AP-78 Pride Energy Reserve Pit #15 - South Fork Lakes Unit

Nov 2004 spud date
Mar 2005 well completed
Sept 2006 C-104 form to allow transport of product
Aug 2007 pit closure form submitted C-144
Dec 2007 revised C-144 submitted
Jan 2008 initial soil and groundwater sampling
Feb 2008 Abatement Plan required
April 2008 Investigation and Remediation Plan submitted
April 2008 plan approved
May 2008 monitoring begins

"brine from the pit migrated through the vadose zone to groundwater via saturated flow during operation of drilling pit or during drying process"

groundwater abatement plan -- pump and use (basically pump out the salty water and take it somewhere else)

estimated linear groundwater velocity 9-90 ft/yr -- chloride mass traveled 150 feet downgradient from pit between Nov 2004 and May 2008 or 40 ft/yr (calculated by consultant for oil company).

monitoring well data 3930 mg/l Cl and 9820 mg/l TDS
SE groundwater flow direction
background data from a windmill pond - 167 mg/l Cl and 1210 mg/l TDS

soil samples at 8 ft: 1600 to 4800 mg/kg Cl
soil samples at 14 ft: 1500 to 4200 mg/kg Cl
soil samples at 20 ft: 450 to 2600 mg/kg Cl
soil samples at 30 ft: 300 to 800 mg/kg Cl

"in the first boring, flowing sands under lithostatic and/or hydrostatic pressure were observed below 51 ft bgs where a semi-confining sandstone/quartzite layer was encountered, therefore all subsequent borings were terminated upon reaching the sandstone/quartize layer. Aside from the inability to collect groundwater samples below this depth, the termination of each boring at approximately 51 ft bgs was also due to concerns that we could not create enough pressure to hold down the flowing sands and drilling deeper could compromise our ability to create a proper borehole seal." -- from the Stage 2 Abatement Plan

GB

AP-078

Abatement Plan

DATE:
2008

RECEIVED
2008 OCT 3 PM 1 48

TRIDENT ENVIRONMENTAL

USPS Delivery Confirmation
420 87505 9101 0105 2129 7451 3319 77

October 1, 2008

Mr. Glenn von Gonten
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

RE: Stage 2 Abatement Plan (AP-78)
South Four Lakes #15 Site
T12S-R34E-Section 2, Unit Letter G
Lea County, New Mexico

Dear Mr. von Gonten

On behalf of Pride Energy Company, enclosed is one hard copy and one electronic copy of the Stage 2 Abatement Plan for the above-referenced site.

I look forward to working with you on this project. If you have any questions please call me at 432-638-8740 or Matt Pride at 918-524-9200.

Sincerely,

Gilbert Van Deventer, REM, PG
Trident Environmental

cc: Matt Pride (Pride Energy Co., Tulsa, OK)
Chris Williams (NMOCD -District 1, Hobbs, NM)

AP-078

Abatement Plan

DATE:
2008

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1.0 EXECUTIVE SUMMARY

On May 29, 2008, Trident Environmental performed a soil boring program at the South Four Lakes #15 well site to delineate the vertical and horizontal extent of groundwater impairment caused by the former drilling pit in accordance with the Stage 1 Abatement Plan (AP-78). Groundwater samples were collected from the hollow-stem drilled borings for chloride analysis and specific conductivity measurements. Groundwater samples were also collected from monitoring well MW-1 on January 23, May 13, and June 20, 2008, for laboratory analysis.

Our findings during the soil boring program and groundwater monitoring activities are discussed below; followed by proposed recommendations.

- Based on the soil boring data obtained by Elke Environmental in January 2008 and Trident Environmental in May 2008 the chloride impact to the vadose zone is limited to within the perimeter of the former drilling pit. The greatest mass of chloride in the vadose zone was observed at the northeast corner and southwest corner of the pit.
- Based on the soil sampling data, brine from the pit migrated through the vadose zone to ground water via saturated flow during operation of the drilling pit or sometime during the drying process. The uniform decline of chloride concentrations observed from about 20 feet below grade to the water table is due to dilution of the migrating brine by less saline ground water residing within the capillary fringe. Low porosity in the indurated sandy caliche at these depths may also contribute to lower chloride measurements because it retains a smaller mass of brine relative to the more unconsolidated soils above which exhibit a higher porosity.
- Chloride and total dissolved solids (TDS) concentrations in groundwater at monitoring well MW-1, and soil borings B-1, B-3, and B-4 exceeded Water Quality Control Commission (WQCC) standards. The highest chloride (6,180 mg/L) and TDS (12,500 mg/L) levels were at MW-1 which is adjacent to the downgradient (southeast) corner of the former drilling pit. Horizontal dispersion of the chloride and TDS in groundwater does not extend beyond approximately 150 feet downgradient (southeast) of the southeast corner of the pit as evidenced by the results of boring B-2 where background chloride and TDS levels were observed in groundwater.
- One 4-inch recovery/monitoring well (RW-1) located near the center of mass of groundwater chloride, but outside of the well anchors and deadman zone, is proposed to define the vertical extent of groundwater impairment at the site.
- The proposed groundwater remedy is a short-term, demand-based pump-and-use strategy that recovers brackish groundwater from the proposed recovery well (RW-1) as water supply for drilling oil and gas wells in the area if TDS concentrations are above 3,000 mg/L in RW-1.
- The proposed drilling pit excavation closure is construction of an infiltration barrier to eliminate the migration of residual brines from the vadose zone to groundwater
- Regulated hydrocarbons are not present in groundwater or the vadose zone

FIGURES

FIGURE 1	SITE LOCATION MAP (USGS TOPOGRAPHIC MAP)
FIGURE 2	SITE AERIAL PHOTO MAP (2005)
FIGURE 3	CHLORIDE CONCENTRATIONS IN VADOSE ZONE
FIGURE 4	CHLORIDE AND TDS CONCENTRATIONS IN GROUNDWATER
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APPENDICES

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APPENDIX B	SOIL BORING LITHOLOGIC LOGS
APPENDIX C	LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION
APPENDIX D	MONITORING WELL SAMPLING DATA FORMS

2.0 SITE DESCRIPTION

2.1 *LOCATION*

The South Four Lakes #15 well site is located on State land in Township 12 South, Range 34 East, Section 2, and Unit Letter G (N 33° 18' 30.5", W 103° 28' 48.2"). To access the site:

1. Drive west on Highway 380 ten miles from the intersection of Highway 380 and Highway 206 in Tatum, New Mexico.
2. At mile marker 217 turn right, proceed through cattle guard, and continue north about 0.35 miles on the dirt lease road.
3. Turn left and proceed 0.1 mile west along south side of tank battery and then north 0.1 miles to the site (see Figure 1).

Figure 2 is a recent (2005) aerial photo showing the general area and access to the site. A photograph showing most of the site facing southeast is included on the front cover of this report.

2.2 *DETAILED SITE MAP*

As shown in Figure 3, the current environs at the site include:

- an active gas well (API # 30-025-36882)
- an open drilling pit excavation varying from 2-ft to 6-ft deep below ground surface
- a closed deep trench burial pit containing the former contents of the drilling pit
- five soil borings (TP-1 through TP-5) that were sampled and then plugged in January 2008
- four soil borings (B-1 through B-4) that were sampled and then plugged on May 29, 2008
- One monitoring well (MW-1) located near the southeast edge of the former drilling pit.
- Four deadman anchors utilized for well work over operations

2.3 *NEARBY WELLS AND WATER SUPPLIES*

There are no surface water bodies or water wells within 1,000 feet of the site. The nearest surface water body is a livestock watering pond fed by a windmill well (NMOSE Permit # L-0656) located approximately 0.4 miles west (see Figure 2).

The nearest water well is an out of service water supply well (NMOSE Permit # L-3005) located approximately 0.3 miles north (Figure 2).

The South Four Lakes tank battery is located approximately 400 feet south of the South Four Lakes #15 well site (see Figure 2). There are several monitoring wells and a groundwater remediation system located at the tank battery site (1R-204).

2.4 *SITE HISTORY*

Pertinent events that occurred at the site are listed chronologically in Table 1 below.

Table 1: Site History

Date	Description
November 8, 2004	Well spudded.
September 8, 2006	C-104 filed to allow for transport of product
August 24, 2007	C-144 pit closure form approved by NMOCD
December 10, 2007	Revised C-144 submitted by Elke Environmental approved by NMOCD
January 8-21, 2008	Initial soil and groundwater sampling activities performed by Elke Environmental.
January 30, 2008	C-141 release notification form submitted by Elke Environmental
February 12, 2008	NMOCD requires submission of Abatement Plan and assigns AP #78
March 27, 2008	Initial site visit conducted by Trident Environmental
April 7, 2008	Investigation and Remediation Plan (IRP) submitted to NMOCD
April 16, 2008	NMOCD verbally acknowledges IRP to satisfy Abatement Plan requirements
May 13, 2008	Groundwater sampling and monitoring event performed at site (MW-1)
May 29, 2008	Soil boring program initiated to define vertical and horizontal extent of any impairment to groundwater
June 19, 2008	Second quarter groundwater sampling and monitoring event performed at site (MW-1)
September 9, 2008	Third quarter groundwater sampling and monitoring event performed at site (MW-1)

3.0 PROCEDURES – SOIL BORING AND GROUNDWATER INVESTIGATION

On May 29, 2008, Trident Environmental mobilized to the site to perform soil boring activities. The drilling contractor, Atkins Engineering (Roswell NM) utilized a Mobile 58 drilling rig and a 7 ¼- inch O.D. hollow stem augers to advance four soil borings at the locations depicted in Figure 2. Photographs depicting the soil and groundwater investigation are included in Appendix A. The following procedures were performed at each boring location:

1. Lithologic descriptions of the soils encountered in each boring were recorded in a field log book.
2. Groundwater samples were collected at various depths through the augers using a trip bailer. Specific conductance (SC), pH, and temperature of these samples were measured in the field with a Hanna Combo meter (Model No. HI 98130) to determine the vertical and horizontal extent of any groundwater impairment and to provide guidance in locating additional boreholes. Because of slow recharge of groundwater through the augers, especially at shallower depths as drilling proceeded, there was not enough sample volume collected for laboratory analysis, except at the termination of each boring.
3. At the bottom of each boring, groundwater samples were obtained through the augers using the trip bailer and submitted to the laboratory analysis for SC, chloride, and total dissolved solids (TDS) analysis to correlate field measurements with laboratory measurements. Groundwater samples were submitted to XENCO Laboratories (Odessa TX).
4. In the first boring, flowing sands under lithostatic and/or hydrostatic pressure were observed below 51 feet bgs where a semi-confining sandstone/quartzite layer was encountered, therefore all subsequent borings were terminated upon reaching the sandstone/quartize layer. Aside from the inability to collect groundwater samples below this depth, the termination of each boring at approximately 51 feet bgs was also due to concerns that we could not create enough pressure to hold down the flowing sands and drilling deeper could compromise our ability to create a proper borehole seal.
5. On June 20, 2008 and September 9, 2008, Rozanne Johnson (Arc Environmental) performed the groundwater sampling event at monitoring well MW-1.

Since regulated hydrocarbons were not detected in any groundwater samples from MW-1 or from the deep soil samples from within the former drilling pit, samples from the auger borings were not submitted for analysis of regulated hydrocarbons. In addition, there were no observations (visual or odor) of hydrocarbons during the soil boring activities.

4.0 RESULTS

4.1 *SOIL BORING DELINEATION PROGRAM*

The first boring (B-1) was completed approximately 100 feet downgradient of existing monitoring well MW-1, which is located near the southeast corner of the former drilling pit. Since depth discrete groundwater specific conductivity (SC) readings from this boring suggested readings above background conditions, a second boring (B-2) was installed another 75 feet downgradient where conductivity readings indicated background levels. A third (B-3) and fourth (B-4) soil boring were installed approximately 25 feet south and 25 feet east, respectively, of the former drilling pit to horizontally delineate conditions closer to the targeted source. The location of each soil boring is shown on Figures 3 and 4.

Generally, the first few feet of subsurface soils consisted of a clayey loam. Below this layer, silty clayey fine sand and fine sands with interbeds of caliche and indurated sands were encountered until a depth of approximately 25 feet where groundwater was reached. Below this depth fine sands continued to a depth of approximately 51 feet where a very hard sandstone/quartzite layer was encountered. Below the approximately 1- to 2-foot thick sandstone/quartzite layer, loose and unconsolidated fine-grained flowing sands were encountered. Groundwater was encountered at approximately 25 feet bgs. A more detailed description of each soil boring is provided on the lithologic logs in Appendix B. Laboratory analysis of chloride concentrations for each soil sample is summarized in Table 2 below, depicted on Figure 2, and shown on the individual lithologic logs in Appendix B. Field and laboratory analysis of groundwater samples from the soil boring program are summarized in Table 3 below and depicted on Figure 3.

Table 2
Soil Sample Chloride Analyses from Borings

Boring ID	Depth (ft bgs)	Chloride Concentration (mg/kg)
B-1	5'	<5.0
	10'	2,650
	15'	86.4
	20'	38.2
	25'	30.2
B-2	5'	235
	10'	1,090
	15'	513
	20'	408
	25'	371
B-3	5'	590
	10'	2,230
	15'	230
	20'	1,730
	25'	851
B-4	5'	1,400
	10'	72.7
	15'	59.8
	20'	82.7
	25'	80.6

Table 3
Groundwater Analyses from Soil Borings

Boring ID	Field Measured Values		Lab Analyzed Values	
	Depth (ft bgs)	SC (mS/cm)	Chloride (mg/L)	TDS (mg/L)
B-1	38	2.36	---	---
	48	3.44	1,040	2,210
	58	1.75	---	---
B-2	37	0.84	---	---
	48	0.80	56.0	418
B-3	43	10.00	---	---
	51	5.72	1,450	3,270
	52	2.26	---	---
B-4	38	9.74	---	---
	50	13.04	4,550	7,790

--- Indicates insufficient water sample volume for lab analysis

The laboratory analytical reports and chain of custody documentation for the soil and groundwater sampling are in Appendix C.

4.2 *GROUNDWATER MONITORING WELL SAMPLING*

The recent and historic groundwater chemistry and groundwater elevation measurements at MW-1 are summarized in Table 4. The most recent chloride and TDS concentrations have decreased since the previous sampling event conducted in June. There are no indications of hydrocarbon impact to the groundwater as concentrations have been below WQCC standards and laboratory method detection limits for each constituent of BTEX. The laboratory analytical reports and chain of custody documentation for the most recent sampling event are in Appendix C. The well sampling data forms are included in Appendix D.

Table 4
Groundwater Analyses from Monitoring Well MW-1

Sample Date	Depth to Groundwater (feet BTOC)	SC (mS/cm)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)
01/23/08	29.1	---	**3,930**	---	---	---	---	---
03/13/08	26.25	12.34	**4,150**	**9,820**	<0.001	<0.002	<0.001	<0.003
06/20/08	26.46	14.05	**6,180**	**12,500**	---	---	---	---
09/09/08	26.55	13.40	**4,850**	**9,700**	<0.001	<0.001	<0.001	<0.003
WQCC Standards			250	1,000	0.01	0.75	0.75	0.62

--- Indicates sample not analyzed for this constituent.
Values in boldface type indicate concentrations exceed New Mexico Water Quality Commission (WQCC) standards.

5.0 CONCLUSIONS

Based on the soil boring data obtained by Elke Environmental in January 2008 (TP-1 through TP-5) and Trident Environmental in May 2008 (B-1 through B-4) the chloride impact to the vadose zone is limited to within the perimeter of the former drilling pit. The greatest chloride mass was observed at the TP-2 (northeast corner) and TP-3 (southwest corner) of the pit.

Based on the soil sampling data, brine from the pit migrated through the vadose zone to ground water via saturated flow during operation of the drilling pit or sometime during the drying process. The uniform decline of chloride concentrations observed from about 20 feet below grade to the water table is due to dilution of the migrating brine by less saline ground water residing within the capillary fringe. Low porosity in the indurated sandy caliche at these depths may also contribute to lower chloride measurements because it retains a smaller mass of brine relative to the more unconsolidated soils above which exhibit a higher porosity. The soil borings partially penetrated a very hard sandstone/quartzite layer at 51-feet bgs. This well-cemented horizon creates a permeability barrier between the uppermost portion of the Ogallala Aquifer and the lower section of the aquifer which is also reflected by the decreased SC levels below this layer (Table 3).

Chloride and TDS concentrations in groundwater at monitoring well MW-1, and soil borings B-1, B-3, and B-4 exceeded WQCC standards. The highest chloride (6,180 mg/L) and TDS (12,500 mg/L) levels were at MW-1 which is expected due to it's immediately downgradient location with respect to the former drilling pit. Horizontal dispersion of the chloride and TDS in groundwater does not exceed beyond approximately 150 feet downgradient (southeast) of the southeast corner of the pit as evidenced by the results of boring B-2 where background chloride and TDS levels were observed in groundwater.

As cited by Fetter (*Applied Hydrogeology*, 2nd Edition, Table 4.5, p. 80) and Freeze and Cherry (*Groundwater*, 1st Edition, Table 2.3, p. 29) hydraulic conductivity values at the site would likely range from approximately 10^{-3} to 10^{-2} cm/sec (3 to 30 ft/day) based on the lithologic description of the upper portion of the Ogallala Formation (fine to medium sand and caliche) which was penetrated by the soil borings. With a porosity of 0.25 and hydraulic gradient of 0.002 ft/ft that would correspond to an estimated average linear groundwater velocity ranging from approximately 0.024 to 0.24 ft/day (9 to 90 ft/year) according Darcy's Law. Assuming the center of chloride mass has traveled approximately 150 ft downgradient from the former drilling pit since November 2004 (well spudding) that would correspond to a linear velocity of about 40 ft/yr.

6.0 STAGE 2 ABATEMENT PLAN

Data collected to date indicates chloride/TDS-impaired groundwater exists beneath the site and chloride concentrations above 1,000 mg/kg exist in the vadose zone below the former drilling pit. The suspected source of the chloride in the vadose zone and groundwater at the site is the former drilling pit. The following remedies to the groundwater and vadose zone are proposed:

6.1 *GROUNDWATER REMEDY*

Pride Energy proposes to perform the following corrective actions for groundwater remedy:

1. Conduct one additional quarterly groundwater sampling event
2. Evaluate the groundwater monitoring and sampling data and in April 2009 provide an annual report to NMOCD with additional recommendations.
3. After NMOCD approval of the Stage 1 and 2 Abatement Plan:
   a. Use mud rotary drilling and install RW-1 approximately 20 feet south of MW-1 (outside of the deadman zone) to further define the vertical magnitude of groundwater impairment and to serve as a supply well for the proposed pump-and-use remedy. The depth of this well will not go beyond 100 ft bgs (expected base of Ogallala Fm.) and will terminate when field conditions (specific conductivity readings) indicate declining chloride levels with depth.
   b. Perform an aquifer test on RW-1 or use pump test data from comparable wells in the vicinity to provide data that will assist in creating a better estimate the rate of natural groundwater restoration and the rate of contaminant migration
   c. Implement an on-demand, pump-and-use groundwater restoration program in which the proposed recovery well provides water for nearby oil and gas drilling operations if TDS concentrations are above 3,000 mg/L in RW-1. Pride will provide additional details regarding the pump-and-use strategy after completion and testing of RW-1.
4. In April of 2010, provide an annual groundwater monitoring report to NMOCD that evaluate the data from the proposed drilling of RW-1, pumping and groundwater sampling program and propose recommendations for:
   a. a natural restoration/monitoring groundwater remedy or
   b. continuation of a pump-and-use groundwater restoration strategy

6.2 *VADOSE ZONE REMEDY*

Pride Energy proposes to perform the following corrective actions for the vadose zone:

1. Expand the existing pit excavation as necessary to create a 3-foot wide area where subsurface impact of pit leakage does not exist (Figure 5, Step 1).
2. Use the material from the pit expansion or deepen the excavation as necessary to create a sloping surface on the bottom of the excavation as shown in Figure 5 (Step 2).
3. Over the sloping surface place sheets of 20-mil reinforced liner material that meet NMOCD specifications for pit liners. These shingles are laid to shed any infiltrated water from the pit area to native soil and to prevent any upward migration of chloride into the root zone.
4. Backfill the excavation with clean material, beginning with caliche and/or sand and finishing the top of the backfill with about 6-inches of soil that is capable of supporting native vegetation.
5. The new surface grade is a 3-5% slope that drains to a "ponding area". The final grade of the surface over the former pit should blend with the surroundings as much as possible. Figure 5 (Step 3), which shows a 5% slope that resembles a large "pitchers mound", is one example of a final surface that allows for drainage of storm water away from the former drilling pit.
6. Seed the reclaimed pit with a mixture approved by the State Land Office and monitor for growth.

6.3 *SCHEDULE OF ACTIVITIES*

Pride Energy will perform one additional groundwater monitoring and sampling event at MW-1 to complete a full year of quarterly monitoring at the site. Groundwater samples will be submitted to the laboratory for the following analyses:

- Chloride (EPA Method SM4500B – formerly 325.1)
- TDS (EPA Method SM2540C – formerly Method 160.1)

Upon OCD approval of the proposed abatement activities, Pride will commence the proposed work elements.

FIGURES

AP-078

Abatement Plan

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2008

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Abatement Plan

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2008

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2008

APPENDIX A

PHOTODOCUMENTATION

AP-078

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DATE:
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APPENDIX B

SOIL BORING LITHOLOGIC LOGS

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DATE:
2008

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Abatement Plan

DATE:
2008

APPENDIX C

LABORATORY ANALYTICAL REPORTS

AND

CHAIN-OF-CUSTODY DOCUMENTATION

Analytical Report 304935

for

Pride Energy Company

Project Manager: Matt Pride

Pride Energy Company

South Four Lakes #15

03-JUN-08

12600 West I-20 East Odessa, Texas 79765

Texas certification numbers:
Houston, TX T104704215

Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429

South Carolina certification numbers:
Norcross(Atlanta), GA 98015

North Carolina certification numbers:
Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta

ENVIRONMENTAL LAB OF

03-JUN-08

Project Manager: **Matt Pride**
Pride Energy Company
P.O. Box 701950

Tulsa, OK 74170

Reference: XENCO Report No: **304935**
Pride Energy Company
Project Address: T12S-R34E, Section 2, Unit Letter G

Matt Pride:

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 304935. 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. 304935 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

Sample Cross Reference 304935

Pride Energy Company, Tulsa, OK

Pride Energy Company

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
B-1 (5')	S	May-29-08 07:45		304935-001
B-1 (10')	S	May-29-08 07:50		304935-002
B-1 (15')	S	May-29-08 07:55		304935-003
B-1 (20')	S	May-29-08 08:02		304935-004
B-1 (25')	S	May-29-08 08:11		304935-005
B-2 (5')	S	May-29-08 10:50		304935-006
B-2 (10')	S	May-29-08 10:53		304935-007
B-2 (15')	S	May-29-08 11:00		304935-008
B-2 (20')	S	May-29-08 11:10		304935-009
B-2 (25')	S	May-29-08 11:15		304935-010
B-3 (5')	S	May-29-08 13:00		304935-011
B-3 (10')	S	May-29-08 13:08		304935-012
B-3 (15')	S	May-29-08 13:14		304935-013
B-3 (20')	S	May-29-08 13:22		304935-014
B-3 (25')	S	May-29-08 13:25		304935-015
B-4 (5')	S	May-29-08 15:33		304935-016
B-4 (10')	S	May-29-08 15:38		304935-017
B-4 (15')	S	May-29-08 15:41		304935-018
B-4 (20')	S	May-29-08 16:50		304935-019
B-4 (25')	S	May-29-08 17:00		304935-020

Certificate of Analysis Summary 304935

Pride Energy Company, Tulsa, OK

Project Name: Pride Energy Company

Project Id: South Four Lakes #15
Contact: Matt Pride
Project Location: T12S-R34E, Section 2, Unit Letter G

Date Received in Lab: Sat May-31-08 01:05 pm
Report Date: 03-JUN-08
Project Manager: Brent Barron, II

Analysis Requested	*Lab Id:*	304935-001		304935-002		304935-003		304935-004		304935-005		304935-006	
	Field Id:	B-1 (5')		B-1 (10')		B-1 (15')		B-1 (20')		B-1 (25')		B-2 (5')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-29-08 07:45		May-29-08 07:50		May-29-08 07:55		May-29-08 08:02		May-29-08 08:11		May-29-08 10:50	
Inorganic Anions by EPA 300	*Extracted:*												
	Analyzed:	Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		ND	5.00	2650	25.0	86.4	25.0	38.2	25.0	30.2	25.0	235	25.0

Brent Barron
Odessa Laboratory Director

Certificate of Analysi ımmary 304935

Pride Energy Company, Tulsa, OK

Project Name: Pride Energy Company

Project Id: South Four Lakes #15
Contact: Matt Pride
Project Location: T12S-R34E, Section 2, Unit Letter G

Date Received in Lab: Sat May-31-08 01:05 pm
Report Date: 03-JUN-08
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	304935-007		304935-008		304935-009		304935-010		304935-011		304935-012	
	Field Id:	B-2 (10')		B-2 (15')		B-2 (20')		B-2 (25')		B-3 (5')		B-3 (10')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-29-08 10:53		May-29-08 11:00		May-29-08 11:10		May-29-08 11:15		May-29-08 13:00		May-29-08 13:08	
Inorganic Anions by EPA 300	*Extracted:*												
	Analyzed:	Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1090	50.0	513	25.0	408	25.0	371	50.0	590	50.0	2230	50.0

Brent Barron
Odessa Laboratory Director

Certificate of Analysi ımmary 304935

Pride Energy Company, Tulsa, OK

Project Name: Pride Energy Company

Project Id: South Four Lakes #15
Contact: Matt Pride
Project Location: T12S-R34E, Section 2, Unit Letter G

Date Received in Lab: Sat May-31-08 01:05 pm
Report Date: 03-JUN-08
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	304935-013		304935-014		304935-015		304935-016		304935-017		304935-018	
	Field Id:	B-3 (15')		B-3 (20')		B-3 (25')		B-4 (5')		B-4 (10')		B-4 (15')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-29-08 13:14		May-29-08 13:22		May-29-08 13:25		May-29-08 15:33		May-29-08 15:38		May-29-08 15:41	
Inorganic Anions by EPA 300	*Extracted:*												
	Analyzed:	Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45		Jun-03-08 12:45	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		230	25.0	1730	50.0	851	25.0	1400	25.0	72.7	25.0	59.8	25.0

Brent Barron
Odessa Laboratory Director

Certificate of Analysi ımmary 304935

Pride Energy Company, Tulsa, OK

Project Name: Pride Energy Company

Project Id: South Four Lakes #15
Contact: Matt Pride
Project Location: T12S-R34E, Section 2, Unit Letter G

Date Received in Lab: Sat May-31-08 01:05 pm
Report Date: 03-JUN-08
Project Manager: Brent Barron, II

Analysis Requested							
	Lab Id:	304935-019	304935-020				
	Field Id:	B-4 (20')	B-4 (25')				
	Depth:						
	Matrix:	SOIL	SOIL				
	Sampled:	May-29-08 16:50	May-29-08 17:00				
Inorganic Anions by EPA 300	***Extracted:***						
	Analyzed:	Jun-03-08 12:45	Jun-03-08 12:45				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		82.7 25.0	80.6 25.0				

Brent Barron
Odessa Laboratory Director

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 effect the recovery of the spike concentration. This condition could also effect 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 MQL(PQL) and above the SQL(MDL).

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.

* Outside XENCO'S scope of NELAC Accreditation

Blank Spike Recovery

Project Name: Pride Energy Company

Work Order #: 304935 **Project ID:** South Four Lakes #15

Lab Batch #: 724237 **Sample:** 724237-1-BKS **Matrix:** Solid

Date Analyzed: 06/03/2008 **Date Prepared:** 06/03/2008 **Analyst:** LATCOR

Reporting Units: mg/kg **Batch #:** 1

Inorganic Anions by EPA 300 Analytes	Blank Result [A]	BLANK /BLANK SPIKE RECOVERY STUDY Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	9.91	99	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.

Form 3 - MS Recoveries

Project Name: Pride Energy Company

Work Order #: 304935
Lab Batch #: 724237
Project ID: South Four Lakes #15
Date Analyzed: 06/03/2008
Date Prepared: 06/03/2008
Analyst: LATCOR
QC- Sample ID: 304935-001 S
Batch #: 1
Matrix: Soil
Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	ND	100	87.7	88	75-125	

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

Sample Duplicate Recovery

Project Name: Pride Energy Company

Work Order #: 304935

Lab Batch #: 724237 **Project ID:** South Four Lakes #15

Date Analyzed: 06/03/2008 **Date Prepared:** 06/03/2008 **Analyst:** LATCOR

QC- Sample ID: 304935-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	ND	ND	NC	20	

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

XENCO Laboratories / Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Pride Energy Company
Direct Invoice To: Matt Pride
Billing Address: P. O. Box 710950
City, State, Zip Code: Tulsa, OK 74170-1950
Telephone No: 918-524-9200
Fax No: 918-524-9292
Email Report to: mattp@pride-energy.com

Company Name: Trident Environmental
Project Manager: Gil Van Deventer
Address: P. O. Box 7624
City, State, Zip Code: Midland TX 79708-7624
Telephone No: 432-638-8740
Fax No: 413-403-9988
Email Report to: gil@trident-environmental.com

Project Name: Pride Energy Company
Project #: South Four Lakes #15
Project Location: T12S-R34E, Section 2, Unit Letter G
COC #: V125-053108-1

Sampler: Gil Van Deventer (Printed) — [signature] (Signature)

LAB # (lab use only) 301935	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice (4 oz glass)	Preservative: HNO3	Preservative: HCl (BTEX only)	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (Specify)	Analyze For: TPH 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K, Fl)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B	RCI	N.O.R.M.	Total Dissolved Solids (TDS)	SPLP 1312	Chloride	Total Fe and Mn	RUSH TAT (Pre-Schedule)	Standard TAT
1	B-1 (5')	05/29/08	0745	1	X									X														X			X
2	B-1 (10')	05/29/08	0750	1	X									X														X			X
3	B-1 (15')	05/29/08	0755	1	X									X														X			X
4	B-1 (20')	05/29/08	0802	1	X									X														X			X
5	B-1 (25')	05/29/08	0811	1	X									X														X			X
6	B-2 (5')	05/29/08	1050	1	X									X														X			X
7	B-2 (10')	05/29/08	1053	1	X									X														X			X
8	B-2 (15')	05/29/08	1100	1	X									X														X			X
9	B-2 (20')	05/29/08	1110	1	X									X														X			X
10	B-2 (25')	05/29/08	1115	1	X									X														X			X

Special Instructions:
Email results to: gil@trident-environmental.com and mattp@pride-energy.com

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments: 7C

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	5/31/08	1:05pm			
Relinquished by:	Date	Time	Received by ELOT: Pello Garcia	5/31/08	1:10

130506

XENCO Laboratories / Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Pride Energy Company
Direct Invoice To: Matt Pride
Billing Address: P. O. Box 710950
City, State, Zip Code: Tulsa, OK 74170-1950
Telephone No. 918-524-9200
Fax No: 918-524-9292
Email Report to: mattp@pride-energy.com

Company Name: Trident Environmental
Project Manager: Gil Van Deventer
Address: P. O. Box 7624
City, State, Zip Code: Midland TX 79708-7624
Telephone No. 432-638-8740
Fax No: 413-403-9968
Email Report to: gil@trident-environmental.com

Project Name: Pride Energy Company
Project #: South Four Lakes #15
Project Location: T12S-R34E, Section 2, Unit Letter G
COC #: V126-053108-2

Sampler: Gil Van Deventer (Printed) — [signature] (Signature)

304935

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice (1 oz 4/651)	HNO₃	HCl (BTEX only)	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	TPH 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K,)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B	RCI	N.O.R.M.	Total Dissolved Solids (160.1)	SPLP 1312	Chloride	Total Fe and Mn	RUSH TAT (Pre-Schedule)	Standard TAT
11	B-3 (5')	05/29/08	1300	1	X									X														X			X
12	B-3 (10')	05/29/08	1308	1	X									X														X			X
13	B-3 (15')	05/29/08	1314	1	X									X														X			X
14	B-3 (20')	05/29/08	1322	1	X									X														X			X
15	B-3 (25')	05/29/08	1325	1	X									X														X			X
16	B-4 (5')	05/29/08	1533	1	X									X														X			X
17	B-4 (10')	05/29/08	1538	1	X									X														X			X
18	B-4 (15')	05/29/08	1541	1	X									X														X			X
19	B-4 (20')	05/29/08	1650	1	X									X														X			X
20	B-4 (25')	05/29/08	1700	1	X									X														X			X

Special Instructions:
Email results to: gil@trident-environmental.com and mattp@pride-energy.com

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 7 °C
Laboratory Comments:

Relinquished by	Date	Time	Received by	Date	Time
[signature]	5/31/08	1:05p			
Relinquished by	Date	Time	Received by ELOT: [signature]	5/31/08	[illegible]

13:05 JG

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Pride Energy company

Date/ Time: 5/31/08 14:18

Lab ID #: 304935

Initials: JG

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	(Yes)	No	7.8°C	
#2	Shipping container in good condition?	(Yes)	No		
#3	Custody Seals intact on shipping container/ cooler?	(Yes)	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	(Yes)	No	Not Present	
#5	Chain of Custody present?	(Yes)	No		
#6	Sample instructions complete of Chain of Custody?	(Yes)	No		
#7	Chain of Custody signed when relinquished/ received?	(Yes)	No		
#8	Chain of Custody agrees with sample label(s)?	(Yes)	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	(Yes)	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	(Yes)	No		
#11	Containers supplied by ELOT?	(Yes)	No		
#12	Samples in proper container/ bottle?	(Yes)	No	See Below	
#13	Samples properly preserved?	(Yes)	No	See Below	
#14	Sample bottles intact?	(Yes)	No		
#15	Preservations documented on Chain of Custody?	(Yes)	No		
#16	Containers documented on Chain of Custody?	(Yes)	No		
#17	Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below	
#18	All samples received within sufficient hold time?	(Yes)	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20	VOC samples have zero headspace?	Yes	No	(Not Applicable)	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

Analytical Report 304938

for

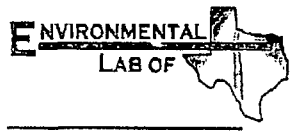
Pride Energy Company

Project Manager: Matt Pride

Pride Energy Company

South Four Lakes #15

05-JUN-08



12600 West I-20 East Odessa, Texas 79765

Texas certification numbers:
Houston, TX T104704215

Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429

South Carolina certification numbers:
Norcross(Atlanta), GA 98015

North Carolina certification numbers:
Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta

05-JUN-08

Project Manager: **Matt Pride**
Pride Energy Company
P.O. Box 701950

Tulsa, OK 74170

Reference: XENCO Report No: **304938**
Pride Energy Company
Project Address: T12S-R34E, Section 2, Unit Letter G

Matt Pride:

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 304938. 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. 304938 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

Sample Cross Reference 304938

Pride Energy Company, Tulsa, OK

Pride Energy Company

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
B-1	W	May-29-08 09:00		304938-001
B-2	W	May-29-08 11:50		304938-002
B-3	W	May-29-08 15:00		304938-003
B-4	W	May-29-08 17:22		304938-004

Certificate of Analysis Summary 304938

Pride Energy Company, Tulsa, OK

Project Name: Pride Energy Company

Project Id: South Four Lakes #15
Contact: Matt Pride
Project Location: T12S-R34E, Section 2, Unit Letter G

Date Received in Lab: Sat May-31-08 01:05 pm
Report Date: 05-JUN-08
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	304938-001		304938-002		304938-003		304938-004					
	Field Id:	B-1		B-2		B-3		B-4					
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER					
	Sampled:	May-29-08 09:00		May-29-08 11:50		May-29-08 15:00		May-29-08 17:22					
Inorganic Anions by EPA 300	*Extracted:*												
	Analyzed:	Jun-02-08 10:36		Jun-02-08 10:36		Jun-02-08 10:36		Jun-02-08 10:36					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Chloride		1040	10.0	56.0	5.00	1450	25.0	4550	50.0				
TDS by SM2540C	*Extracted:*												
	Analyzed:	Jun-02-08 16:15		Jun-02-08 16:15		Jun-02-08 16:15		Jun-02-08 16:15					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Total dissolved solids		2210	5.00	418	5.00	3270	5.00	7790	5.00				

Brent Barron
Odessa Laboratory Director

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 effect the recovery of the spike concentration. This condition could also effect 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 MQL(PQL) and above the SQL(MDL).

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.

* Outside XENCO'S scope of NELAC Accreditation

Blank Spike Recovery

Project Name: Pride Energy Company

Work Order #: 304938 **Project ID:** South Four Lakes #15

Lab Batch #: 724230 **Sample:** 724230-1-BKS **Matrix:** Water

Date Analyzed: 06/02/2008 **Date Prepared:** 06/02/2008 **Analyst:** LATCOR

Reporting Units: mg/L **Batch #:** 1

Inorganic Anions by EPA 300 Analytes	BLANK /BLANK SPIKE RECOVERY STUDY					
	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	10.1	101	85-115	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.

Form 3 - MS Recoveries

Project Name: Pride Energy Company

ork Order #: 304938
Lab Batch #: 724230
Date Analyzed: 06/02/2008
QC- Sample ID: 304831-001 S
Reporting Units: mg/L

Date Prepared: 06/02/2008
Batch #: 1

Project ID: South Four Lakes #15
Analyst: LATCOR
Matrix: Water

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	34.6	50.0	77.6	86	85-115	

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

Sample Duplicate Recovery

Project Name: Pride Energy Company

Work Order #: 304938

Lab Batch #: 724230 **Project ID:** South Four Lakes #15

Date Analyzed: 06/02/2008 **Date Prepared:** 06/02/2008 **Analyst:** LATCOR

QC- Sample ID: 304831-001 D **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

Inorganic Anions by EPA 300	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	34.6	23.6	38	20	F

Lab Batch #: 724353

Date Analyzed: 06/02/2008 **Date Prepared:** 06/02/2008 **Analyst:** WRU

QC- Sample ID: 304932-001 D **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

TDS by SM2540C	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total dissolved solids	384	356	8	30	

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

XENCO Laboratories / Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Pride Energy Company
Direct Invoice To: Matt Pride
Billing Address: P. O. Box 710950
City, State, Zip Code: Tulsa, OK 74170-1950
Telephone No: 918-524-9200
Fax No: 918-524-9292
Email Report to: mattp@pride-energy.com
Sampler: Gil Van Deventer (Printed) — (Signature)

Company Name: Trident Environmental
Project Manager: Gil Van Deventer
Address: P. O. Box 7624
City, State, Zip Code: Midland TX 79708-7624
Telephone No. 432-638-8740
Fax No: 413-403-9968
Email Report to: gil@trident-environmental.com

Project Name: Pride Energy Company
Project #: South Four Lakes #15
Project Location: T12S-R34E, Section 2, Unit Letter G
COC #: V126-053106-3

30438

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice (Soil HDPE)	Preservative: HNO_3	Preservative: HCl (BTEX only)	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	TPH 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO_4, CO_3, HCO_3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B	RCI	N.O.R.M.	Total Dissolved Solids (160.1)	SPLP 1312	Chloride	Total Fe and Mn	RUSH TAT (Pre-Schedule)	Standard TAT
1	B-1	05/29/08	0900	1	X							X														X		X			X
2	B-2	05/29/08	1150	1	X							X														X		X			X
3	B-3	05/29/08	1500	1	X							X														X		X			X
4	B-4	05/29/08	1722	1	X							X														X		X			X

Special Instructions:
Email results to: gil@trident-environmental.com and mattp@pride-energy.com

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 7.0C
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	5/31/08	1:05p			
Relinquished by:	Date	Time	Received by ELOT: [signature] Garcia	5/31/08	13:05 JG

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Pride Energy Company

Date/ Time: 5/31/08 14:18

Lab ID #: 304938

Initials: JG

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	(Yes)	No	7.0 °C	
#2	Shipping container in good condition?	(Yes)	No		
#3	Custody Seals intact on shipping container/ cooler?	(Yes)	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	(Yes)	No	Not Present	
#5	Chain of Custody present?	(Yes)	No		
#6	Sample instructions complete of Chain of Custody?	(Yes)	No		
#7	Chain of Custody signed when relinquished/ received?	(Yes)	No		
#8	Chain of Custody agrees with sample label(s)?	(Yes)	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	(Yes)	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	(Yes)	No		
#11	Containers supplied by ELOT?	(Yes)	No		
#12	Samples in proper container/ bottle?	(Yes)	No	See Below	
#13	Samples properly preserved?	(Yes)	No	See Below	
#14	Sample bottles intact?	(Yes)	No		
#15	Preservations documented on Chain of Custody?	(Yes)	No		
#16	Containers documented on Chain of Custody?	(Yes)	No		
#17	Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below	
#18	All samples received within sufficient hold time?	(Yes)	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20	VOC samples have zero headspace?	Yes	No	(Not Applicable)	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

Analytical Report 306332

for

Pride Energy Company

Project Manager: Matt Pride

Pride Energy Company

South Four Lakes # 15

27-JUN-08

ENVIRONMENTAL LAB OF

12600 West I-20 East Odessa, Texas 79765

Texas certification numbers:
Houston, TX T104704215

Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429

South Carolina certification numbers:
Norcross(Atlanta), GA 98015

North Carolina certification numbers:
Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta

27-JUN-08

Project Manager: **Matt Pride**
Pride Energy Company
P.O. Box 701950

Tulsa, OK 74170

Reference: XENCO Report No: **306332**
Pride Energy Company
Project Address: T12S-R34E, Section 2, Unit Letter G

Matt Pride:

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 306332. 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. 306332 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

Sample Cross Reference 306332

Pride Energy Company, Tulsa, OK

Pride Energy Company

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-1	W	Jun-20-08 07:55		306332-001

Certificate of Analysis Summary 306332

Pride Energy Company, Tulsa, OK

Project Name: Pride Energy Company

Project Id: South Four Lakes # 15
Contact: Matt Pride
Project Location: T12S-R34E, Section 2, Unit Letter G

Date Received in Lab: Fri Jun-20-08 05:00 pm
Report Date: 27-JUN-08
Project Manager: Brent Barron, II

Analysis Requested							
	Lab Id:	306332-001					
	Field Id:	MW-1					
	Depth:						
	Matrix:	WATER					
	Sampled:	Jun-20-08 07:55					
Inorganic Anions by EPA 300	*Extracted:*						
	Analyzed:	Jun-23-08 08:50					
	Units/RL:	mg/L	RL				
Chloride		6180	50.0				
TDS by SM2540C	*Extracted:*						
	Analyzed:	Jun-23-08 16:30					
	Units/RL:	mg/L	RL				
Total dissolved solids		12500	5.00				

Brent Barron
Odessa Laboratory Director

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 effect the recovery of the spike concentration. This condition could also effect 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 MQL(PQL) and above the SQL(MDL).

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.

* Outside XENCO'S scope of NELAC Accreditation

Blank Spike Recovery

Project Name: Pride Energy Company

Work Order #: 306332 **Project ID:** South Four Lakes # 15

Lab Batch #: 726337 **Sample:** 726337-1-BKS **Matrix:** Water

Date Analyzed: 06/23/2008 **Date Prepared:** 06/23/2008 **Analyst:** LATCOR

Reporting Units: mg/L **Batch #:** 1

Inorganic Anions by EPA 300 Analytes	BLANK /BLANK SPIKE RECOVERY STUDY					
	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	11.6	116	80-120	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.

Form 3 - MS Recoveries

Project Name: Pride Energy Company

Work Order #: 306332
Lab Batch #: 726337
Project ID: South Four Lakes # 15
Date Analyzed: 06/23/2008
Date Prepared: 06/23/2008
Analyst: LATCOR
QC- Sample ID: 306329-001 S
Batch #: 1
Matrix: Water
Reporting Units: mg/L

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	2600	500	3270	134	80-120	X

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

Sample Duplicate Recovery

Project Name: Pride Energy Company

Work Order #: 306332

Lab Batch #: 726337 **Project ID:** South Four Lakes # 15

Date Analyzed: 06/23/2008 **Date Prepared:** 06/23/2008 **Analyst:** LATCOR

QC- Sample ID: 306329-001 D **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

Inorganic Anions by EPA 300	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	2600	2590	20	20	

Lab Batch #: 726342

Date Analyzed: 06/23/2008 **Date Prepared:** 06/23/2008 **Analyst:** WRU

QC- Sample ID: 306329-001 D **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

TDS by SM2540C	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total dissolved solids	5700	5580	2	30	

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

XENCO Laboratories / Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Company Name:	Pride Energy Company	Company Name:	Trident Environmental	Project Name:	Pride Energy Company
Direct Invoice To:	Matt Pride	Project Manager:	Gil Van Deventer	Project #:	South Four Lakes # 15
Billing Address:	P. O. Box 710950	Address:	P. O. Box 7624	Project Location:	T12S-R34E, Section 2, Unit Letter G
City, State, Zip Code:	Tulsa, OK 74170-1950	City, State, Zip Code:	Midland TX 79708-7624	COC #:	
Telephone No:	918-524-9200	Telephone No:	432-638-8740		
Fax No:	918-524-9292	Fax No:	413-403-9968		
Email Report to:	mattp@pride-energy.com	Email Report to:	gil@trident-envitonmental.com		

Sampler: Rozanne Johnson (575) 631-9310 rozanne@valornet.com
Printed Signature

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl BTEX only	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP: TOTAL: TPH 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K, Fe)	Anions (Cl, SO4, CO3 HCO3)	SAR / ESP / CEC	Metals As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	M.C.R.M	Total Dissolved Solids (160.1)	SPLP 1312	Chloride	Total Fe and Mn	RUSH TAT (Pre-Scheduled)	Standard TAT
340332	MW-1	06/20/08	7:55	1	X							X														X		X			

Special Instructions: Email results to: gil@trident-environmental.com, mattp@pride-energy.com, rozanne@valornet.com

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments: 1 c pdf

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	6/23/08	17.00			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Andrea Lam	6-20-08	17:00

5.0 w/labels & seals

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Pride Energy

Date/ Time: 6.20.08 17.00

Lab ID # : 306332

Initials: AL

Sample Receipt Checklist

				Client Initials
#1 Temperature of container/ cooler?	(Yes)	No	5.0 °C	
#2 Shipping container in good condition?	(Yes)	No		
#3 Custody Seals intact on shipping container/ cooler?	Yes	No	(Not Present)	
#4 Custody Seals intact on sample bottles/ container?	(Yes)	No	Not Present	
#5 Chain of Custody present?	(Yes)	No		
#6 Sample instructions complete of Chain of Custody?	(Yes)	No		
#7 Chain of Custody signed when relinquished/ received?	(Yes)	No		
#8 Chain of Custody agrees with sample label(s)?	(Yes)	No	ID written on Cont./ Lid	
#9 Container label(s) legible and intact?	(Yes)	No	Not Applicable	
#10 Sample matrix/ properties agree with Chain of Custody?	(Yes)	No		
#11 Containers supplied by ELOT?	(Yes)	No		
#12 Samples in proper container/ bottle?	(Yes)	No	See Below	
#13 Samples properly preserved?	(Yes)	No	See Below	
#14 Sample bottles intact?	(Yes)	No		
#15 Preservations documented on Chain of Custody?	(Yes)	No		
#16 Containers documented on Chain of Custody?	(Yes)	No		
#17 Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below	
#18 All samples received within sufficient hold time?	(Yes)	No	See Below	
#19 Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20 VOC samples have zero headspace?	Yes	No	(Not Applicable)	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

APPENDIX D

MONITORING WELL SAMPLING DATA FORMS

WELL SAMPLING DATA FORM

CLIENT: Pride Energy Company WELL ID: MW- 1

SITE NAME: S. Four Lakes #15 DATE: September 9, 2008

SITE LOCATION: T12S-R34E-Sec 2 Unit G SAMPLER: Rozanne Johnson

LAT/LONG: N 33° 18' 31.6", W 103° 28' 48.1"

PURGING METHOD: ☐ Hand Bailed ☑ Pump If Pump, Typ purge pump

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other:

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE SAMPLING THE WELL:

☑ Gloves ☑ Alconox ☑ Distilled Water R☐e Other:

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drum ☑ SWD Disposal Facility

TOTAL DEPTH OF WELL: 49.69 Feet

DEPTH TO WATER: 26.55 Feet

HEIGHT OF WATER COLUMN: 23.14 Feet 11.1 Minimum gallons to purge 3 well volumes

WELL DIAMETER: 2.0 Inch 12 Actual Gallons purged

TIME	VOLUME PURGED	TEMP. °C	COND. mS/cm	pH	DO mg/L		PHYSICAL APPEARANCE AND REMARKS
3:39 PM	2	19.6	10.5	7.37			
3:47 PM	6	19.3	13.8	7.03			
3:59 PM	12	19.2	14.2	7.01			
4:10 PM		19.2	14.2	7.01			Samples Collected
							Major Ions (1-1000ml Plastic)
							BTEX 8021B (2-40 ml glass VOA)
24 min	:Total Time (hr:min)		12	:Total Vol (gal)		0.5	:Average Flow Rate (gal/min)

COMMENTS:

Myron Model 6P instrument used to obtain pH, conductivity and temperature measurements.

Delivered samples to Cardinal Laboratories Hobbs, New Mexico for analyses.

WELL SAMPLING DATA FORM

CLIENT: Pride Energy Company
WELL ID: Monitor Well #1
SYSTEM: South Four Lakes #15
DATE: June 20, 2008
SITE LOCATION: T12S R34E Sec2 Unit G
SAMPLER: Rozanne Johnson

PURGING METHOD: ☐ Hand Bailed ☑ Pump, Type: Variable Controlled Purge Pump
SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other:

DISPOSAL METHOD OF PURGE WATER: ☐ On-site Drum ☐ Drums ☑ SWD Disposal Facility

TOTAL DEPTH OF WELL: 49.69 Feet
DEPTH TO WATER: 26.46 Feet
HEIGHT OF WATER COLUMN: 23.23 Feet
WELL VOLUME: 3.7 Gal.

2 In. Well Diameter
15 Gallons purged prior to sampling

TIME	TEMP. °C	COND. mS/cm	pH	PHYSICAL APPEARANCE AND REMARKS
7:40	20.5	15.12	6.78	Silt and Sand
7:42	20.6	14.22	6.79	Clear
7:50	20.7	14.05	6.81	
7:55				Samples Collected with Disposable Bailer
				Chlorides/TDS (1-1000ml Plastic)

COMMENTS: Equipment decontamination consists of gloves, Alconox, and Distilled Water Rinse.
Myron Model 6P instrument used to obtain pH, conductivity, and temperature measurements.
Delivered samples to Xenco Laboratories for Chlorides and TDS analysis.