AP-100

Unit Petroleum
Gourley Fed 3Q Drillpit

Stage 1 Workplan
July 2013

Griswold, Jim, EMNRD

From: Griswold, Jim, EMNRD
Sent: Monday, August 12, 2013 9:58 AM
To: 'Bockisch, Bernie'
Cc: Gene Voreis
Subject: RE: Gourley Fed#3 Abatement Plan Submission

Messrs. Voreis and Bockish,

The OCD has received and preliminarily reviewed the Stage 1 Abatement Plan dated July, 2013 for the Gourley Federal #3Q Drilling Pit (AP-100) submitted by Conestoga-Rovers & Associates on behalf of Unit Petroleum Company. The OCD finds this plan to be administratively complete. You may proceed with public notice requirements under 19.15.30.15.B NMAC. Please provide me with verification as to when the newspaper notices appear. Please retain a copy of this email for your files as no hardcopy will be sent. Thank you.

Jim Griswold
Senior Hydrologist
EMNRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505.476.3465
email: jim.griswold@state.nm.us

From: Bockisch, Bernie [mailto:bbockisch@craworld.com]
Sent: Thursday, July 11, 2013 3:47 PM
To: Griswold, Jim, EMNRD
Cc: Gene Voreis
Subject: Gourley Fed#3 Abatement Plan Submission

Jim,

On behalf of Unit Petroleum Corporation, Conestoga, Rovers, and Associates, Inc. is submitting a Stage 1 Abatement Plan for the Gourley Fed#3 Site. The site is located near Loving, New Mexico. The scope of work that is proposed for this project is substantially in accordance with our discussions held on May 2, 2013. We plan to submit notice of the Abatement Plan to the interested parties as specified in NMAC 19.15.30.15. Please feel free to contact me if you have any questions regarding the Abatement Plan. Thank you for your attention to this matter.

Bernard Bockisch, PMP
Conestoga-Rovers & Associates (CRA)
6121 Indian School Rd NE Ste. 200
Albuquerque, NM, USA 87110
Office: (505) 884-0672
Mobile: (505) 280-0572
Fax: (505) 884-4932
Email: bbockisch@craworld.com
www.CRAworld.com

Griswold, Jim, EMNRD

From: Griswold, Jim, EMNRD
Sent: Monday, July 08, 2013 12:03 PM
To: 'Kanack, Cale'
Cc: Bockisch, Bernie
Subject: RE: Gourley Fed #3 Public Notice For Your Review

Approved.

Jim Griswold
Senior Hydrologist
EMNRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505.476.3465
email: jim.griswold@state.nm.us

From: Kanack, Cale [mailto:ckanack@craworld.com]
Sent: Thursday, June 27, 2013 10:29 AM
To: Griswold, Jim, EMNRD
Cc: Bockisch, Bernie
Subject: Gourley Fed #3 Public Notice For Your Review

Jim,

Here are the notices for the Gourley Fed #3 Abatement Plan for your review. The shorter one in letter format is what will be sent to the land owners, governmental officials, etc. The longer one is what will be published in the newspapers. Please let me know if there is anything you want to change.

Thanks,

Cale Kanack, Environmental Scientist
Conestoga-Rovers & Associates (CRA)
6121 Indian School Rd NE Ste. 200
Albuquerque, NM, USA 87110
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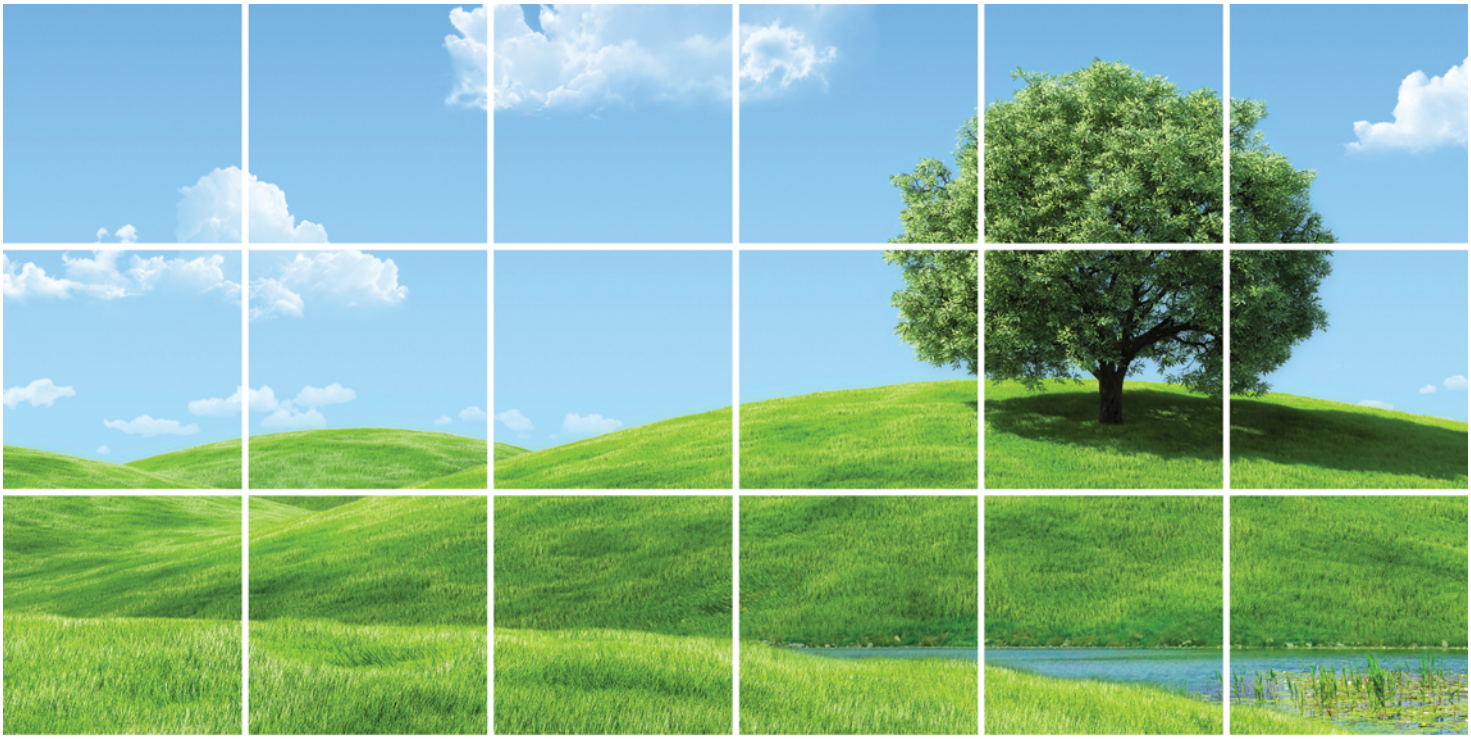
www.CRAworld.com



STAGE I ABATEMENT PLAN

Gourley Federal #3 Well
Unit H, Section 28, T-22-S, R-28_E
Eddy County, New Mexico

Prepared for: Unit Petroleum Company
2nd SW 3rd Suite 205
Tuttle, OK 73089

Conestoga-Rovers & Associates
6121 Indian School Road, NE Suite 200
Albuquerque, New Mexico 87110

July 2013 • #082612
Report Number:1

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1.0 EXECUTIVE SUMMARY

The Site is located within Unit H, Sec 28, Township 22 South, Range 28 East, in Eddy County, New Mexico (32° 22′ 0.48″ N, 104° 5′ 12.91″ W) (see **Figure 1**). The site consists of a reserve pit that was discovered by the Bureau of Land Management (BLM) as not being properly closed on November 5, 2008. The New Mexico Oil Conservation Division (NMOCD) subsequently issued Unit Petroleum Company (Unit) a Notice of Violation (NOV No. 02-08-23) on November 17, 2008.

According to information provided by Unit, Sweatt Construction Company (Sweatt) attempted to close the pit in 2007. Sweatt excavated the pit contents and backfilled to within five feet below ground surface (bgs) using overburden from the original pit. A 40 mil polyethylene liner was installed at five feet bgs, and the excavation was backfilled to grade using clean fill. An initial Site investigation was performed by Tetra Tech in June 2009. A total of three groundwater monitoring wells (MWs) and five soil borings were installed at the site. Analytical results from the groundwater monitoring wells indicated the presence of elevated concentrations of chlorides.

A Stage 1 Abatement Plan (AP) was submitted by Tetra Tech in July 2009 to the NMOCD. To date, this AP has not been approved by the NMOCD. A meeting was held with Mr. Jim Griswold with the NMOCD on May 2, 2013 to discuss a path forward for the site.

Mr. Gene Voreis with Unit and Mr. Bernard Bockisch with CRA attended the meeting. The results of the meeting are summarized as follows:

- Mr. Griswold agreed that additional soil remediation was not necessary; and
- The previous abatement plan is to be revised to include:
    - Installation of two additional monitoring wells, one located upgradient of MW-2 (to be used as a background well), and one to be located downgradient of MW-3.
    - Quarterly groundwater monitoring for 8 quarters.

During the meeting, Mr. Griswold agreed that existing data could qualify as two of the 8 quarters of groundwater monitoring. Therefore, this scope of work only includes six quarters of groundwater monitoring.

2.0 CHRONOLOGY OF EVENTS

April 23, 2007: NMOCD District II Office received Operator's C-144 pit closure plan from Sweatt.

April 24, 2008: NMOCD District II Supervisor Tim Gum approved operator's C-144 pit closure plan submitted by Sweatt.

May 31-July 25, 2007: Sweatt excavates the reserve pit contents and samples the pit for closure.

October 5, 2008: Don Peterson from the Bureau of Land Management's Carlsbad Field Office called Mike Bratcher of the NMOCD and told him that the pit was still open and what appeared to be drill cuttings were stockpiled in the middle of the pit.

November 17, 2008: NMOCD issued a Notice of Violation (NOV) No. 02-08-23 to Unit for an open pit.

December 3, 2008: An administrative conference was held on the NOV. Unit's district engineer and E-Tech Environmental & Safety Solutions were onsite for conference. Conclusion was that Sweatt had failed to complete the pit closure at the site.

January 7, 2009: Unit contacted Tetra Tech to perform confirmation sampling of the open pit.

February 19, 2009: Tetra Tech was onsite to install one monitor well northwest of the pit.

February 25, 2009: Tetra Tech personnel were onsite to sample monitor well MW-1 and the water well located one mile southwest of the site.

May 29, 2009: Tetra Tech emailed the NMOCD requesting an extension of the pit closure.

June 1, 2009: NMOCD grants extension of closure of the pit until October 1, 2009. Unit files a C-141 with the NMOCD.

June 2, 2009: Unit submits revised C-141 to the NMOCD.

June 5, 2009: NMOCD issued letter requiring a Stage I Abatement Plan for the site.

June 25, 2009: Two additional monitor wells, MW-2 and MW-3, are installed on the pad adjacent to the open pit.

July 17, 2009: First submission of Stage 1 Abatement Plan to the NMOCD.

September 28, 2009: Unit requested extension of October 1, 2009 closure deadline from NMOCD.

September 30, 2009: NMOCD grants requested extension.

May 2, 2013: Bernie Bockisch of CRA, Gene Voreis of Unit, and Jim Griswold of the NMOCD meet to discuss a path forward for the site.

May 9, 2013: CRA submits proposal to revise and implement Stage 1 Abatement Plan.

3.0 BACKGROUND & PREVIOUS WORK

In June 2007, Sweatt excavated the pit to a maximum depth of 6 feet bgs, with sample trenches to 20 feet bgs for chloride sampling. Sampling conducted on July 25, 2007 found that chloride concentrations within the pit were generally below 10,000 mg/kg with the exception of 3 samples. One sample was collected from the center of the pit floor and another was collected at 15 feet below the pit bottom (bpb). The third sample was from the pit bottom in the northeast corner. Chloride concentrations in the samples collected from the center of the pit at depths below 15 feet bpb were below 10,000 mg/kg. At the request of the NMOCD, a temporary monitor well was installed on the south edge of the pit in June 2007 to establish the depth to groundwater. The well was drilled to a depth of 50 feet bgs. Samples from that well showed chloride concentrations of 907 mg/L and TDS concentrations of 3990 mg/L.

In January 2009, Tetra Tech was contracted to perform sampling of the pit at the site. As requested by the NMOCD, samples were collected from the center and southwest corner of the pit. Samples from a depth of 25 feet bgs were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH), and chlorides. Confirmation samples were also collected for chlorides from a depth of 39 feet bgs in the center and 35 feet bgs in the southwest corner. During the confirmation sampling, the soils were field screened for chlorides. A one to two foot thick clay layer was encountered in both sample trenches at 37 feet bgs in the center and 34 feet bgs in the southwest corner. Sampling in the southwest corner of the pit showed elevated chlorides ranging from 5,800 mg/kg at the bottom of the pit, declining to 700 mg/kg at 30 feet bgs, and increasing to 6,450 mg/kg at the clay layer. The concentration below the clay layer at 35 feet bgs was 761 mg/kg.

The field screening at the center of the pit showed chloride concentrations ranging from 13,520 mg/kg at the bottom of the pit, to 19,600 at 15 feet bgs, declining to 1,050 mg/kg at 35 feet bgs. At the clay layer at 37 feet bgs, the chloride concentration increased to 9,450 mg/kg. Below the clay layer at 39 feet bgs, the field chloride concentration was 1,600 mg/kg. The laboratory results for the 39 foot sample showed a concentration of 2,170 mg/kg chlorides.

Monitoring well 1 (MW-1) was installed on February 19, 2009. It was installed approximately 180 feet north of the northwest corner of the pit. This well was drilled to a depth of 60 feet bgs and installed with 30 feet of 0.02-inch (in.) slotted polyvinyl chloride (PVC) well screen. Analytical results from this well showed a chloride concentration of 3,220 milligrams per liter (mg/L) and TDS concentration of 7,800 mg/L.

On June 25, 2009, Tetra Tech installed two additional monitor wells. One well (MW-2) was installed east of the pit. The other well (MW-3) was installed west of the pit. MW-1, MW-2, and MW-3 were gauged and sampled on June 27, 2009. The results are presented in **Appendix A** and summarized in **Table 1**.

On July 17, 2009, Tetra Tech submitted a Stage 1 AP to the NMOCD. However, to date, this AP has not been approved by the NMOCD.

4.0 GEOLOGY & HYDROGEOLOGY

4.1 REGIONAL AND LOCAL GEOLOGY

According to the Geology and Groundwater Resources of Eddy County, New Mexico, the Rustler, Castile and Salado formation (Ochoa Series) is present west and east of the Pecos River. The Salado formation, which consists of halite and small amounts of anhydrite, polyhalite and other potassium salts and red sandy shale, overlies the Castile formation in the area east of the Pecos River. West of the river, most of the formation has been removed by solution.

Underlying the Salado formation is the Castile formation which consists of 1,300 to 2,000 feet of anhydrite, gypsum, and small amounts of halite, dolomite, and sandstone. As originally deposited, most of the gypsum probably was anhydrite, but it has since been altered by groundwater.

The Rustler formation overlies the Salado formation east of the Pecos River, and the Castile formation west of the Pecos River. The Rustler formation ranges in thickness from about 200 feet in northern Eddy County to about 500 feet southeast of Carlsbad. It consists of anhydrite, gypsum, interbedded red and green sandy clay, and some beds of dolomite.

4.2 REGIONAL AND LOCAL HYDROGEOLOGY

The groundwater in the area generally comes from the Rustler formation. Historically, chlorides and sulfate concentrations are elevated in the Rustler formation. Based on Tetra Tech's gauging event of MW-1, MW-2, and MW-3 on June 27, 2009, the local groundwater gradient in the vicinity of the pit was historically reported as towards the west-northwest (see **Table 2**). However, the reported regional hydraulic gradient is to the southwest towards the Pecos River. This discrepancy will be assessed under this Stage 1 AP, as discussed below in Section 7.2. The depth to water in this area is approximately 45 to 50 feet bgs.

4.3 WATER WELL INVENTORY

A water well inventory was performed to encompass a half mile radius around the facility. The inventory included a review of water well records on the New Mexico

Office of the State Engineer W.A.T.E.R.S. database, the United States Geologic Survey (USGS) website and any water wells denoted on the USGS 7.5 minute topographic quadrangle map within the search radius. No wells were shown in either database or on the USGS 7.5 minute topographic quadrangle map within the search radius. One 18" diameter out of service water well was observed approximately 1 mile southwest of the site.

5.0 SUBSURFACE SOILS

The soils in the vicinity of this site are of the Bippus Series. The Bippus series consist of deep, moderately dark colored, well-drained, calcareous soils that developed in alluvium. These soils occur mainly on flood plains of intermittent streams in the southeastern part of the survey area, but smaller areas are scattered throughout the eastern part.

Soils of the Bippus series typically have a surface layer that is about 21 inches thick. The uppermost few inches consists of grayish-brown sandy loam. This material overlies dark grayish-brown silty clay loam. Beneath the surface layer is a transitional layer of dark-brown to brown silty clay loam about 16 inches thick. The substratum, about 11 inches thick, is brown clay loam enriched by calcium carbonate. It rests on weak cemented caliche at a depth of about 4 feet.

Bippus soils are uneroded to slightly eroded. They are subject to periodic flooding, and there is some deposition of sandy material at the edges of the flood plain. Runoff is medium. Permeability is moderately slow, and the water-holding capacity is high.

6.0 GROUNDWATER GRADIENT AND QUALITY

The three existing monitoring wells wells were gauged, purged and sampled on June 27, 2009. The samples were submitted for laboratory analysis of major anions/cations and TDS.

Analytical results indicated chloride concentrations of 4,140 mg/L in monitor well MW-1, 1,110 mg/L in MW-2, and 1,270 mg/L in MW-3. The gauging and analytical data are presented in Tables 1 and 2. Laboratory analytical is presented in Appendix A.

7.0 STAGE 1 ABATEMENT PLAN

7.1 PUBLIC NOTICE

Upon approval of the AP by Unit and the NMOCD, notification of the AP will be performed in accordance with 19.15.30.15 New Mexico Administrative Code (NMAC). This notification will include written notice, as approved by Mr. Jim Griswold of the NMOCD, of the AP to the appropriate surface owners, governmental officials, and parties of interest. It will also include public notification by publication in the Albuquerque Journal and the Carlsbad Current-Argus. Upon publication, the Director of the NMOCD will allow a 30-day period during which written comments or a written request for a hearing may be submitted. If significant interest from the public occurs, the NMOCD may hold a public hearing on the project.

7.2 ADDITIONAL MONITORING WELL INSTALLATIONS

Once the public notice requirements are complete, CRA will:

- Develop a Health and Safety Plan (HASP) that addresses field work specified in the Work Plan.
- Develop work orders and contracts for subcontractors;
- Obtain well installation permits from the New Mexico Office of the State Engineer (NMOSE);
- Confirm New Mexico One-Call notifications were made by the proposed drilling company (required by the State of New Mexico); and
- Notify the Client a minimum of 48 hours prior to the commencement of field and sampling activities.

Two borings will be advanced at the property, one located upgradient of MW-2 to be used as a background well, and one located downgradient of MW-3 (see **Figure 2**) to assess downgradient chloride concentrations. Both wells will be installed to an approximate depth of 60 feet bgs.

Borings will be advanced using air rotary drilling techniques with an approximate 8-inch diameter drill bit. Samples will be collected at 5 feet bgs and every 5 feet thereafter using a 2-inch diameter by 24-inch long split spoon sampler. Cuttings and samples will be logged according to the Unified Soil Classification System. Field screening for petroleum hydrocarbons will be performed in the following manner:

- All split spoon samples will be field screened using the heated headspace method.

- Soil samples will be field screened for the presence of chlorides using Hach chlor-tab strips.

Each soil boring will be converted to a 60-foot deep monitoring well, which will be constructed of 2-inch diameter, schedule 40, flush-joint, threaded PVC casing and screen. Monitoring wells will consist of a 0.5-foot long, threaded PVC bottom plug and 15-foot long flush-joint, threaded, factory-slotted (0.020-inch) well screen.

The annular space around the well screen will be filled with silica sand (10/20 gradation) from the bottom of the boring to approximately 2 feet above the well screen. A minimum of three feet of bentonite pellets will be placed above the silica sand. A cement/bentonite grout will be placed from the top of the bentonite pellets and extend to ground surface. The wellhead will be protected with an above-grade completion set within a minimum 24-inch by 24-inch by 4-inch thick concrete pad.

Each well will be developed using a bailer and/or a pump until water quality parameters stabilize and turbidity is significantly decreased.

Excess fluids generated during the groundwater gauging and monitoring events will be containerized and properly disposed of at an approved waste facility.

Upon completion of the wells, the first quarterly groundwater sampling event will be performed immediately following the installation and development of the monitoring wells (see below for procedure). Well construction logs will be filed with the NMOSE.

7.3 QUARTERLY GROUNDWATER MONITORING

CRA will conduct six quarterly groundwater monitoring and sampling events (see Executive Summary, above). The first of these quarters will be performed following installation of the two additional groundwater monitoring wells. The remaining sampling events will be performed approximately every three months following well installation.

Prior to purging and sampling the wells, groundwater levels and total well depths will be recorded to the nearest one-hundredth of a foot using a water level probe. The interface probe will be cleaned between wells.

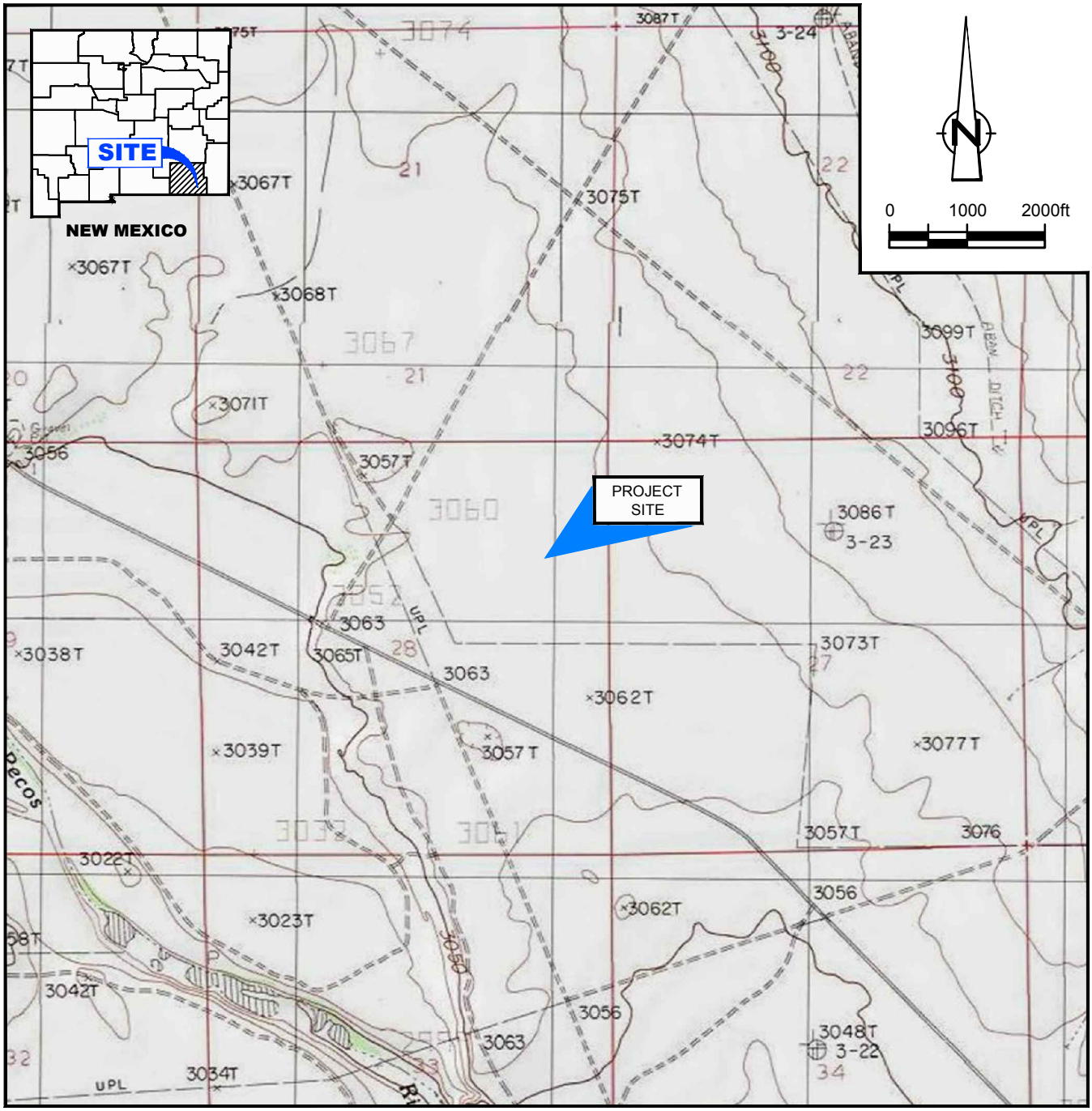
Subsequent to well gauging, the monitor wells will be purged using EPA-approved no-purge methodology using a Hydrosleeve™ to collect samples. Geochemical field parameters including pH, conductivity, and temperature will be recorded and laboratory-supplied sample containers will be filled. Each sample will be labeled, placed on ice and submitted to Hall Environmental Analytical Laboratories (HEAL) in Albuquerque, New Mexico for analyses of chlorides by EPA Methods 300.1 and total dissolved solids (TDS) by Method SM20 2540C.

Results from groundwater monitoring and assessment activities performed at the Site will be summarized in an annual report that will be provided to Unit for submittal to the NMOCD. The annual report will be prepared during the quarter following the last sampling event. The annual report will include tabulated analytical and gauging data, groundwater gradient and COC isopleth maps from the quarterly events, and recommendations for future activities at the Site.

8.0 QUALITY ASSURANCE/ QUALITY CONTROL

Downhole equipment (i.e., drill pipe, drill bits, etc.) will be cleaned between each use with a steam cleaner. Sampling will be completed in accordance with CRA's standard Quality Assurance/Quality Control procedures designed to minimize cross-contamination between samples and to provide reliable laboratory results. Work will be performed in general compliance with the techniques listed in Subsection B of 20.6.2.3107 New Mexico Administrative Code (NMAC) and with 20.6.4.13 NMAC of the Water Quality Standards of Interstate and Intrastate Surface Water in New Mexico 20.6.4 NMAC.

FIGURES



SOURCE: USGS 7.5 MINUTE QUAD
"LOVING AND INDIAN FLATS, NEW MEXICO"

LAT/LONG: 32.3668° NORTH, 104.0869° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO EAST

Figure 1

SITE LOCATION MAP
GOURLEY FEDERAL #3
EDDY COUNTY, NEW MEXICO
Unit Petroleum Company

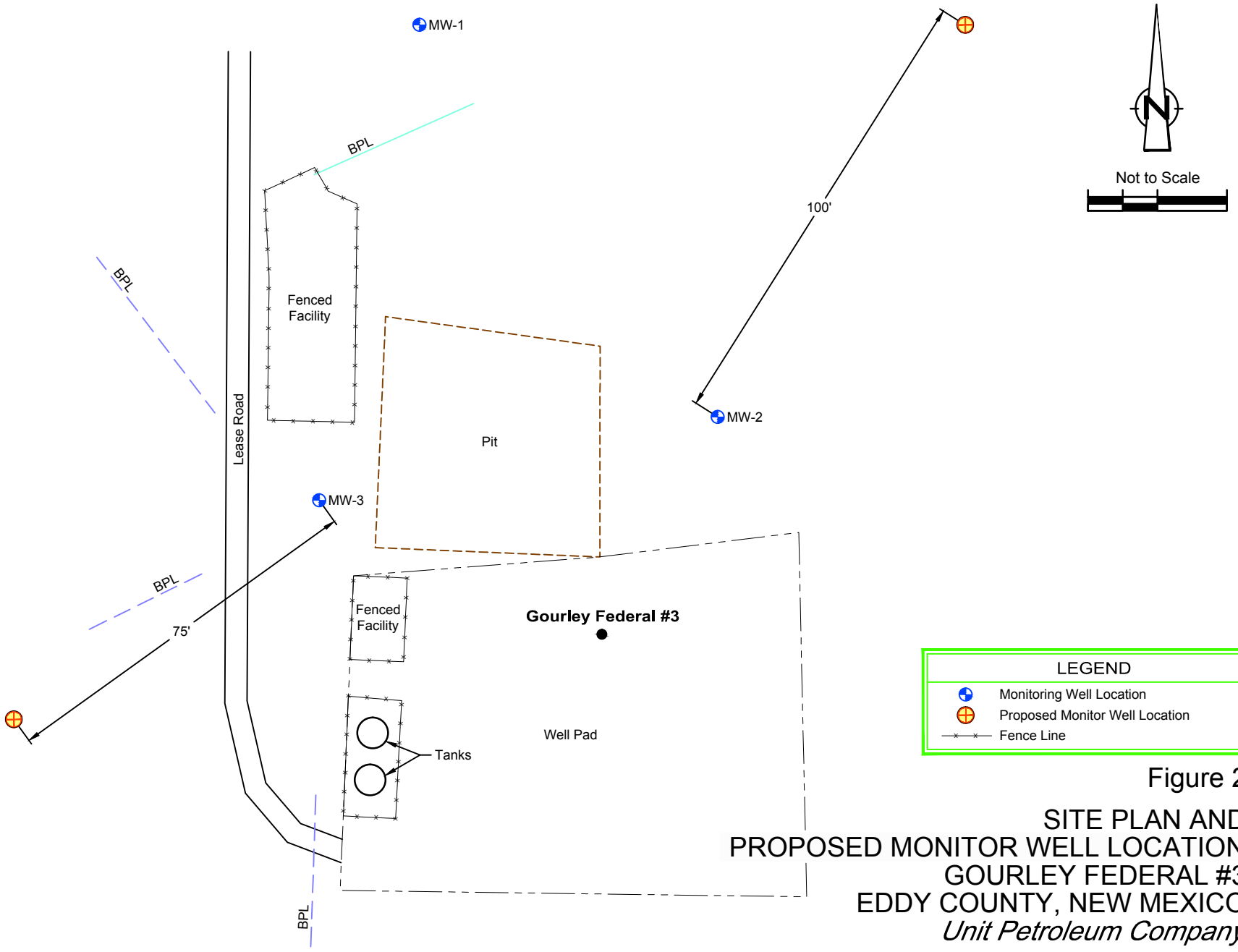


Figure 2

SITE PLAN AND
PROPOSED MONITOR WELL LOCATION
GOURLEY FEDERAL #3
EDDY COUNTY, NEW MEXICO
Unit Petroleum Company

082612-00(000)GN-DL001 JUL 1/2013

TABLES

Table 1
Groundwater Analytical Results
Gourley Federal #3
Unit Petroleum Company
Eddy County, New Mexico

Well ID	Date	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	pH
18" Abandoned Well	2/25/2009	**284**	**1,390**	**2,630**	7.62
MW-1	2/25/2009	**3,220**	**1,800**	**7,800**	7.26
	6/27/2009	**4,140**	**1,840**	**10,000**	6.98
	7/1/2010	**5,310**	**1,650**	**13,000**	6.76
	10/23/2012	**3,910**	**1,880**	**8,340**	6.84
	2/7/2013	**1,770**	**1,860**	**5,810**	7.19
MW-2	6/27/2009	**1,110**	**1,520**	**3,960**	7.14
	7/1/2010	**983**	**1,340**	**4,070**	7.10
	10/23/2012	**944**	**1,420**	**4,020**	7.02
	2/7/2013	**956**	**1,550**	**4,290**	7.31
MW-3	6/27/2009	**1,270**	**1,540**	**4,030**	7.18
	7/1/2010	**1,250**	**1,370**	**4,160**	7.05
	10/23/2012	**1,540**	**1,460**	**4,840**	6.92
	2/7/2013	**1,540**	**1,550**	**4,980**	7.21
EPA Drinking Water Maximum Contaminant Levels		**250**	**250**	**500**	**6.5 - 8.5**

mg/L = milligrams per liter
TDS = Total Dissolved Solids
Bold = Exceeds EPA Drinking Water Maximum Contaminant Levels

Table 2
Groundwater Gauging Data
Gourley Federal #3
Unit Petroleum Company
Eddy County, New Mexico

Well ID	Date	TOC Elevation (ft)	Total Depth (ft bgs)	Water Level Below TOC (ft)	GW Elevation (ft)
MW-1	6/27/2009	3,069.18	61.24	49.38	3,019.80
	10/7/2009	3,069.18	61.24	49.23	3,019.95
	7/1/2010	3,069.18	61.24	49.31	3,019.87
	10/23/2012	3,069.18	61.24	49.49	3,019.69
	2/7/2013	3,069.18	61.24	49.54	3,019.64
Mw-2	6/27/2009	3,067.72	63.73	47.06	3,020.66
	10/7/2009	3,067.72	63.73	46.39	3,021.33
	7/1/2010	3,067.72	63.73	46.45	3,021.27
	10/23/2012	3,067.72	63.73	47.73	3,019.99
	2/7/2013	3,067.72	63.73	47.78	3,019.94
MW-3	6/27/2009	3,068.53	63.47	48.57	3,019.96
	10/7/2009	3,068.53	63.47	47.67	3,020.86
	7/1/2010	3,068.53	63.47	47.73	3,020.80
	10/23/2012	3,068.53	63.47	49.31	3,019.22
	2/7/2013	3,068.53	63.47	49.33	3,019.20

TOC = Top of Casing
ft = feet
bgs = below ground surface
GW = Groundwater

APPENDICIES

APPENDIX A

SUMMARY REPORT JULY 1, 2009

Summary Report

Gary Miller
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: July 1, 2009

Work Order: 9062907

Project Location: Eddy Co., NM
Project Name: Gourley Fed. #3
Project Number: 115-6403654

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
200653	MW-1	water	2009-06-27	11:30	2009-06-29
200654	MW-2	water	2009-06-27	10:00	2009-06-29
200655	MW-3	water	2009-06-27	10:45	2009-06-29

Sample: 200653 - MW-1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**145**	mg/L as CaCo3	4.00
Total Alkalinity		**145**	mg/L as CaCo3	4.00
Dissolved Calcium		**1470**	mg/L	1.00
Chloride		**4140**	mg/L	0.500
Hardness (by ICP)		**5770**	mg eq CaCO3/L	0.00
Dissolved Potassium		**18.8**	mg/L	1.00
Dissolved Magnesium		**507**	mg/L	1.00
Dissolved Sodium		**1450**	mg/L	1.00
pH		**6.98**	s.u.	0.00
Sulfate		**1840**	mg/L	0.500
Total Dissolved Solids		**10000**	mg/L	10.0

Sample: 200654 - MW-2

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00

continued ...

sample 200654 continued ...

Param	Flag	Result	Units	RL
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**115**	mg/L as CaCo3	4.00
Total Alkalinity		**115**	mg/L as CaCo3	4.00
Dissolved Calcium		**582**	mg/L	1.00
Chloride		**1110**	mg/L	0.500
Hardness (by ICP)		**2130**	mg eq CaCO3/L	0.00
Dissolved Potassium		**11.4**	mg/L	1.00
Dissolved Magnesium		**165**	mg/L	1.00
Dissolved Sodium		**474**	mg/L	1.00
pH		**7.14**	s.u.	0.00
Sulfate		**1520**	mg/L	0.500
Total Dissolved Solids		**3960**	mg/L	10.0

Sample: 200655 - MW-3

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**120**	mg/L as CaCo3	4.00
Total Alkalinity		**120**	mg/L as CaCo3	4.00
Dissolved Calcium		**603**	mg/L	1.00
Chloride		**1270**	mg/L	0.500
Hardness (by ICP)		**2210**	mg eq CaCO3/L	0.00
Dissolved Potassium		**10.4**	mg/L	1.00
Dissolved Magnesium		**170**	mg/L	1.00
Dissolved Sodium		**540**	mg/L	1.00
pH		**7.18**	s.u.	0.00
Sulfate		**1540**	mg/L	0.500
Total Dissolved Solids		**4030**	mg/L	10.0