Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No.: NMSF78766

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.: ROSA UNIT / NMNM 078407E

8. Lease Name and Well No.: ROSA UNIT 604H

2. Name of Operator: LOGOS OPERATING LLC

9. API Well No.: 30-039-31434

3a. Address: 2010 AFTON PLACE, FARMINGTON, NM 87401

3b. Phone No. *(include area code)*: (505) 278-8720

10. Field and Pool, or Exploratory: BASIN MANCOS/BASIN MANCOS

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

At surface: SENE / 1503 FNL / 605 FEL / LAT 36.888251 / LONG -107.443252

At proposed prod. zone: NWNW / 378 FNL / 170 FWL / LAT 36.891286 / LONG -107.476609

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 22/T31N/R6W/NMP

14. Distance in miles and direction from nearest town or post office*: 38 miles

12. County or Parish: RIO ARRIBA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 170 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 640.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 15 feet

19. Proposed Depth: 6835 feet / 16893 feet

20. BLM/BIA Bond No. in file: FED:

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 6260 feet

22. Approximate date work will start*: 11/07/2022

23. Estimated duration: 45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | ETTA TRUJILLO / Ph: (505) 324-4145 | 09/26/2022 |

Title: Regulatory Specialist

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | DAVE J MANKIEWICZ / Ph: (505) 564-7761 | 09/19/2023 |

| Title | Office |
|---|---|
| AFM-Minerals | Farmington Field Office |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

**Approval Date: 09/19/2023**

## INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48( d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.



(Continued on page 3)



**Approval Date: 09/19/2023**

## Additional Operator Remarks

### Location of Well

0. SHL: SENE / 1503 FNL / 605 FEL / TWSP: 31N / RANGE: 6W / SECTION: 22 / LAT: 36.888251 / LONG: -107.443252 ( TVD: 0 feet, MD: 0 feet )

PPP: LOT 3 / 0 FNL / 0 FEL / TWSP: 31N / RANGE: 6W / SECTION: 21 / LAT: 0.0 / LONG: 0.0 ( TVD: 0 feet, MD: 0 feet )

PPP: LOT 1 / 0 FNL / 0 FEL / TWSP: 31N / RANGE: 6W / SECTION: 22 / LAT: 0.0 / LONG: 0.0 ( TVD: 0 feet, MD: 0 feet )

PPP: NWNW / 379 FNL / 330 FWL / TWSP: 31N / RANGE: 6W / SECTION: 21 / LAT: 36.891284 / LONG: -107.476062 ( TVD: 0 feet, MD: 0 feet )

PPP: NENE / 456 FNL / 796 FEL / TWSP: 31N / RANGE: 6W / SECTION: 22 / LAT: 36.891123 / LONG: -107.443903 ( TVD: 6850 feet, MD: 7329 feet )

BHL: NWNW / 378 FNL / 170 FWL / TWSP: 31N / RANGE: 6W / SECTION: 21 / LAT: 36.891286 / LONG: -107.476609 ( TVD: 6835 feet, MD: 16893 feet )

## BLM Point of Contact

Name: JEFFREY J TAFOYA
Title: Assistant Field Manager
Phone: (505) 564-7672
Email: JTAFOYA@BLM.GOV

**Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, 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 Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

[X] AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| 30-039-31434 | 97232 | BASIN MANCOS |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| 320608 | ROSA UNIT | 604H |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 289408 | LOGOS OPERATING, LLC | 6260' |

## [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 |
|---|---|---|---|---|---|---|---|---|---|
| H | 22 | 31N | 6W | | 1503 | NORTH | 605 | EAST | 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 |
|---|---|---|---|---|---|---|---|---|---|
| D | 21 | 31N | 6W | | 378 | NORTH | 170 | WEST | RIO ARRIBA |

| [12] Dedicated Acres | | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|---|
| 640.00 | N/2 Section 21<br>N/2 Section 22 | | | R-13457 |

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

LAST TAKE POINT
378' FNL 170' FWL
SECTION 21, T31N, R6W
LAT: 36.891281 °N
LONG: 107.476004 °W
DATUM: NAD1927

LAT: 36.891286 °N
LONG: 107.476609 °W
DATUM: NAD1983

N89°52.1'W 160.0'

FIRST PERFORATION
379' FNL 330' FWL
SECTION 21, T31N, R6W
LAT: 36.891278 °N
LONG: 107.475457 °W
DATUM: NAD1927

LAT: 36.891284 °N
LONG: 107.476062 °W
DATUM: NAD1983

N89°52.1'W 9404.2'

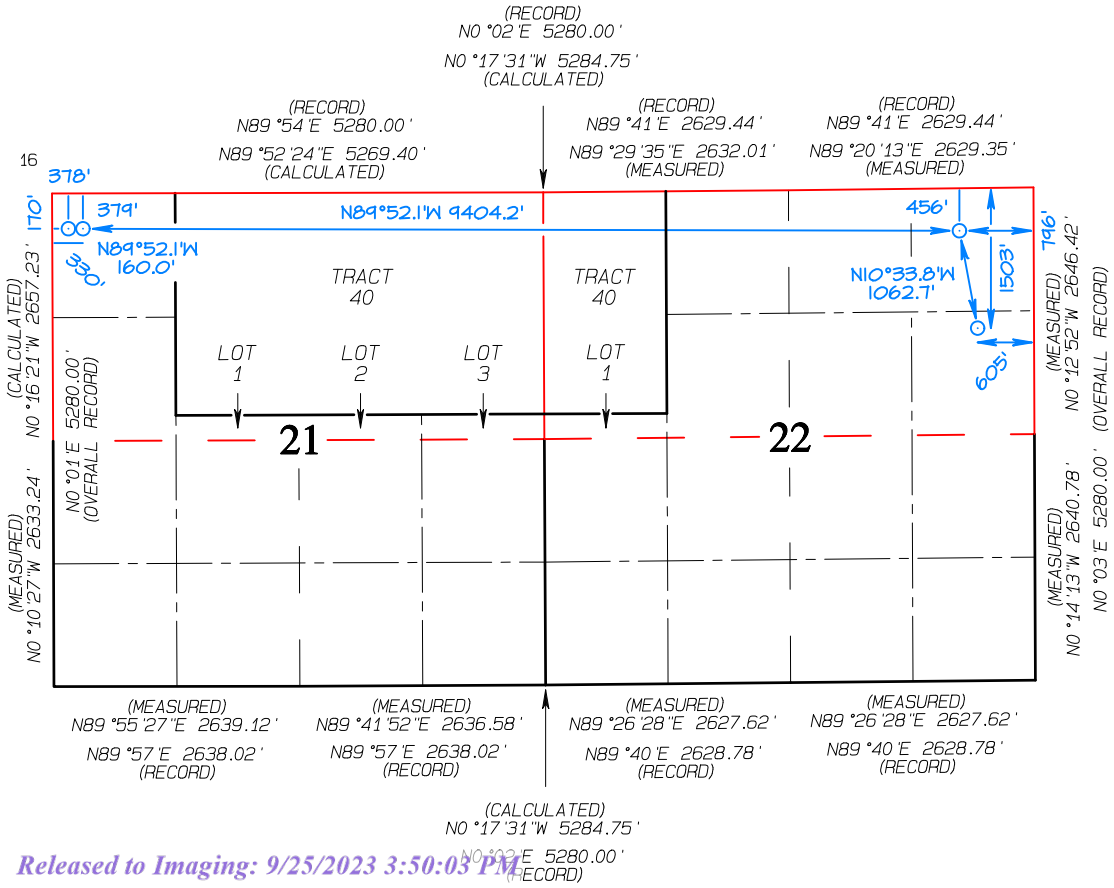
FIRST TAKE POINT
456' FNL 796' FEL
SECTION 22, T31N, R6W
LAT: 36.891117 °N
LONG: 107.443299 °W
DATUM: NAD1927

LAT: 36.891123 °N
LONG: 107.443903 °W
DATUM: NAD1983

N10°33.8'W 1062.7'

SURFACE LOCATION
1503' FNL 605' FEL
SECTION 22, T31N, R6W
LAT: 36.888246 °N
LONG: 107.442648 °W
DATUM: NAD1927

LAT: 36.888251 °N
LONG: 107.443252 °W
DATUM: NAD1983




## [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.

Etta Trujillo — Signature — 8/8/2022 — Date

Etta Trujillo — Printed Name

etrujillo@logosresourcesllc.com — 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.

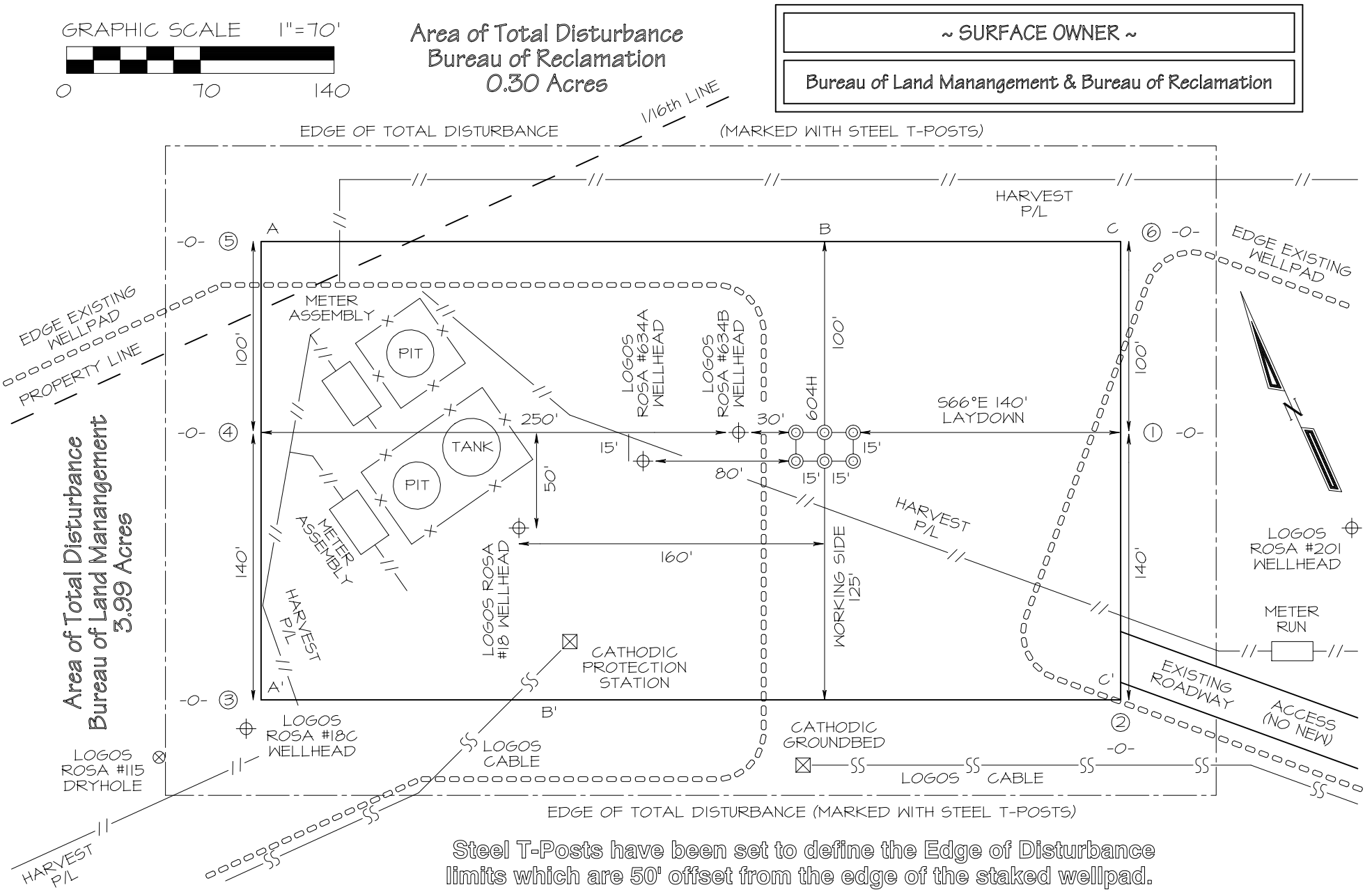
Date Revised: AUGUST 2, 2022
Survey Date: JANUARY 13, 2012

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

# LOGOS OPERATING, LLC ROSA UNIT #604H
# 1503' FNL & 605' FEL, SECTION 22, T31N, R6W, NMPM
# RIO ARRIBA COUNTY, NEW MEXICO ELEVATION: 6260'
# LAT: 36.888251°N LONG: 107.443252°W DATUM: NAD1983

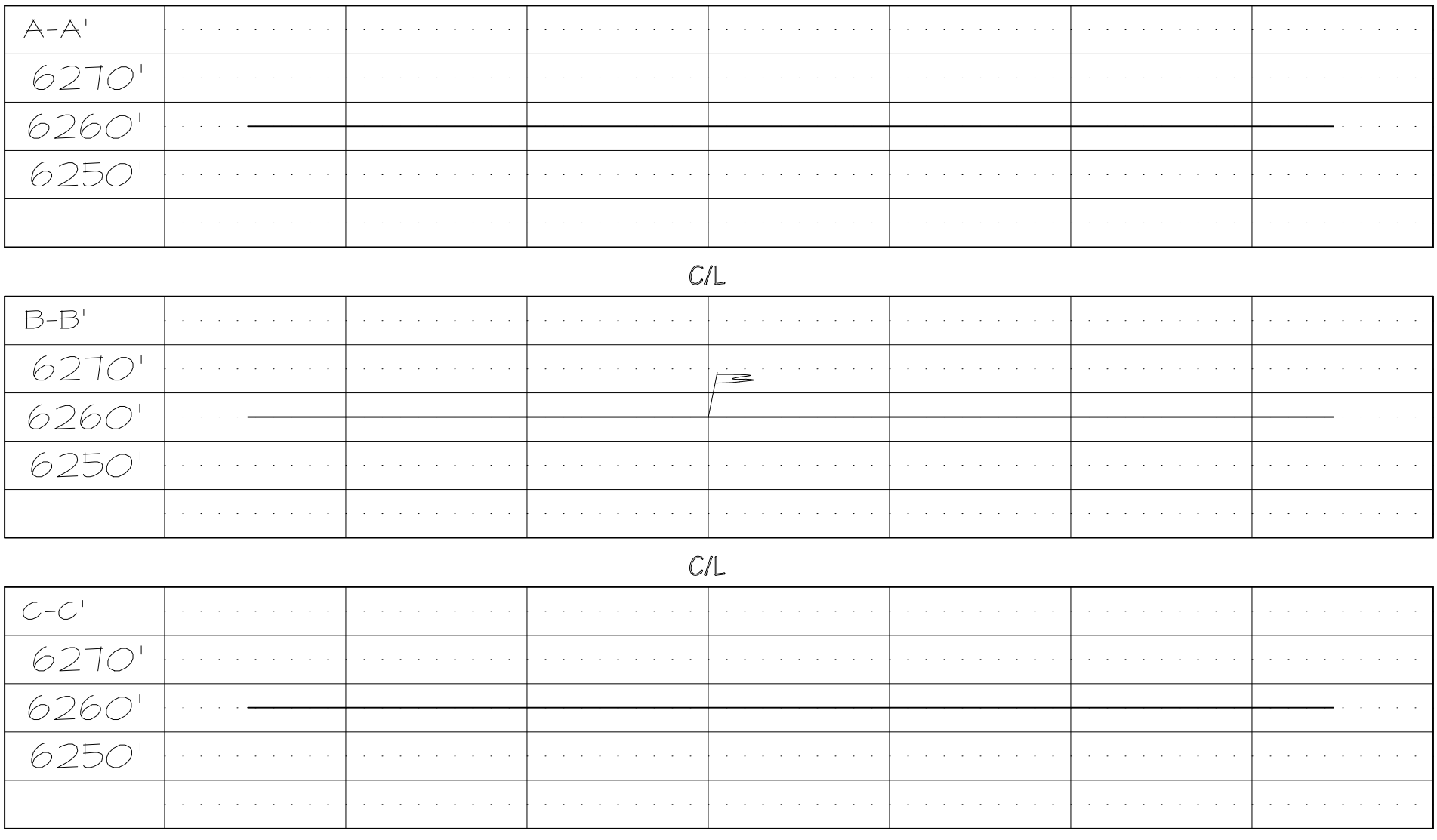



Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked wellpad.

# LOGOS OPERATING, LLC ROSA UNIT #604H
# 1503' FNL & 605' FEL, SECTION 22, T31N, R6W, NMPM
# RIO ARRIBA COUNTY, NEW MEXICO ELEVATION: 6260'

HORIZONTAL SCALE
1"=40'

VERTICAL SCALE
1"=30'

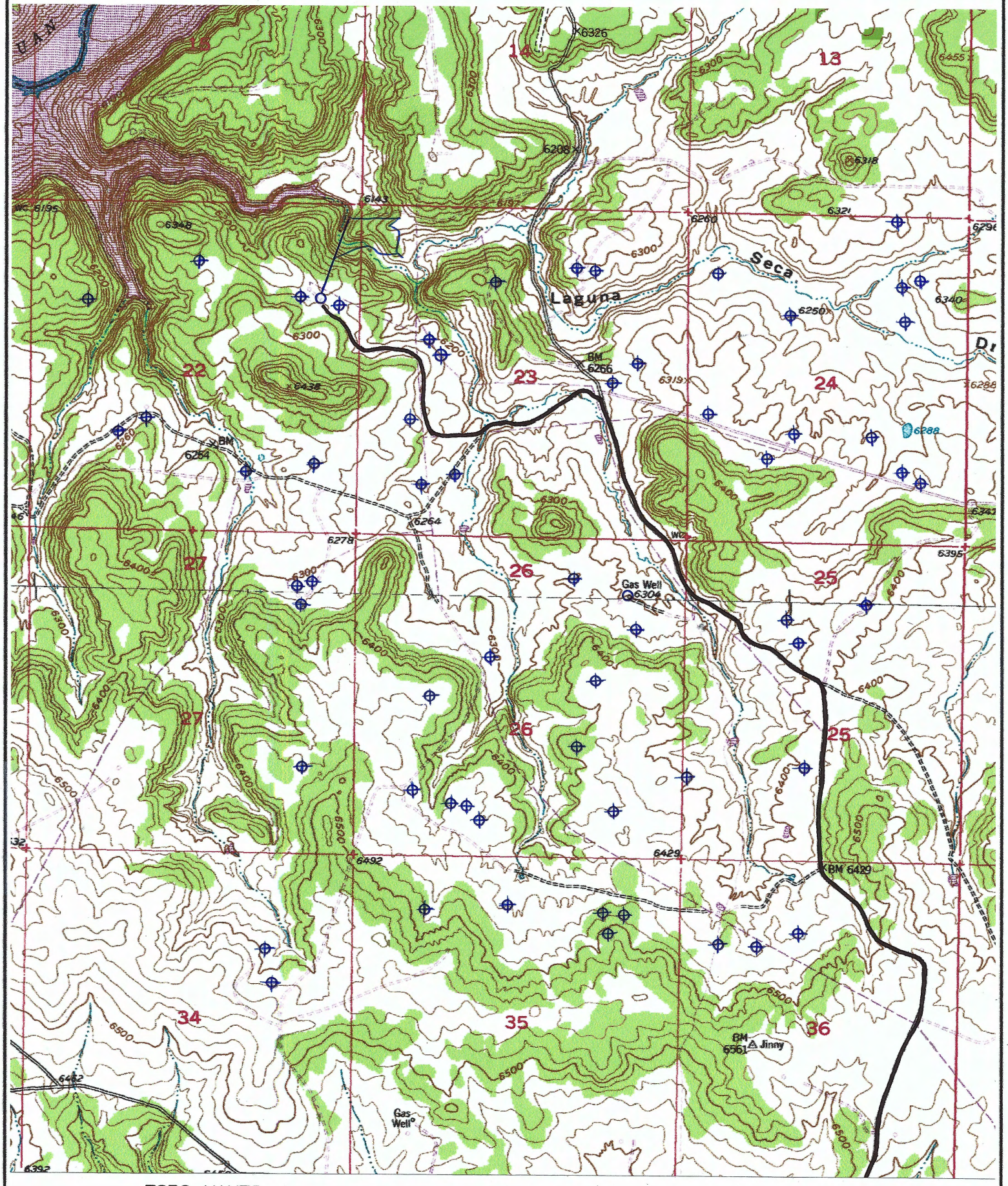



NCE SURVEYS IS NOT LIABLE FOR LOCATION OF UNDERGROUND UTILITIES OR PIPELINES.

CONTRACTOR SHOULD CONTACT ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED UNDERGROUND UTILITIES OR PIPELINES ON WELLPAD AND/OR ACCESS ROAD AT LEAST TWO WORKING DAYS PRIOR TO CONSTRUCTION.

# LOGOS OPERATING, LLC ROSA UNIT #604H

1503' FNL & 605' FEL, SECTION 22, T31N, R6W, N.M.P.M.
RIO ARRIBA COUNTY, NEW MEXICO




TOPO NAMES :
BANCOS MESA NW & GOMEZ RANCH

⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

**Directions from the Intersection of US Hwy 550 & US Hwy 64**

**in Bloomfield, NM to Logos Operating, LLC Rosa Unit #604H**

**1503' FNL & 605' FEL, Section 22, T31N, R6W, N.M.P.M., Rio Arriba County, NM**

**Latitude: 36.888251°N Longitude: 107.443252°W Datum: NAD1983**

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Easterly on US Hwy 64 for 38.0 miles to Mile Marker 102.3 to State Hwy 527 (Simms Hwy);

Go Left (North-westerly) on State Hwy 527 (Simms Hwy) for 7.9 miles to Rosa Road @ La Jara Station;

Go Right (Northerly) on Rosa Road for 6.5 miles to fork in roadway;

Go Left (North-westerly) which is straight remaining on Rosa Road for 4.0 miles to 4-way intersection;

Go Left (North-westerly) which is straight remaining on Rosa Road for 1.2 miles to 4-way intersection;

Go Left (Westerly) exiting Rosa Road for 0.4 miles to fork in roadway;

Go Right (Westerly) which is straight for 0.4 miles to fork in roadway;

Go Left (North-westerly) which is straight for 0.4 miles to LOGOS Rosa Unit #604H proposed wellpad which overlaps the LOGOS Rosa Unit #634A existing wellpad.

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

# NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

## Section 1 – Plan Description
**Effective May 25, 2021**

**I. Operator:** LOGOS Operating, LLC **OGRID:** 289408 **Date:** 09/19/2023

**II. Type:** ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

| Well Name | API | ULSTR | Footages | Anticipated Oil BBL/D | Anticipated Gas MCF/D | Anticipated Produced Water BBL/D |
|---|---|---|---|---|---|---|
| Rosa Unit 604H | 30-039- | H 22 T31N R6W | 1503FNL 605FEL | N/A | 9,860 | 453 |
| Rosa Unit 606H | 30-039- | H 22 T31N R6W | 1509FNL 592FEL | N/A | 9,860 | 444 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**IV. Central Delivery Point Name:** Harvest Gathering System [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

| Well Name | API | Spud Date | TD Reached Date | Completion Commencement Date | Initial Flow Back Date | First Production Date |
|---|---|---|---|---|---|---|
| Rosa Unit 604H | 30-039- | Pending | Pending | Pending | Pending | Pending |
| Rosa Unit 606H | 30-039- | Pending | Pending | Pending | Pending | Pending |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**VI. Separation Equipment:** ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:** ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:** ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

# Section 2 – Enhanced Plan

**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

| Well | API | Anticipated Average Natural Gas Rate MCF/D | Anticipated Volume of Natural Gas for the First Year MCF |
|---|---|---|---|
| | | | |
| | | | |

**X. Natural Gas Gathering System (NGGS):**

| Operator | System | ULSTR of Tie-in | Anticipated Gathering Start Date | Available Maximum Daily Capacity of System Segment Tie-in |
|---|---|---|---|---|
| | | | | |
| | | | | |

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

## Section 3 - Certifications

**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.** ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.** ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

## Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

**(a)** Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

**(b)** Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

**I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.**

| | |
|---|---|
| Signature: | Etta Trujillo |
| Printed Name: | Etta Trujillo |
| Title: | Regulatory Specialist |
| E-mail Address: | etrujillo@logosresourcesllc.com |
| Date: | 09/19/2023 |
| Phone: | (505) 324-4154 |

**OIL CONSERVATION DIVISION**
**(Only applicable when submitted as a standalone form)**

| | |
|---|---|
| Approved By: | |
| Title: | |
| Approval Date: | |
| Conditions of Approval: | |

VI. Separation Equipment

The operator will select separation equipment for the maximum anticipated throughput and pressure to optimize gas capture. Separation equipment is sized according to manufacturer's design specifications. Separation vessels are built following the A.S.M.E. section VII division 1 codes for pressure vessel design, fabrication, inspection, testing and certification. Anticipated well pressures and production rates are evaluated to select separation equipment according to the equipment's designed operating pressure and throughput.

After completion, the operator utilizes flowback equipment, including separators, to manage wellbore fluids and solids during the initial separation period. After the initial flowback period is complete the operator utilizes iterative facility separation equipment to ensure that optimal separation is achieved.

VII. Operational Practices 19.15.27.8 NMAC A through F

A. The operator will maximize the recovery of natural gas and minimize the amount of gas vented or flared when technically and safely feasible as further described and detailed within the following subsections (B-F of 19.15.27.8). In all cases where natural gas venting and flaring requires regulatory reporting, reporting will be submitted accurately and within the required time frames.
B. Venting and flaring during drilling operations:
    a. New Drill HZ Oil Wells: The operator drills wells in the area by utilizing a balanced mud to safely drill the wellbore. This technique prevents gas from coming to surface during the drilling process. If there is an emergency or malfunction and natural gas does come to surface the natural gas will be captured or combusted, with an appropriately sized and located flare stack, if technically and safely feasible.
    b. New Drill HZ Gas Wells: The operator drills wells in the area by balancing the mud weight to safely drill the wellbore with as minimal flaring as possible. When gas kicks enter the wellbore, sometimes it is necessary to circulate it out of the wellbore to an appropriately sized and located flare stack. The operator will estimate the volume flared and appropriately report.
C. Venting and flaring during completion or recompletion operations:
    a. New Drill HZ Oil Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. During the separation flowback period natural gas will be routed to a properly sized and located flare until the natural gas is of pipeline quality (less than 60 days). The natural gas will also be utilized on site as needed for fuel gas or injection gas.

    b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.

D. Venting and flaring during production operations:

a. New Drill HZ Oil Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. This facility will operate under a notice of intent (NOI) from the New Mexico Environment Department (NMED).

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

(a) If there is an emergency or malfunction, vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
(b) If the wellbore requires liquids to be unloaded to atmosphere, the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
(c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging with minor exceptions.
(d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will utilize a LACT system when available to minimize gas vented during oil tank loading.
(e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
(f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
(g) Storage tanks and other low-pressure vessel normal operational venting will be minimized during the early life of the well with the installation of a vapor recovery unit to limit the flash and working and breathing emissions to atmosphere.
(h) No dehydration or amine units are anticipated to be set on location.
(i) Compressors, compressor engines, turbines, flanges, connectors, valves, and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operation.
(j) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
(k) When natural gas does not meet gathering pipeline specifications, for example high nitrogen content after a nearby frac, gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
(l) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

(a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
(b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
(c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
(d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.
(e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
(f) Electric controllers and pumps, or instrument air, will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
(g) No dehydration or amine units are anticipated to be set on location.
(h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
(i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
(j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
(k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:
a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.

b. All tanks that are routed to a control device that is installed after 5/25/2021 will have an automatic gauging system to minimize the amount of vented natural gas.
c. If a flare stack is installed or replaced after 5/25/2021 it will be equipped with an automatic ignitor or continuous pilot. The flare stack will be properly sized and designed to ensure proper combustion efficiency. The flare stack will be located 100 feet away from the nearest wellhead or storage tank.
d. AVO inspections will be conducted weekly for the year after completion and for all wells producing greater than 60,000 cubic feet of natural gas daily. The AVO inspection will include all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated pipeline to identify any leaks and releases by comprehensive auditory, visual, and olfactory inspection. The AVO inspection records will be maintained for 5 years which will be available at the department's request. Identified leaks will be repaired as soon as feasible to minimize the amount of vented natural gas.

F. Measurement or estimation of vented and flared natural gas.
a. The volume of natural gas that is vented, flared or consumed for beneficial use will be measured when possible, or estimated, during drilling, completions, or production operations.
b. Equipment will be installed to measure the volume of natural gas flared for all APD's issued after 5/25/2021 on facilities that will have an average daily gas rate greater than 60,000 cubic feet of natural gas. Measurement equipment will conform to API MPMS Chapter 14.10 regulations. The measurement equipment will not have a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment. If metering is not practical, then the volume of gas will be estimated.

# LOGOS Operating, LLC
# Operations Plan

***Note: This procedure will be adjusted onsite based upon actual conditions***

| | | | |
|---|---|---|---|
| Date: | September 12, 2022 | Pool: | Basin Mancos |
| **Well Name:** | **Rosa Unit 604H** | GL Elevation: | 6,260’ |
| Surface Location: | Sec 22, T31N, R6W 1503 FNL, 605 FWL (36.888251º N, 107.443252º W – NAD83) | Measured Depth: | 16,893’ (KB) |
| Bottom Hole Location: | Sec 21, T31N, R6W 378 FNL, 170 FWL (36.891286º N, 107.476609º W – NAD83) | County: | Rio Arriba |

**Lease Serial #NMSF078766 CA Serial #NMNM78407E**

## I. GEOLOGY

**A.** Formation Tops (Based on GL Elevation): Estimated top of important geological markers:
SURFACE FORMATION – NACIMIENTO

| NAME | MD | TVD | NAME | MD | TVD |
|---|---|---|---|---|---|
| OJO ALAMO | 2,320' | 2,300' | *POINT LOOKOUT | 5,629' | 5,540' |
| KIRTLAND | 2,427' | 2,405' | *MANCOS | 6,124' | 6,024' |
| *FRUITLAND | 2,945' | 2,912' | KICKOFF POINT | 6,272' | 6,169' |
| *PICTURED CLIFFS | 3,297' | 3,257' | LANDING POINT | 7,329' | 6,850' |
| LEWIS | 3,393' | 3,351' | | | |
| CHACRA | 4,523' | 4,457' | | | |
| *CLIFF HOUSE | 5,337' | 5,254' | | | |
| MENEFEE | 5,383' | 5,299' | TD | 16,893' | 6,835' |

* indicates depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered.

**B. MUD LOGGING PROGRAM:** Mudlogger on location from KOP to TD.

**C. LOGGING PROGRAM:** LWD GR from surface casing to TD.

**D. NATURAL GAUGES:** Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

## II. DRILLING

**A. MUD PROGRAM:** LSND mud (WBM) will be used to drill the 17-1/2" surface hole as well as the 12-1/4” directional vertical hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2” curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

Above ground steel pits will be used for fluid and cuttings while drilling. In the unlikely event that a tank develops a leak, upon immediate visual discovery, the fluid would be transferred to another tank and contaminated soil would be removed and disposed. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times.

B. **BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10 minutes.** Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes.** Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. BOP equipment will be tested every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip or but not more than once a day. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when initially installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30 day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30 day interval of first full test.

C. **GeoHazards:** There are no Geohazards

D. **Maximum Anticipated Pressure:** 6850' TVD x 0.43 = 2946 psi

E. **H2S Concerns**: There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

## III. MATERIALS

### A. CASING EQUIPMENT:

| CASING TYPE | OH SIZE (IN) | DEPTH (MD) | CSG SIZE | WEIGHT | GRADE | CONN |
|---|---|---|---|---|---|---|
| SURFACE | 17.5" | 320' or greater | 13.375" | 54.5 LBS | J-55 or equiv | LTC/BTC |
| INTERMEDIATE | 12.25" | 6,199' | 9.625" | 43.5 LBS | N-80 or equiv | LTC/BTC |
| PRODUCTION | 8.5" | 16,893' | 5.5" | 20 LBS | P-110 or equiv | LTC/BTC |

NOTE: All casing depths are approximate, based on GL elevation and will be based on drilling conditions +/- 50'. Weights, grades and connections will be based on availability and may vary but will be equivalent or greater.

### B. FLOAT EQUIPMENT:

1. SURFACE CASING: 13-3/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
2. INTERMEDIATE CASING: 9-5/8" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancelation plugs for DV tools may be used if losses while cementing are not encountered.
3. PRODUCTION CASING: Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

### C. CEMENTING:

***(Note: Cement type and volumes may be adjusted onsite due to actual conditions and availability)***

1. SURFACE: Casing shall be set at ~ 320' and cemented to surface. TOC at Surface. 263 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 223 sks of 14.6 ppg Type III with 1.39 cuf/sk yield, 30% excess.

2. INTERMEDIATE: Intermediate casing shall be kept fluid filled while running in to the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools in order to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to surface, a CBL will be run to determine TOC.

| | Top | Footage | Cement (ft3/ft) Annular Capacity | Excess (30%) | Total (ft3) | Total (bbl) | Slurry Yield (ft3/sk) | Sacks Cement | Density (PPG) |
|---|---|---|---|---|---|---|---|---|---|
| **Stage 1 Tail** | 5,079 | 1,120 | 0.3132 | 1.3 | 474 | 84 | 1.15 | 412 | 15.8 |
| **Stage 1 Lead** | 4,574 | 505 | 0.31318 | 1.3 | 206 | 37 | 2.30 | 89 | 12.3 |
| | | | | | **679** | **121** | | **501** | |
| **Stage 2 Tail** | 3,399 | 1,175 | 0.31318 | 1.3 | 478 | 85 | 1.50 | 319 | 13.5 |
| **Stage 2 Lead** | 2,975 | 424 | 0.31318 | 1.3 | 173 | 31 | 2.30 | 75 | 12.3 |
| | | | | | **651** | **116** | | **394** | |
| **Stage 3 Tail** | 2,325 | 650 | 0.31318 | 1.3 | 265 | 47 | 1.99 | 133 | 12.8 |
| **Stage 3 Lead** | 320 | 2,005 | 0.31318 | 1.3 | 816 | 145 | 2.53 | 323 | 12 |
| **Stage 3 Lead** | - | 320 | 0.36268 | 1 | 116 | 21 | 2.53 | 46 | 12 |
| | | | | | **1,197** | **213** | | **502** | |
| **All Stage Totals** | | | | | **2,527** | **450** | | **1,397** | |

Calculations based on 30% excess for open hole and cement to surface. Actual excess pumped will be determined by well conditions.

3. PRODUCTION: Production casing will be cemented in 1 stage with 100' of cement overlap above intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.

| | Top | ft | Cement (ft3/ft) Annular Capacity | Excess (15%) | Total (ft3) | Total (bbl) | Slurry Yield (ft3/sk) | Sacks Cement | Density (PPG) |
|---|---|---|---|---|---|---|---|---|---|
| **Cased Lead** | **5,199** | **100** | **0.2531** | **1** | **25** | **5** | **1.56** | **16** | 13 |
| **Open Hole Lead** | **6,199** | **10,694** | **0.2291** | **1.15** | **2,828** | **504** | **1.56** | **1,813** | 13 |
| | | | | | **2,853** | **508** | | **1,829** | |

Calculations based on 15% excess for open hole and 100' overlap into intermediate casing. Actual volumes will vary.

*Cement calculations are used for volume estimation. Well conditions will dictate final cement job design.* Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected. All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

ROSA UNIT 604H

## IV. COMPLETION

### A. CBL

CBLs and/or Temperature Surveys will be performed as needed or required to determine cement top if cement is not circulated.

### B. PRESSURE TEST

C. Pressure test 5-1/2" casing to 0.22 psi/ft * 6,850' TVD=1507 psi for 30 minutes. Increase pressure to Open RSI sleeves.

### D. STIMULATION

Stimulate with sand and water. Isolate stages with flow through or dissolvable frac plugs. Drill out frac plugs and flowback lateral.

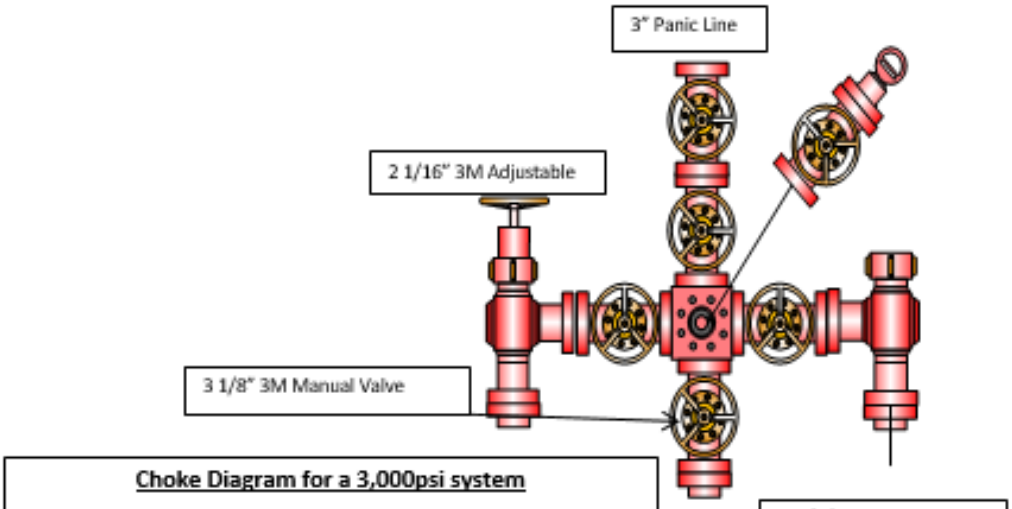
### E. PRODUCTION TUBING

2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-18 months after completion.

*NOTE: Although this horizontal well may be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 8(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 8(2) NMAC, 19.15.16.15 8(2)NMAC, and 19.15.16.15. 8(4) NMAC.

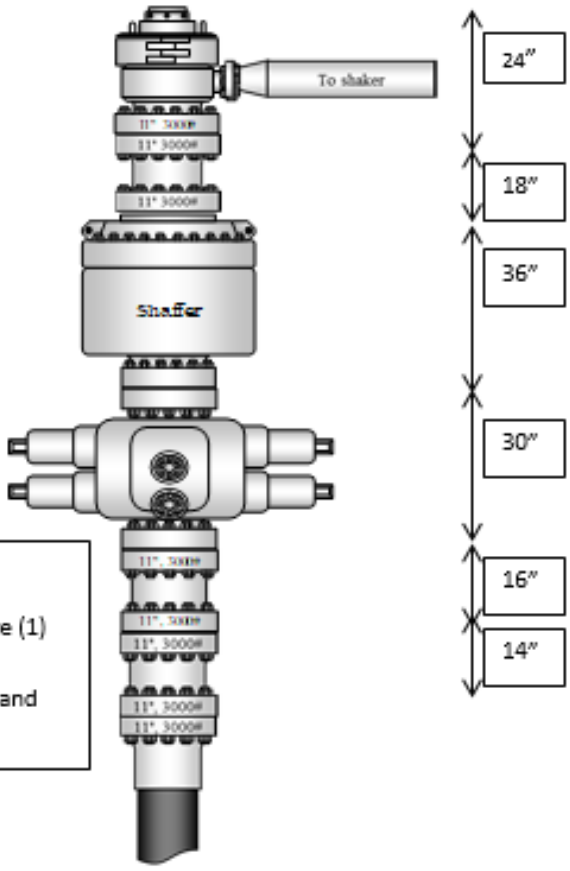
LOGOS RESOURCES II, LLC

# 3M 11" B.O.P.E Diagram




**Choke Diagram for a 3,000psi system**

- Features all 3 1/8" 3M Manual Valves
- Two 2 1/16" Manual Adjustable Choke Valves
- 3" Panic Line and 2" Vent lines
- (2) 3 1/8" 3M Coflex Hose f/Choke to BOP




**11" 3,000psi BOP**

- Choke Side has (1) manual 3 1/8" Valve (1) HCR
- Kill Side has (2) 2 1/16" Manual Valve and (1) check valve

ROSA UNIT 604H

LOGOS RESOURCES II, LLC

Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Rosa Unit 9
Well: Rosa Unit 604H
Wellbore: OH
Design: Plan #1

**PROJECT DETAILS: Rio Arriba, NM NAD83**

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: True

LONESTAR CONSULTING

**WELL DETAILS: Rosa Unit 604H**

GL 6260' @ 6260.00ft

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 2142882.02 | 2837165.31 | 36.8882510 | -107.4432520 | A2 |

Plan: Plan #1 (Rosa Unit 604H/OH)

Created By: Janie Collins Date: 13:38, August 11 2022

Azimuths to True North
Magnetic North: 8.[illegible]°
Magnetic Field
Strength: 49623.[illegible]nT
Dip Angle: 63.[illegible]°
Date: 12/31/2021
Model: HDGM2021_FILE

**DESIGN TARGET DETAILS**

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| Rosa 604H POE | 6850.00 | 1045.64 | -190.40 | 2143926.87 | 2836970.64 | 36.8911231 | -107.4439031 |
| Rosa 604H BHL | 6835.00 | 1106.65 | -9754.52 | 2143948.80 | 2827406.37 | 36.8912860 | -107.4766090 |
| Rosa 604H FPerf | 6835.00 | 1105.87 | -9594.56 | 2143948.67 | 2827566.33 | 36.8912840 | -107.4760620 |

**SECTION DETAILS**

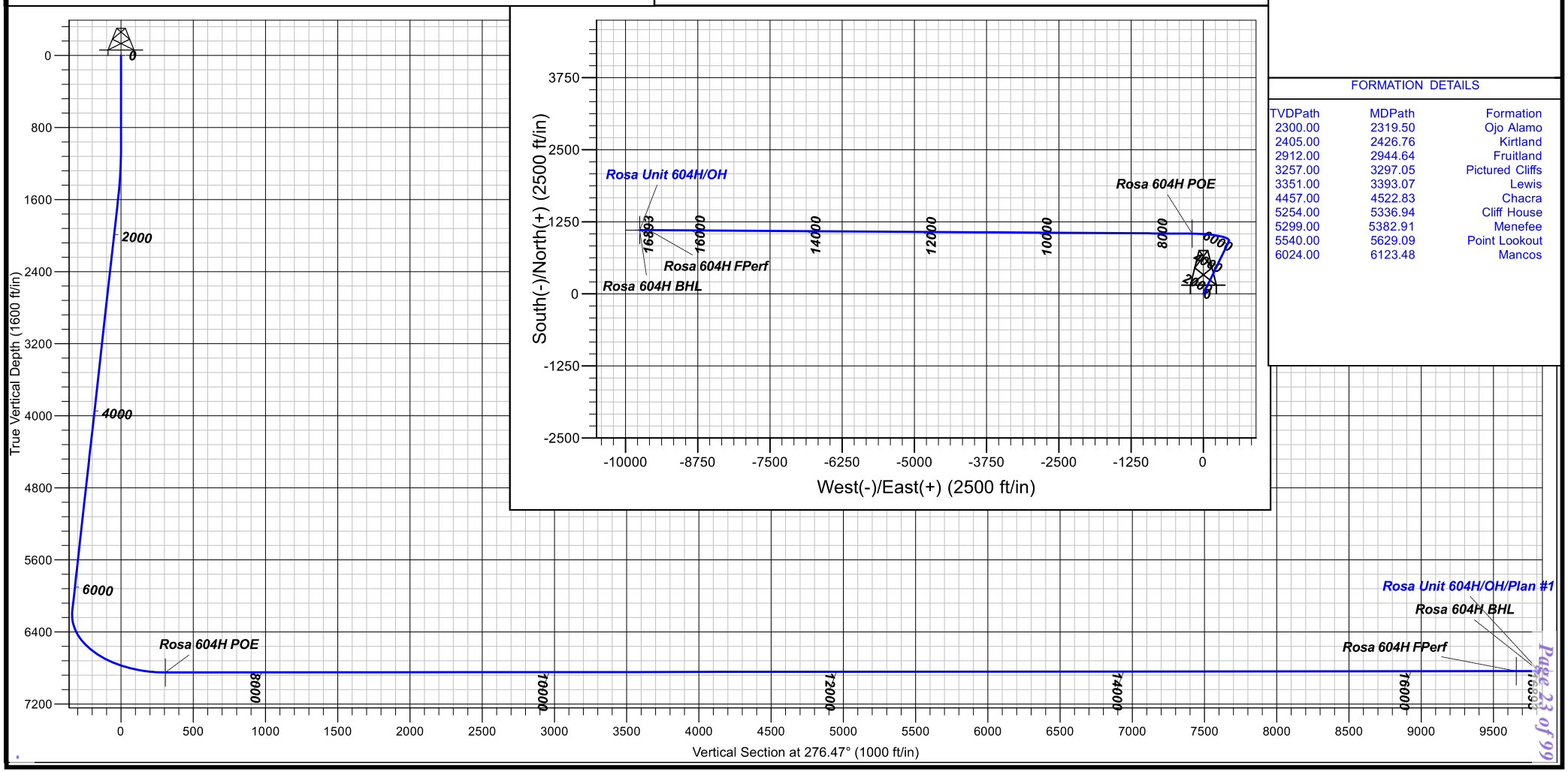
| MD | Inc | Azi | TVD | +N/-S | +E/-W | DLeg | TFace | VSect |
|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1000.00 | 0.00 | 0.00 | 1000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1588.50 | 11.77 | 25.92 | 1584.37 | 54.18 | 26.33 | 2.00 | 25.92 | -20.05 |
| 6271.93 | 11.77 | 25.92 | 6169.33 | 913.43 | 443.90 | 0.00 | 0.00 | -338.10 |
| 7329.00 | 90.09 | 270.37 | 6850.00 | 1045.64 | -190.40 | 9.00 | -115.07 | 307.06 |
| 16893.32 | 90.09 | 270.37 | 6835.00 | 1106.65 | -9754.52 | 0.00 | 0.00 | 9817.09 |

**CASING DETAILS**

No casing data is available

**FORMATION DETAILS**

| TVDPath | MDPath | Formation |
|---|---|---|
| 2300.00 | 2319.50 | Ojo Alamo |
| 2405.00 | 2426.76 | Kirtland |
| 2912.00 | 2944.64 | Fruitland |
| 3257.00 | 3297.05 | Pictured Cliffs |
| 3351.00 | 3393.07 | Lewis |
| 4457.00 | 4522.83 | Chacra |
| 5254.00 | 5336.94 | Cliff House |
| 5299.00 | 5382.91 | Menefee |
| 5540.00 | 5629.09 | Point Lookout |
| 6024.00 | 6123.48 | Mancos |



# Logos Operating LLC

**Rio Arriba, NM NAD83**
**Rosa Unit 9**
**Rosa Unit 604H - Slot A2**

**OH**

**Plan: Plan #1**

# Standard Planning Report

**11 August, 2022**

# Lonestar Consulting, LLC

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Company:** | Logos Operating LLC | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Project:** | Rio Arriba, NM NAD83 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site:** | Rosa Unit 9 | **North Reference:** | True |
| **Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 | | |

**Project** Rio Arriba, NM NAD83

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Western Zone | | |

**Site** Rosa Unit 9

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 2,142,876.25 usft | **Latitude:** | 36.8882350 |
| **From:** | Lat/Long | **Easting:** | 2,837,179.08 usft | **Longitude:** | -107.4432050 |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | 13.200 in | | |

**Well** Rosa Unit 604H - Slot A2

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 ft | **Northing:** | 2,142,882.02 usft | **Latitude:** | 36.8882510 |
| | **+E/-W** | 0.00 ft | **Easting:** | 2,837,165.31 usft | **Longitude:** | -107.4432520 |
| **Position Uncertainty** | | 0.00 ft | **Wellhead Elevation:** | ft | **Ground Level:** | 6,260.00 ft |
| **Grid Convergence:** | | 0.23 ° | | | | |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM2021_FILE | 12/31/2021 | 8.67 | 63.35 | 49,623.40000000 |

**Design** Plan #1

**Audit Notes:**

| | | | | |
|---|---|---|---|---|
| **Version:** | **Phase:** | PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 276.47 |

**Plan Survey Tool Program** **Date** 8/11/2022

| | Depth From (ft) | Depth To (ft) | Survey (Wellbore) | Tool Name | Remarks |
|---|---|---|---|---|---|
| 1 | 0.00 | 16,893.32 | Plan #1 (OH) | MWD-SDI | |

**Plan Sections**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,588.50 | 11.77 | 25.92 | 1,584.37 | 54.18 | 26.33 | 2.00 | 2.00 | 0.00 | 25.92 | |
| 6,271.93 | 11.77 | 25.92 | 6,169.33 | 913.43 | 443.90 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,329.00 | 90.09 | 270.37 | 6,850.00 | 1,045.64 | -190.40 | 9.00 | 7.41 | -10.93 | -115.07 | Rosa 604H POE |
| 16,893.32 | 90.09 | 270.37 | 6,835.00 | 1,106.65 | -9,754.52 | 0.00 | 0.00 | 0.00 | 0.00 | Rosa 604H BHL |

# Lonestar Consulting, LLC

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Company:** | Logos Operating LLC | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Project:** | Rio Arriba, NM NAD83 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site:** | Rosa Unit 9 | **North Reference:** | True |
| **Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,100.00 | 2.00 | 25.92 | 1,099.98 | 1.57 | 0.76 | -0.58 | 2.00 | 2.00 | 0.00 |
| 1,200.00 | 4.00 | 25.92 | 1,199.84 | 6.28 | 3.05 | -2.32 | 2.00 | 2.00 | 0.00 |
| 1,300.00 | 6.00 | 25.92 | 1,299.45 | 14.12 | 6.86 | -5.22 | 2.00 | 2.00 | 0.00 |
| 1,400.00 | 8.00 | 25.92 | 1,398.70 | 25.08 | 12.19 | -9.28 | 2.00 | 2.00 | 0.00 |
| 1,500.00 | 10.00 | 25.92 | 1,497.47 | 39.14 | 19.02 | -14.49 | 2.00 | 2.00 | 0.00 |
| 1,588.50 | 11.77 | 25.92 | 1,584.37 | 54.18 | 26.33 | -20.05 | 2.00 | 2.00 | 0.00 |
| 1,600.00 | 11.77 | 25.92 | 1,595.63 | 56.29 | 27.35 | -20.83 | 0.00 | 0.00 | 0.00 |
| 1,700.00 | 11.77 | 25.92 | 1,693.53 | 74.63 | 36.27 | -27.62 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 11.77 | 25.92 | 1,791.42 | 92.98 | 45.18 | -34.42 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 11.77 | 25.92 | 1,889.32 | 111.33 | 54.10 | -41.21 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 11.77 | 25.92 | 1,987.22 | 129.67 | 63.02 | -48.00 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 11.77 | 25.92 | 2,085.12 | 148.02 | 71.93 | -54.79 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 11.77 | 25.92 | 2,183.01 | 166.37 | 80.85 | -61.58 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 11.77 | 25.92 | 2,280.91 | 184.71 | 89.76 | -68.37 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 11.77 | 25.92 | 2,378.81 | 203.06 | 98.68 | -75.16 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 11.77 | 25.92 | 2,476.70 | 221.41 | 107.60 | -81.95 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 11.77 | 25.92 | 2,574.60 | 239.75 | 116.51 | -88.74 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 11.77 | 25.92 | 2,672.50 | 258.10 | 125.43 | -95.53 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 11.77 | 25.92 | 2,770.40 | 276.45 | 134.34 | -102.33 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 11.77 | 25.92 | 2,868.29 | 294.79 | 143.26 | -109.12 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 11.77 | 25.92 | 2,966.19 | 313.14 | 152.18 | -115.91 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 11.77 | 25.92 | 3,064.09 | 331.49 | 161.09 | -122.70 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 11.77 | 25.92 | 3,161.99 | 349.83 | 170.01 | -129.49 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 11.77 | 25.92 | 3,259.88 | 368.18 | 178.92 | -136.28 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 11.77 | 25.92 | 3,357.78 | 386.53 | 187.84 | -143.07 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 11.77 | 25.92 | 3,455.68 | 404.87 | 196.76 | -149.86 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 11.77 | 25.92 | 3,553.58 | 423.22 | 205.67 | -156.65 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 11.77 | 25.92 | 3,651.47 | 441.57 | 214.59 | -163.44 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 11.77 | 25.92 | 3,749.37 | 459.91 | 223.50 | -170.23 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 11.77 | 25.92 | 3,847.27 | 478.26 | 232.42 | -177.03 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 11.77 | 25.92 | 3,945.17 | 496.61 | 241.34 | -183.82 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 11.77 | 25.92 | 4,043.06 | 514.95 | 250.25 | -190.61 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 11.77 | 25.92 | 4,140.96 | 533.30 | 259.17 | -197.40 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 11.77 | 25.92 | 4,238.86 | 551.65 | 268.08 | -204.19 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 11.77 | 25.92 | 4,336.76 | 569.99 | 277.00 | -210.98 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 11.77 | 25.92 | 4,434.65 | 588.34 | 285.92 | -217.77 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 11.77 | 25.92 | 4,532.55 | 606.69 | 294.83 | -224.56 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 11.77 | 25.92 | 4,630.45 | 625.03 | 303.75 | -231.35 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 11.77 | 25.92 | 4,728.35 | 643.38 | 312.66 | -238.14 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 11.77 | 25.92 | 4,826.24 | 661.73 | 321.58 | -244.93 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 11.77 | 25.92 | 4,924.14 | 680.07 | 330.49 | -251.73 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 11.77 | 25.92 | 5,022.04 | 698.42 | 339.41 | -258.52 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 11.77 | 25.92 | 5,119.94 | 716.77 | 348.33 | -265.31 | 0.00 | 0.00 | 0.00 |

# Lonestar Consulting, LLC

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Company:** | Logos Operating LLC | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Project:** | Rio Arriba, NM NAD83 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site:** | Rosa Unit 9 | **North Reference:** | True |
| **Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 5,300.00 | 11.77 | 25.92 | 5,217.83 | 735.11 | 357.24 | -272.10 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 11.77 | 25.92 | 5,315.73 | 753.46 | 366.16 | -278.89 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 11.77 | 25.92 | 5,413.63 | 771.81 | 375.07 | -285.68 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 11.77 | 25.92 | 5,511.53 | 790.15 | 383.99 | -292.47 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 11.77 | 25.92 | 5,609.42 | 808.50 | 392.91 | -299.26 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 11.77 | 25.92 | 5,707.32 | 826.85 | 401.82 | -306.05 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 11.77 | 25.92 | 5,805.22 | 845.19 | 410.74 | -312.84 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 11.77 | 25.92 | 5,903.11 | 863.54 | 419.65 | -319.64 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 11.77 | 25.92 | 6,001.01 | 881.89 | 428.57 | -326.43 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 11.77 | 25.92 | 6,098.91 | 900.23 | 437.49 | -333.22 | 0.00 | 0.00 | 0.00 |
| 6,271.93 | 11.77 | 25.92 | 6,169.33 | 913.43 | 443.90 | -338.10 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 10.94 | 13.77 | 6,196.85 | 918.59 | 445.78 | -339.39 | 9.00 | -2.96 | -43.27 |
| 6,400.00 | 12.45 | 328.80 | 6,294.97 | 937.06 | 442.45 | -334.00 | 9.00 | 1.51 | -44.98 |
| 6,500.00 | 18.72 | 304.09 | 6,391.35 | 955.31 | 423.55 | -313.16 | 9.00 | 6.27 | -24.71 |
| 6,600.00 | 26.57 | 292.47 | 6,483.62 | 972.88 | 389.53 | -277.37 | 9.00 | 7.85 | -11.62 |
| 6,700.00 | 34.95 | 285.99 | 6,569.50 | 989.35 | 341.23 | -227.53 | 9.00 | 8.38 | -6.48 |
| 6,800.00 | 43.55 | 281.79 | 6,646.88 | 1,004.31 | 279.85 | -164.86 | 9.00 | 8.60 | -4.20 |
| 6,900.00 | 52.26 | 278.75 | 6,713.86 | 1,017.39 | 206.90 | -90.89 | 9.00 | 8.71 | -3.04 |
| 7,000.00 | 61.04 | 276.36 | 6,768.79 | 1,028.27 | 124.17 | -7.46 | 9.00 | 8.78 | -2.39 |
| 7,100.00 | 69.85 | 274.34 | 6,810.31 | 1,036.68 | 33.70 | 83.38 | 9.00 | 8.81 | -2.02 |
| 7,200.00 | 78.68 | 272.54 | 6,837.40 | 1,042.42 | -62.28 | 179.39 | 9.00 | 8.83 | -1.80 |
| 7,300.00 | 87.52 | 270.85 | 6,849.40 | 1,045.33 | -161.41 | 278.22 | 9.00 | 8.84 | -1.69 |
| 7,329.00 | 90.09 | 270.37 | 6,850.00 | 1,045.64 | -190.40 | 307.06 | 9.00 | 8.84 | -1.66 |
| 7,400.00 | 90.09 | 270.37 | 6,849.89 | 1,046.09 | -261.40 | 377.66 | 0.00 | 0.00 | 0.00 |
| 7,500.00 | 90.09 | 270.37 | 6,849.73 | 1,046.73 | -361.40 | 477.09 | 0.00 | 0.00 | 0.00 |
| 7,600.00 | 90.09 | 270.37 | 6,849.58 | 1,047.37 | -461.40 | 576.52 | 0.00 | 0.00 | 0.00 |
| 7,700.00 | 90.09 | 270.37 | 6,849.42 | 1,048.01 | -561.40 | 675.96 | 0.00 | 0.00 | 0.00 |
| 7,800.00 | 90.09 | 270.37 | 6,849.26 | 1,048.65 | -661.39 | 775.39 | 0.00 | 0.00 | 0.00 |
| 7,900.00 | 90.09 | 270.37 | 6,849.11 | 1,049.29 | -761.39 | 874.82 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 90.09 | 270.37 | 6,848.95 | 1,049.92 | -861.39 | 974.25 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 90.09 | 270.37 | 6,848.79 | 1,050.56 | -961.39 | 1,073.69 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 90.09 | 270.37 | 6,848.64 | 1,051.20 | -1,061.38 | 1,173.12 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 90.09 | 270.37 | 6,848.48 | 1,051.84 | -1,161.38 | 1,272.55 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 90.09 | 270.37 | 6,848.32 | 1,052.48 | -1,261.38 | 1,371.98 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 90.09 | 270.37 | 6,848.17 | 1,053.11 | -1,361.38 | 1,471.42 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 90.09 | 270.37 | 6,848.01 | 1,053.75 | -1,461.38 | 1,570.85 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 90.09 | 270.37 | 6,847.85 | 1,054.39 | -1,561.37 | 1,670.28 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 90.09 | 270.37 | 6,847.70 | 1,055.03 | -1,661.37 | 1,769.71 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 90.09 | 270.37 | 6,847.54 | 1,055.67 | -1,761.37 | 1,869.14 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 90.09 | 270.37 | 6,847.38 | 1,056.31 | -1,861.37 | 1,968.58 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 90.09 | 270.37 | 6,847.23 | 1,056.94 | -1,961.37 | 2,068.01 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 90.09 | 270.37 | 6,847.07 | 1,057.58 | -2,061.36 | 2,167.44 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 90.09 | 270.37 | 6,846.91 | 1,058.22 | -2,161.36 | 2,266.87 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 90.09 | 270.37 | 6,846.76 | 1,058.86 | -2,261.36 | 2,366.31 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 90.09 | 270.37 | 6,846.60 | 1,059.50 | -2,361.36 | 2,465.74 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 90.09 | 270.37 | 6,846.44 | 1,060.14 | -2,461.35 | 2,565.17 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 90.09 | 270.37 | 6,846.29 | 1,060.77 | -2,561.35 | 2,664.60 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 90.09 | 270.37 | 6,846.13 | 1,061.41 | -2,661.35 | 2,764.04 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 90.09 | 270.37 | 6,845.97 | 1,062.05 | -2,761.35 | 2,863.47 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 90.09 | 270.37 | 6,845.82 | 1,062.69 | -2,861.35 | 2,962.90 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 90.09 | 270.37 | 6,845.66 | 1,063.33 | -2,961.34 | 3,062.33 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 90.09 | 270.37 | 6,845.50 | 1,063.96 | -3,061.34 | 3,161.77 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 90.09 | 270.37 | 6,845.35 | 1,064.60 | -3,161.34 | 3,261.20 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 90.09 | 270.37 | 6,845.19 | 1,065.24 | -3,261.34 | 3,360.63 | 0.00 | 0.00 | 0.00 |

# Lonestar Consulting, LLC

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Company:** | Logos Operating LLC | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Project:** | Rio Arriba, NM NAD83 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site:** | Rosa Unit 9 | **North Reference:** | True |
| **Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 10,500.00 | 90.09 | 270.37 | 6,845.03 | 1,065.88 | -3,361.34 | 3,460.06 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.09 | 270.37 | 6,844.88 | 1,066.52 | -3,461.33 | 3,559.50 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.09 | 270.37 | 6,844.72 | 1,067.16 | -3,561.33 | 3,658.93 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.09 | 270.37 | 6,844.56 | 1,067.79 | -3,661.33 | 3,758.36 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.09 | 270.37 | 6,844.41 | 1,068.43 | -3,761.33 | 3,857.79 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.09 | 270.37 | 6,844.25 | 1,069.07 | -3,861.32 | 3,957.23 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.09 | 270.37 | 6,844.09 | 1,069.71 | -3,961.32 | 4,056.66 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.09 | 270.37 | 6,843.94 | 1,070.35 | -4,061.32 | 4,156.09 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.09 | 270.37 | 6,843.78 | 1,070.98 | -4,161.32 | 4,255.52 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 90.09 | 270.37 | 6,843.62 | 1,071.62 | -4,261.32 | 4,354.96 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.09 | 270.37 | 6,843.47 | 1,072.26 | -4,361.31 | 4,454.39 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.09 | 270.37 | 6,843.31 | 1,072.90 | -4,461.31 | 4,553.82 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.09 | 270.37 | 6,843.15 | 1,073.54 | -4,561.31 | 4,653.25 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 90.09 | 270.37 | 6,843.00 | 1,074.18 | -4,661.31 | 4,752.68 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 90.09 | 270.37 | 6,842.84 | 1,074.81 | -4,761.31 | 4,852.12 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 90.09 | 270.37 | 6,842.68 | 1,075.45 | -4,861.30 | 4,951.55 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 90.09 | 270.37 | 6,842.53 | 1,076.09 | -4,961.30 | 5,050.98 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 90.09 | 270.37 | 6,842.37 | 1,076.73 | -5,061.30 | 5,150.41 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.09 | 270.37 | 6,842.22 | 1,077.37 | -5,161.30 | 5,249.85 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 90.09 | 270.37 | 6,842.06 | 1,078.01 | -5,261.29 | 5,349.28 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.09 | 270.37 | 6,841.90 | 1,078.64 | -5,361.29 | 5,448.71 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.09 | 270.37 | 6,841.75 | 1,079.28 | -5,461.29 | 5,548.14 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.09 | 270.37 | 6,841.59 | 1,079.92 | -5,561.29 | 5,647.58 | 0.00 | 0.00 | 0.00 |
| 12,800.00 | 90.09 | 270.37 | 6,841.43 | 1,080.56 | -5,661.29 | 5,747.01 | 0.00 | 0.00 | 0.00 |
| 12,900.00 | 90.09 | 270.37 | 6,841.28 | 1,081.20 | -5,761.28 | 5,846.44 | 0.00 | 0.00 | 0.00 |
| 13,000.00 | 90.09 | 270.37 | 6,841.12 | 1,081.83 | -5,861.28 | 5,945.87 | 0.00 | 0.00 | 0.00 |
| 13,100.00 | 90.09 | 270.37 | 6,840.96 | 1,082.47 | -5,961.28 | 6,045.31 | 0.00 | 0.00 | 0.00 |
| 13,200.00 | 90.09 | 270.37 | 6,840.81 | 1,083.11 | -6,061.28 | 6,144.74 | 0.00 | 0.00 | 0.00 |
| 13,300.00 | 90.09 | 270.37 | 6,840.65 | 1,083.75 | -6,161.27 | 6,244.17 | 0.00 | 0.00 | 0.00 |
| 13,400.00 | 90.09 | 270.37 | 6,840.49 | 1,084.39 | -6,261.27 | 6,343.60 | 0.00 | 0.00 | 0.00 |
| 13,500.00 | 90.09 | 270.37 | 6,840.34 | 1,085.03 | -6,361.27 | 6,443.04 | 0.00 | 0.00 | 0.00 |
| 13,600.00 | 90.09 | 270.37 | 6,840.18 | 1,085.66 | -6,461.27 | 6,542.47 | 0.00 | 0.00 | 0.00 |
| 13,700.00 | 90.09 | 270.37 | 6,840.02 | 1,086.30 | -6,561.27 | 6,641.90 | 0.00 | 0.00 | 0.00 |
| 13,800.00 | 90.09 | 270.37 | 6,839.87 | 1,086.94 | -6,661.26 | 6,741.33 | 0.00 | 0.00 | 0.00 |
| 13,900.00 | 90.09 | 270.37 | 6,839.71 | 1,087.58 | -6,761.26 | 6,840.77 | 0.00 | 0.00 | 0.00 |
| 14,000.00 | 90.09 | 270.37 | 6,839.55 | 1,088.22 | -6,861.26 | 6,940.20 | 0.00 | 0.00 | 0.00 |
| 14,100.00 | 90.09 | 270.37 | 6,839.40 | 1,088.86 | -6,961.26 | 7,039.63 | 0.00 | 0.00 | 0.00 |
| 14,200.00 | 90.09 | 270.37 | 6,839.24 | 1,089.49 | -7,061.26 | 7,139.06 | 0.00 | 0.00 | 0.00 |
| 14,300.00 | 90.09 | 270.37 | 6,839.08 | 1,090.13 | -7,161.25 | 7,238.49 | 0.00 | 0.00 | 0.00 |
| 14,400.00 | 90.09 | 270.37 | 6,838.93 | 1,090.77 | -7,261.25 | 7,337.93 | 0.00 | 0.00 | 0.00 |
| 14,500.00 | 90.09 | 270.37 | 6,838.77 | 1,091.41 | -7,361.25 | 7,437.36 | 0.00 | 0.00 | 0.00 |
| 14,600.00 | 90.09 | 270.37 | 6,838.61 | 1,092.05 | -7,461.25 | 7,536.79 | 0.00 | 0.00 | 0.00 |
| 14,700.00 | 90.09 | 270.37 | 6,838.46 | 1,092.68 | -7,561.24 | 7,636.22 | 0.00 | 0.00 | 0.00 |
| 14,800.00 | 90.09 | 270.37 | 6,838.30 | 1,093.32 | -7,661.24 | 7,735.66 | 0.00 | 0.00 | 0.00 |
| 14,900.00 | 90.09 | 270.37 | 6,838.14 | 1,093.96 | -7,761.24 | 7,835.09 | 0.00 | 0.00 | 0.00 |
| 15,000.00 | 90.09 | 270.37 | 6,837.99 | 1,094.60 | -7,861.24 | 7,934.52 | 0.00 | 0.00 | 0.00 |
| 15,100.00 | 90.09 | 270.37 | 6,837.83 | 1,095.24 | -7,961.24 | 8,033.95 | 0.00 | 0.00 | 0.00 |
| 15,200.00 | 90.09 | 270.37 | 6,837.67 | 1,095.88 | -8,061.23 | 8,133.39 | 0.00 | 0.00 | 0.00 |
| 15,300.00 | 90.09 | 270.37 | 6,837.52 | 1,096.51 | -8,161.23 | 8,232.82 | 0.00 | 0.00 | 0.00 |
| 15,400.00 | 90.09 | 270.37 | 6,837.36 | 1,097.15 | -8,261.23 | 8,332.25 | 0.00 | 0.00 | 0.00 |
| 15,500.00 | 90.09 | 270.37 | 6,837.20 | 1,097.79 | -8,361.23 | 8,431.68 | 0.00 | 0.00 | 0.00 |
| 15,600.00 | 90.09 | 270.37 | 6,837.05 | 1,098.43 | -8,461.23 | 8,531.12 | 0.00 | 0.00 | 0.00 |
| 15,700.00 | 90.09 | 270.37 | 6,836.89 | 1,099.07 | -8,561.22 | 8,630.55 | 0.00 | 0.00 | 0.00 |
| 15,800.00 | 90.09 | 270.37 | 6,836.73 | 1,099.71 | -8,661.22 | 8,729.98 | 0.00 | 0.00 | 0.00 |

# Lonestar Consulting, LLC
## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Company:** | Logos Operating LLC | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Project:** | Rio Arriba, NM NAD83 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site:** | Rosa Unit 9 | **North Reference:** | True |
| **Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 15,900.00 | 90.09 | 270.37 | 6,836.58 | 1,100.34 | -8,761.22 | 8,829.41 | 0.00 | 0.00 | 0.00 |
| 16,000.00 | 90.09 | 270.37 | 6,836.42 | 1,100.98 | -8,861.22 | 8,928.85 | 0.00 | 0.00 | 0.00 |
| 16,100.00 | 90.09 | 270.37 | 6,836.26 | 1,101.62 | -8,961.21 | 9,028.28 | 0.00 | 0.00 | 0.00 |
| 16,200.00 | 90.09 | 270.37 | 6,836.11 | 1,102.26 | -9,061.21 | 9,127.71 | 0.00 | 0.00 | 0.00 |
| 16,300.00 | 90.09 | 270.37 | 6,835.95 | 1,102.90 | -9,161.21 | 9,227.14 | 0.00 | 0.00 | 0.00 |
| 16,400.00 | 90.09 | 270.37 | 6,835.79 | 1,103.53 | -9,261.21 | 9,326.58 | 0.00 | 0.00 | 0.00 |
| 16,500.00 | 90.09 | 270.37 | 6,835.64 | 1,104.17 | -9,361.21 | 9,426.01 | 0.00 | 0.00 | 0.00 |
| 16,600.00 | 90.09 | 270.37 | 6,835.48 | 1,104.81 | -9,461.20 | 9,525.44 | 0.00 | 0.00 | 0.00 |
| 16,700.00 | 90.09 | 270.37 | 6,835.32 | 1,105.45 | -9,561.20 | 9,624.87 | 0.00 | 0.00 | 0.00 |
| 16,800.00 | 90.09 | 270.37 | 6,835.17 | 1,106.09 | -9,661.20 | 9,724.30 | 0.00 | 0.00 | 0.00 |
| 16,893.32 | 90.09 | 270.37 | 6,835.00 | 1,106.65 | -9,754.52 | 9,817.09 | 0.00 | 0.00 | 0.00 |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Rosa 604H BHL<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 6,835.00 | 1,106.65 | -9,754.52 | 2,143,948.79 | 2,827,406.38 | 36.8912860 | -107.4766090 |
| Rosa 604H FPerf<br>- plan misses target center by 0.34ft at 16733.36ft MD (6835.27 TVD, 1105.66 N, -9594.56 E)<br>- Point | 0.00 | 0.00 | 6,835.00 | 1,105.87 | -9,594.56 | 2,143,948.66 | 2,827,566.33 | 36.8912840 | -107.4760620 |
| Rosa 604H POE<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 6,850.00 | 1,045.64 | -190.40 | 2,143,926.87 | 2,836,970.64 | 36.8911231 | -107.4439031 |

**Formations**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 2,319.50 | 2,300.00 | Ojo Alamo | | 0.00 | 0.00 |
| 2,426.76 | 2,405.00 | Kirtland | | 0.00 | 0.00 |
| 2,944.64 | 2,912.00 | Fruitland | | 0.00 | 0.00 |
| 3,297.05 | 3,257.00 | Pictured Cliffs | | 0.00 | 0.00 |
| 3,393.07 | 3,351.00 | Lewis | | 0.00 | 0.00 |
| 4,522.83 | 4,457.00 | Chacra | | 0.00 | 0.00 |
| 5,336.94 | 5,254.00 | Cliff House | | 0.00 | 0.00 |
| 5,382.91 | 5,299.00 | Menefee | | 0.00 | 0.00 |
| 5,629.09 | 5,540.00 | Point Lookout | | 0.00 | 0.00 |
| 6,123.48 | 6,024.00 | Mancos | | 0.00 | 0.00 |

LOGOS RESOURCES II, LLC

# Lonestar Consulting, LLC

Planning Report

LONESTAR CONSULTING

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Company:** | Logos Operating LLC | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Project:** | Rio Arriba, NM NAD83 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site:** | Rosa Unit 9 | **North Reference:** | True |
| **Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 | | |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | +E/-W (ft) | Comment |
|---|---|---|---|---|
| 1,000.00 | 1,000.00 | 0.00 | 0.00 | Start Build 2.00 |
| 1,588.50 | 1,584.37 | 54.18 | 26.33 | Start 4683.43 hold at 1588.50 MD |
| 6,271.93 | 6,169.33 | 913.43 | 443.90 | Start DLS 9.00 TFO -115.07 |
| 7,329.00 | 6,850.00 | 1,045.64 | -190.40 | POE @ 7329' MD |
| 7,329.00 | 6,850.00 | 1,045.64 | -190.40 | 36.8911231 / -107.4439031 |
| 16,733.00 | 6,835.27 | 1,105.66 | -9,594.20 | First Perf @ 16,733' MD |
| 16,733.00 | 6,835.27 | 1,105.66 | -9,594.20 | 36.8912834 / -107.4760608 |
| 16,893.32 | 6,835.00 | 1,106.65 | -9,754.52 | TD at 16893.32 |

# Logos Operating LLC

**Rio Arriba, NM NAD83**
**Rosa Unit 9**
**Rosa Unit 604H**

**OH**
**Plan #1**

# Anticollision Summary Report

**11 August, 2022**

# Lonestar Consulting, LLC

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Logos Operating LLC | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Project:** | Rio Arriba, NM NAD83 | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Reference Site:** | Rosa Unit 9 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | True |
| **Reference Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | OH | **Database:** | Grand Junction |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

**Reference** Plan #1

| | | | |
|---|---|---|---|
| **Filter type:** | NO GLOBAL FILTER: Using user defined selection & filtering criteria | | |
| **Interpolation Method:** | Stations | **Error Model:** | ISCWSA |
| **Depth Range:** | Unlimited | **Scan Method:** | Closest Approach 3D |
| **Results Limited by:** | Maximum centre distance of 8,000.02ft | **Error Surface:** | Pedal Curve |
| **Warning Levels Evaluated at:** | 2.00 **Sigma** | **Casing Method:** | Not applied |

**Survey Tool Program** **Date** 8/11/2022

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.00 | 16,893.32 | Plan #1 (OH) | MWD-SDI | |

**Summary**

| Site Name<br>Offset Well - Wellbore - Design | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Rosa Unit 9 | | | | | | |
| Rosa 634A - OH - OH | 0.00 | 16.49 | 96.33 | 96.30 | 3,376.992 | CC |
| Rosa 634A - OH - OH | 1,200.00 | 1,216.67 | 97.85 | 90.93 | 14.151 | ES |
| Rosa 634A - OH - OH | 1,500.00 | 1,516.01 | 107.45 | 98.58 | 12.114 | SF |
| Rosa 634A - ST1 - ST1 | 0.00 | 16.49 | 96.33 | 96.30 | 3,376.992 | CC |
| Rosa 634A - ST1 - ST1 | 1,200.00 | 1,216.67 | 97.85 | 90.93 | 14.151 | ES |
| Rosa 634A - ST1 - ST1 | 7,152.25 | 7,206.34 | 294.36 | 252.33 | 7.002 | SF |
| Rosa 634B - OH - OH | 754.79 | 773.51 | 34.82 | 30.68 | 8.423 | CC |
| Rosa 634B - OH - OH | 900.00 | 918.61 | 35.40 | 30.36 | 7.018 | ES |
| Rosa 634B - OH - OH | 1,300.00 | 1,318.26 | 42.19 | 34.57 | 5.539 | SF |
| Rosa Unit 115 - OH - OH | 1,000.00 | 993.01 | 444.35 | 411.19 | 13.401 | CC |
| Rosa Unit 115 - OH - OH | 1,200.00 | 1,192.86 | 447.27 | 407.44 | 11.231 | ES |
| Rosa Unit 115 - OH - OH | 7,600.00 | 6,841.82 | 1,034.06 | 803.48 | 4.485 | SF |
| Rosa Unit 18 - OH - OH | 1,000.00 | 994.00 | 166.93 | 124.17 | 3.904 | CC |
| Rosa Unit 18 - OH - OH | 1,300.00 | 1,293.45 | 172.75 | 117.11 | 3.105 | ES |
| Rosa Unit 18 - OH - OH | 1,588.50 | 1,578.37 | 195.28 | 127.38 | 2.876 | SF |
| Rosa Unit 18C - OH - OH | 465.54 | 463.57 | 206.84 | 204.50 | 88.144 | CC, ES |
| Rosa Unit 18C - OH - OH | 8,600.00 | 7,081.24 | 1,888.65 | 1,832.07 | 33.378 | SF |
| Rosa Unit 201 - OH - OH | 1,015.75 | 1,006.07 | 230.32 | 224.07 | 36.879 | CC |
| Rosa Unit 201 - OH - OH | 1,100.00 | 1,090.29 | 230.60 | 223.80 | 33.910 | ES |
| Rosa Unit 201 - OH - OH | 2,100.00 | 2,072.72 | 318.52 | 305.19 | 23.895 | SF |
| Rosa Unit 201A - OH - OH | 2,874.31 | 5,225.01 | 1,485.19 | 1,426.74 | 25.410 | CC, ES |
| Rosa Unit 201A - OH - OH | 3,000.00 | 5,225.01 | 1,490.50 | 1,431.61 | 25.311 | SF |
| Rosa Unit 32 - OH - OH | 12,820.37 | 6,316.00 | 1,202.54 | 996.25 | 5.829 | CC, ES, SF |
| Rosa Unit 32A - OH - OH | 15,521.03 | 6,057.00 | 1,605.50 | 1,403.36 | 7.943 | CC, ES |
| Rosa Unit 32A - OH - OH | 15,600.00 | 6,057.00 | 1,607.89 | 1,405.42 | 7.941 | SF |
| Rosa Unit 32B - OH - OH | 13,541.80 | 6,901.21 | 1,475.78 | 1,225.57 | 5.898 | CC, ES, SF |
| Rosa Unit 32C - OH - OH | 16,300.00 | 7,244.89 | 221.72 | 141.06 | 2.749 | SF |
| Rosa Unit 32C - OH - OH | 16,321.40 | 7,244.64 | 220.69 | 141.03 | 2.770 | CC, ES |
| Rosa Unit 332 - OH - OH | 2,930.80 | 5,796.00 | 2,369.94 | 2,309.95 | 39.508 | CC, ES |
| Rosa Unit 332 - OH - OH | 3,100.00 | 5,796.00 | 2,375.97 | 2,315.59 | 39.349 | SF |
| Rosa Unit 342 - OH - OH | 13,492.16 | 3,205.00 | 3,957.27 | 3,881.52 | 52.236 | CC |
| Rosa Unit 342 - OH - OH | 13,500.00 | 3,205.00 | 3,957.28 | 3,881.50 | 52.219 | ES |
| Rosa Unit 342 - OH - OH | 16,300.00 | 3,205.00 | 4,852.21 | 4,739.96 | 43.226 | SF |
| Rosa Unit 342A - OH - OH | 15,400.00 | 3,217.00 | 4,116.87 | 4,065.00 | 79.373 | CC, ES |
| Rosa Unit 342A - OH - OH | 16,893.32 | 3,217.00 | 4,373.71 | 4,314.80 | 74.243 | SF |
| Rosa Unit 79A - OH - OH | 10,998.59 | 5,984.00 | 1,447.62 | 1,269.62 | 8.133 | CC |
| Rosa Unit 79A - OH - OH | 11,000.00 | 5,984.00 | 1,447.63 | 1,269.62 | 8.132 | ES |

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

# Lonestar Consulting, LLC

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Logos Operating LLC | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Project:** | Rio Arriba, NM NAD83 | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Reference Site:** | Rosa Unit 9 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | True |
| **Reference Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | OH | **Database:** | Grand Junction |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

**Summary**

| Site Name<br>Offset Well - Wellbore - Design | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Rosa Unit 9 | | | | | | |
| Rosa Unit 79A - OH - OH | 11,100.00 | 5,984.00 | 1,451.43 | 1,272.89 | 8.129 | SF |
| Rosa Unit 79B - OH - OH | 9,188.12 | 6,856.17 | 514.63 | 278.85 | 2.183 | CC, ES, SF |

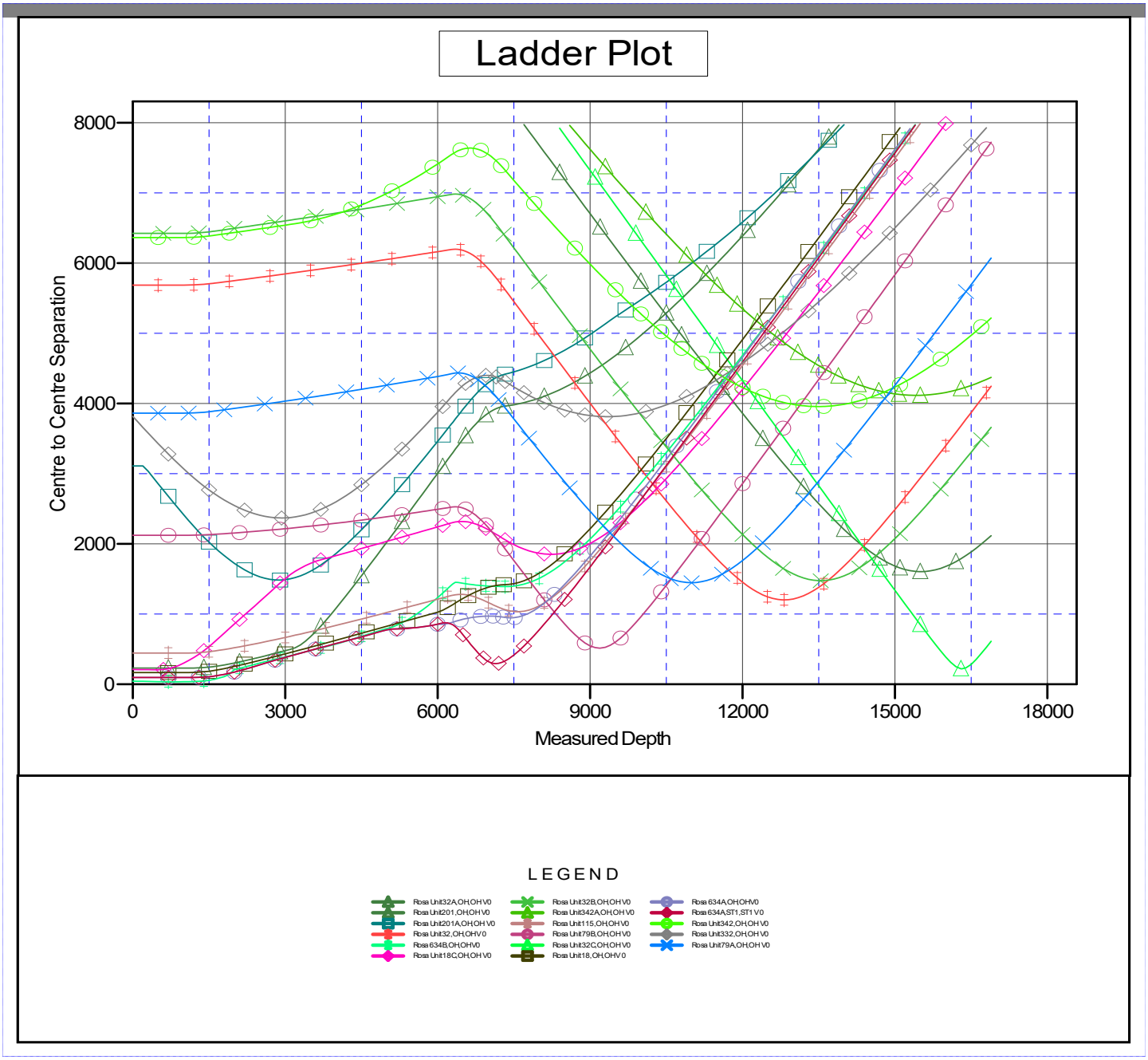
CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

# Lonestar Consulting, LLC
## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Logos Operating LLC | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Project:** | Rio Arriba, NM NAD83 | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Reference Site:** | Rosa Unit 9 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | True |
| **Reference Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | OH | **Database:** | Grand Junction |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

Reference Depths are relative to GL 6260' @ 6260.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit 604H - Slot A2
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.23°



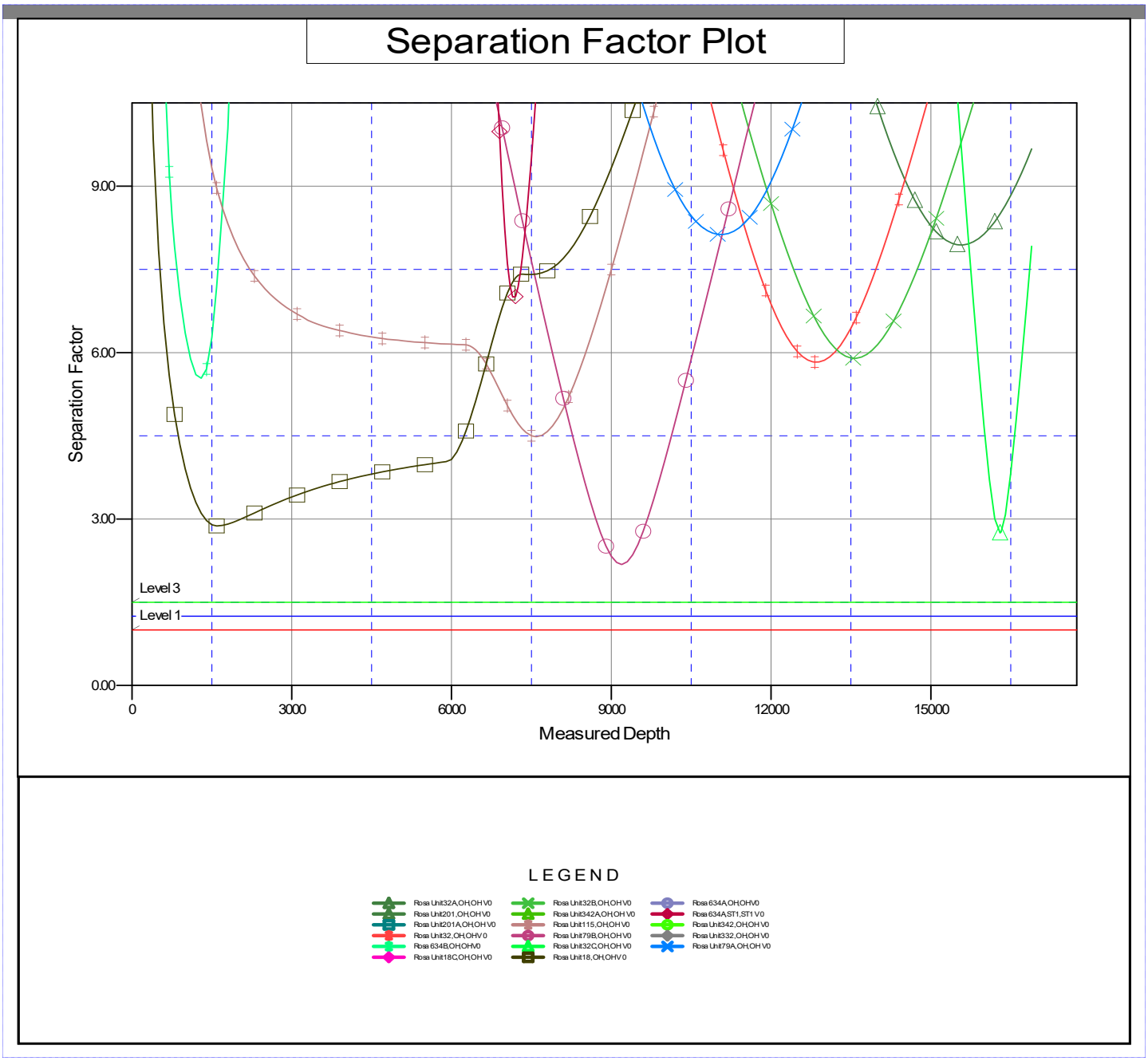

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

# Lonestar Consulting, LLC
## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Logos Operating LLC | **Local Co-ordinate Reference:** | Well Rosa Unit 604H - Slot A2 |
| **Project:** | Rio Arriba, NM NAD83 | **TVD Reference:** | GL 6260' @ 6260.00ft |
| **Reference Site:** | Rosa Unit 9 | **MD Reference:** | GL 6260' @ 6260.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | True |
| **Reference Well:** | Rosa Unit 604H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | OH | **Database:** | Grand Junction |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

Reference Depths are relative to GL 6260' @ 6260.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit 604H - Slot A2
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.23°



## Surface Casing Design - Evacuated/Max SICP (collaspe & burst), 100k overpull (tension)

| | | | | | 1.125 | 1.000 | | 1.400 |
|---|---|---|---|---|---|---|---|---|
| | **Size** | **Weight** | **Grade** | **Conn** | **Collapse** | **Burst** | **70% Burst** | **Tension (Body)** |
| **Surface** | 13.375 | 54.5 | J-55 | BTC | 1,130 | 2,730 | 1,911 | 853,000 |

| **Collapse** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Casing Depth TVD** | **MW in** | **MW out** | **Pres in** | **Pres out** | **SF** | |
| 54.5 J-55 BTC | 320 | 0.00 | 15.80 | 0 | 263 | 4.30 | full evacuation with 15.8 ppg m |

| **Burst** | | | | | | | |
|---|---|---|---|---|---|---|---|
| 54.5 J-55 BTC | 320 | 15.80 | 0.00 | 1763 | 0 | 1.55 | 1500 psi casing test |

| **Tension** | | | | | | | |
|---|---|---|---|---|---|---|---|
| 54.5 J-55 BTC | | **Mud Wt** | **Air Wt** | **Bouy Wt** | **BW +100k** | **SF** | |
| **Tension (Body)** | 320 | 15.80 | 17,440 | 13,233 | 113,233 | 7.53 | 100k over pull |
| **Tension (Conn)** | 320 | 15.80 | 17,440 | 13,233 | 113,233 | 8.03 | 100k over pull |
| | | **BF** | | | | | BF= 1- (MW)/65.5 |
| | | 0.7588 | | | | | |

## Intermedate Casing Design - Evacuated/Max SICP (collaspe & burst), 100k overpull (tension)

| | | | | | 1.125 | 1.000 | | 1.400 |
|---|---|---|---|---|---|---|---|---|
| | Size | Weight | Grade | Conn | Collapse | Burst | 80% Burst | Tension (Body) |
| Intermediate | 9.625 | 43.5 | N-80 or L-80 | LTC | 3,810 | 6,330 | 5,064 | 1,005,000 |
| | 9.625 | 43.5 | N-80 or L-80 | BTC | 3,810 | 6,330 | 5,064 | 1,005,000 |
| | 9.625 | 43.5 | P-110 | BTC | 4,420 | 8,700 | 6,960 | 1,381,000 |

| Collapse | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Casing Depth TVD | MW in | MW out | Pres in | Pres out | SF | |
| 43.5 N-80 or L-80 L | 6,098 | 0.00 | 9.40 | 0 | 2981 | 1.28 | full evacuation with 9.4 ppg mu |
| 43.5 N-80 or L-80 E | 6,098 | 0.00 | 9.40 | 0 | 2981 | 1.28 | full evacuation with 9.4 ppg mu |

| Burst | | | | | | | |
|---|---|---|---|---|---|---|---|
| 43.5 N-80 or L-80 L | 6,098 | 9.40 | 0.00 | 4481 | 0 | 1.41 | Casing full with 9.4 ppg mud , a |
| 43.5 N-80 or L-80 E | 6,098 | 9.40 | 0.00 | 4481 | 0 | 1.41 | Casing full with 9.4 ppg mud , a |

| Tension | | | | | | | |
|---|---|---|---|---|---|---|---|
| 43.5 N-80 or L-80 LTC | | Mud Wt | Air Wt | Bouy Wt | BW +100k | SF | |
| **Tension (Body)** | 6,098 | 9.40 | 265,263 | 227,195 | 327,195 | 3.07 | 100k over pull |
| **Tension (Conn)** | 6,098 | 9.40 | 265,263 | 227,195 | 327,195 | 2.52 | 100k over pull |
| | | **BF** | | | | | BF= 1- (MW)/65.5 |
| | | 0.8565 | | | | | |
| 43.5 N-80 or L-80 BTC | | | | | | | |
| **Tension (Body)** | 6,098 | 9.40 | 265,263 | 227,195 | 327,195 | 3.07 | 100k over pull |
| **Tension (Conn)** | 6,098 | 9.40 | 265,263 | 227,195 | 327,195 | 3.28 | 100k over pull |
| | | **BF** | | | | | BF= 1- (MW)/65.5 |
| | | 0.8565 | | | | | |

## Production Casing Design - Evacuated/Max SICP (collaspe & burst), 100k overpull (tension)

| | | | | | 1.125 | 1.000 | | 1.400 |
|---|---|---|---|---|---|---|---|---|
| | **Size** | **Weight** | **Grade** | **Conn** | **Collapse** | **Burst** | **80% Burst** | **Tension (Body)** |
| **Production** | 5.5 | 20 | P110 | LTC | 11,080 | 12,630 | 10,104 | 641,000 |
| | 5.5 | 20 | P110 | BTC | 11,080 | 12,360 | 9,888 | 641,000 |

| **Collapse** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Casing Depth TVD** | **MW in** | **MW out** | **Pres in** | **Pres out** | **SF** | |
| 20 P110 LTC | 6,835 | 0.00 | 13.30 | 0 | 4727 | 2.34 | full evacuation with 13.3 ppg m |
| 20 P110 BTC | 6,835 | 0.00 | 13.30 | 0 | 4727 | 2.34 | full evacuation with 13.3 ppg m |
| *USE BHL TVD for B9 | | | | | | | |

| **Burst** | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 P110 LTC | 6,835 | 13.30 | 0.00 | 6227 | 0 | 2.03 | 1500 psi casing test |
| 20 P110 BTC | 6,835 | 13.30 | 0.00 | 6227 | 0 | 1.98 | 1500 psi casing test |

| **Tension** | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 P110 LTC | | **Mud Wt** | **Air Wt** | **Bouy Wt** | **BW +100k** | **SF** | |
| **Tension (Body)** | 6,835 | 13.30 | 136,700 | 108,943 | 208,943 | 3.07 | 100k over pull |
| **Tension (Conn)** | 6,835 | 13.30 | 136,700 | 108,943 | 208,943 | 2.62 | 100k over pull |
| | | **BF** | | | | | BF= 1- (MW)/65.5 |
| | | 0.7969 | | | | | |
| 20 P110 BTC | | **Mud Wt** | **Air Wt** | **Bouy Wt** | **BW +100k** | **SF** | |
| **Tension (Body)** | 6,835 | 13.30 | 136,700 | 108,943 | 208,943 | 3.07 | 100k over pull |
| **Tension (Conn)** | 6,835 | 13.30 | 136,700 | 108,943 | 208,943 | 3.19 | 100k over pull |
| | | **BF** | | | | | BF= 1- (MW)/65.5 |

# LOGOS Operating, LLC

## Surface Use Plan of Operations

## *Rosa Unit Pad 9 Natural Gas Well Development Project*

**Amended September 2022**

LOGOS Operating, LLC
2010 Afton Place
Farmington, New Mexico
Phone: (505) 278-8720
FAX: (505) 326-6112

## Table of Contents

This amended Surface Use Plan of Operations (SUPO) submitted by LOGOS Operating, LLC (LOGOS) addresses proposed modifications to a SUPO originally submitted by Williams Production Company, the predecessor of WPX Energy Production, LLC (WPX), the previous operator of the Rosa Unit, Rio Arriba County, New Mexico. LOGOS assumed operation of the Rosa Unit in early 2018, after an affiliate of LOGOS acquired an interest in the Rosa Unit from WPX in 2017.

The original SUPO was approved by the Bureau of Land Management (BLM) Farmington Field Office (FFO) in 2010, in conjunction with the Rosa Unit 634A and 634B APDs. The original SUPO covered construction, use and ultimate abandonment of one multi-well pad, the Rosa Unit Pad 9 (formerly called Rosa UT Pad 9), along with development of associated well pad construction zones, access roads, pipeline corridors, cuttings disposal, and temporary surface lines. The project is located on lands managed by the BLM FFO and accesses federal minerals managed by the BLM FFO. The area for this project is shown in Appendix B, Figure1.

LOGOS is in the process of planning the construction, drilling and completion of certain wells with surface locations within Rosa Unit Pad 9, where there are two producing wells currently. LOGOS is planning to potentially drill and complete up to four additional wells from Rosa Pad 9.

LOGOS is proposing modifications to the amount and source of water for drilling and completing wells on Rosa Unit Pad 9 and the method of storage of water for completion use. Other minor changes have been made to clarify operations, based on feedback from the Farmington Field Office personnel. Some of these modifications are necessitated to implement modern industry best practices and enhance subsurface resource recovery while efficiently utilizing surface resources. Further, the alterations to the originally approved SUPO will substantially reduce truck traffic, minimizing potential impacts to existing roads and wildlife and reducing associated greenhouse gas emissions

Pursuant to Onshore Oil and Gas Order No. 1 (43 CFR 3160), this Surface Use Plan of Operations (SUPO) has been prepared for the Bureau of Land Management (BLM) Farmington Field Office (FFO) as part of the LOGOS Operating, LLC (LOGOS) Rosa Unit 604H, 605H, 606H and Rosa Unit 607H Application for Permit to Drill (APD). This SUPO is in accordance with Onshore Oil and Gas Order No. 1, 43 Code of Federal Regulation (CFR) 2804.12, 43 CFR 2884.11.

LOGOS proposes the development of the Rosa Unit 604H, 605H, 606H and Rosa Unit 607H natural gas wells and a well-connect pipeline. The access road and well pad are already existing. The Rosa Unit 604H, 605H, 606H and 607H wells will be located on the well pad known as Rosa Unit Pad 9, along with slots for an additional two future natural gas wells (Rosa Unit Pad 9 Project). The proposed Rosa Unit 9 Project will also require the temporary installation of surface waterlines for well completions. The proposed project would be located on BLM-managed land and would develop Federal minerals from the Basin Mancos Formation associated with valid existing leases SF-078766, NM-289-43 and NM E-289-53 administered by the BLM-FFO. The Project would include the use, and subsequent reclamation of one well pad with associated well pad construction zone, buried gas line and temporary surface waterlines. Four natural gas wells and two potential natural gas wells would be horizontally or vertically drilled, possibly produced and eventually plugged and abandoned from Rosa Unit 9 well pad. Each proposed well would be authorized by an approved APD. The well pad, access road, pipeline and temporary surface lines are located entirely on-lease within the Rosa Unit. The proposed action is the approval of the Rosa Unit 604H, 605H, 606H and 607H APDs for an on-lease pad, buried pipeline and temporary surface waterlines by the BLM-FFO.

A pre-disturbance on-site meeting for the project was held on October 16, 2015. A second on-site was held on June 7, 2022. Attendees at the more recent on-site meeting included LOGOS representatives, BLM-FFO representatives, BOR representative, the project surveyor, and environmental consultants (Adkins Consulting, Inc.), see the sign in sheet Figure 13, Appendix B.

## 1.0 Existing Roads

A. The project area is located in Rio Arriba County, New Mexico. To access the project area, from the intersection of U. S. Highway 550 and U. S. Highway 64 in Bloomfield, New Mexico:
   - Travel easterly on US HWY 64 for 38.0 miles to mile marker 102.3 to state Hwy 527 (Simms Hwy).
   - Turn left (north-westerly) on State Hwy 527 (Simms Hwy) for 7.9 miles to Rosa Road at La Jara Station.
   - Go right (northerly) on Rosa Road for 6.5 miles to fork in roadway
   - Go left (northerly) which is straight, remaining on Rosa Road for 4.0 miles to 4-way intersection
   - Go left (north-westerly) which is straight remaining on Rosa Road for 1.2 miles to 4-way intersection
   - Go left (westerly) exiting Rosa Road for 0.4 miles to fork in roadway.
   - Go right (westerly) which is straight for 0.4 miles to fork in roadway
   - Go left (north-westerly) which is straight for 0.4 miles to LOGOS Rosa Unit Pad 9 proposed well pad which overlaps the LOGOS Rosa Unit #634A existing well pad.

B. For existing County Roads or roads that are considered collector roads, LOGOS will defer to the county or to the Roads Committee, when formed, for maintenance determinations. Roads will be maintained in the same or better condition as existed prior to the commencement of operations, and maintenance will continue until final abandonment and reclamation of the well location and associated facilities.

C. Best management practices (BMPs) for dust abatement and erosion control will be utilized along the road to reduce fugitive dust for the life of the project. Fresh water application, using a rear- spraying truck or other suitable means, will be the primary method of dust suppression along the road.

D. No routine maintenance activities will be performed during periods when the soil is too wet to adequately support construction equipment. If equipment creates ruts deeper than 6 inches, the soil will be deemed too wet for construction or maintenance.

E. The access road will be maintained as outlined in the Road Maintenance Plan (Appendix C). At final abandonment, the access road will be reclaimed as described in the Reclamation Plan (Appendix A).

## 2.0 New or Reconstructed Access Roads

A. No new access road will be needed as the existing road to the Rosa Unit 201, 634A and 634B will be used to access the existing well pad. The existing road runs into the southeast corner of the pad as shown on Figure 3, Appendix B. At the onsite, it was determined that no cattle guards or fences would be required. Although no need for culverts is anticipated, any drainage issues will be addressed during construction. All disturbance will be within the construction zone. Any additional need for water-control features, such as diversions and /or silt traps, will be determined at interim reclamation.

B. BMPs for dust abatement and erosion control will be utilized along the road to reduce fugitive dust for the life of the project. Fresh water application, using a rear- spraying truck or other suitable means, will be the primary method of dust suppression along the road. If culverts or silt traps are required for erosion control, they will be added as necessary. The access road will be maintained as

outlined in the Road Maintenance Plan (Appendix C). At final abandonment, the access road will be reclaimed as described in the Reclamation Plan (Appendix A).

## 3.0 Location of Existing Wells

Water wells and oil and gas wells (plugged and abandoned, active, and proposed) within a 1-mile radius of the well pad are depicted on Figure 2 (Appendix B). No recorded water wells are located within a 1-mile radius of the proposed project.

## 4.0 Location of Existing or Proposed Production Facilities

A. Survey Monuments
   1. LOGOS will protect all survey monuments, witness corners, and reference monuments during construction, operation, maintenance, and termination of the facilities. The BLM Authorized Officer will be immediately notified in the event that any corners, monuments, or markers are disturbed or anticipated to be disturbed. LOGOS will secure the services of a Registered Land Surveyor to restore any corners, monuments, or markers in the event disturbance does occur. The surveyor will use procedures found in the Manual of Surveying Instructions for the Survey of Public Lands in the United States. Recordation of the survey will be in compliance with State of New Mexico regulations.

B. Pipeline: Below Ground
   1. LOGOS will mark the exterior boundaries of the proposed pipeline ROW with stakes and/or lath at 100-to-200-foot intervals. The stakes and/or laths will be flagged in a distinctive color as determined by the holder. The survey station numbers will be marked on the boundary stakes and/or laths at the entrance to and the exit from BLM and BOR lands. The holder shall maintain all boundary stakes and/or laths in place until final cleanup and restoration is completed and approved by the BLM-FFO. The stakes and/or laths will then be removed.
   2. The proposed well-connect pipeline, waterline and AC line would be located in Sections 22 & 23, Township 31 North, Range 06 West.
   3. The proposed pipeline system will consist of one trench hosting one steel natural gas line up to 16 inches, one 2-to-4-inch waterline and an AC wire.
   4. The proposed well-connect pipeline would connect the Rosa 604H, 605H, 606H and 607H (Rosa Unit Pad 9 Wells) and possibly two additional future wells on the Rosa Pad 9 to the line at Rosa Unit Pad 10, and then to the existing A-59 compressor site which will deliver produced minerals to an existing Harvest gas gathering system in the area.
   5. The proposed well-connect pipeline would be 2776.2-feet in length. The pipeline parallels several resource roads, traveling from the existing Pad 9 T31N R06W section 22 to Pad 10 in T31N, R06W sections 23 as shown in Figures 1, 2, 7 & 9, Appendix B. Total disturbance by way of well-connect pipeline installation would be approximately 1.91 acres.
   6. Prior to construction, the pipeline ROW will be staked at 100- to 200-foot intervals and, when applicable, BLM boundaries will be marked with station numbers at the entrance to and exit from BLM lands.
   7. Soils will be excavated from the well-connect pipeline trenches using a trencher, backhoe, or excavator. The bottom of the trench will be dug to a depth of 4 feet. The trenches will be a minimum 16 inches in width. Soft plugs will be placed within the trenches every ¼ mile. When stringing pipe, one joint of pipe will be set back every ¼ mile. After a pipe has been welded and coated, a side-boom tractor will be used to

place the pipe into the trench.

8. All pipelines will be buried to a depth of 4 feet except at road crossings where they will be buried to a depth greater than 4 feet. In areas were the pipeline crosses an existing road, LOGOS will utilize the following backfill method. The pipeline trench will be backfilled with soil halfway and compacted, then whole, intact sacks of Quikrete will be placed side-by-side along the length of the trench across the road. The sacks will be placed with approximate 3- to 4-inch spacing between each sack. Road base will then be backfilled and compacted to the surface. This method has been shown to provide the best road stabilization and to alleviate potholes and depressions that often occur over the pipeline trench after backfill material settles over time.
9. Backfilling operations will be performed within a reasonable amount of time to ensure that the trenches are not left open for more than 24 hours. If a trench is left open overnight, it will be temporarily fenced, or a night watchman will be utilized. The excavated soils will be returned to the trenches, atop the pipe, and compacted to prevent subsidence. The trenches will be compacted after approximately 2 feet of fill is placed over the pipe and after the ground surface has been leveled.
10. Prior to the well-connect pipelines being placed in service, the pipes will be pressure tested to the recommended standards based on their size and wall thickness.
11. Earthen berms will be constructed at each end of the ROW where it is separated from the road. The berms will be a minimum of 4-feet high with a 1-foot cut at the base facing away from the ROW (towards the direction of potential traffic).
12. Following construction, pipeline markers will be installed along the well-connect pipeline corridor within the line of sight. These markers will not create safety hazards.

C. Temporary Surface Pipelines
   1. Surface lay-flat waterlines would be temporarily installed to transport water to the Rosa Pad 9. These may be run from the 181 POD to the Section 30 freshwater pond and then on to the Rosa Pad 9 via the Rosa SWD #1, or directly from the Rosa 181 POD to Rosa Pad 9 as shown in Figure 8, Appendix B. One to two temporary surface lines up to 12 inches in diameter would be utilized and would be removed when the well stimulation is completed.
   2. Stimulation pumping may be conducted adjacent to the Section 30 freshwater pond, within the Rosa SWD #1 or on the Rosa Pad 10 and then pumped to the Rosa Pad 9. If the freshwater lake tank is on the pad, the pumping will take place on the pad.
   3. The aboveground stimulation and flowback lines would be installed adjacent to existing resource roads, existing pipeline corridors, and along the proposed pipeline corridor.
      (a) Surface waterlines will only be installed where needed, and each corridor will not contain more than two (2) 5.5-inch high-pressure, heavy walled steel pipelines and up to three (3) 12-inch (or less) heavy duty lay flat lines within at a time. Lay flat lines will only be used for freshwater transfer.
   4. In areas where surface waterlines traverse a side hill or steep slope, they will be secured with metal t-posts.
   5. All temporary surface water lines will be inspected every day, several times a day, while in service.
   6. The spill response plan for the temporary surface water lines is located in Appendix D.
   7. All temporary lines would be removed following well stimulation activities.

D. Production Facility
   1. Production facilities have already been constructed and are currently in use on the Rosa 18C well pad adjacent to Rosa Unit Pad 9, Figures 11 & 12, Appendix B, to allow for maximum interim reclamation and revegetation of the well location.

2. As practical, access will be a teardrop-shaped road through the production area to allow for maximum revegetation during interim reclamation.
3. Within 90 days of installation, production facilities would be painted Juniper Green to blend with the natural color of the landscape and would be located, to the extent practical, to reasonably minimize visual impact.
4. Berms will be constructed around all storage facilities sufficient in size to contain the storage capacity of tanks. Berm walls will be compacted with appropriate equipment to assure containment.
5. After the completion phases and pipeline installation, portions of the project area not needed for operation will be reclaimed. When the well is plugged, final reclamation will occur within the remainder of the project area. Reclamation is described in detail in the Reclamation Plan (Appendix A).

## 5.0 Locations and Types of Water Supply

The Rosa Unit 604H, 605H, 606H and 607H wells will be horizontally drilled and will be completed via well stimulation (hydraulic fracturing). Sources of water for drilling and completion may include produced, recycled, non-potable, and fresh water. LOGOS would ensure that all required permits have been obtained prior to utilizing water from any source. The fresh water may be purchased and/or leased from San Juan Basin Water Haulers Association or the San Juan Water Commission. These leased water rights are specifically designated for commercial and industrial use by LOGOS and will be obtained from the Navajo Reservoir at the permitted POD #181 on Bureau of Reclamation ("BOR") managed surface Figure 8, Appendix B. Access to the Navajo Reservoir is on BOR land, and has been separately obtained through License Agreement Contract No. 21-LM-48-0001 granted to LOGOS by the BOR.

Water for drilling and completion may be supplied via surface water lines that will follow existing resource roads and the previously approved surface line route from the Navajo Reservoir #181 POD to the SWD #1. From there the water would follow the proposed surface line route from the SWD #1 to pad 9, as shown in Figures 8 & 9, Appendix B. Alternatively, the surface water lines may travel from the POD #181 to the Rosa Unit Section 30 Freshwater Pond via previously BLM-approved route, and then on to Rosa Unit Pad 9 as shown in Figure 8, Appendix B. The spill response plan for these surface water lines is located in Appendix D. Water may also be piped from the Rosa Section 30 freshwater pond through LOGOS' existing water gathering system in areas where infrastructure is available. Alternatively, water may be truck hauled to location. The fresh water for drilling and completions will be stored either on Rosa Unit Pad 9 and/or on Rosa Unit Pad 10 in one or more lake tank(s), within permitted temporary use areas or in additional upright or laydown tanks on Rosa Unit Pad 9 and/or Rosa Unit Pad 10. When recycled water is used, it will be stored only in upright or laydown tanks.

LOGOS proposes to utilize produced water for drilling if sufficient volumes are available. Use of produced water from existing wells for drilling fluid is authorized under New Mexico State Regulation (NMAC 19.15.2.52). The barrels of water required for drilling each well may vary from 2,500 up to 10,000 barrels of water depending on the performance of the wells on Rosa Unit Pad 9. LOGOS may choose to use fresh water for drilling if sufficient produced water is not available or cannot be reasonably delivered to Rosa Unit Pad 9 in a timely manner.

It is estimated that 600,000 barrels (+/- 15%) of fresh or produced water would be required for completion of each 10,000 ft. well to be drilled on Rosa Unit Pad 9. This volume will vary with lateral length. Approximately 10% of produced water from completions may be recovered for reuse for subsequent operations, based upon factors including but not limited to program timing, permitting and availability and adequacy of storage facilities.

Pumping is expected to operate up to 24 hours per day for at least 21 days or until sufficient water

volume is achieved for the completion of two wells. Additional time would be required for more than two wells. The temporary lines would be in place longer to accommodate set up and removal as well as the total duration of the well completions. LOGOS's current plan to hydraulically fracture two wells simultaneously may require up to 37 days to complete the stimulation program, and if four wells are being stimulated it would be up to double that amount of time.

Once fracturing operations have been completed, pigs would be sent through the fresh water temporary lines from the booster pump at Navajo Reservoir POD #181 towards the Rosa Unit Pad 9 to clear any remaining water and to minimize potential for leaks and waste during the rig down process. The fresh water pigged from the lines would flow into the lake tank(s), the Section 30 freshwater pond, upright tanks, and/or laydown tanks, and would subsequently be used for completion fluid, spraying lease roads, hauled to another project, or hauled for disposal at the permitted, LOGOS-operated Rosa SWD #1 well or Rosa SWD #2 well.

## 6.0 Construction Materials

The BLM-FFO will be notified (505-564-7600) at least 48 hours prior to the start of construction activities associated with the project. The construction phase of the project is anticipated to last approximately 2 to 3 weeks. The Rosa Unit 9 well pad is within the Rosa Mesa Wildlife SDA, which has a Winter Closure COA.

A. No additional construction materials are anticipated for the creation of the pad or access road per the attached plat showing cut and fill in Figure 6, Appendix B. Any topsoil removed during construction of the pad will be stored as shown on Figure 10, Appendix B.
B. Construction and maintenance activities will cease when soil or road surfaces become saturated to the extent that construction equipment is unable to stay within the project area and/or when activities cause irreparable harm to roads, soils, or streams.

## 7.0 Methods for Handling Waste

A. Cuttings
    1. Drilling operations will utilize a closed-loop system. Drilling of the vertical section will be accomplished with water-based mud. All cuttings from the water-based mud section of the wellbore will be placed in roll-off bins and hauled to the Rosa Unit Section 23B or 23K cuttings disposal recycling containment. No blow pit will be used. LOGOS will follow Onshore Oil and Gas Order No. 1 regarding the placement, operation, and removal of closed-loop systems.
    2. Either water or oil-based mud will be used in the horizontal lateral portion of the well. If oil-based mud is utilized, a closed-loop system will be used to eliminate potential impacts to surface and groundwater quality. A 30-mil reinforced liner or equivalent will be placed under the drill rig mats and all drilling machinery. This area will be enclosed by a containment berm and ditches, which will drain to sump areas for spill prevention and control. The containment berm will be ramped to allow access to the solids control area. The cuttings from the oil-based mud section of the wellbore will be placed in roll-off bins and hauled to the Envirotech disposal facility or any NMOCD approved licensed disposal facility.
    3. Closed-loop tanks will be adequately sized for containment of all fluids.

B. Drilling Fluids
    1. Drilling fluids will be stored onsite in above-ground storage tanks. Upon termination of drilling operations, the drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical.

Currently it is planned to use NewPark Drilling Fluids as the drilling fluid vendor but that may change depending on logistics and availability. All residual fluids will be hauled to a commercial disposal facility such as the Envirotech disposal facility, or any NMOCD approved licensed disposal facility.

C. Spills
   1. Any spills of non-freshwater fluids will be immediately cleaned up and removed to an approved disposal site.

D. Sewage
   1. Portable toilets will be provided and maintained during construction, as needed.

E. Garbage and other water material
   1. All garbage and trash will be placed in a metal trash containment. The trash and garbage will be hauled off site and dumped in an approved landfill, as needed.

F. Hazardous Waste
   1. No chemicals subject to reporting under Superfund Amendments and Reauthorization Act Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of these wells.
   2. No extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities will be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of these wells.
   3. All fluids (i.e., scrubber cleaners) used during washing of production equipment will be properly disposed of to avoid ground contamination or hazard to livestock or wildlife.

G. Completion Fluids (pre-frac):
   1. One or more lake tanks, each up to 80,000 barrel capacity, would be installed at Rosa Unit Pad 9 (Figure 11 Appendix B) and/or the Rosa Pad 10 for short term storage of fresh water needed for well completions. A lake tank may also be located on the Rosa unit #201 pad, or the Rosa Unit 18C pad, or at the Rosa SWD #1. Only fresh water would be stored in the lake tank(s).
   2. Additional storage tanks may be installed on Rosa Unit Pad 9, Rosa Unit Pad 10, Rosa Unit #201, Rosa Unit 18C or the Rosa SWD #1 for storage of fresh water and/or produced water, if needed for completions and for storage of flowback resulting from the fracturing operations. (See potential storage tank locations on Pad 9 in Figure 10 Appendix B)

H. Produced Water (post frac):
   1. LOGOS will attempt to recycle and reuse produced water from the wells for use in drill-out and subsequent wells in the area as operations allow. Recycled produced water will be filtered, treated and stored in tanks on location (Figure 10 Appendix B). No recycled water will be stored in lake tanks.
   2. Once operations are complete, LOGOS will dispose of produced water from these wells at one of the following facilities:
      a. Lybrook Yard WDW #1, API #30-039-27533, NMOCD permit #SWD-907, operated by Elm Ridge Resources, located in NE ¼, Section 14, Township 23 North, Range 7 West
      b. Jillson Federal #1, NMOCD order #R-10168, operated by Hilcorp, located in NW ¼, Section 8, Township 24 North, Range 3 West
      c. Rosa Unit SWD #001, API #30-039-27055, NMOCD permit SWD-916, operated by LOGOS, located in SE ¼, Section 23, Township 31 North, Range 6 West
      d. Rosa Unit SWD #002, API #30-039-30182, NMOCD permit SWD-1236, operated by

LOGOS, located in NW ¼, Section 25, Township 31 North, Range 5 West

e. Basin Disposal, permit #NM-01-005, located in the NW ¼, Section 3, Township 29 North, Range 11 West
f. Sunco SWD #001, API #30-045-28653, NMOCD permit SWD-457, operated by Key Energy, located in NW ¼, Section 2, Township 29 North, Range 12 West
g. Any other NMOCD approved licensed water disposal facility.

3. Water will be piped thru the existing subsurface water gathering system in the Rosa Unit where possible and will be hauled by truck where infrastructure has not yet been installed. Some produced water may also be used in drilling and completion operations as an alternative disposal method.

## 8.0 Ancillary Facilities

Standard drilling operation equipment that will be on location includes drilling rig with associated equipment, temporary trailers equipped with sleeping quarters necessary for company personnel, toilet facilities, and trash containers.

Any existing Rosa Pad may possibly be used for the staging or storage of equipment during the drilling and completion process. Only existing disturbances will be utilized, no new disturbances will be created. This may include offset well pads (producing or TA'ed), proposed booster stations for the temporary lay flatlines, existing disturbances around the Rosa SWDs and existing disturbance around the Rosa freshwater pond.

## 9.0 Well Site Layout

The approximate cuts and fills and well pad orientation for the well pad is shown on the construction plats in the APD permit package and in Figure 6, Appendix B. Rig orientation and the location of drilling equipment are depicted on Figure 10 (Appendix B). The layout of the completions rig is depicted on Figure 11 (Appendix B). The interim reclamation/long-term disturbance layout of the well pad site is depicted on Figure 12 (Appendix B) and is described below.

Drilling of the proposed Rosa well would require utilizing the already constructed well pad 450 feet by 225 feet (2.32 acres), with an additional 50-foot construction buffer zone on all four sides (1.85 acres). Total disturbance from the proposed well pad would be approximately 4.17 acres. This disturbance falls on the BLM surface. No additional disturbance beyond the already approved and constructed pad site is requested at this time. After completion, a 16-foot-wide teardrop driving surface (0.04 acre) and the facilities area (1.5 acre) will remain unreclaimed for the life of the well. A working area including the center of the teardrop and a level surface surrounding the well heads (1.50 acres) will not be recontoured; however, they will be reseeded. The remainder of the well pad and construction zone (1.25 acres) will be recontoured and reseeded.

Well Site Layout Details

1. No construction is required for this pad, it is already constructed.
2. Vegetation and topsoil removal, storage, and protection are described in detail in the Reclamation Plan (Appendix A). The topsoil is stored on location as shown in Figure 10, Appendix B.
3. The well pad is already leveled to provide space and a level surface for vehicles and equipment. There is no cut and fill for Rosa Pad 9 and no additional surfacing

materials will be required for construction.

4. As determined during the onsite on June 07, 2022, the following best management practices will be implemented:
    a. Culverts will be installed where needed as needed.
    b. Any additional need for water control features such as diversions and/or silt traps, will be determined at interim reclamation.
    c. Diversions will be installed upon reclamation
    d. No additional fill would be required to construct the pad.
    e. Facilities will be painted Juniper Green
    f. Upon site clearing, vegetation including trees that measure less than 3 inches in diameter (at ground level) and slash/brush, will be chipped or mulched and incorporated into the topsoil as additional organic matter. If trees are present, all trees 3 inches in diameter or greater (at ground level) will be cut to ground level and delimbed.
    g. The top six (6) inches of topsoil will be stripped (if available) and stored separately on the construction buffer zone.
    h. All project activities will be confined to permitted areas only.
    i. Construction equipment may include chain saws, a brush hog, scraper, maintainer, excavator, trencher, backhoe, and a dozer.
    j. One or more lake tanks up to 80,000 barrel capacity would be installed at Rosa Unit Pad 9 (Figure 11, Appendix B) and/or the Rosa Unit Pad 10 for short term storage of fresh water needed for well completions. No recycled or produced water would be stored in lake tank(s).
    k. Additional storage tanks may be installed on Rosa Unit Pad 9, Rosa Unit Pad 10, Rosa Unit 18D or Rosa Unit 201 for storage of fresh water and/or produced water if such storage is needed for drilling, completions and/or flowback from fracturing operations. Such potential additional storage tanks are shown on Appendix B – Figure 11. All water remaining in these tanks after completions would be hauled away by truck for reuse in other oil and gas operations or for disposal at permitted locations.
    l. Facilities to maintain stormwater BMPs will be installed and maintained as necessary.
    m. If drilling has not been initiated on the well pad within 120 days of the well pad being constructed, the operator will consult with the BLM to address a site-stabilization plan.

## 10.0 Plans for Surface Reclamation

A Reclamation Plan was prepared in accordance with Procedure B of the BLM-FFO Bare Soil Reclamation Procedures. Procedure B is required for surface disturbing actions, grants, or permits authorized by the BLM-FFO resulting in bare mineral soil across an area greater than or equal to 1 acre, not including a BLM-FFO-approved working area. Based on observations made during the pre-disturbance site visit, the BLM-FFO representative has determined that the vegetation community which best represents the proposed project area is Sagebrush Shrubland Community.

The noxious weed pre-construction survey results and methods for controlling and preventing noxious weeds are provided in the Reclamation Plan (Appendix A). Prior to construction equipment entering the project area, operator will use BMPs to control noxious weeds. The operator will comply with applicable federal and state laws and regulations concerning the use of pesticides. The operator will acquire approval from the BLM-FFO prior to the use of pesticides.

## 11.0 Surface Ownership

The project is located on BLM-managed and on BOR-managed land. The field office contact information is:

Bureau of Land Management Farmington Field Office
6251 College Boulevard, Suite A
Farmington, New Mexico 87401
(505) 564-7600

US Bureau of Reclamation
Western Colorado Area Office Durango Address
185 Suttle Street Suite 2
Durango, CO 81303
(970) 385-6500

US Bureau of Reclamation
Western Colorado Area Office Address
445 West Gunnison Ave. Suite 2221
Grand Junction, CO 81501
(970) 248-0601

## 12.0 Other Information

A. Construction contractors will call New Mexico One-Call (or equivalent) to identify the location of any marked or unmarked pipelines or cables located in proximity to the proposed well pad, access road, and pipeline at least two working days prior to ground disturbance.
B. The project area has been surveyed by La Plata Archaeological Consultants (LAC). The cultural survey report was submitted to the BLM-FFO. Cultural mitigation will occur, if any is listed in the approved APDs.
C. All activities associated within the construction, use/operation, maintenance, and abandonment or termination of the Rosa Pad 9 are limited to areas approved in the Rosa Unit 604H, 605H, 606H or 607H APDs.
D. All LOGOS approved locations may be utilized for staging or storing equipment during drilling or completions operations.
E. All BLM-FFO general COAs will apply to this action.

# *Surface Use Reclamation Plan Appendix A*

# United States Department of the Interior Bureau of Land Management

# Surface Reclamation & Re-vegetation Plan

**For the:**

***Rosa Unit 9 Well Pad***

**Sponsored by:**

***LOGOS Resources, LLC***

July 2022

U.S. Department of the Interior Bureau of Land Management
Farmington District Farmington Field Office
6251 N. College Blvd., Ste. A Farmington, NM 87402
Phone: (505) 564-7600
FAX: (505) 564-7608

BLM

## Contents

# Reclamation Plan (Procedure B)

| | |
|---|---|
| Applicant | LOGOS Resources, LLC (LOGOS) |
| Project Type | Gas Well |
| Well, Oil and Gas Lease, or Right-of-Way (ROW) Name | Rosa Unit 604H |
| Legal Location | 1503' FNL & 605' FEL, Section 22, T31N, R6W, NMPM<br>Lat: 36.888251°N<br>Long: 107.443252°W |

## Introduction

This reclamation plan has been prepared based on requirements and guidelines of the Bureau of Land Management (BLM) Farmington Field Office (FFO) Bare Soil Reclamation Procedures (BLM 2013a) and Onshore Oil and Gas Order No. 1 (43 CFR Part 3160).

The LOGOS contact person for this Reclamation Plan is:

Marcia Brueggenjohann
505-787-2220 (Office)
918-284-2541 (Cell)
MBrueggenjohann@LogosResourcesllc.com

---

### *Vegetation Reclamation Procedure B*

Completion of a Vegetation Reclamation Plan based on Procedure B of the BLM/FFO Bare Soil Reclamation Procedures is recommended given that the proposed action would result in bare mineral soil **across an area greater than or equal to 1 acre**, not including working areas routinely used to operate and maintain facilities or improvements.

---

### *Revision of the Reclamation Plan*

LOGOS may submit a request to the BLM to revise the Reclamation Plan at any time during the life of the project in accordance to page 44 of the Gold Book (USDI-USDA 2007). LOGOS will include justification for the revision request.

## Project Description

LOGOS' Rosa Unit 604H gas well pad and associated project features exist on Bureau of Land Management and Bureau of Reclamation Lands. LOGOS proposes to construct three new gas wells on the existing Rosa Units #201 and #18 well pads on BLM lands subject to BLM Farmington Field Office oversite that would develop federal minerals. The proposed well pad would utilize existing access roads expand the existing well pad. The proposed development would be located in the San Juan Basin of northwestern New Mexico (NM) approximately 35 miles west of Dulce, New Mexico, in Section 22, Township 31N, Range 6W, Rio Arriba County, New Mexico. Local terrain consists of hilly Sagebrush/grass and Pinyon/Juniper vegetation communities.

## *Estimated Total Area of Disturbance*

The project would result in a total of 6.20 acres of disturbance with approximately 4.09 acres of new surface disturbance. LOGOS would utilize the existing access road, pipeline ROW, and historically disturbed area to eliminate the total amount of new disturbance. During interim reclamation, approximately 3.16 acres of the total proposed surface disturbance would be fully reclaimed, and 1.50 acres would be reseeded (but not recontoured). The remainder (1.54 acres) would be stabilized and used as a working surface throughout the life of the proposed project and would be fully reclaimed during final reclamation.

Well Pad

LOGOS proposes to utilize and expand existing Rosa Units #201 and #18 well pads. The existing well pads are 2.11 acres. 2.18 acres of new disturbance is anticipated due to expanding the existing well pad to a total of 4.29 acres. Included as part of the project will be a 50-foot buffer construction zone surrounding the perimeter of the well pad. There will be no cut and fill on this well pad. The entire area will be utilized during construction, setting of production equipment, and drilling and completion phases. After completion, a 16-foot-wide teardrop driving surface (0.04 acre) and the facilities area (1.50 acre) will remain unreclaimed for the life of the well. A working area including the center of the teardrop and a level surface surrounding the well heads (1.50 acres) will not be recontoured; however, they will be reseeded. The remainder of the well pad and construction zone (1.25 acres) will be recontoured and reseeded.

Well-connect pipeline corridor

The pipeline will have a 30-foot ROW and will be 2,776.2 feet long (0.53 miles). The pipeline will run along existing ROW disturbance to avoid new disturbance. Total disturbance will be 1.91 acres. All disturbance will be fully reclaimed.

Access Road

No new access road will be needed as the existing road to the Rosa Unit #201 will be used to access the proposed well pad expansion. The proposed project would utilized the existing access roads with a 30-foot ROW. The access road running along the northeastern boundary of the pad will be improved in accordance to the BLM Gold Book standards. For lease roads which are LOGOS' responsibility as the operator, these roads will be maintained in a condition the same or better than before operations began. Specifically, LOGOS will conduct routine inspections of road conditions, blade when necessary to reduce ruts and holes, maintain crowns and out slopes, replace surfacing materials, clear sediment blocking ditches and culverts, maintain interim reclamation, and noxious weed control. The access road would remain disturbed for the lifetime of the project. The remainder of the disturbed access road corridor would be reclaimed during interim reclamation.

Surface Water Line

A temporary surface water line will be used to transport water from the well pad to pad 10. The temporary line will be removed following all well stimulation activities. The aboveground stimulation and flowback lines would be installed adjacent to existing resource roads, and existing pipeline corridors. Surface waterlines will only be installed where needed, and each corridor will not contain more than two (2) 5.5-inch high-pressure, heavy walled steel pipelines and up to three (3) 12-inch (or less) heavy duty lay flat lines within at a time. Lay flat lines will only be used for freshwater transfer. There is no disturbance from the surface lay flat.

All surface disturbance associated with the well pad would be reclaimed to a BLM-approved working area. Production equipment will be placed on the location in such a manner to allow safe access to produce

and service the well/facilities while minimizing long-term disturbance and maximizing interim reclamation. As practical, access will be provided by a tear-drop shaped road through the production area. Right-of-way clearing shall be limited to 15 feet on each side of centerline and a maximum driving surface of 16 feet. There will be a maximum bladed width of 30 feet excluding turnout ditches and turnouts, and a maximum grade of 10 percent. Existing roads and pipeline corridors will be utilized to reduce the amount of new disturbance.

**Table 1. Proposed Action Surface Disturbance**

| Project Feature | Surface Disturbance (acres) | | Acreage Following Post Construction Reclamation | | |
|---|---|---|---|---|---|
| | Total | New | Fully Reclaimed | Reseed Only | Long-term Disturbance |
| Well Pad + Construction Zone | 4.29 | 2.18 | 1.25 | 1.50 | 1.54 |
| Pipeline | 1.91 | 1.91 | 1.91 | - | - |
| TOTAL | 6.20 | 4.09 | 3.16 | 1.50 | 1.54 |

## Pre-Disturbance Site Visit and Site Conditions

This plan is based on observations made during pre- and post-disturbance site visits and compiled from information obtained from consultation with agencies including BLM/FFO and LOGOS. The pre-disturbance site visit occurred on June 7, 2022.

### *Vegetation Community*

Most of the area is previously disturbed. Undisturbed vegetation is piñon-juniper woodland dominated by piñon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*), with an understory dominated by broom snakeweed (*Gutierrezia sarothrae*), big sagebrush (*Artemisia tridentata*),) Indian ricegrass (*Achnatherum hymenoides*), Blue Grama (*Bouteloua gracilis*), and James' galleta grass (*Pleuraphis jamesii*).

Based on observations made during site visits, it has been determined that the vegetation communities which best represents the proposed action area are Sagebrush/grass and Pinyon/Juniper vegetation communities.

Vegetation consists of mixed desert shrub, comprised of widely scattered, mixed shrub of Big sagebrush (*Artemisia tridentata*) with Broom snakewood (*Gutierrezia sarothrae*), Bigelow sagebrush *(Artemisia bigelovii*), Mountain-mahogany (*Cercocarpus montanus*), Rubber rabbit brush (*Ericameria nauseosa*), and Bitterbrush (*Purshia tridentata*). Grass cover is represented by Galleta (*Hilaria jamesii*), Indian ricegrass (*Oryzopsis hymenoides*), Blue Grama (*Bouteloua gracilis*), cheat grass (*Bromus tectorum*), and Squirrel tail grass (*Elymus elymoides*). Herbaceous forbs consist of Narrow leaved Yucca (*Yucca angustissima*), Whipple Cholla (*Cylindropunita whipplei),* Rocky Mountain Four-o' clock *(Mirabilis multiflora*), Scarlet globemallow (*Sphaeralcea coccinea*), and invasive Russian thistle (Salsola tragus). Surrounding the existing pad is dense pinyon-juniper woodland.

Soil composition primarily consists of well drained Orlie fine sandy loam, 1 to 8 percent slopes.

## *Proposed Reclamation Seed Mix*

Disturbance will be re-contoured and topsoil will be redistributed and prepared for seeding by the construction contractor. Ripping, disking, and seeding of the site will be done by LOGOS or the reclamation contractor. Details describing seedbed preparation can be found below. LOGOS would use a BLM-approved seed mixture appropriate for reclamation within a Sagebrush/grass community (see Table 2 below).

**Table 2. Reclamation Seed Mix***

| Common Name | Scientific Name | Cultivar | Pounds/PLS/acre |
|---|---|---|---|
| Western wheatgrass | *Pascopyrum smithii* | Arriba | 3.0 |
| Indian ricegrass | *Achnatherum hymenoides* | Paloma or Rimrock | 4.0 |
| Blue grama | *Bouteloua gracilis* | Alma or Hachita | 2.0 |
| Small burnet | *Sanguisorba minor* | Delar | 2.0 |
| Rocky Mtn. bee plant | *Cleome serrulata* | Local collection or VNS | 0.25 |
| Bottlebrush squirreltail | *Elymus elymoides* | Unknown | 3.0 |
| Winterfat | *Krascheninnikovia lanta* | VNS | 2.0 |
| Fourwing saltbush | *Atripliex canescens* | Delar | 2.0 |
| **TOTAL PLS/ACRE** | | | **18.25** |

** Smith, 2019, Bureau of Land Management, Natural Resource Specialist*

## *Vegetation Reclamation Standards*

Requirements for determining reclamation and if it is successfully completed for the selected vegetation community are determined by the reclamation percent cover standards for the community, as outlined in Tables 3 and 4. Meeting these standards during post-disturbance monitoring indicate the attainment of vegetation reclamation standards.

**Table 3. Reclamation Goal for Sagebrush/grass Community Cover**

| Functional Group | Percent (%) Foliar Cover | Common Species |
|---|---|---|
| Trees/Shrubs/Grasses/Forbs | ≥35 | Utah Juniper, piñon pine; big sagebrush, four-wing saltbush, antelope bitterbrush, alkali sacaton, Western wheatgrass, Indian ricegrass, galleta, sand dropseed, scarlet globemallow, wooly Indianwheat, fleabane, *Penstemon* sp., buckwheat, threadleaf groundsel |
| Invasive/undesirables **10% allowed toward meeting standard of 35%.** | ≤10 | Plants that have the potential to become a dominant species on a site where its presence is a detriment to revegetation efforts or the native plant community. Examples of invasive species include cheatgrass, Russian thistle, and kochia. |

**Table 4. Reclamation Goal for Pinyon-juniper Community Cover**

| Functional Group | Percent (%) Foliar Cover | Common Species |
|---|---|---|
| Trees/Shrubs/Grasses/Forbs | >20 | Utah Juniper, piñon pine; Utah serviceberry, alderleaf mountain mohagany, rubber rabbitbrush, cliff fendlerbrush, big sagebrush, antelope bitterbrush, green jointfir, Bigelow sagebrush, broom snakeweed, black sagebrush, Indian ricegrass, blue grama, bottlebrush squirreltail, muttongrass, needle-and-thread grass, sand dropseed, threeawn grass, prairie Junegrass, Arizona fescue, western wheatgrass, Wright's birdbeak, Eriogonum spp., hairy false goldenaster, |
| | | pingue rubberweed, multi-lobed senecio, scarlet globemallow, *Penstemon* sp., Wyoming paint brush, and machaeranthera spp. |
| Invasive/undesirables **10% allowed toward meeting standard of 35%.** | ≤10 | Plants that have the potential to become a dominant species on a site where its presence is a detriment to revegetation efforts or the native plant community. Examples of invasive species include cheatgrass, Russian thistle, and kochia. |

## *Pre-Disturbance Weed Survey*

During the pre-disturbance site visit, the proposed action area was surveyed for noxious weeds listed on the New Mexico Department of Agriculture's Class A and Class B list. No noxious weeds were observed during the field survey. LOGOS will follow BLM requirements and instructions for weed management and treatments.

## *Pre-Disturbance Soil Evaluation*

Soil testing was not completed for the proposed action area.

## *Pre- and Post-Disturbance Site Photographs*

Photographs were taken of pre and post-disturbance conditions using a cell phone camera and each photograph in the Surface Reclamation Plan is notated with the direction the photograph was taken. The photograph locations are listed in Table 5.

**Table 5. List of Pre-Disturbance Site Photographs**

| Photographs | Location Description |
|---|---|
| 1, 2, 3, 4 | From well pad corners, looking toward the center |
| 5, 6, 7, 8 | Four cardinal directions from the center of well pad |
| 9 | Pipeline along road |

| | | | |
|---|---|---|---|
| **Location:** | Well Pad SW Corner (3) | | |
| **Photo Number** | 1 | **Photo Direction:** | WNW |

| | | | |
|---|---|---|---|
| **Location:** | Well Pad SE Corner (2) | | |
| **Photo Number** | 2 | **Photo Direction:** | WNW |

| | | | |
|---|---|---|---|
| **Location:** | Well Pad SE Corner (5) | | |
| **Photo Number** | 3 | **Photo Direction:** | SE |

| | | | |
|---|---|---|---|
| **Location:** | Well Pad SW Corner (6) | | |
| **Photo Number** | 4 | **Photo Direction:** | SW |

| | | | |
|---|---|---|---|
| **Location:** | Well Pad Center | | |
| **Photo Number** | 5 | **Photo Direction:** | East |

| | | | |
|---|---|---|---|
| **Location:** | Well Pad Center | | |
| **Photo Number** | 6 | **Photo Direction:** | South |

| | Well Pad Center | | |
|---|---|---|---|
| **Photo Number** | 7 | **Photo Direction:** | West |

| **Location:** | Well Pad Center | | |
|---|---|---|---|
| **Photo Number** | 8 | **Photo Direction:** | North |

| | | | |
|---|---|---|---|
| **Location:** | Pipeline along road | | |
| **Photo Number** | 9 | **Photo Direction:** | SE |

## Reclamation Techniques for Successful Revegetation

### *Vegetation and Site Clearing*

Woody vegetation, such as large shrubs and trees, will be cleared from the staked project area and stockpiled for later use as soil mulch, visual mitigation, and/or wildlife shelter. Trees larger than 6 inches in diameter will be cut in 4 foot lengths and stacked off site for public use. Smaller logs and trees (less than 6-inches in diameter) removed during construction will be chipped or mulched and incorporated into topsoil, along with all slash, as additional organic matter during reclamation.

Surface rocks (where present and useful for reclamation) will be stockpiled adjacent to the topsoil stockpile. During reclamation activities, the surface rock will be placed within the area of reclamation for erosion control or in a manner that visually blends with the adjacent undisturbed area.

### *Topsoil Stripping, Storage, and Replacement*

If available, the upper 6 inches of topsoil will be stripped, following vegetation and site clearing during construction activities. LOGOS (or its contractor) will take care not to mix topsoil with the underlying subsoil horizons and will stockpile the topsoil separately from subsoil or other excavated material along the western edge of location for redistribution for reclamation. Topsoil and sub-surface soils will be replaced in the proper order, prior to final seedbed preparation. Stained topsoil will be stored separately to facilitate removal and reclamation. Stockpiled topsoil will be utilized, and amendments added if necessary, for proper revegetation.

## Water Management/Erosion Control Features

LOGOS will use appropriate erosion control/water management design features within the proposed action area. Potential erosion control or water management features that may be used include (but are not limited to), water bars or rolling dips for roads, sediment basins or sediment traps, check dams, silt fencing, outlet protection for culverts, erosion control blankets or geotextiles, and straw wattles.

LOGOS (or its contractors) will use erosion control blankets, straw bales, or straw wattles as appropriate to limit erosion and sediment transport from any stockpiled soils. A silt trap will be installed at reclamation in the southeast corner of the pad and a thorough inspection of any other drainage issues will be conducted and drainage systems, if any, will be identified.

---

## Seedbed Preparation

For cut and fill slopes, initial seedbed preparation will consist of backfilling and re-contouring to achieve a configuration as close to pre-disturbance conditions as possible. Areas to be reclaimed will be re-contoured to blend with the surrounding landscape, emphasizing restoration of existing drainage patterns and landform to pre-construction condition, to the extent practicable.

Seedbed preparation of compacted areas will be ripped to a minimum depth of 18 inches. Disking will be conducted if large clumps or clods remain after ripping. Any tilling or disking that occurs along the contour of the slope and seed drills will also be run along the contour to provide terracing and prevent rapid run- off and erosion. If broadcast seeding is used, a dozer or other tracked equipment will track perpendicular to the slope prior to broadcast seeding.

Following final contouring, the backfilled or ripped surfaces will be covered evenly with stockpiled topsoil. Final seedbed preparation will consist of raking or harrowing the spread topsoil prior to seeding to promote a firm (but not compacted) seedbed without surface crusting. Seedbed preparation may not be necessary for topsoil storage piles or other areas of temporary seeding.

---

## Soil Amendments

Amendments will be used if determined necessary by BLM for successful reclamation.

---

## Seeding

Seeding will occur within 90 days of well completion or 120 days from spud date.

A disc type drill with two boxes for various seed sizes will used. The drill rows will be 8-10 inches apart and seed planted ½ to 1 inch deep. Where slopes are too steep for contour drilling a hand seeder will be utilized. In situations where differing planting depths are not practicable using available equipment, the entire seed mix will be planted no deeper than 0.25 inch.

Drill seeding may be used on well-packed and stable soils that occur on gentler slopes and where equipment and drills can safely operate. Where drill seeding is not practicable due to topography, the reclamation contractor will hand-broadcast seed. Broadcast application of seed requires a doubling of the drill-seeding rate. The seed will then be raked into the ground so the seed is planted no deeper than 0.25 inch below the surface.

---

## Mulching

Hand seeding with hydro-mulch, excelsior netting, and/or mulch with netting shall be required on slopes in

excess of 1H:1V (1 horizontal to 1 vertical – equivalent to a 45 degree slope). Mulch should be grass or straw spread at 2,000 to 3,000 pounds per acre, or approximately 1 to 2 inches deep. Mulching will consist of crimping certified weed-free straw or certified weed-free native grass hay into the soil.

Straw or native grass hay mulch can be applied by hand broadcasting or blowing to a relatively uniform depth of 2 to 3 inches, equivalent to a rate of approximately 2 tons per acre (one 74-pound bale per 800 square feet). When applied properly, approximately 20 to 40 percent of the original ground surface will be visible.

Straw or native grass hay mulch will then be anchored using one of the following methods:

- Hand Punching – a spade or shovel is used to punch mulch into the topsoil at 1-foot intervals until all areas have mulch standing perpendicular to the slope and the mulch is embedded at least 4 inches into the soil.

- Roller Punching – a roller is used to spread mulch over an area; the roller is equipped with straight studs not less than 6 inches long, from 4 to 6 inches wide, and approximately 1 inch thick.

- Crimper Punching – similar to roller punching, a crimper is used over the soil. The crimper has serrated disk blades about 4 to 8 inches apart that force the mulch into the soil. Crimping should be done in two directions with the final pass across the slope.

Mulch applications in extremely clayey soils should be evaluated carefully to avoid developing an adobe mixture. In these cases, a soil amendment may be beneficial.

## *Noxious and Invasive Weed Control*

Inspection of the project area for noxious or invasive weeds listed by New Mexico Department of Agriculture as Class A or Class B will occur after earthwork and seeding activities. LOGOS will follow BLM requirements and instructions for weed treatments, including the period of treatment, approved herbicides that may be used, required documentation to be submitted to the BLM after treatment, and any other site-specific instructions that may be applicable. LOGOS will manage weeds at the proposed site with the following general practices:

- Any “listed” weeds will be treated prior to commencement of construction to prevent incorporation into the soil.

- Equipment will be inspected and cleaned prior to entering the construction site, and earthmoving equipment will be cleaned prior to exiting the site.

- Potential weed introduction will be minimized by using only weed-free seed mix, straw, mulch or other materials that may be brought to the site.

- Ongoing weed inspection and appropriate treatment will continue until percentage cover standards have been attained and final abandonment has occurred.

## *Fencing*

Fenced re-seeded area is encouraged and optional but, failure of seed germination and growth as a result of livestock and wildlife grazing is strictly the responsibility of the contractor, company completing project. Re-seeding shall be repeated until material materials are well established.

Disturbance to existing fences and other improvements on public land will be minimized and will be promptly repair to at least their former state. Their functional use will be maintained at all times. The owner of any improvement will be contacted prior to disturbing them

- Each fence crossed by will be H-braced and secured on both sides to prevent slacking of the wire, before cutting the wire. The opening thus created will be temporarily closed as necessary during construction to prevent passage of livestock. Upon completion of construction, install a cattle guard with an adjacent 16 foot gate. The cattle guard shall be constructed to Bureau of Land Management specifications. Cattle guards will be kept clean and repaired or replaced when needed.
- A minimum of 10 feet of undisturbed surface will be maintained between fence lines and roads that are constructed parallel to fences.
- Gaps opened in natural barriers used for livestock control during construction will be fenced to prevent drift of livestock, as directed by the AO.

## Monitoring Requirements

Monitoring will be completed according to BLM-FFO Bare Soil Reclamation Procedure B (BLM 2013b). Monitoring activities will be initiated after the project is completed (Interim Monitoring), during the post-disturbance earthwork, and seeding inspection process.

Percentage cover will be monitored annually until attainment of the vegetation reclamation cover standard has been met. LOGOS will keep a record of the monitoring for future submittal to the BIA and/or BLM at reclamation attainment.

## Interim Reclamation

### *Initiation*

During the post-disturbance inspection at the project site, the BLM-FFO representative (in collaboration with the LOGOS Representative) will determine site-specific monitoring locations for photo point monitoring and vegetation line point intercept transects. The BLM-FFO will GPS the monitoring locations, take the initial monitoring photographs, and complete the initial monitoring report within 60 days of the post-disturbance earthwork and seeding inspection. The initial report will be available from the BLM-FFO.

### *Annual Monitoring and Reporting*

LOGOS will be responsible for annual monitoring of the photo points and the vegetation line point intercept transects for the on-lease project starting two years after the completion and approval of the earthwork and seeding. Monitoring may occur during any time of the year. LOGOS will submit the initial monitoring report to the BLM by December 31 of the year monitored.

Vegetation line point intercept transects will be monitored annually by LOGOS until attainment of vegetation reclamation standards is met.

### *Attainment of Vegetation Reclamation Standards*

When vegetation on a reclaimed site appears to meet the required percent revegetation standard (see Section 3.3), LOGOS may request BLM-FFO concurrence that vegetation percent cover standards have been attained any time after two calendar years of completion of earthwork and seeding. LOGOS will submit a written report identifying that revegetation standards have been attained. The BLM-FFO will reply to the operator to confirm concurrence (or not) with a rational for the determination within 60 days of receiving the request.

If the revegetation standards are not attained, LOGOS and the BLM-FFO will analyze the issues that may

have contributed to vegetation reclamation failure or lack of meaningful progress. Remedial actions will be developed in collaboration with the BLM if vegetation percent cover standards are not being attained.

## *Long-Term Monitoring*

After the required percent revegetation standard has been attained, LOGOS will begin long-term monitoring. Every fifth year after attainment, LOGOS will monitor the site at all established photo points to ensure the site remains productive and stable.

## *Final Abandonment*

Upon final abandonment, LOGOS will file for ROW Grant termination with the BLM. LOGOS would relinquish ROW Grants for the well pad and access roads. Surface disturbances within the ROW Grant areas will be returned to pre-disturbance conditions as practicable according to BLM procedure.

Ninety days prior to termination of the right-of-way the holder shall contact the Authorized Officer (AO) to arrange a joint inspection of the ROW. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. The plan will include, but is not limited to, removal of facilities, drainage structures, or surfacing material, re-contouring, top soiling or seeding. The AO must approve the plan in writing prior to the holder's commencement of any termination actions.

If, upon abandonment of wells, the retention of access road is not considered necessary for the management and multiple use of the natural resources, it will be ripped a minimum of 12" in depth. After ripping, water bars will be installed. All ripped surfaces are to be protected from vehicular travel by construction of a dead end ditch and earthen barricade at the entrance to these ripped areas. (Re- seeding of affected areas may be required).

The well will be abandoned per BLM and New Mexico Oil Conservation Division (NMOCD) regulations. This includes site preparation which may require gouging, scarifying, dozer track-walking, mulching, fertilizing, seeding and planting. Any topsoil removed during P&A operations will be respread. The disturbed areas will be seeded with the recommended BLM/FFO seed mix.

If 1 acre or more of bare soil results from earthwork required in preparation for final abandonment, LOGOS will follow the Vegetation Reclamation Plan in accordance with Procedure B of the BLM-FFO Bare Soil Reclamation Procedures (2013a).

If final abandonment or relinquishment earthwork results in less than 1 acre, but more than 0.1 acre of bare soil, LOGOS will initiate the Vegetation Reclamation Plan in accordance with Procedure A of the BLM- FFO Bare Soil Reclamation Procedures. Disturbed areas less than 0.1 acre are expected to revegetate naturally from seed sources adjacent to the disturbance (2013a).

Revegetation percent cover standards will be attained, documented, and submitted to the BLM-FFO by LOGOS, or an exception granted before the BLM-FFO will approve a final abandonment notice (FAN) or relinquishment.

## *Cessation of Monitoring*

Monitoring requirements will remain in effect as long as the permit, grant, or authorization remains in force and until all infrastructure or associated facilities are abandoned by established BLM procedure and a FAN or relinquishment is issued by the BLM-FFO. LOGOS will document that percent cover standards have been obtained when submitting a request for a FAN or a relinquishment.

# References

43 CFR Part 3160, “Onshore Oil and Gas Order No. 1; Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; approval of Operations,” 72 Federal Register 44 (March 2007), pp. 10328-10338. Available at: https://www.ecfr.gov/current/title-43/subtitle-B/chapter-II/subchapter-C/part-3160

BLM. 2013a. Farmington Field Office Bare Soil Reclamation Procedures. Available at: http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_planning/surface_use_plan_of.html.

BLM. 2013b. Updated Reclamation Goals. Available at: http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_planning/surface_use_plan_of/updated_reclamation.html

Smith, Gary. 2019. Personal Communication Regarding Surface Reclamation and Seed Mix on the Tocito Dome Project. Bureau of Land Management, Natural Resource Specialist.

State of New Mexico Oil Conservation Division (NMOCD). 2010. Pit Rule Guidance Document (v 1.0) for compliance with (19.15.17 NMAC or Part 17). December 2010. Available online: http://www.emnrd.state.nm.us/ocd/documents/201012-16DraftOCDPitRuleGuidanceDocument.pdf.

U.S. Department of the Interior, U.S. Department of Agriculture (USDI, USDA). 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. BLM/WO/ST-06/021+307/REV
07. Bureau of Land Management, Denver, Colorado. 84 pp.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at the following link: http://websoilsurvey.sc.egov.usda.gov/. Accessed December, 17th, 2021.

# *Appendix B*
# *Figures*

**Figure 1. Rosa Unit Pad 9 Development Project Topographic Map**

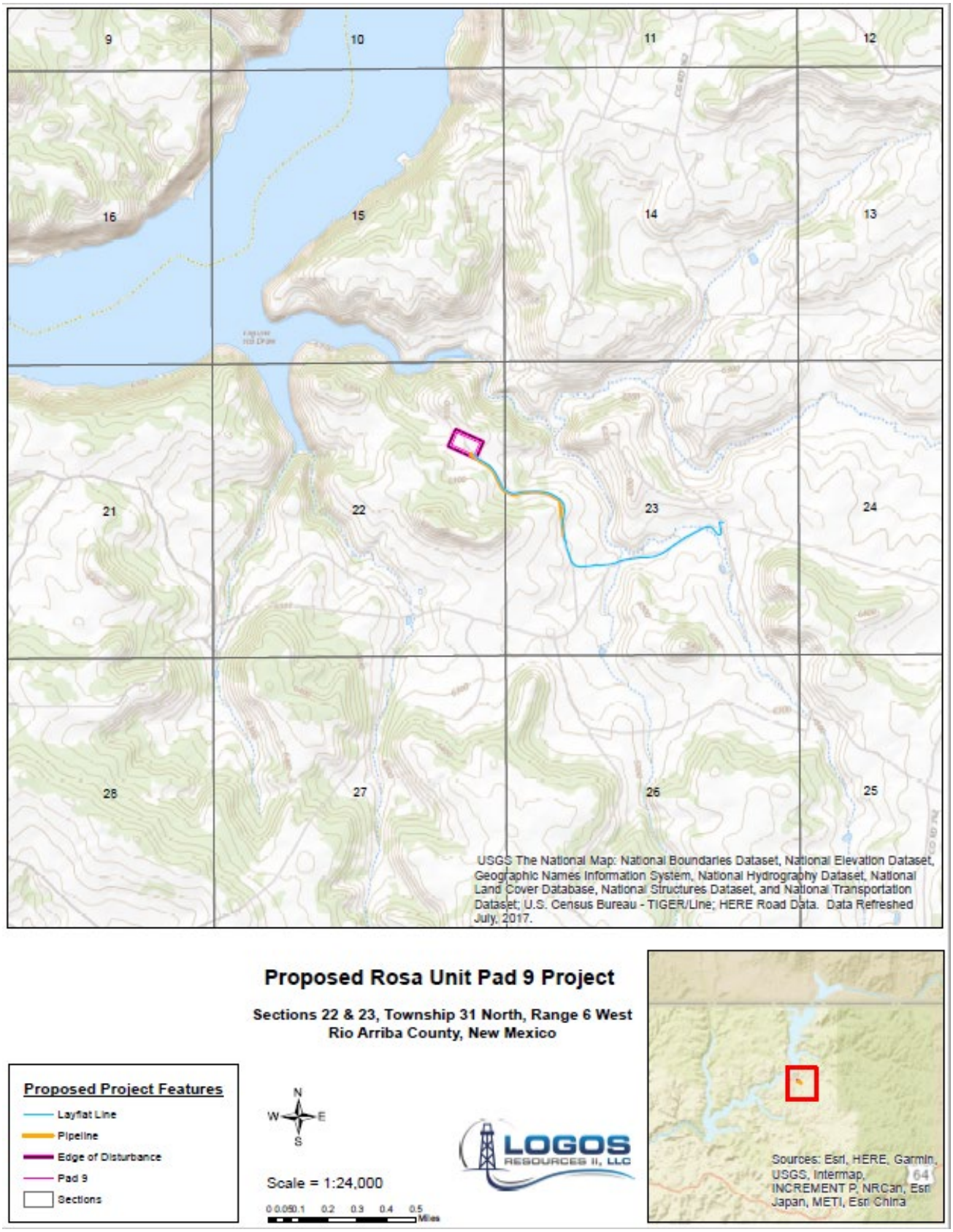


**Figure 2. Rosa Unit Pad 9 Development Project Aerial Map**

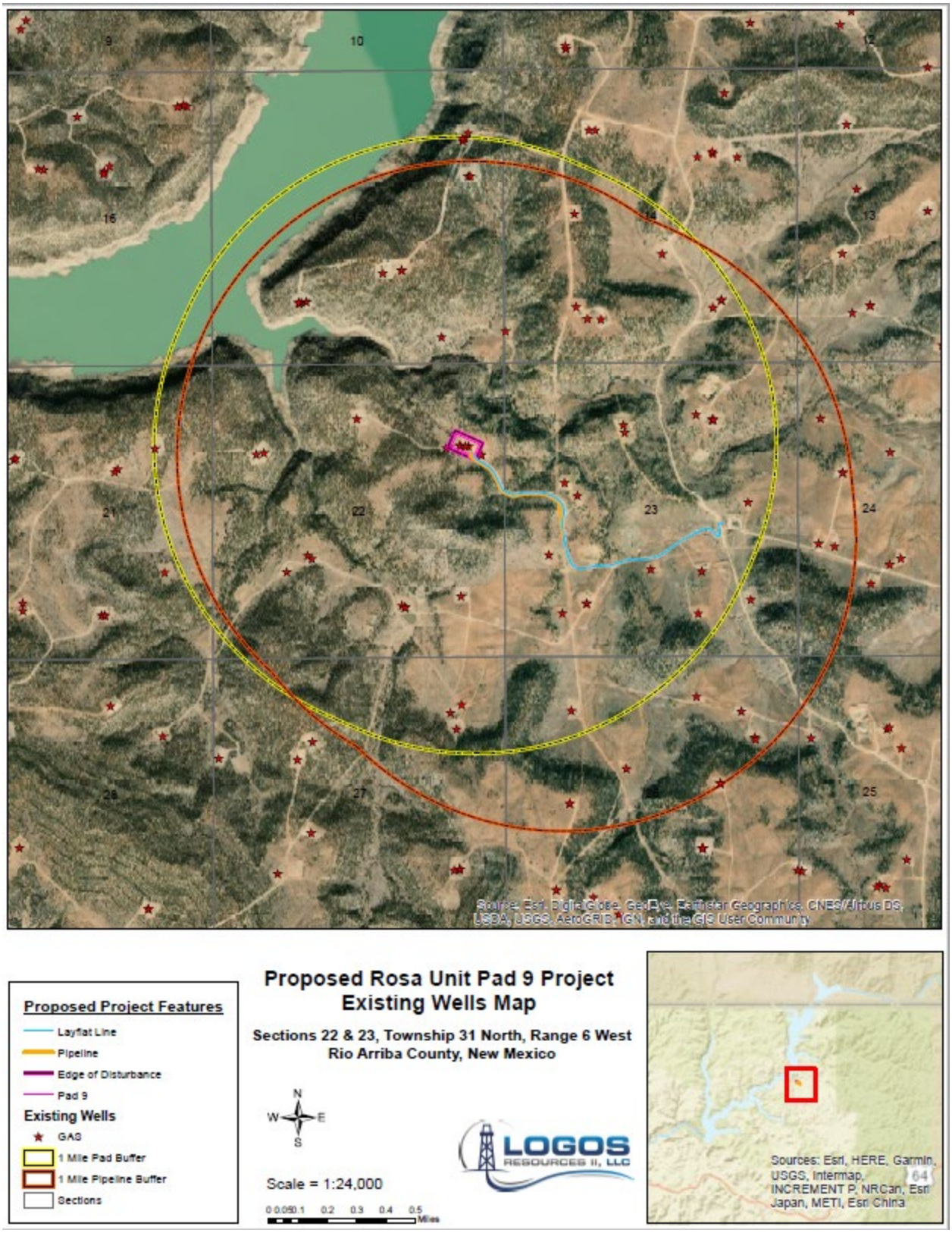


**Figure 3. Rosa Unit Pad 9 Plat**

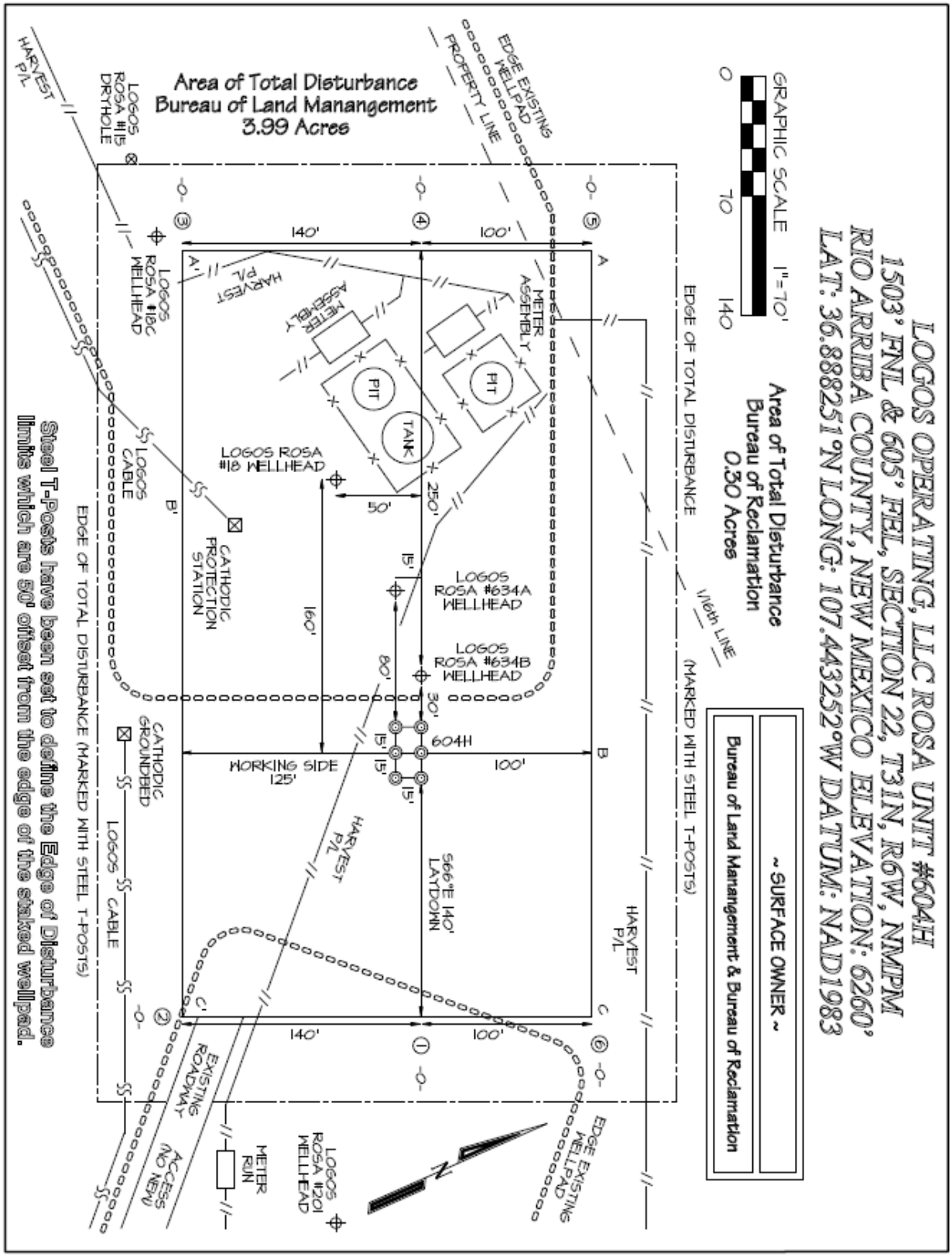


**Figure 4. Rosa Unit Pad 9 Plat – 604H C102**

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, 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 Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

[X] 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 |
|---|---|---|
| 320608 | ROSA UNIT | 604H |

| 7 OGRID No. | 8 Operator Name | 9 Elevation |
|---|---|---|
| 289408 | LOGOS OPERATING, LLC | 6260' |

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 |
|---|---|---|---|---|---|---|---|---|---|
| H | 22 | 31N | 6W | | 1503 | NORTH | 605 | EAST | 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 |
|---|---|---|---|---|---|---|---|---|---|
| D | 21 | 31N | 6W | | 378 | NORTH | 170 | WEST | RIO ARRIBA |

| 12 Dedicated Acres | | 13 Joint or Infill | 14 Consolidation Code | 15 Order No. |
|---|---|---|---|---|
| 640.00 | N/2 Section 21<br>N/2 Section 22 | | | R-13457 |

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

LAST TAKE POINT
379' FNL 170' FWL
SECTION 21, T31N, R6W
LAT: 36.891281 °N
LONG: 107.476004 °W
DATUM: NAD1927

LAT: 36.891286 °N
LONG: 107.476609 °W
DATUM: NAD1983

N84°52.1W 160.0'

FIRST PERFORATION
379' FNL 330' FWL
SECTION 21, T31N, R6W
LAT: 36.891278 °N
LONG: 107.475457 °W
DATUM: NAD1927

LAT: 36.891284 °N
LONG: 107.476062 °W
DATUM: NAD1983

N84°52.1W 9404.2'

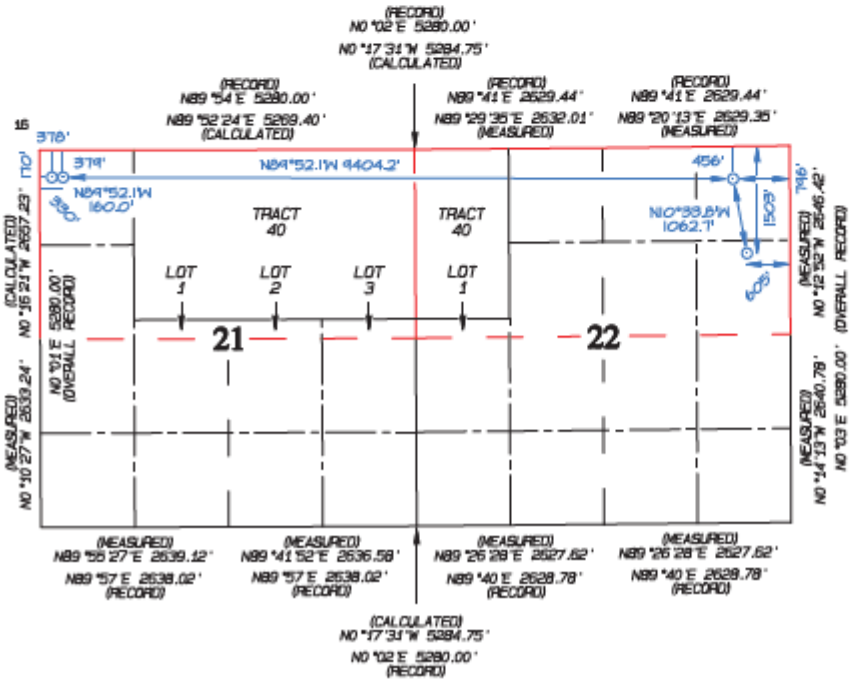
FIRST TAKE POINT
456' FNL 798' FEL
SECTION 22, T31N, R6W
LAT: 36.891117 °N
LONG: 107.443299 °W
DATUM: NAD1927

LAT: 36.891123 °N
LONG: 107.443903 °W
DATUM: NAD1983

N10°38.8W 1062.7'

SURFACE LOCATION
1503' FNL 605' FEL
SECTION 22, T31N, R6W
LAT: 36.888246 °N
LONG: 107.442648 °W
DATUM: NAD1927

LAT: 36.888251 °N
LONG: 107.443252 °W
DATUM: NAD1983




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.

Etta Trujillo — 8/8/2022
Signature — Date

Etta Trujillo
Printed Name

etrujillo@logosresourcesllc.com
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.

Date Revised: AUGUST 2, 2022
Survey Date: JANUARY 13, 2012

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

**Figure 5. Rosa Unit Pad 9 Plat – 606H C102**

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, 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 Drive
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 |
|---|---|---|
| 320608 | ROSA UNIT | 606H |
| 7 OGRID No. | 8 Operator Name | 9 Elevation |
| 289408 | LOGOS OPERATING, LLC | 6260' |

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 |
|---|---|---|---|---|---|---|---|---|---|
| H | 22 | 31N | 6W | | 1509 | NORTH | 592 | EAST | 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 |
|---|---|---|---|---|---|---|---|---|---|
| E | 21 | 31N | 6W | | 1607 | NORTH | 158 | WEST | RIO ARRIBA |

| 12 Dedicated Acres | | 13 Joint or Infill | 14 Consolidation Code | 15 Order No. |
|---|---|---|---|---|
| 640.00 | N/2 Section 21<br>N/2 Section 22 | | | R-13457 |

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

LAST TAKE POINT
1607' FNL 158' FWL
SECTION 21, T31N, R6W
LAT: 36.887907 °N
LONG: 107.476041 °W
DATUM: NAD1927

LAT: 36.887912 °N
LONG: 107.476646 °W
DATUM: NAD1983

N84°31.4'W 172.3'

FIRST PERFORATION
1609' FNL 330' FWL
SECTION 21, T31N, R6W
LAT: 36.887901 °N
LONG: 107.475452 °W
DATUM: NAD1927

LAT: 36.887907 °N
LONG: 107.476057 °W
DATUM: NAD1983

N84°31.4'W 8808.0'

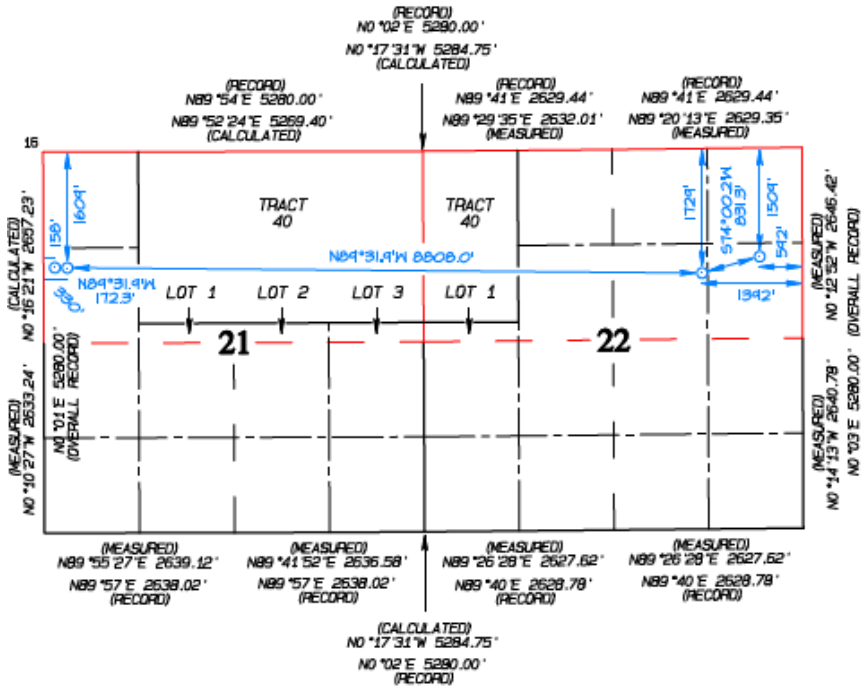
FIRST TAKE POINT
1729' FNL 1392' FEL
SECTION 22, T31N, R6W
LAT: 36.887608 °N
LONG: 107.445337 °W
DATUM: NAD1927

LAT: 36.887614 °N
LONG: 107.445941 °W
DATUM: NAD1983

S14°00.2'W 891.3'

SURFACE LOCATION
1509' FNL 592' FEL
SECTION 22, T31N, R6W
LAT: 36.888229 °N
LONG: 107.442601 °W
DATUM: NAD1927

LAT: 36.888235 °N
LONG: 107.443205 °W
DATUM: NAD1983




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.

Etta Trujillo 8/8/2022
Signature Date

Etta Trujillo
Printed Name

etrujillo@logosresourcesllc.com
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.

Date Revised: AUGUST 8, 2022
Survey Date: JANUARY 13, 2012

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

**Figure 6. Rosa Unit Pad 9 Cut and Fill Diagram**

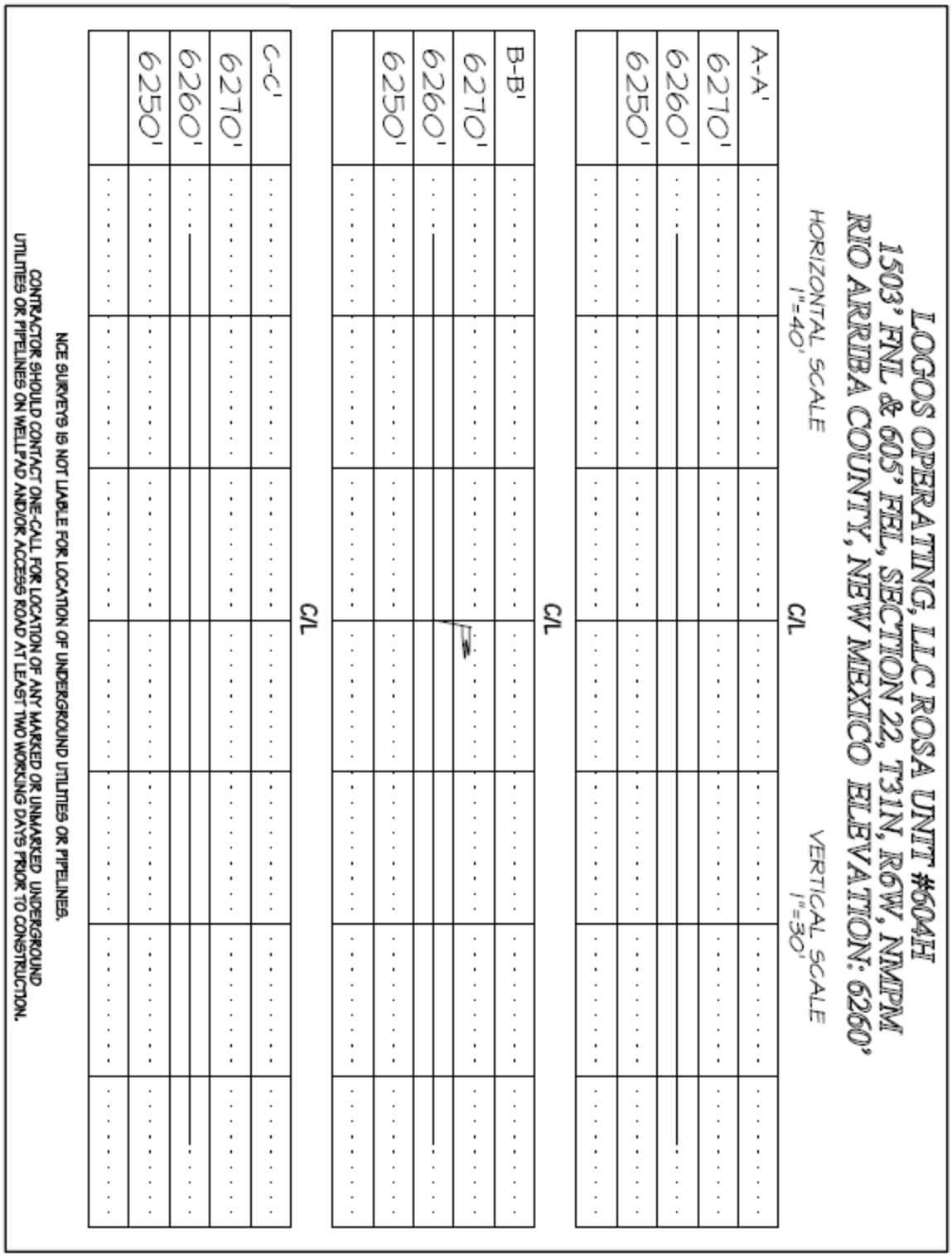


**Figure 7. Rosa Pad 9 – Gas Pipeline Route**

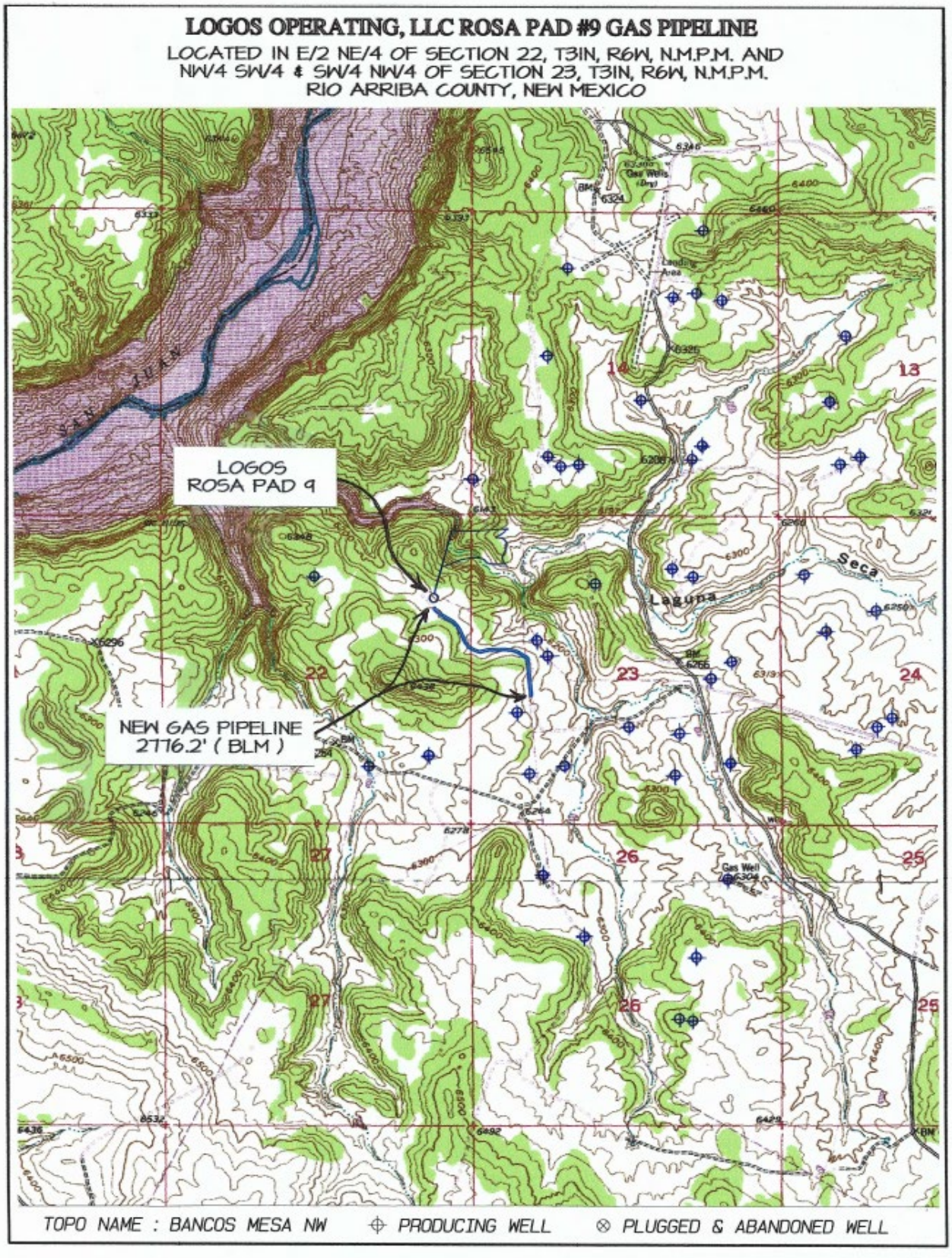


**Figure 8. Rosa Pad 9 – Waterline Route Map to Pad 9**

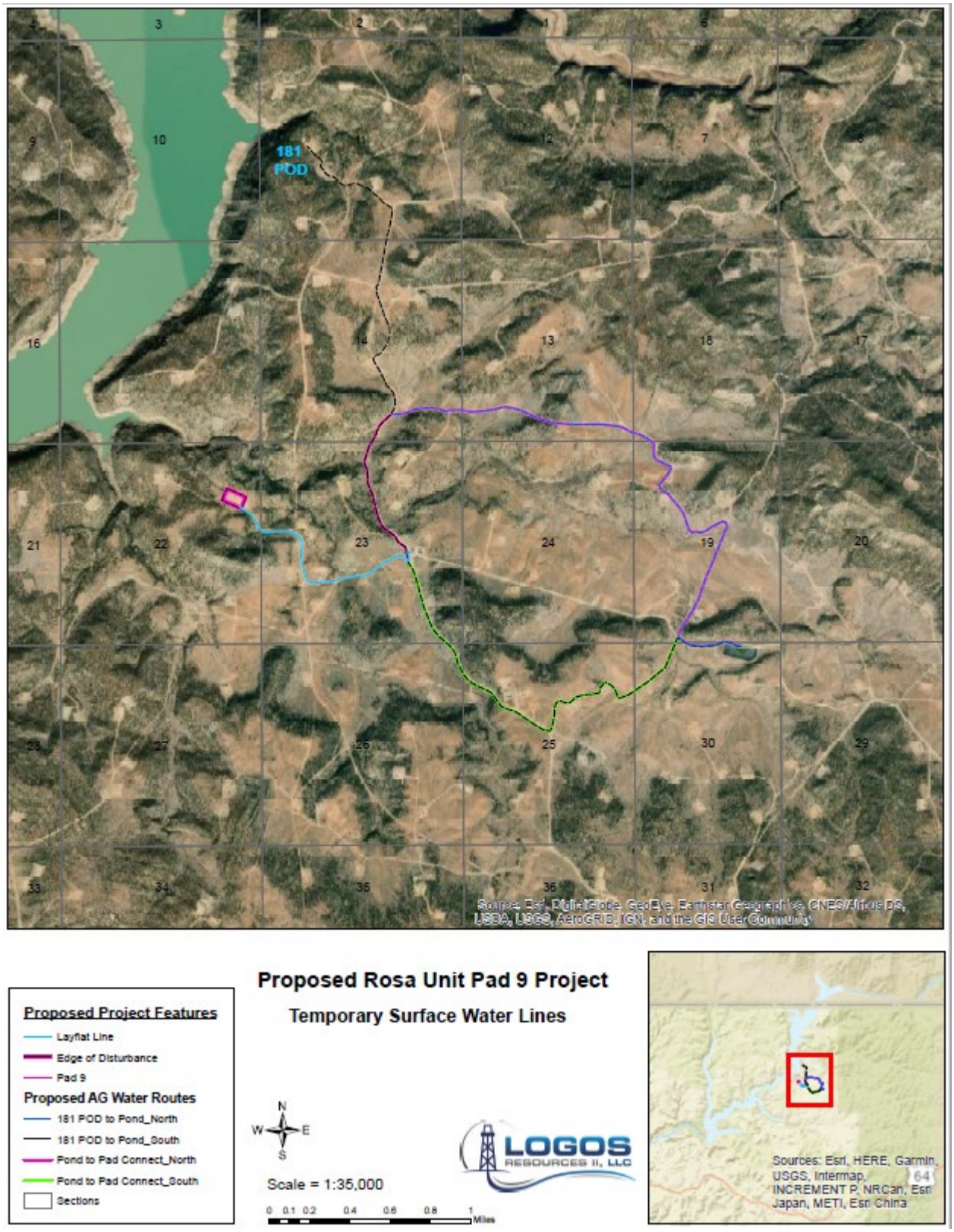
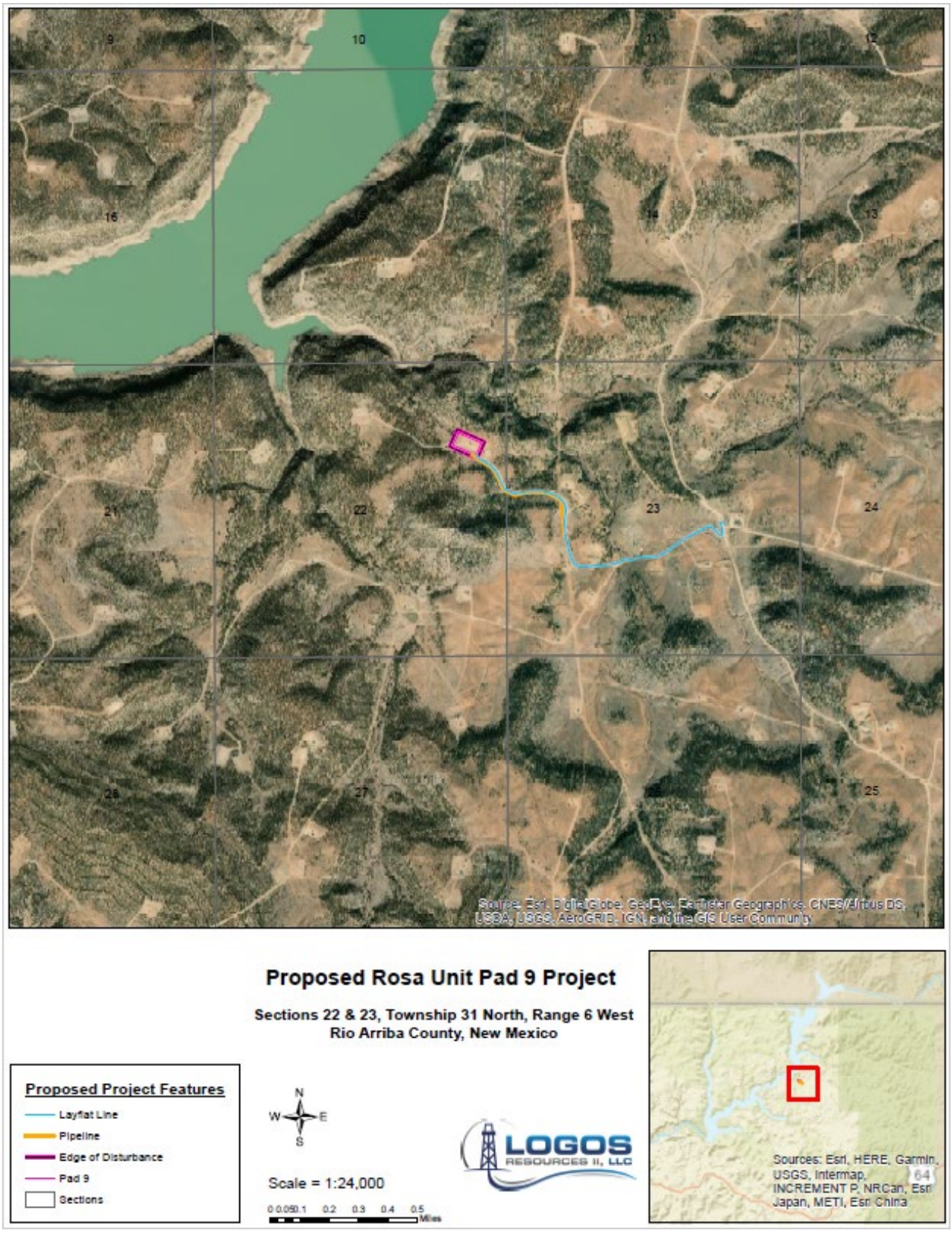
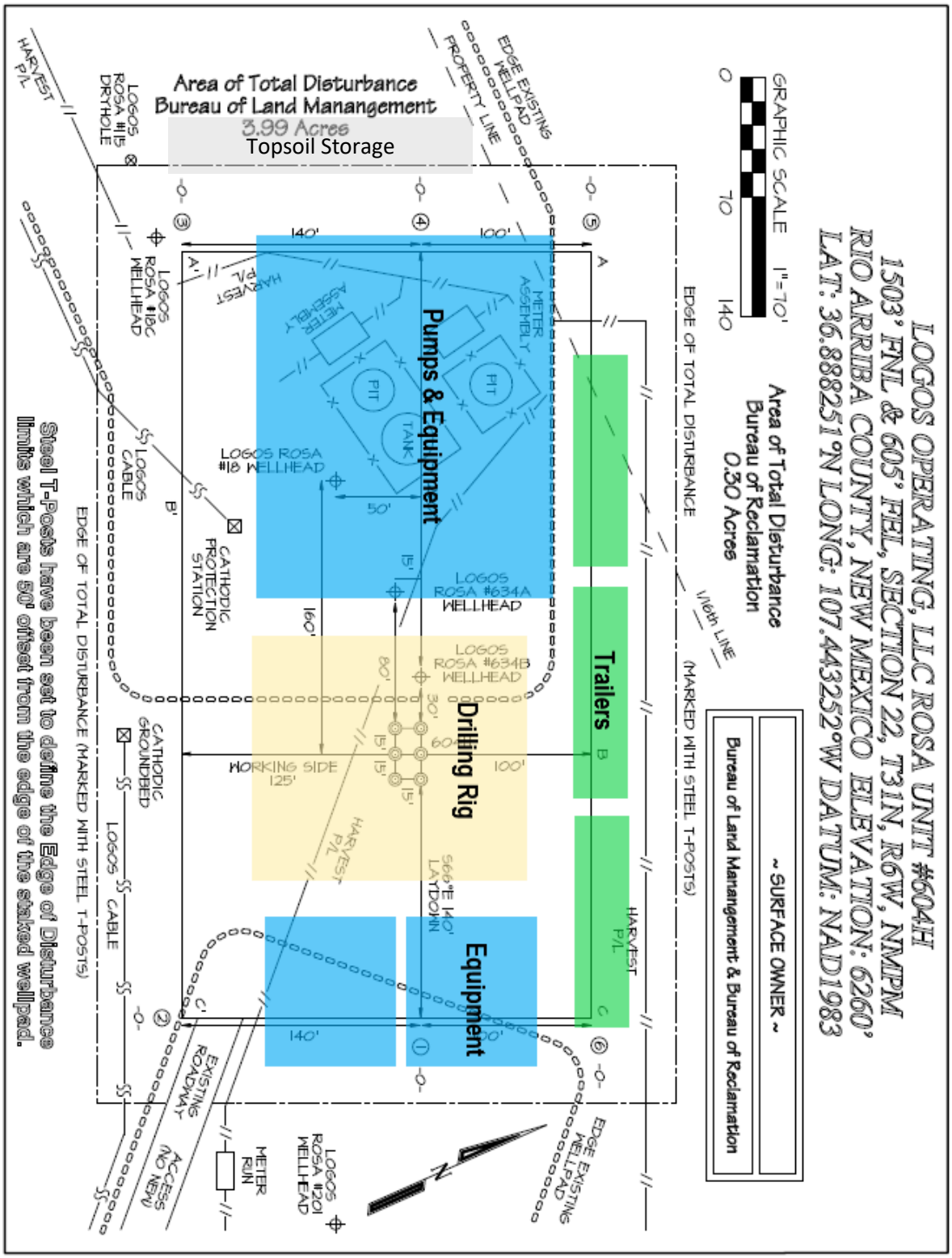


**Figure 9. Rosa Pad 9 – New Pipeline to Rosa Pad 10 with Lay flat to SWD #1**



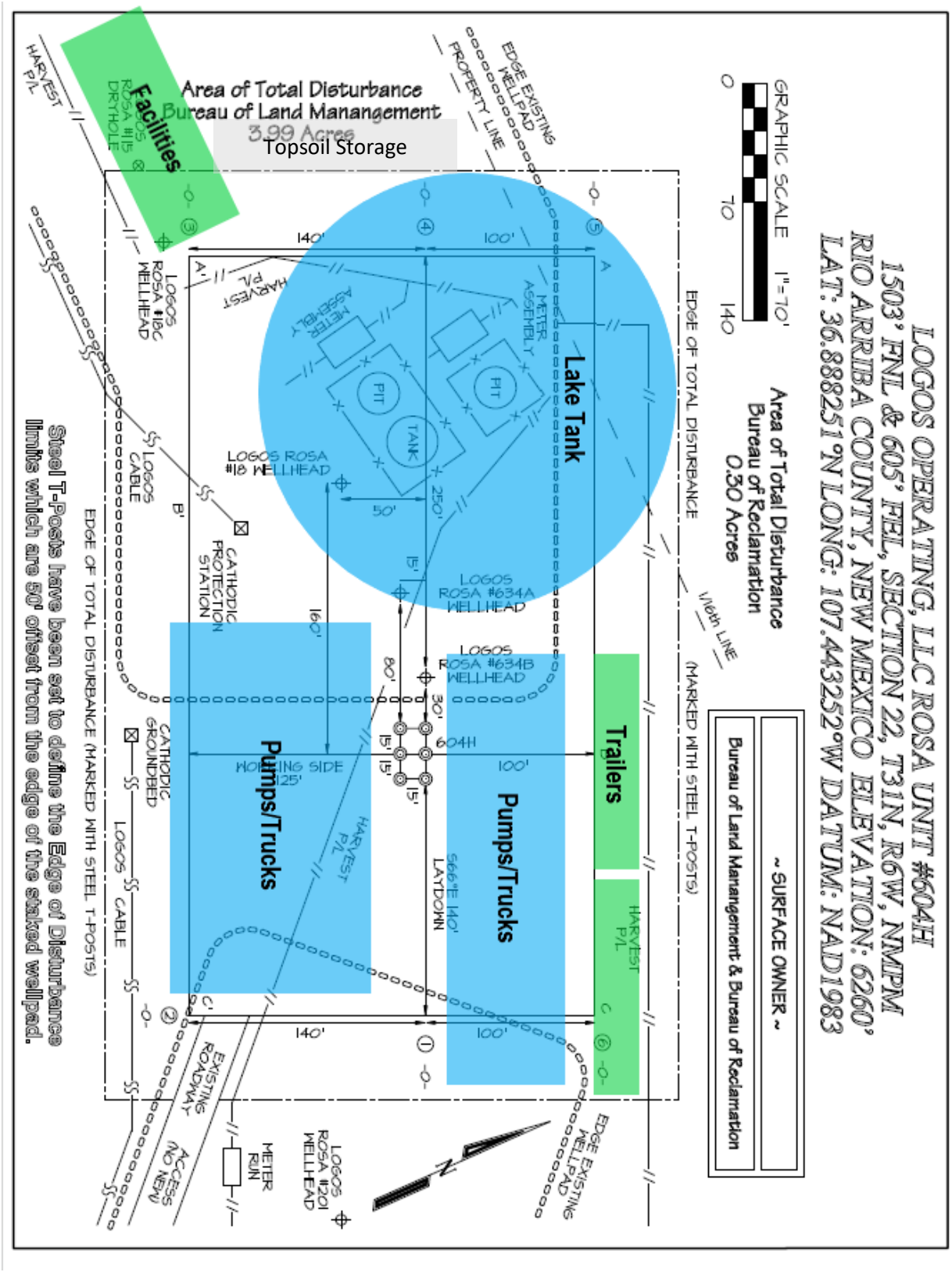

**(shown in yellow)**

**Figure 10. Drill Site** Layout **– Equipment Diagram**




Drilling Equipment layout may be modified as needed for safety reasons during operations

**Figure 11. Completions Rigs Diagram**




Completion Equipment layout may be modified as needed for safety reasons during operations

**Figure 12. Pad 9 Interim Reclamation Diagram**

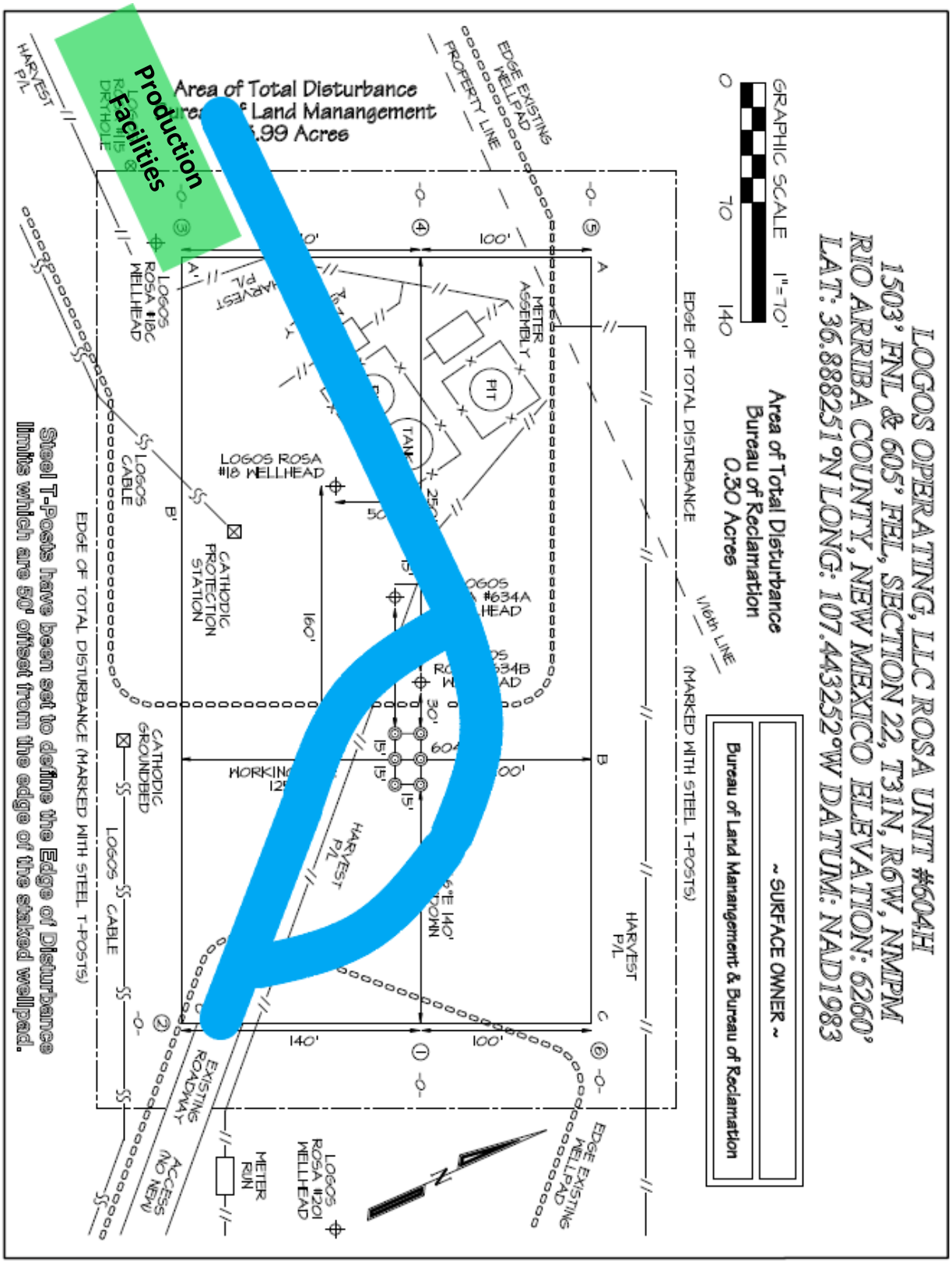


**Figure 13. Onsite Sign-In Sheet**

TODAY'S DATE: 06/07/2022

**SIGN IN SHEET FOR ONSITES**

WELL SITE:

Man Camp / Pad 9 PAD 10 PAD 25 PAD 26

| | Print Name | Signature | Company/Agency |
|---|---|---|---|
| 1 | Jaime DeMarco | 970-903-2143 | BLM |
| 2 | Ryan McBee | rmcbee@blm.gov | BLM |
| 3 | Jim E. Foreman | 970-385-6533 | BOR |
| 4 | Michael J Ryan | 505-608-1057 | DCI |
| 5 | RYAN EDWARDS | 505-486-1695 | NCE |
| 6 | Jon Talmo | 505-486-1695 | NCE |
| 7 | Robert Bixler | 505-635-1663 | LOGOS |
| 8 | Deborah V Gibson | 505-486-2616 | ACI |
| 9 | Sam Hunt | 513-562-7460 | ACI |
| 10 | Eryn Bordes | 802 881 8567 | ACI |
| 11 | Jessica Karpa | 215-622-1856 | ACI |
| 12 | Vanessa Fields | 505-320-1243 | Logos |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | | | |
| 22 | | | |
| | | | |
| | | | |

# *Road Maintenance Plan*
# *Appendix C*

# LOGOS Operating, LLC

## Road Maintenance Plan

## *Rosa Unit Pad 9 Natural Gas Well Development Project*

**Amended July 2022**

LOGOS Operating, LLC
2010 Afton Place
Farmington, New Mexico 87401
Phone: (505) 278-8720
FAX: (505) 326-6112

## 1.0 Introduction

LOGOS Operating, LLC (LOGOS) is providing this Road Maintenance Plan (Plan) to the Bureau of Land Management/Farmington Field Office (BLM/FFO) as part of the Surface Use Plan of Operations (SUPO) for the Rosa Unit Pad 9 Natural Gas Well Development Project. The road addressed in this Plan was permitted under the Application for Permit to Drill (APD) for Rosa Unit 634A & 634B wells, so no new access road is proposed with this action. The Rosa Unit 604H and 606H wells will be located on a well pad known as Rosa Unit Pad 9, along with slots for an additional 2 future natural gas wells (Rosa Unit Pad 9 Project).

The road maintenance procedures provided in this Plan meet the standards established in The Gold Book: Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development and BLM Manual 9113.

Under the Rosa Unit 604H and 606H APDs, LOGOS will be responsible for road maintenance associated with the Rosa Unit Pad 9. This responsibility will continue until LOGOS transfers the permit or abandons the project and obtains a Final Abandonment Notice or relinquishment from the BLM/FFO. Refer to Conditions of Approval (COAs) attached to the approved APD for any upgrades to existing roads.

## 2.0 Road Inspections

LOGOS Representatives will formally inspect the road biannually, in the spring and fall, to assess the condition of the road. The formal road inspection will be recorded on a Road Inspection Form (blank form attached to this Plan). Completed Road Inspection Forms will be kept on file at LOGOS and can be provided to the BLM/FFO, if requested (See Attached Road Inspection Form).

Additionally, outside of the formal inspection period, LOGOS Representatives driving to/from the project area will assess the condition of the road and notify the LOGOS Construction Supervisor if maintenance is needed.

Road maintenance activities will be documented at LOGOS and can be provided to the BLM/FFO, if requested.

## 3.0 Road Maintenance

The following maintenance may be performed on an as needed basis:

- Water control structures (such as culverts, ditches, and silt traps) and/or cattle guards may be cleaned. If this occurs, the soil/sediment material will be spread on area roads or locations.
- Bar ditches may be pulled.
- Low-water crossings and drainage dips may be cleared and/or repaired.
- Crowning may be repaired.
- Litter may be collected.

- Noxious weeds may be controlled following the BLM-FFO noxious weed guidelines.
- The access road may be bladed.

In addition to inspection-triggered maintenance procedures, the road will be maintained following this Plan, as needed.

Attachment: Road Inspection Form

# Road Inspection Form

| | |
|---|---|
| **Road Name:** | **County:** |
| **Date:** | **Time (a.m./p.m.):** |
| **Weather:** | |
| **Inspector(s):** | |
| **Road Surface Type:** | |

| Road Condition Inspection Items | Road Condition | | |
|---|---|---|---|
| | Good | Poor | Comments |
| Water-Control Structure(s) | | | |
| Low-Water Crossing(s) | | | |
| Road Crowning/Ruts/Potholes | | | |
| Road Surfacing | | | |
| Cattle guard(s) | | | |
| Litter | | | |
| Noxious Weeds Within/Adjacent to Roadway | | | |
| Vegetation Within Roadway | | | |
| Additional Site-Specific Inspection Notes: | | | |

# *Spill Response Plan*
# *Appendix D*

In accordance with Onshore Oil and Gas Order No. 1, 43 Code of Federal Regulation (CFR) 2804.12, 43 CFR 2884.11. LOGOS will comply with Federal and State regulations if a release occurs from the transfer of freshwater from any LOGOS lay flat lines. If a release occurs the Bureau of Land Management Farmington Field Office will be notified.

## 1.0 Purpose:

The aboveground stimulation and flowback lines would be installed adjacent to existing resource roads, and existing pipeline corridors. Surface waterlines will only be installed where needed, and each corridor will not contain more than two (2) 5.5-inch high-pressure, heavy walled steel pipelines and up to three (3) 12-inch (or less) heavy duty lay flat lines within at a time. Lay flat lines will only be used for freshwater transfer.

a. In areas where surface waterlines traverse a side hill or steep slope, they will be secured with metal t-posts or by other appropriate measures. All lines will be inspected daily, several times a day when in service.
b. All temporary lines would be removed following well stimulation activities.

## 2.0 Training:

Several measures are used to prevent spills. These measures can be more appropriately described as best management practices (BMPs) and are further discussed in this section.

Non-structural controls are management-based activities that are generally designed to prevent or reduce spills or pollution causing activities. These non-structural controls include:

- Procedures for handling materials and products
- Planning and notifications
- Training
- Preventative maintenance

## 3.0 Response:

LOGOS countermeasures for cleanup of a discharge are designed to ensure that areas and media affected by the spill are identified, that the health and safety of employees and the public are protected, and that the cleanup actions will protect the quality of surface and groundwater resources. They are based on:

a. Cleanup Training
    - Ensuring that personnel who may be directly involved with spill cleanup are properly trained for their tasks
    - Ensuring that Leads understand how to determine when a cleanup action is beyond their capabilities
b. Cleanup Approaches
    - Assessing the materials spilled and the nature, size, and location of the spill
    - Establishing what media have been affected (i.e., soil, water) and to what extent
    - Establishing whether the cleanup will be performed by LOGOS personnel and contractors or by an emergency-response contractor
c. Soil and Water Quality
    - Basing cleanup requirements on applicable soil and water-quality regulations

In the event a release occurs from a lay flat line LOGOS will immediately stop the release by berming, and or diking the release to prevent further runoff.

## 4.0 Method of Disposal:

If it is determined that the recovered material is needed to be disposed of LOGOS will dispose of the impacted material at NMOCD approved Land farm, such as the Envirotech Land farm.

## 5.0 Contacts:

LOGOS shall have at least one person (usually the Operations Manager) either in the area or on-call (and available to respond to an emergency). This person will be responsible for coordinating emergency response measures.

| | **Primary Contact (Qualified Individual)** | **Alternate Contact (Qualified Individuals)** |
|---|---|---|
| ***Name:*** | Robert (Duane) Bixler | Eydel Sigala<br>Bryan Lovato<br>Tyler Smith<br>Jason Meechan |
| ***Title:*** | General Manager of Operations | Operations Manager |
| ***Work Address:*** | 2010 Afton Place<br>Farmington, NM 87401 | 2010 Afton Place<br>Farmington, NM 87401 |
| ***Emergency Phone (24 hour):*** | 866-598-6220 | 866-598-6220 |
| ***Direct Contact:*** | Duane Bixler- 505-635-1663 | Eydel Sigala- 505-360-0125<br>Bryan Lovato- 505-320-6909<br>Tyler Smith- 505-330-3892<br>Jason Meechan- 505-486-2612 |

**Conditions of Approval**

| | |
|---|---|
| **Operator:** | Logos Operating, LLC |
| **Well Name:** | Rosa Unit Pad 9 (Rosa Unit 604H & 606H) |
| **Legal Location:** | Twn 31N, Rng 06W, Sec 22 |
| **NEPA Log Number:** | DOI-BLM-NM-F010-2023-0022-EA |
| **Inspection Date:** | June 7, 2022 |
| **Lease Number:** | NMSF078766 |

The following conditions of approval will apply to Logos Operating, LLC's Rosa Unit Pads 9 and 10 Natural Gas Wells Project well pads, access roads and other associated facilities, unless a particular Surface Managing Agency or private surface owner has supplied to Bureau of Land Management and the operator a contradictory environmental stipulation. The failure of the operator to comply with these requirements may result in an assessment or civil penalties pursuant to 43 CFR 3163.1 or 3163.2.

**Disclaimers:** BLM's approval of the APD does not relieve the lessee and operator from obtaining any other authorizations that may be required by the BIA, Navajo Tribe, State or other jurisdictional entities.

**Copy of Plans:** A complete copy of the APD package, including: Surface Use Plan of Operations, Bare Soil Reclamation Plan, Plan of Development (if required), Conditions of Approval, Cultural Resource Record of Review, Cultural Resources Compliance Form (if required), and Project Stipulations (if required) shall be at the project area at all times and available to all persons.

**Review of NEPA documents:** It is the responsibility of the operator to follow all the design features, best management practices, and mitigation measures as contained in Environmental Assessment DOI-BLM-NM-F010-2023-0022-EA. Copies of the EA, Decision Record, and Finding of No Significant Impact may be obtained from the BLM FFO public room, or online at: EplanningUi (blm.gov).

**Best Management Practices (BMPs)**: Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of well site pads, access roads, pipeline ties, facility placement or any other surface disturbing activity associated with this project. Bureau wide standard BMP's are found in the Gold Book, Fourth Edition-Revised 2007 and at http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices.html. Farmington Field Office BMP's are integrated into the Environmental Assessment, Surface Use Plan of Operations, Bare Soil Reclamation Plan, and COAs.

**Construction, Production, Facilities, Reclamation & Maintenance**

**Construction & Reclamation Notification:** The operator or their contractor will contact the Bureau of Land Management, Farmington Field Office Environmental Protection Staff at (505) 564-7600 or by email, at least 48 hours prior to any construction or reclamation on this project.

**Production Facilities:** Design and layout of facilities will be deferred until an onsite with BLM-FFO surface protection staff is conducted to determine the best location. Logos or their contractor will contact the Bureau of Land Management, Farmington Field Office, Surface and Environmental Protection Staff to schedule a facility layout onsite.

**Staking:** The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with

the plan of development. If stakes are disturbed, they shall be replaced before proceeding with construction.

**Weather:** No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 6 inches deep, the soil shall be deemed too wet.

**Stockpile of Soil:** The top 6 inches of soil material will be stripped and stockpiled in the construction zones around the pad [construction zones may be restricted or deleted to provide resource avoidance]. The stockpiled soil will be free of brush and tree limbs, trunks, and roots. The stockpiled soil material will be spread on the reclaimed portions of the pad [including the reserve pit, cut and fill slopes] prior to re-seeding. Spreading shall not be done when the ground or topsoil is frozen or wet.

**Storage Tanks:** All open top permanent production or storage tanks regardless of diameter made of fiberglass, steel, or other material used for the containment of oil, condensate, produced water and or other production waste shall be screened, netted, or otherwise covered to protect migratory birds and other wildlife from access.

**Compressors:** Compressor units on this well location not equipped with a drip pan for containment of fluids shall be lined with an impervious material at least 8 mils thick and a 12-inch berm. The compressor will be painted to match the well facilities. Any variance to this will be approved by the Authorized Officer (AO).

**Culverts:** Silt Traps/Bell Holes will be built upstream of all culvert locations.

**Driving Surface Area:** All activities associated within the construction, operation, maintenance, and abandonment of the well location is limited to areas approved in the APD or ROW permit. During the production of the well, vehicular traffic is limited to the daily driving surface area established during interim reclamation construction operations. This area typically forms a keyhole or teardrop driving surface from which all production facilities may be serviced or inspected. A v-type ditch will be constructed on the outside of the driving surface to further define the driving surface and to deter vehicular traffic from entering onto the interim reclamation areas.

**Contouring of Cut and Fill Slopes:** The interim cut and fill slope grade shall be as close to the original contour as possible. To obtain this ratio, pits and slopes shall be back sloped into the pad during interim reclamation. Only subsurface soil and material shall be utilized in the contouring of the cut and fill slopes. Under no circumstances shall topsoil be utilized as substrate material for contouring of cut and fill slopes.

**Maintenance:** In order to perform subsequent well operations, right-of-way (ROW) operations, or install new/additional equipment, it may be necessary to drive, park, and operate on restored, interim vegetation within the previously disturbed area. This is generally acceptable provided damage is promptly repaired and reclaimed following use. Where vehicular travel has occurred as a “convenience” and interim reclamation/vegetation has been compromised, immediate remediation of the affected areas is required. Additionally, where erosion has occurred and compromised the reclamation of the well location, the affected area must be promptly remediated so that future erosion is prevented, and the landform is stabilized.

**Layflat Lines:** Layflat lines used for development of the wells may be on the ground for a maximum of 6 months and shall be retrieved immediately following completion operations. If the layflat lines are needed for longer than 6 months a Sundry NOI shall be submitted to the BLM FFO for review and decision that includes a rationale for the time extension.

**Noxious Weeds**

Inventory the proposed site for the presence of noxious and invasive weeds. Noxious weeds are those listed on the New Mexico Noxious Weed List and USDA's Federal Noxious Weed List. The New Mexico Noxious Weed List or USDA's Noxious Weed List can be updated at any time and should be regularly check for any changes. Invasive species may or may not be listed as a noxious weed but have been identified to likely cause economic or environmental harm or harm to human health. The following noxious weeds have been identified as occurring on lands within the boundaries of the Farmington Field Office (FFO). There are numerous invasive species on the FFO such as Russian thistle (*Salsola spp.)* and field bindweed (*Convolvulus arvensis*).

| | |
|---|---|
| Russian Knapweed (*Centaurea repens*) | Musk Thistle (*Carduss nutans*) |
| Bull Thistle (*Cirsium vulgare*) | Canada Thistle (*Cirsium arvense*) |
| Scotch Thistle (*Onopordum acanthium)* | Hoary Cress (*Cardaria draba*) |
| Perennial Pepperweed (*Lepdium latiofolfium*) | Halogeton (*Halogeton glomeratus*) |
| Spotted Knapweed (*Centaurea maculosa*) | Dalmation Toadflax (*Linaria genistifolia*) |
| Yellow Toadflax (*Linaria vulgaris*) | Camelthorn (*Alhagi pseudalhagi*) |
| African Rue (*Penganum harmala*) | Salt Cedar (*Tamarix spp*.) |
| Diffuse Knapweed (*Centaurea diffusa*) | Leafy Spurge (*Euphorbia esula*) |

a. Identified weeds will be treated prior to new surface disturbance if determined by the FFO Noxious Weed Coordinator. A Pesticide Use Proposal (PUP) must be submitted to and approved by the FFO Noxious Weed Coordinator prior to application of pesticide. The FFO Noxious Weeds Coordinator (505-564-7600) can provide assistance in the development of the PUP.

b. Vehicles and equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.

c. Fill dirt or gravel may be needed for excavation, road construction/repair, or for spill remediation. If fill dirt or gravel will be required, the source shall be noxious weed free and approved by the FFO Noxious Weed Coordinator.

d. The site shall be monitored for the life of the project for the presence of noxious weeds (includes maintenance and construction activities). If weeds are found the FFO Coordinator shall be notified at (505) 564-7600 and provided with a Weed Management Plan and if necessary, a Pesticide Use Proposal (PUP). The FFO Coordinator can provide assistance developing the Weed Management Plan and/or the Pesticide Use Proposal.

e. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. Logos' weed-control contractor would contact the BLM-FFO prior to using these chemicals.

f. Noxious/invasive weed treatments must be reported to the FFO Noxious Weed Coordinator. A Pesticide Use Report (PUR) is required to report any mechanical, chemical, biological, or cultural treatments used to eradicate, and/or control noxious or invasive species. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.

**Bare ground vegetation trim-out:** If bare ground vegetation treatment (trim-out) is desired around facility structures, the operator will submit a bare ground/trim-out design included in their Surface Use Plan of Operations (SUPO). The design will address vegetation safety concerns of the operator and BLM while minimizing impacts to interim reclamation efforts. The design must include what structures to be treated and buffer distances of trim-out. Pesticide use for vegetation control around anchor structures is not approved. If pesticides are used for bare ground trim-out, the trim-out will not exceed three feet from the edge of any eligible permanent structure (i.e., well heads, fences, tanks). Additional distance/areas may be requested and must be approved by the FFO authorized officer. The additional information below must also be provided to the FFO:

a. Pesticide use for trim out will require a Pesticide Use Proposal (PUP). A PUP is required ***prior*** to any treatment and must be approved by the FFO Noxious Weed Coordinator. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. Logos' weed-control contractor would contact the BLM-FFO prior to using these chemicals and provide Pesticide Use Reports (PURs) post treatment.

b. A Pesticide Use Report (PUR) or a Biological Use Report (BUR) is required to report any chemical, or biological treatments used to eradicate, or control vegetation on site. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.

**Paleontology**

Any paleontological resource discovered by the Operator, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant scientific values. The Holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the Holder.

**Wildlife**

**Migratory Bird:** The BLM/FFO migratory bird policy requires a bird nest survey between May 15-July 31 for any projects that would remove 4.0 or more acres or vegetation. The proposed project is estimated to disturb more than four acres of vegetation, a survey will be required.

**Threatened, Endangered or Sensitive Species:** If, in operations the operator/holder discovers any Threatened, Endangered or Sensitive species, work in the vicinity of the discovery will be suspended and the discovery promptly reported to the Bureau of Land Management T&E specialist @ (505) 564-7600. The Bureau of Land Management will then specify what action is to be taken. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with The Endangered Species Act (as amended).

**Nesting:** If a bird nest containing eggs or young is encountered in the path of construction the operator will cease construction and consult with BLM to determine appropriate actions.

**Soil, Air, Water**

**Land Farming:** No excavation, remediation or closure activities will be authorized without prior approval, on any federal or Indian mineral estate, federal surface, or federal ROW. A Sundry Notice (DOI, BLM Form 3160-5) must be submitted with an explanation of the remediation or closure plan for on-lease actions.

**Emission Control Standard:** Compressor engines 300 horsepower or less used during well production must be rated by the manufacturer as emitting NOx at 2 grams per horsepower hour or less to comply with the New Mexico Environmental Department, Air Quality Bureau's guidance.

**Waste Disposal:** All fluids (i.e., scrubber cleaners) used during washing of production equipment, including compressors, will be properly disposed of to avoid ground contamination, or hazard to livestock or wildlife.

**Cultural Resources**

**Non-Permitted Disturbance:** Construction, construction maintenance or any other activity outside the areas permitted by the APD will require additional approval and may require a new cultural survey and clearance.

**Employee Education:** All employees of the project, including the Project Sponsor and its contractors and sub-contractors will be informed and educated that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment. This includes personnel associated with construction, use, maintenance, and abandonment of the well pad, well facilities, access, and pipeline. They will also be notified that it is illegal to collect, damage, or disturb historic or prehistoric cultural resources, and that such activities are punishable by criminal and or administrative penalties under the provisions of the ARPA (16 U.S.C. 470aa-mm), NAGPRA (25 U.S.C. 3001-3013), and other laws, as applicable (for example, NM Stat. § 18-6-9 through § 18-6-11.2, as amended, and NM Stat. § 30-12-12, as amended).

**Discovery of Cultural Resources in the Presence or Absence of Monitoring:** If any previously unidentified historic or prehistoric cultural resources are discovered during construction or project operations, work in the vicinity of the discovery will be suspended and the discovery will promptly be reported to the BLM Field Manager.

**Damage to Sites:** If, in its operations, operator/holder damages, or is found to have damaged any previously documented or undocumented historic or prehistoric cultural resources, excluding "discoveries" as noted above, the operator/holder agrees at his/her expense to have a permitted cultural resources consultant prepare a BLM approved damage assessment and/or data recovery plan. The operator/holder agrees at his/her expense to implement a **mitigation** that the agency finds appropriate given the significance of the site, which the agency determines in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property. **This mitigation may** entail execution of the data recovery plan by a permitted cultural resources consultant and/or alternative mitigations. Damage to cultural resources may result in **civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, the Native American Graves Protection and Repatriation Act (NAGRPA) of 1990, as amended, and other applicable laws.**

**See below for Cultural Resource Records of Review with no additional cultural stipulations.**

BLM Report Number: 2023(II)007F
USGS Map: Bancos Mesa NW, NM
Activity Code: 1310
NMCRIS No: 151281

# CULTURAL RESOURCE RECORD OF REVIEW

BUREAU OF LAND MANAGEMENT
FARMINGTON FIELD OFFICE

**1. Description of Report/Project:**
Project Name: Rosa 604H Well Pad and Pipeline.
Project Sponsor: Logos Resources II, LLC.
Arch. Firm & Report No.: Adkins Consulting, Inc.; Adkins Report No. ACI(F)15b.
Location: T31N R6W Sections 22, & 23.
Well Footages: See Plats
Split Estate: Yes
Project Dimensions: 240 ft x 450 ft – well pad (340 ft x 550 ft w/ a 50 ft construction zone).
2,776 ft x 40 ft – pipeline.

Sites Located: None.

Determination: No Effect to Historic Properties.
**2. Field Check:** none.
**3. Cultural ACEC:** No.
**4. Sensitive Cultural Area:** No.
**5. Recommendation:** *PROCEED WITH ACTION:* X *STIPULATIONS ATTACHED*: __
**6. Reviewer /Archaeologist:** Kim Adams **Date**: 2/17/2023

| Report Summary | BLM | Other | Total |
|---|---|---|---|
| Acres Inventoried | 17.39 | 0.83 | 18.22 |
| Sites Recorded | 0 | 0 | 0 |
| Prev. Recorded Sites | 0 | 0 | 0 |
| Sites Avoided | 0 | 0 | 0 |
| Sites Treated | 0 | 0 | 0 |

**Discovery of Cultural Resources in the Presence or Absence of Monitoring: If any previously unidentified historic or prehistoric cultural resources are discovered during construction or project operations, work in the vicinity of the discovery will be suspended and the discovery will promptly be reported to the BLM Field Manager.**
**Note:** If there are questions about these stipulations, contact Kim Adams (BLM) at 505.564.7683 or kadams@blm.gov.




**Approval Date: 09/19/2023**

BLM Report Number: 2023(I)017F
USGS Map: Bancos Mesa NW, NM
Activity Code: 1430
NMCRIS No: 150924

# CULTURAL RESOURCE RECORD OF REVIEW

BUREAU OF LAND MANAGEMENT
FARMINGTON FIELD OFFICE

**1. Description of Report/Project:**
Project Name: Rosa 604H Well Pad Layflat Waterline.
Project Sponsor: Logos Resources II, LLC.
Arch. Firm & Report No.: Adkins Consulting, Inc; Adkins Report No. ACI(F)015b.
Location: T31N R6W Sections 22, & 23.

Well Footages: N/A
Split Estate: No
Project Dimensions: 6,337 ft x 40 ft – layflat waterline.

Sites Located: None.
Determination: No Effect to Historic Properties.

**2. Field Check:** none.
**3. Cultural ACEC:** No.
**4. Sensitive Cultural Area:** No.
**5. Recommendation:** *PROCEED WITH ACTION:* X *STIPULATIONS ATTACHED*: __
**6. Reviewer /Archaeologist:** Kim Adams **Date**: 1/26/2023

| Report Summary | BLM | Other | Total |
|---|---|---|---|
| Acres Inventoried | 35.4 | 0.00 | 35.4 |
| Sites Recorded | 0 | 0 | 0 |
| Prev. Recorded Sites | 0 | 0 | 0 |
| Sites Avoided | 0 | 0 | 0 |
| Sites Treated | 0 | 0 | 0 |

**Discovery of Cultural Resources in the Presence or Absence of Monitoring: If any previously unidentified historic or prehistoric cultural resources are discovered during construction or project operations, work in the vicinity of the discovery will be suspended and the discovery will promptly be reported to the BLM Field Manager.**

**Note:** If there are questions about these stipulations, contact Kim Adams (BLM) at 505.564.7683 or kadams@blm.gov.




**Approval Date: 09/19/2023**

**District I**
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
**District II**
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
**District III**
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
**District IV**
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 267666

## CONDITIONS

| | |
|---|---|
| Operator:<br>LOGOS OPERATING, LLC<br>2010 Afton Place<br>Farmington, NM 87401 | OGRID:<br>289408 |
| | Action Number:<br>267666 |
| | Action Type:<br>[C-101] BLM - Federal/Indian Land Lease (Form 3160-3) |

**CONDITIONS**

| Created By | Condition | Condition Date |
|---|---|---|
| ward.rikala | Notify OCD 24 hours prior to casing & cement | 9/25/2023 |
| ward.rikala | Will require a File As Drilled C-102 and a Directional Survey with the C-104 | 9/25/2023 |
| ward.rikala | Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string | 9/25/2023 |
| ward.rikala | Cement is required to circulate on both surface and intermediate1 strings of casing | 9/25/2023 |
| ward.rikala | Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system | 9/25/2023 |