State of New Mexico
Energy, Minerals and Natural Resources Department

ana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

Heather Riley, Division Director
Oil Conservation Division

New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-4 or 3160-5 form.

Operator Signature Date: 7/6/18 Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf_Owner	Sec	Twp	N/S	Rng	W/E
30-043-21320	S ESCAVADA UNIT	353H	ENDURING RESOURCES, LLC	O	N	Sandoval	N	26	22	N	7	W

Application Type:

☐ P&A ☒ Drilling/Casing Change ☐ Location Change

☐ Recomplete/DHC (For hydraulic fracturing operations review EPA Underground injection control Guidance #84; Submit Gas Capture Plan form prior to spudding or initiating recompletion operations)

☐ Other:

Conditions of Approval:

- Notify NMOCD 24hrs prior to beginning operations.
- Extend pilot hole plug down to 4350'.
- If the bottom hole penetrates the Granaros formation a bottom hole plug will also be required to be approved by the agencies prior to plugging.

Brandon Powell

NMOCD Approved by Signature

7-16-18
Date

RECEIVED

JUL 06 2013

Farmington Field Office
Bureau of Land Management

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM 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 ☒Oil Well ☐Gas Well ☐Other	5. Lease Serial No. **NO-G-1312-1823**
	6. If Indian, Allottee or Tribe Name
	7. If Unit of CA/Agreement, Name and/or No. **South Escavada Unit**
	8. Well Name and No. **S Escavada Unit #353H**
2. Name of Operator **Enduring Resources LLC**	9. API Well No. **30-043-21320**
3a. Address **332 Cr 3100 Aztec, NM 87410** 3b. Phone No. *(include area code)* **505-636-9743**	10. Field and Pool or Exploratory Area **Rusty Gallup Oil Pool**
4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)* **SHL: 1719' FNL & 2352' FWL SEC 26 22N 7W** **BHL: 2325' FSL & 1815' FEL SEC 22 22N 7W**	11. Country or Parish, State **Sandoval, NM**

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒Notice of Intent	☐Acidize	☐Deepen	☐Production (Start/Resume)	☐Water ShutOff
☐Subsequent Report	☐Alter Casing	☐Hydraulic Fracturing	☐Reclamation	☐Well Integrity
☐Final Abandonment Notice	☐Casing Repair	☐New Construction	☐Recomplete	☒Other **Change in plans- Pilot Hole**
	☒Change Plans	☐Plug and Abandon	☐Temporarily Abandon	
	☐Convert to Injection	☐Plug Back	☐Water Disposal	

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 recomplete 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 perfonned 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 recompletion 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 detennined that the site is ready for final inspection.)

Enduring Resources LLC requests a change in plans to include the pilot-hole design on the S Escavada Unit #353H.

Attached are the updated:

- C102
- Wellbore
- Ops plan
- Plan & Section view
- Well Plan for Pilot Hole
- Well Plan

NMOCD
JUL 10 2018
DISTRICT III

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)* **Lacey Granillo**	Title: **Permitting Specialist**
Signature	Date: **7/6/18**

THE SPACE FOR FEDERAL OR STATE OFICE USE

Approved by	Title PE	Date 7/9/18
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 FFO	

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.

NMOCD

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-043-21320	52860	RUSTY GALLUP OIL POOL

4 Property Code	5 Property Name	6 Well Number
322151	S ESCAVADA UNIT	353H
7 OGRID No.	**8 Operator Name**	**9 Elevation**
372286	ENDURING RESOURCES LLC	6776'

10 Surface Location

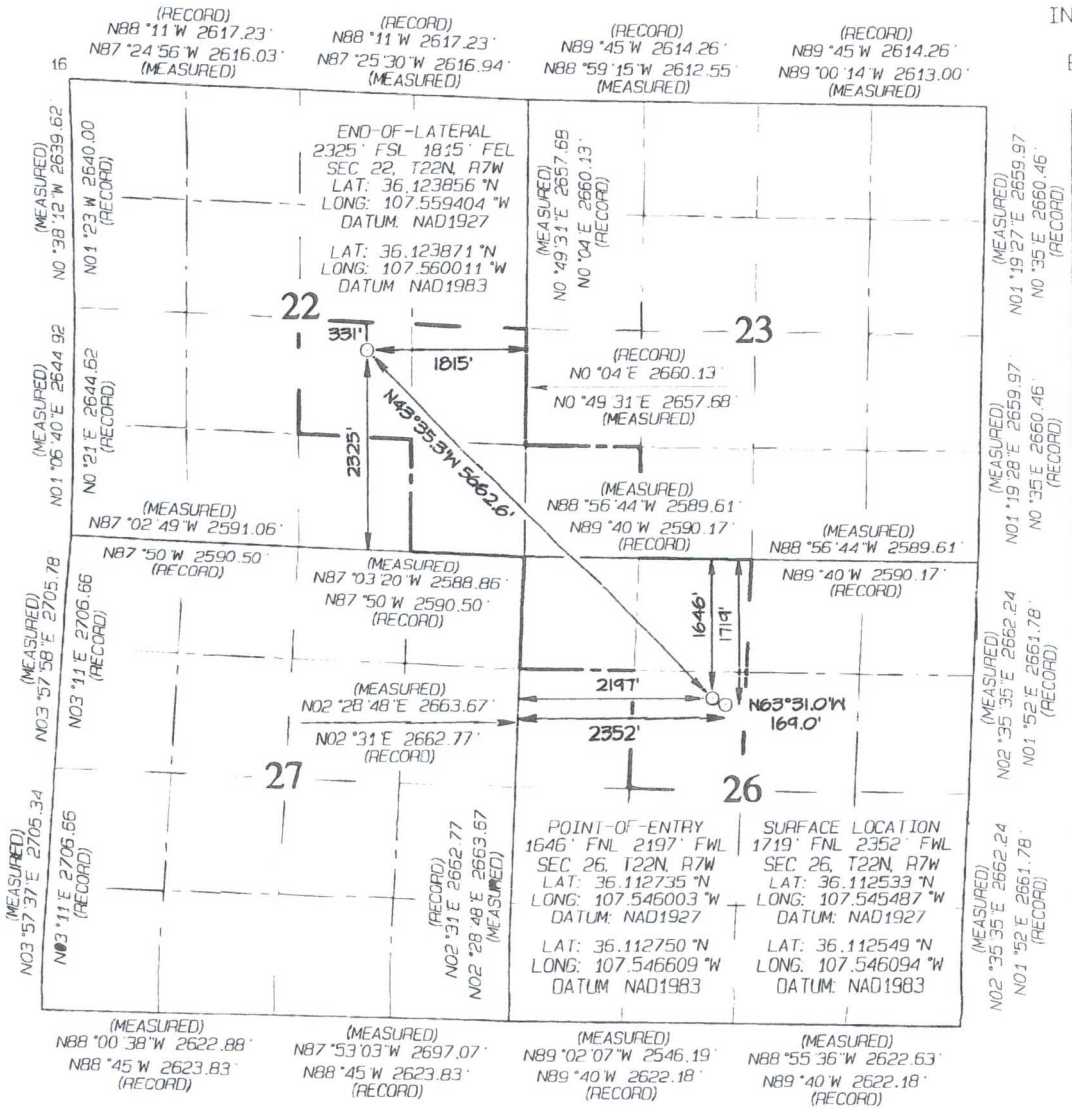
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	26	22N	7W		1719	NORTH	2352	WEST	SANDOVAL

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
J	22	22N	7W		2325	SOUTH	1815	EAST	SANDOVAL

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
280.00 SW/4 SW/4 - Section 23 N/2 SE/4, SE/4 SE/4 - Section 22 N/2 NW/4, SE/4 NW/4 - Section 26			R-14347

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.

7/6/18

Signature Date

Lacey Granillo

Printed Name

lgranillo@enduringresrouces.com

E-mail Address

18 SURVEYOR CERTIFICATION

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

Date Revised: FEBRUARY 20, 2018
Date of Survey: JUNE 6, 2017

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

WELL NAME: S Escavada Unit 353H

OBJECTIVE: Drill pilot hole for OH logs; sidetrack; drill, complete, and equip single lateral in

API Number: 30-043-21320

State: New Mexico

County: Sandoval

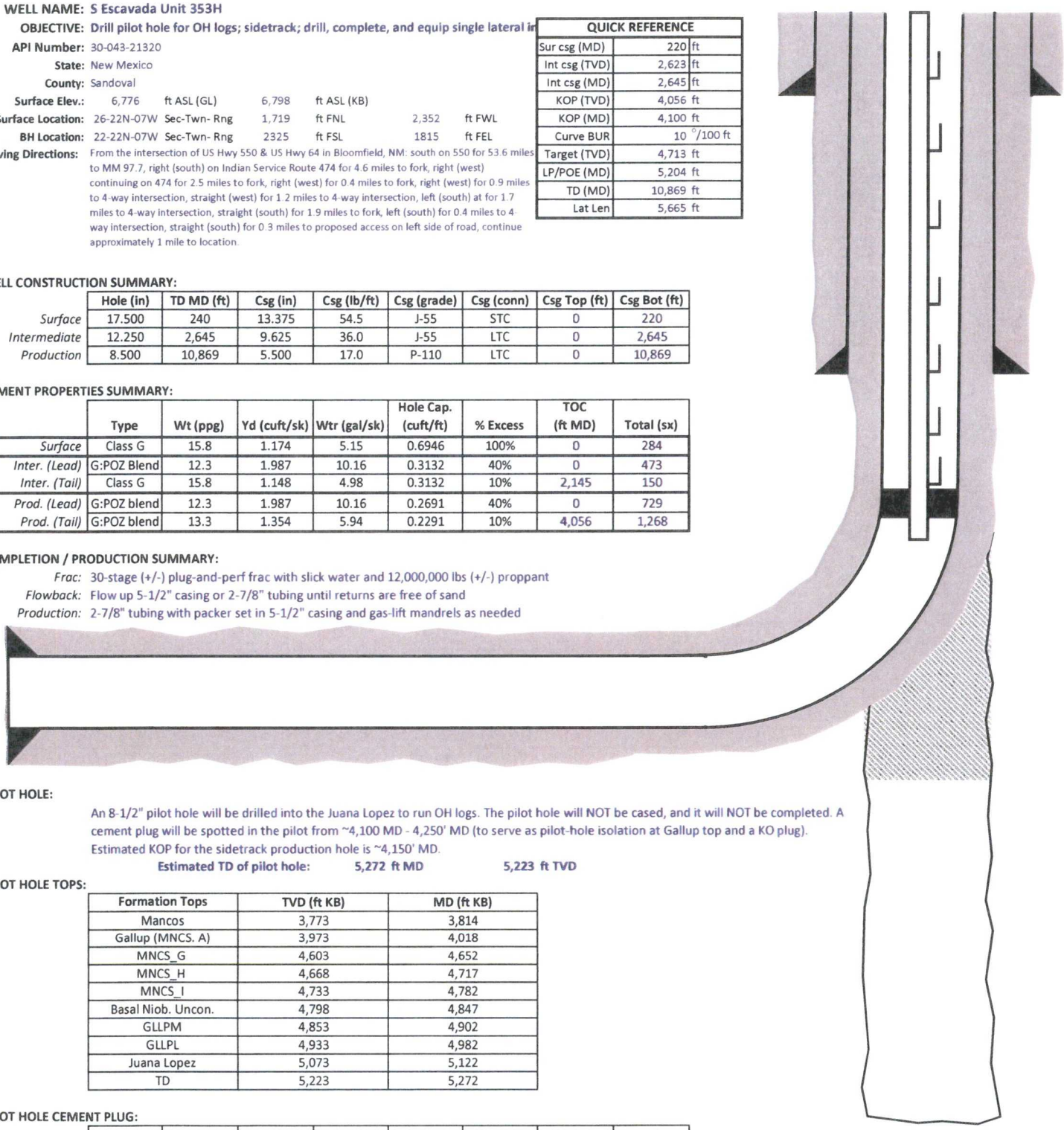
Surface Elev.: 6,776 ft ASL (GL) 6,798 ft ASL (KB)

Surface Location: 26-22N-07W Sec-Twn- Rng 1,719 ft FNL 2,352 ft FWL

BH Location: 22-22N-07W Sec-Twn- Rng 2325 ft FSL 1815 ft FEL

Driving Directions: From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM: south on 550 for 53.6 miles to MM 97.7, right (south) on Indian Service Route 474 for 4.6 miles to fork, right (west) continuing on 474 for 2.5 miles to fork, right (west) for 0.4 miles to fork, right (west) for 0.9 miles to 4-way intersection, straight (west) for 1.2 miles to 4-way intersection, left (south) at for 1.7 miles to 4-way intersection, straight (south) for 1.9 miles to fork, left (south) for 0.4 miles to 4-way intersection, straight (south) for 0.3 miles to proposed access on left side of road, continue approximately 1 mile to location.

QUICK REFERENCE	
Sur csg (MD)	220 ft
Int csg (TVD)	2,623 ft
Int csg (MD)	2,645 ft
KOP (TVD)	4,056 ft
KOP (MD)	4,100 ft
Curve BUR	10 °/100 ft
Target (TVD)	4,713 ft
LP/POE (MD)	5,204 ft
TD (MD)	10,869 ft
Lat Len	5,665 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	240	13.375	54.5	J-55	STC	0	220
Intermediate	12.250	2,645	9.625	36.0	J-55	LTC	0	2,645
Production	8.500	10,869	5.500	17.0	P-110	LTC	0	10,869

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	284
Inter. (Lead)	G:POZ Blend	12.3	1.987	10.16	0.3132	40%	0	473
Inter. (Tail)	Class G	15.8	1.148	4.98	0.3132	10%	2,145	150
Prod. (Lead)	G:POZ blend	12.3	1.987	10.16	0.2691	40%	0	729
Prod. (Tail)	G:POZ blend	13.3	1.354	5.94	0.2291	10%	4,056	1,268

COMPLETION / PRODUCTION SUMMARY:

Frac: 30-stage (+/-) plug-and-perf frac with slick water and 12,000,000 lbs (+/-) proppant

Flowback: Flow up 5-1/2" casing or 2-7/8" tubing until returns are free of sand

Production: 2-7/8" tubing with packer set in 5-1/2" casing and gas-lift mandrels as needed

PILOT HOLE:

An 8-1/2" pilot hole will be drilled into the Juana Lopez to run OH logs. The pilot hole will NOT be cased, and it will NOT be completed. A cement plug will be spotted in the pilot from ~4,100 MD - 4,250' MD (to serve as pilot-hole isolation at Gallup top and a KO plug). Estimated KOP for the sidetrack production hole is ~4,150' MD.

Estimated TD of pilot hole: 5,272 ft MD 5,223 ft TVD

PILOT HOLE TOPS:

Formation Tops	TVD (ft KB)	MD (ft KB)
Mancos	3,773	3,814
Gallup (MNCS. A)	3,973	4,018
MNCS_G	4,603	4,652
MNCS_H	4,668	4,717
MNCS_I	4,733	4,782
Basal Niob. Uncon.	4,798	4,847
GLLPM	4,853	4,902
GLLPL	4,933	4,982
Juana Lopez	5,073	5,122
TD	5,223	5,272

PILOT HOLE CEMENT PLUG:

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	1.148	4.98	0.3941	50%	4,100	77

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

DRILLING PLAN: *Drill pilot hole for OH logs; sidetrack; drill, complete, and equip single lateral in the Gallup formation*

WELL INFORMATION:

Name: **S Escavada Unit 353H**
API Number: **30-043-21320**
State: New Mexico
County: Sandoval
Surface Elevation: 6,776 ft ASL (GL) 6,798 ft ASL (KB)
Surface Location: 26-22N-07W Sec-Twn-Rng 1,719 ft FNL 2,352 ft FWL
36.112459 ° N latitude 107.546094 ° W longitude (NAD 83)
BH Location: 22-22N-07W Sec-Twn-Rng 2,325 ft FSL 1,815 ft FEL
36.123871 ° N latitude 107.560011 ° W longitude (NAD 83)
Driving Directions: From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM: south on 550 for 53.6 miles to MM 97.7, right (south) on Indian Service Route 474 for 4.6 miles to fork, right (west) continuing on 474 for 2.5 miles to fork, right (west) for 0.4 miles to fork, right (west) for 0.9 miles to 4-way intersection, straight (west) for 1.2 miles to 4-way intersection, left (south) at for 1.7 miles to 4-way intersection, straight (south) for 1.9 miles to fork, left (south) for 0.4 miles to 4-way intersection, straight (south) for 0.3 miles to proposed access on left side of road, continue approximately 1 mile to location.

GEOLOGIC AND RESERVOIR INFORMATION:

Pilot-Hole Prognosis:

Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
Ojo Alamo	6,280	518	518	W	normal
Kirtland	6,015	783	783	W	normal
Fruitland	5,966	832	832	G, W	normal
Pictured Cliffs	5,651	1,147	1,147	G, W	normal
Lewis	5,438	1,360	1,361	G, W	normal
Chacra	5,293	1,505	1,508	G, W	normal
Cliff House	4,915	1,883	1,892	G, W	normal
Menefee	4,225	2,573	2,593	G, W	normal
Point Lookout	3,280	3,518	3,555	G, W	normal
Mancos	3,025	3,773	3,814	O,G	normal
Gallup (MNCS. A)	2,825	3,973	4,018	O,G	normal
MNCS_G	2,195	4,603	4,652	O,G	normal
MNCS_H	2,130	4,668	4,717	O,G	normal
MNCS_I	2,065	4,733	4,782	O,G	normal
Basal Niob. Uncon.	2,000	4,798	4,847	O,G	normal
GLLPM	1,945	4,853	4,902	O,G	normal
GLLPL	1,865	4,933	4,982	O,G	normal
Juana Lopez	1,725	5,073	5,122	O,G	normal
TD	**1,575**	**5,223**	**5,272**	**O,G**	**normal**

Surface: Nacimiento
Oil & Gas Zones: Several gas bearing zones will be encountered; target formation is the Juana Lopez (Gallup)
Pressure: Normal pressure gradient (0.43 psi/ft) 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: 2,250 psi
Maximum anticipated surface pressure, assuming partially evacuated hole: 1,110 psi
Temperature: **Maximum anticipated BHT is 180° F or less**

Lateral Prognosis:

Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
Ojo Alamo	6,280	518	518	W	normal
Kirtland	6,015	783	783	W	normal
Fruitland	5,966	832	832	G, W	normal
Pictured Cliffs	5,651	1,147	1,147	G, W	normal
Lewis	5,438	1,360	1,361	G, W	normal

Chacra	5,293	1,505	1,508	G, W	normal
Cliff House	4,915	1,883	1,892	G, W	normal
Menefee	4,225	2,573	2,593	G, W	normal
Point Lookout	3,280	3,518	3,555	G, W	normal
Mancos	3,025	3,773	3,814	O,G	normal
Gallup (MNCS. A)	2,825	3,973	4,018	O,G	normal
Gallup (Target Depth)	**2,085**	**4,713**	**5,204**	**O,G**	**normal**
PROJECTED WELL TD	**2,055**	**4,743**	**10,869**	**O,G**	**normal**

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

Pressure: Normal pressure gradient (0.43 psi/ft) 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: 2,030 psi

Maximum anticipated surface pressure, assuming partially evacuated hole: 1,000 psi

Temperature: **Maximum anticipated BHT is 165° F or less**

H_2S INFORMATION:

H_2S 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 chromatograph 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: Schlumberger CMR & ECS logs (or equivalent) from TD of pilot hole to Mancos top, Schlumberger Quad-Combo log (or equivalent) from TD of pilot hole to 9-5/8" casing shoe.

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 double gate ram (13-5/8", 5,000 psi)

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

Choke Cameron (4", 10,000 psi)

KB-GL (ft): 22

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 5,000 psi for 10 minutes, and the annular preventer will be tested to 2,500 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 intalled 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 the 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 minimimize 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	240 ft ft (MD)	Hole Section Length:	240 ft
0 ft (TVD)	to	240 ft ft (TVD)	Casing Required:	220 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, run gyro survey after drilling

Logging: None

Procedure: Drill to TD. After reaching TD, run gyro survey in 100' stations from TD to surface. Wiper trip. Condition hole and fluid for casing running. TOH. Run casing and 5K API WH. Pump cement as detailed below. Monitor returns during cement job and note cement volume to surface.

Casing Specs:		Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	13.375	54.5	J-55	STC	1,130	2,730	853,000	514,000
Loading					105	565	111,406	111,406
Min. S.F.					**10.78**	**4.84**	**7.66**	**4.61**

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): *Minumum: 3,860 Optimum: 5,140 Maximum: 6,430*

Casing Details: Guide shoe, single-valve float collar, 1 jt casing, double-valve float collar, landing 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	284

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, install wellhead.*

220 ft (MD)	to	2,645 ft (MD)	Hole Section Length:	2,425 ft
220 ft (TVD)	to	2,623 ft (TVD)	Casing Required:	2,645 ft

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

Hole Size: 12-1/4"
Bit / Motor: PDC w/mud motor
MWD / Survey: MWD with GR, inclination, and azimuth survey (every 100' at a minimum)
Logging: None
Pressure Test: NU BOPE and test (as noted above); pressure test 13-3/8" casing to **1,500** psi for 30 minutes.
Note: The intermediate hole section may be drilled with a 2,000 psi annular preventer only (no blind or pipe rams). Maximum anticipated surface pressure while drilling intermediate hole section is 560 psi
Procedure: Drill to TD following directional plan. Steer as needed to keep well on plan. Keep DLS < 2 deg/100' and keep slide length < 10'. Take surveys every stand, at a minimum. Wiper trip. Condition hole and fluid for casing running. TOH. Run casing. Pump cement as detailed below. Monitor returns during cement job and note cement volume to surface.

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					1,146	1,150	183,036	183,036
Min. S.F.					**1.76**	**3.06**	**3.08**	**2.47**

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): *Minumum: 3,400 Optimum: 4,530 Maximum: 5,660*
Casing Details: Guide shoe, single-valve float collar, 1 jt casing, double-valve float collar, landing collar, casing to surface, 11" 5K API-certified wellhead
Centralizers: 2 centralizers per jt stop-banded 10' from each collar on bottom 3 jts, 1 centralizer per 3 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)
Lead	G:POZ Blend	12.3	1.987	10.16	0.3132	40%	0	473
Tail	Class G	15.8	1.148	4.98	0.3132	10%	2,145	150

Calculated cement volumes assume gauge hole and the excess noted in table
Halliburton ECONOCEM & HALCEM cementing blend
Notify NMOCD & BLM if cement is not circulated to surface. Cement must achieve 500 psi compressive strength before drilling out.

PILOT HOLE: *Drill pilot hole, run open-hole logs as directed by Geology, plug back*

2,645 ft (MD)	to	5,272 ft (MD)	Hole Section Length:	2,627 ft
2,623 ft (TVD)	to	5,223 ft (TVD)	Casing Required:	N/A

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	pH	Comments
	WBM	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 every 100' at a minimum
Logging: GR MWD for entire section, OH WL logs as directed by Operations Geologist
Pressure Test: NU BOPE and test (as noted above); pressure test 9-5/8" casing to **1,500** psi for 30 minutes.
Procedure: Drill to pilot hole TD following directional plan. Steer as needed to keep well on plan. At TD, circulate and condition hole for OH logs. TOH. Run OH logs from TD to 9-5/8" casing shoe. Spot cement balanced plug as noted below. Ensure sufficient WOC time before tagging plug and sidetracking.

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	Hole Cap. (cuft/ft)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Gallup (MNCS_A)	Class G	15.8	1.148	4.98	0.3941	50%	4,100	77

Plug length: 150 ft with excess noted above

PRODUCTION: *Perform sidetrack, drill to TD following directional plan, run casing, cement casing to surface.*

4,100	ft (MD)	to	10,869	ft (MD)	Hole Section Length: 6,769 ft
4,056	ft (TVD)	to	4,743	ft (TVD)	Casing Required: 10,869 ft

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	pH	Comments
	WBM	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

Casing Specs:	Size (in)	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	5.500	17.0	P-110	LTC	7,460	10,640	546,000	445,000
Loading					2,343	8,944	259,442	259,442
Min. S.F.					**3.18**	**1.19**	**2.10**	**1.72**

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): *Minumum: 3,470 Optimum: 4,620 Maximum: 5,780*

Casing Details: Guide shoe, single-valve float collar, 1 jt casing, double-valve float collar, 1 jt casing, landing collar, toe-intitiation sleeve x 2 , casing to surface with 4 - 20' marker joints spaced evenly in lateral and 1 - 20' marker joint at KOP. The toe-initiation sleeves will be positioned inside the applicable unit setback.

Centralizers: Lateral: 1 centralizer every 2 joints at a minimum (will evalutate running additional centralizers based on surveys)
Curve: 1 centralizer every joint from landing point to KOP
Vertical: 1 centralizer every 2 joints from KOP to 9-5/8" shoe, 1 every 3 joints from 9-5/8" shoe to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	Hole Cap. (cuft/ft)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ blend	12.3	1.987	10.16	0.2691	40%	0	729
Tail	G:POZ blend	13.3	1.354	5.94	0.2291	10%	4,056	1,268

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 past applicaple setback to maximize the length of the completed interval and to maximize resource recovery. If the well is drilled past the setback, the toe Initiation sleeve 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) . Order number for South Escavada Unit is R-14347.

FINISH WELL: ***ND BOP, NU WH with BPV and cap, RDMO.***

COMPLETION AND PRODUCTION PLAN:

Frac: Lateral will be fracture-stimulated in approximately 30 plug-and-perf stages with approximately 200,000 bbls slickwater fluid and 10,000,000 lbs of proppant.

Flowback: Depending on well pressures, flow back may be either up 5-1/2" casing or 2-7/8" production tubing. Well will be flowed back until proppant volumes are low enough that the well can safely be produced through permanent production facilities.

Production: Well will produce up production tubing via gas-lift into permanent production and storage facilities.

ESTIMATED START DATES:

Drilling: 8/1/2017
Completion: 9/15/2017
Production: 10/15/2017

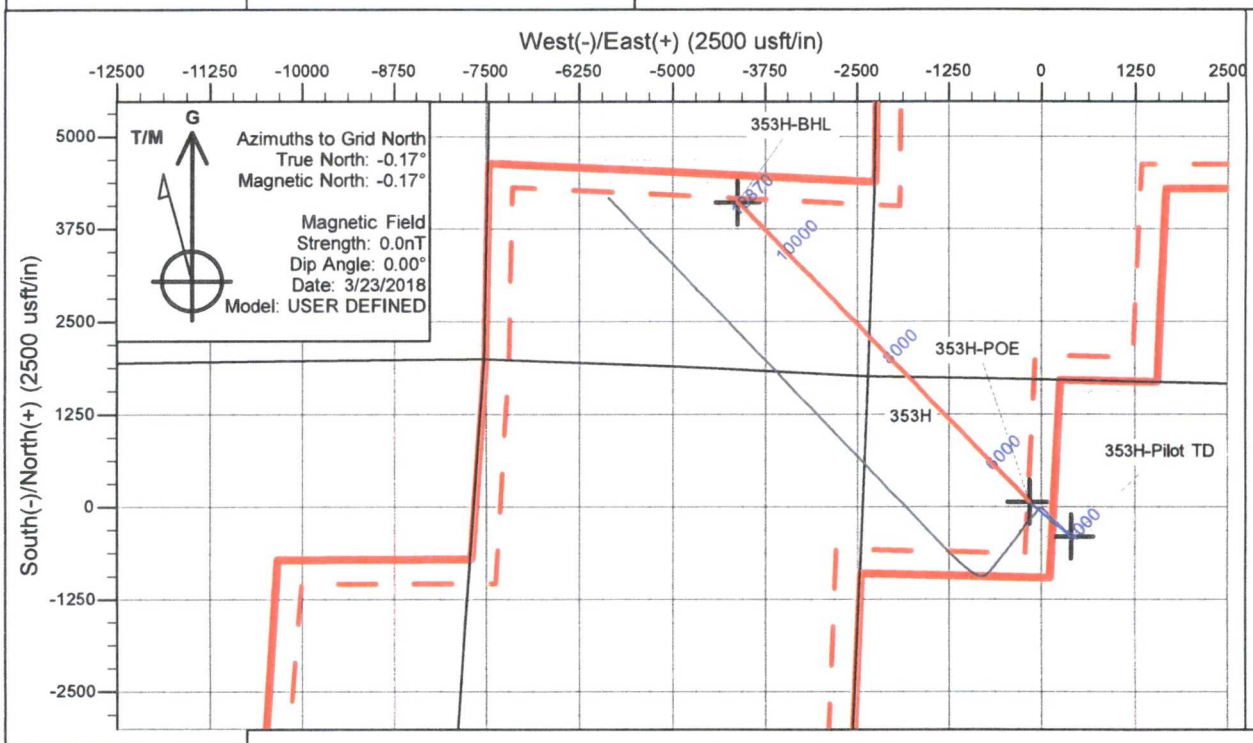
Prepared by: **Alec Bridge** **6/8/2018**
Updated by: **Alec Bridge** **7/5/2018** - *added procedure for drilling, logging, and abandoning 8-1/2" pilot hole*

Enduring Resources LLC

Directional Drilling Plan
Plan View & Section View

S Escavada Unit 353H

Sandoval Co., New Mexico
T22N-R07W-Sec. 26-Lot F
Surface Latitude: 36.112549°N
Surface Longitude: 107.546094°W
Ground Level: 6776.0
Reference Elevation: KB new @ 6798.0usft

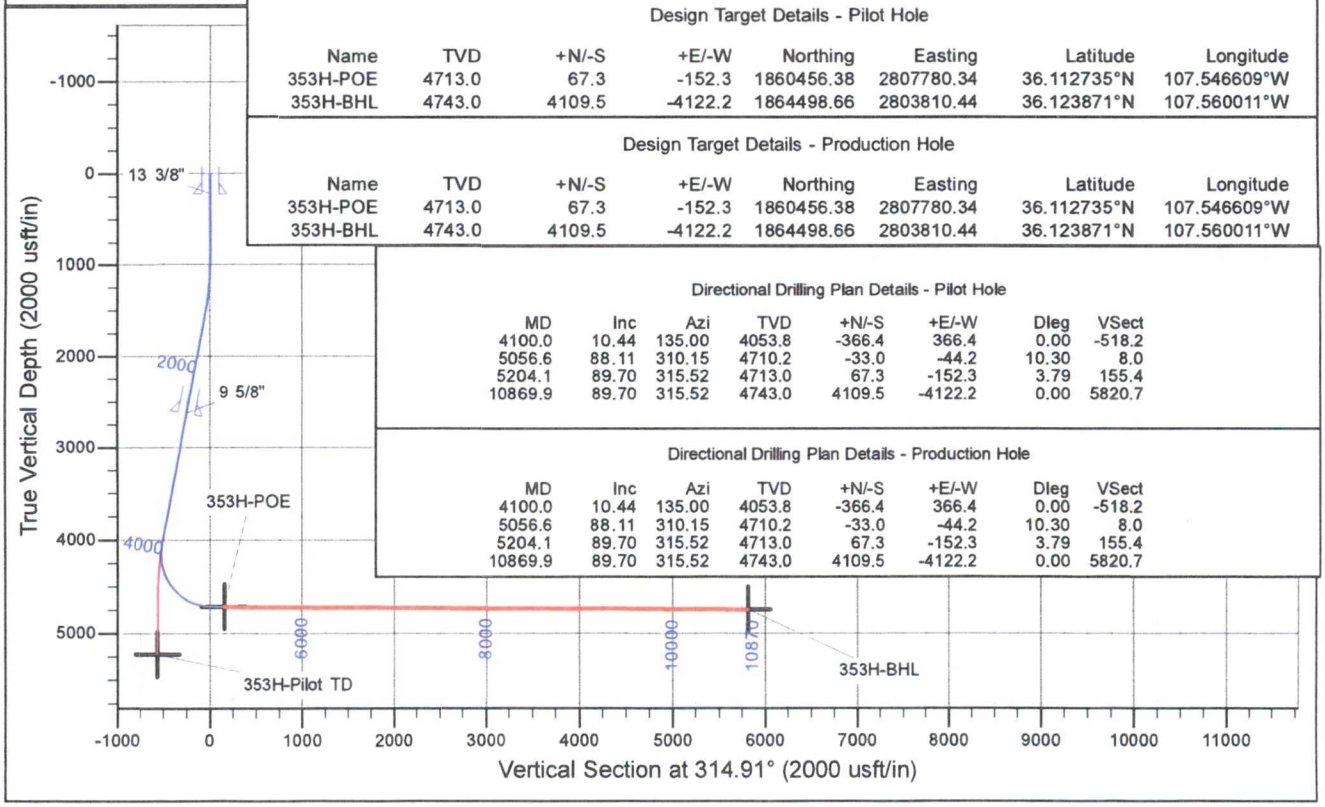


Design Target Details - Pilot Hole

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
353H-POE	4713.0	67.3	-152.3	1860456.38	2807780.34	36.112735°N	107.546609°W
353H-BHL	4743.0	4109.5	-4122.2	1864498.66	2803810.44	36.123871°N	107.560011°W

Design Target Details - Production Hole

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
353H-POE	4713.0	67.3	-152.3	1860456.38	2807780.34	36.112735°N	107.546609°W
353H-BHL	4743.0	4109.5	-4122.2	1864498.66	2803810.44	36.123871°N	107.560011°W



Directional Drilling Plan Details - Pilot Hole

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
4100.0	10.44	135.00	4053.8	-366.4	366.4	0.00	-518.2
5056.6	88.11	310.15	4710.2	-33.0	-44.2	10.30	8.0
5204.1	89.70	315.52	4713.0	67.3	-152.3	3.79	155.4
10869.9	89.70	315.52	4743.0	4109.5	-4122.2	0.00	5820.7

Directional Drilling Plan Details - Production Hole

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
4100.0	10.44	135.00	4053.8	-366.4	366.4	0.00	-518.2
5056.6	88.11	310.15	4710.2	-33.0	-44.2	10.30	8.0
5204.1	89.70	315.52	4713.0	67.3	-152.3	3.79	155.4
10869.9	89.70	315.52	4743.0	4109.5	-4122.2	0.00	5820.7

Enduring Resources LLC

San Juan Basin - South Escavada Unit
352H Pad
353H

Wellbore #1

Plan: Design #1

Standard Planning Report

06 July, 2018

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

Site	352H Pad, Sandoval Co., New Mexico				
Site Position:		Northing:	1,860,389.12 usft	Latitude:	36.112549°N
From:	Lat/Long	Easting:	2,807,932.66 usft	Longitude:	107.546094°W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well	353H					
Well Position	+N/-S	0.0 usft	Northing:	1,860,389.12 usft	Latitude:	36.112549°N
	+E/-W	0.0 usft	Easting:	2,807,932.66 usft	Longitude:	107.546094°W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,776.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	3/23/2018	0.00	0.00	0.00000000

Design	Design #1				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	4,100.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	314.91	

Plan Survey Tool Program	Date 7/6/2018			
	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	4,100.0	10,869.9	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
4,100.0	10.44	135.00	4,053.8	-366.4	366.4	0.00	0.00	0.00	0.00	
5,056.6	88.11	310.15	4,710.2	-33.0	-44.2	10.30	8.12	18.31	175.10	
5,204.1	89.70	315.52	4,713.0	67.3	-152.3	3.79	1.07	3.64	73.61	353H-POE
10,869.9	89.70	315.52	4,743.0	4,109.5	-4,122.2	0.00	0.00	0.00	0.00	353H-BHL

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)
4,100.0	10.44	135.00	4,053.8	-366.4	366.4	-518.2	0.00	0.00	0.00
4,200.0	0.89	213.35	4,153.2	-373.5	372.4	-527.5	10.30	-9.55	78.35
4,300.0	10.23	305.26	4,252.7	-369.0	364.7	-518.9	10.30	9.34	91.90
4,400.0	20.51	307.81	4,349.0	-353.1	343.6	-492.6	10.30	10.28	2.55
4,500.0	30.80	308.69	4,439.0	-326.3	309.7	-449.7	10.30	10.29	0.88
4,600.0	41.10	309.16	4,519.8	-289.5	264.1	-391.4	10.30	10.30	0.47
4,700.0	51.39	309.47	4,588.9	-243.7	208.3	-319.6	10.30	10.30	0.31
4,800.0	61.69	309.70	4,643.9	-190.6	144.1	-236.6	10.30	10.30	0.23
4,900.0	71.99	309.89	4,683.2	-131.9	73.5	-145.2	10.30	10.30	0.19
5,000.0	82.29	310.06	4,705.4	-69.3	-1.1	-48.2	10.30	10.30	0.17
5,056.6	88.11	310.15	4,710.2	-33.0	-44.2	8.0	10.30	10.30	0.16
5,100.0	88.58	311.73	4,711.4	-4.6	-77.0	51.3	3.79	1.07	3.64
5,200.0	89.65	315.37	4,713.0	64.3	-149.4	151.2	3.79	1.07	3.64
5,204.1	89.70	315.52	4,713.0	67.3	-152.3	155.4	3.79	1.08	3.64
5,300.0	89.70	315.52	4,713.5	135.7	-219.5	251.2	0.00	0.00	0.00
5,400.0	89.70	315.52	4,714.0	207.0	-289.6	351.2	0.00	0.00	0.00
5,500.0	89.70	315.52	4,714.6	278.3	-359.6	451.2	0.00	0.00	0.00
5,600.0	89.70	315.52	4,715.1	349.7	-429.7	551.2	0.00	0.00	0.00
5,700.0	89.70	315.52	4,715.6	421.0	-499.8	651.2	0.00	0.00	0.00
5,800.0	89.70	315.52	4,716.2	492.4	-569.8	751.2	0.00	0.00	0.00
5,900.0	89.70	315.52	4,716.7	563.7	-639.9	851.2	0.00	0.00	0.00
6,000.0	89.70	315.52	4,717.2	635.1	-710.0	951.2	0.00	0.00	0.00
6,100.0	89.70	315.52	4,717.7	706.4	-780.0	1,051.2	0.00	0.00	0.00
6,200.0	89.70	315.52	4,718.3	777.8	-850.1	1,151.1	0.00	0.00	0.00
6,300.0	89.70	315.52	4,718.8	849.1	-920.2	1,251.1	0.00	0.00	0.00
6,400.0	89.70	315.52	4,719.3	920.5	-990.2	1,351.1	0.00	0.00	0.00
6,500.0	89.70	315.52	4,719.9	991.8	-1,060.3	1,451.1	0.00	0.00	0.00
6,600.0	89.70	315.52	4,720.4	1,063.1	-1,130.4	1,551.1	0.00	0.00	0.00
6,700.0	89.70	315.52	4,720.9	1,134.5	-1,200.4	1,651.1	0.00	0.00	0.00
6,800.0	89.70	315.52	4,721.4	1,205.8	-1,270.5	1,751.1	0.00	0.00	0.00
6,900.0	89.70	315.52	4,722.0	1,277.2	-1,340.6	1,851.1	0.00	0.00	0.00
7,000.0	89.70	315.52	4,722.5	1,348.5	-1,410.6	1,951.1	0.00	0.00	0.00
7,100.0	89.70	315.52	4,723.0	1,419.9	-1,480.7	2,051.1	0.00	0.00	0.00
7,200.0	89.70	315.52	4,723.6	1,491.2	-1,550.8	2,151.1	0.00	0.00	0.00
7,300.0	89.70	315.52	4,724.1	1,562.6	-1,620.8	2,251.1	0.00	0.00	0.00
7,400.0	89.70	315.52	4,724.6	1,633.9	-1,690.9	2,351.1	0.00	0.00	0.00
7,500.0	89.70	315.52	4,725.2	1,705.3	-1,761.0	2,451.1	0.00	0.00	0.00
7,600.0	89.70	315.52	4,725.7	1,776.6	-1,831.1	2,551.1	0.00	0.00	0.00
7,700.0	89.70	315.52	4,726.2	1,847.9	-1,901.1	2,651.0	0.00	0.00	0.00
7,800.0	89.70	315.52	4,726.7	1,919.3	-1,971.2	2,751.0	0.00	0.00	0.00
7,900.0	89.70	315.52	4,727.3	1,990.6	-2,041.3	2,851.0	0.00	0.00	0.00
8,000.0	89.70	315.52	4,727.8	2,062.0	-2,111.3	2,951.0	0.00	0.00	0.00
8,100.0	89.70	315.52	4,728.3	2,133.3	-2,181.4	3,051.0	0.00	0.00	0.00
8,200.0	89.70	315.52	4,728.9	2,204.7	-2,251.5	3,151.0	0.00	0.00	0.00
8,300.0	89.70	315.52	4,729.4	2,276.0	-2,321.5	3,251.0	0.00	0.00	0.00
8,400.0	89.70	315.52	4,729.9	2,347.4	-2,391.6	3,351.0	0.00	0.00	0.00
8,500.0	89.70	315.52	4,730.5	2,418.7	-2,461.7	3,451.0	0.00	0.00	0.00
8,600.0	89.70	315.52	4,731.0	2,490.1	-2,531.7	3,551.0	0.00	0.00	0.00
8,700.0	89.70	315.52	4,731.5	2,561.4	-2,601.8	3,651.0	0.00	0.00	0.00
8,800.0	89.70	315.52	4,732.0	2,632.7	-2,671.9	3,751.0	0.00	0.00	0.00
8,900.0	89.70	315.52	4,732.6	2,704.1	-2,741.9	3,851.0	0.00	0.00	0.00
9,000.0	89.70	315.52	4,733.1	2,775.4	-2,812.0	3,951.0	0.00	0.00	0.00
9,100.0	89.70	315.52	4,733.6	2,846.8	-2,882.1	4,050.9	0.00	0.00	0.00
9,200.0	89.70	315.52	4,734.2	2,918.1	-2,952.1	4,150.9	0.00	0.00	0.00
9,300.0	89.70	315.52	4,734.7	2,989.5	-3,022.2	4,250.9	0.00	0.00	0.00
9,400.0	89.70	315.52	4,735.2	3,060.8	-3,092.3	4,350.9	0.00	0.00	0.00
9,500.0	89.70	315.52	4,735.7	3,132.2	-3,162.3	4,450.9	0.00	0.00	0.00
9,600.0	89.70	315.52	4,736.3	3,203.5	-3,232.4	4,550.9	0.00	0.00	0.00
9,700.0	89.70	315.52	4,736.8	3,274.9	-3,302.5	4,650.9	0.00	0.00	0.00
9,800.0	89.70	315.52	4,737.3	3,346.2	-3,372.5	4,750.9	0.00	0.00	0.00
9,900.0	89.70	315.52	4,737.9	3,417.5	-3,442.6	4,850.9	0.00	0.00	0.00
10,000.0	89.70	315.52	4,738.4	3,488.9	-3,512.7	4,950.9	0.00	0.00	0.00
10,100.0	89.70	315.52	4,738.9	3,560.2	-3,582.8	5,050.9	0.00	0.00	0.00
10,200.0	89.70	315.52	4,739.5	3,631.6	-3,652.8	5,150.9	0.00	0.00	0.00
10,300.0	89.70	315.52	4,740.0	3,702.9	-3,722.9	5,250.9	0.00	0.00	0.00
10,400.0	89.70	315.52	4,740.5	3,774.3	-3,793.0	5,350.9	0.00	0.00	0.00

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)
10,500.0	89.70	315.52	4,741.0	3,845.6	-3,863.0	5,450.8	0.00	0.00	0.00
10,600.0	89.70	315.52	4,741.6	3,917.0	-3,933.1	5,550.8	0.00	0.00	0.00
10,700.0	89.70	315.52	4,742.1	3,988.3	-4,003.2	5,650.8	0.00	0.00	0.00
10,800.0	89.70	315.52	4,742.6	4,059.7	-4,073.2	5,750.8	0.00	0.00	0.00
10,869.9	89.70	315.52	4,743.0	4,109.5	-4,122.2	5,820.7	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
353H-POE - plan hits target center - Point	0.00	0.00	4,713.0	67.3	-152.3	1,860,456.38	2,807,780.35	36.112735°N	107.546609°W
353H-BHL - plan hits target center - Point	0.00	0.00	4,743.0	4,109.5	-4,122.2	1,864,498.66	2,803,810.44	36.123871°N	107.560011°W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
220.0	220.0	13 3/8"	13-3/8	17-1/2
2,644.8	2,623.0	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
518.0	518.0	Ojo Alamo		0.00	
783.0	783.0	Kirtland		0.00	
832.0	832.0	Fruitland		0.00	
1,147.1	1,147.0	Pictured Cliffs		0.00	
1,361.0	1,360.0	Lewis		0.00	
1,507.7	1,505.0	Chacra		0.00	
1,892.1	1,883.0	Cliff House		0.00	
2,593.9	2,573.0	Menefee		0.00	
3,555.1	3,518.0	Point Lookout		0.00	
3,814.4	3,773.0	Mancos		0.00	
4,017.9	3,973.0	Gallup		0.00	
5,204.1	4,713.0	TARGET		0.00	

Enduring Resources LLC

San Juan Basin - South Escavada Unit
352H Pad
353H

353H - Pilot Hole

Plan: Design #1

Standard Planning Report

06 July, 2018

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

Site	352H Pad, Sandoval Co., New Mexico				
Site Position:		Northing:	1,860,389.12 usft	Latitude:	36.112549°N
From:	Lat/Long	Easting:	2,807,932.66 usft	Longitude:	107.546094°W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well	353H					
Well Position	+N/-S	0.0 usft	Northing:	1,860,389.12 usft	Latitude:	36.112549°N
	+E/-W	0.0 usft	Easting:	2,807,932.66 usft	Longitude:	107.546094°W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,776.0 usft

Wellbore	353H - Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.89	63.01	50,574.41004715

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	135.00	

Plan Survey Tool Program		Date 7/6/2018			
	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	5,272.1	Design #1 (353H - Pilot Hole)	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	
220.0	0.00	0.00	220.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,526.1	10.52	135.00	1,523.2	-34.1	34.1	2.00	2.00	0.00	135.00	
4,096.0	10.52	135.00	4,049.8	-365.9	365.9	0.00	0.00	0.00	0.00	
4,622.1	0.00	0.00	4,573.0	-400.0	400.0	2.00	-2.00	0.00	180.00	
5,272.1	0.00	0.00	5,223.0	-400.0	400.0	0.00	0.00	0.00	0.00	353H-Pilot TD

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
220.0	0.00	0.00	220.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
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
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
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	2.00	135.00	1,100.0	-1.2	1.2	1.7	2.00	2.00	0.00
1,200.0	4.00	135.00	1,199.8	-4.9	4.9	7.0	2.00	2.00	0.00
1,300.0	6.00	135.00	1,299.5	-11.1	11.1	15.7	2.00	2.00	0.00
1,400.0	8.00	135.00	1,398.7	-19.7	19.7	27.9	2.00	2.00	0.00
1,500.0	10.00	135.00	1,497.5	-30.8	30.8	43.5	2.00	2.00	0.00
1,526.1	10.52	135.00	1,523.2	-34.1	34.1	48.2	2.00	2.00	0.00
1,600.0	10.52	135.00	1,595.8	-43.6	43.6	61.7	0.00	0.00	0.00
1,700.0	10.52	135.00	1,694.1	-56.5	56.5	79.9	0.00	0.00	0.00
1,800.0	10.52	135.00	1,792.4	-69.4	69.4	98.2	0.00	0.00	0.00
1,900.0	10.52	135.00	1,890.8	-82.3	82.3	116.5	0.00	0.00	0.00
2,000.0	10.52	135.00	1,989.1	-95.3	95.3	134.7	0.00	0.00	0.00
2,100.0	10.52	135.00	2,087.4	-108.2	108.2	153.0	0.00	0.00	0.00
2,200.0	10.52	135.00	2,185.7	-121.1	121.1	171.2	0.00	0.00	0.00
2,300.0	10.52	135.00	2,284.0	-134.0	134.0	189.5	0.00	0.00	0.00
2,400.0	10.52	135.00	2,382.4	-146.9	146.9	207.8	0.00	0.00	0.00
2,500.0	10.52	135.00	2,480.7	-159.8	159.8	226.0	0.00	0.00	0.00
2,600.0	10.52	135.00	2,579.0	-172.7	172.7	244.3	0.00	0.00	0.00
2,700.0	10.52	135.00	2,677.3	-185.7	185.7	262.6	0.00	0.00	0.00
2,800.0	10.52	135.00	2,775.6	-198.6	198.6	280.8	0.00	0.00	0.00
2,900.0	10.52	135.00	2,873.9	-211.5	211.5	299.1	0.00	0.00	0.00
3,000.0	10.52	135.00	2,972.3	-224.4	224.4	317.3	0.00	0.00	0.00
3,100.0	10.52	135.00	3,070.6	-237.3	237.3	335.6	0.00	0.00	0.00
3,200.0	10.52	135.00	3,168.9	-250.2	250.2	353.9	0.00	0.00	0.00
3,300.0	10.52	135.00	3,267.2	-263.1	263.1	372.1	0.00	0.00	0.00
3,400.0	10.52	135.00	3,365.5	-276.1	276.1	390.4	0.00	0.00	0.00
3,500.0	10.52	135.00	3,463.9	-289.0	289.0	408.7	0.00	0.00	0.00
3,600.0	10.52	135.00	3,562.2	-301.9	301.9	426.9	0.00	0.00	0.00
3,700.0	10.52	135.00	3,660.5	-314.8	314.8	445.2	0.00	0.00	0.00
3,800.0	10.52	135.00	3,758.8	-327.7	327.7	463.5	0.00	0.00	0.00
3,900.0	10.52	135.00	3,857.1	-340.6	340.6	481.7	0.00	0.00	0.00
4,000.0	10.52	135.00	3,955.4	-353.5	353.5	500.0	0.00	0.00	0.00
4,096.0	10.52	135.00	4,049.8	-365.9	365.9	517.5	0.00	0.00	0.00
4,100.0	10.44	135.00	4,053.8	-366.4	366.4	518.2	2.00	-2.00	0.00
4,200.0	8.44	135.00	4,152.4	-378.0	378.0	534.6	2.00	-2.00	0.00
4,300.0	6.44	135.00	4,251.6	-387.2	387.2	547.6	2.00	-2.00	0.00
4,400.0	4.44	135.00	4,351.1	-393.9	393.9	557.1	2.00	-2.00	0.00
4,500.0	2.44	135.00	4,450.9	-398.2	398.2	563.1	2.00	-2.00	0.00
4,600.0	0.44	135.00	4,550.9	-399.9	399.9	565.6	2.00	-2.00	0.00
4,622.1	0.00	0.00	4,573.0	-400.0	400.0	565.7	2.00	-2.00	0.00
4,700.0	0.00	0.00	4,650.9	-400.0	400.0	565.7	0.00	0.00	0.00
4,800.0	0.00	0.00	4,750.9	-400.0	400.0	565.7	0.00	0.00	0.00
4,900.0	0.00	0.00	4,850.9	-400.0	400.0	565.7	0.00	0.00	0.00
5,000.0	0.00	0.00	4,950.9	-400.0	400.0	565.7	0.00	0.00	0.00
5,100.0	0.00	0.00	5,050.9	-400.0	400.0	565.7	0.00	0.00	0.00
5,200.0	0.00	0.00	5,150.9	-400.0	400.0	565.7	0.00	0.00	0.00
5,272.1	0.00	0.00	5,223.0	-400.0	400.0	565.7	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
353H-Pilot TD - plan hits target center - Point	0.00	0.00	5,223.0	-400.0	400.0	1,859,989.12	2,808,332.66	36.111447°N	107.544744°W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
220.0	220.0	13 3/8"	13-3/8	17-1/2
2,644.8	2,623.0	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
518.0	518.0	Ojo Alamo		0.00	
783.0	783.0	Kirtland		0.00	
832.0	832.0	Fruitland		0.00	
1,147.1	1,147.0	Pictured Cliffs		0.00	
1,361.0	1,360.0	Lewis		0.00	
1,507.7	1,505.0	Chacra		0.00	
1,892.1	1,883.0	Cliff House		0.00	
2,593.9	2,573.0	Menefee		0.00	
3,555.1	3,518.0	Point Lookout		0.00	
3,814.4	3,773.0	Mancos		0.00	
4,017.9	3,973.0	Gallup (Mncs. A)		0.00	
4,652.1	4,603.0	MNCS_G		0.00	
4,717.1	4,668.0	MNCS_H		0.00	
4,762.1	4,713.0	Gallup (TARGET)		0.00	
4,782.1	4,733.0	MNCS_I		0.00	
4,847.1	4,798.0	Bas. Nio. Uncom.		0.00	
4,902.1	4,853.0	GLLPM		0.00	
4,982.1	4,933.0	GLLPL		0.00	
5,122.1	5,073.0	Juana Lopez		0.00	
5,272.1	5,223.0	TD		0.00	