

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: 12-1-14

Well information;

Operator WPX, Well Name and Number S. Chaco Unit # 346H

API# 30-043-21241, Section 2, Township 22NS, Range 7 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 Bern  
NMOCD Approved by Signature

3-20-2015  
Date KC

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

DEC 05 2014

FORM APPROVED  
OMB No. 1004-0136  
Expires January 31, 2004

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NO-G-1312-1814	
6. If Indian, Allottee or Tribe Name	
7. If Unit or CA Agreement, Name and No. CA 133321X	
8. Lease Name and Well No. S Chaco UT #346H	
9. API Well No. 30-043-21241	
10. Field and Pool, or Exploratory Lybrook Gallup Pool	
11. Sec., T., R., M., or Blk. and Survey or Area SHL: Section 2, T22N, R7W BHL: Section 1, T22N, R7W	
12. County or Parish Sandoval	13. State NM
14. Distance in miles and direction from nearest town or post office* approximately 4 miles east of Lybrook, New Mexico MAR 18 2015	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 200'	16. No. of Acres in lease 1,282.160.16
17. Spacing Unit dedicated to this well 320.64 N2 320 acres Sec 1, T22N, R7W	18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 22'
19. Proposed Depth 10,627' MD / 5,293' TVD	20. BLM/BIA Bond No. on file UTB000178 B001576
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7034' GR	22. Approximate date work will start* February 1, 2015
23. Estimated duration 1 month	
24. Attachments	

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

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

25. Signature 	Name (Printed/Typed) Andrea Felix	Date 12-1-2014
Title Regulatory Specialist		
Approved by (Signature) 	Name (Printed/Typed) AEM	Date 3/16/15
Title AEM	Office FFO	

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.

\*(Instructions on reverse)

WPX Energy Production, LLC, proposes to develop the South Chaco UT / Lybrook Gallup pool at the above described location in accordance with the attached drilling and surface use plans.

The well pad surface is on lease on Indian Allotted surface and is co-located with the S Chaco UT #342H, 347H, 343H.

This location has been archaeologically surveyed by Western Cultural Resource Management, Inc. Copies of their report have been submitted directly to the BLM and Navajo Nation Historic Preservation Department.

New access road is approximately 1,299.96' on lease on Indian Allotted surface.

This well is on approximately 1614.97" on lease on Indian Allotted surface.

technical and procedural review  
pursuant to 43 CFR 3165.3 and  
appeal pursuant to 43 CFR 3165.4

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

REMOVED

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

DISTRICT I  
1625 N. French Dr., Hobbs, N.M. 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II  
811 S. First St., Artesia, N.M. 88210  
Phone: (575) 748-1283 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, N.M. 87505  
Phone: (505) 478-3460 Fax: (505) 478-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.  
Santa Fe, N.M. 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate  
District Office

DEC 05 2014

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30043-21241	<sup>2</sup> Pool Code 42289	<sup>3</sup> Pool Name LYBROOK GALLUP
<sup>4</sup> Property Code 314331	<sup>5</sup> Property Name S CHACO UT	<sup>6</sup> Well Number 346H
<sup>7</sup> GRID No. 120782	<sup>8</sup> Operator Name WPX ENERGY PRODUCTION, LLC	<sup>9</sup> Elevation 7034

<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	2	22 N	7 W	LOT 1	1305	NORTH	200	EAST	SANDOVAL

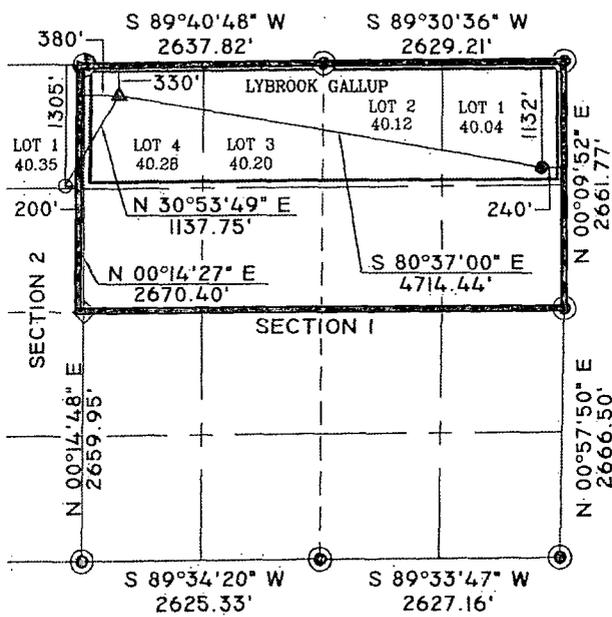
<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	1	22 N	7 W	LOT 1	1132	NORTH	240	EAST	SANDOVAL

<sup>12</sup> Dedicated Acres 320.64 N2 CW 320 ACRES N1/2-N1/2 - SECTION 1	<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

- <sup>16</sup> **LEGEND:**  
 ○ = SURFACE LOCATION      ⊕ = FOUND 1947 U.S.G.L.O. BRASS CAP  
 ▲ = LANDING POINT  
 ● = BOTTOM HOLE              ◇ = FOUND 1/2" REBAR  
 ⊙ = FOUND 1948 U.S.G.L.O. BRASS CAP



**SURFACE LOCATION**

SEC. 2, T22N, R7W  
1305' FNL, 200' FEL  
LAT: 36.172127° N  
LONG: 107.536132° W  
NAD 83  
LAT: 36.172113° N  
LONG: 107.535526° W  
NAD 27

**LANDING POINT**

SEC. 1, T22N, R7W  
330' FNL, 380' FWL  
LAT: 36.174804° N  
LONG: 107.534142° W  
NAD 83  
LAT: 36.174790° N  
LONG: 107.533536° W  
NAD 27

**BOTTOM HOLE**

SEC. 1, T22N, R7W  
1132' FNL, 240' FEL  
LAT: 36.172652° N  
LONG: 107.518391° W  
NAD 83  
LAT: 36.172638° N  
LONG: 107.517785° W  
NAD 27

**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.

*Andrea Felix*      12-1-14  
Signature      Date

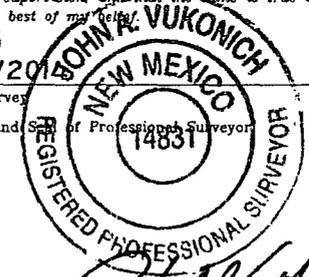
Andrea Felix  
Printed Name  
andrea.felix@wpxenergy.com  
E-mail Address

**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.

REV 3  
08/15/2014  
Date of Survey

Signature and Seal of Professional Surveyor



14831      11-25-2014  
Certificate Number      United Field Services, Inc.

**NOTE:**  
BEARINGS & DISTANCES SHOWN ARE REFERENCED TO NEW MEXICO STATE PLANE, WEST ZONE, NAD 83.



**III. MATERIALS****A. CASING PROGRAM:**

CASING TYPE	OH SIZE (IN)	DEPTH (MD) (FT)	CASING SIZE (IN)	WEIGHT(LB)	GRADE
Surface	12.25"	400+	9.625"	36#	J-55
Intermediate	8.75"	5,912'	7"	23#	K-55
Prod. Liner	6.125"	5,762 - 10,627'	4-1/2"	11.6#	N-80
Tie-Back String	N/A	Surf. - 5,762'	4-1/2"	11.6#	N-80

**B. FLOAT EQUIPMENT:**

- SURFACE CASING:** 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (4) joints of Surface Casing.
- INTERMEDIATE CASING:** 7" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,700 ft., 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft.
- PRODUCTION LINER:** Run 4-1/2" Liner with cement nose guide Float Shoe + 2jts. of 4-1/2" casing + Landing Collar + 4-1/2" pup joint + 1 RSI (Sliding Sleeve) positioned inside the 330ft Hard line. Centralizer program will be determined by Wellbore condition and when Lateral is evaluated by Geoscientists and Reservoir Engineers. Set seals on Liner Hanger. Test TOL to 1500 psi for 15 minutes.
- TIE-BACK CASING:** None

**C. CEMENTING:**

*(Note: Volumes may be adjusted onsite due to actual conditions)*

- SURFACE:** 10 bbl Fr Water Spacer + 190 sx (222.3 cu.ft.) of "Premium Cement" + 2% Calcium Chloride Cement + 0.125# pps of Poly-E-Flake, 15.8 #/gal (1.17 cu ft./sk, Vol 39.58 Bbls.). The 100% excess should circulate cement to the surface. WOC 12 hours. Test csg to 600psi. Total Volume: (222.3 cu-ft/190 sx/39.6 Bbls). TOC at Surface.
- INTERMEDIATE:** 20 bbl (112 cu-ft) Mud Flush III spacer + Lead: +/- 700 sx Foamed 50/50 Poz Cement. 13.0 ppg + 0.1% Halad 766 + 0.2% Versaset + 1.5% Chem-Foamer 760 (Yield :1.43 cu-ft/ sk. / Vol: 1216 cu-ft / 216.5 Bbls.) + TAIL: 100 sx 13.5 #/gal. + 0.2% Versaset + 0.15% HALAD-766 (Yield: 1.28 cu-ft / sk / Vol: 128 cu-ft / 22.8 Bbls.). + Fresh Water Displacement (1,362 cu-ft / +/- 242 Bbls) + 100 sx Top-Out Cement Premium: Yield: (1.17 cu-ft / sk / (Vol: 117 cu-ft / 20.8 Bbls). Test Casing to 1500 PSI for 30 minutes. Total Cement Volume: (1050 sx / 1461 cu-ft / 260 bbls). Mix with +/- 84,000 SCF Nitrogen. TOC at surface.
- PRODUCTION LINER: STAGE 1:** 10 bbl (56.cu-ft) Fr Water Spacer. **STAGE 2:** 40 bbl 9.5 ppg (224.6 cu-ft) Tuned Spacer III + 0.5 gal/bbl Musol + 38.75 ppb Barite + 0.5 gal/bbl SEM-7. **STAGE 3:** 10 bbl Fr Water Spacer. **STAGE 4: Lead Cement:** 50 / 50 Poz Premium + 0.2% Versaset + 0.2% Halad -766, Yield 1.43 cu ft/sk, 13.0 ppg, (10 sx / 14.3 cu ft. / 2.5 bbls). **STAGE 5:** 200 sx. Foamed Lead Cement: 50 / 50 Poz Standard + 0.2% Versaset + 0.2% HALAD-766 + 1.5% Chem-Foamer 760. Yield 1.97 cu-ft/sk. 13.0 ppg (200 sx / 394 cu-ft. / 70.2 bbls.). **STAGE 6:** Tail Cement : 100 sx. 50/50 Poz Standard + 0.2% Versaset + 0.05% HALAD-766 + .05% SA-1015, Weight: 13.5 ppg ( 100 sx / Yield 1.28 cu ft/sk. / 128 cu ft. / 22.8 bbls) **STAGE 7:** Displace w/ +/- 137 bbl Fr Water. Total Cement ( 563.3 cu ft / 95.5 bbls). Mix Foamed Cement w/ +/- 75,000 SCF Nitrogen. Est. TOC +/- 5,644 ft.

**IV. COMPLETION**

**A. CBL**

1. Run CCL for perforating.

**B. PRESSURE TEST**

1. Pressure test 4-1/2" casing to 4500 psi max, hold at 1500 psi for 30 minutes. Increase pressure to Open RSI sleeves.

**C. STIMULATION**

1. Stimulate with approximately 2,805,000# 20/40 mesh sand and 340,000# 16/30 mesh sand in 619,113 gallons water with 42,696 mscf N2 for 17 stages.
2. Isolate stages with flow through frac plug.
3. Drill out frac plugs and flowback lateral.

**D. RUNNING TUBING**

1. Production Tubing: Run 2-7/8", 6.5#, J-55, EUE tubing with a SN on top of bottom joint. Land tubing near Top of Liner point of curve (~5,800' MD).

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

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**NOTE:**

Installation of RSI sleeves at Toe of Lateral.

**Proposed Operations:**

A 4-1/2" 11.6# N-80 Liner will be run to TD and landed +/- 150 ft. into the 7" 23# K-55 Intermediate casing (set at 6,094 ft. MD) with a Liner Hanger and pack-off assembly then cemented to +/- 300 ft above the liner hanger. TOL will be +/- 5,944 ft. (MD) +/- 78 degree angle. TOC: +/- 5,644 ft. (MD).

After cementing and TOL clean up operations are complete, the TOL will be tested to 1500 psi (per BLM).

A 4-1/2" 11.6# N-80 tie-back string with seal assembly will be run and stung into the PBR of the liner hanger, tested to 1500 PSI and hung off at the surface.

The Drilling Rig will be rigged down at this point and Completion operations will begin. After Stimulation and Testing operations are complete the 4-1/2" tie-back string will be removed from the well.

Note: Changes to formation tops, casing landing points, well TD and Directional Plan.



## **SAN JUAN BASIN**

**SJ 02-22N-07W**

**Chaco 2207-02A**

**Chaco 2207-02A #346H - Slot 346H**

**Wellbore #1**

**Plan: Design #1 03Nov14 kjs**

## **Standard Planning Report - Geographic**

**11 November, 2014**

<b>Database:</b>	COMPASS-SANJUAN	<b>Local Co-ordinate Reference:</b>	Well Chaco 2207-02A #346H - Slot 346H
<b>Company:</b>	SAN JUAN BASIN	<b>TVD Reference:</b>	WELL @ 7048.0usft (Original Well Elev)
<b>Project:</b>	SJ 02-22N-07W	<b>MD Reference:</b>	WELL @ 7048.0usft (Original Well Elev)
<b>Site:</b>	Chaco 2207-02A	<b>North Reference:</b>	True
<b>Well:</b>	Chaco 2207-02A #346H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 03Nov14 kjs		

<b>Project</b>	SJ 02-22N-07W, Sandoval County, NM		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico West 3003		

<b>Site</b>	Chaco 2207-02A				
<b>Site Position:</b>	<b>Northing:</b>	1,881,980.93 usft	<b>Latitude:</b>	36.171992	
<b>From:</b>	<b>Map</b>	<b>Easting:</b>	587,898.06 usft	<b>Longitude:</b>	-107.535527
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.18 °

<b>Well</b>	Chaco 2207-02A #346H - Slot 346H					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,882,025.30 usft	<b>Latitude:</b>	36.172114
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	587,898.36 usft	<b>Longitude:</b>	-107.535525
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	0.0 usft	<b>Ground Level:</b>	7,034.0 usft	

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF2010	11/3/2014	(°)	(°)	(nT)
			9.32	62.94	50,100

<b>Design</b>	Design #1 03Nov14 kjs			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	99.56

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	
550.0	0.00	0.00	550.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,502.8	19.06	354.80	1,485.3	156.3	-14.2	2.00	2.00	0.00	354.80	
3,892.5	19.06	354.80	3,744.1	933.4	-85.0	0.00	0.00	0.00	0.00	
4,845.3	0.00	0.00	4,679.4	1,089.7	-99.2	2.00	-2.00	0.00	180.00	
5,512.0	60.00	99.56	5,230.7	1,036.8	214.7	9.00	9.00	0.00	99.56	
5,572.0	60.00	99.56	5,260.7	1,028.2	265.9	0.00	0.00	0.00	0.00	
5,912.4	90.64	99.56	5,346.0	974.1	586.9	9.00	9.00	0.00	0.00	
10,627.4	90.64	99.56	5,293.0	191.1	5,236.1	0.00	0.00	0.00	0.00	TD / PBHL #346H

<b>Database:</b>	COMPASS-SANJUAN	<b>Local Co-ordinate Reference:</b>	Well Chaco 2207-02A #346H - Slot 346H
<b>Company:</b>	SAN JUAN BASIN	<b>TVD Reference:</b>	WELL @ 7048.0usft (Original Well Elev)
<b>Project:</b>	SJ 02-22N-07W	<b>MD Reference:</b>	WELL @ 7048.0usft (Original Well Elev)
<b>Site:</b>	Chaco 2207-02A	<b>North Reference:</b>	True
<b>Well:</b>	Chaco 2207-02A #346H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 03Nov14 kjs		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	1,882,025.30	587,898.36	36.172114	-107.535525	
200.0	0.00	0.00	200.0	0.0	0.0	1,882,025.30	587,898.36	36.172114	-107.535525	
400.0	0.00	0.00	400.0	0.0	0.0	1,882,025.30	587,898.36	36.172114	-107.535525	
550.0	0.00	0.00	550.0	0.0	0.0	1,882,025.30	587,898.36	36.172114	-107.535525	
<b>Start Build 2.00</b>										
600.0	1.00	354.80	600.0	0.4	0.0	1,882,025.74	587,898.32	36.172115	-107.535525	
800.0	5.00	354.80	799.7	10.9	-1.0	1,882,036.16	587,897.34	36.172144	-107.535529	
1,000.0	9.00	354.80	998.2	35.1	-3.2	1,882,060.42	587,895.06	36.172210	-107.535536	
1,200.0	13.00	354.80	1,194.4	73.1	-6.7	1,882,098.40	587,891.48	36.172315	-107.535548	
1,400.0	17.00	354.80	1,387.6	124.7	-11.3	1,882,149.93	587,886.63	36.172456	-107.535564	
1,502.8	19.06	354.80	1,485.3	156.3	-14.2	1,882,181.61	587,883.65	36.172543	-107.535573	
<b>Hold 19.06° Inc, 354.8° Az</b>										
1,600.0	19.06	354.80	1,577.2	187.9	-17.1	1,882,213.20	587,880.68	36.172630	-107.535583	
1,800.0	19.06	354.80	1,766.2	253.0	-23.0	1,882,278.21	587,874.56	36.172809	-107.535603	
2,000.0	19.06	354.80	1,955.3	318.0	-28.9	1,882,343.22	587,868.44	36.172988	-107.535623	
2,200.0	19.06	354.80	2,144.3	383.0	-34.9	1,882,408.23	587,862.32	36.173166	-107.535643	
2,400.0	19.06	354.80	2,333.4	448.1	-40.8	1,882,473.24	587,856.20	36.173345	-107.535663	
2,600.0	19.06	354.80	2,522.4	513.1	-46.7	1,882,538.26	587,850.08	36.173524	-107.535684	
2,800.0	19.06	354.80	2,711.4	578.1	-52.6	1,882,603.27	587,843.96	36.173702	-107.535704	
3,000.0	19.06	354.80	2,900.5	643.2	-58.5	1,882,668.28	587,837.84	36.173881	-107.535724	
3,200.0	19.06	354.80	3,089.5	708.2	-64.5	1,882,733.29	587,831.72	36.174059	-107.535744	
3,400.0	19.06	354.80	3,278.6	773.2	-70.4	1,882,798.30	587,825.60	36.174238	-107.535764	
3,600.0	19.06	354.80	3,467.6	838.3	-76.3	1,882,863.31	587,819.48	36.174417	-107.535784	
3,800.0	19.06	354.80	3,656.6	903.3	-82.2	1,882,928.33	587,813.36	36.174595	-107.535804	
3,892.5	19.06	354.80	3,744.1	933.4	-85.0	1,882,958.39	587,810.53	36.174678	-107.535813	
<b>Start Drop -2.00</b>										
4,000.0	16.91	354.80	3,846.3	966.4	-88.0	1,882,991.43	587,807.42	36.174769	-107.535823	
4,200.0	12.91	354.80	4,039.5	1,017.6	-92.6	1,883,042.64	587,802.60	36.174910	-107.535839	
4,400.0	8.91	354.80	4,235.9	1,055.3	-96.1	1,883,080.31	587,799.06	36.175013	-107.535851	
4,600.0	4.91	354.80	4,434.4	1,079.2	-98.2	1,883,104.24	587,796.80	36.175079	-107.535858	
4,800.0	0.91	354.80	4,634.1	1,089.3	-99.2	1,883,114.34	587,795.85	36.175107	-107.535861	
4,845.3	0.00	0.00	4,679.4	1,089.7	-99.2	1,883,114.69	587,795.82	36.175108	-107.535861	
<b>KOP 9°/100</b>										
5,000.0	13.92	99.56	4,832.6	1,086.6	-80.8	1,883,111.64	587,814.27	36.175099	-107.535799	
5,200.0	31.92	99.56	5,016.0	1,073.7	-4.3	1,883,098.99	587,890.82	36.175064	-107.535540	
5,400.0	49.92	99.56	5,166.5	1,052.0	124.4	1,883,077.72	588,019.54	36.175004	-107.535104	
5,512.0	60.00	99.56	5,230.7	1,036.8	214.7	1,883,062.79	588,109.87	36.174962	-107.534798	
<b>Hold 60° tangent at 60° Inc</b>										
5,572.0	60.00	99.56	5,260.7	1,028.2	265.9	1,883,054.32	588,161.14	36.174939	-107.534624	
<b>Begin 9°/100 Build</b>										
5,600.0	62.52	99.56	5,274.2	1,024.1	290.2	1,883,050.31	588,185.39	36.174927	-107.534542	
5,800.0	80.52	99.56	5,337.3	992.7	476.5	1,883,019.51	588,371.77	36.174841	-107.533911	
5,912.5	90.64	99.56	5,346.0	974.1	586.9	1,883,001.24	588,482.26	36.174790	-107.533537	
<b>Landing Pt 90.64° Inc, 99.56° Az - POE #346H</b>										
6,000.0	90.64	99.56	5,345.0	959.6	673.2	1,882,986.97	588,568.62	36.174750	-107.533244	
6,200.0	90.64	99.56	5,342.7	926.4	870.4	1,882,954.36	588,765.93	36.174659	-107.532576	
6,400.0	90.64	99.56	5,340.5	893.2	1,067.6	1,882,921.75	588,963.24	36.174568	-107.531908	
6,600.0	90.64	99.56	5,338.3	860.0	1,264.8	1,882,889.14	589,160.55	36.174476	-107.531240	
6,800.0	90.64	99.56	5,336.0	826.7	1,462.0	1,882,856.53	589,357.86	36.174385	-107.530572	
7,000.0	90.64	99.56	5,333.8	793.5	1,659.2	1,882,823.92	589,555.17	36.174294	-107.529903	
7,200.0	90.64	99.56	5,331.5	760.3	1,856.5	1,882,791.30	589,752.48	36.174203	-107.529235	
7,400.0	90.64	99.56	5,329.3	727.1	2,053.7	1,882,758.69	589,949.79	36.174111	-107.528567	
7,600.0	90.64	99.56	5,327.0	693.9	2,250.9	1,882,726.08	590,147.10	36.174020	-107.527899	
7,800.0	90.64	99.56	5,324.8	660.7	2,448.1	1,882,693.47	590,344.41	36.173929	-107.527231	

<b>Database:</b>	COMPASS-SANJUAN	<b>Local Co-ordinate Reference:</b>	Well Chaco 2207-02A #346H - Slot 346H
<b>Company:</b>	SAN JUAN BASIN	<b>TVD Reference:</b>	WELL @ 7048.0usft (Original Well Elev)
<b>Project:</b>	SJ 02-22N-07W	<b>MD Reference:</b>	WELL @ 7048.0usft (Original Well Elev)
<b>Site:</b>	Chaco 2207-02A	<b>North Reference:</b>	True
<b>Well:</b>	Chaco 2207-02A #346H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 03Nov14 kjs		

#### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,000.0	90.64	99.56	5,322.5	627.4	2,645.3	1,882,660.86	590,541.72	36.173837	-107.526563
8,200.0	90.64	99.56	5,320.3	594.2	2,842.5	1,882,628.25	590,739.03	36.173746	-107.525894
8,400.0	90.64	99.56	5,318.0	561.0	3,039.7	1,882,595.64	590,936.34	36.173655	-107.525226
8,600.0	90.64	99.56	5,315.8	527.8	3,236.9	1,882,563.03	591,133.65	36.173563	-107.524558
8,800.0	90.64	99.56	5,313.5	494.6	3,434.1	1,882,530.41	591,330.96	36.173472	-107.523890
9,000.0	90.64	99.56	5,311.3	461.4	3,631.3	1,882,497.80	591,528.28	36.173381	-107.523222
9,200.0	90.64	99.56	5,309.0	428.1	3,828.6	1,882,465.19	591,725.59	36.173289	-107.522554
9,400.0	90.64	99.56	5,306.8	394.9	4,025.8	1,882,432.58	591,922.90	36.173198	-107.521886
9,600.0	90.64	99.56	5,304.5	361.7	4,223.0	1,882,399.97	592,120.21	36.173107	-107.521217
9,800.0	90.64	99.56	5,302.3	328.5	4,420.2	1,882,367.36	592,317.52	36.173015	-107.520549
10,000.0	90.64	99.56	5,300.0	295.3	4,617.4	1,882,334.75	592,514.83	36.172924	-107.519881
10,200.0	90.64	99.56	5,297.8	262.1	4,814.6	1,882,302.13	592,712.14	36.172833	-107.519213
10,400.0	90.64	99.56	5,295.6	228.8	5,011.8	1,882,269.52	592,909.45	36.172741	-107.518545
10,600.0	90.64	99.56	5,293.3	195.6	5,209.0	1,882,236.91	593,106.76	36.172650	-107.517877
10,627.4	90.64	99.56	5,293.0	191.1	5,236.1	1,882,232.44	593,133.80	36.172638	-107.517785

TD at 10627.4 - TD / PBHL #346H

#### Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
TD / PBHL #346H - hit/miss target - Shape - Point	0.00	0.00	5,293.0	191.1	5,236.1	1,882,232.44	593,133.80	36.172638	-107.517785
POE #346H - plan hits target center - Point	0.00	0.00	5,346.0	974.1	586.9	1,883,001.23	588,482.26	36.174790	-107.533537

#### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
550.0	550.0	0.0	0.0	Start Build 2.00
1,502.8	1,485.3	156.3	-14.2	Hold 19.06° Inc, 354.8° Az
3,892.5	3,744.1	933.4	-85.0	Start Drop -2.00
4,845.3	4,679.4	1,089.7	-99.2	KOP 9°/100
5,512.0	5,230.7	1,036.8	214.7	Hold 60' tangent at 60° Inc
5,572.0	5,260.7	1,028.2	265.9	Begin 9°/100 Build
5,912.4	5,346.0	974.1	586.9	Landing Pt 90.64° Inc, 99.56° Az
10,627.4	5,293.0	191.1	5,236.1	TD at 10627.4



Azimuths to True North  
 Magnetic North: 9.32°  
 Magnetic Field  
 Strength: 50099.8snT  
 Dip Angle: 62.94°  
 Date: 11/3/2014  
 Model: IGRF2010

Project: SJ 02-22N-07W  
 Site: Chaco 2207-02A  
 Well: Chaco 2207-02A #346H  
 Design #1 03Nov14 kjs

Well Name: Chaco 2207-02A #346H

Surface Location: Chaco 2207-02A

NAD 1927 (NADCON CONUS), US State Plane 1927 (Exact solution) New Mexico West 3003

Ground Elevation: 7034.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1882025.30	587898.36	36.172114	-107.535525	346H

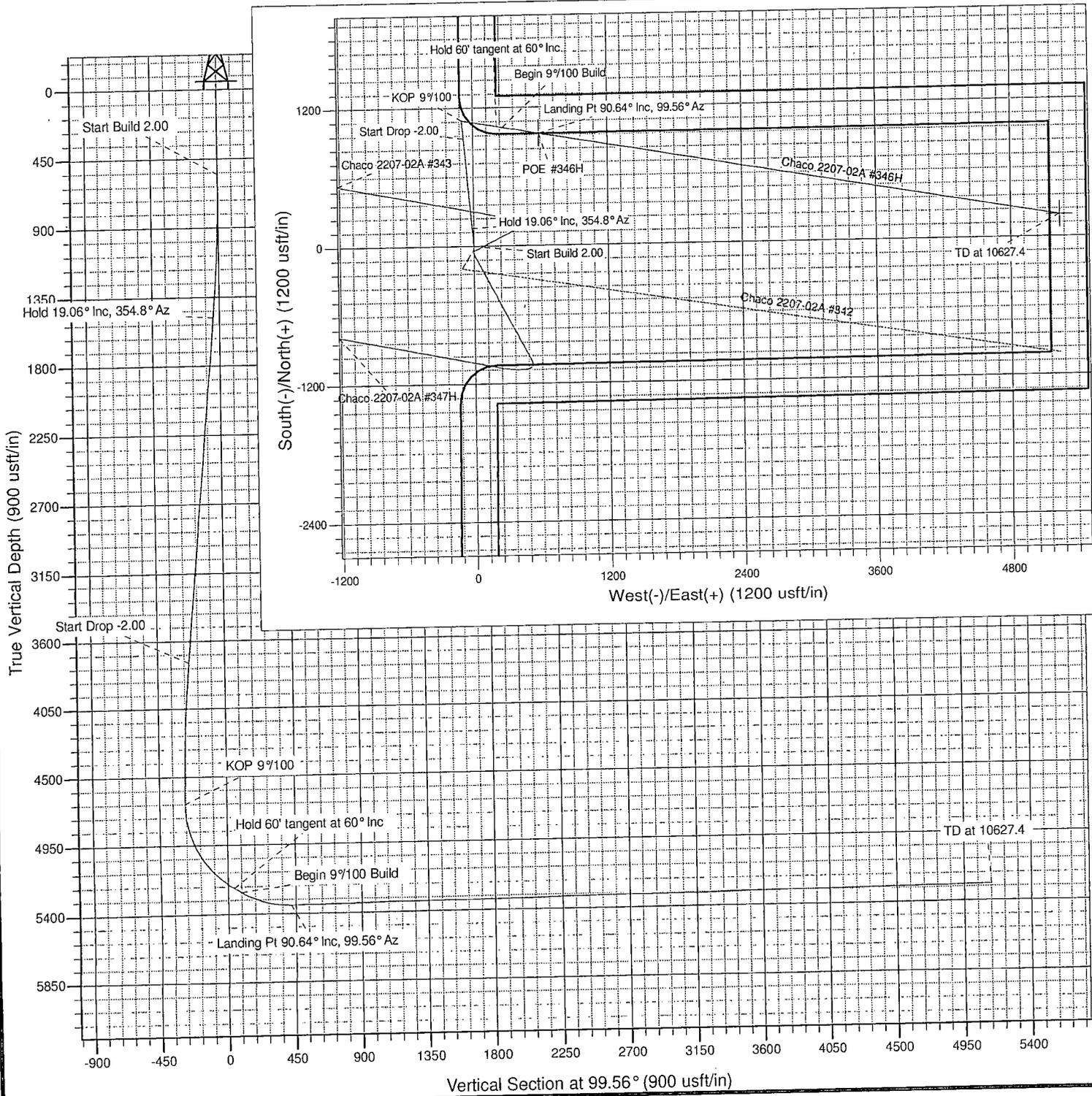
WELL @ 7048.0usft (Original Well Elev)

### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSEct	Departure	Annotation
550.0	550.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00
1485.3	1502.8	19.06	354.80	156.3	-14.2	-40.0	157.0	Hold 19.06° Inc, 354.8° Az
3744.1	3892.5	19.06	354.80	933.4	-85.0	-238.8	937.2	Start Drop -2.00
4679.4	4845.3	0.00	0.00	1089.7	-99.2	-278.8	1094.2	KOP 9°/100
5230.7	5512.0	60.00	99.56	1036.8	214.7	39.5	1412.5	Hold 60° tangent at 60° Inc
5260.7	5572.0	60.00	99.56	1028.2	265.9	91.5	1464.5	Begin 9°/100 Build
5346.0	5912.4	90.64	99.56	974.1	586.9	416.9	1789.9	Landing Pt 90.64° Inc, 99.56° Az
5293.0	10627.4	90.64	99.56	191.1	5236.1	5131.6	6504.6	TD at 10627.4

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
TD / PBHL #346H	5293.0	191.1	5236.1	1882232.44	593133.80	36.172638	-107.517785
POE #346H	5346.0	974.1	586.9	1883001.23	588482.26	36.174790	-107.533536



6. If drilling has not been initiated on the well pad within 120 days of the well pad being constructed, the operator will consult with the BLM to address a site-stabilization plan.

D. Production Facilities

1. As practical, access will be a teardrop-shaped road through the production area so that the center may be revegetated.
2. Within 90 days of installation, production facilities would be painted Juniper Green to blend with the natural color of the landscape and would be located, to the extent practical, to reasonably minimize visual impact.
3. Berms will be constructed around all storage facilities sufficient in size to contain the storage capacity of tanks. Berm walls will be compacted with appropriate equipment to assure containment.

After the completion phases and pipeline installation, portions of the project area not needed for operation will be reclaimed. When the well is plugged, final reclamation will occur within the remainder of the project area. Reclamation is described in detail in the Reclamation Plan (Appendix C).

## 7. Methods for Handling Waste

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A. Cuttings

- ✓ 1. Drilling operations will utilize a closed-loop system. Drilling of the horizontal laterals will be accomplished with water-based mud. All cuttings will be placed in roll-off bins and hauled to a commercial disposal facility or land farm. WPX will follow Onshore Oil and Gas Order No. 1 regarding the placement, operation, and removal of closed-loop systems. No blow pit will be used.
2. Closed-loop tanks will be adequately sized for containment of all fluids.

B. Drilling Fluids

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

C. Spills

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

D. Sewage

1. Portable toilets will be provided and maintained during construction, as needed (see Figure 4 in Appendix B for the location of toilets).

E. Garbage and other water material

1. Garbage, trash, and other waste materials will be collected in a portable, self-contained, and fully enclosed trash container during drilling and completion

**3000 PSI BOP Schematic**

