

State of New Mexico  
Energy, Minerals and Natural Resources Department

Susana Martinez  
Governor

David Martin  
Cabinet Secretary

Brett F. Woods, Ph.D.  
Deputy Cabinet Secretary

David R. Catanach 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 3160-3 APD form.

Operator Signature Date: 3-9-15

Well information;

Operator Energen, Well Name and Number Federal F # 773H

API# 30-045-35681, Section 13, Township 24 N/S, Range 10 E/W

Conditions of Approval:

(See the below checked and handwritten conditions)

- Notify Aztec OCD 24hrs prior to casing & cement.
- Hold C-104 for directional survey & "As Drilled" Plat
- Hold C-104 for NSL, NSP, DHC
- Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- 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
- Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- 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.
- Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

Charles Serr  
NMOCD Approved by Signature

10-9-2015  
Date KC

RECEIVED

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

MAR 20 2015

APPLICATION FOR PERMIT TO DRILL OR REENTER *On Field Office*  
Bureau of Land Management

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NM45209
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator <b>ENERGEN RESOURCES CORPORATION</b>		7. If Unit or CA Agreement, Name and No.
3a. Address <b>2010 AFTON PLACE FARMINGTON, NM 87401</b>	3b. Phone No. (include area code) <b>505-325-6800</b>	8. Lease Name and Well No. <b>FEDERAL F #773H</b>
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface <b>1100' FNL &amp; 380' FEL, SEC 13, T24N, R10W</b> At proposed prod. zone <b>380' FNL &amp; 380' FEL, SEC 18, T24N, R9W</b>		9. API Well No. <b>30-045-35681</b>
11. Distance in miles and direction from nearest town or post office* <b>Approximately 3.5 miles southwest of Blanco Trading Post, New Mexico</b>		10. Field and Pool, or Exploratory <b>BISTI LOWER GALLUP</b>
12. County or Parish <b>SAN JUAN COUNTY</b>	13. State <b>NM</b>	11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 13. T24N. R10W. NMPM SEC 18. T24N. R9W. NMPM</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>380'</b>	16. No. of acres in lease <b>320.03 ACRES</b>	17. Spacing Unit dedicated to this well <b>160.05 160' ACRES</b>
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>50'</b>	19. Proposed Depth <b>10,459' MD 5,515' TVD</b>	20. BLM/BIA Bond No. on file <b>NM2707 NMB000747</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>GL: 6,965.2' (NAVD 88)</b>	22. Approximate date work will start* <b>06/01/2015</b>	23. Estimated duration <b>45 DAYS</b>
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

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

25. Signature <i>Doug Thomas</i>	Name (Printed/Typed) <b>DOUG THOMAS</b>	Date <b>3-19-15</b>
Title <b>DRILLING SUPERINTENDENT</b>		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) <b>AFM</b>	Date <b>9/23/15</b>
Title <b>AFM</b>	Office <b>FFO</b>	

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.

(Continued on page 2)

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

\*(Instructions on page 2)

**DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"**

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

**NMOCD PV**

DISTRICT I  
1625 N French Dr. Hobbs, NM 88240  
Phone (575) 393-6181 Fax (575) 393-0720

DISTRICT II  
811 S First St. Artesia, N.M. 88210  
Phone: (575) 748-1383 Fax (575) 748-9720

DISTRICT III  
1000 Rio Brazos Rd., Aztec, N.M. 87410  
Phone: (505) 334-6178 Fax (505) 334-6170

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

State of New Mexico  
Energy, Minerals & Natural Resources Department

Form C-102  
Revised August 1, 2011

Submit one copy to appropriate  
District Office

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number <b>30-045-35681</b>		<sup>2</sup> Pool Code 5890	<sup>3</sup> Pool Name BISTI LOWER GALLUP
<sup>4</sup> Property Code <b>315300</b>	<sup>5</sup> Property Name FEDERAL F		<sup>6</sup> Well Number 773H
<sup>7</sup> OGRID No. 162928	<sup>8</sup> Operator Name ENERGEN RESOURCES CORPORATION		<sup>9</sup> Elevation 6965

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	13	24N	10W		1100'	NORTH	380'	EAST	SAN JUAN

<sup>11</sup> 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
A	18	24N	9W		380'	NORTH	380'	EAST	SAN JUAN

<sup>12</sup> Dedicated Acres N/2 N/2 SEC 18 160 ACRES	PROJECT AREA	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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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

**BOTTOM HOLE**

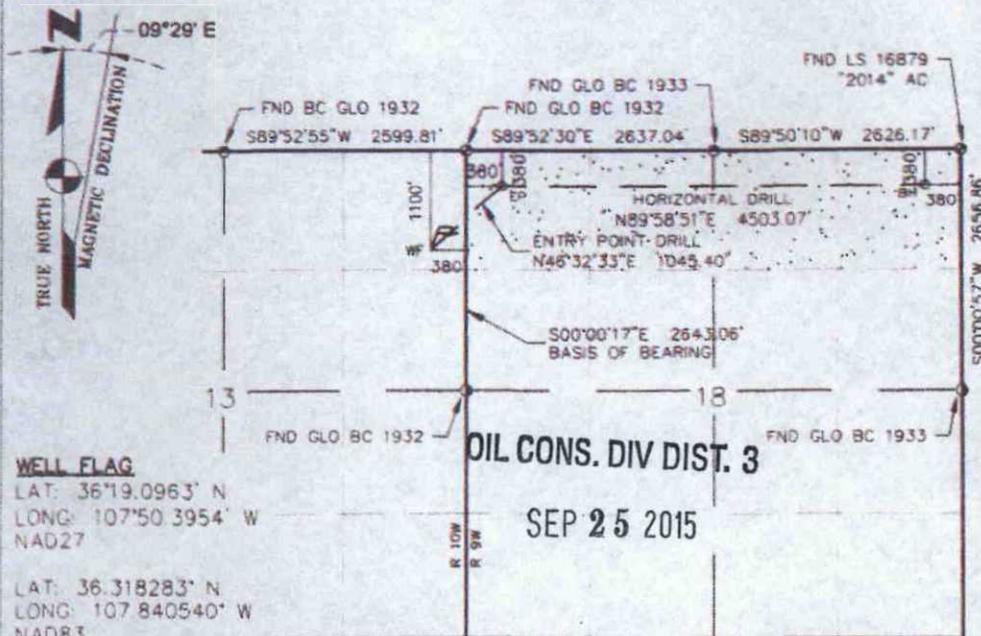
LAT: 36.79.2151' N  
LONG: 107.49.3242' W  
NAD27

LAT: 36.320264' N  
LONG: 107.822686' W  
NAD83

**ENTRY POINT**

LAT: 36.79.2148' N  
LONG: 107.50.2410' W  
NAD27

LAT: 36.320258' N  
LONG: 107.837966' W  
NAD83



**WELL FLAG**

LAT: 36.79.0963' N  
LONG: 107.50.3954' W  
NAD27

LAT: 36.318283' N  
LONG: 107.840540' W  
NAD83

**BASIS OF BEARING:**

BETWEEN FOUND MONUMENTS AT THE NORTHEAST CORNER AND THE EAST QUARTER CORNER OF SECTION 13, TOWNSHIP 24 NORTH, RANGE 10 WEST, N.M.P.M. SAN JUAN COUNTY, NEW MEXICO

LINE BEARS: S 00°00'17\" E A DISTANCE OF 2643.06 FEET AS MEASURED BY G.P.S. LOCAL GRID NAD83.

OIL CONS. DIV DIST. 3

SEP 25 2015

**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 in a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

*Nathan Smith* 3/20/15  
Signature Date

Nathan Smith  
Printed Name

nsmith@energen.com  
E-mail Address

**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.

January 14, 2015

Date of Survey

Signature and Seal of Professional Surveyor:

*Glen W. Russell*



GLEN W. RUSSELL  
Certificate Number 15703

**Drilling Plan**  
**Energen Resources Corporation**

**Federal F #773H**

Surface Location: 1100 FNL, 380 FEL

Legal Description: Sec 13, T24N, R10W (36.318283° N, 107.840540° W – NAD83)

Bottom Hole Location: 380 FNL, 380 FEL

Legal Description: Sec 18, T24N, R9W (36.320264° N, 107.822686° W – NAD83)

San Juan County, NM

1. The elevation of the unprepared ground is 6,964 feet above sea level.
2. The geological name of the surface formation is the Nacimiento.
3. A rotary rig will be used to drill the well to a Proposed Total Depth of 5,515' TVD/10,459' MD.
4. Estimated top of important geological markers:

<u>Formation</u>	<u>Depth (TVD)(ft)</u>	<u>Depth (MD)(ft)</u>
Nacimiento	Surface	Surface
Ojo Alamo	972	972
Kirtland	1,100	1,100
Fruitland	1,275	1,275
Pictured Cliffs	1,750	1,750
Huerfanto Bentonite	2,078	2,078
Chacra	2,528	2,536
Cliff House	3,235	3,259
Menefee	3,276	3,301
Point Lookout	4,212	4,259
Mancos	4,458	4,511
Mancos/Niobrara "C"	5,515	5,948

5. Estimated depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered:

<u>Formation</u>	<u>Depth (TVD)(ft)</u>	<u>Water/HydroCarbon</u>
Fruitland	1,275	Water/Gas
Pictured Cliffs	1,750	Gas
Cliffhouse	3,235	Gas
Point Lookout	4,212	Gas
Mancos	4,458	Oil/Gas

6. All proposed casing is new and the program is as follows:

Casing	Size	Depth		Grade	Weight	Connection	PSI		
		MD	TVD				Burst	Collapse	Tension
Surface	9-5/8"	0-500'	0-500'	J-55	36.00	STC	3520	2020	394
Intermediate	7"	0-6,050'	0-5,515'	J-55	26.00	LTC	4980	4320	367
Production	4-1/2"	5,900'- 10,459'	5,515'-5,397'	L-80	11.60	Ultra DQX	7780	6350	267

## 7. Cementing Program:

- a. 12-1/4" hole x 9-5/8" casing at 500' will have cement circulated to surface with 270 sks (100% excess true hole) Class H Cement with 1.0 % CaCl<sub>2</sub>, 1/2 #/sk Poly-E-Flake 15.8 ppg, 1.17 ft<sup>3</sup>/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3<sup>RD</sup> JOINT TO SURFACE. 20 BBLS OF WATER FOLLOWED BY 20 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER
- b. 8-3/4" hole x 7" casing at 6,050'. Cement will be circulated to surface with 640 sks (50% excess true hole) of HLC with 1.0 % CaCl<sub>2</sub>. 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal (Gilsonite) – 12.3 ppg, 1.95 ft<sup>3</sup>/sk followed by 115 sks (100% excess true hole) 50/50 Glass H/Poz with 0.15% Versaset, 0.30% HALAD-9, 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal – 13.5 ppg, 1.31 ft<sup>3</sup>/sk. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN EVERY 3<sup>RD</sup> JOINT TO SURFACE. 10 BBLS OF WATER FOLLOWED BY 30 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER. Test Intermediate Casing to 1500 psi. Cement Additives Subject to Change Based on Wellbore Conditions and Cement Design Criteria
- c. 6-1/4" hole x 4-1/2" liner at 10,459'. A fluid caliper will be run to determine base slurry cement to have TOC at 5,900'. Base slurry to consist of 400 sks 50/50 Class H/Poz with 0.10% Versaset, 1.5 gal/sk CHEM-FOAMER 760, 0.10% sa-1015, 0.20% HALAD-766 – 13.5 ppg, 1.27 ft<sup>3</sup>/sk, Foamed density 10.5 ppg. 50 sks of base slurry to be used as tail cement less foaming agent. CENTRALIZERS TO BE USED AT DISCRETION IN LATERAL TO ACHIEVE 70% STAND OFF. CENTRALIZERS TO BE USED TO TIE BACK DEPTH OF 6150' TO ACHIEVE 70% STAND OFF. PACKOFF SEAL ASSEMBLY TO BE USED FOR LINER TOP ISOLATION. Cement Additives Subject to Change Based on Wellbore Conditions and Cement Design Criteria. Liner to be Pressure Tested During Completion Operations.

## 8. Pressure Control Equipment

- a. BOPE to be installed prior to Surface Casing drillout.
- b. Pressure control equipment will be used to meet 2,000 (2M) psi specifications.
- c. BOPE working pressure of 3,000 psi.
- d. Function test and visual inspection to be done at each casing size change prior to drill out.
- e. BOP annular to be tested to 85% of working pressure.
- f. All BOP and related equipment will be tested in accordance with the requirements outlined in Onshore Order No. 2 and Notice to Operators dated May 27, 2005.
- g. BOP remote controls to be located on rig floor and readily accessible, master control on ground at accumulator will be able to function all preventors.
- h. Kill line will be 2 in min and have two kill line valves, one being a check valve.
- i. Choke line will be 2 in min and have two choke line valves, choke manifold with have two adjustable chokes, one manual and one remote. All choke lines will be as straight as possible. Any turns will be properly targeted using block and/or running tees. Choke line and manifold to be pressure tested to 1,500 psi.
- j. Float sub and TIW valve will be on the rig floor at all times.
- k. If high pressure co-flex hoses are used, they will be run as straight as possible and anchored to prevent whip.
- l. The main discharge line (panic line) will be at least 100' from the choke manifold and discharged into an appropriately sized discharge facility.

9. Mud Program:

0' - 500'	Fresh water/Spud Mud. Paper for losses and seepage. 8.5 to 9.0 ppg, 32 to 75 vis, PV 3 to 5, YP 5 to 7, WL NC
500' - 6,050'	Fresh water/LSND. As needed LCM for losses and seepage. 8.5 to 9.5 ppg, pH 10, 28 to 60 vis, PV 1, YP 1, WL 8-15
6,050' - 10,459'	WBM with shale and clay stabilizers. As needed LCM for losses and seepage. 8.3 to 9.3 ppg, 15 to 35 vis, PV 4-6, YP 4-6, WL < 20

**\*\*During drilling operations, all necessary products will be sufficiently stored on location for abnormal situations. The characteristics, use, testing of drilling mud and the implementation of related drilling procedures shall be designed to prevent the loss of well control. Sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring well control.**

**\*\*A pH of 10 or above in the fresh water base mud system shall be maintained to control the effects corrosion has on metallurgy of equipment used.**

Operating and Maintenance

Energen Resources Corporation will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times. A trip/surge tank will be used to monitor returns for any "kicks" of formation fluids.

Equipment:

2-Mongoose Shale Shakers

2-3400 High Speed Centrifuges with stands and pumps

2-Roll off bins with Tracks

2-200 bbl Open top Frac tanks

1-Mud/Gas Separator and Degasser

1-Trip/Surge Tank

Electronic or Visual monitoring system to indicate lost returns

10. Testing, Logging and Coring Program:

- a. Testing Program: No drillstem tests are anticipated
- b. Electric Logging Program: TBD
- c. LWD Program: TBD
- d. Coring Program: None.
- e. CBL's and/or Temperature Surveys Will Be Performed as Needed or Required.

11. Bottom Hole Pressure expected to be 2,500 +/- psi

12. Bottom Hole Temperature expected to be 160 deg F.

# **Energen Resources**

**Federal F**

**Federal F #773H**

**Design #1**

**Preliminary Design**

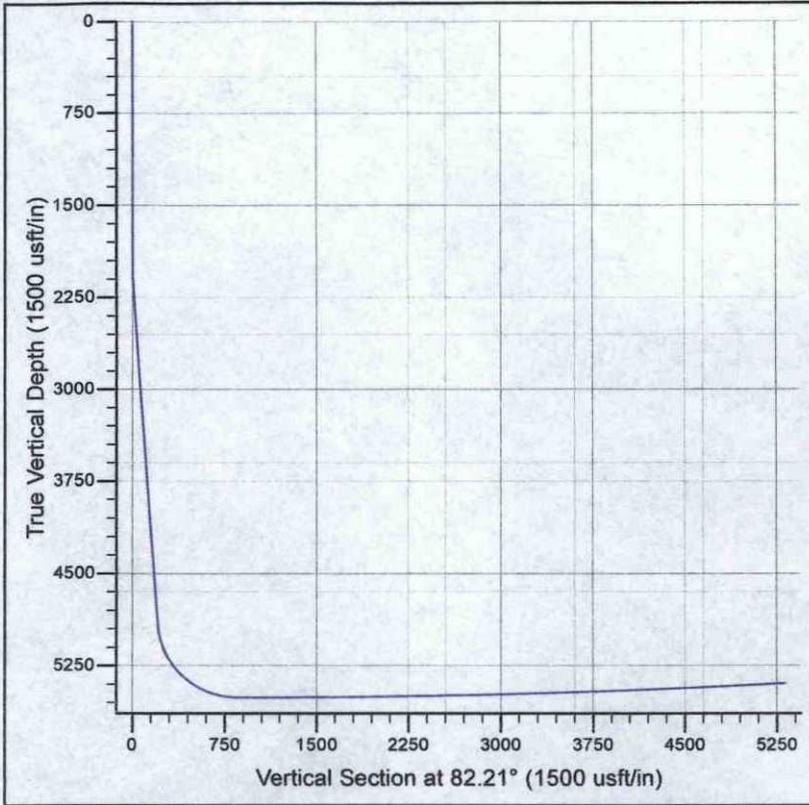
**Plan: APD Plan**

## **Preliminary Design**

**30 January, 2015**

Company Name: Energen Resources

Project: Federal F  
Site: Federal F #773H  
Well: Design #1  
Wellbore: Preliminary Design  
Design: APD Plan

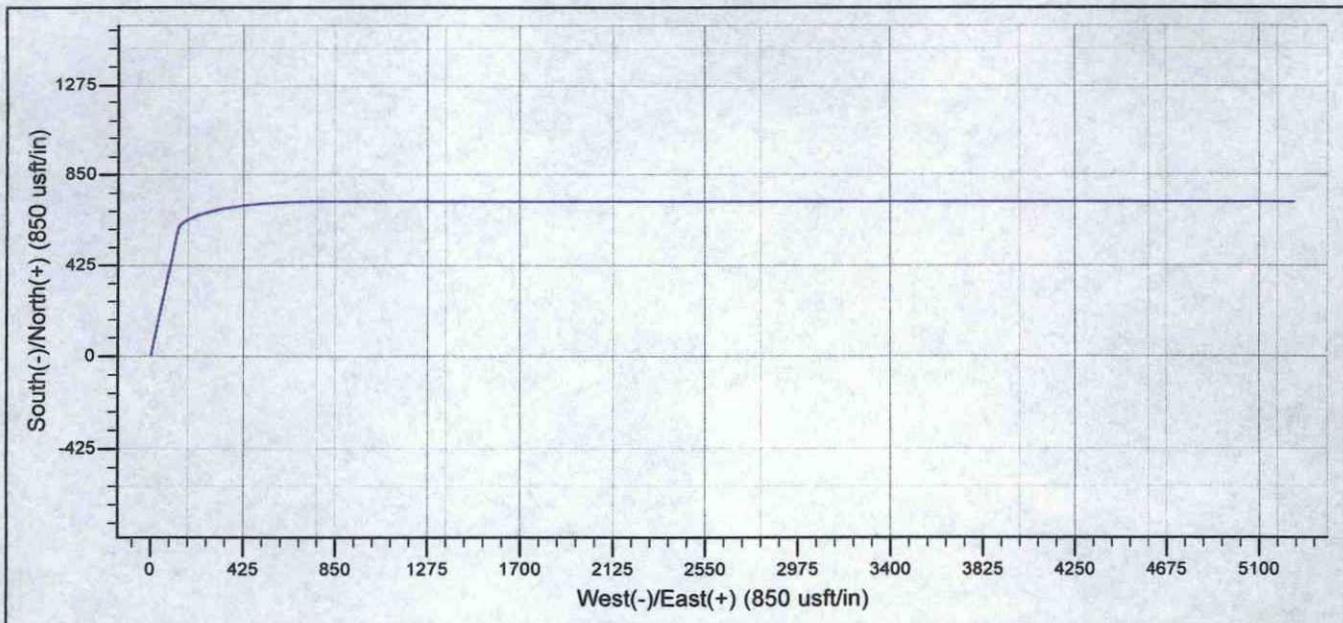


OIL CONS. DIV DIST. 3

SEP 25 2015

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0
3	2273.0	12.28	11.81	2270.9	28.5	6.0	4.50	11.81	9.8
4	4983.6	12.28	11.81	4919.5	593.1	124.0	0.00	0.00	203.2
5	5955.9	90.00	90.00	5515.0	720.0	760.0	9.00	78.46	850.6
6	10459.6	93.00	90.00	5397.1	720.0	5261.6	0.07	0.00	5310.7



**Energen**  
Preliminary Design

SEP 25 2015

<b>Company:</b> Energen Resources	<b>Local Co-ordinate Reference:</b> Site Federal F #773H
<b>Project:</b> Federal F	<b>TVD Reference:</b> WELL @ 0.0usft (Original Well Elev)
<b>Site:</b> Federal F #773H	<b>MD Reference:</b> WELL @ 0.0usft (Original Well Elev)
<b>Well:</b> Design #1	<b>North Reference:</b> Grid
<b>Wellbore:</b> Preliminary Desgin	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> APD Plan	<b>Database:</b> EDM 5000.1 Single User Db

<b>Project</b> Federal F	<b>System Datum:</b> Mean Sea Level
<b>Map System:</b> US State Plane 1983	
<b>Geo Datum:</b> North American Datum 1983	
<b>Map Zone:</b> New Mexico Western Zone	

<b>Site</b> Federal F #773H	
<b>Site Position:</b>	<b>Northing:</b> 1,935,155.31 usft
<b>From:</b> Lat/Long	<b>Easting:</b> 2,720,968.62 usft
<b>Position Uncertainty:</b> 0.0 usft	<b>Slot Radius:</b> 13-3/16"
	<b>Latitude:</b> 36° 19' 5.819 N
	<b>Longitude:</b> 107° 50' 25.944 W
	<b>Grid Convergence:</b> 0.00 °

<b>Well</b> Design #1	
<b>Well Position</b> +N/-S 0.0 usft	<b>Northing:</b> 1,935,155.31 usft
+E/-W 0.0 usft	<b>Easting:</b> 2,720,968.62 usft
<b>Position Uncertainty</b> 0.0 usft	<b>Wellhead Elevation:</b> usft
	<b>Latitude:</b> 36° 19' 5.819 N
	<b>Longitude:</b> 107° 50' 25.944 W
	<b>Ground Level:</b> 0.0 usft

<b>Wellbore</b> Preliminary Desgin	
<b>Magnetics</b>	<b>Model Name</b> IGRF200510
	<b>Sample Date</b> 12/4/2014
	<b>Declination (°)</b> 9.44
	<b>Dip Angle (°)</b> 63.03
	<b>Field Strength (nT)</b> 50,242

<b>Design</b> APD Plan	
<b>Audit Notes:</b>	
<b>Version:</b>	<b>Phase:</b> PROTOTYPE
	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b> 0.0
	<b>+N/-S (usft)</b> 0.0
	<b>+E/-W (usft)</b> 0.0
	<b>Direction (°)</b> 82.21

<b>Survey Tool Program</b>	<b>Date</b> 1/5/2015
<b>From (usft)</b> 0.0	<b>To (usft)</b> 10,459.6
<b>Survey (Wellbore)</b>	APD Plan (Preliminary Desgin)
<b>Tool Name</b>	MWD
<b>Description</b>	MWD - Standard

<b>Planned Survey</b>								
TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)	
0.0	0.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
100.0	100.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
200.0	200.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
300.0	300.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
400.0	400.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
500.0	500.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
<b>9 5/8"</b>								
600.0	600.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
700.0	700.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
800.0	800.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
900.0	900.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0
1,000.0	1,000.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0

# Energen

## Preliminary Design

**Company:** Energen Resources  
**Project:** Federal F  
**Site:** Federal F #773H  
**Well:** Design #1  
**Wellbore:** Preliminary Desgin  
**Design:** APD Plan

**Local Co-ordinate Reference:** Site Federal F #773H  
**TVD Reference:** WELL @ 0.0usft (Original Well Elev)  
**MD Reference:** WELL @ 0.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

### Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
1,100.0	1,100.0	0.00	0.00	0.0	0.0	0.00	0.0
1,200.0	1,200.0	0.00	0.00	0.0	0.0	0.00	0.0
1,300.0	1,300.0	0.00	0.00	0.0	0.0	0.00	0.0
1,400.0	1,400.0	0.00	0.00	0.0	0.0	0.00	0.0
1,500.0	1,500.0	0.00	0.00	0.0	0.0	0.00	0.0
1,600.0	1,600.0	0.00	0.00	0.0	0.0	0.00	0.0
1,700.0	1,700.0	0.00	0.00	0.0	0.0	0.00	0.0
1,800.0	1,800.0	0.00	0.00	0.0	0.0	0.00	0.0
1,900.0	1,900.0	0.00	0.00	0.0	0.0	0.00	0.0
2,000.0	2,000.0	0.00	0.00	0.0	0.0	0.00	0.0
2,099.9	2,100.0	4.50	11.81	3.8	0.8	4.50	1.3
2,199.2	2,200.0	9.00	11.81	15.3	3.2	4.50	5.3
2,270.9	2,273.0	12.28	11.81	28.5	6.0	4.50	9.8
2,297.3	2,300.0	12.28	11.81	34.2	7.1	0.00	11.7
2,395.0	2,400.0	12.28	11.81	55.0	11.5	0.00	18.8
2,492.7	2,500.0	12.28	11.81	75.8	15.8	0.00	26.0
2,590.4	2,600.0	12.28	11.81	96.6	20.2	0.00	33.1
2,688.1	2,700.0	12.28	11.81	117.5	24.6	0.00	40.3
2,785.8	2,800.0	12.28	11.81	138.3	28.9	0.00	47.4
2,883.6	2,900.0	12.28	11.81	159.1	33.3	0.00	54.5
2,981.3	3,000.0	12.28	11.81	179.9	37.6	0.00	61.7
3,079.0	3,100.0	12.28	11.81	200.8	42.0	0.00	68.8
3,176.7	3,200.0	12.28	11.81	221.6	46.3	0.00	75.9
3,274.4	3,300.0	12.28	11.81	242.4	50.7	0.00	83.1
3,372.1	3,400.0	12.28	11.81	263.3	55.0	0.00	90.2
3,469.8	3,500.0	12.28	11.81	284.1	59.4	0.00	97.4
3,567.5	3,600.0	12.28	11.81	304.9	63.7	0.00	104.5
3,665.2	3,700.0	12.28	11.81	325.7	68.1	0.00	111.6
3,762.9	3,800.0	12.28	11.81	346.6	72.5	0.00	118.8
3,860.7	3,900.0	12.28	11.81	367.4	76.8	0.00	125.9
3,958.4	4,000.0	12.28	11.81	388.2	81.2	0.00	133.0
4,056.1	4,100.0	12.28	11.81	409.0	85.5	0.00	140.2
4,153.8	4,200.0	12.28	11.81	429.9	89.9	0.00	147.3
4,251.5	4,300.0	12.28	11.81	450.7	94.2	0.00	154.5
4,349.2	4,400.0	12.28	11.81	471.5	98.6	0.00	161.6
4,446.9	4,500.0	12.28	11.81	492.3	102.9	0.00	168.7
4,544.6	4,600.0	12.28	11.81	513.2	107.3	0.00	175.9
4,642.3	4,700.0	12.28	11.81	534.0	111.6	0.00	183.0
4,740.1	4,800.0	12.28	11.81	554.8	116.0	0.00	190.1
4,837.8	4,900.0	12.28	11.81	575.7	120.3	0.00	197.3
4,919.5	4,983.6	12.28	11.81	593.1	124.0	0.00	203.2
4,935.5	5,000.0	12.66	18.41	596.5	124.9	2.30	204.6
4,984.1	5,050.0	14.68	35.54	606.8	130.3	4.03	211.4
5,032.1	5,100.0	17.62	47.85	617.1	139.6	5.89	222.0

# Energen

## Preliminary Design

**Company:** Energen Resources  
**Project:** Federal F  
**Site:** Federal F #773H  
**Well:** Design #1  
**Wellbore:** Preliminary Desgin  
**Design:** APD Plan

**Local Co-ordinate Reference:** Site Federal F #773H  
**TVD Reference:** WELL @ 0.0usft (Original Well Elev)  
**MD Reference:** WELL @ 0.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

### Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
5,079.3	5,150.0	21.11	56.48	627.1	152.7	6.97	236.4
5,125.3	5,200.0	24.91	62.67	636.9	169.6	7.60	254.4
5,169.9	5,250.0	28.90	67.28	646.4	190.1	7.98	276.0
5,212.8	5,300.0	33.01	70.85	655.6	214.1	8.22	301.0
5,253.7	5,350.0	37.20	73.69	664.3	241.5	8.39	329.4
5,292.3	5,400.0	41.45	76.03	672.5	272.1	8.50	360.8
5,328.5	5,450.0	45.74	78.01	680.3	305.7	8.58	395.1
5,362.0	5,500.0	50.06	79.72	687.4	342.1	8.64	432.1
5,392.7	5,550.0	54.40	81.22	693.9	381.1	8.68	471.6
5,420.2	5,600.0	58.75	82.57	699.8	422.4	8.71	513.3
5,444.5	5,650.0	63.12	83.80	705.0	465.7	8.74	557.0
5,465.4	5,700.0	67.50	84.94	709.4	510.9	8.76	602.4
5,482.7	5,750.0	71.89	86.00	713.1	557.7	8.77	649.2
5,496.4	5,800.0	76.28	87.02	716.0	605.7	8.79	697.1
5,506.4	5,850.0	80.68	88.00	718.2	654.6	8.79	745.9
5,512.6	5,900.0	85.08	88.95	719.5	704.2	8.80	795.2
5,515.0	5,950.0	89.48	89.89	720.0	754.1	8.80	844.8
5,515.0	5,955.9	90.00	90.00	720.0	760.0	8.80	850.6
5,515.0	6,000.0	90.03	90.00	720.0	804.1	0.07	894.3
5,514.9	6,050.0	90.06	90.00	720.0	854.1	0.07	943.8
7"							
5,514.9	6,100.0	90.10	90.00	720.0	904.1	0.07	993.4
5,514.6	6,200.0	90.16	90.00	720.0	1,004.1	0.07	1,092.5
5,514.3	6,300.0	90.23	90.00	720.0	1,104.1	0.07	1,191.5
5,513.8	6,400.0	90.30	90.00	720.0	1,204.1	0.07	1,290.6
5,513.3	6,500.0	90.36	90.00	720.0	1,304.1	0.07	1,389.7
5,512.6	6,600.0	90.43	90.00	720.0	1,404.1	0.07	1,488.8
5,511.8	6,700.0	90.50	90.00	720.0	1,504.1	0.07	1,587.8
5,510.8	6,800.0	90.56	90.00	720.0	1,604.1	0.07	1,686.9
5,509.8	6,900.0	90.63	90.00	720.0	1,704.1	0.07	1,786.0
5,508.7	7,000.0	90.70	90.00	720.0	1,804.1	0.07	1,885.0
5,507.4	7,100.0	90.76	90.00	720.0	1,904.1	0.07	1,984.1
5,506.0	7,200.0	90.83	90.00	720.0	2,004.1	0.07	2,083.2
5,504.5	7,300.0	90.90	90.00	720.0	2,104.1	0.07	2,182.2
5,502.9	7,400.0	90.96	90.00	720.0	2,204.0	0.07	2,281.3
5,501.1	7,500.0	91.03	90.00	720.0	2,304.0	0.07	2,380.4
5,499.3	7,600.0	91.10	90.00	720.0	2,404.0	0.07	2,479.4
5,497.3	7,700.0	91.16	90.00	720.0	2,504.0	0.07	2,578.5
5,495.2	7,800.0	91.23	90.00	720.0	2,604.0	0.07	2,677.5
5,493.0	7,900.0	91.30	90.00	720.0	2,703.9	0.07	2,776.6
5,490.7	8,000.0	91.36	90.00	720.0	2,803.9	0.07	2,875.6
5,488.3	8,100.0	91.43	90.00	720.0	2,903.9	0.07	2,974.7
5,485.7	8,200.0	91.49	90.00	720.0	3,003.9	0.07	3,073.7
5,483.0	8,300.0	91.56	90.00	720.0	3,103.8	0.07	3,172.8
5,480.3	8,400.0	91.63	90.00	720.0	3,203.8	0.07	3,271.8

# Energen Preliminary Design

**Company:** Energen Resources  
**Project:** Federal F  
**Site:** Federal F #773H  
**Well:** Design #1  
**Wellbore:** Preliminary Design  
**Design:** APD Plan

**Local Co-ordinate Reference:** Site Federal F #773H  
**TVD Reference:** WELL @ 0.0usft (Original Well Elev)  
**MD Reference:** WELL @ 0.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

## Planned Survey

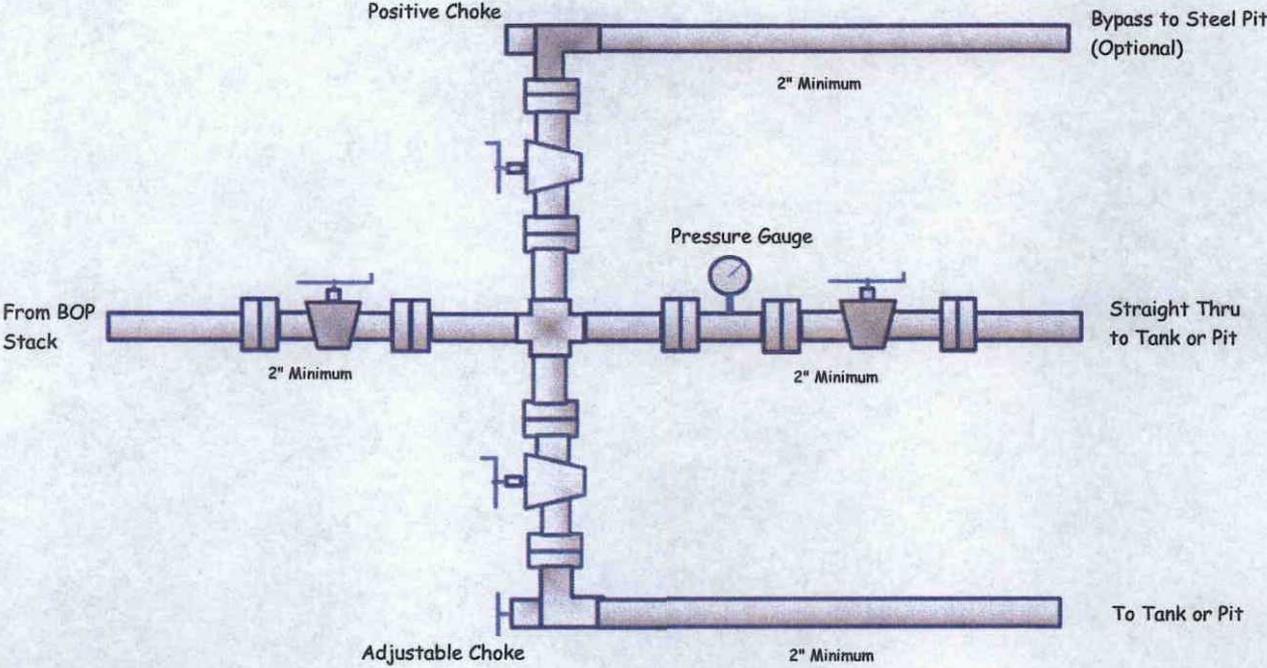
TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
5,477.4	8,500.0	91.69	90.00	720.0	3,303.7	0.07	3,370.8
5,474.4	8,600.0	91.76	90.00	720.0	3,403.7	0.07	3,469.9
5,471.2	8,700.0	91.83	90.00	720.0	3,503.6	0.07	3,568.9
5,468.0	8,800.0	91.89	90.00	720.0	3,603.6	0.07	3,667.9
5,464.6	8,900.0	91.96	90.00	720.0	3,703.5	0.07	3,767.0
5,461.1	9,000.0	92.03	90.00	720.0	3,803.5	0.07	3,866.0
5,457.5	9,100.0	92.09	90.00	720.0	3,903.4	0.07	3,965.0
5,453.8	9,200.0	92.16	90.00	720.0	4,003.3	0.07	4,064.0
5,450.0	9,300.0	92.23	90.00	720.0	4,103.3	0.07	4,163.0
5,446.0	9,400.0	92.29	90.00	720.0	4,203.2	0.07	4,262.0
5,442.0	9,500.0	92.36	90.00	720.0	4,303.1	0.07	4,361.0
5,437.8	9,600.0	92.43	90.00	720.0	4,403.0	0.07	4,460.0
5,433.5	9,700.0	92.49	90.00	720.0	4,502.9	0.07	4,559.0
5,429.1	9,800.0	92.56	90.00	720.0	4,602.8	0.07	4,657.9
5,424.6	9,900.0	92.63	90.00	720.0	4,702.7	0.07	4,756.9
5,419.9	10,000.0	92.69	90.00	720.0	4,802.6	0.07	4,855.9
5,415.2	10,100.0	92.76	90.00	720.0	4,902.5	0.07	4,954.9
5,410.3	10,200.0	92.83	90.00	720.0	5,002.4	0.07	5,053.8
5,405.3	10,300.0	92.89	90.00	720.0	5,102.3	0.07	5,152.8
5,400.2	10,400.0	92.96	90.00	720.0	5,202.1	0.07	5,251.7
5,397.1	10,459.0	93.00	90.00	720.0	5,261.0	0.07	5,310.1
<b>4 1/2"</b>							
5,397.1	10,459.6	93.00	90.00	720.0	5,261.6	0.07	5,310.7

## Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
500.0	500.0	9 5/8"	9-5/8	12-1/4
6,050.0	5,514.9	7"	7	8-3/4
10,459.0	5,397.1	4 1/2"	4-1/2	6-1/4

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

## 2M Choke & Kill Manifold



Note: All connections are bolted flange  
Working pressure for all equipment is  
2,000 psi or greater

proposed project will be stored and protected until it is redistributed during reclamation. Topsoil will be stored within the construction zone separately from subsoil material. The topsoil will be free of brush, tree limbs, trunks, and roots. Vehicle/equipment traffic will not be allowed to cross topsoil stockpiles. The topsoil will be protected using wattles or other BMPs so that erosion is minimized. If topsoil is stored for a length of time such that nutrients are depleted, amendments will be added to the topsoil as advised by the Energen's environmental scientist or appropriate agent/contractor.

The well pad will be leveled with heavy equipment to provide space and a level surface for vehicles and equipment. Excavated materials from the cuts will be used to the fill portions of the location to level the proposed well pad. Approximately 5.2 feet of cut and 4.8 feet of fill will be needed to create a level well pad. No additional materials will be required for construction of the proposed well pad.

Within 90 days of installation, aboveground structures not subject to safety requirements will be painted according to stipulations as outlined in the BLM COAs to reduce visual resource impacts and blend with vegetation and characteristics of the surrounding landscape.

Construction plats are provided in the APD permit packages.

## **9. METHODS FOR HANDLING WASTE**

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✓ Drilling operations will utilize a closed-loop system. Drilling of the horizontal lateral will be done using a water based mud system. All water-based mud cuttings will be hauled to a commercial disposal facility. The drilling operations area will be enclosed by a containment berm and ditches, and the containment berm will be ramped to allow access to the solids control area. The contained operations area will drain gradually to one area of the pad which will be contoured for spill prevention and control.

Energen will follow New Mexico Oil Conservation Division Pit Rule and Onshore Order No. 1 and No. 7 regarding placement, operation, and closure of any reserve pits or closed-loop systems. No blow pit will be used.

All refuse will be placed in metal trash basket and will be hauled off site, as needed, and properly disposed in an approved landfill. Portable toilets will be provided and maintained as needed during construction, drilling and completion operations.

## **10. ANCILLARY FACILITIES**

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There are no ancillary facilities or TUAs associated with the proposed project.

## **11. WELL SITE LAYOUT**

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The interim reclamation/long-term disturbance layout is depicted in Appendix C and is described below.

The following areas (known as the "non-reseeded working areas") will remain unreclaimed throughout the lifetime of the proposed project. These areas will be regularly used for equipment or for vehicular access.

- Production facilities will be located within a facility area measuring approximately 105-by-250 foot (0.60 acre) on the northern end of the proposed well pad.
- The teardrop for the proposed well pad will include a looped, 20-foot-wide driving surface, totaling approximately 0.81 acre.

The following areas (known as the "reseeded working areas") will be reseeded and not recontoured during interim reclamation. These areas may be used for future activities within the proposed well pad, but will not be used for daily activities.

# ENERGEN RESOURCES CORPORATION FEDERAL F #773H

1100' FNL & 380' FEL

LOCATED IN THE NE/4 SEC. 13, T-24-N, R-10-W, N.M.P.M.  
SAN JUAN COUNTY, NEW MEXICO

WELL FLAG LOCATED AT  
36.318283° N  
107.840540° W  
NAD 83

### DIRECTIONS

1. FROM THE INTERSECTION OF HWY 64 AND US-550 IN BLOOMFIELD NEW MEXICO, TRAVEL SOUTH ON HWY 550 28.2 MILES TO BLANCO TRADING POST.
2. TURN RIGHT (SOUTHWESTERLY) ONTO NM-57 FOR 3.1 MILES.
3. TURN LEFT (SOUTHERLY) ONTO DIRT ROAD THROUGH LOCKED GATE FOR 0.6 MILES
4. TURN LEFT (EASTERLY) FOR 0.1 MILE TO BEGINNING OF NEW ACCESS ON THE RIGHT (SOUTH) SIDE OF THE DIRT ROAD WHICH CONTINUES FOR 190' TO THE NEW LOCATION.

 <small>ENERGEN RESOURCES CORPORATION</small>	ENERGEN RESOURCES CORPORATION FEDERAL F #773H, 1100' FNL & 380' FEL SEC 13, T 24N, R 10W, NMPM, SAN JUAN CO, NM GROUND ELEVATION: 6965.2' DESIGN ELEVATION: 6966.7'			
	PROJ. NO 3040914			
1199 MAIN AVENUE SUITE 101 DURANGO, COLORADO 81301 (970)828-4732	DRAWN BY MJW	DATE 01/14/15	CHECKED BY GWR	DATE 01/14/15

# Typical BOP Schematic - 3M psi System

