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.: NMNM013233

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.:

8. Lease Name and Well No.: GOONCH FED COM 0409 226H

2. Name of Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

9. API Well No.: 30 015 48149

3a. Address: 1001 West Wilshire Boulevard Suite 206, Oklahoma City, (

3b. Phone No. *(include area code)*: (405) 404-0414

10. Field and Pool, or Exploratory: Purple Sage/Wolfcamp

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

At surface: LOT 2 / 433 FNL / 1363 FEL / LAT 32.3407251 / LONG -104.0882654

At proposed prod. zone: SWSE / 130 FSL / 2310 FEL / LAT 32.312966 / LONG -104.0914042

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 4/T23S/R28E/NMP

14. Distance in miles and direction from nearest town or post office*: 4 miles

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 433 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 640.45

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 20 feet

19. Proposed Depth: 9759 feet / 20107 feet

20. BLM/BIA Bond No. in file: FED: NMB001536

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3036 feet

22. Approximate date work will start*: 04/01/2020

23. Estimated duration: 90 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)	BRIAN WOOD / Ph: (405) 404-0414	02/04/2020

Title: President

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575) 234-5959	04/16/2021

Title	Office
Assistant Field Manager Lands & Minerals	Carlsbad 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: 04/16/2021

Entered KMS - NMOCD

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 Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015- 48149	98220	PURPLE SAGE; WOLFCAMP (GAS)

[4] Property Code	[5] Property Name	[6] Well Number
	GOONCH FED COM 0409	226H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372920	NOVO OIL & GAS NORTHERN DELAWARE, LLC	3036.0

[10] Surface Location

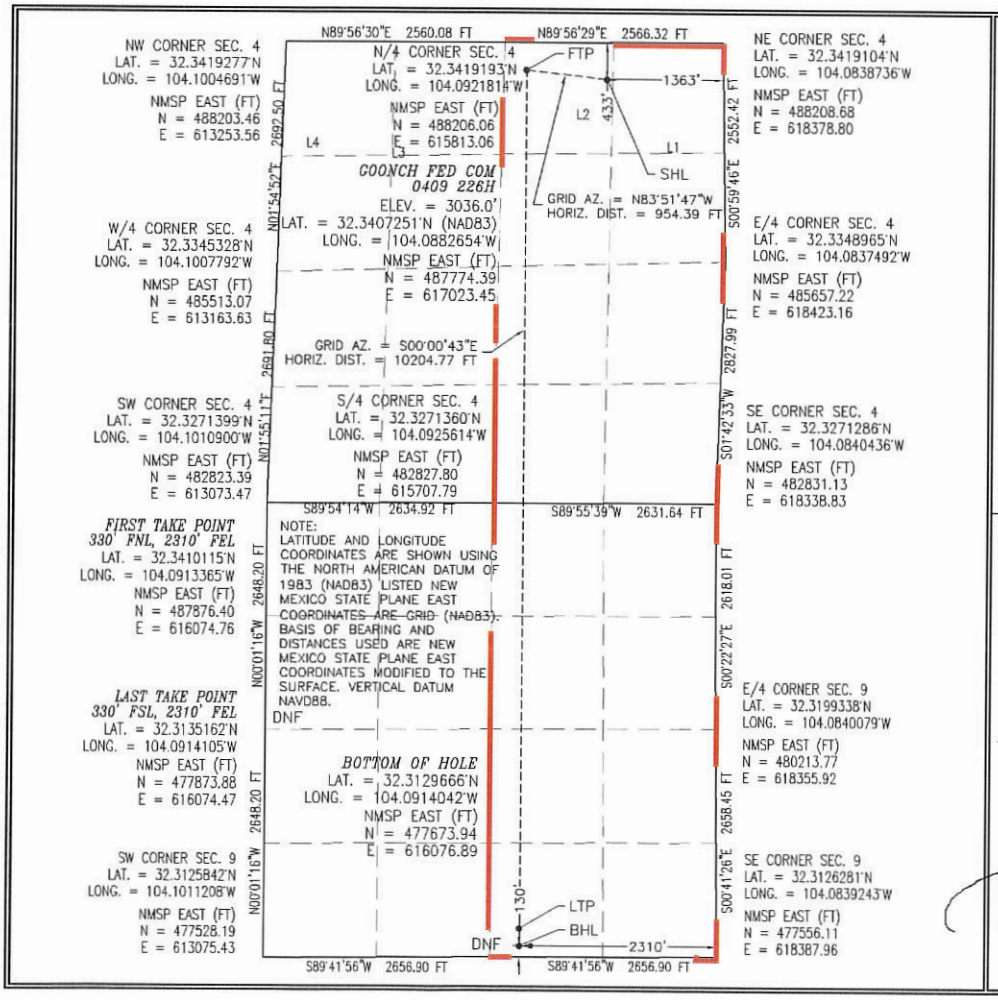
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
2	4	23 S	28 E		433	NORTH	1363	EAST	EDDY

[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
O	9	23 S	28 E		130	SOUTH	2310	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
640.45		C	

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



[17] OPERATOR CERTIFICATION

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

2-2-20

Signature Date

BRIAN WOOD

Printed Name

brian@permitswest.com

E-mail Address

(505) 466-8120

[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.

SEPTEMBER 13, 2019

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: ALLEMON F. JARAMILLO PLS 12797

NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

ALLEMON F. JARAMILLO NO. 7271B

Intent YES As Drilled

API #

Operator Name:	Property Name:	Well Number
NOVO OIL & GAS NORTHERN DELAWARE, LLC	GOONCH FED COM 0409	226H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	4	23S	28E	2	433	NORTH	1363	EAST	EDDY

Latitude	Longitude	NAD
32.3407251	104.0882654	83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	4	23S	28E	2	330	NORTH	2310	EAST	EDDY

Latitude	Longitude	NAD
32.3410115	104.0913365	83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
O	9	23S	28E		330	SOUTH	2310	EAST	EDDY

Latitude	Longitude	NAD
32.3135162	104.0914105	83

Is this well the defining well for the Horizontal Spacing Unit? NO

Is this well an infill well? YES

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #
30-015-46608

Operator Name:	Property Name:	Well Number
Novo Oil & Gas Northern Delaware, LLC	Goonch Fed Com 0409	214H

KZ 06/29/2018

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

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Submit Original to Appropriate District Office

GAS CAPTURE PLAN

Date: 2/2/2020

X Original Operator & OGRID No.: Novo Oil & Gas Northern Delaware, LLC (372920)
□ Amended - Reason for Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: A C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule 19.15.18.12.A

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Goonch Fed Com 04 135H	30-015-	B-4-23S-28E	592 FNL & 1494 FEL	200	30 days	Time depends on well clean up
Goonch Fed Com 0409 136H	30-015-	B-4-23S-28E	464 FNL & 1338 FEL	400	30 days	Time depends on well clean up
Goonch Fed Com 04 215H	30-015-	B-4-23S-28E	577 FNL & 1506 FEL	2000	30 days	Time depends on well clean up
Goonch Fed Com 04 235H	30-015-	B-4-23S-28E	546 FNL & 1531 FEL	2000	30 days	Time depends on well clean up
Goonch Fed Com 0409 216H	30-015-	B-4-23S-28E	449 FNL & 1350 FEL	4000	30 days	Time depends on well clean up
Goonch Fed Com 0409 226H	30-015-	B-4-23S-28E	433 FNL & 1363 FEL	4000	30 days	Time depends on well clean up
Goonch Fed Com 0409 236H	30-015-	B-4-23S-28E	418 FNL & 1375 FEL	4000	30 days	Time depends on well clean up

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. Gas from the CTB will be piped north ≈1540' to an existing Enterprise Field Services L. L. C. (151618) line in SESE 33-22s-28e. Right-of-way application has been submitted to BLM, but not yet approved. Novo Oil & Gas Northern Delaware, LLC will provide (periodically) to its Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Novo Oil & Gas Northern Delaware, LLC and its Gas Transporter have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at an as yet undetermined Gas Transporter Processing Plant located in Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on its Gas Transporter system at that time. Based on current information, it is Novo Oil & Gas Northern Delaware, LLC's belief an existing or new system can take this gas upon completion of the well(s). Safety requirements during cleanout operations from using underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

AFMSS
U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report
04/17/2021

APD ID: 10400053937 **Submission Date:** 02/04/2020

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 0409 **Well Number:** 226H

Well Type: CONVENTIONAL GAS WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
652074	QUATERNARY	3036	0	0	OTHER : None	USEABLE WATER	N
652075	RUSTLER	2936	100	100	ANHYDRITE	NONE	N
652085	SALADO	2302	734	734	SALT	NONE	N
652081	CASTILE	2066	970	971	ANHYDRITE	NONE	N
652082	BASE OF SALT	462	2574	2582	SALT	NONE	N
652073	BELL CANYON	462	2574	2582	SANDSTONE	NATURAL GAS, OIL	N
652077	CHERRY CANYON	-600	3636	3660	SANDSTONE	NATURAL GAS, OIL	N
652070	BRUSHY CANYON	-1613	4649	4689	SANDSTONE	NATURAL GAS, OIL	N
652071	BONE SPRING LIME	-3075	6111	6173	LIMESTONE	NATURAL GAS, OIL	N
652078	BONE SPRING 1ST	-4080	7116	7194	SANDSTONE	NATURAL GAS, OIL	N
652066	BONE SPRING 2ND	-4345	7381	7463	OTHER : Carbonate	NATURAL GAS, OIL	N
652067	BONE SPRING 2ND	-4855	7891	7979	SANDSTONE	NATURAL GAS, OIL	N
652068	BONE SPRING 3RD	-5215	8251	8339	OTHER : Carbonate	NATURAL GAS, OIL	N
652069	BONE SPRING 3RD	-6115	9151	9239	SANDSTONE	NATURAL GAS, OIL	N
652083	WOLFCAMP	-6370	9406	9495	OTHER : XY Carbonate	NATURAL GAS, OIL	N
652084	WOLFCAMP	-6575	9611	9723	OTHER : A Carbonate	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 0409 **Well Number:** 226H

Pressure Rating (PSI): 5M **Rating Depth:** 12000

Equipment: A 13.625 5,000-psi BOP system will be installed on a multi-bowl (speed head) wellhead with a 13.625 flanged casing spool. Top flange of casing spool will be set in a cellar below ground level. BOP system will consist of a single pipe ram on the bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top, and annular preventer. Blowout preventer will be installed on top of the 13.375 surface casing and will remain installed to TD of the well. Wellhead, blowout preventer, and choke manifold diagram are included.
Requesting Variance? YES

Variance request: Variance is requested to use a co-flex hose between the BOP system and choke manifold. A typical co-flex pressure test certificate is attached. An equipment specific co-flex pressure test certificate will be on site when testing the BOP.
Testing Procedure: BOP system will be isolated with a test plug and tested by an independent tester to 250-psi low and 5000-psi high for 10 minutes before drilling out the surface shoe. All casing strings will be tested in accordance with Onshore Order 2 III.B.1.h. Surface casing will be pressure tested to 250 psi low and 1500 psi high. Intermediate casing will be tested to 250 psi low and 0.22 psi/ft (1958 psi) high for 30 minutes.
Choke Diagram Attachment:

Goonch_0409_226H_Choke_20200203075727.pdf

BOP Diagram Attachment:

Goonch_0409_226H_BOP_20200203075741.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	175	0	175	0	-175	175	J-55	54.5	BUTT	1.125	1.125	DRY	1.6	DRY	1.6
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	8900	0	8812	3041	-8812	8900	HCL-80	43.5	BUTT	1.125	1.125	DRY	1.6	DRY	1.6
3	PRODUCTION	8.75	5.5	NEW	API	N	0	20107	0	9759	3041	-9759	20107	P-110	20	OTHER - TMK DQX	1.125	1.125	DRY	1.6	DRY	1.6

Casing Attachments

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 0409 **Well Number:** 226H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Goonch_0409_226H_Casing_Design_Assumptions_20200203080422.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Goonch_0409_226H_Casing_Design_Assumptions_20200203080503.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Goonch_0409_226H_Casing_Design_Assumptions_20200203080535.pdf

5.5in_DQX_Casing_Spec_20200203080548.pdf

Section 4 - Cement

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 0409 **Well Number:** 226H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	0	0	0	0	None	None
SURFACE	Tail		0	175	150	1.62	13.8	243	100	Class C	gel + accelerator + LCM
PRODUCTION	Lead		0	0	0	0	0	0	0	None	None
PRODUCTION	Tail		8400	20107	1703	1.89	13	3218	20	Class H	fluid loss + retarder + LCM
INTERMEDIATE	Lead	4000	0	4000	542	2.27	11.9	1235	20	Class C or H	fluid loss + retarder + LCM
INTERMEDIATE	Tail		0	4000	200	1.34	14.8	268	20	Class C or H	fluid loss + retarder + LCM
INTERMEDIATE	Lead		4000	8900	690	2.27	11.9	1573	20	Class C or H	fluid loss + accelerator + LCM
INTERMEDIATE	Tail		4000	8900	200	1.34	14.8	268		Class C or H	fluid loss + retarder + LCM

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products (barite, bentonite, LCM) to control weight and fluid loss will be on site at all times. Mud program may change due to hole conditions.

Describe the mud monitoring system utilized: An electronic PVT mud system will monitor flow rate, pump pressure, stroke rate, and volume.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
175	8900	OTHER : Brine diesel emulsion	8.8	9.2							

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 0409 **Well Number:** 226H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
8900	20107	OIL-BASED MUD	8.8	12.5							
0	175	OTHER : Fresh water spud	8.3	8.3							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A 2-person mud logging program will be used from 3000’ to TD.

GR log will be acquired by MDW tools from the intermediate casing to TD.

List of open and cased hole logs run in the well:

GAMMA RAY LOG,MUD LOG/GEOLOGIC LITHOLOGY LOG,

Coring operation description for the well:

No core or drill stem test is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5237 **Anticipated Surface Pressure:** 3084

Anticipated Bottom Hole Temperature(F): 165

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Goonch_0409_226H_H2S_Plan_20200203080944.pdf

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 0409 **Well Number:** 226H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Goonch_0409_226H_Horizontal_Plan_20200203081026.pdf

Other proposed operations facets description:

Please see highlighted casing spec sheet to address deficiency.

Other proposed operations facets attachment:

Goonch_0409_226H_Drill_Plan_20200203081052.pdf
CoFlex_Certs_20200203081117.pdf
Goonch_0409_226H_Speedhead_Specs_20200203081313.pdf
Goonch_0409_226H_Anti_Collision_Report_20200203081334.pdf

Other Variance attachment:

Goonch_0409_226H_Alternative_Casing__Spec_Request_20200203081410.pdf
Goonch_0409_226H_Casing_Cementing_Variance_20200203081434.pdf
Alternative_Casing_Spec_CoupoingOD_JointTension_20200903135200.pdf

GOONCH FED COM 0409 226H

NOVO

WELL DETAILS:	GOONCH FED COM 0409 226H				
		3036.00			
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	487774.39	617023.45	32.34073	-104.08827

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
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00
500.00	3.00	45.00	499.86	5.55	5.55	1.00	45.00	-5.55
1100.00	3.00	45.00	1099.04	27.76	27.76	0.00	0.00	-27.76
1400.00	0.00	0.00	1398.90	33.31	33.31	1.00	180.00	-33.31
1801.10	0.00	0.00	1800.00	33.31	33.31	0.00	0.00	-33.31
2301.10	10.00	286.92	2297.47	45.97	-8.33	2.00	286.92	-45.97
7710.76	10.00	286.92	7624.94	319.34	-907.05	0.00	0.00	-319.34
8210.76	0.00	0.00	8122.41	332.01	-948.69	2.00	180.00	-332.01
9401.89	0.00	0.00	9313.54	332.01	-948.69	0.00	0.00	-332.01
10153.43	90.18	179.99	9791.00	-146.99	-948.59	12.00	179.99	146.99
20106.94	90.18	179.99	9759.00	-10100.45	-946.56	0.00	0.00	10100.45

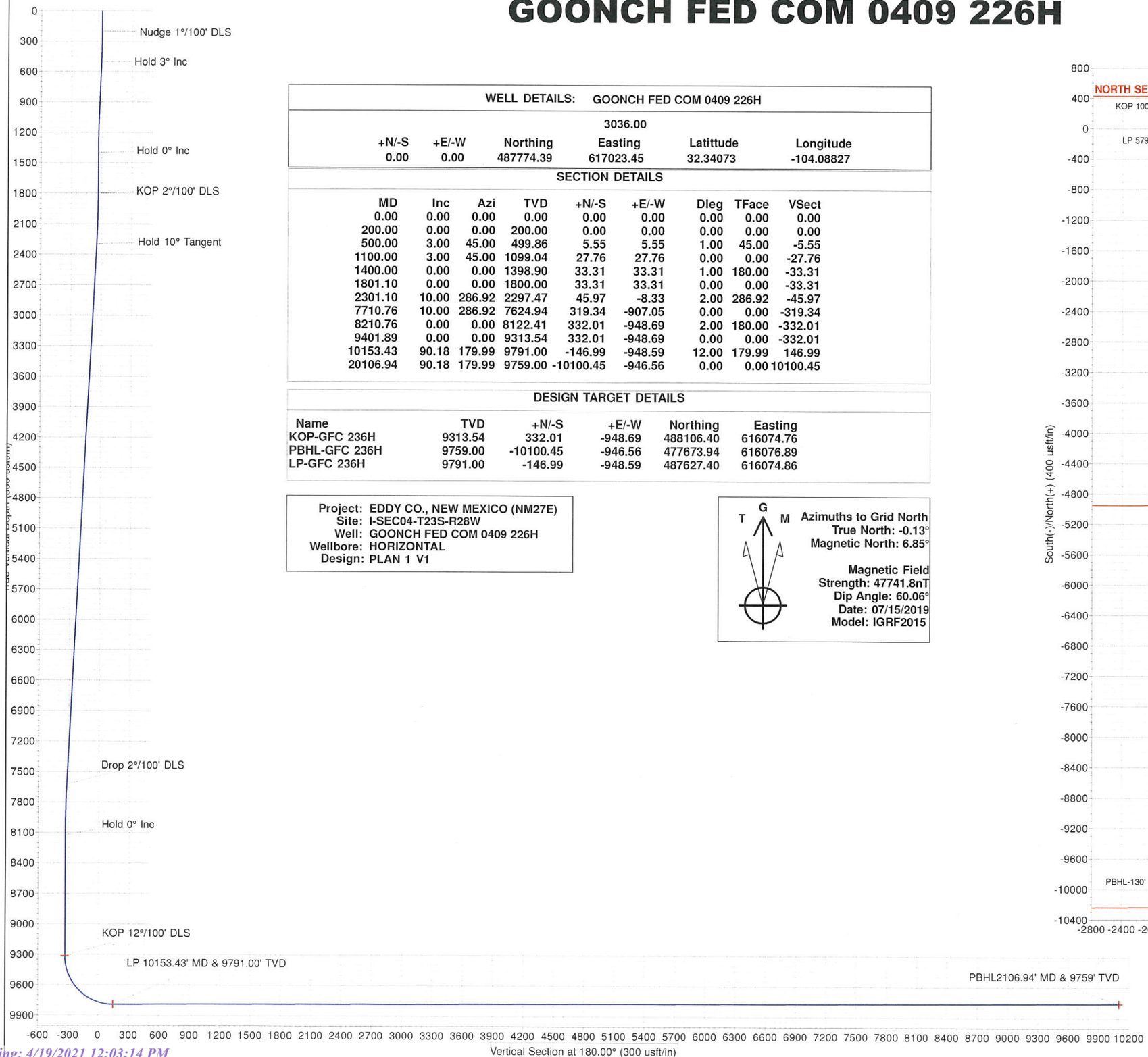
DESIGN TARGET DETAILS

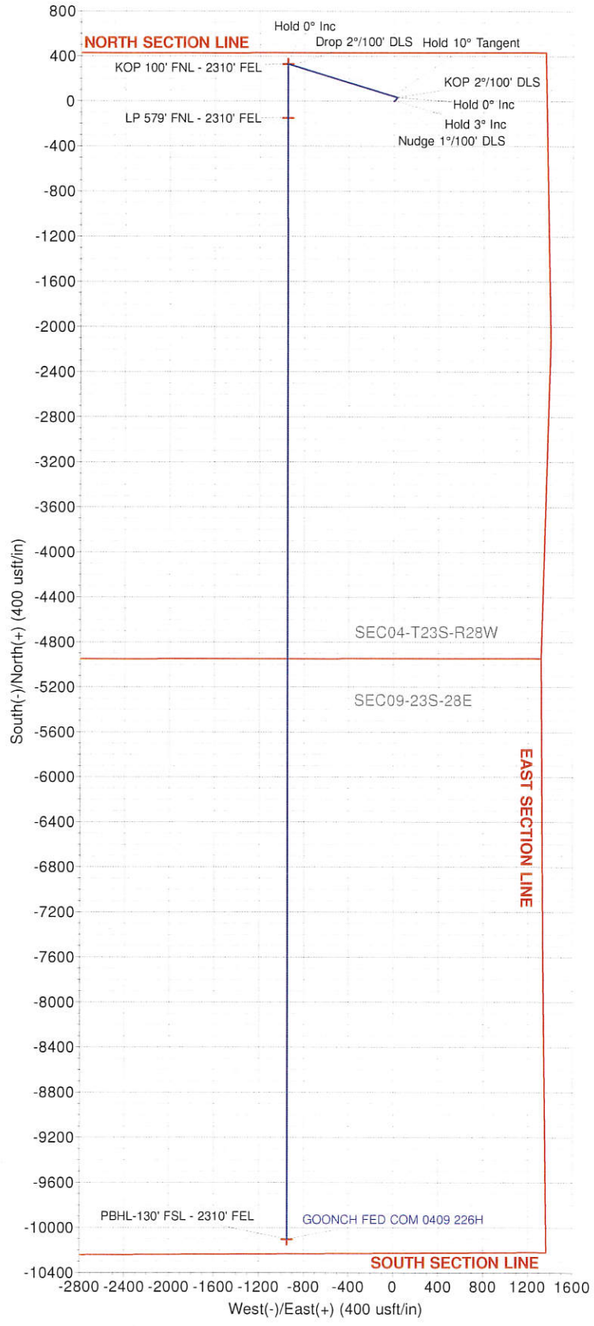
Name	TVD	+N/-S	+E/-W	Northing	Easting
KOP-GFC 236H	9313.54	332.01	-948.69	488106.40	616074.76
PBHL-GFC 236H	9759.00	-10100.45	-946.56	477673.94	616076.89
LP-GFC 236H	9791.00	-146.99	-948.59	487627.40	616074.86

Project: EDDY CO., NEW MEXICO (NM27E)
Site: I-SEC04-T23S-R28W
Well: GOONCH FED COM 0409 226H
Wellbore: HORIZONTAL
Design: PLAN 1 V1

Azimuths to Grid North
True North: -0.13°
Magnetic North: 6.85°

Magnetic Field
Strength: 47741.8nT
Dip Angle: 60.06°
Date: 07/15/2019
Model: IGRF2015





Project	EDDY CO., NEW MEXICO (NM27E)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	I-SEC04-T23S-R28W				
Site Position:		Northing:	488,208.70 usft	Latitude:	32.34191
From:	Lat/Long	Easting:	618,378.81 usft	Longitude:	-104.08387
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.13 °

Well	GOONCH FED COM 0409 226H					
Well Position	+N/-S	0.00 usft	Northing:	487,774.39 usft	Latitude:	32.34073
	+E/-W	0.00 usft	Easting:	617,023.45 usft	Longitude:	-104.08827
Position Uncertainty		0.00 usft	Wellhead Elevation:	3,036.00 usft	Ground Level:	3,036.00 usft

Wellbore	HORIZONTAL				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	07/15/19	6.98	60.06	47,741.80166900

Design	PLAN 1 V1				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Survey Tool Program Date 07/16/19

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	20,106.59	PLAN 1 V1 (HORIZONTAL)	MWD	OWSG MWD - Standard

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
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
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00
Nudge 1°/100' DLS							
300.00	1.00	45.00	299.99	0.62	0.62	-0.62	1.00
400.00	2.00	45.00	399.96	2.47	2.47	-2.47	1.00
500.00	3.00	45.00	499.86	5.55	5.55	-5.55	1.00
Hold 3° Inc							
600.00	3.00	45.00	599.73	9.25	9.25	-9.25	0.00
700.00	3.00	45.00	699.59	12.95	12.95	-12.95	0.00
800.00	3.00	45.00	799.45	16.65	16.65	-16.65	0.00
900.00	3.00	45.00	899.31	20.36	20.36	-20.36	0.00
1,000.00	3.00	45.00	999.18	24.06	24.06	-24.06	0.00
1,100.00	3.00	45.00	1,099.04	27.76	27.76	-27.76	0.00
1,200.00	2.00	45.00	1,198.94	30.84	30.84	-30.84	1.00
1,300.00	1.00	45.00	1,298.91	32.69	32.69	-32.69	1.00
1,400.00	0.00	0.00	1,398.90	33.31	33.31	-33.31	1.00
Hold 0° Inc							
1,500.00	0.00	0.00	1,498.90	33.31	33.31	-33.31	0.00
1,600.00	0.00	0.00	1,598.90	33.31	33.31	-33.31	0.00
1,700.00	0.00	0.00	1,698.90	33.31	33.31	-33.31	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,801.10	0.00	0.00	1,800.00	33.31	33.31	-33.31	0.00
KOP 2°/100' DLS							
1,900.00	1.98	286.92	1,898.88	33.81	31.68	-33.81	2.00
2,000.00	3.98	286.92	1,998.74	35.32	26.71	-35.32	2.00
2,100.00	5.98	286.92	2,098.36	37.84	18.40	-37.84	2.00
2,200.00	7.98	286.92	2,197.62	41.38	6.78	-41.38	2.00
2,301.10	10.00	286.92	2,297.47	45.97	-8.33	-45.97	2.00
Hold 10° Tangent							
2,400.00	10.00	286.92	2,394.87	50.97	-24.76	-50.97	0.00
2,500.00	10.00	286.92	2,493.35	56.03	-41.37	-56.03	0.00
2,600.00	10.00	286.92	2,591.83	61.08	-57.99	-61.08	0.00
2,700.00	10.00	286.92	2,690.31	66.13	-74.60	-66.13	0.00
2,800.00	10.00	286.92	2,788.79	71.19	-91.21	-71.19	0.00
2,900.00	10.00	286.92	2,887.27	76.24	-107.83	-76.24	0.00
3,000.00	10.00	286.92	2,985.75	81.29	-124.44	-81.29	0.00
3,100.00	10.00	286.92	3,084.23	86.35	-141.05	-86.35	0.00
3,200.00	10.00	286.92	3,182.71	91.40	-157.67	-91.40	0.00
3,300.00	10.00	286.92	3,281.19	96.45	-174.28	-96.45	0.00
3,400.00	10.00	286.92	3,379.67	101.51	-190.89	-101.51	0.00
3,500.00	10.00	286.92	3,478.15	106.56	-207.51	-106.56	0.00
3,600.00	10.00	286.92	3,576.64	111.61	-224.12	-111.61	0.00
3,700.00	10.00	286.92	3,675.12	116.67	-240.73	-116.67	0.00
3,800.00	10.00	286.92	3,773.60	121.72	-257.35	-121.72	0.00
3,900.00	10.00	286.92	3,872.08	126.77	-273.96	-126.77	0.00
4,000.00	10.00	286.92	3,970.56	131.83	-290.57	-131.83	0.00
4,100.00	10.00	286.92	4,069.04	136.88	-307.19	-136.88	0.00
4,200.00	10.00	286.92	4,167.52	141.93	-323.80	-141.93	0.00
4,300.00	10.00	286.92	4,266.00	146.99	-340.41	-146.99	0.00
4,400.00	10.00	286.92	4,364.48	152.04	-357.03	-152.04	0.00
4,500.00	10.00	286.92	4,462.96	157.09	-373.64	-157.09	0.00
4,600.00	10.00	286.92	4,561.44	162.15	-390.25	-162.15	0.00
4,700.00	10.00	286.92	4,659.92	167.20	-406.87	-167.20	0.00
4,800.00	10.00	286.92	4,758.41	172.25	-423.48	-172.25	0.00
4,900.00	10.00	286.92	4,856.89	177.31	-440.09	-177.31	0.00
5,000.00	10.00	286.92	4,955.37	182.36	-456.71	-182.36	0.00
5,100.00	10.00	286.92	5,053.85	187.41	-473.32	-187.41	0.00
5,200.00	10.00	286.92	5,152.33	192.47	-489.93	-192.47	0.00
5,300.00	10.00	286.92	5,250.81	197.52	-506.55	-197.52	0.00
5,400.00	10.00	286.92	5,349.29	202.57	-523.16	-202.57	0.00
5,500.00	10.00	286.92	5,447.77	207.63	-539.77	-207.63	0.00
5,600.00	10.00	286.92	5,546.25	212.68	-556.39	-212.68	0.00
5,700.00	10.00	286.92	5,644.73	217.73	-573.00	-217.73	0.00
5,800.00	10.00	286.92	5,743.21	222.79	-589.61	-222.79	0.00
5,900.00	10.00	286.92	5,841.69	227.84	-606.23	-227.84	0.00
6,000.00	10.00	286.92	5,940.17	232.89	-622.84	-232.89	0.00
6,100.00	10.00	286.92	6,038.66	237.95	-639.45	-237.95	0.00
6,200.00	10.00	286.92	6,137.14	243.00	-656.06	-243.00	0.00
6,300.00	10.00	286.92	6,235.62	248.05	-672.68	-248.05	0.00
6,400.00	10.00	286.92	6,334.10	253.11	-689.29	-253.11	0.00
6,500.00	10.00	286.92	6,432.58	258.16	-705.90	-258.16	0.00
6,600.00	10.00	286.92	6,531.06	263.21	-722.52	-263.21	0.00
6,700.00	10.00	286.92	6,629.54	268.27	-739.13	-268.27	0.00
6,800.00	10.00	286.92	6,728.02	273.32	-755.74	-273.32	0.00
6,900.00	10.00	286.92	6,826.50	278.37	-772.36	-278.37	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,000.00	10.00	286.92	6,924.98	283.43	-788.97	-283.43	0.00
7,100.00	10.00	286.92	7,023.46	288.48	-805.58	-288.48	0.00
7,200.00	10.00	286.92	7,121.94	293.53	-822.20	-293.53	0.00
7,300.00	10.00	286.92	7,220.42	298.59	-838.81	-298.59	0.00
7,400.00	10.00	286.92	7,318.91	303.64	-855.42	-303.64	0.00
7,500.00	10.00	286.92	7,417.39	308.69	-872.04	-308.69	0.00
7,600.00	10.00	286.92	7,515.87	313.75	-888.65	-313.75	0.00
7,700.00	10.00	286.92	7,614.35	318.80	-905.26	-318.80	0.00
7,710.76	10.00	286.92	7,624.94	319.34	-907.05	-319.34	0.00
Drop 2°/100' DLS							
7,800.00	8.22	286.92	7,713.06	323.46	-920.57	-323.46	2.00
7,900.00	6.22	286.92	7,812.26	327.11	-932.58	-327.11	2.00
8,000.00	4.22	286.92	7,911.84	329.75	-941.28	-329.75	2.00
8,100.00	2.22	286.92	8,011.68	331.39	-946.64	-331.39	2.00
8,200.00	0.22	286.92	8,111.65	332.00	-948.67	-332.00	2.00
8,210.76	0.00	0.00	8,122.41	332.01	-948.69	-332.01	2.00
Hold 0° Inc							
8,300.00	0.00	0.00	8,211.65	332.01	-948.69	-332.01	0.00
8,400.00	0.00	0.00	8,311.65	332.01	-948.69	-332.01	0.00
8,500.00	0.00	0.00	8,411.65	332.01	-948.69	-332.01	0.00
8,600.00	0.00	0.00	8,511.65	332.01	-948.69	-332.01	0.00
8,700.00	0.00	0.00	8,611.65	332.01	-948.69	-332.01	0.00
8,800.00	0.00	0.00	8,711.65	332.01	-948.69	-332.01	0.00
8,900.00	0.00	0.00	8,811.65	332.01	-948.69	-332.01	0.00
9,000.00	0.00	0.00	8,911.65	332.01	-948.69	-332.01	0.00
9,100.00	0.00	0.00	9,011.65	332.01	-948.69	-332.01	0.00
9,200.00	0.00	0.00	9,111.65	332.01	-948.69	-332.01	0.00
9,300.00	0.00	0.00	9,211.65	332.01	-948.69	-332.01	0.00
9,401.89	0.00	0.00	9,313.54	332.01	-948.69	-332.01	0.00
KOP 12°/100' DLS							
9,425.00	2.77	179.99	9,336.64	331.45	-948.69	-331.45	12.00
9,450.00	5.77	179.99	9,361.57	329.59	-948.69	-329.59	12.00
9,475.00	8.77	179.99	9,386.36	326.42	-948.69	-326.42	12.00
9,500.00	11.77	179.99	9,410.96	321.97	-948.69	-321.97	12.00
9,525.00	14.77	179.99	9,435.29	316.23	-948.69	-316.23	12.00
9,550.00	17.77	179.99	9,459.29	309.22	-948.69	-309.22	12.00
9,575.00	20.77	179.99	9,482.88	300.97	-948.68	-300.97	12.00
9,600.00	23.77	179.99	9,506.01	291.50	-948.68	-291.50	12.00
9,625.00	26.77	179.99	9,528.62	280.82	-948.68	-280.82	12.00
9,650.00	29.77	179.99	9,550.63	268.98	-948.68	-268.98	12.00
9,675.00	32.77	179.99	9,572.00	256.01	-948.67	-256.01	12.00
9,700.00	35.77	179.99	9,592.66	241.93	-948.67	-241.93	12.00
9,725.00	38.77	179.99	9,612.55	226.79	-948.67	-226.79	12.00
9,750.00	41.77	179.99	9,631.62	210.63	-948.67	-210.63	12.00
9,775.00	44.77	179.99	9,649.82	193.50	-948.66	-193.50	12.00
9,800.00	47.77	179.99	9,667.10	175.43	-948.66	-175.43	12.00
9,825.00	50.77	179.99	9,683.41	156.49	-948.65	-156.49	12.00
9,850.00	53.77	179.99	9,698.70	136.72	-948.65	-136.72	12.00
9,875.00	56.77	179.99	9,712.94	116.17	-948.65	-116.17	12.00
9,900.00	59.77	179.99	9,726.09	94.91	-948.64	-94.91	12.00
9,925.00	62.77	179.99	9,738.10	72.99	-948.64	-72.99	12.00
9,950.00	65.77	179.99	9,748.95	50.47	-948.63	-50.47	12.00
9,975.00	68.77	179.99	9,758.61	27.42	-948.63	-27.42	12.00
10,000.00	71.77	179.99	9,767.05	3.89	-948.62	-3.89	12.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
10,025.00	74.77	179.99	9,774.24	-20.05	-948.62	20.05	12.00
10,050.00	77.77	179.99	9,780.17	-44.34	-948.61	44.34	12.00
10,075.00	80.77	179.99	9,784.83	-68.90	-948.61	68.90	12.00
10,100.00	83.77	179.99	9,788.19	-93.67	-948.60	93.67	12.00
10,125.00	86.77	179.99	9,790.25	-118.58	-948.60	118.58	12.00
10,150.00	89.77	179.99	9,791.00	-143.56	-948.59	143.56	12.00
10,153.43	90.18	179.99	9,791.00	-146.99	-948.59	146.99	11.98
LP 10153.43' MD & 9791.00' TVD							
10,200.00	90.18	179.99	9,790.85	-193.56	-948.58	193.56	0.00
10,300.00	90.18	179.99	9,790.53	-293.56	-948.56	293.56	0.00
10,400.00	90.18	179.99	9,790.21	-393.56	-948.54	393.56	0.00
10,500.00	90.18	179.99	9,789.89	-493.56	-948.52	493.56	0.00
10,600.00	90.18	179.99	9,789.57	-593.56	-948.50	593.56	0.00
10,700.00	90.18	179.99	9,789.25	-693.56	-948.48	693.56	0.00
10,800.00	90.18	179.99	9,788.92	-793.56	-948.46	793.56	0.00
10,900.00	90.18	179.99	9,788.60	-893.56	-948.44	893.56	0.00
11,000.00	90.18	179.99	9,788.28	-993.56	-948.42	993.56	0.00
11,100.00	90.18	179.99	9,787.96	-1,093.56	-948.40	1,093.56	0.00
11,200.00	90.18	179.99	9,787.64	-1,193.56	-948.38	1,193.56	0.00
11,300.00	90.18	179.99	9,787.32	-1,293.56	-948.36	1,293.56	0.00
11,400.00	90.18	179.99	9,786.99	-1,393.56	-948.34	1,393.56	0.00
11,500.00	90.18	179.99	9,786.67	-1,493.56	-948.32	1,493.56	0.00
11,600.00	90.18	179.99	9,786.35	-1,593.56	-948.30	1,593.56	0.00
11,700.00	90.18	179.99	9,786.03	-1,693.56	-948.28	1,693.56	0.00
11,800.00	90.18	179.99	9,785.71	-1,793.56	-948.26	1,793.56	0.00
11,900.00	90.18	179.99	9,785.39	-1,893.56	-948.24	1,893.56	0.00
12,000.00	90.18	179.99	9,785.07	-1,993.55	-948.22	1,993.55	0.00
12,100.00	90.18	179.99	9,784.74	-2,093.55	-948.19	2,093.55	0.00
12,200.00	90.18	179.99	9,784.42	-2,193.55	-948.17	2,193.55	0.00
12,300.00	90.18	179.99	9,784.10	-2,293.55	-948.15	2,293.55	0.00
12,400.00	90.18	179.99	9,783.78	-2,393.55	-948.13	2,393.55	0.00
12,500.00	90.18	179.99	9,783.46	-2,493.55	-948.11	2,493.55	0.00
12,600.00	90.18	179.99	9,783.14	-2,593.55	-948.09	2,593.55	0.00
12,700.00	90.18	179.99	9,782.81	-2,693.55	-948.07	2,693.55	0.00
12,800.00	90.18	179.99	9,782.49	-2,793.55	-948.05	2,793.55	0.00
12,900.00	90.18	179.99	9,782.17	-2,893.55	-948.03	2,893.55	0.00
13,000.00	90.18	179.99	9,781.85	-2,993.55	-948.01	2,993.55	0.00
13,100.00	90.18	179.99	9,781.53	-3,093.55	-947.99	3,093.55	0.00
13,200.00	90.18	179.99	9,781.21	-3,193.55	-947.97	3,193.55	0.00
13,300.00	90.18	179.99	9,780.89	-3,293.55	-947.95	3,293.55	0.00
13,400.00	90.18	179.99	9,780.56	-3,393.55	-947.93	3,393.55	0.00
13,500.00	90.18	179.99	9,780.24	-3,493.55	-947.91	3,493.55	0.00
13,600.00	90.18	179.99	9,779.92	-3,593.55	-947.89	3,593.55	0.00
13,700.00	90.18	179.99	9,779.60	-3,693.55	-947.87	3,693.55	0.00
13,800.00	90.18	179.99	9,779.28	-3,793.55	-947.85	3,793.55	0.00
13,900.00	90.18	179.99	9,778.96	-3,893.54	-947.83	3,893.54	0.00
14,000.00	90.18	179.99	9,778.63	-3,993.54	-947.81	3,993.54	0.00
14,100.00	90.18	179.99	9,778.31	-4,093.54	-947.79	4,093.54	0.00
14,200.00	90.18	179.99	9,777.99	-4,193.54	-947.77	4,193.54	0.00
14,300.00	90.18	179.99	9,777.67	-4,293.54	-947.75	4,293.54	0.00
14,400.00	90.18	179.99	9,777.35	-4,393.54	-947.73	4,393.54	0.00
14,500.00	90.18	179.99	9,777.03	-4,493.54	-947.70	4,493.54	0.00
14,600.00	90.18	179.99	9,776.71	-4,593.54	-947.68	4,593.54	0.00
14,700.00	90.18	179.99	9,776.38	-4,693.54	-947.66	4,693.54	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
14,800.00	90.18	179.99	9,776.06	-4,793.54	-947.64	4,793.54	0.00
14,900.00	90.18	179.99	9,775.74	-4,893.54	-947.62	4,893.54	0.00
15,000.00	90.18	179.99	9,775.42	-4,993.54	-947.60	4,993.54	0.00
15,100.00	90.18	179.99	9,775.10	-5,093.54	-947.58	5,093.54	0.00
15,200.00	90.18	179.99	9,774.78	-5,193.54	-947.56	5,193.54	0.00
15,300.00	90.18	179.99	9,774.46	-5,293.54	-947.54	5,293.54	0.00
15,400.00	90.18	179.99	9,774.13	-5,393.54	-947.52	5,393.54	0.00
15,500.00	90.18	179.99	9,773.81	-5,493.54	-947.50	5,493.54	0.00
15,600.00	90.18	179.99	9,773.49	-5,593.54	-947.48	5,593.54	0.00
15,700.00	90.18	179.99	9,773.17	-5,693.54	-947.46	5,693.54	0.00
15,800.00	90.18	179.99	9,772.85	-5,793.53	-947.44	5,793.53	0.00
15,900.00	90.18	179.99	9,772.53	-5,893.53	-947.42	5,893.53	0.00
16,000.00	90.18	179.99	9,772.20	-5,993.53	-947.40	5,993.53	0.00
16,100.00	90.18	179.99	9,771.88	-6,093.53	-947.38	6,093.53	0.00
16,200.00	90.18	179.99	9,771.56	-6,193.53	-947.36	6,193.53	0.00
16,300.00	90.18	179.99	9,771.24	-6,293.53	-947.34	6,293.53	0.00
16,400.00	90.18	179.99	9,770.92	-6,393.53	-947.32	6,393.53	0.00
16,500.00	90.18	179.99	9,770.60	-6,493.53	-947.30	6,493.53	0.00
16,600.00	90.18	179.99	9,770.28	-6,593.53	-947.28	6,593.53	0.00
16,700.00	90.18	179.99	9,769.95	-6,693.53	-947.26	6,693.53	0.00
16,800.00	90.18	179.99	9,769.63	-6,793.53	-947.24	6,793.53	0.00
16,900.00	90.18	179.99	9,769.31	-6,893.53	-947.21	6,893.53	0.00
17,000.00	90.18	179.99	9,768.99	-6,993.53	-947.19	6,993.53	0.00
17,100.00	90.18	179.99	9,768.67	-7,093.53	-947.17	7,093.53	0.00
17,200.00	90.18	179.99	9,768.35	-7,193.53	-947.15	7,193.53	0.00
17,300.00	90.18	179.99	9,768.02	-7,293.53	-947.13	7,293.53	0.00
17,400.00	90.18	179.99	9,767.70	-7,393.53	-947.11	7,393.53	0.00
17,500.00	90.18	179.99	9,767.38	-7,493.53	-947.09	7,493.53	0.00
17,600.00	90.18	179.99	9,767.06	-7,593.53	-947.07	7,593.53	0.00
17,700.00	90.18	179.99	9,766.74	-7,693.53	-947.05	7,693.53	0.00
17,800.00	90.18	179.99	9,766.42	-7,793.52	-947.03	7,793.52	0.00
17,900.00	90.18	179.99	9,766.10	-7,893.52	-947.01	7,893.52	0.00
18,000.00	90.18	179.99	9,765.77	-7,993.52	-946.99	7,993.52	0.00
18,100.00	90.18	179.99	9,765.45	-8,093.52	-946.97	8,093.52	0.00
18,200.00	90.18	179.99	9,765.13	-8,193.52	-946.95	8,193.52	0.00
18,300.00	90.18	179.99	9,764.81	-8,293.52	-946.93	8,293.52	0.00
18,400.00	90.18	179.99	9,764.49	-8,393.52	-946.91	8,393.52	0.00
18,500.00	90.18	179.99	9,764.17	-8,493.52	-946.89	8,493.52	0.00
18,600.00	90.18	179.99	9,763.85	-8,593.52	-946.87	8,593.52	0.00
18,700.00	90.18	179.99	9,763.52	-8,693.52	-946.85	8,693.52	0.00
18,800.00	90.18	179.99	9,763.20	-8,793.52	-946.83	8,793.52	0.00
18,900.00	90.18	179.99	9,762.88	-8,893.52	-946.81	8,893.52	0.00
19,000.00	90.18	179.99	9,762.56	-8,993.52	-946.79	8,993.52	0.00
19,100.00	90.18	179.99	9,762.24	-9,093.52	-946.77	9,093.52	0.00
19,200.00	90.18	179.99	9,761.92	-9,193.52	-946.75	9,193.52	0.00
19,300.00	90.18	179.99	9,761.59	-9,293.52	-946.72	9,293.52	0.00
19,400.00	90.18	179.99	9,761.27	-9,393.52	-946.70	9,393.52	0.00
19,500.00	90.18	179.99	9,760.95	-9,493.52	-946.68	9,493.52	0.00
19,600.00	90.18	179.99	9,760.63	-9,593.52	-946.66	9,593.52	0.00
19,700.00	90.18	179.99	9,760.31	-9,693.51	-946.64	9,693.51	0.00
19,800.00	90.18	179.99	9,759.99	-9,793.51	-946.62	9,793.51	0.00
19,900.00	90.18	179.99	9,759.67	-9,893.51	-946.60	9,893.51	0.00
20,000.00	90.18	179.99	9,759.34	-9,993.51	-946.58	9,993.51	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
20,106.93	90.18	179.99	9,759.00	-10,100.44	-946.56	10,100.44	0.00
PBHL 20106.93' MD & 9759.00' TVD							
20,106.94	90.18	179.99	9,759.00	-10,100.45	-946.56	10,100.45	0.00

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
200.00	200.00	0.00	0.00	Nudge 1°/100' DLS
500.00	499.86	5.55	5.55	Hold 3° Inc
1,400.00	1,398.90	33.31	33.31	Hold 0° Inc
1,801.10	1,800.00	33.31	33.31	KOP 2°/100' DLS
2,301.10	2,297.47	45.97	-8.33	Hold 10° Tangent
7,710.76	7,624.94	319.34	-907.05	Drop 2°/100' DLS
8,210.76	8,122.41	332.01	-948.69	Hold 0° Inc
9,401.89	9,313.54	332.01	-948.69	KOP 12°/100' DLS
10,153.43	9,791.00	-146.99	-948.59	LP 10153.43' MD & 9791.00' TVD
20,106.93	9,759.00	-10,100.44	-946.56	PBHL 20106.93' MD & 9759.00' TVD

Checked By: _____ Approved By: _____ Date: _____

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME: Novo Oil & Gas Northern Delaware, LLC

Lease Number NMNM013233& NMNM018038

COUNTY: Eddy County, New Mexico

GOONCH FED COM 04 135H
Surface Hole Location: 592' FNL & 1494' FEL, Section 4, T. 23 S., R. 28 E.
Bottom Hole Location: 10' FSL & 1914' FWL, Section 4, T. 23 S., R. 28 E

GOONCH FED COM 04 215H
Surface Hole Location: 577' FNL & 1506' FEL, Section 4, T. 23 S., R. 28 E.
Bottom Hole Location: 130' FSL & 2310' FWL, Section 4, T. 23 S., R. 28 E

GOONCH FED COM 04 225H
Surface Hole Location: 561' FNL & 1519' FEL, Section 4, T. 23 S., R. 28 E.
Bottom Hole Location: 130' FSL & 1914' FWL, Section 4, T. 23 S., R. 28 E

GOONCH FED COM 04 235H
Surface Hole Location: 546' FNL & 1531' FEL, Section 4, T. 23 S., R. 28 E.
Bottom Hole Location: 130' FSL & 2178' FWL, Section 4, T. 23 S., R. 28 E

GOONCH FED COM 0409 216H
Surface Hole Location: 449' FNL & 1350' FEL, Section 4, T. 23 S., R. 28 E.
Bottom Hole Location: 130' FSL & 1914' FEL, Section 4, T. 23 S., R. 28 E

GOONCH FED COM 0409 226H
Surface Hole Location: 433' FNL & 1363' FEL, Section 4, T. 23 S., R. 28 E.
Bottom Hole Location: 130' FSL & 2310' FEL, Section 9, T. 23 S., R. 28 E

GOONCH FED COM 0409 236H
Surface Hole Location: 418' FNL & 1375' FEL, Section 4, T. 23 S., R. 28 E.
Bottom Hole Location: 130' FSL & 2178' FEL, Section 4, T. 23 S., R. 28 E

Approval Date: 04/16/2021

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator 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 shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for

acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Hydrology:

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion. A power pole should not be placed in drainages, playas, wetlands, riparian areas, or floodplains and must span across the features at a distance away that would not promote further erosion.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production:

Construction:

General Construction:

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

Pad Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

Tank Battery Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- All tank battery locations and facilities will be lined and bermed.
- The liner should be at least 20 mil in thickness and installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures.
- Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Road Construction:

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

Buried Pipeline/Cable Construction:

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.

Powerline Construction:

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Larger powerlines will adjust their pole spacing to avoid cave and karst features.
- Special restoration stipulations or realignment may be required if subsurface voids are encountered.

Surface Flowlines Installation:

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage

system.

Leak Detection System:

- A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present.
- A leak detection plan will be submitted to BLM that incorporates an automatic shut off system (see below) to minimize the effects of an undesirable event that could negatively sensitive cave/karst resources.
- Well heads, pipelines (surface and buried), storage tanks, and all supporting equipment should be monitored regularly after installation to promptly identify and fix leaks.

Automatic Shut-off Systems:

- Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and groundwater concerns:

Closed Loop System:

- A closed loop system using steel tanks will be utilized during drilling – no pits
- All fluids and cuttings will be hauled off-site and disposed of properly at an authorized site

Rotary Drilling with Fresh Water:

- Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:

- The kick off point for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:

- ALL lost circulation zones between surface and the base of the cave occurrence zone will be logged and reported in the drilling report.
- If a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, regardless of

the type of drilling machinery used, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:

- Additional plugging conditions of approval may be required upon well abandonment in high and medium karst potential occurrence zones.
- The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:

- The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice.
- If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Range

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

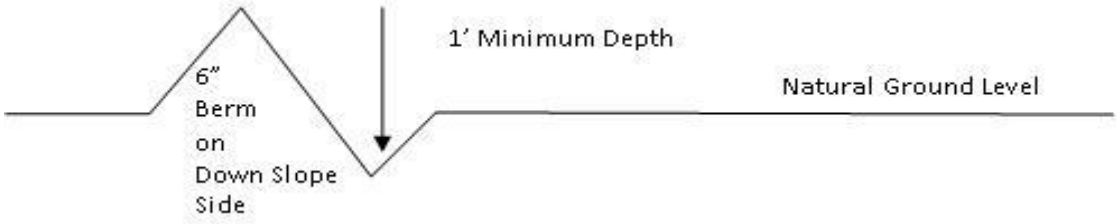
Ditching
Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

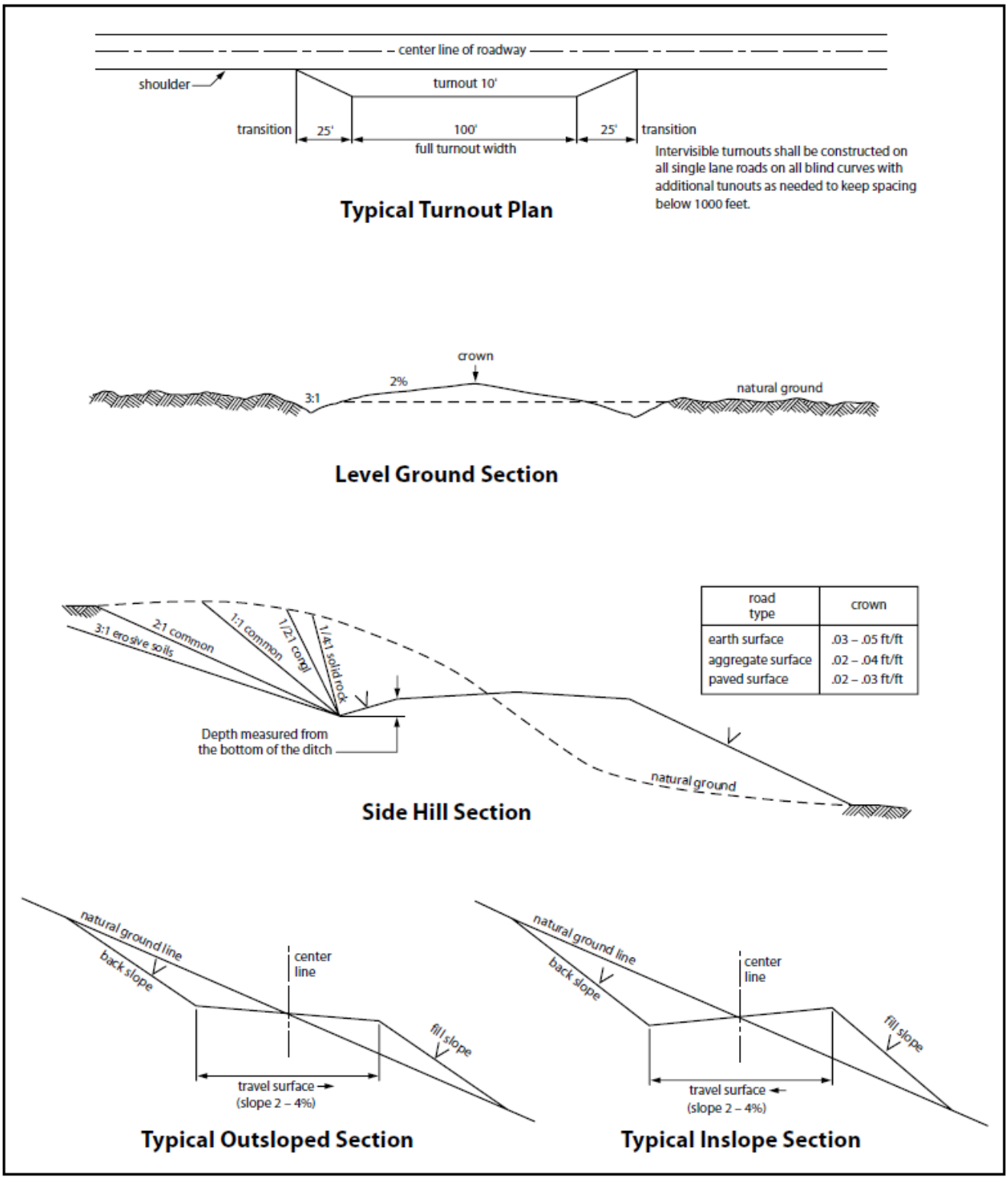


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

Approval Date: 04/16/2021

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone*.) Production

equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Seed Mixture 3, for Shallow Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains Bristlegrass (Setaria macrostachya)	1.0
Green Sprangletop (Leptochloa dubia)	2.0
Sideoats Grama (Bouteloua curtipendula)	5.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

Approval Date: 04/16/2021

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Novo Oil and Gas Northern Delaware LLC**
LEASE NO.:	**NMNM013233**
WELL NAME & NO.:	Goonch Fed Com 0409 226H
SURFACE HOLE FOOTAGE:	433'/N & 1363'/E
BOTTOM HOLE FOOTAGE	130'/S & 2310'/E
LOCATION:	Section 4, T.23 S., R.28 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

H2S	☉ Yes	○ No	
Potash	☉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	☉ Medium	○ High
Cave/Karst Potential	○ Critical		
Variance	○ None	☉ Flex Hose	○ Other
Wellhead	○ Conventional	☉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **North East Loving** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **230 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8**

 Approval Date: 04/16/2021

hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above.
  Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
  Cement excess is less than 25%, more cement might be required.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.
  Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
  Cement excess is less than 25%, more cement might be required.

❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.
  Cement excess is less than 25%, more cement might be required.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

 Approval Date: 04/16/2021

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

NOVO

H_2S Drilling Operations Plan

a. All personnel will be trained in H_2S working conditions as required by Onshore Order 6 before drilling out of the surface casing.

b. Two briefing areas will be established. Each will be at least 150' from the wellhead, perpendicular from one another, and easily entered and exited. See H_2S page 5 for more details.

c. H_2S Safety Equipment/Systems:

i. Well Control Equipment

- Flare line will be ≥150' from the wellhead and ignited by a pilot light.
- Beware of SO_2 created by flaring.
- Choke manifold will include a remotely operated choke.
- Mud gas separator

ii. Protective Equipment for Essential Personnel

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
- One self-contained breathing apparatus (SCBA) 30-minute rescue pack will be at each briefing area. Two 30-minute SCBA packs will be stored in the safety trailer.
- Four work/escape packs will be on the rig floor. Each pack will have a long enough hose to allow unimpaired work activity.
- Four emergency escape packs will be in the doghouse for emergency evacuation.
- Hand signals will be used when wearing protective breathing apparatus.
- Stokes litter or stretcher
- Two full OSHA compliant body harnesses
- A 100-foot long x 5/8" OSHA compliant rope
- One 20-pound ABC fire extinguisher

iii. H_2S Detection & Monitoring Equipment

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
- A stationary detector with three sensors will be in the doghouse.
- Sensors will be installed on the rig floor, bell nipple, and at the end of the flow line or where drilling fluids are discharged.
- Visual alarm will be triggered at 10 ppm.
- Audible alarm will be triggered at 10 ppm.
- Calibration will occur at least every 30 days. Gas sample tubes will be kept in the safety trailer.

iv. Visual Warning System

- Color-coded H_2S condition sign will be set at the entrance to the pad.
- Color-coded condition flag will be installed to indicate current H_2S conditions.
- Two wind socks will be installed that will be visible from all sides.

v. Mud Program

- A water based mud with a pH of $\geq$10 will be maintained to control corrosion, H_2S gas returns to the surface, and minimize sulfide stress cracking and embrittlement.
- Drilling mud containing H_2S gas will be degassed at an optimum location for the rig configuration.
- This gas will be piped into the flare system.
- Enough mud additives will be on location to scavenge and/or neutralize H_2S where formation pressures are unknown.

vi. Metallurgy

- All equipment that has the potential to be exposed to H_2S will be suitable for H_2S service.
- Equipment that will meet these metallurgical standards include the drill string, casing, wellhead, BOP assembly, casing head and spool, rotating head, kill lines, choke, choke manifold and lines, valves, mud-gas separators, DST tools, test units, tubing, flanges, and other related equipment (elastomer packings and seals).

vii. Communication from well site

- Cell phones and/or two-way radios will be used to communicate from the well site.

d. A remote-controlled choke, mud-gas separator, and a rotating head will be installed before drilling or testing any formation expected to contain H_2S.

Company Personnel to be Notified

Kurt Shipley, Vice-President - Operations	Office: (405) 609-1596

Local & County Agencies

Loving Fire Department	911 or (575) 745-3600
Eddy County Sheriff (Carlsbad)	911 (575) 887-7551
Eddy County Emergency Management (Carlsbad)	(575) 887-9511
Carlsbad Medical Center Hospital	(575) 887-4100
Eddy County South Road Department (Carlsbad)	(575) 885-4835

State Agencies

NM State Police (Carlsbad)	(575) 885-3138
NM Oil Conservation (Artesia)	(575) 748-1283
NM Oil Conservation (Santa Fe)	(505) 476-3440
NM Dept. of Transportation (Roswell)	(575) 637-7201

Federal Agencies

BLM Carlsbad Field Office	(575) 234-5972
National Response Center	(800) 424-8802
US EPA Region 6 (Dallas)	(800) 887-6063
	(214) 665-6444

Residents within 2 miles

none

Air Evacuation

Med Flight Air Ambulance (Albuquerque)	(800) 842-4431
Lifeguard (Albuquerque)	(888) 866-7256

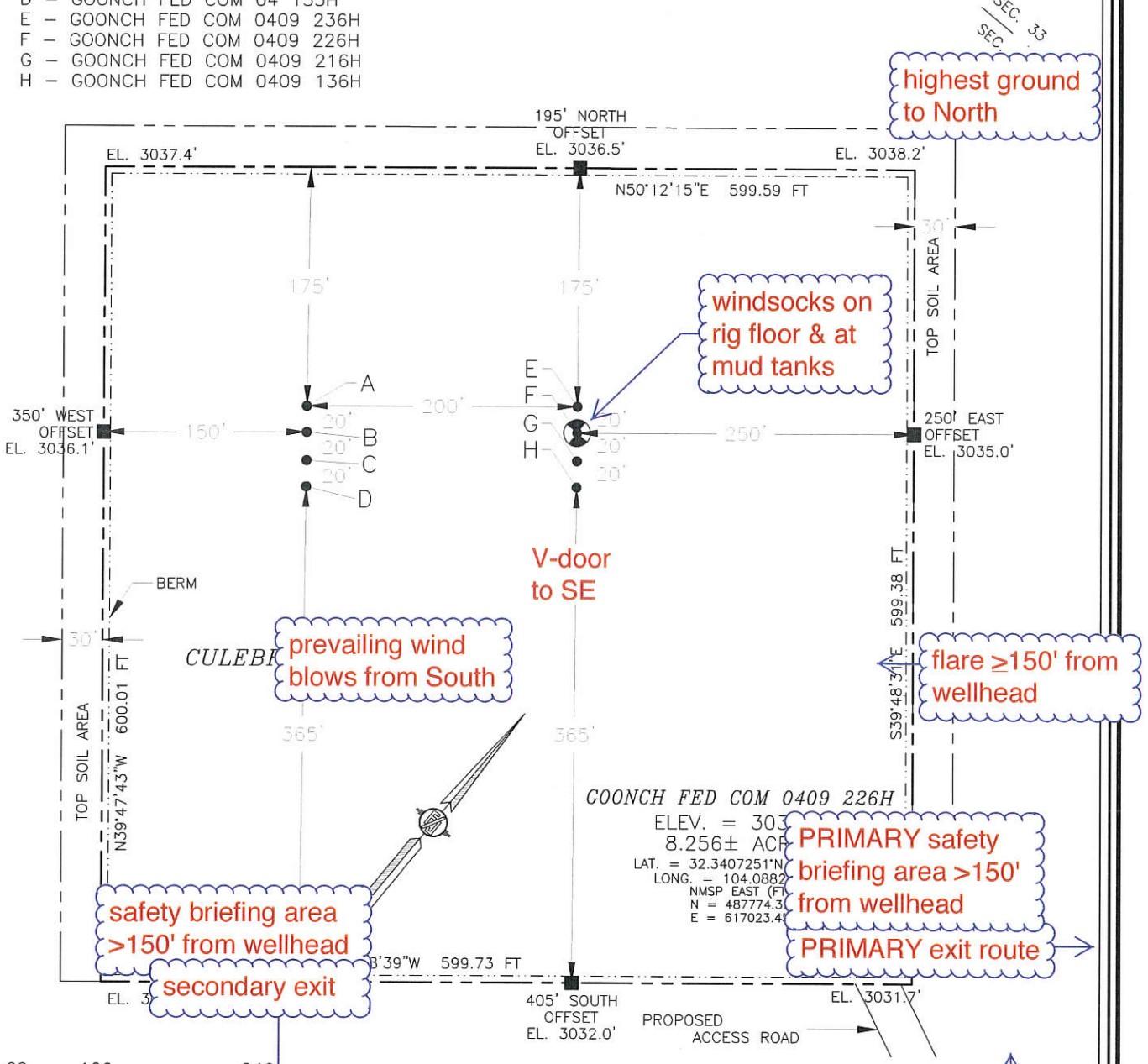
Veterinarians

Desert Willow Veterinary Services (Carlsbad)	(575) 885-3399
Animal Care Center (Carlsbad)	(575) 885-5352

SECTION 4, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

A – GOONCH FED COM 04 235H
B – GOONCH FED COM 04 225H
C – GOONCH FED COM 04 215H
D – GOONCH FED COM 04 135H
E – GOONCH FED COM 0409 236H
F – GOONCH FED COM 0409 226H
G – GOONCH FED COM 0409 216H
H – GOONCH FED COM 0409 136H

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. VERTICAL DATUM NAVD88.



012 60 120 240
SCALE 1" = 120'

DIRECTIONS TO LOCATION

FROM STATE ROAD 31 (POTASH MINES) & CR 605 (REFINERY) GO NORTHWEST ON REFINERY ROAD APPROX 3.57 MILES TO HERRADURA BEND ROAD, TURN LEFT AND GO WEST–SOUTHWEST ON HERRADURA BEND ROAD APPROX. 0.66 OF A MILE, TURN LEFT AND GO SOUTH–SOUTHEAST APPROX. 0.59 OF A MILE TO A PROPOSED ROAD, GO SOUTHWEST–NORTHWEST 2415' TO THE SOUTHEAST PAD CORNER FOR THIS LOCATION.

I, FILIMON F. JARAMILLO, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

9/13/19
DATE

FILIMON F. JARAMILLO – PLS 12797

NOVO OIL & GAS NORTHERN DELAWARE, LLC
GOONCH FED COM 0409 226H
LOCATED 433 FT. FROM THE NORTH LINE AND 1363 FT. FROM THE EAST LINE OF
SECTION 4, TOWNSHIP 23 S
RANGE 28 EAST, N.M.P.
EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 13, 2019

SURVEY NO. 7271B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

Novo Oil and Gas Northern Delaware, LLC

Culebra Bluff Pad 3
H_2S Contingency Plan:
Radius Map

Goonch Fed Com 04 235H
Goonch Fed Com 04 225H
Goonch Fed Com 04 215H
Goonch Fed Com 04 135H
Goonch Fed Com 0409 236H
Goonch Fed Com 0409 226H
Goonch Fed Com 0409 216H
Goonch Fed Com 0409 136H

Section 4, Township 23S, Range 28E
Eddy County, New Mexico

Well Pad

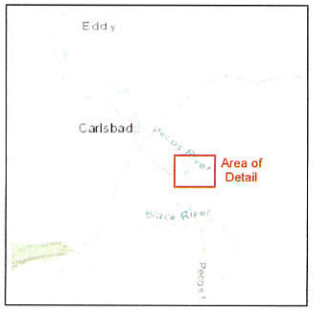
1:27,000
0 0.25 0.5 1
Miles

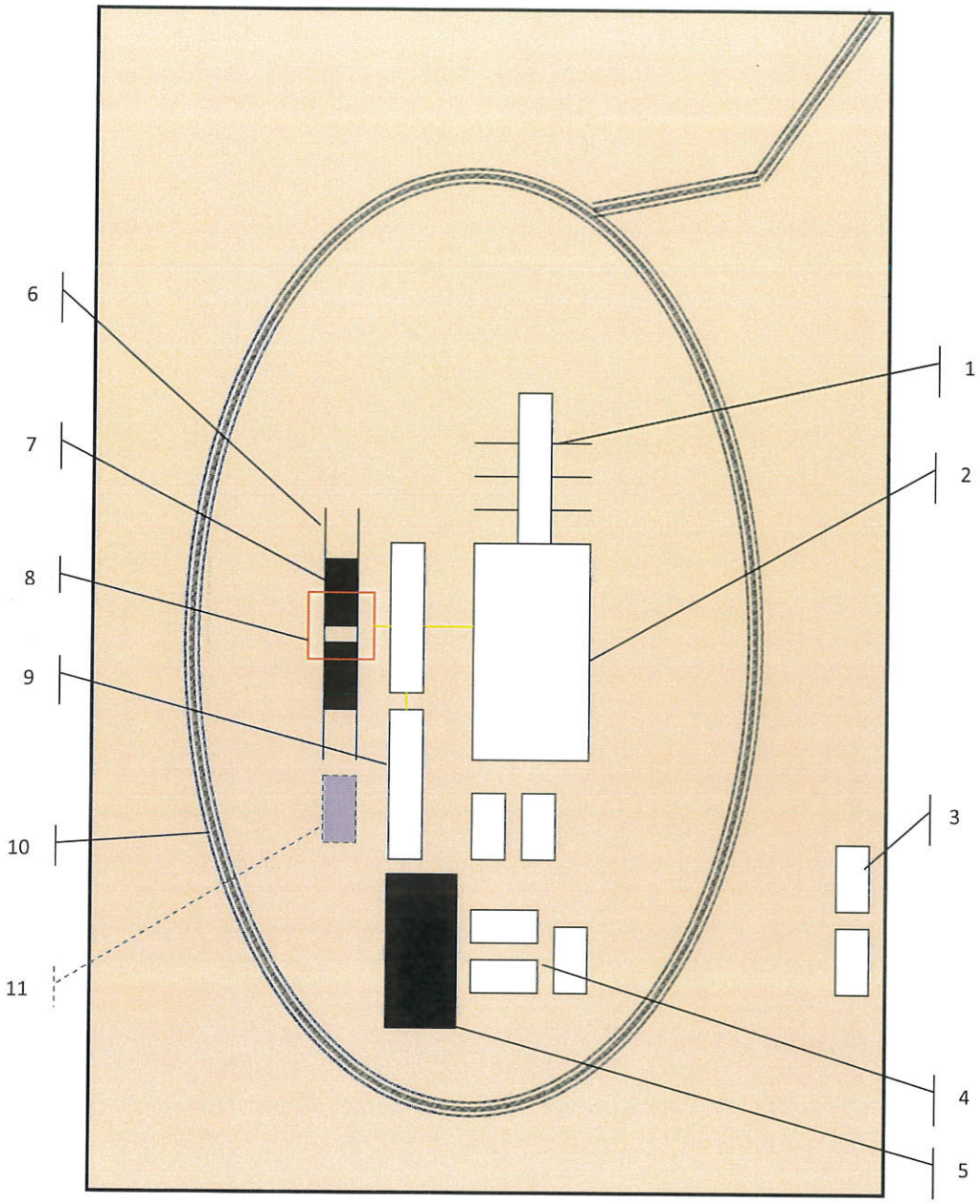
N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST, Inc.

Prepared by Permits West, Inc., July 8, 2019
for Novo Oil and Gas Northern Delaware, LLC





Schematic Closed Loop Drilling Rig*

1. Pipe Rack
2. Drill Rig
3. House Trailers/ Offices
4. Generator/Fuel/Storage
5. Overflow-Frac Tank
6. Skids
7. Roll Offs
8. Hopper or Centrifuge
9. Mud Tanks
10. Loop Drive
11. Generator (only for use with centrifuge)

*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available

Above: Centrifugal Closed Loop System

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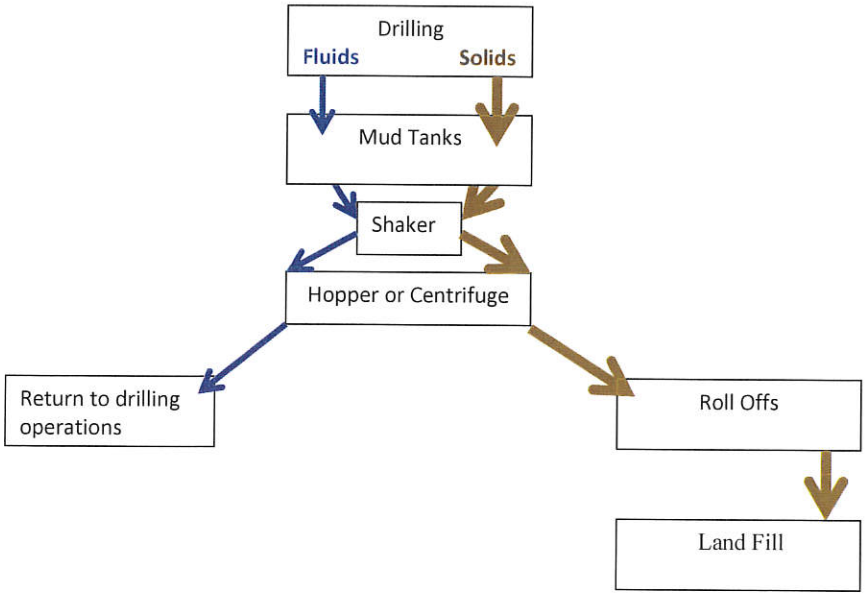
Closed Loop Drilling System: Mud tanks to right (1)
Hopper in air to settle out solids (2)
Water return pipe (3)
Shaker between hopper and mud tanks (4)
Roll offs on skids (5)

Flow Chart for Drilling Fluids and Solids



Photos Courtesy of Gandy Corporation Oil Field Service

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

COMMENTS

Action 24412

COMMENTS

Operator:	OGRID:	Action Number:	Action Type:
NOVO OIL & GAS NORTHERN DELAWA 1001 West Wilshire Blvd Suite 206 Oklahoma City, OK73116	372920	24412	FORM 3160-3

Created By	Comment	Comment Date
kpickford	Adhere to previous NMOCD Conditions of Approval	04/19/2021

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CONDITIONS OF APPROVAL

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OCD Reviewer	Condition
kpickford	Notify OCD 24 hours prior to casing & cement
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104
kpickford	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
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing
kpickford	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