1R - 34

REPORTS

DATE:

5/16/2006

LAW OFFICES

HEIDEL, SAMBERSON, NEWELL, COX & McMAHON

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F.L. HEIDEL
(1913-1985)

May 16, 2006

NMOCD
Ed Martin
1220 South St. Francis Drive
Santa Fe NM 87505

2006 MAY 17 PM 12 02

Re: Byrd Pump Site, Monument New Mexico

Dear Mr. Martin,

As per our conversation, please find enclosed the Initial Site Characterization Report and the Work Plan for the above referenced site. Also enclosed are four photographs of the Site taken in April 2006.

I am writing this letter on behalf of the Surface Owner, Mr. J.R. Byrd. Please advise as to why this Site has not been remediated as per the enclosed Report and Work Plan.

I look forward to hearing from you.

Sincerely,

HEIDEL, SAMBERSON, NEWELL, COX & MCMAHON

By: PBM

Patrick B. McMahon

PBM:jo
Enclosures
pc: J.R. Byrd, (w/out encl.)

INITIAL SITE CHARACTERIZATION REPORT

BYRD PUMP SITE MONUMENT, NEW MEXICO

IR-34

Prepared for
ARCO PIPE LINE COMPANY
15600 JFK BLVD. SUITE 300
HOUSTON, TEXAS

JANUARY, 2000

URS Greiner Woodward Clyde
A Division of URS Corporation

6200 La Calma
Suite 210
Austin, TX 78752

Project No. 93-99000162.00

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Background

Arco Pipe Line Company (APL) operates a 4-inch crude oil transfer line in Lea County, New Mexico. Line pressure is increased at a booster pump (Byrd Pump) located 3 miles west of the town of Monument on Hwy 322 and 2.5 miles south of the El Paso Natural Gas Monument Station (32.35.01N and 103.18.32W) Figure 1-1. Upon inspection of the pump area, APL personnel noted that soil around the pump has been stained by crude oil due to historical operations at the pump.

In April 1999, APL contracted CJR Contractors to remove stained soil from around the pump and line. Upon removal of the soil from around the pump and line, APL personnel noted that stained soil extends to at least two feet below grade. Soil samples collected from the stockpile of the excavated soil indicated total petroleum hydrocarbons (TPH) by EPA Method 418.1 at 15,200 mg/kg. The benzene, toluene, ethyl benzene, and xylenes (BTEX) analysis by EPA Method 8260 indicated less than detection limits for each constituent. The composite soil sample was also analyzed by TCLP for metals, semivolatiles, volatiles, reactivity (sulfide and cyanide), corrosivity, and ignitability. Appendix A contains the laboratory analytical report for the composite soil sample from the excavated stockpile. All excavated soils were placed in an onsite landfarm area next to the pump.

On October 1, 1999, URS Greiner Woodward Clyde (URSWC), on behalf of ARCO Pipe Line Company (APL), submitted an *Initial Site Characterization Work Plan, ARCO Pipe Line Byrd Pump Site, Monument, New Mexico* to the New Mexico Oil Conservation Division (NMOCD). The work plan was approved by the NMOCD on October 15,1999. URSGWC performed the field investigation in November 1999. This report presents the findings of the investigation and presents the conclusions and recommendations based on evaluation of the data.

Water Well Search and Local Hydrogeology

A water well search was conducted by Environmental Data Resources on December 15,1999 (Appendix B). Two wells (A-1, A-2) were identified within 1/4 mile of the site. One well (3) was located ¼ to ½ mile of the site and five domestic supply wells are located ½ to 1 mile from the site. According to the United States Geological Survey publication "Geology and Groundwater Conditions in Southern Lea County, New Mexico," the depths of groundwater wells in the vicinity of the site range from 53 to 283 feet below ground surface (bgs). Groundwater elevations range from 18 to 34 feet (bgs). The water wells are screened in either the Quaternary-age alluvium or the Tertiary-age Ogallala Formation.

In November 1999, URSGWC initiated a soil and groundwater investigation at the Byrd pump site by drilling and sampling one soil boring and installing a permanent monitoring well next to the pump (Figure 2-1). Soil samples were collected from the soil boring and groundwater samples were collected from the monitoring well installed into the soil boring. The soil boring log is presented in Appendix C.

Monitoring Well Installation, Soil and Groundwater Sampling

The soil boring was drilled by hollow-stem auger while soil sampling was performed with a 5-foot long CME continuous sampler. A 12.25-inch borehole was initially drilled and sampled for the purposes of installing a surface casing. A 10-inch I.D. PVC casing was cemented into place in the upper ten feet of soil. After the cement cured for approximately 48 hours, an 8.25-inch borehole was then drilled and sampled to 40 feet. Moist soils were encountered at approximately 27 feet below grade and a saturated gravelly sand was encountered at approximately 37 feet below grade. The monitoring well was constructed of four-inch diameter schedule 40 PVC with 20 feet of well screen (0.010" slots) extending from 20 to 40 feet below grade. The monitoring well was filter packed with pre-washed silica sand from 17 to 40 feet and sealed with 3 feet of hydrated bentonite chips from 14 to 17 feet below grade. Above the well seal to ground surface, the borehole annulus was filled with a cement\bentonite slurry. A six-inch upright locking well cover was placed over the 3-foot PVC well stickup and cemented into place.

Soil samples were logged and described for material type, properties, and moisture content during sample collection. Six soil samples were collected from the following depth intervals; 4-5', 9-10', 14-15', 19-20', 29-30', and 39-40' and submitted for laboratory analysis. Soil samples were analyzed BTEX by EPA Method 8021, TPH by EPA Method 8015 modified (GRO-DRO), and polynuclear aromatic hydrocarbons (PAH's) by EPA Method 8310. Additionally, soil samples MW-1 (9-10') and MW-1 (14-15') were analyzed by the Synthetic Precipitation Leaching Procedure (SPLP) for PAH's for the purposes of determining leachability of these constituents from the soil. Soil cuttings from the boring were placed with the excavated soil from the initial excavation of the area.

Groundwater samples were collected from the monitoring well after development and purging. Development consisted of surging and bailing followed by over-pumping until the water was clear and the pH, temperature, and conductivity had stabilized. After well development was complete, a minimum of 24 hours was allowed to pass prior to purging and sampling. Purging was performed by pumping with a submersible pump at a rate of approximately 1 gallon per minute or until no drawdown was observed. Upon removal of at least three well volumes and stabilization of the pH, temperature, and conductivity, the groundwater was sampled from the dedicated discharge tubing of the pump. The groundwater sample was placed into the appropriate

pre-labeled containers and stored on ice for shipment to the analytical laboratory. Chain-of-custody procedures were followed during sample handling. Purge and development water was placed into 55-gallon drums, labeled with contents, sealed, and left at the site pending waste characterization.

Groundwater samples were analyzed for BTEX by EPA Method 8021, PAH's by EPA Method 8310, TPH by EPA Method 8015 modified (GRO-DRO), major cations and anions, and heavy metals by various EPA 7000 series methods. Additionally, a groundwater sample was collected for analysis of total dissolved solids.

Soil Analytical Results

A total of six subsurface soil samples were collected from the soil boring drilled and the pump site. The soil analytical results were compared to the New Mexico Oil Conservation Division (NMOCD) target criteria. A summary of soil analytical results are presented in Tables 2-1 and 2-2. The laboratory analytical reports are attached as Appendix D.

TPH-DRO and GRO were detected in all six of the soil samples above the NMOCD recommended remediation level for soils of 100 mg/kg. Toluene, ethyl benzene, and xylenes were detected in all six of the soil samples, however, none of these constituents exceeded the NMOCD recommended remediation levels. Benzene was not detected in any of the subsurface soil samples. PAH constituents were also detected in soil samples, however, NMOCD has not established soil remediation standards for the PAH compounds in soil.

SPLP analyses for PAH's were performed on the two highest TPH soil samples for the purposes of determining the leachability of these constituents from soil to groundwater. Soil samples MW-1 (9-10') and MW-1 (14-15') were analyzed by the SPLP method for PAH compounds. Both sample results slightly exceeded the New Mexico Water Quality Control Commission (NMWQCC) groundwater standards for total naphthalene and mono-methylnaphthalenes. Figure 2-2 presents the soil concentrations that exceed NMOCD standards based on a ranking criteria where the depth to groundwater is less than 50 feet, the distance to a public water supply is greater than 1000 feet, the distance to a private domestic water source is greater than 200 feet, and the distance to a surface water body is greater than 1000 feet. Figure 2-2 also presents the PAH-SPLP concentrations that exceed NMWQCC standards.

Groundwater Analytical Results

The groundwater analytical results from the groundwater sample were compared to the NMWQCC groundwater standards. The groundwater analytical results and the NMWQCC standards are presented on Tables 2-3, 2-4, and 2-5. The laboratory analytical reports are attached as Appendix D.

A trace of crude oil was found on the water table after well development. The oil was visually inspected by the use of a product bailer and found to be in globules only. An interface probe measurement for thickness of the oil indicated <0.005 feet thickness. Prior to sampling an absorbent sock was used to remove any free phase product prior to purging and sampling.

The analytical results for the PAH compounds slightly exceeded the NMWQCC groundwater standards for total naphthalene and mono-methylnaphthalenes. The analytical results for TPH and BTEX were reported in concentrations above the laboratory reporting limits, however, only

the benzene concentration exceeded the NMWQCC groundwater standards. Figure 2-2 presents the groundwater concentrations that exceed NMWQCC standards.

The analytical results for metals were reported in concentrations above the laboratory reporting limits. Arsenic, aluminum, barium, boron, calcium, iron, magnesium, manganese, potassium, and sodium were detected in concentrations above the laboratory reporting limits, however, below any of the NMWQCC standards for domestic water supply or irrigation use. Boron and iron were detected in concentrations that exceeded the NMWQCC standards for domestic water supply or irrigation use. Chloride, fluoride, nitrogen, nitrate, and sulfate concentrations were also measured in the groundwater samples. Chloride and fluoride concentrations exceeded both the NMWQCC standards for domestic water supply and human health. Sulfate was detected in the four samples; however, a water quality standard has not been established for sulfate. The total dissolved solids concentrations measured from the monitoring well is 840 mg/L The metal and ion concentrations are most likely attributable to the poor natural water quality of the aquifer and are not a result of the pipe line leak.

Based on the results of the investigation, historical operations at the booster pump have impacted the soil and groundwater at the Byrd pump site. Soil analytical results have indicated TPH to be above the NMOCD remediation standards, however, further analysis of the TPH impacted soils has shown that the PAH compounds, which comprise the TPH, to marginally leach out of the soils above the NMWQCC standards. Additionally, analytical results for PAH's from the groundwater sample only slightly exceed the NMWQCC standards. Analytical results of benzene and total BTEX in soil were below the NMOCD standards, although benzene was detected in groundwater above the NMWQCC standards.

Because the site is an active booster pump location and several pieces of equipment and a 4-inch crude oil line cross the area, it is recommended that the upper five feet of soil be removed and replaced with clean soil. This can be performed without major disruption of the pump operations while protecting the surface exposure pathway at the site.

Due to the relatively low hydrocarbon concentrations in the deeper soils at the site, APL proposes to address the impacted soils by way of active bioventing. A blower fan will be used to inject ambient air (oxygen) into the existing monitoring well for the purposes of stimulating biodegradation of the remaining constituents in the deeper soils. The soils will be monitored for hydrocarbon concentrations over time. Additionally, the groundwater will be monitored for the present of free phase liquids and periodically sampled to assess the groundwater conditions. Upon demonstration that the soil and groundwater meet NMOCD and NMWQCC standards, APL will request site closure from NMOCD.

TABLES

TABLE 2-1
SOIL ANALYTICAL RESULTS
BYRD PUMP SITE - HOBBS, NEW MEXICO
(Samples collected 11/11/99)

CONSTITUENT	MW-1 (4-5')	MW-1 (9-10')	MW-1 (14-15')	MW-1 (19-20')	MW-1 (29-30')	MW-1 (39-40')
PAH (mg/kg)						
1-Methylnaphthalene	<.130	5.9	2	3.7	3.7	0.037
2-Methylnaphthalene	<.130	4.9	1.7	3.3	3.3	0.036
Acenaphtene	<.066	0.41	0.12	0.24	0.29	0.0047
Acenaphthylene	<.066	0.1	<.066	0.076	<.066	<.0033
Anthracene	<.066	<.066	<.066	<.066	<.066	<.0033
Benz(a)anthracene	<.066	0.21	0.077	0.08	0.088	0.012
Benzo(a)pyrene	<.066	<.066	<.066	<.066	<.066	<.0033
Benzo(b)fluoranthene	<.066	0.16	<.066	<.066	0.078	<.0033
Benzo(g,h,I)perylene	<.066	0.13	<.066	<.066	<.066	0.0092
Benzo(k)fluoranthene	<.066	<.066	<.066	<.066	<.066	<.0033
Chrysene	<.066	0.4	0.16	0.2	0.21	0.0071
Dibenzo(g,h)anthracene	<.066	<.066	<.066	<.066	<.066	<.0033
Fluoranthene	<.066	<.066	<.066	<.066	0.076	<.0033
Fluorene	<.066	3.4	0.82	2.1	2.3	0.027
Indeno(1,2,3-cd)pyrene	<.066	0.088	<.066	<.066	<.066	<.0033
Naphthalene	<.066	1	0.33	0.68	0.7	0.0038
Phenanthrene	<.066	1.4	0.4	0.81	0.88	0.018
Pyrene	<.066	0.46	0.17	0.21	0.25	0.0063
TPH (mg/kg)						
Diesel Range Organics	2500	3300	4100	3000	3200	5.4
Gasoline Range Organics	23	280	250	240	370	17
Total TPH [1]	**2523**	**3580**	**4350**	**3240**	**3570**	22.4
BTEX (mg/kg)						
Benzene [2]	<.005	<.05	<.025	<.025	<.05	<.001
Ethylbenzene	<.005	1.8	1	0.87	0.47	<.001
Toluene	0.047	1.9	1.1	0.99	1.2	0.23
Xylenes, Total	0.324	3.8	3.8	4	4	0.061
Total BTEX [3]	0.371	7.5	5.9	5.86	5.67	0.291

Notes:

1) New Mexico Oil Conservation Division's Recommended Remediation Levels for soils impacted with petroleum hydrocarbons is 100 mg/Kg for Total TPH, based on site specific ranking criteria.
2) New Mexico Oil Conservation Division's Recommended Remediation Levels for soils impacted with petroleum hydrocarbons is 10 mg/Kg for benzene, based on site specific ranking criteria.
3) New Mexico Oil Conservation Division's Recommended Remediation Levels for soils impacted with petroleum hydrocarbons is 50 mg/Kg for Total BTEX, based on site specific ranking criteria.

PAH = polynuclear aromatic hydrocarbons

TPH = total petroleum hydrocarbons

BTEX = benzene, toluene, ethyl benzene, xylenes

mg/kg=milligrams per kilogram

TABLE 2-2
SOIL ANALYTICAL RESULTS, SPLP
BYRD PUMP SITE - HOBBS, NEW MEXICO
(samples collected 11/11/99)

CONSTITUENT	MW-1 (9-10')	MW-1 (14-15')	New Mexico WQCC Groundwater Standards (HHS)[1]
PAH (mg/L)			
1-Methylnaphthalene	0.017	0.016	--
2-Methylnaphthalene	0.014	0.012	--
Acenaphtene	<.002	<.002	--
Acenaphthylene	0.00071	0.00055	--
Anthracene	<.0001	<.0001	--
Benz(a)anthracene	<.0001	<.0001	--
Benzo(a)pyrene	<.0001	<.0001	.0007
Benzo(b)fluoranthene	<.0001	<.0001	--
Benzo(g,h,I)perylene	<.0001	<.0001	--
Benzo(k)fluoranthene	<.0001	<.0001	--
Chrysene	<.0001	<.0001	--
Dibenzo(g,h)anthracene	<.0001	<.0001	--
Fluoranthene	<.0001	<.0001	--
Fluorene	0.0043	0.004	--
Indeno(1,2,3-cd)pyrene	<.0001	<.0001	--
Naphthalene	0.01	0.0086	--
Phenanthrene	<.002	<.002	--
Pyrene	<.0001	<.0001	--
Total, Naphthalene and Monomethylnaphthalenes[2]	**0.041**	**0.0366**	.030

Notes:

1) New Mexico Water Quality Control Commision Groundwater Standards for Human Health
2) The standard established by the New Mexico Water Quality Control Commision for Naphthalene includes total monomethylnaphthalenes.

SPLP = synthetic precipation leaching procedure
PAH = polynuclear aromatic hydrocarbons
mg/L = milligrams per liter

TABLE 2-3
GROUNDWATER ANALYTICAL RESULTS
BYRD PUMP SITE - HOBBS, NEW MEXICO
(samples collected 11/17/99)

CONSTITUENT	MW-1	New Mexico WQCC Groundwater Standards (HHS)[1]
PAH (mg/L)		
1-Methylnaphthalene	0.029	--
2-Methylnaphthalene	0.014	--
Acenaphtene	<.002	--
Acenaphthylene	<.002	--
Anthracene	<.002	--
Benz(a)anthracene	<.002	--
Benzo(a)pyrene	<.002	.0007
Benzo(b)fluoranthene	<.002	--
Benzo(g,h,I)perylene	<.002	--
Benzo(k)fluoranthene	<.002	--
Chrysene	<.002	--
Dibenzo(g,h)anthracene	<.002	--
Fluoranthene	<.002	--
Fluorene	0.0081	--
Indeno(1,2,3-cd)pyrene	<.002	--
Naphthalene	0.01	--
Phenanthrene	0.0026	--
Pyrene	<.002	--
Total, Naphthalene and Monomethylnaphthalenes[2]	**0.053**	.030

Notes:

1) New Mexico Water Quality Control Commision Groundwater Standards for Human Health
2) The standard set by the New Mexico Water Quality Control Commision for Naphthalene includes total monomethylnaphthalenes.

PAH = polynuclear aromatic hydrocarbons

mg/L= milligrams per liter

TABLE 2-4
GROUNDWATER ANALYTICAL RESULTS
BYRD PUMP SITE - HOBBS, NEW MEXICO

CONSTITUENT	MW-1	New Mexico WQCC Groundwater Standards (HHS)[1]	New Mexico WQCC Groundwater Standards (DWSS)[2]
TPH (mg/L)			
Diesel Range Organics	22	--	--
Gasoline Range Organics	3.9	--	--
BTEX (mg/L)			
Benzene	**0.13**	0.01	--
Ethylbenzene	0.11	0.75	--
Toluene	0.11	0.75	--
Xylenes, Total	0.3552	0.62	--
Cation, Anion Water Quality Parameters (mg/L)			
Chloride	**300**	--	250
Fluoride	**2.9**	1.6	--
Nitrogen, Nitrate	<1	10	--
Sulfate	1.1	--	--
Total Dissolved Solids (mg/L)			
Total Dissolved Solids	840	--	1000

Notes:

1) New Mexico Water Quality Control Commision Groundwater Standards for Human Health
2) New Mexico Water Quality Control Commision Groundwater Standards for Domestic Water Supply

TPH = total petroleum hydrocarbons
BTEX = benzene, toluene, ethyl benzene, xylenes
mg/L=milligrams per liter

TABLE 2-5
GROUNDWATER ANALYTICAL RESULTS
BYRD PUMP SITE - HOBBS, NEW MEXICO

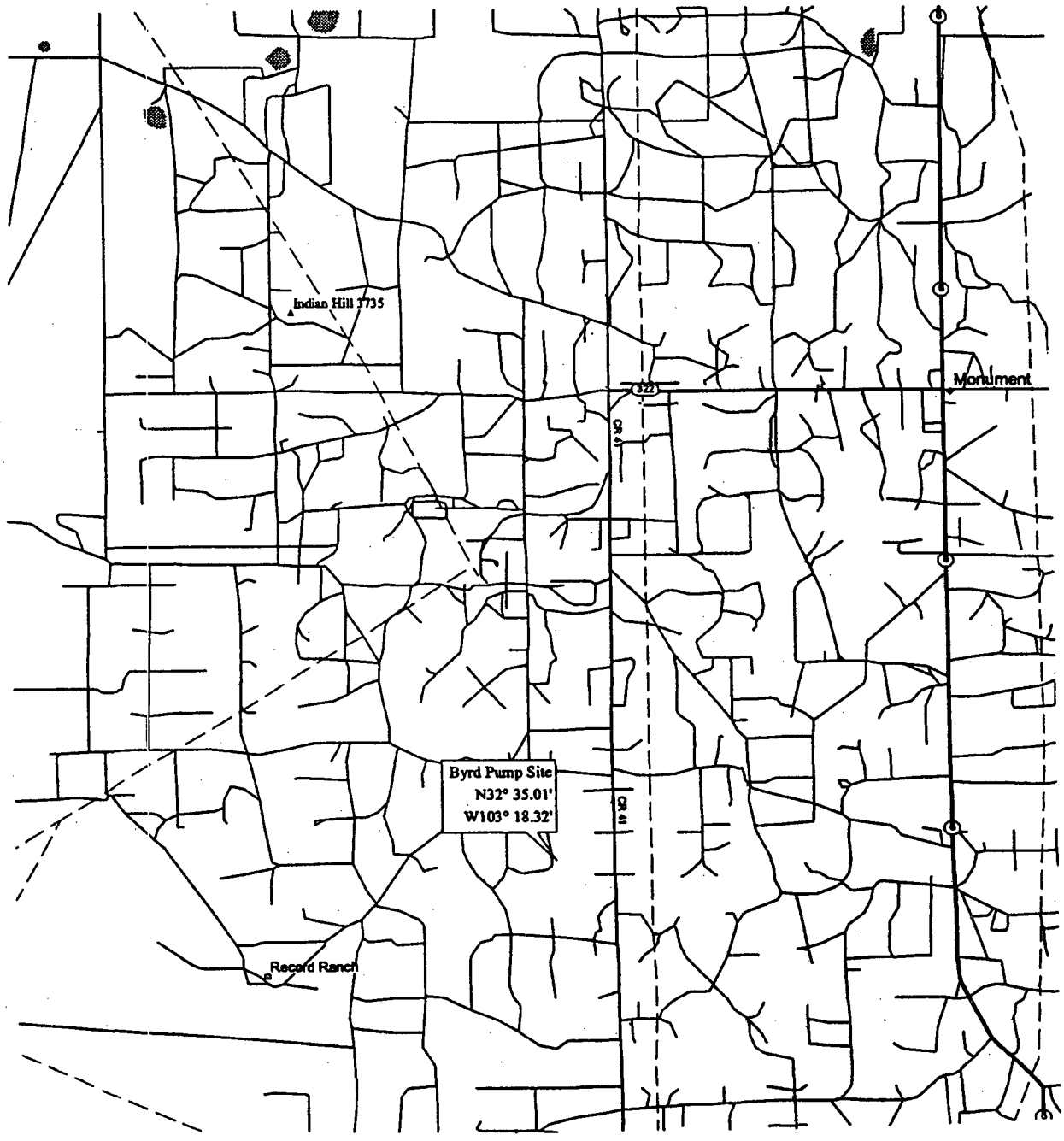
CONSTITUENT	MW-1	New Mexico WQCC Groundwater Standards (HHS)[1]	New Mexico WQCC Groundwater Standards (DWSS)[2]	New Mexico WQCC Groundwater Standards (IU)[3]
Metals (mg/L)				
Arsenic	0.00674	0.10	--	--
Lead	<0.005	0.05	--	--
Selenium	<0.005	0.05	--	--
Aluminum	1.92	--	--	5.0
Barium	0.88	1.0	--	--
Boron	**0.882**	--	--	0.75
Cadmium	<0.005	0.01	--	--
Calcium	354	--	--	--
Chromium	<1	0.05	--	--
Cobalt	<0.01	--	--	0.05
Copper	<0.01	--	1.0	--
Iron	**2.94**	--	1.0	--
Magnesium	110	--	--	--
Manganese	0.0908	--	0.20	--
Molybdenum	<0.02	--	--	1.0
Nickel	<0.02	--	--	0.20
Potassium	3.22	--	--	--
Silver	<0.01	0.05	--	--
Sodium	454	--	--	--
Zinc	<0.02	--	10.0	--

Notes:

1) New Mexico Water Quality Control Commision Groundwater Standards for Human Health
2) New Mexico Water Quality Control Commision Groundwater Standards for Domestic Water Supply
3) New Mexico Water Quality Control Commision Groundwater Standards for Irrigation Use

mg/L=milligrams per liter

FIGURES



Mag 13.00
Mon Jun 28 17:19 1999
Scale 1:62,500 (at center)

1 Miles

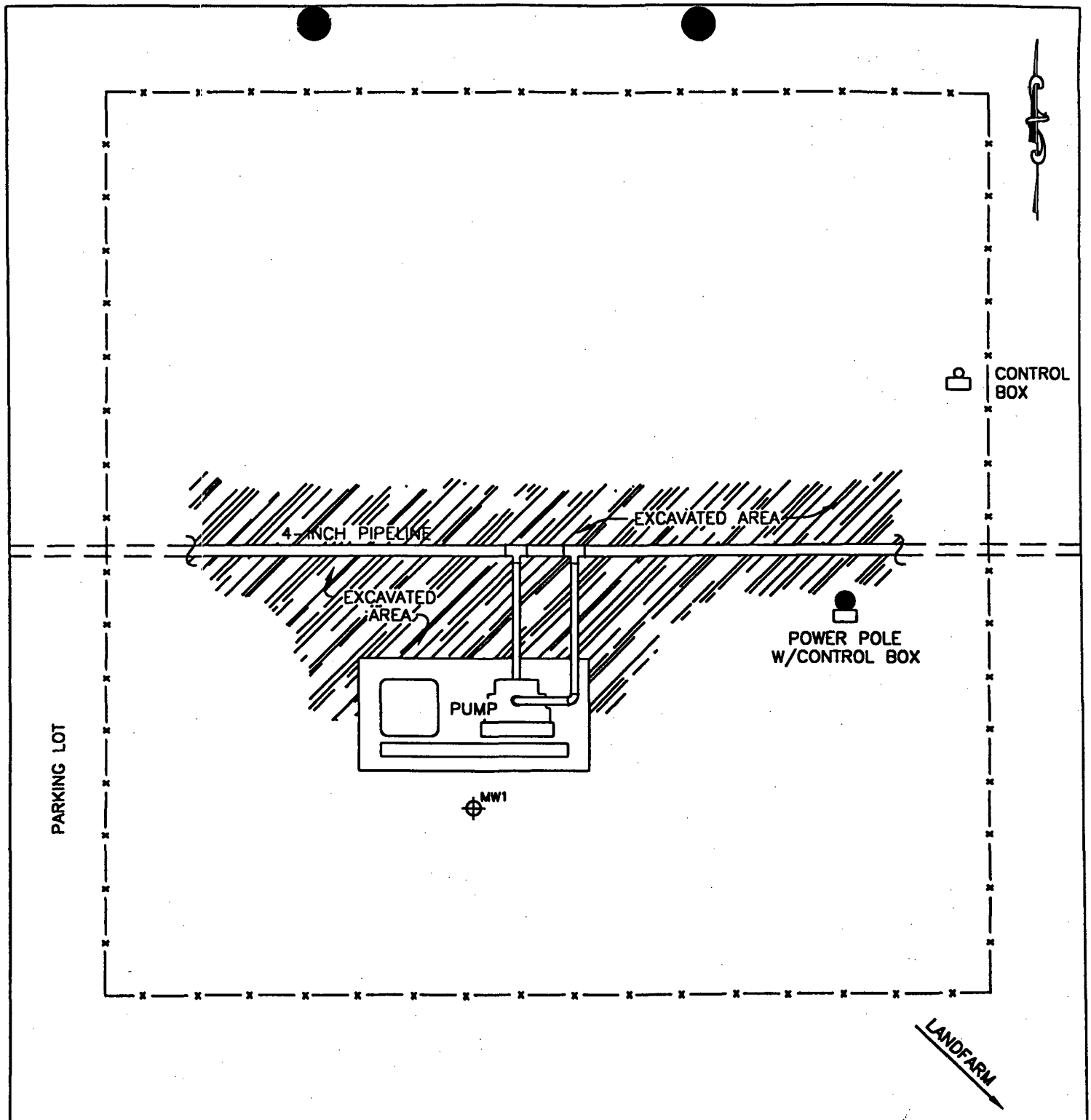
2 KM

Secondary SR/Road/Hwy Ramp
Major Connector
State Route
US Highway
Utility/Pipe
Water
Intermittent River

N

ARCO PIPE LINE, CO	**URS Greiner Woodward Clyde** Austin, Texas	SITE LOCATION MAP	PROJECT NO. 93990001B2.00
BYRD PUMP 3 MILES WEST OF MONUMENT, NEW MEXICO	SCALE: NOTED; DRAWN BY: MSM DATE: 6/28/99; CHECKED BY: MSM DATE: 6/28/99		FIG. NO. 1-1

I:\ARCO\BYRD\BYRDPUMP\CADD\BORDER.DWG



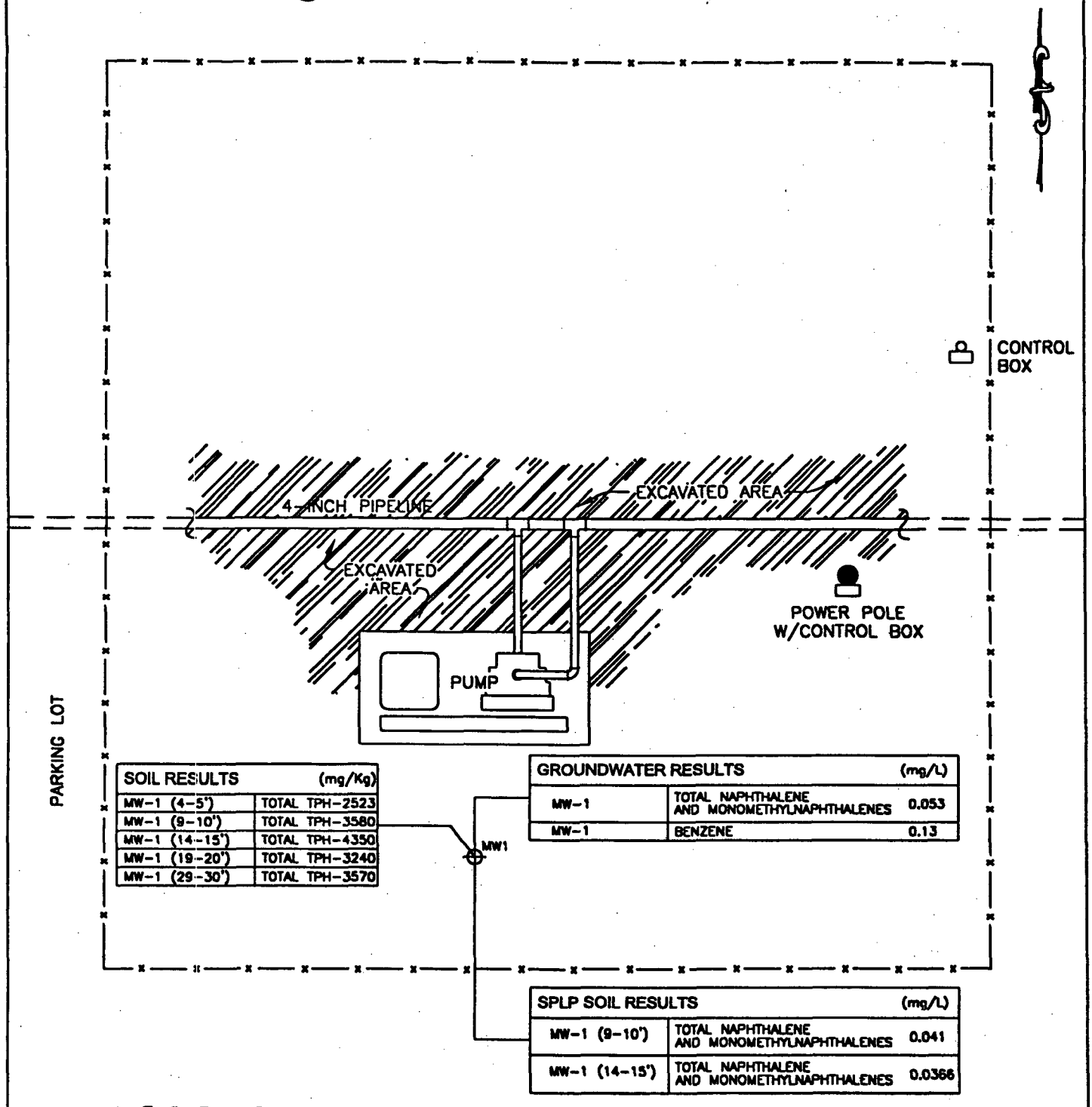
LEGEND

MW1 MONITORING WELL

BARB WIRE FENCE

NOT TO SCALE

ARCO PIPELINE BYRD PUMP RELEASE SITE	**URS Greiner Woodward Clyde** 7600 West Tidwell Road, Suite 600 Houston, Texas 77040 United States of America	SITE PLAN	FILE NO. 9399000162
	SCALE: AS NOTED / DRAWN BY: SAF / DATE: 01/03/2000 CHKD. BY: / DATE:		FIGURE NO. 2-1



SOIL RESULTS	(mg/Kg)
MW-1 (4-5')	TOTAL TPH-2523
MW-1 (9-10')	TOTAL TPH-3580
MW-1 (14-15')	TOTAL TPH-4350
MW-1 (19-20')	TOTAL TPH-3240
MW-1 (29-30')	TOTAL TPH-3570

GROUNDWATER RESULTS		(mg/L)
MW-1	TOTAL NAPHTHALENE AND MONOMETHYLNAPHTHALENES	0.053
MW-1	BENZENE	0.13

SPLP SOIL RESULTS		(mg/L)
MW-1 (9-10')	TOTAL NAPHTHALENE AND MONOMETHYLNAPHTHALENES	0.041
MW-1 (14-15')	TOTAL NAPHTHALENE AND MONOMETHYLNAPHTHALENES	0.0366

LEGEND

MW1 MONITORING WELL

BARB WIRE FENCE

NOT TO SCALE

ARCO PIPELINE
BYRD PUMP
RELEASE SITE

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

SCALE: AS NOTED	DRAWN BY: SAF/BH	DATE: 01/03/2000
	CHKD. BY:	DATE:

SOIL CONCENTRATIONS, SPLP SOIL CONCENTRATIONS, GROUNDWATER CONCENTRATIONS EXCEEDING NMWQCC/ NMOCD STANDARDS

FILE NO. 9399000162

FIGURE NO. 2-2

Appendix A
Laboratory Analytical Reports for Excavated Soil

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/12/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP

Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NO.	SAMPLE ID	TPH (mg/kg)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE:		04/09/99	04/09/99	04/09/99	04/09/99	04/09/99
H4098-1	BYRD PUMP	15200	<0.002	<0.002	<0.002	<0.006
Quality Control		254	0.087	0.099	0.092	0.260
True Value QC		240	0.100	0.100	0.100	0.300
% Recovery		106	87.4	98.8	92.4	93.4
Relative Percent Difference		1.9	2.6	3.1	2.6	1.8

METHODS: TRPHC - EPA 600/7-79-020, 418.1; BTEX - EPA SW-846 8260

Chemist

4/12/99
Date

H4098.XLS

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/15/99
Project Number: NOT GIVEN
Project Name. ARCO PIPELINE
Project Location: BYRD PUMP

Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH/GP

TCLP METALS

LAB NO.	SAMPLE ID	As ppm	Ag ppm	Ba ppm	Cd ppm	Cr ppm	Pb ppm	Hg ppm	Se ppm
ANALYSIS DATE:		04/13/99	04/14/99	04/14/99	04/14/99	04/14/99	04/14/99	04/15/99	04/13/99
EPA LIMITS:		5	5	100	1	5	5	0.2	1
H4098-1	BYRD PUMP	<1	<1	<5	<0.1	<1	<1	<0.02	<0.1
Quality Control		0.201	1.020	19.69	0.506	3.964	2.999	0.0095	0.051
True Value QC		0.200	1.000	20.00	0.500	4.000	3.000	0.0100	0.050
% Recovery		101	102	98	101	99	100	95	102
Relative Standard Deviation		2.77	0.83	0.28	1.27	1.11	1.38	2.4	3.6
METHODS: EPA 1311, 600/4-91/		206.2	272.1	208.1	213.1	218.1	239.1	245.1	270.2

Gayle A. Potter, Chemist

04/15/99
Date

H4098M.XLS

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/13/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP
Lab Number: H4098-1
Sample ID: BYRD PUMP

Analysis Date: 04/12/99
Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

TCLP SEMIVOLATILES (ppm)	EPA LIMIT	Sample Result H4098-1	Method Blank	QC	% Recov.	True Value QC
Pyridine	5.00	<0.020	<0.005	0.016	32	0.050
1,4-Dichlorobenzene	7.50	<0.020	<0.005	0.034	68	0.050
o-Cresol	200	<0.020	<0.005	0.034	68	0.050
m, p-Cresol	200	<0.020	<0.005	0.034	68	0.050
Hexachloroethane	3.00	<0.020	<0.005	0.033	66	0.050
Nitrobenzene	2.00	<0.020	<0.005	0.034	68	0.050
Hexachloro-1,3-butadiene	0.500	<0.020	<0.005	0.039	78	0.050
2,4,6-Trichlorophenol	2.00	<0.020	<0.005	0.041	82	0.050
2,4,5-Trichlorophenol	400	<0.020	<0.005	0.042	84	0.050
2,4-Dinitrotoluene	0.130	<0.020	<0.005	0.042	84	0.050
Hexachlorobenzene	0.130	<0.020	<0.005	0.044	88	0.050
Pentachlorophenol	100	<0.020	<0.005	0.041	82	0.050

	% RECOVERY
Fluorophenol	75
Phenol-d5	62
Nitrobenzene-d5	100
2-Fluorobiphenyl	110
2,4,6-Tribromophenol	115
Terphenyl-d14	104

METHODS: EPA SW 846-8270, 1311, 3510

Burgess J. A. Cooke, Ph. D.

4/13/99
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/13/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP
Lab Number: H4098-1
Sample ID: BYRD PUMP

Analysis Date: 04/12/99
Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

TCLP VOLATILES (ppm)	EPA LIMIT	Sample Result H4098-1	Method Blank	QC	%Recov.	True Value QC
Vinyl Chloride	0.20	<0.005	<0.005	0.102	102	0.100
1,1-Dichloroethylene	0.7	<0.005	<0.005	0.104	104	0.100
Methyl Ethyl Ketone	200	<0.050	<0.050	0.116	116	0.100
Chloroform	6.0	<0.005	<0.005	0.106	106	0.100
1,2-Dichloroethane	0.5	<0.005	<0.005	0.099	99	0.100
Benzene	0.5	<0.005	<0.005	0.111	111	0.100
Carbon Tetrachloride	0.5	<0.005	<0.005	0.094	94	0.100
Trichloroethylene	0.5	<0.005	<0.005	0.097	97	0.100
Tetrachloroethylene	0.7	<0.005	<0.005	0.090	90	0.100
Chlorobenzene	100	<0.005	<0.005	0.099	99	0.100
1,4-Dichlorobenzene	7.5	<0.005	<0.005	0.093	93	0.100

	% RECOVERY
Dibromofluoromethane	90
Toluene-d8	120
Bromofluorobenzene	88

METHODS. EPA SW 846-8260, 1311

Burgess J. A. Cooke, Ph. D.

4/13/99
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/13/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP

Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	REACTIVITY Sulfide (ppm)	REACTIVITY Cyanide (ppm)	CORROSIVITY (pH)	IGNITABILITY (°F)
ANALYSIS DATE:		04/13/99	04/13/99	04/09/99	04/09/99
H4098-1	BYRD PUMP	Not reactive	Not reactive	7.45	Nonflammable
Quality Control		NR	NR	7.02	NR
True Value QC		NR	NR	7.00	NR
% Recovery		NR	NR	100	NR
Relative Percent Difference		NR	NR	0.3	NR

METHOD: EPA SW 846-7.3, 7.2, 1030 (proposed), 1311. *40 CFR 261*

Chemist

4/13/99
Date

Appendix B
EDR Well Search Report

The EDR-GeoCheck® Report

Arco Pipeline Byrd Pump Site
Byrd Pump
Hobbs, NM 88240

Inquiry Number: 444309.1s

December 15, 1999

Environmental Data Resources, Inc.
an edr company

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

THE EDR GEOCHECK™ REPORT

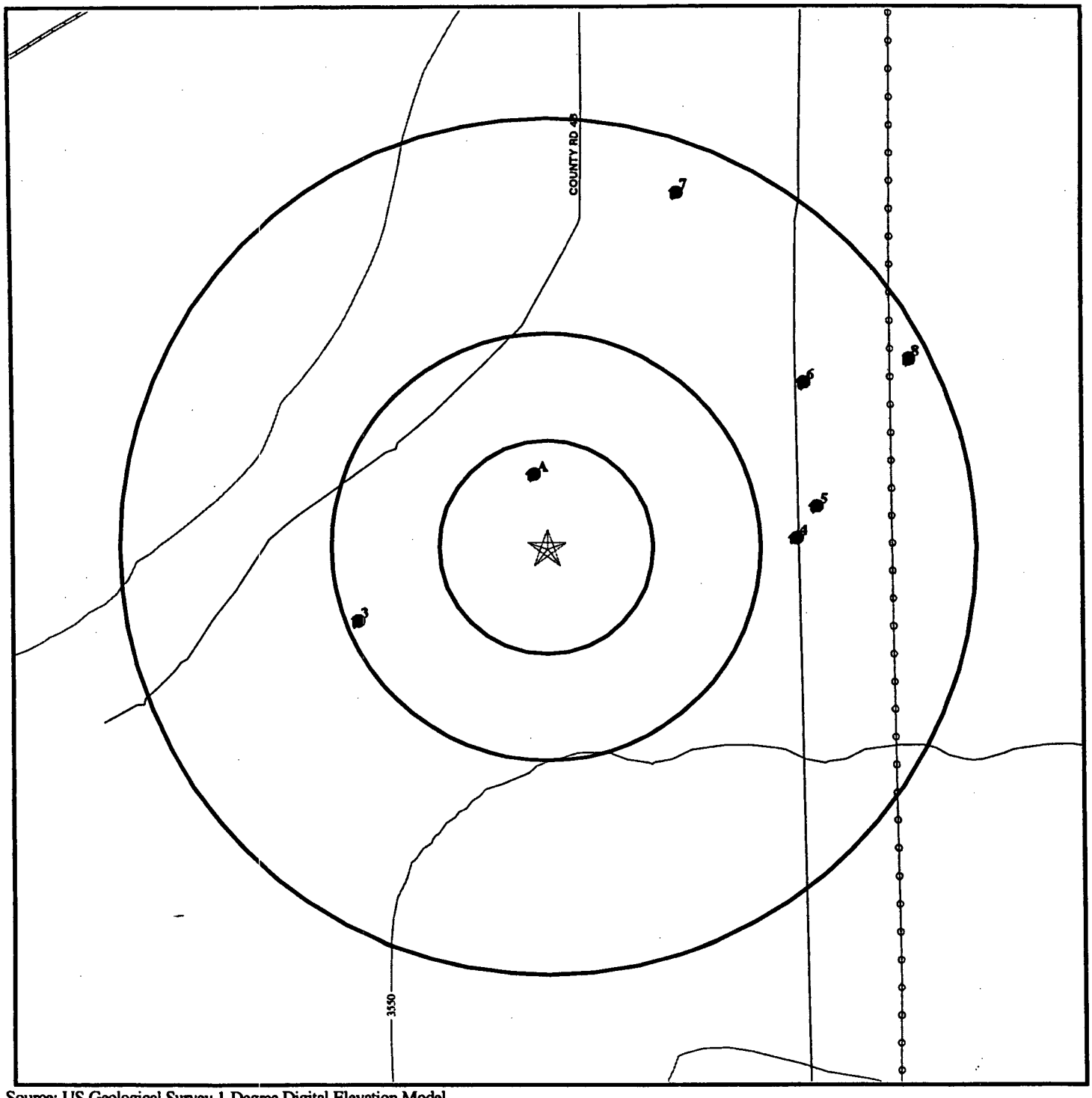
The EDR GeoCheck™ Report is a screening tool designed to assist in the hydrogeological assessment of a particular geographic area based upon publicly available information.

The EDR GeoCheck™ Report consists of the following information within a customer specified radius of the target property.

- topography (25 foot intervals unless otherwise shown)
- major roads
- surface water bodies
- railroad tracks
- flood plains (available in selected counties)
- wetlands (available in selected counties)
- wells including depth to water table and water level variability (in federal and selected state databases)
- public water supply wells (including violations information)
- geologic data
- radon data.

The EDR GeoCheck™ Report is a general area study. It may or may not be accurate at any specific location.

TOPOGRAPHIC MAP –444309.1s –'URS Greiner/Woodward Clyde'



Source: US Geological Survey 1-Degree Digital Elevation Model
Compiled 09/15/92

0 1/4 1/2 1

scale in miles

- –Major Roads
- –Contour lines (25 foot interval unless otherwise shown)
- –Waterways
- –Wells within search distance to Target Property
- –Earthquake Epicenters (Richter 5 or greater)
- –Power lines
- –Pipe lines
- –Fault lines
- –Water

N

TARGET PROPERTY:	Arco Pipeline Byrd Pump Site	CUSTOMER:	URS Greiner/Woodward Clyde
ADDRESS:	Byrd Pump	CONTACT:	Dennis Hayes
CITY/STATE/ZIP:	Hobbs NM 88240	INQUIRY #:	444309.1s
LAT/LONG:	32.5836 / 103.3089	DATE:	December 15, 1999

WELL SEARCH SUMMARY

GEOLOGIC AGE IDENTIFICATION†

Geologic Code:	Qp
Era:	Cenozoic
System:	Quaternary
Series:	Pleistocene

ROCK STRATIGRAPHIC UNIT†

Category:	Stratifed Sequence

SEARCH DISTANCE RADIUS INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal Database	1.000
State Database	1.000
PWS Database	1.000

FEDERAL DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	323510103183401	1/8 - 1/4 Mile North
A2	323510103183402	1/8 - 1/4 Mile North
3	323452103185901	1/4 - 1/2 Mile WSW
4	323502103175601	1/2 - 1 Mile East
5	323506103175301	1/2 - 1 Mile East
6	323521103175501	1/2 - 1 Mile ENE
7	323544103181301	1/2 - 1 Mile NNE
8	323524103174001	1/2 - 1 Mile ENE

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

NO WELLS FOUND

PUBLIC WATER SUPPLY SYSTEM INFORMATION

NO WELLS FOUND

AREA RADON INFORMATION

Zip Code: 88240

Number of sites tested: 29

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.655 pCi/L	93%	7%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.400 pCi/L	100%	0%	0%

† Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

WELL SEARCH FINDINGS

Map ID
Direction
Distance

A1
North
1/8 - 1/4 Mile

Site ID:	323510103183401	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3559.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level:	29.45 ft.	Water Level:	28.18 ft.	Water Level:	29.76 ft.	Water Level:	29.65 ft.
Date Measured:	03/25/54	Date Measured:	03/01/61	Date Measured:	03/03/66	Date Measured:	04/11/68

A2
North
1/8 - 1/4 Mile

Site ID:	323510103183402	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3559.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level:	28.25 ft.
Date Measured:	01/21/71

3
WSW
1/4 - 1/2 Mile

Site ID:	323452103185901	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3566.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level:	33.51 ft.	Water Level:	33.13 ft.	Water Level:	31.74 ft.
Date Measured:	04/11/68	Date Measured:	01/27/71	Date Measured:	02/13/76

WELL SEARCH FINDINGS

Map ID
Direction
Distance

4
East
1/2 - 1 Mile

Site ID:	323502103175601	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3552.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level: 25.65 ft.
Date Measured: 03/01/61

5
East
1/2 - 1 Mile

Site ID:	323506103175301	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3553.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level: 27.14 ft.
Date Measured: 03/29/54

6
ENE
1/2 - 1 Mile

Site ID:	323521103175501	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3557.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level: 28.96 ft. Water Level: 27.72 ft.
Date Measured: 03/30/54 Date Measured: 09/08/67

WELL SEARCH FINDINGS

Map ID
Direction
Distance

7
NNE
1/2 - 1 Mile

Site ID:	323544103181301	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3566.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level:	33.32 ft.	Water Level:	26.76 ft.	Water Level:	27.02 ft.	Water Level:	26.28 ft.
Date Measured:	03/30/54	Date Measured:	03/01/61	Date Measured:	03/03/66	Date Measured:	04/11/68

8
ENE
1/2 - 1 Mile

Site ID:	323524103174001	Info. Source:	USGS
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Lea
Altitude:	3558.00 ft.	State:	New Mexico
Well Depth:	Not Reported	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Not Reported
Date Measured:	Not Reported	Prim. Use of Water:	Not Reported

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Water Level:	28.71 ft.	Water Level:	29.09 ft.	Water Level:	28.23 ft.	Water Level:	27.37 ft.
Date Measured:	03/01/61	Date Measured:	03/03/66	Date Measured:	04/10/68	Date Measured:	01/14/71
Water Level:	24.01 ft.						
Date Measured:	02/04/76						

NEW MEXICO GOVERNMENT WELL RECORDS SEARCHED

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SWDIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

Area Radon Information: The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones: Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

USGS Water Wells: In November 1971 the United States Geological Survey (USGS) implemented a national water resource information tracking system. This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on more than 900,000 wells, springs, and other sources of groundwater.

Water Dams: National Inventory of Dams
Source: Federal Emergency Management Agency
Telephone: 202-646-2801
National computer database of more than 74,000 dams maintained by the Federal Emergency Management Agency.

Appendix C
Soil Boring/Monitoring Well Construction Log

Project: APL BYRD PUMP SITE
Project Location: Hobbs, New Mexico
Project Number: 93-99000162.00-00001

Log of Monitoring Well MW1

Sheet 1 of 1

Date(s) Drilled	11/9/99 11/11/1999	Logged By	D. Hayes	Checked By	R.T.Murthy
Drilling Method	HSA	Drilling Contractor	GMI	Total Depth of Borehole	40.0 feet
Drill Rig Type	CME	Drill Bit Size/Type	12.25" OD to 10'/8.25" OD to 40'	Surface Elevation	
Groundwater Level and Date	33.60 (oil)/33.605 (water) on 11/15/99	Sampler Type	5 ft. CME Sampler	Top of PVC Elevation	-
Diameter of Hole (inches)	12.25/8.25 Diameter of Well (inches) 4	Type of Well Casing	4 in. Schedule 40 PVC	Screen Perforation	0.010 inch machine slotted
Type of Sand Pack	20/40 Silica Sand	Type and Depth of Seal(s)	Hydrated Bentonite Pellets, from 14' to 17'		
Comments					

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	OVA Reading, ppm	REMARKS
0			90		SILTY SAND, moderate brown, loose, slightly moist, fine to medium grained, moderate to poorly graded, subangular to subrounded, heavy brown oil staining, strong petroleum odor.		4 52 60 71	
5			95		CLAYEY SAND, moderate yellow brown, loose, slightly moist, fine to medium grained, moderate to poorly graded, subangular to subrounded, lighter staining.		21 503	MW1-4-5 Soil Jar Sample
					change in color to pale yellow brown		631	
					SANDY CLAY, gray stains, gray, firm to hard, slightly moist, low plasticity.		571 435	
10			50		SILTY SAND, moderate yellow brown, loose, moist, fine grained, moderate to poorly graded, subangular.		326	MW1-9-10 Soil Jar Sample
					GRAVELLY SAND, moderate yellow brown, loose, moist, coarse to fine, subangular chert pebbles, maximum size of 0.5 inch, strong odor.		252 241 301 321	
15			60				301	MW1-14-15 Soil Jar Sample
							704 569 507	
20			70		SILTY SAND, moderate yellow brown, loose, moist, fine grained, moderate to poorly graded, subangular.		554 834	MW1-19-20 Soil Jar Sample
							318 710 953	
25			80		CALICHE		510 503 505	
					SILTY SAND, moderate yellow brown, loosem moist, fine grained, moderate to poorly graded, subangular		212 238 138	
30			80				596 472	MW1-29-30 Soil Jar Sample
					change in color to light brown	▽	187 563	
35			80				749 820 321 336	
					GRAVELLY SAND, light brown, loose, saturated, fine to medium grained, well graded, subangular.		196 54 35	MW1-39-40 Soil Jar Sample
40					Boring terminated at a depth of 40 feet below existing ground. Groundwater encountered after completion of well.			
45								

Report: ENV_23DW; File: BYRD-MON.GPJ; 1/10/00

Appendix D
Laboratory Analytical Reports for Subsurface Soil and Groundwater

Laboratory Analytical Reports
Subsurface Soils – Soil Boring

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

URS Greiner Woodward Clyde

Certificate of Analysis Number:

99110356

Report To:		Project Name:	ARCO/ HOBBS, NM
URS Greiner Woodward Clyde		Site:	HOBBS, NM
Rick Nelson		Site Address:	
6200 La Calma			
Suite 210		PO Number:	
Austin		State:	
Texas		State Cert. No.:	
78752-		Date Reported:	12/28/1999
ph (512) 458-1174	fax: (512) 458-9823		

According to the latest promulgated version of Method 8310 for PAH's, confirmation of target compounds can be performed using either a second analytical column with different retention times for the analytes of interest or by use of the Diode Array Detector (DAD). SPL confirms all PAH compounds detected at concentrations exceeding the Practical Quantitation Limit (PQL) by examining the DAD spectra for these compounds. The spectra are compared to the reference spectra from the instrument that is used for these compounds, and a probability match is generated for the peak requiring confirmation. The effectiveness of this method of confirmation is dependent on the relative concentrations of non-target compounds that are co-extracted from the sample.

Your sample ID " MW 1-4-5 " (SPL ID: 99110356-01) was randomly selected for the use in SPL's quality control program for the Polynuclear Aromatic Hydrocarbons analysis by SW846 method 8310. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of the advisable quality control limits for various spiked compounds (Batch ID: 1659), due to matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

Please note the results reported in the Quality Assurance section for your sample ID "MW 1-4-5" are below the elevated Practical Quantitaion Limits reported on the analytical pages, but are present for calculation purposes only. Such values should not be interpreted as valid analyte concentrations, and thus are reported as non-detected in the analytical section of the report. Their purpose is to allow for validation of spiked analyte recovery values.

Any other data flags or quality control exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Lynch, Pat
Project Manager

12/29/1999
Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

URS Greiner Woodward Clyde

Certificate of Analysis Number:

99110356

Report To:	URS Greiner Woodward Clyde Rick Nelson 6200 La Calma Suite 210 Austin Texas 78752- ph: (512) 458-1174 fax: (512) 458-9823	**Project Name:**	ARCO/ HOBBS, NM
		Site:	HOBBS, NM
		Site Address:	
		PO Number:	
		State:	
		State Cert. No.:	
		Date Reported:	
Fax To:	*URS Greiner Woodward Clyde* *Rick Nelson* *fax: (512) 458-9823*		

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW1-4-5	99110356-01	Soil	11/9/99 10:30:00 AM	11/13/99 10:00:00 AM	086306	☐
MW1-4-5	99110356-01	Soil	11/9/99 10:30:00 AM	11/13/99 10:00:00 AM	086306	☑
MW1-9-10	99110356-02	Soil	11/9/99 11:00:00 AM	11/13/99 10:00:00 AM	086306	☐
MW1-14-15	99110356-03	Soil	11/11/99 10:30:00 AM	11/13/99 10:00:00 AM	086306	☐
MW1-19-20	99110356-04	Soil	11/11/99 10:40:00 AM	11/13/99 10:00:00 AM	086306	☑
MW1-19-20	99110356-04	Soil	11/11/99 10:40:00 AM	11/13/99 10:00:00 AM	086306	☐
MW1-29-30	99110356-05	Soil	11/11/99 11:15:00 AM	11/13/99 10:00:00 AM	086306	☑
MW1-29-30	99110356-05	Soil	11/11/99 11:15:00 AM	11/13/99 10:00:00 AM	086306	☐
MW1-39-40	99110356-06	Soil	11/11/99 11:30:00 AM	11/13/99 10:00:00 AM	086306	☑
MW1-39-40	99110356-06	Soil	11/11/99 11:30:00 AM	11/13/99 10:00:00 AM	086306	☐
Trip Blank 11/8/99	99110356-07	Trip Blank	11/11/99	11/13/99 10:00:00 AM	086306	☐

Lynch, Pat
Project Manager

12/28/99
Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID MW1-4-5 **Collected:** 11/9/99 10:30:00 **SPL Sample ID:** 99110356-01

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	2500		120		25		11/22/99 23:49	RR	113050
Surr: Pentacosane	D	%	20-154		25	*	11/22/99 23:49	RR	113050

Run ID/Seq #: HP_V_991121C-113050

Prep Method	Prep Date	Prep Initials
SW3550A	11/16/1999 9:05	EE

GASOLINE RANGE ORGANICS				MCL	SW8015B		Units: mg/Kg		
Gasoline Range Organics	23		0.5		5		11/19/99 8:05	FB	112847
Surr: 1,4-Difluorobenzene	98	%	72-153		5		11/19/99 8:05	FB	112847
Surr: 4-Bromofluorobenzene	480	%	51-149		5	*	11/19/99 8:05	FB	112847

POLYNUCLEAR AROMATIC HYDROCARBONS				MCL	SW8310		Units: ug/Kg		
1-Methylnaphthalene	ND		130		20		11/21/99 21:21	KA	111943
2-Methylnaphthalene	ND		130		20		11/21/99 21:21	KA	111943
Acenaphthene	ND		66		20		11/21/99 21:21	KA	111943
Acenaphthylene	ND		66		20		11/21/99 21:21	KA	111943
Anthracene	ND		66		20		11/21/99 21:21	KA	111943
Benz(a)anthracene	ND		66		20		11/21/99 21:21	KA	111943
Benzo(a)pyrene	ND		66		20		11/21/99 21:21	KA	111943
Benzo(b)fluoranthene	ND		66		20		11/21/99 21:21	KA	111943
Benzo(g,h,i)perylene	ND		66		20		11/21/99 21:21	KA	111943
Benzo(k)fluoranthene	ND		66		20		11/21/99 21:21	KA	111943
Chrysene	ND		66		20		11/21/99 21:21	KA	111943
Dibenzo(a,h)anthracene	ND		66		20		11/21/99 21:21	KA	111943
Fluoranthene	ND		66		20		11/21/99 21:21	KA	111943
Fluorene	ND		66		20		11/21/99 21:21	KA	111943
Indeno(1,2,3-cd)pyrene	ND		66		20		11/21/99 21:21	KA	111943
Naphthalene	ND		66		20		11/21/99 21:21	KA	111943
Phenanthrene	ND		66		20		11/21/99 21:21	KA	111943
Pyrene	ND		66		20		11/21/99 21:21	KA	111943
Surr: 1-Fluoronaphthalene	D	%	34-167		20	*	11/21/99 21:21	KA	111943
Surr: Phenanthrene-d10	18	%	37-167		20	*	11/21/99 21:21	KA	111943

Run ID/Seq #: 2_991122A-111943

Prep Method	Prep Date	Prep Initials
SW3550A	11/13/1999 18:42	DB

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID MW1-4-5 **Collected:** 11/9/99 10:30:00 **SPL Sample ID:** 99110356-01

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		5	5		11/19/99 8:52	FB	112091
Ethylbenzene	ND		5	5		11/19/99 8:52	FB	112091
Toluene	47		5	5		11/19/99 8:52	FB	112091
Xylenes,Total	324		5	5		11/19/99 8:52	FB	112091
Surr: 1,4-Difluorobenzene	110	%	59-127	5		11/19/99 8:52	FB	112091
Surr: 4-Bromofluorobenzene	140	%	48-156	5		11/19/99 8:52	FB	112091

Qualifiers:

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J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
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Client Sample ID MW1-9-10 **Collected:** 11/9/99 11:00:00 **SPL Sample ID:** 99110356-02

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	MCL	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					SW8015B		Units: mg/Kg		
Diesel Range Organics	3300		250		50		11/23/99 0:27	RR	113051
Surr: Pentacosane	6600	%	20-154		50	*	11/23/99 0:27	RR	113051

Run ID/Seq #: HP_V_991121C-113051

Prep Method	Prep Date	Prep Initials
SW3550A	11/16/1999 9:05	EE

GASOLINE RANGE ORGANICS									
				MCL	SW8015B		Units: mg/Kg		
Gasoline Range Organics	280		5		50		11/19/99 9:04	FB	112848
Surr: 1,4-Difluorobenzene	73	%	72-153		50		11/19/99 9:04	FB	112848
Surr: 4-Bromofluorobenzene	540	%	51-149		50	*	11/19/99 9:04	FB	112848
POLYNUCLEAR AROMATIC HYDROCARBONS				MCL	SW8310		Units: ug/Kg		
1-Methylnaphthalene	5900		1300		200		11/23/99 1:46	KA	113108
2-Methylnaphthalene	4900		1300		200		11/23/99 1:46	KA	113108
Acenaphthene	410		66		20		11/22/99 1:20	KA	111949
Acenaphthylene	100		66		20		11/22/99 1:20	KA	111949
Anthracene	ND		66		20		11/22/99 1:20	KA	111949
Benz(a)anthracene	210		66		20		11/22/99 1:20	KA	111949
Benzo(a)pyrene	ND		66		20		11/22/99 1:20	KA	111949
Benzo(b)fluoranthene	160		66		20		11/22/99 1:20	KA	111949
Benzo(g,h,i)perylene	130		66		20		11/22/99 1:20	KA	111949
Benzo(k)fluoranthene	ND		66		20		11/22/99 1:20	KA	111949
Chrysene	400		66		20		11/22/99 1:20	KA	111949
Dibenzo(a,h)anthracene	ND		66		20		11/22/99 1:20	KA	111949
Fluoranthene	ND		66		20		11/22/99 1:20	KA	111949
Fluorene	3400		660		200		11/23/99 1:46	KA	113108
Indeno(1,2,3-cd)pyrene	88		66		20		11/22/99 1:20	KA	111949
Naphthalene	1000		66		20		11/22/99 1:20	KA	111949
Phenanthrene	1400		66		20		11/22/99 1:20	KA	111949
Pyrene	460		66		20		11/22/99 1:20	KA	111949
Surr: 1-Fluoronaphthalene	200	%	34-167		20	*	11/22/99 1:20	KA	111949
Surr: 1-Fluoronaphthalene	D	%	34-167		200	*	11/23/99 1:46	KA	113108
Surr: Phenanthrene-d10	2400	%	37-167		200	*	11/23/99 1:46	KA	113108
Surr: Phenanthrene-d10	2200	%	37-167		20	*	11/22/99 1:20	KA	111949

Run ID/Seq #: 2_991122A-111949

Prep Method	Prep Date	Prep Initials
SW3550A	11/13/1999 18:42	DB

Run ID/Seq #: 2_991122A-113108

Prep Method	Prep Date	Prep Initials
SW3550A	11/13/1999 18:42	DB

Qualifiers:

ND/U - Not Detected at the Reporting Limit
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Client Sample ID MW1-9-10 **Collected:** 11/9/99 11:00:00 **SPL Sample ID:** 99110356-02

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
POLYNUCLEAR AROMATIC HYDROCARBONS, SPLP			**MCL**	**SW8310**		**Units: ug/L**		
1-Methylnaphthalene	17		4	20		12/02/99 13:57	KA	120796
2-Methylnaphthalene	14		4	20		12/02/99 13:57	KA	120796
Acenaphthene	ND		2	20		12/02/99 13:57	KA	120796
Acenaphthylene	0.71		0.1	1		12/02/99 7:21	KA	120781
Anthracene	ND		0.1	1		12/02/99 7:21	KA	120781
Benz(a)anthracene	ND		0.1	1		12/02/99 7:21	KA	120781
Benzo(a)pyrene	ND		0.1	1		12/02/99 7:21	KA	120781
Benzo(b)fluoranthene	ND		0.1	1		12/02/99 7:21	KA	120781
Benzo(g,h,i)perylene	ND		0.1	1		12/02/99 7:21	KA	120781
Benzo(k)fluoranthene	ND		0.1	1		12/02/99 7:21	KA	120781
Chrysene	ND		0.1	1		12/02/99 7:21	KA	120781
Dibenzo(a,h)anthracene	ND		0.1	1		12/02/99 7:21	KA	120781
Fluoranthene	ND		0.1	1		12/02/99 7:21	KA	120781
Fluorene	4.3		2	20		12/02/99 13:57	KA	120796
Indeno(1,2,3-cd)pyrene	ND		0.1	1		12/02/99 7:21	KA	120781
Naphthalene	10		2	20		12/02/99 13:57	KA	120796
Phenanthrene	ND		2	20		12/02/99 13:57	KA	120796
Pyrene	ND		0.1	1		12/02/99 7:21	KA	120781
Surr: 1-Fluoronaphthalene	150	%	30-140	1	*	12/02/99 7:21	KA	120781
Surr: 1-Fluoronaphthalene	130	%	30-140	20		12/02/99 13:57	KA	120796
Surr: Phenanthrene-d10	230	%	35-140	20	*	12/02/99 13:57	KA	120796
Surr: Phenanthrene-d10	110	%	35-140	1		12/02/99 7:21	KA	120781

Run ID/Seq #: 2_991202A-120781

Prep Method	Prep Date	Prep Initials
SW3510B	11/23/1999 16:02	KL

Run ID/Seq #: 2_991202A-120796

Prep Method	Prep Date	Prep Initials
SW3510B	11/23/1999 16:02	KL

PURGEABLE AROMATICS			MCL	SW8021B		Units: ug/Kg		
Benzene	ND		50	50		11/19/99 9:48	FB	112093
Ethylbenzene	1800		50	50		11/19/99 9:48	FB	112093
Toluene	1900		50	50		11/19/99 9:48	FB	112093
Xylenes,Total	3800		50	50		11/19/99 9:48	FB	112093
Surr: 1,4-Difluorobenzene	80	%	59-127	50		11/19/99 9:48	FB	112093
Surr: 4-Bromofluorobenzene	170	%	48-156	50	*	11/19/99 9:48	FB	112093

Qualifiers:

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J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
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Client Sample ID MW1-14-15 Collected: 11/11/99 10:30:0 SPL Sample ID: 99110356-03

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B		Units: mg/Kg		
Diesel Range Organics	4100		500	100		11/23/99 1:05	RR	113052
Surr: Pentacosane	5400	%	20-154	100	*	11/23/99 1:05	RR	113052

Run ID/Seq #: HP_V_991121C-113052

Prep Method	Prep Date	Prep Initials
SW3550A	11/16/1999 9:05	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B		Units: mg/Kg		
Gasoline Range Organics	250		5	50		11/19/99 10:01	FB	112849
Surr: 1,4-Difluorobenzene	75	%	72-153	50		11/19/99 10:01	FB	112849
Surr: 4-Bromofluorobenzene	580	%	51-149	50	*	11/19/99 10:01	FB	112849
POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310		Units: ug/Kg		
1-Methylnaphthalene	2000		1300	200		11/23/99 2:25	KA	113109
2-Methylnaphthalene	1700		1300	200		11/23/99 2:25	KA	113109
Acenaphthene	120		66	20		11/22/99 10:35	KA	111951
Acenaphthylene	ND		66	20		11/22/99 10:35	KA	111951
Anthracene	ND		66	20		11/22/99 10:35	KA	111951
Benz(a)anthracene	77		66	20		11/22/99 10:35	KA	111951
Benzo(a)pyrene	ND		66	20		11/22/99 10:35	KA	111951
Benzo(b)fluoranthene	ND		66	20		11/22/99 10:35	KA	111951
Benzo(g,h,i)perylene	ND		66	20		11/22/99 10:35	KA	111951
Benzo(k)fluoranthene	ND		66	20		11/22/99 10:35	KA	111951
Chrysene	160		66	20		11/22/99 10:35	KA	111951
Dibenzo(a,h)anthracene	ND		66	20		11/22/99 10:35	KA	111951
Fluoranthene	ND		66	20		11/22/99 10:35	KA	111951
Fluorene	820		66	20		11/22/99 10:35	KA	111951
Indeno(1,2,3-cd)pyrene	ND		66	20		11/22/99 10:35	KA	111951
Naphthalene	330		66	20		11/22/99 10:35	KA	111951
Phenanthrene	400		66	20		11/22/99 10:35	KA	111951
Pyrene	170		66	20		11/22/99 10:35	KA	111951
Surr: 1-Fluoronaphthalene	D	%	34-167	20	*	11/22/99 10:35	KA	111951
Surr: 1-Fluoronaphthalene	D	%	34-167	200	*	11/23/99 2:25	KA	113109
Surr: Phenanthrene-d10	800	%	37-167	200	*	11/23/99 2:25	KA	113109
Surr: Phenanthrene-d10	650	%	37-167	20	*	11/22/99 10:35	KA	111951

Run ID/Seq #: 2_991122A-111951

Prep Method	Prep Date	Prep Initials
SW3550A	11/13/1999 18:42	DB

Run ID/Seq #: 2_991122A-113109

Prep Method	Prep Date	Prep Initials
SW3550A	11/13/1999 18:42	DB

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
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Client Sample ID MW1-14-15 **Collected:** 11/11/99 10:30:0 **SPL Sample ID:** 99110356-03

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
POLYNUCLEAR AROMATIC HYDROCARBONS, SPLP			**MCL**	**SW8310**		**Units: ug/L**		
1-Methylnaphthalene	16		4	20		12/02/99 14:37	KA	120797
2-Methylnaphthalene	12		4	20		12/02/99 14:37	KA	120797
Acenaphthene	ND		2	20		12/02/99 14:37	KA	120797
Acenaphthylene	0.55		0.1	1		12/02/99 8:01	KA	120786
Anthracene	ND		0.1	1		12/02/99 8:01	KA	120786
Benz(a)anthracene	ND		0.1	1		12/02/99 8:01	KA	120786
Benzo(a)pyrene	ND		0.1	1		12/02/99 8:01	KA	120786
Benzo(b)fluoranthene	ND		0.1	1		12/02/99 8:01	KA	120786
Benzo(g,h,i)perylene	ND		0.1	1		12/02/99 8:01	KA	120786
Benzo(k)fluoranthene	ND		0.1	1		12/02/99 8:01	KA	120786
Chrysene	ND		0.1	1		12/02/99 8:01	KA	120786
Dibenzo(a,h)anthracene	ND		0.1	1		12/02/99 8:01	KA	120786
Fluoranthene	ND		0.1	1		12/02/99 8:01	KA	120786
Fluorene	4		2	20		12/02/99 14:37	KA	120797
Indeno(1,2,3-cd)pyrene	ND		0.1	1		12/02/99 8:01	KA	120786
Naphthalene	8.6		2	20		12/02/99 14:37	KA	120797
Phenanthrene	ND		2	20		12/02/99 14:37	KA	120797
Pyrene	ND		0.1	1		12/02/99 8:01	KA	120786
Surr: 1-Fluoronaphthalene	100	%	30-140	1		12/02/99 8:01	KA	120786
Surr: 1-Fluoronaphthalene	120	%	30-140	20		12/02/99 14:37	KA	120797
Surr: Phenanthrene-d10	250	%	35-140	20	*	12/02/99 14:37	KA	120797
Surr: Phenanthrene-d10	110	%	35-140	1		12/02/99 8:01	KA	120786

Run ID/Seq #: 2_991202A-120786

Prep Method	Prep Date	Prep Initials
SW3510B	11/23/1999 16:02	KL

Run ID/Seq #: 2_991202A-120797

Prep Method	Prep Date	Prep Initials
SW3510B	11/23/1999 16:02	KL

PURGEABLE AROMATICS			MCL	SW8021B		Units: ug/Kg		
Benzene	ND		25	25		11/19/99 11:55	FB	110703
Ethylbenzene	1000		25	25		11/19/99 11:55	FB	110703
Toluene	1100		25	25		11/19/99 11:55	FB	110703
Xylenes,Total	3800		25	25		11/19/99 11:55	FB	110703
Surr: 1,4-Difluorobenzene	74	%	59-127	25		11/19/99 11:55	FB	110703
Surr: 4-Bromofluorobenzene	230	%	48-156	25	*	11/19/99 11:55	FB	110703

Qualifiers:

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8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
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Client Sample ID MW1-19-20 Collected: 11/11/99 10:40:0 SPL Sample ID: 99110356-04

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B		Units: mg/Kg		
Diesel Range Organics	3000		500	100		11/23/99 1:43	RR	113053
Surr: Pentacosane	2400	%	20-154	100	*	11/23/99 1:43	RR	113053

Run ID/Seq #: HP_V_991121C-113053

Prep Method	Prep Date	Prep Initials
SW3550A	11/16/1999 9:05	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B		Units: mg/Kg		
Gasoline Range Organics	240		5	50		11/19/99 22:04	FB	112850
Surr: 1,4-Difluorobenzene	75	%	72-153	50		11/19/99 22:04	FB	112850
Surr: 4-Bromofluorobenzene	620	%	51-149	50	*	11/19/99 22:04	FB	112850
POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310		Units: ug/Kg		
1-Methylnaphthalene	3700		1300	200		11/23/99 3:05	KA	113110
2-Methylnaphthalene	3300		1300	200		11/23/99 3:05	KA	113110
Acenaphthene	240		66	20		11/22/99 11:15	KA	111952
Acenaphthylene	76		66	20		11/22/99 11:15	KA	111952
Anthracene	ND		66	20		11/22/99 11:15	KA	111952
Benz(a)anthracene	80		66	20		11/22/99 11:15	KA	111952
Benzo(a)pyrene	ND		66	20		11/22/99 11:15	KA	111952
Benzo(b)fluoranthene	ND		66	20		11/22/99 11:15	KA	111952
Benzo(g,h,i)perylene	ND		66	20		11/22/99 11:15	KA	111952
Benzo(k)fluoranthene	ND		66	20		11/22/99 11:15	KA	111952
Chrysene	200		66	20		11/22/99 11:15	KA	111952
Dibenzo(a,h)anthracene	ND		66	20		11/22/99 11:15	KA	111952
Fluoranthene	ND		66	20		11/22/99 11:15	KA	111952
Fluorene	2100		660	200		11/23/99 3:05	KA	113110
Indeno(1,2,3-cd)pyrene	ND		66	20		11/22/99 11:15	KA	111952
Naphthalene	680		66	20		11/22/99 11:15	KA	111952
Phenanthrene	810		66	20		11/22/99 11:15	KA	111952
Pyrene	210		66	20		11/22/99 11:15	KA	111952
Surr: 1-Fluoronaphthalene	110	%	34-167	20		11/22/99 11:15	KA	111952
Surr: 1-Fluoronaphthalene	D	%	34-167	200	*	11/23/99 3:05	KA	113110
Surr: Phenanthrene-d10	1600	%	37-167	200	*	11/23/99 3:05	KA	113110
Surr: Phenanthrene-d10	1300	%	37-167	20	*	11/22/99 11:15	KA	111952

Run ID/Seq #: 2_991122A-111952

Prep Method	Prep Date	Prep Initials
SW3550A	11/13/1999 18:42	DB

Run ID/Seq #: 2_991122A-113110

Prep Method	Prep Date	Prep Initials
SW3550A	11/13/1999 18:42	DB

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID MW1-19-20 Collected: 11/11/99 10:40:0 SPL Sample ID: 99110356-04

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				MCL	SW8021B		Units: ug/Kg		
Benzene	ND		25		25		11/19/99 12:23	FB	110709
Ethylbenzene	870		25		25		11/19/99 12:23	FB	110709
Toluene	990		25		25		11/19/99 12:23	FB	110709
Xylenes,Total	4000		25		25		11/19/99 12:23	FB	110709
Surr: 1,4-Difluorobenzene	83	%	59-127		25		11/19/99 12:23	FB	110709
Surr: 4-Bromofluorobenzene	250	%	48-156		25	*	11/19/99 12:23	FB	110709

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID MW1-29-30 **Collected:** 11/11/99 11:15:0 **SPL Sample ID:** 99110356-05

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	3200		500	100		11/23/99 2:22	RR	113054
Surr: Pentacosane	2600	%	20-154	100	*	11/23/99 2:22	RR	113054
Run ID/Seq #: HP_V_991121C-113054								
Prep Method: SW3550A	Prep Date: 11/16/1999 9:05		Prep Initials: EE					
GASOLINE RANGE ORGANICS			**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	370		10	100		11/22/99 17:00	FB	112869
Surr: 1,4-Difluorobenzene	75	%	72-153	100		11/22/99 17:00	FB	112869
Surr: 4-Bromofluorobenzene	420	%	51-149	100	*	11/22/99 17:00	FB	112869
POLYNUCLEAR AROMATIC HYDROCARBONS			**MCL**	**SW8310**		**Units: ug/Kg**		
1-Methylnaphthalene	3700		1300	200		11/23/99 3:45	KA	113111
2-Methylnaphthalene	3300		1300	200		11/23/99 3:45	KA	113111
Acenaphthene	290		66	20		11/22/99 11:55	KA	111954
Acenaphthylene	ND		66	20		11/22/99 11:55	KA	111954
Anthracene	ND		66	20		11/22/99 11:55	KA	111954
Benz(a)anthracene	88		66	20		11/22/99 11:55	KA	111954
Benzo(a)pyrene	ND		66	20		11/22/99 11:55	KA	111954
Benzo(b)fluoranthene	78		66	20		11/22/99 11:55	KA	111954
Benzo(g,h,i)perylene	ND		66	20		11/22/99 11:55	KA	111954
Benzo(k)fluoranthene	ND		66	20		11/22/99 11:55	KA	111954
Chrysene	210		66	20		11/22/99 11:55	KA	111954
Dibenzo(a,h)anthracene	ND		66	20		11/22/99 11:55	KA	111954
Fluoranthene	76		66	20		11/22/99 11:55	KA	111954
Fluorene	2300		660	200		11/23/99 3:45	KA	113111
Indeno(1,2,3-cd)pyrene	ND		66	20		11/22/99 11:55	KA	111954
Naphthalene	700		66	20		11/22/99 11:55	KA	111954
Phenanthrene	880		66	20		11/22/99 11:55	KA	111954
Pyrene	250		66	20		11/22/99 11:55	KA	111954
Surr: 1-Fluoronaphthalene	120	%	34-167	20		11/22/99 11:55	KA	111954
Surr: 1-Fluoronaphthalene	D	%	34-167	200	*	11/23/99 3:45	KA	113111
Surr: Phenanthrene-d10	1400	%	37-167	200	*	11/23/99 3:45	KA	113111
Surr: Phenanthrene-d10	1200	%	37-167	20	*	11/22/99 11:55	KA	111954
Run ID/Seq #: 2_991122A-111954								
Prep Method: SW3550A	Prep Date: 11/13/1999 18:42		Prep Initials: DB					
Run ID/Seq #: 2_991122A-113111								
Prep Method: SW3550A	Prep Date: 11/13/1999 18:42		Prep Initials: DB					

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID MW1-29-30 **Collected:** 11/11/99 11:15:0 **SPL Sample ID:** 99110356-05

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			MCL	SW8021B		Units: ug/Kg		
Benzene	ND		50	50		11/19/99 12:51	FB	110711
Ethylbenzene	470		50	50		11/19/99 12:51	FB	110711
Toluene	1200		50	50		11/19/99 12:51	FB	110711
Xylenes,Total	4000		50	50		11/19/99 12:51	FB	110711
Surr: 1,4-Difluorobenzene	79	%	59-127	50		11/19/99 12:51	FB	110711
Surr: 4-Bromofluorobenzene	160	%	48-156	50	*	11/19/99 12:51	FB	110711

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID MW1-39-40 **Collected:** 11/11/99 11:30:0 **SPL Sample ID:** 99110356-06

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			**MCL**	**SW8015B**		**Units: mg/Kg**		
Diesel Range Organics	5.4		5	1		11/23/99 3:00	RR	113055
Surr: Pentacosane	70	%	20-154	1		11/23/99 3:00	RR	113055
Run ID/Seq #: HP_V_991121C-113055								
Prep Method: SW3550A	Prep Date: 11/16/1999 9:05		Prep Initials: EE					
GASOLINE RANGE ORGANICS			**MCL**	**SW8015B**		**Units: mg/Kg**		
Gasoline Range Organics	17		10	100		11/22/99 17:02	FB	112870
Surr: 1,4-Difluorobenzene	83	%	72-153	100		11/22/99 17:02	FB	112870
Surr: 4-Bromofluorobenzene	110	%	51-149	100		11/22/99 17:02	FB	112870
POLYNUCLEAR AROMATIC HYDROCARBONS			**MCL**	**SW8310**		**Units: ug/Kg**		
1-Methylnaphthalene	37		6.7	1		11/22/99 3:59	KA	111950
2-Methylnaphthalene	36		6.7	1		11/22/99 3:59	KA	111950
Acenaphthene	4.7		3.3	1		11/22/99 3:59	KA	111950
Acenaphthylene	ND		3.3	1		11/22/99 3:59	KA	111950
Anthracene	ND		3.3	1		11/22/99 3:59	KA	111950
Benz(a)anthracene	12		3.3	1		11/22/99 3:59	KA	111950
Benzo(a)pyrene	ND		3.3	1		11/22/99 3:59	KA	111950
Benzo(b)fluoranthene	ND		3.3	1		11/22/99 3:59	KA	111950
Benzo(g,h,i)perylene	9.2		3.3	1		11/22/99 3:59	KA	111950
Benzo(k)fluoranthene	ND		3.3	1		11/22/99 3:59	KA	111950
Chrysene	7.1		3.3	1		11/22/99 3:59	KA	111950
Dibenzo(a,h)anthracene	ND		3.3	1		11/22/99 3:59	KA	111950
Fluoranthene	ND		3.3	1		11/22/99 3:59	KA	111950
Fluorene	27		3.3	1		11/22/99 3:59	KA	111950
Indeno(1,2,3-cd)pyrene	ND		3.3	1		11/22/99 3:59	KA	111950
Naphthalene	3.8		3.3	1		11/22/99 3:59	KA	111950
Phenanthrene	18		3.3	1		11/22/99 3:59	KA	111950
Pyrene	6.3		3.3	1		11/22/99 3:59	KA	111950
Surr: 1-Fluoronaphthalene	52	%	34-167	1		11/22/99 3:59	KA	111950
Surr: Phenanthrene-d10	64	%	37-167	1		11/22/99 3:59	KA	111950
Run ID/Seq #: 2_991122A-111950								
Prep Method: SW3550A	Prep Date: 11/13/1999 18:42		Prep Initials: DB					

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID MW1-39-40 **Collected:** 11/11/99 11:30:0 **SPL Sample ID:** 99110356-06

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1		1		11/19/99 10:31	FB	110761
Ethylbenzene	ND		1		1		11/19/99 10:31	FB	110761
Toluene	230		1		1		11/19/99 10:31	FB	110761
Xylenes,Total	61		1		1		11/19/99 10:31	FB	110761
Surr: 1,4-Difluorobenzene	110	%	59-127		1		11/19/99 10:31	FB	110761
Surr: 4-Bromofluorobenzene	360	%	48-156		1	*	11/19/99 10:31	FB	110761

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID Trip Blank 11/8/99 | Collected: 11/11/99 | SPL Sample ID: 99110356-07

Site: HOBBS, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			MCL	SW8021B		Units: ug/L		
Benzene	ND		1	1		11/20/99 3:18	CJ	112779
Ethylbenzene	ND		1	1		11/20/99 3:18	CJ	112779
Toluene	ND		1	1		11/20/99 3:18	CJ	112779
Xylenes,Total	ND		1	1		11/20/99 3:18	CJ	112779
Surr: 1,4-Difluorobenzene	120	%	72-137	1		11/20/99 3:18	CJ	112779
Surr: 4-Bromofluorobenzene	98	%	48-156	1		11/20/99 3:18	CJ	112779

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

Quality Control Documentation

HOUSTON LABORATORY
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Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Diesel Range Organics
Method: SW8015B
WorkOrder: 99110356
Lab Batch ID: 1670

Method Blank

RunID: HP_V_991121C-111726 Units: mg/Kg
Analysis Date: 11/21/1999 16:42 Analyst: RR
Preparation Date: 11/16/1999 9:05 Prep By: EE Method SW3550A

Analyte	Result	Rep Limit
Diesel Range Organics	ND	10
Surr: Pentacosane	91.4	20-154

Samples In Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-01B	MW1-4-5
99110356-02B	MW1-9-10
99110356-03B	MW1-14-15
99110356-04B	MW1-19-20
99110356-05B	MW1-29-30
99110356-06B	MW1-39-40

Laboratory Control Sample (LCS)

RunID: HP_V_991121C-111727 Units: mg/Kg
Analysis Date: 11/21/1999 17:21 Analyst: RR
Preparation Date: 11/16/1999 9:05 Prep By: EE Method SW3550A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	83.33	80	96	77	145

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110349-04
RunID: HP_V_991121C-113060 Units: mg/Kg-dry
Analysis Date: 11/23/1999 6:49 Analyst: RR
Preparation Date: 11/16/1999 9:05 Prep By: EE Method SW3550A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics	22	171	110	49.2	171	120	57.6	15.7	50	21	175

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 99110356
Lab Batch ID: R5090

Method Blank

RunID: HP_O_991118B-110013 Units: ug/Kg
Analysis Date: 11/19/1999 2:04 Analyst: FB

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	91.9	59-127
Surr: 4-Bromofluorobenzene	95.2	48-156

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-03A	MW1-14-15
99110356-04A	MW1-19-20
99110356-05A	MW1-29-30
99110356-06A	MW1-39-40

Laboratory Control Sample (LCS)

RunID: HP_O_991118B-109980 Units: ug/Kg
Analysis Date: 11/18/1999 23:16 Analyst: FB

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	49	98	60	116
Ethylbenzene	50	51	101	68	127
Toluene	50	50	100	64	122
Xylenes,Total	150	149	99	68	127

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9911480-21A
RunID: HP_O_991118B-109990 Units: ug/Kg
Analysis Date: 11/19/1999 0:12 Analyst: FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	21	104	20	21	103	1.44	34	35	139
Ethylbenzene	1.8	20	21	97.9	20	21	97.9	0.0255	35	31	137
Toluene	3.8	20	23	95.0	20	23	98.4	3.52	28	31	137
Xylenes,Total	12	60	67	92.2	60	66	90.5	1.82	38	25	139

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 99110356
Lab Batch ID: R5201

Method Blank

RunID: HP_O_991119A-111997 **Units:** ug/Kg
Analysis Date: 11/19/1999 18:02 **Analyst:** FB

Samples In Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-01A	MW1-4-5
99110356-02A	MW1-9-10

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	90.6	59-127
Surr: 4-Bromofluorobenzene	97.6	48-156

Laboratory Control Sample (LCS)

RunID: HP_O_991119A-111991 **Units:** ug/Kg
Analysis Date: 11/19/1999 15:11 **Analyst:** FB

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	48	95	60	116
Ethylbenzene	50	50	100	68	127
Toluene	50	48	96	64	122
Xylenes,Total	150	144	96	68	127

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110429-01
RunID: HP_O_991119A-111992 **Units:** ug/Kg-dry
Analysis Date: 11/19/1999 16:09 **Analyst:** FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	23.8	25	103	23.8	25	105	1.07	34	35	139
Ethylbenzene	ND	23.8	26	107	23.8	24	103	4.14	35	31	137
Toluene	ND	23.8	25	104	23.8	24	100	3.18	28	31	137
Xylenes,Total	ND	71.4	72	101	71.4	71	99.4	1.40	38	25	139

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 99110356
Lab Batch ID: R5226

Method Blank

RunID: VARD_991120B-112778 Units: ug/L
Analysis Date: 11/20/1999 2:45 Analyst: CJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-07A	Trip Blank 11/8/99

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	92.6	72-137
Surr: 4-Bromofluorobenzene	99.1	48-156

Laboratory Control Sample (LCS)

RunID: VARD_991120B-112775 Units: ug/L
Analysis Date: 11/20/1999 1:06 Analyst: CJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	49	98	61	119
Ethylbenzene	50	49	97	70	118
Toluene	50	48	97	65	125
Xylenes,Total	150	148	99	72	116

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9911516-02A
RunID: VARD_991120B-112776 Units: ug/L
Analysis Date: 11/20/1999 1:39 Analyst: CJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	18	90.6	20	19	94.0	3.69	21	32	164
Ethylbenzene	ND	20	17	87.1	20	17	86.8	0.384	19	52	142
Toluene	ND	20	18	88.1	20	18	89.4	1.37	20	38	159
Xylenes,Total	ND	60	54	90.0	60	82	137	41.2*	17	53	143

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 99110356
Lab Batch ID: R5232

Method Blank

RunID: HP_O_991119D-112845 Units: mg/Kg
Analysis Date: 11/19/1999 6:00 Analyst: FB

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	80.5	72-153
Surr: 4-Bromofluorobenzene	92.4	51-149

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-01A	MW1-4-5
99110356-02A	MW1-9-10
99110356-03A	MW1-14-15
99110356-04A	MW1-19-20

Laboratory Control Sample (LCS)

RunID: HP_O_991119D-112842 Units: mg/Kg
Analysis Date: 11/19/1999 3:03 Analyst: FB

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.63	63	53	137

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110429-01
RunID: HP_O_991119D-112843 Units: mg/Kg-dry
Analysis Date: 11/19/1999 5:00 Analyst: FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	1.07	0.94	88.0	1.07	0.97	90.3	2.55	50	36	163

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 99110356
Lab Batch ID: R5234

Method Blank

RunID: HP_O_991122A-114342 Units: mg/Kg
Analysis Date: 11/22/1999 10:02 Analyst: FB

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-05A	MW1-29-30
99110356-06A	MW1-39-40

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	80.6	72-153
Surr: 4-Bromofluorobenzene	133.5	51-149

Laboratory Control Sample (LCS)

RunID: HP_O_991122A-112868 Units: mg/Kg
Analysis Date: 11/22/1999 2:00 Analyst: FB

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.68	68	53	137

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110450-01
RunID: HP_O_991122A-114339 Units: mg/Kg
Analysis Date: 11/22/1999 9:03 Analyst: FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	1.2	130	0.9	0.94	104	21.6	50	36	163

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Polynuclear Aromatic Hydrocarbons **WorkOrder:** 99110356
Method: SW8310 **Lab Batch ID:** 1659

Method Blank

RunID: 2_991122A-111937 Units: ug/Kg
Analysis Date: 11/21/1999 20:02 Analyst: KA
Preparation Date: 11/18/1999 15:09 Prep By: EE Method SW3550A

Analyte	Result	Rep Limit
2-Methylnaphthalene	ND	6.7
Acenaphthene	ND	3.3
Acenaphthylene	ND	3.3
Anthracene	ND	3.3
Benz(a)anthracene	ND	3.3
Benzo(a)pyrene	ND	3.3
Benzo(b)fluoranthene	ND	3.3
Benzo(g,h,i)perylene	ND	3.3
Benzo(k)fluoranthene	ND	3.3
Chrysene	ND	3.3
Dibenzo(a,h)anthracene	ND	3.3
Fluoranthene	ND	3.3
Fluorene	ND	3.3
Indeno(1,2,3-cd)pyrene	ND	3.3
Naphthalene	ND	3.3
Phenanthrene	ND	3.3
Pyrene	ND	3.3
Surr: 1-Fluoronaphthalene	53.9	34-167
Surr: Phenanthrene-d10	49.5	37-167

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-01B	MW1-4-5
99110356-02B	MW1-9-10
99110356-03B	MW1-14-15
99110356-04B	MW1-19-20
99110356-05B	MW1-29-30
99110356-06B	MW1-39-40

Laboratory Control Sample (LCS)

RunID: 2_991122A-111940 Units: ug/Kg
Analysis Date: 11/21/1999 20:42 Analyst: KA
Preparation Date: 11/18/1999 15:09 Prep By: EE Method SW3550A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Acenaphthene	16.7	11	66	0.01	124
Acenaphthylene	16.7	11	66	0.01	139
Anthracene	16.7	12	71	0.01	126
Benz(a)anthracene	16.7	12	73	12	135
Benzo(a)pyrene	16.7	11	67	0.01	128
Benzo(b)fluoranthene	16.7	12	73	6	150
Benzo(g,h,i)perylene	16.7	12	75	0.01	116
Benzo(k)fluoranthene	16.7	12	72	0.01	159
Chrysene	16.7	13	80	0.01	199
Dibenzo(a,h)anthracene	16.7	12	74	0.01	110
Fluoranthene	16.7	12	72	14	123
Fluorene	16.7	11	68	0.01	142
Indeno(1,2,3-cd)pyrene	16.7	13	81	0.01	116
Naphthalene	16.7	11	63	0.01	122
Phenanthrene	16.7	11	67	0.01	155

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Polynuclear Aromatic Hydrocarbons **WorkOrder:** 99110356
Method: SW8310 **Lab Batch ID:** 1659

Laboratory Control Sample (LCS)

RunID: 2_991122A-111940 Units: ug/Kg
Analysis Date: 11/21/1999 20:42 Analyst: KA
Preparation Date: 11/18/1999 15:09 Prep By: EE Method SW3550A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Pyrene	16.7	11	68	0.01	140

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110356-01
RunID: 2_991122A-111946 Units: ug/Kg
Analysis Date: 11/21/1999 22:01 Analyst: KA
Preparation Date: 11/13/1999 18:42 Prep By: DB Method SW3550A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Acenaphthene	ND	16.7	6.3	37.5	16.7	7.3	43.9	15.8	50	0.01	124
Acenaphthylene	ND	16.7	D	0*	16.7	D	0*	0	50	0.01	139
Anthracene	ND	16.7	13	77.8	16.7	14	82.6	5.91	50	0.01	126
Benz(a)anthracene	37	16.7	50	77.9	16.7	43	38.9	66.7*	50	12	135
Benzo(a)pyrene	ND	16.7	D	0*	16.7	D	0*	0	50	0.01	128
Benzo(b)fluoranthene	26	16.7	D	-157*	16.7	26	-2.37*	194*	50	6	150
Benzo(g,h,i)perylene	27	16.7	29	8.91	16.7	D	-164*	223*	50	0.01	116
Benzo(k)fluoranthene	14	16.7	22	52.0	16.7	17	19.4	91.5*	50	0.01	159
Chrysene	7.5	16.7	3.9	-21.6*	16.7	3.9	-21.5*	0.793	50	0.01	199
Dibenzo(a,h)anthracene	ND	16.7	D	0*	16.7	27	160*	200*	50	0.01	110
Fluoranthene	ND	16.7	18	111	16.7	19	111	0.749	50	14	123
Fluorene	ND	16.7	28	169*	16.7	25	152*	10.4	50	0.01	142
Indeno(1,2,3-cd)pyrene	43	16.7	43	-4.14*	16.7	45	12.0	409*	50	0.01	116
Naphthalene	ND	16.7	D	0*	16.7	7.4	44.4	200*	50	0.01	122
Phenanthrene	ND	16.7	18	109	16.7	20	119	8.61	50	0.01	155
Pyrene	14	16.7	25	67.4	16.7	20	38.1	55.5*	50	0.01	140

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Polynuclear Aromatic Hydrocarbons, SPLP **WorkOrder:** 99110356
Method: SW8310 **Lab Batch ID:** 1817

Method Blank

RunID: 2_991202A-120774 Units: ug/L
Analysis Date: 12/02/1999 6:02 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: KL Method SW3510B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110356-02C	MW1-9-10
99110356-03C	MW1-14-15

Analyte	Result	Rep Limit
1-Methylnaphthalene	ND	0.20
2-Methylnaphthalene	ND	0.20
Acenaphthene	ND	0.10
Acenaphthylene	ND	0.10
Anthracene	ND	0.10
Benz(a)anthracene	ND	0.10
Benzo(a)pyrene	ND	0.10
Benzo(b)fluoranthene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Benzo(k)fluoranthene	ND	0.10
Chrysene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Fluoranthene	ND	0.10
Fluorene	ND	0.10
Indeno(1,2,3-cd)pyrene	ND	0.10
Naphthalene	ND	0.10
Phenanthrene	ND	0.10
Pyrene	ND	0.10
Surr: 1-Fluoronaphthalene	56.8	30-140
Surr: Phenanthrene-d10	46.5	35-140

Laboratory Control Sample (LCS)

RunID: 2_991202A-120778 Units: ug/L
Analysis Date: 12/02/1999 6:42 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Acenaphthene	0.5	0.39	77	0.01	124
Acenaphthylene	0.5	0.38	76	0.01	139
Anthracene	0.5	0.39	78	0.01	126
Benz(a)anthracene	0.5	0.41	81	12	135
Benzo(a)pyrene	0.5	0.42	84	0.01	128
Benzo(b)fluoranthene	0.5	0.41	83	6	150
Benzo(g,h,i)perylene	0.5	0.4	80	0.01	116
Benzo(k)fluoranthene	0.5	0.41	81	0.01	159
Chrysene	0.5	0.45	90	0.01	199
Dibenzo(a,h)anthracene	0.5	0.41	83	0.01	110
Fluoranthene	0.5	0.39	79	14	123
Fluorene	0.5	0.39	78	0.01	142
Indeno(1,2,3-cd)pyrene	0.5	0.39	79	0.01	116
Naphthalene	0.5	0.38	75	0.01	122

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

URS Greiner Woodward Clyde

ARCO/ HOBBS, NM

Analysis: Polynuclear Aromatic Hydrocarbons, SPLP
Method: SW8310
WorkOrder: 99110356
Lab Batch ID: 1817

Laboratory Control Sample (LCS)

RunID: 2_991202A-120778 Units: ug/L
Analysis Date: 12/02/1999 6:42 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Phenanthrene	0.5	0.4	80	0.01	155
Pyrene	0.5	0.38	76	0.01	140

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110356-04
RunID: 2_991202A-120793 Units: ug/L
Analysis Date: 12/02/1999 9:20 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Acenaphthene	1.2	0.5	1.4	58.1	0.5	1.5	78.1	29.4	30	0.01	124
Acenaphthylene	0.91	0.5	0.95	7.98	0.5	1.9	208*	185*	30	0.01	139
Anthracene	ND	0.5	0.36	67.0	0.5	0.37	68.3	1.92	30	0.01	126
Benz(a)anthracene	ND	0.5	0.38	66.6	0.5	0.37	62.9	5.72	30	12	135
Benzo(a)pyrene	ND	0.5	0.26	51.3	0.5	0.23	46.9	8.97	30	0.01	128
Benzo(b)fluoranthene	ND	0.5	0.25	49.8	0.5	0.23	46.4	7.24	30	6	150
Benzo(g,h,i)perylene	ND	0.5	0.17	34.5	0.5	0.15	29.6	15.1	30	0.01	116
Benzo(k)fluoranthene	ND	0.5	0.25	49.1	0.5	0.22	44.0	10.9	30	0.01	159
Chrysene	ND	0.5	0.37	74.6	0.5	0.37	73.1	2.01	30	0.01	199
Dibenzo(a,h)anthracene	ND	0.5	0.17	33.1	0.5	0.15	30.4	8.47	30	0.01	110
Fluoranthene	ND	0.5	0.4	74.0	0.5	0.38	70.5	4.78	30	14	123
Fluorene	7.3	0.5	6.8	-91.4*	0.5	7.7	83.2	4300*	30	0.01	142
Indeno(1,2,3-cd)pyrene	ND	0.5	0.15	29.8	0.5	0.14	28.9	2.96	30	0.01	116
Naphthalene	11	0.5	10	-165*	0.5	12	90.5	685*	30	0.01	122
Phenanthrene	ND	0.5	0	0*	0.5	0	0*	0	30	0.01	155
Pyrene	0.10	0.5	0.41	60.4	0.5	0.39	57.7	4.55	30	0.01	140

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

Chain of Custody

And

Sample Receipt Checklist

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No: 9911035 6

086306

page 1 of 1

Client Name: URSGWC

Address/Phone: 7600 W. TIDWELL #600

Client Contact: DENNIS HAYES 713-744-9055

Project Name: APL BYRD PUMP SITE

Project Number:

Project Location: HOBBS, NEW MEXICO

Invoice To: RICK NELSON (URSGWC

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water SL=sludge S=soil O=other:)	bottle (P=plastic G=glass A=amber glass V=vial)	size (1=1 liter 8=8oz 4=4oz 16=16oz 40=vial)	pres. (1=HCl 3=H2SO4 2=HNO3 O=other:)	Number of Containers	Requested Analysis: BTEX-8021/TPH-8015 GRO/DRO	TPH DRO-8015/PAH	SPLP(BTEX/PAH)	BTEX 8021					
MW1-4-5	11-9-99	1030		X	S	G	4,8,16	ICE	3									
MW1-9-10	11-9-99	1100		X	S	G												
MW1-14-15	11-11-99	1030		X	S	P												
MW1-19-20	11-11-99	1040		X	S	G												
MW1-29-30	11-11-99	1115		X	S	G												
MW1-39-40	11-11-99	1130		X	S	G												
TRIP BLANK	—	—			W	V		HCl	1				1					

Client/Consultant Remarks: TRIP BLANK HAS ONLY 1 VIAL

Laboratory remarks: HOLD SPLP BTEX/PAH per Rick Nelson. PL 11/15/99

Intact? Y N

Temp: 4C

Requested TAT

24hr ☐ 72hr ☐

48hr ☐ Standard ☒

Other ☐ _____

Special Reporting Requirements: Fax Results ☒ Raw Data ☐ Standard QC ☒ Level 3 QC ☐ Level 4 QC ☐

Special Detection Limits (specify):

PM review (initial): PL

	date	time	
1. Relinquished by Sampler: Dennis Hayes	11-12-99	1700	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date	time	6. Received by Laboratory: 11/13/99 1026

☒ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	99110356	Received by:	Estrada, Ruben
Date and Time Received:	11/13/99 10:00:00 AM	Carrier name:	FedEx
Temperature:	4		

Shipping container/cooler in good condition?	Yes	☑	No ☐	Not Present	☐
Custody seals intact on shippping container/cooler?	Yes	☐	No ☐	Not Present	☑
Custody seals intact on sample bottles?	Yes	☐	No ☐	Not Present	☑
Chain of custody present?	Yes	☑	No ☐		
Chain of custody signed when relinquished and received?	Yes	☑	No ☐		
Chain of custody agrees with sample labels?	Yes	☑	No ☐		
Samples in proper container/bottle?	Yes	☑	No ☐		
Sample containers intact?	Yes	☑	No ☐		
Sufficient sample volume for indicated test?	Yes	☑	No ☐		
All samples received within holding time?	Yes	☑	No ☐		
Container/Temp Blank temperature in compliance?	Yes	☑	No ☐		
Water - VOA vials have zero headspace?	Yes	☑	No ☐	Not Present	☐
Water - pH acceptable upon receipt?	Yes	☑	No ☐		

Laboratory Analytical Reports
Groundwater

HOUSTON LABORATORY
9880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

URS Greiner Woodward Clyde

Certificate of Analysis Number:

99110496

Report To:		Project Name:	BYRD PUMP
URS Greiner Woodward Clyde		Site:	BYRD PUMP
Rick Nelson		Site Address:	
6200 La Calma			
Suite 210		PO Number:	
Austin		State:	New Mexico
Texas		State Cert. No.:	
78752-		Date Reported:	12/16/1999
ph (512) 458-1174	fax: (512) 458-9823		

According to the latest promulgated version of Method 8310 for PAH's, confirmation of target compounds can be performed using either a second analytical column with different retention times for the analytes of interest or by use of the Diode Array Detector (DAD). SPL confirms all PAH compounds detected at concentrations exceeding the Practical Quantitation Limit (PQL) by examining the DAD spectra for these compounds. The spectra are compared to the reference spectra from the instrument that is used for these compounds, and a probability match is generated for the peak requiring confirmation. The effectiveness of this method of confirmation is dependent on the relative concentrations of non-target compounds that are co-extracted from the sample.

Any data flags or quality control exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Lynch, Pat
Project Manager

12/16/1999
Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

URS Greiner Woodward Clyde

Certificate of Analysis Number:

99110496

Report To:	URS Greiner Woodward Clyde Rick Nelson 6200 La Calma Suite 210 Austin Texas 78752- ph: (512) 458-1174 fax: (512) 458-9823	**Project Name:**	BYRD PUMP
		Site:	BYRD PUMP
		Site Address:	
		PO Number:	
		State:	New Mexico
		State Cert. No.:	
Fax To:	*URS Greiner Woodward Clyde* *Rick Nelson fax: (512) 458-9823*	**Date Reported:**	

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW1-GW	99110496-01	Water	11/17/99 4:25:00 PM	11/19/99 10:00:00 AM	086257	☐
Trip Blank 11/11/99	99110496-02	Trip Blank	11/17/99	11/19/99 10:00:00 AM	086257	☐

Lynch, Pat
Project Manager

12/16/99
Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID MW1-GW **Collected:** 11/17/99 4:25:00 **SPL Sample ID:** 99110496-01

Site: BYRD PUMP

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE-IC				**MCL**	**E300**		**Units: mg/L**		
Chloride	300		4		20		11/23/99 13:09	ES	118573
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/L**		
Diesel Range Organics	22		20		100		12/07/99 0:15	RR	123283
Surr: Pentacosane	120	%	20-131		100		12/07/99 0:15	RR	123283

Run ID/Seq #: HP_V_991125A-123283

Prep Method	Prep Date	Prep Initials
SW3510B	11/22/1999 8:14	KL

FLUORIDE-IC				**MCL**	**E300**		**Units: mg/L**		
Fluoride	2.9		0.1		1		11/19/99 12:38	ES	114570
GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/L**		
Gasoline Range Organics	3.9		0.1		1		11/23/99 12:04	DL	113848
Surr: 1,4-Difluorobenzene	68	%	62-144		1		11/23/99 12:04	DL	113848
Surr: 4-Bromofluorobenzene	100	%	44-153		1		11/23/99 12:04	DL	113848
MERCURY, TOTAL				**MCL**	**SW7470A**		**Units: mg/L**		
Mercury	ND		0.0002		1		12/15/99 10:31	AG	131562

Run ID/Seq #: HGL_991215A-131562

Prep Method	Prep Date	Prep Initials
SW7470A	12/14/1999 16:30	AG

METALS BY METHOD 6010B, TOTAL				**MCL**	**SW6010B**		**Units: mg/L**		
Arsenic	0.00874		0.005		1		11/29/99 15:37	EG	118315
Lead	ND		0.005		1		11/29/99 15:37	EG	118315
Selenium	ND		0.005		1		11/29/99 15:37	EG	118315
Aluminum	1.92		0.1		1		11/30/99 20:32	PB	119318
Barium	9.88		0.005		1		11/30/99 20:32	PB	119318
Boron	0.862		0.2		1		11/30/99 20:32	PB	119318
Cadmium	ND		0.005		1		11/30/99 20:32	PB	119318
Calcium	354		10		1		12/01/99 18:06	PB	120397
Chromium	ND		1		1		12/01/99 18:06	PB	120397
Cobalt	ND		0.01		1		11/30/99 20:32	PB	119318
Copper	ND		0.01		1		11/30/99 20:32	PB	119318
Iron	2.94		0.02		1		11/30/99 20:32	PB	119318
Magnesium	110		0.1		1		11/30/99 20:32	PB	119318
Manganese	0.0908		0.005		1		11/30/99 20:32	PB	119318
Molybdenum	ND		0.02		1		11/30/99 20:32	PB	119318
Nickel	ND		0.02		1		11/30/99 20:32	PB	119318
Potassium	3.22		2		1		11/30/99 20:32	PB	119318

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID MW1-GW **Collected:** 11/17/99 4:25:00 **SPL Sample ID:** 99110496-01

Site: BYRD PUMP

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Silver	ND		0.01	1		11/30/99 20:32	PB	119318
Sodium	454		0.5	1		11/30/99 20:32	PB	119318
Zinc	ND		0.02	1		11/30/99 20:32	PB	119318

Run ID/Seq #: TJA_991129B-118315

Prep Method	Prep Date	Prep Initials
SW3010A	11/22/1999 8:15	ME

Run ID/Seq #: TJA_991130B-119318

Prep Method	Prep Date	Prep Initials
SW3010A	11/22/1999 8:15	ME

Run ID/Seq #: TJA_991201B-120397

Prep Method	Prep Date	Prep Initials
SW3010A	11/22/1999 8:15	ME

NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen,Nitrate (As N)	ND	0.1		1	11/19/99 12:38	ES	115369

POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310	Units: ug/L		
1-Methylnaphthalene	29	4		20	12/05/99 12:31	KA	123434
2-Methylnaphthalene	14	4		20	12/05/99 12:31	KA	123434
Acenaphthene	ND	2		20	12/05/99 12:31	KA	123434
Acenaphthylene	ND	2		20	12/05/99 12:31	KA	123434
Anthracene	ND	2		20	12/05/99 12:31	KA	123434
Benz(a)anthracene	ND	2		20	12/05/99 12:31	KA	123434
Benzo(a)pyrene	ND	2		20	12/05/99 12:31	KA	123434
Benzo(b)fluoranthene	ND	2		20	12/05/99 12:31	KA	123434
Benzo(g,h,i)perylene	ND	2		20	12/05/99 12:31	KA	123434
Benzo(k)fluoranthene	ND	2		20	12/05/99 12:31	KA	123434
Chrysene	ND	2		20	12/05/99 12:31	KA	123434
Dibenzo(a,h)anthracene	ND	2		20	12/05/99 12:31	KA	123434
Fluoranthene	ND	2		20	12/05/99 12:31	KA	123434
Fluorene	8.1	2		20	12/05/99 12:31	KA	123434
Indeno(1,2,3-cd)pyrene	ND	2		20	12/05/99 12:31	KA	123434
Naphthalene	10	2		20	12/05/99 12:31	KA	123434
Phenanthrene	2.6	2		20	12/05/99 12:31	KA	123434
Pyrene	ND	2		20	12/05/99 12:31	KA	123434
Surr: 1-Fluoronaphthalene	190 %	30-140		20 *	12/05/99 12:31	KA	123434
Surr: Phenanthrene-d10	310 %	35-140		20 *	12/05/99 12:31	KA	123434

Run ID/Seq #: 2_991202B-123434

Prep Method	Prep Date	Prep Initials
SW3510B	11/23/1999 16:02	KL

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID MW1-GW **Collected:** 11/17/99 4:25:00 **SPL Sample ID:** 99110496-01

Site: BYRD PUMP

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	130		1		1		11/23/99 12:43	DL	114435
Ethylbenzene	110		1		1		11/23/99 12:43	DL	114435
Toluene	110		1		1		11/23/99 12:43	DL	114435
Xylenes,Total	365.2		1		1		11/23/99 12:43	DL	114435
Surr: 1,4-Difluorobenzene	120	%	72-137		1		11/23/99 12:43	DL	114435
Surr: 4-Bromofluorobenzene	350	%	48-156		1	*	11/23/99 12:43	DL	114435
SULFATE				**MCL**	**E300**		**Units: mg/L**		
Sulfate	1.1		0.2		1		11/23/99 13:09	ES	118591
TOTAL DISSOLVED SOLIDS				**MCL**	**E160.1**		**Units: mg/L**		
Total Dissolved Solids (Residue,Filterable)	840		100		10		11/23/99 21:45	GJ	116198

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

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Client Sample ID Trip Blank 11/11/99 **Collected:** 11/17/99 **SPL Sample ID:** 99110496-02

Site: BYRD PUMP

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**		**Units: mg/L**		
Gasoline Range Organics	ND		0.1		1		11/22/99 22:01	DL	113831
Surr: 1,4-Difluorobenzene	92	%	62-144		1		11/22/99 22:01	DL	113831
Surr: 4-Bromofluorobenzene	95	%	44-153		1		11/22/99 22:01	DL	113831
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1		1		11/22/99 22:17	DL	113706
Ethylbenzene	ND		1		1		11/22/99 22:17	DL	113706
Toluene	ND		1		1		11/22/99 22:17	DL	113706
Xylenes,Total	ND		1		1		11/22/99 22:17	DL	113706
Surr: 1,4-Difluorobenzene	96	%	72-137		1		11/22/99 22:17	DL	113706
Surr: 4-Bromofluorobenzene	100	%	48-156		1		11/22/99 22:17	DL	113706

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

Quality Control Documentation

HOUSTON LABORATORY
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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Diesel Range Organics
Method: SW8015B
WorkOrder: 99110496
Lab Batch ID: 1791

Method Blank

RunID: HP_V_991125A-117219 Units: mg/L
Analysis Date: 11/25/1999 8:45 Analyst: RR
Preparation Date: 11/22/1999 8:14 Prep By: KL Method SW3510B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01E	MW1-GW

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.20
Surr: Pentacosane	26.6	20-131

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: HP_V_991125A-117220 Units: mg/L
Analysis Date: 11/25/1999 9:23 Analyst: RR
Preparation Date: 11/22/1999 8:14 Prep By: KL Method SW3510B

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.1	84	2.5	1.9	78	7.8	39	53	148

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 99110496
Lab Batch ID: R5271

Method Blank

RunID: HP_S_991122A-113704 Units: ug/L
Analysis Date: 11/22/1999 21:18 Analyst: DL

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-02A	Trip Blank 11/11/99

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	98.7	72-137
Surr: 4-Bromofluorobenzene	99.8	48-156

Laboratory Control Sample (LCS)

RunID: HP_S_991122A-113703 Units: ug/L
Analysis Date: 11/22/1999 20:48 Analyst: DL

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	49	98	61	119
Ethylbenzene	50	51	101	70	118
Toluene	50	50	100	65	125
Xylenes,Total	150	147	98	72	116

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110460-02
RunID: HP_S_991122A-113707 Units: ug/L
Analysis Date: 11/22/1999 22:46 Analyst: DL

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	16	77.7	20	14	70.4	9.95	21	32	164
Ethylbenzene	ND	20	14	69.2	20	12	59.6	14.9	19	52	142
Toluene	ND	20	15	74.2	20	13	64.0	14.7	20	38	159
Xylenes,Total	ND	60	35	58.3	60	28	46.7*	22.2*	17	53	143

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 99110496
Lab Batch ID: R5277

Method Blank

RunID: HP_S_991122B-113829 Units: mg/L
Analysis Date: 11/22/1999 21:01 Analyst: DL

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01A	MW1-GW
99110496-02A	Trip Blank 11/11/99

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	91.3	62-144
Surr: 4-Bromofluorobenzene	96.8	44-153

Laboratory Control Sample (LCS)

RunID: HP_S_991122B-113828 Units: mg/L
Analysis Date: 11/22/1999 20:01 Analyst: DL

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.78	78	64	131

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110449-04
RunID: HP_S_991122B-113832 Units: mg/L
Analysis Date: 11/22/1999 23:04 Analyst: DL

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.84	89.4	0.9	0.81	87.0	2.80	36	36	160

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 99110496
Lab Batch ID: R5301

Method Blank

RunID: HP_S_991123A-115061 Units: ug/L
Analysis Date: 11/23/1999 19:17 Analyst: DL

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01A	MW1-GW

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	98.4	72-137
Surr: 4-Bromofluorobenzene	100.6	48-156

Laboratory Control Sample (LCS)

RunID: HP_S_991123A-114434 Units: ug/L
Analysis Date: 11/23/1999 12:13 Analyst: DL

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	50	101	61	119
Ethylbenzene	50	52	105	70	118
Toluene	50	53	106	65	125
Xylenes,Total	150	153	102	72	116

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9911506-02A
RunID: HP_S_991123A-115062 Units: ug/L
Analysis Date: 11/23/1999 20:14 Analyst: DL

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	19	94.9	20	20	98.6	3.90	21	32	164
Ethylbenzene	2.7	20	21	90.5	20	22	94.7	4.59	19	52	142
Toluene	3.3	20	20	84.6	20	21	87.9	3.87	20	38	159
Xylenes,Total	8.8	60	60	85.3	60	62	88.7	3.83	17	53	143

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Polynuclear Aromatic Hydrocarbons **WorkOrder:** 99110496
Method: SW8310 **Lab Batch ID:** 1817

Method Blank

RunID: 2_991202B-123423 Units: ug/L
Analysis Date: 12/02/1999 6:02 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: KL Method SW3510B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01B	MW1-GW

Analyte	Result	Rep Limit
1-Methylnaphthalene	ND	0.20
2-Methylnaphthalene	ND	0.20
Acenaphthene	ND	0.10
Acenaphthylene	ND	0.10
Anthracene	ND	0.10
Benz(a)anthracene	ND	0.10
Benzo(a)pyrene	ND	0.10
Benzo(b)fluoranthene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Benzo(k)fluoranthene	ND	0.10
Chrysene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Fluoranthene	ND	0.10
Fluorene	ND	0.10
Indeno(1,2,3-cd)pyrene	ND	0.10
Naphthalene	ND	0.10
Phenanthrene	ND	0.10
Pyrene	ND	0.10
Surr: 1-Fluoronaphthalene	56.8	30-140
Surr: Phenanthrene-d10	46.5	35-140

Laboratory Control Sample (LCS)

RunID: 2_991202B-123424 Units: ug/L
Analysis Date: 12/02/1999 6:42 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Acenaphthene	0.5	0.39	77	0.01	124
Acenaphthylene	0.5	0.38	76	0.01	139
Anthracene	0.5	0.39	78	0.01	126
Benz(a)anthracene	0.5	0.41	81	12	135
Benzo(a)pyrene	0.5	0.42	84	0.01	128
Benzo(b)fluoranthene	0.5	0.41	83	6	150
Benzo(g,h,i)perylene	0.5	0.4	80	0.01	116
Benzo(k)fluoranthene	0.5	0.41	81	0.01	159
Chrysene	0.5	0.45	90	0.01	199
Dibenzo(a,h)anthracene	0.5	0.41	83	0.01	110
Fluoranthene	0.5	0.39	79	14	123
Fluorene	0.5	0.39	78	0.01	142
Indeno(1,2,3-cd)pyrene	0.5	0.39	79	0.01	116
Naphthalene	0.5	0.38	75	0.01	122

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Polynuclear Aromatic Hydrocarbons **WorkOrder:** 99110496
Method: SW8310 **Lab Batch ID:** 1817

Laboratory Control Sample (LCS)

RunID: 2_991202B-123424 Units: ug/L
Analysis Date: 12/02/1999 6:42 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Phenanthrene	0.5	0.4	80	0.01	155
Pyrene	0.5	0.38	76	0.01	140

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110356-04
RunID: 2_991202B-123426 Units: ug/L
Analysis Date: 12/02/1999 9:20 Analyst: KA
Preparation Date: 11/23/1999 16:02 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Acenaphthene	1.2	0.5	1.4	58.1	0.5	1.5	78.1	29.4	30	0.01	124
Acenaphthylene	0.91	0.5	0.95	7.98	0.5	1.9	208*	185*	30	0.01	139
Anthracene	ND	0.5	0.36	67.0	0.5	0.37	68.3	1.92	30	0.01	126
Benz(a)anthracene	ND	0.5	0.38	66.6	0.5	0.37	62.9	5.72	30	12	135
Benzo(a)pyrene	ND	0.5	0.26	51.3	0.5	0.23	46.9	8.97	30	0.01	128
Benzo(b)fluoranthene	ND	0.5	0.25	49.8	0.5	0.23	46.4	7.24	30	6	150
Benzo(g,h,i)perylene	ND	0.5	0.17	34.5	0.5	0.15	29.6	15.1	30	0.01	116
Benzo(k)fluoranthene	ND	0.5	0.25	49.1	0.5	0.22	44.0	10.9	30	0.01	159
Chrysene	ND	0.5	0.37	74.6	0.5	0.37	73.1	2.01	30	0.01	199
Dibenzo(a,h)anthracene	ND	0.5	0.17	33.1	0.5	0.15	30.4	8.47	30	0.01	110
Fluoranthene	ND	0.5	0.4	74.0	0.5	0.38	70.5	4.78	30	14	123
Fluorene	7.3	0.5	6.8	-91.4*	0.5	7.7	83.2	4300*	30	0.01	142
Indeno(1,2,3-cd)pyrene	ND	0.5	0.15	29.8	0.5	0.14	28.9	2.96	30	0.01	116
Naphthalene	11	0.5	10	-165*	0.5	12	90.5	685*	30	0.01	122
Phenanthrene	ND	0.5	0	0*	0.5	0	0*	0	30	0.01	155
Pyrene	0.10	0.5	0.41	60.4	0.5	0.39	57.7	4.55	30	0.01	140

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Metals by Method 6010B, Total
Method: SW6010B
WorkOrder: 99110496
Lab Batch ID: 1794

Method Blank

RunID: TJA_991130B-119305 Units: mg/L
Analysis Date: 11/30/1999 19:39 Analyst: PB
Preparation Date: 11/22/1999 8:15 Prep By: ME Method SW3010A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01C	MW1-GW

Analyte	Result	Rep Limit
Aluminum	ND	0.1
Barium	ND	0.005
Boron	ND	0.2
Cadmium	ND	0.005
Cobalt	ND	0.01
Copper	ND	0.01
Iron	ND	0.02
Magnesium	ND	0.1
Manganese	ND	0.005
Molybdenum	ND	0.02
Nickel	ND	0.02
Potassium	ND	2
Silver	ND	0.01
Sodium	ND	0.5
Zinc	ND	0.02

Laboratory Control Sample (LCS)

RunID: TJA_991130B-119306 Units: mg/L
Analysis Date: 11/30/1999 19:43 Analyst: PB
Preparation Date: 11/22/1999 8:15 Prep By: ME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Aluminum	2	2.03	101	80	120
Barium	2	2.05	102	80	120
Boron	4	3.95	99	80	120
Cadmium	2	2	100	80	120
Cobalt	2	2	100	80	120
Copper	2	2.04	102	80	120
Iron	2	2.04	102	80	120
Magnesium	20	20.5	103	80	120
Manganese	2	2.04	102	80	120
Molybdenum	2	2.04	102	80	120
Nickel	2	2.02	101	80	120
Potassium	20	20.6	103	80	120
Silver	2	2.07	104	80	120
Sodium	20	19.4	97	80	120
Zinc	2	2.02	101	80	120

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Metals by Method 6010B, Total
Method: SW6010B
WorkOrder: 99110496
Lab Batch ID: 1794

Sample Spiked: 99110449-01
RunID: TJA_991130B-119313 Units: mg/L
Analysis Date: 11/30/1999 20:12 Analyst: PB

Analyte	Sample Result	PDS Spike Added	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Aluminum	7.67	1	8.5	83	1	8.46	79	5.0	20	75	125
Iron	3.46	1	4.32	86	1	4.28	82	5.0	20	75	125
Sodium	471	10	468	-34*	10	464	-69*	70*	20	75	125

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110449-01
RunID: TJA_991130B-119308 Units: mg/L
Analysis Date: 11/30/1999 19:51 Analyst: PB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Aluminum	7.7	1	9.8	213*	1	8.74	107	66.7*	20	75	125
Barium	0.40	1	1.35	95.8	1	1.34	94.6	1.20	20	75	125
Boron	0.78	2	2.63	92.7	2	2.64	92.8	0.130	20	75	125
Cadmium	ND	1	0.958	95.8	1	0.959	95.9	0.112	20	75	125
Cobalt	ND	1	0.875	87.0	1	0.875	87.0	.0161	20	75	125
Copper	ND	1	0.997	98.9	1	0.991	98.3	0.630	20	75	125
Iron	3.5	1	4.64	117	1	4.07	60.4*	64.0*	20	75	125
Magnesium	110	10	117	106	10	115	90.2	16.6	20	75	125
Manganese	0.46	1	1.37	91.5	1	1.36	90.9	0.760	20	75	125
Molybdenum	ND	1	0.919	91.3	1	0.922	91.6	0.366	20	75	125
Nickel	ND	1	0.878	87.8	1	0.873	87.3	0.522	20	75	125
Potassium	20	10	31.5	115	10	30.8	108	6.10	20	75	125
Silver	ND	1	0.992	99.2	1	0.995	99.5	0.235	20	75	125
Sodium	470	10	481	101	10	475	35.6*	95.6*	20	75	125
Zinc	0.092	1	1.08	99.1	1	1.1	101	2.15	20	75	125

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Metals by Method 6010B, Total
Method: SW6010B
WorkOrder: 99110496
Lab Batch ID: 1794A

Method Blank

RunID: TJA_991201B-120384 Units: mg/L
Analysis Date: 12/01/1999 17:13 Analyst: PB
Preparation Date: 11/22/1999 8:15 Prep By: ME Method SW3010A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01C	MW1-GW

Analyte	Result	Rep Limit
Calcium	ND	10
Chromium	ND	1

Laboratory Control Sample (LCS)

RunID: TJA_991201B-120385 Units: mg/L
Analysis Date: 12/01/1999 17:17 Analyst: PB
Preparation Date: 11/22/1999 8:15 Prep By: ME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Calcium	20	20.5	103	80	120
Chromium	2	2.04	102	80	120

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 99110449-01
RunID: TJA_991201B-120389 Units: mg/L
Analysis Date: 12/01/1999 17:34 Analyst: PB

Analyte	Sample Result	PDS Spike Added	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Calcium	2060	100	2170	115	100	2000	-61	650*	20	75	125
Chromium	ND	10	9.93	99	10	10	100	1.0	20	75	125

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Metals by Method 6010B, Total
Method: SW6010B
WorkOrder: 99110496
Lab Batch ID: 1794-T

Method Blank

RunID: TJAT_991129B-118301 Units: mg/L
Analysis Date: 11/29/1999 14:30 Analyst: EG
Preparation Date: 11/22/1999 8:15 Prep By: ME Method SW3010A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01C	MW1-GW

Analyte	Result	Rep Limit
Arsenic	ND	0.005
Lead	ND	0.005
Selenium	ND	0.005

Laboratory Control Sample (LCS)

RunID: TJAT_991129B-118302 Units: mg/L
Analysis Date: 11/29/1999 14:35 Analyst: EG
Preparation Date: 11/22/1999 8:15 Prep By: ME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	4	4.15	104	80	120
Lead	2	1.97	99	80	120
Selenium	4	4.09	102	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110449-01
RunID: TJAT_991129B-118304 Units: mg/L
Analysis Date: 11/29/1999 14:45 Analyst: EG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Arsenic	0.054	2	2.13	104	2	2.13	104	0.326	20	75	125
Lead	0.023	1	0.91	88.7	1	0.907	88.4	0.345	20	75	125
Selenium	ND	2	2.02	101	2	2.02	101	0.305	20	75	125

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Mercury, Total
Method: SW7470A
WorkOrder: 99110496
Lab Batch ID: 2151

Method Blank

RunID: HGL_991215A-131552 Units: mg/L
Analysis Date: 12/15/1999 10:31 Analyst: AG
Preparation Date: 12/14/1999 16:30 Prep By: AG Method SW7470A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01C	MW1-GW

Analyte	Result	Rep Limit
Mercury	ND	0.0002

Laboratory Control Sample (LCS)

RunID: HGL_991215A-131553 Units: mg/L
Analysis Date: 12/15/1999 10:31 Analyst: AG
Preparation Date: 12/14/1999 16:30 Prep By: AG Method SW7470A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Mercury	0.002	0.00192	96	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110449-01
RunID: HGL_991215A-131555 Units: mg/L
Analysis Date: 12/15/1999 10:31 Analyst: AG
Preparation Date: 12/14/1999 16:30 Prep By: AG Method SW7470A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Mercury	ND	0.002	0.00212	106	0.002	0.002	100	5.58	20	75	125

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Fluoride-IC
Method: E300
WorkOrder: 99110496
Lab Batch ID: R5306

Method Blank

RunID: WET_991119O-114562 Units: mg/L
Analysis Date: 11/19/1999 12:38 Analyst: ES

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01D	MW1-GW

Analyte	Result	Rep Limit
Fluoride	ND	0.10

Laboratory Control Sample (LCS)

RunID: WET_991119O-114563 Units: mg/L
Analysis Date: 11/19/1999 12:38 Analyst: ES

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Fluoride	10	9.5	95	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110449-01
RunID: WET_991119O-114565 Units: mg/L
Analysis Date: 11/19/1999 12:38 Analyst: ES

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Fluoride	3.1	10	13	96.2	10	13	95.6	0.709	20	80	120

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Nitrogen, Nitrate (As N) **WorkOrder:** 99110496
Method: E300 **Lab Batch ID:** R5352

Method Blank

RunID: WET_991119P-115361 Units: mg/L
Analysis Date: 11/19/1999 12:38 Analyst: ES

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01D	MW1-GW

Analyte	Result	Rep Limit
Nitrogen,Nitrate (As N)	ND	0.10

Laboratory Control Sample (LCS)

RunID: WET_991119P-115362 Units: mg/L
Analysis Date: 11/19/1999 12:38 Analyst: ES

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen,Nitrate (As N)	10	9.4	94	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110449-01
RunID: WET_991119P-115364 Units: mg/L
Analysis Date: 11/19/1999 12:38 Analyst: ES

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Nitrogen,Nitrate (As N)	ND	10	11	111	10	9.5	95.1	15.3	20	86	115

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Total Dissolved Solids
Method: E160.1
WorkOrder: 99110496
Lab Batch ID: R5394

Method Blank

RunID: WET_991123J-116185 Units: mg/L
Analysis Date: 11/23/1999 21:45 Analyst: GJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01D	MW1-GW

Analyte	Result	Rep Limit
Total Dissolved Solids (Residue,Filterable)	ND	10

Laboratory Control Sample (LCS)

RunID: WET_991123J-116187 Units: mg/L
Analysis Date: 11/23/1999 21:45 Analyst: GJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Total Dissolved Solids (Residue,Filtera	450	452	100	80	120

Sample Duplicate

Original Sample: 99110496-01
RunID: WET_991123J-116198 Units: mg/L
Analysis Date: 11/23/1999 21:45 Analyst: GJ

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filtera	840	760	10	20

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Chloride-IC
Method: E300
WorkOrder: 99110496
Lab Batch ID: R5511

Method Blank

RunID: WET_991123O-118565 Units: mg/L
Analysis Date: 11/23/1999 13:09 Analyst: ES

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01D	MW1-GW

Analyte	Result	Rep Limit
Chloride	ND	0.20

Laboratory Control Sample (LCS)

RunID: WET_991123O-118566 Units: mg/L
Analysis Date: 11/23/1999 13:09 Analyst: ES

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10	9.5	95	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110449-01
RunID: WET_991123O-118568 Units: mg/L
Analysis Date: 11/23/1999 13:09 Analyst: ES

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	830	1000	1900	104	1000	1900	104	.0760	20	80	120

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

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Quality Control Report

URS Greiner Woodward Clyde

BYRD PUMP

Analysis: Sulfate
Method: E300
WorkOrder: 99110496
Lab Batch ID: R5513

Method Blank

RunID: WET_991123P-118585 Units: mg/L
Analysis Date: 11/23/1999 13:09 Analyst: ES

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99110496-01D	MW1-GW

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID: WET_991123P-118586 Units: mg/L
Analysis Date: 11/23/1999 13:09 Analyst: ES

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	9.7	97	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99110496-01
RunID: WET_991123P-118592 Units: mg/L
Analysis Date: 11/23/1999 13:09 Analyst: ES

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	1.1	10	12	106	10	12	107	0.357	20	80	120

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Recovery Unreportable due to Dilution

Chain of Custody

And

Sample Receipt Checklist

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No: 9911049G

086257

page 1 of 1

Client Name: URS Greiner Woodward Clyde

Address/Phone: 6200 La Calma Ste. 210 Austin, TX

Client Contact: DENNIS HAYES

Project Name: APL BYRD PUMP

Project Number: 93990001620000001

Project Location: HOBBS NEW MEXICO

Invoice To: URSGLEX

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil SL=sludge O=other:)	bottle (P=plastic A=amber glass G=glass V=vial)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz)	pres. (1=HCl 2=HNO3 3=H2SO4 O=other:)	Number of Containers	Requested Analysis: BTEX (8021) / 6RO	PAH (8310)	Metals	TDS, Cl, SO4, F, NO3	DRO (8015)
MW1-GW	11/17/99	1625		X	W	P,A,V	1,40	1,2	8	X	X	X	X	X
TRIP BLANK	11/11 199				W				2	X				

Client/Consultant Remarks:

Laboratory remarks: PH RR 11-20-99

Intact? Y N

Temp: 2

Requested TAT

24hr ☐ 72hr ☐

48hr ☐ Standard ☒

Other ☐ _____

Special Reporting Requirements: Fax Results ☒ Raw Data ☐ Standard QC ☒ Level 3 QC ☐ Level 4 QC ☐

Special Detection Limits (specify): NMWQS

PM review (initial): PLL

	date	time	
1. Relinquished by Sampler: Dennis Hayes	11-17-99	2200	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date	time	6. Received by Laboratory: 11/19/99 1000

☒ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

☐ [illegible] MI 49684 (616) 947-5777

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	99110496	Received by:	Estrada, Ruben
Date and Time Received:	11/19/99 10:00:00 AM	Carrier name:	FedEx
Temperature:	2		

Shipping container/cooler in good condition?	Yes	☑	No ☐	Not Present	☐
Custody seals intact on shippping container/cooler?	Yes	☐	No ☐	Not Present	☑
Custody seals intact on sample bottles?	Yes	☐	No ☐	Not Present	☑
Chain of custody present?	Yes	☑	No ☐		
Chain of custody signed when relinquished and received?	Yes	☑	No ☐		
Chain of custody agrees with sample labels?	Yes	☑	No ☐		
Samples in proper container/bottle?	Yes	☑	No ☐		
Sample containers intact?	Yes	☑	No ☐		
Sufficient sample volume for indicated test?	Yes	☑	No ☐		
All samples received within holding time?	Yes	☑	No ☐		
Container/Temp Blank temperature in compliance?	Yes	☑	No ☐		
Water - VOA vials have zero headspace?	Yes	☑	No ☐	Not Present	☐
Water - pH acceptable upon receipt?	Yes	☑	No ☐		

WORK PLAN

INITIAL SITE CHARACTERIZATION

BYRD PUMP SITE MONUMENT, NEW MEXICO

1R-34

Prepared for
ARCO PIPE LINE COMPANY
15600 JFK BLVD. SUITE 300
HOUSTON, TEXAS

October 1, 1999

URS Greiner Woodward Clyde
A Division of URS Corporation

6200 La Calma
Suite 210
Austin, TX 78752

Project No. 93-99000162.00

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Figures

Appendices

1.0 INTRODUCTION

Arco Pipe Line Company (APL) operates a 4-inch crude oil transfer line in Lea County, New Mexico. Line pressure is increased at a booster pump (Byrd Pump) located 3 miles west of the town of Monument on Hwy 322 and 2.5 miles south of the EL Paso Natural Gas Monument Station (32.35.01N and 103.18.32W) Figure 1-1. Upon inspection of the pump area, APL personnel noted that soil around the pump has been stained by crude oil due to historical operations at the pump.

In April 1999, APL contracted CJR Contractors to remove stained soil from around the pump and line. Upon removal of the soil from around the pump and line, APL personnel noted that stained soil extends to at least two feet below grade (Photo #1 and #2). Soil samples collected from the stockpile of the excavated soil indicated total petroleum hydrocarbons (TPH) by EPA Method 418.1 at 15,200 mg/kg. The benzene, toluene, ethyl benzene, and xylenes (BTEX) analysis by EPA Method 8260 indicated less than detection limits for each constituent. The composite soil sample was also analyzed by TCLP for metals, semivolatiles, volatiles, reactivity (sulfide and cyanide), corrosivity, and ignitability. Appendix A contains the laboratory analytical report for the composite soil sample from the excavated stockpile.

This work plan supercedes the "*Arco Pipeline Remediation Workplan Byrd Pump*" prepared by CJR Contractors dated April 12, 1999.

2.0 SITE CHARACTERIZATION ACTIVITIES

Based on site observations and results of the laboratory analysis of the surface soils, APL proposes to characterize the pump area soils and collect a groundwater sample (estimated groundwater depth is 35 to 40 feet below grade) to determine if groundwater has been impacted by historical operations. In order to perform this task APL proposes to drill and sample one soil boring next to the pump and convert this soil boring to a monitoring well. Soil samples will be collected continuously for lithologic logging purposes and select soil samples (5, 10, 15, 20, 30, and 40 feet below grade) will be collected for laboratory analysis. A groundwater sample will also be collected from the monitoring well.

Soil samples will be analyzed for TPH by EPA Method 8015 (GRO-DRO) and BTEX by EPA Method 8021. Additionally, soil samples will be analyzed by the Synthetic Precipitation Leaching Procedure (SPLP) for BTEX and TPH for the purposes of

determining if these constituents may potentially leach out of the soil. Groundwater samples will be analyzed for BTEX by EPA Method 8021, polynuclear aromatic hydrocarbons (PAH) by EPA Method 8310, TPH by EPA Method 8015 (GRO-DRO), major cations and anions, and heavy metals by various EPA 7000 series methods. Additionally, a groundwater sample will be collected for analysis of total dissolved solids.

3.0 DATA EVALUATION

Based on the results of the soil analysis and depth of impact to soil, the soil results will be compared to the New Mexico Oil Conservation Division (NMOCD) target criteria. In addition, the soil SPLP results will be evaluated as to whether petroleum constituents can potentially leach out of soil above NMOCD target criteria into the underlying groundwater. The soil data will also provide APL with options as to whether insitu or exsitu remediation is feasible, if it should be required.

The groundwater analytical results will be evaluated so as to determine if groundwater has been impacted above the New Mexico Water Quality Control Commission regulations. Options for potentially remediating groundwater will also be evaluated, if necessary.

4.0 REPORTING

A report describing the findings of the initial site characterization will be prepared for submittal to the NMOCD. The report will include the results of the findings, the well/soil boring log, the analytical data collected from the site, and a recommendation for the next step.

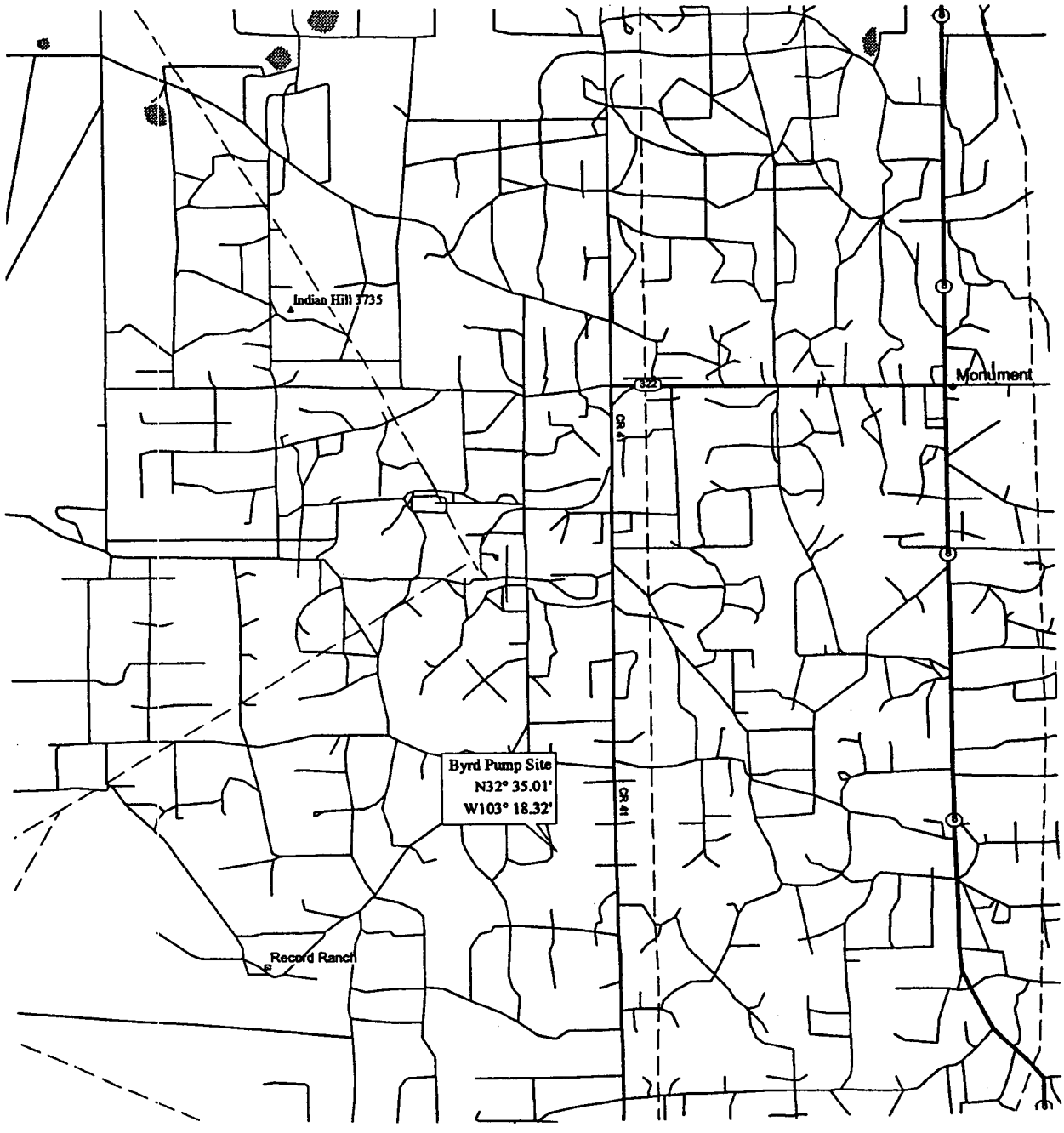
5.0 SOIL BORING AND MONITORING WELL CONSTRUCTION AND SAMPLING

The soil boring will be drilled by using air rotary and sampling methods or hollow-stem auger sampling methods. The boring will be soil sampled continuously for lithologic sampling purposes while soil samples for laboratory analytical analysis will be collected at depths of 5, 10, 15, 20, 30, and 40 feet or just above the encountered water table and the total depth of the boring. The soil samples will be analyzed for the constituents listed in section 2.0.

The monitoring well will be constructed in the borehole used for soil sampling. A four-inch diameter schedule 40 PVC well casing and screen (0.010" slots) will used for the

well. The well will be filter packed with a pre-washed silica sand and sealed with 2 feet of hydrated bentonite chips. Above the bentonite chips to ground surface, the borehole annulus will be filled with a cement\bentonite slurry. The surface completion will be constructed with a 4ft x 4ft x 6in concrete pad and a six inch upright locking well cover.

A groundwater sample will be collected from the monitoring well after development and purging. Development will consist of surging and bailing followed by over-pumping until the water is clear and the pH, temperature, and conductivity have stabilized. After the development is complete, the well will be purged prior to sample collection. Purging will be accomplished by pumping at a slow rate (~1 gallon per minute) or until no drawdown is observed. Upon stabilization of the development parameters and the removal of at least three well volumes, the well water will be sampled from the dedicated discharge tubing of the pump. The samples will be placed into the appropriate pre-labeled containers and stored for shipment to the analytical laboratory. Chain-of-custody procedures will be followed during sample handling. The groundwater samples will be analyzed for the constituents listed in section 2.0.



Mag 13.00
Mon Jun 28 17:19 1999
Scale 1:62,500 (at center)
1 Miles
2 KM

Secondary SR/Road/Hwy Ramp
Major Connector
State Route
US Highway
Utility/Pipe
Water
Intermittent River

N

ARCO PIPE LINE, CO	URS Greiner Woodward Clyde Austin, Texas	SITE LOCATION MAP	PROJECT NO. 939900182.00
BYRD PUMP 3 MILES WEST OF MONUMENT, NEW MEXICO	SCALE: NOTED DRAWN BY: MSM DATE: 6/28/99 CHECKED BY: MSM DATE: 6/28/99		FIG. NO. 1-1

I:\ARCO\BYRD\BYRDPUMP\CADD\BORDER.DWG

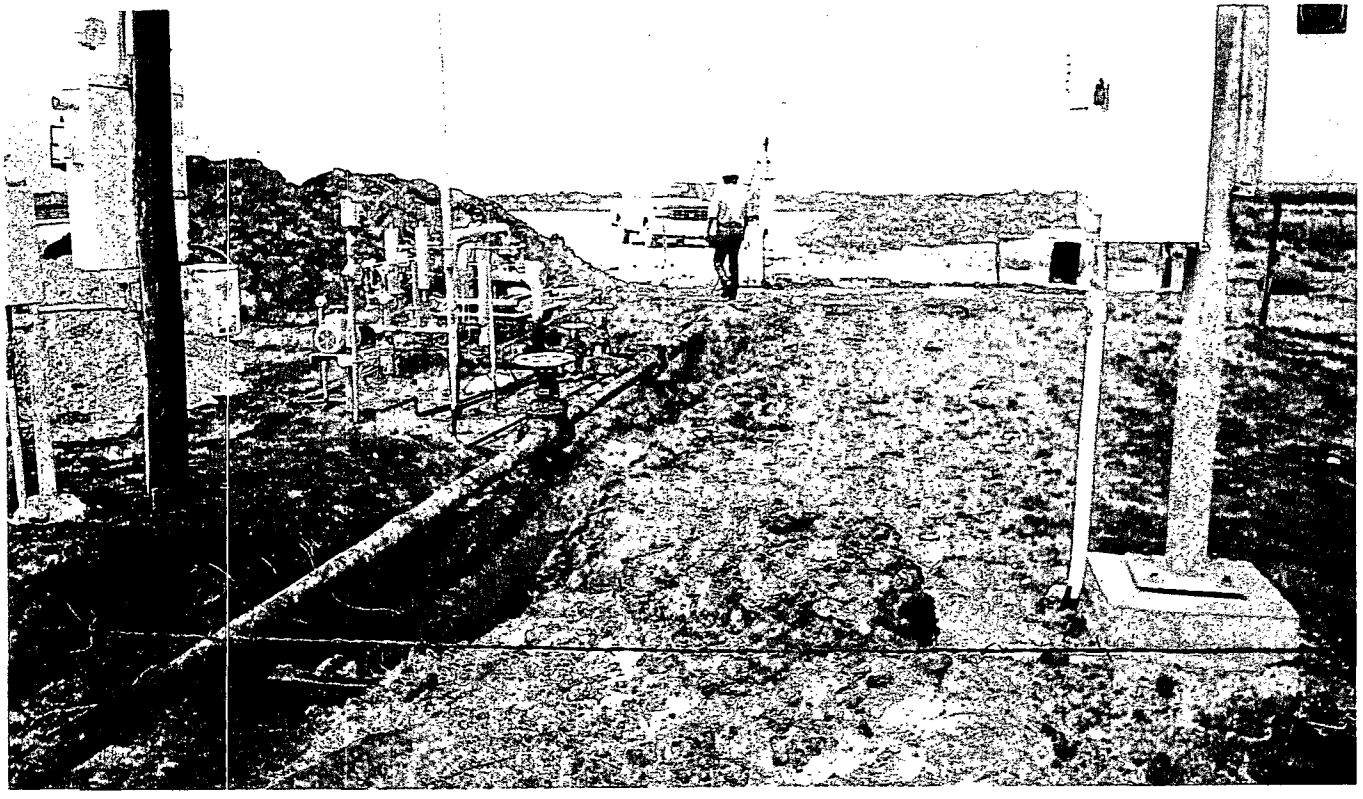


Photo #1: View looking west at pump area. Note excavated soil stock pile in left rear of photo. (photo by RJN 5/28/99)

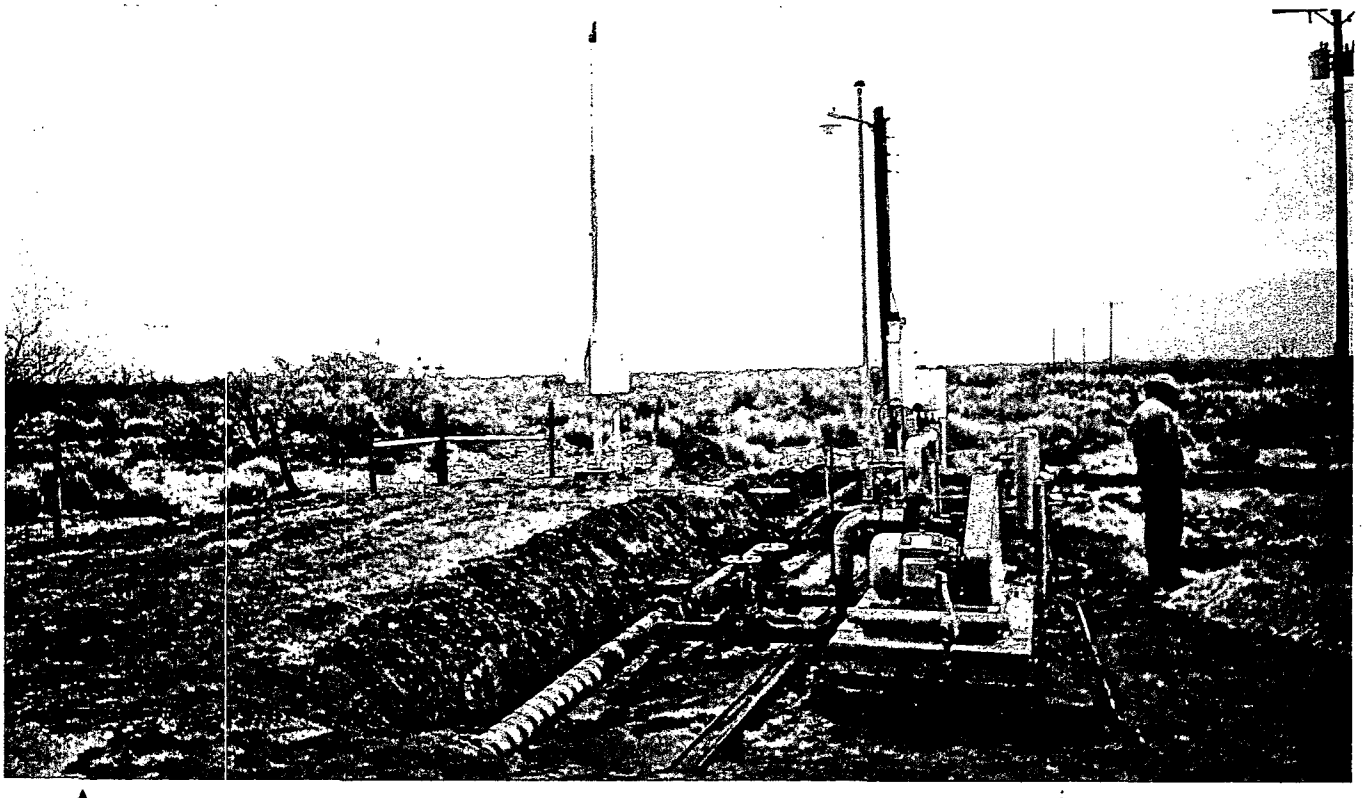


Photo #2: View looking east at pump areas showing limits of initial excavation. (photo by RJN 5/28/99)

ARCO PIPE LINE, CO BYRD PUMP 3 MILES WEST OF MONUMENT, NEW MEXICO	**URS Greiner Woodward Clyde** Austin, Texas	SITE PHOTOS	PROJECT NO. 9399000162.00 PHOTOS 1 and 2
	SCALE: NOTED DRAWN BY: MSM DATE: 6/28/99 CHECKED BY: MSM DATE: 6/28/99		

I:\ARCO\BYRD\BYRDPUMP\CADD\BORDER.DWG

APPENDIX A
Laboratory Analytical Data

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/12/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP

Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NO.	SAMPLE ID	TPH (mg/kg)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE:		04/09/99	04/09/99	04/09/99	04/09/99	04/09/99
H4098-1	BYRD PUMP	15200	<0.002	<0.002	<0.002	<0.006
Quality Control		254	0.087	0.099	0.092	0.280
True Value QC		240	0.100	0.100	0.100	0.300
% Recovery		106	87.4	98.8	92.4	93.4
Relative Percent Difference		1.9	2.6	3.1	2.6	1.8

METHODS: TRPHC - EPA 600/7-79-020, 418.1; BTEX - EPA SW-846 8260

Chemist

4/12/99
Date

H4098.XLS

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/15/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP

Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH/GP

TCLP METALS

LAB NO.	SAMPLE ID	As ppm	Ag ppm	Ba ppm	Cd ppm	Cr ppm	Pb ppm	Hg ppm	Se ppm
ANALYSIS DATE:		04/13/99	04/14/99	04/14/99	04/14/99	04/14/99	04/14/99	04/15/99	04/13/99
EPA LIMITS:		5	5	100	1	5	5	0.2	1
H4098-1	BYRD PUMP	<1	<1	<5	<0.1	<1	<1	<0.02	<0.1
Quality Control		0.201	1.020	19.69	0.506	3.964	2.999	0.0095	0.051
True Value QC		0.200	1.000	20.00	0.500	4.000	3.000	0.0100	0.050
% Recovery		101	102	98	101	99	100	95	102
Relative Standard Deviation		2.77	0.83	0.28	1.27	1.11	1.38	2.4	3.6
METHODS: EPA 1311, 600/4-91/		206.2	272.1	208.1	213.1	218.1	239.1	245.1	270.2

Gayle A. Potter, Chemist

04/15/99
Date

H4098M.XLS

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/13/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP
Lab Number: H4098-1
Sample ID: BYRD PUMP

Analysis Date: 04/12/99
Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

TCLP SEMIVOLATILES (ppm)	EPA LIMIT	Sample Result H4098-1	Method Blank	QC	% Recov.	True Value QC
Pyridine	5.00	<0.020	<0.005	0.016	32	0.050
1,4-Dichlorobenzene	7.50	<0.020	<0.005	0.034	68	0.050
o-Cresol	200	<0.020	<0.005	0.034	68	0.050
m, p-Cresol	200	<0.020	<0.005	0.034	68	0.050
Hexachloroethane	3.00	<0.020	<0.005	0.033	66	0.050
Nitrobenzene	2.00	<0.020	<0.005	0.034	68	0.050
Hexachloro-1,3-butadiene	0.500	<0.020	<0.005	0.039	78	0.050
2,4,6-Trichlorophenol	2.00	<0.020	<0.005	0.041	82	0.050
2,4,5-Trichlorophenol	400	<0.020	<0.005	0.042	84	0.050
2,4-Dinitrotoluene	0.130	<0.020	<0.005	0.042	84	0.050
Hexachlorobenzene	0.130	<0.020	<0.005	0.044	88	0.050
Pentachlorophenol	100	<0.020	<0.005	0.041	82	0.050

	% RECOVERY
Fluorophenol	75
Phenol-d5	62
Nitrobenzene-d5	100
2-Fluorobiphenyl	110
2,4,6-Tribromophenol	115
Terphenyl-d14	104

METHODS: EPA SW 846-8270, 1311, 3510

Burgess J. A. Cooke, Ph. D.

4/13/99
Date

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/13/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP
Lab Number: H4098-1
Sample ID: BYRD PUMP

Analysis Date: 04/12/99
Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

TCLP VOLATILES (ppm)	EPA LIMIT	Sample Result H4098-1	Method Blank	QC	%Recov.	True Value QC
Vinyl Chloride	0.20	<0.005	<0.005	0.102	102	0.100
1,1-Dichloroethylene	0.7	<0.005	<0.005	0.104	104	0.100
Methyl Ethyl Ketone	200	<0.050	<0.050	0.116	116	0.100
Chloroform	6.0	<0.005	<0.005	0.106	106	0.100
1,2-Dichloroethane	0.5	<0.005	<0.005	0.099	99	0.100
Benzene	0.5	<0.005	<0.005	0.111	111	0.100
Carbon Tetrachloride	0.5	<0.005	<0.005	0.094	94	0.100
Trichloroethylene	0.5	<0.005	<0.005	0.097	97	0.100
Tetrachloroethylene	0.7	<0.005	<0.005	0.090	90	0.100
Chlorobenzene	100	<0.005	<0.005	0.099	99	0.100
1,4-Dichlorobenzene	7.5	<0.005	<0.005	0.093	93	0.100

	% RECOVERY
Dibromofluoromethane	90
Toluene-d8	120
Bromofluorobenzene	88

METHODS: EPA SW 846-8260, 1311

Burgess J. A. Cooke, Ph. D.

4/13/99
Date

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ANALYTICAL RESULTS FOR
CJR CONTRACTORS, INC.
ATTN: J.L. HAM
401 W. BROADWAY
DENVER CITY, TX 79323
FAX TO:

Receiving Date: 04/09/99
Reporting Date: 04/13/99
Project Number: NOT GIVEN
Project Name: ARCO PIPELINE
Project Location: BYRD PUMP

Sampling Date: 04/09/99
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	REACTIVITY Sulfide (ppm)	REACTIVITY Cyanide (ppm)	CORROSIVITY (pH)	IGNITABILITY (°F)
ANALYSIS DATE:		04/13/99	04/13/99	04/09/99	04/09/99
H4098-1	BYRD PUMP	Not reactive	Not reactive	7.45	Nonflammable
Quality Control		NR	NR	7.02	NR
True Value QC		NR	NR	7.00	NR
% Recovery		NR	NR	100	NR
Relative Percent Difference		NR	NR	0.3	NR

METHOD: EPA SW 846-7.3, 7.2, 1030 (proposed), 1311, *40 CFR 261*

Chemist

4/13/99
Date