

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 August 1, 2011

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

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

10669 Amended
Type of action: ☒ Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
☐ Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
☐ Modification to an existing permit
☐ Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, 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: Logos Operating, LLC OGRID #: 289408
Address: 4001 North Butler Avenue, Building 7101 Farmington, NM 87401
Facility or well name: Logos #5
API Number: 30-045-35423 OCD Permit Number: _____
U/L or Qtr/Qtr P Section 4 Township 23N Range 8W County: San Juan
Center of Proposed Design: Latitude 36.25082° N Longitude 107.68123° W NAD: ☐ 1927 ☒ 1983
Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Pit:** Subsection F or G of 19.15.17.11 NMAC
Temporary: ☒ Drilling ☐ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A
☒ Lined ☐ Unlined Liner type: Thickness 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☒ Welded ☒ Factory ☐ Other _____ Volume: 8,000 bbl Dimensions: L 130 x W 60 x D 10

RCVD NOV 28 '12
OIL CONS. DIV.
DIST. 3

3.
☐ **Closed-loop System:** Subsection H of 19.15.17.11 NMAC
Type of Operation: ☐ P&A ☐ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other _____
☐ Lined ☐ Unlined Liner type: Thickness _____ mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other _____
Liner Seams: ☐ Welded ☐ Factory ☐ Other _____

4.
☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC
Volume: _____ bbl Type of fluid: _____
Tank Construction material: _____
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other _____
Liner type: Thickness _____ mil ☐ HDPE ☐ PVC ☐ Other _____

5.
☐ **Alternative Method:**
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

6.

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' hog wire with one strand of barbed wire on top

7.

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)

8.

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

9.

Administrative Approvals 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:

- ☐ Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.
- ☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

10.

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. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank.

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

☐ Yes ☒ No

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 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (*Applies to temporary, emergency, or cavitation pits and below-grade tanks*)

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

☐ Yes ☒ No
☐ NA

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (*Applies to permanent pits*)

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

☐ Yes ☒ No
☐ NA

Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, 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 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 500 feet of a wetland.

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

☐ 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

11.

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: _____

12.

Closed-loop Systems 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.

- ☐ Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9
- ☐ Siting Criteria Compliance Demonstrations (only for on-site closure) - 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: _____

☐ Previously Approved Operating and Maintenance Plan API Number: _____ (Applies only to closed-loop system that use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)

13.

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 H₂S, 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

14.

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 ☐ Closed-loop System

☐ 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 (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

15.

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 F 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 I of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

16.

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.D NMAC)**Instructions:** Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Will any of the proposed closed-loop system operations and associated activities occur on or in areas that *will not* be used for future service and operations?☐ Yes (If yes, please provide the information below) ☐ No*Required for impacted areas which will not be used for future service and operations:*☐ 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 I of 19.15.17.13 NMAC☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

17.

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 may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 50 feet below the bottom of the buried waste.

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

☐ Yes ☒ No
☐ NA

Ground water is between 50 and 100 feet below the bottom of the buried waste

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

☐ Yes ☒ No
☐ 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

☒ Yes ☐ No
☐ NA

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 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 private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.

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

☐ Yes ☒ 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 500 feet of a wetland.

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

☐ 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

18.

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 F of 19.15.17.13 NMAC
- ☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements 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 Subsection F of 19.15.17.13 NMAC
- ☐ Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F 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 I of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

19.

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): John C. Thompson Title: Engineer
 Signature: [Signature] Date: 11/27/2012
 e-mail address: john@walsheng.net Telephone: (505) 327-4892

20.

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

OCD Representative Signature: [Signature] Approval Date: 1/28/2013
 Title: Compliance Officer OCD Permit Number: _____

21.

Closure Report (required within 60 days of closure completion): Subsection K of 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: _____

22.

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.

23.

Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:

Instructions: Please identify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Were the closed-loop system operations and associated activities performed on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations:

- ☐ Site Reclamation (Photo Documentation)
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique

24.

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)
☐ 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

25.

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: _____

Hydro geological report for Logos #5

Regional Hydro geological context:

The Logos #5 is located on federal land in San Juan County, New Mexico. The well location is located on even terrain. There is a very gentle slope to the northwest, toward Kimbeto Wash (ephemeral). Kimbeto Wash is approximately 500' from the well location.

A records search of the NM Office of the State Engineer – iWATERS database indicates that the closest known water well is 2905 meters away in Section 32, T24N, R8W. The depth to ground water is 690' and the drilled depth is 690'. The next well is 3616 meters away in Section 22, T23N, R8W. The depth to ground water 260' and the drilled depth is 500'.

Geologic maps of the area indicate that the surface formation at the proposed well site is the Nacimiento Formation. The Nacimiento Formation is a heterogeneous, non-marine formation composed of shale, siltstone, and sandstone. This formation was deposited in floodplain, fluvial, and lacustrine settings during the early and middle Paleocene (approximately 64.5 to 61.0 million years ago). The formation outcrops very low in the section, deep in the canyons where years of erosion have exposed it.

FEMA Map – 100 year floodplain

The attached FEMA Map indicates that the proposed location is well outside 100 year floodplain.

Siting Criteria Compliance Demonstrations

The Logos #5 is not located in an unstable area. The location is not over a mine and is not on the side of a hill. The location of the excavated pit material will not be located within 300' of any continuously flowing watercourse or 200' from any other watercourse.

Logos Operating, LLC
Logos #5
Temporary Reserve Pit Application
Siting Criteria

1. According to the iWaters Database from the State Engineers Office, the closest known water well is 2905 meters from the Logos #5 location in Section 32, T24N, R8W. The depth to ground water is 690' and the drilled depth is 690'. See attached printout.
2. As shown on the attached topographic map and aerial photos, there are no continuously flowing watercourses within 300' of the well, or any significant watercourses, lakebeds, sinkholes or playa lakes within 200' of the well.
3. There are no permanent residences, schools, hospitals, institutions, or churches within 300' of the well.
4. There are no domestic water wells or springs within 500' of the well. See iWaters Database printout.
5. The well is not located within any municipal boundaries.
6. The well is not within 500' of any wetlands. See attached topographic map and aerial photos.
7. There are no subsurface mines in Section 4, T23N, R8W. See attached map from the NM EMNRD Mining and Mineral Division.
8. The Logos #5 is not located in an "unstable" area. The location is not over a mine and is not on the side of a hill. The location of the excavated pit material will not be located within 300' of a continuously flowing watercourse or 200' from any other watercourse.
9. The well is not located in a 100-year floodplain as visible on the topographic map and the FEMA Flood Insurance Rate Map.
10. In the event that the composite pit sample that is mixed 3:1 with native soils does not meet the requirements for onsite burial, the pit contents will be removed and disposed of at the Envirotech Land Farm #2 (NMOCD Permit #11).



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(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)

(In feet)

POD		Q Q Q										Depth	Depth	Water	
POD Number	Code	Subbasin	County	64	16	4	Sec	Tws	Rng	X	Y	Distance	Well	Water	Column
<u>SJ 02686</u>			SJ	3	4	2	32	24N	08W	257502	4017472*	2905	690	690	0
<u>SJ 03978 POD1</u>			SJ	1	2	1	22	23N	08W	259816	4011541	3616	500	260	240
<u>SJ 00960</u>			SJ	3	3	3	36	24N	08W	262730	4016518*	3817			
<u>SJ 00960 S</u>			SJ	3	1	3	36	24N	08W	262744	4016920*	3996			
<u>SJ 00960 S-2</u>			SJ	3	2	3	36	24N	08W	263147	4016909*	4355			
<u>SJ 00960 S-3</u>			SJ	2	4	3	36	24N	08W	263336	4016707*	4451			
<u>SJ 00870</u>			SJ		2	3	36	24N	08W	263248	4017010*	4489	250		
<u>SJ 01304</u>			SJ			2	01	23N	08W	263823	4015987*	4722	100		
<u>SJ 01334</u>			SJ			2	01	23N	08W	263823	4015987*	4722	90	40	50
<u>SJ 01709</u>			SJ		1	1	27	23N	08W	259451	4009831*	5278	317	225	92
<u>SJ 00001</u>			SJ		4	1	12	23N	09W	253534	4014427*	5690	695	630	65
<u>SJ 01335</u>			RA			1	31	24N	07W	264672	4017581*	6021	185		
<u>SJ 01131</u>			RA		1	4	19	24N	07W	265313	4020131*	7927	1700	400	1300
<u>SJ 01710</u>			SJ		1	3	25	23N	09W	252985	4009203*	8557	550	173	377
<u>SJ 01712</u>			SJ		2	4	27	24N	09W	251195	4018933*	8859	528	515	13
<u>SJ 00949 -S</u>			SJ	1	3	2	01	22N	08W	263242	4006176*	9806	2647	1106	1541
<u>SJ 00681 39</u>			RA	4	2	2	18	24N	07W	265824	4022392*	9859	1825	500	1325

Average Depth to Water: **453 feet**

Minimum Depth: **40 feet**

Maximum Depth: **1106 feet**

Record Count: 17

UTMNAD83 Radius Search (in meters):

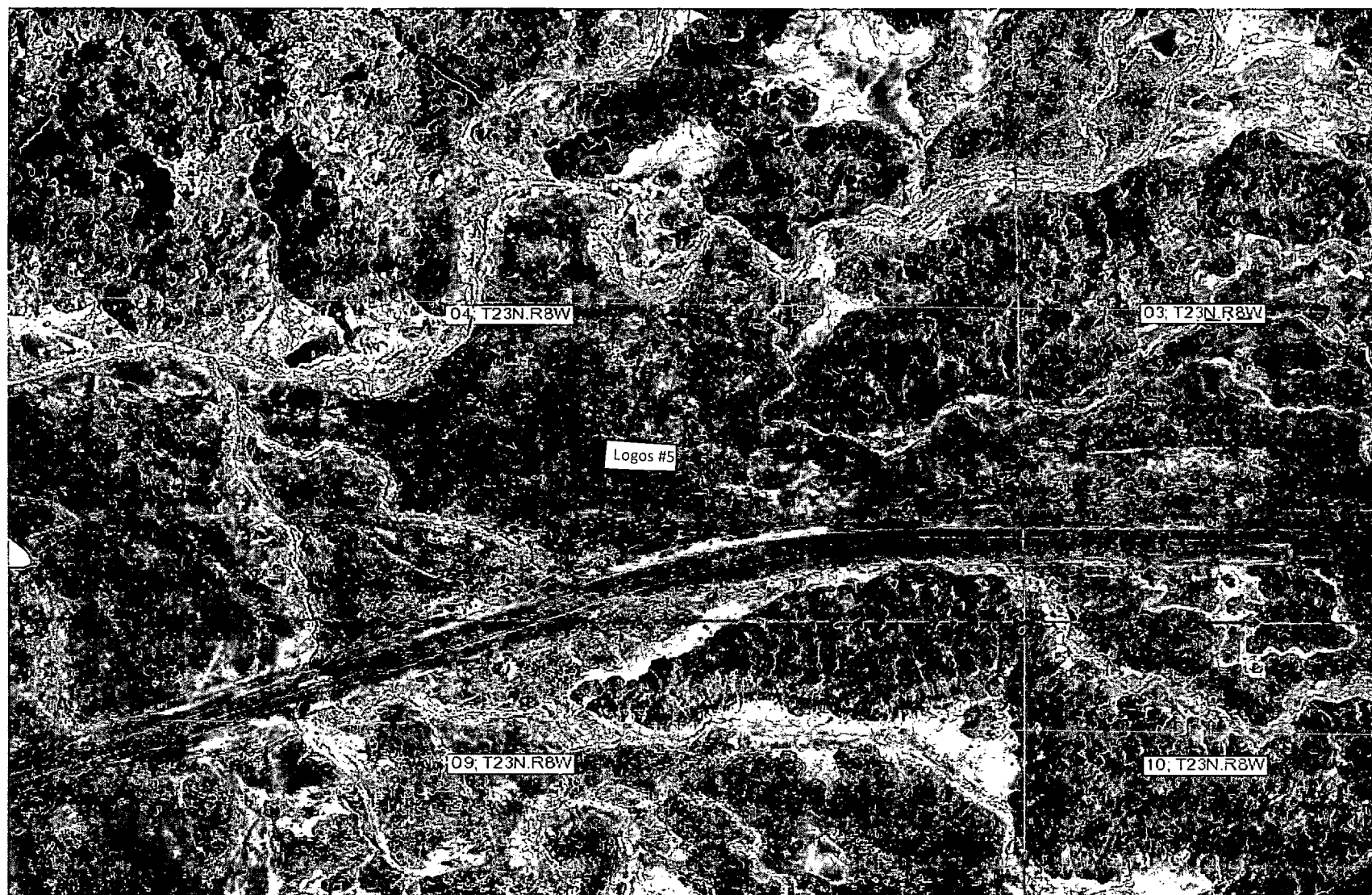
Easting (X): 259184

Northing (Y): 4015103

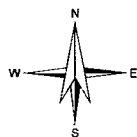
Radius: 10000

*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.



0 200 400ft



Petroleum Recovery
Research Center

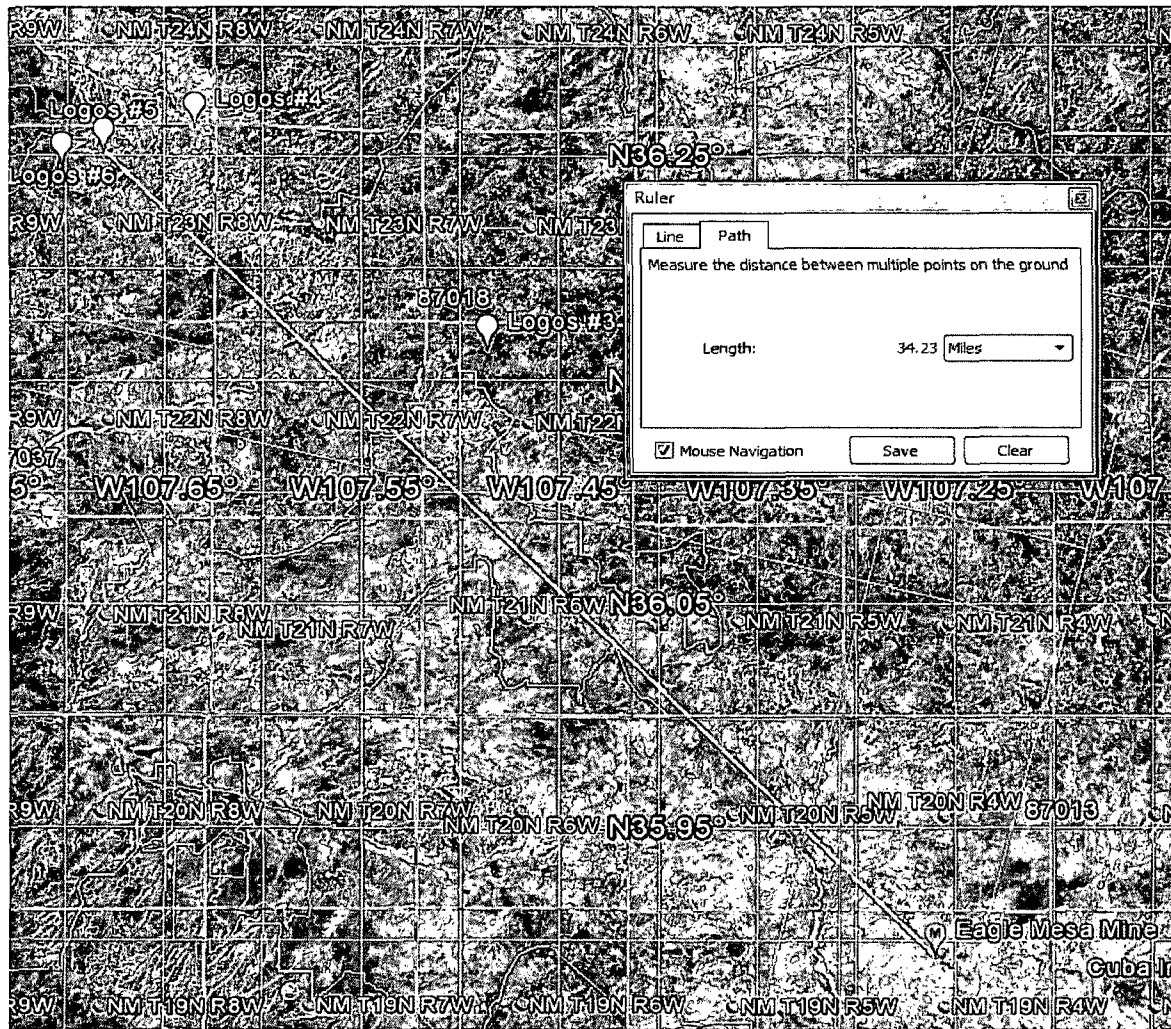
Logos #5

Figure: ##

Logos Operating, LLC

Nov 26, 2012

Mines, Mills & Quarries



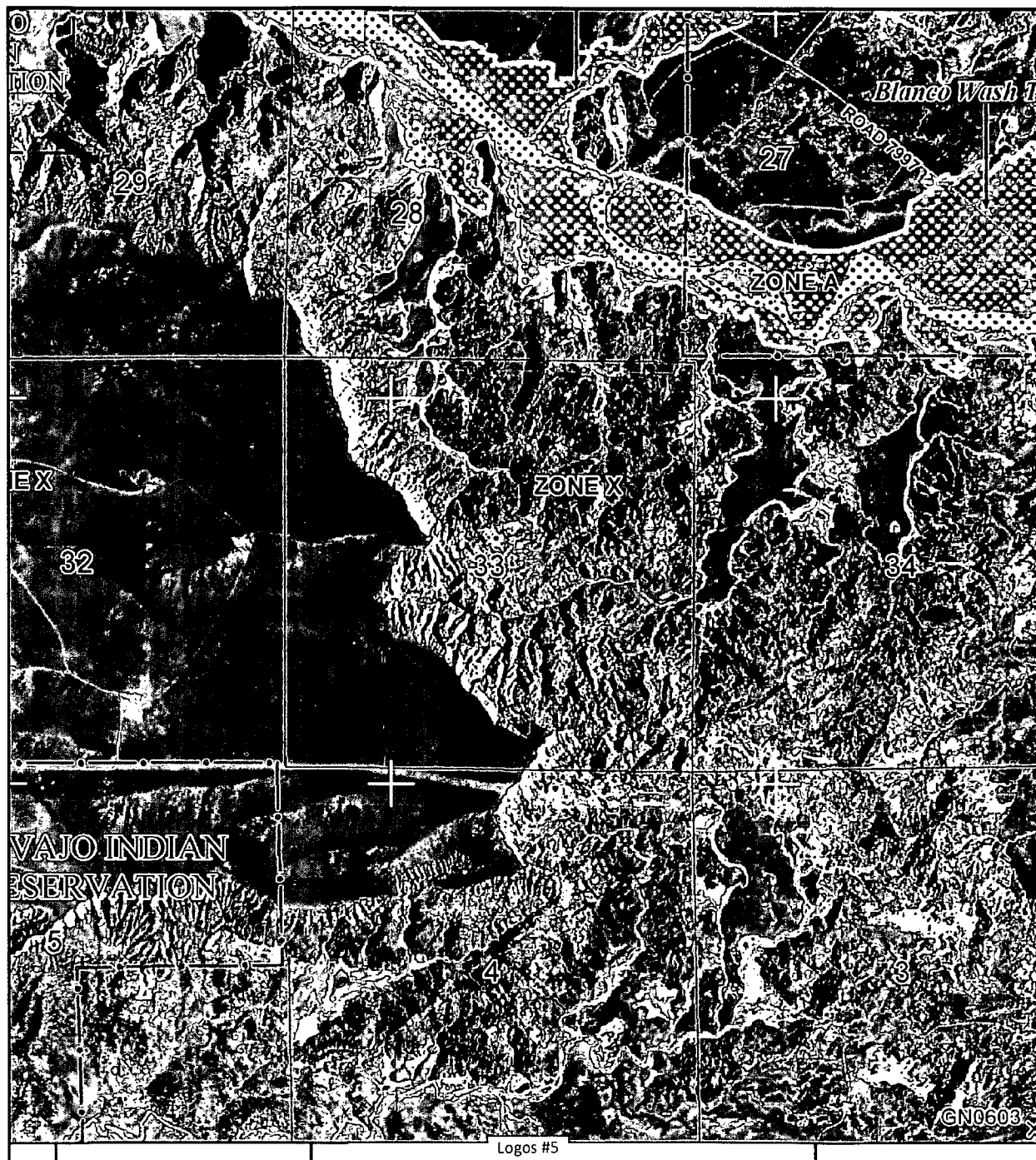
Logos #5 - Latitude 36.25082° N / Longitude 107.68123° W (NAD83)

Eagle Mesa Mine (Latitude 35.891403° N / Longitude 107.260122° W (NAD83) is closest to the Logos #5 @ 34.23 miles away.

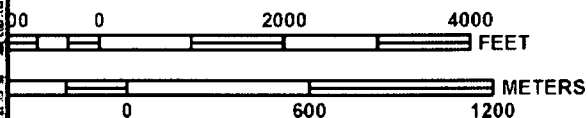
Data Source: New Mexico Active Mines, Feb 2012 spreadsheet

<http://www.emnrd.state.nm.us/MMD/gismapminedata.html>

Name	County	Commodities	Quads	LatitudeDDNAD83	LongitudeDDNAD83
San Luis Mine	Sandoval	Humate	San Luis	35.690455	107.086325
U.S. Forest Service Mine	Sandoval	Pumice	Bear Springs Peak	35.738118	106.612346
Eagle Mesa Mine	Sandoval	Humate	Ojo Encino Mesa	35.891403	107.260122
Menefee Mill	Sandoval	Humate	San Pablo	35.989027	106.956868
Navajo Mine	San Juan	Coal	Fruitland, Hogback, The, South, Kirtland SW, Newcomb NE, The Pillar NW	36.510536	108.503947
Foutz & Bursum Gravel Pit	San Juan	Aggregate	Bloomfield	36.697768	107.986423
Cliffside Complex / Palmer Pit	San Juan	Aggregate	Farmington South	36.714026	108.241287
Mission Pit at Cliffside East	San Juan	Aggregate	Farmington South	36.715472	108.225564
Farmington Sand & Gravel Pit	San Juan	Aggregate, Other	Kirtland	36.716043	108.250170
Eaton Wet Pit - Cliffside Wet	San Juan	Aggregate	Farmington South	36.721489	108.252215
Arco Wet Pit - Cliffside Wet	San Juan	Aggregate	Farmington South	36.724884	108.243138
Crouch Mesa BLM Pit	San Juan	Aggregate	Horn Canyon	36.726500	108.123500
Crouch Mesa State Pit	San Juan	Aggregate	Horn Canyon	36.730537	108.101870
Kirtland Pit	San Juan	Aggregate	Kirtland	36.744156	108.335458
Link Pit	San Juan	Aggregate	Fruitland	36.744183	108.461941
Shiprock Pit	San Juan	Aggregate	Chimney Rock	36.759584	108.523900
Toulouse Pit	San Juan	Aggregate	Flora Vista	36.793832	108.110690
San Juan Mine	San Juan	Coal	Waterflow, Youngs Lake	36.797798	108.439723
Aztec Pit	San Juan	Aggregate	Flora Vista	36.829277	108.047781
Neff Trust Quarry	San Juan	Aggregate, Dimension & Flagstone	La Plata	36.954918	108.214650
Decker Sand Pit	San Juan	Aggregate	Cedar Hill	36.972300	107.924700
Waller Pit	San Juan	Aggregate	Cedar Hill	36.991978	107.968690
Rosa Gravel Mine - SE4 NE4 Sec10	San Juan	Aggregate	Bancos Mesa NW	36.995050	107.438518
Rosa Gravel Mine - SW4 Sec10	San Juan	Aggregate	Bancos Mesa NW	36.996713	107.445323



MAP SCALE 1" = 2000'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2100F

FIRM

FLOOD INSURANCE RATE MAP
SAN JUAN COUNTY,
NEW MEXICO
AND INCORPORATED AREAS

PANEL 2100 OF 2750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN JUAN COUNTY	35C054	2100	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

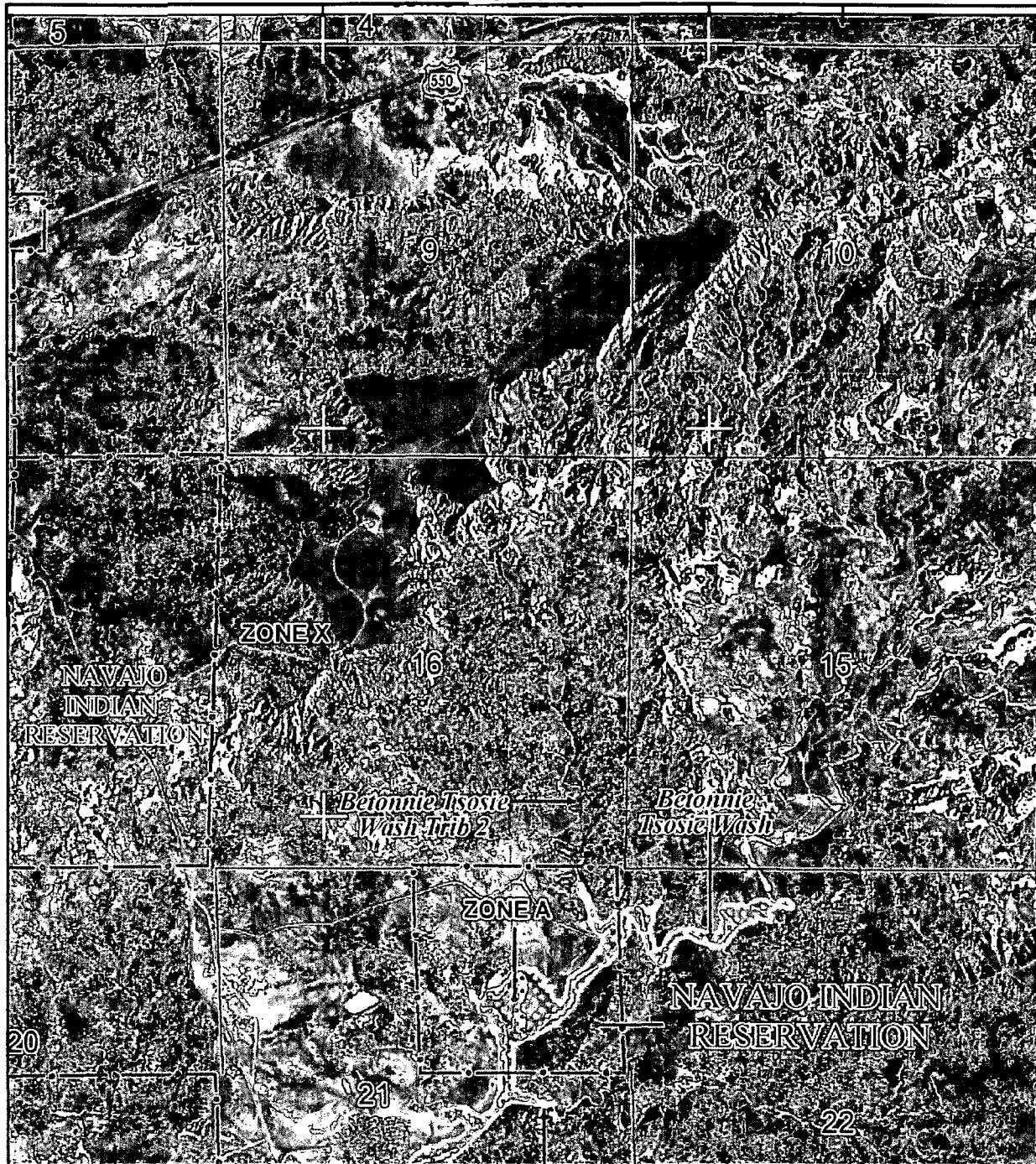


MAP NUMBER
35045C2100F

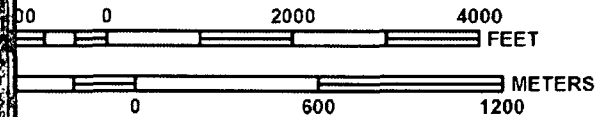
EFFECTIVE DATE
AUGUST 5, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 2000'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2425F

FIRM

FLOOD INSURANCE RATE MAP
 SAN JUAN COUNTY,
 NEW MEXICO
 AND INCORPORATED AREAS

PANEL 2425 OF 2750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN JUAN COUNTY	350064	2425	F

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
 35045C2425F

EFFECTIVE DATE
 AUGUST 5, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Logos Operating, LLC
San Juan Basin
Pit Design and Construction Plan

In accordance with Rule 19 15 17 the following information describes the design and construction for temporary pits on Logos Operating Company's locations; this is Logos Operating's standard procedure for all temporary pits. A separate plan will be submitted for any temporary pit that does not conform to this plan.

General Plan

- 1 Logos Operating will design and construct a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public health and environment
- 2 Prior to constructing the pit, topsoil will be stockpiled in the construction zone for later use in restoration
- 3 Logos Operating will post a well sign, not less than 12' by 14', on the well site prior to construction of the temporary pit. The sign will list the operator on record as the operator, the location of the well by unit letter, section, township rang, and emergency telephone numbers
- 4 Logos Operating shall construct all new fences unitizing 48' steel mesh field-fence (hogwire) on the bottom with a single strand of barbed wire on top. T-posts shall be installed every 12 feet and corners shall be anchored utilizing a secondary T-post. Temporary pits will be fenced at all times excluding drilling or overwork operations, when the front side of the fence will be temporarily removed for operational purposes
- 5 Logos Operating shall construct the temporary pit so that the foundation and interior slopes are firm and free of rocks, debris, sharp edges or irregularities to prevent liner failure
- 6 Logos Operating shall construct the pit so that the slopes are no steeper than two horizontal feet to 1 vertical foot
- 7 Pit walls will be walked down by a crawler type tractor following construction
- 8 All temporary pits will be lined with a 20-mil, string reinforced, LLDPE liner, complying with EPA SW-846 method 9090A requirements
- 9 Geotextile will be installed beneath the liner when rocks, debris, sharp edges or irregularities cannot be avoided
- 10 All liners will be anchored in the bottom of a compacted earth-filled trench at least 18 inches deep
- 11 Logos Operating will minimize liner seams and orient them up and down, not across a slope. Factory seams will be used whenever possible. Logos Operating will ensure all field seams are welded by qualified personnel. Field seams will be overlapped four to six inches and will be oriented parallel to the line of maximum slope. Logos Operating will minimize the number of field seams in corners and irregularly shaped areas
- 12 The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides, or a manifold system
- 13 The pit shall be protected from run-off by constructing and maintaining diversion ditched around the location or around the perimeter of the pit in some cases
- 14 The volume of the pit shall not exceed 10 acre-feet, including freeboard
- 15 Temporary blow pits will be constructed to allow gravity flow to discharge into lined drill pit
- 16 The lower half of the blow pit (nearest lined pit) will be lined with the same 20 mil liner. The upper half of the blow pit will remain unlined as allowed in Rule 19 15 17 11 F 11
- 17 Logos Operating will not allow freestanding liquids to remain on the unlined portion of temporary blow pit

Logos Operating, LLC
San Juan Basin
Maintenance and Operating Plan

In accordance with Rule 19 15 17 the following information described the operation and maintenance of temporary pits on Logos Operating Company locations. This is Logos Operating's standard procedure for all temporary pits. A separate plan will be submitted for any temporary pit that does not conform to this plan.

General Plan

- 1 Logos Operating will operate and maintain a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public health and environment
- 2 Logos Operating will conserve drilling fluids by transferring liquids to pits ahead of the rigs whenever possible. All other drilling fluids will be disposed at Basin Disposal, Inc. Permit # NM-01-005
- 3 Logos Operating will not discharge or store any hazardous waste in any temporary pit
- 4 If any pit liner's integrity is compromised or if any penetration of the liner occurs above the liquid's surface, then Logos Operating shall notify the Aztec Division office by phone or email within 48 hours of the discovery and repair the damage or replace the liner
- 5 If a leak develops below the liquid's level, Logos Operating shall remove all liquids above the damaged liner within 48 hours and repair the damage or replace the liner. Logos Operating shall notify the Aztec Division office by phone or email within 48 hours of the discovery for leaks less than 25 barrels. Logos Operating shall notify the Aztec division office as required pursuant to Subsection B of 19 15 3 116 NMAC shall be reported within twenty-four (24) hours of discovery of leaks greater than 25 barrels. In addition, immediate verbal notification pursuant to Subsection B, Paragraph (1) and Subparagraph (d) of 19 15 3 116 NMAC shall be reported to the division's Environmental Bureau Chief
- 6 The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides, or manifold system
- 7 The pit shall be protected from run-off by constructing and maintaining diversion ditches around the location or around the perimeter of the pit in some cases
- 8 Logos Operating shall immediately remove any visible layer of oil from the surface of temporary pit after cessation of a drilling or workover operation. Oil absorbent booms will be utilized to contain and remove oil from the pit's surface. An oil absorbent boom will be stored on-site until closure of pit
- 9 Only fluids generated during the drilling or workover process may be discharged into a temporary pit
- 10 Logos Operating will maintain the temporary pit free of miscellaneous solid waste or debris
- 11 During drilling or workover operations, Logos Operating will inspect the temporary pit at least once daily to ensure compliance with this plan. Inspections will be logged in the IADC reports. Logos Operating will file this log with the Aztec Division office upon closure of the pit
- 12 After drilling or workover operations, Logos Operating will inspect the temporary pit weekly so long as liquids remain in the temporary pit. A log of the inspections will be stored at Logos Operating's office electronically and will be filed with the Aztec Division office upon closure of the pit
- 13 Logos Operating shall maintain at least two feet of freeboard for a temporary pit
- 14 Logos Operating shall remove all free liquids from a temporary pit within 30 days from the date the operator releases the drilling or workover rig
- 15 Logos Operating shall remove all free liquids from a cavitations put within 48 hours after completing cavitations. Logos Operating may request additional time to remove liquids from Aztec Division office if it is not feasible to remove liquids within 48 hours

**Logos Operating, LLC
San Juan Basin
Closure Plan**

In accordance with Rule 19.15.17.12 NMAC the following information describes the closure requirements of temporary pits on Logos Operating Company's locations. This is Logos Operating's standard procedure for all temporary pits. A Separate plan will be submitted for any temporary pit that does not conform to this plan.

All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of the pit closure. Closure report will be filed on C-144 and incorporated the following:

- Detail on Capping and Covering, where applicable
- Plot Plan (Pit diagram)
- Inspection reports
- Sampling Results
- C-105
- Copy of Deed Notice will be filed with County Clerk

General Plan

- 1 All free standing liquids will be removed at the start of the pit closure process from the pit and disposed of in a division-approved facility or recycle, reuse or reclaim the liquids in a manner that the appropriate division district office approves
- 2 The preferred method of closure for all temporary pits will be on-site burial, assuming that all criteria listed in sub-section (B) of 19.15.17.13 are met
- 3 The surface owner shall be notified of Logos Operating's proposed closure plan using a means that provides proof of notice i.e., certified mail, return receipt requested
- 4 Within 6 months of the Rig Off status occurring Logos Operating will ensure that temporary pits are closed, re-contoured, and reseeded
- 5 Notice of Closure will be given to the Aztec Division office between 72 hours and one week of closure via email, or verbally, The notification of closure will include the following:
 - i. Operator's name
 - ii. Location by Unit Letter, Section, Township, and Range. Well name and API Number
- 6 Liner of temporary pit shall be removed above "mud level" after stabilization. Removal of liner will consist of manually or mechanically cutting liner at mud level and removing all remaining liner. Care will be taken to remove "All" of the liner i.e., edges of liner entrenched or buried. All excessive liner will be disposed of at a licensed disposal facility
- 7 Pit contents shall be mixed with non-waste containing, earthen material in order to achieve the solidification process. The solidification process will be accomplished using a combination of natural drying and mechanically mixing. Pit contents will be mixed with non-waste, earthen material to a consistency that is deemed a safe and stable. The mixing ratio shall not exceed 3 parts clean soil to 1 part pit contents
- 8 A five point composite sample will be taken of the pit using sampling tools and all samples rested per Subsection B of 19.15.17.13(B)(1)(b). In the event that the criteria are not met, all contents will be handled per Subparagraph (a) of Paragraph (1) of Subsection B of 19.15.17.13 i.e., Dig and haul

Components	Tests Method	Limit (mg/Kg)
Benzene	EPA SW-846 8021B or 8260B	0.2
BTEX	EPA SW-846 8021B or 8260B	50
TPH	EPA SW-846 418.1	2500
GRO/DRO	EPA SW-846 8015M	500
Chlorides	EPA 300.1	1000

- 9 Upon completion of solidification and testing, the pit area will be backfilled with compacted, non-waste containing, earthen material. A minimum of four feet of cover shall be achieved and the cover shall include one foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater
- 10 Re-contouring of location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be placed in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape
- 11 Notification will be sent to OCD when the reclaimed area is seeded
- 12 Logos Operating shall seed the distributed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM or Forest Service stipulated seed mixed will be used on federal lands. Vegetative cover will equal 70% of the native perennial vegetative cover (un-impacted) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover thorough twp successive growing seasons. Repeat seeding or planting will be continued until successful vegetative growth occurs
- 13 The temporary pit will be located with a steel marker, no less than four inches in diameter, cemented in a hole three feet deep in the center of the onsite burial upon the abandonment of all the wells on the pad. The marker will be a four foot tall riser with the operator's information at the time of all wells on the pad are abandoned. The operator's information will include the following: Operator Name, Lease Name, Well Name and Number, unit Number, Section, Township, Range and an indicator that the marker is an onsite burial location

DISTRICT I
1626 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6181 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Hondo Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number		*Pool Code	*Pool Name BASIN DAKOTA-NAGEEZI GALLUP
*Property Code	*Property Name LOGOS		*Well Number 5
*GRID No.	*Operator Name LOGOS OPERATING, LLC		*Elevation 6867'

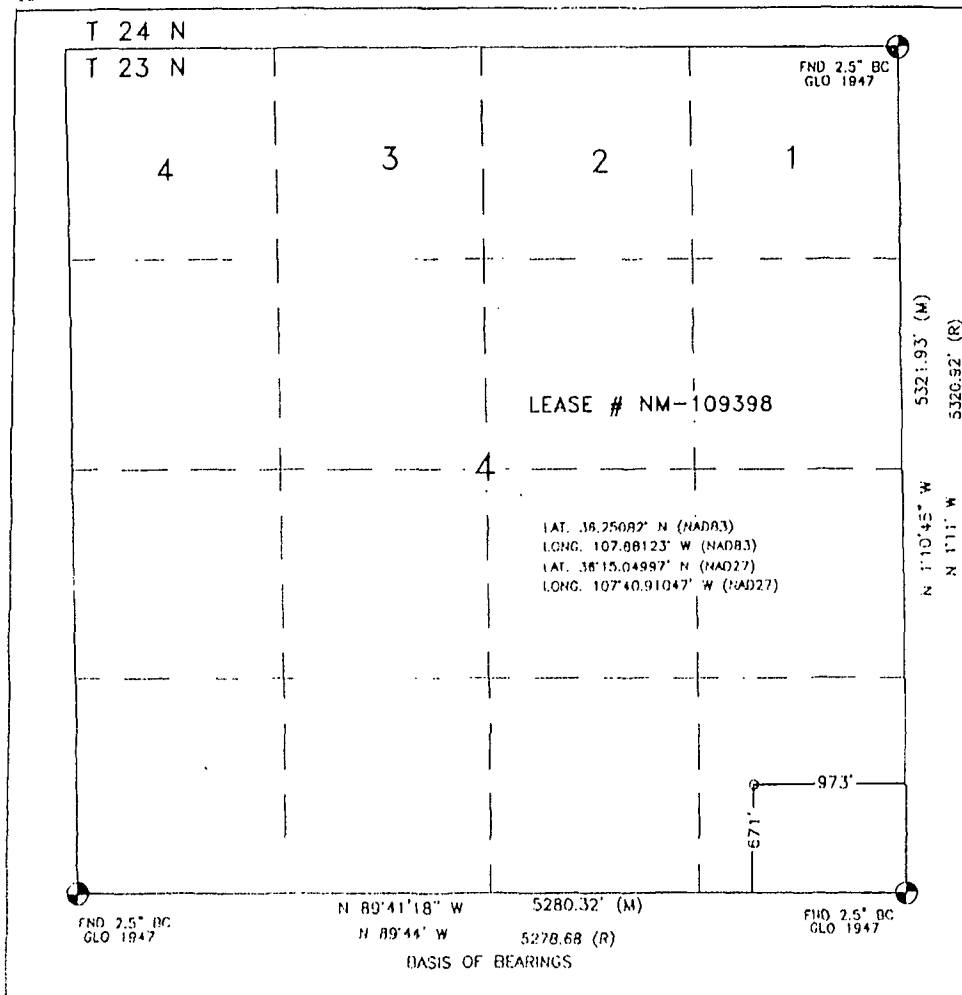
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	4	23N	8W		671'	SOUTH	973'	EAST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
¹² Dedicated Acres			¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No.		

16



¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

[Signature] 10/31/2012
Signature Date

John C. Thompson
Printed Name

johnnewalsheng.net
E-Mail Address

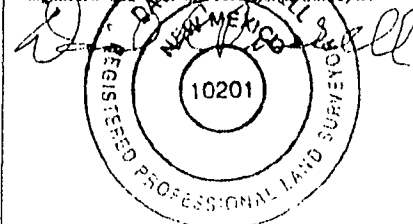
¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

OCTOBER 1, 2012

Date of Survey

[Signature]
Signature and Seal of Registered Professional Surveyor:



DAVID RUSSELL

Certificate Number

10201

WELL FLAG

LATITUDE: 36.25082° N
LONGITUDE: 107.68123° W
CENTER OF PIT
LATITUDE: 36.25095° N
LONGITUDE: 107.68131° W
ELEVATION: 6857.2'
DATUM: NAD83 & NAVD88

NOTES

1.) BASIS OF BEARING: BETWEEN FOUND MONUMENTS AT THE SOUTHEAST CORNER AND THE SOUTHWEST CORNER OF SECTION 4, TOWNSHIP 23 NORTH, RANGE 8 WEST, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO.
LINE BEARS: N 89°41'18" W A DISTANCE OF 1260.32 FEET AS MEASURED BY D.P.S.

2.) LATITUDE, LONGITUDE AND ELLIPSOIDAL HEIGHT BASED ON ACTED CORRS 11 PHASE CENTER.
DISTANCES SHOWN ARE GROUND DISTANCES USING A TRAVERSE MERCATOR PROJECTION FROM A WGS84 ELLIPSOID, CONVERTED TO NADES.
NAVD88 ELEVATIONS AS PREDICTED BY GEODIGS.

3.) LOCATION OF UNDERGROUND UTILITIES DEPICTED ARE APPROXIMATE. PRIOR TO EXCAVATION UNDERGROUND UTILITIES SHOULD BE FIELD VERIFIED. ALL CONSTRUCTION ACTIVITIES SHOULD BE FIELD VERIFIED WITH NEW MEXICO ONE-CALL AUTHORITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

LOGOS OPERATING, LLC

LOGOS #5

671' FSL & 973' FEL

LOCATED IN THE SE/4 SE/4 OF SECTION 4,

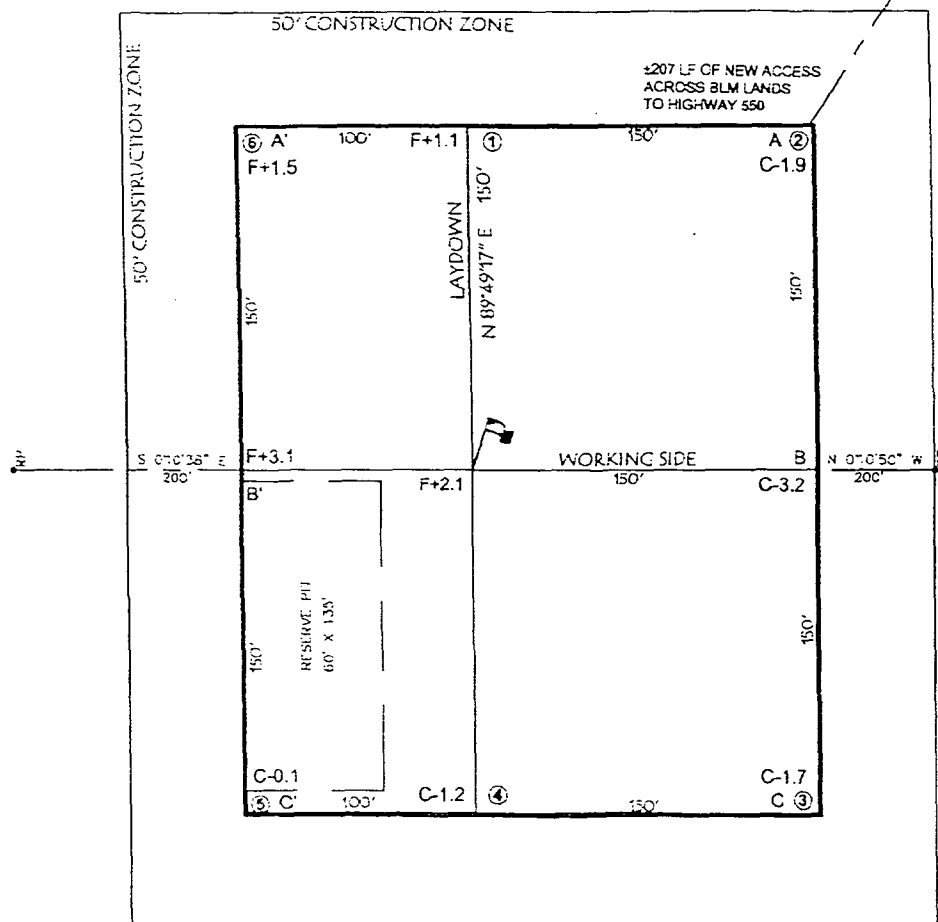
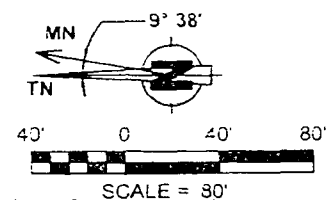
T23N, R8W, N.M.P.M.,

SAN JUAN COUNTY, NEW MEXICO

GROUND ELEVATION: 6867', NAVD 88

FINISHED PAD ELEVATION: 6869.2', NAVD 88

PLAT #2



SLOPES TO BE CONSTRUCTED TO MATCH THE ORIGINAL CONTOURS AS CLOSE AS POSSIBLE.

TOTAL PERMITTED AREA

350' x 400' = 3.21 ACRES

SCALE: 1" = 80'

JOB No.: LGS008

DATE: 10/02/12

DRAWN BY: TWT

NOTE:

Scorpion Survey & Consulting, L.L.C., INC. IS NOT LIABLE FOR UNDERGROUND UTILITIES OR PIPELINES. CONTRACTOR SHOULD CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED, BURIED PIPELINES OR CABLES ON WELL PAD, IN CONSTRUCTION ZONE AND/OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.



Scorpion Survey & Consulting, L.L.C.
55 County Road 3312
Aztec, New Mexico 87410
(505) 333-2945



4001 N. Butler Ave, Building 7101
Farmington, NM 87401
Phone: (505) 436-2627
kgraham@logosresourcesllc.com

Date: January 23, 2013

To: Jonathan Kelly, Compliance Officer - NMOCD

Re: Test Hole Results - Logos #5 and Logos #6

RCVD JAN 25 '13
OIL CONS. DIV.
DIST. 3

Dear Mr. Kelly,

MO-TE Drilling, on behalf of Logos Operating, LLC, has recently completed the drilling of a 120' deep test water hole adjacent to the Logos No. 5 well location in Section 4, T23N, R8W, NMPM. Per NMOCD request, the Logos #5 location was tested January 17, 2013 for groundwater level due to unknown depth to groundwater in the upper Kimbeto Wash. No water was found in the course of drilling the test hole as detailed on the attached drilling report. Based on these results, Logos Operating, LLC requests approval of our previously submitted C-144. Please note that Logos Operating, LLC submits that these results also be used for approval of the C-144 form previously submitted for the Logos #6 well located in Section 8, T23N, R8W, NMPM; as the ground water for this location is also influenced by the same Kimbeto Wash.

Should you have any questions or concerns regarding the information above, or the information contained in the attached report, please contact me at 505-426-2627.

Regards,

A handwritten signature in black ink, appearing to read "Kristy Graham", written in a cursive style.

Kristy Graham
Director of Administration and Engineering Support
Logos Operating, LLC

MO-TE DRILLING, INC.

DAY <u>Thur</u>			
DRILLER <u>Zach M</u>		LEFT TOWN	ARRIVED FIELD
HELPER <u>Bob H.</u>		LEFT FIELD	ARRIVED TOWN
HELPER <u>Tom H.</u>		TOTAL FOOTAGE TODAY	
RIG NO. <u>207</u>	DATE <u>1-17-13</u>	CLIENT <u>Logos Operating</u>	
BEGIN WORK ON HOLE NO. <u>Logos #5</u>	AT	FEET	
BEGIN WORK ON HOLE NO. <u>Test hole G/4</u>	AT	FEET	

TIME		ACTIVITY
FROM	TO	
8 ⁴⁵	9 ³⁰	Drive to location
9 ³⁰	10 ⁰⁰	Rig Up
10 ⁰⁰	10 ¹⁵	Drill G/4 from 0' to 65'
10 ¹⁵	11 ¹⁵	Trip out wait 1 hour test for water.
11 ¹⁵	11 ³⁰	Drill G/4 from 65' to 120'
11 ³⁰	1 ⁰⁰	Trip out, wait 1 hour test for water
11³⁰	1⁰⁰	back fill hole,
1 ⁰⁰	2 ¹⁵	Drive back to yard
		NO WATER
		0-10' SAND 50'-60' shale
		10'-20' SAND SAND 60'-70' shale/clay
		20'-30' SAND/clay 70'-80' Shell
		30'-40' clay 80'-90' Clay
		40'-50' Sandstone/clay 90'-100' Clay
BIT RECORD		
SIZE & MAKE	SERIAL NO.	FOOTAGE
		100'-110' Sandstone/Clay
		110'-120' Sand Clay Mix
		1 Day Rig 3500 ⁰⁰
CIRCULATION MATERIAL		
QUAN.	UNIT	MATERIAL
		1 Day Supp 775 ⁰⁰
		Water Level Meter 100 ⁰⁰
		Tax 311 ⁷²

NO. OF LOADS OF WATER _____ SOURCE Total 4686⁷²



4001 N. Butler Ave, Building 7101
Farmington, NM 87401
Phone: (505) 436-2627
kgraham@logosresourcesllc.com

Date: January 23, 2013

RCVD JAN 25 '13
OIL CONS. DIV.
DIST. 3

To: Jonathan Kelly, Compliance Officer - NMOCD

Re: C-144 Supporting Documents - Update to the Hydro Geological Report for the Logos #5

Dear Mr. Kelly,

Per your request, Logos Operating, LLC has modified the Depth to Ground Water verbiage on the Hydro Geological Report for the Logos #5 (Section 4, T23N, R8W, NMPM) to include the results from the test hole drilled January 17, 2013. Please see attached.

Regards,

A handwritten signature in black ink, appearing to read "Kristy Graham", with a stylized flourish at the end.

Kristy Graham
Director of Administration and Engineering Support
Logos Operating, LLC

Hydro geological report for Logos #5

Regional Hydro geological context:

The Logos #5 is located on federal land in San Juan County, New Mexico. The well location is located on even terrain. There is a very gentle slope to the northwest, toward Kimbeto Wash (ephemeral). Kimbeto Wash is approximately 500' from the well location.

A records search of the NM Office of the State Engineer – iWATERS database indicates that the closest known water well is 2905 meters away in Section 32, T24N, R8W. The depth to ground water is 690' and the drilled depth is 690'. The next well is 3616 meters away in Section 22, T23N, R8W. The depth to ground water 260' and the drilled depth is 500'.

Geologic maps of the area indicate that the surface formation at the proposed well site is the Nacimiento Formation. The Nacimiento Formation is a heterogeneous, non-marine formation composed of shale, siltstone, and sandstone. This formation was deposited in floodplain, fluvial, and lacustrine settings during the early and middle Paleocene (approximately 64.5 to 61.0 million years ago). The formation outcrops very low in the section, deep in the canyons where years of erosion have exposed it.

Depth to groundwater: It is unknown what the depth to groundwater is in the upper Kimbeto Wash. On January 17, 2013, a test hole was drilled to 120' on the Logos #5 location. No water was found during this test. Therefore, the depth to groundwater is greater than 120'.