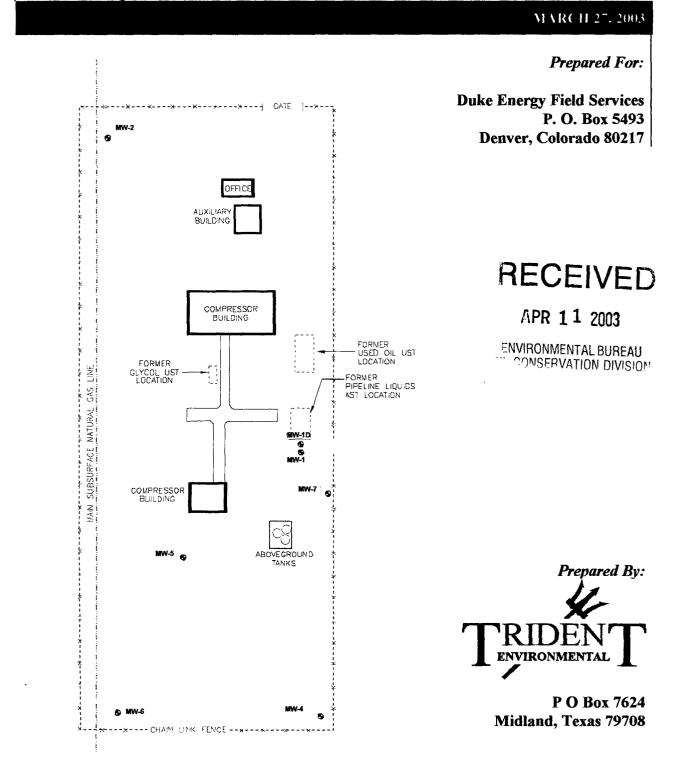


REPORTS

$\frac{\text{DATE:}}{2002}$

2002 Annual Groundwater Monitoring and Remediation Performance Report Duke Energy Field Services Monument Booster Station Lea County, New Mexico



2002 Annual Groundwater Monitoring Report Duke Energy Field Services Monument Booster Station Lea County, New Mexico

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1.0 Executive Summary

Trident Environmental (Trident) was retained by Duke Energy Field Services Inc. (DEFS) to perform the groundwater monitoring operations at the Monument Booster Station. This 2002 annual report documents the two semi-annual groundwater sampling events performed by Trident at the DEFS Monument Booster Station on February 13, 2002 and September 27, 2002. The report also contains the historical groundwater elevation and analytical data since the beginning of the monitoring and sampling program in May 1995. The monitoring and sampling activities were conducted in accordance with the guidelines specified by Mr. Bill Olson of the New Mexico Oil Conservation Division (OCD) in his letter dated December 9, 1999.

Based on the groundwater monitoring and remediation system performance data to date, the following conclusions at the Monument Booster Station are evident:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations in monitoring wells MW-1D, MW-2, MW-3, MW-4, and MW-6 are presently below New Mexico Water Quality Control Commission (WQCC) standards. With the exception of the August 1999 sample recovered from MW-2 and the August 1999 and February 2000 samples recovered from MW-3, the BTEX concentrations in each of these wells have remained below the WQCC standard levels since 1995.
- Only the benzene concentrations from the current and historic groundwater samples recovered from MW-7 exceed the WQCC standard. The BTEX concentrations in monitoring well MW-7 were at their lowest level during the last sampling event since monitoring began in 1995.
- As of December 17, 2002, a total of approximately 157 gallons of light non-aqueous phase liquids (LNAPL) has been removed from monitoring wells MW-1 and MW-5 using a combination of gravity siphoning, hand bailing, passive skimmer, adsorbent sock, and pneumatic pump recovery methods.
- The biodegradation capacity of electron acceptors and metabolic byproducts (33.36 mg/L) far exceeds the highest benzene concentration observed on site in the past (1.13 mg/L in MW-7 during the January 1996 sampling event) by a ratio of 30 to 1. The most recent benzene concentration in MW-7 was 0.015 mg/L during the August 2002 sampling event. This indicates that the biodegradation process has been occurring and will continue.

The following recommendations are suggested for the remediation system and monitoring operations at the Monument Booster Station.

- Continue LNAPL recovery operations utilizing absorbent socks in MW-1 and MW-5. This method appears to have been effective in recovering free product over the last two annual monitoring periods.
- Discontinue analyses for aluminum, arsenic, and chromium since those constituents have been below the WQCC standards for over seven years.
- Continue the groundwater-monitoring program on a semi-annual basis. The next sampling event is scheduled during the first quarter of 2003.

2.0 Chronology of Events

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July 1992	Benge Construction Company of Lovington, New Mexico removed three underground storage tanks (USTs) near the main compressor building for ENRON at the Hobbs Compressor Station #2). The USTs formally contained used oil and pipeline liquids (oil and/or natural gas liquid condensate). Hydrocarbon-impacted soils were removed from the used oil and pipeline liquids UST tank holds.
February 4, 1994	Geoscience Consultants Ltd (GCL) installed two monitoring wells (MW-1 and MW-2) during a subsurface investigation for ENRON. Hydrocarbon-impacted groundwater was confirmed in MW-1.
May 17, 1994	Benge Construction Company returned during a subsurface investigation conducted by Daniel B. Stevens and Associates (DBS&A) and removed an additional amount of hydrocarbon-impacted soils from the pipeline liquids and used oil UST tank holds. The amount of hydrocarbon-impacted soils removed from the used oil and pipeline liquids UST tank holds in 1992 and 1994 was not well documented, however it was estimated by DBS&A that a total of 1,064 cubic yards were excavated from the two tank holds based on the amount of backfill required to fill the excavations.
May 16-19, 1994	Six soil borings (SB-1 through SB-6) were completed as temporary drive point wells for ENRON by DBS&A to delineate the horizontal extent of hydrocarbon-impacted soils and groundwater.
October 7, 1994	The OCD requested ENRON to provide a work plan to completely define the extent of groundwater contamination at the Hobbs Compressor Station #2 site.
November 1994	GPM Gas Corporation (GPM) acquired ownership and operation of the Monument Booster Station (formerly Hobbs Compressor Station #2) from ENRON.
February 23, 1995	GPM submitted a subsurface investigation work plan to the OCD to address the groundwater conditions at Monument Booster Station.
April 5, 1995	The OCD approved the subsurface investigation work plan for Monument Booster Station.
May 8-10, 1995	GCL completed a subsurface investigation for GPM to delineate the extent of the hydrocarbon-impacted groundwater. The investigation included the installation and sampling of four monitoring wells (MW-1D, MW-3, MW-4, and MW-5) and one soil boring (SB-7).
July 28, 1995	GPM submitted the <i>Subsurface Investigation and Preliminary Remedial</i> <i>Response</i> report for the Monument Booster Station to the OCD.

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August 24, 1995	The OCD approved GPM's recommendations for remedial action. The OCD requested a work plan for an additional monitoring well, new recovery well and product recovery system.
September 29, 1995	GPM submitted the <i>Remediation and Monitoring Work Plan for the Monument</i> <i>Booster Station</i> to the OCD.
October 25, 1995	The OCD approved the remediation and monitoring work plan for Monument Booster Station.
November 14-16, 1995	GCL installed two additional monitoring wells (MW-6 and MW-7) and conducted the fourth quarter 1995 sampling event at Monument Booster Station.
January 18, 1996	GCL conducted the first quarter 1996 sampling event at Monument Booster Station.
April 24, 1996	GCL conducted the annual (second quarter 1996) sampling event at Monument Booster Station. The annual report included recommendations to the OCD for remedial response.
January 22, 1997	BDM International, Inc. (formerly GCL) conducted the first quarter 1997 sampling event at Monument Booster Station.
January 31, 1997	The OCD completed the review of the annual report for the second quarter 1996 sampling event and approved the groundwater monitoring modifications for Monument Booster Station.
January 31, 1997	BDM International, Inc. (BDM) and GPM installed an automated pneumatic product recovery pump system in monitoring wells MW-1 and MW-5 to replace the hand bailing and gravity siphoning techniques used previously.
August 11, 1997	BDM conducted the annual (third quarter 1997) sampling event at Monument Booster Station.
January 23, 1998	TRW conducted the semi-annual (first quarter 1998) sampling event at Monument Booster Station.
August 3, 1998	TRW conducted the annual (third quarter 1998) sampling event at Monument Booster Station.
February 10, 1999	TRW conducted the semi-annual (first quarter 1999) sampling event at Monument Booster Station.
August 17, 1999	TRW conducted the annual (third quarter 1999) sampling event at Monument Booster Station.



September 14, 1999	TRW conducted O & M on Xitech product recovery system (MW-1) checked and/or replaced absorbent sock and hand bailed excess product from MW-5.
October 26, 1999	TRW conducted O & M on Xitech system and manual product removal.
November 5, 1999	TRW conducted manual product removal from MW-5.
November 22, 1999	TRW conducted O & M on Xitech system and manual product removal.
December 20, 1999	TRW removed the Xitech pump for update and repair. An absorbent sock was installed in MW-1 and replaced in MW-5. Excess product was removed from MW-5 using a hand bailer.
January 26, 2000	TRW measured product thickness and installed new absorbent socks in MW-1 and MW-5.
February 17-18, 2000	TRW conducted the semi-annual (first quarter 2000) sampling event and product removal operations. Groundwater samples were recovered from MW-1D, MW-2, MW-3, MW-4, MW-6 and MW-7.
April 4, 2000	TRW measured product thickness, installed new absorbent socks in MW-1 and MW-5, and removed excess product using a hand bailer.
April 24, 2000	TRW measured product thickness and check and/or replaced absorbent socks in MW-1 and MW-5.
June 15, 2000	TRW measured product thickness and installed new absorbent socks in MW-1 and MW-5.
July 19, 2000	TRW measured product thickness and installed new absorbent socks in MW-1 and MW-5.
August 23, 2000	TRW conducted the annual (third quarter 2000) sampling event and product removal operations. Groundwater samples were recovered from MW-1D, MW-2, MW-3, MW-4, MW-6 and MW-7.
October 3, 2000	TRW measured product thickness and installed new absorbent socks in MW-1 and MW-5.
December 14, 2001	TRW measured product thickness and installed new absorbent socks in MW-1 and MW-5.
January 23, 2001	TRW measured product thickness and installed new absorbent socks in MW-1 and MW-5.

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February 8-9, 2001	TRW conducted the semi-annual (first quarter 2001) sampling event and product removal operations. Groundwater samples were recovered from MW-1D, MW-2, MW-3, MW-4, MW-6 and MW-7.
April 4, 2001	TRW measured product thickness and installed new absorbent socks in MW-1 and MW-5.
May 1, 2001	Trident Environmental acquired the Midland Texas resources of TRW, Inc.
May 16, 2001	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
June 19, 2001	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
July 20, 2001	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
July 30, 2001	Trident conducted the annual (third quarter 2001) sampling event and product removal operations. Groundwater samples were recovered from MW-1D, MW-2, MW-3, MW-4, MW-6 and MW-7.
September 10, 2001	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
October 7, 2001	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
November 8, 2001	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
December 11, 2001	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
January 18, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
February 13, 2002	Trident conducted the semi-annual (first quarter 2002) sampling event and product removal operations. Groundwater samples were recovered from MW-1D, MW-2, MW-3, MW-4, MW-6 and MW-7.
March 14, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
April 10, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.

May 14, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
June 18, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
July 12, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
August 24, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
September 10, 2001	Trident conducted the annual (third quarter 2001) sampling event and product removal operations. Groundwater samples were recovered from MW-1D, MW-2, MW-3, MW-4, MW-6 and MW-7.
October 24, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
November 22, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.
December 17, 2002	Trident measured product thickness and installed new absorbent socks in MW-1 and MW-5.

3.0 **Procedures**

Prior to sampling, all monitoring wells (MW-1 through MW-7) were gauged for depth to groundwater using a Heron Model H.01L oil/water interface probe. Each monitoring well designated for groundwater sampling was purged using a clean, decontaminated submersible pump. Groundwater parameters, including pH, conductivity, temperature, turbidity, and dissolved oxygen (DO) were measured during the purging operation using a Horiba Model U10 multi-parameter instrument, and Hanna Model 9143 DO meter. A total of 278 gallons of water was purged from monitoring wells MW-1D, MW-2, MW-3, MW-4, MW-6, and MW-7 during the February 13, 2002 and September 27, 2002 sampling events. On September 27, 2002, MW-5 was sampled for the first time since 1995 due to the lack of presence of LNAPL. All groundwater samples were obtained following the purging operation using a new, decontaminated, disposable bailer.

The first sets were transferred into airtight, septum-sealed, 40-ml glass VOA sample vials with zero headspace for analysis of BTEX using EPA Method 8021B. A duplicate sample of MW-7 was collected during both sampling events. The second set of water samples were transferred into appropriately preserved containers for analysis of nitrate (NO₃) and sulfate (SO₄), to assess the efficacy of intrinsic bioremedial activity currently taking place. During the annual sampling event conducted on September 27, 2002, a third and fourth set of water samples were transferred into appropriately preserved containers for analysis of major ions (chloride, fluoride, and total dissolved solids) and WQCC metals (aluminum, arsenic, boron, chromium, iron, and manganese). Also, ferrous iron was measured in the field using a Hach DR2010 spectrophotometer (Method 8146). A summary of purging and sampling methods is provided in Table 1 below. Chain-of-custody (COC) forms documenting sample identification numbers, collection times, and delivery times to the laboratories were completed for each set of samples. A monitoring well sampling data sheet was prepared for each well to document the parameter readings during the purge operation. The water samples were placed in an ice-filled cooler immediately after collection and shipped to Trace Analysis, Inc. of Lubbock, Texas for laboratory analysis.

Summary of Purging and Sampling Methods						
Monitoring Well No.	Sample Date	Purge Method	Purge Volume (gallons)	Sampling Method	Groundwater Analytes	
MW-1D	02/13/02	Pump	15	Disposable bailer	BTEX and Bio-indicators	
	09/02/02	Hand Bail	5	Disposable bailer	BTEX, Metals, Ions, Bio-indicators	
MW-2	02/13/02	Pump	25	Disposable bailer	BTEX and Bio-indicators	
101 00 -2	09/02/02	Pump	30	Disposable bailer	BTEX, Metals, Ions, Bio-indicators	
MW-3	02/13/02	Pump	23	Disposable bailer	BTEX and Bio-indicators	
10100-5	09/02/02	Pump	14	Disposable bailer	BTEX, Metals, Ions, Bio-indicators	
MW-4	02/13/02	Pump	25	Disposable bailer	BTEX and Bio-indicators	
101 00 -4	09/02/02	Pump	16	Disposable bailer	BTEX, Metals, Ions, Bio-indicators	
MW-5	09/02/02	Hand Bail	20	Disposable bailer	BTEX, Metals, Ions, Bio-indicators	
MW-6	02/13/02	Pump	25	Disposable bailer	BTEX and Bio-indicators	
10100-0	09/02/02	Pump	30	Disposable bailer	BTEX, Metals, Ions, Bio-indicators	
MW-7	02/13/02	Pump	25	Disposable bailer	BTEX and Bio-indicators	
101 00 - 7	09/02/02	Pump	25	Disposable bailer	BTEX, Metals, Ions, Bio-indicators	

	Table 1	
Summarv	of Purging and Sampling Methods	

* Indicates monitoring well was bailed dry or pumped off.

BTEX - benzene, toluene, ethylbenzene, xylenes

WQCC Metals - Al, As, B, Cr, Fe, and Mn

Ions - F, Cl, NO3, SO4, and TDS

Bio-indicatoras - DO, NO3, SO4

MW-1 and MW-5 not sampled due to presence of product.

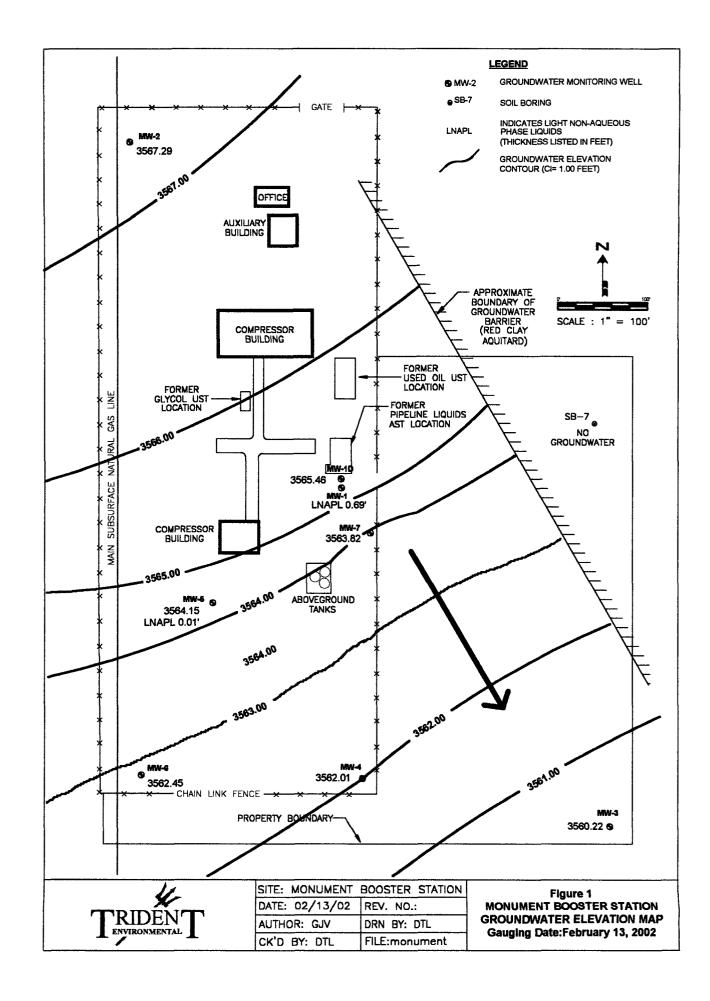
4.0 Groundwater Elevations, Hydraulic Gradient and Flow Direction

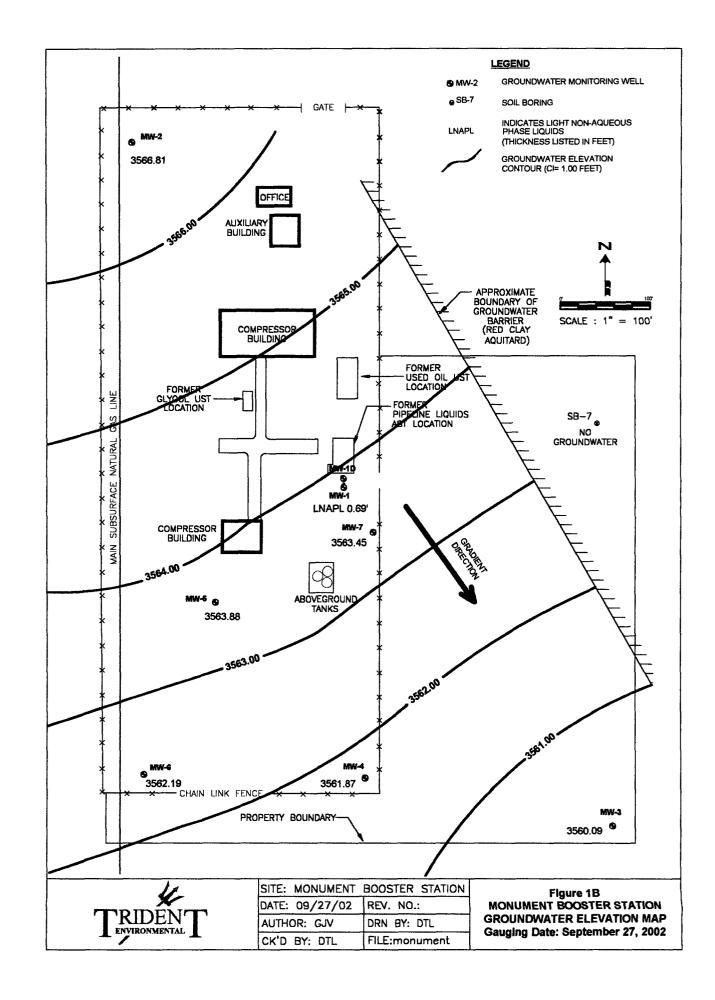
Based on the most recent gauging data collected by Trident on September 27, 2002, the groundwater conditions at the Monument Booster Station are characterized below.

- The depth to the water table across the site varies from approximately 21 to 27 feet below ground surface
- The hydraulic gradient is approximately 0.007 feet/foot
- The direction of groundwater flow is to the southeast

The direction of groundwater flow and hydraulic gradient has remained consistent for the past six and onehalf years. Groundwater elevation maps depicting the water table elevation and direction of groundwater flow using the gauging data obtained during the two 2002 sampling events are presented in Figure 1A (February 13, 2002) and Figure 1B (September 27, 2002).

Figure 2 depicts the changes in groundwater elevations in monitoring wells MW-1 through MW-7 with time. Historical groundwater elevations and depth to water measurements are summarized in Table 2.







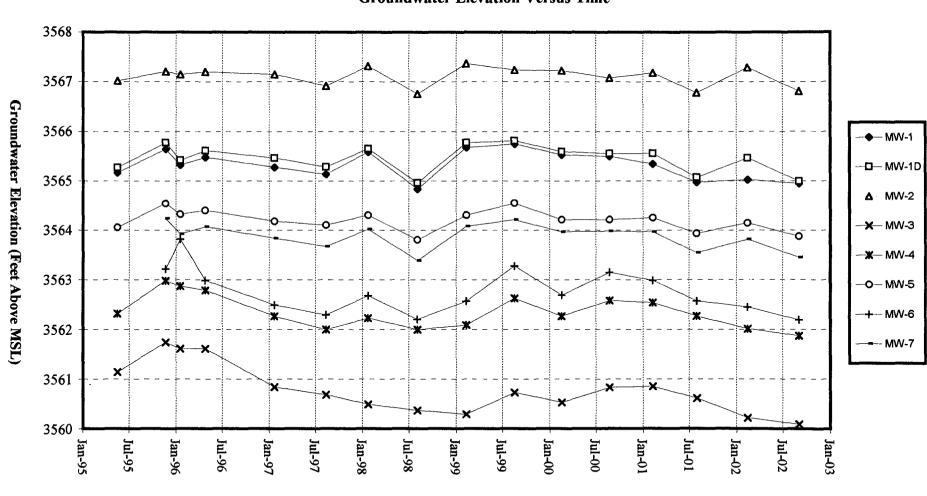


Figure 2 Groundwater Elevation Versus Time

Gauging Date

			Table 1			
		Summary	of Groundwate	er Elevations		
		Ground		Groundwater	Groundwater	LNAPL
Monitoring	Gauging	Surface	Top of Casing	Depth Below		
Well Number	Date	Elevations	Elevation (Feet)	Top of Casing	Elevation	Thickness
		(Feet)		(Feet)	(Feet)	(Feet)
MW-1	05/16/95	3588.85	3591.15	28.05	3565.17	2.52
	11/21/95	3588.85	3591.15	27.03	3565.65	1.86
	01/18/96	3588.85	3591.15	27.62	3565.32	2.18
	04/24/96	3588.85	3591.15	27.39	3565.47	2.09
	01/22/97	3588.85	3591.15	27.68	3565.27	2.20
	08/11/97	3588.85	3591.15	26.03	3565.14	0.02
	01/23/98	3588.85	3591.15	25.63	3565.59	0.08
}	08/03/98	3588.85	3591.15	26.32	3564.84	0.01
	02/10/99	3588.85	3591.15	25.55	3565.67	0.09
	08/17/99	3588.85	3591.15	25.41	3565.75	0.01
	02/17/00	3588.85	3591.15	25.69	3565.53	0.08
	08/23/00	3588.85	3591.15	25.73	3565.49	0.09
	02/08/01	3588.85	3591.15	26.32	3565.34	0.62
	07/30/01	3588.85	3591.15	26.26	3564.97	0.10
	02/13/02	3588.85	3591.15	26.69	3565.03	0.69
	09/02/02	3588.85	3591.15	26.77	3564.95	0.69
MW-1D	05/16/95	3589.06	3591.31	26.04	3565.27	0.00
	11/21/95	3589.06	3591.31	25.54	3565.77	0.00
	01/18/96	3589.06	3591.31	25.89	3565.42	0.00
	04/24/96	3589.06	3591.31	25.70	3565.61	0.00
	01/22/97	3589.06	3591.31	25.85	3565.46	0.00
	08/11/97	3589.06	3591.31	26.03	3565.28	0.00
	01/23/98	3589.06	3591.31	25.66	3565.65	0.00
	08/03/98	3589.06	3591.31	26.35	3564.96	0.00
	02/10/99	3589.06	3591.31	25.54	3565.77	0.00
	08/17/99	3589.06	3591.31	25.50	3565.81	0.00
	02/17/00	3589.06	3591.31	25.72	3565.59	0.00
	08/23/00	3589.06	3591.31	25.72	3565.55	0.00
	02/08/01	3589.00	3591.31	25.76	3565.55	0.00
	07/30/01	3589.06	3591.31	26.24	3565.07	0.00
	02/13/02	3589.06	3591.31	25.85	3565.46	0.00
	09/02/02	3589.06	3591.31	26.32	3564.99	
MW-2	05/16/95	3594.13	3596.30	29.28	3567.02	0.00
141 44 -7	11/21/95	3594.13	3596.30	29.09	3567.02	0.00
	01/18/96	3594.13	3596.30	29.09	3567.15	0.00
	04/24/96	3594.13	3596.30	29.13	3567.20	0.00
	01/22/97	3594.13	3596.30	29.10	3567.15	0.00
	08/11/97	3594.13	3596.30	29.13	3566.92	
	01/23/98	3594.13	3596.30		3567.32	0.00
1	08/03/98	3594.13	3596.30	28.98 29.54	3566.76	0.00
	08/03/98 02/10/99	3594.13	3596.30	29.54 28.93		0.00
	02/10/99 08/17/99		1 1		3567.37	0.00
	08/17/99 02/17/00	3594.13	3596.30	29.06	3567.24	0.00
		3594.13	3596.30	29.07	3567.23	0.00
	08/23/00	3594.13	3596.30	29.22	3567.08	0.00
	02/08/01	3594.13	3596.30	29.12	3567.18	0.00
	07/30/01	3594.13	3596.30	29.52	3566.78	0.00
	02/13/02	3594.13	3596.30	29.01	3567.29	0.00
	09/02/02	3594.13	3596.30	29.49	3566.81	0.00

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		T	able 1 (Contin	ued)		
		Summary	of Groundwate	er Elevations		
Monitoring Well Number	Gauging Date	Ground Surface Elevations (Feet)	Top of Casing Elevation (Feet)	Groundwater Depth Below Top of Casing (Feet)	Groundwater Elevation (Feet)	LNAPL Thickness (Feet)
	05/16/95	3581.46	3583.86	22.72	3561.14	0.00
	11/21/95	3581.46	3583.86	22.12	3561.74	0.00
	01/18/96	3581.46	3583.86	22.12	3561.61	0.00
	04/24/96	3581.46	3583.86	22.25	3561.61	0.00
	01/22/97	3581.46	3583.86	23.02	3560.84	0.00
	08/11/97	3581.46	3583.86	23.18	3560.68	0.00
	01/23/98	3581.46	3583.86	23.18	3560.08	0.00
	08/03/98	3581.40	3583.86	23.49	3560.37	0.00
MW-3	02/10/99	3581.40	3583.86	23.49	3560.29	0.00
	02/10/99	3581.46	3583.86	23.13	3560.29	0.00
	02/17/00	3581.46	3583.86	23.13	3560.73	0.00
	08/23/00	3581.46	3583.86	23.03	3560.83	0.00
	02/08/01	3581.46				
	07/30/01		3583.86	23.01	3560.85	0.00
		3581.46	3583.86	23.25	3560.61	0.00
	02/13/01	3581.46	3583.86	23.64	3560.22	0.00
	09/02/02	3581.46	3583.86	23.77	3560.09	0.00
	05/16/95	3586.10	3588.77	26.45	3562.32	0.00
	11/21/95	3586.10	3588.77	25.79	3562.98	0.00
	01/18/96	3586.10	3588.77	25.90	3562.87	0.00
	04/24/96	3586.10	3588.77	25.98	3562.79	0.00
	01/22/97	3586.10	3588.77	26.50	3562.27	0.00
	08/11/97	3586.10	3588.77	26.77	3562.00	0.00
	01/23/98	3586.10	3588.77	26.54	3562.23	0.00
MW-4	08/03/98	3586.10	3588.77	26.77	3562.00	0.00
	02/10/99	3586.10	3588.77	26.68	3562.09	0.00
	08/17/99	3586.10	3588.77	26.14	3562,63	0.00
	02/17/00	3586.10	3588.77	26.50	3562.27	0.00
	08/23/00	3586.10	3588.77	26.19	3562.58	0.00
	02/08/01	3586.10	3588.77	26.23	3562.54	0.00
	07/30/01	3586.10	3588.77	26.50	3562.27	0.00
	02/13/02	3586.10	3588.77	26.76	3562.01	0.00
	09/02/02	3586.10	3588.77	26.90	3561.87	0.00
	05/16/95	3589.62	3592.16	28.10	3564.06	0.00
	11/21/95	3589.62	3592.16	28.24	3564.54	0.76
	01/18/96	3589.62	3592.16	28.45	3564.33	0.75
	04/24/96	3589.62	3592.16	28.41	3564.40	0.79
	01/22/97	3589.62	3592.16	28.45	3564.18	0.57
	08/11/97	3589.62	3592.16	28.13	3564.10	0.09
	01/23/98	3589.62	3592.16	27.89	3564.30	0.04
MW-5	08/03/98	3589.62	3592.16	28.79	3563.80	0.53
141 44 -2	02/10/99	3589.62	3592.16	28.48	3564.30	0.76
	08/17/99	3589.62	3592.16	27.93	3564.55	0.39
1	02/17/00	3589.62	3592.16	28.03	3564.21	0.10
l I	08/23/00	3589.62	3592.16	28.07	3564.21	0.15
	02/08/01	3589.62	3592.16	27.92	3564.25	0.01
	07/30/01	3589.62	3592.16	28.24	3563.94	0.02
	02/13/02	3589.62	3592.16	28.02	3564.15	0.01
	09/02/02	3589.62	3592.16	28.28	3563.88	<0.00

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		Т	able 1 (Continu	ued)		
		Summary	of Groundwate	er Elevations		
Monitoring Vell Number	Gauging Date	Ground Surface Elevations (Feet)	Top of Casing Elevation (Feet)	Groundwater Depth Below Top of Casing (Feet)	Groundwater Elevation (Feet)	LNAPL Thickness (Feet)
	11/16/95	3586.15	3587.93	24.71	3563.22	0.00
	01/18/96	3586.15	3587.93	24.11	3563.82	0.00
	04/24/96	3586.15	3587.93	24.94	3562.99	0.00
	01/22/97	3586.15	3587.93	25.44	3562.49	0.00
	08/11/97	3586.15	3587.93	25.64	3562.29	0.00
	01/23/98	3586.15	3587.93	25.25	3562.68	0.00
	08/03/98	3586.15	3587.93	25.73	3562.20	0.00
MW-6	02/10/99	3586.15	3587.93	25.36	3562.57	0.00
	08/17/99	3586.15	3587.93	24.65	3563.28	0.00
	02/17/00	3586.15	3587.93	25.24	3562.69	0.00
	08/23/00	3586.15	3587.93	24.78	3563.15	0.00
	02/08/01	3586.15	3587.93	24.94	3562.99	0.00
	07/30/01	3586.15	3587.93	25.36	3562.57	0.00
MW-7	02/13/02	3586.15	3587.93	25.48	3562.45	0.00
	09/02/02	3586.15	3587.93	25.74	3562.19	0.00
	11/21/95	3588.06	3589.40	25.16	3564.24	0.00
	01/18/96	3588.06	3589.40	25.48	3563.92	0.00
	04/24/96	3588.06	3589.40	25.33	3564.07	0.00
	01/22/97	3588.06	3589.40	25.56	3563.84	0.00
	08/11/97	3588.06	3589.40	25.73	3563.67	0.00
	01/23/98	3588.06	3589.40	25.38	3564.02	0.00
	08/03/98	3588.06	3589.40	26.01	3563.39	0.00
	02/10/99	3588.06	3589.40	25.32	3564.08	0.00
	08/17/99	3588.06	3589.40	25.19	3564.21	0.00
	02/17/00	3588.06	3589.40	25.43	3563.97	0.00
	08/23/00	3588.06	3589.40	25.42	3563.98	0.00
	02/08/01	3588.06	3589.40	25.43	3563.97	0.00
	07/30/01	3588.06	3589.40	25.85	3563.55	0.00
	02/13/02	3588.06	3589.40	25.58	3563.82	0.00
	09/02/02	3588.06	3589.40	25.95	3563.45	0.00

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Elevations initially surveyed by John W. West Engineering Company of Hobbs, NM.

The monitoring well casings were marked on the north side to provide consistent reference points for future gauging operations.

** Groundwater Elev. Corrected for LNAPL = Top of Casing Elev. - [Groundwater Depth - (SG x LNAPL Thickness)].

Groundwater direction is to the southeast with a hydraulic gradient of approximately 0.008 feet/foot.



5.0 Groundwater Quality Conditions

5.1 Distribution of Hydrocarbons in Groundwater

A historical listing of BTEX concentrations obtained from the sampled monitoring wells is summarized in Table 3. Hydrocarbon concentration maps depicting the BTEX concentrations for the two 2002 sampling events conducted on February 13, 2002 and September 27, 2002, are presented in Figures 3A and 3B, respectively. Figure 4 depicts the historic benzene concentrations in the groundwater versus time over the life of the monitoring project. The historic BTEX concentrations in the groundwater versus time at MW-7 are depicted in Figure 5. Based on the most recent analytical, the distribution of hydrocarbons at the Monument Booster Station is described below.

- BTEX concentrations in MW-1D, MW-2, MW-3, MW-4, and MW-6 are presently below WQCC standards. With the exception of the August 1999 sample recovered from MW-2 and the August 1999 and February 2000 samples recovered from MW-3, the BTEX concentrations in each of these wells have remained below the WQCC standard levels since 1995.
- Only the benzene concentrations from the current and historic groundwater samples recovered from MW-5 and MW-7 exceed the WQCC standard. MW-5 was sampled on September 27, 2002, for the first time since 1995 due to the lack of presence of LNAPL. The benzene concentration in MW-7 was at its lowest level (0.015 mg/L) during the last sampling event since monitoring began in 1995.

5.2 Distribution of Dissolved WQCC Metals and Ions in Groundwater

Historical groundwater sample analytical results for metals and ions are presented in Tables 4. The WQCC standards are listed in the tables for comparison and constituents with concentrations above the WQCC standards are highlighted in boldface type. The laboratory reports and COC documentation are included in Appendix A. A graph that depicts the historic concentrations of total dissolved solids (TDS), chlorides, and sulfates versus time for monitoring well MW-2 is provided in Figure 6.

The WQCC metal results for the 2002 annual sampling event indicate no constituents exceeded the WQCC standards with the exception of manganese in MW-5, MW-6, and MW-7, and iron in MW-5 and MW-7. These elevated levels may be due to the reduced chemical environment caused by the presence of dissolved hydrocarbons. Under this condition, certain metal ions (particularly manganese and iron) have a greater affinity to go into the dissolved state. In addition, iron and manganese are byproducts from natural biodegradation processes, thus resulting in higher concentrations. In contrast, upgradient monitoring well MW-2, and downgradient monitoring wells MW-3, and MW-4 contain very low concentrations of iron or manganese. Based on the results of the metal analyses during the 2002 annual sampling event, the groundwater in the site area is not adversely affected or impacted with dissolved metals.

The major ion analyses for the 2002 annual sampling event indicate that no constituents exceeded the WQCC standards with the exception of chloride and TDS in MW-2, fluoride in MW-1D, MW-2, MW-3, MW-5, and MW-7, arsenic in MW-5, and boron in MW-5 and MW-6.



Chloride (2,170 mg/L) and TDS (4,440 mg/L) concentrations in MW-2 have increased since August 1998 and may indicate a potential upgradient release of produced water north and/or west of the Monument Booster Station.

Since fluoride is not a constituent for the gas processing activities on site, its presence is likely due to natural conditions as it is a common naturally occurring compound in groundwater (USGS Water-Supply Paper 2254, 1989, pgs.120-123).

Before 1980, arsenic compounds, such as lead arsenate and sodium arsenite, were commonly used in the pest and weed control business (*Groundwater Geochemistry – Fundamentals and Applications to Contamination*, William J. Deutsch, 1997, pg. 168). The concentration of arsenic in monitoring well MW-5 (0.119 mg/L) is very near the WQCC standard (0.1 mg/L). Arsenic compounds are not known to have been used at the facility, therefore the presence of arsenic is likely due to some anthropogenic (offsite) input or may be naturally occurring.

Boron has numerous industrial uses, most commonly as a cleaning agent (Borax) and is also found naturally in the evaporite deposits of certain closed basins and in oceanic water (USGS Water-Supply Paper 2254, 1989, pg.129). The concentration of boron in monitoring wells MW-5 (0.774 mg/L) and MW-6 (1.17 mg/L) is very near the WQCC standard (0.75 mg/L). Boron is not a constituent for the known gas processing activities on site, therefore its presence is likely due to natural conditions.

Since the groundwater on site is not used for potable drinking water, nor will it be in the foreseeable future, and the constituents of concern above WQCC standards are limited to being on site, there is low risk to human health and the environment.

<u></u>		Ta	ble 2		<u></u>
	Sumr	narv of Dissolved	BTEX Concentr	ations	
		-	ooster Station		
Monitoring	Sampling	Benzene	Toluene	Ethylbenzene	Xylenes
Well	Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-1D	05/16/95	0.018	0.006	0.015	0.016
	11/15/95	0.003	<0.001	0.002	0.001
	01/18/96	0.004	<0.001	0.003	0.009
	04/24/96	< 0.001	<0.001	<0.001	< 0.001
	01/22/97	0.001	<0.001	0.001	< 0.001
	08/11/97	< 0.001	<0.001	< 0.001	< 0.001
	01/23/98	< 0.001	<0.001	< 0.001	< 0.001
	08/03/98	< 0.001	<0.001	<0.001	< 0.001
	02/10/99	< 0.001	<0.001	< 0.001	< 0.001
	08/17/99	< 0.001	<0.001	<0.001	< 0.001
	02/18/00	0.002	<0.001	0.003	0.001
1	08/23/00	< 0.005	<0.005	<0.005	< 0.005
	02/09/01	< 0.001	<0.001	<0.001	0.001
	07/30/01	< 0.001	<0.001	< 0.001	< 0.001
1	02/13/02	< 0.001	< 0.001	<0.001	< 0.001
	09/27/02	< 0.001	<0.001	< 0.001	< 0.001
MW-2	05/16/95	< 0.001	< 0.001	< 0.001	< 0.001
	11/15/95	0.044*	0.002*	0.006*	0.009*
	01/18/96	< 0.001	< 0.001	<0.001	< 0.001
	04/24/96	< 0.001	<0.001	<0.001	< 0.001
	01/22/97	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/97	< 0.001	< 0.001	<0.001	< 0.001
	01/23/98	< 0.001	< 0.001	< 0.001	< 0.001
	08/03/98	< 0.001	< 0.001	< 0.001	< 0.001
	02/10/99	< 0.001	<0.001	< 0.001	< 0.001
	08/17/99	0.017	0.013	0.002	0.003
	02/18/00	< 0.001	< 0.001	< 0.001	< 0.001
	08/23/00	< 0.001	< 0.001	< 0.001	< 0.001
	02/08/01	< 0.001	< 0.001	<0.001	< 0.001
	07/30/01	< 0.001	< 0.001	<0.001	<0.001
	02/13/02	< 0.001	< 0.001	<0.001	<0.001
	09/27/02	<0.001	< 0.001	<0.001	<0.001
MW-3	05/16/95	<0.001	<0.001	<0.001	<0.001
	11/15/95	< 0.001	<0.001	<0.001	< 0.001
	01/18/96	< 0.001	<0.001	<0.001	< 0.001
	04/24/96	< 0.001	<0.001	<0.001	< 0.001
	01/22/97	<0.001	< 0.001	<0.001	<0.001
	08/11/97	<0.001	< 0.001	<0.001	< 0.001
	01/23/98	< 0.001	< 0.001	<0.001	< 0.001
	08/03/98	0.007	< 0.001	<0.001	<0.001
	02/10/99	< 0.005	< 0.001	<0.001	< 0.001
	08/17/99	0.043	< 0.005	< 0.005	< 0.005
	02/17/00	0.021	<0.005	<0.005	<0.005
	08/23/00	0.006	< 0.005	<0.005	<0.005
	02/08/01	0.004	0.003	0.001	0.005
	07/30/01	0.004	< 0.002	< 0.001	< 0.003
	02/13/02	0.002	<0.001	<0.001	<0.001
	09/27/02	<0.002	<0.001	<0.001	<0.001
	03121102	~0.003	~0.003	~0.005	~0.003

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		Table 2 (C	Continued)		
	Sumn	nary of Dissolved	BTEX Concent	rations	
		Monument B	ooster Station		
Monitoring	Sampling	Benzene	Toluene	Ethylbenzene	Xylenes
Well	Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-4	05/16/95	<0.001	<0.001	<0.001	< 0.001
	11/15/95	0.045*	0.002*	0.006*	0.010*
	01/18/96	0.003	< 0.001	<0.001	< 0.001
	04/24/96	< 0.002	<0.002	< 0.002	< 0.002
	01/22/97	0.002	< 0.001	<0.001	< 0.001
	08/11/97	0.001	< 0.001	<0.001	< 0.001
	01/23/98	< 0.001	< 0.001	<0.001	< 0.001
	08/03/98	<0.001	< 0.001	<0.001	< 0.001
	02/10/99	<0.001	< 0.001	<0.001	< 0.001
	08/17/99	<0.001	< 0.001	< 0.001	0.001
[02/18/00	< 0.005	< 0.005	< 0.005	< 0.005
	08/23/00	<0.005	<0.005	< 0.005	< 0.005
l l	02/08/01	0.002	<0.001	< 0.001	0.002
1	07/30/01	<0.001	< 0.001	< 0.001	< 0.001
	02/13/02	<0.001	< 0.001	< 0.001	<0.001
	09/27/02	<0.001	< 0.001	<0.001	< 0.001
	05/16/95	0.265	0.009	0.261	0.050
MW-5	09/27/02	0.028	<0.005	0.049	0.043
MW-6	11/16/95	0.003	< 0.001	0.001	0.003
1	01/17/96	0.002	< 0.001	< 0.001	< 0.001
1	04/24/96	<0.001	< 0.001	< 0.001	< 0.001
	01/22/97	0.001	< 0.001	< 0.001	< 0.001
]	08/11/97	<0.001	< 0.001	< 0.001	0.001
	01/23/98	<0.001	< 0.001	< 0.001	< 0.001
1	08/03/98	< 0.001	< 0.001	< 0.001	< 0.001
	02/10/99	< 0.001	< 0.001	< 0.001	0.014
	08/17/99	0.002	<0.001	< 0.001	0.012
	02/18/00	< 0.001	< 0.001	0.004	0.006
	08/23/00	< 0.001	< 0.001	0.004	0.011
1	02/08/01	<0.001	< 0.001	<0.001	0.011
	07/30/01	< 0.001	< 0.001	<0.001	< 0.001
1	02/13/02	<0.001	<0.001	<0.001	<0.001
[09/27/02	< 0.005	< 0.001	<0.001	< 0.005
MW-7	11/15/95	0.465	<0.001	0.205	0.163
	01/17/96	1.130	0.003	0.476	0.365
1	04/24/96	0.585	< 0.002	0.251	0.013
	01/22/97	0.896	< 0.002	0.240	0.330
1	08/11/97	0.317	0.020	0.155	0.049
Į	01/23/98	0.876	< 0.005	0.486	0.181
-	08/03/98	0.094	< 0.005	0.064	0.101
	02/10/99	0.597	< 0.005	0.440	0.120
ľ	08/17/99	0.705	< 0.005	0.060	0.120
	02/18/00	0.703	<0.005	0.000	0.336
	08/23/00	0.575	0.005	0.490	0.220
	02/09/01	0.346	< 0.005	0.424	0.177
	07/30/01	0.355	<0.003	0.424	<0.032
	02/13/02	0.228	<0.005	0.038	0.003
1	09/27/02	0.228	<0.003	0.094	<0.030
NV000	Standards	0.010	0.75	0.75	0.62

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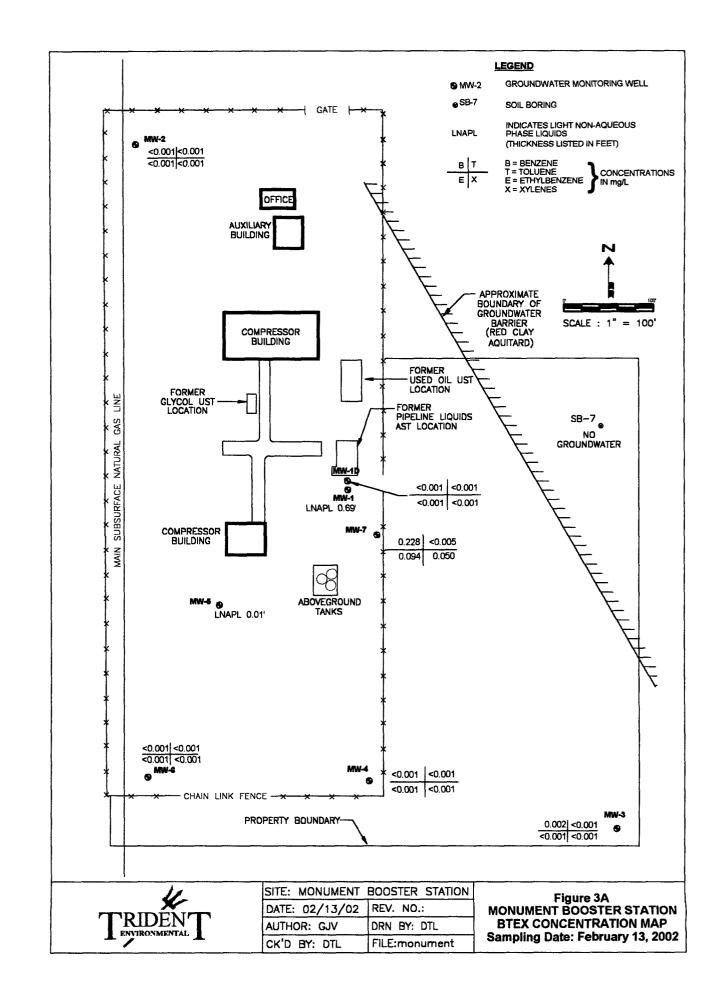
Analyses performed by Trace Analysis, Inc., Lubbock, Texas.

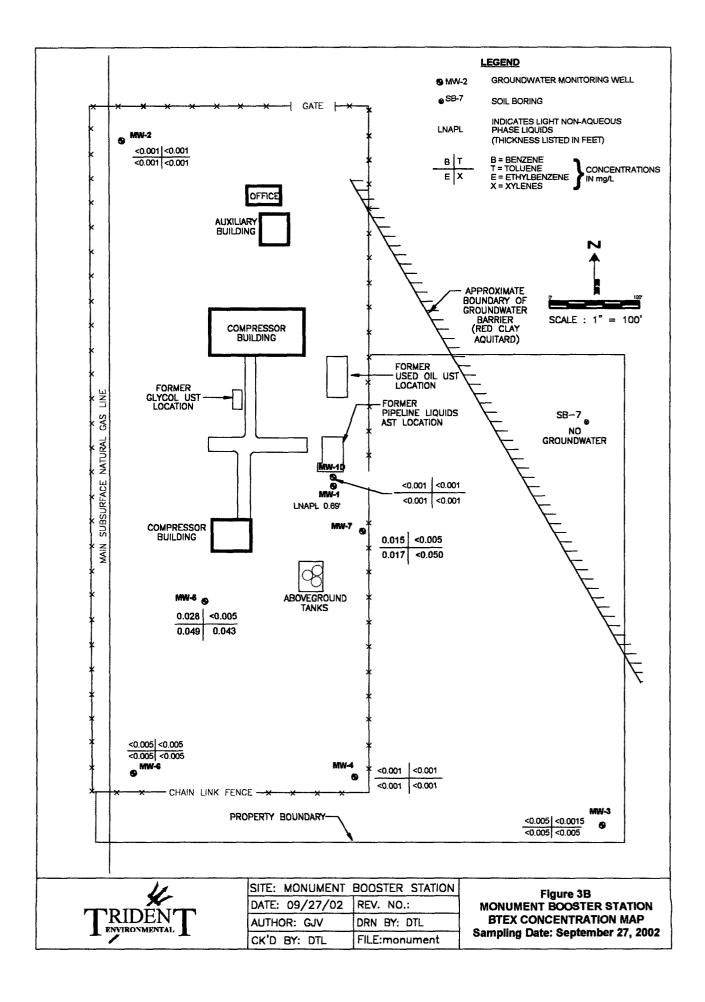
All samples analyzed for BTEX using EPA Method 8020 except for samples obtained on May 16, 1995 (EPA Method 8240).

Values listed in **boldface** type indicate concentrations exceed New Mexico Water Quality Control Commission (WQCC) standards.

Monitoring wells MW-1 and MW-5 (after May 16, 1995) were not sampled (due to presence of LNAPL).

* BTEX cross-contamination occurred on samples obtained from monitoring wells MW-2 & MW-4 during the 11/15/95 sampling event.





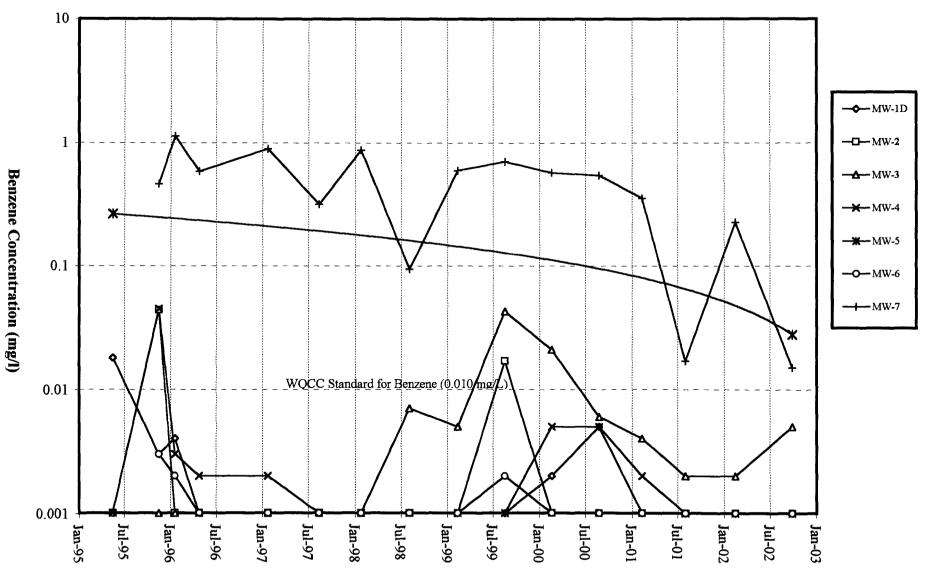


Figure 4 Benzene Versus Time

Sampling Date

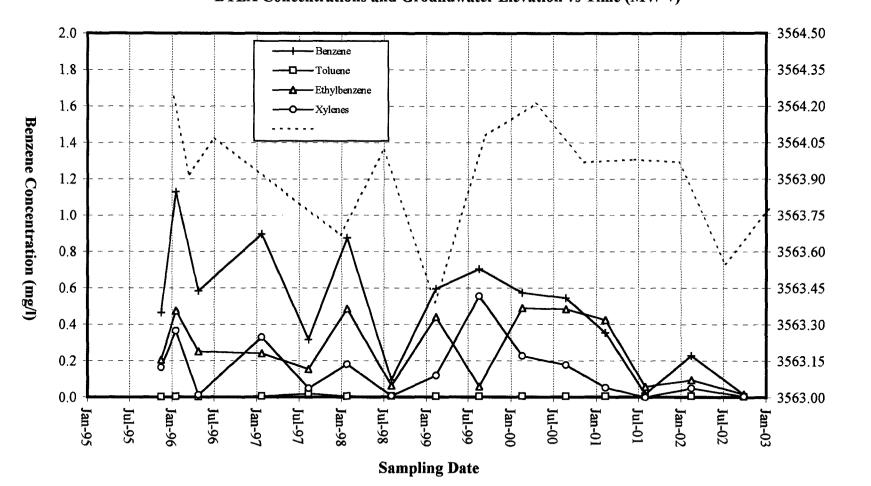


Figure 5 BTEX Concentrations and Groundwater Elevation vs Time (MW-7)

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Groundwater Elevation (ft)



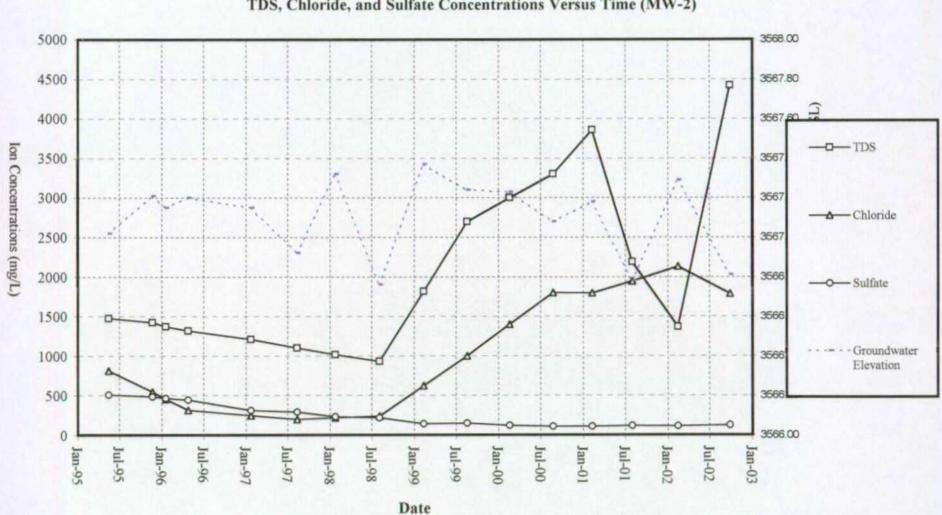


Figure 6 TDS, Chloride, and Sulfate Concentrations Versus Time (MW-2)

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			Table 4Summary of Metal and Major Ion Analytical Results	Metal and	Table 4 Major Ion	Analytical l	Results			
Constituent	Date	MW-1 (mg/L)	MW-1D (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)	MW-5 (mg/L)	MW-6 (mg/L)	MW-7 (mg/L)	WQCC Standards (mg/L)
	05-16-96 04-24-96	0.55 NS	1.34 0.2	13.10 <0.2	0.88 <0.7	8.04 <0.7	0.24 NS	10		
	08-11-97	NS	<0.2	0.32	<0.2	<0.2	SN	0.23	<0.2	
Aluminum (Al)	08-03-98	SN	<0.1 <0.1	0.17	1.7	0.10	SN	<0.1	0.14	Ś
	08-23-00	SN	<0.2	<0.2	<0.2	<0.2	SN	<0.2	<0.2	
	07-30-01	SN	<0.1	<0.1	€0.1 0.1	<0.1	SN	<0.1	<0.1	
	05-16-96	CN1 0>	1.0>	0	010	010	1.0	1.0	1.0	
	04-24-96	SN	0.012	0.011	0.019	0.008	NS	0.238	0.004	
	08-11-97	NS	<0.1	<0.1	<0.1	<0.1	NS	<0.1	<0.1	
	08-03-98	NS	<0.1	<0.1	<0.1	<0.1	NS	<0.1	<0.1	10
Arsenic (As)	08-17-99	NS	<0.1	<0.1	<0.1	<0.1	NS	<0.1	<0.1	1.0
	08-23-00	NS	<0.05	<0.05	<0.05	<0.05	NS	<0.05	0.06	
	07-30-01	NS	<0.05	<0.05	<0.05	<0.05	NS	<0.05	0.07	
	09-27-02	NS	<0.05	<0.05	<0.05	<0.05	0.119	<0.05	<0.05	
	05-16-96	0.85	0.22	0.37	60'0	0.14	0.39	1	1	
	04-24-96	NS	0.11	0.38	<0.03	0.06	NS	0.22	0.6	
	08-11-97	NS	<0.2	<0.2	<0.2	<0.2	NS	0.79	<0.2	
Boron (B)	08-03-98	NS	<0.75	<0.75	<0.75	<0.75	NS	<0.75	<0.75	0.75
	08-17-99	NS	0.15	0.23	0.19	0.21	NS	0.38	0.85	
	07-30-01	NS	0.14	0.18	0.16	0.18	NS	0.38	0.35	
	09-27-02	NS	0.299	0.527	0.510	0.500	0.774	1.17	0.610	
 Analyses performed by Trace Analysis, Inc. using EPA Methods 200.7, 239.2, 270.2, 272.2, 6010B, 160.1 and 300. Standards Bold values indicate concentrations exceed WQCC groundwater standards as listed as specified in Regulation 3-103. Indicates monitoring well was not sampled (due to presence of free product). Indicates monitoring well was installed after this sampling date. Samples were not filtered on 05-17-95, therefore results indicate total (dissolved and undissolved) metal concentrations. Samples were filtered with a 45 mm element between 04-24-96 and 09-27-02 therefore results indicate dissolved metal concentrations. 	performed by Trace Analysis, Inc. using EPA Methods 200.7, 239.2, 270.2, 2 Bold values indicate concentrations exceed WQCC groundwater standards Indicates monitoring well was not sampled (due to presence of free product) Indicates monitoring well was installed after this sampling date. vere not filtered on 05-17-95, therefore results indicate total (dissolved and t were filtered with a 45 mm element between 04-24-96 and 09-27-02 therefor	. using EPA M ons exceed W(t sampled (due stalled after thi refore results i nt between 04.	lethods 200.7, 2. QCC groundwatt 3 to presence of 1 is sampling date ndicate total (dii 24-96 and 09-2	39.2, 270.2, 2' er standards as free product). ssolved and ur 7-02 therefore	72.2, 6010B, 1 s listed as spec idissolved) me results indicat	60.1 and 300. ified in Regula tal concentratione dissolved me	ttion 3-103. ons. stal concentrati	SUD		
Ardumo										

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Standards wQCC (mg/L) 0.05 0.2 MW-7 (mg/L) <0.05 <0.05<0.05 <0.05 <0.01 <0.01</td> --0.38 0.41 0.19 0.22 0.33 0.261 ł **MW-6** (mg/L) <0.05 <0.05 <0.05 0.26 0.42 0.36 0.36 0.484 0.36 0.52 0.36 0.36 0.34 0.34 0.34 0.34 0.389 <0.01 <0.01
<0.01 0.06 ---0.15 0.21 MW-5 (mg/L) 0.02 NS NS NS NS NS NS NS Summary of Metal and Major Ion Analytical Results MW-4 (mg/L) <0.05 <0.05 <0.05 <0.05 <0.05 <0.01 <0.05 <0.05 0.02 <0.05 <0.01</td> <0.1 0.11 <0.01 <0.01 <0.1 **4.68** 0.08 0.08 <0.1 < 0.10.066 0.03 0.07 Table 4 (continued) MW-3 (mg/L) <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 0.01 <0.05 <0.05 <0.01 <0.01 <0.01 0.53 0.17 0.14 0.55 <0.1 0.08 <0.01 <0.01 <0.1 <0.1 <0.01 0.03 0.525 0.057 MW-2 (mg/L) <0.025 <0.025 <0.05 <0.05 <0.05 <0.025 **0.06** <0.05 <0.05 <0.05 <0.05 <0.01 0.02 0.02 0.033 **5.82** 0.07 0.24 <0.1 <0.1 0.12 <0.01 <0.01 ≤0.1 <0.1 0.02MW-1D (mg/L) <0.01 <0.05 <0.05 <0.05 <0.05 <0.01 <0.01
<0.01 <0.1 0.19 0.20 0.21 0.149 <0.05</pre> 0.20 0.20 0.186 0.157 **4.6** 0.06 0.28 0.31 0.37 0.35 0.35 0.18 MW-1 (mg/L) 0.67 NS NS NS NS NS NS NS NS NS 08-23-00 07-30-01 08-03-98 08-17-99 08-17-99 04-24-96 08-23-00 08-11-97 07-30-01 02-13-02 04-24-96 38-03-98 09-27-02 05-16-96 02-13-02 09-27-02 05-16-96 04-24-96 08-03-98 08-17-99 07-30-01 05-16-96 38-11-97 08-11-97 08-23-00 09-27-02 Date Manganese (Mn) Chromium (Cr) Constituent Iron (Fe)

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Constituent Date MW-1 MW-10 MW-2 MW-3 MW-4 MW-5 MW-7 Standards Constituent Date (mg/L) (mg/L)				Table 4 (continued) Summary of Metal and Major Ion Analytical Results	Table 4 Metal and	Table 4 (continued) al and Major Ion A	l) Analytical F	tesults			
77 812 188 152 80 $$ $$ 77 812 188 152 80 $$ $$ 20 200 140 NS 160 180 180 180 21 134 167 NS 160 190 170 180 20 240 190 190 170 NS 160 120 59 1,790 181 139 50 125 50 74 59 1,11 1,5 1,1 NS 123 67 74 50 1,31 1,5 1,1 NS 123 67 74 50 1,3 1,5 1,1 NS 0,3 27 27 21 1,5 1,1 NS 1,5 1,8 2,7 2,7 21 1,3 1,5 1,1 NS 1,5 2,7 2,7 21 1,7	Constituent	Date	MW-1 (mo/1)	MW-1D	MW-2 (mg/l.)	MW-3 (mo/l.)	MW-4 (mg/L)	MW-5 (ma/L)	MW-6	MW-7 (mo/1)	WQCC Standards
77 812 188 152 80 $$ 24 314 134 167 NS 186 143 20 200 160 NS 150 160 180 91 1,000 190 170 NS 160 120 65 1,800 190 170 NS 140 74 59 1,790 183 12 1.4 0.7 74 59 1,790 183 12 1.4 0.7 74 50 15 1.1 1.8 1.2 1.4 0.7 66 1.3 1.5 1.1 NS 1.2 1.8 1.1 1.8 1.1 NS 1.3 1.3 1.3 2.7 1.9 NS 1.3 1.5 1.1 NS 1.8 2.7 1.9 NS 1.5 1.1 NS 1.8 2.7 2.7 1.9 </td <td></td> <td></td> <td>(1) (1)</td> <td>(न<i>वि</i>गा)</td> <td>(m/Amr)</td> <td>(17/Яш)</td> <td>(न<i>वि</i>गा)</td> <td>(1)/Яш)</td> <td>(1) (1)</td> <td>(मक्रीm)</td> <td>(mg/L)</td>			(1) (1)	(न <i>वि</i> गा)	(m/Amr)	(17/Яш)	(न <i>वि</i> गा)	(1)/Яш)	(1) (1)	(मक्रीm)	(mg/L)
24 314 134 167 NS 186 143 80 200 140 160 NS 160 120 91 1,000 190 170 NS 160 120 55 1,800 190 170 NS 140 74 56 1,790 181 139 50 123 67 59 1,790 181 139 50 126 74 59 1,790 181 139 50 126 50 50 1,1 1.5 1.1 NS 126 1.8 166 1.3 NS 1.4 166 1.1 1.5 1.1 NS 1.8 1.8 170 1.8 1.6 1.8 NS 1.8 2.7 171 1.7 2.0 1.8 NS 1.8 2.7 17 2.0 1.8 NS 1.8 2.7 2.7 2.1 1.7 2.0		05-16-95	NS	77	812	188	152	80	1]	
80 200 140 140 NS 160 180 120 180 120		04-24-96	NS	124	314	134	167	NS	186	143	
20 240 160 160 NS 150 160 120 91 1,000 190 170 NS 160 120 120 55 1,700 181 139 50 123 67 74 65 1,700 181 139 50 126 50 74 66 1,11 1,8 1,1 1,8 1,2 1,4 74 50 74 67 1,3 1,5 1,1 NS 1,2 1,8 1,6 1,8 1,6 1,8 1,6 1,8 1,8 1,8 1,8 1,8 1,8 1,8 1,8 1,8 1,8 1,8 2,7 1,8 1,8 1,8 1,8 1,8 1,8 1,8 1,8 2,7 1,8 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 2,7 <td></td> <td>08-11-97</td> <td>NS</td> <td>180</td> <td>200</td> <td>140</td> <td>140</td> <td>NS</td> <td>160</td> <td>180</td> <td></td>		08-11-97	NS	180	200	140	140	NS	160	180	
91 1,000 190 170 NS 160 120 55 1,800 190 150 NS 140 74 59 1,790 181 139 50 123 67 66 2,170 181 139 50 126 50 74 16 1.1 1.8 1.2 1.4 16 1.1 1.5 1.1 NS 0.9 1.8 1.6 1.3 1.8 17 2.0 1.5 1.1 NS 0.9 1.8 2.7 2.7 1.7 2.0 1.8 NS 1.3 1.8 2.7 3.7 7.42 5.62 3.69 0.56 0.1 0.3 0.1 NS 1.8 1.5 2.1 1.5 2.3 3.7 7.42 5.62 3.69 0.56 2.0 2.3 2.3	Chlorida (Cl)	08-03-98	NS	120	240	160	160	NS	150	160	020
65 1,800 190 150 NS 140 74 39 1,790 181 139 50 126 50 16 1.1 1.8 1.2 1.4 16 1.1 1.5 1.1 NS 0.9 1.8 19 1.3 1.5 1.1 NS 0.9 1.8 19 1.3 1.6 1.3 NS 1.3 1.8 2.7 1.7 2.0 1.8 NS 1.3 1.8 2.7 1.7 2.0 1.8 NS 1.3 1.8 2.7 1.7 2.0 1.8 NS 1.5 2.7 3.7 7.42 5.62 3.69 0.56 0.1 0.3 1.5 1.1 NS 2.6 2.7 3.7 7.42 5.62 3.69 0.56 0.1		08-17-99	NS	91	1,000	190	170	NS	160	120	007
59 1,790 183 146 NS 123 67 46 2,170 181 1.39 50 126 50 16 1.1 1.5 1.1 NS 1.2 1.4 16 1.1 1.5 1.1 NS 1.3 0.9 1.8 2.4 1.8 1.6 1.3 NS 1.3 NS 1.3 2.7 2.9 1.8 1.6 1.3 NS 1.3 2.7 2.7 2.9 1.8 2.0 1.8 NS 1.5 2.7 2.7 3.0 1.9 2.1 1.9 NS 1.5 2.7 3.1 1.9 NS 1.8 NS 1.8 2.7 3.1 1.9 0.1 0.1 NS 2.2 2.7 3.1 1.1 NS 1.8 2.0 2.6 0.9 3.1 1.9 0.1 NS 2.0 2.6 0.1 0.1 1.1 0.3 0.1 <		08-23-00	NS	65	1,800	190	150	SN	140	74	
46 2.170 181 139 50 126 50 1.8 1.1 1.5 1.1 NS 0.9 1.8 1.6 1.1 1.5 1.1 NS 0.9 1.8 2.4 1.8 1.6 1.3 NS 1.3 1.8 2.7 1.7 2.0 1.5 NS 1.3 1.8 2.7 1.7 2.0 1.5 NS 1.3 2.7 2.9 1.8 2.0 1.5 NS 1.5 2.7 3.7 7.42 5.62 3.69 0.56 0.1 0.3 0.1 NS 2.0 2.5 2.7 0.1 0.3 0.1 NS 2.0 2.6 0.1 6.0 1.0 9 9.4 <1.0		07-30-01	NS	59	1,790	183	146	NS	123	67	
1 1.8 1.2 1.4 1 1.5 1.1 1.5 1.1 NS 0.9 1.8 1 1.5 1.1 NS 0.85 1.8 1.8 1.8 2.7 1.7 2.0 1.5 NS 1.5 2.7 2.7 1.7 2.0 1.8 NS 1.8 2.7 2.9 1.8 2.0 1.8 NS 1.8 2.7 3.0 1.9 2.1 1.9 NS 1.8 2.7 3.0 1.9 2.1 1.9 NS 2.0 2.3 3.1 1.9 NS 1.8 2.0 2.5 2.3 0.1 0.3 0.1 NS 2.0 2.3 2.3 1.0 9 9.4 0.3 0.1 NS <0.1		09-27-02	NS	46	2,170	181	139	50	126	50	
1 1.5 1.1 NS 0.9 1.8 1.9 1.3 1.5 1.1 NS 0.9 1.8 2.4 1.8 1.6 1.3 NS 1.3 1.8 2.7 2.7 1.7 2.0 1.5 NS 1.5 2.7 2.9 1.8 2.0 1.8 NS 1.8 2.7 8.0 1.9 2.1 1.9 NS 1.8 2.7 8.0 1.9 2.1 1.9 NS 1.8 2.7 8.0 1.9 2.1 1.9 NS 2.0 2.5 9 1.8 1.5 1.1 NS 2.0 2.3 0.1 0.3 0.1 NS 2.0 2.3 2.3 0.1 0.3 0.1 NS 2.0 2.3 2.3 1.0 9 9.4 2.0 0.56 1.0 9 1.1 NS <1.0		05-16-95	SN	1.8	1.1	1.8	1.2	1.4	1		
[19] 1.3 1.5 1.1 NS 0.85 1.8 2.4 1.8 1.6 1.3 NS 1.3 1.8 1.6 2.7 1.7 2.0 1.5 NS 1.5 2.7 2.9 1.8 2.0 1.8 NS 1.5 2.7 3.0 1.9 NS 1.8 2.0 2.8 2.7 3.0 1.9 NS 2.1 1.9 NS 2.7 3.7 7.42 5.62 3.69 0.56 0.1 0.3 0.1 NS 2.0 2.5 2.3 0.1 0.3 0.3 0.1 NS 2.0 2.6 1.0 9 9.4 4.0 2.6 NS <1.0		04-24-96	NS	1.6	1.1	1.5	1.1	NS	0.9	1.8	
2.4 1.8 1.6 1.3 NS 1.3 1.8 2.7 2.9 1.7 2.0 1.5 NS 1.5 2.7 2.9 1.8 2.0 1.8 NS 1.5 2.7 3.0 1.9 2.0 1.8 NS 1.5 2.7 3.0 1.9 2.1 1.9 NS 2.0 2.5 2.7 3.7 7.42 5.62 3.69 0.56 -1 -1.5 2.3 3.7 7.42 5.62 3.69 0.56 -1 -1.5 2.3 0.1 0.3 0.1 NS <1.0 NS <1.0 2.0 0.1 0.3 0.1 NS <1.0 NS <1.0 <1.0 3.0 1.5 1.1 NS <1.0 <1.0 <1.0 <1.0 <1.0 0.1 0.3 2.6 1.49 <1.0 $NS <1.0 <1.0 <1.0$		08-11-97	NS	1.9	1.3	1.5	1.1	NS	0.85	1.8	
2.7 1.7 2.0 1.5 NS 1.5 2.7 2.0 1.8 2.0 1.8 NS 1.5 2.7 3.0 1.9 2.1 1.9 NS 2.0 2.5 2.0 1.8 1.5 2.1 1.9 NS 2.0 2.5 2.0 1.9 2.1 1.9 NS 2.0 2.5 3.7 7.42 5.62 3.69 0.56 $$ $$ 0.1 0.3 0.1 NS <1.0 2.1 <0.1 1.0 9 9.4 <1.0 NS <1.0 <1.0 2.8 3.0 1.5 1 NS <1.0 <1.0 8.8 4.0 3.5 2.6 NS <1.0 <1.0 2.69 1.49 <1.0 NS <1.0 <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 <1.0	Elizarida (E)	08-03-98	NS	2.4	1.8	1.6	1.3	NS	1.3	1.8	
2.9 1.8 2.0 1.8 NS 1.8 2.7 3.0 1.9 2.1 1.9 NS 2.0 2.5 3.7 7.42 5.62 3.69 0.56 $$ 0.3 0.1 NS 2.0 2.5 0.1 0.3 0.1 NS <0.1 <0.1 0.1 9 9.4 <0.3 0.28 0.39 0.39 0.1 9 9.4 0.35 <1.0 <1.0 <1.0 8 4.0 3.5 2.5 NS <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 0.3 2.69 1.49 </td <td>LINNING (L)</td> <td>08-17-99</td> <td>NS</td> <td>2.7</td> <td>1.7</td> <td>2.0</td> <td>1.5</td> <td>NS</td> <td>1.5</td> <td>2.7</td> <td>0.1</td>	LINNING (L)	08-17-99	NS	2.7	1.7	2.0	1.5	NS	1.5	2.7	0.1
3.0 1.9 2.1 1.9 NS 2.0 2.5 2.3 2.9 1.5 1.8 1.5 2.1 1.9 NS 2.0 2.5 2.3 2.1 1.5 1.1 NS < 2.10 < 2.3 2.3 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.5 2.10 2.5 2.10 2.5 2.10 2.5 2.10 2.5 2.10 2.5 2.10 2.5 2.5 2.5 2.5 <th< td=""><td></td><td>08-23-00</td><td>NS</td><td>2.9</td><td>1.8</td><td>2.0</td><td>1.8</td><td>NS</td><td>1.8</td><td>2.7</td><td></td></th<>		08-23-00	NS	2.9	1.8	2.0	1.8	NS	1.8	2.7	
29 1.5 1.8 1.5 2.1 1.5 2.3 377 7.42 5.62 3.69 0.56 0.1 0.3 0.1 NS <0.1 <0.1 <0.1 1.0 9 9.4 <1.0 NS <0.1 <0.1 1.0 9 9.4 <1.0 NS <0.1 <0.1 1.0 9 9.4 <1.0 NS <1.0 <1.0 8 3.0 1.5 1 NS <1.0 <1.0 8 4.0 3.5 2.5 NS <1.0 <1.0 8 2.0 3.3 2.6 NS <1.0 <1.0 0.1 2.6 1.49 <1.0 NS <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 0.3 2.69 1		02-30-01	SN	3.0	1.9	2.1	1.9	NS	2.0	2.5	
.37 7.42 5.62 3.69 0.56 0.1 0.3 0.3 0.3 0.1 NS <0.1 <0.1 1.0 9 9.4 <1.0 NS <0.1 <0.1 <0.1 2.0 9.4 <1.0 NS <1.0 <1.0 <1.0 2.8 30 15 1 NS <1.0 <1.0 <1.0 8 4.0 3.5 2.5 NS <1.0 <1.0 <1.0 8.4 2.0 3.3 2.6 NS <1.0 <1.0 <1.0 0.1 2.6 1.8 1.1 NS <1.0 <1.0 <1.0 0.1 2.6 1.49 <1.0 NS <1.0 <1.0 <1.0 <1.0 0.1 2.6 1.49 <1.0 NS <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0		09-27-02	NS	2.9	1.5	1.8	1.5	2.1	1.5	2.3	
0.1 0.3 0.3 0.3 0.1 NS <0.1 <0.1 1.0 9 9.4 <1.0 NS <1.0 <1.0 <1.0 2.8 30 15 1 NS <1.0 <1.0 <1.0 2.8 30 15 1 NS <1.0 <1.0 <1.0 8.8 4.0 3.5 2.5 NS <1.0 <1.0 8.8 4.0 3.5 2.6 NS <1.0 <1.0 8.4 2.0 3.3 2.6 NS <1.0 <1.0 8.4 2.0 3.3 2.6 NS <1.0 <1.0 0.1 2.6 1.49 <1.0 NS <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 0.1 0.1 0.1 0.1 0.1 0.6 0.2 0.0 0.1 0.1 0.1 0.1 0.6 <td></td> <td>05-16-95</td> <td>SN</td> <td>1.37</td> <td>7.42</td> <td>5.62</td> <td>3.69</td> <td>0.56</td> <td>1</td> <td></td> <td></td>		05-16-95	SN	1.37	7.42	5.62	3.69	0.56	1		
1.0 9 9.4 <1.0		04-24-96	SN	<0.1	0.3	0.3	0.1	NS	<0.1	<0.1	
2.8 30 15 1 NS 0.28 0.39 4.0 4.0 2.9 NS <1.0 <1.0 <1.0 8.8 4.0 3.5 2.5 NS <1.0 <1.0 <1.0 8.8 4.0 3.5 2.5 NS <1.0 <1.0 <1.0 8.4 2.0 3.3 2.6 NS <1.0 <1.0 <1.0 0.1 2.69 1.49 <1.1 NS <1.0 <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 <1.0 0.1 0.1 0.1 0.6 0.2 0.3 <1.0 <1.0 0.1 0.1 0.1 0.6 0.2 0.3 <1.0 <1.0 0.1 0.1 0.1 0.1 0.6 0.2 0.3 <1.0 sence of free product). <1.0 <1.0 <td></td> <td>08-11-97</td> <td>SN</td> <td><1.0</td> <td>6</td> <td>9.4</td> <td><1.0</td> <td>NS</td> <td><1.0</td> <td><1.0</td> <td></td>		08-11-97	SN	<1.0	6	9.4	<1.0	NS	<1.0	<1.0	
4.0 4.0 2.9 NS <1.0 <1.0 8.8 4.0 3.5 2.5 NS <1.0 <1.0 8.4 2.0 3.5 2.5 NS <1.0 <1.0 8.4 2.0 3.5 2.5 NS <1.0 <1.0 8.4 2.0 3.3 2.6 NS <1.0 <1.0 0.1 2.6 1.8 1.1 NS <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 0.3 0.1 0.1 0.1 0.1 0.6 0.2 0.3 0.6 0.2 0.2 0.2 0.2 0.3 0.3 0.1 0.1 0.1 0.1 0.1 0.6 0.2 0.3 0.1 0.1 0.1 0.1 0.1 0.6 0.2 0.3 sence of free product). 0.1 0.1 0.6 0.2 0.3 0.3 <		01-23-98	NS	2.8	30	15	1	NS	0.28	0.39	
8.8 4.0 3.5 2.5 NS <1.0 <1.0 8.4 2.0 3.3 2.6 NS <0.1 <1.0 2.1 2.6 1.8 1.1 NS <0.1 <1.0 2.6 1.8 1.1 NS <0.1 <1.0 <1.0 0.1 2.6 1.49 <1.0 NS <1.0 <1.0 0.3 2.69 1.49 <1.0 NS <1.0 <1.0 0.7 0.1 0.1 0.1 0.1 0.6 0.2 0.3 0.0 1.49 <1.0 NS <1.0 0.3 0.3 0.0 0.1 0.1 0.1 0.1 0.6 0.2 0.3 0.0 0.1 0.1 0.1 0.1 0.6 0.2 0.0 0.1 0.1 0.1 0.1 0.2 0.3 0.0 0.2 0.2 0.2 0.2 0.2 0.3 <	Nitesto NO ND	08-03-98	SN	4.0	4.0	4.0	2.9	NS	<1.0	<1.0	0.01
3.4 2.0 3.3 2.6 NS <0.1 2.1 2.6 1.8 1.1 NS <1.0 0.3 2.69 1.49 <1.0 NS <1.0 0.3 2.69 1.49 <1.0 NS <1.0 0.5 1.3 0.1 0.1 0.6 0.2 0.5 1.3 0.1 0.1 0.6 0.2 0.6 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.1 0.6 0.5 0.1 0.1 0.1 0.6 0.5 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.1 0.6 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.1 0.6 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.1 0.1 0.1 0.1 0.6 0.1 0.2 0.1 0.1 <td></td> <td>08-17-99</td> <td>SN</td> <td>3.8</td> <td>4.0</td> <td>3.5</td> <td>2.5</td> <td>NS</td> <td><1.0</td> <td><1.0</td> <td>10.01</td>		08-17-99	SN	3.8	4.0	3.5	2.5	NS	<1.0	<1.0	10.01
2.1 2.6 1.8 1.1 NS <1.0 0.3 2.69 1.49 <1.0 NS <1.0 0.3 2.69 1.49 <1.0 NS <1.0 0.5 1.3 0.1 0.1 0.6 0.2 0.0 dwater standards as listed as specified in Regulation 3-103. <1.03 <1.03 sence of free product). 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.1 0.6 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.6 0.2 0.1 0.1 0.1 0.1 0.6 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.1 0.2 <td></td> <td>08-23-00</td> <td>SN</td> <td>3.4</td> <td>2.0</td> <td>3.3</td> <td>2.6</td> <td>NS</td> <td><0.1</td> <td><1.0</td> <td></td>		08-23-00	SN	3.4	2.0	3.3	2.6	NS	<0.1	<1.0	
.03 2.69 1.49 <1.0		07-30-01	NS	2.1	2.6	1.8	1.1	NS	<1.0	<1.0	
0.5 1.3 0.1 0.1 0.6 oundwater standards as listed as specified in Regulation 3-103. sence of free product). ning date. total (dissolved and undissolved) metal concentrations. and 09-27-02 therefore results indicate dissolved metal concentrations.		02-13-02	NS	2.03	2.69	1.49	<1.0	SN	<1.0	0.3	
		09-27-02	NS	0.5	1.3	0.1	0.1	0.6	0.2		_
	Standards Bold values indi	icate concentratic	ons exceed W(2CC groundwate	r standards as	listed as spec.	ified in Regula	tion 3-103.			
		ring well was not	t sampled (due	to presence of f	ree product).						
	Samples were not filtered c	ring well was ins m 05-17-95, thei	stalled after un refore results i	is sampling date. ndicate total (dis	solved and un	dissolved) me	tal concentratic	Suc.			
	Samples were filtered with	a 45 mm elemen	nt between 04-		7-02 therefore	results indicat	e dissolved me	tal concentrati	ons.		

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			Table 4 (continued) Summary of Metal and Major Ion Analytical Results	Table Metal and	Table 4 (continued) al and Major Ion A	d) Analytical l	Results			
Constituent	Date	MW-1 (mg/L)	MW-1D (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)	MW-5 (mg/L)	MW-6 (mg/L)	MW-7 (mg/L)	WQCC Standards (mg/L)
Sulfate (SO4)	05-16-95 04-24-96 08-11-97 01-23-98 08-03-98 08-17-99 08-23-00 07-30-01 02-13-02 09-27-02	NS NS NS NS NS NS NS NS NS NS	174 169 110 190 120 93 86.3 833	509 443 290 230 230 150 116 116 115	115 95 75 240 80 84 84 87 67 67 74	136 115 96 180 120 120 92 92 94	67 NS NS NS NS NS NS NS S7 S7 S7 S7 S7 S7 S7 S7 S7 S7 S7 S7 S7	 70 37 45 82 82 83 48.9 39	 149 76 180 90 19 66 30.9 71	600
Total Dissolved Solids (TDS)	05-16-95 04-24-96 08-03-98 08-03-98 08-17-99 08-23-00 07-30-01 09-27-02	NS NS NS NS NS NS NS NS NS	634 702 770 640 560 548 548 548	1,478 1,318 1,100 930 2,700 3,300 4,440	516 598 670 640 830 844 776	716 759 800 750 790 790 791 810	692 NS NS NS NS S49 S49	 929 870 920 907 934	 828 860 860 850 790 658 658	1,000
Analyses performed by Trace Analysis, Inc. using EPA Methods 200.7, 239.2, 270.2, 272.2, 6010B, 160.1 and 300. Standards Bold values indicate concentrations exceed WQCC groundwater standards as listed as specified in Regulation 3-103. NS Indicates monitoring well was not sampled (due to presence of free product). Indicates monitoring well was installed after this sampling date. Samples were not filtered on 05-17-95, therefore results indicate total (dissolved and undissolved) metal concentrations. Samples were filtered with a 45 mm element between 04-24-96 and 07-30-01 therefore results indicate dissolved metal concentrations.	tee Analysis, Inc icate concentrati ring well was no ring well was inc m 05-17-95, the a 45 mm eleme	using EPA N ions exceed W(at sampled (due stalled after thi refore results i int between 04.	fethods 200.7, 2: QCC groundwat 2 to presence of 1 is sampling date ndicate total (di: -24-96 and 07-3(39.2, 270.2, 27 er standards as free product). solved and un -01 therefore	72.2, 6010B, 1 s listed as spec dissolved) me results indicat	60.1 and 300. ified in Regula tal concentrative e dissolved me	ttion 3-103. ons. ttal concentrati	ons,		

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6.0 Monitoring Natural Attenuation

The following assessment for intrinsic bioremediation occurring on site is identical to last year's annual report and is being repeated because the same trends and conditions are present.

During biodegradation, dissolved BTEX is ultimately transformed into carbon dioxide, methane, and water. Biodegradation of BTEX dissolved in groundwater results in a reduction of contaminant concentration (and mass) and slowing (retardation) of the contaminant relative to the average advective groundwater flow velocity. Indigenous hydrocarbon-degrading microorganisms transform available nutrients into forms useful for energy and cell reproduction by facilitating the transfer of electrons from donors to acceptors. This results in oxidation of the electron donor and reduction of the electron acceptor. Electron donors include natural organic material and petroleum hydrocarbons. Electron acceptors are elements or compounds that occur in relatively oxidized states. The more important electron acceptors in groundwater, in order of utilization, include dissolved oxygen, (DO), nitrate (NO₃), ferric iron (Fe³⁺), sulfate (SO₄), and carbon dioxide (CO₂).

Biodegradation causes measurable changes in groundwater geochemistry. During aerobic respiration, oxygen is reduced to water, and dissolved oxygen concentrations decrease. In anaerobic systems where nitrate is the electron acceptor, the nitrate is reduced (denitrification) to NO_2^- , N_2O , NO, NH^{4+} , or N_2 , and nitrate concentrations decrease. In anaerobic systems where ferric iron (Fe³⁺) is the electron acceptor, it is reduced (iron reduction) to ferrous iron (Fe²⁺), and Fe²⁺ concentrations increase. In anaerobic systems where sulfate is the electron acceptor, it is reduced to hydrogen sulfide (H₂S), and sulfate concentrations decrease (sulfate reduction). In anaerobic systems where CO₂ is used as an electron acceptor, methanogenic bacteria reduce it (methanogenosis) to methane (CH₄).

Using the stoichiometric derivations, the mass of benzene degraded per unit mass of electron acceptor utilized and metabolic byproduct produced was calculated to determine the biodegradation capacity of these constituents relative to the highest observed benzene concentration on site. A conservative approach was taken in this analysis in that microbial cell mass production was not taken into account for nitrate or sulfate and only average concentrations of electron acceptors and metabolic byproducts were used. The table below summarizes this comparison.

Electron Acceptor/ Byproduct	Terminal Electron Accepting Process (in order of preferred utilization)	Trend in Analyte Concentration During Biodegradation	Mass of benzene Degraded per unit mass of Electron Acceptor Utilized	Mass of benzene Degraded per unit mass of Metabolic Byproduct Produced	Average Concentrations of Electron Acceptors/ Byproducts (mg/L)	Biodegradation Capacity of Electron Acceptors/ Byproducts (mg/L)
DO	Aerobic Respiration	Decreases	0.97		4.54	4.40
NO3*	Denitrification	Decreases	0.21		2.60	0.55
Fe ²⁺	Ferric Iron Reduction	Increases		0.046	1.18	0.05
SO4*	Sulfate Reduction	Decreases	0.22		129	28.36
				Total Biodegra	dation Capacity	33,36
			Highest O	bserved Benzen	e Concentration	1.13

* Concervative assumption (does not take into account microbial cell mass production)



Our suite of biological parameters included dissolved oxygen, nitrate, sulfate, dissolved iron, and manganese. These electron acceptor results are summarized in Table 5. Changes in dissolved oxygen, nitrate, sulfate, iron, and manganese concentrations with time are depicted in Figures 7, 8, 9, 10, and 11, respectively.

Hydrocarbon-impacted wells (MW-1D and MW-7) are compared against upgradient and downgradient wells (MW-2, MW-3, MW-4, and MW-6) to observe whether or not significant differences are observed in electron acceptor concentrations that may be related to subsurface biodegradation. The relationships in the electron acceptor data are observed:

- Generally, dissolved oxygen levels have been lower within the hydrocarbon-impacted plume area compared to the downgradient and upgradient wells indicating active aerobic biodegradation conditions.
- Nitrate concentrations fluctuate over time therefore no trend relationship is noted. However, the presence of nitrate as an electron acceptor indicates its availability for microorganisms in the course of hydrocarbon degradation.
- Generally, sulfate concentrations have decreased with time indicating its utilization as an electron acceptor under anaerobic conditions.
- Increased concentrations of the metabolic byproducts iron and manganese in monitoring well MW-7 indicates iron and manganese reduction conditions that are the result of anaerobic biodegradation processes.
- The biodegradation capacity of electron acceptors and metabolic byproducts (33.36 mg/L) far exceeds the highest benzene concentration observed on site in the past (1.13 mg/L in MW-7 during the January 1996 sampling event) by a ratio of 30 to 1. The most recent benzene concentration in MW-7 was 0.015 mg/L during the August 2002 sampling event. This indicates that the biodegradation process has been occurring and will continue.



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			Т	able 5			
		Summar			neter Results		
				, Booster St			
Monitoring	Sampling	DO	Nitrate	Sulfate	Total Iron	Ferrous Iron	Manganese
Well	Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-1D	05/16/95	1.05	1.37	174	4.6		0.3
	11/15/95	1.26	< 0.01	119			
	01/18/96	4.8	0.6	168			
	04/24/96	2.6	<0.1	169	0.06		0.37
	01/22/97	7.0	< 0.1	83			
	08/11/97	3.6	<0.1	110	0.28		0.35
	01/23/98	4.6	2.8	190			
	08/03/98	2.16	4.0	100	<0.1		0.22
	02/10/99	2.7	4.6	110			
	08/17/99	1.03	3.8	120	0.19	* = =	0.18
	02/18/00	0.41	3.6	92			
	08/23/00	1.01	3.4	98	0.20		0.20
	02/09/01	0.00	2.0	95			
	07/30/01	2.00	2.0	93	0.21		0.20
	02/13/02	2.64	2.03	86.3	0.149		0.186
	09/27/02	2.73	0.5	82.5	< 0.05	0.05	0.157
MW-2	05/16/95	6.48	7.42	509	5.82	0.05	0.137
111112	11/15/95	6.13	7.42		5.62		0.12
	01/18/96	6.2					
	04/24/96	1.5	0.3	443	0.07		< 0.01
	01/22/97	9.0	2.1	310			
	08/11/97	7.6	9.0	290	0.24		<0.01
	01/23/98	8.2	30.0	230			-0.01
	08/03/98	7.00	4.0	220	<0.1		<0.1
	02/10/99	8.3	4.8	140	-0.1		-0.1
	08/17/99	5.98	4.0	150	< 0.1		<0.1
	02/18/00	5.65	4.1	120	-0.1		
	08/23/00	6.39	2.0	110	<0.05		< 0.01
	02/08/01	7.58	2.6	110			-0.01
	07/30/01	7.57	2.6	116	< 0.05		<0.025
	02/13/02	9.39	2.69	115	< 0.05		<0.025
	09/27/02	8.19	1.3	125	< 0.05	0.11	<0.025
MW-3	05/16/95	6.85	5.62	115	0.53	0.11	0.08
141 44 -5	11/15/95	1.29	5.02		0.55		0.08
	01/18/96	4.9					
	04/24/96	1.0	0.3	95	0.17		<0.01
	01/22/97	8.75	0.5 2.7	76	0.17		-0.01
	08/11/97	9.2	2.7 9.4	70 75	0.14		< 0.01
	01/23/98	7.7	15.0	240	0.17		-0.01
	08/03/98	3.43	4.0	80	0.55		<0.1
	02/10/99	5.80	4.9	74			~V.1
	08/17/99	4.04	3.5	84	<0.1		<0.1
	02/17/00	6.24	3.7	69	~V.1		~0.1
	08/23/00	6.24 6.25	3.7	09 72	< 0.05		< 0.01
	03/23/00	6.90	1.8	67	~0.05		NU.UI
	07/30/01	5.75	1.8	67 67	< 0.05		0.029
	02/13/02	9.32	1.8	67.6	<0.05 <0.05		0.029
	02/13/02	6.36	0.1	73.5	< 0.05	0.14	0.055
	07121102	0.50	0.1	12.2	-0.05	0.14	0.037

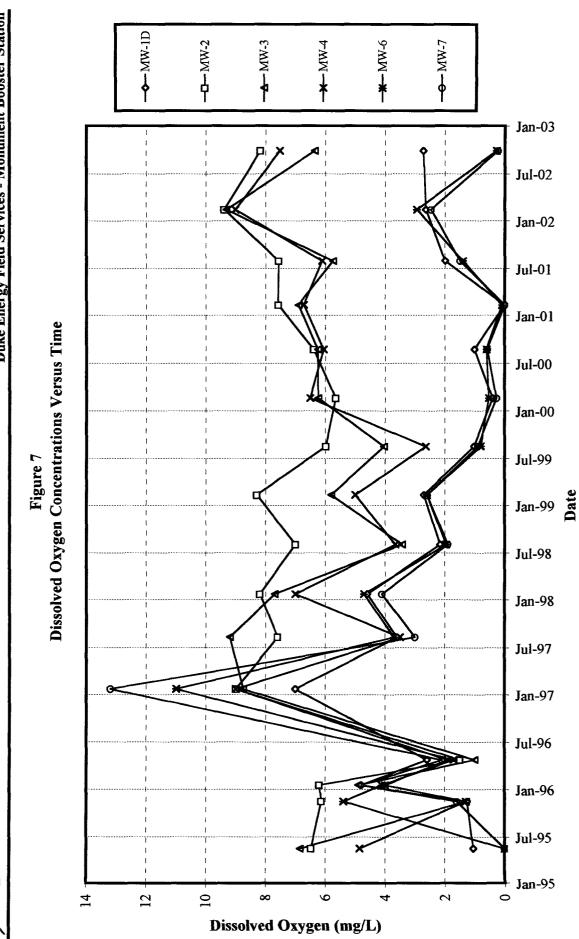
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			T	able 5			··············		
	Summary of Biological Parameter Results								
	Monument Booster Station								
Monitoring	Sampling	DO	Nitrate	Sulfate	Total Iron	Ferrous Iron	Manganese		
Well	Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		
MW-4	05/16/95	4.85	3.69	136	4.68		0.11		
	11/15/95	1.30							
	01/18/96	4.0							
	04/24/96	1.9	0.1	115	0.08		<0.01		
	01/22/97	9.0	<0.1	100					
	08/11/97	3.5	<0.1	96	0.08		<0.01		
	01/23/98	7.0	1.0	180					
	08/03/98	3.66	2.9	100	<0.1		<0.1		
	02/10/99	5.0	3.7	110					
	08/17/99	2.64	2.5	120	<0.1		<0.1		
	02/18/00	6.51	2.8	98					
	08/23/00	6.06	2.6	100	<0.05		0.03		
	02/08/01	6.72	<1.0	97					
	07/30/01	6.11	1.1	92	<0.05		0.07		
	02/13/02	9.02	<1.0	90.6	<0.05		0.066		
····	09/27/02	7.52	0.1	94.2	< 0.05	0.04	0.063		
MW-5	09/27/02	1.19	0.6	56.9	3.37	1.84	0.397		
MW-6	05/16/95								
	11/16/95	5.40	0.06	233					
	01/18/96	4.1	<0.05	93					
	04/24/96	1.7	<0.1	70	0.15		0.28		
	01/22/97	11.0	< 0.1	37					
	08/11/97	3.7	<0.1	37	0.21		0.30		
	01/23/98	4.7	0.3	230					
	08/03/98	1.96	<1.0	45	0.26		0.36		
	02/10/99	2.6	<1.0	42					
	08/17/99	0.8	<1.0	82	0.42		0.27		
	02/18/00	0.53	<1.0	59 57					
	08/23/00	0.61	< 0.1	57	<0.05		0.34		
	02/08/01 07/30/01	0.10 1.40	<1.0	60 62	0.36		0.34		
	02/13/02	2.94	<1.0 <1.0	63 48.9	0.36		0.34		
	02/13/02	0.28		48.9 38.8	0.484	0.46	0.289		
MW-7	05/16/95	0.20	0.2		0.521	0.40	0.331		
111 11 - /	11/15/95	16	5.00	418					
	01/18/96	1.6 4.8	6.54	180					
	04/24/96	2.1	0.34	149	< 0.03		0.38		
	01/22/97	13.2	<0.2 <0.1	25	-0.05				
	08/11/97	3.0	<0.1	76	0.43		0.37		
	01/23/98	4.1	-0.1 0.4	180	U.TJ				
	08/03/98	1 .9	<1.0	90	6.1		0.41		
	02/10/99	2.6	<1.0	44					
	08/17/99	0.9	<1.0	14	8.1		0.19		
	02/18/00	0.28	<1.0	27					
	08/23/00	0.59	<1.0	19	7.4		0.22		
	02/09/01	0.00	<1.0	22					
	07/30/01	1.50	<1.0	66	5.3		0.33		
	02/13/02	2.47	<1.0	30.9	8.250		0.261		
	09/27/02	0.23	0.3	70.8	4.21	2.67	0.310		
Analyses performed I									
Dissolved oxygen (D				DO meter or a	comparable model.				
Monitoring wells MV					•	re present.			
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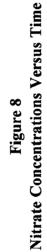
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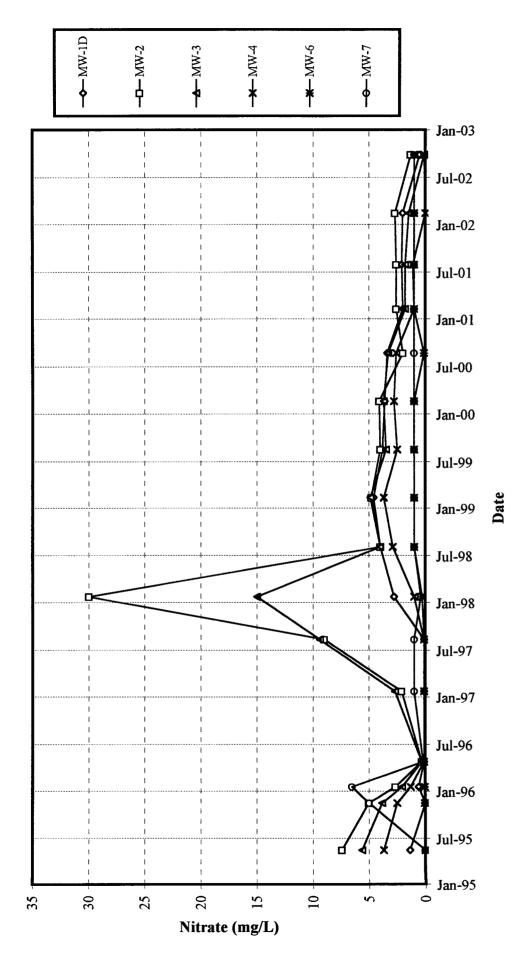
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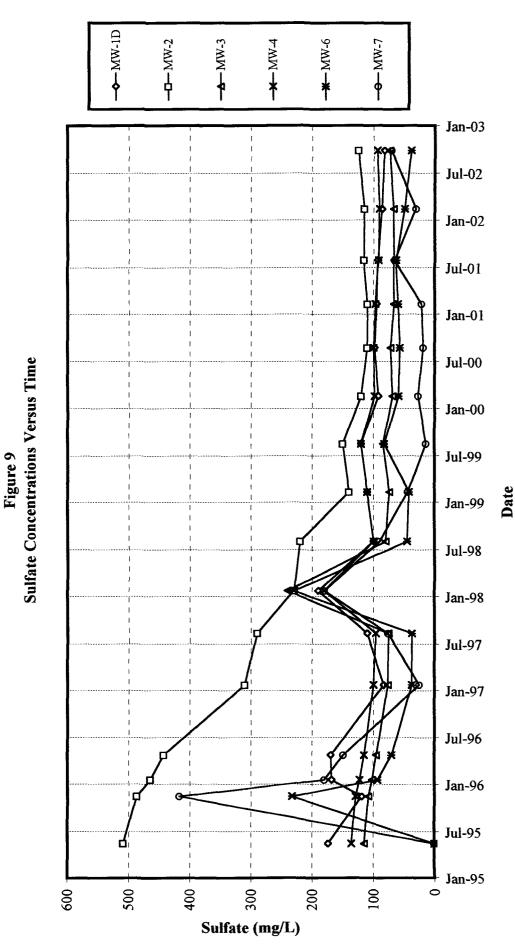






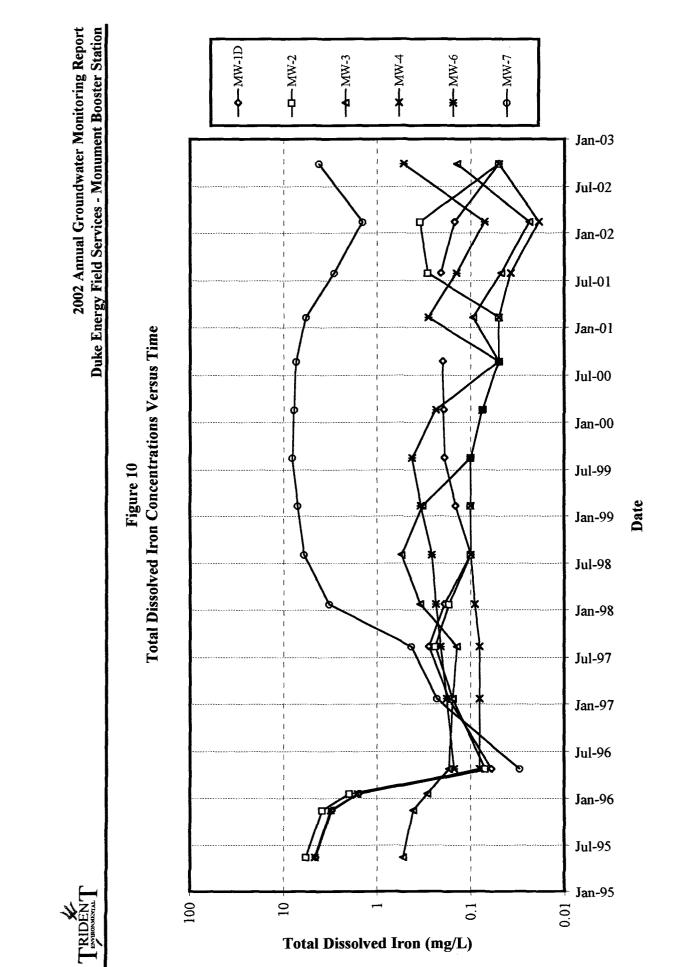
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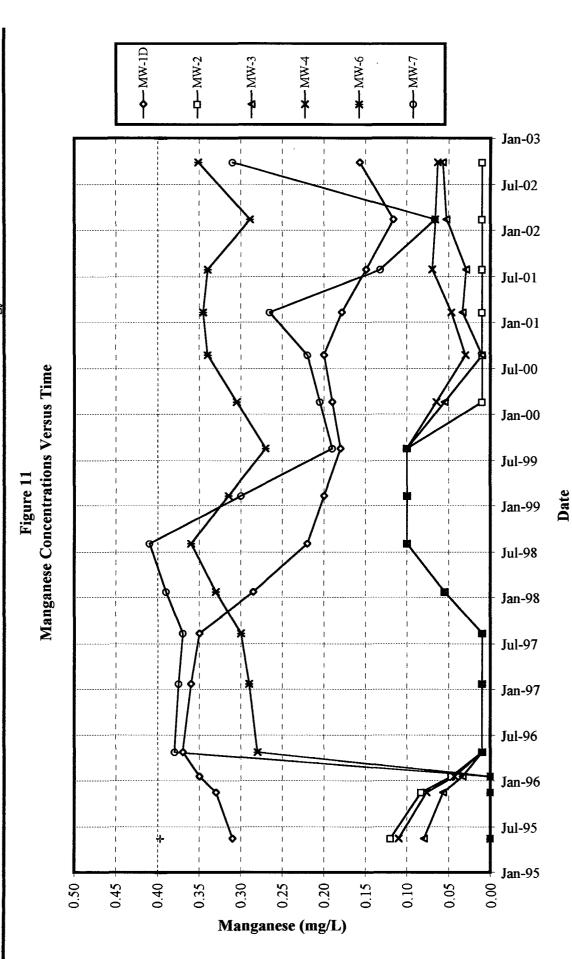
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7.0 Remediation System Performance

LNAPL remediation at the Monument Booster Station is presently being conducted utilizing hydrophobic absorbent socks in both MW-1 and MW-5. Xitech product recovery pumps were initially installed in monitoring wells MW-1 and MW-5 on January 31, 1997 to replace the hand bailing and gravity siphoning techniques used previously. On March 13, 1998 the Xitech pump in MW-5 was replaced with a passive bailer. On April 20, 1999, the passive bailer in MW-5 was replaced with a hydrophobic adsorbent sock. On December 20, 1999 the Xitech pump in MW-1 was removed and replaced with an adsorbent sock. As of December 17, 2002, a total of approximately 157 gallons of LNAPL (condensate) have been removed from monitoring wells MW-1 and MW-5. Product recovery volumes are listed below in Table 6. A graph of LNAPL thickness measurements from each of the impacted wells and the cumulative LNAPL recovery versus time is provided in Figure 12.

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		LN		able 6 covery Vol	umes		
	Duke	Energy Fiel		•		ter Station	n
Date	LNAPL Thic	ckness (feet)	LN	IAPL Recov	vered (gall	ons)	Cumulative LNAPL Recovered
Duit	MW-1	MW-5	М	W-1	M	W-5	(gallons)
07/24/95	2.48		10	HB			10
07/27/95	0.53		2	SWAP		-	12
11/15/95	1.35	0.77	1.4	SWAP			13.4
11/21/95	1.86	0.76					13.4
12/20/95	2.14	0.75					13.4
01/18/96_	2.18	0.75					13.4
03/08/96			15	Pump			28.4
04/24/96	2.09	0.79					28.4
06/14/96	2.27	0.82	12	Pump	1.5	HB	41.9
01/27/97	2.21	0.59	4	Pump	0	Pump	45.9
01/31/97				Pump	0		45.9
02/07/97			4	Pump	2	Pump	51.9
02/19/97			10	Pump	0	Pump	61.9
08/11/97	0.02	0.09	23	Pump	6	Pump	90.9
08/09/97	0.03	0.08	1.5	Pump	0	Pump	92.4
09/18/97	0.04		2.5	Pump	0	Pump	94.9
10/07/97			1.5	Pump	0	Pump	96.4
10/22/97		0.04	_1	Pump	0	Pump	97.4
11/25/97		0.09	1.5	Pump	0.5	Pump	99.4
12/09/97		0.22	0.0	Pump	0	Pump	99.4
01/09/98			2	Pump	0.0	Pump	101.4
01/23/98	0.08	0.04	0.0	Pump	0.5	Pump	101.9
02/24/98	0.03	0.33	2	Pump	0.00	PB	103.9
03/23/98	0.00	0.38	2	Pump	0.07	PB	106.0
06/23/98	0.03	0.58	5	Pump	0.04	PB	111.0
08/03/98	0.01	0.53	0.0	Pump	0.05	PB	111.1
09/18/98	0.09	0.36	3	Pump	0.16	PB	114.2
10/28/98	0.07	0.31	0.5	Pump	0.00	PB	114.7
11/17/98	0.03	0.27	0.5	Pump	0.01	PB	115.2
02/10/99	0.09	0.76	1.5	Pump	0.01	PB	116.7
03/24/99	0.27	1.20		Pump		PB	116.7
04/20/99	0.49	1.64	0.5	Pump	0.9	PB	118.1
05/13/99	0.02	0.19	3	Pump	0.4	PB	121.5
06/14/99	0.02	0.32	1	Pump	0.5	Sock	123.0
08/04/99	0.03	0.51	0.0	Pump	0.4	Sock	123.4
08/17/99	0.01	0.39	0.0	Pump	0.5	Sock	123.9
09/14/99	0.04	0.37	1	Pump	0.6	Sock	125.5
10/26/99	0.22	0.53	1	Pump	0.5	Sock	127.0
11/22/99	0.24	0.37	0.5	Pump	0.5	Sock	128.0
12/20/99	0.01	0.32	0.5	Pump	0.4	Sock	128.9

HB: Hand bailing using PVC bailer

SWAP: Gravity siphon demonstration

Pump: Xitech ADJ 1000 Smart Skimmer (Product Recovery System)

PB: Passive bailer with hydrophobic filter

Sock: Hydrophobic (oil adsorbent) sock

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	Duke	Energy Field		•		ster Station	
Date	LNAPL Thi	I		APL Recov			Cumulative LNAPL Recovered
Date	MW-1	MW-5	М	W-1	MW-5		(gallons)
01/26/00	0.06	0.28	0.4	Sock	0.4	Sock	129.7
02/17/00	0.08	0.10	0.4	Sock	0.2	Sock	130.3
04/04/00	0.13	0.16	0.6	Sock	1.2	Sock	132.1
04/24/00	0.22	0.01	0.5	Sock	0.4	Sock	132.9
06/15/00	0.46	0.01	1.1	Sock	0.3	Sock	134.3
07/19/00	0.12	0.15	0.6	Sock	0.6	Sock	135.5
08/23/00	0.09	0.15	0.5	Sock	0.7	Sock	136.7
10/03/00	0.50	0.19	1.1	Sock	0.4	Sock	138.3
12/14/00	0.17	0.42	0.5	Sock	0.5	Sock	139.2
01/23/01	0.31	0.22	0.5	Sock	0.3	Sock	140.0
02/09/01	0.62	0.01	0.8	Sock	0.2	Sock	141.0
04/04/01	0.11	0.16	0.35	Sock	0.34	Sock	141.7
05/16/01	0.36	0.08	0.73	Sock	0.26	Sock	142.7
06/19/01	0.83	0.01	0.95	Sock	0.08	Sock	143.7
07/20/01	0.57	0.00	1.18	Sock	0.01	Sock	144.9
09/10/01	0.22	0.00	0.79	Sock	0.06	Sock	145.7
10/09/01	0.13	< 0.01	0.44	Sock	0.02	Sock	146.2
11/08/01	0.19	< 0.01	0.58	Sock	0.02	Sock	146.8
12/11/01	0.24	0.01	0.57	Sock	0.01	Sock	147.3
01/18/02	0.12	0.20	0.35	Sock	0.08	Sock	147.8
02/13/02	0.69	0.01	1.11	Sock	0.13	Sock	149.0
03/14/02	0.14	< 0.01	0.55	Sock	0.16	Sock	149.7
04/10/02	0.08	< 0.01	0.42	Sock	0.16	Sock	150.3
05/14/02	0.22	0.01	0.62	Sock	0.18	Sock	151.1
06/18/02	0.69	0.01	1.09	Sock	0.15	Sock	152.4
07/12/02	0.37	< 0.01	0.61	Sock	0.01	Sock	153.0
08/14/02	0.75	0.02	1.36	Sock	0.04	Sock	154.4
09/24/02	0.69	< 0.01	1.39	Sock	0.03	Sock	155.8
10/24/02	0.27	< 0.01	0.70	Sock	0.00	Sock	156.5
11/22/02	0.08	< 0.01	0.16	Sock	0.08	Sock	156.7
12/17/02	0.08	0.02	0.22	Sock	0.15	Sock	157.1
	hume of Produ		134.5	(MW-1)	22.6	(MW-5)	157.1
HB: Hand bai	ry methods used: iling using PVC be ity siphon demons						

Pump: Xitech ADJ 1000 Smart Skimmer (Product Recovery System)

PB: Passive bailer with hydrophobic filter

Sock: Hydrophobic (oil adsorbent) sock

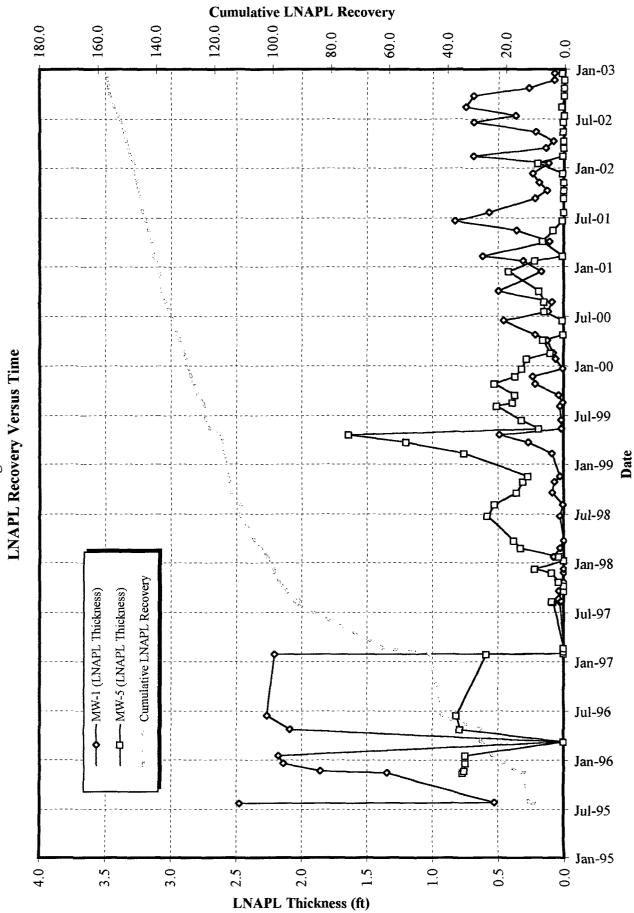


Figure 12



8.0 Conclusions

Conclusions relevant to groundwater conditions and the remediation performance at the Monument Booster Station are presented below.

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations in monitoring wells MW-1D, MW-2, MW-3, MW-4, and MW-6 are presently below New Mexico Water Quality Control Commission (WQCC) standards. With the exception of the August 1999 sample recovered from MW-2 and the August 1999 and February 2000 samples recovered from MW-3, the BTEX concentrations in each of these wells have remained below the WQCC standard levels since 1995.
- Only the benzene concentrations from the current and historic groundwater samples recovered from MW-7 exceed the WQCC standard. The BTEX concentrations in monitoring well MW-7 were at their lowest level during the last sampling event since monitoring began in 1995.
- As of December 17, 2002, a total of approximately 157 gallons of light non-aqueous phase liquids (LNAPL) has been removed from monitoring wells MW-1 and MW-5 using a combination of gravity siphoning, hand bailing, passive skimmer, adsorbent sock, and pneumatic pump recovery methods.
- The biodegradation capacity of electron acceptors and metabolic byproducts (33.36 mg/L) far exceeds the highest benzene concentration (1.13 mg/L in MW-7 during the January 1996 sampling event) observed on site by a ratio of 30 to 1. The most recent benzene concentration in MW-7 was 0.015 mg/L during the August 2002 sampling event. This indicates that the biodegradation process has been occurring and will continue.
- The biodegradation capacity of electron acceptors and metabolic byproducts (33.36 mg/L) far exceeds the highest benzene concentration observed on site in the past (1.13 mg/L in MW-7 during the January 1996 sampling event) by a ratio of 30 to 1. The most recent benzene concentration in MW-7 was 0.015 mg/L during the August 2002 sampling event. This indicates that the biodegradation process has been occurring and will continue. Continued semi-annual monitoring is necessary to demonstrate the effectiveness of intrinsic bioremediation in limiting the migration of the dissolved hydrocarbon plume.

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9.0 Recommendations

The following recommendations are proposed for the remediation system and monitoring operations at the Monument Booster Station.

- Continue LNAPL recovery operations utilizing absorbent socks in MW-1 and MW-5. This system appears to have been effective in recovering LNAPL over the last two annual monitoring periods.
- Discontinue analyses for aluminum, arsenic, and chromium since those constituents have been below the WQCC standards for over five years.
- Continue the groundwater-monitoring program on a semi-annual basis. The next sampling event is scheduled during the first quarter of 2002.

Appendix A

Laboratory Analytical Reports

and

Chain-of-Custody Documentation

Gil Van Deventer

P.O. Box 7624

Trident Environmental

Midland, Tx. 79708

Lubbock, TX 79424-1515

(806) 794-1296

Page Number: 1 of 3 Monument Booster

Report Date: February 22, 2002Order Number: A02021515 Duke Energy Field Services V-104

Summary Report

Report Date:

February 22, 2002

Order ID Number: A02021515

Project Number:Duke Energy Field ServicesProject Name:V-104Project Location:Monument Booster

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
191077	MW-4	Water	2/13/02	9:30	2/15/02
191078	MW-6	Water	2/13/02	10:20	2/15/02
191079	MW-3	Water	2/13/02	11:20	2/15/02
191080	MW-2	Water	2/13/02	13:20	2/15/02
191081	MW-7	Water	2/13/02	14:00	2/15/02
191082	MW-1D	Water	2/13/02	14:40	2/15/02
191083	Rinsate	Water	2/13/02	11:50	2/15/02
191084	Duplicate	Water	2/13/02	:	2/15/02

0 This report consists of a total of 3 page(s) and is intended only as a summary of results for the sample(s) listed above.

	BTEX						
	Benzene	Toluene	Ethylbenzene	M,P,O-Xylene	Total BTEX		
Sample - Field Code	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)		
191077 - MW-4	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
191078 - MW-6	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
191079 - MW-5	0.0017	< 0.001	< 0.001	< 0.001	0.0017		
191080 - MW-2	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
191081 - MW-7	0.228	< 0.005	0.0944	0.0495	0.372		
191082 - MW-1D	< 0.001	< 0.001	< 0.001	< 0.001	<0.001		
191083 - Rinsate	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
191084 - Duplicate	0.275	< 0.001	0.115	0.063	0.453		

Sample: 191077 - MW-4

Param	\mathbf{Flag}	Result	Units
ferrous iron	I I	0.84	mg/L
Nitrate-N	2	<1.00	mg/L
Sulfate		90.6	mg/L
Total Iron		< 0.050	mg/L
Total Manganese		0.0659	mg/L

²Samples at of ¹ out time for NO3.

Report Date: February 22, 2002Order Number: A02021515 Duke Energy Field Services V-104 Page Number: 2 of 3 Monument Booster

Duke Dilergy Field Dervices	v-104	104	
Sample: 191078 - MW-	6		
Param	Flag	Result	Units
ferrous iron	3	0.56	mg/L
Nitrate-N	4	<1.00	mg/L
Sulfate		48.9	mg/L
Total Iron		0.484	mg/L
Total Manganese		0.289	mg/L

Sample: 191079 - MW-3

Param	Flag	Result	Units
ferrous iron	5	0.56	mg/L
Nitrate-N	6	1.49	mg/L
Sulfate		67.6	mg/L
Total Iron		<0.050	mg/L
Total Manganese		0.0525	mg/L

Sample: 191080 - MW-2

Param	Flag	Result	Units
ferrous iron	7	0.56	mg/L
Nitrate-N	8	2.69	mg/L
Sulfate		115	mg/L
Total Iron		< 0.050	mg/L
Total Manganese		<0.025	mg/L

المحاجبة والمتعجبة فتشتر ويعجب والمداؤر

Sample: 191081 - MW-7

Param	Flag	Result	Units
ferrous iron	9	0.56	mg/L
Nitrate-N	10	<1.00	mg/L
Sulfate		30.9	mg/L
Total Iron		8.25	mg/L
Total Manganese		0.261	mg/L

Sample: 191082 - MW-1D

Param	Flag	Result	Units
ferrous iron	11	0.56	mg/L
Nitrate-N	12	2.03	mg/L

Continued on next page

³out of hold time

 $^4 \mathrm{Sample}$ out of hold time for NO3.

 5 out of hold time

⁶Sample out of hold time for NO3.

⁷out of hold time

⁸Sample out of hold time for NO3.

⁹out of hold time

 $^{10}\mathrm{Sample}$ out of hold time for NO3.

¹¹out of hold time

 $^{12}\mathrm{Sample}$ out of hold time for NO3.

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FAX 915•585•4944

Analytical and Quality Control Report

Gil Van Deventer **Report Date:** February 22, 2002 **Trident Environmental** P.O. Box 7624 Midland, Tx. 79708 Order ID Number: A02021515 Project Number: **Duke Energy Field Services Project Name:** V-104 Project Location: Monument Booster

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
191077	MW-4	Water	2/13/02	9:30	2/15/02
191078	MW-6	Water	2/13/02	10:20	2/15/02
191079	MW-3	Water	2/13/02	11:20	2/15/02
191080	MW-2	Water	2/13/02	13:20	2/15/02
191081	MW-7	Water	2/13/02	14:00	2/15/02
191082	MW-1D	Water	2/13/02	14:40	2/15/02
191083	Rinsate	Water	2/13/02	11:50	2/15/02
191084	Duplicate	Water	2/13/02	;	2/15/02

0

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed. Note: the RDL is equal to MQL for all organic analytes including TPH.---

This report consists of a total of 12 pages and shall not be reproduced except in its entirety including the chain of custody (COC), without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Report Date: February 22, 2002 Duke Energy Field Services

Analytical Report

Sample: 191077 - MW-4

Analysis: Analyst:	BTEX CG	Analytical Method: Preparation Method		QC Batch: Prep Batch:	QC18170 PB17702	Date Analyzed: Date Prepared:	$\frac{2}{15}$
Param		Flag	Result	Units	Dil	ution	RDL
Benzene			< 0.001	mg/L		1	0.001
Toluene			< 0.001	mg/L		1	0.001
Ethylbenze	ene		< 0.001	mg/L		1	0.001
M,P,O-Xyl	ene		< 0.001	mg/L		1	0.001
Total BTE	Х		< 0.001	mg/L		1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.107	mg/L	1	0.10	107	70 - 130
4-BFB		0.105	mg/L	1	0.10	105	70 - 130

Sample: 191077 - MW-4

Analysis: Analyst:	Ferrous Iron JSW	Analytical Method: Preparation Method:		QC Batch: Prep Batch:	v	U	2/15/02 2/15/02
Param	Fla	g Result	Units	D	ilution		RDL
ferrous iron	I	0.84	ing/L		1		0.01

Sample: 191077 - MW-4

Analysis: Analyst:	JS	- • • • /	alytical Method: eparation Method:		0 QC Batch: Prep Batch:	QC18222 Date Analyzed: 2/15/02 PB17740 Date Prepared: 2/15/02
Param	Flag	Result	Units	Dilut	ion	RDL
Nitrate N	2	<1.00	mg/L	5		0.20
Sulfate		90.6	mg/L	5		0.50

Sample: 191077 - MW-4

Analysis: Analyst:	Total Metals RR	Analytical Preparatic	Method: on Method:	S 6010B S 3010A	QC Batch: Prep Batch:	QC18306 PB17725	Date Analyzed: Date Prepared: .	2/21/02 2/18/02
Param		Flag	Resul	lt	Units	Dilution		RDL
Total Iron		1011 <u>1011 11 11</u>	< 0.05	0	mg/L	1		0.05
<u>Total Mang</u>	ganese		0.065	9	$\mathrm{mg/L}$	1		0.02

Sample: 191078 - MW-6

Analysis:		Analytical Method:		•	•	Date Analyzed:	, ,
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB17702	Date Prepared:	2/15/02

¹out of hold time

²Sample out of hold time for NO3.

-	te: February 22 gy Field Servic	· ·		Order Number: A02021515 V-104			Page Number: 3 of 12 Monument Booster	
Param		Flag	Result	Uni		ilution	RL	
Benzene			< 0.001	mg/	Ľ	1	0.0	
Toluene			< 0.001	mg/	'L	1	0.00	
Ethylbenzer	ne		< 0.001	mg/		1	0.00	
M,P,O-Xyle	ene		< 0.001	mg/		1	0.00	
Total BTEX			< 0.001	mg/		1	0.00	
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recover Limits	
TFT		0.0944	mg/L	1	0.10	94	70 - 13	
4-BFB		0.092	mg/L	1	0.10	92	70 - 13	
Sample: Analysis: Analyst:	191078 - Ferrous Iron JSW	MW-6 Analytical M Preparation		•	Batch: QC1810 Batch: PB1769	-	, ,	
Param	Fla		Result	Units	Dilution		RD	
ferrous iron		3	0.56	mg/L	1		0.0	
Sample: Analysis: Analyst:	191078 - Ion Chromato JS	ography (IC) A	nalytical Met reparation M	ethod: N/A		C18222 Date Analyz B17740 Date Prepare		
Analysis: Analyst: Param	Ion Chromato JS Flag	ography (IC) A Pr Result	reparation M Units	ethod: N/A Dilutio	Prep Batch: Pl	B17740 Date Prepare	ed: 2/15/0 RD	
Analysis: Analyst: Param Vitrate-N	Ion Chromato JS	ography (IC) A Pi	reparation M	ethod: N/A Dilution 5	Prep Batch: Pl	B17740 Date Prepare	ed: 2/15/0 RD 0.2	
Analysis: Analyst: Param Nitrate-N Sulfate	Ion Chromato JS Flag 4	ography (IC) A Pr Result <1.00 48.9	reparation M Units mg/L	ethod: N/A Dilution 5	Prep Batch: Pl	B17740 Date Prepare	ed: 2/15/0 RD 0.2	
Analysis: Analyst: Param Vitrate-N Sulfate Sample:	Ion Chromato JS Flag 4 191078 - 1	pgraphy (IC) A Pr Result <1.00 48.9 MW-6	Units Units mg/L mg/L	ethod: N/A Dilutio 5 5 5	Prep Batch: Pl	B17740 Date Prepare	ed: 2/15/0 RD 0.2 0.5	
Analysis: Analyst: Param Vitrate-N Sulfate Sample: Analysis:	Ion Chromato JS Flag 4	ography (IC) A Pr Result <1.00 48.9	Yeparation M Units mg/L mg/L Method: S	ethod: N/A Dilutio 5 5 6010B QC B	Prep Batch: Pl	B17740 Date Prepare 5 Date Analyzed:	ed: 2/15/0 RD 0.2 0.5 2/21/0	
Analysis: Analyst: Param Nitrate-N Sulfate Sample: Analysis: Analyst: Param	Ion Chromato JS Flag 4 191078 - Total Metals	pgraphy (IC) A Pr Result <1.00 48.9 MW-6 Analytical M	Internation M Units mg/L Method: S Method: S Result	ethod: N/A Dilutio 5 5 6010B QC B 3010A Prep Units	Prep Batch: Pl	B17740 Date Prepare Date Analyzed: Date Prepared:	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RD	
Analysis: Analyst: Param Nitrate-N Sulfate Sample: Analysis: Analyst: Param Fotal Iron	Ion Chromato JS Flag 4 191078 - I Total Metals RR	ography (IC) A Pr Result <1.00 48.9 MW-6 Analytical M Preparation	Ints Method: S Method: S Result 0.484	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1	B17740 Date Prepare Date Analyzed: Date Prepared:	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RD 0.0	
Analysis: Analyst: Param Nitrate-N Sulfate Sample: Analysis: Analyst: Param Fotal Iron	Ion Chromato JS Flag 4 191078 - I Total Metals RR	ography (IC) A Pr Result <1.00 48.9 MW-6 Analytical M Preparation	Internation M Units mg/L Method: S Method: S Result	ethod: N/A Dilutio 5 5 6010B QC B 3010A Prep Units	Prep Batch: Pl on atch:QC18300 Batch: PB17725 Diluti	B17740 Date Prepare Date Analyzed: Date Prepared:	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RD 0.0	
Analysis: Analysis: Param Nitrate-N Sulfate Sample: Analysis: Analyst: Param Fotal Iron Fotal Iron Fotal Manga Sample: Analysis:	Ion Chromato JS Flag 4 191078 - I Total Metals RR anese 191079 - I BTEX Ar	pgraphy (IC) A Presult <1.00 48.9 MW-6 Analytical M Preparation Flag	Method: S Result 0.484 0.289 0d: S 8021	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L mg/L	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1 1 1	B17740 Date Prepare Date Analyzed: Date Prepared:	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RD 0.0 0.0 2/15/0	
Analysis: Analysis: Param Nitrate-N Sulfate Sample: Analysis: Param Fotal Iron Fotal Iron Fotal Manga Sample: Analysis: Analysis:	Ion Chromato JS Flag 4 191078 - I Total Metals RR nese 191079 - I BTEX Ar CG Pr	MW-3 Plag	Method: S Result 0.484 0.289 0d: S 8021	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L mg/L	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1 1 h: QC18170 cch: PB17702	B17740 Date Prepare Date Analyzed: Date Prepared: Jon	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RD 0.0 0.0 2/15/0 2/15/0	
Analysis: Analysis: Param Nitrate-N Sulfate Sample: Analysis: Param Total Iron Total Manga Sample: Analysis: Analysis: Analysis: Analyst: Param	Ion Chromato JS Flag 4 191078 - I Total Metals RR nese 191079 - I BTEX Ar CG Pr	MW-6 Flag MW-3 halytical Metho	Method: S Method: S Method: S Method: S Method: S Method: S Method: S 0.484 0.289 Method: S 0.484 0.289	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L mg/L B QC Batc B Prep Bat Units	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1 1 h: QC18170 ch: PB17702 s Dil	B17740 Date Prepare Date Analyzed: Date Prepared: Date Prepared: Date Prepared: ution	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RDI 0.0 0.0 2/15/0 2/15/0 RDI	
Analysis: Analysis: Param Nitrate-N Sulfate Sample: Analysis: Analyst: Param Fotal Iron Fotal Manga Sample: Analysis: Analysis: Analyst: Param Benzene	Ion Chromato JS Flag 4 191078 - J Total Metals RR anese 191079 - J BTEX Ar CG Pr	MW-6 Flag MW-3 halytical Metho	Method: S Method: S Method	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L mg/L B QC Batc B Prep Batc Units mg/I	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1 1 1 h: QC18170 ch: PB17702 s Dil	B17740 Date Prepare Date Analyzed: Date Prepared: ion Date Analyzed: Date Prepared: ution 1	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 2/18/0 0.0 0.0 2/15/0 2/15/0 2/15/0 RDI 0.00	
Analysis: Analysis: Analyst: Param Nitrate-N Sulfate Sample: Analysis: Analyst: Param Fotal Iron Fotal Iron Fotal Manga Sample: Analysis: Analysis: Analysis: Analyst: Param Benzene Foluene	Ion Chromato JS Flag 4 191078 - I Total Metals RR anese 191079 - I BTEX Ar CG Pr	MW-6 Flag MW-3 halytical Metho	Aethod: S Method: S Method	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L mg/L B QC Batc B Prep Batc Units mg/I mg/I mg/I	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1 1 h: QC18170 ch: PB17702 s Dil	B17740 Date Prepare Date Analyzed: Date Prepared: ion Date Analyzed: Date Prepared: ution 1 1	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RDI 0.0 0.0 2/15/0 2/15/0 2/15/0 RDI 0.00 0.00	
Analysis: Analysis: Analyst: Param Nitrate-N Sulfate Sample: Analysis: Analyst: Param Fotal Iron Fotal Iron Fotal Manga Sample: Analysis: Analysis: Analyst: Param Benzene Foluene Ethylbenzene	Ion Chromato JS Flag 4 191078 - J Total Metals RR anese 191079 - J BTEX Ar CG Pr	MW-6 Flag MW-3 halytical Metho	reparation M Units mg/L mg/L Method: S Method: S Method: S Result 0.484 0.289 od: S 8021 hod: S 5030 Result 0.0017 <0.001 <0.001	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L mg/L B QC Batc Prep Bat Unit: mg/I mg/I mg/I mg/I	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1 1 1 h: QC18170 sch: PB17702 s Dil	B17740 Date Prepare Date Analyzed: Date Prepared: ion Date Analyzed: Date Prepared: ution 1 1 1	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 RDI 0.0 0.0 2/15/0 2/15/0 2/15/0 RDI 0.00 0.00 0.00 0.00	
Analysis: Analysis: Analyst: Param Nitrate-N Sulfate Sample: Analysis: Analysis: Analyst: Param Fotal Iron Fotal Manga Sample: Analysis: Analysis: Analyst: Param Benzene Foluene	Ion Chromato JS Flag 4 191078 - I Total Metals RR unese 191079 - I BTEX Ar CG Pr	MW-6 Flag MW-3 halytical Metho	Aethod: S Method: S Method	ethod: N/A Dilution 5 5 6010B QC B 3010A Prep Units mg/L mg/L B QC Batc B Prep Batc Units mg/I mg/I mg/I	Prep Batch: Pl on atch: QC18300 Batch: PB17725 Diluti 1 1 h: QC18170 ch: PB17702 s Dil	B17740 Date Prepare Date Analyzed: Date Prepared: ion Date Analyzed: Date Prepared: ution 1 1	ed: 2/15/0 RD 0.2 0.5 2/21/0 2/18/0 2/18/0 RDI 0.0 2/15/0 2/15/0 2/15/0 RDI 0.00 0.00	

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 3 out of hold time 4 Sample out of hold time for NO3.

Report Date: February 22, 2002 Duke Energy Field Services			Oro	ler Number: A02 V-104	Page Number: 4 of 12 Monument Booster		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.086	mg/L	1	0.10	86	70 - 130
4-BFB		0.0835	mg/L	1	0.10	84	70 - 130

Sample: 191079 - MW-3

Analysis: Analyst:	Ferrous Iron JSW	Analytical Method: Preparation Method:		QC Batch: Prep Batch:	•	Date Analyzed: Date Prepared:	2/15/02 2/15/02
Param	Fla	g Result	Units	D	ilution		RDL
ferrous iron	5	0.56	mg/L		1	······	0.01

Sample: 191079 - MW-3

Analysis:	Ion Chromatog	raphy (IC)	Analytical Method:	E 300.0	0 QC Batch:	QC18222 Date Analyzed: 2/15/02
Analyst:	$_{ m JS}$]	Preparation Method:	N/A	Prep Batch:	PB17740 Date Prepared: 2/15/02
Param	Flag	Result	Units	Diluti	on	RDL
Nitrate-N	6	1.49	mg/L	5		0.20
Sulfate		67.6	mg/L	5		0.50

Sample: 191079 - MW-3

Analysis: Analyst:	Total Metals RR	Analytical l Preparation		S 6010B S 3010A	QC Batch: Prep Batch:	QC18306 PB17725	Date Analyzed: Date Prepared:	2/21/02 2/18/02
Param		Flag	Resu	lt	Units	Dilution	1	RDL
Total Iron			< 0.05	60	mg/L	1		0.05
Total Mang	ganese		0.052	25	m mg/L	1		0.02

Sample: 191080 - MW-2

Applysis: Analyst:	BTEN CG	Analytical Method: Preparation Method:	S 8021B S 5030B	QC Batch: Prep Batch:	QC18170 PB17702	Date Analyzed: Date Prepared:	$\frac{2}{15}$
Param		Flag	Result	Units	Dila	ition	RDL
Benzene		<	< 0.001	mg/L		1	0.001
Toluene		<	< 0.001	$\mathrm{mg/L}$		1	0.001
Ethylbenze	116	<	< 0.001	mg/L		1	0.001
M,P,O-Xyle	ene	<	< 0.001	mg/L		1	0.001
Total BTE	X	<	< 0.001	mg/L		1	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0728	mg/L	1	0.10	73	70 - 130
4-BFB	·	0.0702	mg/L	1	0.10	70	70 - 130

⁵out of hold time

 6 Sample out of hold time for NO3.

Report Date: February 22, 2002 Duke Energy Field Services				V	ber: A02021 '-104	Page Number: 5 of 1 Monument Booste		
Sample:	191080 -	 MW-2						
Analysis:	Ferrous Iron		ethod	Hach IR-1	QC Batch	n: QC1816	8 Date Analyzed:	2/15/0
Analyst:	JSW	Preparation 1		N/A	Prep Bate	•	-	2/15/0
Param	F	lag R	esult	Unit		Dilution		RD
ferrous iron		7	0.56	mg/	L	1		0.0
Sample:	191080 -	MW-2						
Analysis: Analyst:	Ion Chromat JS	tography (IC) Ar Pr	•		E 300.0 QC N/A Prep		18222 Date Analyze 17740 Date Prepare	
Param	Flag	Result	U	nits	Dilution			RD
Nitrate-N	8	2.69	m	g/L	5			0.2
Sulfate		115	mį	g/L	5			0.5
Sample:	191080 -	MM7.2				· ·		
Analysis:	Total Metals		ethod.	S 6010B	QC Batch:	QC18306	Date Analyzed:	2/21/0
Analyst:	RR	Preparation		S 3010B	Prep Batch	•	Date Prepared:	2/21/0 2/18/0
Param		Flag	Resu		Units	Diluti	on	RD
Total Iron			< 0.05		mg/L	1		0.0
Total Manga	anese	·····	< 0.02		mg/L	1		0.0
					·· ·	· · · · · · · · · · · · · · · · · · ·	··· · ···	*
Sample:	191081 -	MW-7						
Analysis:	BTEX A	Analytical Metho	d: S 8	021B Q0	C Batch:	QC18170	Date Analyzed:	2/15/0
Analyst:	CG F	Preparation Meth	od: S 5	030B Pr	ep Batch:	PB17702	Date Prepared:	2/15/0
Param		Flag	Resul		Units	Dilu		RDI
Benzene			0.22		mg/L		5	0.00
Toluene			< 0.00					0.00
Ethylbenzen			0.094		mg/L	5		0.001
M,P,O-Xylei			0.049		mg/L	5		0.001
Fotal BTEX			0.372	2	mg/L)	0.00
Innegation	El a	Decult	TT '4	וירד	ion	Spike	Percent	Recovery
Surrogate FFT	Flag	<u>Result</u> 0.088	Units	Dilut		Amount 0.10	Recovery	Limits 70 - 130
IFI I-BFB		0.088	mg/L mg/L	5		0.10	88 97	70 - 130 70 - 130
Sample: Analysis:	191081 - Ferrous Iron	Analytical Me		Hach IR-1	QC Batch	•		2/15/02
Analyst:	JSW	Preparation M	lethod.	N/A	Prep Batc	h: PB17696	Date Prepared:	2/15/02

Report Date: February 22, 2002 Duke Energy Field Services Order Number: A02021515 V-104 Page Number: 6 of 12 Monument Booster

Continued Param	Sample: 191081 Flag	Analysis: Ferrous Iron Result	Units	Dilution	RDL
Param	Flag	Result	Units	Dilution	RDL
ferrous iron	9	0.56	mg/L	1	0.01

Sample: 191081 - MW-7

Analysis:	Ion Chromatogr	aphy (IC) Ana	lytical Method:	E 300.	0 QC Batch:	QC18222 Date Analyzed: 2/15/02
Analyst:	JS	Prep	paration Method:	N/A	Prep Batch:	PB17740 Date Prepared: 2/15/02
Param	Flag	Result	Units	Diluti	ion	RDL
Nitrate-N	10	<1.00	mg/L	5		0.20
Sulfate		30.9	mg/L	5		0.50

Sample: 191081 - MW-7

Analysis: Analyst:	Total Metals RR	Analytical Preparatic	Method: on Method:	S 6010B S 3010A	QC Batch: Prep Batch:	QC18306 PB17725	Date Analyzed: Date Prepared:	2/21/02 2/18/02
Param		Flag	Resul	t	Units	Dilution		RDL
Total Iron			8.2	5	mg/L	1		0.05
Total Mang	ganese		0.26	1	$\mathrm{mg/L}$	1		0.02

Sample: 191082 - MW-1D

Analysis: Analyst:	BTEX CG	Analytical Method: Preparation Method		QC Batch: Prep Batch:	QC18170 PB17702	Date Analyzed: Date Prepared:	$\frac{2}{15}$
Param		Flag	Result	Units	Dil	ution	RDL
Benzene			< 0.001	mg/L		1	0.001
Toluene			< 0.001	mg/L		1	0.001
Ethylbenze	116		< 0.001	mg/L		1	0.001
M,P,O-Xyle	ene		< 0.001	mg/L		1	0.001
Total BTE			< 0.001	mg/L		1	0.001

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
TFT		0.0886	mg/L	1	0.10	89	70 - 130
4-BFB		0.0892	mg/L	1	0.10	89	70 - 130

Sample: 191082 - MW-1D

Analysis: Analyst:	Ferrous Iron JSW	Analytical Method: Preparation Method:		•	•	Date Analyzed: Date Prepared:	2/15/02 2/15/02
Param	Fla	g Result	Units	D	ilution		RDL
ferrous iron	T	0.56	mg/L		1		0.01

⁹out of hold time

¹⁰Sample out of hold time for NO3.

¹¹out of hold time

	te: February gy Field Ser		Order	r Number: A0202 V-104	Page Nun Monum	iber: 7 of ient Boost	
Sample: Analysis: Analyst:		- MW-1D hatography (IC) An Pre	alytical Metho eparation Meth			QC18222 Date Analyz PB17740 Date Prepar	
Param	Flag	Result	Units	Dilution			RD
Nitrate-N	12	2.03	mg/L	5			0.2
Sulfate	, """, ", ", ", ", ", ", ", ", ", ", ", 	86.3	mg/L	5			0.5
Sample: Analysis: Analyst:	191082 Total Meta RR	- MW-1D als Analytical Me Preparation N		•	•	-	2/21/0 2/18/0
-	1111	-	vietnou. 5 50	-		-	
Param		Flag	Result	Units	Dilu		· RD
Total Iron Total Mang	anosa		$\begin{array}{c} 0.149 \\ 0.186 \end{array}$	mg/L mg/L	1		0.0
Sample:	101083	- Rinsate					
Analysis: Analyst:	BTEX CG	Analytical Method Preparation Method		QC Batch: Prep Batch:	QC18170 PB17702	Date Analyzed: Date Prepared:	2/15/0 2/15/0
Param		Flag	Result	Units	Di	lution	RD
Benzene			< 0.001	mg/L		1	0.00
Toluene			< 0.001	mg/L		1	0.00
Ethylbenzer M,P,O-Xyle			<0.001 <0.001	mg/L mg/L		1	0.00 0.00
Fotal BTEX			<0.001	mg/L		1	0.00
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recover Limits
FFT		0.0697	mg/L	1	0.10	70	70 - 130
I-BFB		0.0706	mg/L	<u> </u>			70 - 130
Sample: Analysis: Analyst:	191084 BTEX CG	- Duplicate Analytical Method Preparation Metho		QC Batch: Prep Batch:	QC18170 PB17702	Date Analyzed: Date Prepared:	2/15/0 2/15/0
Param		Flag	Result	- Units	יח	lution	RD
Benzene		1 1ag	0.275	mg/L	10	1	0.00
Foluene			< 0.001	mg/L		1	0.00
Ethylbenzen	e		0.115	8/ - mg/L		1	0.00
M,P,O-Xylei			0.063	mg/L		1	0.00
otal BTEX	_		0.453	mg/L		1	0.00
• • • -		D	T T '4		Spike	Percent	Recovery
Surrogate FFT	Flag 13	Result	Units	Dilution	Amount 0.10	Recovery 61	Limits 70 - 130
. т. т	••	0.0616	m mg/L	1	0.10	01	10 - 130

¹²Sample out of hold time for NO3. ¹³Low surrogate recovery due to prep. ICV, CCV, CCV show the method to be in control.

Report Date: February 22, 2002 Duke Energy Field Services			Ore	ler Number: A02 V-104	Page Number: 8 of 12 Monument Booster		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-BFB	14	0.0652	mg/L	1	0.10	65	70 - 130

¹⁴Low surrogate recovery due to prep. ICV, CCV, CCV show the method to be in control.

Report Date: February 22, 2002 Duke Energy Field Services Order Number: A02021515 V-104 Page Number: 9 of 12 Monument Booster

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Quality Control Report Method Blank

Method Blank	QCBatch:	QC18168				
Demons	Dia			Unit	_	Reportin Limit
Param ferrous iron	Flag		Results			0.01
ierrous iron		·	0.84	mg/.	L	0.01
Method Blank	QCBatch:	QC18170				
	1.1					Reporting
Param	Flag		Results	Uni		Limit
Benzene			<0.001	mg/		0.001
Toluene			< 0.001	mg/		0.001
Ethylbenzene			< 0.001	mg/		0.001
M,P,O-Xylene Total BTEX			< 0.001	mg/		0.001 0.001
	<u> </u>		<0.001	mg/		0.001
Surrogate Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT	0.0995	mg/L	1	0.10	99	70 - 130
4-BFB	0.101	mg/L	1	0.10	101	70 - 130
Method Blank	QCBatch:	QC18222		n in strategiere en	an an tr	
		_	_			Reporting
Param	Flag	R	esults	Units		Limit
Nitrate-N				mg/L		0.20
Sulfate			<2.0	mg/L	 	0.50
Method Blank	QCBatch:	QC18306				
						Reporting
Param	Flag		Results	Uni	ts	Limit
Fotal Iron			< 0.050	mg/		0.05
Total Manganese			< 0.025	mg/		0.02

Quality Control Report Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC18170

Report Date: February 22, 2002 Duke Energy Field Services

Order Number: A02021515 V-104

Param	LCS Result	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.0956	0.0981	mg/L	1	0.10	< 0.001	96	2	82 - 111	20
Benzene	0.0978	0.0997	mg/L	1	0.10	< 0.001	98	2	86 - 106	20
Toluene	0.0972	0.0993	mg/L	1	0.10	< 0.001	97	2	82 - 108	20
Ethylbenzene	0.0941	0.0962	mg/L	1	0.10	< 0.001	94	2	86 - 115	20
M,P,O-Xylene	0.268	0.274	mg/L	1	0.30	< 0.001	89	2	79 - 122	_20

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

Surrogate	LCS Result	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.0992	0.102	mg/L	1	0.10	99	102	70 - 130
4-BFB	0.122	0.125	mg/L	1	0.10	122	125	70 - 130

Laboratory Control Spikes QCBatch: QC18222

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	11.53	11.50	mg/L	1	12.50	<2.0	92	0	90 - 110	20
Nitrate-N	2.37	2.37	mg/L	1	2.50	< 0.2	94	0	90 - 110	20
Sulfate	11.61	11.67	$\mathrm{mg/L}$	1	12.50	<2.0	92	0	90 - 110	20

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

Laboratory Control Spikes

QCBatch: QC18306

					Spike					
	LCS	LCSD			Amount	Matrix			% Rec	RPD
Param	Result	Result	Units	Dil.	Added	Result	% Rec	RPD	Limit	Limit
Total Iron	0.501	0.510	mg/L	1	0.50	< 0.050	100	1	75 - 125	20
Total Manganese	0.250	0.257	mg/L	1	0.25	< 0.025	100	2	75 - 125	20

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

Quality Control Report Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC18222

					Spike					
	MS	MSD			Amount	Matrix			$\% { m Rec}$	RPD
Param	Result	Result	Units	Dil.	Added	Result	$\% { m Rec}$	RPD	Limit	Limit
Nitrate-N	30.89	31.00	mg/L	1	25		93	0	84 - 105	20
Sulfate	15 722.57	729.70	mg/L	1	125		72	1	79 - 104	20

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

Matrix Spikes QCBatch: QC18306

 $^{15}\mathrm{Sulfate}$ matrix spike %EA was low. LCS spikes show that the test was in contro.

ruary 22, 2 d Services			Order	· Number: A V-104	02021515		Pa	ge Number: Monument	
MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
$0.492 \\ 0.300$	0.505	mg/L mg/L	1	0.50	<0.050 0.0659	98 93	2 2	75 - 125 75 - 125	20 20
	d Services MS Result	MS MSD Result Result 0.492 0.505	d Services MS MSD Result Result Units 0.492 0.505 mg/L	d Services MS MSD Result Result Units Dil. 0.492 0.505 mg/L 1	d Services V-104 MS MSD Spike MS MSD Amount Result Result Units Dil. Added 0.492 0.505 mg/L 1 0.50	d Services V-104 Spike MS MSD Amount Matrix Result Result Units Dil. Added Result 0.492 0.505 mg/L 1 0.50 <0.050	d Services V-104 Spike MS MSD Amount Matrix Result Result Units Dil. Added Result % Rec 0.492 0.505 mg/L 1 0.50 <0.050 98	A Services V-104 Spike MS MSD Amount Matrix Result Result Units Dil. Added Result % Rec RPD 0.492 0.505 mg/L 1 0.50 <0.050 98 2	A Services V-104 Monument Spike MS MSD Amount Matrix % Rec Result Result Units Dil. Added Result % Rec RPD Limit 0.492 0.505 mg/L 1 0.50 <0.050 98 2 75 - 125

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

Quality Control Report Continuing Calibration Verification Standards

CCU	(1)	
CCV	(1)	

QCBatch: QC18170

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE	<u>v</u>	mg/L	0.10	0.0979	98	85 - 115	2/15/02
Benzene		mg/L	0.10	0.0988	99	85 - 115	2/15/02
Toluene		mg/L	0.10	0.0986	99	85 - 115	2/15/02
Ethylbenzene		mg/L	0.10	0.0949	95	85 - 115	2/15/02
M,P,O-Xylene		mg/L	0.30	0.269	90	85 - 115	2/15/02

CCV(2)

QCBatch: QC18170

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
MTBE		mg/L	0.10	0.097	97	85 - 115	2/15/02
Benzene		mg/L	0.10	0.1	100	85 - 115	2/15/02
Toluene		mg/L	0.10	0.099	99	85 - 115	2/15/02
Ethylbenzene		mg/L	0.10	0.096	96	85 - 115	2/15/02
M,P,O-Xylene		mg/L	0.30	0.273	91	85 - 115	2/15/02

ICV (1) QCBatch:

QC18170

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0991	99	85 - 115	2/15/02
Benzene		mg/L	0.10	0.100	100	85 - 115	2/15/02
Toluene		mg/L	0.10	0.100	100	85 - 115	2/15/02
Ethylbenzene		mg/L	0.10	0.0967	97	85 - 115	2/15/02
M,P,O-Xylene		mg/L	0.30	0.274	91	85 - 115	2/15/02

CCV(1)QCBatch: QC18222

n Flag ide te-N e 7 (1) QCBate n Flag ide te-N e V (1) QCBate N e V (1) QCBate flag ide te-N e		Order	Number: A02 V-104	021515	Page Number: 12 of 12 Monument Booster					
oride mg/L rate-N mg/L Sate mg/L CV (1) QCBatch: Q am Flag Units oride mg/L rate-N mg/L CV (1) QCBatch: Q am Flag Ur	TT -,	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date				
Flag						Analyzed 2/15/02				
						2/15/02 2/15/02				
	÷,					2/15/02 2/15/02				
QCB	atch: QC	18222								
		CCVs	$\rm CCVs$	CCVs	Percent					
		True	Found	Percent	Recovery	Date				
Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed				
	mg/L	12.50	11.48	91	90 - 110	2/15/02				
		2.50	2.36	94	90 - 110	2/15/02				
	mg/L	12.50	11.65	93	90 - 110	2/15/02				
······			11.00			2/10/02				
QCI		C18306	11.00							
QCI		C18306			· · · · · · · · · · · · · · · · · · ·					
QCI			CCVs Found	CCVs Percent	Percent	Date				
	Batch: Q	C18306 CCVs True	CCVs	CCVs	· · · · · · · · · · · · · · · · · · ·					
	Batch: Q	C18306 CCVs True ss Conc.	CCVs Found	CCVs Percent	Percent Recovery	Date				
	Flag QCB	Flag Units mg/L mg/L gCBatch: QC Flag Units mg/L mg/L	$\begin{array}{c c} & & & & & \\ \hline & & & & & \\ \hline Flag & Units & Conc. & \\ & & & & mg/L & 12.50 & \\ & & & & mg/L & 12.50 & \\ \hline & & & & & \\ & & & & & & \\ \hline & & & &$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	old ServicesV-104CCVsCCVsCCVsCCVsTrueFoundPercentFlagUnitsConc.Conc.mg/L12.5011.5392mg/L2.502.3794mg/L12.5011.7894CCVsCCVsCCVsCCVsTrueFoundPercentFlagUnitsUnitsConc.Conc.Recoverymg/L12.5011.48mg/L12.5011.4891mg/L2.502.3694	edd ServicesV-104MonCCVsCCVsCCVsPercentTrueFoundPercentRecoveryFlagUnitsConc.Conc.Recoverymg/L12.5011.539290 - 110mg/L2.502.379490 - 110mg/L12.5011.789490 - 110gCBatch:QC18222CCVsCCVsPercentTrueFoundPercentRecoveryLimitsgdUnitsConc.Conc.RecoveryFlagUnitsConc.Conc.RecoveryLimitsmg/L12.5011.489190 - 110mg/L2.502.369490 - 110				

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Param	Flag	Units	True Conc.	Found Conc.	Percent Recovery	Recovery Limits	Date Analyzed
Total Iron	1 lag	mg/L	1	0.999	100	90 - 110	2/21/02
Total Manganese		mg/L	0.50	0.499	100	90 - 110	2/21/02

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TraceAnalysis, Inc.

(806) 794-1296

Report Date: October 9, 2002Order Number: A02093019 Duke Energy Field Services V-104 Page Number: 1 of 3 Monument Booster

Summary Report

Dale Littlejohn Trident Environmental P.O. Box 7624 Midland, Tx. 79708 Report Date:

October 9, 2002

Order ID Number: A02093019

Project Number:Duke Energy Field ServicesProject Name:V-104Project Location:Monument Booster

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
209280	MW-4	Water	9/27/02	8:00	9/28/02
209281	MW-1D	Water	9/27/02	8:20	9/28/02
209282	MW-3	Water	9/27/02	9:25	9/28/02
209283	MW-5	Water	9/27/02	11:20	9/28/02
209284	MW-6	Water	9/27/02	10:40	9/28/02
209285	MW-2	Water	9/27/02	12:10	9/28/02
209286	MW-7	Water	9/27/02	13:00	9/28/02
209287	Duplicate	Water	9/27/02	:	9/28/02
209288	Rinsate	Water	9/27/02	13:10	9/28/02
209289	Trip Blank	Water	9/27/02	:	9/28/02

0 This report consists of a total of 3 page(s) and is intended only as a summary of results for the sample(s) listed above.

			BTEX		
	Benzene	Toluene	Ethylbenzene	M,P,O-Xylene	Total BTEX
Sample - Field Code	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
209280 - MW-4	< 0.001	< 0.001	<0.001	< 0.001	< 0.001
209281 - MW-1D	< 0.001	< 0.001	<0.001	<0.001	< 0.001
209282 - MW-3	< 0.005	< 0.005	<0.005	<0.005	< 0.005
209283 - MW-5	0.0284	< 0.005	0.0489	0.0429	0.120
209284 - MW-6	< 0.005	< 0.005	<0.005	<0.005	< 0.005
209285 - MW-2	< 0.001	< 0.001	<0.001	<0.001	< 0.001
209286 - MW-7	0.0148	< 0.005	0.0174	<0.005	0.0322
209287 - Duplicate	0.0142	< 0.005	0.0176	<0.005	0.0318
209288 - Rinsate	< 0.001	< 0.001	0.001	<0.001	0.001
209289 - Trip Blank	< 0.005	< 0.005	<0.005	<0.005	< 0.005

Sample: 209280 - MW-4

Param	Flag	Result	Units
Chloride		139	mg/L
Fluoride		1.54	mg/L
Sulfate		94.2	mg/L
Total Dissolved Solids		810	mg/L
		A	,

Continued on next page ...

This is only a summary. Please, refer to the complete report package for quality control data.

TraceAnalysis, Inc.

Lubbock, TX 79424-1515

(806) 794-1296

Report Date: October 9, 2002Order Number: A02093019 Duke Energy Field Services V-104 Page Number: 2 of 3 Monument Booster

Sample 209280 continued ...

Param	Flag	Result	Units
Total Aluminum		<0.100	mg/L
Total Arsenic		< 0.050	mg/L
Total Boron		0.500	mg/L
Total Chromium		< 0.010	mg/L
Total Iron		< 0.050	mg/L
Total Manganese		0.0633	mg/L

Sample: 209281 - MW-1D

Param	Flag	Result	Units
Chloride		45.7	mg/L
Fluoride		2.87	mg/L
Sulfate		82.5	mg/L
Total Dissolved Solids		493	mg/L
Total Aluminum		<0.100	mg/L
Total Arsenic		< 0.050	mg/L
Total Boron		0.299	mg/L
Total Chromium		<0.010	mg/L
Total Iron		< 0.050	mg/L
Total Manganese		0.157	mg/L

Sample: 209282 - MW-3

Param	Flag	Result	Units
Chloride		181	mg/L
Fluoride		1.83	mg/L
Sulfate		73.5	mg/L
Total Dissolved Solids		776	mg/L
Total Aluminum		<0.100	mg/L
Total Arsenic		< 0.050	mg/L
Total Boron		0.510	mg/L
Total Chromium		< 0.010	mg/L
Total Iron		< 0.050	mg/L
Total Manganese		0.057	mg/L

Sample: 209283 - MW-5

Param	Flag	Result	Units
Chloride		50.2	mg/L
Fluoride		2.05	mg/L
Sulfate		56.9	mg/L
Total Dissolved Solids		549	m mg/L
Total Aluminum		<0.100	mg/L
Total Arsenic		0.119	mg/L
Total Boron		0.774	mg/L

Continued on next page ...

This is only a summary. Please, refer to the complete report package for quality control data.

Lubbock, TX 79424-1515 (806) 794-1296 TraceAnalysis, Inc. 6701 Aberdeen Ave., Suite 9 Report Date: October 9, 2002Order Number: A02093019 Page Number: 3 of 3 Monument Booster Duke Energy Field Services V-104 Sample 209283 continued ... Flag Param Result Units Total Chromium < 0.010 mg/L Total Iron 3.37 mg/L Total Manganese 0.397 mg/L

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Sample: 209284 - MW-6

Param	Flag	Result	Units
Chloride		126	mg/L
Fluoride		1.52	mg/L
Sulfate		38.8	mg/L
Total Dissolved Solids		934	mg/L
Total Aluminum		<0.100	mg/L
Total Arsenic		<0.050	mg/L
Total Boron		1.17	mg/L
Total Chromium		<0.010	mg/L
Total Iron		0.521	mg/L
Total Manganese		0.351	mg/L

Sample: 209285 - MW-2

Param	Flag	Result	Units
Chloride	······································	2170	mg/L
Fluoride		1.50	mg/L
Sulfate		125	mg/L
Total Dissolved Solids		4440	mg/L
Total Aluminum		<0.100	mg/L
Total Arsenic		<0.050	mg/L
Total Boron		0.527	mg/L
Total Chromium		0.0329	mg/L
Total Iron		<0.050	mg/L
Total Manganese		<0.025	mg/L

Sample: 209286 - MW-7

Param	Flag	Result	Units
Chloride	······································	49.5	mg/L
Fluoride		2.26	mg/L
Sulfate		70.8	mg/L
Total Dissolved Solids		574	mg/L
Total Aluminum		<0.100	mg/L
Total Arsenic		<0.050	mg/L
Total Boron		0.610	mg/L
Total Chromium		<0.010	mg/L
Total Iron		4.21	mg/L
Total Manganese		0.310	mg/L

This is only a summary. Please, refer to the complete report package for quality control data.



Analytical and Quality Control Report

6701 Aberdeen Avenue, Suite 9 155 McCutcheon, Suite H

Lubbock, Texas 79424 El Paso, Texas 79932

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October 9, 2002

Dale Littlejohn **Trident Environmental** P.O. Box 7624 Midland, Tx. 79708

Order ID Number: A02093019

Report Date:

Project Number: Duke Energy Field Services Project Name: V-104 Project Location: Monument Booster

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
209280	MW-4	Water	9/27/02	8:00	9/28/02
209281	MW-1D	Water	9/27/02	8:20	9/28/02
209282	MW-3	Water	9/27/02	9:25	9/28/02
209283	MW-5	Water	9/27/02	11:20	9/28/02
209284	MW-6	Water	9/27/02	10:40	9/28/02
209285	MW-2	Water	9/27/02	12:10	9/28/02
209286	MW-7	Water	9/27/02	13:00	9/28/02
209287	Duplicate	Water	9/27/02	:	9/28/02
209288	Rinsate	Water	9/27/02	13:10	9/28/02
209289	Trip Blank	Water	9/27/02	:	9/28/02

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

The test results contained within this report meet all requirements of LAC 33:I unless otherwise noted.

This report consists of a total of 19 pages and shall not be reproduced except in its entirety including the chain of custody (COC). without written approval of TraceAnalysis, Inc.

Note: Samples will be disposed of 30 days from the report date unless the lab is contacted before the 30 days has past.

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Dr. Blair Leftwich, Director

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Report Date: October 9, 2002 Duke Energy Field Services

Analytical Report

Sample:	20928	0 - MW-4					
Analysis:	BTEX	Analytical Metho	od: S 8021B	QC Batch:	QC2385	8 Date Analyzed:	9/30/0
Analyst:	CG	Preparation Met		Prep Batch	-	·	9/30/0
Param		Flag	Result	Units		Dilution	RD
Benzene			<0.001	mg/L		1	0.00
Toluene			< 0.001	mg/L		1	0.00
Ethylbenze	ene		< 0.001	mg/L		1	0.00
M,P,O-Xyl	ene		< 0.001	mg/L		1	0.00
Total BTE	X		<0.001	mg/L		1	0.00
					Spike	Percent	Recover
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
TFT		0.104	mg/L	1	0.10	104	70 - 130
4-BFB		0.0951	mg/L	1	0.10	95	70 - 130
Sample: Analysis:	Ion Chron) - MW-4 natography (IC) An	alytical Method:	${ m E}~300.0{ m Q}$	C Batch:	QC23893 Date Analyze	d: 10/1/0
Analyst:	JSW	Pre	eparation Method	l: N/A Pi	rep Batch:	PB22339 Date Prepare	d: 10/1/0
Param	Flag	Result	Units	Dilution			RDI
Chloride		139	mg/L	5			
Fluoride		1.54	mg/L	5			0.20
Sulfate		94.2	mg/L	5			
Sunate							*
	-)(1()()-)-(1						
Sample:) - MW-4			0033880	Doto Apolyzał	
	209280 TDS JSW		E 160.1	QC Batch: Prep Batch:	QC23889 PB22340	Date Analyzed: Date Prepared:	10/1/02 10/1/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids	· · · · · · · · · · · · · · · · · · ·	810	mg/L	2	10

Sample: 209280 - MW-4

Analysis: Analyst:	Total Metals RR	Analytical Preparatic	Method: on Method:	S 6010B S 3010A	QC Batch: Prep Batch:	QC23935 PB22342	Date Analyzed: Date Prepared:	10/3/02 10/2/02
Param		Flag	Resu	lt	Units	Dilution	1	RDL
Total Alum	inum		< 0.10	0	mg/L	1		0.10
Total Arser	nic		< 0.05	0	mg/L	1		0.05
Total Boron	1		0.50	0	mg/L	10		0.005
Total Chron	mium		< 0.01	0	mg/L	1		0.01
Total Iron			< 0.05	0	mg/L	1		0.05
Total Mang	anese		0.063	3	mg/L	1		0.02

Duke Ener	gy rieid be	rvices		V-104		Monum	10ml 20050
Sample: Analysis: Analyst:	209281 BTEX CG	- MW-1D Analytical Method: Preparation Method	S 8021B I: S 5030B	QC Batch: Prep Batch	QC23858 : PB22304	Date Analyzed: Date Prepared:	9/30/0 9/30/0
Param		Flag	Result	Units	Di	lution	RD
Benzene			< 0.001	mg/L		1	0.00
Toluene			< 0.001	mg/L		1	0.00
Ethylbenzei	ne		< 0.001	mg/L		1	0.00
M,P,O-Xyle	ene		< 0.001	mg/L		1	0.00
Total BTE	X		<0.001	mg/L		1	0.00
•					0.1		n
Quananata	Flor	Deput	TT	Dilation	Spike Amount	Percent	Recover
Surrogate TFT	Flag		Units	Dilution		Recovery	Limits
4-BFB			mg/L	1	0.10	102	70 - 130
4-DFD		0.0938	mg/L	1	0.10	94	70 - 130
Analyst:	JSW	Prepa	ration Metho	d: N/A Pr	ep Batch: PI	322339 Date Prepare	d: 10/1/0.
Param Chloride	JSW Flag	Result 45.7	Units mg/L	Dilution 5	ep Batch: PI	322339 Date Prepare	RDI
Param Chloride Fluoride		Result	Units	Dilution	ep Batch: Pf	322339 Date Prepare	RDI 1 0.20
Param Chloride Fluoride Sulfate Sample: Analysis: Analyst:	Flag 209281 TDS	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method:	Units mg/L mg/L mg/L E 160.1 N/A	Dilution 5 5 5 QC Batch: Prep Batch:	QC23889 PB22340	Date Analyzed: Date Prepared:	RDI 1 0.20 1 1 10/1/02 10/1/02
Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol	Flag 209281 TDS JSW	Result 45.7 2.87 82.5 - MW-1D Analytical Method:	Units mg/L mg/L mg/L E 160.1	Dilution 5 5 5 VC Batch: Prep Batch: t	QC23889	Date Analyzed:	RDI 1 0.20 1 10/1/02
Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param	Flag 209281 TDS JSW ved Solids	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method: Flag - MW-1D	Units mg/L mg/L mg/L E 160.1 N/A Resul 490	Dilution 5 5 5 QC Batch: Prep Batch: t 1 3 1 9 B QC Batch	QC23889 PB22340 Units mg/L h: QC23935	Date Analyzed: Date Prepared: Dilution 1	RDI 0.20 10/1/02 10/1/02 RDL 10 10/3/02
Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol ⁴ Sample: analysis: analysis: analysis:	Flag 209281 TDS JSW ved Solids 209281 Total Meta	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method: Flag - MW-1D Is Analytical Metho Preparation Method	Units mg/L mg/L mg/L E 160.1 N/A Resul 490	Dilution 5 5 5 QC Batch: Prep Batch: t 1 3 1 9 B QC Batch	QC23889 PB22340 Units mg/L h: QC23935	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	RDI 0.20 1 10/1/02 10/1/02 RDL 10 10/3/02 10/2/02
Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis:	Flag 209281 TDS JSW ved Solids 209281 Total Meta RR	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method: Flag - MW-1D Is Analytical Metho Preparation Method	Units mg/L mg/L mg/L E 160.1 N/A Resul 493 od: S 6010 hod: S 3010	Dilution 5 5 5 VC Batch: Prep Batch: t 3 1 0 B QC Batch A Prep Batch	QC23889 PB22340 Units mg/L h: QC23935 ch: PB22342	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	RDI 0.20 10/1/02 10/1/02 RDL 10/3/02 10/2/02 RDL
Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissolv Sample: Analysis:	Flag 209281 TDS JSW ved Solids 209281 Total Meta RR	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method: Flag - MW-1D Is Analytical Method Preparation Method Preparation Method	Units mg/L mg/L mg/L E 160.1 N/A Resul 493 od: S 6010 hod: S 3010 Result	Dilution 5 5 5 VC Batch: Prep Batch: t 1 3 1 0 B QC Batch A Prep Batch A Prep Batch	QC23889 PB22340 Units mg/L h: QC23935 ch: PB22342 Diluti	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	RDI 0.20 10/1/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10
Param Chloride Fluoride Sulfate Sample: Analysis: Analysis: Analysis: Param Fotal Dissol Sample: Analysis:	Flag 209281 TDS JSW ved Solids 209281 Total Meta RR	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method: Flag - MW-1D Is Analytical Method Preparation Method Preparation Method	Units mg/L mg/L mg/L E 160.1 N/A Resul 493 od: S 6010 hod: S 3010 Result <0.100	Dilution 5 5 5 QC Batch: Prep Batch: t 1 B QC Batch A Prep Batch QA Prep Batch Units mg/L mg/L	QC23889 PB22340 Units mg/L h: QC23935 ch: PB22342 Diluti 1	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	RDI 0.20 1 0/1/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10
Param Chloride Fluoride Sulfate Sample: Analysis: Analysis: Analysis: Cotal Dissol Sample: Analysis: Analy	Flag 209281 TDS JSW ved Solids 209281 Total Meta RR num c	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method: Flag - MW-1D Is Analytical Metho Preparation Met. Flag	Units mg/L mg/L mg/L E 160.1 N/A Resul 490 od: S 6010 hod: S 3010 Result <0.100 <0.050	Dilution 5 5 5 2 QC Batch: Prep Batch: t 3 0 B QC Batch 3 0 Prep Batch A Prep Batch A Prep Batch M Prep Batch M Prep Batch A Prep Batch	QC23889 PB22340 Units mg/L h: QC23935 ch: PB22342 Diluti 1 1	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	RDI 0.20 1 0.20 1 10/1/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05
Param Chloride Fluoride Sulfate Sample: Analysis: Param Fotal Dissol Sample: Analysis:	Flag 209281 TDS JSW ved Solids 209281 Total Meta RR num c	Result 45.7 2.87 82.5 - MW-1D Analytical Method: Preparation Method: Flag - MW-1D Is Analytical Metho Preparation Met. Flag	Units mg/L mg/L mg/L E 160.1 N/A Resul 49: 0d: S 6010 hod: S 3010 Result <0.100 <0.050 0.299	Dilution 5 5 5 QC Batch: Prep Batch: t 1 B QC Batch A Prep Batch QA Prep Batch Units mg/L mg/L	QC23889 PB22340 Units mg/L h: QC23935 ch: PB22342 Diluti 1 1 1 1	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	RDI 0.20 1 0.20 1 10/1/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005

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		vices		V-104		Monum	
Sample: Analysis: Analyst:	209282 BTEX CG	- MW-3 Analytical Method: Preparation Method	S 8021B : S 5030B	QC Batch: Prep Batch:	QC23858 : PB22304	Date Analyzed: Date Prepared:	9/30/0 9/30/0
Param		Flag	Result	Units	Di	lution	RD
Benzene			< 0.005	mg/L		5	0.00
Toluene			<0.005	mg/L		5	0.00
Ethylbenzei	ne		< 0.005	mg/L		5	0.00
M,P,O-Xyle	ene		< 0.005	mg/L		5	0.00
Total BTE	X		<0.005	mg/L		5	0.00
					Spike	Percent	Recover
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
TFT	1 lag		mg/L	5	0.10	94	70 - 130
4-BFB			mg/L mg/L	5	0.10	84	70 - 130
Param Chloride	Flag	Result 181	Units mg/L	Dilution 5			RDI
		1.83	mg/L	5			
							0.20
Sulfate	209282	1.83	mg/L	5			0.20
Sulfate Sample: Analysis:	TDS .	1.83 73.5	mg/L	5 5 QC Batch:	QC23933 PB22365	Date Analyzed: Date Prepared:	0.20
Sulfate Sample: Analysis: Analyst: Param	TDS JSW	1.83 73.5 - MW-3 Analytical Method:	mg/L mg/L E 160.1 N/A Resul	5 5 QC Batch: Prep Batch: t U	PB22365 Jnits	Date Prepared: Dilution	0.20 10/3/02 10/1/02
Sulfate Sample: Analysis: Analyst: Param	TDS JSW	1.83 73.5 - MW-3 Analytical Method: Preparation Method:	mg/L mg/L E 160.1 N/A	5 5 QC Batch: Prep Batch: t U	PB22365	Date Prepared:	1 0.20 1 1 10/3/02 10/1/02 RDL 10
Sulfate Sample: Analysis: Analyst: Param Fotal Dissol	TDS JSW D	1.83 73.5 - MW-3 Analytical Method: Preparation Method:	mg/L mg/L E 160.1 N/A Resul	5 5 QC Batch: Prep Batch: t U	PB22365 Jnits	Date Prepared: Dilution	0.20 1 10/3/02 10/1/02 RDL
Sample: Analysis: Analyst: Param Fotal Dissol	TDS JSW D	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3	mg/L mg/L E 160.1 N/A Resul 77	5 5 QC Batch: Prep Batch: t U 6 n	PB22365 Jnits ng/L	Date Prepared: Dilution 2	0.20 10/3/02 10/1/02 RDL 10
Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis:	TDS JSW 1 ved Solids 209282	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3	mg/L mg/L E 160.1 N/A Resul 77	5 5 QC Batch: Prep Batch: t U 6 n	PB22365 Jnits ng/L 1: QC23935	Date Prepared: Dilution 2	0.20 10/3/02 10/1/02 RDL 10 10/3/02
Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analyst: Param	TDS JSW 1 ved Solids 209282 Total Meta RR	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3 ls Analytical Metho Preparation Metho Flag	mg/L mg/L E 160.1 N/A Result	5 5 QC Batch: Prep Batch: t U 6 n 0B QC Batch 0A Prep Batch Units	PB22365 Jnits ng/L n: QC23935 ch: PB22342 Diluti	Date Prepared: Dilution 2 Date Analyzed: Date Prepared:	0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL
Sulfate Sample: Analysis: Analyst: Param Cotal Dissol Sample: Analysis: Analyst: Param Cotal Alumin	TDS JSW 1 ved Solids 209282 Total Meta RR	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3 Is Analytical Metho Preparation Method Flag	mg/L mg/L E 160.1 N/A Resul 77 od: S 6010 hod: S 3010 Result <0.100	5 5 QC Batch: Prep Batch: t U 6 n 9 B QC Batch 9 A Prep Batc Units mg/L	PB22365 Jnits ng/L :: QC23935 sh: PB22342 Diluti 1	Date Prepared: Dilution 2 Date Analyzed: Date Prepared:	0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10
Sulfate Sample: Analysis: Analyst: Param Sample: Analysis: Analyst: Param Otal Alumin Cotal Alumin	TDS JSW 1 ved Solids 209282 Total Meta RR	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3 Is Analytical Metho Preparation Method Flag	mg/L mg/L E 160.1 N/A Resul 77 od: S 6010 hod: S 3010 Result <0.100 <0.050	5 5 QC Batch: Prep Batch: (t U 6 n 9 B QC Batch 0A Prep Batc Units mg/L mg/L	PB22365 Jnits ng/L a: QC23935 ch: PB22342 Diluti 1 1	Date Prepared: Dilution 2 Date Analyzed: Date Prepared:	0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05
Sulfate Sample: Analysis: Analyst: Param Cotal Dissol Sample: Analysis: Analyst: Param Cotal Alumin Cotal Arseni Cotal Boron	TDS JSW 1 ved Solids 209282 Total Meta RR num c	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3 Is Analytical Metho Preparation Method Flag	mg/L mg/L E 160.1 N/A Resul 77 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.510	5 5 QC Batch: Prep Batch: (t U 6 n 9 B QC Batch 0 A Prep Batc Units mg/L mg/L mg/L	PB22365 Jnits ng/L :: QC23935 ch: PB22342 Diluti 1 1 1 1 10	Date Prepared: Dilution 2 Date Analyzed: Date Prepared:	0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005
Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analyst: Param Fotal Alumin Fotal Alumin Fotal Arseni Fotal Boron Fotal Chrom	TDS JSW 1 ved Solids 209282 Total Meta RR num c	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3 Is Analytical Metho Preparation Metho Flag	mg/L mg/L E 160.1 N/A Resul 77 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.510 <0.010	5 5 QC Batch: Prep Batch: (t U 6 n 0B QC Batch 0A Prep Batc Units mg/L mg/L mg/L mg/L	PB22365 Jnits ng/L :: QC23935 ch: PB22342 Diluti 1 1 1 1 10 1	Date Prepared: Dilution 2 Date Analyzed: Date Prepared:	0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005 0.01
Fluoride Sulfate Sulfate Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analysis: Analyst: Param Fotal Alumin Fotal Arseni Fotal Arseni Fotal Boron Fotal Boron Fotal Iron Fotal Iron	TDS JSW 1 ved Solids 209282 Total Meta RR num c	1.83 73.5 - MW-3 Analytical Method: Preparation Method: Flag - MW-3 Is Analytical Metho Preparation Metho Flag	mg/L mg/L E 160.1 N/A Resul 77 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.510	5 5 QC Batch: Prep Batch: (t U 6 n 9 B QC Batch 0 A Prep Batc Units mg/L mg/L mg/L	PB22365 Jnits ng/L :: QC23935 ch: PB22342 Diluti 1 1 1 1 10	Date Prepared: Dilution 2 Date Analyzed: Date Prepared:	0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005

Report Dat Duke Energ	gy Field Se			V-104		Monum	
Sample:	209283						
Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC23882	Date Analyzed:	10/1/0
Analyst:	CG	Preparation Method		Prep Batch:	PB22325	Date Prepared:	10/1/0
Param		Flag	Result	Units	Di	lution	RD
Benzene	1		0.0284	mg/L		5	0.00
Toluene			< 0.005	mg/L		5	0.00
Ethylbenzer			0.0489	mg/L		5	0.00
M,P,O-Xyle			0.0429	mg/L		5	0.00
Total BTE	<u> </u>		0.120	mg/L		5	0.00
					Spike	Percent	Recover
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
TFT	8	0.0836	mg/L	5	0.10	83	70 - 130
4-BFB		0.0796	mg/L	5	0.10	79	70 - 130
• ·	000000	, N/INA/ E					
Analysis:	209283 Ion Chron JSW	natography (IC) Analy	rtical Method tration Metho		-	C23892 Date Analyze 322338 Date Prepare	
Sample: Analysis: Analyst: Param	Ion Chron	natography (IC) Analy		-	-	-	d: 10/1/0
Analysis: Analyst: Param	Ion Chron JSW	natography (IC) Analy Prepa	ration Metho	od: N/A Pre	-	-	d: 10/1/0 RDI
Analysis: Analyst: Param Chloride Fluoride	Ion Chron JSW	natography (IC) Analy Prepa Result 50.2 2.05	uration Metho Units mg/L mg/L	od: N/A Pre Dilution 5 5	-	-	d: 10/1/0 RDI 0.2
Analysis: Analyst: Param Chloride Fluoride	Ion Chron JSW	natography (IC) Analy Prepa Result 50.2	Units mg/L	od: N/A Pre Dilution 5	-	-	d: 10/1/0 RDI 0.2
Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis:	Ion Chron JSW Flag 209283 TDS	natography (IC) Analy Prepa Result 50.2 2.05	Units mg/L mg/L mg/L E 160.1	od: N/A Pre Dilution 5 5 5 QC Batch:	ep Batch: PI	-	d: 10/1/0 RDI 0.24 10/3/0
Analysis: Analyst:	Ion Chron JSW Flag 209283 TDS	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method:	Units mg/L mg/L mg/L E 160.1	od: N/A Pre Dilution 5 5 5 QC Batch: Prep Batch:	QC23932	322338 Date Prepare	
Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst:	Ion Chron JSW Flag 209283 TDS JSW	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method:	Units mg/L mg/L mg/L E 160.1 N/A	od: N/A Pre Dilution 5 5 5 2 QC Batch: Prep Batch:	20 Batch: PH QC23932 PB22366	322338 Date Prepare Date Analyzed: Date Prepared:	d: 10/1/0 RDJ 0.2 10/3/0 10/1/0 RDI
Analysis: Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Param Fotal Dissolv Sample: Analysis:	Ion Chron JSW Flag 209283 TDS JSW ved Solids	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method: Flag - MW-5	units mg/L mg/L mg/L E 160.1 N/A Resul 54 od: S 6010	od: N/A Pre- Dilution 5 5 5 QC Batch: Prep Batch: lt U 9 n	QC23932 PB22366 Jnits ng/L :: QC23935	B22338 Date Prepare Date Analyzed: Date Prepared: Dilution 1 Date Analyzed:	d: 10/1/0 RDI 0.24 10/3/02 10/1/02 RDI 10/3/02
Analysis: Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Rotal Dissol Sample: Analysis: Analysis: Analysis: Analyst: Param	Ion Chron JSW Flag 209283 TDS JSW ved Solids ved Solids 209283 Total Meta RR	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method: Flag - MW-5 als Analytical Meth Preparation Met	units mg/L mg/L mg/L E 160.1 N/A Resul 54 cod: S 6010 thod: S 3010 Result	od: N/A Pre Dilution 5 5 5 2 QC Batch: Prep Batch: lt U 9 n 0B QC Batch 0A Prep Batch Units	QC23932 PB22366 Jnits ng/L :: QC23935	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	d: 10/1/0 RDI 0.20 10/3/02 10/1/02 RDI 10/3/02 10/2/02 RDI
Analysis: Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Total Dissoly Sample: Analysis: Analysis: Analysis: Analysis:	Ion Chron JSW Flag 209283 TDS JSW ved Solids 209283 Total Meta RR	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method: Flag - MW-5 als Analytical Meth Preparation Met	units mg/L mg/L mg/L E 160.1 N/A Result cod: S 6010 thod: S 3010 Result <0.100	od: N/A Pre Dilution 5 5 5 QC Batch: Prep Batch: lt U 9 n OB QC Batch OA Prep Batch OA Prep Batch	PBatch: PH QC23932 PB22366 Jnits ng/L a: QC23935 ch: PB22342 Diluti 1	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	d: 10/1/0 RDI 0.20 10/3/02 10/1/02 RDI 10/3/02 10/2/02 RDL 0.10
Analysis: Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Cotal Dissol Sample: Analysis: Analysis: Analysis: Analysis: Cotal Alumin Cotal Alumin Cotal Alumin	Ion Chron JSW Flag 209283 TDS JSW ved Solids 209283 Total Meta RR	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method: Flag - MW-5 als Analytical Meth Preparation Met	units mg/L mg/L mg/L E 160.1 N/A Result 54 cod: S 6010 chod: S 3010 <u>Result</u> <0.100 0.119	od: N/A Pre Dilution 5 5 5 QC Batch: Prep Batch: lt U 9 n OB QC Batch OA Prep Batc Units mg/L mg/L	PBatch: PH QC23932 PB22366 Jnits ng/L a: QC23935 ch: PB22342 Diluti 1 1	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	d: 10/1/0 RDI 0.24 10/3/02 10/1/0 RDI 10/3/02 10/2/02 RDI 0.10 0.05
Analysis: Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissolv Sample: Analysis: Analysis: Analyst: Param Cotal Alumin Cotal Alumin Cotal Arsenic Cotal Boron	Ion Chron JSW Flag 209283 TDS JSW ved Solids ved Solids total Meta RR num c	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method: Flag - MW-5 als Analytical Meth Preparation Met Flag	units mg/L mg/L mg/L E 160.1 N/A E 160.1 N/A Result 54 cod: S 6010 chod: S 3010 Result <0.100 0.119 0.774	od: N/A Pre Dilution 5 5 5 QC Batch: Prep Batch: lt U 9 n OB QC Batch OA Prep Batc Units mg/L mg/L	Pp Batch: PI QC23932 PB22366 Jnits	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	d: 10/1/0 RDI 0.20 10/3/02 10/1/02 RDI 10/3/02 10/2/02 RDI 0.10 0.05 0.005
Analysis: Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissolv Sample: Analysis: Analysis: Analyst: Param Cotal Alumin Cotal Alumin Cotal Arsenic Cotal Boron Cotal Chrom	Ion Chron JSW Flag 209283 TDS JSW ved Solids ved Solids total Meta RR num c	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method: Flag - MW-5 als Analytical Meth Preparation Met Flag	units mg/L mg/L mg/L E 160.1 N/A E 160.1 N/A Result cod: S 6010 thod: S 3010 Result <0.100 0.119 0.774 <0.010	od: N/A Pre Dilution 5 5 5 QC Batch: Prep Batch: lt U 9 n DB QC Batch 0A Prep Batch Units mg/L mg/L mg/L	Pp Batch: PI QC23932 PB22366 Jnits	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	d: 10/1/0 RDI 0.24 10/3/02 10/1/02 RDI 10/3/02 10/2/02 RDI 0.10 0.05 0.005 0.01
Analysis: Analysis: Analyst: Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissolv Sample: Analysis: Analysis: Analyst: Param Cotal Alumin Cotal Alumin Cotal Arsenic Cotal Boron	Ion Chron JSW Flag 209283 TDS JSW ved Solids 209283 Total Meta RR num c ium	natography (IC) Analy Prepa Result 50.2 2.05 56.9 - MW-5 Analytical Method: Preparation Method: Flag - MW-5 als Analytical Meth Preparation Met Flag	units mg/L mg/L mg/L E 160.1 N/A E 160.1 N/A Result 54 cod: S 6010 chod: S 3010 Result <0.100 0.119 0.774	od: N/A Pre Dilution 5 5 5 QC Batch: Prep Batch: lt U 9 n OB QC Batch OA Prep Batc Units mg/L mg/L	Pp Batch: PI QC23932 PB22366 Jnits	Date Analyzed: Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	d: 10/1/0 RDI 0.24 10/3/02 10/1/02 RDI 10/3/02 10/2/02 RDI 0.10 0.05 0.005

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Duke Ener	gy Field S	r 9, 2002 ervices	Urder 1	Number: A0209 V-104	13019	Page Number: 7 of 1 Monument Booste		
Sample:	20928	4 - MW-6	······································					
Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC23882	Date Analyzed:	10/1/0	
Analyst:	CG	Preparation Method		Prep Batch	-	Date Prepared:	10/1/0	
Param		Flag	Result	Units	Di	lution	RD	
Benzene			< 0.005	mg/L		5	0.00	
Foluene			< 0.005	mg/L		5	0.00	
Ethylbenzer	ne		< 0.005	$\mathrm{mg/L}$		5	0.00	
M,P,O-Xyle			< 0.005	mg/L		5	0.00	
Total BTE	X		<0.005	mg/L		5	0.00	
					Spike	Percent	Recovery	
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits	
<u>FFT</u>			mg/L	5	0.10	89	70 - 130	
-BFB			mg/L	1	0.10	78	70 - 130	
aram	Flao	Result	Units	Dilution			ותא	
Param Chloride Fluoride	Flag	126 1.52	Units mg/L mg/L	Dilution 5 5			1	
Chloride	Flag	126	mg/L	5			1 0.20	
Chloride Fluoride Sulfate		126 1.52 38.8	mg/L mg/L	5 5			0.20	
Chloride Fluoride Sulfate	209284	126 1.52 38.8	mg/L mg/L mg/L	5 5 5	QC23932	Date Analyzed:	1 0.20 1	
Chloride Fluoride Sulfate Sample: malysis:		126 1.52 38.8	mg/L mg/L mg/L E 160.1	5 5	QC23932 PB22366	Date Analyzed: Date Prepared:	1 0.20 1 10/3/02	
Chloride 'luoride ulfate Sample: .nalysis: .nalyst: aram	20928 4 TDS JSW	126 1.52 38.8 4 - MW-6 Analytical Method:	mg/L mg/L E 160.1 N/A Resul	5 5 QC Batch: Prep Batch:	PB22366 Units	Date Prepared: Dilution	10/3/02 10/1/02 RDL	
Chloride Fluoride Sulfate Sample: malysis:	20928 4 TDS JSW	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method:	mg/L mg/L mg/L E 160.1 N/A	5 5 QC Batch: Prep Batch:	PB22366	Date Prepared:	1 0.20 1 10/3/02 10/1/02 RDL	
Chloride Sulfate Sample: Analysis: Analyst: Param Otai Dissolv	209284 TDS JSW ved Solids	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method: Flag	mg/L mg/L E 160.1 N/A Resul	5 5 QC Batch: Prep Batch:	PB22366 Units	Date Prepared: Dilution	1 0.20 1 10/3/02 10/1/02 RDL	
Chloride Fluoride Sulfate Sample: analysis: analyst: aram otai Dissolv	209284 TDS JSW ved Solids 209284	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method: Flag	mg/L mg/L E 160.1 N/A Resul	5 5 VC Batch: Prep Batch: t T 4 r	PB22366 Units ng/L	Date Prepared: Dilution 1	1 0.20 1 10/3/02 10/1/02 RDL 10	
Chloride Sulfate Sample: malysis: malyst: earam otai Dissolv ample: nalysis:	209284 TDS JSW ved Solids	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method: Flag - MW-6	mg/L mg/L E 160.1 N/A Resul 93-	5 5 5 QC Batch: Prep Batch: t U t r B QC Batch	PB22366 Units ng/L n: QC23935	Date Prepared: Dilution	1 0.20 1 10/3/02 10/1/02 RDL 10	
Chloride 'luoride ulfate Sample: nalysis: nalyst: aram otai Dissolv ample: nalysis: nalyst: aram	209284 TDS JSW ved Solids 209284 Total Met RR	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method: Flag - MW-6 als Analytical Metho Preparation Met. Flag	mg/L mg/L mg/L E 160.1 N/A Result od: S 6010 hod: S 3010 Result	5 5 5 QC Batch: Prep Batch: t U 4 r B QC Batch A Prep Batch Units	PB22366 Units ng/L n: QC23935 ch: PB22342 Diluti	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL	
Chloride 'luoride ulfate Cample: nalysis: nalyst: aram otai Dissolv ample: nalysis: nalysis: nalyst: uram otal Alumin	209284 TDS JSW ved Solids 209284 Total Met RR	126 1.52 38.8 I - MW-6 Analytical Method: Preparation Method: Flag - MW-6 als Analytical Metho Preparation Method: Flag	mg/L mg/L mg/L E 160.1 N/A Result 93- 0d: S 6010 hod: S 3010 Result <0.100	5 5 5 QC Batch: Prep Batch: t U 4 r B QC Batch A Prep Batc Units mg/L	PB22366 Units ng/L n: QC23935 ch: PB22342 Dilution 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 10/3/02 10/1/02 RDL 10 10/3/02 10/2/02 RDL 0.10	
Chloride 'luoride ulfate Cample: nalysis: nalysis: aram otai Dissolv ample: nalysis: n	209284 TDS JSW ved Solids 209284 Total Met RR	126 1.52 38.8 I - MW-6 Analytical Method: Preparation Method: Flag - MW-6 als Analytical Metho Preparation Method: Flag	mg/L mg/L mg/L E 160.1 N/A Resul 93- 0d: S 6010 hod: S 3010 Result <0.100 <0.050	5 5 5 QC Batch: Prep Batch: t U 4 r B QC Batch A Prep Batc Units mg/L mg/L	PB22366 Units ng/L n: QC23935 ch: PB22342 Dilution 1 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0.20 1 0/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05	
Chloride 'luoride ulfate Sample: nalysis: nalyst: aram otai Dissolv ample: nalysis: nalyst: nalyst: aram otal Alumin otal Arsenic otal Boron	209284 TDS JSW wed Solids 209284 Total Met RR	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method: Flag - MW-6 als Analytical Metho Preparation Method Flag	mg/L mg/L mg/L E 160.1 N/A Result 93- 0d: S 6010 hod: S 3010 Result <0.100 <0.050 1.17	5 5 5 QC Batch: Prep Batch: t U 4 r B QC Batch A Prep Batc M Prep Batc Units mg/L mg/L	PB22366 <u>Units</u> ng/L n: QC23935 ch: PB22342 <u>Diluti</u> 1 1 1 1 10	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0.20 1 0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005	
Chloride Sulfate Sample: malysis: malysis: aram otai Dissolv ample: malysis	209284 TDS JSW wed Solids 209284 Total Met RR	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method: Flag - MW-6 als Analytical Metho Preparation Method Flag	mg/L mg/L mg/L E 160.1 N/A Result 934 934 934 934 934 934 934 934 934 934	5 5 5 QC Batch: Prep Batch: t U t U t M G C Batch A Prep Batch M g/L mg/L mg/L mg/L	PB22366 <u>Units</u> ng/L n: QC23935 ch: PB22342 Dilution 1 1 10 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0.20 1 0/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005 0.01	
Chloride 'luoride ulfate Sample: analysis: analysis: aram otai Dissolv ample: nalysis: nalysis: nalyst: aram otal Alumin otal Arsenic otal Boron	209284 TDS JSW ved Solids 209284 Total Met RR num	126 1.52 38.8 4 - MW-6 Analytical Method: Preparation Method: Flag - MW-6 als Analytical Metho Preparation Method Flag	mg/L mg/L mg/L E 160.1 N/A Result 93- 0d: S 6010 hod: S 3010 Result <0.100 <0.050 1.17	5 5 5 QC Batch: Prep Batch: t U 4 r B QC Batch A Prep Batc M Prep Batc Units mg/L mg/L	PB22366 <u>Units</u> ng/L n: QC23935 ch: PB22342 <u>Diluti</u> 1 1 1 1 10	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	10/2/02 RDL 0.10 0.05 0.005	

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Duke Ener	gy Field Se	9, 2002 rvices	Order 1	V-104		Monum	ent Boost
Sample:	20028	5 - MW-2					
Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC23858	Date Analyzed:	9/30/0
Analyst:	CG	Preparation Method		Prep Batch:	-	Date Prepared:	9/30/0
Param		Flag	Result	Units	Di	lution	RD
Benzene			< 0.001	mg/L		1	0.00
Toluene			< 0.001	mg/L		1	0.00
Ethylbenzei	ne		<0.001	mg/L		1	0.00
M,P,O-Xyle	ene		< 0.001	mg/L		1	0.00
Total BTE	X		<0.001	mg/L		1	0.00
					a 11		
a .			-* •		Spike	Percent	Recovery
Surrogate	Flag		Units	Dilution	Amount	Recovery	Limits
TFT			mg/L	1	0.10	102	70 - 130
4-BFB		0.094	mg/L	5	0.10	94	70 - 130
Param	Flag	Result	Units	Dilution			RDI
	Flag	Result 2170	Units mg/L	Dilution 50			
Chloride	Flag		Units mg/L mg/L				
Chloride Fluoride	Flag	2170	mg/L	50			1 0.20
Chloride Fluoride Sulfate Sample: Analysis:	209285 TDS	2170 1.50	mg/L mg/L	50 5 5 QC Batch:	QC23932 PB22366	Date Analyzed: Date Prepared:	0.20 1 10/3/02
Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param	209285 TDS	2170 1.50 125 - MW-2 Analytical Method: Preparation Method:	mg/L mg/L E 160.1 N/A	50 5 5 QC Batch: Prep Batch:	PB22366	Date Prepared:	10/3/02 10/1/02
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param	209285 TDS JSW	2170 1.50 125 - MW-2 Analytical Method:	mg/L mg/L mg/L E 160.1	50 5 5 QC Batch: Prep Batch: It U	PB22366	Date Prepared:	10/3/02 10/1/02 RDL
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Total Dissol Sample: Analysis:	209285 TDS JSW ved Solids	2170 1.50 125 - MW-2 Analytical Method: Preparation Method: Flag - MW-2	mg/L mg/L E 160.1 N/A Resul 444	50 5 5 Verify Batch: Prep Batch: It U 0 m	PB22366 Jnits ng/L : QC23935	Date Prepared: Dilution 1	10/3/02 10/3/02
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analysis: Analyst: Param	209285 TDS JSW ved Solids 209285 Total Meta RR	2170 1.50 125 - MW-2 Analytical Method: Preparation Method: Flag - MW-2 els Analytical Methor Preparation Methor Flag	mg/L mg/L E 160.1 N/A Resul 444 bd: S 6010 hod: S 3010 Result	50 5 5 QC Batch: Prep Batch: lt U 0 m 0 Prep Batch 0A Prep Batch Units	PB22366 Jnits ng/L : QC23935 h: PB22342 Diluti	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	RDL 1 0.20 1 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Total Dissol Sample: Analysis: Analyst: Param Cotal Alumin	209285 TDS JSW ved Solids 209285 Total Meta RR	2170 1.50 125 - MW-2 Analytical Method: Preparation Method: Flag - MW-2 als Analytical Methor Preparation Methor Flag	mg/L mg/L mg/L E 160.1 N/A Resul 444 od: S 6010 hod: S 3010 Result <0.100	50 5 5 2 QC Batch: Prep Batch: lt U 0 m 0 DB QC Batch DA Prep Batc Units mg/L	PB22366 Jnits ng/L : QC23935 h: PB22342 Diluti 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Total Dissol Sample: Analysis: Analyst: Param Cotal Alumin Cotal Alumin	209285 TDS JSW ved Solids 209285 Total Meta RR	2170 1.50 125 - MW-2 Analytical Method: Preparation Method: Flag - MW-2 als Analytical Methor Preparation Methor Flag	mg/L mg/L mg/L E 160.1 N/A Resul 444 od: S 6010 hod: S 3010 Result <0.100 <0.050	50 5 5 5 QC Batch: Prep Batch: lt U 0 m 0 DB QC Batch 0A Prep Batc Units mg/L mg/L	PB22366 <u>Jnits</u> ng/L : QC23935 h: PB22342 <u>Diluti</u> 1 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05
Chloride Fluoride Sulfate Sample: Analysis: Analysis: Param Total Dissof Sample: Analysis: Analysis: Analysis: Analyst: Param Cotal Alumin Cotal Alumin Cotal Boron	209285 TDS JSW ved Solids 209285 Total Meta RR num c	2170 1.50 125 - MW-2 Analytical Method: Preparation Method: Flag - MW-2 als Analytical Methor Preparation Methor Flag	mg/L mg/L mg/L E 160.1 N/A Resul 444 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.527	50 5 5 2 2 2 2 2 3 3 5 3 3 3 5 3 3 3 3 3 3	PB22366 <u>Jnits</u> ng/L : QC23935 h: PB22342 <u>Diluti</u> 1 1 1 10	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005
Chloride Fluoride Sulfate Sample: Analysis: Analysis: Param Total Dissol Sample: Analysis: Analyst: Param Total Alumin Total Alumin Total Arseni Total Boron Total Chrom	209285 TDS JSW ved Solids 209285 Total Meta RR num c	2170 1.50 125 - MW-2 Analytical Method: Preparation Method: Flag - MW-2 als Analytical Methor Preparation Methor Flag	mg/L mg/L mg/L E 160.1 N/A Resul 444 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.527 0.0329	50 5 5 5 QC Batch: Prep Batch: Net U 0 m 0 DB QC Batch 0A Prep Batc Units mg/L mg/L mg/L mg/L	PB22366 <u>Jnits</u> ng/L : QC23935 h: PB22342 <u>Diluti</u> 1 1 10 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005 0.01
Chloride Fluoride Sulfate Sample: Analysis: Analysis: Param Total Dissof Sample: Analysis: Analysis: Analysis: Analyst: Param Cotal Alumin Cotal Alumin Cotal Boron	209285 TDS JSW ved Solids 209285 Total Meta RR num c	2170 1.50 125 - MW-2 Analytical Method: Preparation Method: Flag - MW-2 als Analytical Methor Preparation Methor Flag	mg/L mg/L mg/L E 160.1 N/A Resul 444 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.527	50 5 5 2 2 2 2 2 3 3 5 3 3 3 5 3 3 3 3 3 3	PB22366 <u>Jnits</u> ng/L : QC23935 h: PB22342 <u>Diluti</u> 1 1 1 10	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005

Duke Ener	gy Field Ser	9, 2002 vices	Order N	Vumber: A02093 V-104	3019	Page Number: 9 of 1 Monument Booste		
Sample:	209286	- MW-7					_	
Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC23858	Date Analyzed:	9/30/0	
Analyst:	CG	Preparation Method		Prep Batch:	-	Date Prepared:	9/30/0	
Param		Flag	Result	Units	Dil	ution	RDI	
Benzene		<u>_</u>	0.0148	mg/L		5	0.00	
Toluene			< 0.005	mg/L		5	0.00	
Ethylbenzei	ne		0.0174	mg/L		5	0.00	
M,P,O-Xyle	ene		< 0.005	mg/L		5	0.00	
Total BTE	X	· · · ·	0.0322	mg/L		5	0.00	
						_	_	
~		*		5.1	Spike	Percent	Recovery	
Surrogate	Flag		Units	Dilution	Amount	Recovery	Limits	
TFT			mg/L	5	0.10	91	70 - 130	
4-BFB		0.0836	mg/L	5	0.10	83	70 - 130	
aram	Flao	Result	Units	Dilution			RDI	
Chloride Fluoride	Flag	Result 49.5 2.26 70.8	Units mg/L mg/L	Dilution 5 5		. ·	RDL 1 0.20	
Chloride Fluoride	Flag	49.5	mg/L	5			1 0.20	
Chloride Fluoride Sulfate Sample:	209286	49.5 2.26 70.8	mg/L mg/L mg/L	5 5 5			1 0.20 1	
Chloride Fluoride Sulfate Sample: Analysis:	209286 TDS	49.5 2.26 70.8 - MW-7 Analytical Method:	mg/L mg/L mg/L E 160.1	5 5 5 QC Batch:	QC23932	Date Analyzed:	0.20 1 10/3/02	
Chloride Fluoride Sulfate Sample: Analysis:	209286 TDS	49.5 2.26 70.8	mg/L mg/L mg/L	5 5 5 QC Batch:	QC23932 PB22366	Date Analyzed: Date Prepared:	1 0.20 1 10/3/02	
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param	209286 TDS JSW 1	49.5 2.26 70.8 - MW-7 Analytical Method:	mg/L mg/L mg/L E 160.1	5 5 5 QC Batch: Prep Batch:	-	-	10/3/02 10/1/02	
Param Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol	209286 TDS JSW 1	49.5 2.26 70.8 - MW-7 Analytical Method: Preparation Method:	mg/L mg/L mg/L E 160.1 N/A	5 5 5 QC Batch: Prep Batch: t U	PB22366	Date Prepared:	0.20 1 10/3/02 10/1/02 RDL	
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analyst: Param	209286 TDS JSW Ved Solids 209286 Total Meta RR	49.5 2.26 70.8 - MW-7 Analytical Method: Preparation Method: Flag - MW-7 ls Analytical Metho Preparation Metho Flag	mg/L mg/L mg/L E 160.1 N/A Result od: S 6010 hod: S 3010 Result	5 5 5 VC Batch: Prep Batch: t U 4 n B QC Batch A Prep Batc Units	PB22366 Jnits ng/L : QC23935	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL	
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analyst: Param Fotal Alumin	209286 TDS JSW Ved Solids 209286 Total Meta RR	49.5 2.26 70.8 - MW-7 Analytical Method: Preparation Method: Flag - MW-7 ls Analytical Metho Preparation Metho Flag	mg/L mg/L mg/L E 160.1 N/A Result 574 od: S 6010 hod: S 3010	5 5 5 QC Batch: Prep Batch: t U 4 n B QC Batch A Prep Batc	PB22366 <u>Jnits</u> <u>ng/L</u> : QC23935 h: PB22342	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL	
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Cotal Dissol Sample: Analysis: Analys	209286 TDS JSW Ved Solids 209286 Total Meta RR	49.5 2.26 70.8 - MW-7 Analytical Method: Preparation Method: Flag - MW-7 ls Analytical Metho Preparation Metho Flag	mg/L mg/L mg/L E 160.1 N/A Result od: S 6010 hod: S 3010 Result	5 5 5 VC Batch: Prep Batch: t U 4 n B QC Batch A Prep Batc Units	PB22366 <u>Jnits</u> <u>rg/L</u> : QC23935 h: PB22342 Dilution 1 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0.20 1 0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05	
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analysis: Analyst: Param Jotal Alumin Jotal Arseni Jotal Boron	209286 TDS JSW 1 ved Solids 209286 Total Meta RR num	49.5 2.26 70.8 - MW-7 Analytical Method: Preparation Method: Flag - MW-7 ls Analytical Metho Preparation Metho Flag	mg/L mg/L mg/L E 160.1 N/A Result 574 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.610	5 5 5 VC Batch: Prep Batch: t U 4 n B QC Batch A Prep Batc Units mg/L	PB22366 <u>Jnits</u> <u>ng/L</u> : QC23935 h: PB22342 Dilution 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0.20 1 0/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005	
Chloride Fluoride Sulfate Sample: Analysis: Analysis: Param Fotal Dissol Sample: Analysis: Analysis: Analysis: Analyst: Param Fotal Alumin Fotal Arseni Fotal Boron Fotal Chrom	209286 TDS JSW 1 ved Solids 209286 Total Meta RR num	49.5 2.26 70.8 - MW-7 Analytical Method: Preparation Method: Flag - MW-7 ls Analytical Metho Preparation Metho Flag	mg/L mg/L mg/L E 160.1 N/A Result 574 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.610 <0.010	5 5 5 5 QC Batch: Prep Batch: t U t U t n M B QC Batch A Prep Batc Units mg/L mg/L mg/L mg/L	PB22366 <u>Jnits</u> <u>rg/L</u> : QC23935 h: PB22342 Dilution 1 1	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	1 0.20 1 0.20 1 0.20 10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005 0.01	
Chloride Fluoride Sulfate Sample: Analysis: Analyst: Param Fotal Dissol Sample: Analysis: Analysis: Analyst: Param Jotal Alumin Jotal Arseni Jotal Boron	209286 TDS JSW Ved Solids 209286 Total Meta RR num ic	49.5 2.26 70.8 - MW-7 Analytical Method: Preparation Method: Flag - MW-7 ls Analytical Metho Preparation Metho Flag	mg/L mg/L mg/L E 160.1 N/A Result 574 od: S 6010 hod: S 3010 Result <0.100 <0.050 0.610	5 5 5 VC Batch: Prep Batch: t U 4 n B QC Batch A Prep Batc Units mg/L mg/L	PB22366 <u>Jnits</u> <u>ng/L</u> : QC23935 h: PB22342 <u>Dilution</u> 1 1 1 10	Date Prepared: Dilution 1 Date Analyzed: Date Prepared:	10/3/02 10/1/02 RDL 10/3/02 10/2/02 RDL 0.10 0.05 0.005	

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-	te: October gy Field Ser	-	Order 1	Number: A02093 V-104	019	Page Num Monun	nent Boost
Sample: Analysis: Analyst:	209287 BTEX CG	' - Duplicate Analytical Method: Preparation Method	S 8021B 1: S 5030B	QC Batch: Prep Batch:	QC23858 PB22304	Date Analyzed: Date Prepared:	9/30/0 9/30/0
Param		Flag	Result	Units	\mathbf{Dil}	ution	RD
Benzene			0.0142	mg/L		5	0.00
Toluene			< 0.005	mg/L		5	0.00
Ethylbenze			0.0176	mg/L		5	0.00
M,P,O-Xyle			< 0.005	mg/L		5	0.00
Total BTE	<u>X</u>		0.0318	mg/L		5	0.00
					Emilia	Percent	Decorrer
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Recovery	Recovery Limits
TFT		0.0899	mg/L	5	0.10	89	70 - 130
4-BFB		0.0833	mg/L	5	0.10	83	70 - 130
Sample: Analysis:	209288 BTEX	- Rinsate Analytical Method:	S 8021B	QC Batch:	QC23858	Date Analyzed:	9/30/02
Analysis. Analyst:	CG	Preparation Method		Prep Batch:	QO23838 PB22304	Date Prepared:	9/30/02
Param		Flag	Result	Units	יווים	ition	RDI
Benzene	,,		<0.001	mg/L		1	0.001
Toluene			<0.001	mg/L		1	0.001
Ethylbenzer	ne		0.001	mg/L	n na star star star star star star star sta	=	0.001
M,P,O-Xyle			< 0.001	mg/L		1	0.001
Total BTEX	<u> </u>		0.001	mg/L		1	0.001
					a	n	_
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
		·····	mg/L	1	0.10		70 - 130
		••••					
<u>TFT</u>		0.094	mg/L	1	0.10	94	
FFT 4-BFB Sample: Analysis:	BTEX	0.094 - Trip Blank Analytical Method: Preparation Method:	mg/L S 8021B			94 Date Analyzed: Date Prepared:	70 - 130 9/30/02
FFT 4-BFB Sample: Analysis: Analyst: Param	BTEX	- Trip Blank Analytical Method: Preparation Method:	mg/L S 8021B	1 QC Batch:	0.10 QC23858	Date Analyzed: Date Prepared:	70 - 130 9/30/02 9/30/02
FFT 4-BFB Sample: Analysis: Analyst: Param Benzene	BTEX	- Trip Blank Analytical Method: Preparation Method: Flag	mg/L S 8021B S 5030B Result <0.005	1 QC Batch: Prep Batch:	0.10 QC23858 PB22304 Dilu	Date Analyzed: Date Prepared: tion	70 - 130 9/30/02 9/30/02 RDL
FFT 4-BFB Sample: Analysis: Analyst: Param Benzene Coluene	BTEX CG	- Trip Blank Analytical Method: Preparation Method: Flag	mg/L S 8021B S 5030B Result <0.005 <0.005	1 QC Batch: Prep Batch: Units	0.10 QC23858 PB22304 Dilu	Date Analyzed: Date Prepared: tion	70 - 130 9/30/02 9/30/02 RDL 0.001 0.001
FFT 4-BFB Analysis: Analyst: Param Benzene Foluene Ethylbenzen	BTEX CG e	- Trip Blank Analytical Method: Preparation Method: Flag	mg/L S 8021B S 5030B Result <0.005 <0.005 <0.005	1 QC Batch: Prep Batch: Units mg/L mg/L mg/L	0.10 QC23858 PB22304 Dilu 5 5 5	Date Analyzed: Date Prepared: tion	70 - 130 9/30/02 9/30/02 RDL 0.001 0.001 0.001
FFT I-BFB Analysis: Analyst: Param Benzene Coluene Chylbenzen 4,P,O-Xyler	BTEX CG e ne	- Trip Blank Analytical Method: Preparation Method: Flag	mg/L S 8021B S 5030B Result <0.005 <0.005 <0.005 <0.005	1 QC Batch: Prep Batch: Units mg/L mg/L	0.10 QC23858 PB22304 Dilu 5 5 5 5 5 5	Date Analyzed: Date Prepared: tion	70 - 130 9/30/02 9/30/02 RDL 0.001 0.001 0.001 0.001
FFT 4-BFB 5ample: Analysis: Analyst: Param Benzene Coluene Ethylbenzen 4,P,O-Xyler	BTEX CG e ne	- Trip Blank Analytical Method: Preparation Method: Flag	mg/L S 8021B S 5030B Result <0.005 <0.005 <0.005	1 QC Batch: Prep Batch: Units mg/L mg/L mg/L	0.10 QC23858 PB22304 Dilu 5 5 5	Date Analyzed: Date Prepared: tion	70 - 130 9/30/02 9/30/02 RDL 0.001 0.001
TFT 4-BFB Analysis: Analyst: Param Benzene Foluene Ethylbenzen A,P,O-Xyler Fotal BTEX	BTEX CG e ne	- Trip Blank Analytical Method: Preparation Method: Flag	mg/L S 8021B S 5030B Result <0.005 <0.005 <0.005 <0.005	1 QC Batch: Prep Batch: Units mg/L mg/L mg/L mg/L	0.10 QC23858 PB22304 Dilu 5 5 5 5 5 5	Date Analyzed: Date Prepared: tion	70 - 130 9/30/02 9/30/02 RDL 0.001 0.001 0.001 0.001 Recovery
FFT 4-BFB 5ample: Analysis: Analyst: Param Benzene Coluene Ethylbenzen 4,P,O-Xyler	BTEX CG e ne	- Trip Blank Analytical Method: Preparation Method: Flag	mg/L S 8021B S 5030B Result <0.005 <0.005 <0.005 <0.005 <0.005	1 QC Batch: Prep Batch: Units mg/L mg/L mg/L mg/L	0.10 QC23858 PB22304 Dilu 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Date Analyzed: Date Prepared: tion	70 - 130 9/30/02 9/30/02 RDL 0.001 0.001 0.001 0.001

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Report Date: October 9, 2002 Duke Energy Field Services

Quality Control Report Method Blank

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Param		Flag		Results	Uni		Limit
Benzene				<0.001	mg,		0.001
Toluene				< 0.001	mg_{ℓ}		0.001
Ethylbenzene M,P,O-Xylene				< 0.001	mg/		0.001
M,P,O-Xylene				< 0.001	mg		0.001
Total BTEX				<0.001	mg/	[′] L	0.001
					Spike	Percent	Recover
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
TFT	1	0.0553	mg/L	1	0.10	55	70 - 130
4-BFB	2	0.0557	mg/L	1	0.10	55	70 - 130
Method B	lank	QCBatch:	QC23882				
Damana		T21		Denultu	TT	t a	Reporting
		Flag	a	Results	Uni		Limit
Benzene		Flag		< 0.001	mg/	L	Limit 0.001
Param Benzene Toluene Ethylbonzone		Flag	q,	<0.001 <0.001	mg/	L L	Limit 0.001 0.001
Benzene Toluene Ethylbenzene		Flag		<0.001 <0.001 <0.001	mg/ mg/ mg/	L L L	Limit 0.001 0.001 0.001
Benzene Toluenc Ethylbenzene M,P,O-Xylcne		Flag		<0.001 <0.001 <0.001 <0.001	mg/ mg/ mg/ mg/	L L L L	Limit 0.001 0.001 0.001 0.001
Benzene Foluene Ethylbenzene M,P,O-Xylcne		Flag		<0.001 <0.001 <0.001	mg/ mg/ mg/	L L L L	Limit 0.001 0.001 0.001
Benzene Toluene Ethylbenzene M,P,O-Xylene Total BTEX				<0.001 <0.001 <0.001 <0.001 <0.001	mg/ mg/ mg/ mg/ Spike	L L L L L Percent	Limit 0.001 0.001 0.001 0.001 0.001 Recovery
Benzene Toluene Ethylbenzene M,P,O-Xylene Total BTEX Surrogate	Flag	Result	Units	<0.001 <0.001 <0.001 <0.001 <0.001 Dilution	mg/ mg/ mg/ mg/ Spike Amount	L L L L L Percent Recovery	Limit 0.001 0.001 0.001 0.001 0.001 Recovery Limits
Benzene Foluene Ethylbenzene M,P,O-Xylene Fotal BTEX Surrogate	Flag	Result 0.0895	mg/L	<0.001 <0.001 <0.001 <0.001 <0.001 Dilution	mg/ mg/ mg/ mg/ Spike Amount 0.10	L L L L Percent Recovery 90	Limit 0.001 0.001 0.001 0.001 0.001 Recovery Limits 70 - 130
Benzene	Flag	Result		<0.001 <0.001 <0.001 <0.001 <0.001 Dilution	mg/ mg/ mg/ mg/ Spike Amount	L L L L L Percent Recovery	Limit 0.001 0.001 0.001 0.001 0.001 Recovery Limits 70 - 130
Benzene Foluene Ethylbenzene M,P,O-Xylene Fotal BTEX Surrogate FFT I-BFB		Result 0.0895	mg/L	<0.001 <0.001 <0.001 <0.001 <0.001 Dilution	mg/ mg/ mg/ mg/ Spike Amount 0.10	L L L L Percent Recovery 90	Limit 0.001 0.001 0.001 0.001 0.001 Recover Limits 70 - 130
Benzene Toluene Ethylbenzene M,P,O-Xylcne Fotal BTEX Surrogate		Result 0.0895 0.0769	mg/L mg/L QC23889	<0.001 <0.001 <0.001 <0.001 <0.001 Dilution	mg/ mg/ mg/ mg/ Spike Amount 0.10 0.10	L L L L Percent Recovery 90	Limit 0.001 0.001 0.001 0.001 0.001 Recovery

Method Blank

QCBatch: QC23892

¹Low surrogate recovery due to prep. ICV, CCV show the method to be in control. ²Low surrogate recovery due to prep. ICV, CCV show the method to be in control.

, 2002 ices	Order 1	Number: A020930 V-104	19	Page Number: 12 of 1 Monument Booste
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·····	řī ? 4 -	Reporting
r lag				Limit1
				0.20
				0.20
	<1.0		MB/ D	s
QCBatch:	QC23893			
Flag	Re	sults	Units	Reporting Limit
		<1.0	mg/L	1
		<0.2	mg/L	0.20
		<1.0	mg/L	1
QCBatch:	QC23932			
Flag		Results	Units	Reporting Limit
	······································	<10	mg/L	10
QCBatch:	QC23933			
				Reporting
Flag				Limit
	<u> </u>	<10	mg/L	10
QCBatch:	QC23935			
·	•			
171		D 14	¥7	Reporting
r lag			and the second	Limit
				0.10 0.05
				0.005
				0.005
				0.01
		< 0.025	mg/L	0.03
	Flag QCBatch: Flag QCBatch: Flag QCBatch: Flag	Flag Re   QCBatch: QC23893   Flag Re   QCBatch: QC23932   Flag Plag   QCBatch: QC23933   Flag Secondary   QCBatch: QC23933   Flag Secondary	Ices       V-104         Flag       Results         <1.0	V-104       Flag     Results     Units $<1.0$ mg/L $<0.2$ mg/L $<1.0$ mg/L       QCBatch:     QC23893       Flag     Results     Units $<1.0$ mg/L $<0.2$ mg/L $<0.2$ mg/L $<0.2$ mg/L $<0.2$ mg/L $<1.0$ mg/L $<0.2$ mg/L $<1.0$ mg/L       QCBatch:     QC23932       Flag     Results     Units $<10$ mg/L       QCBatch:     QC23933       Flag     Results     Units $<10$ mg/L       QCBatch:     QC23935       Flag     Results     Units $<0.100$ mg/L $<0.010$ mg/L $<0.010$ mg/L

### Quality Control Report Duplicate Samples

Duplicate

QCBatch: QC23889

Report Date: October Duke Energy Field Ser	· ·	O	rder Number: V-104	•	Page Number: 13 of 19 Monument Booster		
Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids		2818	2834	mg/L	1	0	9.7
Duplicate	QCBatch:	QC23932					
		Duplicate	Sample				RPD
Param	Flag	Result	Result	Units	Dilution	RPD	Limit
Total Dissolved Solids		928	934	mg/L	1	0	9.7
Duplicate	QCBatch:	QC23933					
		Duplicate	Sample				RPD
Param	Flag	Result	Result	Units	Dilution	RPD	Limit
Total Dissolved Solids		826	776	mg/L	1	6	9.7

#### Quality Control Report Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC23858

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.092	0.0917	mg/L	1	0.10	< 0.001	92	0	70 - 130	20
Benzene	0.0936	0.0946	mg/L	1	0.10	< 0.001	94	1	70 - 130	20
Toluene	0.0936	0.094	mg/L	1	0.10	< 0.001	94	0	70 - 130	20
Ethylbenzene	0.0939	0.094	mg/L	1	0.10	< 0.001	91	0	70 - 130	20
M,P,O-Xylene	0.275	0.276	mg/L	1	0.30	< 0.001	92	0	70 - 130	20

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

Surrogate	LCS Result	LCSD Result	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.101	0.102	mg/L	1	0.10	101	102	70 - 130
4-BFB	0.0982	0.0981	mg/L	1	0.10	98	98	70 - 130

Laboratory Control Spikes

QCBatch: (

QC23882

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.0934	0.0902	mg/L	1	0.10	< 0.001	93	3	70 - 130	20
Benzene	0.0935	0.0911	mg/L	1	0.10	< 0.001	94	3	70 - 130	20
Toluene	0.0922	0.0907	mg/L	1	0.10	< 0.001	92	2	70 - 130	20
Ethylbenzene	0.0894	0.0903	mg/L	1	0.10	< 0.001	89	1	70 - 130	20
M.P.O-Xylene	0.269	0.269	mg/L	1	0.30	< 0.001	90	0	70 - 130	20

Report Date: October 9, 2002 Duke Energy Field Services Order Number: A02093019 V-104 Page Number: 14 of 19 Monument Booster

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

Surrogate	$\begin{array}{c} { m LCS} \\ { m Result} \end{array}$	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.0937	0.0908	mg/L	1	0.10	94	91	70 - 130
4-BFB	0.0894	0.0866	mg/L	1	0.10	89	87	70 - 130

Laboratory Control Spikes

QCBatch: QC23892

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	11.88	11.85	mg/L	1	12.50	<1.0	95	0	90 - 110	20
Fluoride	2.41	2.36	mg/L	1	2.50	<0.2	96	2	90 - 110	20
Sulfate	11.92	11.92	mg/L	1	12.50	<1.0	95	0	90 - 110	20

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

Laboratory Control Spikes

QCBatch: QC23893

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Nitrate-N	2.42	2.42	mg/L	1	2.50	< 0.2	96	0	90 - 110	20

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

Laboratory Control Spikes

QCBatch: Q

QC23935

Param	LCS Result	$\begin{array}{c} { m LCSD} \\ { m Result} \end{array}$	Units	Dil.	Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Aluminum	0.964	0.957	mg/L	1	1	< 0.100	96	0	75 - 125	20
Total Arsenic	0.572	0.556	mg/L	1	0.50	< 0.050	114	2	75 - 125	20
Total Boron	0.105	0.103	mg/L	1	0.10	<0.010	105	1	75 - 125	20
Total Chromium	0.102	0.101	mg/L	1	0.10	<0.010	102	0	75 - 125	20
Total Iron	0.522	0.501	mg/L	1	0.50	< 0.050	104	4	75 - 125	20
Total Manganese	0.253	0.250	mg/L	1	0.25	< 0.025	101	1	75 - 125	20

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

#### Quality Control Report Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC23892

					Spike					
	MS	MSD			Amount	Matrix			$\% { m Rec}$	RPD
Param	Result	Result	Units	Dil.	Added	Result	% Rec	RPD	Limit	Limit
Chloride	³ 3125	4 3116	mg/L	1	1250	2170	76	0	48 - 127	20
³ This san	nple was spike	d at a differen	t dilution. N	AS %EA =	= 91 and RPD	= 0.			Contin	nued

⁴This sample was spiked at a different dilution. MS %EA = 91 and RPD = 0.

-	ate: October rgy Field Se			Or	der Number: V-104		Page Number: 15 of 19 Monument Booster			
Contin	ued				Çu:l-a					
	MS	MSD			Spike Amount	Matrix			% Rec	RPD
Param	Result	Result	Units	Dil.	Added	Result	$\% { m Rec}$	RPD	Limit	Limit
Fluoride	5 271	6 272	mg/L	1	250	1.50	107	0	82 - 101	20
Sulfate	7 1310	⁸ 1284	mg/L	1	1250	125	94	2	59 - 121	20

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

QC23893

#### Matrix Spikes QCBatch:

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	⁹ 1210	10 1200	mg/L	1	1250	45.7	93	0	48 - 127	20
Fluoride	11 272	12 270	mg/L	1	250	2.87	107	0	82 - 101	20
Sulfate	¹³ 1260	14 1270	mg/L	1	1250	82.5	94	0	59 - 121	20

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

Matrix Spikes

QCBatch: QC23935

					Spike					
	MS	MSD			Amount	Matrix			% Rec	RPD
Param	Result	Result	Units	Dil.	Added	Result	$\% { m Rec}$	RPD	Limit	Limit
Total Aluminum	1.09	1.09	mg/L	1	1	< 0.100	109	0	75 - 125	20
Total Arsenic	0.565	0.562	mg/L	1	0.50	< 0.050	113	0	75 - 125	20
Total Boron	15 0.634	0.646	mg/L	10	0.10	0.500	134	8	75 - 125	20
Total Chromium	0.0967	0.0969	mg/L	1	0.10	< 0.010	96	0	75 - 125	20
Total Iron	0.495	0.497	mg/L	1	0.50	< 0.050	99	0	75 - 125	20
Total Manganese	0.304	0.305	mg/L	1	0.25	0.0633	96	0	75 - 125	20

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

#### Quality Control Report Continuing Calibration Verification Standards

CCV(1)

QCBatch: QC23858

 $^{^5 \}mathrm{This}$  sample was spiked at a different dilution. MS %EA = 108 and RPD = 0.

 $^{^6} This$  sample was spiked at a different dilution. MS %EA = 108 and RPD = 0.

 $^{^7 \}mathrm{This}$  sample was spiked at a different dilution. MS %EA = 93 and RPD = 2.  $^8 This$  sample was spiked at a different dilution. MS %EA = 93 and RPD = 2.

 $^{^9\}mathrm{This}$  sample was spiked at a different dilution. MS %EA = 87 and RPD = 1.

 $^{^{10}\}text{This}$  sample was spiked at a different dilution. MS %EA = 87 and RPD = 1.

 $^{^{11}\}mathrm{This}$  sample was spiked at a different dilution. MS %EA = 102 and RPD = 1.

 $^{^{12}}$  This sample was spiked at a different dilution. MS %EA = 102 and RPD = 1.

 $^{^{13}\}mathrm{This}$  sample was spiked at a different dilution. MS %EA = 93 and RPD = 0.  14  This sample was spiked at a different dilution. MS %EA = 93 and RPD = 0.

¹⁵Matrix spike recovery invalid due to matrix effects. LCS demonstrates process under control.

Report Date: October 9, 2002 Duke Energy Field Services			Order I	Number: A020 V-104	Page Number: 16 of 19 Monument Booster		
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE	<u>_</u>	mg/L	0.10	0.0928	93	85 - 115	9/30/02
Benzene		mg/L	0.10	0.0949	95	85 - 115	9/30/02
Toluene		mg/L	0.10	0.0951	95	85 - 115	9/30/02
Ethylbenzene		mg/L	0.10	0.0942	94	85 - 115	9/30/02
M,P,O-Xylene		mg/L	0.30	0.277	92	85 - 115	9/30/02

CCV(2)	QCBa	tch: QC23	3858				
E.			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
MTBE		mg/L	0.10	0.0938	93	85 - 115	9/30/02
Benzene		mg/L	0.10	0.0957	95	85 - 115	9/30/02
Toluene		mg/L	0.10	0.0957	95	85 - 115	9/30/02
Ethylbenzene		mg/L	0.10	0.0953	95	85 - 115	9/30/02
M,P,O-Xylene	<u> </u>	mg/L	0.30	0.279	93	85 - 115	9/30/02

ICV (1) QCBatch: QC23858

			CCVs True	CCVs Found	$\operatorname{CCVs}$	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
MTBE		mg/L	0.10	0.0904	90	85 - 115	9/30/02
Benzene		mg/L	0.10	0.0942	94	85 - 115	9/30/02
Toluene		mg/L	0.10	0.0948	95	85 - 115	9/30/02
Ethylbenzene		mg/L	0.10	0.095	95	85 - 115	9/30/02
M,P,O-Xylene		mg/L	0.30	0.278		85 - 115	9/30/02

CCV (1) QCBatch: QC23882

			CCVs True	$\operatorname{CCVs}$ Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
MTBE		mg/L	0.10	0.092	92	85 - 115	10/1/02
Benzene		mg/L	0.10	0.0914	91	85 - 115	10/1/02
Toluene		mg/L	0.10	0.0918	92	85 - 115	10/1/02
Ethylbenzene		mg/L	0.10	0.0911	91	85 - 115	10/1/02
M,P,O-Xylene		mg/L	0.30	0.272	91	85 - 115	10/1/02

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CCV (2) QCBatch: QC23882

Report Date: Oc Duke Energy Fie	'		Order 1	Number: A020 V-104	93019	÷	mber: 17 of 19 iment Booster
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE	1 lag	mg/L	0.10	0.0911	<u>91</u>	85 - 115	10/1/02
Benzene		mg/L	0.10	.0904	90	85 - 115	10/1/02
Toluene		mg/L	0.10	0.0899	89	85 - 115	10/1/02
Ethylbenzene		mg/L	0.10	0.091	91	85 - 115	10/1/02
M,P,O-Xylene		mg/L	0.30	0.2725	90	85 - 115	10/1/02

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ICV (1)	QCBatch:	QC23882
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			$\mathrm{CCVs}$	$\mathrm{CCVs}$	$\mathrm{CCVs}$	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
MTBE		mg/L	0.10	0.0937	94	85 - 115	10/1/02
Benzene		mg/L	0.10	0.0928	93	85 - 115	10/1/02
Toluene		mg/L	0.10	0.0917	92	85 - 115	10/1/02
Ethylbenzene		mg/L	0.10	0.092	92	85 - 115	10/1/02
M,P,O-Xylene		mg/L	0.30	0.275	92	85 - 115	10/1/02

CCV (1) QCBatch: QC23889

			CCVs	$\mathrm{CCVs}$	$\mathrm{CCVs}$	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Dissolved Solids		mg/L	1000	1006	100	90 - 110	10/1/02

ICV (1) QCBatch: QC23889

			CCVs	$\rm CCVs$	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Dissolved Solids		mg/L	1000	975	97	90 - 110	10/1/02

### CCV (1) QCBatch: QC23892

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride	1 18.8	mg/L	12.50	11.88	<u>95</u>	90 - 110	<u>10/1/02</u>
Fluoride		mg/L	2.50	2.38	95	90 - 110	10/1/02
Sulfate		mg/L	12.50	12.03	96	90 - 110	10/1/02

ICV(1)

QCBatch: QC23892

Report Date: C Duke Energy F				Order N	(umber: A0209 V-104	93019		umber: 18 of 1 ument Booste
Param	Flag	Units	CCV Tru Con	e	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L			11.84	94	90 - 110	10/1/02
Fluoride		mg/L	2.50	)	2.39	95	90 - 110	10/1/02
Sulfate		mg/L	12.5	0	11.95	95	90 - 110	10/1/02
CCV (1)	QCI	Batch:	QC23893					
			CC	Vs	CCVs	CCVs	Percent	•
			Tru		Found	Percent	Recovery	Date
Param	Flag	Units			Conc.	Recovery	Limits	Analyzed
Nitrate-N		mg/I	. 2.5	0	2.41	96	90 - 110	10/1/02
ICV (1)	QCB	atch:	QC23893					
			CCV	ls	CCVs	CCVs	Percent	
			Tru		Found	Percent	Recovery	Date
Param	Flag	Units	Con	c.	Conc.	Recovery	Limits	Analyzed
Nitrate-N		mg/L	<i>i</i> 2.50	)	2.38	95	90 - 110	10/1/02
CCV (1)	QCE	Batch:	QC23932			. <u>.</u>		
	-		-			<b>.</b>	_	
				CCVs	CCVs	CCVs	Percent	
Param		Flag	Units	True Conc.	Found Conc.	Percent Recovery	Recovery Limits	Date Analyzed
Total Dissolved	Solids	Tiag	mg/L	1000	1020	102	90 - 110	10/3/02
		<u></u>	8/					
ICV (1)	QCBa	itch:	QC23932					
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param		Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
fotal Dissolved S	Solids		mg/L	1000	997	99	90 - 110	10/3/02
CCV (1)	QCB	atch:	QC23933					
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
'aram		Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
otal Dissolved S	olids		mg/L	1000	997	99	90 - 110	10/3/02

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Report Date: Octo Duke Energy Field	•		Order Nu	mber: A02093 V-104	019	-	nber: 19 of 19 ment Booster
ICV (1)	QCBatch:	QC23933					
			CCVs	CCVs	$\mathrm{CCVs}$	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Dissolved So	lids	mg/L	1000	989	98	90 - 110	10/3/02
CCV (1)	QCBatch:	QC23935	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Aluminum		mg/L	2	1.82	91	90 - 110	10/3/02
Total Arsenic		mg/L	1	0.969	97	90 - 110	10/3/02
Total Boron		mg/L	0.10	0.109	109	90 - 110	10/3/02
Total Chromium		mg/L	0.20	0.190	95	90 - 110	10/3/02
Total Iron		mg/L	1	0.939	94	90 - 110	10/3/02
Total Manganese		mg/L	0.50	0.472	94	90 - 110	10/3/02

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ICV (1) QCBatch: QC23935

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Aluminum		mg/L	2	1.84	92	95 - 105	10/3/02
Total Arsenic		mg/L	1	0.943	94	95 - 105	10/3/02
Total Boron		$\mathrm{mg/L}$	0.10	0.106	106	95 - 105	10/3/02
Total Chromium		mg/L	0.20	0.190	95	95 - 105	10/3/02
Total Iron		mg/L	1	0.930	93	95 - 105	10/3/02
-Total-Mangamese		mg/L	0.50	0.470	94	95 - 105	10/3/02

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## **ANALYTICAL REPORT**

### **Prepared for:**

**GILBERT VAN DEVENTER TRIDENT ENVIRONMENTAL** P.O. BOX 7624 MIDLAND, TX 79708

Duke Energy Field Services **Project: PO#:** Order#: G0204664

**Report Date:** 10/01/2002

**Certificates** US EPA Laboratory Code TX00158

### ENVIRONMENTAL LAB OF TEXAS SAMPLE WORK LIST

TRIDENT ENVIRONMENTAL

P.O. BOX 7624 MIDLAND, TX 79708

682-0727

Order#:G0204664Project:V-102Project Name:Duke Energy Field ServicesLocation:Monument Booster

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

-				Date / Time		Date / Time		
Lab ID:	Sample :	<u>Matrix:</u>		Collected		Received	<u>Container</u>	<u>Preservative</u>
0204664-01	MW-4	WATER		9/27/02		9/27/02	4 oz Glass	Ice ·
-	1 1	n.t	Ne	8:00		16:45		
	<u>ıb Testing:</u>	Rejected:	NO	1	emp:	3.5C		
	Nitrogen, Nitrate							
0204664-02	MW-2d	WATER		9/27/02		9/27/02	4 oz Glass	Ice
				8:20		16:45		
La	<u>b Testing:</u>	Rejected:	No	т	emp:	3.5C		
	Nitrogen, Nitrate							
0204664-03	MW-3	WATER		9/27/02		9/27/02	4 oz Glass	Ice
0204004-03				9:25		16:45		
<u>La</u>	<u>b Testing:</u>	Rejected:	No	Т	emp:	3.5C		
	Nitrogen, Nitrate	<u></u>		·····				······
0204664-04	MW-6	WATER		9/27/02		9/27/02	4 oz Glass	Ice
0204004-04				10:40		16:45		
<u>La</u>	<u>b Testing:</u>	Rejected:	No	Т	emp:	3.5C		
	Nitrogen, Nitrate							
0204664-05	MW-5	WATER		9/27/02		9/27/02	4 oz Glass	Ice
				11:20	:	16:45		• •
La	<u>b Testing:</u>	Rejected:	No	Те	emp:	3.5C		
	Nitrogen, Nitrate							
_0204664-06	MW-2	WATER		9/27/02		9/27/02	4 oz Glass	Ice
0204004 00				12:10		16:45		
La	<u>b Testing:</u>	Rejected:	No	Те	mp:	3.5C		
	Nitrogen, Nitrate							
0204664-07	MW-7	WATER		9/27/02		9/27/02	4 oz Glass	Ice
				13:00		16:45		
Lal	<u>b Testing:</u>	Rejected:	No	Te	mp:	3.5C		
	Nitrogen, Nitrate							

### ENVIRONMENTAL LAB OF TEXAS ANALYTICAL REPORT

			Order Projec Projec Locati	et: et Name:	G0204664 V-102 Duke Energ Monument I	y Field Services Booster		
Lab ID: Sample ID:	0204664-01 MW-4							
Test Paral		<u>Result</u>	Units	Dilutio <u>Factor</u>		Method	Date <u>Analyzed</u>	<u>Analys</u>
Nitrogen, Ni	itrate	0.1	mg/L	1	0.10	353.3	9/28/02	SB
Lab ID: Sample ID:	0204664-02 MW-2d				· · · · ·			
Test Paran Parameter		Result	Units	Dilution <u>Factor</u>		Method	Date <u>Analyzed</u>	Analys
Nitrogen, Ni	trate	0.5	mg/L	1	0.10	353.3	9/28/02	SB
Lab ID: Sample ID:	0204664-03 MW-3							
Test Paran Parameter	meters	Result	Units	Dilutior <u>Factor</u>		Method	Date <u>Analyzed</u>	<u>Analys</u> t
Nitrogen, Ni	trate	0.1	mg/L	1	0.10	353.3	9/28/02	SB
Lab ID: Sample ID:	0204664-04 MW-6							
Test Paran Parameter	neters	Result	Units	Dilution <u>Factor</u>		Method	Date Analyzed	<u>Analyst</u>
Nitrogen, Nit		0.2	mg/L	1	0.10	353.3	9/28/02	SB
Lab ID: Sample ID:	0204664-05 MW-5							
Test Paran Parameter	neters	<u>Result</u>	<u>Units</u>	Dilution <u>Factor</u>	<u>RL</u>	Method	Date Analyzed	<u>Analyst</u>
Nitrogen, Nit	rate	0.6	mg/L	1	0.10	353.3	9/28/02	SB
ab ID: ample ID:	0204664-06 MW-2							
<i>Test Paran</i> Parameter	neters	Result	<u>Units</u>	Dilution <u>Factor</u>	<u>RL</u>	Method	Date <u>Analyzed</u>	<u>Analyst</u>
Nitrogen, Niti	rate	1.3	mg/L	1	0.10	353.3	9/28/02	SB

RL = Reporting Limit N/A = Not Applicable

Page 1 of 2

ENVIRONMENTAL LAB OF TEXAS I, LTD.

12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800

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### ENVIRONMENTAL LAB OF TEXAS ANALYTICAL REPORT

GILBERT VAN TRIDENT EN P.O. BOX 7624 MIDLAND, T	VIRONMENTAL		Project: Project	Order#: Project: Project Name: Location:		Field Services		
Lab ID: Sample ID:	0204664-07 MW-7							
<i>Test Parameters</i> Parameter		<u>Result</u>	Units	Dilutio <u>Facto</u>		Method	Date Analyzed	<u>Analyst</u>
Nitrogen, Nit	rate	0.3	mg/L	1	0.10	353.3	9/28/02	SB

Approval: Kaland K. Jul 10-01-02 Raland K. Tuttle, Lab Director, QA Officer Date

Raland K. Tuttle, Lab Director, QA Officer Celey D. Keene, Org. Tech. Director Jeanne McMurrey, Inorg. Tech. Director Sandra Biezugbe, Lab Tech. Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

### ENVIRONMENTAL LAB OF TEXAS QUALITY CONTROL REPORT

#### **Test Parameters**

Order#: G0204664

BLANK	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Nitrogen, Nitrate-mg/L		0003262-01	- ··· ··· ···		<0.10		
DUPLICATE	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Nitrogen, Nitrate-mg/L		0204664-01	0.1		0.10		0.%
SRM	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Nitrogen, Nitrate-mg/L		0003262-04		2	2.1	105.%	

ENVIRONMENTAL LAB OF TEXAS I, LTD. 12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800

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Appendix B

Well Sampling Data Forms

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-1D
S	ITE NAME:	MONUMEN		STATION		DATE:	2/13/02
PRO	DJECT NO.		V-104		. 5	SAMPLER:	Fergerson / Van Deventer
PURGING	G METHOD	:	Hand Bai	iled 🗹 Pu	imp If Pu	mp, Type:	3" Grundfos Pump
SAMPLIN		D:	🗹 Disposat	le Bailer	Direct	from Disch	arge Hose   Other:
DESCRIE		ENT DECC	NTAMINAT	ION METH	OD BEFO	ORE SAMP	LING THE WELL:
Glove	s 🗹 Alcono	ox 🗹 Disti	lled Water F	Rinse 🔲 🤇	Other:		
DISPOSA		OF PURG	E WATER:	Surface	e Dischar	ge 🗌 Dru	ms
DEPTH T HEIGHT	O WATER:		36.12 25.85 10.27 Inch	Feet		5.0	Minimum Gallons to purge 3 well volume (Water Column Height x 0.49)
TIME	VOLUME		COND. <i>m</i> S/cm	pН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
1418	0	-	•	-	-		Pump Turned on.
1421	3	19.2	850	7.95	2.78	1	
1425	6	19.5	829	7.87	2.24	0	
1428	9	19.6	829	7.85	2.37	0	
1432	12	19.7	826	7.86	2.61	0	
1435	15	19.7	831	7.85	2.64	0	Pump turned off
						0.88	= approximate flow rate (gal/min)
						1440	= Time of sample collection
		<u>.</u>					L
	NTS:	Transferred	l unfiltered s	ample into	2 - 40 ml	VOAs pres	served with HCL for BTEX analysis, and
into 1 - 1	,000 ml plas	stic unprese	rved contair	er for SO4	& NO ₃ ar	alysis. Also	o transferred filtered sample into

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES	-	WELL ID:	MW-2
S		MONUMEN		STATION	-	DATE:	2/13/02
PRO	DJECT NO.		V-104			SAMPLER:	Fergerson / Van Deventer
PURGIN			Hand Ba	iled 🔽 Pu	ımo lf Pı	imo Tvoe:	3" Grundfos Pump
							arge Hose  Other:
			-				
			lied vvater F	anse 🗋	Other:		
DISPOS		OF PURG	E WATER:	Surface	e Dischar	ge 🗌 Dru	ms
		VELL	43.06	Feet			
DEPTH 1	O WATER:		29.01	⊢eet			
	OF WATER AMETER:		14.05	Feet		27.5	Minimum Gallons to purge 3 well volumes (Water Column Height x 1.96)
TIME	VOLUME PURGED		COND. <i>m</i> S/cm	pН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
1300	0	-		-	-	-	Pump Turned on.
1302	5	18.5	757	7.6	8.68	14	
1305	10	19.5	704	7.54	8.32	35	
1307	15	20.1	696	7.54	8.22	44	
1310	20	20.3	717	7.56	8.22	25	
1314	25	20.5	683	7.58	9.39	8	Pump turned off
						1.79	= approximate flow rate (gal/min)
						1320	= Time of sample collection
[							
			····				
	<u>ا</u> TS [.]	Transferrer	l unfiltered s	amole into	2 - 10 m		served with HCL for BTEX analysis, and
	-						o transferred filtered sample into
1101-1		ac unprese		101 101 30 ₄		MIS	o ransierreu nitereu sampie litto

1 - 500 ml plastic container for Fe & Mn analysis.

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-3
S		MONUMEN	IT BOOSTER	STATION		DATE:	2/13/02
PRC	JECT NO.		V-104			SAMPLER:	Fergerson / Van Deventer
PURGING		:	Hand Bai	led 🗹 Pu	mp If Pu	mp, Type:	3" Grundfos Pump
SAMPLIN	IG METHO	D:	Disposab	le Bailer	] Direct	from Disch	arge Hose 🔲 Other:
DESCRIE		ENT DECO	NTAMINAT	ION METH	OD BEFO	ORE SAMP	LING THE WELL:
Glove	s 🗹 Alcono	ox 🗹 Disti	lled Water F	Rinse 🔲 🤇	Other:		
DISPOSA		OF PURG	E WATER:	Surface	e Discharç	ge 🗌 Dru	ms IDisposal Facility
TOTAL D	EPTH OF V	VELL:	35.47	Feet			
DEPTH T	O WATER:			Feet		22.2	Minimum Gallons to purge 3 well volumes
	AMETER:			reel			(Water Column Height x 1.96)
	VOLUME	TEMP.	COND.		DO		
TIME	PURGED		m S/cm	рН	mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
1055	0	-	-			<u> </u>	Pump Tumed on.
1100	5	20.0	1300	7.74	3.68	42	
1107	10	22.3	1340	7.66	2.62	5	
1114	15	22.7	1300	7.65	2.95	12	
1121	20	_23.1	1250	7.84	5.87	49	
1130	25	22.9	1240	7.98	9.32	51	Pump turned off
<u> </u>						0.71	= approximate flow rate (gal/min)
						1120	= Time of sample collection
_							
COMMEN		Transferred	unfiltered s	ample into	2 - 40 ml	VOAs pres	served with HCL for BTEX analysis, and
into 1 - 1	•						o transferred filtered sample into
	<u> </u>			·			

1 - 500 ml plastic container for Fe & Mn analysis.

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-4		
S	ITE NAME:	MONUMEN	IT BOOSTER	STATION		DATE:	2/13/02		
PRO	DJECT NO.		V-104	<u> </u>	SAMPLER:		Fergerson / Van Deventer		
PURGIN	G METHOD	:	Hand Bai	iled 🗹 Pu	mp If Pu	mp, Type:	3" Grundfos Pump		
SAMPLIN		<b>D</b> :	🗹 Disposab	le Bailer [	Direct	from Disch	arge Hose 🔲 Other:		
DESCRIE		ENT DECC	NTAMINAT	ION METH		ORE SAMP	LING THE WELL:		
☑ Glove	es 🗹 Alcono	ox <b> </b>	lled Water F	Rinse 🔲 🤇	Other:	- <u> </u>			
DISPOSA	AL METHOD	OF PURG	E WATER:	Surface	e Dischar	ge 🗌 Dru	ms 🗹 Disposal Facility		
	EPTH OF V	VELL:	38.71	Feet					
	O WATER:		26.76 11.95			00 A	Minimum College to purge 2 well volume		
	AMETER:			reet			Minimum Gallons to purge 3 well volume (Water Column Height x 1.96)		
	VOLUME		COND.		DO	·	<b></b>		
TIME	PURGED		m S/cm	рН	mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS		
0834	0	-		-	-		Pump Turned on.		
0838	5	18.5	1360	7.28	3.06	42			
0841	10	20.1	1330	7.26	2.52	45			
0851	15	20.2	1310	7.52	7.25	195			
0903	20	20.3	1290	7.63	9.69	7			
0922	25	20.3	1270	7.66	9.02	5	Pump turned off.		
						0.52	= approximate flow rate (gal/min)		
						0930	= Time of sample collection		
		Tropoform			2 40				
	•						served with HCL for BTEX analysis, and		
	,000 ml plas	stic unprese		her for $SO_4$			o transferred filtered sample into		

1 - 500 ml plastic container for Fe & Mn analysis.

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-6
S	TE NAME:	MONUMEN		STATION		DATE:	2/13/02
PRC	JECT NO.		V-104			SAMPLER:	Fergerson / Van Deventer
							<u>3" Grundfos Pump</u>
				_			arge Hose D Other:
Glove	s 🗹 Alcond	ox 🗹 Disti	lled Water F	Rinse 🔲 🤇	Other:		
DISPOSA		) of Purg	E WATER:	Surface	Dischar	ge 🗌 Dru	ms Disposal Facility
DEPTH T	O WATER:	COLUMN:	39.30 25.48 13.82 Inch	Feet		27.1	Minimum Gallons to purge 3 well volume (Water Column Height x 1.96)
TIME	VOLUME		COND. <i>m</i> S/cm	рН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
0959	0	-	-	-	-	-	Pump Turned on.
1002	5	18.7	1380	7.38	4.17	11	
1005	10	20.1	1400	7.38	3.09	12	
1008	15	20.9	<u>1410</u>	7.37	2.97	1	
1011	20	21.1	1440	7.38	3.13	1	
1015	25	21.2	1440	7.37	2.94	0	Pump turned off
						1.56	= approximate flow rate (gal/min)
						1020	= Time of sample collection
						1	
<u></u>							
	•						served with HCL for BTEX analysis, and or transferred filtered sample into

1 - 500 ml plastic container for Fe & Mn analysis.

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-7
S	ITE NAME:	MONUMEN		STATION		DATE:	2/13/02
PRC	JECT NO.		V-104		5	SAMPLER:	Fergerson / Van Deventer
	_						
PURGING		:	Hand Bai	iled 🗹 Pu	mp If Pu	mp, Type:	3" Grundfos Pump
SAMPLIN		D:	🗹 Disposab	le Bailer	] Direct	from Disch	arge Hose 🔲 Other:
DESCRIE	BE EQUIPM	ENT DECC	NTAMINAT	ION METH	OD BEFO	DRE SAMP	LING THE WELL:
Glove	es 🗹 Alcond	ox 🗹 Disti	lled Water F	Rinse 🔲 🤇	Other:	<u></u>	
DISPOSA		) of Purg	E WATER:		Dischar	ge 🗌 Dru	ms IDisposal Facility
DEPTH T HEIGHT	O WATER:	COLUMN:	10.64	Feet		20.8	Minimum Gallons to purge 3 well volumes (Water Column Height x 1.96)
TIME	VOLUME		COND. mS/cm	pН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
1332	0	<u> </u>	-	-	-	-	Pump Turned on.
1334	5	19.2	850	7.95	2.78	1	
1337	10	19.5	829	7.87	2.24	0	
1340	15	19.6	829	7.85	2.37	0	
1344	20	19.7	826	7.86	2.61	0	
1347	25	19.7	831	7.85	2.64	0	Pump turned off.
						1.67	= approximate flow rate (gal/min)
						1400	= Time of sample collection
							Collected duplicate sample (BTEX)
COMMEN	NTS:	Transferred	unfiltered s	ample into	2 - 40 ml	VOAs pres	served with HCL for BTEX analysis, and
into 1 - 1	,000 ml plas	stic unprese	rved contair	her for $SO_4$	& NO ₃ ar	nalysis. Also	o transferred filtered sample into
1 - 500 m	l plastic con	tainer for F	e & Mn anal	ysis.			

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-1D
S	ITE NAME:	MONUMEN		STATION		DATE	9/27/02
PRO	JECT NO.		V-104		5		Littlejohn / Van Deventer
PURGIN		:	Hand Bai	iled 🗌 Pu	mp if Pu	imp, Type:	
SAMPLIN		D:	🗹 Disposab	le Bailer	] Direct	from Disch	narge Hose 🔲 Other:
DESCRIE		ENT DECC	NTAMINAT	ION METH	OD BEFO	ORE SAMP	PLING THE WELL:
Glove	s 🗹 Alcond	ox 🗹 Disti	lled Water F	Rinse 🗌 (	Other:		
DISPOSA	AL METHOD	) of Purg	E WATER:	Surface	Dischar	ge 🗌 Dru	ıms ⊡Disposal Facility
	EPTH OF V	VELL:	36.12	Feet			
DEPTH T	O WATER:		26.32	Feet			
	OF WATER A <b>METER</b> :		9.80	Feet		4.8	Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)
							(
TIME	VOLUME		COND. mS/cm	pН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
0820	5	19.3	695	4.89	2.73	-	Hand bailed
							pH readings too low (bad meter?)
						0.05	= Ferrous Iron concentration (mg/L)*
						0820	= Time of sample collection
		····					
						<u>_</u>	
		Transferred	d unfiltered s	ample into	2 - 40 ml	VOAs pre	served with HCL for BTEX analysis, and
	•						nalysis. Also transferred filtered sample into
·······			I, As, B, Cr,				·
<u> </u>	. p.2010 001		., ,,,,				

* Used a Hach Model 2010 Spectrophotometer to measure ferrous iron in the field (Method 8146).

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-2
S	TE NAME:	MONUMEN	IT BOOSTER	STATION		DATE:	9/27/02
			V-104				Littlejohn / Van Deventer
PURGING	S METHOD:	:	🗌 Hand Bai	led 🗹 Pu	mp If Pu	тр, Туре:	3" Grundfos Pump
SAMPLIN		<b>D</b> :	🗹 Disposab	le Bailer	] Direct	from Disch	arge Hose 🔲 Other:
DESCRIE	BE EQUIPM	ENT DECO	NTAMINAT	ION METH	OD BEFO	ORE SAMF	PLING THE WELL:
Glove	s 🗹 Alcono	ox 🗹 Disti	lled Water F	Rinse 🔲 (	Other:		
DISPOSA		OF PURG	E WATER:		Dischar	ae 🗌 Dru	ms ☑Disposal Facility
							_ , , ,
DEPTH T	O WATER:		43.06	Feet			
	OF WATER AMETER:		13.57	Feet		26.6	Minimum Gallons to purge 3 well volumes (Water Column Height x 1.96)
TIME	VOLUME	TEMP. ℃ / °F	COND. mS/cm	рН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
1140	0	-	-	-	-	-	Pump Turned on.
1143	5	22.5	7030	3.27	6.37	-	pH readings too low (bad meter?)
1146	10	22.0	6840	3.61	5.96		
1150	15	22.9	6670	4.16	6.83	-	
1156	20	23.3	6470	4.57	7.27	<b></b>	
1201	25	23.3	6450	4.61	8.65		
1205	30	23.5	6460	4.73	7.84		Pump turned off
						1.20	= approximate flow rate (gal/min)
						0.11	= Ferrous Iron concentration (mg/L)*
						1310	= Time of sample collection
	L					<u></u>	
	<u> </u>						L
COMMEN	NTS:	Transferred	l unfiltered s	ample into	2 - 40 mi	VOAs pre	served with HCL for BTEX analysis, and
nto 2 - 50	0 ml plastic	unpreserve	ed containen	s for NO ₃ , s	50 ₄ , CI, F	& TDS an	nalysis. Also transferred filtered sample into
l - 500 m	l plastic con	tainer for A	I, As, B, Cr,	Fe & Mn ai	nalysis.		

* Used a Hach Model 2010 Spectrophotometer to measure ferrous iron in the field (Method 8146).

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID:	MW-3
SI		MONUMEN	IT BOOSTER	STATION		DATE:	9/27/02
PRC	JECT NO.		V-104				Littlejohn / Van Deventer
PURGING		:	Hand Bai	iled 🗹 Pu	mp If Pu	imp, Type:	3" Grundfos Pump
SAMPLIN	IG METHO	D:	Disposab	le Bailer	Direct	from Disch	arge Hose 📋 Other:
DESCRIE	BE EQUIPM	ENT DECC	NTAMINAT	ION METH	OD BEF	ORE SAMF	PLING THE WELL:
Glove	s 🗹 Alcond	ox 🗹 Disti	lled Water F	Rinse 🔲 G	Other:		
DISPOSA		) of Purg	E WATER:	Surface	Dischar	ge 🗌 Dru	ms IDisposal Facility
DEPTH T HEIGHT (	O WATER:	COLUMN:	11.70	Feet		22.9	Minimum Gallons to purge 3 well volumes (Water Column Height x 1.96)
TIME	VOLUME		COND. mS/cm	ρН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
0906	0	-	-	-	-	-	Pump Turned on.
0910	3	21.1	1310	4.70	0.46	-10	pH readings too low (bad meter?)
0912	6	21.6	1330	4.65	0.70	-10	
0914	9	22.1	1320	4.66	1.20	4	
0919	12	23.0	1260	4.48	5.84	101	Pumped off at 12 gallons
0930	14	24.0	1230	3.82	6.36	36	Pump back on at 0925 and off at 0930.
						0.92	= approximate flow rate (gal/min)
						0.14	= Ferrous Iron concentration (mg/L)*
						0925	= Time of sample collection
						·	
 				,			
L							L
COMMEN	•						served with HCL for BTEX analysis, and
		· · · · · · · · · · · · · · · · · · ·					nalysis. Also transferred filtered sample into
1 - 500 m	i plastic con	tainer for A	l, As, B, Cr,	re & Mn ar	nalysis.		

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* Used a Hach Model 2010 Spectrophotometer to measure ferrous iron in the field (Method 8146).

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	CLIENT:	DUKE ENE	RGY FIELD	SERVICES		WELL ID	MW-4		
SITE NAME: MONUMENT BOOSTER STATION							9/27/02		
PROJECT NO V-104							Littlejohn / Van Deventer		
			_	_		_			
				_			3" Grundfos Pump		
SAMPLIN	g metho	<b>D</b> :	Disposab	le Bailer [	Direct	from Discl	narge Hose 🔲 Other:		
DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE SAMPLING THE WELL:									
Glove	Gloves Alconox Distilled Water Rinse Other:								
DISPOSA	DISPOSAL METHOD OF PURGE WATER: Surface Discharge Drums Disposal Facility								
TOTAL DEPTH OF WELL:38.71 FeetDEPTH TO WATER:26.90 FeetHEIGHT OF WATER COLUMN:11.81 FeetWELL DIAMETER:4.0 InchColumn Height x 1.96)									
TIME	VOLUME PURGED	TEMP. °C / °F	COND. <i>m</i> S/cm	pН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS		
0725	0	-	-	-	-	-	Pump Turned on.		
0728	4	19.2	1340	5.90	0.39	2	pH readings too low (bad meter?)		
0730	8	20.3	1320	5.62	0.54	-10			
0735	10	20.3	1320	5.39	0.54	319			
0739	12	20.3	1320	4.73	5.79	197			
0743	14	20.5	1270	4.62	6.48	55			
0747	16	21.7	1270	4.31	7.52	-10	Pump turned off.		
						0.73	= approximate flow rate (gal/min)		
						0.04	= Ferrous Iron concentration (mg/L)*		
						0800	= Time of sample collection		
L									
L									
COMMENTS: Transferred unfiltered sample into $2 - 40$ ml VOAs preserved with HCL for BTEX analysis, and into $2 - 500$ ml plastic unpreserved containers for NO ₃ , SO ₄ , Cl, F & TDS analysis. Also transferred filtered sample into									
						- & IDS al	nalysis. Also transferred filtered sample into		
1 - 500 ml plastic container for Al, As, B, Cr, Fe & Mn analysis.									

* Used a Hach Model 2010 Spectrophotometer to measure ferrous iron in the field (Method 8146).

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CLIENT: DUKE ENERGY FIELD SERVICES							:MW-5
SITE NAME: MONUMENT BOOSTER STATION							9/27/02
PRO	DJECT NO.		V-104	<u> </u>		SAMPLER	: Littlejohn / Van Deventer
URGIN	G METHOD:	:	Hand Ba	iled 🗌 Pu	mp If Pu	imp, Type:	·
AMPLIN		<b>)</b> :	<b>V</b> Disposat	le Bailer	] Direct	from Discl	harge Hose 🔲 Other:
ESCRIE	BE EQUIPM	ENT DECC	NTAMINAT	ION METH	OD BEF	ORE SAM	PLING THE WELL:
J Glove	es 🗹 Alcono	x 🗹 Disti	illed Water F	Rinse 🔲 🤇	Other:		······································
					Dischar		
15205/	AL METHOL	OF PURG	E WATER:		Dischar	ge 🗋 Dri	ums Disposal Facility
	EPTH OF V		37.00				
IEIGHT	OF WATER	COLUMN:	8.72			17.1	Minimum Gallons to purge 3 well volumes
VELL DI	AMETER:	4.0	Inch				(Water Column Height x 1.96)
TIME	VOLUME	TEMP.	COND.	pН	DO	Turb	PHYSICAL APPEARANCE AND REMARKS
	PURGED		<i>m</i> S/cm	·	mg/L		
1120	20	<b>-</b>	-	-	1.19	-	Hand bailed
		- 11 <u></u>					Did not take parameters so as not to
			· · · · · · · · · · · · · · · · · · ·				damage meter from impacted well.
						1.84	= Ferrous Iron concentration (mg/L)*
			 			1120	= Time of sample collection
		·					
		· · · · · · · · · · · · · · · · · · ·					
	<u> </u>						1
		Transforme	Lunfiltered c	ample into	2 . 10 m		served with HCL for BTEX analysis, and
	•						
							nalysis. Also transferred filtered sample into
- 500 m			I, As, B, Cr,				ne field (Method 8146).

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CLIENT: DUKE ENERGY FIELD SERVICES						WELL ID:	MW-6
SITE NAME: MONUMENT BOOSTER STATION						DATE:	9/27/02
			V-104				Littlejohn / Van Deventer
PURGING		:	Hand Bai	led 🗹 Pu	mp If Pu	mp, Type:	3" Grundfos Pump
SAMPLIN		D:	Disposab	le Bailer	] Direct	from Disch	arge Hose   Other:
DESCRIE	BE EQUIPM	ENT DECC	NTAMINAT	ION METH	OD BEF	ORE SAMP	LING THE WELL:
J Glove	s 🗹 Alcono	ox 🗹 Disti	lled Water F	Rinse 🗋 🤇	Other:		
DISPOSA		OF PURG	E WATER:	Surface	Dischar	ge 🔲 Dru	ms IDisposal Facility
						-	
DEPTH T	O WATER:	VELL.	<u>39.30</u> 25.74	Feet			
			13.56	Feet		26.6	Minimum Gallons to purge 3 well volumes
	AMETER:						(Water Column Height x 1.96)
TIME	VOLUME		COND. mS/cm	рН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
1014	5	22.4	1460	3.92	1.10	-	
1018	10	<u>22</u> .7	1450	4.16	0.75	-	pH readings too low (bad meter?)
1022	15	22.7	1490	4.57	0.26	<u> </u>	
1025	20	22.8	1500	4.53	0.34	-	
1029	25	22.8	1500	4.54	0.35		
1034	30	22.9	1490	4.62	0.28	-	Pump turned off.
							= approximate flow rate (gal/min)
							= Ferrous Iron concentration (mg/L)*
						1040	= Time of sample collection
		·····					
		· · · · · · · · · · · · · · · · · · ·					
<u> </u>	┼───┤					<u>, ,</u>	
<u> </u>							
	•						served with HCL for BTEX analysis, and
			l, As, B, Cr,			- & IDS an	alysis. Also transferred filtered sample int

* Used a Hach Model 2010 Spectrophotometer to measure ferrous iron in the field (Method 8146).

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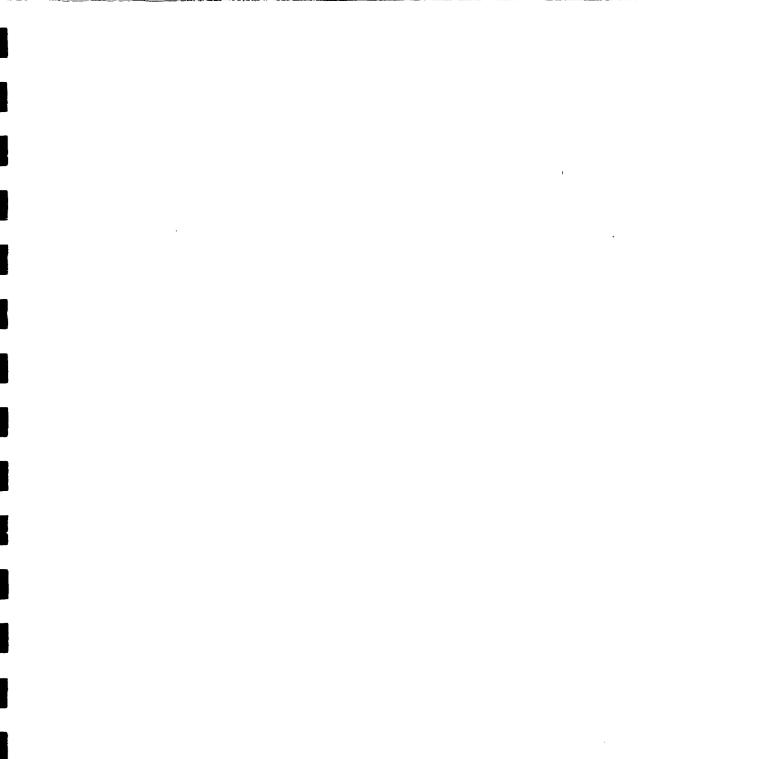
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	CLIENT:	DUKE ENE		SERVICES		WELL ID	: <u>MW-7</u>
SITE NAME: MONUMENT BOOSTER STATION						DATE	9/27/02
			V-104				: Littlejohn / Van Deventer
							3" Grundfos Pump
SAMPLIN		D:	Disposab	le Bailer	] Direct	from Disch	narge Hose 🔲 Other:
DESCRIE	BE EQUIPM	ENT DECC	NTAMINAT	ION METH	OD BEF	ORE SAM	PLING THE WELL:
Glove	es 🗹 Alcono	ox 🗹 Disti	iled Water F	Rinse 🔲 🤇	Other:		
DISPOSA		) of purg	E WATER:	Surface	Dischar	ge 🗌 Dri	ums Disposal Facility
DEPTH T HEIGHT	O WATER:	COLUMN:	36.22 25.95 10.27 Inch	Feet		20.1	_Minimum Gallons to purge 3 well volumes (Water Column Height x 1.96)
TIME	VOLUME PURGED		COND. <i>m</i> S/cm	pН	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
1235	0	<b>-</b>	-	-	-	-	Pump Turned on.
1239	5	22.0	960	4.85	0.73	330	pH readings too low (bad meter?)
1243	10	23.0	980	5.18	0.35	58	
1247	15	23.1	1020	5.43	0.17	-	
1251	20	23.1	1000	5.45	0.17	-	
1255	25	23.4	843	5.30	0.23	13	Pump turned off.
<u></u>						1.25	= approximate flow rate (gal/min)
						2.67	= Ferrous Iron concentration (mg/L)*
						1300	= Time of sample collection
		·					
COMMEN	•						served with HCL for BTEX analysis, and
						- & TDS ar	nalysis. Also transferred filtered sample into
- 500 m	I plastic con	tainer for A	I, As, B, Cr,	Fe & Mn ar	nalysis.	<u> </u>	

* Used a Hach Model 2010 Spectrophotometer to measure ferrous iron in the field (Method 8146).

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