

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources  
Department  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-144  
Revised April 3, 2017

For temporary pits, below-grade tanks, and multi-well fluid management pits, submit to the appropriate NMOCD District Office.  
For permanent pits submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Below-Grade Tank, or  
Proposed Alternative Method Permit or Closure Plan Application

Type of action: ☐ Below grade tank registration  
☐ Permit of a pit or proposed alternative method  
☐ Closure of a pit, below-grade tank, or proposed alternative method  
☐ Modification to an existing permit/or registration  
☒ Closure plan only submitted for an existing permitted or non-permitted pit, below-grade tank, or proposed alternative method

**Instructions: Please submit one application (Form C-144) per individual pit, below-grade tank or alternative request**

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.  
Operator: BP AMERICA PRODUCTION COMPANY OGRID #: 778  
Address: 380 Airport Road, Durango CO, 81303  
Facility or well name: A L ELLIOTT C 001  
API Number: 3004508377 OCD Permit Number: \_\_\_\_\_  
U/L or Qtr/Qtr B Section 15 Township 29N Range 9W County: San Juan  
Center of Proposed Design: Latitude 36.72959 Longitude -107.762835° NAD83  
Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.  
☐ **Pit:** Subsection F, G or J of 19.15.17.11 NMAC  
Temporary: ☐ Drilling ☐ Workover  
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A ☐ Multi-Well Fluid Management Low Chloride Drilling Fluid ☐ yes ☐ no  
☐ Lined ☐ Unlined Liner type: Thickness \_\_\_\_\_ mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other \_\_\_\_\_  
☐ String-Reinforced  
Liner Seams: ☐ Welded ☐ Factory ☐ Other \_\_\_\_\_ Volume: \_\_\_\_\_ bbl Dimensions: L \_\_\_\_\_ x W \_\_\_\_\_ x D \_\_\_\_\_

3.  
☒ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC **TANK B**  
Volume: 95 bbl Type of fluid: Produced Water  
Tank Construction material: Steel  
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off  
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other Single Wall, double bottom, sidewalls not visible  
Liner type: Thickness \_\_\_\_\_ mil ☐ HDPE ☐ PVC ☐ Other \_\_\_\_\_

NMOCD

OCT 17 2018

DISTRICT III

4.  
☐ **Alternative Method:**  
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

5.  
**Fencing:** Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)  
☐ Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)  
☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet  
☒ Alternate. Please specify 4' hogwire with single barbed wire.

6.

**Netting:** Subsection E of 19.15.17.11 NMAC (*Applies to permanent pits and permanent open top tanks*)

☐ Screen ☐ Netting ☐ Other \_\_\_\_\_

☐ Monthly inspections (If netting or screening is not physically feasible)

7.

**Signs:** Subsection C of 19.15.17.11 NMAC

☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☒ Signed in compliance with 19.15.16.8 NMAC

8.

**Variances and Exceptions:**

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

**Please check a box if one or more of the following is requested, if not leave blank:**

☐ Variance(s): Requests must be submitted to the appropriate division district for consideration of approval.

☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

9.

**Siting Criteria (regarding permitting):** 19.15.17.10 NMAC

**Instructions:** The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Siting criteria does not apply to drying pads or above-grade tanks.

**General siting**

**Ground water is less than 25 feet below the bottom of a low chloride temporary pit or below-grade tank.**

- ☐ NM Office of the State Engineer - iWATERS database search; ☐ USGS; ☐ Data obtained from nearby wells

☐ Yes ☒ No

☐ NA

**Ground water is less than 50 feet below the bottom of a Temporary pit, permanent pit, or Multi-Well Fluid Management pit .**

NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

☐ Yes ☒ No

☐ NA

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. (**Does not apply to below grade tanks**)

- Written confirmation or verification from the municipality; Written approval obtained from the municipality

☐ Yes ☒ No

Within the area overlying a subsurface mine. (**Does not apply to below grade tanks**)

- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division

☐ Yes ☒ No

Within an unstable area. (**Does not apply to below grade tanks**)

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map

☐ Yes ☒ No

Within a 100-year floodplain. (**Does not apply to below grade tanks**)

- FEMA map

☐ Yes ☒ No

**Below Grade Tanks**

Within 100 feet of a continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake (measured from the ordinary high-water mark).

- Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☒ No

Within 200 horizontal feet of a spring or a fresh water well used for public or livestock consumption;

- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site

☐ Yes ☒ No

**Temporary Pit using Low Chloride Drilling Fluid** (maximum chloride content 15,000 mg/liter)

Within 100 feet of a continuously flowing watercourse, or any other significant watercourse or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). (Applies to low chloride temporary pits.)

- Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

Within 300 feet from a occupied permanent residence, school, hospital, institution, or church in existence at the time of initial application.

- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image

☐ Yes ☐ No

Within 200 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 300feet of any other fresh water well or spring, in existence at the time of the initial application.

NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site

☐ Yes ☐ No



Within 100 feet of a wetland.

- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

### **Temporary Pit Non-low chloride drilling fluid**

Within 300 feet of a continuously flowing watercourse, or any other significant watercourse, or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

- Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image

☐ Yes ☐ No

Within 500 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 1000 feet of any other fresh water well or spring, in the existence at the time of the initial application;

- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

Within 300 feet of a wetland.

- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

### **Permanent Pit or Multi-Well Fluid Management Pit**

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

- Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image

☐ Yes ☐ No

Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application.

- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

Within 500 feet of a wetland.

- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☐ No

10.

#### **Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist:** Subsection B of 19.15.17.9 NMAC

**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☒ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
- ☐ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC
- ☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☒ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☒ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: \_\_\_\_\_ or Permit Number: \_\_\_\_\_

11.

#### **Multi-Well Fluid Management Pit Checklist:** Subsection B of 19.15.17.9 NMAC

**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ A List of wells with approved application for permit to drill associated with the pit.
- ☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
- ☐ Hydrogeologic Data - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

☐ Previously Approved Design (attach copy of design) API Number: \_\_\_\_\_ or Permit Number: \_\_\_\_\_

12.

**Permanent Pits Permit Application Checklist:** Subsection B of 19.15.17.9 NMAC

**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC  
☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC  
☐ Climatological Factors Assessment  
☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC  
☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC  
☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC  
☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC  
☐ Quality Control/Quality Assurance Construction and Installation Plan  
☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC  
☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC  
☐ Nuisance or Hazardous Odors, including H<sub>2</sub>S, Prevention Plan  
☐ Emergency Response Plan  
☐ Oil Field Waste Stream Characterization  
☐ Monitoring and Inspection Plan  
☐ Erosion Control Plan  
☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

13.

**Proposed Closure:** 19.15.17.13 NMAC

**Instructions:** Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

- Type: ☐ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☐ Permanent Pit ☐ Below-grade Tank ☐ Multi-well Fluid Management Pit  
☐ Alternative
- Proposed Closure Method: ☒ Waste Excavation and Removal  
☐ Waste Removal (Closed-loop systems only)  
☐ On-site Closure Method (Only for temporary pits and closed-loop systems)  
☐ In-place Burial ☐ On-site Trench Burial  
☐ Alternative Closure Method

14.

**Waste Excavation and Removal Closure Plan Checklist:** (19.15.17.13 NMAC) **Instructions:** Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.

- ☒ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC  
☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.13 NMAC  
☒ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)  
☒ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  
☒ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  
☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

15.

**Siting Criteria (regarding on-site closure methods only):** 19.15.17.10 NMAC

**Instructions:** Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria require justifications and/or demonstrations of equivalency. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 25 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Ground water is between 25-50 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Within 100 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input type="checkbox"/> No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	<input type="checkbox"/> Yes <input type="checkbox"/> No
Within 300 horizontal feet of a private, domestic fresh water well or spring used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input type="checkbox"/> No
Written confirmation or verification from the municipality; Written approval obtained from the municipality	<input type="checkbox"/> Yes <input type="checkbox"/> No
Within 300 feet of a wetland. US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input type="checkbox"/> No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance	



adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- Written confirmation or verification from the municipality; Written approval obtained from the municipality

☐ Yes ☐ No

Within the area overlying a subsurface mine.

- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division

☐ Yes ☐ No

Within an unstable area.

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map

☐ Yes ☐ No

Within a 100-year floodplain.

- FEMA map

☐ Yes ☐ No

16.

**On-Site Closure Plan Checklist:** (19.15.17.13 NMAC) *Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.*

- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC  
☐ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection E of 19.15.17.13 NMAC  
☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K of 19.15.17.11 NMAC  
☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC  
☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC  
☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC  
☐ Waste Material Sampling Plan - based upon the appropriate requirements of 19.15.17.13 NMAC  
☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)  
☐ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

17.

**Operator Application Certification:**

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Steve Moskal Title: Environmental Coordinator

Signature: [Signature] Date: October 17, 2018

e-mail address: steven.moskal@bpx.com Telephone: (505) 330-9179

18.

**OCD Approval:** ☐ Permit Application (including closure plan) ☒ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: [Signature] Approval Date: 10/18/2018

Title: Environmental Specialist OCD Permit Number: \_\_\_\_\_

19.

**Closure Report (required within 60 days of closure completion):** 19.15.17.13 NMAC

*Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.*

☐ Closure Completion Date: \_\_\_\_\_

20.

**Closure Method:**

- ☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)  
☐ If different from approved plan, please explain.

21.

**Closure Report Attachment Checklist:** *Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.*

- ☐ Proof of Closure Notice (surface owner and division)  
☐ Proof of Deed Notice (required for on-site closure for private land only)  
☐ Plot Plan (for on-site closures and temporary pits)  
☐ Confirmation Sampling Analytical Results (if applicable)  
☐ Waste Material Sampling Analytical Results (required for on-site closure)  
☐ Disposal Facility Name and Permit Number  
☐ Soil Backfilling and Cover Installation  
☐ Re-vegetation Application Rates and Seeding Technique  
☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude \_\_\_\_\_ Longitude \_\_\_\_\_ NAD: ☐ 1927 ☐ 1983

**Operator Closure Certification:**

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

e-mail address: \_\_\_\_\_ Telephone: \_\_\_\_\_





# *New Mexico Office of the State Engineer* **Wells with Well Log Information**

No wells found.

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 253277.78

**Northing (Y):** 4068410.47

**Radius:** 1610



# New Mexico Office of the State Engineer

## Wells Without Well Log Information

(A CLW##### in the  
POD suffix indicates the  
POD has been replaced  
& no longer serves a  
water right file.)

(R=POD has  
been replaced,  
O=orphaned,  
C=the file is  
closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest)

(NAD83 UTM in meters)

POD		q q q											
POD Number	Code	Subbasin	County	Source	64	16	4	Sec	Tws	Rng	X	Y	Distance
<a href="#">RG 31033</a>			TA		4	1	10	29N	09W		252818	4069734*	1401

Record Count: 1

### UTMNAD83 Radius Search (in meters):

Easting (X): 253277.78

Northing (Y): 4068410.47

Radius: 1610

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.





# *New Mexico Office of the State Engineer*

## **Point of Diversion with Meter Attached**

No PODs found.

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 253277.78

**Northing (Y):** 4068410.47

**Radius:** 1610

data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# BP - A L Elliott C 1

(B) Section 15, T29N, R9W  
API #: 3004508377

Imagery date: 10/5/2016

Annie L Elliott B 005E  
currently operated by  
Hilcorp Energy Co.

GL Elevation: 5,854 ft.

Dec. 1993 depth to  
groundwater approx.  
41.50 ft. below grade

Annie L Elliott B 5E

4640

Distance & Bearing  
approx. 0.4 mi., N26E

A L Elliott C 1

GL Elevation  
5,937 ft.

Google Earth

© 2018 Google

1000 ft





# LEGEND



MONITOR WELL



WELL HEAD

GROUNDWATER ELEV. 2-17-93

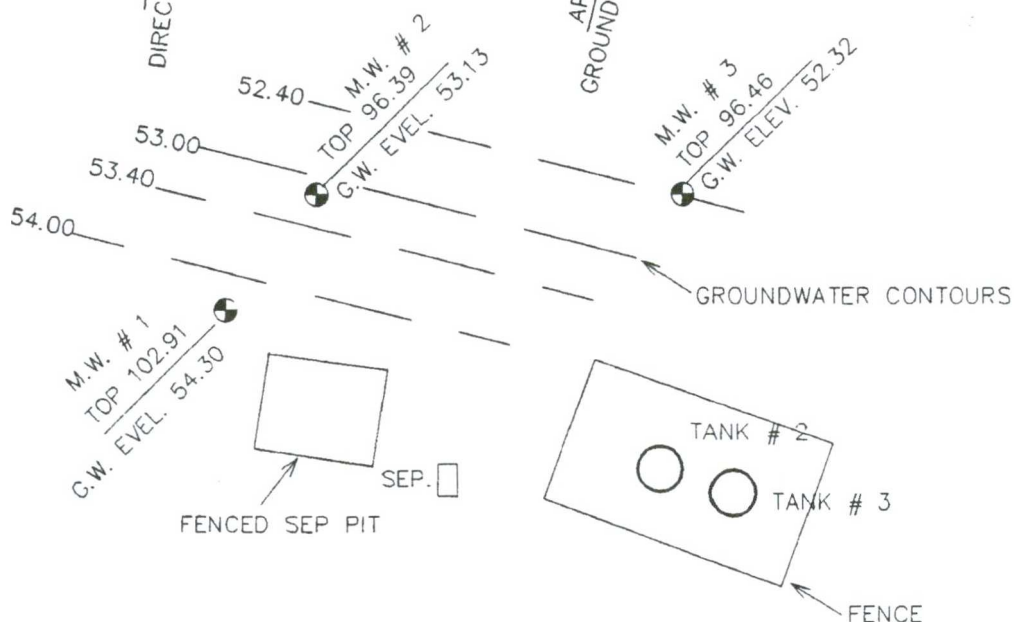
SCALE  
IN FEET



FLOW DIRECTION  
OF WASH

DIRECTION TO WASH

APPARENT  
GROUND WATER FLOW



WELL HEAD

TBM:  
TOP OF FLANGE AT  
BASE OF WELL HEAD.  
ELEV. 100.00

GL Elevation: 5,854 ft.

SITE DIAGRAM  
MCCO PRODUCTION CO  
A.L. ELLIOTT B 5E  
SAN ANTONIO CANYON

PROJECT NO. 92140/CC007

## ENVIROTECH INC.

ENVIRONMENTAL SCIENTISTS & ENGINEERS  
5796 U.S. HIGHWAY 64-3014  
FARMINGTON, NEW MEXICO 87401  
PHONE: (505) 632-0615

ENGINEERED BY: DEF  
DRAWN BY: DEF  
PROJECT MGR.: NV  
DATE SURVEYED: 1-12-93  
DATE DRAWN: 2-1-93

SHEET: # 4

WELL NAME	U-S-T-R	SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)
ELLIOTT ANNIE L B 5E	P102909	07-Jan-93	MW #1	48.58	
		13-May-93		44.17	53.44
		02-Sep-93			
		31-Mar-94		44.39	
		16-Jun-94		44.43	
		07-Jan-93	MW #2	43.25	
		13-May-93		43.31	50.05
		02-Sep-93			
		01-Dec-93		43.50	49.86
		31-Mar-94		43.52	
		16-Jun-94		43.56	
		07-Jan-93	MW #3	44.13	
		13-May-93		48.65	56.65
		02-Sep-93			
		31-Mar-94		48.89	
Top of casing for all monitor wells approx. 2.00 ft. above grade.		16-Jun-94		48.93	



# ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401  
(505) 632-0615

## BORE HOLE REPORT

BORING No: BH -  
JOE No: 92140  
PAGE No: 7  
LOCATION: A.L. ELLIOTT BEE  
DATE START: 11/16/92  
DATE FINISH: 11/16/92  
OPERATOR: MC  
PREPARED BY: NV

PROJECT: MONITOR WELL DRILLING PROJECT (EXPANDED VULNER. AREA)  
CLIENT: AMOCO PRODUCTION COMPANY  
CONTRACTOR: ENVIROTECH INC.  
EQUIPMENT USED: DRILLING RIG (CME 55)

DEPTH FEET	USC	OVM PPM	SAMPLE TYPE	BLOW/ FOOT	FIELD CLASSIFICATION AND REMARKS
5	SM				BROWN SILT-SAND, MOIST, LOOSE TO SLIGHTLY DENSE, NO APPARENT ODOR.
10	SM	5.1	SPT	NA	SAA.
15	SM				SAA, SLIGHT ODOR.
20	SP/ SG	64.9	SPT	NA	BROWN SAND WITH GRAVEL, MOIST, LOOSE TO SLIGHTLY DENSE, SLIGHT ODOR.
25	SM/ SG				BROWN SILT-SAND WITH SOME GRAVEL, MOIST, LOOSE TO SLIGHTLY DENSE, SLIGHT ODOR.
30	SP/ SC	29.9	SPT	NA	BROWN SAND/CLAY WITH SOME GRAVEL, MOIST, LOOSE TO SLIGHTLY DENSE, SLIGHT ODOR. SOIL TPH ANALYSIS (USEPA Method 418.1) = NON DETECT.
35	SM				BROWN SILT-SAND, MOIST, SLIGHTLY DENSE, SLIGHT ODOR.
40	SP	8.7	WTR	NA	BROWN SAND, MOIST, SLIGHTLY DENSE, SLIGHT ODOR.
45					
50					
					TOTAL DEPTH: 48 FEET GROUNDWATER DEPTH: 39 FEET @ 1315 (11/16/92)
					COMPLETION: SEE SHEET #4 (MONITOR WELL DETAILS; MW - 1).
					NOTES: SPT - SPLIT SPOON SAMPLE COLLECTED BY DRILL RIG. WTR - GROUNDWATER SAMPLE. SAA - SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED.
					OVM - SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (OVM).
					TPH - TOTAL PETROLEUM HYDROCARBONS. REFER TO LAB ANALYSIS MW #1 @ 30".

DRAWING: 100  
DATE: 02-08-93  
OWN: NV

# ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401  
(505) 632-0615

## BORE HOLE REPORT

BORING No: BH -2  
JOB No: 92140  
PAGE No: 8  
LOCATION: A.L. ELLIOTT BSE  
DATE START: 11/18/92  
DATE FINISH: 11/18/92  
OPERATOR: MD  
PREPARED BY: NV

PROJECT: MONITOR WELL DRILLING PROJECT (EXPANDED VULNER. AREA)  
CLIENT: AMOCO PRODUCTION COMPANY  
CONTRACTOR: ENVIROTECH INC.  
EQUIPMENT USED: DRILLING RIG (CME 55)

DEPTH FEET	SCS	OVM PPM	SAMPLE TYPE	BLOW/ FOOT	FIELD CLASSIFICATION AND REMARKS
5	SM	ND	CUT'G	NA	BROWN SILT-SAND, SLIGHTLY MOIST, LOOSE TO SLIGHTLY DENSE, NO APPARENT ODOR.
10	SM	5.2	SPT	NA	YELLOWISH BROWN SILT-SAND, SLIGHTLY MOIST, LOOSE TO SLIGHTLY DENSE, NO APPARENT ODOR.
15	SM	5.2	CUT'G	NA	SAA.
20	SM	106.2	SPT	NA	SAA, MOIST.
25	SM	41.3	CUT'G	NA	SAA, SLIGHT ODOR.
30	SM	62.2	SPT	NA	BROWN SILT-SAND, MOIST, SLIGHTLY DENSE, SLIGHT ODOR.
35	SM/ SG	72.2	CUT'G	NA	BROWN SILT-SAND WITH SOME GRAVEL, MOIST, SLIGHTLY DENSE, SLIGHT ODOR.
40	SM	40.0	SPT	NA	BROWN SILT-SAND, MOIST, SLIGHTLY DENSE, SLIGHT ODOR.
45	SM	69.8	CUT'G	NA	BROWN SAND, MOIST, SLIGHTLY DENSE, SLIGHT ODOR. SOIL TPH ANALYSIS @ 45' (USEPA Method 418.1) = NON DETECT.
50					NOTES: SPT - SPLIT SPOON SAMPLE COLLECTED BY DRILL RIG. CUT'G - GRAB SOIL SAMPLE. ND - NONE DETECTED. WTR - GROUNDWATER SAMPLE. SAA - SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED. OVM - SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (OVM). TPH - TOTAL PETROLEUM HYDROCARBONS. REFER TO LAB ANALYSIS MW #2 (45').
55					
TOTAL DEPTH: 56 FEET GROUNDWATER DEPTH: 47 FEET @ 1100 (11/18/92)					DRAWING: THRPTB DATE: 02-11-93 DWN BY: NV
COMPLETION: SEE SHEET #4 (MONITOR WELL DETAILS) MW - 2).					



# ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401  
(505) 632-0615

## BORE HOLE REPORT

BORING No: BH -3  
JOB No: 92140  
PAGE No: 9  
LOCATION: A.L. ELLIOTT B5E  
DATE START: 11/18/92  
DATE FINISH: 11/18/92  
OPERATOR: MD  
PREPARED BY: NV

PROJECT: MONITOR WELL DRILLING PROJECT (EXPANDED VULNER. AREA)  
CLIENT: AMOCO PRODUCTION COMPANY  
CONTRACTOR: ENVIROTECH INC.  
EQUIPMENT USED: DRILLING RIG (CME 55)

DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/ FOOT	FIELD CLASSIFICATION AND REMARKS
5					
10	SM/ SC	ND	SPT	NA	YELLOWISH BROWN SILT-SAND/CLAY, NON PLASTIC, DRY, SLIGHTLY DENSE, NO APPARENT ODOR.
15					
20	SM	ND	SPT	NA	YELLOWISH BROWN SILT-SAND, DRY, SLIGHTLY DENSE, NO APPARENT ODOR.
25					
30	SM	ND	SPT	NA	BROWN SILT-SAND, MOIST, SLIGHTLY DENSE, NO APPARENT ODOR.
35					
40	SM ▼	11.4	SPT	NA	BROWN SILT-SAND, WET, SLIGHTLY DENSE, NO APPARENT ODOR. SOIL TPH ANALYSIS @ 40' (USEPA Method 418.1) = 8.6 ppm.
45					
50					
TOTAL DEPTH: 51 FEET GROUNDWATER DEPTH: 41 FEET @ 1030 (11/18/92)					
COMPLETION: SEE SHEET #4 (MONITOR WELL DETAILS, MW - 3).					
NOTES: SPT - SPLIT SPOON SAMPLE COLLECTED BY DRILL RIG.					
ND - NONE DETECTED.					
OVM - SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (OVM).					
TPH - TOTAL PETROLEUM HYDROCARBONS. REFER TO LAB ANALYSIS MW #3 (40').					

DRAWING: THRPT9  
DATE: 02-11-93  
DWN BY: NV

## **SITING AND HYDRO-GEOLOGICAL REPORT FOR A L ELLIOTT C 001**

### **Siting Criteria 19.15.17.10 NMAC**

Depth to groundwater at the site is estimated to be 120-125 feet below surface. This is based on the attached well information associated with the A L Elliott B 5E located 0.4 miles away and supports data from Stone and others (1983), and depth to groundwater data obtained from water wells permitted by the New Mexico State Engineer's Office (OSE, Figure 1). Local topography and proximity to adjacent water features is also considered. A topographic map of the site is provided as Figure 2 and demonstrates that the below grade tank (BGT) is not within 300 feet of any continuously flowing watercourse or within 200 feet of any other significant watercourse, lakebed, sinkhole or playa lake as measured from the ordinary high water mark. Figure 3 demonstrates that the BGT is not within 300 feet of a permanent residence, school, hospital, institution or church. Figure 4 demonstrates, based on a search of the OSE database and USGS topographic maps, that there are no freshwater wells or springs within 1000 feet of the BGT. Figure 5 demonstrates that the BGT is not within a municipal boundary or a defined municipal freshwater well field. Figure 6 demonstrates that the BGT is not within 500 feet of a wetland. Figure 7 demonstrates that the BGT is not in an area overlying a subsurface mine. The BGT is not located in an unstable area. Figure 8 demonstrates that the BGT is not within the mapped FEMA 100-year floodplain..

### **Local Geology and Hydrology**

This particular site is located on a slope close to the main channel of Manzanares Canyon. Regional topography of this area is composed of mesas dissected by deep, narrow canyons and arroyos. The more resistant cliff-forming sandstones of the San Jose Formation cap the interbedded siltstones, shales and sandstones of the Nacimiento Formation. Accumulations of talus and eroded sands at the base of canyon walls form steep to gentle slopes that transition into flat-bottomed arroyos within the canyons. Deposits of Quaternary alluvial and eolian sands occur prominently near the surface of Largo Canyon, especially near streams and washes.

### **Regional Geology and Hydrology**

The San Juan Basin is situated in the Navajo section of the Colorado Plateau and is characterized by broad open valleys, mesas, buttes and hogbacks. Away from major valleys and canyons topographic relief is generally low. Native vegetation is sparse and shrubby. Drainage is mainly by the San Juan River, the only permanent stream in the Navajo Section of the Colorado Plateau. The San Juan River is a tributary of the Colorado River. Major tributaries include the Animas, Chaco and La Plata Rivers. Flow of the San Juan River across the basin is regulated by the Navajo Dam, located about 30 miles northeast of Farmington, New Mexico. The climate is arid to semiarid with an average annual precipitation of 8 to 10 inches. Soils within the basin consist of weathered parent rock derived from predominantly physical means mostly from eolian depositional system with fluvial having a lesser impact.

Cretaceous and Tertiary sandstones, as well as Quaternary Alluvial deposits, serve as the primary aquifers in the San Juan Basin (Stone et al., 1983). The Nacimiento Formation of Paleocene age occurs at the surface in a broad belt at the western and southern edges of the central San Juan



Basin and dips beneath the San Jose Formation in the center. The lower part of the Nacimiento Formation is composed of interbedded black, carbonaceous mudstones and white coarse-grained sandstones. The upper part is comprised of mudstone and sandstone. It is generally slope-forming, even within the sandstone units. Thickness of the Nacimiento ranges from 418 to 2232 feet. Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation are between 0 and 1000 feet deep in this section of the basin. Wells within these bodies flow from 16 to 100 gallons per minute (gpm), and transmissivities are expected to be 100 ft<sup>2</sup>/d (Stone et al, 1983). Groundwater within these aquifers flows toward the San Juan River.

### **References**

Circular 154—Guidebook to coal geology of northwest New Mexico By E. C. Beaumont, J. W. Shomaker, W. J. Stone, and others, 1976

Stone, et al., 1983, Hydrogeology and Water Resources of the San Juan Basin, New Mexico, Socorro, New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 6, 70 p

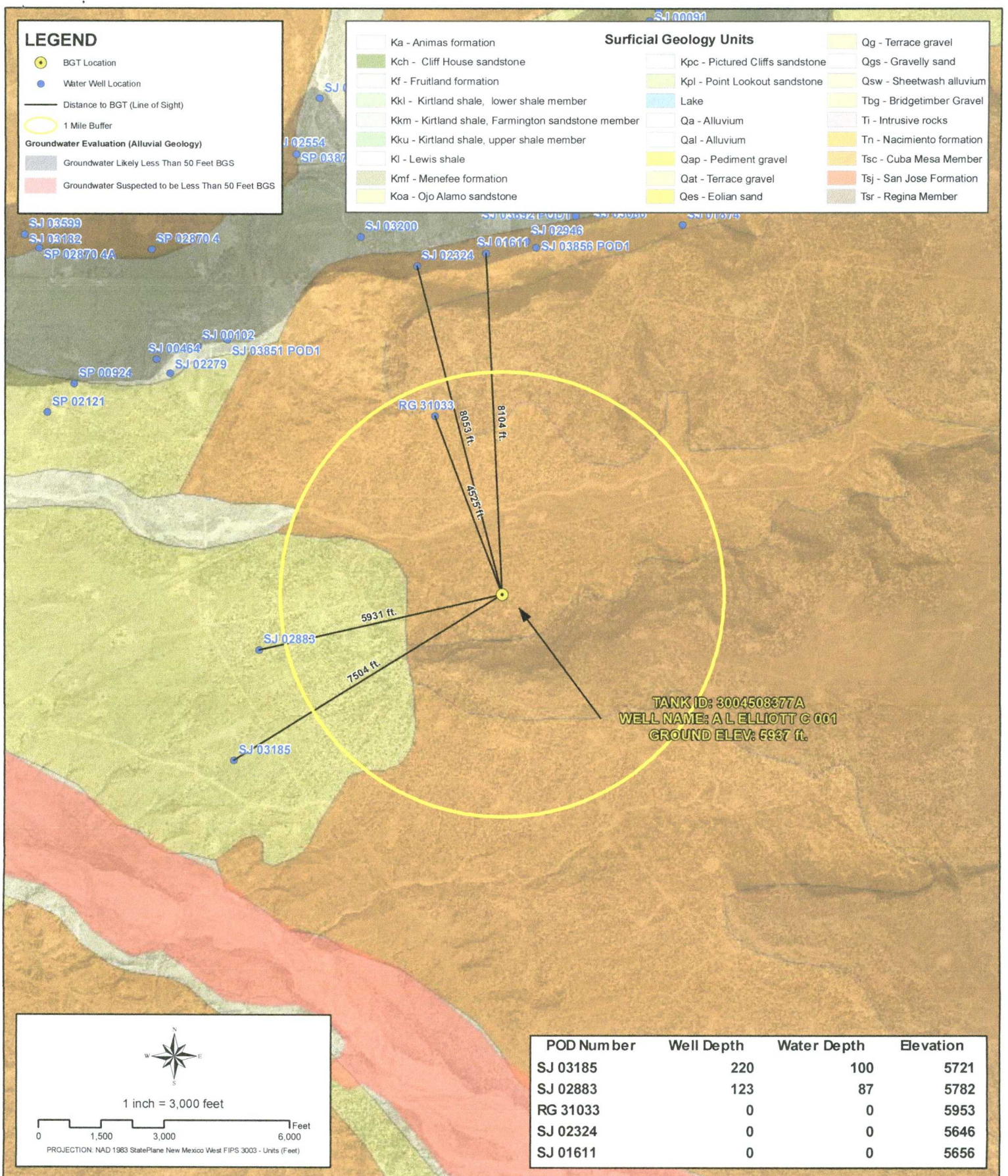


## LEGEND

- BGT Location
- Water Well Location
- Distance to BGT (Line of Sight)
- 1 Mile Buffer
- Groundwater Evaluation (Alluvial Geology)**
- Groundwater Likely Less Than 50 Feet BGS
- Groundwater Suspected to be Less Than 50 Feet BGS

## Surficial Geology Units

- |   |                                 |                           |
|---|---------------------------------|---------------------------|
| Ka - Animas formation                             | Kpc - Pictured Cliffs sandstone | Qg - Terrace gravel       |
| Kch - Cliff House sandstone                       | Kpl - Point Lookout sandstone   | Qgs - Gravelly sand       |
| Kf - Fruitland formation                          | Lake                            | Qsw - Sheetwash alluvium  |
| Kkl - Kirtland shale, lower shale member          | Qa - Alluvium                   | Tbg - Bridgetimber Gravel |
| Kkm - Kirtland shale, Farmington sandstone member | Qal - Alluvium                  | Ti - Intrusive rocks      |
| Kku - Kirtland shale, upper shale member          | Qap - Pediment gravel           | Tn - Nacimiento formation |
| Kl - Lewis shale                                  | Qat - Terrace gravel            | Tsc - Cuba Mesa Member    |
| Kmf - Menefee formation                           | Qes - Eolian sand               | Tsj - San Jose Formation  |
| Koa - Ojo Alamo sandstone                         |                                 | Tsr - Regina Member       |



POD Number	Well Depth	Water Depth	Elevation
SJ 03185	220	100	5721
SJ 02883	123	87	5782
RG 31033	0	0	5953
SJ 02324	0	0	5646
SJ 01611	0	0	5656



1 inch = 3,000 feet

0 1,500 3,000 6,000 Feet

PROJECTION: NAD 1983 StatePlane New Mexico West FIPS 3003 - Units (Feet)

Creation Date: 5/3/2010

File Path: X:\BP\PASS\Sector\_7\Sector\_7A\MXDs\3004508377A.mxd

Created by: EBB

Reviewed by: AGH



# GROUNDWATER LESS THAN 50 FT.

WELL NAME: A L ELLIOTT C 001

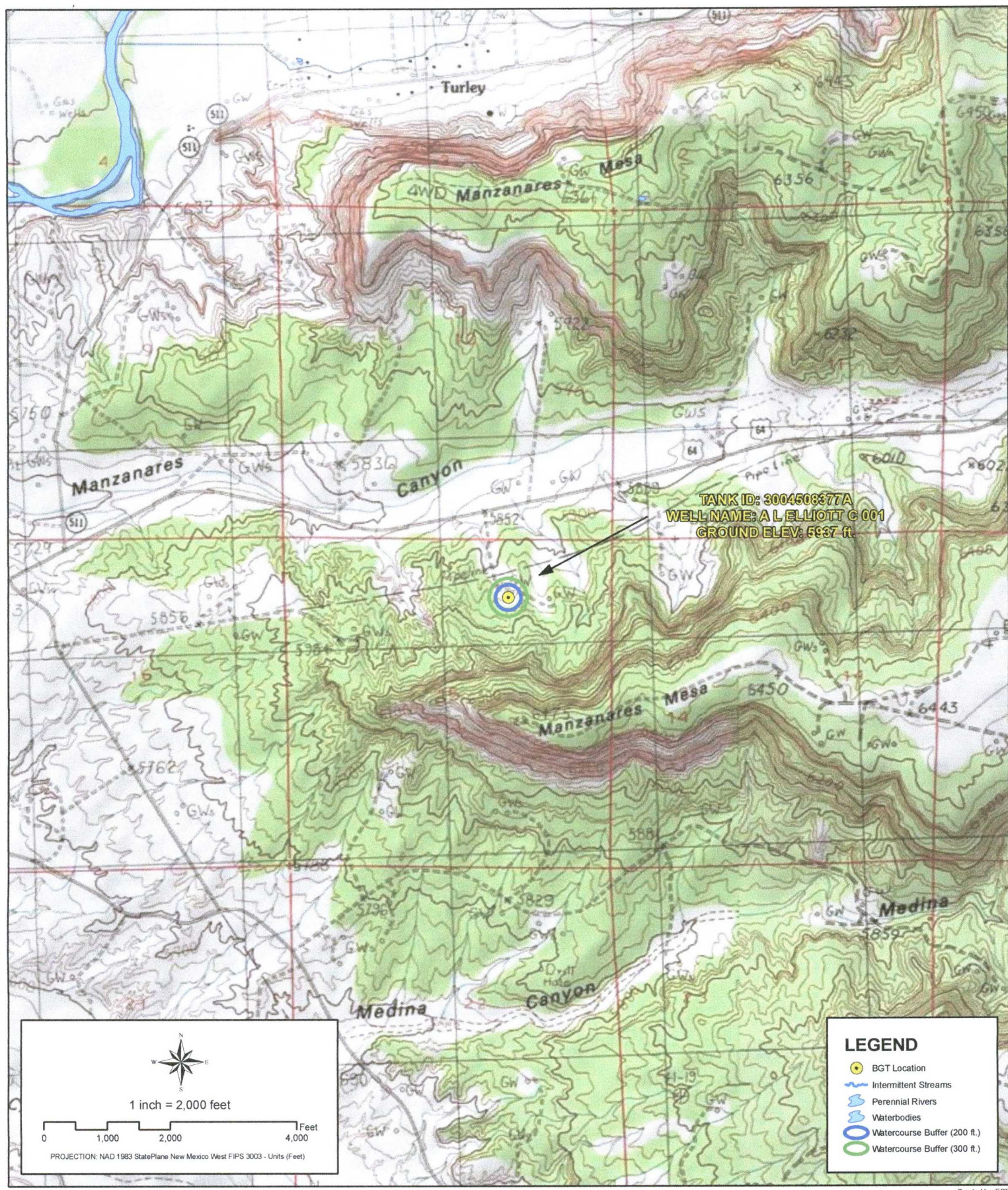
API NUMBER: 3004508377 TANK ID: 3004508377A

SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M. NM23

FIGURE

1





Creation Date: 5/3/2010

Created by: EBB

File Path: X:\BP\PASS\Sector\_7\Sector\_7A\MXDs\3004508377A.mxd

Reviewed by: AGH



## PROXIMITY TO WATERCOURSES

**WELL NAME: A L ELLIOTT C 001**

**API NUMBER: 3004508377 TANK ID: 3004508377A**

**SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M. NM23**

**FIGURE**

**2**





Creation Date: 5/3/2010

File Path: X:\BP\PASS\Sector\_7\Sector\_7A\MXD\3004508377A.mxd

Created by: EBB

Reviewed by: AGH



## PROXIMITY TO PERMANENT STRUCTURE

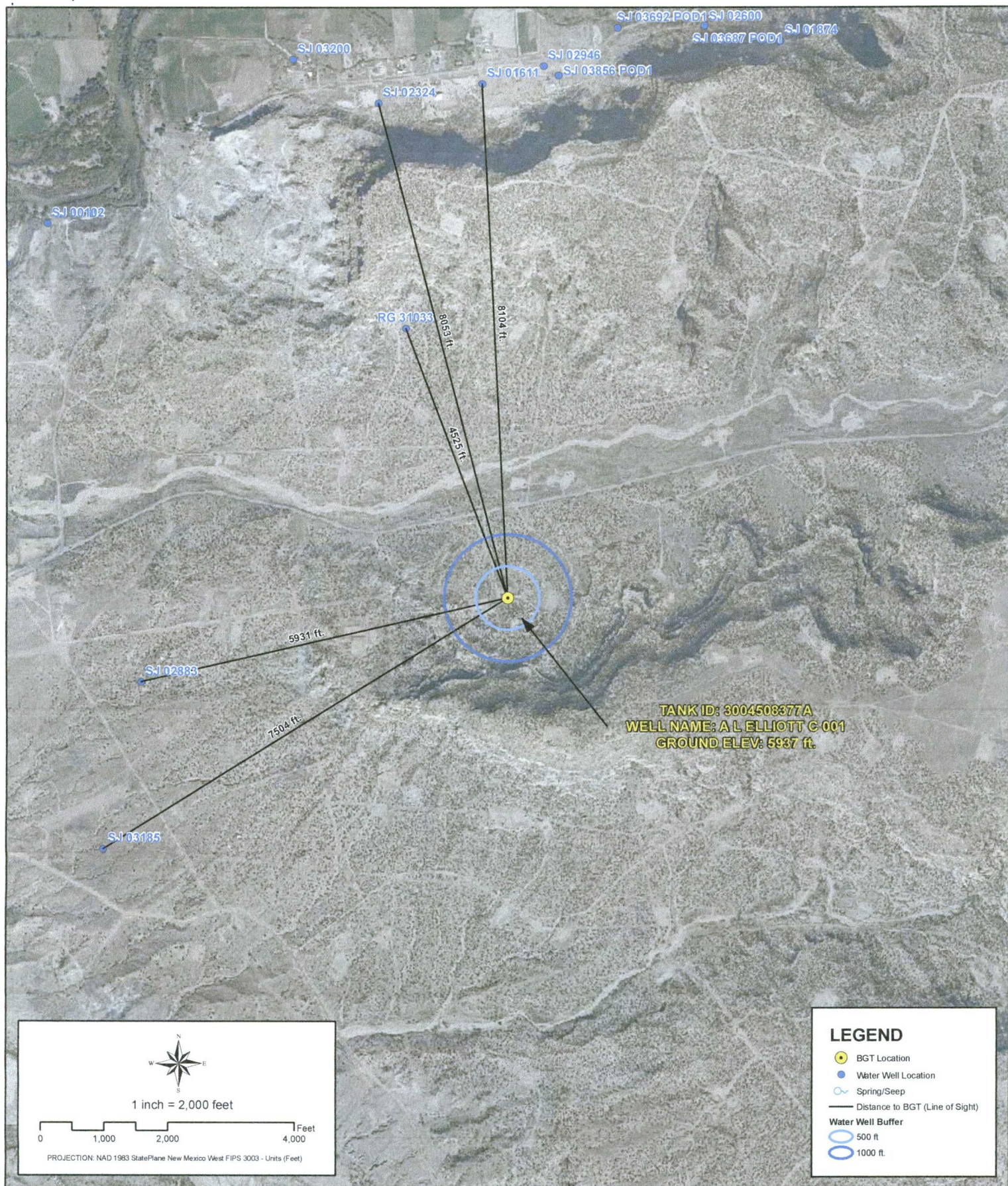
WELL NAME: A L ELLIOTT C 001

API NUMBER: 3004508377 TANK ID: 3004508377A

SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M. NM23

FIGURE  
3





File Path: X:\BP\PASS\Sector\_7\Sector\_7\AIMXD\3004508377A.mxd



# PROXIMITY TO WATER WELLS

**WELL NAME: A L ELLIOTT C 001**

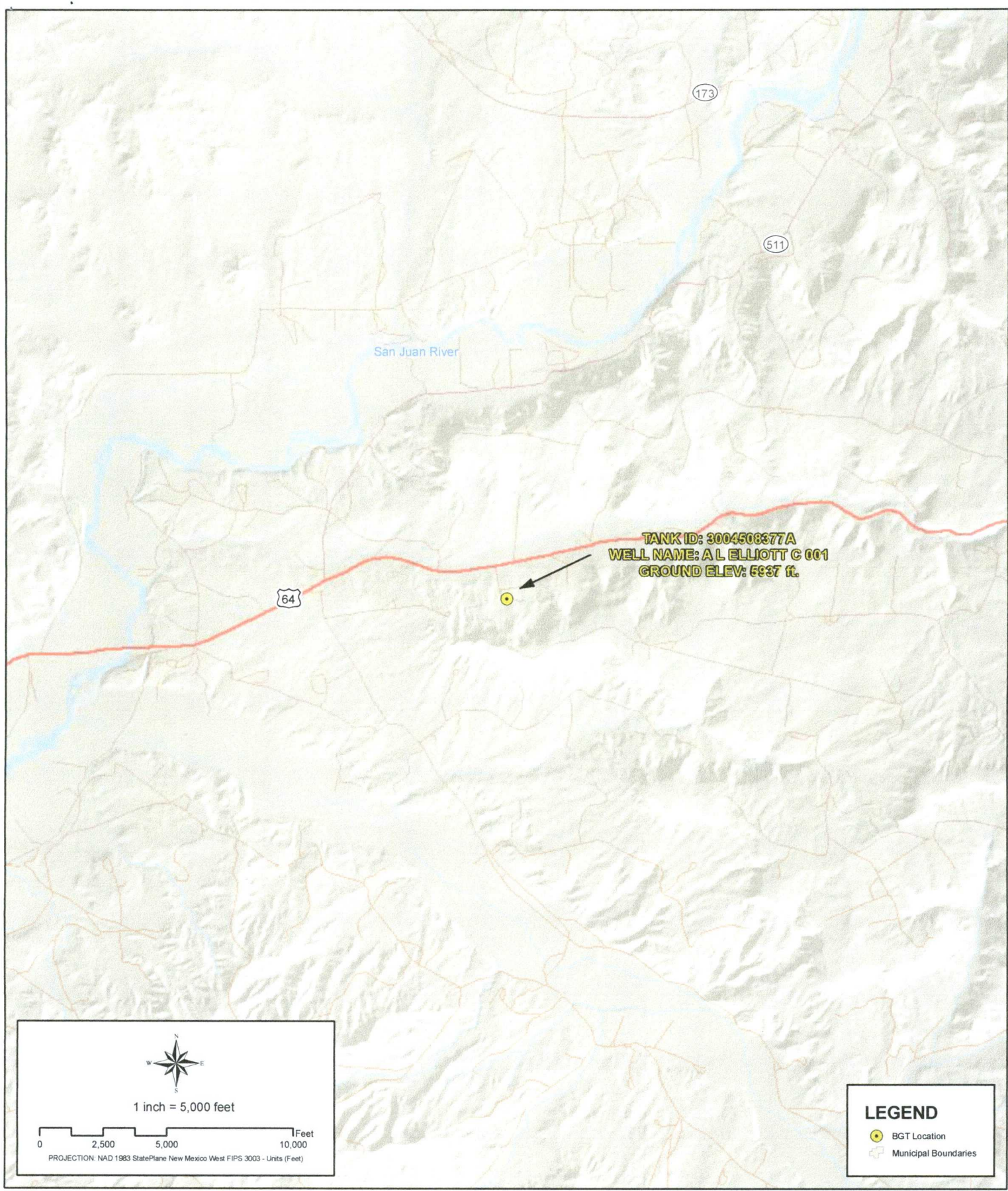
API NUMBER: 3004508377 TANK ID: 3004508377A

SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M. NM23

FIGURE

4





Creation Date: 5/3/2010  
File Path: X:\BP\PASS\Sector\_7\Sector\_7A\MXDs\3004508377A.mxd  
Created by: EBB  
Reviewed by: AGH



## PROXIMITY TO MUNICIPAL BOUNDARY

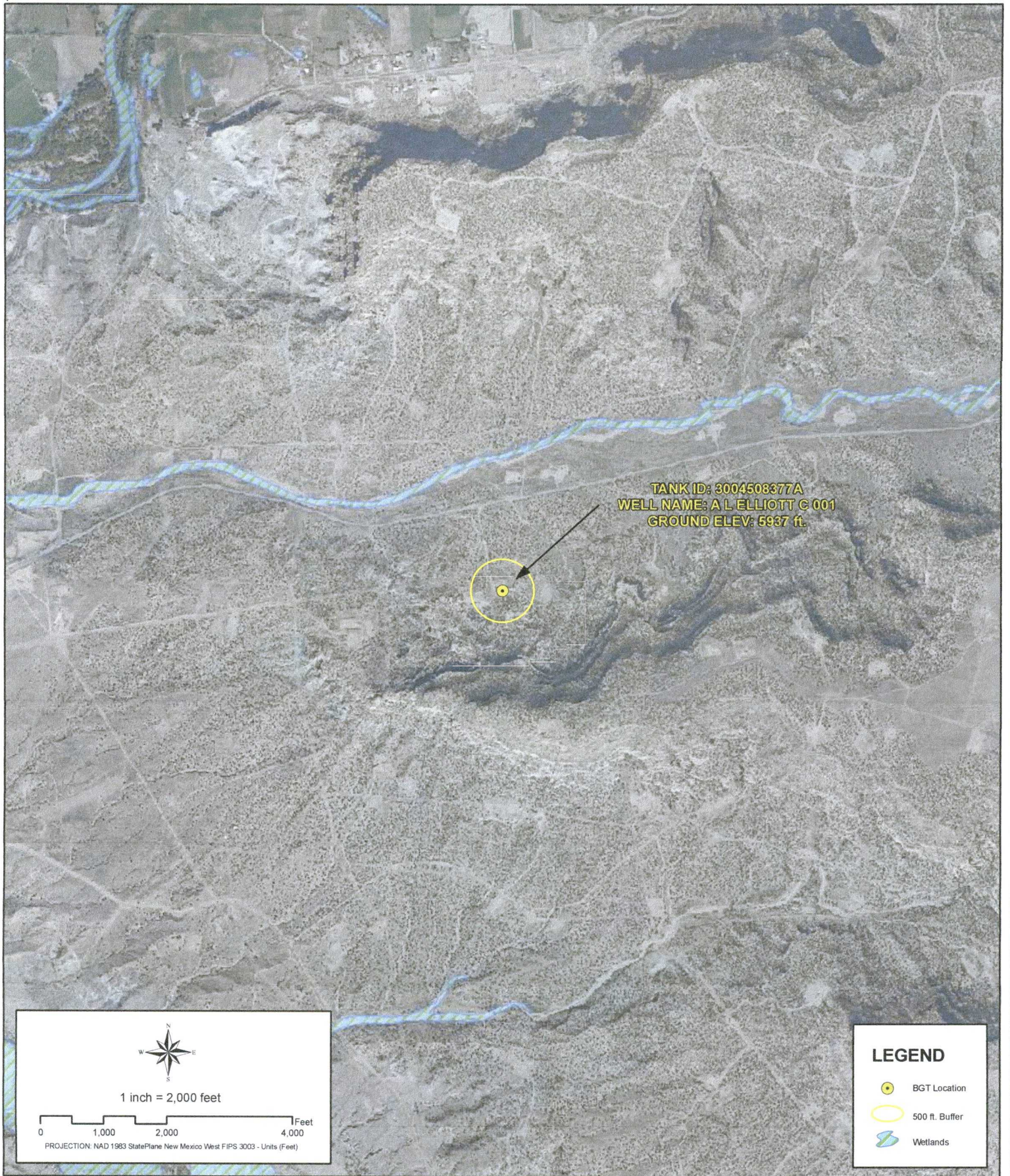
WELL NAME: A L ELLIOTT C 001

API NUMBER: 3004508377 TANK ID: 3004508377A

SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M. NM23

FIGURE  
5





## PROXIMITY TO WETLANDS

**WELL NAME: A L ELLIOTT C 001**

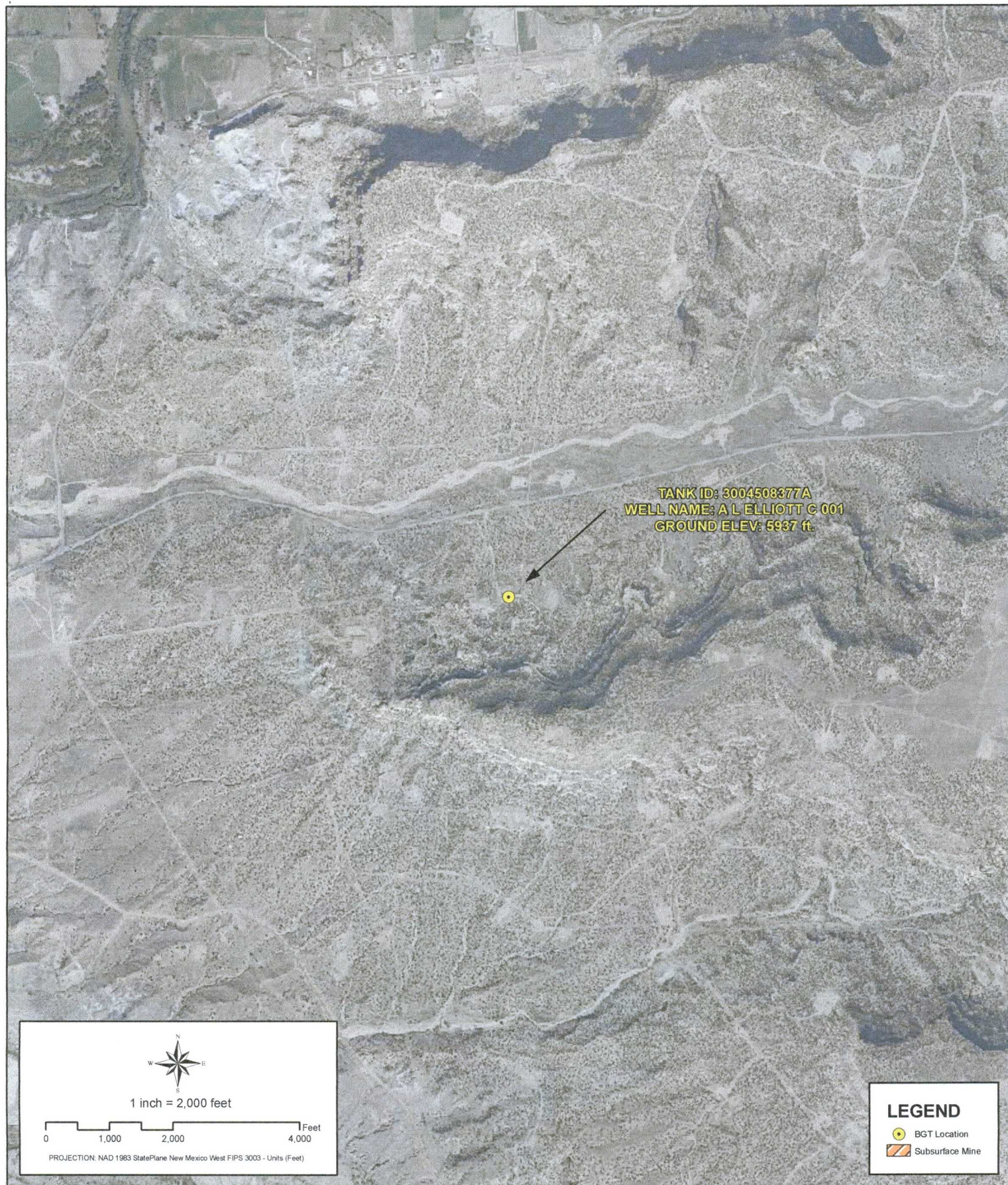
API NUMBER: 3004508377 TANK ID: 3004508377A

SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M. NM23

FIGURE

6





Creation Date: 5/3/2010

Created by: EBR

File Path: X:\BP\PASS\Sector\_7\Sector\_7\AIMXD\3004508377A.mxd

Reviewed by: AGH



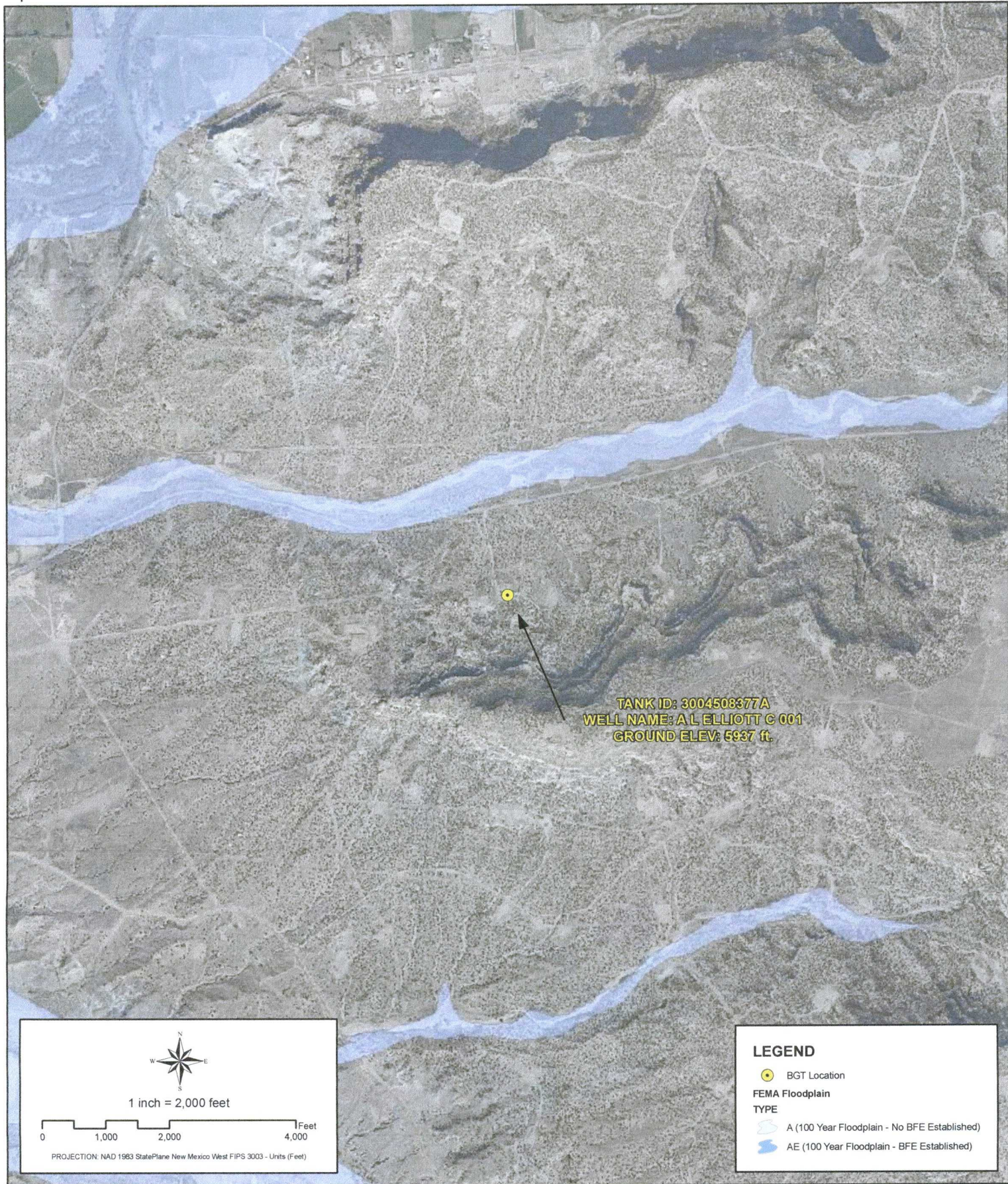
## PROXIMITY TO SUBSURFACE MINES

WELL NAME: A L ELLIOTT C 001

API NUMBER: 3004508377 TANK ID: 3004508377A  
SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M.NM23

FIGURE  
7





File Path: X:\BP\IPASS\Sector\_7\Sector\_7\AIMXD\3004508375A.mxd



**PROXIMITY TO FLOODPLAIN**

**WELL NAME: A L ELLIOTT C 001**

API NUMBER: 3004508377 TANK ID: 3004508377A

**SECTION 15, TOWNSHIP 29.0N, RANGE 09W, P.M. NM23**

**FIGURE**

**8**



# SOUTHERN SAN JUAN BASIN (SSJB)

## Figure Citation List

March 2010

### **Figure 1: Groundwater Less Than 50 ft.**

#### **Layers:**

##### **Water Wells:**

**iWaters Database: NMOSE/ISC (Dec. 2009)**

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from:  
[http://www.ose.state.nm.us/waters\\_db\\_index.html](http://www.ose.state.nm.us/waters_db_index.html).

##### **Cathodic Wells:**

**Tierra Corrosion Control, Inc. (Aug. 2008)**

Tierra Corrosion Control, Inc. 1700 Schofield Ln. Farmington, NM 87401. Driller's Data Log. (Data collected: All data are associated with cathodic protection wells installed at BP facilities between 2008-2009. Data received: 05/06/2010).

##### **Hydrogeological Evaluation:**

**Wright Water Engineers, Inc. (2008)**

Evaluation completed by Wright Water Engineers, Inc. Durango Office. Data created using digital statewide geology at 1:500,000 from USGS in combination with 10m Digital Elevation Model (DEM) from NRCS. (Data compiled: 2008.)

Results: Spatial Polygons representing "Groundwater likely to be less than 50 ft." and "Groundwater suspected to be less than 50 ft.".

##### **Surficial Geology:**

**USGS (1963/1987)**

Data digitized and rectified by Geospatial Consultants. (Data digitized: 03/23/ 2010). Original hard copy maps sourced from United States Geological Survey (USGS). Data available from:  
<http://pubs.er.usgs.gov/>.

*Geology, Structure and Uranium Deposits of the Shiprock Quadrangle, New Mexico and Arizona.* 1:250,000. I - 345. Compiled by Robert B. O'Sullivan and Helen M. Beikman. 1963.

*Geologic Map of the Aztec 1 x 2 Quadrangle, Northwestern New Mexico and Southern Colorado.* 1:250,000. I - 1730. Compiled by Kim Manley, Glenn R. Scott, and Reinhard A. Wobus. 1987.

##### **Aerial Imagery:**

**Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:  
NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

## **Figure 2: Proximity to Watercourses**

### **Layers:**

#### **Perennial Streams:**

**NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: <http://nhd.usgs.gov/>.

#### **Intermittent Streams:**

**NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: <http://nhd.usgs.gov/>.

#### **Water Bodies:**

**NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from: <http://nhd.usgs.gov/>.

#### **USGS Topographic Maps:**

**USGS (2007)**

USGS 24k Topographic map series. 1:24000. Maps are seamless, scanned images of USGS paper topographic maps. Data available from: <http://store.usgs.gov>.

## **Figure 3: Proximity to Permanent Structure**

### **Layers:**

#### **Aerial Imagery:**

**Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:  
NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.



#### **Figure 4: Proximity to Water Wells**

##### **Layers:**

###### **Water Wells:**

**iWaters Database: NMOSE/ISC (Dec. 2009)**

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from:  
[http://www.ose.state.nm.us/waters\\_db\\_index.html](http://www.ose.state.nm.us/waters_db_index.html).

###### **Springs/Seeps:**

**NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from:  
<http://nhd.usgs.gov/>.

###### **Aerial Imagery:**

**Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:  
NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

#### **Figure 5: Proximity to Municipal Boundary**

##### **Layers:**

###### **Municipal Boundary:**

**San Juan County, New Mexico (2010)**

Data provided by San Juan County GIS Division. (Data received: 03/25/2010).

###### **Shaded Relief:**

**NED, USGS (1999)**

National Elevation Dataset (NED). U.S. Geological Survey, EROS Data Center. (Data created: 1999. Data downloaded: April, 2010). Resolution: 10 meter (1/3 arc-second). Data available from: <http://ned.usgs.gov/>.

###### **StreetMap North America:**

**Tele Atlas North America, Inc., ESRI (2008)**

Data derived from Tele Atlas Dynamap/Transportation North America, version 5.2. (Data updated: annually. Data series issue: 2008).



## **Figure 6: Proximity to Wetlands**

### **Layers:**

#### **Wetlands:**

#### **NWI (2010)**

National Wetlands Inventory (NWI). U.S Fish and Wildlife Service. (Data last updated: 09/25/2009. Data received: 03/21/2010). Data available from: <http://www.fws.gov/wetlands/>.

#### **Aerial Imagery:**

#### **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:

NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

## **Figure 7: Proximity to Subsurface Mine**

### **Layers:**

#### **Subsurface Mine:**

#### **NM Mining and Minerals Division ( 2010)**

New Mexico Mining and Minerals Division. (Data received: 03/12/2010). Contact: Susan Lucas Kamat, Geologist. Provided PLSS NM locations (Sections) for the two subsurface mines located in San Juan and Rio Arriba counties.

#### **Aerial Imagery:**

#### **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:

NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.



## **Figure 8: Proximity to FEMA Floodplain**

### **Layers:**

#### **FEMA Floodplain:**

#### **FEMA (varying years)**

Data digitized and rectified by Wright Water Engineers, Inc. (Data digitized: August 2008).  
Digitized from hard copy Flood Insurance Rate Maps (FIRMs) (varying years) of San Juan County.

#### **Aerial Imagery:**

#### **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery.

Projected coordinate system name:

NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.



# BP AMERICA PRODUCTION COMPANY

SAN JUAN BASIN, NORTHWEST NEW MEXICO

## BELOW-GRADE TANK CLOSURE PLAN

This plan will address the method, procedures, and protocols for closure of below-grade tanks (BGTs) on BP America Production Company (BP) well sites pursuant to Subsection A of 19.15.17.13 NMAC. As stipulated in Paragraph (1) of Subsection C of 19.15.17.13 NMAC, BP will not commence closure without first obtaining approval of the closure plan submitted pursuant to Paragraph (3) of Subsection B of 19.15.17.9 NMAC. If deviations from this plan are necessary, BP will request preapproval from the Division District III office of any specific changes and will be included on form C-144. BP shall close its BGTs within 60 days of cessation of the operation as required by Paragraph (4) of Subsection G of 19.15.17.13 NMAC.

### **General Closure Plan**

1. BP shall notify the surface owner by certified mail; return receipt requested that it plans to close a BGT. Notice given will be at least 72 hours in advanced, but not more than one week prior to any closure operation. The notice shall include the well name, API number, and legal description of the location. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records demonstrates compliance with this requirement.
2. BP shall notify the Division District III office verbally and in writing at least 72 hours, but not more than one week, prior to any closure operation. The notice shall include the Operator's name, and the location of the BGT to be closed by unit letter, section, township and range. If the BGT closure is associated with a particular well, then the notice shall also include the well's name, number and API number.
3. BP will removed liquids and sludge within 60 days of cessation of operations of the BGT. BP shall remove liquids and sludge from the BGT prior to implementing a closure method and dispose of the liquids and sludge in a NMOCD approved facility. The facilities to be used are:
  - a. BP Crouch Mesa Landfarm, Permit NM-02-003 (Solids)
  - b. JFJ Landfarm, Permit NM-01-010 (B) (Solids and Sludge) c. Basin Disposal, Permit NM-01-0005 (Liquids)
  - d. Envirotech Inc. Soil Remediation Facility, Permit NM-01-0011 (Solids and Sludge)
  - e. BP Operated E.E. Elliott SWD #1, API 30-045-27799 (Liquids)
  - f. BP Operated 13 GCU SWD #1, API 30-045-28601 (Liquids)
  - g. BP Operated GCU 259 SWD, API 30-045-20006 (Liquids) h. BP Operated GCU 306 SWD, API 30-045-24286 (Liquids)
  - i. BP Operated GCU 307 SWD, API 30-045-24248 (Liquids)
  - j. BP Operated GCU 328 SWD, API 30-045-24735 (Liquids)
  - k. BP Operated Pritchard SWD #1, API 30-045-28351 (Liquids)
4. BP shall remove the BGT within 60 days of cessation of the operation. BP shall remove the BGT and dispose of it in a NMOCD approved facility or recycle, reuse, or reclaim it in a manner that the Division District III office approves. Documentation as to the final disposition of the removed BGT will be provided in the final closure report.
5. BP shall remove any on-site equipment associated with a BGT unless the equipment is required for some other purpose within 6 months of BGT removal.
6. BP shall test the soils beneath the BGT to determine whether a release has occurred. BP shall collect at a minimum: a five (5) point composite sample to include any obvious stained or wet soils, or other evidence of a release under the BGT. The composite sample shall be collected and analyzed as required for the constituents listed in Table I within Subparagraph (a) of paragraph (3) of Subsection C of 19.15.17.13 NMAC (see Table 1 on following page).



<p align="center"><b>Table 1</b> <b>Closure Criteria for Soils Beneath Below-Grade Tanks</b></p>			
Depth below bottom of pit to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**
≤50 feet	Chloride	EPA 300.0	600 mg/kg
	TPH	EPA SW-846 Method 418.1	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg
51 feet-100 feet	Chloride	EPA 300.0	10,000 mg/kg
	TPH	EPA SW-846 Method 418.1	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg
<div style="border: 1px solid red; border-radius: 50%; padding: 2px; display: inline-block;"> <b>&gt; 100 feet</b> </div>	Chloride	EPA 300.0	20,000 mg/kg
	TPH	EPA SW-846 Method 418.1	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg

**Notes:** mg/Kg = milligram per kilogram, BTEX = benzene, toluene, ethylbenzene, and total xylenes, TPH = total petroleum hydrocarbons, TDS = total dissolved solids.

\* - Or other test methods approved by the division

\*\* - Numerical limits or natural background level, whichever is greater

7. If any contaminant concentration exceeds those standards set in Table I, BP will acknowledge NMOCD's position to require additional delineation upon review of the results. BP will not proceed with any further closure activities until approval is first granted by NMOCD.
8. If the sampling demonstrates that all contaminant constituents do not exceed the concentrations specified in Table I, then BP shall backfill the excavation, with non-waste containing, uncontaminated, earthen material.
9. BP shall reclaim the BGT location and all areas associated with the BGT including associated access roads to a safe and stable condition that blends with the surrounding undisturbed area. BP shall substantially restore the impacted surface area to the condition that existed prior to oil and gas operations by placement of the soil cover as provided in Paragraph (2) of Subsection H of 19.15.17.13 NMAC, re-contour the BGT location and associated areas to a contour that approximates the original contour and blends with the surrounding topography and re-vegetate according to Paragraph (5) of Subsection H of 19.15.17.13 NMAC.
10. BP may propose an alternative to the re-vegetation or recontouring requirement if it can demonstrate to the NMOCD's District III office that the proposed alternative provides equal or greater prevention of erosion, and protection of fresh water, public health and the environment. BP will seek surface owner approval of the proposed alternative and provide written documentation of the surface owner's approval to NMOCD for its approval.
11. Areas reasonably needed for production operations or for subsequent drilling operations shall be compacted, covered, paved, or otherwise stabilized and maintained in such a way as to minimize dust and erosion to the extent practicable.
12. The soil cover for closures after site contouring, where the BGT has been removed and if necessary remediated beneath the BGT to chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0, shall consist of the background thickness of topsoil or one foot or suitable material, whichever is greater.



13. The soil cover will be constructed to the site's existing grade and all practicable efforts will be made to prevent ponding of water and erosion of the cover material.
14. All areas disturbed by the closure of the BGT, except areas reasonably needed for production operations or for subsequent drilling operations, shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable.
15. Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns. The disturbed area then shall be reseeded in the first favorable growing season following closure of the BGT.
16. Reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.
17. The re-vegetation and reclamation obligations imposed by other applicable federal or tribal agencies on lands managed by those agencies shall supersede these provisions and govern the obligations of BP subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.
18. Pursuant to Subparagraph (e) of Paragraph (5) of Subsection H of 19.15.17.13 NMAC, BP shall notify the NMOCD when reclamation and re-vegetation has been successfully achieved.
19. Within 60 days of closure completion, BP shall submit a closure report on NMOCD's form C-144, and will include the following;
  - a. necessary attachments to document all closure activities
  - b. sampling results
  - c. information required by 19.15.17 NMAC
  - d. details on back-filling, capping and covering, where applicable.
20. BP shall certify that all information in the report and attachments is accurate, truthful, and compliant with all applicable closure requirements and conditions specified in the approved closure plan.