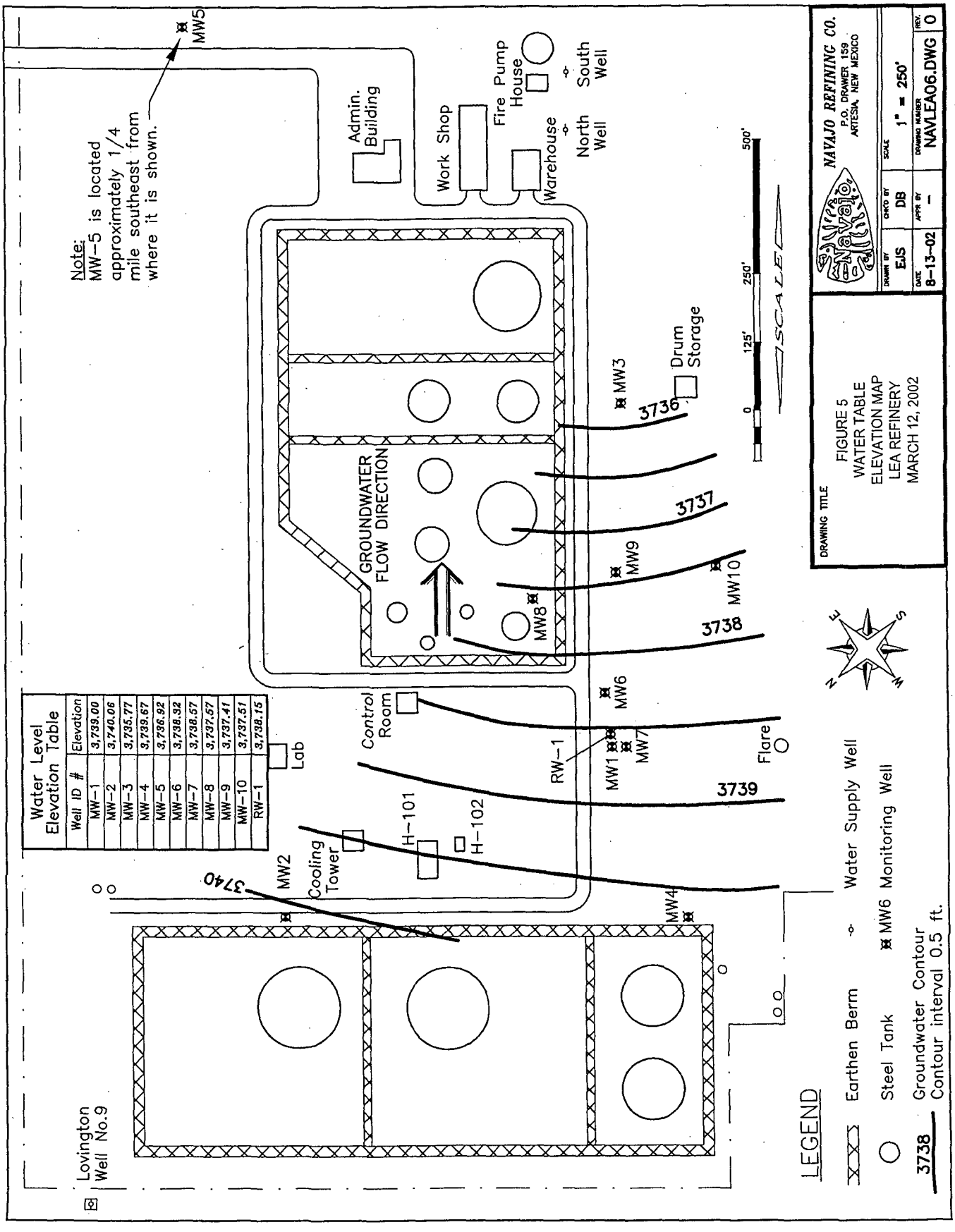
Name: LOVINGTON
Date: 6/8/2001
Scale: 1 inch equals 2000 feet

Location: 032° 53' 00.3" N 103° 17' 56.3" W
Caption: Figure 1. Location Map, Navajo Refining Co., Lea Refinery

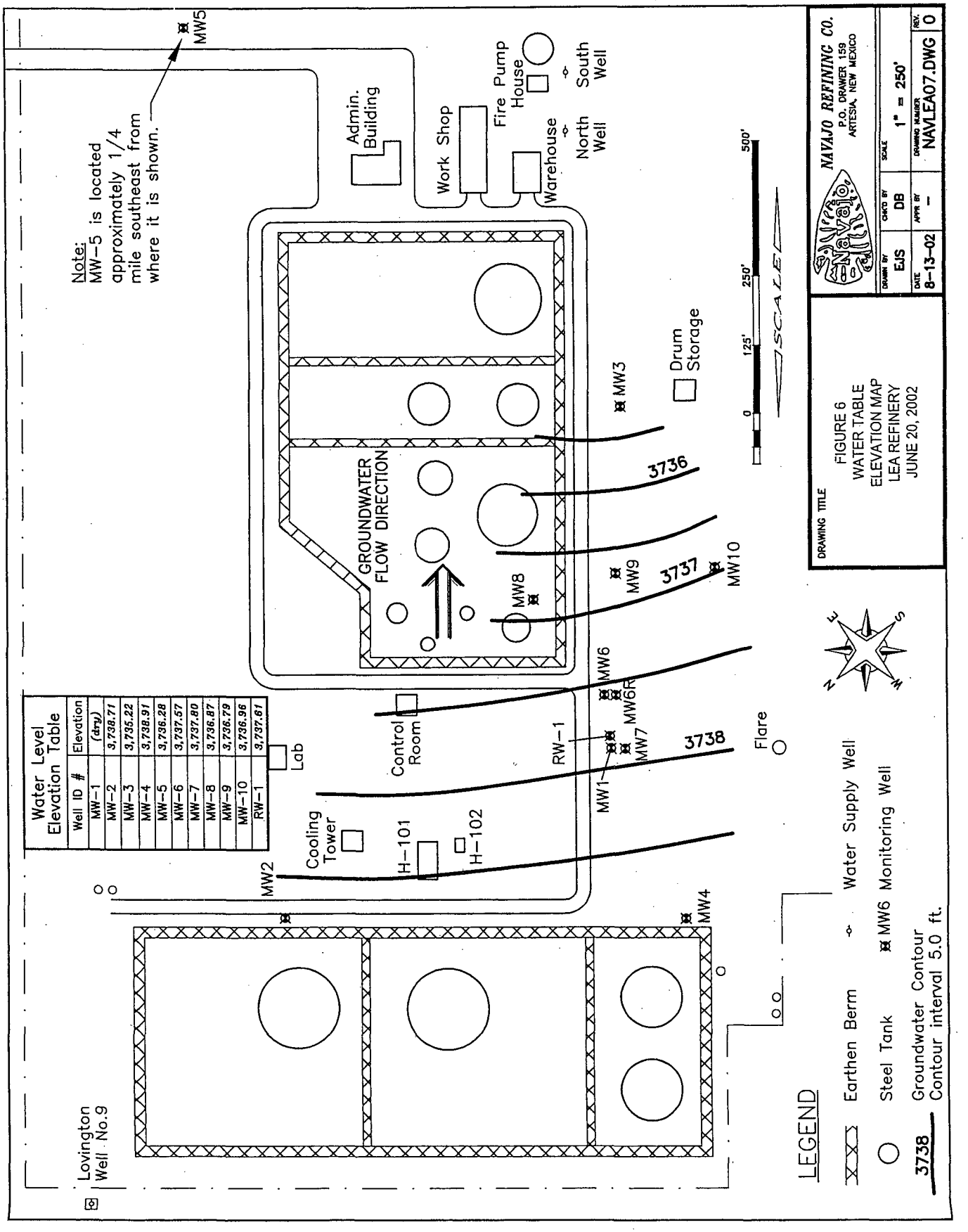

MW5
Note:
MW-5 is located approximately 1/4 mile southeast from where it is shown.
Admin. Building
Work Shop
Fire Pump House
Warehouse
North Well
South Well
Drum Storage
MW3
MW8
MW9
MW10
MW6
MW1
MW7
RW-1
Lab
Control Room
Cooling Tower
H-101
H-102
MW2
MW4
Flare
Lovington Well No.9
0
125'
250'
500'
SCALE
LEGEND
Earthen Berm
Water Supply Well
Steel Tank
MW6 Monitoring Well
NAVAJO REFINING CO.
P.O. DRAWER 159
ARTESIA, NEW MEXICO
DRAWN BY EJS
CHK'D BY DB
APPR BY -
DATE 04-20-01
SCALE 1" = 250'
DRAWING NUMBER NAVLEA02.DWG
REV. 0
DRAWING TITLE
FIGURE 2
SITE MAP


Note:
MW-5 is located approximately 1/4 mile southeast from where it is shown.
MW5
Admin. Building
Work Shop
Fire Pump House
South Well
North Well
Warehouse
Drum Storage
MW3
GROUNDWATER FLOW DIRECTION
3736
3737
3738
3739
MW8
MW9
MW10
MW6
MW1
MW7
RW-1
Control Room
Lab
Flare
MW2
Cooling Tower
H-101
H-102
MW4
Lovington Well No.9
Water Level Elevation Table
Well ID # | Elevation
MW-1 | 3738.85
MW-2 | 3738.96
MW-3 | 3735.65
MW-4 | 3739.26
MW-5 | 3736.24
MW-6 | Dry
MW-7 | 3738.13
MW-8 | 3737.13
MW-9 | 3737.11
MW-10 | 3737.30
RW-1 | 3738.08
SCALE
0
125'
250'
500'
LEGEND
Earthen Berm
Water Supply Well
Steel Tank
MW6 Monitoring Well
3738 Groundwater Contour
Contour interval 0.5 ft.
DRAWING TITLE
FIGURE 3
WATER TABLE
ELEVATION MAP
LEA REFINERY
AUGUST 28, 2001
NAVAJO REFINING CO.
P.O. DRAWER 159
ARTESIA, NEW MEXICO
DRAWN BY EJS
CK'D BY DB
SCALE 1" = 250'
DATE 8-13-02
APP'D BY -
DRAWING NUMBER NAVLEA04.DWG
REV. 0


Note:
MW-5 is located approximately 1/4 mile southeast from where it is shown.
MW5
Admin. Building
Work Shop
Fire Pump House
Warehouse
North Well
South Well
MW3
Drum Storage
GROUNDWATER FLOW DIRECTION
MW8
MW9
MW10
3737
3738
3739
Control Room
Lab
RW-1
MW1
MW6
MW7
Flare
MW2
Cooling Tower
H-101
H-102
MW4
Lovington Well No.9
Water Level Elevation Table
Well ID # | Elevation
MW-1 | 3738.96
MW-2 | 3739.57
MW-3 | 3736.09
MW-4 | 3739.34
MW-5 | 3736.25
MW-6 | 3738.11
MW-7 | 3738.97
MW-8 | 3737.45
MW-9 | 3737.39
MW-10 | 3737.44
RW-1 | 3738.12
LEGEND
Earthen Berm
Water Supply Well
Steel Tank
MW6 Monitoring Well
3738 Groundwater Contour
Contour interval 0.5 ft.
SCALE
0
125'
250'
500'
DRAWING TITLE
FIGURE 4
WATER TABLE
ELEVATION MAP
LEA REFINERY
DECEMBER 19, 2001
NAVAJO REFINING CO.
P.O. DRAWER 159
ARTESIA, NEW MEXICO
DRAWN BY EJS
CHK'D BY DB
APPR BY -
SCALE 1" = 250'
DATE 8-13-02
DRAWING NUMBER NAVLEA05.DWG
REV. 0



Water Level Elevation Table	
Well ID #	Elevation
MW-1	3,739.00
MW-2	3,740.06
MW-3	3,735.77
MW-4	3,739.67
MW-5	3,736.92
MW-6	3,738.32
MW-7	3,738.57
MW-8	3,737.57
MW-9	3,737.41
MW-10	3,737.51
RW-1	3,738.15


Note:
MW-5 is located approximately 1/4 mile southeast from where it is shown.
MW5
Admin. Building
Work Shop
Fire Pump House
South Well
North Well
Warehouse
Drum Storage
MW3
GROUNDWATER FLOW DIRECTION
3736
3737
3738
MW8
MW9
MW10
MW6
MW6R
MW7
MW1
RW-1
Control Room
Lab
Cooling Tower
H-101
H-102
MW2
MW4
Flare
Lovington Well No.9
0
125'
250'
500'
SCALE
N
E
S
W
LEGEND
Earthen Berm
Water Supply Well
Steel Tank
MW6 Monitoring Well
3738 Groundwater Contour
Contour interval 5.0 ft.
Water Level Elevation Table
Well ID # | Elevation
MW-1 | (dry)
MW-2 | 3,738.71
MW-3 | 3,735.22
MW-4 | 3,738.91
MW-5 | 3,736.28
MW-6 | 3,737.57
MW-7 | 3,737.80
MW-8 | 3,736.87
MW-9 | 3,736.79
MW-10 | 3,736.96
RW-1 | 3,737.61
NAVAJO REFINING CO.
P.O. DRAWER 159
ARTESIA, NEW MEXICO
DRAWN BY EJS
CHK'D BY DB
APPR BY –
DATE 8-13-02
SCALE 1" = 250'
DRAWING NUMBER NAVLEA07.DWG
REV. 0
DRAWING TITLE
FIGURE 6
WATER TABLE
ELEVATION MAP
LEA REFINERY
JUNE 20, 2002

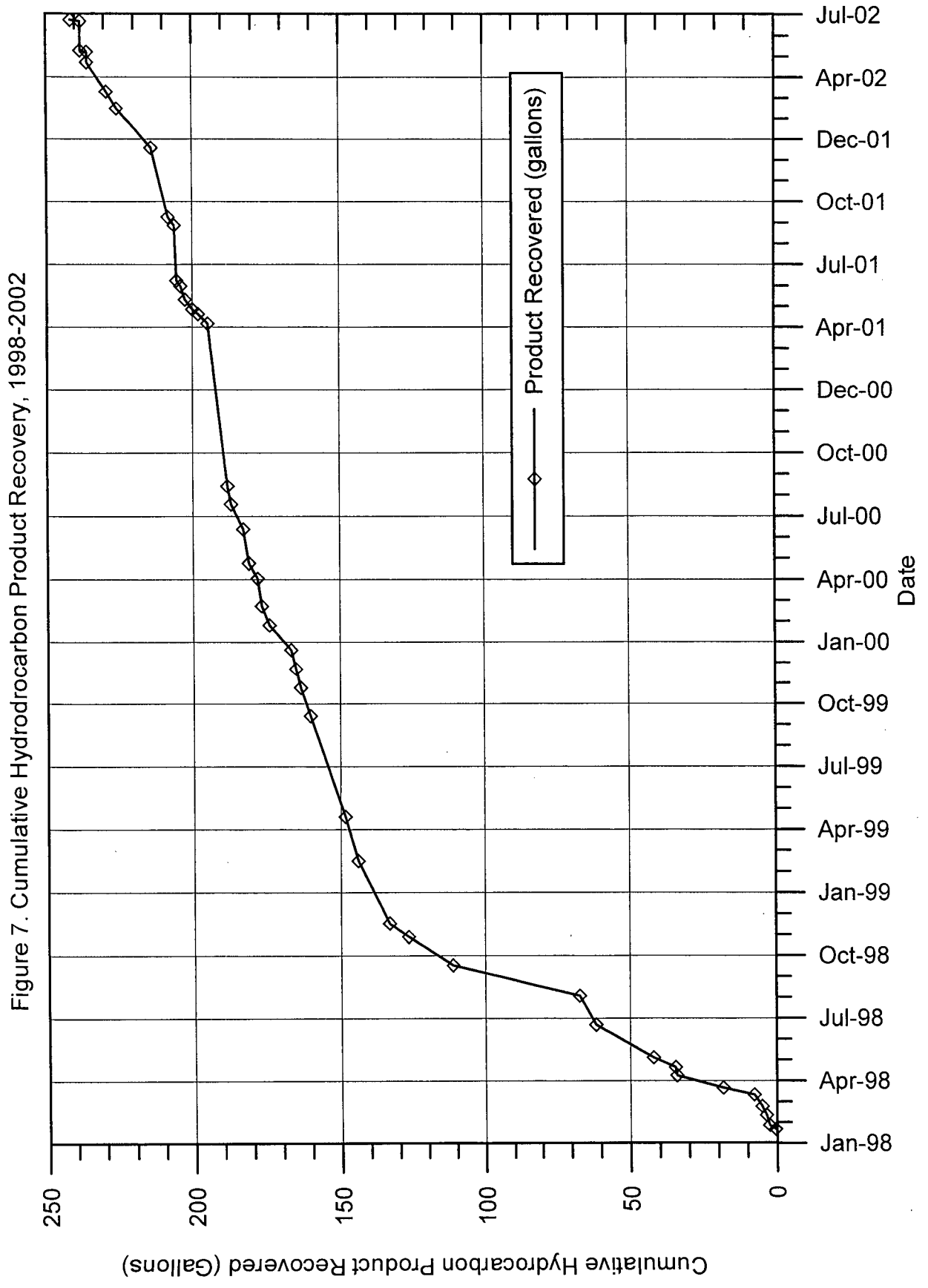


Figure 7. Cumulative Hydrodrocarbon Product Recovery, 1998-2002

XII. APPENDIX
Analytical Results and Chain-of-Custody Forms

Analytical and Quality Control Report

David Boyer
Navajo Refining
501 E. Main
Artesia, NM 88210

Report Date: September 3, 2001

Order ID Number: A01082916

Project Number: N/A
Project Name: N/A
Project Location: Lea Refining

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
178201	MW-8	Water	8/28/01	9:55	8/29/01
178202	MW-10	Water	8/28/01	10:30	8/29/01
178203	MW-9	Water	8/28/01	11:05	8/29/01
178204	MW-3	Water	8/28/01	11:48	8/29/01
178205	North Water Well	Water	8/28/01	14:55	8/29/01
178206	South Water Well	Water	8/28/01	15:10	8/29/01

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.

This report consists of a total of 7 pages and shall not be reproduced except in its entirety including the chain of custody (COC), without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 178201 - MW-8

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13704	Date Analyzed:	8/29/01
Analyst:	CG	Preparation Method:	E 5030B	Prep Batch:	PB11696	Date Prepared:	8/29/01

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		0.075	mg/L	1	0.10	75	72 - 128
4-BFB		0.072	mg/L	1	0.10	72	72 - 128

Sample: 178202 - MW-10

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13704	Date Analyzed:	8/29/01
Analyst:	CG	Preparation Method:	E 5030B	Prep Batch:	PB11696	Date Prepared:	8/29/01

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		0.073	mg/L	1	0.10	73	72 - 128
4-BFB	[1]	0.070	mg/L	1	0.10	70	72 - 128

Sample: 178203 - MW-9

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13675	Date Analyzed:	8/28/01
Analyst:	CG	Preparation Method:	E 5030B	Prep Batch:	PB11668	Date Prepared:	8/28/01

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

[1] Low surrogate recovery due to matrix difficulties.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.072	mg/L	1	0.10	72	72 - 128
4-BFB	[2]	0.069	mg/L	1	0.10	69	72 - 128

Sample: 178204 - MW-3

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC13704 Date Analyzed: 8/29/01
Analyst: CG Preparation Method: E 5030B Prep Batch: PB11696 Date Prepared: 8/29/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.037	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		0.004	mg/L	1	0.001
Total BTEX		0.042	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.077	mg/L	1	0.10	77	72 - 128
4-BFB		0.100	mg/L	1	0.10	100	72 - 128

Sample: 178205 - North Water Well

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC13704 Date Analyzed: 8/29/01
Analyst: CG Preparation Method: E 5030B Prep Batch: PB11696 Date Prepared: 8/29/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.003	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		0.003	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT	[3]	0.069	mg/L	1	0.10	69	72 - 128
4-BFB	[4]	0.065	mg/L	1	0.10	65	72 - 128

Sample: 178206 - South Water Well

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC13704 Date Analyzed: 8/29/01
Analyst: CG Preparation Method: E 5030B Prep Batch: PB11696 Date Prepared: 8/29/01

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

Continued ...

[2]Low surrogate recovery due to matrix difficulties.
[3]Low surrogate recovery due to lack of mixing.
[4]Low surrogate recovery due to lack of mixing.

... *Continued* Sample: 178206 Analysis: BTEX

Param	Flag	Result	Units	Dilution	RDL
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	[5]	0.068	mg/L	1	0.10	68	72 - 128
4-BFB	[6]	0.064	mg/L	1	0.10	64	72 - 128

[5]Low surrogate recovery due to lack of mixing.
[6]Low surrogate recovery due to lack of mixing.

Quality Control Report
Method Blank

Method Blank

QCBatch: QC13675

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		0.088	mg/L	1	0.10	88	72 - 128
4-BFB		0.082	mg/L	1	0.10	82	72 - 128

Method Blank

QCBatch: QC13704

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		0.098	mg/L	1	0.10	98	72 - 128
4-BFB		0.091	mg/L	1	0.10	91	72 - 128

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC13675

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.095	0.093	mg/L	1	0.10	<0.001	95	2	80 - 120	20
Benzene	0.091	0.091	mg/L	1	0.10	<0.001	91	0	80 - 120	20
Toluene	0.095	0.095	mg/L	1	0.10	<0.001	95	0	80 - 120	20
Ethylbenzene	0.095	0.095	mg/L	1	0.10	<0.001	95	0	80 - 120	20
M,P,O-Xylene	0.283	0.284	mg/L	1	0.30	<0.001	94	0	80 - 120	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	0.084	0.085	mg/L	1	0.10	84	85	72 - 128
4-BFB	0.084	0.084	mg/L	1	0.10	84	84	72 - 128

Laboratory Control Spikes

QCBatch: QC13704

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.100	0.102	mg/L	1	0.10	<0.001	100	2	80 - 120	20
Benzene	0.091	0.094	mg/L	1	0.10	<0.001	91	3	80 - 120	20
Toluene	0.094	0.096	mg/L	1	0.10	<0.001	94	2	80 - 120	20
Ethylbenzene	0.093	0.096	mg/L	1	0.10	<0.001	93	3	80 - 120	20
M,P,O-Xylene	0.282	0.289	mg/L	1	0.30	<0.001	94	2	80 - 120	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	0.097	0.098	mg/L	1	0.10	97	98	72 - 128
4-BFB	0.098	0.099	mg/L	1	0.10	98	99	72 - 128

Quality Control Report
Continuing Calibration Verification Standards

CCV (1)

QCBatch: QC13675

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.095	95	85 - 115	8/28/01
Benzene		mg/L	0.10	0.090	90	85 - 115	8/28/01
Toluene		mg/L	0.10	0.094	94	85 - 115	8/28/01
Ethylbenzene		mg/L	0.10	0.095	95	85 - 115	8/28/01
M,P,O-Xylene		mg/L	0.30	0.282	94	85 - 115	8/28/01

CCV (2)

QCBatch: QC13675

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.092	92	85 - 115	8/28/01
Benzene		mg/L	0.10	0.088	88	85 - 115	8/28/01
Toluene		mg/L	0.10	0.091	91	85 - 115	8/28/01
Ethylbenzene		mg/L	0.10	0.092	92	85 - 115	8/28/01
M,P,O-Xylene		mg/L	0.30	0.273	91	85 - 115	8/28/01

ICV (1)

QCBatch: QC13675

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.094	94	85 - 115	8/28/01
Benzene		mg/L	0.10	0.089	89	85 - 115	8/28/01
Toluene		mg/L	0.10	0.093	93	85 - 115	8/28/01
Ethylbenzene		mg/L	0.10	0.092	92	85 - 115	8/28/01
M,P,O-Xylene		mg/L	0.30	0.276	92	85 - 115	8/28/01

CCV (1)

QCBatch: QC13704

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.096	96	85 - 115	8/29/01
Benzene		mg/L	0.10	0.087	87	85 - 115	8/29/01
Toluene		mg/L	0.10	0.089	89	85 - 115	8/29/01
Ethylbenzene		mg/L	0.10	0.089	89	85 - 115	8/29/01
M,P,O-Xylene		mg/L	0.30	0.269	90	85 - 115	8/29/01

CCV (2)

QCBatch: QC13704

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.096	96	85 - 115	8/29/01
Benzene		mg/L	0.10	0.089	89	85 - 115	8/29/01
Toluene		mg/L	0.10	0.091	91	85 - 115	8/29/01
Ethylbenzene		mg/L	0.10	0.091	91	85 - 115	8/29/01
M,P,O-Xylene		mg/L	0.30	0.274	91	85 - 115	8/29/01

ICV (1)

QCBatch: QC13704

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.110	110	85 - 115	8/29/01
Benzene		mg/L	0.10	0.099	99	85 - 115	8/29/01
Toluene		mg/L	0.10	0.102	102	85 - 115	8/29/01
Ethylbenzene		mg/L	0.10	0.102	102	85 - 115	8/29/01
M,P,O-Xylene		mg/L	0.30	0.309	103	85 - 115	8/29/01

6701 Aberdeen Av , Ste. 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

TraceAnalysis, Inc.

6 McCutcheon, Suite H
El Paso, Texas 79932
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # H0108291C

Company Name: NAVAJO Refining Phone #: (505) 748-3311

Address: (Street, City, Zip) P.O. Box 159 Artesia Fax #: (505) 746-5421

Contact Person: David Boyer (505) 357-0510 Phone

Invoice to: (If different from above) Darrell Moore NRC 505 393-4388 FAX

Project #: Project Name:

Project Location: Lea Refinery Sampler Signature:

ANALYSIS REQUEST

(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE (2001)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Turn Around Time if different from standard	Hold
178201	MW-8	2	60ml	X				X				X		8/28	0950	X															
202	MW-10	"	"	X				X				X		"	1030	X															
03	MW-9	"	"	X				X				X		"	1100	X															
04	MW-3	"	"	X				X				X		"	1148	X															
05	Northwest Well	"	"	X				X				X		"	1455	X															
06	South Well	"	"	X				X				X		"	1510	X															

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
W Boyer	8/28	4:50PM			
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:
				8-29-01	10:00

LAB USE ONLY

Intact Y / N

Headspace Y / N

Temp 4 °

Log-in Review NF

REMARKS: Copy of Results to D. Boyer

☐ Check if Special Reporting Limits Are Needed

Carrier # Bus 902 074 9224

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

ORIGINAL COPY

Analytical and Quality Control Report

David Boyer
Navajo Refining
501 E. Main
Artesia, NM 88210

Report Date: January 8, 2002

Order ID Number: A01122101

Project Number: N/A
Project Name: N/A
Project Location: Lea Refining

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
187792	MW-2	Water	12/19/01	9:55	12/20/01
187793	MW-4	Water	12/19/01	10:40	12/20/01
187794	MW-8	Water	12/19/01	11:20	12/20/01
187795	MW-10	Water	12/19/01	12:05	12/20/01
187796	MW-9	Water	12/19/01	12:46	12/20/01
187797	MW-3	Water	12/19/01	13:14	12/20/01
187798	South Water Well	Water	12/19/01	13:55	12/20/01
187799	North Water Well	Water	12/19/01	13:47	12/20/01
187800	MW-5	Water	12/19/01	14:14	12/20/01
187801	MW-6	Water	12/19/01	15:20	12/20/01
187802	Duplicate	Water	12/19/01	:	12/20/01
187803	Field Blank	Water	12/19/01	:	12/20/01

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.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 187792 - MW-2

Analysis: BTEX | Analytical Method: S 8021B | QC Batch: QC16977 | Date Analyzed: 12/31/01
Analyst: CG | Preparation Method: S 5030B | Prep Batch: PB16762 | Date Prepared: 12/31/01

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		0.416	mg/L	5	0.10	83	72 - 128
4-BFB		0.384	mg/L	5	0.10	77	72 - 128

Sample: 187792 - MW-2

Analysis: Ion Chromatography (IC) | Analytical Method: E 300.0 | QC Batch: QC16847 | Date Analyzed: 12/21/01
Analyst: JS | Preparation Method: N/A | Prep Batch: PB16668 | Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride		79.0	mg/L	5	0.50
Fluoride		1.57	mg/L	5	0.20
Nitrate-N		3.38	mg/L	5	0.20
Sulfate		62.8	mg/L	5	0.50

Sample: 187792 - MW-2

Analysis: TDS | Analytical Method: E 160.1 | QC Batch: QC17045 | Date Analyzed: 12/27/01
Analyst: JS | Preparation Method: N/A | Prep Batch: PB16826 | Date Prepared: 12/26/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		549	mg/L	1	10

Sample: 187792 - MW-2

Analysis: Total Metals | Analytical Method: S 6010B | QC Batch: QC16871 | Date Analyzed: 12/26/01
Analyst: RR | Preparation Method: S 3010A | Prep Batch: PB16622 | Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.010	mg/L	1	0.01
Total Barium		0.119	mg/L	1	0.10
Total Boron		0.644	mg/L	1	0.01
Total Iron		0.243	mg/L	1	0.05
Total Manganese		<0.02	mg/L	1	0.02
Total Vanadium		<0.02	mg/L	1	0.02

Sample: 187793 - MW-4

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16977 Date Analyzed: 12/31/01
Analyst: CG Preparation Method: S 5030B Prep Batch: PB16762 Date Prepared: 12/31/01

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		0.401	mg/L	5	0.10	80	72 - 128
4-BFB		0.378	mg/L	1	0.10	76	72 - 128

Sample: 187793 - MW-4

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC16847 Date Analyzed: 12/21/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16668 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride		21.9	mg/L	5	0.50
Fluoride		1.58	mg/L	5	0.20
Nitrate-N		2.87	mg/L	5	0.20
Sulfate		76.4	mg/L	5	0.50

Sample: 187793 - MW-4

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC17045 Date Analyzed: 12/27/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16826 Date Prepared: 12/26/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		394	mg/L	1	10

Sample: 187793 - MW-4

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC16871 Date Analyzed: 12/26/01
Analyst: RR Preparation Method: S 3010A Prep Batch: PB16622 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.010	mg/L	1	0.01
Total Barium		0.153	mg/L	1	0.10
Total Boron		0.181	mg/L	1	0.01
Total Iron		0.930	mg/L	1	0.05
Total Manganese		<0.02	mg/L	1	0.02
Total Vanadium		0.0266	mg/L	1	0.02

Sample: 187794 - MW-8

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16853 Date Analyzed: 12/27/01
Analyst: DN Preparation Method: S 5030B Prep Batch: PB16673 Date Prepared: 12/27/01

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		0.096	mg/L	1	0.10	96	72 - 128
4-BFB		0.0982	mg/L	5	0.10	98	72 - 128

Sample: 187794 - MW-8

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC16847 Date Analyzed: 12/21/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16668 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride	[1]	397	mg/L	50	0.50
Fluoride		1.76	mg/L	5	0.20
Nitrate-N		5.41	mg/L	5	0.20
Sulfate		101	mg/L	5	0.50

Sample: 187794 - MW-8

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC17045 Date Analyzed: 12/27/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16826 Date Prepared: 12/26/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		1160	mg/L	2	10

Sample: 187794 - MW-8

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC16871 Date Analyzed: 12/26/01
Analyst: RR Preparation Method: S 3010A Prep Batch: PB16622 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.010	mg/L	1	0.01
Total Barium		0.132	mg/L	1	0.10
Total Boron		0.676	mg/L	1	0.01
Total Iron		0.180	mg/L	1	0.05
Total Manganese		<0.02	mg/L	1	0.02
Total Vanadium		0.025	mg/L	1	0.02

Sample: 187795 - MW-10

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16853 Date Analyzed: 12/27/01
Analyst: DN Preparation Method: S 5030B Prep Batch: PB16673 Date Prepared: 12/27/01

[1]Chloride re-ran on IC122101-3.sch (PB16670; QC16849). ICV %IA = 102; CCV %IA = 100; matrix spikes RPD = 1; %EA = 97; LCS spikes RPD = 0; %EA = 100.

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		0.0806	mg/L	1	0.10	81	72 - 128
4-BFB		0.0867	mg/L	1	0.10	87	72 - 128

Sample: 187795 - MW-10

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC16847 Date Analyzed: 12/21/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16668 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride		29.8	mg/L	5	0.50
Fluoride		1.49	mg/L	5	0.20
Nitrate-N		3.09	mg/L	5	0.20
Sulfate		91.2	mg/L	5	0.50

Sample: 187795 - MW-10

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC17045 Date Analyzed: 12/27/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16826 Date Prepared: 12/26/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		450	mg/L	1	10

Sample: 187795 - MW-10

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC16871 Date Analyzed: 12/26/01
Analyst: RR Preparation Method: S 3010A Prep Batch: PB16622 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.010	mg/L	1	0.01
Total Barium		0.136	mg/L	1	0.10
Total Boron		0.170	mg/L	1	0.01
Total Iron		0.408	mg/L	1	0.05
Total Manganese		<0.02	mg/L	1	0.02
Total Vanadium		0.0263	mg/L	1	0.02

Sample: 187796 - MW-9

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16977 Date Analyzed: 12/31/01
Analyst: CG Preparation Method: S 5030B Prep Batch: PB16762 Date Prepared: 12/31/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001

Continued ...

... *Continued* Sample: 187796 Analysis: BTEX

Param	Flag	Result	Units	Dilution	RDL
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		0.417	mg/L	5	0.10	83	72 - 128
4-BFB		0.397	mg/L	5	0.10	79	72 - 128

Sample: 187796 - MW-9

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC16847 Date Analyzed: 12/21/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16668 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride	[2]	269	mg/L	10	0.50
Fluoride		3.93	mg/L	5	0.20
Nitrate-N		3.71	mg/L	5	0.20
Sulfate		70.1	mg/L	5	0.50

Sample: 187796 - MW-9

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC17045 Date Analyzed: 12/27/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16826 Date Prepared: 12/26/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		944	mg/L	2	10

Sample: 187796 - MW-9

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC16871 Date Analyzed: 12/26/01
Analyst: RR Preparation Method: S 3010A Prep Batch: PB16622 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		0.0156	mg/L	1	0.01
Total Barium		0.182	mg/L	1	0.10
Total Boron		0.181	mg/L	1	0.01
Total Iron		0.528	mg/L	1	0.05
Total Manganese		0.112	mg/L	1	0.02
Total Vanadium		0.0396	mg/L	1	0.02

Sample: 187797 - MW-3

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16977 Date Analyzed: 12/31/01
Analyst: CG Preparation Method: S 5030B Prep Batch: PB16762 Date Prepared: 12/31/01

[2]Chloride re-ran on IC122101-3.sch (PB16670; QC16849). ICV %IA = 102; CCV %IA = 100; matrix spikes RPD = 1; %EA = 97; LCS spikes RPD = 0; %EA = 100.

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		0.419	mg/L	5	0.10	84	72 - 128
4-BFB		0.419	mg/L	5	0.10	84	72 - 128

Sample: 187797 - MW-3

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC16847 Date Analyzed: 12/21/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16668 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride	[3]	548	mg/L	50	0.50
Fluoride		1.01	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		29.0	mg/L	5	0.50

Sample: 187797 - MW-3

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC17045 Date Analyzed: 12/27/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16826 Date Prepared: 12/26/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		1400	mg/L	2	10

Sample: 187797 - MW-3

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC16871 Date Analyzed: 12/26/01
Analyst: RR Preparation Method: S 3010A Prep Batch: PB16622 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.010	mg/L	1	0.01
Total Barium		0.389	mg/L	1	0.10
Total Boron		0.555	mg/L	1	0.01
Total Iron		0.952	mg/L	1	0.05
Total Manganese		0.688	mg/L	1	0.02
Total Vanadium		<0.02	mg/L	1	0.02

Sample: 187798 - South Water Well

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16853 Date Analyzed: 12/27/01
Analyst: DN Preparation Method: S 5030B Prep Batch: PB16673 Date Prepared: 12/27/01

[3]Chloride re-ran on IC122101-3.sch (PB16670; QC16849). ICV %IA = 102; CCV %IA = 100; matrix spikes RPD = 1; %EA = 97; LCS spikes RPD = 0; %EA = 100.

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		0.0861	mg/L	1	0.10	86	72 - 128
4-BFB		0.0905	mg/L	1	0.10	90	72 - 128

Sample: 187799 - North Water Well

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16853 Date Analyzed: 12/27/01
Analyst: DN Preparation Method: S 5030B Prep Batch: PB16673 Date Prepared: 12/27/01

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		0.0876	mg/L	1	0.10	88	72 - 128
4-BFB		0.0902	mg/L	1	0.10	90	72 - 128

Sample: 187800 - MW-5

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16853 Date Analyzed: 12/27/01
Analyst: DN Preparation Method: S 5030B Prep Batch: PB16673 Date Prepared: 12/27/01

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		0.0904	mg/L	1	0.10	90	72 - 128
4-BFB		0.0945	mg/L	1	0.10	94	72 - 128

Sample: 187800 - MW-5

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC16847 Date Analyzed: 12/21/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16668 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride		68.8	mg/L	5	0.50
Fluoride		1.03	mg/L	5	0.20
Nitrate-N		1.90	mg/L	5	0.20
Sulfate		49.7	mg/L	5	0.50

Sample: 187800 - MW-5

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC17044 Date Analyzed: 12/26/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16825 Date Prepared: 12/24/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		603	mg/L	1	10

Sample: 187800 - MW-5

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC16871 Date Analyzed: 12/26/01
Analyst: RR Preparation Method: S 3010A Prep Batch: PB16622 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.010	mg/L	1	0.01
Total Barium		0.187	mg/L	1	0.10
Total Boron		0.158	mg/L	1	0.01
Total Iron		1.64	mg/L	1	0.05
Total Manganese		<0.02	mg/L	1	0.02
Total Vanadium		<0.02	mg/L	1	0.02

Sample: 187801 - MW-6

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16810 Date Analyzed: 12/23/01
Analyst: DN Preparation Method: S 5030B Prep Batch: PB16628 Date Prepared: 12/23/01

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		0.0885	mg/L	1	0.10	88	72 - 128
4-BFB		0.0837	mg/L	1	0.10	84	72 - 128

Sample: 187801 - MW-6

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC16847 Date Analyzed: 12/21/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16668 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Chloride		171	mg/L	5	0.50

Continued ...

... *Continued* Sample: 187801 Analysis: Ion Chromatography (IC)

Param	Flag	Result	Units	Dilution	RDL
Fluoride		3.97	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		61.4	mg/L	5	0.50

Sample: 187801 - MW-6

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC17044 Date Analyzed: 12/26/01
Analyst: JS Preparation Method: N/A Prep Batch: PB16825 Date Prepared: 12/24/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		667	mg/L	1	10

Sample: 187801 - MW-6

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC16871 Date Analyzed: 12/26/01
Analyst: RR Preparation Method: S 3010A Prep Batch: PB16622 Date Prepared: 12/21/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		0.0821	mg/L	1	0.01
Total Barium		0.102	mg/L	1	0.10
Total Boron		0.112	mg/L	1	0.01
Total Iron		1.11	mg/L	1	0.05
Total Manganese		0.0489	mg/L	1	0.02
Total Vanadium		0.222	mg/L	1	0.02

Sample: 187802 - Duplicate

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16810 Date Analyzed: 12/23/01
Analyst: DN Preparation Method: S 5030B Prep Batch: PB16628 Date Prepared: 12/23/01

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		0.089	mg/L	1	0.10	89	72 - 128
4-BFB		0.0796	mg/L	1	0.10	80	72 - 128

Sample: 187803 - Field Blank

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC16810 Date Analyzed: 12/23/01
Analyst: *DN* Preparation Method: S 5030B Prep Batch: PB16628 Date Prepared: 12/23/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.001	mg/L	1	0.001

Continued ...

... *Continued* Sample: 187803 Analysis: BTEX

Param	Flag	Result	Units	Dilution	RDL
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		0.0878	mg/L	1	0.10	88	72 - 128
4-BFB		0.079	mg/L	1	0.10	79	72 - 128

Quality Control Report
Method Blank

Method Blank

QCBatch: QC16810

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		0.0865	mg/L	1	0.10	86	72 - 128
4-BFB		0.0774	mg/L	1	0.10	77	72 - 128

Method Blank

QCBatch: QC16847

Param	Flag	Results	Units	Reporting Limit
Chloride		<2.0	mg/L	0.50
Fluoride		<0.2	mg/L	0.20
Nitrate-N		<0.2	mg/L	0.20
Sulfate		<2.0	mg/L	0.50

Method Blank

QCBatch: QC16853

Param	Flag	Results	Units	Reporting Limit
Benzene		0.003	mg/L	0.001
Toluene		0.0036	mg/L	0.001
Ethylbenzene		0.0024	mg/L	0.001
M,P,O-Xylene		0.003	mg/L	0.001
Total BTEX		0.012	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0937	mg/L	1	0.10	94	72 - 128
4-BFB		0.096	mg/L	1	0.10	96	72 - 128

Method Blank

QCBatch: QC16871

Param	Flag	Results	Units	Reporting Limit
Total Arsenic		<0.010	mg/L	0.01
Total Barium		<0.100	mg/L	0.10
Total Boron		<0.010	mg/L	0.01
Total Iron		<0.050	mg/L	0.05
Total Manganese		<0.025	mg/L	0.02
Total Vanadium		<0.025	mg/L	0.02

Method Blank

QCBatch: QC16977

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		0.0808	mg/L	1	0.10	81	72 - 128
4-BFB		0.0763	mg/L	1	0.10	76	72 - 128

Method Blank

QCBatch: QC17044

Param	Flag	Results	Units	Reporting Limit
Total Dissolved Solids		<10	mg/L	10

Method Blank

QCBatch: QC17045

Param	Flag	Results	Units	Reporting Limit
Total Dissolved Solids		<10	mg/L	10

Quality Control Report
Duplicate Samples

Duplicate

QCBatch: QC17044

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids		2462	2340	mg/L	1	5	8.9

Duplicate QCBatch: QC17045

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids		1450	1400	mg/L	1	3	8.9

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes QCBatch: QC16810

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.100	0.101	mg/L	1	0.10	<0.001	100	1	80 - 120	20
Benzene	0.101	0.102	mg/L	1	0.10	<0.001	101	1	80 - 120	20
Toluene	0.106	0.107	mg/L	1	0.10	<0.001	106	1	80 - 120	20
Ethylbenzene	0.106	0.107	mg/L	1	0.10	<0.001	106	1	80 - 120	20
M,P,O-Xylene	0.322	0.325	mg/L	1	0.30	<0.001	107	1	80 - 120	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	0.0869	0.0839	mg/L	1	0.10	87	84	72 - 128
4-BFB	0.0892	0.0869	mg/L	1	0.10	89	87	72 - 128

Laboratory Control Spikes QCBatch: QC16847

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	12.06	12.70	mg/L	1	12.50	<2.0	96	5	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: QC16853

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.0986	0.102	mg/L	1	0.10	<0.001	99	3	80 - 120	20
Benzene	0.0978	0.102	mg/L	1	0.10	0.003	95	4	80 - 120	20
Toluene	0.0995	0.103	mg/L	1	0.10	0.0036	96	3	80 - 120	20
Ethylbenzene	0.0986	0.105	mg/L	1	0.10	0.0024	96	6	80 - 120	20
M,P,O-Xylene	0.204	0.304	mg/L	1	0.30	0.003	67	4	80 - 120	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	0.0916	0.0979	mg/L	1	0.10	92	98	72 - 128
4-BFB	0.0952	0.100	mg/L	1	0.10	95	100	72 - 128

Laboratory Control Spikes

QCBatch: QC16871

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Arsenic	0.485	0.472	mg/L	1	0.50	<0.010	97	3	75 - 125	20
Total Barium	1.01	1.01	mg/L	1	1	<0.100	101	0	75 - 125	20
Total Boron	0.0537	0.0528	mg/L	1	0.05	<0.010	107	2	75 - 125	20
Total Iron	0.511	0.515	mg/L	1	0.50	<0.050	102	1	75 - 125	20
Total Manganese	0.254	0.254	mg/L	1	0.25	<0.025	102	0	75 - 125	20
Total Vanadium	0.250	0.249	mg/L	1	0.25	<0.025	100	0	75 - 125	20

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

Laboratory Control Spikes

QCBatch: QC16977

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.099	0.101	mg/L	1	0.10	<0.001	99	2	80 - 120	20
Benzene	0.097	0.0994	mg/L	1	0.10	<0.001	97	2	80 - 120	20
Toluene	0.103	0.105	mg/L	1	0.10	<0.001	103	2	80 - 120	20
Ethylbenzene	0.101	0.105	mg/L	1	0.10	<0.001	101	4	80 - 120	20
M,P,O-Xylene	0.309	0.317	mg/L	1	0.30	<0.001	103	3	80 - 120	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	0.082	0.0799	mg/L	1	0.10	82	80	72 - 128
4-BFB	0.082	0.0818	mg/L	1	0.10	82	82	72 - 128

Quality Control Report
Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC16847

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	182.48	182.11	mg/L	1	125	57.5	99	0	52 - 131	20
Fluoride	27.09	27.17	mg/L	1	25		93	0	80 - 113	20
Nitrate-N	32.96	32.42	mg/L	1	25		98	2	84 - 105	20
Sulfate	294.87	296.76	mg/L	1	125		106	1	79 - 104	20

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

Matrix Spikes

QCBatch: QC16871

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Arsenic	0.485	0.494	mg/L	1	0.50	<0.010	97	2	75 - 125	20

Continued ...

... *Continued*

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Barium	1.09	1.10	mg/L	1	1	0.119	109	1	75 - 125	20
Total Boron	[4] 0.670	[5] 0.656	mg/L	1	0.05	0.644	51	74	75 - 125	20
Total Iron	0.716	0.746	mg/L	1	0.50	0.243	94	6	75 - 125	20
Total Manganese	0.243	0.245	mg/L	1	0.25	<0.02	97	1	75 - 125	20
Total Vanadium	0.265	0.267	mg/L	1	0.25	<0.02	106	1	75 - 125	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: QC16810

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.106	106	85 - 115	12/23/01
Benzene		mg/L	0.10	0.103	103	85 - 115	12/23/01
Toluene		mg/L	0.10	0.109	109	85 - 115	12/23/01
Ethylbenzene		mg/L	0.10	0.108	108	85 - 115	12/23/01
M,P,O-Xylene		mg/L	0.30	0.330	110	85 - 115	12/23/01

CCV (2) QCBatch: QC16810

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.1033	103	85 - 115	12/23/01
Benzene		mg/L	0.10	0.1009	100	85 - 115	12/23/01
Toluene		mg/L	0.10	0.106	106	85 - 115	12/23/01
Ethylbenzene		mg/L	0.10	0.1058	105	85 - 115	12/23/01
M,P,O-Xylene		mg/L	0.30	0.3212	107	85 - 115	12/23/01

ICV (1) QCBatch: QC16810

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	12/23/01
Benzene		mg/L	0.10	0.103	103	85 - 115	12/23/01
Toluene		mg/L	0.10	0.108	108	85 - 115	12/23/01
Ethylbenzene		mg/L	0.10	0.108	108	85 - 115	12/23/01
M,P,O-Xylene		mg/L	0.30	0.328	109	85 - 115	12/23/01

[4]Matrix spike recovery invalid due to matrix difficulties. LCS demonstrates process under control.
[5]Matrix spike recovery invalid due to matrix difficulties. LCS demonstrates process under control.

CCV (1) QCBatch: QC16847

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	12.28	98	90 - 110	12/21/01

ICV (1) QCBatch: QC16847

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	12.13	97	90 - 110	12/21/01

CCV (1) QCBatch: QC16853

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.101	101	85 - 115	12/27/01
Benzene		mg/L	0.10	0.0949	92	85 - 115	12/27/01
Toluene		mg/L	0.10	0.0977	94	85 - 115	12/27/01
Ethylbenzene		mg/L	0.10	0.0998	97	85 - 115	12/27/01
M,P,O-Xylene		mg/L	0.30	0.296	98	85 - 115	12/27/01

CCV (2) QCBatch: QC16853

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.096	96	85 - 115	12/27/01
Benzene		mg/L	0.10	0.099	99	85 - 115	12/27/01
Toluene		mg/L	0.10	0.101	101	85 - 115	12/27/01
Ethylbenzene		mg/L	0.10	0.101	101	85 - 115	12/27/01
M,P,O-Xylene		mg/L	0.30	0.301	100	85 - 115	12/27/01

ICV (1) QCBatch: QC16853

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.100	100	85 - 115	12/27/01
Benzene		mg/L	0.10	0.0996	97	85 - 115	12/27/01
Toluene		mg/L	0.10	0.102	98	85 - 115	12/27/01
Ethylbenzene		mg/L	0.10	0.104	102	85 - 115	12/27/01
M,P,O-Xylene		mg/L	0.30	0.213	70	85 - 115	12/27/01

CCV (1) QCBatch: QC16871

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Arsenic		mg/L	1	0.997	100	90 - 110	12/26/01
Total Barium		mg/L	2	2.02	101	90 - 110	12/26/01
Total Boron		mg/L	0.10	0.108	108	90 - 110	12/26/01
Total Iron		mg/L	1	1.03	103	90 - 110	12/26/01
Total Manganese		mg/L	0.50	0.505	101	90 - 110	12/26/01
Total Vanadium		mg/L	0.50	0.498	100	90 - 110	12/26/01

ICV (1) QCBatch: QC16871

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Arsenic		mg/L	1	1.01	101	90 - 110	12/26/01
Total Barium		mg/L	2	2.04	102	90 - 110	12/26/01
Total Boron		mg/L	0.10	0.103	103	90 - 110	12/26/01
Total Iron		mg/L	1	1.02	102	90 - 110	12/26/01
Total Manganese		mg/L	0.50	0.509	102	90 - 110	12/26/01
Total Vanadium		mg/L	0.50	0.505	101	90 - 110	12/26/01

CCV (1) QCBatch: QC16977

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0976	98	85 - 115	12/31/01
Benzene		mg/L	0.10	0.0962	96	85 - 115	12/31/01
Toluene		mg/L	0.10	0.102	102	85 - 115	12/31/01
Ethylbenzene		mg/L	0.10	0.101	101	85 - 115	12/31/01
M,P,O-Xylene		mg/L	0.30	0.307	102	85 - 115	12/31/01

CCV (2) QCBatch: QC16977

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.093	93	85 - 115	12/31/01
Benzene		mg/L	0.10	0.095	95	85 - 115	12/31/01
Toluene		mg/L	0.10	0.101	101	85 - 115	12/31/01
Ethylbenzene		mg/L	0.10	0.1	100	85 - 115	12/31/01
M,P,O-Xylene		mg/L	0.30	0.303	101	85 - 115	12/31/01

ICV (1) QCBatch: QC16977

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.103	103	85 - 115	12/31/01
Benzene		mg/L	0.10	0.099	99	85 - 115	12/31/01
Toluene		mg/L	0.10	0.104	104	85 - 115	12/31/01
Ethylbenzene		mg/L	0.10	0.104	104	85 - 115	12/31/01
M,P,O-Xylene		mg/L	0.30	0.318	106	85 - 115	12/31/01

CCV (1) QCBatch: QC17044

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1007	100	90 - 110	12/26/01

ICV (1) QCBatch: QC17044

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1023	102	90 - 110	12/26/01

CCV (1) QCBatch: QC17045

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	993	99	90 - 110	12/27/01

ICV (1) QCBatch: QC17045

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	986	98	90 - 110	12/27/01

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # A0112201

Company Name: NAVAJO Refining Co Phone #: (505) 748-3311
Address: (Street, City, Zip) P.O. Box 159 Artesia NM 88211 Fax #: (505) 746-5421
Contact Person: David Boyer (505) 397-0510, FAX (505) 393-4388
Invoice to: (If different from above) Darrell Moore, NRC
Project #: Project Name: Lea Refinery
Project Location: Lovington NM Sampler Signature: [signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE (2001)	TIME
187792	MW-2	4	1.5L	X				X	X			X		12/19	0955
93	MW-4	4	"	X				X	X			X		"	1040
94	MW-8	4	"	X				X	X			X		"	1120
95	MW-10	4	"	X				X	X			X		"	1205
96	MW-9	4	"	X				X	X			X		"	1246
97	MW-3	4	"	X				X	X			X		"	1314
98	South Water Well	~~4~~ 2	80ml	X				X	~~X~~			X		"	1335
99	North Water Well	~~4~~ 2	80ml	X				X	~~X~~			X		"	1347
800	MW-5	4	"	X				X	X			X		"	1414
01	MW-6	4	"	X				X	X			X		"	1520
02	Duplicate	2	80ml	X				X	~~X~~			X		"	—

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB #	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Metals: As, B, Ba, Fe, Mn, V	Cl, F, NO_3, SO_4, TDS				Turn Around Time if different from standard	Hold
187792		✓														✓	✓					
93		✓														✓	✓					
94		✓														✓	✓					
95		✓														✓	✓					
96		✓														✓	✓					
97		✓														✓	✓					
98		✓														~~✓~~	✓					
99		✓														~~✓~~	✓					
800		✓														✓	✓					
01		✓														✓	✓					
02		✓																				

Relinquished by: [signature] Date: 12/20/01 Time: 0800 | Received by: Date: Time:
Relinquished by: Date: Time: | Received by: Date: Time:
Relinquished by: Date: Time: | Received at Laboratory by: [signature] Date: 12/20/01 Time: 1200

LAB USE ONLY
Intact Y / N
Headspace Y / N
Temp 4
Log-in Review [initials]

REMARKS: Results on internal QC: As(0.05), B(0.20), Ba(0.50), Fe(0.05), Mn(0.05), V(0.05)

☒ Check If Special Reporting Limits Are Needed

Carrier # TNM: 0 902 756 1811

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

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TraceAnalysis, Inc.

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1 (888) 588-3443

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # 0112210

Company Name: Navajo Refining Co
Phone #: 505-748-3311
Address: (Street, City, Zip) PO Box 159 Artesia NM
Fax #: 505-746-5421
Contact Person: David Boyer 505-397-0510, FAX 393-4388
Invoice to: (If different from above) DeAnne Mook NRC
Project #:
Project Name: Lea Refinery
Project Location: Lovington NM
Sampler Signature: D Boyer

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
8803	Field Blank	2	60ml	X				X				X		12/19/01	

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Turn Around Time if different from standard	Hold
	✓															

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
D Boyer	12/20/01	0800			
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:
				12/20/01	200

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LAB USE ONLY
Intact Y / N
Headspace Y / N
Temp 4 °
Log-In Review

REMARKS:

☐ Check If Special Reporting Limits Are Needed

Carrier # TNM&O 902736 1851

Analytical and Quality Control Report

David Boyer
Navajo Refining
501 E. Main
Artesia, NM 88210

Report Date: March 15, 2002

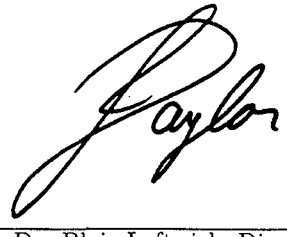
Order ID Number: A02031310

Project Number: N/A
Project Name: N/A
Project Location: Lovington

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
192664	MW-8	Water	3/12/02	9:55	3/13/02
192665	MW-9	Water	3/12/02	10:45	3/13/02
192666	MW-10	Water	3/12/02	11:15	3/13/02
192667	MW-6	Water	3/12/02	12:05	3/13/02
192668	MW-3	Water	3/12/02	12:25	3/13/02
192669	North Water Well	Water	3/12/02	12:40	3/13/02
192670	South Water Well	Water	3/12/02	12:50	3/13/02
192671	Duplicate #1	Water	3/12/02	:	3/13/02
192672	Trip Blank	Water	3/12/02	:	3/13/02

0
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.



for
Dr. Blair Leftwich, Director

Analytical Report

Sample: 192664 - MW-8

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

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		0.0955	mg/L	1	0.10	96	70 - 130
4-BFB		0.0849	mg/L	1	0.10	85	70 - 130

Sample: 192665 - MW-9

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

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		0.0958	mg/L	1	0.10	96	70 - 130
4-BFB		0.0846	mg/L	1	0.10	85	70 - 130

Sample: 192666 - MW-10

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

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

Continued ...

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0937	mg/L	1	0.10	94	70 - 130
4-BFB		0.0828	mg/L	1	0.10	83	70 - 130

Sample: 192667 - MW-6

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0016	mg/L	1	0.001
Toluene		<0.001	mg/L	1	0.001
Ethylbenzene		0.0108	mg/L	1	0.001
M,P,O-Xylene		<0.001	mg/L	1	0.001
Total BTEX		0.0124	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0836	mg/L	1	0.10	84	70 - 130
4-BFB		0.0742	mg/L	1	0.10	74	70 - 130

Sample: 192668 - MW-3

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0159	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		0.0159	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0937	mg/L	1	0.10	94	70 - 130
4-BFB		0.0895	mg/L	1	0.10	90	70 - 130

Sample: 192669 - North Water Well

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0021	mg/L	1	0.001
Toluene		<0.001	mg/L	1	0.001
Ethylbenzene		<0.001	mg/L	1	0.001

Continued ...

... *Continued* Sample: 192669 Analysis: BTEX

Param	Flag	Result	Units	Dilution	RDL
M,P,O-Xylene		<0.001	mg/L	1	0.001
Total BTEX		0.0021	mg/L	1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0871	mg/L	1	0.10	87	70 - 130
4-BFB		0.0748	mg/L	1	0.10	75	70 - 130

Sample: 192670 - South Water Well

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

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		0.0968	mg/L	1	0.10	97	70 - 130
4-BFB		0.0818	mg/L	1	0.10	82	70 - 130

Sample: 192671 - Duplicate #1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

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		0.0873	mg/L	1	0.10	87	70 - 130
4-BFB		0.0759	mg/L	1	0.10	76	70 - 130

Sample: 192672 - Trip Blank

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18803	Date Analyzed:	3/13/02
Analyst:	BC	Preparation Method:	S 5030B	Prep Batch:	PB18215	Date Prepared:	3/13/02

Continued ...

... *Continued* Sample: 192672 Analysis: BTEX

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		0.0804	mg/L	1	0.10	80	70 - 130
4-BFB		0.0716	mg/L	1	0.10	72	70 - 130

Quality Control Report
Method Blank

Method Blank

QCBatch: QC18803

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		0.094	mg/L	1	0.10	94	70 - 130
4-BFB		0.0798	mg/L	1	0.10	80	70 - 130

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC18803

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.0806	0.0885	mg/L	1	0.10	<0.001	81	9	82 - 111	20
Benzene	0.0787	0.0882	mg/L	1	0.10	<0.001	79	11	86 - 106	20
Toluene	0.0745	0.0865	mg/L	1	0.10	<0.001	74	15	82 - 108	20
Ethylbenzene	0.0741	0.0861	mg/L	1	0.10	<0.001	74	15	86 - 115	20
M,P,O-Xylene	0.229	0.261	mg/L	1	0.30	<0.001	76	13	79 - 122	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	0.0831	0.0898	mg/L	1	0.10	83	90	70 - 130
4-BFB	0.0823	0.0879	mg/L	1	0.10	82	88	70 - 130

Quality Control Report
Continuing Calibration Verification Standards

CCV (1)

QCBatch: QC18803

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.093	93	85 - 115	3/13/02
Benzene		mg/L	0.10	0.0895	90	85 - 115	3/13/02

Continued ...

... Continued

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Toluene		mg/L	0.10	0.0854	85	85 - 115	3/13/02
Ethylbenzene	[1]	mg/L	0.10	0.0843	84	85 - 115	3/13/02
M,P,O-Xylene		mg/L	0.30	0.254	85	85 - 115	3/13/02

CCV (2)

QCBatch: QC18803

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.089	89	85 - 115	3/13/02
Benzene		mg/L	0.10	0.085	85	85 - 115	3/13/02
Toluene		mg/L	0.10	0.085	85	85 - 115	3/13/02
Ethylbenzene		mg/L	0.10	0.086	86	85 - 115	3/13/02
M,P,O-Xylene		mg/L	0.30	0.252	84	85 - 115	3/13/02

ICV (1)

QCBatch: QC18803

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	3/13/02
Benzene		mg/L	0.10	0.0921	92	85 - 115	3/13/02
Toluene		mg/L	0.10	0.0889	89	85 - 115	3/13/02
Ethylbenzene		mg/L	0.10	0.0873	87	85 - 115	3/13/02
M,P,O-Xylene		mg/L	0.30	0.270	90	85 - 115	3/13/02

[1]Ethylbenzene outside normal limits. Average of CCV components within acceptable range.

6701 Aberdeen Avenue, Ste. 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

TraceAnalysis, Inc.

1555 McCutcheon, Suite H
El Paso, Texas 79932
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # 402031310

Company Name: NAVAJO Refining Co
Phone #: (505) 748-3311
Address: (Street, City, Zip) P.O. Box 159 Artesia NM 88211
Fax #: (505) 746-5421
Contact Person: David Boyer SESI (505) 397-0510, 325-4[illegible] FAX
Invoice to: (If different from above) Darrell Moore NRC
Project #: Quarterly Lea Refining
Project Name:
Project Location: Lovington NM
Sampler Signature: D Boyer

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
192664	MW-8	2	80ml	X				X				X		3/1/02	0955
65	MW-9	2	"	X				X				X		"	1045
66	MW-10	2	"	X				X				X		"	1115
67	MW-6	2	"	X				X				X		"	1205
68	MW-3	2	"	X				X				X		"	1225
69	~~MW~~ NORTH Water Well	2	"	X				X				X		"	1240
70	South Water Well	2	"	X				X				X		"	1250
71	Duplicate #1	2	"	X				X				X		"	—
72	Trip Blank	2	"	X				X				X		—	—

ANALYSIS REQUEST (Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 8010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Turn Around Time if different from standard	Hold
X	X															
	X															
	X															
	X															
	X															
	X															
	X															
	X															
	X															

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
D Boyer	3/2/02	2:30PM			
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by: Vicki Reeves	3/3/02	10:00AM

LAB USE ONLY
Intact Y / N
Headspace Y / N
Temp 4° C
Log-in Review MM

REMARKS:

☐ Check If Special Reporting Limits Are Needed

Carrier # TNM&O 902-806-7704

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

ORIGINAL COPY

Analytical and Quality Control Report

David Boyer
Navajo Refining
501 E. Main
Artesia, NM 88210

Report Date: August 2, 2002

Order ID Number: A02062517

Project Number: N/A
Project Name: N/A
Project Location: Lea Refining

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
200030	MW-8	Water	6/20/02	13:55	6/25/02
200031	MW-9	Water	6/20/02	15:15	6/25/02
200032	North Water Well	Water	6/20/02	16:05	6/25/02
200033	South Water Well	Water	6/20/02	16:10	6/25/02
200034	MW-10	Water	6/20/02	17:15	6/25/02
200035	MW-3	Water	6/20/02	18:15	6/25/02
200036	MW-12	Water	6/22/02	8:15	6/25/02
200037	MW-6R	Water	6/22/02	9:05	6/25/02
200038	MW-11	Water	6/22/02	9:45	6/25/02
200039	Duplicate #1	Water	6/22/02	:	6/25/02

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.

for
Dr. Blair Leftwich, Director

Analytical Report

Sample: 200030 - MW-8

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21358	Date Analyzed:	6/25/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20296	Date Prepared:	6/25/02

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		0.090	mg/L	1	0.10	90	70 - 130
4-BFB		0.0897	mg/L	1	0.10	90	70 - 130

Sample: 200031 - MW-9

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21358	Date Analyzed:	6/25/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20296	Date Prepared:	6/25/02

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		0.0895	mg/L	1	0.10	90	70 - 130
4-BFB		0.0888	mg/L	1	0.10	89	70 - 130

Sample: 200032 - North Water Well

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21358	Date Analyzed:	6/25/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20296	Date Prepared:	6/25/02

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		0.093	mg/L	1	0.10	93	70 - 130
4-BFB		0.0899	mg/L	1	0.10	90	70 - 130

Sample: 200033 - South Water Well

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21358 Date Analyzed: 6/25/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20296 Date Prepared: 6/25/02

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		0.0896	mg/L	1	0.10	90	70 - 130
4-BFB		0.0891	mg/L	1	0.10	89	70 - 130

Sample: 200034 - MW-10

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21358 Date Analyzed: 6/25/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20296 Date Prepared: 6/25/02

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		0.0905	mg/L	1	0.10	90	70 - 130
4-BFB		0.0883	mg/L	1	0.10	88	70 - 130

Sample: 200035 - MW-3

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC21358 Date Analyzed: 6/25/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB20296 Date Prepared: 6/25/02

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		0.0925	mg/L	1	0.10	92	70 - 130
4-BFB		0.0931	mg/L	1	0.10	93	70 - 130

Sample: 200036 - MW-12

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21358	Date Analyzed:	6/25/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20296	Date Prepared:	6/25/02

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		0.0917	mg/L	1	0.10	92	70 - 130
4-BFB		0.089	mg/L	1	0.10	89	70 - 130

Sample: 200037 - MW-6R

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21358	Date Analyzed:	6/25/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB20296	Date Prepared:	6/25/02

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		0.0898	mg/L	1	0.10	90	70 - 130
4-BFB		0.0883	mg/L	1	0.10	88	70 - 130

Sample: 200038 - MW-11

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21592	Date Analyzed:	6/27/02
Analyst:	DN	Preparation Method:	S 5030B	Prep Batch:	PB20483	Date Prepared:	6/27/02

Param	Flag	Result	Units	Dilution	RDL
MTBE		<0.005	mg/L	5	0.001
Benzene		1.13	mg/L	5	0.001
Toluene		0.0253	mg/L	5	0.001
Ethylbenzene		0.144	mg/L	5	0.001
M,P,O-Xylene		0.0944	mg/L	5	0.001

Continued ...

... *Continued* Sample: 200038 Analysis: BTEX

Param	Flag	Result	Units	Dilution	RDL
Total BTEX		1.39	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0923	mg/L	5	0.10	92	70 - 130
4-BFB		0.0967	mg/L	5	0.10	96	70 - 130

Sample: 200039 - Duplicate #1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC21592	Date Analyzed:	6/27/02
Analyst:	DN	Preparation Method:	S 5030B	Prep Batch:	PB20483	Date Prepared:	6/27/02

Param	Flag	Result	Units	Dilution	RDL
MTBE		<0.005	mg/L	5	0.001
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		0.0894	mg/L	5	0.10	89	70 - 130
4-BFB		0.0857	mg/L	5	0.10	85	70 - 130

Quality Control Report
Method Blank

Method Blank

QCBatch: QC21358

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		0.0834	mg/L	1	0.10	83	70 - 130
4-BFB		0.084	mg/L	1	0.10	84	70 - 130

Method Blank

QCBatch: QC21592

Param	Flag	Results	Units	Reporting Limit
MTBE		<0.001	mg/L	0.001
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		0.0926	mg/L	1	0.10	92	70 - 130
4-BFB		0.0869	mg/L	1	0.10	86	70 - 130

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC21358

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.0896	0.0897	mg/L	1	0.10	<0.001	90	0	70 - 130	20
Benzene	0.0941	0.0933	mg/L	1	0.10	<0.001	94	1	70 - 130	20
Toluene	0.0941	0.0911	mg/L	1	0.10	<0.001	94	3	70 - 130	20
Ethylbenzene	0.0944	0.0934	mg/L	1	0.10	<0.001	94	1	70 - 130	20
M,P,O-Xylene	0.284	0.280	mg/L	1	0.30	<0.001	95	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	0.0879	0.0858	mg/L	1	0.10	88	86	70 - 130
4-BFB	0.0912	0.0887	mg/L	1	0.10	91	89	70 - 130

Laboratory Control Spikes

QCBatch: QC21592

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.0938	0.0954	mg/L	1	0.10	<0.001	93	1	70 - 130	20
Benzene	0.0934	0.0958	mg/L	1	0.10	<0.001	93	2	70 - 130	20
Toluene	0.0905	0.0933	mg/L	1	0.10	<0.001	90	3	70 - 130	20
Ethylbenzene	0.0906	0.0939	mg/L	1	0.10	<0.001	90	3	70 - 130	20
M,P,O-Xylene	0.271	0.283	mg/L	1	0.30	<0.001	90	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	0.091	0.093	mg/L	1	0.10	91	93	70 - 130
4-BFB	0.0906	0.0938	mg/L	1	0.10	90	93	70 - 130

Quality Control Report
Continuing Calibration Verification Standards

CCV (1)

QCBatch: QC21358

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0901	90	85 - 115	6/25/02
Benzene		mg/L	0.10	0.0906	91	85 - 115	6/25/02
Toluene		mg/L	0.10	0.0891	89	85 - 115	6/25/02
Ethylbenzene		mg/L	0.10	0.0895	90	85 - 115	6/25/02
M,P,O-Xylene		mg/L	0.30	0.269	90	85 - 115	6/25/02

CCV (2)

QCBatch: QC21358

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.092	92	85 - 115	6/25/02
Benzene		mg/L	0.10	0.092	92	85 - 115	6/25/02
Toluene		mg/L	0.10	0.0898	89	85 - 115	6/25/02
Ethylbenzene		mg/L	0.10	0.0902	90	85 - 115	6/25/02
M,P,O-Xylene		mg/L	0.30	0.27	90	85 - 115	6/25/02

ICV (1) QCBatch: QC21358

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0894	89	85 - 115	6/25/02
Benzene		mg/L	0.10	0.0952	95	85 - 115	6/25/02
Toluene		mg/L	0.10	0.0933	93	85 - 115	6/25/02
Ethylbenzene		mg/L	0.10	0.0949	94	85 - 115	6/25/02
M,P,O-Xylene		mg/L	0.30	0.285	95	85 - 115	6/25/02

CCV (1) QCBatch: QC21592

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0887	88	85 - 115	6/27/02
Benzene		mg/L	0.10	0.0901	90	85 - 115	6/27/02
Toluene		mg/L	0.10	0.0878	87	85 - 115	6/27/02
Ethylbenzene		mg/L	0.10	0.0891	89	85 - 115	6/27/02
M,P,O-Xylene		mg/L	0.30	0.266	88	85 - 115	6/27/02

CCV (2) QCBatch: QC21592

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0915	91	85 - 115	6/27/02
Benzene		mg/L	0.10	0.0902	90	85 - 115	6/27/02
Toluene		mg/L	0.10	0.0875	87	85 - 115	6/27/02
Ethylbenzene		mg/L	0.10	0.0882	88	85 - 115	6/27/02
M,P,O-Xylene		mg/L	0.30	0.261	87	85 - 115	6/27/02

ICV (1) QCBatch: QC21592

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	6/27/02
Benzene		mg/L	0.10	0.0941	94	85 - 115	6/27/02
Toluene		mg/L	0.10	0.0931	93	85 - 115	6/27/02
Ethylbenzene		mg/L	0.10	0.0931	93	85 - 115	6/27/02
M,P,O-Xylene		mg/L	0.30	0.28	93	85 - 115	6/27/02

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Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

TraceAnalysis, Inc.

155 McCutcheon, Suite H
El Paso, Texas 79932
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # A0206257?

Company Name: NAVAJO ~~Lea~~ Refinery
Phone #: (505) 748-3311
Address: (Street, City, Zip) P.O. Box 159, Artesia
Fax #: (505) 746-5421
Contact Person: David Boyd (505) 370-5?10 ???-4?88
Invoice to: (If different from above) Darrell Moore NRC
Project #:
Project Name: Lea Refinery
Project Location:
Sampler Signature: [signature]

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE (2002)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Turn Around Time if different from standard	Hold
[illegible]30	MW-8	2	80ml	X				X				X		6/20	1355		X															
31	MW-9	2	"	X				X				X		"	1515		X															
32	North Water Well	2	"	X				X				X		"	1605		X															
33	South Water Well	2	"	X				X				X		"	1610		X															
34	MW-10	2	"	X				X				X		"	1715		X															
35	MW-3	2	"	X				X				X		"	1815		X															
36	MW-12	2	"	X				X				X		6/22	0835		X															
37	MW-6R	2	"	X				X				X		"	0900		X															
38	MW-11	2	"	X				X				X		"	0945		X															
39	Duplicate #1	2	"	X				X				X		—	—		X															

Relinquished by: DR Boyd Date: 6/22/02 Time: 1115
Received by: Date: Time:

Relinquished by: Date: Time:
Received by: Date: Time:

Relinquished by: Date: Time:
Received at Laboratory by: [signature] Date: 6-25-02 Time: 10:00

LAB USE ONLY
Intact (Y) / N
Headspace Y / N
Temp 4°
Log-in Review [initials]

REMARKS:

☐ Check if Special Reporting Limits Are Needed

Carrier # Bus 902 821 825 4

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.