

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

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

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

District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

Form C-101
August 1, 2011

Permit 263907

NMOCD

MAR 01 2019

DISTRICT III

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address JUNIPER RESOURCES EXPLORATION COMPANY, LLC 3624 Oak Lawn Ave. Suite 222 Dallas, TX 75219		2. OGRID Number 371654
4. Property Code 325118		3. API Number 30-045-35910
5. Property Name Coal Creek State 16		6. Well No. 001 H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
P	16	23N	11W		352	S	447	E	SAN JUAN

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
E	16	23N	11W	E	1407	N	330	W	San Juan

9. Pool Information

Basin Mancos Gas Pool	0
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Additional Well Information

11. Work Type New Well	12. Well Type GAS	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 6210
16. Multiple N	17. Proposed Depth 9406	18. Formation Mancos Formation	19. Contractor	20. Spud Date 3/1/2019
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	200	100	0
Int1	12.25	9.625	36	2900	1048	0
Prod	8.75	5.5	20	9406	1658	2700

Casing/Cement Program: Additional Comments

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	2000		Well Control Equipment

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☐ if applicable.

Signature: 

Printed Name: Matt Strickler

Title: Vice President of Land

Email Address: matt.strickler@juniperresources.com

Date: 2/18/19

Phone: 405-306-
6081

OIL CONSERVATION DIVISION

Approved By:

Title: IFE SUPERVISOR

Approved Date: 3-26-19

Expiration Date: 3-26-2021

Conditions of Approval Attached

SEE ATTACHED NMOCD
CONDITIONS OF APPROVAL

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, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30.045-35916	² Pool Code 97232	³ Pool Name BASIN MANCOS GAS POOL
⁴ Property Code 325118	⁵ Property Name COAL CREEK STATE #16	⁶ Well Number 1 H
⁷ OGRID No. 371654	⁸ Operator Name JUNIPER RESOURCES EXPLORATION COMPANY, LLC	⁹ Elevation 6210

¹⁰ Surface Location

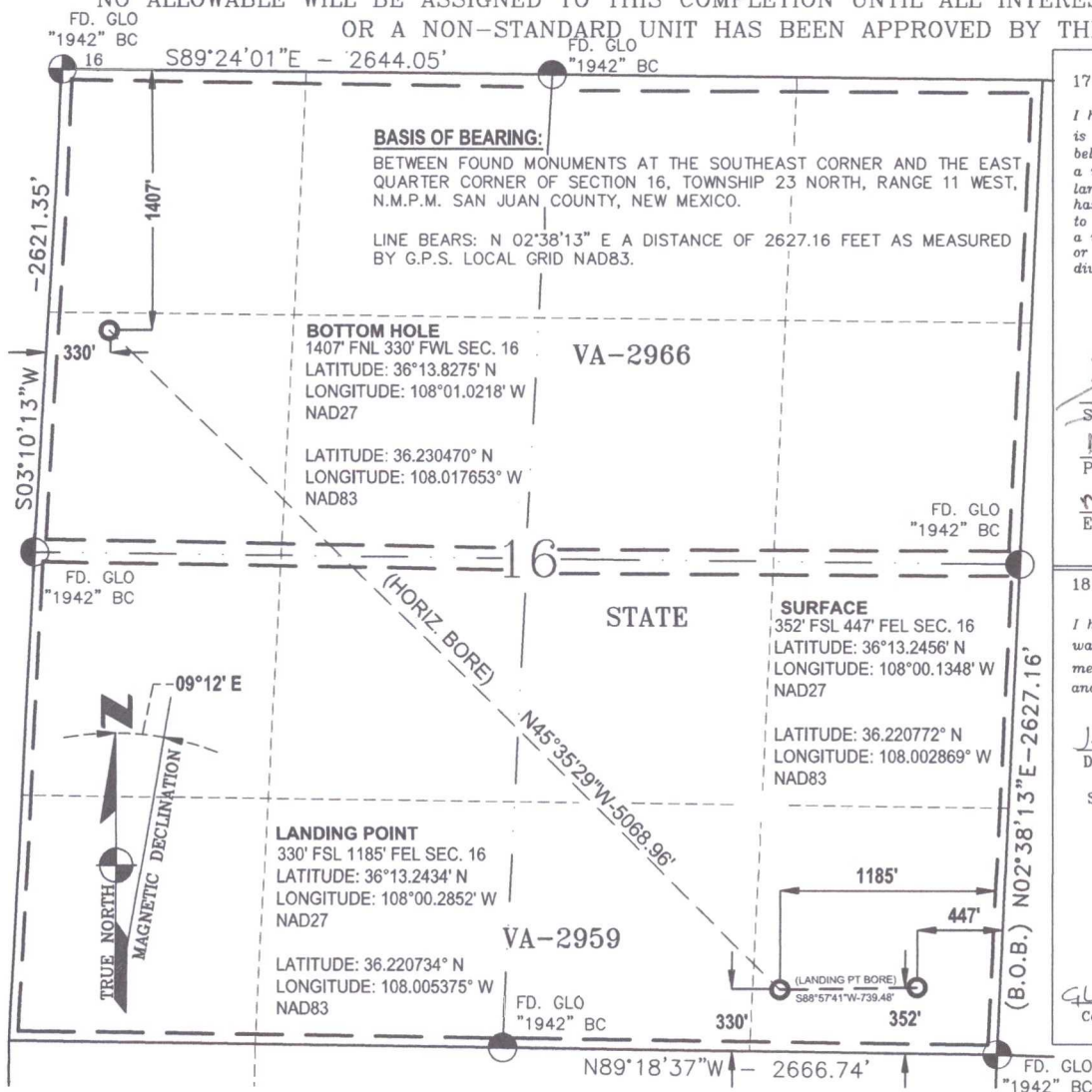
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	16	23-N	11-W		352	SOUTH	447	EAST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	16	23-N	11-W		1407	NORTH	330	WEST	SAN JAUN

¹² Dedicated Acres BMGP = SEC 16 640 ACRES	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ 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



17 OPERATOR CERTIFICATION

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

Signature Matt Strickler Date 2/18/14
Printed Name Matt Strickler
E-mail Address Matt.Strickler@jnpresources.com

18 SURVEYOR CERTIFICATION

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

JANUARY 23, 2019
Date of Survey

Signature and Seal of Professional Surveyor

GLEN W. RUSSEL
Certificate Number

15703



APD Drilling Program

JUNIPER RESOURCES EXPLORATION CO. LLC.

3333 Lee Pkwy.
Suite 210
Dallas, TX 75219

COAL CREEK STATE 16 1H

Surface Location: 352' FSL & 447' FEL
Section 16, T23N, R11W
Proposed GL Elev = 6210'
Lat. = 36.220772° N
Long. = 108.002869° W
NAD83
San Juan County, New Mexico

Proposed Top of Production Location: 352' FSL & 447' FEL
Section 16, T23N, R11W
Proposed Bottom Hole Location (Pilot Hole): 352' FSL & 447' FEL
Section 16, T23N, R11W
Proposed Bottom Hole Location (Landing Point): 330' FSL & 1185' FEL
Section 16, T23N, R11W
Proposed Bottom Hole Location (Lateral #1): 1407' FNL & 330' FWL
Section 16, T23N, R11W
San Juan County, New Mexico

Drilling program written in compliance with onshore Oil and Gas Order No. 1
(III.D.3, effective May 2007) and Onshore Order No. 2 Dated November 18, 1988

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS

Depths are referenced to GL of 6,210 ft			
Formation	TVD (ft)	MD (ft)	Subsea (ft)
Kirtland Shale	0	0	6,219
Fruitland Coal	225	225	6,012
Pictured Cliffs Ss.	397	397	5,840
Lewis Shale	530	530	5,707
CliffHouse Ss.	1,070	1,070	5,167
Menefee Fn.	1,649	1,649	4,588
Point Lookout Ss.	2,742	2,742	3,495
Mancos Shale	2,895	2,895	3,342
Mancos Silt	3,472	3,472	2,765
Mancos 2A	3,722	3,722	2,515
El Vado	3,768	3,768	2,469
Gallup Fn.	3,892	3,892	2,345
Juana Lopez	4,309	4,309	1,928
Dakota	4,742	4,742	1,495

Pilot Hole TD	5,087	5,087	1,150
Lateral TD	3,830	9,406	2,406

Note: Geologic markers will be updated based on drilling and geology operations

Drilling Plan

Drill 17 ½" hole to 200' then set 13 3/8" casing. Surface casing may be preset before moving in the drilling rig. Drill 12 ¼" intermediate hole to 2,900' then set 9 5/8" casing. Drill 8 3/4" Pilot hole with fresh water potassium chloride mud from 2,900' MD to approximately 5,087'. Logs will be run to determine exact landing point for the horizontal wellbore.

The wellbore will be plugged back with cement to above kick off point (KOP) #1 approximately 3,160' MD/TVD. The plug will be dressed off and an 8 ¾" kick off assembly will be run to build the curve at 9-10 degrees per 100' to landing point at 89.49 degrees and 315 deg azimuth, 4,500' MD/ 3,785'TVD.

The lateral section will be drilled continuing with the 8 ¾" hole and holding an 89.49 deg inclination until TD is reached.

The Bottom hole location will be in a legal location at 9,406' MD / 3,830' TVD at 1407' FNL & 330' FWL of section 16.
A total of 4,966' of horizontal hole will be drilled.

2. ESTIMATED DEPTHS OF POTENTIAL WATER, OIL, GAS & OTHER MINERAL BEARING ZONES

Depths are referenced to GL of 6,210 ft			
Formation	TVD (ft)	MD (ft)	Substance
Kirtland Shale	0	0	
Fruitland Coal	225	225	Water/Gas
Pictured Cliffs Ss.	397	397	Gas
Lewis Shale	530	530	Gas
CliffHouse Ss.	1,070	1,070	Gas
Menefee Fn.	1,649	1,649	Water/Gas
Point Lookout Ss.	2,742	2,742	Water
Mancos Shale	2,895	2,895	Oil/Gas
Mancos Silt	3,472	3,472	Oil/Gas
Mancos 2A	3,722	3,722	Oil/Gas
El Vado	3,768	3,768	Oil/Gas
Gallup Fn.	3,892	3,892	Oil/Gas
Juana Lopez	4,309	4,309	Oil/Gas
Dakota	4,742	4,742	Oil/Gas
Pilot Hole TD	5,087	5,087	
Lateral TD	3,830	9,406	Oil/Gas

Possible Aquifers: None

Oil Shale: None Expected.

Oil & Gas: Primary objective is the Mancos formation encountered first at 2,895' TVD. Landing point will be in the El Vado section of the Mancos at 3,786'TVD.

Protection of oil, gas, water, or other mineral bearing formations: Protection shall be accomplished by setting surface casing below base of possible aquifer and cementing surface casing to surface.

Intermediate casing will be set at 2,900' TVD and cemented to surface.

3. PRESSURE CONTROL

The Operator's minimum specifications for blowout prevention equipment and diverter systems to be used, including size, pressure rating, configuration and the testing procedure and frequency. Blowout prevention equipment must meet the minimum standards outlined in Order 2.

BOP equipment and accessories will meet or exceed BLM requirements outlined in 43 CFR Part 3160.

The working pressure of all BOPE shall exceed the anticipated surface pressure to which it may be subjected, assuming a partially evacuated hole with a pressure gradient of 0.22 psi/ft.

Bottom Hole pressure = 5087' TVD x 0.38 psi/ft = 1933 psi (based on measured offset bottom hole pressures).

Maximum Surface Pressure = 1933 psi - (5087' TVD x .22 psi/ft) = 1933psi – 1119 psi = 814 psi less than 2000 psi working pressure.

Therefore 2000 psi BOPE system required.

A 2000 psig double ram hydraulic BOP will be used (see attached diagram) accessories to the BOP will meet BLM requirements for a 2000 psig system, in accordance with Onshore Order #2 (111.A well requirements).

The accumulator system capacity will be sufficient to close all BOPE with a 50% safety factor. Fill line, kill line and line to the choke manifold will be 2".

BOPs will be function tested every 24 hours and will be recorded on an IADC log. Accessories to the BOPE will include upper and lower Kelly cocks with handles with a stabbing valve to fit drill pipe on the floor at all times, string float at bit, 3000 psig choke manifold with 2" adjustable and 2" positive chokes, and pressure gauge.

All BOP equipment will be hydraulically operated with controls accessible both on the rig floor.

The wellhead BOP equipment will be nipped-up on the 13 3/8" x 13 5/8" 2,000 psi WP casing head prior to drilling out from under surface casing. All ram preventers and related equipment will be tested to 2,000 psi for 10 minutes. Annular preventers will be tested to 50% of rated working pressure for 10 minutes. Surface casing will be tested to 70% of internal yield pressure. All preventers and surface casing will be tested before drilling out of surface casing. BOP equipment will be tested every 14 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams shall be activated each trip or at least weekly. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE.

4. CASING AND CEMENTING PROGRAM

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones and any prospectively valuable mineral deposits. Any isolating medium other than cement shall receive approval prior to use.

Casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during drilling operations.

Included below is the Operator's proposed casing program which includes size, grade, weight, type of threading and coupling and setting depth for each string and its condition. Minimum design criteria and hole sizes are also included herein.

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade	Coupling	Condition
Surface	0' - 200'	17 1/2"	13 3/8"	54.5 ppf	J or K55	STC	New
Intermediate	0' - 2,900'	12 1/4"	9 5/8"	36 ppf	J or K55	STC	New
Production	0' - 9,406'	8 3/4"	5 1/2"	20 ppf	P-110	LTC/BTC	New

Casing String				Casing Strenght Properties			Minimum Design Factors		
Size	Weight	Grade	Coupling	Collapse (psi)	Burst (psi)	Tensile (klbs)	Collapse	Burst	Tension
13 3/8"	54.5 ppf	J55	STC	1,130	2,730	514	1.125	1.1	1.2
9 5/8"	36 ppf	J55	STC	2,020	3,520	394	1.125	1.1	1.2
5 1/2"	20 ppf	P110	BTC	7,460	12,640	667	1.125	1.1	1.2

Casing strings below the conductor casing will be tested to .22 psi per foot of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield.

Surface casing shall have a minimum of 1 centralizer per joint on the bottom three (3) joints, starting with the shoe joint for a total of (4) minimum centralizers. Centralizers will be placed 10' above the shoe on the shoe joint, on the 1st, 2nd and 3rd casing collars.

The intermediate casing will be centralized using 1 centralizer the first 6 jts and then spaced +/- 1 centralizer / 4 jts through the remainder of the cement column.

The production casing will be centralized using 1 centralizer the first 6 jts and then spaced +/- 1 centralizer per 3 joints through the curve and into the intermediate casing.

*Surface casing maybe preset with a preset rig (MOTE).

The proposed cementing program is as follows:

Surface Casing Single Stage Job – (0-200'MD/TVD):

Excess – 50% over gauge hole – 17-1/2" hole and 13-3/8" casing (0.694638 ft3/ft)
Top of Cement – Surface

Lead #1 - (0' – 200'): 176 sx – 15.8 ppg, conventional cement containing:
 HALCEM™ CEMENT – PREMIUM CEMENT
 Calcium Chloride Pellet – Accelerates Thickening Time – 2.0%
 Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
 Yield – 1.175ft3/sx
 Water requirement – 5.14 gal/sx.
 Compressive strength: 24 hr – 2000 psi+
Total sacks of cement pumped = 170

Intermediate Casing Single Job - (0-2,900'MD/2,900'TVD):

Excess – 50% over gauge hole – 12-1/4" hole and 9-5/8" casing (0.3132 ft3/ft)

Top of Cement – Surface.

Lead #1 - (0 – 2,900'): 1048 sx – 13.5 ppg, conventional cement containing:
VARICEM™ – Cement
Kol-Seal – Lost Circulation Control Agent – 5 lbs/sx
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.30 ft³/sx
Water requirement – 5.64 gal/sx.
Compressive strength: 24 hr – 1000 psi+

Total sacks of cement pumped = 1048

Cement volumes are minimums and may be adjusted based on hole conditions.

Production Casing Single Stage Job – (2,700' MD – 9,518' MD/ 2,700' - 3,829' TVD):

Excess – 30% over gauge hole – 8-3/4" hole and 5-1/2" casing (0.2526 ft³/ft)
Top of Cement – 2700' MD (200' inside intermediate casing).

Lead #1 - (2,700' – 9,406') – 6,706': 1631 sx – 13.3 ppg, conventional cement containing:
EXTENDACEM™ – Cement
Yield – 1.35 ft³/sx
Water requirement – 5.94 gal/sx.
Compressive strength: 24 hr – 1000 psi+

Total sacks of cement pumped = 1658

Cement volumes are minimums and may be adjusted based on hole conditions.

Plug Back Cement – (2900' - 3900' MD/TVD):

Excess – 50% over gauge hole – 8-3/4" hole (0.4176 ft³/ft)
Top of Cement – 200' above KOP
Cement will be place in 2 equal plugs approximately 500' in length (312 sx each)

Lead #1 - (2900' – 3900') -1000': 624 sx – 15.8 ppg, conventional cement containing:
HALCEM™ CEMENT – PREMIUM CEMENT
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.175ft³/sx
Water requirement – 5.14 gal/sx.
Compressive strength: 24 hr – 2000 psi+

Total sacks of cement pumped = 624 sx

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

Other Cementing Notes:

- Pea Gravel or other material shall not be used to fill up around the surface casing in the event cement fall back occurs.
- The surface casing shall in all cases be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface. No more than the top 100' will be remediated with 1" line if fall back occurs. Anything more than 100' will require plan approval to remediate.
- If returns are lost and/or cement is not brought to surface and no fallback occurs, a cement bond log (CBL) will be required to determine the quality of the job prior to drilling ahead (see OO2).

- Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.
- Production casing will be cemented.

5. DRILLING FLUIDS PROGRAM

Interval (MD)	Hole Section	Hole Size	Type	MW	VIS	FL	PV	YP	PH
0' - 200'	Surface	17-1/2"	FW/Gel	8.4-9.0	32-44	NC	8	12	9
200' - 2,900'	Intermediate	12-1/4"	KCL Polymer	8.4-9.5	38-42	6	10	14	9.5
2,900' - 5,087'	Pilot	8-3/4"	KCL Polymer	9.0-10.0	38-42	6-10	10-14	7-8	9.5
2,900' - 9,406'	Curve/Lateral	8-3/4"	KCL Polymer	9.0-10.0	45-50	10-15	10-14	7-8	9.5

Sufficient weighting material will be on hand to weight mud up to 10.5 PPG, if required.

The formula for weight up with barite is listed below:

Sacks of Barite per 100 bbl of mud = $1470 \times (W2 - W1) \div (35 - W2)$

Where; W1 = current mud weight

W2 = new mud weight

Sacks = $1470 \times (10.5 - 8.4) \div (35 - 10.5) = 126 \text{ sx} \times 5 \text{ (500bbls minimum)} = 630\text{sx}$

Pason Pit Volume Totalizer (PVT) equipment (or equivalent) will be on each pit to monitor pit levels. A trip tank equipped with a Pason PVT will be used to monitor trip volumes.

A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of as outlined in surface use plan. Location will be lined in accordance with the Surface Use Plan of Operations.

6. TESTING, LOGGING AND CORING

- a) Drill stem testing – none anticipated
- b) Coring – none anticipated
- c) Mud Logging – Mud loggers will be operational from 2,900' of the pilot hole to TD of the horizontal hole.
 - a. Gas detecting equipment will be installed and operational and hydrocarbon gas will be monitored for pore pressure changes from base of surface casing to TD.
 - b. Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume.
- d) Logging – see below:

Open hole (pilot hole)

Triple Combo (2,900' to TD – GR to surface)
 DiPole Sonic (Top Mancos Sh. To TD)
 NMR (contingent – Top Mancos Sh. To TD)

Dielectric Scanner (Top Mancos Sh. To TD)
 Image Log (Top Mancos Sh. To TD)

Minimum logging requirements for the entire well shall consist of a calibrated gamma ray (GR) log scaled in API units from total measured depth to surface, with a repeat section. Maximum logging speed 3,600 feet/hour in open hole and 2,000 feet/hour in cased hole. An MWD GR log is sufficient for this requirement in the curved and lateral portions of the well.

Minimum logging requirements above the kick off point (KOP) shall consist of:

1. Multiple depth-of-investigation resistivity log from surface casing to the KOP, and
2. Compensated density-neutron logs over potential hydrocarbon producing zones or,
3. A cased hole pulsed neutron log if there are open hole compensated density-neutron, gamma ray, and multiple depth-of-investigation resistivity logs (such as medium and deep induction and shallow laterlog, or array induction logs) suitable for calibration within one-half mile. The pulsed neutron log should be run from KOP to the base of surface casing no faster than 1,800 feet/hour.

BLM shall be provided with a directional survey to establish the location of the horizontal lateral and bottom of the well including the surface reference, inclination, horizontal angle, reference, and direction turned. If reduced data are provided, the algorithm, datum, and projection should also be provided.

Submission of digital logging data shall be in Log ASCII Standard (LAS) file format.

Cased Hole

CBL/CCL/GR will be run after the drilling of the well has been completed and as the start of the completion process. The CBL will confirm the quality of the cement bond and the actual TOC. If either of these two data points were not satisfactory per BLM, State and standard procedure, remedial cement work, if required, will be performed after consultation and approval of a plan from both the BLM and State agencies.

A cement bond log shall be run if the well is cased for production, injection, or disposal. The logged interval should extend from at least 50 feet below the KOP, if practical, to 200 feet above the top of cement. In no case shall the cement bond log begin above the KOP.

7. ABNORMAL PRESSURES & HYDROGEN SULFIDE

Normal to subnormal pressure gradient to TD.

MASP and casing design parameters determined using 0.38 psi/ft.

Bottom Hole pressure = 5087' TVD x 0.38 psi/ft = 1933 psi (based on measured offset bottom hole pressures).

Maximum expected BHP @ TD of pilot hole at 5087' TVD: 1933 psi

Maximum expected BHT @ 5087' TVD: ~160^o F

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

8. OTHER FACETS OF PROPOSED OPERATION & ANTICIPATED START DATE

Directional Plans: Horizontal directional well, directional plans attached.

Completion: Completion design will be dependent on open-hole log evaluation from the pilot hole and the actual horizontal section drilled. Generally, the completion will consist of a plug and perf hydraulic fracturing operation consistent with best practices in the same area of the San Juan Basin. The frac job will likely consist of between 25 and 50 stages. Each stage will consist of approximately 300,000 lbs of 20/40 sand and 3,000 bbls of water. Pumping rates will be dependant on surface treating pressures but should be around 70 bpm down 5 ½" casing. All fracturing fluids will be water based and contain nitrogen foam. After the frac job, plugs will be drilled out within 10 days and production tubing will be run. Production tubing is expected to be 2 3/8" or 2 7/8".

Timing: Drilling is estimated to commence in late June, or early July 2019 depending on rig availability. The drilling rig has been identified and timing will depend on current operations for other Operators. It is anticipated that the drilling of this well will take 14-20 days and completion operations will begin within 30 days of rig release depending on fracture treatment schedules with various pumping service companies.

CLOSED-LOOP SYSTEM DESIGN PLAN



The closed-loop system will consist of a series of temporary above-ground storage tanks and/or haul-off bins suitable for holding the cuttings and fluids from drilling operations. The closed loop system will not entail temporary pits, below-grade storage tanks, below-grade sumps, or drying pads.

Design considerations include:

- The closed-loop system will be signed in accordance with 19.15.17.11 NMAC
- The closed-loop system storage tanks will be of adequate volume to ensure confinement of all fluids and provide sufficient freeboard to prevent uncontrolled releases.
- Topsoil will be salvaged and stored for use in reclamation activities
- The closed-loop system storage tanks will be placed in bermed secondary containment sized to contain a minimum of 110% of the volume of the largest storage tank.

CLOSED-LOOP SYSTEM OPERATING & MAINTENANCE PLAN

The closed-loop system will be operated and maintained to contain liquids and solids; minimize the amount of drilling fluids and cuttings that require disposal; maximize the amount of drilling fluid recycled and reused in the drilling process; isolate drilling wastes from the environment; prevent contamination of fresh water; and protect public health and the environment.

Operation and maintenance considerations include:

- Fluid levels will be maintained to provide sufficient freeboard to prevent over-topping.
- Visual inspections will be conducted on a daily basis to identify any potential leaks and to ensure that the closed-loop system storage tanks have sufficient freeboard to prevent over-topping.
- Only drilling fluids or cuttings intrinsic to, used by, or generated from, drilling operations will be stored in the closed-loop system storage tanks. Hazardous waste, miscellaneous solid waste, and/or debris will not be stored in the storage tanks.
- The OCD District Office will be notified within 48 hours of discovery of a leak in the closed-loop drilling system. If a leak is discovered, all liquid will be removed within 48 hours and the damage repaired.

CLOSED-LOOP SYSTEM CLOSURE PLAN

The closed-loop system will be closed in accordance with 19.15.17.13 NMAC. Closure considerations include:

- Drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical.
- Residual fluids will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at Industrial Ecosystem, Inc. waste disposal facilities.
- Remaining cuttings or sludges will be vacuumed from the storage tanks and disposed of at the Envirotech, Inc and/or Industrial Ecosystem, Inc. waste disposal facilities.
- Storage tanks will be removed from the well location during the rig move.
- The well pad will be reclaimed and seeded in accordance with subsections G, H and I of 19.15.17.13 NMAC.

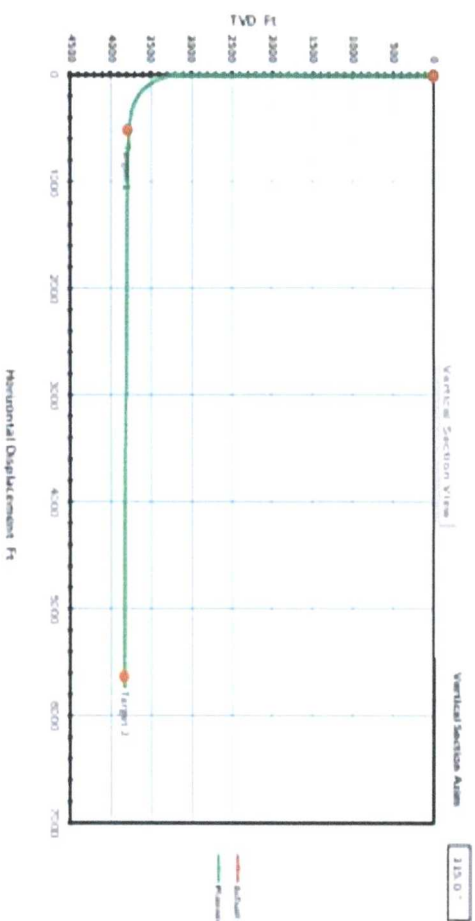


**COAL CREEK STATE 16-1
SEC 16, T23N, R11W**

PROPOSED DIRECTIONAL PLAN
9/10/2018

TD Survey # 158	MD (ft)	INCL°	AZIM°	TVD (ft)	TVDSS (ft)	N/-S (ft)	E/-W (ft)	DLS (100ft)	Closure (ft)	AZIM°	Vert Sect (ft)
	MD (ft)	INCL°	AZIM°	TVD (ft)	TVDSS (ft)	N/-S (ft)	E/-W (ft)	DLS (100ft)	Closure (ft)	AZIM°	Vert Sect (ft)
Comments RKB WH	9,405.94	89.49		3,828.38	-2,404.62	3,672.68	-4,420.37	0.00	5,747.02	309.72	5,722.65
	0.00	0.00		0.00	-6233.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00		0.00	-6233.00	0.00	0.00	0.00	0.00	0.00	0.00
	60.00	0.00		60.00	-6173.00	0.00	0.00	0.00	0.00	0.00	0.00
	120.00	0.01		120.00	-6113.00	0.00	0.00	-0.01	0.01	0.01	0.00
	180.00	0.01		180.00	-6053.00	0.00	0.00	-0.02	0.01	0.02	0.01
	240.00	0.02		240.00	-5993.00	0.00	0.00	-0.03	0.01	0.03	0.02
	300.00	0.02		300.00	-5933.00	0.00	0.00	-0.05	0.01	0.05	0.04
	360.00	0.02		360.00	-5873.00	0.00	0.00	-0.07	0.01	0.07	0.05
	420.00	0.03		420.00	-5813.00	0.00	0.00	-0.10	0.01	0.10	0.07
	480.00	0.03		480.00	-5753.00	0.00	0.00	-0.13	0.01	0.13	0.09
	540.00	0.03		540.00	-5693.00	0.00	0.00	-0.16	0.01	0.16	0.11
	600.00	0.04		600.00	-5633.00	0.00	0.00	-0.20	0.01	0.20	0.14
	660.00	0.04		660.00	-5573.00	0.00	0.00	-0.24	0.01	0.24	0.17
	720.00	0.05		720.00	-5513.00	0.00	0.00	-0.29	0.01	0.29	0.20
	780.00	0.05		780.00	-5453.00	0.00	0.00	-0.34	0.01	0.34	0.24
	840.00	0.05		840.00	-5393.00	0.00	0.00	-0.39	0.01	0.39	0.28
	900.00	0.06		900.00	-5333.00	0.00	0.00	-0.45	0.01	0.45	0.32
	960.00	0.06		960.00	-5273.00	0.00	0.00	-0.51	0.01	0.51	0.36
	1,020.00	0.06		1,020.00	-5213.00	0.00	0.00	-0.57	0.01	0.57	0.41
	1,080.00	0.07		1,080.00	-5153.00	0.00	0.00	-0.64	0.01	0.64	0.46
	1,140.00	0.07		1,140.00	-5093.00	0.00	0.00	-0.72	0.01	0.72	0.51
	1,200.00	0.08		1,200.00	-5033.00	0.00	0.00	-0.80	0.01	0.80	0.56
	1,260.00	0.08		1,260.00	-4973.00	0.00	0.00	-0.88	0.01	0.88	0.62
	1,320.00	0.08		1,320.00	-4913.00	0.00	0.00	-0.96	0.01	0.96	0.68
	1,380.00	0.09		1,380.00	-4853.00	0.00	0.00	-1.05	0.01	1.05	0.74
	1,440.00	0.09		1,440.00	-4793.00	0.00	0.00	-1.15	0.01	1.15	0.81
	1,500.00	0.09		1,500.00	-4733.00	0.00	0.00	-1.24	0.01	1.24	0.88
	1,560.00	0.10		1,560.00	-4673.00	0.00	0.00	-1.34	0.01	1.34	0.95
	1,620.00	0.10		1,620.00	-4613.00	0.00	0.00	-1.45	0.01	1.45	1.02
	1,680.00	0.11		1,680.00	-4553.00	0.00	0.00	-1.56	0.01	1.56	1.10
	1,740.00	0.11		1,740.00	-4493.00	0.00	0.00	-1.67	0.01	1.67	1.18
	1,800.00	0.11		1,800.00	-4433.00	0.00	0.00	-1.79	0.01	1.79	1.27
	1,860.00	0.12		1,860.00	-4373.00	0.00	0.00	-1.91	0.01	1.91	1.35
	1,920.00	0.12		1,920.00	-4313.00	0.00	0.00	-2.04	0.01	2.04	1.44
	1,980.00	0.13		1,980.00	-4253.00	0.00	0.00	-2.17	0.01	2.17	1.53
	2,040.00	0.13		2,040.00	-4193.00	0.00	0.00	-2.30	0.01	2.30	1.63
	2,100.00	0.13		2,100.00	-4133.00	0.00	0.00	-2.44	0.01	2.44	1.72
	2,160.00	0.14		2,160.00	-4073.00	0.00	0.00	-2.58	0.01	2.58	1.82
	2,220.00	0.14		2,220.00	-4013.00	0.00	0.00	-2.72	0.01	2.72	1.92
	2,280.00	0.14		2,280.00	-3953.00	0.00	0.00	-2.87	0.01	2.87	2.03
	2,340.00	0.15		2,340.00	-3893.00	0.00	0.00	-3.02	0.01	3.02	2.14
	2,400.00	0.15		2,400.00	-3833.00	0.00	0.00	-3.18	0.01	3.18	2.25
	2,460.00	0.16		2,460.00	-3773.00	0.00	0.00	-3.34	0.01	3.34	2.36
	2,520.00	0.16		2,520.00	-3713.00	0.00	0.00	-3.51	0.01	3.51	2.48
	2,580.00	0.16		2,580.00	-3653.00	0.00	0.00	-3.68	0.01	3.68	2.60
	2,640.00	0.17		2,640.00	-3593.00	0.00	0.00	-3.85	0.01	3.85	2.72
	2,700.00	0.17		2,700.00	-3533.00	0.00	0.00	-4.03	0.01	4.03	2.85
	2,760.00	0.17		2,760.00	-3473.00	0.00	0.00	-4.21	0.01	4.21	2.98
	2,820.00	0.18		2,820.00	-3413.00	0.00	0.00	-4.39	0.01	4.39	3.11
	2,880.00	0.18		2,880.00	-3353.00	0.00	0.00	-4.58	0.01	4.58	3.24
	2,940.00	0.19		2,939.99	-3293.01	0.00	0.00	-4.77	0.01	4.77	3.38
	3,000.00	0.19		2999.99	-3233.01	0.00	0.00	-4.97	0.01	4.97	3.51
	3,060.00	0.19		3059.99	-3173.01	0.00	0.00	-5.17	0.01	5.17	3.66
	3,120.00	0.20		3119.99	-3113.01	0.00	0.00	-5.38	0.01	5.38	3.80
	3,180.00	2.16		3179.98	-3053.02	0.00	0.00	-6.61	3.27	6.61	4.67
	3,240.00	8.05		3239.71	-2993.29	0.00	0.00	-11.94	9.81	11.94	8.44
	3,300.00	13.93		3298.59	-2934.41	0.00	0.00	-23.37	9.81	23.37	16.52
	3,360.00	19.82		3355.98	-2877.02	0.00	0.00	-40.76	9.81	40.76	28.82
	3,420.00	25.70		3411.28	-2821.72	0.00	0.00	-63.94	9.81	63.94	45.21
	3,480.00	31.55		3463.92	-2769.08	0.00	0.00	-92.65	9.75	92.65	65.52
EOB 3463.7	3,540.00	37.30		3513.39	-2719.61	0.00	0.00	-126.53	9.58	126.53	89.47
	3,600.00	43.05		3559.22	-2673.78	0.00	0.00	-165.19	9.58	165.19	116.81
	3,660.00	48.79		3600.94	-2632.06	0.00	0.00	-208.24	9.58	208.24	147.25
	3,720.00	54.54		3638.14	-2594.86	0.00	0.00	-255.24	9.58	255.24	180.48
	3,780.00	60.29		3670.44	-2562.56	0.00	0.00	-305.74	9.58	305.74	216.19
	3,840.00	66.04		3697.52	-2535.48	0.00	0.00	-359.20	9.58	359.20	254.00
	3,900.00	71.78		3719.10	-2513.90	0.00	0.00	-415.11	9.58	415.11	293.53
	3,960.00	77.53		3734.97	-2498.03	0.00	0.00	-472.90	9.58	472.90	334.39
	4,020.00	80.68		3746.31	-2486.69	0.00	0.00	-531.75	9.54	531.76	377.18
	4,080.00	81.87		3755.42	-2477.58	1.67	0.00	-590.65	9.54	590.70	423.26
	4,140.00	83.07		3763.29	-2469.71	19.99	0.00	-648.82	9.56	649.13	472.92
	4,200.00	84.26		3769.91	-2463.09	37.79	0.00	-705.66	9.59	706.67	525.69
	4,260.00	85.46		3775.29	-2457.71	61.15	0.00	-760.58	9.61	763.03	581.05
	4,320.00	86.65		3779.43	-2453.57	89.86	0.00	-813.01	9.62	817.96	638.43
	4,380.00	87.84		3782.31	-2450.69	123.65	0.00	-862.42	9.63	872.24	697.26
	4,440.00	89.04		3783.94	-2449.06	163.18	0.00	-908.29	9.64	922.65	756.93
EOD 4462.7	4,500.00	89.49		3784.71	-2448.29	203.79	0.00	-951.49	9.65	973.07	816.90
	4,560.00	89.49		3785.25	-2447.75	246.21	0.00	-993.91	0.00	1023.95	876.90

Comments	SURVEY #	MD (ft)	INCL°	AZIM°	TVD (ft)	TVDSS (ft)	N/s (ft)	E/W (ft)	DLS (100ft)	Closure (ft)	AZIM°	Vert Sect (ft)
	78	4,620.00		89.49	315.00	3785.78	-2447.22	288.64	-1036.34	0.00	1075.78	285.56
	79	4,680.00		89.49	315.00	3786.32	-2446.68	331.06	-1078.76	0.00	1128.42	287.06
	80	4,740.00		89.49	315.00	3786.85	-2446.15	373.49	-1121.19	0.00	1181.76	288.42
	81	4,800.00		89.49	315.00	3787.38	-2445.62	415.91	-1163.61	0.00	1235.71	289.67
	82	4,860.00		89.49	315.00	3787.92	-2445.08	458.34	-1206.04	0.00	1290.19	290.81
	83	4,920.00		89.49	315.00	3788.45	-2444.55	500.76	-1248.46	0.00	1345.15	291.86
	84	4,980.00		89.49	315.00	3788.99	-2444.01	543.19	-1290.89	0.00	1400.51	292.82
	85	5,040.00		89.49	315.00	3789.52	-2443.48	585.61	-1333.31	0.00	1456.25	293.71
	86	5,100.00		89.49	315.00	3790.05	-2442.95	628.04	-1375.73	0.00	1512.31	294.54
	87	5,160.00		89.49	315.00	3790.59	-2442.41	670.46	-1418.16	0.00	1568.66	295.30
	88	5,220.00		89.49	315.00	3791.12	-2441.88	712.89	-1460.58	0.00	1625.27	296.02
	89	5,280.00		89.49	315.00	3791.66	-2441.34	755.31	-1503.01	0.00	1682.12	296.68
	90	5,340.00		89.49	315.00	3792.19	-2440.81	797.74	-1545.43	0.00	1739.18	297.30
	91	5,400.00		89.49	315.00	3792.72	-2440.28	840.16	-1587.86	0.00	1796.43	297.88
	92	5,460.00		89.49	315.00	3793.26	-2439.74	882.59	-1630.28	0.00	1853.86	298.43
	93	5,520.00		89.49	315.00	3793.79	-2439.21	925.01	-1672.71	0.00	1911.44	298.94
	94	5,580.00		89.49	315.00	3794.33	-2438.67	967.44	-1715.13	0.00	1969.16	299.43
	95	5,640.00		89.49	315.00	3794.86	-2438.14	1009.86	-1757.56	0.00	2027.02	299.88
	96	5,700.00		89.49	315.00	3795.39	-2437.61	1052.28	-1799.98	0.00	2085.00	300.31
	97	5,760.00		89.49	315.00	3795.93	-2437.07	1094.71	-1842.41	0.00	2143.09	300.72
	98	5,820.00		89.49	315.00	3796.46	-2436.54	1137.13	-1884.83	0.00	2201.29	301.10
	99	5,880.00		89.49	315.00	3797.00	-2436.00	1179.56	-1927.26	0.00	2259.57	301.47
	100	5,940.00		89.49	315.00	3797.53	-2435.47	1221.98	-1969.68	0.00	2317.95	301.82
	101	6,000.00		89.49	315.00	3798.06	-2434.94	1264.41	-2012.11	0.00	2376.40	302.15
	102	6,060.00		89.49	315.00	3798.60	-2434.40	1306.83	-2054.53	0.00	2434.93	302.46
	103	6,120.00		89.49	315.00	3799.13	-2433.87	1349.26	-2096.96	0.00	2493.54	302.76
	104	6,180.00		89.49	315.00	3799.67	-2433.33	1391.68	-2139.38	0.00	2552.20	303.04
	105	6,240.00		89.49	315.00	3800.20	-2432.80	1434.11	-2181.80	0.00	2610.93	303.32
	106	6,300.00		89.49	315.00	3800.74	-2432.26	1476.53	-2224.23	0.00	2669.71	303.58
	107	6,360.00		89.49	315.00	3801.27	-2431.73	1518.96	-2266.65	0.00	2728.54	303.83
	108	6,420.00		89.49	315.00	3801.80	-2431.20	1561.38	-2309.08	0.00	2787.43	304.07
	109	6,480.00		89.49	315.00	3802.34	-2430.66	1603.81	-2351.50	0.00	2846.36	304.30
	110	6,540.00		89.49	315.00	3802.87	-2430.13	1646.23	-2393.93	0.00	2905.33	304.52
	111	6,600.00		89.49	315.00	3803.41	-2429.59	1688.66	-2436.35	0.00	2964.35	304.73
	112	6,660.00		89.49	315.00	3803.94	-2429.06	1731.08	-2478.78	0.00	3023.40	304.93
	113	6,720.00		89.49	315.00	3804.47	-2428.53	1773.51	-2521.20	0.00	3082.50	305.12
	114	6,780.00		89.49	315.00	3805.01	-2427.99	1815.93	-2563.63	0.00	3141.62	305.31
	115	6,840.00		89.49	315.00	3805.54	-2427.46	1858.35	-2606.05	0.00	3200.78	305.49
	116	6,900.00		89.49	315.00	3806.08	-2426.92	1900.78	-2648.48	0.00	3259.97	305.67
	117	6,960.00		89.49	315.00	3806.61	-2426.39	1943.20	-2690.90	0.00	3319.19	305.83
	118	7,020.00		89.49	315.00	3807.14	-2425.86	1985.63	-2733.33	0.00	3378.43	306.00
	119	7,080.00		89.49	315.00	3807.68	-2425.32	2028.05	-2775.75	0.00	3437.70	306.15
	120	7,140.00		89.49	315.00	3808.21	-2424.79	2070.48	-2818.18	0.00	3497.00	306.30
	121	7,200.00		89.49	315.00	3808.75	-2424.25	2112.90	-2860.60	0.00	3556.32	306.45
	122	7,260.00		89.49	315.00	3809.28	-2423.72	2155.33	-2903.02	0.00	3615.66	306.59
	123	7,320.00		89.49	315.00	3809.81	-2423.19	2197.75	-2945.45	0.00	3675.02	306.73
	124	7,380.00		89.49	315.00	3810.35	-2422.65	2240.18	-2987.87	0.00	3734.41	306.86
	125	7,440.00		89.49	315.00	3810.88	-2422.12	2282.60	-3030.30	0.00	3793.81	306.99
	126	7,500.00		89.49	315.00	3811.42	-2421.58	2325.03	-3072.72	0.00	3853.23	307.11
	127	7,560.00		89.49	315.00	3811.95	-2421.05	2367.45	-3115.15	0.00	3912.67	307.23
	128	7,620.00		89.49	315.00	3812.48	-2420.52	2409.88	-3157.57	0.00	3972.12	307.35
	129	7,680.00		89.49	315.00	3813.02	-2419.98	2452.30	-3200.00	0.00	4031.60	307.46
	130	7,740.00		89.49	315.00	3813.55	-2419.45	2494.73	-3242.42	0.00	4091.08	307.57
	131	7,800.00		89.49	315.00	3814.09	-2418.91	2537.15	-3284.85	0.00	4150.58	307.68
	132	7,860.00		89.49	315.00	3814.62	-2418.38	2579.57	-3327.27	0.00	4210.10	307.79
	133	7,920.00		89.49	315.00	3815.16	-2417.84	2622.00	-3369.70	0.00	4269.63	307.89
	134	7,980.00		89.49	315.00	3815.69	-2417.31	2664.42	-3412.12	0.00	4329.17	307.99
	135	8,040.00		89.49	315.00	3816.22	-2416.78	2706.85	-3454.55	0.00	4388.73	308.08
	136	8,100.00		89.49	315.00	3816.76	-2416.24	2749.27	-3496.97	0.00	4448.29	308.17
	137	8,160.00		89.49	315.00	3817.29	-2415.71	2791.70	-3539.40	0.00	4507.87	308.26
	138	8,220.00		89.49	315.00	3817.83	-2415.17	2834.12	-3581.82	0.00	4567.46	308.35
	139	8,280.00		89.49	315.00	3818.36	-2414.64	2876.55	-3624.25	0.00	4627.06	308.44
	140	8,340.00		89.49	315.00	3818.89	-2414.11	2918.97	-3666.67	0.00	4686.67	308.52
	141	8,400.00		89.49	315.00	3819.43	-2413.57	2961.40	-3709.09	0.00	4746.29	308.60
	142	8,460.00		89.49	315.00	3819.96	-2413.04	3003.82	-3751.52	0.00	4805.92	308.68
	143	8,520.00		89.49	315.00	3820.50	-2412.50	3046.25	-3793.94	0.00	4865.56	308.76
	144	8,580.00		89.49	315.00	3821.03	-2411.97	3088.67	-3836.37	0.00	4925.20	308.84
	145	8,640.00		89.49	315.00	3821.56	-2411.44	3131.10	-3878.79	0.00	4984.86	308.91
	146	8,700.00		89.49	315.00	3822.10	-2410.90	3173.52	-3921.22	0.00	5044.52	308.98
	147	8,760.00		89.49	315.00	3822.63	-2410.37	3215.95	-3963.64	0.00	5104.19	309.05
	148	8,820.00		89.49	315.00	3823.17	-2409.83	3258.37	-4006.07	0.00	5163.87	309.12
	149	8,880.00		89.49	315.00	3823.70	-2409.30	3300.80	-4048.49	0.00	5223.56	309.19
	150	8,940.00		89.49	315.00	3824.23	-2408.77	3343.22	-4090.92	0.00	5283.25	309.26
	151	9,000.00		89.49	315.00	3824.77	-2408.23	3385.64	-4133.34	0.00	5342.95	309.32
	152	9,060.00		89.49	315.00	3825.30	-2407.70	3428.07	-4175.77	0.00	5402.66	309.38
	153	9,120.00		89.49	315.00	3825.84	-2407.16	3470.49	-4218.19	0.00	5462.37	309.45
	154	9,180.00		89.49	315.00	3826.37	-2406.63	3512.92	-4260.62	0.00	5522.09	309.51
	155	9,240.00		89.49	315.00	3826.90	-2406.10	3555.34	-4303.04	0.00	5581.81	309.56
	156	9,300.00		89.49	315.00	3827.44	-2405.56	3597.77	-4345.47	0.00	5641.54	309.62
	157	9,360.00		89.49	315.00	3827.97	-2405.03	3640.19	-4387.89	0.00	5701.28	309.68
TD	158	9,405.94		89.49	315.00	3828.38	-2404.62	3672.68	-4420.37	0.00	5747.02	309.72

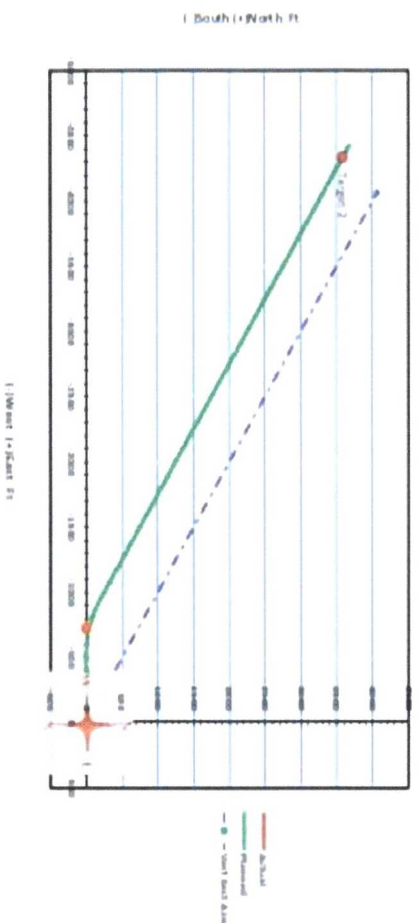


Well Head Data		
M/D	0.00	Ft
RKB - WH	0.00	Ft
RKB - GL	14.00	Ft
GL - MSL	6,219.00	Ft
RKB - MSL	6,233.00	Ft
WH - MSL	6,233.00	Ft
Vertical Section Airmuth		
	115.00	Deg
TVD		
KOP Depth (TD)	3,160.01	Ft
KOP Inclination	0.20	Deg
KOP Azimuth	270.00	Deg
KOP A North	0.00	Ft
KOP A East	-5.52	Ft
KOP Closure	5.52	Ft
KOP Vertical Section	-4.52	Ft

Plan View

Vertical Section Alarm

115.0'

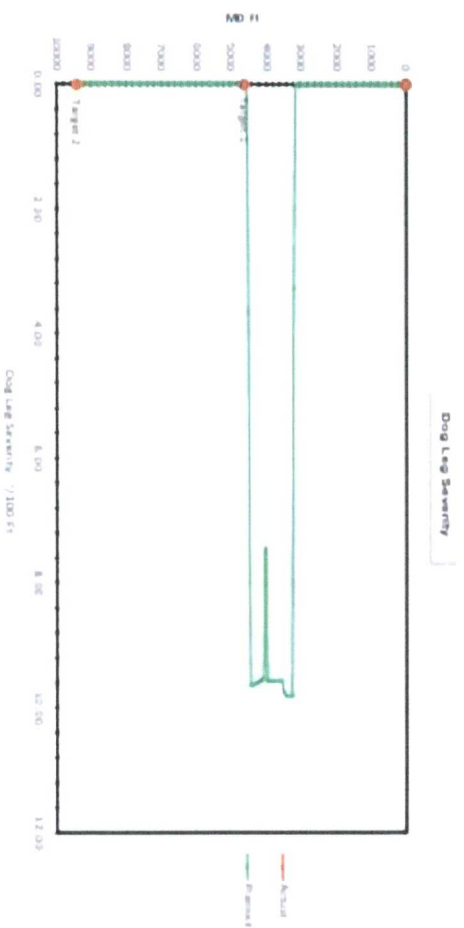


Build Section		
M/D	3,463.79	Ft
EOD Depth	30.00	Deg
EOD Inclination	270.00	Deg
EOD Azimuth	270.00	Deg
Build Section Length	303.78	Ft
Build Rate	9.81	deg/200m
Turn Rate	0.00	deg/200m
Dog Leg Severity (DLS)	9.81	deg/200m
EOD A North	0.00	Ft
EOD A East	-83.76	Ft
EOD Closure	83.76	Ft
EOD Closure Azimuth	270.00	Deg
EOD Vertical Section	-68.51	Ft

Tangent Section		
M/D	YES	
M/D EOD	3,965.80	Ft
Tangent Depth	522.01	Ft
Tangent Length	80.00	Deg
Tangent Inclination	270.00	Deg
Tangent Azimuth	0.00	Ft
Tangent A North	-497.93	Ft
Tangent A East	497.93	Ft
Tangent Closure	270.00	Deg
Tangent Closure Azimuth	270.00	Deg
Tangent Vertical Section	-407.88	Ft

Drop Section		
M/D	4,462.71	Ft
EOD Depth	89.49	Deg
EOD Inclination	315.00	Deg
EOD Azimuth	476.92	Ft
Drop Section Length	1.99	deg/200m
Drop Rate	9.44	deg/200m
Turn Rate	9.59	deg/200m
Dog Leg Severity (DLS)	178.17	Ft
EOD A North	-924.26	Ft
EOD A East	941.28	Ft
EOD Closure	289.91	Deg
EOD Closure Azimuth	459.31	Ft
EOD Vertical Section		

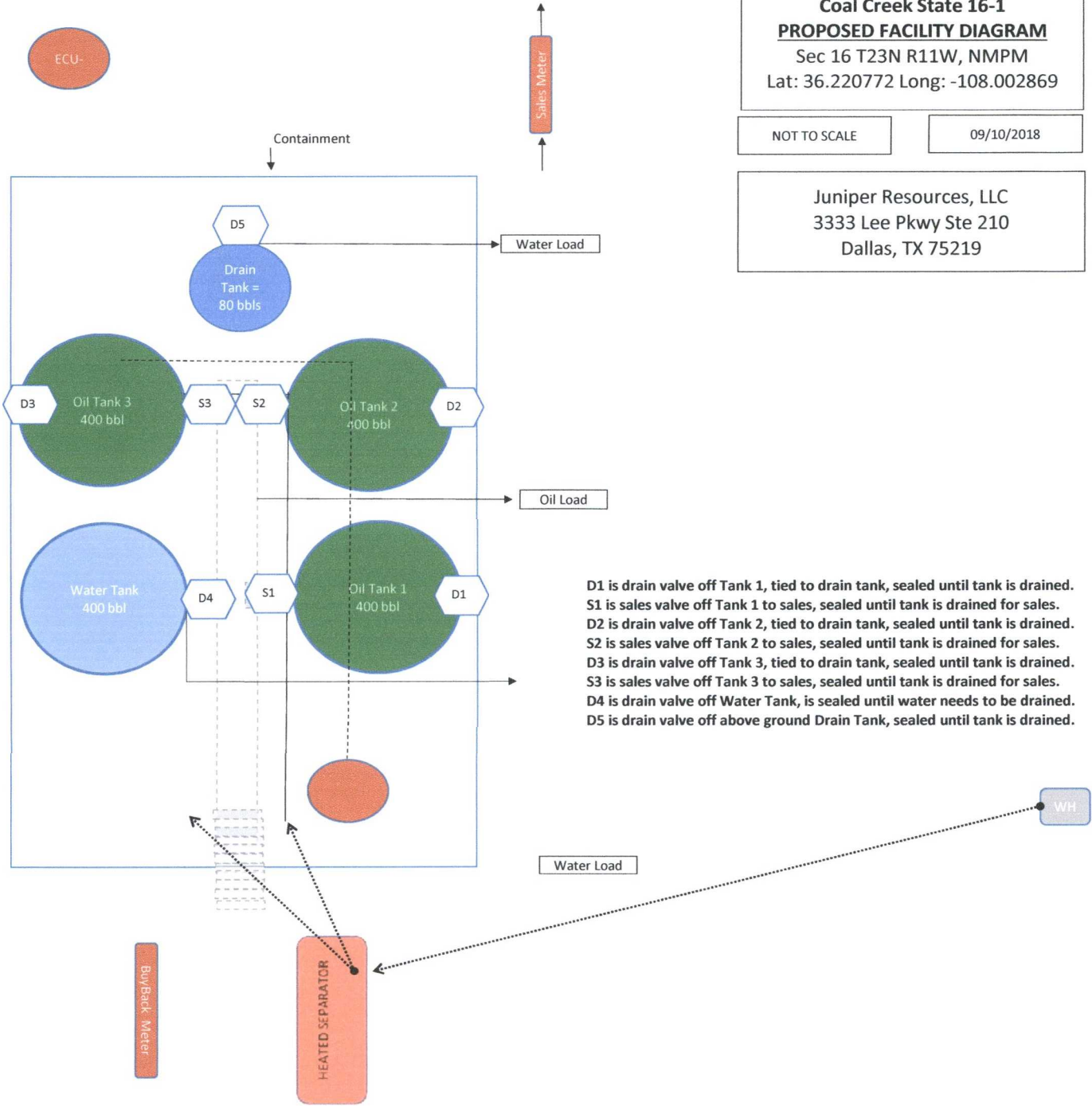
TD Tangent Section		
M/D	YES	
M/D EOD	9,405.94	Ft
Total Depth (TD)	4,943.23	Ft
Tangent Length	89.49	Deg
TD Inclination	315.00	Deg
TD Azimuth	3,673.43	Ft
TD A North	-4,419.51	Ft
TD A East	5,746.84	Ft
TD Closure	309.73	Deg
TD Closure Azimuth	5,727.24	Ft
TD Vertical Section		



Coal Creek State 16-1
PROPOSED FACILITY DIAGRAM
Sec 16 T23N R11W, NMPM
Lat: 36.220772 Long: -108.002869

NOT TO SCALE
09/10/2018

Juniper Resources, LLC
3333 Lee Pkwy Ste 210
Dallas, TX 75219



WELL NAME: Coal Creek State 16-1

Casing Data - SURFACE - Evacuated / Max SICP (Collapse/Burst), 100k Overpull (Tension)

Casing	WT	Connection	Grade	Burst Rating	Collapse Rating	MinYield Rating
13 3/8	54.5	STC	J-55	2,730	1,130	514,000

Hole DataCompletion InfoDesign Info

Hole Data								Completion Info		Design Info			
TD	TD Next Hole		Mud	Weight	Max Pore Pressure Next		Shoe Pore Pressure	Gas Gradient	Frac Pressure	Frac Fluid WT	Collapse SF	Burst SF	Tension SF
	Section				Hole Section								
200	2,900			9.0	8.3		8.3	0.2	N/A	N/A	1.125	1.1	1.2

Collapse @ shoe with gas gradient126 psi
Collapse SF8.95OK

Burst during kick at next hole section TD672 psi(Evac hole with gas gradient)
Burst SF4.06OK

Weight of string in fluid9,402 lbs
Overpull100,000 lbs
Total Weight on slips109,402 lbs
Tension SF4.70OK

Casing Data - INTERMEDIATE - Evacuated / Max SICP (Collapse/Burst), 100k Overpull (Tension)

Casing	WT	Connection	Grade	Burst Rating	Collapse Rating	MinYield Rating
9 5/8	36.0	STC	J-55	3,520	2,020	394,000

Hole DataCompletion InfoDesign Info

Max Pore												
TD Next Hole				Pressure Next				Frac	Frac Fluid	Collapse	Burst	Tension
TD	Section	Mud	Weight	Hole Section	Shoe Pore Pressure	Gas Gradient		Pressure	WT	SF	SF	SF
2900	5,100	10.0		8.3	8.0	0.2		N/A	N/A	1.125	1.1	1.2

Collapse @ shoe with gas gradient1,786 psi
Collapse SF1.13OK

Burst during kick at next hole section TD1,181 psi(Evac hole with gas gradient)
Burst SF2.98OK

Weight of string in fluid88,461 lbs
Overpull100,000 lbs
Total Weight on slips188,461 lbs
Tension SF2.09OK

Casing Data - PRODUCTION - Evacuated / Max SICP (Collapse), Max Frac Press. (Burst), 100k Overpull (Tension)

Casing	WT	Connection	Grade	Burst Rating	Collapse Rating	MinYield Rating
5 1/2	20.0	LTC & BTC	P-110	12,640	7,460	548,000

Hole DataCompletion InfoDesign Info

Max Pore							Frac Pressure	Frac Fluid WT	Collapse SF	Burst SF	Tension SF
TD - TVD	TVD Next Hole Section	Mud	Weight	Pressure Next Hole Section	Shoe Pore Pressure	Gas Gradient					
9518	9,518		10.4	8.3	8.0	0.2	10,000	8.4	1.125	1.1	1.2

Collapse @ shoe with gas gradient5,863 psi
Collapse SF1.27OK

Burst at shoe during frac9,703 psi(Assumes 9# gradient on backside)
Burst SF1.30OK

Burst during kick at next hole section TD2,204 psi(Evac hole with gas gradient)
Burst SF5.73OK

Weight of string in fluid160,135 lbs
Overpull100,000 lbs
Total Weight on slips260,135 lbs
Tension SF2.11OK

LOCATION: COAL CREEK 16 1H
COUNTY: SAN JUAN COUNTY
WELL: COAL CREEK 16 1H

JUNIPER RESOURCES EXPLORATION CO. LLC

DATE: 9/5/2018
RIG: TBD
GLE: 6219
RKBE: 6233

WELL SUMMARY

MWD / LWD	OPEN HOLE LOGGING	FORMATION	DEPTH TVD MD	WELLBORE SCHEMATIC	HOLE SIZE	CASING / CEMENTING SPECS	MUD SPECS	DEVIATION INFO.
None Survey every 100'	None	Kirtland Shale 13 3/8" Casing	0' 0' 200' 200'		17 1/2"	13 3/8", 54.5 ppf, J55, ST&C Cement to Surface	Fresh Wtr. 8.4 - 9 ppg	Vertical < 1 deg
None Survey every 120'	No OH Logs Mud Logger on at 1,625'	Fruitland Pictured Cliffs Lewis Shale Cliffhouse Menefee Point Lookout Mancos 9-5/8" Casing	225' 225' 397' 397' 530' 530' 1,070' 1,070' 1,649' 1,649' 2,742' 2,742' 2,895' 2,895' 2,900' 2,900'		12-1/4"	9 5/8", 36 ppf, J55, ST&C Cement w/ 1048 sx VARICEM (or similar) Cement to Surface	WBM 8.4 - 9.5 ppg	Vertical < 1 deg
MWD/LWD GR, Inc. Azi. Survey every 30' in curve 60' in lateral	OH Log Suite: Triple Combo w/ Spectral GR Dipole Sonic NMR Dielectric FMI	KOP Mancos Silt Mancos 2A El Vado Hz Target Gallup Juana Lopez Dakota Pilot Hole TD	3,160' 3,160' 3,472' 3,472' 3,722' 3,722' 3,768' 3,830' 3,892' 3,892' 4,309' 4,309' 4,742' 4,742' 5,087' 5,087'		KO Plug f/ 2,900' to 3,900' 8-3/4"	200' Cement into 9 5/8" Csg 4,966' Drilled Lateral 5 1/2", 20 ppf, P110, LTC/BTC Long Sting Cement w/ 1658 sx - 1 stage Planned Cmt top - 2700' MD	WBM 9 - 10 ppg	Build / Turn 8 - 10 deg/100' DLS TD = 9,406' MD

Well Control Equipment Schematic for 2M Service

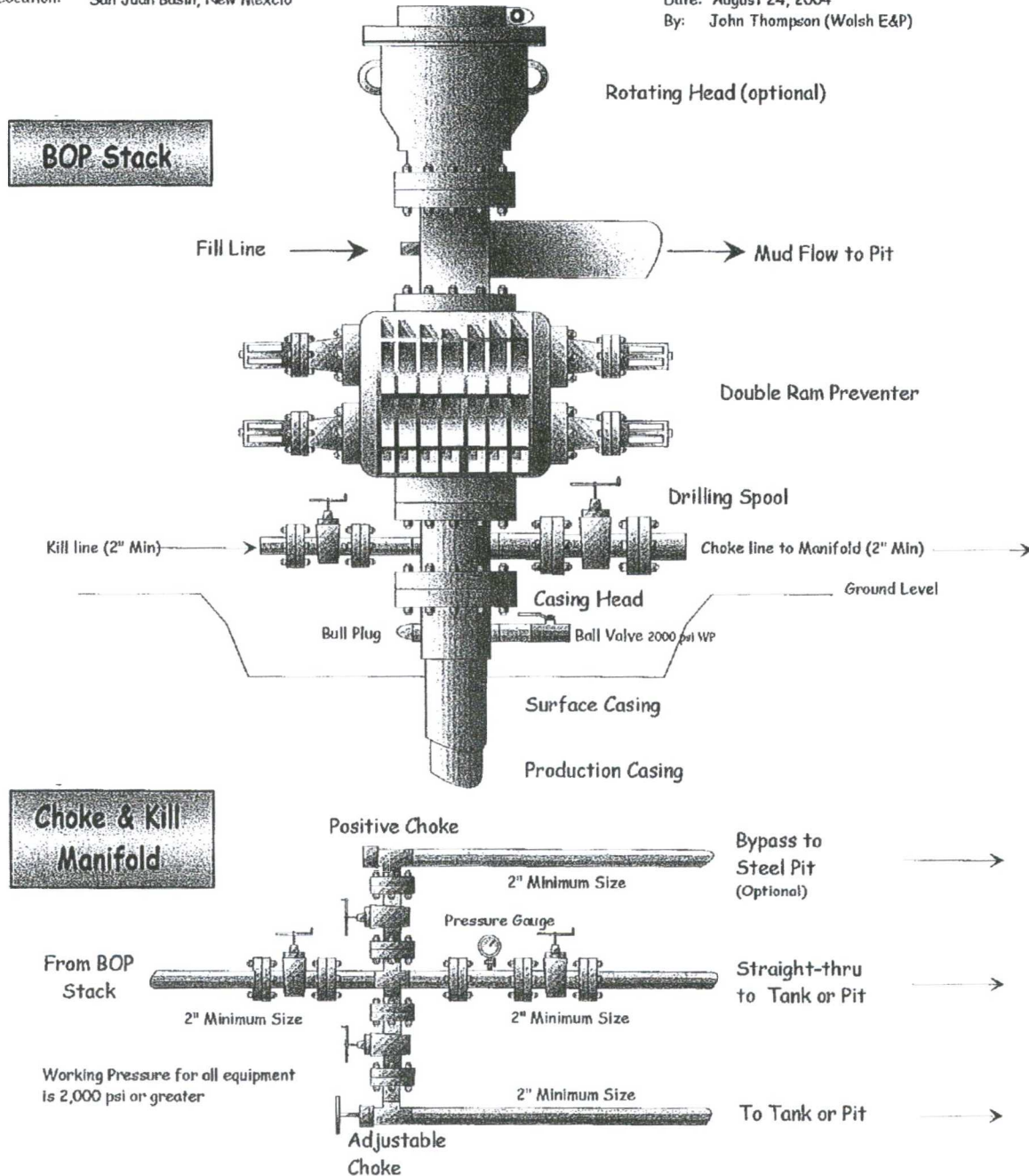
Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

Location: San Juan Basin, New Mexico

Date: August 24, 2004

By: John Thompson (Walsh E&P)



State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Gabriel Wade, Acting Director
Oil Conservation Division



New Mexico Oil Conservation Division conditions of approval
C-101 Application for Permit to Drill

Operator Signature Date: 2/18/2019

Well information;

Operator Juniper, Well Name and Number Coal Creek State 16 #1H

API# 30-045-35916, Section 16, Township 23N/S, Range 11 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
- ☐ Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- ☒ 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.