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 June 6, 2013

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

13088

OIL CONS. DIV DIST. 3

AUG 27 2015

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

30-039-31339

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: **Logos Operating, LLC.** OGRID #: **289408**
Address: 4001 North Butler Ave, Building 7101, Farmington, NM 87401
Facility or well name: **Logos Jicarilla 24D**
API Number: 30-039-31339 OCD Permit Number:
U/L or Qtr/Qtr D Section 24 Township 26N Range 05W County: Rio Arriba
Center of Proposed Design: Latitude 36.477102°N Longitude 107.318800°W NAD: ☐1927 ☒1983
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 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other
☒ String-Reinforced
Liner Seams: ☒ Welded ☒ Factory ☐ Other Volume: 16,000 bbl Dimensions: L 130' x W 75' x D 12'

3.
☐ **Below-grade tank:** Subsection I of 19.15.17.11
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

DENIED
Within 200ft of Significant Watercourse and no site specific groundwater Data as submitted.
BY: : Jonathan Kelly
DATE: 8/31/2015 (505) 334-6178 Ext. 122

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' hog wire with one strand of barbed wire on top

24

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_2S, 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	☐ Yes ☒ No ☐ 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	☐ 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 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	☐ 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 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	☐ Yes ☒ No
Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ 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
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): Tamra Sessions Title: Operations Technician

Signature: Tamra Sessions Date: 8/27/15

e-mail address: tsessions@logosresourcesllc.com Telephone: 505-330-9333

18.
OCD Approval: ☐ Permit Application (inclu D Conditions (see attachment)

DENIED

OCD Representative Signature: ____ **Approval Date:** ____

Title: ____ **nber:** ____

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

22.

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: _____

Logos Operating, LLC
San Juan Basin
Variance Explanation for Temporary Pits

All requested variances provide equal or better protection of fresh water, public health and the environment.

C-144 Item #5 Fencing

Logos is requesting a variance to rule 19.15.17.11 D (3) and shall construct all new fences utilizing 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.

Public Entity Closure Notification -Temporary Pit Closure Plan Attachment Item #3.

Rule 19.15.17.13 E. If the surface owner is a public entity (BLM/State/Tribal) then an email notification will be sent, of plans to close the temporary pit at least 72 hours, but no more than 1 week, prior to any closure operation. The notice will include the well name, API number, and location.

Visible Marker - Temporary Pit Closure Plan Attachment Item #13 a.

Logos has requested a variance for the visible marker that should 'extend at least four feet above mean ground level'. Logos plans to use a steel plate at least 12" x 12", flush with ground level and contain the same information as the four foot riser would have as per the rule. Upon the abandonment of all the wells on the pad, the plate will be removed and replaced with a four foot tall riser containing the same information as per the rule.

Variance explanation PIT 06.10.14 good per OCD 6.26

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 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 Brazos 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

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

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
	LOGOS JICARILLA	24D

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6644

[10] Surface Location

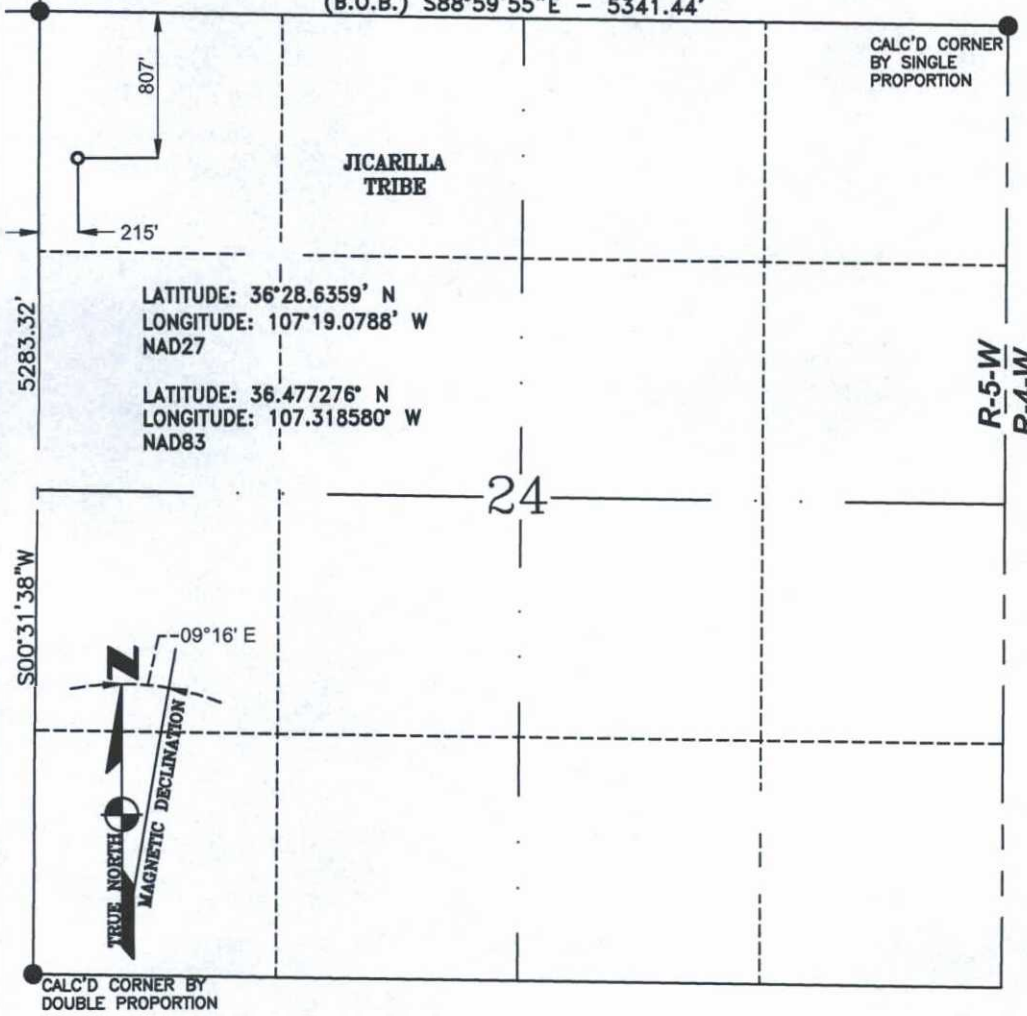
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	24	26-N	5-W		807	NORTH	215	WEST	RIO ARRIBA

[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.
BM 320.00 ACRES N/2			

16 NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



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 a working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

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.

APRIL 24, 2015
Date of Survey

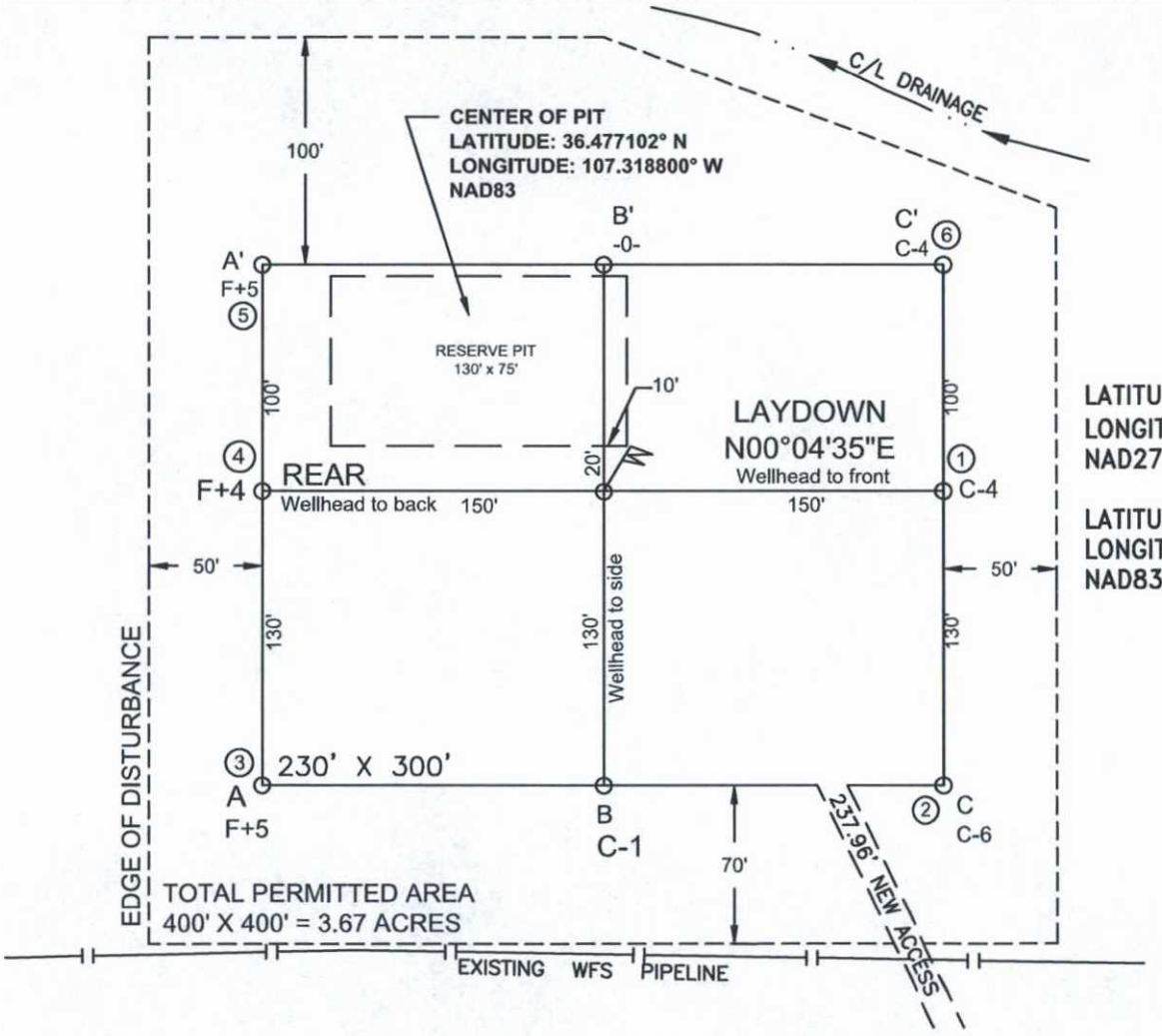
Signature and Seal of Professional Surveyor:

GLEN W. RUSSELL
NEW MEXICO
15703
LICENSED PROFESSIONAL SURVEYOR

GLEN W. RUSSELL
Certificate Number 15703

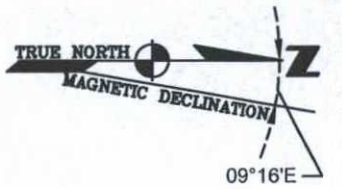
LOGOS OPERATING, LLC

LOGOS JICARILLA #24D, 807' FNL & 215' FWL
SECTION 24, T-26-N, R-5-W, NMPM, RIO ARRIBA COUNTY, NM
GROUND ELEVATION: 6644', DATE: APRIL 14, 2015



LATITUDE: 36°28.6359' N
LONGITUDE: 107°19.0788' W
NAD27

LATITUDE: 36.477276° N
LONGITUDE: 107.318580° W
NAD83



40' 0 40' 80'

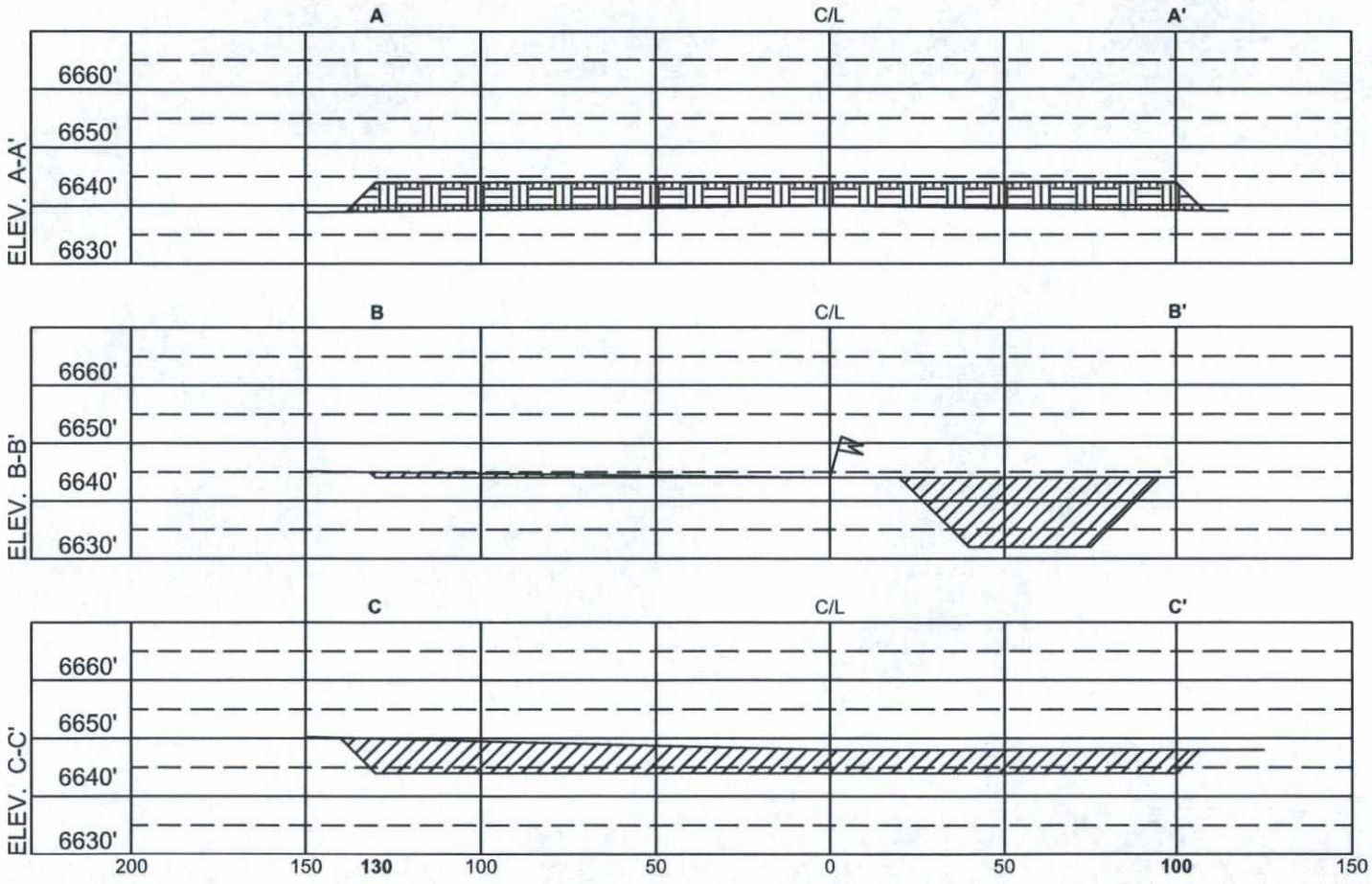
Scale: 1" = 80'

NOTES:

1. VECTOR SURVEYS 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 AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.
2. RESERVE PIT DIKE: TO BE 8' ABOVE DEEP SIDE (OVERFLOW - 3' WIDE AND 1' ABOVE SHALLOW SIDE).

LOGOS OPERATING, LLC

LOGOS JICARILLA #24D, 807' FNL & 215' FWL
SECTION 24, T-26-N, R-5-W, NMPM, RIO ARRIBA COUNTY, NM
GROUND ELEVATION: 6644', DATE: APRIL 14, 2015



HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 30'

NOTE:
VECTOR SURVEYS 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 AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.

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 Number	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
RG 81026		RA	3	4	4	27	27N	05W	290530	4046294*	7348	460	186	274
CR 03087		CO							299120	4034533	8055	141	72	69
SJ 01205		RA	4	4	4	34	27N	04W	300255	4044335*	9212	3054	750	2304
CR 01543		XX							300037	4033531	9389	120	70	50
CR 01909		CO				02	25N	15E	300037	4033531	9389	100	60	40

Average Depth to Water: **227 feet**

Minimum Depth: **60 feet**

Maximum Depth: **750 feet**

Record Count: 5

UTMNAD83 Radius Search (in meters):

Easting (X): 292581 **Northing (Y):** 4039238 **Radius:** 10000

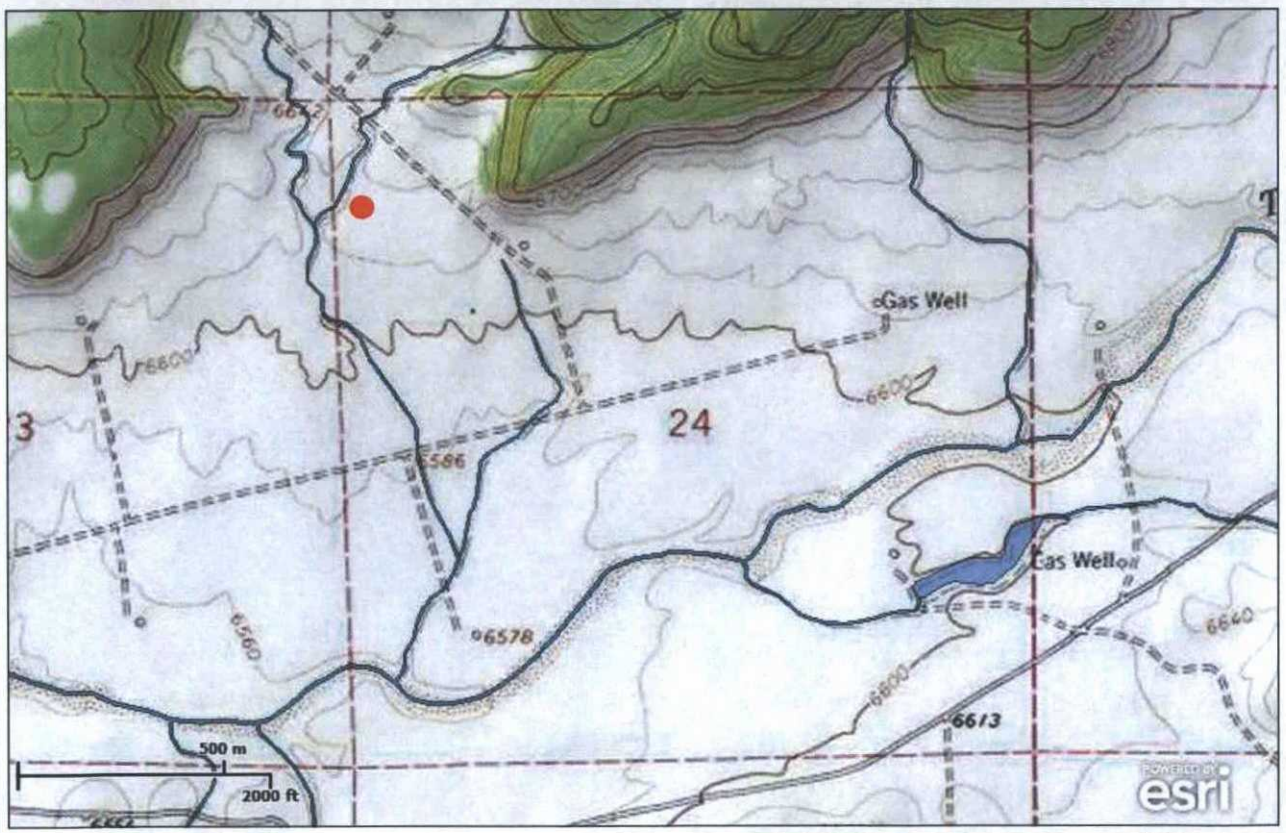
***UTM location was derived from PLSS - see Help**

U.S. Fish and Wildlife Service

National Wetlands Inventory

Logos Jicarilla 24D

Aug 12, 2015



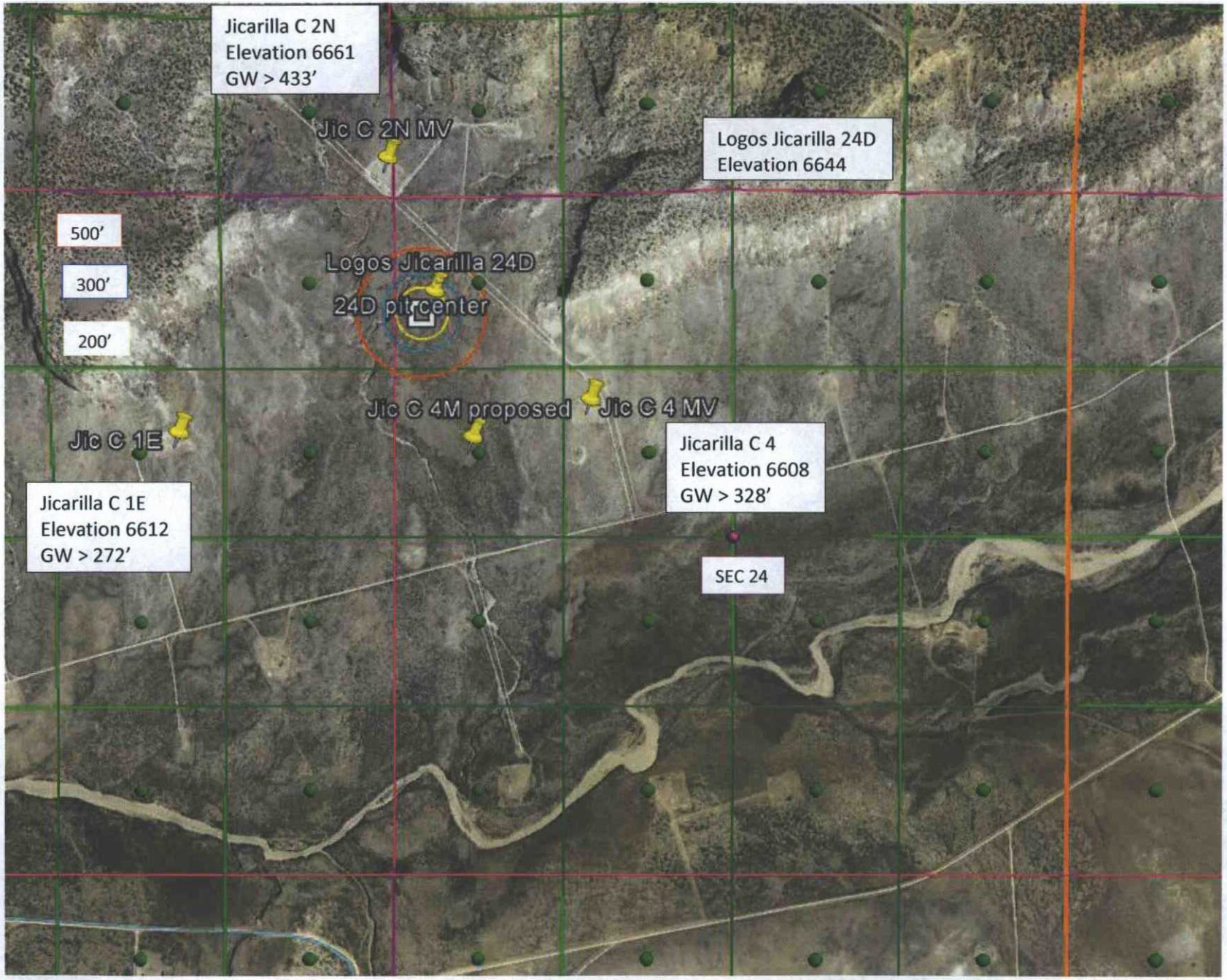
Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

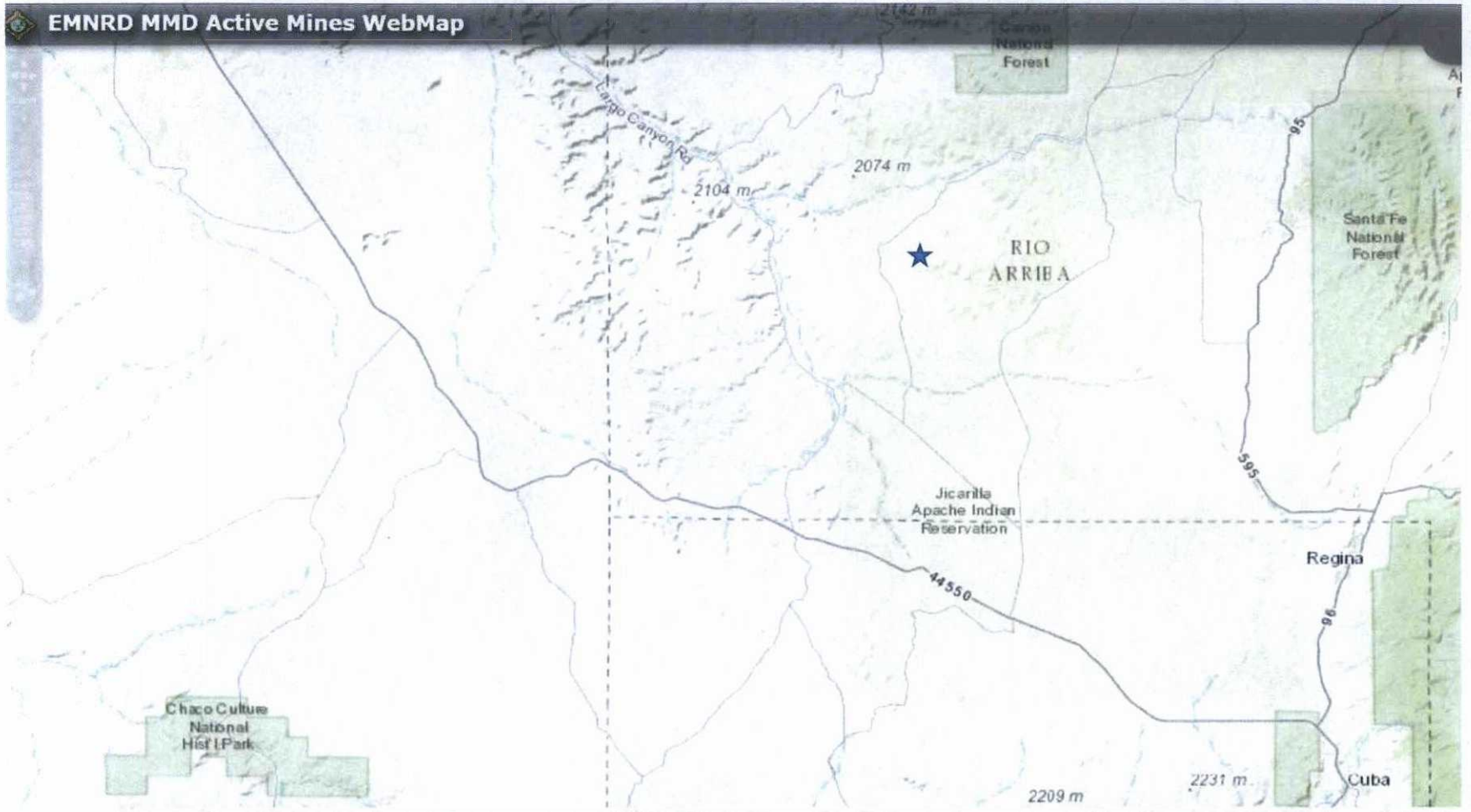
User Remarks:

UL D. Sec 24. T26N. R05W

LOGOS JICARILLA 24D – AERIAL MAP T26N R05W Sec 24 8/18/2015



MINES, MILLS & QUARRIES MAP **LOGOS JICARILLA 24D**



LOGOS JICARILLA 24D - Latitude 36.477102° N / Longitude 107.318800° W (NAD83)

There are no mines, mills or quarries within any close distance.

Data Source: New Mexico Active Mines, Feb 2012 spreadsheet

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

G.W. Data

Form 3160-4
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Amended
RECEIVED
SEP 12 2011
Farmington Field Office
Bureau of Land Management

FORM APPROVED
OMB NO. 1004-0137
Expires July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No. JIC 108

1a. Type of Well ☐ Oil Well ☒ Gas Well ☐ Dry Other

b. Type of Completion: ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other

6. If Indian, Allotee or Tribe Name

7. Unit or CA Agreement Name and No.

2. Name of Operator
EnerVest Operating, LLC

8. Lease Name and Well No.
Jicarilla C No. 2N

3. Address
1001 Fannin St Ste 800 Houston, Tx 77002

3a. Phone No. (include area code)
713-495-6537

9. API Well No.
30-039-29813-C1

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface SE/4 SE/4 175' FSL & 130' FEL

10. Field and Pool, or Exploratory
Basin Dakota

11. Sec., T., R., M., or Block and Survey or Area
UL P, Sec 14, 26N, 05W

At top prod. interval reported below

At total depth

12. County or Parish
Rio Arriba

13. State
NM

14. Date Spudded	15. Date T.D Reached	16. Date Completed	17. Elevations (DF, RKB, RT, GL)*
5/17/11	7/31/11	☐ D & A ☒ Ready to Prod. 8/31/11	6,661' GL

18. Total Depth: MD / TVD	19. Plug Back T.D.: MD / TVD	20. Depth Bridge Plug Set: MD / TVD
7,660'	7,650'	

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CBL. SD/DSEN/ACTR

22. Was well cored? ☒ No ☐ Yes (Submit analysis)
Was DST run ☒ No ☐ Yes (Submit report
Directional Survey? ☒ No ☐ Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt (#ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No.of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
12 1/4"	9 5/8"								
	J-55 STC	36	0	433'		200		surf	10bbls to surf
8 3/4"	7"								
	N-80 LTC	23	0	3608'		132		surf	5bbls to surf
6 1/4"	4 1/2"								
	N-80 LTC	11.6	0	7660'		268		3252'	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2-3/8"	7541'							

25. Producing Intervals

26. Perforation Record

	Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A)	Basin Dakota	7448'		7422' to 7630'	0.400	117	Open
B)							
C)							
D)							

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
7422' to 7630'	80,689# 20/40 sd w/ 2669 bbls 3% KCL.

RECEIVED
SEP 2011
OIL CONS. DIV. DIST. 3

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	**Tbg. Press. Flwg SI**	**Csg. Press.**	**24 Hr. →**	**Oil BBL**	**Gas MCF**	**Water BBL**	**Gas: Oil Ratio**	**Well Status**	

28a. Production-Interval B

ACCEPTED FOR RECORD

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
									SEP 13 2011
Choke Size	**Tbg. Press. Flwg. SI**	**Csg. Press.**	**24 Hr. →**	**Oil BBL**	**Gas MCF**	**Water BBL**	**Gas: Oil Ratio**	**Well Status**	
									FARMINGTON FIELD OFFICE BY

(See instructions and spaces for additional data on page 2)

G.W. Data

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

5. LEASE DESIGNATION AND SERIAL NO.: Jicarilla Cont 108

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Jicarilla, Dulce, New Mex

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Tenneco Oil Company

8. FARM OR LEASE NAME: Jicarilla "G"

9. WELL NO.: #4 API 30-039-08139

3. ADDRESS OF OPERATOR: P. O. Box 1714, Durango, Colorado

10. FIELD AND POOL, OR WILDCAT: Undes. Gallup and Basin Dakota

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface 1650' FNL 1650' FWL
At top prod. interval reported below Unit Letter "F"
At total depth

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 24, T-26-N, R-5-W

14. PERMIT NO. | DATE ISSUED

12. COUNTY OR PARISH: Rio Arriba | 13. STATE: New Mexico

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
6/27/66	7/13/66	8/17/66	6608 GR	6608

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
7680	7640	Two	→	0-7680	0

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
7376-7496 Dakota
4843-4916 Undesignated Gallup

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: Ies, GR Density Log

27. WAS WELL CORED: No

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8-5/8	20 & 24#	328	12-1/4	150 sx	
4-1/2	11.6 & 10.5#	7680	7-7/8	1st stage 275 sx	
				2nd stage 225 sx	
				3rd stage 300 sx	

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
NONE				

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-1/16	6810	6810

31. PERFORATION RECORD (*Interval, size and number*)
750 gals acid 7462 4843-4916 2 HPF
7529-7584 2 HPF
7376-7496 2 HPF
5305 4 Holes
4920 4 Holes

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
7529-7584	40,000# sd & 40,000 gals wtr.
7376-7496	80,000# sd & 80,000 gals wtr.
5305	Squeeze cmt. w/125 sx
4920	Squeeze cement w/150 sx
4843-4916	60,000# sd & 65,000 gals wtr.

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
SI	Flowing	SI

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
8/17/66	3	3/4					

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
360	Packer			Dakota 5930 Gallup Testing		

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)

TEST WITNESSED BY

35. LIST OF ATTACHMENTS

RECEIVED
OCT 28 1966
OIL CON. COM.
DIST.

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

SIGNED Harold C. Nichols TITLE Senior Production Clerk DATE October 26, 1966

*(See Instructions and Spaces for Additional Data on Reverse Side)

6 USGS, 1 Atlantic, 1 Cont. 1 File

G.W. Data

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

2. NAME OF OPERATOR: Tenneco Oil Company

3. ADDRESS OF OPERATOR: P.O. Box 3249, Englewood, CO 80155

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface: 1850' FNL, 1670' FEL "G"
At top prod. interval reported below
At total depth

RECEIVED FEB 23 1981 U.S. GEOLOGICAL SURVEY FARMINGTON, N. M.

5. LEASE DESIGNATION AND SERIAL NO.: Contract #108

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Jicarilla C

9. WELL NO.: 1E API 30-039-22996

10. FIELD AND POOL, OR WILDCAT: Basin Dakota

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Section 23, T26N, R5W

14. PERMIT NO. | DATE ISSUED

12. COUNTY OR PARISH: Rio Arriba | 13. STATE: New Mexico

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
12/20/80	1/4/81	2/19/81	6612' gr.	--

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
7649'	7600'		→	0'-TD	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
7334-7550' Dakota

25. WAS DIRECTIONAL SURVEY MADE: NO

26. TYPE ELECTRIC AND OTHER LOGS RUN
CD/CNL IND/GR

27. WAS WELL CORED: NO

RECEIVED MAR 2 1981 OIL CON. COM. DIST. 3

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
9-5/8"	36#	272'	12-1/4"	225 sx Class B 2% $CACL_2$	
4-1/2"	10.5#, 11.6#	7649'	7-7/8"	1st stg: 475 sx 65/35 6% gel	
				150 sx CL-B, 2nd stg: 930 sx	
				65/35 POZ 50 sx CL-B	

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	7358'	

31. PERFORATION RECORD (Interval, size and number)
7334-46'
7354-64' 48' 96 holes
7454-66' 2 JSPF
7496-7500'
7540-50'

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
7334-7550'	2000 gals 15% HCL 144 balls
	80,000 gals 30# XL gel, 80,000#
	20/40 sand, 25,000# 10/20 sand

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
2/19/81	Flowing	Shut-in

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
2/19/81	3 hrs.	3/4"			1444	ACCEPTED	FOR RECORD

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
95 PSI	545 PSI			1606		

FEB 27 1981
FARMINGTON DISTRICT
BY

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)
To be sold.

TEST WITNESSED BY

35. LIST OF ATTACHMENTS
Electric logs forwarded by Gearhart Owens.

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Lesley Stratton TITLE Asst. Div. Adm. Mgr. DATE 2/23/81

*(See Instructions and Spaces for Additional Data on Reverse Side)

Logos Operating, LLC
Logos Jicarilla 24D
Temporary Reserve Pit Application
Siting Criteria

1. According to the iWaters Database from the State Engineers Office, the closest known water well is 7348 meters (4.5miles) away in Section 27 of T27N R5W. The depth of the well is 460', and water depth is 186'.

2. As shown on the attached topographic map and aerial photos, there are no continuously flowing watercourses within 100' of the temporary pit, or lakebeds, sinkholes or playa lakes within 200' of the temporary pit.

3. There are no permanent residences, schools, hospitals, institutions, or churches within 300' of the temporary pit.

4. There are no domestic water wells or springs within 200' of the temporary pit. See iWaters Database printout.

5. The temporary pit is not located within any municipal boundaries.

6. The temporary pit is not within 100' of any wetlands. See attached topographic map and aerial photos.

7. There are no subsurface mines in Section 24, T26N, R5W. See attached map from the NM EMNRD Mining and Mineral Division.

8. The temporary pit 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 100' of a continuously flowing watercourse or 200' from any other watercourse. The stockpile will be on location and will meet the criteria.

9. The FEMA map for the subject well is unavailable due to its location being on the reservation. FEMA does not provide floodplain information for Reservation Land. Visual inspection was made during the onsite and the TOPO map was referenced; the temporary pit will not be within the 100 year floodplain.

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).

Hydro geological report for Logos Jicarilla 24D

Referenced Well Location:
The Logos Jicarilla 24D is located on tribal lands managed by the Jicarilla Apache Nation in Rio Arriba County, New Mexico. The general region surrounding the proposed project area is characterized by badlands, mesas, and relatively flat lowland valleys. The proposed project area is situated within gently rolling sagebrush and shrubland terrain. Ground elevation at the proposed well head is approximately 6644 feet.

General Regional Groundwater Description:
As a portion of the San Juan Basin, the FFO region is underlain by sandstone aquifers of the Colorado Plateau. The primary aquifer of potential concern at this location is the Uinta-Animas Aquifer, composed primarily of Lower Tertiary rocks in the San Juan Basin. The aquifer consists of the San Jose Formation; the underlying Animas formation and its lateral equivalent, the Nacimiento formation; and the Ojo Alamo Sandstone. The thickness of the Uinta-Animas aquifer generally increases toward the central part of the basin. In this region, the maximum thickness of the aquifer is approximately 3500 feet (USGS, 2001). This aquifer contains fresh to moderately saline water. Groundwater generally flows toward the San Juan River and its tributaries, where it becomes alluvial groundwater or is discharged to stream flow.

Site Specific Information:
Surface Hydrology: The temporary pit area is situated on a gentle, southwest-facing slope of Tapicito Canyon. The confluence of Tapicito Canyon (Creek) and Apache Bull Pasture Canyon is approximately 1.15 mile east of the project area.
1st Water Bearing Formation: San Jose, Tertiary; Formation Thickness: Approximately 200 - 700 ft.
Underlying Formation: Nacimiento, Tertiary

In 2011, the Jicarilla C 2N (30-039-29813) was drilled approximately 900' northwest of our proposed project area. It is at an elevation of 6661' with no indication of water being encountered. Surface casing was set at 433', which would be at 6228'. This would be 416' shallower than our location.

In 1966, the Jicarilla C 4 (30-039-08139) was drilled approximately 1400' southeast of our proposed project area. It is at an elevation of 6608' with no indication of water being encountered. Surface casing was set at 328', which would be at 6280'. This would be 364' shallower than our location.

In 1980, the Jicarilla C 1E (30-039-22296) was drilled approximately 2000' southwest of our proposed project area. It is at an elevation of 6612' with no indication of water being encountered. Surface casing was set at 272', which would be at 6340'. This would be 304' shallower than our location.

See attached Aerial map showing the proximity of these wells to our project area.

Depth to Groundwater:
Depth to groundwater is estimated at greater than 100' below bottom of the temporary pit.

Tamra Sessions

From: Tamra Sessions
Sent: Thursday, August 27, 2015 9:24 AM
To: Kurt Sandoval (kurt.sandoval@bia.gov)
Cc: Marlena Reval (marlena.reval@bia.gov); Deedra Mike (Deedra.Mike@bia.gov); CascindraWillie@jicarillaoga.com; guillermo.deherrera@jicarillaoga.com
Subject: Logos Jicarilla 24D_SURFACE OWNER NOTIFICATION for Temporary Pit 08-27-15

Logos Jicarilla 24D
JAN Lease 108
D, Section 24, T26N, R05W
Rio Arriba County

According to NMOCD rules, Logos Operating, LLC is notifying you, as the surface owner, that there will be a temporary pit on the subject well and that they intend to bury the drill cuttings in the reserve pit, assuming that they qualify as per Subsection D of 19.15.17.13 NMAC. No action is required on your part. If you have any questions, please do not hesitate to call me. Please let me know if I need to add anyone else to this notification.

Thank you,

Tamra Sessions
Logos Resources, LLC
Operations Technician
tsessions@logosresourcesllc.com
505-330-9333 cell
505-436-2606 office

20

Logos Operating, LLC
San Juan Basin
Temporary 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, LLC (Logos) locations; this is Logos 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 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 will post a well sign, in compliance with 19.15.17.11C 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 range, and emergency telephone numbers
4 Logos shall construct all new fences utilizing 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. If the temporary pit is within 1000' of an occupied residence, it will be enclosed with a chain link fence, as least six feet in height with at least two strands of barbed wire at the top. 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 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 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 will minimize liner seams and orient them up and down, not across a slope. Factory seams will be used whenever possible. Logos 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 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-on 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 will not allow freestanding liquids to remain on the unlined portion of temporary blow pit

Logos Operating, LLC
San Juan Basin
Temporary Pit 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, LLC (Logos) locations. This is Logos 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 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 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 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 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 shall remove all liquids above the damaged liner within 48 hours and repair the damage or replace the liner. Logos shall notify the Aztec Division office by phone or email within 48 hours of the discovery pursuant to 19.15.29 NMAC.
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-on by constructing and maintaining diversion ditches around the location or around the perimeter of the pit in some cases
8 Logos shall immediately remove any visible layer or 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 will maintain the temporary pit free of miscellaneous solid waste or debris
11 During drilling or workover operations, Logos will inspect the temporary pit at least once daily to ensure compliance with this plan. Inspections will be logged in the IADC reports. Logos will file this log with the Aztec Division office upon closure of the pit
12 After drilling or workover operations, Logos 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 office electronically and will be filed with the Aztec Division office upon closure of the pit
13 Logos shall maintain at least two feet of freeboard for a temporary pit
14 Logos shall remove all free liquids from a temporary pit within 60 days from the date the operator releases the drilling or workover rig
15 Logos shall remove all free liquids from cavitations put within 48 hours after completing cavitations. Logos 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
Temporary Pit Closure Plan

In accordance with Rule 19.15.17.13 NMAC the following information describes the closure requirements of temporary pits on Logos Operating, LLC (Logos) locations. This is Logos is 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 (D) of 19.15.17.13 are met
3 Logos will notify the surface owner by certified mail, return receipt requested, unless surface owner is a public entity (BLM/State/Tribal) then an email notification will be sent, of plans to close the temporary pit at least 72 hours, but no more than 1 week, prior to any closure operation. The notice will include the well name, API number, and location
4 Within 6 months of the Rig Off status occurring on the continuous drilling of dual pad wells, Logos 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. Well name and API Number
    iii. Location by Unit Letter, Section, Township, and Range.
6 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 as safe and stable. The mixing ratio shall not exceed 3 parts clean soil to 1 part pit contents
7 A five point composite sample will be taken of the pit using sampling tools and all samples tested per 19.15.17.13 (D)(5). In the event that the criteria are not met, all contents will be handled per 19.15.17.13 (D)(7) i.e., Dig and haul

Components	Tests Method	Limit (mg/Kg)
		>100' bottom of pit to GW
Benzene	EPA SW-846 8021B or 8015M	10
BTEX	EPA SW-846 8021B or 8260B	50
TPH	EPA SW-846 418.1	2500
GRO/DRO	EPA SW-846 8015M	1000
Chlorides	EPA 300.0	80,000

8 Upon completion of solidification and testing; and contents are below concentrations listed in TABLE II, Logos will fold the outer edges of the trench liner to overlap the waste material in the pit area, then install a geomembrane cover over the waste material in the pit to prevent collections of infiltration water after the soil cover is in place; geomembrane a 20-mil, string reinforced, LLDPE liner, or equivalent complying with EPA SW-846 method 9090A requirements and impervious resistance to ultra violet light, hydrocarbons, salts, alkaline.

9 Pit area will be backfilled with compacted, non-waste containing, earthen material with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0. 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 shall seed the disturbed areas the first favorable 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 be established that will reflect a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and will equal seventy (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 two successive growing seasons. Repeat seeding or planting will be continued until successful vegetative growth occurs

    a. On Federal/Tribal/Forest lands we will comply with their stipulations as they are more stringent

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

    a. If the well goes into production, then an alternate interim marking system will be used to allow for safer and more efficient operations. A minimum 4" O.D. steel pipe will be set at least 36" deep at the center of the pit. A threaded collar will be on the top of the pipe. A minimum 12" x 12" steel plate will be welded atop the threaded collar. Top of the plate will be flush with ground level. The steel plate will contain the Operator Name, Lease Name, Well Number, and location information including unit letter, section, township and range, and that the marker designates an onsite burial location. This information will be welded, stamped or otherwise permanently engraved into the metal of the plate. Upon the abandonment of all the wells on the pad, the plate will be removed and replaced with a four foot tall riser containing the same information as described for the steel plate pursuant to 19.15.17.13.H.5D.