

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No. NMNM118731
2. Name of Operator ENDURING RESOURCES LLC		6. If Indian, Allottee or Tribe Name EASTERN NAVAJO
Contact: LACEY GRANILLO E-Mail: lgranillo@enduringresources.com		7. If Unit or CA/Agreement, Name and/or No. NMNM135216A
3a. Address 1050 17TH STREET SUITE 2500 DENVER, CO 80265	3b. Phone No. (include area code) Ph: 505-636-9743	8. Well Name and No. W LYBROOK UNIT 732H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 27 T23N R9W NENW 1161FNL 2446FWL 36.201958 N Lat, 107.776802 W Lon		9. API Well No. 30-045-35814-00-X1
		10. Field and Pool or Exploratory Area LYBROOK MANCOS W
		11. County or Parish, State SAN JUAN COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
BP	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original A
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	PD

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

NAME CHANGE/CHANGE IN PLANS

Adhere to Previous NMOC
Conditions of Approval

A summary of the requested changes to the approved APD is outlined below. Please reference the attachments for additional details.

Well Name/Number change from W Lybrook Unit 732H to W Lybrook Unit 830H
C102
Moved BHL from section 21 to section 21
Moved POE from section 27 to section 27
Drilling Program
Directional plan updated based on new POE and BHL
Casing program change

NMOC
REC'D 3/24/20

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #501375 verified by the BLM Well Information System For ENDURING RESOURCES LLC, sent to the Farmington Committed to AFMSS for processing by JOE KILLINS on 03/20/2020 (20JK0198SE)	
Name (Printed/Typed) LACEY GRANILLO	Title PERMITTING SPECIALIST
Signature (Electronic Submission)	Date 01/29/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By JOE KILLINS	Title PETROLEUM ENGINEER	Date 03/20/2020
Conditions of approval, if any, are attached. Approval of this notice 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.		Office Farmington

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.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

AV

Additional data for EC transaction #501375 that would not fit on the form

32. Additional remarks, continued

Surface: 9-5/8" to 13-3/8"

Intermediate: 7" to 9-5/8"

Production: 4-1/2" liner to 5-1/2" long-string

Frac Program

Fluid type: change from nitrogen foam to slick-water

Water volume: increase from 15,000 bbls to 240,000 bbls (estimated)

Sand weight: increase from 3.1 million lbs to 11.0 million lbs (estimated)

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30.045-35814		*Pool Code 98157	*Pool Name LYBROOK MANCOS W
*Property Code 321259	*Property Name W LYBROOK UNIT		*Well Number 830H
*GRID No. 372286	*Operator Name ENDURING RESOURCES, LLC		*Elevation 6641'

10 Surface Location

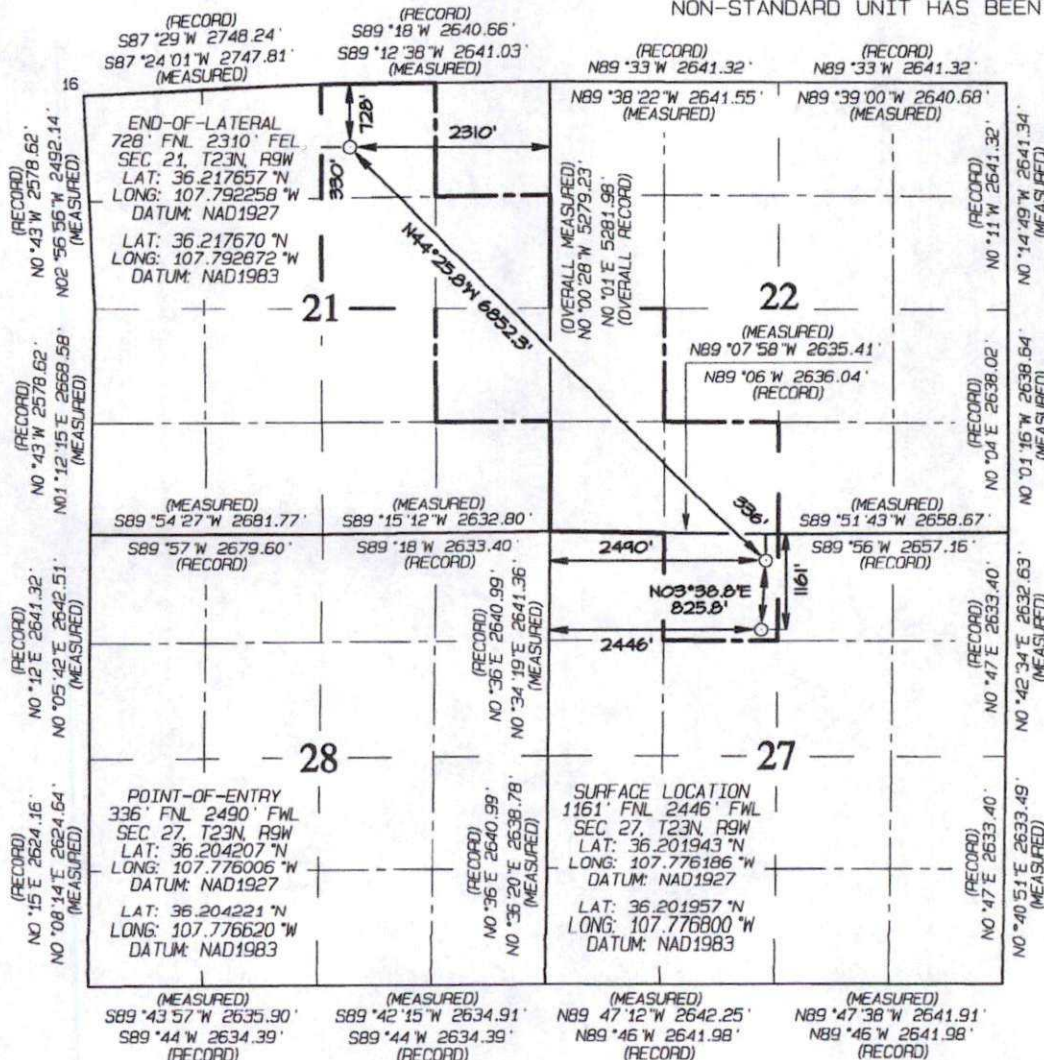
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	27	23N	9W		1161	NORTH	2446	WEST	SAN JUAN

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	21	23N	9W		728	NORTH	2310	EAST	SAN JUAN

12 Dedicated Acres 320.00		W/2 NE/4, SE/4 NE/4 NE/4 SE/4 - Section 21 W/2 SW/4, SE/4 SW/4 - Section 22 NE/4 NW/4 - Section 27		13 Joint or Infill	14 Consolidation Code	15 Order No. R-14051 - 12,807.24 Acres
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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.

Signature: *Jason C. Edwards* Date: 1/15/20
Printed Name: Jason C. Edwards
E-mail Address: jason.edwards@enr.com

18 SURVEYOR CERTIFICATION

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

Date Revised: JANUARY 14, 2020
Date of Survey: MARCH 10, 2016

Signature and Seal of Professional Surveyor



JASON C. EDWARDS

Certificate Number 15269



ENDURING RESOURCES IV, LLC
1050 SEVENTEENTH STREET, SUITE 2500
DENVER, COLORADO 80265

DRILLING PLAN: *Drill, complete, and equip single lateral in the Mancos-Cms formation*

WELL INFORMATION:

Name: W LYBROOK UNIT 830H

API Number: 30-045

AFE Number: not yet assigned

ER Well Number: not yet assigned

State: New Mexico

County: San Juan

Surface Elevation: 6,641 ft ASL (GL) 6,666 ft ASL (KB)

Surface Location: 27-23N-09W Sec-Twn-Rng 1,161 ft FNL 2,446 ft FWL
 36.201957 ° N latitude 107.7768 ° W longitude (NAD 83)

BH Location: 21-23N-09W Sec-Twn-Rng 728 ft FNL 2,310 ft FEL
 36.217670 ° N latitude 107.792258 ° W longitude (NAD 83)

Driving Directions: FROM THE INTERSECTION OF US HWY 550 & US HWY 64 IN BLOOMFIELD, NM:

South on US Hwy 550 for 38.3 miles to MM 113.4, Right (Southwest) on CR #7890 for 0.8 miles to fork, Left (South) remaining on CR #7890 for 1.3 miles to 4-way intersection, Left (Southeast) remaining on CR #7890 for 0.6 miles to fork, Right (Southwest) on CR #7890 for 0.5 miles to fork, Right (West) exiting CR #7890 onto access road for W Lybrook Unit 720H pad for 0.6 miles to fork, Left (West) onto access road for W Lybrook Unit 726H pad for 0.7 miles to fork, Left (West) for 1.4 miles to fork. Left (Southeast) for 0.6 miles to W Lybrook Unit 730H Pad (wells: 730H, 763H, 830H, 861H, 863H).

GEOLOGIC AND RESERVOIR INFORMATION:

Prognosis:	Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
	Ojo Alamo	6,435	231	231	W	normal
	Kirtland	6,375	291	291	W	normal
	Fruitland	6,060	606	606	G, W	sub
	Pictured Cliffs	5,750	916	916	G, W	sub
	Lewis	5,635	1,031	1,031	G, W	normal
	Chacra	5,400	1,266	1,266	G, W	normal
	Cliff House	4,380	2,286	2,291	G, W	sub
	Menefee	4,360	2,306	2,312	G, W	normal
	Point Lookout	3,385	3,281	3,305	G, W	normal
	Mancos	3,110	3,556	3,585	O,G	sub (~0.38)
	Gallup (MNCS_A)	2,885	3,781	3,821	O,G	sub (~0.38)
	MNCS_B	2,780	3,886	3,946	O,G	sub (~0.38)
	MNCS_C	2,695	3,971	4,065	O,G	sub (~0.38)
	MNCS_Cms	2,650	4,016	4,141	O,G	sub (~0.38)
	P.O.E. TARGET	2,550	4,116	4,717	O,G	sub (~0.38)
	PROJECTED TD	2,495	4,171	11,570	O,G	sub (~0.38)

Surface: Nacimiento

Oil & Gas Zones: Several gas bearing zones will be encountered; target formation is the Gallup

Pressure: Normal (0.43 psi/ft) or sub-normal pressure gradients anticipated in all formations

Max. pressure gradient: 0.43 psi/ft Evacuated hole gradient: 0.22 psi/ft

Maximum anticipated BH pressure, assuming maximum pressure gradient: 1,800 psi

Maximum anticipated surface pressure, assuming partially evacuated hole: 890 psi

Temperature: Maximum anticipated BHT is 125° F or less

H₂S INFORMATION:

H₂S Zones: Encountering hydrogen-sulfide bearing zones is **NOT** anticipated.

Safety: Sensors and alarms will be placed in the substructure, on the rig floor, above the pits, and at the shakers.

LOGGING, CORING, AND TESTING:

Mud Logs: None planned; remote geo-steering from drill out of 9-5/8" casing to TD; gas detection from drillout of 13-3/8" casing to TD.

MWD / LWD: Gamma Ray from drillout of 13-3/8" casing to TD

Open Hole Logs: None planned

Testing: None planned

Coring: None planned

Cased Hole Logs: CBL on 5-1/2" casing from deepest free-fall depth to surface

DRILLING RIG INFORMATION:

Contractor: Aztec

Rig No.: 1000

Draw Works: E80 AC 1,500 hp

Mast: Hyduke Triple (136 ft, 600,000 lbs, 10 lines)

Top Drive: NOV IDS-350PE (350 ton)

Prime Movers: 4 - GE Jenbacher Natural Gas Generator

Pumps: 2 - RS F-1600 (7,500 psi)

BOPE 1: Cameron single & double gate rams (13-5/8", 3,000 psi)

BOPE 2: Cameron annular (13-5/8", 5,000 psi)

Choke: Cameron (4", 10,000 psi)

KB-GL (ft): 25

NOTE: A different rig may be used to drill the well depending on rig availability

BOPE REQUIREMENTS:

See attached diagram for details regarding BOPE specifications and configuration.

- 1) Rig will be equipped with upper and lower kelly cocks with handles available.
- 2) Inside BOP and TIW valves will be available to use on all sizes and threads of drill pipe used while drilling the well.
- 2) BOP accumulator will have enough capacity to open the HCR valve, close all rams and annular preventer, and retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity, and the fluid level shall be maintained at manufacturer's recommendation. There will be two additional sources of power for the closing pumps (electric and air). Sufficient nitrogen bottles will be available and will be recharged when pressure falls below manufacturer's recommended minimum.
- 3) BOP testing shall be conducted (a) when initially installed, (b) whenever any seal is broken or repaired, (c) if the time since the previous test exceeds 30 days. Tests will be conducted using a test plug. BOP ram preventers will be tested to 3,000 psig for 10 minutes, and the annular preventer will be tested to 1,500 psi for 10 minutes. Ram and annular preventers will be tested to 250 psi for 5 minutes. Additionally, BOP and casing strings will be tested to .22 psi/ft or 1,500 psi, whichever is greater but not exceeding 70% of yield strength of the casing, for 30 minutes, prior to drilling out 13-3/8" and 9-5/8" casing. Rams and hydraulically operated remote choke line valve will be function tested daily at a minimum.
- 4) Remote valve for BOP rams, HCR, and choke shall be placed in a location that is readily available to the driller. The remote BOP valve shall be capable of closing and opening the rams.
- 5) Manual locking devices (hand wheels) shall be installed on rams. A valve will be installed on the annular preventer's closing line as close as possible to the preventer to act as a locking device. The valve will be maintained in the open position and shall only be closed when there is no power to the accumulator.

FLUIDS AND SOLIDS CONTROL PROGRAM:

- Fluid Measurement:** Pumps shall be equipped with stroke counters with displays in the dog-house. Slow pump speed shall be recorded daily and after mudding up, at a minimum, on the drilling report. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog-house. Gas-detecting equipment will be installed at the shakers, and readouts will be available in the dog-house and the in the geologist's work-station (if geologist or mud-logger is on-site).
- Closed-Loop System:** A fully, closed-loop system will be utilized. The system will consist of above-ground piping and above-ground storage tanks and bins. The system will not entail any earthen pits, below-grade storage, or drying pads. All equipment will be disassembled and removed from the site when drilling operations cease. The system will be capable of storing all fluids and generated cuttings and of preventing uncontrolled releases of the same. The system will be operated in an efficient manner to allow the recycling and reuse of as much fluid as possible and to minimize the amount of fluids and solids that require disposal.
- Fluid Disposal:** Fluids that cannot be reused, recycled, or returned to the supplier will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).
- Solids Disposal:** Drilling solids will be stored (until haul-off) on-site in separate containers with no other waste, debris, or garbage products. Waste solids will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).
- Fluid Program:** See "Detailed Drilling Plan" section for specifics.

DETAILED DRILLING PLAN:

SURFACE: Drill vertically to casing setting depth (plus necessary rathole), run casing, cement casing to surface.

0 ft (MD)	to	350 ft (MD)	Hole Section Length:	350 ft
0 ft (TVD)	to	350 ft (TVD)	Casing Required:	350 ft

Note: Surface hole may be drilled, cased, and cemented with a smaller rig in advance of the drilling rig.

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	Fresh Water	8.4	N/C	2 - 8	2 - 12	9.0	Spud mud

Hole Size: 17-1/2"

Bit / Motor: Mill Tooth or PDC, no motor

MWD / Survey: No MWD, deviation survey

Logging: None

Casing Specs:		Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	13.375	54.5	J-55	BTC	1,130	2,730	853,000	909,000
Loading					153	525	116,634	116,634
Min. S.F.					7.39	5.20	7.31	7.79

Assumptions: Collapse: fully evacuated casing with 8.4 ppg equivalent external pressure gradient

Burst: maximum anticipated surface pressure with 9.5 ppg fluid inside casing while drilling intermediate hole and 8.4 ppg equivalent external pressure gradient

Tension: buoyed weight in 8.4 ppg fluid with 100,000 lbs over-pull

MU Torque (ft lbs): Minimum: N/A Optimum: N/A Maximum: N/A

Make-up as per API Buttress Connection running procedure.

Casing Summary: Float shoe, 1 jt casing, float collar, casing to surface

Centralizers: 2 centralizers per jt stop-banded 10' from each collar on bottom 3 jts, 1 centralizer per 2 jts to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	Hole Cap. (cuft/ft)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
	Class G	15.8	1.174	5.15	0.6946	100%	0	414

Calculated cement volumes assume gauge hole and the excess noted in table

Halliburton HALCEM surface cementing blend

Notify NMOCD & BLM if cement is not circulated to surface. Cement must achieve 500 psi compressive strength before drilling out.

INTERMEDIATE: Drill as per directional plan to casing setting depth, run casing, cement casing to surface.

350 ft (MD)	to	2,414 ft (MD)	Hole Section Length:	2,064 ft
350 ft (TVD)	to	2,406 ft (TVD)	Casing Required:	2,414 ft

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND (KCI)	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	

Hole Size: 12-1/4"

Bit / Motor: PDC w/mud motor

MWD / Survey: MWD Survey with inclination and azimuth survey (every 100' at a minimum), GR optional

Logging: None

Pressure Test: NU BOPE and test (as noted above); pressure test 13-3/8" casing to 1,500 psi for 30 minutes.

Casing Specs:		Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	9.625	36.0	J-55	LTC	2,020	3,520	564,000	453,000
Loading					1,051	1,028	175,772	175,772
Min. S.F.					1.92	3.43	3.21	2.58

Assumptions: Collapse: fully evacuated casing with 8.4 ppg equivalent external pressure gradient

Burst: maximum anticipated surface pressure with 9.5 ppg fluid inside casing while drilling production hole and 8.4 ppg equivalent external pressure gradient

Tension: buoyed weight in 8.4 ppg fluid with 100,000 lbs over-pull

MU Torque (ft lbs): Minimum: 3,400 Optimum: 4,530 Maximum: 5,660

Casing Summary: Float shoe, 1 jt casing, float collar, casing to surface

Centralizers: 2 centralizers per jt stop-banded 10' from each collar on bottom 3 jts, 1 centralizer per 2 jts to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ Blend	12.3	1.987	10.16	70%	0	528
Tail	Class G	15.8	1.148	4.98	20%	1,914	164

Annular Capacity 0.3627 cuft/ft 9-5/8" casing x 13-3/8" casing annulus

0.3132 cuft/ft 9-5/8" casing x 12-1/4" hole annulus

Calculated cement volumes assume gauge hole and the excess noted in table

Halliburton ECONOCHEM & HALCEM cementing blend

Notify NMOCD & BLM if cement is not circulated to surface. Cement must achieve 500 psi compressive strength before drilling out.

PRODUCTION: Drill to TD following directional plan, run casing, cement casing to surface.

2,414 ft (MD)	to	11,570 ft (MD)	Hole Section Length:	9,156 ft
2,406 ft (TVD)	to	4,171 ft (TVD)	Casing Required:	11,570 ft

Estimated KOP:	3,544 ft (MD)	3,516 ft (TVD)
Estimated Landing Point (P.O.E.):	4,717 ft (MD)	4,116 ft (TVD)
Estimated Lateral Length:	6,853 ft (MD)	

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND (FW)	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	OBM as contingency

Hole Size: 8-1/2"

Bit / Motor: PDC w/mud motor

MWD / Survey: MWD with GR, inclination, and azimuth (survey every joint from KOP to Landing Point and survey every 100' minimum before KOP and after Landing Point)

Logging: GR MWD for entire section, no mud-log or cuttings sampling, no OH WL logs

Pressure Test: NU BOPE and test (as noted above); pressure test 9-5/8" casing to **1,500** psi for 30 minutes.

Casing Specs:	Size (in)	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
	5.500	17.0	P-110	LTC	7,460	10,640	546,000	445,000
	Loading				2,060	8,890	269,726	269,726
	Min. S.F.				3.62	1.20	2.02	1.65

Assumptions: Collapse: fully evacuated casing with 9.5 ppg fluid in the annulus (floating casing during running)
Burst: 8,500 psi maximum surface treating pressure with 10.2 ppg equivalent mud weight sand laden fluid with 8.4 ppg equivalent external pressure gradient
Tension: buoyed weight in 9.0 ppg fluid with 100,000 lbs over-pull

MU Torque (ft lbs): Minimum: 3,470 Optimum: 4,620 Maximum: 5,780

Casing Summary: Float shoe, 1 jt casing, float collar, 1 jt casing, float collar, 1 jt casing, toe-initiation sleeve, 20' marker joint, toe-initiation sleeve, casing to KOP with 20' marker joints spaced evenly in lateral every 2,000', floatation sub, casing to surface. **The toe-initiation sleeves must be positioned INSIDE the 330' unit setback.**

Centralizers: Centralizer count and placement may be adjusted based on well conditions and as-drilled surveys.

Lateral: 1 centralizer per joint

Curve: 1 centralizer per joint from landing point to KOP

KOP to surf: 1 centralizer per 2 joints

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ blend	12.4	1.907	9.981	50%	0	765
Tail	G:POZ blend	13.3	1.360	5.999	10%	3,821	1,436

Annular Capacity 0.2691 cuft/ft 5-1/2" casing x 9-5/8" casing annulus

0.2291 cuft/ft 5-1/2" casing x 8-1/2" hole annulus

Calculated cement volumes assume gauge hole and the excess noted in table

Halliburton ECONOCEM & EXTENDACEM cementing blend

Notify NMOCD & BLM if cement is not circulated to surface.

Note: The lateral may be drilled outside the applicable unit setback to maximize the length of the completed interval and to maximize resource recovery. If the well is drilled outside the setback, the toe initiation sleeve(s) and all perforations will be placed inside the setback. An unorthodox location application is not required because the completed interval will be entirely within the setback as defined and allowed by NMAC 19.15.16.7B(1), NMAC 19.15.16.14B(2), NMAC 19.15.16.15B(2) . W Lybrook Unit Order Number is R-14051.

FINISH WELL: ND BOP, cap well, RDMO.

COMPLETION AND PRODUCTION PLAN:

Frac: 40 plug-and-perf stages with 240,000 bbls slickwater fluid and 11,000,000 lbs of proppant (estimated)

Flowback: Flow back through production tubing as pressures allow (ESP may be used for load recovery assistance)

Production: Produce through production tubing via gas-lift into permanent production and storage facilities

ESTIMATED START DATES:

Drilling: TBD

Completion: TBD

Production: TBD

Prepared by: Alec Bridge **1/21/2020**

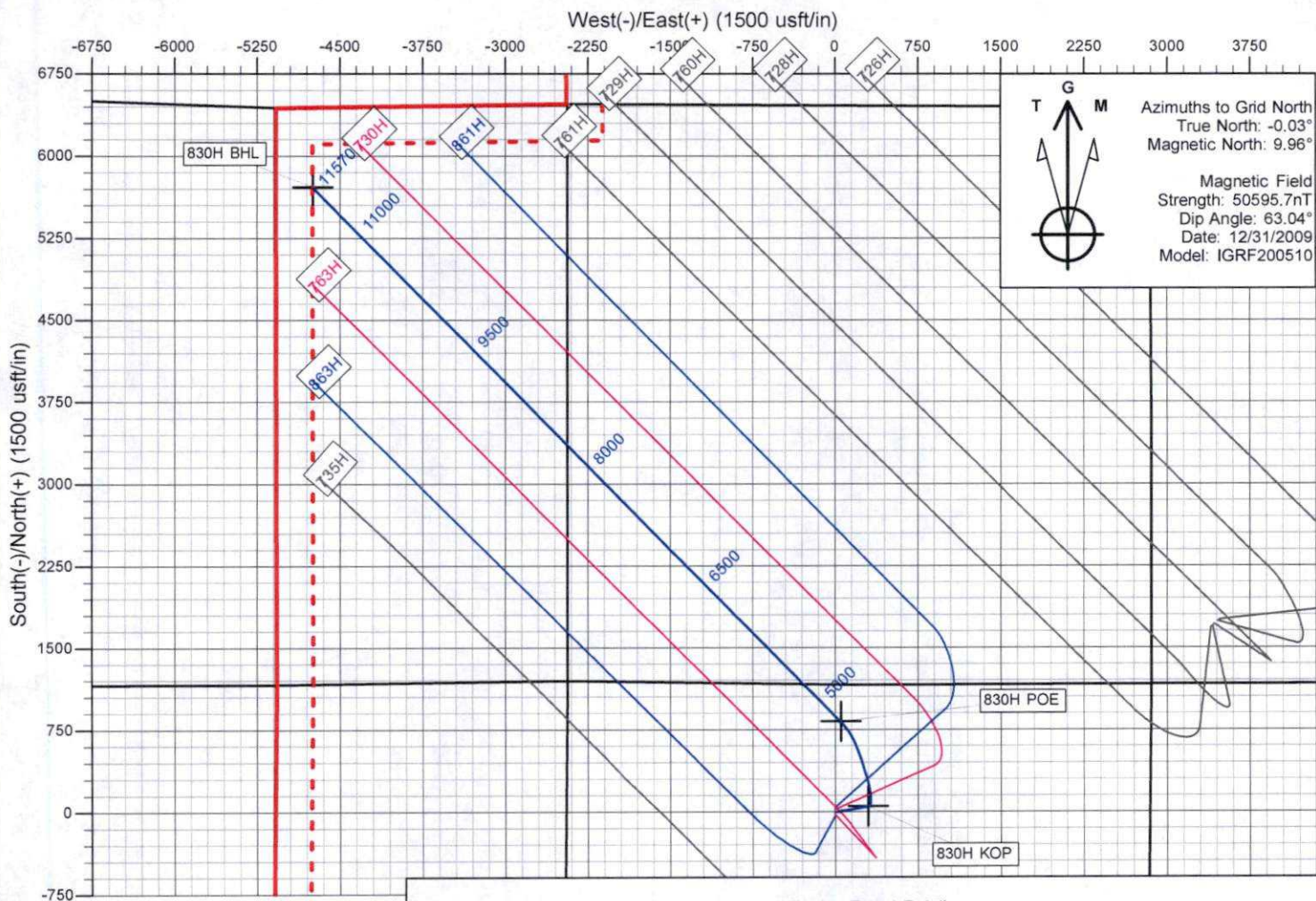


Enduring Resources LLC

Directional Drilling Plan
Plan View & Section View

W Lybrook Unit 830H

San Juan County, New Mexico
T23N - R09W - Sec.27 - Lot C
Surface Latitude: 36.201957°N
Surface Longitude: 107.776800°W
Ground Level: 6641.0
Reference Elevation: KB @ 6666.0usft (Original Well Elev)





Enduring Resources LLC

San Juan Basin - W Lybrook Unit

730H Pad

830H

Wellbore #1

Plan: Design #1

Standard Planning Report

21 January, 2020



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 830H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 6666.0usft (Original Well Elev)
Project:	San Juan Basin - W Lybrook Unit	MD Reference:	KB @ 6666.0usft (Original Well Elev)
Site:	730H Pad	North Reference:	Grid
Well:	830H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	San Juan Basin - W Lybrook Unit, San Juan County, New Mexico		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	730H Pad, San Juan County, New Mexico				
Site Position:		Northing:	1,892,834.72 usft	Latitude:	36.202012°N
From:	Lat/Long	Easting:	2,739,771.06 usft	Longitude:	107.776799°W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.03 °

Well	830H					
Well Position	+N/-S	-20.0 usft	Northing:	1,892,814.69 usft	Latitude:	36.201957°N
	+E/-W	-0.3 usft	Easting:	2,739,770.78 usft	Longitude:	107.776800°W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,641.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	10.00	63.04	50,595.72126747

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	320.32

Plan Survey Tool Program	Date	1/21/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	11,569.5	Design #1 (Wellbore #1)	MWD
				OWSG MWD - Standard

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,750.0	0.00	0.00	1,750.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,112.2	10.87	80.54	2,110.1	5.6	33.8	3.00	3.00	0.00	80.54	
3,543.8	10.87	80.54	3,516.0	50.0	300.0	0.00	0.00	0.00	0.00	830H KOP
4,464.9	88.36	338.08	4,111.3	614.5	189.7	9.85	8.41	-11.12	-102.54	
4,717.0	89.54	315.57	4,116.0	824.2	52.6	8.94	0.47	-8.93	-87.25	830H POE
11,569.5	89.54	315.57	4,171.0	5,717.5	-4,744.1	0.00	0.00	0.00	0.00	830H BHL



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 830H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 6666.0usft (Original Well Elev)
Project:	San Juan Basin - W Lybrook Unit	MD Reference:	KB @ 6666.0usft (Original Well Elev)
Site:	730H Pad	North Reference:	Grid
Well:	830H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
231.0	0.00	0.00	231.0	0.0	0.0	0.0	0.00	0.00	0.00
Ojo Alamo									
291.0	0.00	0.00	291.0	0.0	0.0	0.0	0.00	0.00	0.00
Kirtland									
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
350.0	0.00	0.00	350.0	0.0	0.0	0.0	0.00	0.00	0.00
13 3/8"									
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
606.0	0.00	0.00	606.0	0.0	0.0	0.0	0.00	0.00	0.00
Fruitland									
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
916.0	0.00	0.00	916.0	0.0	0.0	0.0	0.00	0.00	0.00
Pictured Cliffs									
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,031.0	0.00	0.00	1,031.0	0.0	0.0	0.0	0.00	0.00	0.00
Lewis									
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,266.0	0.00	0.00	1,266.0	0.0	0.0	0.0	0.00	0.00	0.00
Chacra_A									
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,750.0	0.00	0.00	1,750.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	1.50	80.54	1,800.0	0.1	0.6	-0.3	3.00	3.00	0.00
1,900.0	4.50	80.54	1,899.8	1.0	5.8	-3.0	3.00	3.00	0.00
2,000.0	7.50	80.54	1,999.3	2.7	16.1	-8.2	3.00	3.00	0.00
2,100.0	10.50	80.54	2,098.0	5.3	31.5	-16.1	3.00	3.00	0.00
2,112.2	10.87	80.54	2,110.1	5.6	33.8	-17.2	3.00	3.00	0.00
2,200.0	10.87	80.54	2,196.3	8.4	50.1	-25.6	0.00	0.00	0.00
2,291.4	10.87	80.54	2,286.0	11.2	67.1	-34.2	0.00	0.00	0.00
Cliff House_Basal									
2,300.0	10.87	80.54	2,294.5	11.4	68.7	-35.1	0.00	0.00	0.00
2,311.7	10.87	80.54	2,306.0	11.8	70.9	-36.2	0.00	0.00	0.00
Menefee									
2,400.0	10.87	80.54	2,392.7	14.5	87.3	-44.5	0.00	0.00	0.00
2,413.6	10.87	80.54	2,406.0	15.0	89.8	-45.8	0.00	0.00	0.00
9 5/8"									
2,500.0	10.87	80.54	2,490.9	17.6	105.9	-54.0	0.00	0.00	0.00
2,600.0	10.87	80.54	2,589.1	20.7	124.5	-63.5	0.00	0.00	0.00
2,700.0	10.87	80.54	2,687.3	23.8	143.1	-73.0	0.00	0.00	0.00
2,800.0	10.87	80.54	2,785.5	26.9	161.7	-82.5	0.00	0.00	0.00
2,900.0	10.87	80.54	2,883.7	30.0	180.3	-92.0	0.00	0.00	0.00
3,000.0	10.87	80.54	2,981.9	33.1	198.9	-101.5	0.00	0.00	0.00



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 830H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 6666.0usft (Original Well Elev)
Project:	San Juan Basin - W Lybrook Unit	MD Reference:	KB @ 6666.0usft (Original Well Elev)
Site:	730H Pad	North Reference:	Grid
Well:	830H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,100.0	10.87	80.54	3,080.1	36.2	217.5	-111.0	0.00	0.00	0.00	
3,200.0	10.87	80.54	3,178.3	39.3	236.1	-120.5	0.00	0.00	0.00	
3,300.0	10.87	80.54	3,276.5	42.4	254.7	-130.0	0.00	0.00	0.00	
3,304.5	10.87	80.54	3,281.0	42.6	255.5	-130.4	0.00	0.00	0.00	
Point Lookout										
3,400.0	10.87	80.54	3,374.7	45.5	273.3	-139.4	0.00	0.00	0.00	
3,500.0	10.87	80.54	3,472.9	48.6	291.8	-148.9	0.00	0.00	0.00	
3,543.8	10.87	80.54	3,516.0	50.0	300.0	-153.1	0.00	0.00	0.00	
3,584.5	10.73	59.02	3,556.0	52.6	307.0	-155.6	9.85	-0.35	-52.85	
Mancos										
3,600.0	11.06	51.15	3,571.2	54.3	309.4	-155.8	9.85	2.13	-50.94	
3,700.0	16.71	16.34	3,668.4	74.1	321.0	-147.9	9.85	5.66	-34.81	
3,800.0	25.07	1.37	3,761.8	109.2	325.5	-123.9	9.85	8.35	-14.97	
3,821.4	26.98	359.35	3,781.0	118.6	325.6	-116.7	9.85	8.94	-9.43	
Gallup (MNCS_A)										
3,900.0	34.19	353.77	3,848.7	158.4	323.0	-84.3	9.85	9.17	-7.10	
3,946.4	38.53	351.37	3,886.0	185.7	319.4	-61.1	9.85	9.36	-5.17	
MNCS_B										
4,000.0	43.60	349.11	3,926.4	220.3	313.4	-30.5	9.85	9.45	-4.21	
4,065.0	49.80	346.88	3,971.0	266.6	303.5	11.4	9.85	9.53	-3.44	
MNCS_C										
4,100.0	53.14	345.84	3,992.8	293.2	297.0	35.9	9.85	9.57	-2.96	
4,140.6	57.04	344.74	4,016.0	325.4	288.6	66.1	9.85	9.60	-2.70	
MNCS_Cms										
4,200.0	62.76	343.30	4,045.8	374.8	274.4	113.2	9.85	9.62	-2.43	
4,300.0	72.41	341.17	4,083.9	462.7	246.2	198.8	9.85	9.65	-2.13	
4,400.0	82.08	339.26	4,105.9	554.3	213.2	290.4	9.85	9.67	-1.91	
4,464.9	88.36	338.08	4,111.3	614.5	189.7	351.8	9.85	9.68	-1.83	
4,500.0	88.52	334.94	4,112.3	646.7	175.7	385.5	8.94	0.44	-8.93	
4,600.0	88.97	326.02	4,114.5	733.6	126.5	483.8	8.94	0.46	-8.93	
4,700.0	89.46	317.09	4,115.9	811.8	64.4	583.7	8.94	0.48	-8.92	
4,717.0	89.54	315.57	4,116.0	824.2	52.6	600.7	8.94	0.49	-8.92	
4,800.0	89.54	315.57	4,116.7	883.4	-5.4	683.3	0.00	0.00	0.00	
4,900.0	89.54	315.57	4,117.5	954.8	-75.4	783.0	0.00	0.00	0.00	
5,000.0	89.54	315.57	4,118.3	1,026.2	-145.4	882.6	0.00	0.00	0.00	
5,100.0	89.54	315.57	4,119.1	1,097.6	-215.4	982.3	0.00	0.00	0.00	
5,200.0	89.54	315.57	4,119.9	1,169.0	-285.4	1,081.9	0.00	0.00	0.00	
5,300.0	89.54	315.57	4,120.7	1,240.5	-355.4	1,181.6	0.00	0.00	0.00	
5,400.0	89.54	315.57	4,121.5	1,311.9	-425.4	1,281.2	0.00	0.00	0.00	
5,500.0	89.54	315.57	4,122.3	1,383.3	-495.4	1,380.9	0.00	0.00	0.00	
5,600.0	89.54	315.57	4,123.1	1,454.7	-565.4	1,480.6	0.00	0.00	0.00	
5,700.0	89.54	315.57	4,123.9	1,526.1	-635.4	1,580.2	0.00	0.00	0.00	
5,800.0	89.54	315.57	4,124.7	1,597.5	-705.4	1,679.9	0.00	0.00	0.00	
5,900.0	89.54	315.57	4,125.5	1,668.9	-775.4	1,779.5	0.00	0.00	0.00	
6,000.0	89.54	315.57	4,126.3	1,740.3	-845.4	1,879.2	0.00	0.00	0.00	
6,100.0	89.54	315.57	4,127.1	1,811.7	-915.4	1,978.8	0.00	0.00	0.00	
6,200.0	89.54	315.57	4,127.9	1,883.1	-985.4	2,078.5	0.00	0.00	0.00	
6,300.0	89.54	315.57	4,128.7	1,954.5	-1,055.4	2,178.1	0.00	0.00	0.00	
6,400.0	89.54	315.57	4,129.5	2,026.0	-1,125.4	2,277.8	0.00	0.00	0.00	
6,500.0	89.54	315.57	4,130.3	2,097.4	-1,195.4	2,377.4	0.00	0.00	0.00	
6,600.0	89.54	315.57	4,131.1	2,168.8	-1,265.4	2,477.1	0.00	0.00	0.00	
6,700.0	89.54	315.57	4,131.9	2,240.2	-1,335.4	2,576.7	0.00	0.00	0.00	
6,800.0	89.54	315.57	4,132.7	2,311.6	-1,405.4	2,676.4	0.00	0.00	0.00	



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 830H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 6666.0usft (Original Well Elev)
Project:	San Juan Basin - W Lybrook Unit	MD Reference:	KB @ 6666.0usft (Original Well Elev)
Site:	730H Pad	North Reference:	Grid
Well:	830H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,900.0	89.54	315.57	4,133.5	2,383.0	-1,475.4	2,776.1	0.00	0.00	0.00
7,000.0	89.54	315.57	4,134.3	2,454.4	-1,545.5	2,875.7	0.00	0.00	0.00
7,100.0	89.54	315.57	4,135.1	2,525.8	-1,615.5	2,975.4	0.00	0.00	0.00
7,200.0	89.54	315.57	4,135.9	2,597.2	-1,685.5	3,075.0	0.00	0.00	0.00
7,300.0	89.54	315.57	4,136.7	2,668.6	-1,755.5	3,174.7	0.00	0.00	0.00
7,400.0	89.54	315.57	4,137.5	2,740.1	-1,825.5	3,274.3	0.00	0.00	0.00
7,500.0	89.54	315.57	4,138.3	2,811.5	-1,895.5	3,374.0	0.00	0.00	0.00
7,600.0	89.54	315.57	4,139.1	2,882.9	-1,965.5	3,473.6	0.00	0.00	0.00
7,700.0	89.54	315.57	4,139.9	2,954.3	-2,035.5	3,573.3	0.00	0.00	0.00
7,800.0	89.54	315.57	4,140.7	3,025.7	-2,105.5	3,672.9	0.00	0.00	0.00
7,900.0	89.54	315.57	4,141.5	3,097.1	-2,175.5	3,772.6	0.00	0.00	0.00
8,000.0	89.54	315.57	4,142.3	3,168.5	-2,245.5	3,872.3	0.00	0.00	0.00
8,100.0	89.54	315.57	4,143.2	3,239.9	-2,315.5	3,971.9	0.00	0.00	0.00
8,200.0	89.54	315.57	4,144.0	3,311.3	-2,385.5	4,071.6	0.00	0.00	0.00
8,300.0	89.54	315.57	4,144.8	3,382.7	-2,455.5	4,171.2	0.00	0.00	0.00
8,400.0	89.54	315.57	4,145.6	3,454.1	-2,525.5	4,270.9	0.00	0.00	0.00
8,500.0	89.54	315.57	4,146.4	3,525.6	-2,595.5	4,370.5	0.00	0.00	0.00
8,600.0	89.54	315.57	4,147.2	3,597.0	-2,665.5	4,470.2	0.00	0.00	0.00
8,700.0	89.54	315.57	4,148.0	3,668.4	-2,735.5	4,569.8	0.00	0.00	0.00
8,800.0	89.54	315.57	4,148.8	3,739.8	-2,805.5	4,669.5	0.00	0.00	0.00
8,900.0	89.54	315.57	4,149.6	3,811.2	-2,875.5	4,769.1	0.00	0.00	0.00
9,000.0	89.54	315.57	4,150.4	3,882.6	-2,945.5	4,868.8	0.00	0.00	0.00
9,100.0	89.54	315.57	4,151.2	3,954.0	-3,015.5	4,968.4	0.00	0.00	0.00
9,200.0	89.54	315.57	4,152.0	4,025.4	-3,085.5	5,068.1	0.00	0.00	0.00
9,300.0	89.54	315.57	4,152.8	4,096.8	-3,155.5	5,167.8	0.00	0.00	0.00
9,400.0	89.54	315.57	4,153.6	4,168.2	-3,225.5	5,267.4	0.00	0.00	0.00
9,500.0	89.54	315.57	4,154.4	4,239.7	-3,295.5	5,367.1	0.00	0.00	0.00
9,600.0	89.54	315.57	4,155.2	4,311.1	-3,365.5	5,466.7	0.00	0.00	0.00
9,700.0	89.54	315.57	4,156.0	4,382.5	-3,435.5	5,566.4	0.00	0.00	0.00
9,800.0	89.54	315.57	4,156.8	4,453.9	-3,505.5	5,666.0	0.00	0.00	0.00
9,900.0	89.54	315.57	4,157.6	4,525.3	-3,575.5	5,765.7	0.00	0.00	0.00
10,000.0	89.54	315.57	4,158.4	4,596.7	-3,645.5	5,865.3	0.00	0.00	0.00
10,100.0	89.54	315.57	4,159.2	4,668.1	-3,715.5	5,965.0	0.00	0.00	0.00
10,200.0	89.54	315.57	4,160.0	4,739.5	-3,785.5	6,064.6	0.00	0.00	0.00
10,300.0	89.54	315.57	4,160.8	4,810.9	-3,855.5	6,164.3	0.00	0.00	0.00
10,400.0	89.54	315.57	4,161.6	4,882.3	-3,925.5	6,264.0	0.00	0.00	0.00
10,500.0	89.54	315.57	4,162.4	4,953.7	-3,995.5	6,363.6	0.00	0.00	0.00
10,600.0	89.54	315.57	4,163.2	5,025.2	-4,065.5	6,463.3	0.00	0.00	0.00
10,700.0	89.54	315.57	4,164.0	5,096.6	-4,135.5	6,562.9	0.00	0.00	0.00
10,800.0	89.54	315.57	4,164.8	5,168.0	-4,205.5	6,662.6	0.00	0.00	0.00
10,900.0	89.54	315.57	4,165.6	5,239.4	-4,275.5	6,762.2	0.00	0.00	0.00
11,000.0	89.54	315.57	4,166.4	5,310.8	-4,345.5	6,861.9	0.00	0.00	0.00
11,100.0	89.54	315.57	4,167.2	5,382.2	-4,415.5	6,961.5	0.00	0.00	0.00
11,200.0	89.54	315.57	4,168.0	5,453.6	-4,485.5	7,061.2	0.00	0.00	0.00
11,300.0	89.54	315.57	4,168.8	5,525.0	-4,555.5	7,160.8	0.00	0.00	0.00
11,400.0	89.54	315.57	4,169.6	5,596.4	-4,625.5	7,260.5	0.00	0.00	0.00
11,500.0	89.54	315.57	4,170.4	5,667.8	-4,695.5	7,360.1	0.00	0.00	0.00
11,569.5	89.54	315.57	4,171.0	5,717.5	-4,744.1	7,429.4	0.00	0.00	0.00



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 830H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 6666.0usft (Original Well Elev)
Project:	San Juan Basin - W Lybrook Unit	MD Reference:	KB @ 6666.0usft (Original Well Elev)
Site:	730H Pad	North Reference:	Grid
Well:	830H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
830H KOP	0.00	0.00	3,516.0	50.0	300.0	1,892,864.69	2,740,070.78	36.202094°N	107.775783°W
- plan hits target center									
- Point									
830H POE	0.00	0.00	4,116.0	824.2	52.6	1,893,638.87	2,739,823.40	36.204221°N	107.776620°W
- plan hits target center									
- Point									
830H BHL	0.00	0.00	4,171.0	5,717.5	-4,744.1	1,898,532.18	2,735,026.64	36.217670°N	107.792872°W
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
350.0	350.0	13 3/8"	13-3/8	17-1/2
2,413.6	2,406.0	9 5/8"	9-5/8	12-1/4

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
231.0	231.0	Ojo Alamo		0.00	
291.0	291.0	Kirtland		0.00	
606.0	606.0	Fruitland		0.00	
916.0	916.0	Pictured Cliffs		0.00	
1,031.0	1,031.0	Lewis		0.00	
1,266.0	1,266.0	Chacra_A		0.00	
2,291.4	2,286.0	Cliff House_Basal		0.00	
2,311.7	2,306.0	Menefee		0.00	
3,304.5	3,281.0	Point Lookout		0.00	
3,584.5	3,556.0	Mancos		0.00	
3,821.4	3,781.0	Gallup (MNCS_A)		0.00	
3,946.4	3,886.0	MNCS_B		0.00	
4,065.0	3,971.0	MNCS_C		0.00	
4,140.6	4,016.0	MNCS_Cms		0.00	

WELL NAME: W LYBROOK UNIT 830H**OBJECTIVE: Drill, complete, and equip single lateral in the Mancos-Cms formation**

API Number: 30-045

AFE Number: not yet assigned

ER Well Number: not yet assigned

State: New Mexico

County: San Juan

Surface Elev.: 6,641 ft ASL (GL) 6,666 ft ASL (KB)

Surface Location: 27-23N-09W Sec-Twn- Rng 1,161 ft FNL 2,446 ft FWL

BH Location: 21-23N-09W Sec-Twn- Rng 728 ft FNL 2310 ft FEL

Driving Directions: **FROM THE INTERSECTION OF US HWY 550 & US HWY 64 IN BLOOMFIELD, NM:**

South on US Hwy 550 for 38.3 miles to MM 113.4, Right (Southwest) on CR #7890 for 0.8 miles to fork, Left (South) remaining on CR #7890 for 1.3 miles to 4-way intersection, Left (Southeast) remaining on CR #7890 for 0.6 miles to fork, Right (Southwest) on CR #7890 for 0.5 miles to fork, Right (West) exiting CR #7890 onto access road for W Lybrook Unit 720H pad for 0.6 miles to fork, Left (West) onto access road for W Lybrook Unit 726H pad for 0.7 miles to fork, Left (West) for 1.4 miles to fork. Left (Southwest) for 0.6 miles to W Lybrook Unit 730H Pad (wells: 730H, 763H, 830H, 861H, 863H).

QUICK REFERENCE	
Sur TD (MD)	350 ft
Int TD (MD)	2,414 ft
KOP (MD)	3,544 ft
KOP (TVD)	3,516 ft
Target (TVD)	4,116 ft
Curve BUR	10 °/100 ft
POE (MD)	4,717 ft
TD (MD)	11,570 ft
Lat Len (ft)	6,853 ft

WELL CONSTRUCTION SUMMARY:

	Hole (in)	TD MD (ft)	Csg (in)	Csg (lb/ft)	Csg (grade)	Csg (conn)	Csg Top (ft)	Csg Bot (ft)
Surface	17.500	350	13.375	54.5	J-55	BTC	0	350
Intermediate	12.250	2,414	9.625	36.0	J-55	LTC	0	2,414
Production	8.500	11,570	5.500	17.0	P-110	LTC	0	11,570

CEMENT PROPERTIES SUMMARY:

	Type	Wt (ppg)	Yd (cuft/sk)	Wtr (gal/sk)	Hole Cap. (cuft/ft)	% Excess	TOC (ft MD)	Total (sx)
Surface	Class G	15.8	1.174	5.15	0.6946	100%	0	414
Inter. (Lead)	G:POZ Blend	12.3	1.987	10.16	0.3627	70%	0	528
Inter. (Tail)	Class G	15.8	1.148	4.98	0.3132	20%	1,914	164
Prod. (Lead)	G:POZ blend	12.4	1.907	9.981	0.2691	50%	0	765
Prod. (Tail)	G:POZ blend	13.3	1.360	5.999	0.2291	10%	3,821	1,436

COMPLETION / PRODUCTION SUMMARY:

Frac: 40 plug-and-perf stages with 240,000 bbls slickwater fluid and 11,000,000 lbs of proppant (estimated)

Flowback: Flow back through production tubing as pressures allow (ESP may be used for load recovery assistance)

Production: Produce through production tubing via gas-lift into permanent production and storage facilities

Tops	TVD (ft KB)	MD (ft KB)
Ojo Alamo	231	231
Kirtland	291	291
Fruitland	606	606
Pictured Cliffs	916	916
Lewis	1,031	1,031
Chacra	1,266	1,266
Cliff House	2,286	2,291
Menefee	2,306	2,312
Point Lookout	3,281	3,305
Mancos	3,556	3,585
Gallup (MNCS_A)	3,781	3,821
MNCS_B	3,886	3,946
MNCS_C	3,971	4,065
MNCS_Cms	4,016	4,141
P.O.E. TARGET	4,116	4,717
PROJECTED TD	4,171	11,570