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REPORTS

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Lodestar Services, Incorporated PO Box 3861 Farmington, NM 87499-3861 Office (505) 334-2791

April 11, 2007

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South Francis Drive
Santa Fe, New Mexico 87505

RE: Annual Report for Giant's Bloomfield Crude Station

Dear Mr. Von Gonten:

Lodestar Services, Incorporated is pleased to submit the enclosed copy of *Annual Report, Bloomfield Crude Station, Bloomfield, New Mexico, March 2005* on behalf of Giant Industries Arizona, Inc.

Please call Mr. Bill Robertson of Giant at (505) 632-4001 or myself at (505) 334-2791 with any questions regarding this submittal.

Respectfully Submitted,
Lodestar Services, Inc.

Martin Nee

Cc. Mr. Bill Robertson, Giant
Mr. David Kirby, Giant
Mr. Brandon Powell, OCD Aztec

3R258

Annual Report
Bloomfield Crude Station
Bloomfield, New Mexico

March 2007

Prepared For

Giant Industries Arizona, Inc.
111 CR 4990
Bloomfield, New Mexico

Project 30003

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (505) 334-2791

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Introduction

The following annual report describes work completed at Giant Industries Arizona, Inc.'s (Giant's) former Crude Station in Bloomfield, New Mexico since the previous annual report submitted in March 2006. The report includes data collected through January 2007 including:

- Bioventing quarterly carbon dioxide and oxygen monitoring measurements during 2006,
- Bioventing soil sampling in December 2006,
- Groundwater sampling results from all wells on January 25, 2007,
- Headspace readings from all monitoring and injection points on December 21, 2006,
- Groundwater sampling results from MW-2 before and after installation of an adjacent air sparge well.

The former Bloomfield Crude Station is located on the southwest corner of Blanco Boulevard and Fifth Street in the city of Bloomfield, San Juan County, New Mexico. The site occupies approximately 5.5 acres within the N ½, NW ¼, NW ¼ of Section 22, Township 29 North, Range 11 West. A regional location map is shown in Figure 1.

A 55,000 barrel crude oil storage tank was previously located at the site within an earthen berm, which occupied approximately 100,000 square feet on the west side of the former crude station. Tank 967-D and berms were removed between late 1995 and early 1996. Approximately 12,924 cubic yards of hydrocarbon impacted soil were removed and treated at Giant's Bisti land-farm. The excavation was backfilled and graded. Currently, the site is an unoccupied, open space. A site map presented as Figure 2 shows the boundary of the former excavation. West of the former tank site is a City of Bloomfield Electrical Substation and two well sites (Jan Redding #1 and Cook #1E) owned and operated by Manana Gas. To the west of the electric substation and Manana well sites, a vacant lot exists. What appears to be a monument may indicate a previous well site that has been plugged and abandoned. Historical research of this area indicate that several oil and possibly gas wells, may have once been operational on this lot, such as Bishop #1, Bishop #3, Hare #1 and Kittell #1 (Figure 2).

The former crude station has been the focus of a subsurface investigation where activities have included numerous soil borings and sampling, installation of seven groundwater monitoring wells, excavation and offsite land farming of hydrocarbon impacted soil, and groundwater sampling. The area of focused investigation is where the former crude oil storage tank numbered 967-D was located. A more detailed historical account can be found in a report previously submitted to the New Mexico Oil Conservation Division (NMOCD) titled *Comprehensive Report for the Bloomfield Crude Station*, dated January 2000. A chronology of site operations and investigations is found in the Golden Environmental Management report *Monitoring Well Installation, Groundwater Sampling and Bioventing Pilot Test Bloomfield Crude Station, Bloomfield, New Mexico*, dated July 2001.

Methodology

During the period covered in this report, the existing bioventing system was utilized, and an air sparge system was installed to target high concentrations of volatile organic carbons consistently present in groundwater samples from MW-2. Bioventing continues as described in the *March 2004 Annual Report* and according to *Bioventing Plan, July 2002* submitted to the New Mexico Oil Conservation Division in July 2002. Soil was sampled from monitoring and injection points of the bioventing system to evaluate effectiveness. Groundwater was sampled from monitoring wells to track progress over the entire site. MW-2 was sampled prior to installation of the air sparge well and again after two months of forced air injection to evaluate effectiveness. Groundwater sampling at all monitoring wells followed accepted industry practices.

Bioventing

Bioventing is the process of supplying air to indigenous microorganisms to enhance natural mineralization of hydrocarbons to carbon dioxide and water. Following a successful bioventing pilot test on June 20, 2001 bioventing was initiated on February 17, 2003.

System installation during 2003 included hand boring three-inch holes with a hand auger, collecting soil samples at three-foot intervals and screening the samples using headspace techniques. Eight soil samples with the highest headspace readings were submitted to Pinnacle Laboratories in Albuquerque, NM for benzene, toluene, ethylbenzene, xylenes (BTEX), and total petroleum hydrocarbon (TPH) analyses by United States Environmental Protection Agency (USEPA) methods 8021 and 8015, respectively. Samples were collected in one-quart plastic bags and split for headspace and laboratory analysis. Samples for laboratory analyses were immediately placed in four-ounce glass jars, sealed, labeled, stored on ice, and shipped to the laboratory under strict chain-of-custody procedures.

Following sampling, one foot of one-inch diameter polyvinyl chloride 0.01-inch slotted well screen was set in each hole at approximately twelve feet beneath ground surface at thirty nine locations. Twenty six points are currently used for monitoring subsurface gasses and thirteen points are used to inject air. Monitoring and Injection point locations are shown on Figure 3.

Injection air is supplied by a Gast™ oil-less rotary vane compressor that supplies approximately 90 standard cubic feet per minute air. The compressor is housed in an existing office building on-site and travels through 1-1/2 inch PVC pipe to each injection point. Valves are located on each injection and monitoring point. The air is injected where field screening and laboratory analyses indicate elevated concentrations of hydrocarbons in the subsurface. Operations and maintenance are performed routinely to ensure the system is operational.

The compressor operates from 0600 hours to 1800 hours Monday through Fridays. Subsurface airflow and oxygen/carbon dioxide concentrations are monitored quarterly. Oxygen and carbon dioxide are measured using a GEM 500 ™ gas monitor. Each point is evacuated until the gas reading is stable.

Comparative soil samples were collected using a hand powered auger following approximately eight months of system operations during October 2003, and then yearly from 2004 through 2006. Soil samples were collected from a location approximately one foot north from where initial eight soil samples were collected and at the same depth as the original. These samples were also screened in the field using headspace techniques and submitted for laboratory analysis for BTEX and TPH by USEPA methods 8021 and 8015, respectively.

Groundwater Sampling

On January 25, 2007, groundwater samples and depth-to-groundwater measurements were collected from monitoring wells MW-2 through MW-7. Each well was checked for the presence of free phase crude oil. Samples were collected from the six monitor wells. Giant abandoned monitoring well MW-1 during excavation of the tank pad. MW-7 was sampled at the request of the NMOCD, although Giant believes groundwater impact at this location is not related to their operations as discussed in previous reports.

Prior to sampling, depth to groundwater and total depth of each well were measured with a Keck oil/water interface probe. Presence of any free phase crude oil was also investigated using the interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. The volume of water in the wells was calculated, and a minimum of three casing volumes of water was purged from each well using a disposable bailer. As water was extracted, pH, electric conductivity and temperature were monitored. The wells were purged until these properties had stabilized, indicating that the purge water was representative of aquifer conditions. These data were recorded within a bound field notebook.

Once each monitoring well was purged, groundwater samples were collected by filling two 40-milliliter (mL) glass vials. The pre-cleaned and pre-preserved vials were filled and capped with no air inside to prevent degradation of the sample. Samples were labeled with the time and date of collection, as well as the origin of the sample. They were immediately sealed and packed on ice. The samples were shipped to Pinnacle Laboratories, Inc. (Pinnacle) in Albuquerque, New Mexico in a sealed cooler via UPS. Proper chain-of-custody procedures were followed with logs documenting the project name and number, sampling point, location, field ID number, date, time, sample type, number of containers, analyses required and sampler's signatures (Appendix A). Pinnacle analyzed the samples for benzene, toluene, ethylbenzene and total xylenes (BTEX) by USEPA Method 8021.

Two 500-milliliter plastic bottles were filled with groundwater for analysis of major cations and anions, total dissolved solids (TDS) and an ion balance by various EPA methods. These samples were labeled, stored on ice and submitted to Pinnacle Laboratories. The samples were labeled with the project name, sampling location, field identification number, date, time, sample type, analysis required. Strict chain-of-custody procedures were followed.

Air Sparging

On October 9, 2006, a sparge well was installed adjacent to MW-2 (Figure 2) to address sustained levels of volatile organic hydrocarbons measured in groundwater samples collected

from the well. Air sparging is the process of injecting air directly into the subsurface saturated zone, thereby volatilizing hydrocarbons and allowing them to mineralize in the unsaturated zone. The addition of oxygen to impacted groundwater and soils also enhances biodegradation as it acts as a nutrient for bacteria.

Headspace analyses of soil samples collected from near MW-2 indicate affected soil exists between 9 and 12 feet beneath the ground surface (bgs). Depth to groundwater in MW-2 is approximately 13 feet bgs. Using this information as a guide for design of the air sparge system, the injection well was drilled to 25' total depth and completed with schedule 40, two-inch diameter polyvinyl-chloride (PVC) pipe. It included 1 foot of 0.01-inch machine slotted flush-threaded PVC well screen. The screen was set ten feet beneath the water table. A clean 10-20 grade silica sand gravel pack was placed from the bottom of the boring to two feet above the screen. Ten feet of three-eights inch natural bentonite chips were set above the gravel pack for a tight seal within the water table. A cement slurry, containing five percent powdered bentonite, was set above the seal to the surface. A lithologic log and well completion diagram is included in Appendix B.

Air is injected with a Gast™ oil-less rotary vane compressor that supplies approximately 17 standard cubic feet per minute air. The compressor is located in the same office building as the bioventing compressor. Air is pumped through 1-1/2 inch PVC pipe directly to the sparge well. The compressor operates from 0600 hours to 1800 hours seven days a week.

Operations and maintenance are performed routinely to ensure the system is effective and working correctly. Prior to activation of the air sparge system, groundwater from MW-2 was sampled for BTEX concentrations using USEPA Method 8021. The groundwater was sampled again following three months of continuous operation. Sampling procedures are described in the previous section.

Results

Bioventing

The results from headspace field screening using a PhotoVac photoionization detector (PID) during monitoring and injection point installation in October 2002 were as follows:

Table 1. Biovent Headspace Results

Location	DEPTH (feet)	PID (ppm)	Location	DEPTH (feet)	PID (ppm)	Location	DEPTH (feet)	PID (ppm)
IP-1	6	57.5	IP-21	6	3.5	MP-12	6	6.2
IP-1	9	57.5	IP-21	9	0.2	MP-12	9	8.9
IP-1	12	594	IP-21	12	4.8	MP-12	12	700
IP-10	6	756	IP-22		no PIDs	MP-13	6	6
IP-10	9	724	IP-23	6	0.3	MP-13	9	4.9
IP-10	12	212	ip-23	9.5	1.3	MP-13	13	650
IP-11	6	262	IP-3	9	240	MP-14	6	1.5
IP-11	9	543	IP-3	12	738	MP-14	9	6.9
IP-11	12.5	59.2	IP-4	6	102	MP-14	12	1.8
IP-12	6	2.9	IP-4	9	415	MP-15	6	0.4
IP-12	9	5.1	IP-4	12	618	MP-16	6	4.2
IP-12	13	616	IP-5	6	1.8	mp-16	9	no PIDs
IP-13	6	5.6	IP-5	9	768	mp-16	10.5	no PIDs
IP-13	9	2	IP-5	13	20.3	MP-2	6	69
IP-13	12	7.5	IP-6	6	187	MP-2	9	697
IP-14	6	0	IP-6	9	1005	MP-2	12	793
IP-14	9	0	IP-6	13	200	MP-3	6	777
IP-14	13.5	25.7	IP-7	3	2.2	MP-3	9	146
IP-15		no PIDs	IP-7	6	19	MP-3	12	23.8
IP-16	6	1.6	IP-7	9	655	MP-4	6	410
IP-16	9	728	IP-7	12	676	MP-4	9	122
IP-16	13	675	IP-8	3	29.2	MP-4	12	632
IP-17		no PIDs	IP-8	6	106	MP-5	6	37.6
IP-18	3	24.2	IP-8	9	439	MP-5	9	757
IP-18	6	106	IP-8	13	76	MP-5	12	865
IP-18	9	439	IP-9	3	102	MP-6	3	2.6
IP-18	12	10.3	IP-9	6	503	MP-6	6	2.1
IP-18	13	76	IP-9	9	74	MP-6	12	616
IP-19		no PIDs	IP-9	12	627	MP-7	3	224
IP-2	6	13.5	MP-1	6	2.3	MP-7	6	872
IP-2	9	786	MP-1	9	602	MP-7	9	708
IP-2	12.5	562	MP-1	13	203	MP-7	11	70.7
IP-20	3	1.5	MP-10	6	49.1	MP-8	6	30.3
IP-20	6	1.2	MP-10	9	733	MP-8	9	772
IP-20	9	1	MP-10	12	738	MP-8	12	602
IP-20	12	0.7	MP-11	6	0	MP-12	6	6.2
IP-21	3	0.4	MP-11	9	0	MP-12	9	8.9
MP-9		no PIDs	MP-11	12	732	MP-12	12	700

Headspace readings were recorded where there was physical evidence of impacted soil. The results of laboratory analyses from eight of the highest headspace reading locations are shown in Table 2. Also included in Table 2 are the results of sampling from the same locations collected during subsequent years at the same depth approximately one, two and three feet from the original samples. Laboratory analytical reports and chain-of-custody documentation are included in Appendix A.

Table 2. Biovent Laboratory Results

Location (Oct 02)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	732	1290	2.9	nd	5.8	36	44.7
IP-16	9	728	5690	0.85	0.78	7.7	58	67.33
MP-8	9	772	nd	nd	nd	nd	nd	0
IP-12	12	616	2470	nd	nd	2.1	16	18.1
IP-7	12	676	4720	2.9	nd	7.6	51	61.5
MP-3	6	777	750	2	0.3	3.2	23	28.5
MP-7	6	872	2830	2	3.3	8.6	56	69.9
IP-10	6	756	1470	0.42	0.14	0.11	1.1	1.77

Location (Oct 03)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	191	157	nd	nd	nd	nd	0
IP-16	9	110	2600	nd	nd	nd	nd	0
MP-8	9	149	nd	nd	nd	nd	nd	0
IP-12	12	190	720	nd	nd	nd	nd	0
IP-7	12	287	1299	nd	nd	nd	0.29	0.29
MP-3	6	314	400	nd	nd	nd	nd	0
MP-7	6	3964	4700	3.5	nd	10	89	102.5
IP-10	6	311	21	nd	nd	nd	nd	0

Location (Oct 04)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	0.0	nd	nd	nd	nd	nd	0
IP-16	9	0.0	540	nd	nd	nd	nd	0
MP-8	9	149	nd	nd	0.027	nd	nd	0.027
IP-12	12	253	nd	nd	nd	nd	nd	0
IP-7	12	123	139	nd	nd	nd	nd	0
MP-3	6	0.0	nd	nd	nd	nd	nd	0
MP-7	6	994	2330	3.5	nd	2.7	35	41.2

IP-10	6	262	nd	nd	nd	nd	0.083	0.083

Location (Oct 05)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	7.49	nd	nd	nd	nd	nd	0
IP-16	9	0.0	52	nd	nd	nd	nd	0
MP-8	9	56.2	nd	nd	nd	nd	nd	0
IP-12	12	120	770	nd	nd	nd	nd	0
IP-7	12	6.2	55	nd	nd	nd	nd	0
MP-3	6	0.0	39	nd	nd	nd	nd	0
MP-7	6	443	2040	< 0.13	< 0.13	6.0	32	38.2
IP-10	6	30.3	nd	nd	nd	nd	nd	0

Location (Oct 06)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	3.2	124	nd	nd	nd	nd	0
IP-16	9	5.0	210	nd	nd	nd	nd	0
MP-8	9	4.6	28	nd	nd	nd	nd	0
IP-12	12	3.3	520	nd	nd	nd	nd	0
IP-7	12	7.4	770	nd	nd	nd	nd	0
MP-3	6	4.7	nd	nd	nd	nd	nd	0
MP-7	6	4.9	22	nd	nd	nd	nd	0
IP-10	6	13.8	nd	nd	nd	nd	nd	0

Yearly Comparison of Laboratory Results

		2002-2003		2003-2004		2004-2005		2005-2006	
Hole	Depth (feet)	% Change Lab TPH mg/kg	% Change Total BTEX mg/kg	% Change Lab TPH mg/kg	% Change Total BTEX mg/kg	% Change Lab TPH mg/kg	% Change Total BTEX mg/kg	% Change Lab TPH mg/kg	% Change Total BTEX mg/kg
MP-11	12	-88%	-100%	-100%	nc	nc	nc	100%	nc
IP-16	9	-54%	-100%	-79%	nc	-90%	nc	304%	nc
MP-8	9	nc	nc	nc	nc	nc	-100%	100%	nc
IP-12	12	-71%	-100%	-100%	nc	100%	nc	-32%	nc
IP-7	12	-72%	-99.5%	-89%	-100%	-60%	nc	1300%	nc
MP-3	6	-47%	-100%	-100%	nc	100%	nc	-100%	nc
MP-7	6	66%	47%	-50%	-60%	-12%	-7%	-99%	-100%
IP-10	6	-99%	-100%	-100%	nc	nc	-100%	nc	nc
Ave.		-52%	-79%	-88.0%	-79.9%	7.6%	-69%	224%	-100%

nc: no change; nd: not detected; wells with no change in values were not used in average change calculations.

TPH levels in the monitoring wells have generally decreased during bioventing operations, as shown in Figure 4. In 2002, all soil samples were well over NMOCD standards for TPH. Since then, TPH levels in soil samples at all locations have fallen significantly. Four samples (MP-11, IP-16, IP-12 and IP-7) were over NMOCD standards in 2006, while TPH was not detected in two samples (MP-3 and IP-10). There is a slight rise in TPH levels detected in soil samples during 2006 as compared to 2005. TPH levels in samples from MP-11, IP-16, MP-8 and IP-7 increased since 2006, while levels in IP-12, MP-3 and MP-7 decreased. TPH from soil collected near IP-10 remained undetected.

As shown in Table 2 and graphically presented in Figure 5, laboratory results indicate a consistent decrease of the BTEX constituents since bioventing operations began. All locations have been under NMOCD standards for BTEX concentrations since 2004. In 2006, BTEX was not detected in any of the samples.

The results of carbon dioxide and oxygen measurements during bioventing are shown in the following table. The pump that injects air into the subsurface failed and was being repaired during the scheduled fourth quarter 2005 monitoring event. No readings were obtained for that time.

Table 3. Results of Air Monitoring

Monitoring Point	Oxygen Percentage at Monitoring Points					Carbon Dioxide Percentage at Monitoring Points				
	Pretest	2003 ave.	2004 ave.	2005 ave.	2006 ave.	Pretest	2003 ave.	2004 ave.	2005 ave.	2006 ave.
IP10	17.20	3.15	12.38	4.8	7.15	1.8	6.52	10.95	4.87	14.13
IP11	20.90	9.51	8.63	13.5	19.6	0	1.03	11.90	4.47	1.3
IP13	20.90	8.62	18.95	18.3	17.88	0.2	1.74	1.38	2.07	2.18
IP14	19.90	5.77	4.50	3.4	15.58	1	6.84	10.05	13.73	4.75
IP15	20.90	0.07	19.93	20.3	19.95	0.8	1.21	0.33	0.47	0.55
IP17	20.90	0.44	19.20	19.0	19.38	1	1.10	1.25	2.13	1.03
IP19	20.90	9.27	16.20	18.1	19.4	0.4	1.24	3.50	2.37	0.93
IP20	20.50	5.88	7.18	13.5	17.8	0.6	6.36	8.40	5.80	1.78
IP21	20.90	8.33	18.10	19.7	18.65	1.4	1.20	2.20	4.10	0.85
IP22	20.90	0.14	17.50	18.3	19.2	0.4	0.94	1.85	2.33	1.13
IP23	20.90	0.69	19.33	18.7	19.35	0.6	0.66	0.77	2.03	0.90
IP8	20.20	3.25	4.80	0.03	0.0	0.8	13.43	10.58	3.50	14.4
MP14	19.20	14.20	8.30	14.1	15.90	1	3.34	7.98	5.33	3.5
MP15	20.90	18.40	14.88	14.2	18.40	0.6	1.82	3.68	3.43	1.5
MP16	20.90	20.11	18.95	19.5	19.28	0.06	0.97	1.40	1.43	1.2
MP4	19.00	1.94	6.15	2.0	0.0	1.2	12.05	14.45	6.33	14.9
MP7	18.60	6.56	7.85	14.2	18.5	1.4	5.60	8.25	4.2	0.7
MP9	20.50	13.13	18.88	19.3	18.85	1	1.89	0.98	1.5	1.28
Average	20.23	13.86	13.43	13.90	15.83	0.79	3.77	5.55	3.53	3.72

Data from 2003 includes data from 2/03,3/03,10/03 and 1/04.
Data from 2004 includes quarterly data from 4/04,7/04,10/04 and 1/05.
Data from 2005 includes data from 4/05, 7/05 and 10/05.
Data from 2006 includes data from 4/06, 7/06, 10/06 and 1/07.

Measurements at individual monitoring points are shown on the Bioventing Data tables in Appendix C. Air monitoring points were, for the most part, installed away from the injection points that were installed in the areas of highest hydrocarbon concentrations. Because these points were away from hydrocarbons and hence biologic activity, initial oxygen concentrations were typically higher and carbon dioxide concentrations typically lower than readings in areas of higher hydrocarbon concentrations. The average oxygen concentration at all monitoring points decreased slightly in 2004, but returned to 2003 levels during 2005 and continued to increase in 2006. Average concentration of carbon dioxide increased in 2004 and returned to just under 2003 levels during 2005. The carbon dioxide concentrations increased slightly in 2006 and are comparable to 2003 levels.

Groundwater Sampling

Depth-to-water measurements taken during January 2007 are shown in Table 5. During January 2007, water depth ranged from 20.44 feet beneath the top of the well casing (BTOC) in MW-7 to 12.63 feet BTOC in MW-2. Product was found in MW-2 during January 2004 through August 2004 and absent from September 2004 to date. Free phase crude oil has never been found in any of the other wells. Groundwater elevations were calculated, and an inferred groundwater elevation contour map is presented as Figure 6. Based on the contours, groundwater movement appears to be to the southwest and the hydraulic gradient is 0.011 feet per feet.

Table 4. Groundwater Elevation Data

Well Number	Casing Elevation (ft)	Date	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Groundwater Elevation (ft)
MW-2	5485.33	1/25/07	12.63	np	np	5472.70
MW-3	5488.61	1/25/07	13.92	np	np	5474.69
MW-4	5486.18	1/25/07	14.15	np	np	5472.03
MW-5	5481.61	1/25/07	14.22	np	np	5467.39
MW-6	5486.18	1/25/07	15.92	np	np	5470.26
MW-7	5491.86	1/25/07	20.44	np	np	5471.42

Notes:
Measuring points are marked by a notch in top of well casing
na: not applicable
np: indicates there was no free phase product present
Groundwater Elevation = (Surveyed Well Casing Elevation) - (Depth to Water)
Water level elevation is given in feet above mean sea level
* MW-1 was abandoned by Giant in 2000

Laboratory analytical results for BTEX are presented in Table 5. Complete reports from Pinnacle Laboratories are included in Appendix A. During January 2007, BTEX was not detected in the groundwater from MW-4 and MW-5. Only trace amounts of ethylbenzene and xylenes were found in MW-6, and a trace amount of benzene was found in MW-3. The concentrations of BTEX constituents in MW-2 were under New Mexico Water Quality Control Commission (NMWQCC) standards for the first time in 2007, with benzene at 8.7 µg/L, toluene at 9.7 µg/L, ethylbenzene at 16 µg/L and total xylenes at 55 µg/L. This is a significant decrease from previous years' results. MW-7 continues to be over NMWQCC standards with 1200 µg/L of benzene and 2500 µg/L of total xylenes. Concentrations of ethylbenzene and total xylenes

increased slightly compared to 2006 results. Ethylbenzene increased from 280 to 450 µg/L and xylenes increased from 1500 to 2500 µg/L. MW-3 showed a trace of benzene for the first time in 2006.

Table 5. Groundwater Analytical Results

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	**750**	**750**	**620**
MW-2	Sep-94	**640**	600	82	**690**
	Apr-95	**220**	280	53	430
	Sep-99	NSP	NSP	NSP	NSP
	Dec-99	NSP	NSP	NSP	NSP
	May-01	NSP	NSP	NSP	NSP
	May-02	NSP	NSP	NSP	NSP
	Jan-03	**1700**	ND	650	**3200**
	Jan-04	**1100**	ND	340	**1800**
	Jan-05	**430**	ND	360	**1000**
	Jan-06	**250**	ND	410	**790**
	Sept-06	**230**	50	290	**640**
	Jan-07	8.7	9.7	16	55
MW-3	Sep-94	ND	ND	ND	ND
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	0.8	ND	ND	ND
MW-4	Sep-94	2.1	ND	ND	1.2
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
MW-5	Sep-94	NS	NS	NS	NS
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	**750**	**750**	**620**
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	1.1
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
MW-6	May-01	**12**	15	13	83
	May-02	ND	ND	0.53	1.4
	Oct -02	ND	ND	ND	3.2
	Jan-03	6.0	20	87	350
	Jul-03	ND	2.7	3.2	16
	Sept-03	0.8	3.7	4.0	24
	Jan-04	0.9	1.6	2.9	16
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	14	32
	Jan-07	ND	ND	3.6	9.1
MW-7	May-01	**2,400**	ND	380	**2,800**
	June-02	**2,000**	ND	140	**1,100**
	Oct-02	**1100**	ND	79	490
	Jan-03	**3200**	ND	400	**3100**
	Jan-04	**3300**	ND	460	**3300**
	Jan-05	**1600**	ND	220	**1500**
	Jan-06	**1400**	ND	280	**1500**
	Jan-07	**1200**	ND	450	**2500**

The results of general chemistry analyses for January 2007 are shown in Table 6. Results indicate high conductivity in all of the samples, ranging from 1460 microhms per centimeter (µmhos/cm) to 7460 µmhos/cm. Total dissolved solids (TDS) are also high, with levels between 858 milligram per liter (mg/L) in MW-7 and 6070 mg/L in MW-6. All of the samples, except MW-7, have concentrations greater than the New Mexico Water Quality Control Commission (NMWQCC) domestic water supply standard for TDS of 1000 mg/L. These results indicate a poor quality for potable use. The samples from wells MW-2, MW-3, MW-4, MW-5, and MW-6 exceed the NMWQCC domestic water standard for sulfate at 2460 mg/L, 1920 mg/L, 1730 mg/L, 1800 mg/L and 3140 mg/L, respectively. The standard for sulfate is 600 mg/L. The sample taken from MW-5 contained 884 mg/L of chloride. The standard for chloride is 250 mg/L. The elevated levels of these parameters are indicators of the typically poor quality of shallow groundwater at the site. The complete laboratory analytical reports are included in Appendix A. Historical general chemistry of groundwater sampled at the Bloomfield Crude Station is included in Appendix D.

Table 6. Groundwater General Chemistry Results

Analyte	Units	Date	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	NMWQCC Standard
Lab pH	s.u.	1/25/07	7.4	7.5	7.2	7.3	7.1	7.1	6-9
Conductivity	µmhos/cm	1/25/07	5490	4780	4700	6630	7460	1460	
TDS	mg/L	1/25/07	**4580**	**3750**	**3690**	**4750**	**6070**	858	1000
Alkalinity as CaCO3	mg/L	1/25/07	726	565	455	915	678	638	No Std.
Bicarbonate as CaCO3	mg/L	1/25/07	724	563	454	914	676	636	No Std.
Carbonate as CO3	mg/L	1/25/07	2.57	1.92	1.17	1.11	2.23	1.38	No Std.
Hydroxide	mg/L	1/25/07							No Std.
Chloride	mg/L	1/25/07	43.5	36.2	54.5	**884**	57.5	22.4	250
Sulfate	mg/L	1/25/07	**2460**	**1920**	**1730**	**1800**	**3140**	127	600
Calcium	mg/L	1/25/07	476	449	410	621	529	161	No Std.
Magnesium	mg/L	1/25/07	59.5	43	43.3	57.6	65.1	20.2	No Std.
Potassium	mg/L	1/25/07	12.5	10.3	12.1	16.6	17.3	8.84	No Std.
Sodium	mg/L	1/25/07	869	649	678	896	1500	124	No Std.
Iron	mg/L	1/25/07	16.3	1.28	0.56	0.50	18.7	32.4	No Std.
Manganese	mg/L	1/25/07	5.0	0.41	5.73	10.8	13.8	2.34	No Std.
Nitrate/Nitrite	mg/L	1/25/07							10

Notes:
s.u. = standard units
µmhos/cm - microhms per centimeter
mg/L = milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission Standard
No Std. = No Standard

Monitoring of MW-2

MW-2 was free of product during 2006. Product has not been found in MW-2 since August, 2004. A comprehensive summary of product monitoring and recovery is presented in Table 7. High levels of BTEX were persistently present in groundwater samples from MW-2 between 2004 and early 2006 (Table 5). As a result, an air sparge system was installed during 2006 to remove volatiles within the affected soil and groundwater. Samples from MW-2 taken before and after installation of the sparge well suggest significant progress (Table 5). Values of all BTEX constituents decreased between September 2006 and January 2007. BTEX concentrations are now below NMWQCC standards in MW-2.

Table 7. Product Recovery Data MW-2

Date	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed (gal) (includes purge water)
May 4, 1995	NA	NA	NA	9
Sept 30, 1999	15.00	17.48	2.47	2.75
Nov 16, 1999	14.65	17.00	2.35	2.0
Dec 14, 1999	14.66	16.76	2.10	5.0
May 11, 2001	14.69	16.77	1.96	2.5
May 21, 2001	15.10	15.65	0.55	0
May 23, 2001	15.13	15.69	0.56	0
July 3, 2001	15.48	16.32	0.84	0
July 9, 2001	15.54	16.43	0.89	1.1
May 13, 2002	14.70	15.51	0.81	1.4
May 22, 2002	14.64	15.29	0.65	1.2
May 30, 2002	14.70	15.14	0.44	1.1
June 5, 2002	14.76	15.00	0.24	1.1
June 13, 2002	14.75	14.91	0.15	0.6
June 19, 2002	14.70	14.78	0.08	0.6
June 26, 2002	14.68	14.73	0.05	0.3
July 5, 2002	14.63	14.69	0.05	0.2
July 12, 2002	14.56	14.61	0.05	0.2
July 18, 2002	14.53	14.59	0.06	0.2
July 25, 2002	14.51	14.56	0.05	0.2
July 31, 2002	14.43	14.47	0.04	0.1
August 16, 2002	14.25	14.32	0.06	0.2
September 6, 2002	14.18	14.30	0.12	0.1
September 19, 2002	14.22	14.38	0.16	0.2
October 21, 2002	-	13.87	0.00	0
January 30, 2003	-	12.53	0.00	0
March 26, 2003	-	13.75	0.00	0
May 16, 2003	-	14.30	0.00	0
July 27, 2003	14.06	14.08	0.02	2.0
August 18, 2003	-	14.07	0.00	0
September 15, 2003	-	14.08	0.00	0
January 20, 2004	14.2	14.24	0.04	2.5
April 29, 2004	15.04	15.1	0.06	2
May 27, 2004	15.38	15.51	0.13	2
June 24, 2004	15.6	15.65	0.05	2
July 26, 2004	15.50	15.54	0.04	1
August 25, 2004	15.12	15.13	0.01	1
September 30, 2004	-	14.72	0	1
October 19, 2004	-	14.58	0	-
November 16, 2004	-	14.4	0	0.5
December 14, 2004	-	14.38	0	-
January 13, 2005	-	14.52	0	-
April 27, 2005	-		0	-
July 28, 2005	-	15.12	0	-
October 25, 2005	-	13.82	0	-
January 26, 2006	-	14.67	0	-

Date	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed (gal) (includes purge water)
September 25, 2006	-	13.85	0	-
January 25, 2007	-	12.63	0	-
Total Gallons of Product and Purge Water Removed Since 1995				44.05

Conclusions

Bioventing

Based on the overall decrease in concentrations of TPH and BTEX following almost four years of operations, bioventing is effectively reducing the concentrations of hydrocarbons in the subsurface. Prior to bioventing in 2002 seven of eight soil samples were over NMOCD standards for TPH, none for benzene and four were over for total BTEX. In 2006, four of eight samples were over NMOCD standards for TPH, and BTEX was not detected in any of the eight samples.

During 2006, four of the monitoring and injection points showed increased concentrations of TPH. MP-11 increased from undetected levels in 2005 to 124 mg/kg in 2006. IP-16 increased from 52 to 210 mg/kg. TPH was not detected in MP-8 in 2005, but showed concentrations of 28 mg/kg in 2006. IP-7 increased from 55 to 770 mg/kg over one year. Samples in 2006 were collected to the north of the injection or monitoring points and at a foot or less away. In contrast, samples from previous years were collected approximately 2 to 3 feet to the east of the injection or monitoring points, suggesting an area previously not sampled and higher in concentration than the original was sampled during 2006.

The concentrations of oxygen and carbon dioxide recorded through January 2007 indicate decreasing biologic activity at the site until 2006. Oxygen concentrations in 2004 decreased slightly, then rose again in 2005, indicating less oxygen was consumed in 2005 as less hydrocarbon mass was available. The increase in subsurface oxygen concentration during 2006 indicates decreasing biologic activity at the site as less oxygen is consumed with a reduced volume of hydrocarbons available as a food source. The largest increases in oxygen concentrations occurred in monitoring and injection points located near the sparge well after it was installed in October 2006 (Appendix C). Oxygen concentrations from monitoring points located farther away from the sparge well remained relatively static.

The peak carbon dioxide concentrations occurred in 2004, and then decreased only slightly in 2005. Carbon dioxide concentrations increased again in 2006, which may be due to increased activity on site after the installation of the sparge well next to MW-2.

Air Sparging

Air sparging operations have proven to be successful in reducing BTEX concentrations in groundwater at MW-2. After only three months of continuous sparging, benzene concentrations dropped from 230 to 8.7 µg/L and xylenes dropped from 640 to 55 µg/L. Air sparging operations have caused benzene and total xylene concentrations to fall below NMWQCC standards for the first time in sampling history at the Bloomfield Crude Station.

Groundwater Sampling

The reduction in the concentrations of BTEX in the groundwater from monitoring wells and the continued absence of product in MW-2 is evidence that all of the product has been removed from the site. The groundwater from MW-7 contains concentrations of benzene, and xylenes that are

above NMWQCC standards, but are not related to Giant's activities at the site due to the well's proximity to former oil and gas wells and it's offsite cross-gradient location. Even so, current activities at the site may be contributing to the decline in BTEX concentrations in the well.

Except for MW-7, the NMWQCC domestic use standards for total dissolved solids in groundwater are exceeded at all monitoring wells including up-gradient well MW-3, indicating that the groundwater is not suitable for domestic use. That the groundwater from MW-7 is significantly lower in TDS indicates the source of the groundwater at MW-7 may not be the same source of the water beneath the Crude Station.

The potentiometric surface elevation did not show an overall increase or decrease since last year. The general direction and flow gradient also remain static. Groundwater flow is to the southwest at 0.011 ft/ft.

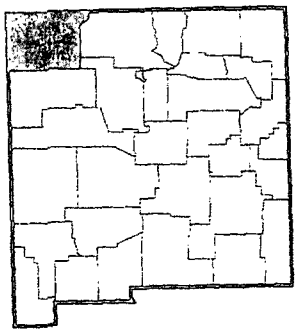
Recommendations

After compiling the most recent analytical results and comparing these with historical results, the following remedial action and monitoring plan is recommended:

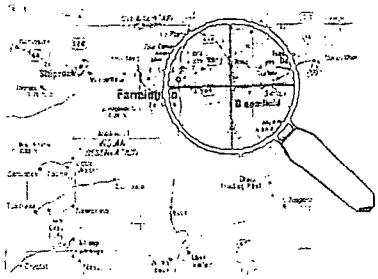
- Continue bioventing at the site to reduce the hydrocarbon concentrations in soil to below NMWQCC standards. Increase airflows where necessary to enhance degradation.
- Collect soil samples during October 2007 to monitor progress of remediation.
- Also during October 2007, turn off the bioventing system for one week and measure the concentrations of hydrocarbons in the soil gas at all monitoring and injection points.
- Continue air sparging at MW-2, and monitor for BTEX on a quarterly basis. If concentrations are beneath standards in April, discontinue sparging and sample for BTEX monthly. If the concentrations rebound, restart sparging.
- If the groundwater from MW-2 remains beneath standards at MW-2, initiate quarterly sampling for closure at MW-2 through MW-6.
- Evaluate and reconfigure the bioventing system to inject air at monitoring points where soil samples or gas monitoring indicate hydrocarbons remain.
- Meet with NMOCD during the second quarter of 2007 to discuss final site closure.
- Prepare an annual report in March 2008.

Figure 1: Site Location Map

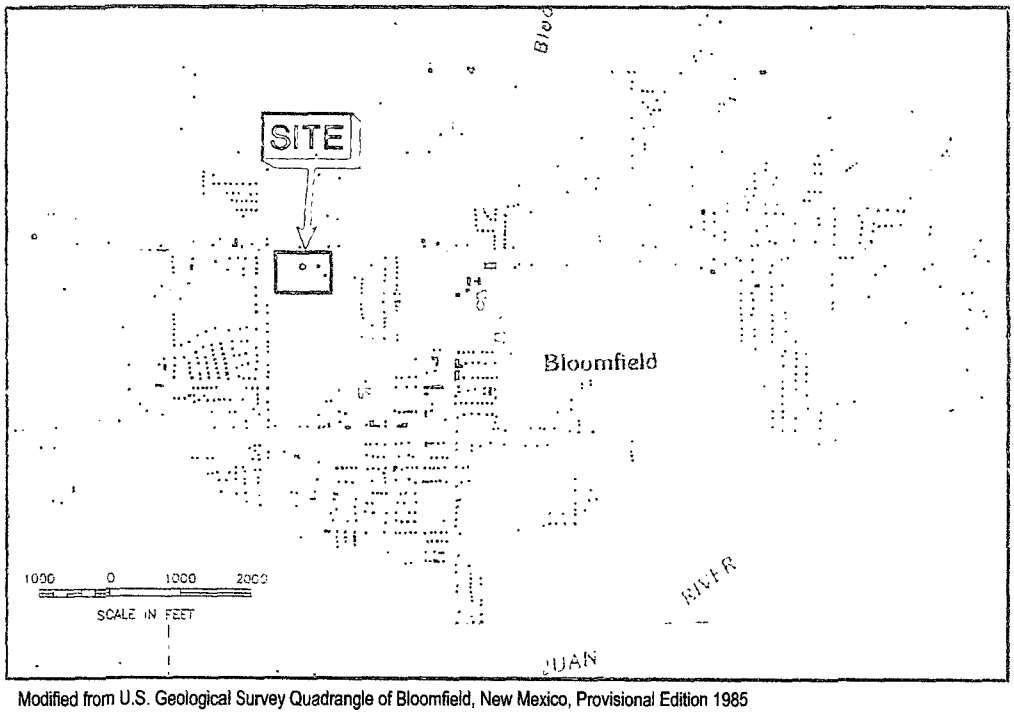
NEW MEXICO



SAN JUAN COUNTY



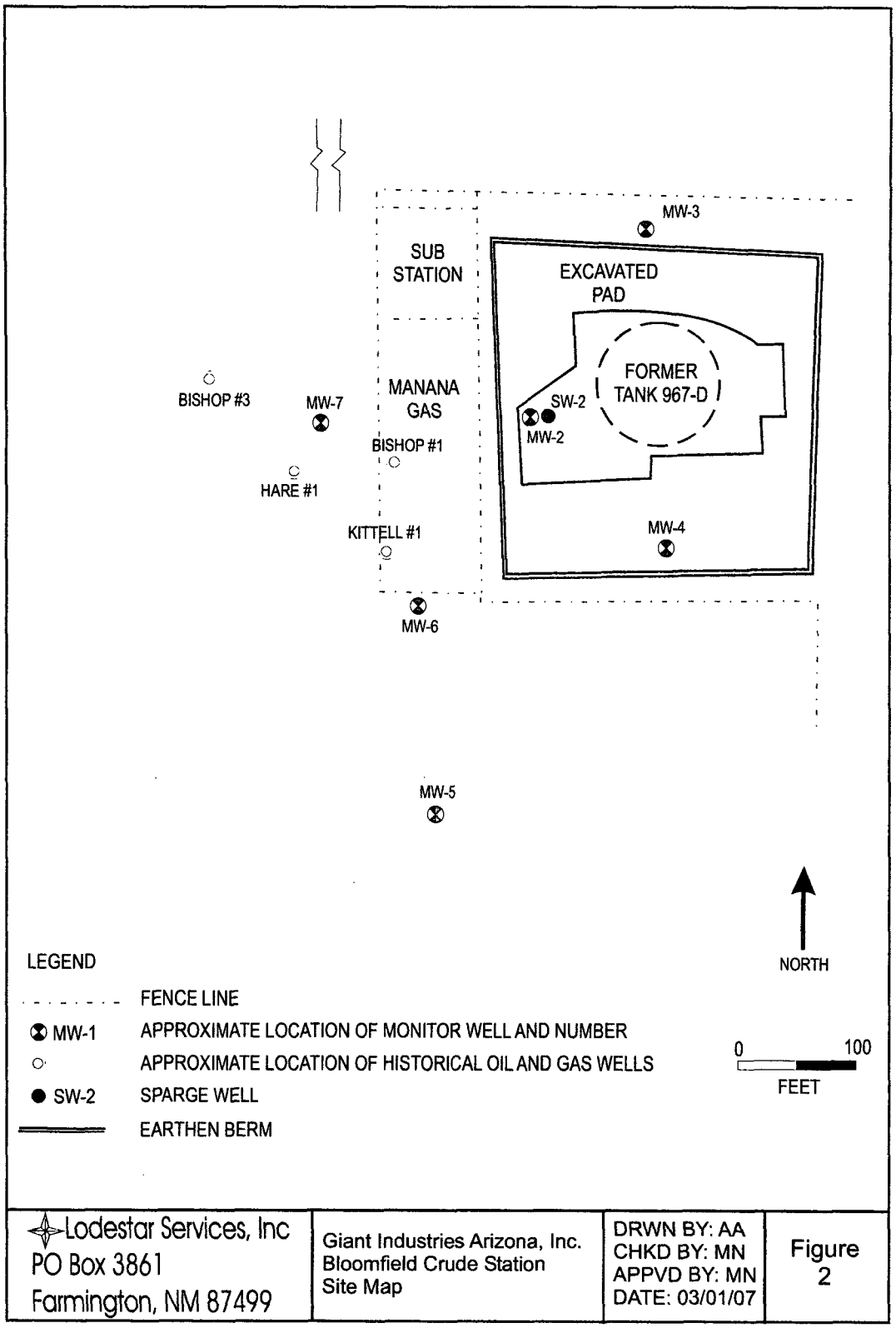
AREA IN DETAIL



Modified from U.S. Geological Survey Quadrangle of Bloomfield, New Mexico, Provisional Edition 1985

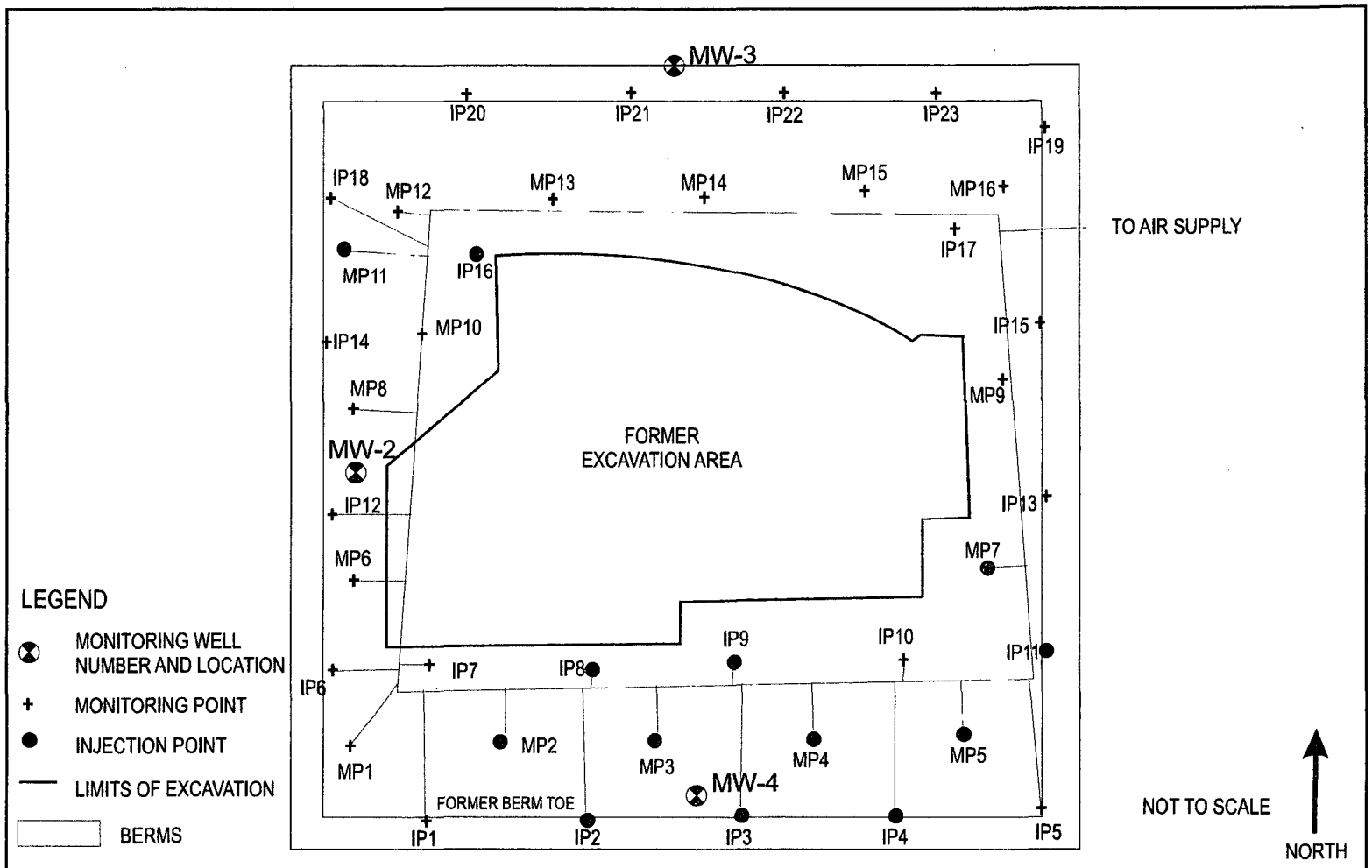
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield Crude Station Site Location Map	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 03/01/07	Figure 1

Figure 2: Site Map



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield Crude Station Site Map	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 03/01/07	Figure 2

Figure 3: Bioventing Layout Map



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield Crude Station Biovent Pilot Test	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 03/01/07	Figure 3

Figure 4: Laboratory TPH Concentrations in Soil Samples over Time

Figure 4
Bloomfield Crude Station
Laboratory THP Results at Monitoring and Injection Points

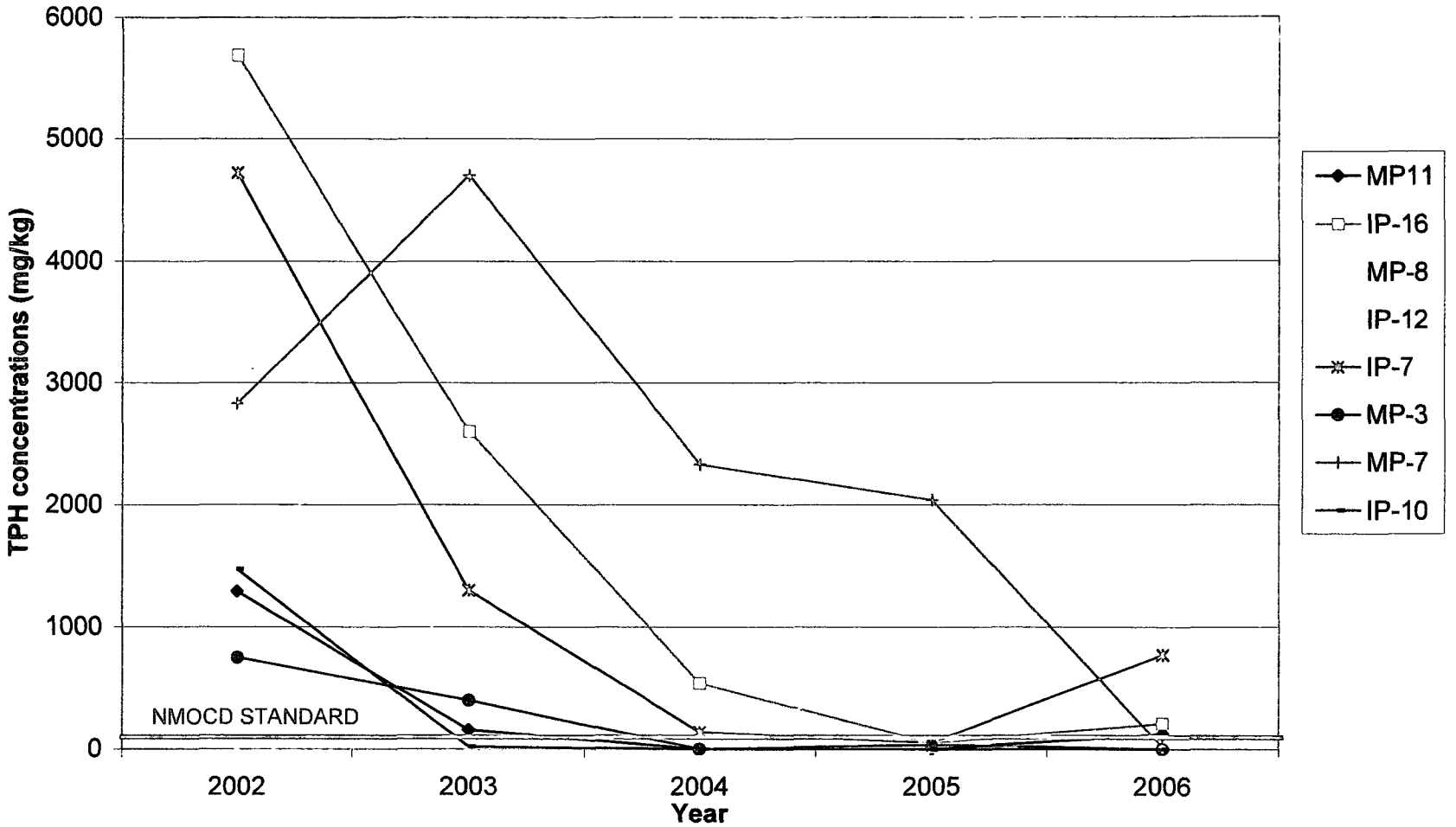


Figure 5: Laboratory Total BTEX Concentrations in Soil Samples over Time

Figure 5
Bloomfield Crude Station
Laboratory Total BTEX Results at Monitoring and Injection Points

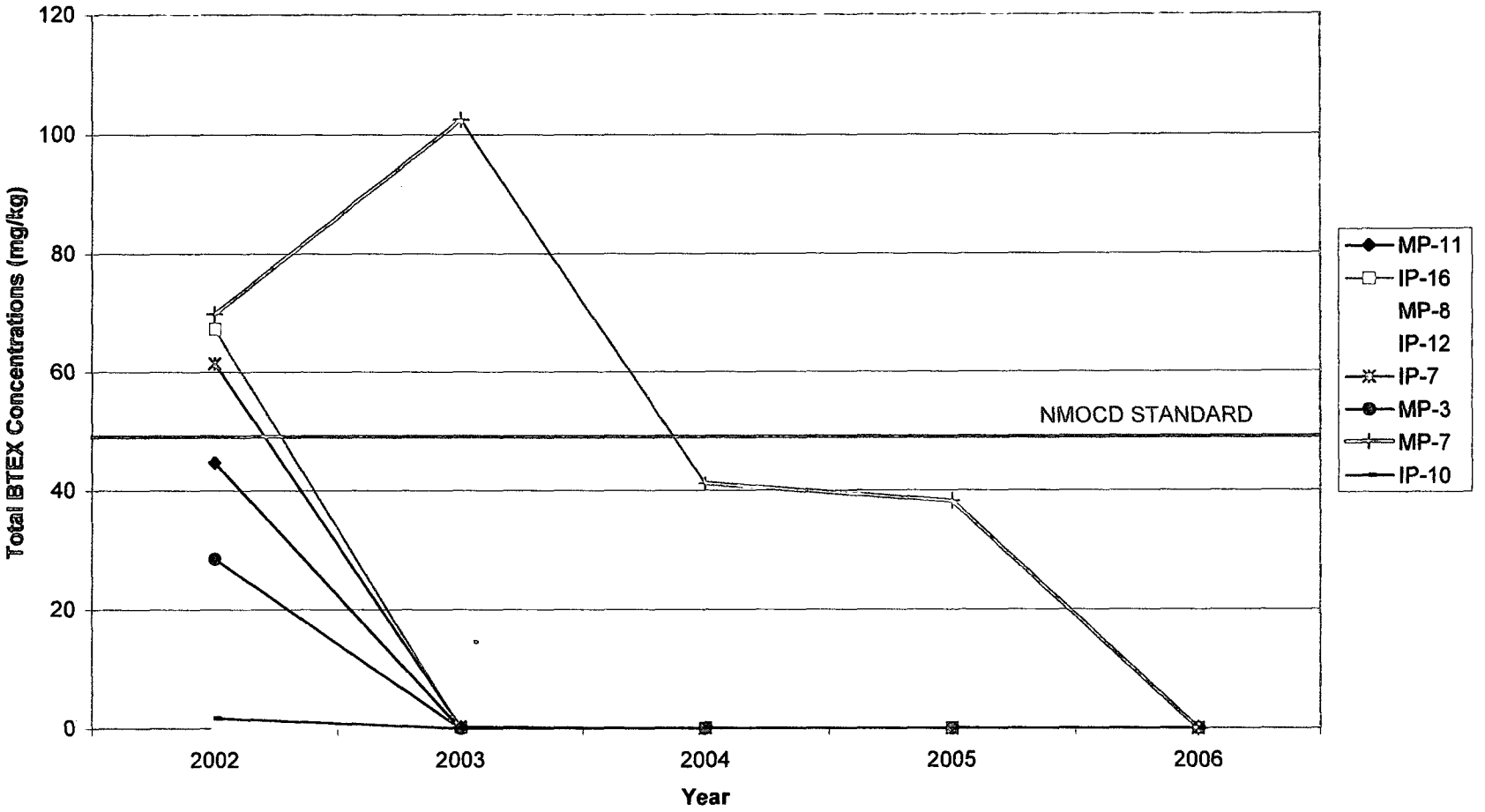
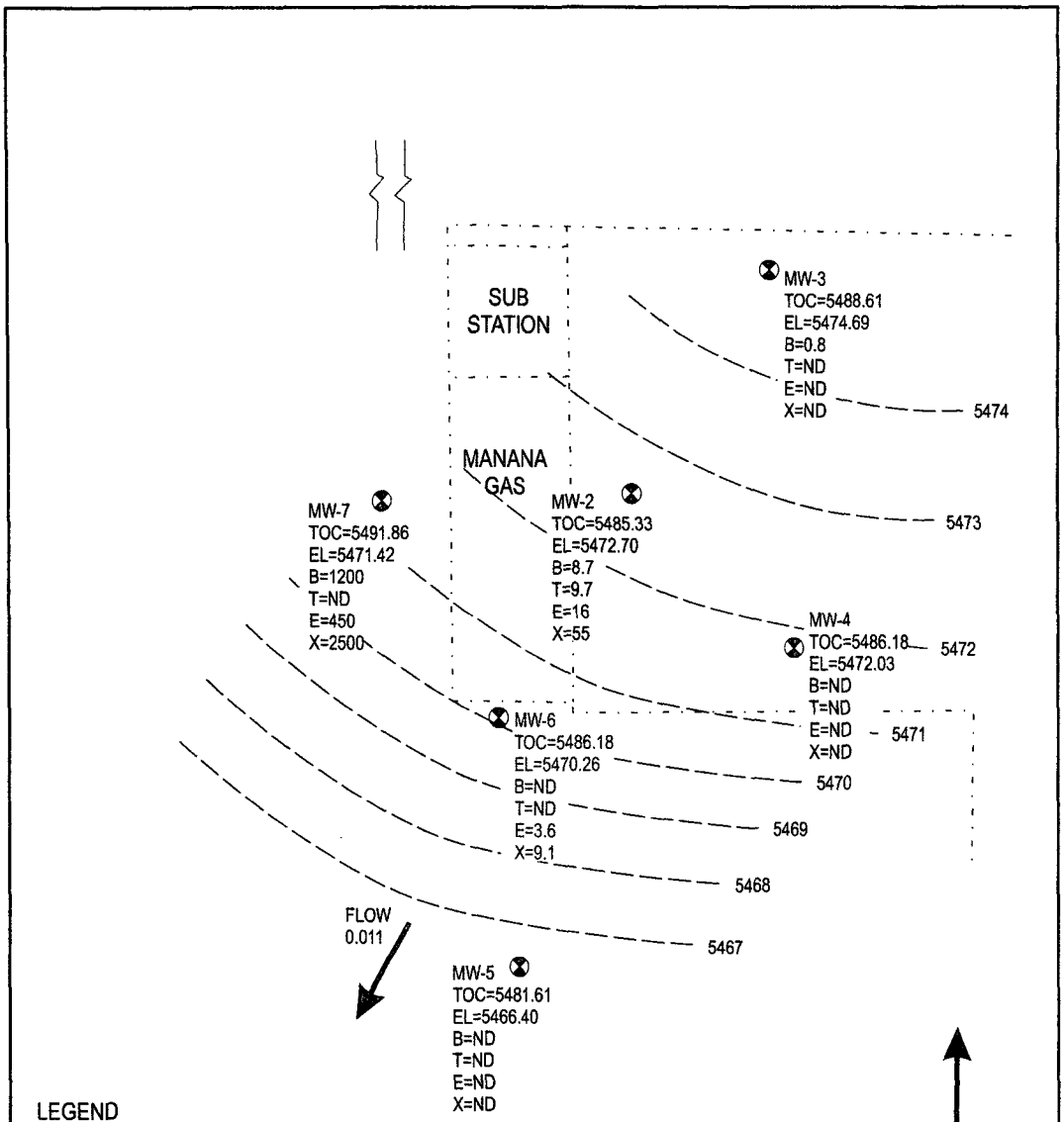


Figure 6: Groundwater Elevation Contour Map January 2007



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield, New Mexico Ground Water Gradient Map	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 02/14/07	Figure 6

Appendix A

Analytical Laboratory Reports

PINNACLE LABS
Environmental Testing

Pinnacle Lab ID number **701173**
February 27, 2007

LODESTAR
26 CR 3500
FLORA VISTA, NM 87415

Project Name BLOOMFIELD CRUDE STN
Project Number (NONE)

Attention: MARTIN NEE/BILL ROBERTSON

On 01/26/2007 Pinnacle Laboratories Inc., (ADHS License No. AZ0643), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

EPA Method 150.1 and 8021 analyses was performed by Pinnacle Laboratories, Inc. (PLI).

All other analyses were performed by Flowers Chemical Laboratories, Inc. (FCL), Altamonte Springs, FL.

If you have any questions or comments, please do not hesitate to contact us at (505) 344-3777.

H. Mitchell Rubenstein, Ph.D.
General Manager, Pinnacle Laboratories, Inc.

MR: jt

Enclosure

2709-D Pan American Fwy, NE Albuquerque, NM 87107 505.344.3777 505.344.4413 FAX 877.PIN.1998 TOLL FREE
www.pinnaclelabs.org www.pinnaclelabsonline.com

PINNACLE LABS
Environmental Testing

CLIENT	: LODESTAR	PINNACLE ID	: 701173
PROJECT #	: (NONE)	DATE RECEIVED	: 01/26/2007
PROJECT NAME	: BLOOMFIELD CRUDE STN	REPORT DATE	: 02/27/2007

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
701173 - 01	MW-6	AQUEOUS	01/25/2007
701173 - 02	MW-7	AQUEOUS	01/25/2007
701173 - 03	MW-4	AQUEOUS	01/25/2007
701173 - 04	MW-3	AQUEOUS	01/25/2007
701173 - 05	MW-2	AQUEOUS	01/25/2007
701173 - 06	MW-5	AQUEOUS	01/25/2007
701173 - 07	25012007TB01	AQUEOUS	01/16/2007

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PINNACLE LABS
Environmental Testing

GENERAL CHEMISTRY RESULTS

CLIENT	: LODESTAR	PINNACLE I.D.	: 701173
PROJECT #	: (NONE)	DATE RECEIVED	: 01/26/2007
PROJECT NAME	: BLOOMFIELD CRUDE STN	ANALYST	: EEH

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE ANALYZED
01	MW-6	AQUEOUS	01/25/2007	01/26/2007
02	MW-7	AQUEOUS	01/25/2007	01/26/2007
03	MW-4	AQUEOUS	01/25/2007	01/26/2007

PARAMETER	MW-6	MW-7	MW-4
PH (150.1)	7.1	7.1	7.3
TEMPERATURE (°C)	17.8	17.1	17.7

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GENERAL CHEMISTRY RESULTS

CLIENT	: LODESTAR	PINNACLE I.D.	: 701173
PROJECT #	: (NONE)	DATE RECEIVED	: 01/26/2007
PROJECT NAME	: BLOOMFIELD CRUDE STN	ANALYST	: EEH

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE ANALYZED
04	MW-3	AQUEOUS	01/25/2007	01/26/2007
05	MW-2	AQUEOUS	01/25/2007	01/26/2007
06	MW-5	AQUEOUS	01/25/2007	01/30/2007

PARAMETER	MW-3	MW-2	MW-5
PH (150.1)	7.2	7.4	7.3
TEMPERATURE (°C)	17.6	17.2	17.9

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT	: LODESTAR	PINNACLE I.D.	: 701173
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN	DATE ANALYZED	: 01/26/2007

PARAMETER	PINNACLE I.D.	SAMPLE RESULT	DUP. RESULT	% RPD
PH (150.1)	701173-02	7.07	7.10	0
TEMPERATURE (°C)		17.1	17.4	

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT	: LODESTAR	PINNACLE I.D.	: 701173
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN	DATE ANALYZED	: 01/30/2007

PARAMETER	PINNACLE I.D.	SAMPLE RESULT	DUP. RESULT	% RPD
PH (ASTMD 4980-89)	701173-06	7.33	7.37	1
TEMPERATURE (°C)		17.9	17.9	

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE Labs
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : (NONE)
PROJECT NAME : BLOOMFIELD CRUDE STN

PINNACLE I.D. : 701173
ANALYST : DRK

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-6	AQUEOUS	01/25/2007	NA	02/01/2007	1
02	MW-7	AQUEOUS	01/25/2007	NA	02/01/2007	20
03	MW-4	AQUEOUS	01/25/2007	NA	02/01/2007	1

PARAMETER	DET. LIMIT	UNITS	MW-6	MW-7	MW-4
BENZENE	0.5	UG/L	< 0.5	**1200**	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 10	< 0.5
ETHYLBENZENE	0.5	UG/L	**3.6**	**450**	< 0.5
TOTAL XYLENES	2.0	UG/L	**9.1**	**2500**	< 2.0
SURROGATE:					
BROMOFLUOROBENZENE (%)			96	99	94
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
N/A

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www.pinnaclelabs.org www.pinnaclelabsonline.com

PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : (NONE)
PROJECT NAME : BLOOMFIELD CRUDE STN

PINNACLE I.D. : 701173
ANALYST : DRK

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	MW-3	AQUEOUS	01/25/2007	NA	02/01/2007	1
05	MW-2	AQUEOUS	01/25/2007	NA	02/08/2007	**5 - D1**
06	MW-5	AQUEOUS	01/25/2007	NA	02/01/2007	1

PARAMETER	DET. LIMIT	UNITS	MW-3	MW-2	MW-5
BENZENE	0.5	UG/L	**0.8**	**8.7**	< 0.5
TOLUENE	0.5	UG/L	< 0.5	**9.7**	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	**16**	< 0.5
TOTAL XYLENES	2.0	UG/L	< 2.0	**55**	< 2.0
SURROGATE:					
BROMOFLUOROBENZENE (%)			97	115	95
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
D1 = Dilution due to matrix interference.

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : (NONE)
PROJECT NAME : BLOOMFIELD CRUDE STN

PINNACLE I.D. : 701173
ANALYST : DRK

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
07	25012007TB01	AQUEOUS	01/16/2007	NA	**02/01/07-H1**	1

PARAMETER	DET. LIMIT	UNITS	25012007TB01
BENZENE	0.5	UG/L	< 0.5
TOLUENE	0.5	UG/L	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5
TOTAL XYLENES	2.0	UG/L	< 2.0

SURROGATE:
BROMOFLUOROBENZENE (%) 95
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
H1 = Trip Blank was run past the 14 day hold time.

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021B	PINNACLE I.D.	: 701173
BLANK I. D.	: 020107C	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 02/01/2007
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN	ANALYST	: DRK

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<2.0
SURROGATE:		
BROMOFLUOROBENZENE (%)		95
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021B	PINNACLE I.D.	: 701173
BLANK I. D.	: 020807B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 02/08/2007
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN	ANALYST	: DRK

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<2.0
SURROGATE:		
BROMOFLUOROBENZENE (%)		96
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

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PINNACLE LABS
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GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021B	PINNACLE I.D.	: 701173
BATCH ID	: 020107B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 02/01/2007
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.3	102	19.4	97	5	(80 - 120)	20
TOLUENE	<0.5	20.0	19.4	97	18.3	92	5	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.5	98	18.6	93	5	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	58.7	98	55.5	93	6	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021B	PINNACLE I.D.	: 701173
BATCH ID	: 020807B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 02/08/2007
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	19.9	100	20.5	102	3	(80 - 120)	20
TOLUENE	<0.5	20.0	19.1	95	19.7	98	3	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.3	96	19.9	99	3	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	57.8	96	59.7	100	3	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8021B	PINNACLE I.D.	: 701173
SAMPLE ID	: 701173-06	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 02/01/2007
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.2	101	19.9	99	2	(80 - 120)	20
TOLUENE	<0.5	20.0	19.3	96	18.9	95	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.5	98	19.1	95	2	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	58.6	98	57.3	95	2	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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Cation-Anion Balance Worksheet

Accession Number: 701173-01

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	678		
Chloride	57.5	0.02821	1.62208
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	3140	0.02082	65.37480
Carbonate	2.23	0.03333	0.07433
Bi-Carbonate	676	0.01639	11.07964
	Total Anions =		**78.1508409**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	529	0.04990	26.39710
Potassium	17.3	0.02558	0.44253
Magnesium	65.1	0.08229	5.35708
Sodium	1500	0.04350	65.25000
Copper		0.03147	0.00000
Iron	18.7	0.05372	1.00456
Manganese	13.8	0.03640	0.50232
Zinc		0.03059	0.00000
	Total Cations =		**98.953597**

Anion/Cation Balance (% difference) = 11.7%

Total Anions+Cations =	5748 mg/l	(calculated)
Total Dissolved Solids =	6070 mg/l	(measured)
TDS/ion sum ratio =	1.06	
Electrical Cond =	7460 umh/cm	(measured)
TDS/EC ratio =	0.814	

Cation-Anion Balance Worksheet

Accession Number: 701173-02

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	638		
Chloride	22.4	0.02821	0.63190
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	127	0.02082	2.64414
Carbonate	1.38	0.03333	0.04600
Bi-Carbonate	636	0.01639	10.42404
	Total Anions =		**13.7460794**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	161	0.04990	8.03390
Potassium	8.84	0.02558	0.22613
Magnesium	20.2	0.08229	1.66226
Sodium	126	0.04350	5.48100
Copper		0.03147	0.00000
Iron	32.4	0.05372	1.74053
Manganese	2.34	0.03640	0.08518
Zinc		0.03059	0.00000
	Total Cations =		**17.2289892**

Anion/Cation Balance (% difference) = 11.2%

Total Anions+Cations =	883 mg/l	(calculated)
Total Dissolved Solids =	858 mg/l	(measured)
TDS/ion sum ratio =	0.97	
Electrical Cond =	1460 umh/cm	(measured)
TDS/EC ratio =	0.588	

Cation-Anion Balance Worksheet

Accession Number: 701173-03

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	455		
Chloride	54.5	0.02821	1.53745
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	1730	0.02082	36.01860
Carbonate	1.17	0.03333	0.03900
Bi-Carbonate	454	0.01639	7.44106
	Total Anions =		**45.0361011**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	410	0.04990	20.45900
Potassium	12.1	0.02558	0.30952
Magnesium	43.3	0.08229	3.56316
Sodium	678	0.04350	29.49300
Copper		0.03147	0.00000
Iron	0.564	0.05372	0.03030
Manganese	5.73	0.03640	0.20857
Zinc		0.03059	0.00000
	Total Cations =		**54.0635451**

Anion/Cation Balance (% difference) =	9.1%	
Total Anions+Cations =	3207 mg/l	(calculated)
Total Dissolved Solids =	3690 mg/l	(measured)
TDS/ion sum ratio =	1.15	
Electrical Cond =	4700 umh/cm	(measured)
TDS/EC ratio =	0.785	

Cation-Anion Balance Worksheet

Accession Number: 701173-04

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	565		
Chloride	36.2	0.02821	1.02120
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	1920	0.02082	39.97440
Carbonate	1.92	0.03333	0.06399
Bi-Carbonate	563	0.01639	9.22757
	Total Anions =		**50.2871656**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	449	0.04990	22.40510
Potassium	10.3	0.02558	0.26347
Magnesium	43	0.08229	3.53847
Sodium	649	0.04350	28.23150
Copper		0.03147	0.00000
Iron	1.28	0.05372	0.06876
Manganese	0.413	0.03640	0.01503
Zinc		0.03059	0.00000
	Total Cations =		**54.5223388**

Anion/Cation Balance (% difference) =	4.0%	
Total Anions+Cations =	3448 mg/l	(calculated)
Total Dissolved Solids =	3750 mg/l	(measured)
TDS/ion sum ratio =	1.09	
Electrical Cond =	4780 umh/cm	(measured)
TDS/EC ratio =	0.785	

Cation-Anion Balance Worksheet

Accession Number: 701173-05

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	726		
Chloride	43.5	0.02821	1.22714
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	2460	0.02082	51.21720
Carbonate	2.57	0.03333	0.08566
Bi-Carbonate	726	0.01639	11.89914
	Total Anions =		**64.4291331**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	476	0.04990	23.75240
Potassium	12.5	0.02558	0.31975
Magnesium	59.5	0.08229	4.89626
Sodium	869	0.04350	37.80150
Copper		0.03147	0.00000
Iron	16.3	0.05372	0.87564
Manganese	5	0.03640	0.18200
Zinc		0.03059	0.00000
	Total Cations =		**67.827541**

Anion/Cation Balance (% difference) =	2.6%	
Total Anions+Cations =	4377 mg/l	(calculated)
Total Dissolved Solids =	4580 mg/l	(measured)
TDS/ion sum ratio =	1.05	
Electrical Cond =	5490 umh/cm	(measured)
TDS/EC ratio =	0.834	

Cation-Anion Balance Worksheet

Accession Number: 701173-06

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	915		
Chloride	884	0.02821	24.93764
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	1800	0.02082	37.47600
Carbonate	1.11	0.03333	0.03700
Bi-Carbonate	914	0.01639	14.98046
	Total Anions =		**77.4310963**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	621	0.04990	30.98790
Potassium	16.6	0.02558	0.42463
Magnesium	57.6	0.08229	4.73990
Sodium	896	0.04350	38.97600
Copper		0.03147	0.00000
Iron	0.503	0.05372	0.02702
Manganese	10.8	0.03640	0.39312
Zinc		0.03059	0.00000
	Total Cations =		**75.5485732**

Anion/Cation Balance (% difference) =	1.2%		
Total Anions+Cations =	4836	mg/l	(calculated)
Total Dissolved Solids =	4750	mg/l	(measured)
TDS/ion sum ratio =	0.98		
Electrical Cond =	6630	umh/cm	(measured)
TDS/EC ratio =	0.716		

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Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 23, 2007; Invoice: 34905

Report Summary

Date Received: Jan 30, 2007

FCL Project Manager: June S. Flowers

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
34905GW1	MW-6/701173-01	EPA300.0	YGS	Main Lab	Ground Water
34905GW2	MW-7/701173-02	EPA300.0	YGS	Main Lab	Ground Water
34905GW3	MW-4/701173-03	EPA300.0	YGS	Main Lab	Ground Water
34905GW4	MW-3/701173-04	EPA300.0	YGS	Main Lab	Ground Water
34905GW5	MW-2/701173-05	EPA300.0	YGS	Main Lab	Ground Water
34905GW6	MW-5/701173-06	EPA300.0	YGS	Main Lab	Ground Water

Certificate of Results

Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.

Jefferson S. Flowers, Ph.D.
President/Technical Director

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Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 23, 2007; Invoice: 34905

Analysis Report

Lab #: 34905GW1 Sampled: 01/25/07 09:55 AM Desc: MW-6/701173-01

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	57.5	mg/L	50.0	20.0	40.0	10079580	EPA300.0	16887-00-6	02/22/07
Sulfate	3140	mg/L	500	500	1000	10079581	EPA300.0	14808-79-8	02/22/07

Lab #: 34905GW2 Sampled: 01/25/07 10:58 AM Desc: MW-7/701173-02

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	22.4 I	mg/L	50.0	20.0	40.0	10079580	EPA300.0	16887-00-6	02/22/07
Sulfate	127	mg/L	50.0	50.0	100	10079581	EPA300.0	14808-79-8	02/22/07

Lab #: 34905GW3 Sampled: 01/25/07 12:00 PM Desc: MW-4/701173-03

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	54.5	mg/L	50.0	20.0	40.0	10079580	EPA300.0	16887-00-6	02/22/07
Sulfate	1730	mg/L	500	500	1000	10079581	EPA300.0	14808-79-8	02/22/07

Lab #: 34905GW4 Sampled: 01/25/07 12:27 PM Desc: MW-3/701173-04

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	36.2 I	mg/L	50.0	20.0	40.0	10079580	EPA300.0	16887-00-6	02/22/07
Sulfate	1920	mg/L	500	500	1000	10079581	EPA300.0	14808-79-8	02/22/07

Lab #: 34905GW5 Sampled: 01/25/07 01:01 PM Desc: MW-2/701173-05

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	43.5	mg/L	50.0	20.0	40.0	10079580	EPA300.0	16887-00-6	02/22/07
Sulfate	2460	mg/L	500	500	1000	10079581	EPA300.0	14808-79-8	02/22/07

Lab #: 34905GW6 Sampled: 01/25/07 01:50 PM Desc: MW-5/701173-06

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	884	mg/L	500	200	400	10079580	EPA300.0	16887-00-6	02/22/07
Sulfate	1800	mg/L	50.0	50.0	100	10079581	EPA300.0	14808-79-8	02/22/07

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2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 23, 2007; Invoice: 34905

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Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 23, 2007; Invoice: 34905

Quality Report

Quality Control Batch: 10079580 **Analyst:** YGS

Blank	Result	Units
Chloride	0.400U	mg/L

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
Chloride	2.22	mg/L	2.00	111.20	52.77-140.31

Matrix Spike	Result	Units	Spike	%REC	%REC Lim	Sample
Chloride	15.5	mg/L	2.00	133.58	42.48-154.56	12.8

Matrix Spike Duplicate	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Chloride	16.0	mg/L	2.00	158.94	42.48-154.56	12.8	3.22	24.51

Quality Control Batch: 10079581 **Analyst:** YGS

Blank	Result	Units
Sulfate	1.00U	mg/L

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
Sulfate	1.97	mg/L	2.00	98.42	42.49-136.21

Matrix Spike	Result	Units	Spike	%REC	%REC Lim	Sample
Sulfate	25.8	mg/L	0.500	109.42	27.47-150.89	25.3

Matrix Spike Duplicate	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Sulfate	25.5	mg/L	0.500	44.00	27.47-150.89	25.3	1.27	21.69

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Albuquerque,NM 87107

PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 23, 2007; Invoice: 34905

Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted. Sample results reported as dissolved were field filtered.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	One or more QC samples associated with this data value exceeded QC limits.
J1	Surrogate recovery limits have been exceeded.
J2	No known quality control criteria exist for the component.
J3	Reported value failed to meet established quality control criteria for either precision or accuracy.
J4	Sample matrix interfered with the ability to make an accurate determination on the spiked sample.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
ZTNTC	Too numerous to count. Numeric value represents filtration volume.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

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Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 7, 2007; Invoice: 33153

Report Summary

Date Received: Jan 30, 2007

FCL Project Manager: June S. Flowers

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
33153GW1	MW-6/701173-01	EPA120.1	LCC	Main Lab	Ground Water
		EPA160.1	RMV	Main Lab	
		EPA200.7	EVB	Main Lab	
		EPA310.1	LCC	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2340B	EVB	Main Lab	
33153GW2	MW-7/701173-02	EPA120.1	LCC	Main Lab	Ground Water
		EPA160.1	RMV	Main Lab	
		EPA200.7	EVB	Main Lab	
		EPA310.1	LCC	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2340B	EVB	Main Lab	
33153GW3	MW-4/701173-03	EPA120.1	LCC	Main Lab	Ground Water
		EPA160.1	RMV	Main Lab	
		EPA200.7	EVB	Main Lab	
		EPA310.1	LCC	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2340B	EVB	Main Lab	
33153GW4	MW-3/701173-04	EPA120.1	LCC	Main Lab	Ground Water
		EPA160.1	RMV	Main Lab	
		EPA200.7	EVB	Main Lab	
		EPA310.1	LCC	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2340B	EVB	Main Lab	
33153GW5	MW-2/701173-05	EPA120.1	LCC	Main Lab	Ground Water
		EPA160.1	RMV	Main Lab	
		EPA200.7	EVB	Main Lab	
		EPA310.1	LCC	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2340B	EVB	Main Lab	
33153GW6	MW-5/701173-06	EPA120.1	LCC	Main Lab	Ground Water
		EPA160.1	RMV	Main Lab	
		EPA200.7	EVB	Main Lab	
		EPA310.1	LCC	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2340B	EVB	Main Lab	

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PO #: 701173
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Date Sampled: Jan 25, 2007
Feb 7, 2007; Invoice: 33153

Certificate of Results

Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.

Jefferson S. Flowers, Ph.D.
President/Technical Director

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PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 7, 2007; Invoice: 33153

Analysis Report

Lab #: 33153GW1 Sampled: 01/25/07 09:55 AMDesc: MW-6/701173-01

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Bicarbonate Alkalinity	676	mg/L	5.00	0.500	1.00	10078340	EPA310.1	E1640226	01/31/07
Carbonate Alkalinity	2.23	mg/L	5.00	0.500	1.00	10078340	EPA310.1	3812-32-6	01/31/07
Total Alkalinity CaCO3	678	mg/L	5.00	0.500	1.00	10078340	EPA310.1	T-005	01/31/07
TDS	6070	mg/L	1.00	2.50	5.00	10078394	EPA160.1	10-33-3	01/31/07
Calcium Hardness CaCO3	1320	mg/L	1.00			10078474	EPA200.7		02/01/07
Magnesium Hardness CaCO3	268	mg/L	1.00			10078474	EPA200.7		02/01/07
Calcium	529	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-70-2	02/01/07
Iron	18.7	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-89-6	02/01/07
Magnesium	65.1	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-95-4	02/01/07
Manganese	13.8	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-96-5	02/01/07
Potassium	17.3	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-09-7	02/01/07
Sodium	1500	mg/L	1.00	0.500	1.00	10078474	EPA6010	7440-23-5	02/01/07
Total Hardness (as CaCO3)	1590	mg/L	1.00	0.100	0.200	10078476	SM2340B	40-11-9	02/01/07
Specific_Conductance	7460	umhos/cm	1.00	1.00	2.00	10078622	EPA120.1	10-34-4	02/02/07

Lab #: 33153GW2 Sampled: 01/25/07 10:58 AMDesc: MW-7/701173-02

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Bicarbonate Alkalinity	636	mg/L	5.00	0.500	1.00	10078340	EPA310.1	E1640226	01/31/07
Carbonate Alkalinity	1.38	mg/L	5.00	0.500	1.00	10078340	EPA310.1	3812-32-6	01/31/07
Total Alkalinity CaCO3	638	mg/L	5.00	0.500	1.00	10078340	EPA310.1	T-005	01/31/07
TDS	858	mg/L	1.00	2.50	5.00	10078394	EPA160.1	10-33-3	01/31/07
Calcium Hardness CaCO3	402	mg/L	1.00			10078474	EPA200.7		02/01/07
Magnesium Hardness CaCO3	83.4	mg/L	1.00			10078474	EPA200.7		02/01/07
Calcium	161	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-70-2	02/01/07
Iron	32.4	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-89-6	02/01/07
Magnesium	20.2	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-95-4	02/01/07
Manganese	2.34	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-96-5	02/01/07

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Feb 7, 2007; Invoice: 33153

Lab #: 33153GW2 Sampled: 01/25/07 10:58 AMDesc: MW-7/701173-02

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Potassium	8.84	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-09-7	02/01/07
Sodium	126	mg/L	1.00	0.500	1.00	10078474	EPA6010	7440-23-5	02/01/07
Total Hardness (as CaCO3)	485	mg/L	1.00	0.100	0.200	10078476	SM2340B	40-11-9	02/01/07
Specific_Conductance	1460	umhos/cm	1.00	1.00	2.00	10078622	EPA120.1	10-34-4	02/02/07

Lab #: 33153GW3 Sampled: 01/25/07 12:00 PMDesc: MW-4/701173-03

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Bicarbonate Alkalinity	454	mg/L	1.00	0.100	0.200	10078340	EPA310.1	E1640226	01/31/07
Carbonate Alkalinity	1.17	mg/L	1.00	0.100	0.200	10078340	EPA310.1	3812-32-6	01/31/07
Total Alkalinity CaCO3	455	mg/L	1.00	0.100	0.200	10078340	EPA310.1	T-005	01/31/07
TDS	3690	mg/L	1.00	2.50	5.00	10078394	EPA160.1	10-33-3	01/31/07
Calcium Hardness CaCO3	1020	mg/L	1.00			10078474	EPA200.7		02/01/07
Magnesium Hardness CaCO3	178	mg/L	1.00			10078474	EPA200.7		02/01/07
Calcium	410	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-70-2	02/01/07
Iron	0.564	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-89-6	02/01/07
Magnesium	43.3	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-95-4	02/01/07
Manganese	5.73	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-96-5	02/01/07
Potassium	12.1	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-09-7	02/01/07
Sodium	678	mg/L	1.00	0.500	1.00	10078474	EPA6010	7440-23-5	02/01/07
Total Hardness (as CaCO3)	1200	mg/L	1.00	0.100	0.200	10078476	SM2340B	40-11-9	02/01/07
Specific_Conductance	4700	umhos/cm	1.00	1.00	2.00	10078622	EPA120.1	10-34-4	02/02/07

Lab #: 33153GW4 Sampled: 01/25/07 12:27 PMDesc: MW-3/701173-04

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Bicarbonate Alkalinity	563	mg/L	1.00	0.100	0.200	10078340	EPA310.1	E1640226	01/31/07
Carbonate Alkalinity	1.92	mg/L	1.00	0.100	0.200	10078340	EPA310.1	3812-32-6	01/31/07
Total Alkalinity CaCO3	565	mg/L	1.00	0.100	0.200	10078340	EPA310.1	T-005	01/31/07
TDS	3750	mg/L	1.00	2.50	5.00	10078394	EPA160.1	10-33-3	01/31/07
Calcium Hardness CaCO3	1120	mg/L	1.00			10078474	EPA200.7		02/01/07

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Lab #: 33153GW4 Sampled: 01/25/07 12:27 PMDesc: MW-3/701173-04

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Magnesium Hardness CaCO3	177	mg/L	1.00			10078474	EPA200.7		02/01/07
Calcium	449	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-70-2	02/01/07
Iron	1.28	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-89-6	02/01/07
Magnesium	43.0	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-95-4	02/01/07
Manganese	0.413	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-96-5	02/01/07
Potassium	10.3	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-09-7	02/01/07
Sodium	649	mg/L	1.00	0.500	1.00	10078474	EPA6010	7440-23-5	02/01/07
Total Hardness (as CaCO3)	1300	mg/L	1.00	0.100	0.200	10078476	SM2340B	40-11-9	02/01/07
Specific_Conductance	4780	umhos/cm	1.00	1.00	2.00	10078622	EPA120.1	10-34-4	02/02/07

Lab #: 33153GW5 Sampled: 01/25/07 01:01 PMDesc: MW-2/701173-05

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Bicarbonate Alkalinity	724	mg/L	5.00	0.500	1.00	10078340	EPA310.1	E1640226	01/31/07
Carbonate Alkalinity	2.57	mg/L	5.00	0.500	1.00	10078340	EPA310.1	3812-32-6	01/31/07
Total Alkalinity CaCO3	726	mg/L	5.00	0.500	1.00	10078340	EPA310.1	T-005	01/31/07
TDS	4580	mg/L	1.00	2.50	5.00	10078394	EPA160.1	10-33-3	01/31/07
Calcium Hardness CaCO3	1190	mg/L	1.00			10078474	EPA200.7		02/01/07
Magnesium Hardness CaCO3	245	mg/L	1.00			10078474	EPA200.7		02/01/07
Calcium	476	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-70-2	02/01/07
Iron	16.3	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-89-6	02/01/07
Magnesium	59.5	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-95-4	02/01/07
Manganese	5.00	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-96-5	02/01/07
Potassium	12.5	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-09-7	02/01/07
Sodium	869	mg/L	1.00	0.500	1.00	10078474	EPA6010	7440-23-5	02/01/07
Total Hardness (as CaCO3)	1430	mg/L	1.00	0.100	0.200	10078476	SM2340B	40-11-9	02/01/07
Specific_Conductance	5490	umhos/cm	1.00	1.00	2.00	10078622	EPA120.1	10-34-4	02/02/07

Lab #: 33153GW6 Sampled: 01/25/07 01:50 PMDesc: MW-5/701173-06

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed

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Lab #: 33153GW6 Sampled: 01/25/07 01:50 PM Desc: MW-5/701173-06

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Bicarbonate Alkalinity	914	mg/L	1.00	0.100	0.200	10078340	EPA310.1	E1640226	01/31/07
Carbonate Alkalinity	1.11	mg/L	1.00	0.100	0.200	10078340	EPA310.1	3812-32-6	01/31/07
Total Alkalinity CaCO3	915	mg/L	1.00	0.100	0.200	10078340	EPA310.1	T-005	01/31/07
TDS	4750	mg/L	1.00	2.50	5.00	10078394	EPA160.1	10-33-3	01/31/07
Calcium Hardness CaCO3	1550	mg/L	1.00			10078474	EPA200.7		02/01/07
Magnesium Hardness CaCO3	237	mg/L	1.00			10078474	EPA200.7		02/01/07
Calcium	621	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-70-2	02/01/07
Iron	0.503	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-89-6	02/01/07
Magnesium	57.6	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-95-4	02/01/07
Manganese	10.8	mg/L	1.00	0.0100	0.0200	10078474	EPA6010	7439-96-5	02/01/07
Potassium	16.6	mg/L	1.00	0.100	0.200	10078474	EPA6010	7440-09-7	02/01/07
Sodium	896	mg/L	1.00	0.500	1.00	10078474	EPA6010	7440-23-5	02/01/07
Total Hardness (as CaCO3)	1790	mg/L	1.00	0.100	0.200	10078476	SM2340B	40-11-9	02/01/07
Specific_Conductance	6630	umhos/cm	1.00	1.00	2.00	10078622	EPA120.1	10-34-4	02/02/07

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Quality Report

Quality Control Batch: 10078340	Analyst: LCC				
Blank	**Result**	**Units**			
Total Alkalinity CaCO3	0.100U	mg/L			
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Total Alkalinity CaCO3	107	mg/L	100	107.36	63.23-132.71

Quality Control Batch: 10078394	Analyst: RMV				
Blank	**Result**	**Units**			
TDS	2.50U	mg/L			
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
TDS	1510	mg/L	1500	100.93	55.54-137.56

Quality Control Batch: 10078474	Analyst: EVB				
Blank	**Result**	**Units**			
Calcium	0.100U	mg/L			
Iron	0.0100U	mg/L			
Magnesium	0.0100U	mg/L			
Manganese	0.0100U	mg/L			
Potassium	0.100U	mg/L			
Sodium	0.500U	mg/L			
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Calcium	2.05	mg/L	2.00	102.52	49.09-141.67
Iron	2.00	mg/L	2.00	100.01	49.43-140.21
Magnesium	2.08	mg/L	2.00	103.84	49.57-140.35

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Quality Control Batch: 10078474 **Analyst: EVB**

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
Magnesium Hardness CaCO3	8.55	mg/L	8.24	103.84	80.00-120.00
Manganese	2.15	mg/L	2.00	107.50	49.43-140.21
Potassium	2.14	mg/L	2.00	107.23	49.54-140.32
Sodium	1.86	mg/L	2.00	92.90	49.43-140.21

Matrix Spike	Result	Units	Spike	%REC	%REC Lim	Sample
Calcium	489	mg/L	5.00	268.04	47.68-150.22	476
Iron	21.7	mg/L	5.00	97.41	50.64-148.50	16.8
Magnesium	64.5	mg/L	5.00	117.85	50.43-149.01	58.6
Manganese	17.6	mg/L	5.00	105.20	50.64-148.50	12.4
Potassium	20.7	mg/L	5.00	102.51	50.49-148.89	15.6
Sodium	1350	mg/L	5.00	50.40	50.64-148.50	1350

Matrix Spike Duplicate	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Calcium	477	mg/L	5.00	21.64	47.68-150.22	476	2.55	20.54
Iron	22.3	mg/L	5.00	109.88	50.64-148.50	16.8	2.83	19.70
Magnesium	65.1	mg/L	5.00	129.25	50.43-149.01	58.6	0.88	19.72
Manganese	18.3	mg/L	5.00	117.92	50.64-148.50	12.4	3.54	19.70
Potassium	21.7	mg/L	5.00	123.06	50.49-148.89	15.6	4.85	19.72
Sodium	1350	mg/L	5.00	97.40	50.64-148.50	1350	0.17	19.70

Quality Control Batch: 10078476 **Analyst: EVB**

Blank	Result	Units
Total Hardness (as CaCO3)	0.100U	mg/L

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
Total Hardness (as CaCO3)	13.7	mg/L	13.2	103.34	62.28-133.26

FLOWERS CHEMICAL LABORATORIES INC.
P.O. Box 150597, Altamonte Springs FL 32715-0597 Phone 407-339-5984 Fax 407-260-6110 www.flowerslabs.com
8253 South U.S. Highway 1, Port St. Lucie FL 34952-2860 Phone 772-343-8006 Fax 772-343-8089
P.O. Box 1200, Madison FL 32341 Phone 850-973-6878 Fax 850-973-6878

Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 701173
Client Project #: LODE
Date Sampled: Jan 25, 2007
Feb 7, 2007; Invoice: 33153

Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted. Sample results reported as dissolved were field filtered.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	One or more QC samples associated with this data value exceeded QC limits.
J1	Surrogate recovery limits have been exceeded.
J2	No known quality control criteria exist for the component.
J3	Reported value failed to meet established quality control criteria for either precision or accuracy.
J4	Sample matrix interfered with the ability to make an accurate determination on the spiked sample.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
ZTNTC	Too numerous to count. Numeric value represents filtration volume.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

Pinnacle Laboratories, Inc.

Interlab Chain of Custody

Date: 1/29/07 Page: 1 of 1

Network Project Manager: Jatinta Tenorio

Pinnacle Laboratories, Inc.
2709-D Pan American Freeway, NE
Albuquerque, NM 87107
(505) 344-3777 Fax (505) 344-4413

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Metals (8) RCRA	TCLP RCRA (8) Metals	Metals-13 PP List	Metals-TAL (23 Metals)	Dissolved Fe, Mn, Pb (6010)	Hardness	Metals: Ca, Mg, K, Na, Mn, Fe	Gen Chemistry:	Alkalinity + Bicarb/Carb/OH,	TDS, Conductivity	Volatile Organics GC/MS (8260)	BOD	COD	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	PNA (8310)/8270 SIMS	8260 (TCLP 1311) ZHE		Base/Neutral Acid Compounds GC/MS (625/8270)	Uranium (ICP-MS)	Radium 226+228	Gross Alpha/Beta	TO-14	NUMBER OF CONTAINERS
MW-6/701173-01	1/26/07	0955	GW	33153	GW		1			X	X		X	X													
MW-7/701173-02		1058					2																				
MW-4/701173-03		1200					3																				
MW-3/701173-04		1227					4																				
MW-2/701173-05		1301					5																				
MW-5/701173-06		1350					6																				

PROJECT INFORMATION	SAMPLE RECEIPT	SAMPLES SENT TO:	RELINQUISED BY: 1.	RELINQUISED BY: 2.
PROJECT #: 701173	Total Number of Containers	PENSACOLA - STL-FL	Signature: Greg M. Sexton Time: 1700	Signature: Time:
PROJ. NAME: LODE	Chain of Custody Seals	ESL - OR	Printed Name: Greg M. Sexton Date: 1/29/07	Printed Name: Date:
QC LEVEL: (STD) IV	Received Intact?	ATEL - AZ	Pinnacle Laboratories, Inc.	Company
QC REQUIRED: MS MSD BLANK	Received Good Cond./Cold	ATEL - MARION	RECEIVED BY: 1.	RECEIVED BY: 2.
TAT: (STANDARD) RUSH!!	LAB NUMBER:	ATEL - MELMORE	Signature: Time:	Signature: Time: 0956
DUE DATE: 2/13/07	COMMENTS:	FCL X	Printed Name: Date:	Printed Name: Date: 1/30/07
RUSH SURCHARGE: -		EHL	Company	Company
CLIENT DISCOUNT: -		GEL		
SPECIAL CERTIFICATION REQUIRED: YES (NO)	1.3°C	WCAS		
		WOHL		

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 01-25-07 PAGE: 1 OF 1

PLI Accession #: 20173

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Martin Nee

COMPANY: Lodestar Services
ADDRESS: 26 CR 3500
Flora Vista, NM 87415
PHONE: 505 334 2791 5053269675
FAX:

BILL TO: Bill Robertson
COMPANY: Giant Industries Az, Inc.
ADDRESS: 111 CR 4990
Bloomfield, NM 87413

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐MTBE ☐TMB ☐PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐/DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics ☐PBMS	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry: EC, Alk, Cl, TDS	cations, anions, Cl, SO4, pH	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method1311)	Metals: Ca, Mg, K, Na, Fe, Mn	Hardness	NUMBER OF CONTAINERS
MW-6	01-25-07	0955	WG	01					✓														✓	✓					✓	✓	3
MW-7	01-25-07	1058	WG	02					✓														✓	✓					✓	✓	3
MW-4	01-25-07	1200	WG	03					✓														✓	✓					✓	✓	3
MW-3	01-25-07	1227	WG	04					✓														✓	✓					✓	✓	3
MW-2	01-25-07	1301	WG	05					✓														✓	✓					✓	✓	3
MW-5	01-25-07	1350	WG	06					✓														✓	✓					✓	✓	3
25012007TB01	01-16-07 01-25-07	0946 0700 08	WG	07					✓																						1

WEEKEND ANALYSES MAY RESULT IN AN ADDITIONAL SURCHARGE - PLEASE INQUIRE.

PROJECT INFORMATION

PROJ. NO.:
PROJ. NAME: Bloomfield Crude Stn
P.O. NO.:
SHIPPED VIA: UPS

SAMPLE RECEIPT

NO CONTAINERS	21
CUSTODY SEALS	Y / N (NA)
RECEIVED INTACT	Y8
BLUE ICE/ICE	4.0°C

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐24hr* ☐48hr* ☐72hr* ☐ 1 WEEK (NORMAL) ☒
*NOT AVAILABLE ON ALL ANALYSES

CERTIFICATION REQUIRED ☐ NM ☐ SDWA ☐ AZ ☐ OTHER

METHANOL PRESERVATION ☐ | METALS ☐ TOTAL ☐ DISSOLVED

COMMENTS:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Ashley Ager Time: 15:30	Signature: Time:
Printed Name: Ashley L. Ager Date: 01-25-07	Printed Name: Date:
Company: Lodestar Services	Company:
See Reverse side (Force Majeure)	
RECEIVED BY: 1	**RECEIVED BY: (LAB) 2**
Signature: Time:	Signature: Time: 1300
Printed Name: Date:	Printed Name: Greg M Sutton Date: 1/26/07
Company:	Pinnacle Laboratories Inc.

Appendix B

Sparge Well Installation Logs

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (505) 334-2791

MONITORING WELL INSTALLATION RECORD

Borehole # 1
Well #
Page 1 of 1

Lodestar Services, Inc
PO Box 3861
Farmington, New Mexico 87499
(505) 334-2791

Project Name: Air Sparge Well Installation
Project Number: Cost Code:
Project Location: Bloomfield Crude Station

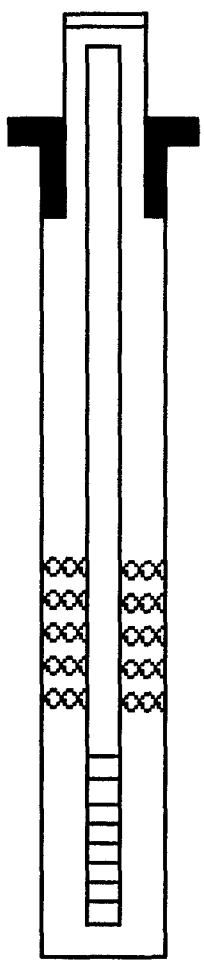
Elevation:
Well Location:
GWL Depth: 14.9
Installed By: Envirotech

On-Site Geologist: Ashley Ager
Personnel On-Site:
Contractors On-Site: Kelly Padilla and assistant
Client Personnel On-Site:

Date/Time Started: 10/09/06, 13:00
Date/Time Completed: 10/09/06, 15:30

Depths in Reference to Ground Surface

Item	Material	Depth (feet)
Top of Protective Casing	Steel	NA
Bottom of Protective Casing		NA
Top of Permanent Borehole Casing	Sch. 40 PVC	2.5
Bottom of Permanent Borehole Casing		-25
Top of Concrete		NA
Bottom of Concrete		NA
Top of Grout		0
Bottom of Grout		-12
Top of Well Riser	Sch. 40 PVC	2.5
Bottom of Well Riser		-23.9
Top of Well Screen	Sch. 40 PVC	-23.9
Bottom of Well Screen		-24.9
Top of Peltonite Seal	Bentonite Pods	-12
Bottom of Peltonite Seal		-22
Top of Gravel Pack	Sand	-22
Bottom of Gravel Pack		-25
Top of Natural Cave-In		NA
Bottom of Natural Cave-In		NA
Top of Groundwater		-14.9
Total Depth of Borehole		-25



Top of Protective Casing NA
Top of Riser 2.5
Ground Surface 0
Top of Seal -12
Top of Gravel Pack -22
Top of Screen -23.9
Bottom of Screen -24.9
Bottom of Borehole -25

Comments: 50 lb bags of sand used: 2.5 ea. , 3 gal bucket of bentonite used: 1ea., 50 lb bag of grout used: 3 ea.

Geologist Signature *Ashley L. Ager*

C:\Documents and Settings\Owner\My Documents\Ashley\LodeStar\Giant\Bloomfield Crude Station\Air Sparge\monitoring well install_Bloomfield Crude Stn.doc

RECORD OF SUBSURFACE EXPLORATION

LodeStar Services
P.O. Box 4465
Durango, CO 81302
303-917-6288

Borehole #: 1
Well #:
Page: 2 of 2
Project Number:
Project Name: Air Sparge Well Installation
Project Location: Bloomfield Crude Station

Borehole Location:
GWL Depth: 14.9
Drilled By: Envirotech
Well Logged By: Ashley Ager
Date Started: 10/9/2006
Date Completed: 10/9/2006

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Depth (feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description	Air Monitoring	Drilling Conditions
20		22-25'	cuttings	Dark gray silty clay, saturated	422	Fast
25						
30						
35						
40						

Comments:

Geologist Signature: Ashley L. Ager

RECORD OF SUBSURFACE EXPLORATION

LodeStar Services
P.O. Box 4465
Durango, CO 81302
303-917-6288

Borehole #: 1
Well #:
Page: 1 of 2
Project Number:
Project Name: Air Sparge Well Installation
Project Location: Bloomfield Crude Station

Borehole Location:
GWL Depth: 14.9
Drilled By: Envirotech
Well Logged By: Ashley Ager
Date Started: 10/9/2006
Date Completed: 10/9/2006

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Depth (feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description	Air Monitoring	Drilling Conditions
0		0-7'	cuttings	Brown, poorly sorted, coarse sand w/gravel. Damp (b/c of recent rain)	0	Fast
5						
		7-9'	cuttings	Dark brown, poorly sorted coarse sand, dry, no gravel	0	Fast
10		9-22'	cuttings	Brownish gray, silty clay, damp	365	Fast
15				15' = wet, saturated silt		
20						

Comments:

Geologist Signature: Ashley L. Ager

Appendix C

Bioventing Data Tables

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (505) 334-2791

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (per cent)

	2/10/03	2/17/03 1332 hours	2/17/03 1601 hours	2/18/03	2/19/03	2/21/03	2/24/03	2/25/03	3/5/03	3/19/03	10/21/03	1/20/04	Average Concentration During Operations	Percentage of Pretest Reading
IP10	1.8	5.8	5.4	7.6	6	5.6	7.8	7.8	5.4	8.8	11.5	0	6.52	362%
IP11	0	0	0	0	0	0	0	0	0	0	10	1.3	1.03	
IP13	0.2	0.2	2	1.8	1.4	2	1.8	1.8	2.9	2.6	0.4	2.2	1.74	868%
IP14	1	2.8	9.2	2.8	7.4	9.4	4.2	6.6	7.2	5.4	9.6	10.6	6.84	684%
IP15	0.8	0.2	2.4	1.2	0	0	0	0.8	0.6	0.8	1.8	5.5	1.21	151%
IP17	1	0.6	1	1	1.2	0.8	1	0.8	0.8	1.2	2.2	1.5	1.10	110%
IP19	0.4	1.4	1.8	1.2	1.6	1	1.8	1.6	1.6	0.2	0.8	0.6	1.24	309%
IP20	0.6	3.2	3.2	3.6	3.8	4.2	4.8	4.6	5.8	8	15.2	13.6	6.36	1061%
IP21	1.4	0.6	1	0.8	1	0.6	0.8	1	1.2	2	0.9	3.3	1.20	86%
IP22	0.4	1	1	1.2	0.8	0.2	0.8	1	1.2	1.6	0	1.5	0.94	234%
IP23	0.6	0.4	0.8	0.6	0.6	0.4	0.6	0.6	0.6	1	0.5	1.2	0.66	111%
IP8	0.8	10.8	14.2	13	14.4	13.4	6.2	14	14.6	15.8	17.1	14.2	13.43	1678%
MP14	1	3.6	3.6	3	3.4	3.4	2.2	2.8	3.2	4	1.1	6.4	3.34	334%
MP15	0.6	2	1.2	2.4	1.8	1.4	1.6	2	2.2	2.2	1.5	1.7	1.82	303%
MP16	0.06	0.8	1.4	1	1.2	0.8	1.2	1.2	1	1.4	0.4	0.3	0.97	1621%
MP4	1.2	10.4	11.4	10.4	11	11	10	10.6	10.2	12	20	15.5	12.05	1004%
MP7	1.4	4.4	7	7.8	8.2	5.6	5.4	4.4	7.2	8.4	3.2	0	5.60	400%
MP9	1	1.2	1.8	1.6	2	1.2	1.2	1.4	1.6	2	4	2.8	1.89	189%
Ave.	0.79	2.74	3.80	3.39	3.66	3.39	2.86	3.50	3.74	4.30	5.57	4.57	3.77	559%

System was started on 2/17/03 0900 hrs

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (per cent)

	4/29/04	7/28/04	10/19/04	1/12/05	Average Concentration During 2004	Percentage of Pretest Reading	Percentage of 2003 Reading
IP10	7.6	15.9	12.9	7.4	10.95	608%	168%
IP11	1.3	15.0	23.3	8.0	11.90		1158%
IP13	1.4	0.3	2.5	1.3	1.38	688%	79%
IP14	12.5	4.3	7.0	16.4	10.05	1005%	147%
IP15	0.0	1.2	0.1	0.0	0.33	41%	27%
IP17	1.3	0.7	1.2	1.8	1.25	125%	114%
IP19	na	na	na	3.5	3.50	875%	283%
IP20	12.6	2.6	10.9	7.5	8.40	1400%	132%
IP21	2.8	1.9	2.7	1.4	2.20	157%	183%
IP22	1.8	1.9	2.0	1.7	1.85	463%	198%
IP23	0.6	1.2	0.5	na	0.77	128%	116%
IP8	9.5	0.2	17.1	15.5	10.58	1322%	79%
MP14	7.3	2.4	13.5	8.7	7.98	798%	239%
MP15	2.1	3.8	3.0	5.8	3.68	613%	202%
MP16	0.9	2.5	0.4	1.8	1.40	2333%	144%
MP4	12.8	2.6	26.9	15.5	14.45	1204%	120%
MP7	7.2	0.7	16.9	8.2	8.25	589%	147%
MP9	0.2	2.1	1.4	0.2	0.98	98%	52%
Ave.	**4.55**	**3.29**	**7.91**	**5.82**	5.55	732%	199%

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (per cent)

	4/20/06	7/25/06	10/25/06	1/31/07	Average Concentration During 2006	Percentage of Pretest Reading	Percentage of 2005 Reading
IP1		6.5	0.5	2.0	3.0		
IP5		1.4	6.6	0.7	2.9		
IP6		11.2	6.1	5.6	7.6		
IP7		14	15.1	3.4	10.8		
IP8	14.4				14.4	1800%	411%
IP10	5.9	21	24.6	5.0	14.13	785%	290%
IP11		1.3			1.3		29%
IP12		1.1	2.9	1.9	2.0		
IP13	0.1	1.3	5.7	1.6	2.2	1086%	105%
IP14	4.8	1.9	7.8	4.5	4.8	475%	35%
IP15	0.1	0	1.5	0.6	0.6	69%	117%
IP17	0.2	0.9	1.9	1.1	1.0	103%	48%
IP18		0	7.5	1.7	3.1		
IP19	0.1	0	1.6	2.0	0.9	231%	39%
IP20	2.9	0	2.5	1.7	1.8	296%	31%
IP21	1.4	0	1.3	0.7	0.9	61%	21%
IP22	0.2	0.5	3.0	0.8	1.1	281%	48%
IP23	0.2	0	2.5	0.9	0.9	150%	44%
MP1		6.8	4.0	8.7	6.5		
MP4	14.9				14.9	350%	235%
MP6		1.5	8.6	5.1	5.1		
MP7	0.7				0.7	50%	17%
MP8		2.5	10.9	1.9	5.1		
MP9	0.3	1.2	2.7	0.9	1.3	128%	85%
MP10		1.8	6.5	4.6	4.3		
MP12		0	1.1	2.7	1.3		
MP13		0	3.2	3.4	2.2		
MP14	2.5	3	6.3	2.2	3.5	350%	66%
MP15	0.2	0	5.6	0.2	1.5	250%	44%
MP16	0.2	0	2.9	1.7	1.2	2000%	84%
Ave.	**2.8**	**2.9**	**5.5**	**2.5**	**3.4**	430%	114%

Blank data indicates the point was an injection point not a monitoring point at this time during the project

Bioventing Data Table: Oxygen Concentrations in Monitoring Points (per cent)

	2/10/03	2/17/03 1332 hrs	2/17/03 1601hrs	2/18/03	2/19/03	2/21/03	2/24/03	2/25/03	3/5/03	3/19/03	10/21/04	1/20/04	Average Concentration During Operations	Percentage of Pretest Reading
IP10	17.20	2.00	5.50	0.90	2.80	2.90	0.90	0.90	6.00	1.00	10.10	1.60	3.15	18%
IP11	20.90	20.90	20.90	20.90	20.90	20.90	20.90	20.90	20.00	20.90	9.20	18.20	19.51	93%
IP13	20.90	20.60	18.40	18.60	19.60	18.00	18.60	18.60	17.90	16.70	20.50	17.30	18.62	89%
IP14	19.90	15.70	1.70	14.70	5.60	0.90	10.40	6.50	3.10	3.30	0	1.60	5.77	29%
IP15	20.90	20.90	20.70	17.30	20.90	20.90	20.90	20.70	20.40	20.80	18.70	18.60	20.07	96%
IP17	20.90	20.60	20.80	20.30	20.60	20.90	20.90	20.80	20.70	20.40	19.60	19.20	20.44	98%
IP19	20.90	18.30	18.80	18.90	18.80	20.20	19.20	19.10	18.00	20.90	20.40	19.40	19.27	92%
IP20	20.50	14.00	14.00	13.30	10.40	2.20	3.20	3.00	2.20	0.90	0	1.50	5.88	29%
IP21	20.90	19.70	19.50	19.90	19.80	18.10	19.20	18.00	16.20	13.80	19.90	17.50	18.33	88%
IP22	20.90	19.60	20.80	19.90	20.40	20.90	20.90	20.30	19.80	19.10	21.10	18.70	20.14	96%
IP23	20.90	20.90	20.90	20.70	20.90	20.90	20.90	20.90	20.30	20.90	20.70	19.60	20.69	99%
IP8	20.20	4.60	2.10	4.00	2.90	3.30	11.50	1.80	2.00	2.20	0	1.40	3.25	16%
MP14	19.20	13.10	13.70	14.80	14.30	13.70	17.30	15.40	13.10	11.20	19.30	10.30	14.20	74%
MP15	20.90	17.90	18.10	19.90	18.50	19.70	20.30	18.80	17.60	18.50	19.30	13.80	18.40	88%
MP16	20.90	19.90	20.20	19.70	20.30	20.90	20.80	20.10	19.20	19.40	20.90	19.80	20.11	96%
MP4	19.00	1.10	1.00	3.40	2.60	1.80	3.00	1.70	3.10	3.40	0	0.20	1.94	10%
MP7	18.60	7.70	2.40	1.20	1.20	5.30	8.20	10.40	3.10	1.10	15.70	15.90	6.56	35%
MP9	20.50	19.40	19.30	19.00	18.90	19.90	20.60	19.30	18.80	18.40	16.00	17.70	13.13	64%
Ave.	20.23	15.38	14.38	14.86	14.41	13.97	15.43	14.29	13.42	12.94	13.97	12.91	13.86	67%

System was started on 2/17/03 0900 hrs

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Bioventing Data Table: Oxygen Concentrations in Monitoring Points (per cent)

	4/29/2004	7/28/2004	10/19/04	1/12/2005	Average Concentration During 2004	Percentage of Pretest Reading	Percentage of 2003 Reading
IP10	11.40	11.30	15.20	11.60	12.38	72%	393%
IP11	18.60	5.40	-	10.50	8.63	41%	44%
IP13	19.70	20.30	17.30	18.50	18.95	91%	102%
IP14	-	18.00	-	-	4.50	23%	78%
IP15	20.20	18.90	20.10	20.50	19.93	95%	99%
IP17	19.40	19.70	19.30	18.40	19.20	92%	94%
IP19	na	na	na	16.2	16.20	78%	84%
IP20	2.20	14.30	4.10	8.10	7.18	35%	122%
IP21	18.10	17.20	18.20	18.90	18.10	87%	99%
IP22	17.90	14.70	17.70	19.70	17.50	84%	87%
IP23	19.60	19.30	19.10	na	19.33	93%	93%
IP8	0.50	18.50	-	0.20	4.80	24%	147%
MP14	4.80	16.10	4.20	8.10	8.30	43%	58%
MP15	17.90	14.90	14.70	12.00	14.88	71%	81%
MP16	19.70	18.00	19.70	18.40	18.95	91%	94%
MP4	1.90	19.40	-	3.30	6.15	32%	318%
MP7	6.60	19.20	-	5.60	7.85	42%	120%
MP9	19.90	17.60	17.80	20.20	18.88	92%	144%
Ave.	12.85	16.64	11.02	12.36	13.43	66%	125%

Bioventing Data Table: Oxygen Concentrations in Monitoring Points (per cent)

	4/27/2005	7/28/2005	10/25/05	Average Concentration During 2005	Percentage of Pretest Reading	Percentage of 2004 Reading
IP10	0	14.4	0	4.8	28%	39%
IP11	0	20.6	19.9	13.5	65%	156%
IP13	16.7	20.4	17.7	18.3	88%	97%
IP14	7.8	2.4	0	3.4	17%	76%
IP15	20.2	21.1	19.7	20.3	97%	102%
IP17	19.3	20.6	17.2	19.0	91%	99%
IP19	16.9	19	18.4	18.1	87%	112%
IP20	13.0	15.0	12.5	13.5	66%	188%
IP21	19.9	20.5	18.8	19.7	94%	109%
IP22	16.6	20.9	16.8	18.3	88%	105%
IP23	17.9	20.9	17.3	18.7	89%	97%
IP8	0	0	0.1	0.03	0.1%	0.01%
MP14	13.2	17.8	11.3	14.1	73%	17%
MP15	10.8	19.6	12.1	14.2	68%	95%
MP16	19.9	20.7	18.0	19.5	93%	103%
MP4	0.7	5.2	0	2.0	105%	33%
MP7	19.6	16.9	6.2	14.2	76%	181%
MP9	18.5	20.4	19.1	19.3	94%	102%
Ave.	12.8	16.5	12.5	13.9	73%	95%

Note: Due to pump failure, no readings are available for the fourth quarter of 2005.

Bioventing Data Table: Oxygen Concentrations at Monitoring Points (per cent)

	4/20/06	7/25/06	10/25/06	1/31/07	Average Concentration During 2006	Percentage of Pretest Reading	Percentage of 2005 Reading
IP1		11.4	19.9	16	15.8		
IP5		15.4	7.6	19.6	14.2		
IP6		2.4	13.1	13.0	9.5		
IP7		1.9	4.9	15.7	7.5		
IP8	0				0	0%	0%
IP10	15.6	0	0	13	7.2	42%	149%
IP11	19.6				19.6	94%	145%
IP12		15.8	16.8	18.9	17.2		
IP13	20.2	17.8	14.8	18.7	17.9	86%	98%
IP14	14	19.7	12.9	5.7	15.6	78%	458%
IP15	20.3	20	19.4	20.1	20	95%	98%
IP17	20.1	18.6	19	19.8	19.4	93%	102%
IP18		19.9	8.2	18.4	15.5		
IP19	20.6	19.4	19	18.6	19.4	93%	107%
IP20	17.7	20.1	16	17.4	17.8	87%	132%
IP21	20.2	18	17.2	19.2	18.7	89%	95%
IP22	20.6	18.6	17.8	19.8	19.2	92%	105%
IP23	20.5	18.4	18.5	20	19.35	93%	103%
MP1		11.9	16.6	8	12.2		
MP4	0				0	0%	0%
MP6		12.7	3	13.7	9.8		
MP7	18.5				18.5	99%	130%
MP8		12.5	6.2	18.4	12.4		
MP9	20.1	17.3	18.2	19.8	18.9	92%	98%
MP10		17	11.7	11	13.2		
MP12		20.3	19.2	16.4	18.6		
MP13		20.3	15.8	14.9	17		
MP14	18	15	13	17.6	15.9	83%	113%
MP15	20.5	19.2	13.6	20.3	18.4	88%	130%
MP16	20.4	19.2	18.3	19.2	19.3	92%	99%
Ave.	**17.1**	**15.5**	**13.9**	**17.0**	**14.9**	74%	107%

Blank data indicates the point was an injection point not a monitoring point at this time during the project

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Appendix D

Summary of Groundwater Analyses

Summary of Groundwater Analytical Results for BTEX - September 1994 Through January 2006

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	**750**	**750**	**620**
MW-2	Sep-94	**640**	600	82	**690**
	Apr-95	**220**	280	53	430
	Sep-99	NSP	NSP	NSP	NSP
	Dec-99	NSP	NSP	NSP	NSP
	May-01	NSP	NSP	NSP	NSP
	May-02	NSP	NSP	NSP	NSP
	Jan-03	**1700**	ND	650	**3200**
	Jan-04	**1100**	ND	340	**1800**
	Jan-05	**430**	ND	360	**1000**
	Jan-06	**250**	ND	410	**790**
	Sept-06	**230**	50	290	**640**
	Jan-06	8.7	9.7	16	55
MW-3	Sep-94	ND	ND	ND	ND
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	0.8	ND	ND	ND
MW-4	Sep-94	2.1	ND	ND	1.2
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
MW-5	Sep-94	NS	NS	NS	NS
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	1.1

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	**750**	**750**	**620**
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
MW-6	May-01	**12**	15	13	83
	May-02	ND	ND	0.53	1.4
	Oct -02	ND	ND	ND	3.2
	Jan-03	6.0	20	87	350
	Jul-03	ND	2.7	3.2	16
	Sept-03	0.8	3.7	4.0	24
	Jan-04	0.9	1.6	2.9	16
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	14	32
	Jan-07	ND	ND	3.6	9.1
MW-7	May-01	**2,400**	ND	380	**2,800**
	June-02	**2,000**	ND	140	**1,100**
	Oct-02	**1100**	ND	79	490
	Jan-03	**3200**	ND	400	**3100**
	Jan-04	**3300**	ND	460	**3300**
	Jan-05	**1600**	ND	220	**1500**
	Jan-06	**1400**	ND	280	**1500**
	Jan-07	**1200**	ND	450	**2500**

Notes:
µg/L = micrograms per liter
ND = not detected
NS = not sampled
NSP = not sampled due to product in well
*MW-1 was not screened within the aquifer
**MW-6 and MW-7 were installed in May 2001
NMWQCC = New Mexico Water Quality Control Commission

Summary of Groundwater Analytical Results for General Water Chemistry - 1994, 2001 ,2002, 2003, 2004, 2005, 2006 and 2007

NMWQCC Standards		Lab pH (su)	Conductivity (µmhos/cm)	TDS (mg/L)	Alkalinity ($CaCO_3$) (mg/L)	Hardness ($CaCO_3$) (mg/L)	Sodium Absorption Ratio	Bicarbonate (HCO_3) (mg/L)	Carbonate (CO_3) (mg/L)	Hydroxide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
		6-9	No Std	1,000	No Std	No Std	No Std	No Std	No Std	No Std	250	600	No Std	No Std	No Std	No Std
MW2	1994	6.6	4,920	3,049	957	NT	11.785	1,170	0	0	1,050	245	325	30	1.4	828
	2001	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP
	2002	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP
	2003	7	3230	3220	1520	416	NT	1850	<1	<1	51	369	133	20	1	660
	2004	7	3100	2000	1500	420	NT	1500	<1	<1	85	130	140	18	3	680
	2005	7.6	3000	2000	1300	430	NT	1300	7	<1	110	58	140	19	3.8	620
	2006	7.4	3400	2000	1400	440	NT	1400	4.3	<1	130	150	150	18	2.4	610
	2007	7.4	5490	4580	726	1190	NT	724	2.57		43.5	2460	476	59.5	12.5	869
MW3	1994	7.1	4,250	3,413	521	NT	8.147	635	0	0	48	1,920	439	37	1.4	661
	2001	7.3	4,500	3,960	459	1,220	NT	559	<1	<1	78	2,250	423	40.4	2.5	711
	2002	7	4,440	3,820	358	1,290	NT	437	<1	<1	46	2,520	446	43	0.6	705
	2003	7	4320	3660	560	1230	NT	683	<1	<1	56	2330	428	39.4	1.6	671
	2004	7.3	4500	4000	560	1400	NT	560	1	<1	44	2300	320	44	3.6	780
	2005	7.4	4700	2000	560	1400	NT	560	1	<1	37	2100	450	47	3.9	690
	2006	7.5	5100	3600	580	1300	NT	580	1.5	<1	37	2200	450	47	3.7	680
	2007	7.5	4780	3750	565	1120	NT	563	1.92		36.2	1920	449	43	10.3	649
MW4	1994	7.0	5,420	4,389	576	NT	10.883	703	0	0	175	2,470	439	53	3.5	907
	2001	7.1	5,090	4,630	490	1,460	NT	597	<1	<1	77	2,680	500	52.5	4.2	900
	2002	6.9	5,140	4,420	358	1,310	NT	437	<1	<1	47	2,930	449	47	2.6	873
	2003	7	4460	3850	400	1070	NT	488	<1	<1	40	2570	361	40.8	2.8	667
	2004	7.3	4500	3900	400	1200	NT	400	3	<1	27	2500	390	44	6.7	810
	2005	7.3	4900	4000	420	1300	NT	420	1	<1	30	2200	450	49	10	740
	2006	7.4	5400	3700	450	1200	NT	450	5.9	<1	31	2500	410	47	7	790
	2007	7.2	4700	3690	455	1020	NT	454	1.17		54.5	1730	410	43.3	12.1	678
MW5	1994	6.9	6,000	4,410	775	NT	8.84	945	0	0	996	1,390	634	51	6.6	861
	2001	6.7	7,000	5,230	757	2,010	NT	923	<1	<1	1,320	1,230	700	63.2	5.6	924
	2002	6.5	6,880	4,810	567	1,880	NT	692	<1	<1	1,200	1,230	661	55.3	4.9	855

NMWQCC Standards		Lab pH (su)	Conductivity (µmhos/cm)	TDS (mg/L)	Alkalinity ($CaCO_3$) (mg/L)	Hardness ($CaCO_3$) (mg/L)	Sodium Absorption Ratio	Bicarbonate (HCO_3) (mg/L)	Carbonate (CO_3) (mg/L)	Hydroxide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
		6-9	No Std	1,000	No Std	No Std	No Std	No Std	No Std	No Std	250	600	No Std	No Std	No Std	No Std
	2003	6.6	6910	5080	830	1780	NT	1010	<1	<1	1090	1330	616	58.1	4.8	829
	2004	6.8	6700	4600	840	2000	NT	840	1	<1	1300	1400	690	57	11	1000
	2005	7.0	6800	4800	870	1900	NT	870	<1	<1	1100	1200	670	60	10	910
	2006	7.1	8000	4300	990	1800	NT	990	<1	<1	1000	1200	630	58	12	920
	2007	7.3	6630	4750	915	1320	NT	914	1.11		884	1800	621	57.6	16.6	896
MW6	2001	6.9	5,470	4,580	740	1,550	NT	903	<1	<1	80	2,780	534	53.3	6.3	1,030
	2002	6.8	4,460	3,560	669	932	NT	816	<1	<1	55	1,900	319	33	2.5	830
	2003	7	3070	2180	1140	602	NT	1390	<1	<1	79	540	203	23.1	2.1	514
	2004	7.2	4100	3000	1000	1100	NT	1000	<1	<1	96	1400	390	63	29	870
	2005	7.2	4100	3000	1100	670	NT	1100	2	<1	93	940	220	28	6.7	670
	2006	7.2	7000	4500	800	1400	NT	800	3.6	<1	82	2600	440	68	24	1200
	2007	7.1	7460	6070	678	1320	NT	676	2.23		57.5	3140	529	65.1	17.3	1500
MW7	2001	6.7	2,160	1,710	600	843	NT	732	<1	<1	52	642	296	25.6	1.6	234
	2002	6.8	1,870	1,570	432	758	NT	527	<1	<1	20	700	258	27.8	2.2	151
	2003	6.7	1310	810	696	531	NT	849	<1	<1	35	57	152	36.8	1.0	126
	2004	6.8	1400	920	720	520	NT	720	<1	<1	13	120	170	23	7.0	170
	2005	7.0	1500	930	740	540	NT	740	1	<1	15	190	180	20	3.3	150
	2006	7.4	1800	1200	750	660	NT	750	3.2	<1	16	310	220	23	3.3	170
	2007	7.1	1460	858	638	402	NT	636	1.38		22.4	127	161	20.2	8.84	124

Notes:

s.u. = standard units
µmhos/cm = micromhos per centimeter
mg/L = milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission
No Std = no standard
NS = not sampled; MW-1 was not screened within the aquifer
NSP = no sample collected due to product in well
NT = Not Tested

Summary of Groundwater Analytical Results for Polynuclear Aromatic Hydrocarbons (EPA 610) - September 1994

Units: µg/L	MW-3	MW-2	MW-4
Naphthalene	<0.5	8.9	<0.50
Acenaphthylene	<1.0	<1.0	<1.0
Acenaphthene	<0.50	<0.50	<0.50
Fluorene	<0.10	1.2	<0.10
Phenanthrene	<0.05	1.8	<0.05
Anthracene	<0.05	<0.05	<0.05
Fluoranthene	<0.10	1.2	<0.10
Pyrene	<0.10	<0.10	<0.10
Benzo(a)Anthracene	<0.10	<0.10	<0.10
Chrysene	<0.10	0.17	<0.10
Benzo(b)Fluoranthene	>0.10	<0.10	<0.10
Benzo(k)Fluoranthene	<0.10	<0.10	<0.10
Benzo(a)Pyrene	<0.10	<0.10	<0.10
Dibenzo(a,h)Anthracene	<0.20	<0.20	<0.20
Benzo(g,h,I)Perylene	<0.10	<0.10	<0.10
Indeno(1,2,3-CD)Pyrene	<0.10	<0.10	<0.10
1-Methylnaphthalene	<0.30	5.9	<0.30
1-Methylnaphthalene	<0.30	5.8	<0.30

Notes:
µg/L = micrograms per liter

Summary of Groundwater Analytical Results for Priority Pollutant Metals - September 1994

Metal	NMWQCC Standards	MW-2	MW-3	MW-4
Silver (mg/L)	0.05	<0.01	<0.01	<0.01
Arsenic (mg/L)	0.1	<0.005	<0.005	<0.005
Beryllium (mg/L)	No Std	<0.004	<0.004	<0.004
Cadmium (mg/L)	0.01	<0.0005	<0.0005	<0.0005
Chromium (mg/L)	0.05	0.010	<0.01	<0.01
Copper (mg/L)	1	0.012	<0.01	<0.01
Mercury (mg/L)	0.002	<0.0002	<0.0002	<0.0002
Nickel (mg/L)	0.2	<0.02	<0.02	<0.02
Lead (mg/L)	<0.05	<0.002	<0.002	<0.002
Antimony (mg/L)	No Std	<0.05	<0.05	<0.05
Selenium (mg/L)	0.05	<0.005	<0.005	<0.005
Thallium (mg/L)	No Std	<0.005	<0.005	<0.005
Zinc (mg/L)	10	0.032	0.023	0.026

Notes:
mg/L = milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission
No Std = no standard