



**Southern Union  
Gas Services**

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March 29, 2012

Mr. Edward Hansen L. Lowe  
New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Re: 2011 Annual Groundwater Monitoring Reports  
Southern Union Gas Services, Ltd  
Boyd Compressor Station (GW-269)  
House Compressor Station (GW-243)  
Lea County, New Mexico

RECEIVED

APR 2 2012

Oil Conservation Division  
1220 S. St. Francis Drive  
Santa Fe, NM 87505

Mr. Hansen,

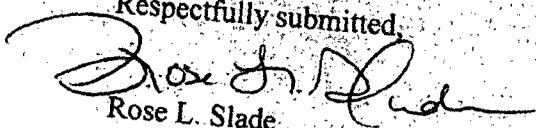
Enclosed are the 2011 Annual Groundwater Monitoring Reports for the following  
groundwater remediation sites in Lea County, New Mexico:

Boyd Compressor Station (GW-269)  
Unit Letter "J", Section 26, Township 22 South, Range 37 East, NMPM

House Compressor Station (GW-243)  
Unit Letter "O", Section 11, Township 20 South, Township 38 East, NMPM

I have personally reviewed these documents, prepared by Basin Environmental Services  
Technologies, LLC, on behalf of Southern Union Gas Services, and believe the facts are true  
and accurate to the best of my knowledge and ability. If you have any questions or  
comments, please contact me at 432-940-5147 or by email at [rose.slade@sug.com](mailto:rose.slade@sug.com).

Respectfully submitted,



Rose L. Slade  
EHS Compliance Specialist  
Southern Union Gas Services, Ltd  
[rose.slade@sug.com](mailto:rose.slade@sug.com)

Cc: Geoffrey R. Leking, NMOCD Hobbs District Office  
SUG Environmental Files  
Enclosures

# *Basin Environmental Service Technologies, LLC*

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2011  
ANNUAL MONITORING REPORT

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APR 2 2012

**SOUTHERN UNION GAS SERVICES  
HOUSE COMPRESSOR STATION  
Lea County, New Mexico**

Oil Conservation Division  
1220 S. St. Francis Drive  
Santa Fe, NM 87505

**"J" (NW/SE), Section 11, Township 20 South, Range 38 East  
New Mexico Discharge Plan & Permit #GW-243**

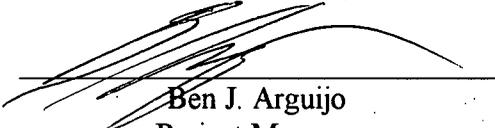
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Southern Union Gas Services  
801 S. Loop 464  
Monahans, TX 79756

Prepared By:

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3100 Plains Highway  
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March 2012



Ben J. Arguijo  
Project Manager

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## **INTRODUCTION**

Basin Environmental Service Technologies, LLC (Basin), on behalf of Southern Union Gas Services (Southern Union), is pleased to submit this *Annual Monitoring Report* in compliance with the New Mexico Oil Conservation Division (NMOCD) letter of May 1998, requiring submittal of an Annual Monitoring Report by April 1st of each year. This report is intended to be viewed as a complete document with text, figures, tables, and appendices. This report presents the results of the quarterly groundwater monitoring events conducted in calendar year 2011 only.

Groundwater monitoring was conducted during the third and fourth quarters of 2011 to assess the levels and extent of dissolved phase constituents and Phase-Separated Hydrocarbon (PSH). The groundwater monitoring events consisted of measuring static water levels in the monitor wells, checking for the presence of PSH, and purging and sampling of each well exhibiting sufficient recharge.

## **SITE DESCRIPTION AND BACKGROUND INFORMATION**

The legal description of the House Compressor Station site is Unit Letter "J" (NW/SE), Section 11, Township 20 South, Range 38 East in Lea County, New Mexico. The facility is covered by a New Mexico Discharge Plan & Permit (GW-243). For reference, a "Site Location Map" is provided as Figure 1.

On July 14, 2008, the New Mexico Oil Conservation Division (NMOCD) conducted a facilities inspection at the House Compressor Station. The facilities inspection was in response to a New Mexico Discharge Plan/Permit renewal application submitted by Southern Union. In correspondence dated September 10, 2008, the NMOCD requested a timeline for removal of two (2) aboveground storage tanks and a below grade sump tank located on the northwest and north sides of the House Compressor Station, respectively.

On October 7, 2008, the two (2) aboveground storage tanks and the below grade sump tank were removed. On October 9, 2008, soil samples were collected from beneath the tanks. The analytical results identified areas of hydrocarbon impact beneath the aboveground tanks

On November 17, 2008, based on laboratory analytical results, three (3) soil borings (SB-1 through SB-3) were advanced at the House Compressor Station site. Soil boring SB-1 was located beneath the southernmost storage tank and was advanced to a total depth of approximately thirty-five feet (35') below ground surface (bgs). Soil samples were collected at selected drilling intervals and submitted to the laboratory for analysis. Laboratory analytical results identified hydrocarbon impact throughout the soil column.

Soil boring SB-2 was advanced northeast of the aboveground storage tanks and south of a decommissioned Copper Compressor. The soil boring was advanced to a total depth of approximately twenty feet (20') bgs. Soil samples were collected at selected drilling intervals and submitted to the laboratory for analysis. Laboratory analytical results indicated the soil was non-impacted.

Soil boring SB-3 was advanced south of the southernmost aboveground storage tank. The soil boring was advanced to a depth of approximately fifteen feet (15') bgs. Soil samples were collected at selected drilling intervals and submitted to the laboratory for analysis. Laboratory analytical results indicated the soil was non-impacted. Based on the results of the soil investigation, the installation of monitor wells was warranted.

Following the advancement of soil boring SB-1, a "raw" groundwater sample was collected from the open uncased borehole and submitted to the laboratory for analysis. Laboratory analytical results indicated BTEX constituent concentrations were present in the sample at levels less than NMOCD and New Mexico Water Quality Control Commission (NMWQCC) regulatory levels. The analytical results further indicated elevated levels of chloride were present in the groundwater.

On November 17 and 18, 2008, three (3) monitor wells (MW-1, MW-2, and MW-3) were installed at the House Compressor Station. Monitor well MW-1 was installed northwest of the aboveground storage tanks to a total depth of approximately forty feet (40') bgs. Laboratory analytical results of submitted soil samples indicated soils were non-impacted.

On November 19, 2008, an initial groundwater sample was collected from monitor well MW-1 and submitted to the laboratory for analysis. Laboratory analytical results indicated groundwater impact, but less than NMOCD/NMWQCC regulatory levels.

Monitor well MW-2 was installed south of the aboveground storage tanks to a total depth of approximately forty feet (40') bgs. Laboratory analytical results of submitted soil samples indicated soils were non-impacted.

On November 19, 2008, an initial groundwater sample was collected from monitor well MW-2 and submitted to the laboratory for analysis. Laboratory analytical results indicated chloride groundwater impact.

Monitor well MW-3 was installed southeast of the aboveground storage tanks to a total depth of approximately forty feet (40') bgs. Laboratory analytical results of submitted soil samples indicated soils were non-impacted.

On November 19, 2008, an initial groundwater sample was collected from monitor well MW-3 and submitted to the laboratory for analysis. Laboratory analytical results indicated chloride groundwater impact.

Based on the analytical results of the initial groundwater sampling event, the monitor wells were placed on a quarterly monitoring and sampling schedule.

On November 20, 2008, decommissioned pipelines were removed from the impacted area identified during the soil investigation. On November 26, 2008, excavation of impacted soil identified during the soil investigation began and continued until March 23, 2009. Laboratory analytical results of soil samples collected from the floor and sidewalls of the excavation

indicated contaminant concentrations exceeding NMOCD/NMWQCC regulatory level remained in the floor and east sidewall of the excavation.

Currently, there are three (3) groundwater monitor wells (MW-1, MW-2, and MW-3) on-site. Monitor wells MW-1, MW-2, and MW-3 are gauged and sampled on a quarterly schedule.

### **FIELD ACTIVITIES**

The on-site monitor wells were gauged and sampled on September 28 (3Q2011) and December 1, 2011 (4Q2011). During these quarterly sampling events, the monitoring wells were purged of a minimum of three (3) well volumes of water or until the wells were dry using a PVC bailer or electrical Grundfos pump. Groundwater was allowed to recharge, and samples were obtained using disposable Teflon bailers. Water samples were stored in clean, glass or plastic containers provided by the laboratory and placed on ice in the field. Purge water was collected in a trailer-mounted polystyrene tank and disposed of at an NMOCD-approved disposal facility near Monument, New Mexico.

Locations of the groundwater monitoring wells and the inferred groundwater elevations were constructed from the measurements collected during the quarterly monitoring events and are depicted in Figures 2A and 2B. Groundwater elevation data is provided as Table 1. An inferred groundwater gradient map cannot be constructed from the observed groundwater elevation data derived from the three (3) on-site monitor wells. An obstruction approximately twenty-two feet (22') bgs in MW-3 precluded measurement of the groundwater elevation in the monitor well. An inferred groundwater gradient map requires elevation data from a minimum of three (3) monitor wells to calculate an accurate groundwater gradient direction and magnitude. Review of New Mexico State Engineers Office (NMOSE) records indicate a general southeast groundwater gradient in this area of Lea County, New Mexico. The corrected groundwater elevations ranged from 3,537.45 to 3,537.78 feet above mean sea level, in monitor well MW-2 and MW-1, respectively, on September 28, 2011.

No PSH was detected in any of the on-site monitor wells during the 2011 reporting period.

### **LABORATORY RESULTS**

Groundwater samples collected from the monitor wells during the quarterly sampling events (3Q2011 and 4Q2011) were delivered to Xenco Laboratories in Odessa, Texas, for determination of chloride, and/or benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituent concentrations by EPA Methods E300 and SW846-8021b, respectively. A summary of benzene, BTEX, and chloride concentrations is presented in Table 2, "2011 Concentrations of Benzene, BTEX & Chloride in Groundwater". Laboratory analytical reports are provided as Appendix A. "Groundwater Concentration" maps are provided as Figures 3A and 3B.

Laboratory analytical results were compared to NMOCD regulatory limits based on the New Mexico groundwater standards found in section 20.6.2.3103 of the New Mexico Administrative Code (NMAC).

### **Monitor well MW-1**

Monitor well MW-1 is sampled on a quarterly schedule. Laboratory analytical results indicated chloride concentrations ranged from 287 mg/L in 3Q2011 to 312 mg/L in 4Q2011. Chloride concentrations exceeded NMOCD regulatory standards in all submitted groundwater samples. Benzene, toluene, ethylbenzene, and total xylene concentrations were both less than the appropriate laboratory method detection limit (MDL) and less than NMOCD regulatory standards in all submitted groundwater samples.

Baseline sampling of monitor well MW-1 was conducted on September 28, 2011. Laboratory analytical results from the baseline monitoring event are summarized in Tables 3 through 5.

### **Monitor well MW-2**

Monitor well MW-2 is sampled on a quarterly schedule. Laboratory analytical results indicated chloride concentrations ranged from 247 mg/L in 4Q2011 to 263 mg/L in 3Q2011. Chloride concentrations exceeded NMOCD regulatory standards during 3Q2011. Benzene, toluene, ethylbenzene, and total xylene concentrations were both less than the appropriate laboratory MDL and less than NMOCD regulatory standards in all submitted groundwater samples.

Baseline sampling of monitor well MW-2 was conducted on September 28, 2011. Laboratory analytical results from the baseline monitoring event are summarized in Tables 3 through 5.

### **Monitor well MW-3**

An obstruction approximately twenty-feet feet (22') bgs in monitor well MW-3 precluded sample collection during 3Q2011 and 4Q2011.

### **SUMMARY**

This report presents the results of monitoring activities for the 2011 monitoring period. Currently, there are three (3) groundwater monitoring wells (MW-1, MW-2, and MW-3) on-site. Monitor well MW-1 and MW-2 are sampled on a quarterly basis. Monitor well MW-3 is obstructed and was unable to be sampled during the 2011 reporting period.

Review of NMOSE records indicate a general groundwater gradient to the southeast.

No PSH was detected in any of the on-site monitor wells during the 2011 reporting period.

Laboratory analytical results indicated chloride concentrations exceeded NMOCD regulatory standards during 3Q2011 (MW-1 and MW-2) and 4Q2011 (MW-1). Benzene, toluene, ethylbenzene, and total xylene concentrations were less than NMOCD regulatory standards in all submitted groundwater samples.

## ANTICIPATED ACTIONS

Monitor wells MW-1 and MW-2 will be monitored and sampled quarterly. Monitor well MW-3 will be inspected by an NMOSE-certified well driller, and quarterly monitoring and sampling of the monitor well will commence after any required maintenance or repairs have been completed.

Southern Union will conduct an investigation to identify potential 3rd Party offsite contributors to the chloride plume. The analytical results of groundwater samples collected from the on-site monitor wells appear to indicate a chloride concentration which exceeds the chloride concentration of the release site vadose zone soil samples. In addition, the analytical results indicate the upgradient monitor well exhibits chloride concentrations in excess of the down gradient monitor well, as well as the soil chloride concentrations. Southern Union will submit the results of the investigation to the NMOCD if potential contributors are identified.

A 2012 *Annual Monitoring Report* will be submitted to the NMOCD by April 1, 2013.

## LIMITATIONS

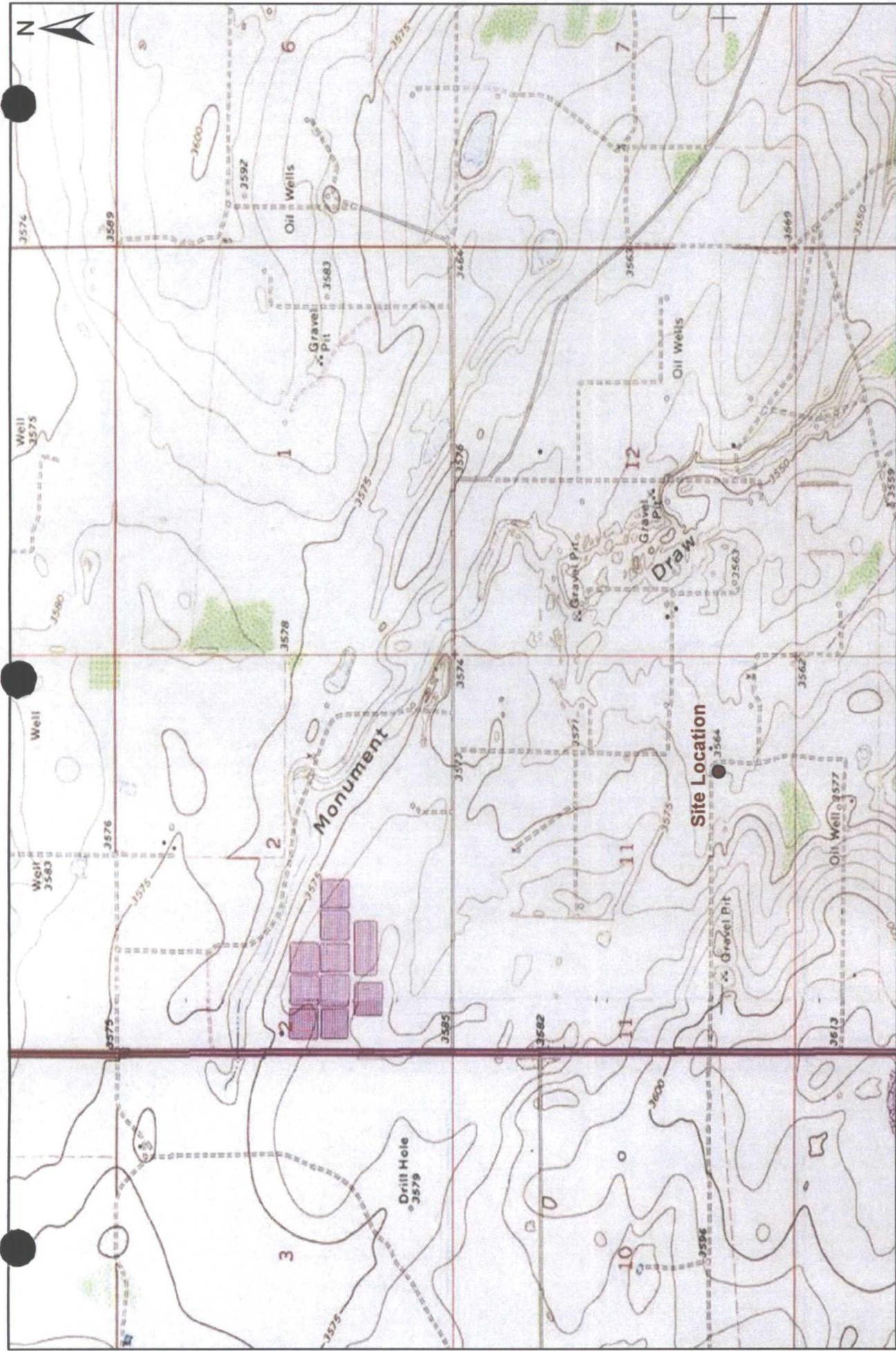
Basin Environmental Service Technologies, LLC, has prepared this *Annual Monitoring Report* to the best of its ability. No other warranty, expressed or implied, is made or intended. Basin has examined and relied upon documents referenced in the report and on oral statements made by certain individuals. Basin has not conducted an independent examination of the facts contained in referenced materials and statements. Basin has presumed the genuineness of these documents and statements and that the information provided therein is true and accurate. Basin has prepared this report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin notes that the facts and conditions referenced in this report may change over time, and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of Southern Union Gas Services. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of Basin Environmental Service Technologies, LLC, and/or Southern Union Gas Services.

## DISTRIBUTION

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# Figures

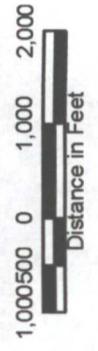


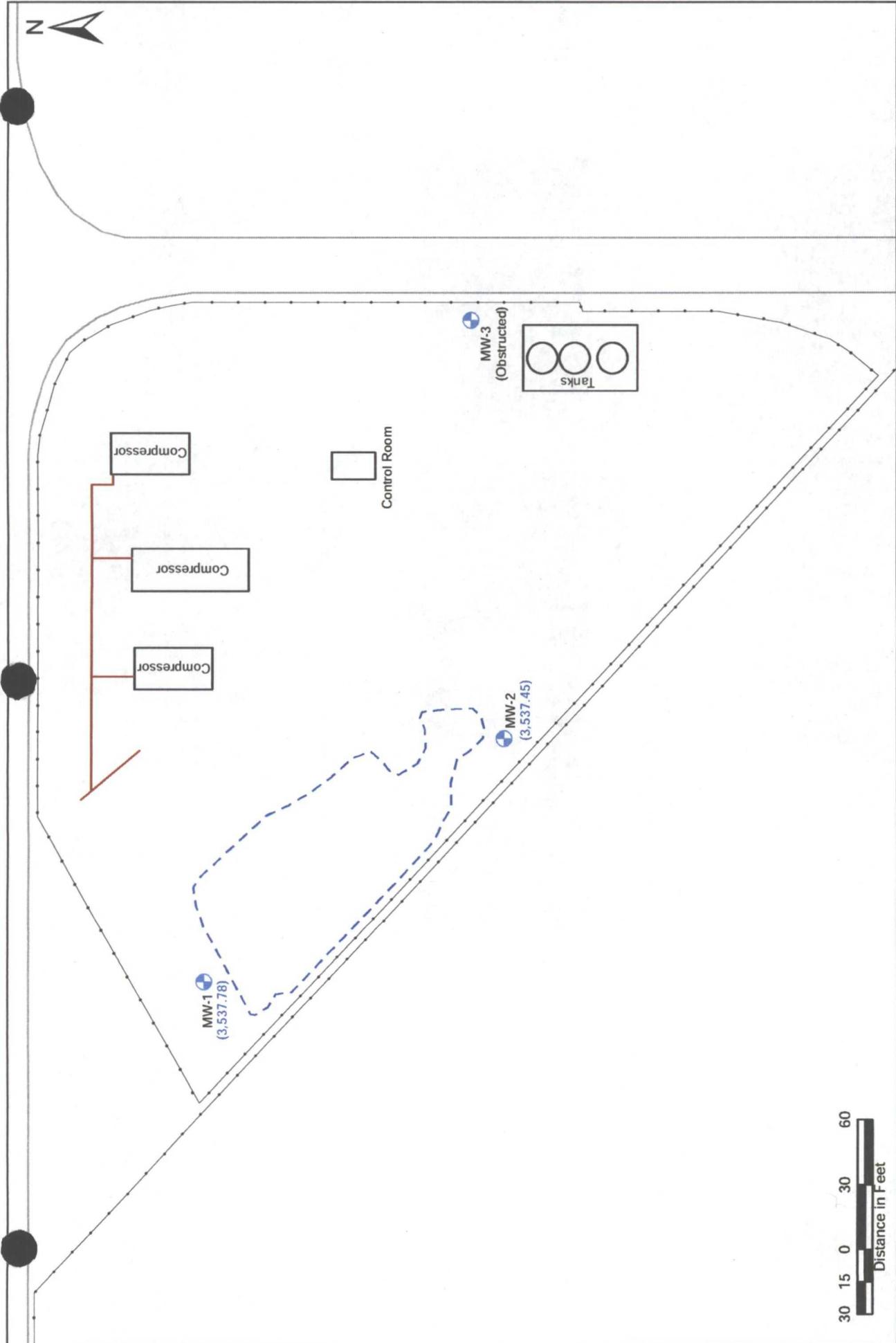
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 Lovington, NM 88260

Drawn By: BJA	Checked By: BRB
March 8, 2012	Scale: 1" = 2000'



**Figure 1**  
**Site Location Map**  
 Southern Union Gas Services  
 House Compressor Station  
 Lea County, New Mexico





Basin Environmental Service Technologies, LLC  
 3100 Plains Hwy.  
 Lovington, NM 88260

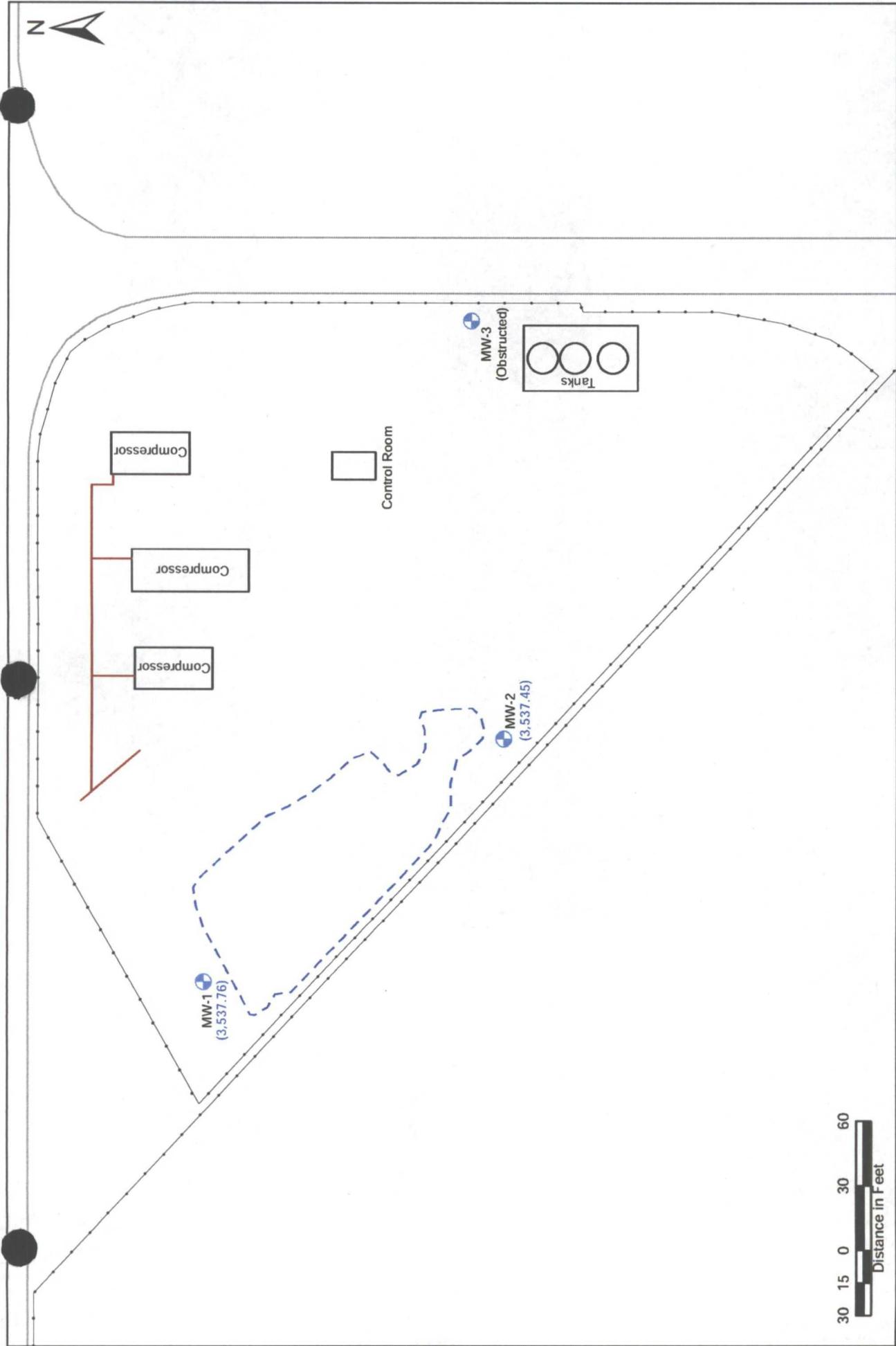
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March 23, 2012	Scale: 1" = 60'



Figure 2A  
 Groundwater Elevation Map  
 3Q2011 (9/28/2011)  
 Southern Union Gas Services  
 House Compressor Station  
 Lea County, New Mexico

Legend:

- Pipeline
- Fence
- Road
- Excavation Extent
- Groundwater Elevation (ft)
- Monitor Well



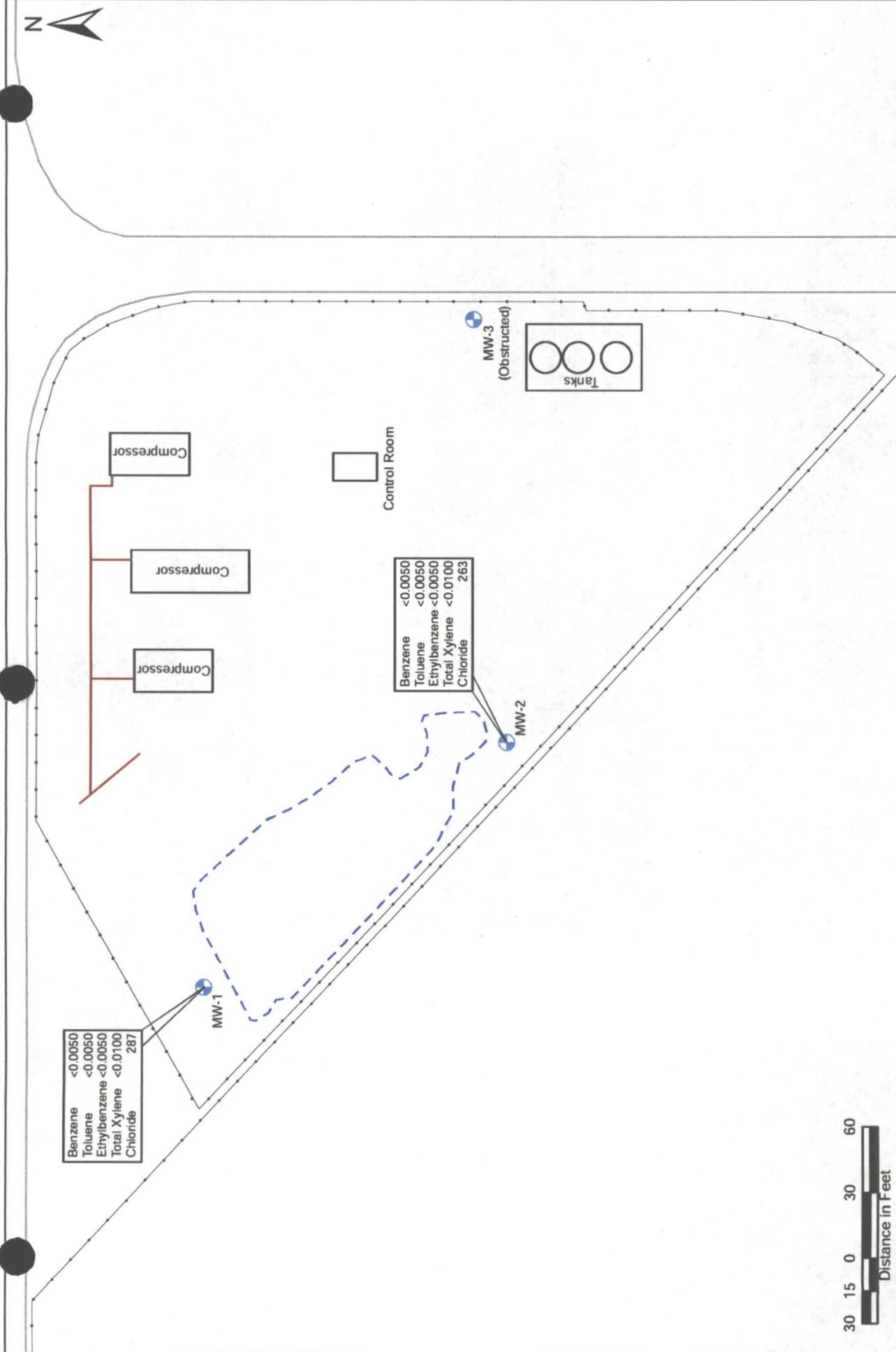
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 3100 Plains Hwy.  
 Lovington, NM 88260

Drawn By: BJA	Checked By: BRB
March 23, 2012	Scale: 1" = 60'



Figure 2B  
 Groundwater Elevation Map  
 4Q2011 (12/1/2011)  
 Southern Union Gas Services  
 House Compressor Station  
 Lea County, New Mexico

- Legend:
- Pipeline
  - Fence
  - Road
  - Excavation Extent
  - Groundwater Elevation (ft)
  - Monitor Well



Benzene <0.0050  
 Toluene <0.0050  
 Ethylbenzene <0.0050  
 Total Xylene <0.0100  
 Chloride 287

Benzene <0.0050  
 Toluene <0.0050  
 Ethylbenzene <0.0050  
 Total Xylene <0.0100  
 Chloride 263

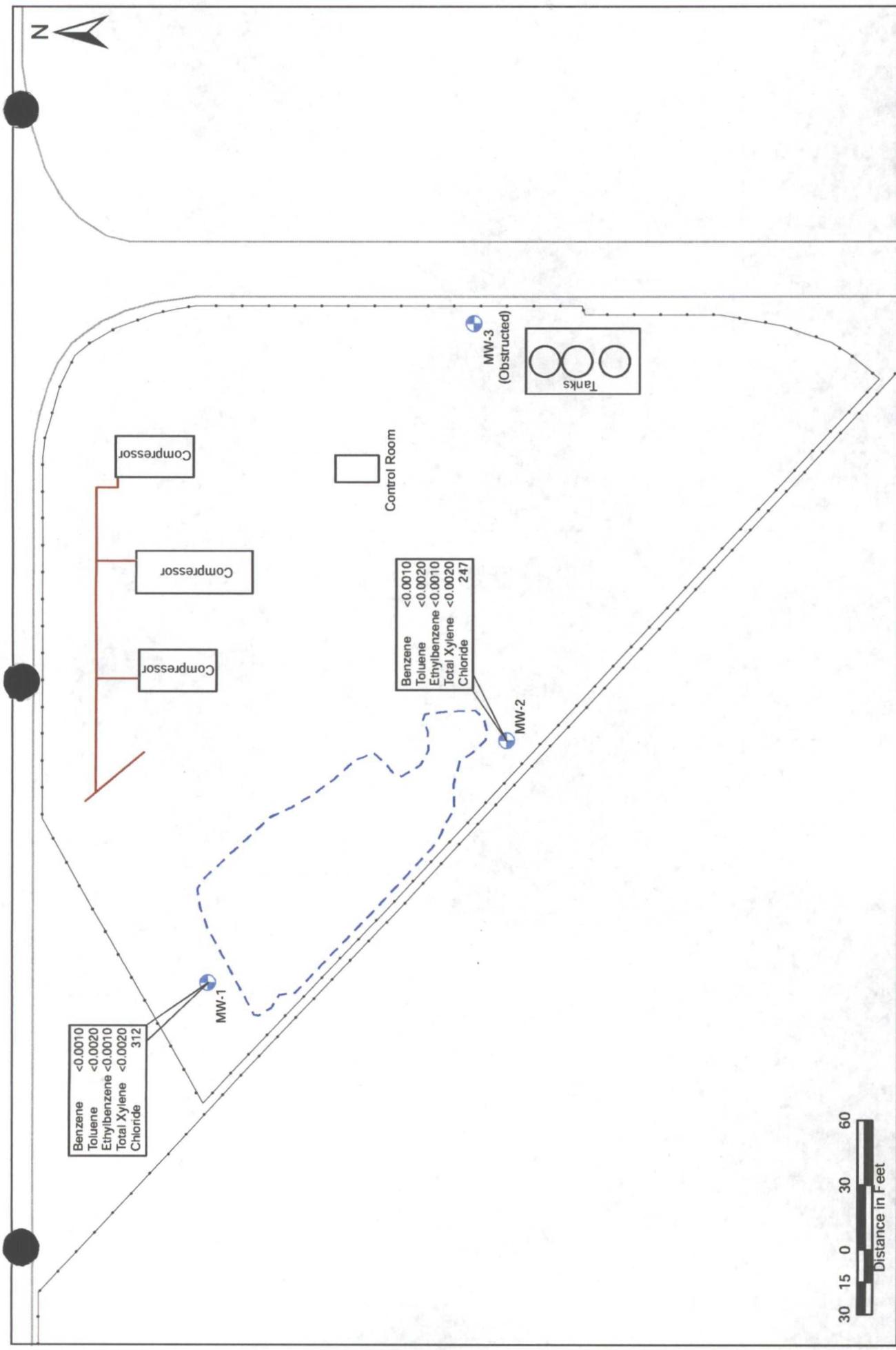
Basin Environmental Service Technologies, LLC  
 3100 Plains Hwy.  
 Lovington, NM 88260  
 Drawn By: BJA  
 Checked By: BRB  
 March 23, 2012  
 Scale: 1" = 60'



Figure 3A  
 Groundwater Concentration Map  
 3Q2011 (9/28/2011)  
 Southern Union Gas Services  
 House Compressor Station  
 Lea County, New Mexico

Legend:  
 Pipeline  
 Fence  
 Road  
 Excavation Extent  
 Monitor Well





Basin Environmental Service Technologies, LLC  
3100 Plains Hwy.  
Lovington, NM 88260

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Checked By: BRB  
March 23, 2012  
Scale: 1" = 60'



Figure 3B  
Groundwater Concentration Map  
4Q2011 (12/1/2011)  
Southern Union Gas Services  
House Compressor Station  
Lea County, New Mexico



# Tables

TABLE 1

GROUNDWATER ELEVATION DATA

SOUTHERN UNION GAS SERVICES  
 HOUSE COMPRESSOR STATION  
 LEA COUNTY, NEW MEXICO

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	TOTAL DEPTH	CORRECTED GROUNDWATER ELEVATION	
MW-1	9/28/2011	3,570.93	-	33.15	-	41.68	3,537.78	
	12/1/2011	3,570.93	-	33.17	-	41.68	3,537.76	
MW-2	9/28/2011	3,570.30	-	32.85	-	41.48	3,537.45	
	12/1/2011	3,570.30	-	32.85	-	41.48	3,537.45	
MW-3	9/28/2011	3,569.25	Obstructed					
	12/1/2011	3,569.25						

TABLE 2

2011 CONCENTRATIONS OF BENZENE, BTEX & CHLORIDE IN GROUNDWATER

SOUTHERN UNION GAS SERVICES  
 HOUSE COMPRESSOR STATION  
 LEA COUNTY, NEW MEXICO

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021b								E 300 CHLORIDE (mg/L)	
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P-XYLENES (mg/L)	O-XYLENES (mg/L)	TOTAL XYLENE (mg/L)	TOTAL BTEX (mg/L)			
MW-1	9/28/2011	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.010	<0.010	287
	12/1/2011	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	312
MW-2	9/28/2011	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.010	<0.010	263
	12/1/2011	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	247
MW-3	9/28/2011										
	12/1/2011										
Obstructed											
NMOC CRITERIA		0.01	0.75	0.75						TOTAL XYLENES 0.62	250

**TABLE 3**  
**CONCENTRATIONS OF RCRA & NMWQCC METALS IN GROUNDWATER**  
**SOUTHERN UNION GAS SERVICES**  
**HOUSE COMPRESSOR STATION**  
**LEA COUNTY, NEW MEXICO**

*All water concentrations are reported in mg/L*

**EPA SW846-6020A, EPA 7470A**

SAMPLE LOCATION	SAMPLE DATE	Aluminum	Boron	Cobalt	Copper	Iron	Manganese	Molybdenum	Nickel	Zinc
MW-1	9/28/2011	6.13	0.387	0.0240	0.0375	15.8	1.40	<0.0020	0.0365	0.0384
MW-2	9/28/2011	15.5	0.364	0.0301	0.0808	23.5	6.75	0.00213	0.221	0.0797
MW-3	9/28/2011	Obstructed								
Maximum Contaminant Levels from NM WQCC Drinking water standards Sections 1-101.UU and 3-103.A.		5.0 mg/L	0.75 mg/L	0.05 mg/L	1.0 mg/L	1.0 mg/L	0.2 mg/L	1.0 mg/L	0.2 mg/L	10 mg/L

**Table 4**  
**CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER**  
**SOUTHERN UNION GAS SERVICES**  
**HOUSE COMPRESSOR STATION**  
**LEA COUNTY, NEW MEXICO**

*All water concentrations are in mg/L*

Sample Location	Date Sampled	Acetone	Acrylonitrile	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	2-Butanone	MTBE	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroethane
MW-1	9/28/2011	<0.1	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01
MW-2	9/28/2011	>0.1	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01
MW-3	9/28/2011																	
Maximum Contaminant Levels from NMWQCC Drinking water standards Sections 1-101,UU and 3-103.A.				0.01 mg/L						Obstructed						0.01 mg/L		

**Table 4**  
**CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER**  
**SOUTHERN UNION GAS SERVICES**  
**HOUSE COMPRESSOR STATION**  
**LEA COUNTY, NEW MEXICO**

*All water concentrations are in mg/L*

Sample Location	Date Sampled	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	p-Cymene(p-isopropyltoluene)	Dibromochloromethane	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane (EDB)	Dibromomethane (methylene bromide)	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene		
MW-1	9/28/2011	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
MW-2	9/28/2011	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
MW-3	9/28/2011	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
		Obstructed																			
Maximum Contaminant Levels from NMWQCC Drinking water standards Sections 1-101,101 and 3-103.A.			0.1mg/L							0.0001 mg/L								0.005 mg/L	0.01 mg/L	0.005 mg/L	0.1mg/L

**Table 4**  
**CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER**  
**SOUTHERN UNION GAS SERVICES**  
**HOUSE COMPRESSOR STATION**  
**LEA COUNTY, NEW MEXICO**

*All water concentrations are in mg/L.*

Sample Location	Date Sampled	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,3-Dichloropropane	2,2-Dichloropropane	1,1-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Ethylbenzene	Hexachlorobutadiene	2-Hexanone	Isopropylbenzene	Methylene chloride	4-Methyl-2-pentanone (MIBK)	Naphthalene	n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane	
MW-1	9/28/2011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	0.00543	<0.05	<0.01	<0.005	<0.005	<0.005	
MW-2	9/28/2011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	>	<0.005	<0.05	<0.005	0.00544	<0.05	<0.01	<0.005	<0.005	<0.005	
MW-3	9/28/2011	Obstructed																	
Maximum Contaminant Levels from NMWQCC Drinking water standards Sections 1-101.UU and 3-103.A.									0.75 mg/L				0.1mg/L		0.03 mg/L				

**Table 4**  
**CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER**  
**SOUTHERN UNION GAS SERVICES**  
**HOUSE COMPRESSOR STATION**  
**LEA COUNTY, NEW MEXICO**

*All water concentrations are in mg/L*

Sample Location	Date Sampled	1,1,2,2-Tetrachloroethane	Tetrachloroethene (PCE)	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene (TCE)	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	o-Xylene	m,p-Xylene	Vinyl Chloride
MW-1	9/28/2011	<0.005	<0.005	<0.005	<0.0099	<0.0099	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.0020
MW-2	9/28/2011	<0.005	<0.005	<0.005	<0.0099	<0.0099	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.0020
MW-3	9/28/2011	Obstructed														
Maximum Contaminant Levels from NMWQCC Drinking water standards Sections 1-101.UU and 3-103.A.		0.02 mg/L		0.75 mg/L			0.06 mg/L		0.01 mg/L						Total Xylene 0.62 mg/L	0.001 mg/L

**TABLE 5**  
**CONCENTRATIONS OF SEMI-VOLATILE COMPOUNDS IN GROUNDWATER**  
**SOUTHERN UNION GAS SERVICES**  
**HOUSE COMPRESSOR STATION**  
**LEA COUNTY, NEW MEXICO**

All water concentrations are reported in mg/L

SAMPLE LOCATION	SAMPLE DATE	EPA SW846-8270C, 3510															
		Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benz[a]pyrene	Benz[b]fluoranthene	Benz[g,h,i]perylene	Benz[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene
MW-1	9/28/2011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
MW-2	9/28/2011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
MW-3	9/28/2011	Obstructed															

# Appendices

**Appendix A**  
**Laboratory Analytical Reports**

# Analytical Report 428605

## for Southern Union Gas Services- Monahans

**Project Manager: Rose Slade**  
**House Compressor Station**

**14-OCT-11**

Collected By: Client



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Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code: AZ000989): Arizona (AZ0758)



14-OCT-11

Project Manager: **Rose Slade**  
**Southern Union Gas Services- Monahans**  
1507 W. 15th Street  
Monahans, TX 79756

Reference: XENCO Report No: **428605**  
**House Compressor Station**  
Project Address: Lea County, NM

**Rose Slade:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 428605. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 428605 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron II**

Odessa Laboratory Manager

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**Sample Cross Reference 428605**



**Southern Union Gas Services- Monahans, Monahans, TX**  
House Compressor Station

<b>Sample Id</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Sample Depth</b>	<b>Lab Sample Id</b>
MW-1	W	09-28-11 10:50		428605-001
MW-2	W	09-28-11 10:15		428605-002



## CASE NARRATIVE

*Client Name: Southern Union Gas Services- Monahans*

*Project Name: House Compressor Station*



*Project ID:*  
*Work Order Number: 428605*

*Report Date: 14-OCT-11*  
*Date Received: 09/29/2011*

---

**Sample receipt non conformances and comments:**

None

---

**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-871619 Anions by E300  
E300MI

Batch 871619, Chloride recovered below QC limits in the Matrix Spike.

Samples affected are: 428605-001, -002.

The Laboratory Control Sample for Chloride is within laboratory Control Limits



## CASE NARRATIVE

*Client Name: Southern Union Gas Services- Monahans*

*Project Name: House Compressor Station*



*Project ID:  
Work Order Number: 428605*

*Report Date: 14-OCT-11  
Date Received: 09/29/2011*

---

*Batch: LBA-871684 VOAs by SW-846 8260B  
SW8260B*

*Batch 871684, Bromochloromethane RPD was outside QC limits.  
Samples affected are: 428605-001, -002*

*SW8260B*

*Batch 871684, 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1-Dichloropropene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Chlorotoluene, Bromochloromethane, Bromodichloromethane, Chloroform, Sec-Butylbenzene, n-Propylbenzene, o-Xylene, p-Cymene (p-Isopropyltoluene), tert-Butylbenzene, trans-1,2-dichloroethene recovered above QC limits in the Matrix Spike. Carbon Tetrachloride, Trichlorofluoromethane recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate.*

*Samples affected are: 428605-001, -002.*

*The Laboratory Control Sample for Bromodichloromethane, 1,3-Dichlorobenzene, Bromochloromethane, 2-Chlorotoluene, tert-Butylbenzene, 1,4-Dichlorobenzene, Chloroform, 1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, Sec-Butylbenzene, o-Xylene, 1,1,1-Trichloroethane, 1,1,1,2-Tetrachloroethane, trans-1,2-dichloroethene, n-Propylbenzene, p-Cymene (p-Isopropyltoluene), 1,1-Dichloropropene is within laboratory Control Limits*

*SW8260B*

*Batch 871684, Carbon Tetrachloride recovered above QC limits Trichlorofluoromethane recovered above QC limits in the Blank Spike and Duplicate.*

*Samples affected are: 428605-001, -002.*

*Batch: LBA-872310 ICP-MS Metals by SW 6020A  
SW6020*

*Batch 872310, Zinc recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.*

*Samples affected are: 428605-001, -002.*

*The Laboratory Control Sample for Zinc is within laboratory Control Limits*



# Certificate of Analysis Summary 428605

## Southern Union Gas Services- Monahans, Monahans, TX



Project Name: House Compressor Station

Project Id:

Contact: Rose Slade

Project Location: Lea County, NM

Date Received in Lab: Thu Sep-29-11 08:46 am

Report Date: 14-OCT-11

Project Manager: Brent Barron II

Analysis Requested	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	Extracted:	Analyzed:	Units/RL:
Anions by E300	428605-001	MW-1		WATER	Sep-28-11 10:50	Oct-04-11 17:49	mg/L	RL 12.5
	428605-002	MW-2		WATER	Sep-28-11 10:15	Oct-04-11 17:49	mg/L	RL 12.5
ICP-MS Metals by SW 6020A SUB: E871002						Oct-06-11 17:00		
Chloride						Oct-13-11 15:46	mg/L	RL
Aluminum							15.5	0.0100
Boron							0.364	0.0100
Cobalt							0.0301	0.00500
Copper							0.0808	0.00200
Iron							23.5	0.150
Manganese							6.75	0.00200
Molybdenum							0.00213	0.00200
Nickel							0.221	0.00500
Zinc							0.0797	0.00300

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Brent Barron II  
Odessa Laboratory Manager



# Certificate of Analysis Summary 428605

## Southern Union Gas Services- Monahans, Monahans, TX



Project Name: House Compressor Station

Project Id:

Contact: Rose Slade

Project Location: Lea County, NM

Date Received in Lab: Thu Sep-29-11 08:46 am

Report Date: 14-OCT-11

Project Manager: Brent Barron II

Analysis Requested		Lab Id:	428605-001	428605-002
Field Id:	MW-1	MW-2		
Depth:				
Matrix:	WATER	WATER		
Sampled:	Sep-28-11 10:50	Sep-28-11 10:15		
Extracted:	Oct-03-11 13:15	Oct-03-11 13:16		
Analyzed:	Oct-03-11 19:10	Oct-03-11 19:32		
Units/RL:	mg/L RL	mg/L RL		
1,1,1,2-Tetrachloroethane	ND 0.00500	ND 0.00500		
1,1,1-Trichloroethane	ND 0.00500	ND 0.00500		
1,1,2,2-Tetrachloroethane	ND 0.00500	ND 0.00500		
1,1,2-Trichloroethane	ND 0.00500	ND 0.00500		
1,1-Dichloroethane	ND 0.00500	ND 0.00500		
1,1-Dichloroethene	ND 0.00500	ND 0.00500		
1,1-Dichloropropene	ND 0.00500	ND 0.00500		
1,2,3-Trichlorobenzene	ND 0.00500	ND 0.00500		
1,2,3-Trichloropropane	ND 0.00500	ND 0.00500		
1,2,4-Trichlorobenzene	ND 0.00500	ND 0.00500		
1,2,4-Trimethylbenzene	ND 0.00500	ND 0.00500		
1,2-Dibromo-3-Chloropropane	ND 0.00500	ND 0.00500		
1,2-Dibromoethane	ND 0.00500	ND 0.00500		
1,2-Dichlorobenzene	ND 0.00500	ND 0.00500		
1,2-Dichloroethane	ND 0.00500	ND 0.00500		
1,2-Dichloropropane	ND 0.00500	ND 0.00500		
1,3,5-Trimethylbenzene	ND 0.00500	ND 0.00500		
1,3-Dichlorobenzene	ND 0.00500	ND 0.00500		
1,3-Dichloropropane	ND 0.00500	ND 0.00500		
1,4-Dichlorobenzene	ND 0.00500	ND 0.00500		
2,2-Dichloropropane	ND 0.00500	ND 0.00500		
2-Chlorotoluene	ND 0.00500	ND 0.00500		
4-Chlorotoluene	ND 0.00500	ND 0.00500		
Benzene	ND 0.00500	ND 0.00500		
Bromobenzene	ND 0.00500	ND 0.00500		

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Brent Barron II  
Odessa Laboratory Manager



# Certificate of Analysis Summary 428605

## Southern Union Gas Services- Monahans, Monahans, TX



**Project Name: House Compressor Station**

**Date Received in Lab:** Thu Sep-29-11 08:46 am  
**Report Date:** 14-OCT-11  
**Project Manager:** Brent Barron II

**Project Id:**  
**Contact:** Rose Slade  
**Project Location:** Lea County, NM

<i>Analysis Requested</i>		<i>Lab Id:</i>	<i>Field Id:</i>	<i>Depth:</i>	<i>Matrix:</i>	<i>Sampled:</i>	<i>Extracted:</i>	<i>Analyzed:</i>	<i>Units/RL:</i>
<b>VOAs by SW-846 8260B SUB: E871002</b>		428605-001	MW-1	WATER	Sep-28-11 10:50	Oct-03-11 13:15	Oct-03-11 13:15	mg/L	RL
		428605-002	MW-2	WATER	Sep-28-11 10:15	Oct-03-11 13:16	Oct-03-11 19:32	mg/L	RL
Bromochloromethane		ND	0.00500			ND	0.00500		0.00500
Bromodichloromethane		ND	0.00500			ND	0.00500		0.00500
Bromoform		ND	0.00500			ND	0.00500		0.00500
Bromomethane		ND	0.00500			ND	0.00500		0.00500
Carbon Tetrachloride		ND	0.00500			ND	0.00500		0.00500
Chlorobenzene		ND	0.00500			ND	0.00500		0.00500
Chloroethane		ND	0.0100			ND	0.0100		0.0100
Chloroform		ND	0.00500			ND	0.00500		0.00500
Chloromethane		ND	0.0100			ND	0.0100		0.0100
cis-1,2-Dichloroethene		ND	0.00500			ND	0.00500		0.00500
cis-1,3-Dichloropropene		ND	0.00500			ND	0.00500		0.00500
Dibromochloromethane		ND	0.00500			ND	0.00500		0.00500
Dibromomethane		ND	0.00500			ND	0.00500		0.00500
Dichlorodifluoromethane		ND	0.00500			ND	0.00500		0.00500
Ethylbenzene		ND	0.00500			ND	0.00500		0.00500
Hexachlorobutadiene		ND	0.00500			ND	0.00500		0.00500
isopropylbenzene		ND	0.00500			ND	0.00500		0.00500
m,p-Xylenes		ND	0.0100			ND	0.0100		0.0100
Methylene Chloride		0.00543	0.00500			0.00544	0.00500		0.00500
MTBE		ND	0.00500			ND	0.00500		0.00500
Naphthalene		ND	0.0100			ND	0.0100		0.0100
n-Butylbenzene		ND	0.00500			ND	0.00500		0.00500
n-Propylbenzene		ND	0.00500			ND	0.00500		0.00500
o-Xylene		ND	0.00500			ND	0.00500		0.00500
p-Cymene (p-Isopropyltoluene)		ND	0.00500			ND	0.00500		0.00500

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**Brent Barron II**  
 Odessa Laboratory Manager

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# Certificate of Analysis Summary 428605

## Southern Union Gas Services- Monahans, Monahans, TX



Project Name: House Compressor Station

Project Id:

Contact: Rose Slade

Project Location: Lea County, NM

Date Received in Lab: Thu Sep-29-11 08:46 am

Report Date: 14-OCT-11

Project Manager: Brent Barron II

Analysis Requested	Lab Id:	428605-001	428605-002
	Field Id:	MW-1	MW-2
	Depth:		
	Matrix:	WATER	WATER
	Sampled:	Sep-28-11 10:50	Sep-28-11 10:15
VOAs by SW-846 8260B SUB: E871002	Extracted:	Oct-03-11 13:15	Oct-03-11 13:16
	Analyzed:	Oct-03-11 19:10	Oct-03-11 19:32
	Units/RL:	mg/L RL	mg/L RL
Sec-Butylbenzene	ND	0.00500	ND 0.00500
Styrene	ND	0.00500	ND 0.00500
tert-Butylbenzene	ND	0.00500	ND 0.00500
Tetrachloroethylene	ND	0.00500	ND 0.00500
Toluene	ND	0.00500	ND 0.00500
trans-1,2-dichloroethene	ND	0.00500	ND 0.00500
trans-1,3-dichloropropene	ND	0.00500	ND 0.00500
Trichloroethene	ND	0.00500	ND 0.00500
Trichlorofluoromethane	ND	0.00500	ND 0.00500
Vinyl Chloride	ND	0.00200	ND 0.00200

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Odessa Laboratory Manager

## Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- MDL** Method Detection Limit      **SDL** Sample Detection Limit      **LOD** Limit of Detection
- PQL** Practical Quantitation Limit      **MQL** Method Quantitation Limit      **LOQ** Limit of Quantitation
- DL** Method Detection Limit
- NC** Non-Calculable
- + Outside XENCO's scope of NELAC Accreditation.

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(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	



# Form 2 - Surrogate Recoveries

Project Name: House Compressor Station

Work Orders : 428605,

Lab Batch #: 871684

Sample: 428605-001 / SMP

Project ID:

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 10/03/11 19:10

### SURROGATE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0476	0.0500	95	74-124	
Dibromofluoromethane	0.0565	0.0500	113	75-131	
1,2-Dichloroethane-D4	0.0515	0.0500	103	63-144	
Toluene-D8	0.0459	0.0500	92	80-117	

Lab Batch #: 871684

Sample: 428605-002 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 10/03/11 19:32

### SURROGATE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0490	0.0500	98	74-124	
Dibromofluoromethane	0.0542	0.0500	108	75-131	
1,2-Dichloroethane-D4	0.0478	0.0500	96	63-144	
Toluene-D8	0.0475	0.0500	95	80-117	

Lab Batch #: 871684

Sample: 612285-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 10/03/11 13:12

### SURROGATE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0482	0.0500	96	74-124	
Dibromofluoromethane	0.0543	0.0500	109	75-131	
1,2-Dichloroethane-D4	0.0495	0.0500	99	63-144	
Toluene-D8	0.0461	0.0500	92	80-117	

Lab Batch #: 871684

Sample: 612285-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 10/03/11 11:44

### SURROGATE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0474	0.0500	95	74-124	
Dibromofluoromethane	0.0552	0.0500	110	75-131	
1,2-Dichloroethane-D4	0.0489	0.0500	98	63-144	
Toluene-D8	0.0476	0.0500	95	80-117	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B

All results are based on MDL and validated for QC purposes.



# Form 2 - Surrogate Recoveries

Project Name: House Compressor Station

Work Orders : 428605,

Project ID:

Lab Batch #: 871684

Sample: 612285-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 10/03/11 12:05

### SURROGATE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0479	0.0500	96	74-124	
Dibromofluoromethane	0.0555	0.0500	111	75-131	
1,2-Dichloroethane-D4	0.0494	0.0500	99	63-144	
Toluene-D8	0.0471	0.0500	94	80-117	

Lab Batch #: 871684

Sample: 428104-009 S / MS

Batch: 1 Matrix: Ground Water

Units: mg/L

Date Analyzed: 10/03/11 14:02

### SURROGATE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0462	0.0500	92	74-124	
Dibromofluoromethane	0.0557	0.0500	111	75-131	
1,2-Dichloroethane-D4	0.0464	0.0500	93	63-144	
Toluene-D8	0.0471	0.0500	94	80-117	

Lab Batch #: 871684

Sample: 428104-009 SD / MSD

Batch: 1 Matrix: Ground Water

Units: mg/L

Date Analyzed: 10/03/11 14:23

### SURROGATE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0457	0.0500	91	74-124	
Dibromofluoromethane	0.0540	0.0500	108	75-131	
1,2-Dichloroethane-D4	0.0456	0.0500	91	63-144	
Toluene-D8	0.0473	0.0500	95	80-117	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B

All results are based on MDL and validated for QC purposes.

# Blank Spike Recovery



**Project Name: House Compressor Station**

**Work Order #: 428605**

**Project ID:**

**Lab Batch #: 872310**

**Sample: 612364-1-BKS**

**Matrix: Water**

**Date Analyzed: 10/13/2011**

**Date Prepared: 10/06/2011**

**Analyst: AMB**

**Reporting Units: mg/L**

**Batch #: 1**

**BLANK /BLANK SPIKE RECOVERY STUDY**

ICP-MS Metals by SW 6020A  Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Aluminum	<0.0100	1.00	0.861	86	80-120	
Boron	<0.0100	0.200	0.204	102	80-120	
Cobalt	<0.00500	0.200	0.188	94	80-120	
Copper	<0.00200	0.200	0.189	95	80-120	
Iron	<0.150	1.00	0.946	95	80-120	
Manganese	<0.00200	0.200	0.190	95	80-120	
Molybdenum	<0.00200	0.200	0.203	102	80-120	
Nickel	<0.00500	0.200	0.189	95	80-120	
Zinc	<0.00300	0.200	0.187	94	80-120	

Blank Spike Recovery [D] = 100\*[C]/[B]

All results are based on MDL and validated for QC purposes.

Below Reporting Limit



**Project Name: House Compressor Station**

Work Order #: 428605

Analyst: BRB

Lab Batch ID: 871619

Sample: 871619-1-BKS

Date Prepared: 10/04/2011

Batch #: 1

Project ID:

Date Analyzed: 10/04/2011

Matrix: Water

Units: mg/L

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Antons by E300	<0.500	10.0	10.6	106	10.0	10.3	103	3	80-120	20	
Chloride											

Relative Percent Difference RPD =  $200 * ((C-F) / (C+F))$   
 Blank Spike Recovery [D] =  $100 * (C) / [B]$   
 Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
 All results are based on MDL and Validated for QC Purposes



# BS / BSD Recoveries



## Project Name: House Compressor Station

Work Order #: 428605

Analyst: CYE

Lab Batch ID: 871684

Sample: 612285-1-BKS

Date Prepared: 10/03/2011

Batch #: 1

Project ID:

Date Analyzed: 10/03/2011

Matrix: Water

Units: mg/L

### BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

VOAs by SW-846 8260B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,1,1,2-Tetrachloroethane	<0.00500	0.0500	0.0571	114	0.0500	0.0568	114	1	75-125	20	
1,1,1-Trichloroethane	<0.00500	0.0500	0.0603	121	0.0500	0.0586	117	3	75-125	20	
1,1,2,2-Tetrachloroethane	<0.00500	0.0500	0.0421	84	0.0500	0.0469	94	11	50-130	31	
1,1,2-Trichloroethane	<0.00500	0.0500	0.0440	88	0.0500	0.0470	94	7	75-127	20	
1,1-Dichloroethane	<0.00500	0.0500	0.0558	112	0.0500	0.0527	105	6	60-130	20	
1,1-Dichloroethene	<0.00500	0.0500	0.0578	116	0.0500	0.0550	110	5	59-172	22	
1,1-Dichloropropene	<0.00500	0.0500	0.0563	113	0.0500	0.0537	107	5	75-125	20	
1,2,3-Trichlorobenzene	<0.00500	0.0500	0.0454	91	0.0500	0.0481	96	6	75-137	20	
1,2,3-Trichloropropane	<0.00500	0.0500	0.0524	105	0.0500	0.0571	114	9	75-125	20	
1,2,4-Trichlorobenzene	<0.00500	0.0500	0.0466	93	0.0500	0.0483	97	4	75-135	20	
1,2,4-Trimethylbenzene	<0.00500	0.0500	0.0554	111	0.0500	0.0534	107	4	75-125	20	
1,2-Dibromo-3-Chloropropane	<0.00500	0.0500	0.0409	82	0.0500	0.0487	97	17	59-125	28	
1,2-Dibromoethane	<0.00500	0.0500	0.0482	96	0.0500	0.0508	102	5	73-125	20	
1,2-Dichlorobenzene	<0.00500	0.0500	0.0542	108	0.0500	0.0537	107	1	75-125	20	
1,2-Dichloroethane	<0.00500	0.0500	0.0541	108	0.0500	0.0538	108	1	68-127	20	
1,2-Dichloropropane	<0.00500	0.0500	0.0463	93	0.0500	0.0459	92	1	74-125	20	
1,3,5-Trimethylbenzene	<0.00500	0.0500	0.0549	110	0.0500	0.0535	107	3	70-125	20	
1,3-Dichlorobenzene	<0.00500	0.0500	0.0558	112	0.0500	0.0551	110	1	75-125	20	
1,3-Dichloropropane	<0.00500	0.0500	0.0461	92	0.0500	0.0477	95	3	75-125	20	
1,4-Dichlorobenzene	<0.00500	0.0500	0.0560	112	0.0500	0.0541	108	3	75-125	20	

Relative Percent Difference RPD =  $200 * (C-F) / (C+F)$

Blank Spike Recovery [D] =  $100 * (C) / [E]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



**Project Name: House Compressor Station**

Work Order #: 428605

Analyst: CYE

Lab Batch ID: 871684

Sample: 612285-1-BKS

Date Prepared: 10/03/2011

Batch #: 1

Project ID:  
Date Analyzed: 10/03/2011

Matrix: Water

Units: mg/L

Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
<b>VOAs by SW-846 8260B</b>											
2,2-Dichloropropane	<0.00500	0.0500	0.0571	114	0.0500	0.0546	109	4	60-140	20	
2-Chlorotoluene	<0.00500	0.0500	0.0566	113	0.0500	0.0551	110	3	73-125	20	
4-Chlorotoluene	<0.00500	0.0500	0.0531	106	0.0500	0.0518	104	2	74-125	20	
Benzene	<0.00500	0.0500	0.0483	97	0.0500	0.0475	95	2	66-142	21	
Bromobenzene	<0.00500	0.0500	0.0520	104	0.0500	0.0526	105	1	60-130	20	
Bromochloromethane	<0.00500	0.0500	0.0587	117	0.0500	0.0597	119	2	73-125	20	
Bromodichloromethane	<0.00500	0.0500	0.0559	112	0.0500	0.0557	111	0	75-125	20	
Bromoform	<0.00500	0.0500	0.0509	102	0.0500	0.0546	109	7	75-125	20	
Bromomethane	<0.00500	0.0500	0.0539	108	0.0500	0.0522	104	3	70-130	20	
Carbon Tetrachloride	<0.00500	0.0500	0.0644	129	0.0500	0.0619	124	4	62-125	20	H
Chlorobenzene	<0.00500	0.0500	0.0523	105	0.0500	0.0516	103	1	60-133	21	
Chloroethane	<0.0100	0.0500	0.0475	95	0.0500	0.0444	89	7	70-130	20	
Chloroform	<0.00500	0.0500	0.0564	113	0.0500	0.0550	110	3	74-125	20	
Chloromethane	<0.0100	0.0500	0.0439	88	0.0500	0.0414	83	6	70-130	20	
cis-1,2-Dichloroethene	<0.00500	0.0500	0.0536	107	0.0500	0.0523	105	2	60-130	20	
cis-1,3-Dichloropropene	<0.00500	0.0500	0.0475	95	0.0500	0.0477	95	0	60-140	20	
Dibromochloromethane	<0.00500	0.0500	0.0556	111	0.0500	0.0557	111	0	60-130	20	
Dibromomethane	<0.00500	0.0500	0.0506	101	0.0500	0.0514	103	2	69-127	23	
Dichlorodifluoromethane	<0.00500	0.0500	0.0498	100	0.0500	0.0456	91	9	70-130	23	
Ethylbenzene	<0.00500	0.0500	0.0503	101	0.0500	0.0499	100	1	75-125	20	

Relative Percent Difference RPD = 200\*(C-F)/(C+F)  
 Blank Spike Recovery [D] = 100\*(C)/(B)  
 Blank Spike Duplicate Recovery [G] = 100\*(F)/(E)  
 All results are based on MDL and Validated for QC Purposes



# BS / BSB Recoveries

## Project Name: House Compressor Station

Work Order #: 428605

Analyst: CYE

Lab Batch ID: 871684

Sample: 612285-1-BKS

Units: mg/L

Date Prepared: 10/03/2011

Batch #: 1

Project ID:

Date Analyzed: 10/03/2011

Matrix: Water

Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
VOAs by SW-846 8260B											
Hexachlorobutadiene	<0.00500	0.0500	0.0484	97	0.0500	0.0477	95	1	75-125	20	
isopropylbenzene	<0.00500	0.0500	0.0532	106	0.0500	0.0508	102	5	75-125	20	
m,p-Xylenes	<0.0100	0.100	0.107	107	0.100	0.104	104	3	75-125	20	
Methylene Chloride	<0.00500	0.0500	0.0515	103	0.0500	0.0504	101	2	75-125	35	
MTBE	<0.00500	0.100	0.105	105	0.100	0.109	109	4	75-125	20	
Naphthalene	<0.0100	0.0500	0.0500	100	0.0500	0.0559	112	11	65-135	20	
n-Butylbenzene	<0.00500	0.0500	0.0514	103	0.0500	0.0500	100	3	75-125	20	
n-Propylbenzene	<0.00500	0.0500	0.0558	112	0.0500	0.0548	110	2	75-125	20	
o-Xylene	<0.00500	0.0500	0.0542	108	0.0500	0.0531	106	2	75-125	20	
p-Cymene (p-Isopropyltoluene)	<0.00500	0.0500	0.0573	115	0.0500	0.0547	109	5	75-125	20	
Sec-Butylbenzene	<0.00500	0.0500	0.0535	107	0.0500	0.0520	104	3	75-125	20	
Styrene	<0.00500	0.0500	0.0520	104	0.0500	0.0511	102	2	60-130	51	
tert-Butylbenzene	<0.00500	0.0500	0.0561	112	0.0500	0.0539	108	4	75-125	20	
Tetrachloroethylene	<0.00500	0.0500	0.0530	106	0.0500	0.0504	101	5	60-130	20	
Toluene	<0.00500	0.0500	0.0497	99	0.0500	0.0478	96	4	59-139	21	
trans-1,2-dichloroethene	<0.00500	0.0500	0.0565	113	0.0500	0.0551	110	3	60-130	20	
trans-1,3-dichloropropene	<0.00500	0.0500	0.0425	85	0.0500	0.0442	88	4	66-125	20	
Trichloroethene	<0.00500	0.0500	0.0545	109	0.0500	0.0532	106	2	62-137	24	
Trichlorofluoromethane	<0.00500	0.0500	0.0662	132	0.0500	0.0630	126	5	67-125	20	H
Vinyl Chloride	<0.00200	0.0500	0.0499	100	0.0500	0.0466	93	7	75-125	20	

Relative Percent Difference RPD =  $200 * (C-F) / (C+F)$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



# Form 3 - MS Recoveries



Project Name: House Compressor Station

Work Order #: 428605

Lab Batch #: 871619

Date Analyzed: 10/04/2011

QC- Sample ID: 428605-001 S

Reporting Units: mg/L

Date Prepared: 10/04/2011

Batch #: 1

Project ID:

Analyst: BRB

Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	287	250	529	97	80-120	

Matrix Spike Percent Recovery [D] =  $100 \cdot (C-A)/B$   
 Relative Percent Difference [E] =  $200 \cdot (C-A)/(C+B)$   
 All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



# Form 3 - MS/MSD Recoveries

Project Name: House Compressor Station

Work Order #: 428605

Lab Batch ID: 872310

Date Analyzed: 10/13/2011

Reporting Units: mg/L

QC- Sample ID: 428612-001 S

Date Prepared: 10/06/2011

Project ID:

Batch #: 1 Matrix: Water

Analyst: AMB

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Analytes	ICP-MS Metals by SW 6020A	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Aluminum		<0.0100	1.00	0.830	83	1.00	0.833	83	0	75-125	25	
Boron		0.267	0.200	0.489	111	0.200	0.492	113	1	75-125	25	
Cobalt		<0.00500	0.200	0.182	91	0.200	0.185	93	2	75-125	25	
Copper		0.00757	0.200	0.188	90	0.200	0.191	92	2	75-125	25	
Iron		<0.150	1.00	0.935	94	1.00	0.949	95	1	75-125	25	
Manganese		0.00468	0.200	0.190	93	0.200	0.192	94	1	75-125	25	
Molybdenum		0.00498	0.200	0.209	102	0.200	0.215	105	3	75-125	25	
Nickel		<0.00500	0.200	0.182	91	0.200	0.184	92	1	75-125	25	
Zinc		0.612	0.200	0.747	68	0.200	0.740	64	1	75-125	25	X

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B  
Relative Percent Difference RPD = 200\*(C-F)/(C+F)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E



# Form 3 - MS / MSD Recoveries

Project Name: House Compressor Station

Work Order #: 428605

Lab Batch ID: 871684

Date Analyzed: 10/03/2011

Reporting Units: mg/L

Project ID:

QC- Sample ID: 428104-009 S

Date Prepared: 10/03/2011

Batch #: 1

Analyst: CYE

Matrix: Ground Water

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,1,1,2-Tetrachloroethane	<0.00500	0.0500	0.0659	132	0.0500	0.0549	110	18	75-125	20	X
1,1,1-Trichloroethane	<0.00500	0.0500	0.0713	143	0.0500	0.0597	119	18	75-125	20	X
1,1,2,2-Tetrachloroethane	<0.00500	0.0500	0.0502	100	0.0500	0.0438	88	14	50-130	31	
1,1,2-Trichloroethane	<0.00500	0.0500	0.0522	104	0.0500	0.0444	89	16	75-127	20	
1,1-Dichloroethane	<0.00500	0.0500	0.0632	126	0.0500	0.0531	106	17	60-130	20	
1,1-Dichloroethene	<0.00500	0.0500	0.0689	138	0.0500	0.0571	114	19	59-172	22	
1,1-Dichloropropene	<0.00500	0.0500	0.0659	132	0.0500	0.0556	111	17	75-125	20	X
1,2,3-Trichlorobenzene	<0.00500	0.0500	0.0564	113	0.0500	0.0498	100	12	75-137	20	
1,2,3-Trichloropropane	<0.00500	0.0500	0.0574	115	0.0500	0.0509	102	12	75-125	20	
1,2,4-Trichlorobenzene	<0.00500	0.0500	0.0570	114	0.0500	0.0503	101	12	75-135	20	
1,2,4-Trimethylbenzene	<0.00500	0.0500	0.0643	129	0.0500	0.0531	106	19	75-125	20	X
1,2-Dibromo-3-Chloropropane	<0.00500	0.0500	0.0475	95	0.0500	0.0423	85	12	59-125	28	
1,2-Dibromoethane	<0.00500	0.0500	0.0558	112	0.0500	0.0490	98	13	73-125	20	
1,2-Dichlorobenzene	<0.00500	0.0500	0.0626	125	0.0500	0.0543	109	14	75-125	20	
1,2-Dichloroethane	<0.00500	0.0500	0.0616	123	0.0500	0.0520	104	17	68-127	20	
1,2-Dichloropropane	<0.00500	0.0500	0.0523	105	0.0500	0.0453	91	14	74-125	20	
1,3,5-Trimethylbenzene	<0.00500	0.0500	0.0645	129	0.0500	0.0533	107	19	70-125	20	X
1,3-Dichlorobenzene	<0.00500	0.0500	0.0670	134	0.0500	0.0562	112	18	75-125	20	X
1,3-Dichloropropane	<0.00500	0.0500	0.0519	104	0.0500	0.0454	91	13	75-125	20	
1,4-Dichlorobenzene	<0.00500	0.0500	0.0652	130	0.0500	0.0554	111	16	75-125	20	X
2,2-Dichloropropane	<0.00500	0.0500	0.0684	137	0.0500	0.0568	114	19	60-140	20	
2-Chlorotoluene	<0.00500	0.0500	0.0663	133	0.0500	0.0557	111	17	73-125	20	X
4-Chlorotoluene	<0.00500	0.0500	0.0623	125	0.0500	0.0527	105	17	74-125	20	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B  
Relative Percent Difference RPD = 200\*(C-F)/(C+E)

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit



# Form 3 - MS MSD Recoveries

Project Name: House Compressor Station

Work Order #: 428605

Lab Batch ID: 871684

Date Analyzed: 10/03/2011

Reporting Units: mg/L

Project ID:

QC- Sample ID: 428104-009 S

Date Prepared: 10/03/2011

Batch #: 1 Matrix: Ground Water

Analyst: CYE

Analytes	VOAs by SW-846 8260B										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00500	0.0500	0.0565	113	0.0500	0.0476	95	17	66-142	21	
Bromobenzene	<0.00500	0.0500	0.0602	120	0.0500	0.0511	102	16	60-130	20	
Bromochloromethane	<0.00500	0.0500	0.0685	137	0.0500	0.0554	111	21	73-125	20	XF
Bromodichloromethane	<0.00500	0.0500	0.0640	128	0.0500	0.0523	105	20	75-125	20	X
Bromoform	<0.00500	0.0500	0.0580	116	0.0500	0.0484	97	18	75-125	20	
Bromomethane	<0.00500	0.0500	0.0524	105	0.0500	0.0498	100	5	70-130	20	
Carbon Tetrachloride	<0.00500	0.0500	0.0759	152	0.0500	0.0629	126	19	62-125	20	X
Chlorobenzene	<0.00500	0.0500	0.0613	123	0.0500	0.0520	104	16	60-133	21	
Chloroethane	<0.0100	0.0500	0.0472	94	0.0500	0.0463	93	2	70-130	20	
Chloroform	<0.00500	0.0500	0.0649	130	0.0500	0.0537	107	19	74-125	20	X
Chloromethane	<0.0100	0.0500	0.0426	85	0.0500	0.0415	83	3	70-130	20	
cis-1,2-Dichloroethene	<0.00500	0.0500	0.0633	127	0.0500	0.0529	106	18	60-130	20	
cis-1,3-Dichloropropene	<0.00500	0.0500	0.0537	107	0.0500	0.0449	90	18	60-140	20	
Dibromochloromethane	<0.00500	0.0500	0.0620	124	0.0500	0.0519	104	18	60-130	20	
Dibromomethane	<0.00500	0.0500	0.0581	116	0.0500	0.0483	97	18	69-127	23	
Dichlorodifluoromethane	<0.00500	0.0500	0.0505	101	0.0500	0.0491	98	3	70-130	23	
Ethylbenzene	<0.00500	0.0500	0.0600	120	0.0500	0.0507	101	17	75-125	20	
Hexachlorobutadiene	<0.00500	0.0500	0.0599	120	0.0500	0.0522	104	14	75-125	20	
isopropylbenzene	<0.00500	0.0500	0.0619	124	0.0500	0.0530	106	15	75-125	20	
m,p-Xylenes	<0.0100	0.100	0.125	125	0.100	0.106	106	16	75-125	20	
Methylene Chloride	0.00765	0.0500	0.0663	117	0.0500	0.0559	97	17	75-125	35	
MTBE	<0.00500	0.100	0.104	104	0.100	0.101	101	3	75-125	20	
Naphthalene	<0.0100	0.0500	0.0603	121	0.0500	0.0537	107	12	65-135	20	

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B  
Relative Percent Difference RPD = 200\*(C-F)/(C+F)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQ = Estimated Quantitation Limit

**Project Name: House Compressor Station**

Work Order #: 428605

Project ID:

Lab Batch ID: 871684

QC- Sample ID: 428104-009 S Batch #: 1 Matrix: Ground Water

Date Analyzed: 10/03/2011

Date Prepared: 10/03/2011 Analyst: CYE

Reporting Units: mg/L

VOAs by SW-846 8260B	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
n-Butylbenzene	<0.00500	0.0500	0.0622	124	0.0500	0.0526	105	17	75-125	20	
n-Propylbenzene	<0.00500	0.0500	0.0671	134	0.0500	0.0566	113	17	75-125	20	X
o-Xylene	<0.00500	0.0500	0.0636	127	0.0500	0.0532	106	18	75-125	20	X
p-Cymene (p-Isopropyltoluene)	<0.00500	0.0500	0.0675	135	0.0500	0.0575	115	16	75-125	20	X
Sec-Butylbenzene	<0.00500	0.0500	0.0648	130	0.0500	0.0550	110	16	75-125	20	X
Styrene	<0.00500	0.0500	0.0580	116	0.0500	0.0468	94	21	60-130	51	
tert-Butylbenzene	<0.00500	0.0500	0.0668	134	0.0500	0.0559	112	18	75-125	20	X
Tetrachloroethylene	<0.00500	0.0500	0.0635	127	0.0500	0.0555	111	13	60-130	20	
Toluene	<0.00500	0.0500	0.0577	115	0.0500	0.0488	98	17	59-139	21	
trans-1,2-dichloroethene	<0.00500	0.0500	0.0665	133	0.0500	0.0556	111	18	60-130	20	X
trans-1,3-dichloropropene	<0.00500	0.0500	0.0494	99	0.0500	0.0413	83	18	66-125	20	
Trichloroethene	<0.00500	0.0500	0.0647	129	0.0500	0.0545	109	17	62-137	24	
Trichlorofluoromethane	<0.00500	0.0500	0.0656	131	0.0500	0.0672	134	2	67-125	20	X
Vinyl Chloride	<0.00200	0.0500	0.0489	98	0.0500	0.0503	101	3	75-125	20	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B  
Relative Percent Difference RPD = 200\*(C-F)/(C+F)

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

**Sample Duplicate Recovery**



**Project Name: House Compressor Station**

Work Order #: 428605

Lab Batch #: 871619

Project ID:

Date Analyzed: 10/04/2011 17:49

Date Prepared: 10/04/2011

Analyst: BRB

QC- Sample ID: 428605-001 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Anions by E300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	287	286	0	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
 All Results are based on MDL and validated for QC purposes.  
 BRL - Below Reporting Limit





**XENCO Laboratories**  
 Atlanta, Boca Raton, Corpus Christi, Dallas  
 Houston, Miami, Odessa, Philadelphia  
 Phoenix, San Antonio, Tampa

Document Title: Sample Receipt Checklist  
 Document No.: SYS-SRC  
 Revision/Date: No. 01, 5/27/2010  
 Effective Date: 6/1/2010 Page 1 of 1

**Prelogin / Nonconformance Report - Sample Log-In**

Client: Southern Union Gas  
 Date/Time: 9/29/11 8:46  
 Lab ID #: 428605  
 Initials: AH

**Sample Receipt Checklist**

1. Samples on ice?	Blue	<u>Water</u>	No	
2. Shipping container in good condition?	<u>Yes</u>	No	None	
3. Custody seals intact on shipping container (cooler) and <u>bottles?</u>	<u>Yes</u>	No	N/A	
4. Chain of Custody present?	<u>Yes</u>	No		
5. Sample instructions complete on chain of custody?	<u>Yes</u>	No		
6. Any missing / extra samples?	Yes	<u>No</u>		
7. Chain of custody signed when relinquished / received?	<u>Yes</u>	No		
8. Chain of custody agrees with sample label(s)?	<u>Yes</u>	No		
9. Container labels legible and intact?	<u>Yes</u>	No		
10. Sample matrix / properties agree with chain of custody?	<u>Yes</u>	No		
11. Samples in proper container / bottle?	<u>Yes</u>	No		
12. Samples properly preserved?	<u>Yes</u>	No	N/A	
13. Sample container intact?	<u>Yes</u>	No		
14. Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
15. All samples received within sufficient hold time?	<u>Yes</u>	No		
16. Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
17. VOC sample have zero head space?	<u>Yes</u>	No	N/A	
18. Cooler 1 No.	Cooler 2 No.	Cooler 3 No.	Cooler 4 No.	Cooler 5 No.
lbs   1.5 °C	lbs   °C	lbs   °C	lbs   °C	lbs   °C

**Nonconformance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that apply:
- Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
  - Initial and Backup Temperature confirm out of temperature conditions
  - Client understands and would like to proceed with analysis

# Analytical Report 433033

for

## Southern Union Gas Services- Monahans

**Project Manager: Rose Slade**

**House Compressor Station**

**20-DEC-11**

Collected By: Client



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**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

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Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code: AZ000989): Arizona (AZ0758)



20-DEC-11

Project Manager: **Rose Slade**  
**Southern Union Gas Services- Monahans**  
1507 W. 15th Street  
Monahans, TX 79756

Reference: XENCO Report No: **433033**  
**House Compressor Station**  
Project Address: Lea County, NM

**Rose Slade:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 433033. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 433033 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste; sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

---

**Brent Barron II**

Odessa Laboratory Manager

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**Sample Cross Reference 433033**



**Southern Union Gas Services- Monahans, Monahans, TX**  
House Compressor Station

<b>Sample Id</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Sample Depth</b>	<b>Lab Sample Id</b>
MW-1	W	12-01-11 10:25		433033-001
MW-2	W	12-01-11 10:55		433033-002



## CASE NARRATIVE

*Client Name: Southern Union Gas Services- Monahans*  
*Project Name: House Compressor Station*



*Project ID:*  
*Work Order Number: 433033*

*Report Date: 20-DEC-11*  
*Date Received: 12/09/2011*

---

**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None



# Certificate of Analysis Summary 433033

## Southern Union Gas Services-Monahans, Monahans, TX



Project Name: House Compressor Station

Project Id:

Contact: Rose Slade

Project Location: Lea County, NM

Date Received in Lab: Fri Dec-09-11 12:30 pm

Report Date: 20-DEC-11

Project Manager: Brent Barron II

Analysis Requested	Lab Id: Field Id: Depth: Matrix: Sampled:	433033-001 MW-1 WATER Dec-01-11 10:25	433033-002 MW-2 WATER Dec-01-11 10:55
<b>Anions by E300</b>	<b>Extracted:</b> <b>Analyzed:</b> <b>Units/RL:</b>	Dec-14-11 12:18 mg/L RL 312 12.5	Dec-14-11 12:18 mg/L RL 247 12.5
<b>BTEX by EPA 8021B</b>	<b>Extracted:</b> <b>Analyzed:</b> <b>Units/RL:</b>	Dec-09-11 15:45 Dec-10-11 07:30 mg/L RL ND 0.00100 ND 0.00200 ND 0.00100 ND 0.00200 ND 0.00100 ND 0.00100 ND 0.00100 ND 0.00100	Dec-09-11 15:45 Dec-10-11 07:53 mg/L RL ND 0.00100 ND 0.00200 ND 0.00100 ND 0.00200 ND 0.00100 ND 0.00100 ND 0.00100
Chloride			
Benzene			
Toluene			
Ethylbenzene			
m_p-Xylenes			
o-Xylene			
Total Xylenes			
Total BTEX			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Brent Barron II  
Odessa Laboratory Manager

## Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
  - B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
  - D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
  - E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
  - F** RPD exceeded lab control limits.
  - J** The target analyte was positively identified below the quantitation limit and above the detection limit.
  - U** Analyte was not detected.
  - L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
  - H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
  - K** Sample analyzed outside of recommended hold time.
  - JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- \* Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

**MDL** Method Detection Limit      **SDL** Sample Detection Limit      **LOD** Limit of Detection

**PQL** Practical Quantitation Limit      **MQL** Method Quantitation Limit      **LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

+ Outside XENCO's scope of NELAC Accreditation.      ^ NELAC or State program does not offer Accreditation at this time.

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# Form 2 - Surrogate Recoveries

Project Name: House Compressor Station

Work Orders : 433033,

Project ID:

Lab Batch #: 876848

Sample: 433033-001 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 12/10/11 07:30

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0285	0.0300	95	80-120	
4-Bromofluorobenzene	0.0276	0.0300	92	80-120	

Lab Batch #: 876848

Sample: 433033-002 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 12/10/11 07:53

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0301	0.0300	100	80-120	
4-Bromofluorobenzene	0.0258	0.0300	86	80-120	

Lab Batch #: 876848

Sample: 615303-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 12/10/11 05:17

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0266	0.0300	89	80-120	

Lab Batch #: 876848

Sample: 615303-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 12/10/11 03:47

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0299	0.0300	100	80-120	
4-Bromofluorobenzene	0.0280	0.0300	93	80-120	

Lab Batch #: 876848

Sample: 615303-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 12/10/11 04:09

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0276	0.0300	92	80-120	
4-Bromofluorobenzene	0.0261	0.0300	87	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B

All results are based on MDL and validated for QC purposes.



# Form 2 - Surrogate Recoveries

Project Name: House Compressor Station

Work Orders : 433033,

Lab Batch #: 876848

Sample: 433031-001 S / MS

Project ID:

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 12/10/11 09:44

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0263	0.0300	88	80-120	

Lab Batch #: 876848

Sample: 433031-001 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 12/10/11 10:06

## SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0301	0.0300	100	80-120	
4-Bromofluorobenzene	0.0275	0.0300	92	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



Project Name: House Compressor Station

Work Order #: 433033

Analyst: ASA

Lab Batch ID: 876848

Sample: 615303-1-BKS

Date Prepared: 12/09/2011

Batch #: 1

Project ID:

Date Analyzed: 12/10/2011

Matrix: Water

Units: mg/L

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
BTEX by EPA 8021B											
Benzene	<0.00100	0.100	0.116	116	0.100	0.112	112	4	70-125	25	
Toluene	<0.00200	0.100	0.115	115	0.100	0.112	112	3	70-125	25	
Ethylbenzene	<0.00100	0.100	0.118	118	0.100	0.118	118	0	71-129	25	
m,p-Xylenes	<0.00200	0.200	0.228	114	0.200	0.229	115	0	70-131	25	
o-Xylene	<0.00100	0.100	0.115	115	0.100	0.115	115	0	71-133	25	

Analyst: BRB

Lab Batch ID: 877276

Sample: 877276-1-BKS

Date Prepared: 12/14/2011

Batch #: 1

Date Analyzed: 12/14/2011

Matrix: Water

Units: mg/L

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Anions by E300											
Chloride	<0.500	10.0	10.9	109	10.0	11.0	110	1	80-120	20	

Relative Percent Difference RPD = 200\*(C-F)/(C+F)  
Blank Spike Recovery [D] = 100\*(C)/[B]  
Blank Spike Duplicate Recovery [G] = 100\*(F)/[E]  
All results are based on MDL and Validated for QC Purposes



# Form 3 - MS Recoveries



Project Name: House Compressor Station

Work Order #: 433033

Lab Batch #: 877276

Date Analyzed: 12/14/2011

QC- Sample ID: 433232-001 S

Date Prepared: 12/14/2011

Batch #: 1

Project ID:

Analyst: BRB

Matrix: Water

Reporting Units: mg/L

### MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	82.0	200	285	102	80-120	

Matrix Spike Percent Recovery [D] =  $100 \cdot (C-A) / B$   
 Relative Percent Difference [E] =  $200 \cdot (C-A) / (C+B)$   
 All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



# Form 3 - MS MSD Recoveries

Project Name: House Compressor Station

Work Order #: 433033

Lab Batch ID: 876848

Date Analyzed: 12/10/2011

Reporting Units: mg/L

Project ID:

QC-Sample ID: 433031-001 S

Batch #: 1 Matrix: Water

Date Prepared: 12/09/2011 Analyst: ASA

Analytes	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00100	0.100	0.105	105	0.100	0.110	110	5	70-125	25	
Toluene	<0.00200	0.100	0.105	105	0.100	0.110	110	5	70-125	25	
Ethylbenzene	<0.00100	0.100	0.109	109	0.100	0.114	114	4	71-129	25	
m p-Xylenes	<0.00200	0.200	0.210	105	0.200	0.223	112	6	70-131	25	
o-Xylene	<0.00100	0.100	0.105	105	0.100	0.112	112	6	71-133	25	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B  
Relative Percent Difference RPD = 200\*(C-F)/(C+F)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E



# Sample Duplicate Recovery



**Project Name: House Compressor Station**

Work Order #: 433033

Lab Batch #: 877276

Project ID:

Date Analyzed: 12/14/2011 12:18

Date Prepared: 12/14/2011

Analyst: BRB

QC- Sample ID: 433232-001 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

## SAMPLE / SAMPLE DUPLICATE RECOVERY

Anions by E300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	82.0	83.6	2	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit





XENCO Laboratories  
 Atlanta, Boca Raton, Corpus Christi, Dallas  
 Houston, Miami, Odessa, Philadelphia  
 Phoenix, San Antonio, Tampa

Document Title: Sample Receipt Checklist  
 Document No.: SYS-SRC  
 Revision/Date: No. 01, 5/27/2010  
 Effective Date: 6/1/2010 Page 1 of 1

**Prelogin / Nonconformance Report - Sample Log-In**

Client: Basin Env.  
 Date/Time: 12.9.11 12:30  
 Lab ID #: 433033  
 Initials: AE

**Sample Receipt Checklist**

1. Samples on ice?	Blue	<del>Water</del>	No	
2. Shipping container in good condition?	Yes	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	N/A	
4. Chain of Custody present?	Yes	No		
5. Sample instructions complete on chain of custody?	Yes	No		
6. Any missing / extra samples?	Yes	No		
7. Chain of custody signed when relinquished / received?	Yes	No		
8. Chain of custody agrees with sample label(s)?	Yes	No		
9. Container labels legible and intact?	Yes	No		
10. Sample matrix / properties agree with chain of custody?	Yes	No		
11. Samples in proper container / bottle?	Yes	No		
12. Samples properly preserved?	Yes	No	N/A	
13. Sample container intact?	Yes	No		
14. Sufficient sample amount for indicated test(s)?	Yes	No		
15. All samples received within sufficient hold time?	Yes	No		
16. Subcontract of sample(s)?	Yes	No	N/A	
17. VOC sample have zero head space?	Yes	No	N/A	
18. Cooler 1 No.	Cooler 2 No.	Cooler 3 No.	Cooler 4 No.	Cooler 5 No.
lbs °C	lbs °C	lbs °C	lbs °C	lbs °C

**Nonconformance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that apply:
- Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.3.3.1.a.1.
  - Initial and Backup Temperature confirm out of temperature conditions
  - Client understands and would like to proceed with analysis