

ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
 - Engineering Bureau -  
 1220 South St. Francis Drive, Santa Fe, NM 87505



**ADMINISTRATIVE APPLICATION CHECKLIST**

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

- [NSL-Non-Standard Location]  
  [NSP-Non-Standard Proration Unit]  
  [SD-Simultaneous Dedication]  
  [DHC-Downhole Commingling]  
  [CTB-Lease Commingling]  
  [PLC-Pool/Lease Commingling]  
  [PC-Pool Commingling]  
  [OLS - Off-Lease Storage]  
  [OLM-Off-Lease Measurement]  
  [WFX-Waterflood Expansion]  
  [PMX-Pressure Maintenance Expansion]  
  [SWD-Salt Water Disposal]  
  [IPI-Injection Pressure Increase]  
  [EOR-Qualified Enhanced Oil Recovery Certification]  
  [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

- [A] Location - Spacing Unit - Simultaneous Dedication  
 NSL    NSP    SD

Check One Only for [B] or [C]

- [B] Commingling - Storage - Measurement  
 DHC    CTB    PLC    PC    OLS    OLM

- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
 WFX    PMX    SWD    IPI    EOR    PPR

- [D] Other: Specify \_\_\_\_\_

Murchison Oil & Gas, Inc.  
 Jackson Unit 6  
 30-025-34623

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

- [A]  Working, Royalty or Overriding Royalty Interest Owners
- [B]  Offset Operators, Leaseholders or Surface Owner
- [C]  Application is One Which Requires Published Legal Notice
- [D]  Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E]  For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F]  Waivers are Attached

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[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Brian Wood

Print or Type Name

Signature

Consultant

Title

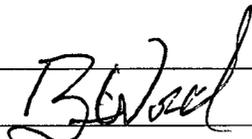
3-25-13

Date

brian@permitswest.com

e-mail Address

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance XXX Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval? \_\_\_\_\_ Yes \_\_\_\_\_ No
- II. OPERATOR: MURCHISON OIL & GAS, INC.  
ADDRESS: 1100 MIRA VISTA BLVD., PLANO TX 75093  
CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-8120
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? \_\_\_\_\_ Yes XXX No  
If yes, give the Division order number authorizing the project: \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- Jackson Unit 6**  
**30-025-34623**  
**SWD; Delaware**
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: BRIAN WOOD TITLE: CONSULTANT  
SIGNATURE:  DATE: MARCH 25, 2013  
E-MAIL ADDRESS: brian@permitswest.com
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

### III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

### XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

**NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.**

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**NOTICE:** Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.



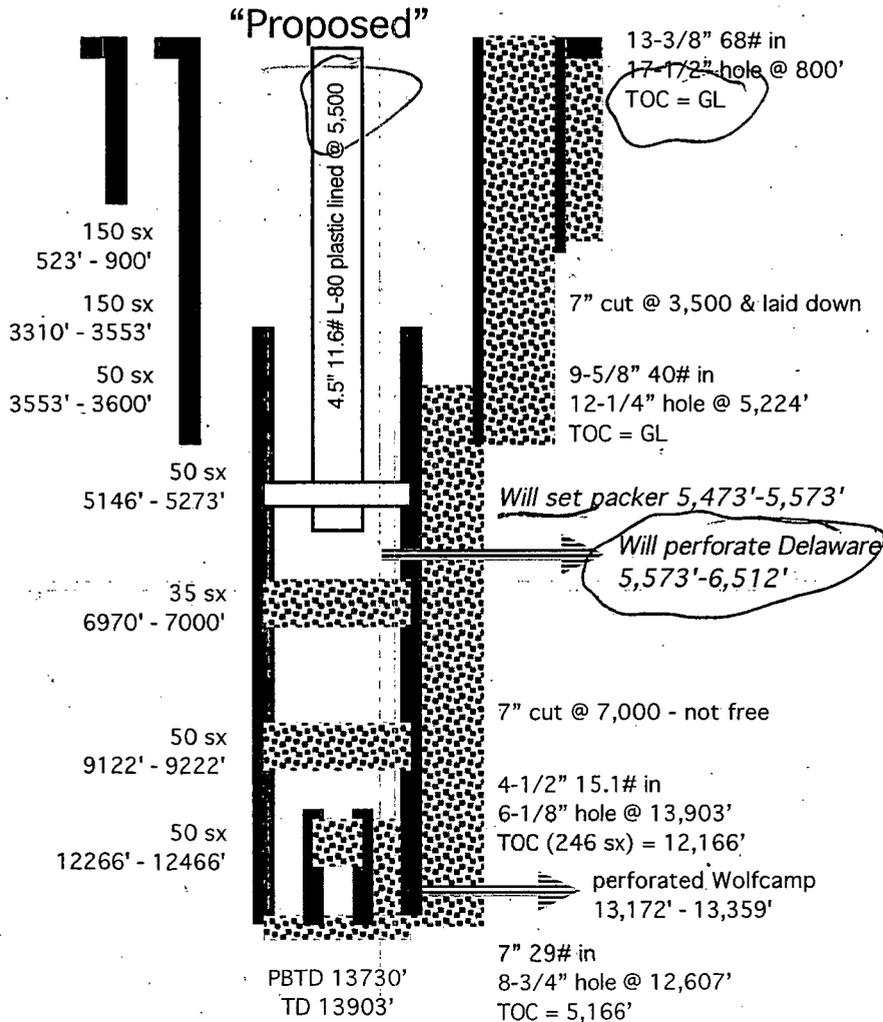
INJECTION WELL DATA SHEET

OPERATOR: MURCHISON OIL & GAS, INC.

WELL NAME & NUMBER: JACKSON UNIT 6

WELL LOCATION: 1650 FNL & 660 FEL      H      21      24 S      33 E  
 FOOTAGE LOCATION      UNIT LETTER      SECTION      TOWNSHIP      RANGE

WELLBORE SCHEMATIC



(not to scale)

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17-1/2"      Casing Size: 13-3/8"  
 Cemented with: 685 SX.      or \_\_\_\_\_ ft<sup>3</sup>  
 Top of Cement: SURFACE ✓      Method Determined: CIRC. 120 SX

Intermediate Casing

Hole Size: 12-1/4"      Casing Size: 9-5/8"  
 Cemented with: 1,550 SX.      or \_\_\_\_\_ ft<sup>3</sup>  
 Top of Cement: SURFACE ✓      Method Determined: CIRC. 400 SX

Production Casing

Hole Size: 8-3/4"      Casing Size: 7"  
 Cemented with: 1,010 SX.      or \_\_\_\_\_ ft<sup>3</sup>  
 Top of Cement: 5,066'      Method Determined: CBL ✓  
 Total Depth: 13,903'

Injection Interval

5,573' feet to 6,512'

(Perforated or Open Hole; indicate which)

**INJECTION WELL DATA SHEET**

Tubing Size: 4-1/2" Lining Material: PLASTIC

Type of Packer: ARROW SET PLASTIC COATED 4.5" X 6.058" 10K

Packer Setting Depth: 5,473' - 5,573'

Other Type of Tubing/Casing Seal (if applicable): \_\_\_\_\_

Additional Data

1. Is this a new well drilled for injection? \_\_\_\_\_ Yes XXX No

If no, for what purpose was the well originally drilled? GAS WELL (WOLFCAMP)

2. Name of the Injection Formation: DELAWARE

3. Name of Field or Pool (if applicable): SWD; DELAWARE (96100)

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. \_\_\_\_\_

WOLFCAMP PERFORATED IN 1999: 13182'-13359'

8 PLUGS SET - SEE SIDE 1

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: \_\_\_\_\_

OVER: NONE

UNDER: BONE SPRING (9144') & WOLFCAMP (12265')

MURCHISON OIL & GAS, INC.  
JACKSON UNIT 6  
1650' FNL & 660' FEL SEC. 21, T. 24 S., R. 33 E.  
LEA COUNTY, NEW MEXICO

PAGE 1

30-025-34623

I. Goal is to re-enter a 13,903' deep plugged and abandoned Johnson Ranch; Wolfcamp (Gas) (79335) well and convert it to a saltwater disposal well. Proposed disposal interval will be 5,573' - 6,512' in the SWD; Delaware (96100).

II. Operator: Murchison Oil & Gas, Inc. (OGRID #15363)  
Operator phone number: (972) 931-0700  
Operator address: 1100 Mira Vista Blvd.  
Plano, TX 75093  
Contact for Application: Brian Wood (Permits West, Inc.)  
Phone: (505) 466-8120

III. A. (1) Lease: New Mexico State Land Office lease L0-5268-0009  
Lease Size: 240.00 acres (see Exhibit A for map and C-102)  
Closest Lease Line: 660'  
Lease Area: NE4 & N2SW4 Section 21, T. 24 S., R. 33 E.  
Unit operator: Murchison Oil & Gas, Inc.  
Unit Number: 300033 (includes all zones)  
Unit Size: 2,480 acres  
Unit Area: E2, S2NW4, & S2SW4 Section 16  
All Sections 15, 21, & 22

A. (2) Surface casing (13-3/8", 68#) was set in 1999 at 800' in a 17-1/2" hole and cemented to the surface with 685 sacks. Circulated 120 sacks.

Intermediate casing (9-5/8", 40#) was set at 5,224' in a 12-1/4" hole and cemented with 1,550 sacks to the surface. Circulated 400 sacks to the pit.

Production casing (7", 29#) was set at 12,607' in an 8-3/4" hole and cemented to 5,166' with 1,010 sacks. (Casing was subsequently cut at 7,000' during plugging operations, but would not come free. It was later cut at 3,500' and laid down.)

A liner (4-1/2", 15.1#) was run from 12,166' to 13,903' and cemented to 12,166' with 245 sacks.

Well was perforated in the Wolfcamp from 13,182' to 13,359' in September 1999. The well flowed 30 Mcf at 100 psi after stimulation. Murchison plugged the well in October 1999 without selling any gas. Seven cement plugs and one CIBP were set.

- A. (3) Tubing will be 4.5", 11.6#, L-80, plastic lined. Setting depth will be approximately 5,550'. (Disposal interval will be 5,573' to 6,512'.)
- A. (4) An Arrow 4.5" x 6.058" 10K plastic coated packer will be set between 5,473' and 5,573' (50' to 100' above the highest proposed perforation of 5,573').
- B. (1) Disposal zone will be the SWD; Delaware (9610).
- B. (2) Disposal interval will be 5,573' to 6,512'. Top of the closest plug below is 6,863'.
- B. (3) Well was drilled as a Wolfcamp gas well and plugged 3 months after TD was reached because it was uneconomical to produce.
- B. (4) Murchison will perforate from 5,573' to 6,512' with 1 shot per foot. Shot diameter = 0.40".
- B. (5) Closest (4-1/4 miles west in 23-24s-32e) Delaware production is in the Double X; Delaware Pool (19090). There are no producing zones above the Delaware within at least a mile radius. There are two producing zones below the Delaware (5,214'), Bone Spring (9,144') and Wolfcamp (12,265').

IV. This is not an expansion of an existing injection project. It is disposal only.

MURCHISON OIL & GAS, INC.  
 JACKSON UNIT 6  
 1650' FNL & 660' FEL SEC. 21, T. 24 S., R. 33 E.  
 LEA COUNTY, NEW MEXICO

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V. Exhibit B shows the only existing well (P & A) within a half-mile radius. Exhibit C shows all 46 existing wells (21 oil or gas wells + 10 P & A wells + 5 water wells or windmills) within a two-mile radius.

Exhibit D shows all leases and lessors (only State) within a half-mile radius. Exhibit E shows all leases and lessors (only State, fee, and BLM) within a two-mile radius. Details on the leases (all are within the unit and Murchison is the unit operator) within a half-mile radius are:

<u>T. 24 S., R. 33 E.</u>	<u>Lessor</u>	<u>Lease Number</u>	<u>Lessee</u>
S2SW4 Sec. 15	NMSLO	LG-6337-0000	EOG
SESW & S2SE4 Sec. 16	NMSLO	LO-5167-0001	EOG
NE4 & NESW Sec. 21	NMSLO	LO-5268-0009	Chaparral & Murchison
SE4 & E2NW4 Sec. 21	NMSLO	LG-4137-0000	EOG
N2NW4, SWNW, & NESW Sec. 22	NMSLO	LO-5168-0009	Chaparral & Murchison
SE4 & W2 SW4 Sec. 22	NMSLO	LG-4138-0007	Chaparral & Murchison

VI. One well is within a 2,640' radius. That well penetrated the upper Delaware. Murchison will dispose in the lower Delaware. A summary of the penetrators is attached as Exhibit F. Wells in or near the area of review are:

OPERATOR	WELL	API # 30- 025-	LOCATION	ZONE	STATUS	TD	DISTANCE
Jackson	F R Jackson State 1	08373	E-22-24s-33e	Delaware	P & A	5504	1360'
Murchison	Jackson Unit 8	35328	F-22-24s-33e	Wolfcamp	gas	13920	2660'

- VII. 1. Average injection rate will be  $\approx$ 4,000 bwpd.  
 Maximum injection rate will be 5,000 bwpd.
2. System will be open and closed. Water will be trucked and piped to the well.
3. Average injection pressure will be  $\approx$ 1,100 psi  
 Maximum injection pressure will be 1,114 psi (= 0.2 psi/foot x 5,573' (highest perforation)).

4. There have been no reports of problems disposing into the three closest active Delaware; SWD wells. At least 359,612 barrels have been disposed at the Ingram O State 2 (30-025-24432) that is 17,730' northwest. At least 4,122,860 barrels have been disposed at the Vaca Ridge 30 Federal 1 (30-025-28873) that is 19,742' southeast. At least 111,019 barrels have been disposed at the Jennings Federal 1 (30-025-08148) that is 24,482' west.

Source of the disposal water will be produced water from Murchison's Wolfcamp and Bone Spring wells. Murchison has 8 existing Wolfcamp gas wells and 6 approved Bone Spring oil wells in T. 24 S., R. 33 E. A summary of water analyses from the closest relevant wells in the WAIDS database follows.

Well	Bell Lake Unit 7	Bell Lake Unit 3	Bell Lake Unit 3	Laguna Plata Unit 1	Zinnia BKC Federal 1
<b>API #</b>	30-025-08367	30-025-08490	30-025-20261	30-025-01678	30-015-27939
<b>Location</b>	1-1-24s-33e	C-6-24s-34e	K-18-23s-34e	I-22-19s-33e	E-27-20s-29e
<b>Formation</b>	Delaware	Bone Spring	Bone Spring	Wolfcamp	Delaware & Wolfcamp
<b>Parameter mg/l</b>					
barium					0
bicarbonate	391	427	512	714	427
calcium		10000			23920
chloride	53920	112000	130000	27270	116724
iron		288			
H2S					30
magnesium		3808			963
sodium		54603			
strontium					
sulfate	749	1050	260	1116	750
TDS	87686		204652	46915	189739

5. Closest (4-1/4 miles west in 23-24s-32e) Delaware production is in the Double X; Delaware Pool (19090).

VIII. The Delaware (3,930' thick in this well) is fine-grained sandstone with some intervals of anhydrite, limestone, and shale. There is a 125' interval of multiple shale layers and tight sandstones above the top perforation (Exhibit G).

Closest possible underground source of drinking water above the proposed disposal interval is the Quaternary at the surface. Two water wells are within a 2,000-meter (6,560') radius according to the Office of the State Engineer (Exhibit H). Closest water well is  $\approx$ 4,723' northwest. No underground source of drinking water is below the proposed disposal interval.

Formation tops are:

Quaternary = 0'  
Anhydrite = 1,270'  
Delaware = 5,214'  
Bone Spring = 9,144'  
Wolfcamp = 12,265'  
PBSD = 13,732'  
Total Depth: 13,903'

There will be 3,944' of vertical separation and the anhydrite interval between the bottom of the only likely underground water source (Quaternary) and the top of the Delaware. The Ogallala is not present. It is more than 25 miles northeast.

A minimum of 4,593,491 barrels of produced water has been disposed into the Delaware at three saltwater disposal wells within less than a 5-mile radius.

IX. The well will be stimulated with acid to clean out scale or fill.

X. Compensated neutron density and gamma ray neutron logs have been run and are on file with NMOCD.

MURCHISON OIL & GAS, INC.  
JACKSON UNIT 6  
1650' FNL & 660' FEL SEC. 21, T. 24 S., R. 33 E.  
LEA COUNTY, NEW MEXICO

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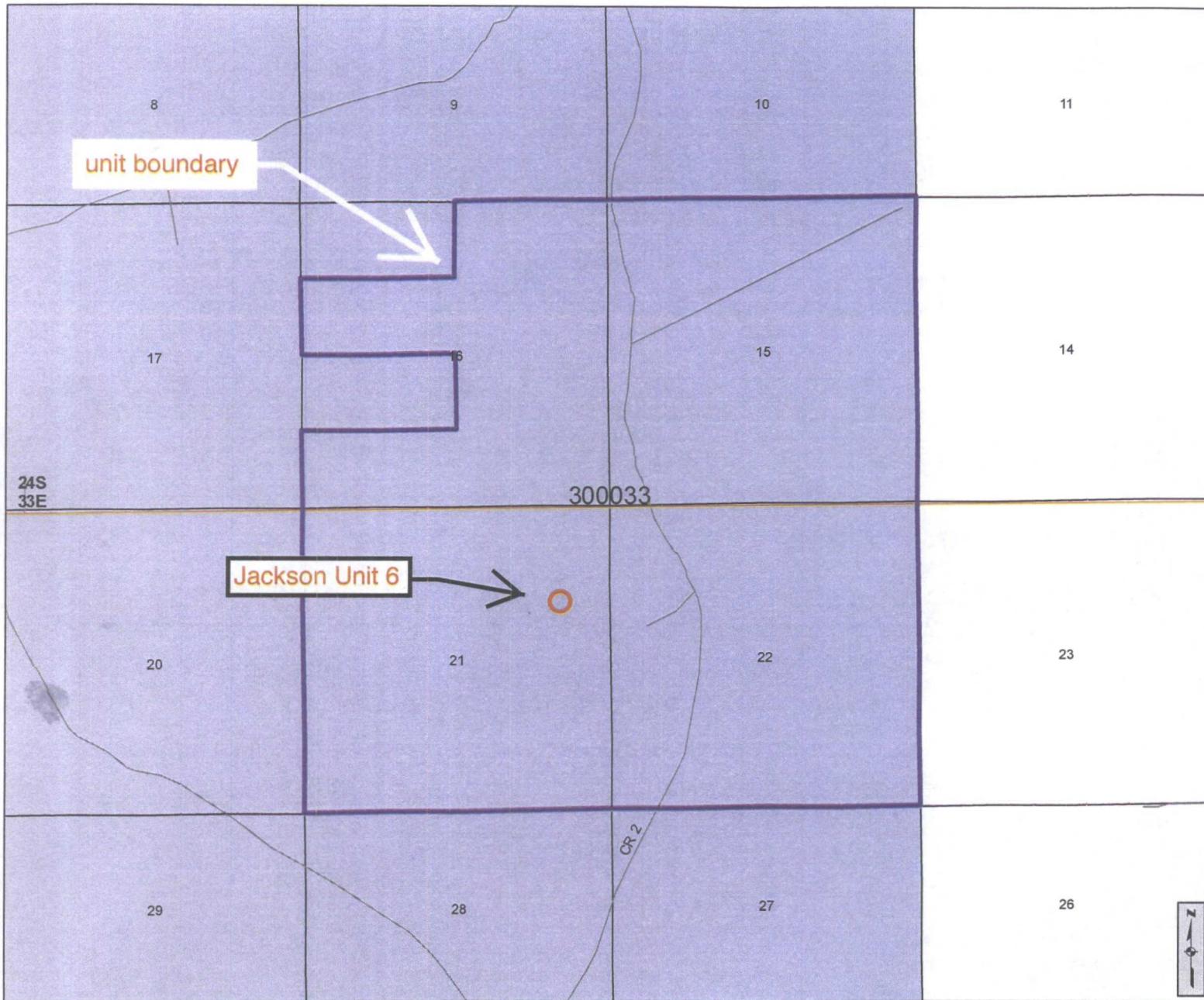
XI. Based on a February 27, 2013 field inspection and a review of the State Engineer's records, one-water well is within a one-mile radius. A second water well (5,330' northwest) is just beyond a mile (5,280'). Both wells were sampled and the analyses are in Exhibit H. The wells are 643' and 640' deep.

XII. Murchison Oil & Gas, Inc. is not aware of any geologic or engineering data which may indicate the Delaware is in hydrologic connection with any underground sources of water. There are 270 active Delaware saltwater disposal or injection wells in New Mexico. Closest fault (Guadalupe) is more than 50 miles southwest (Exhibit I).

XIII. Notice (this application) has been sent (Exhibit J) to the surface owner (NM State Land Office), lessor (NM State Land Office), and all leasehold operators or other affected persons (Chaparral, EOG) within a half-mile.

A legal ad (see Exhibit K) was published on March 16, 2013.





**Point Locations**

- County Seat
- ▲ SLO District Offices
- City, Town or Village
- ☀ Volcanic Vents
- Highway Mileposts

**NMOCD Oil and Gas Wells**

- Oil
- Injection
- ☀ Carbon Dioxide
- Miscellaneous
- ☀ Gas
- ⊕ Water
- ◇ DA or PA
- △ Salt Water Disposal

**Federal Minerals**

- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

**State Trust Lands**

- Surface Estate
- Subsurface Estate
- Both Estates

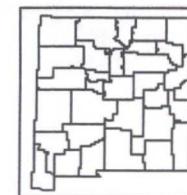
**NMSLO Leasing**

- Option Agreement
- Commercial Lease
- Minerals Lease
- Oil and Gas Lease
- Agricultural Lease
- Not Available for Oil and Gas Leasing
- Restriction Influences Oil and Gas Leasing

**Other Boundaries**

- Continental Divide
- State Boundary
- County Boundaries
- Oil and Gas Unit Boundary
- Participating Areas in Units
- Geologic Regions
- Potash Enclave (NMOCD R-111-P)

For detailed legend of the Geologic Map of New Mexico, please see <http://geoinfo.nmt.edu/>



[www.nmstatelands.org](http://www.nmstatelands.org)

**New Mexico State Land Office  
Oil, Gas, and Minerals**

0 0.1 0.2 0.4 0.6 0.8 Miles  
Universal Transverse Mercator Projection, Zone 13  
1983 North American Datum

**EXHIBIT A**

The New Mexico State Land Office assumes no responsibility or liability for, or in connection with, the accuracy, reliability or use of the information provided here, in State Land Office data layers or any other data layer.

Land Office Geographic Information Center  
logic@slo.state.nm.us

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DISTRICT I  
P.O. Box 1080, Hobbs, NM 88241-1080

State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102  
Revised February 10, 1994  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

DISTRICT II  
P.O. Drawer ED, Artesia, NM 88211-0710

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

AMENDED REPORT

DISTRICT III  
1000 Rio Brazos Rd., Axtec, NM 87410

DISTRICT IV  
P.O. Box 2088, Santa Fe, NM 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number <b>30-025-34623</b>	Pool Code <b>79335</b>	Pool Name <i>Johnson Ranch; Wolfcamp</i>
Property Code <b>8127</b>	Property Name <b>JACKSON UNIT</b>	Well Number <b>6</b>
OGRID No. <b>15363</b>	Operator Name <b>MURCHISON OIL &amp; GAS, INC.</b>	Elevation <b>3582</b>

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	21	24 S	33 E		1650	NORTH	660	EAST	LEA

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

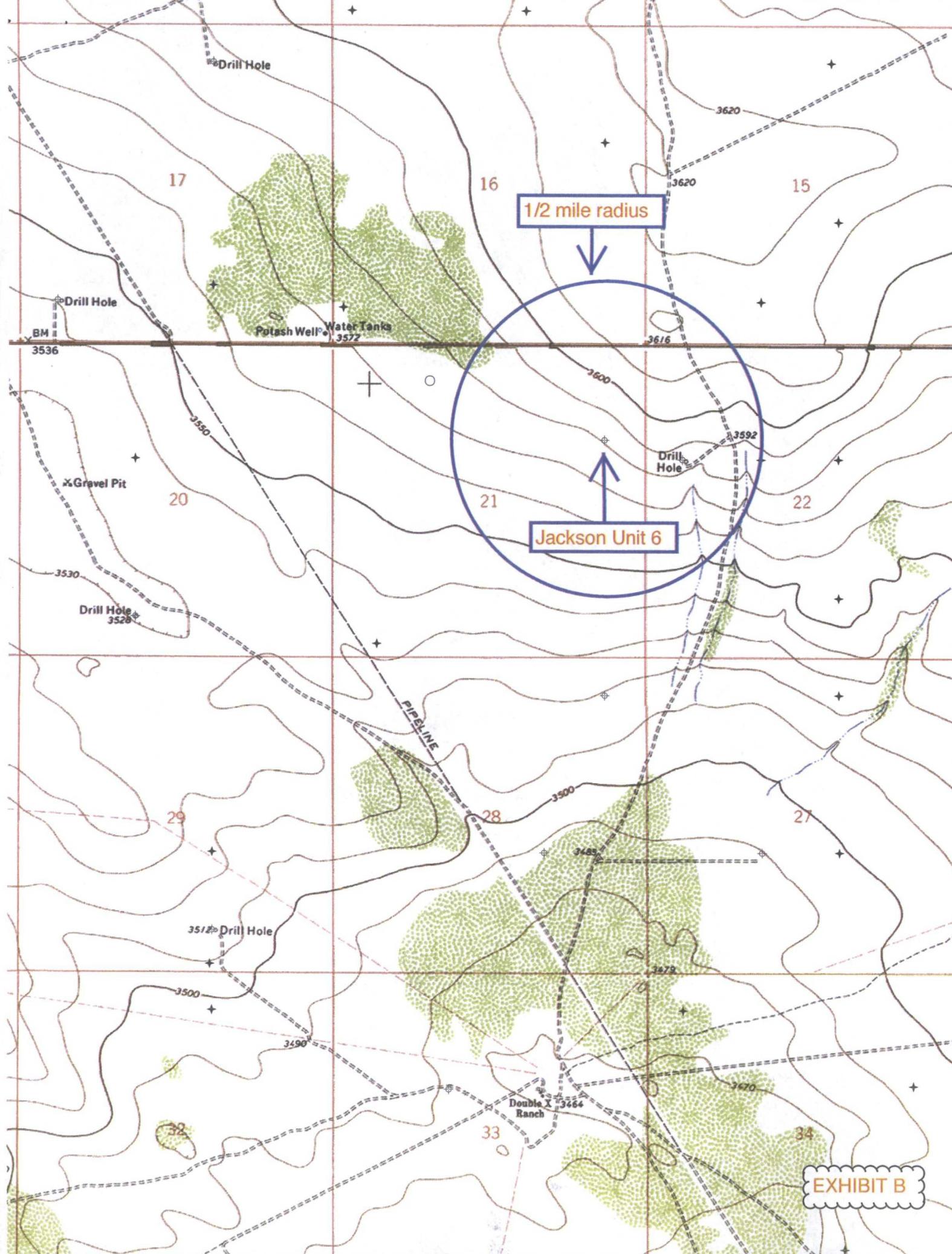
Dedicated Acres <b>320</b>	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><i>Michael Daugherty</i> Signature</p> <p><b>MICHAEL S. DAUGHERTY</b> Printed Name</p> <p><b>VICE PRESIDENT OPERATIONS</b> Title</p> <p><b>5/10/99</b> Date</p>
	<p><b>SURVEYOR CERTIFICATION</b></p> <p>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.</p> <p><b>APRIL 20, 1999</b> Date Surveyed</p> <p><b>JLP</b> Signature</p> <p><b>RONALD J. EIDSON</b> Printed Name</p> <p><b>NEW MEXICO</b> Professional Surveyor</p> <p><b>3238</b> P.O. Num 99-16-30338</p>
	<p>Certificate No. <b>RONALD J. EIDSON, 3238</b></p> <p><b>GARY D. EIDSON, 12641</b></p> <p><b>ANDERSON McDONALD, 12185</b></p>

EXHIBIT A





1/2 mile radius

Jackson Unit 6

EXHIBIT B

Drill Hole

17

16

15

BM 3536

Potash Well Water Tanks 3572

Drill Hole

20

21

22

Gravel Pit

Drill Hole 3528

29

28

27

351/2 Drill Hole

PIPELINE

Double X Ranch 3464

32

33

34

3500

3500

3620

3620

3620

3616

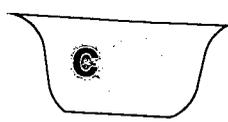
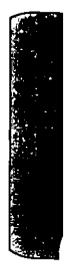
3592

3600

3485

3478

3490

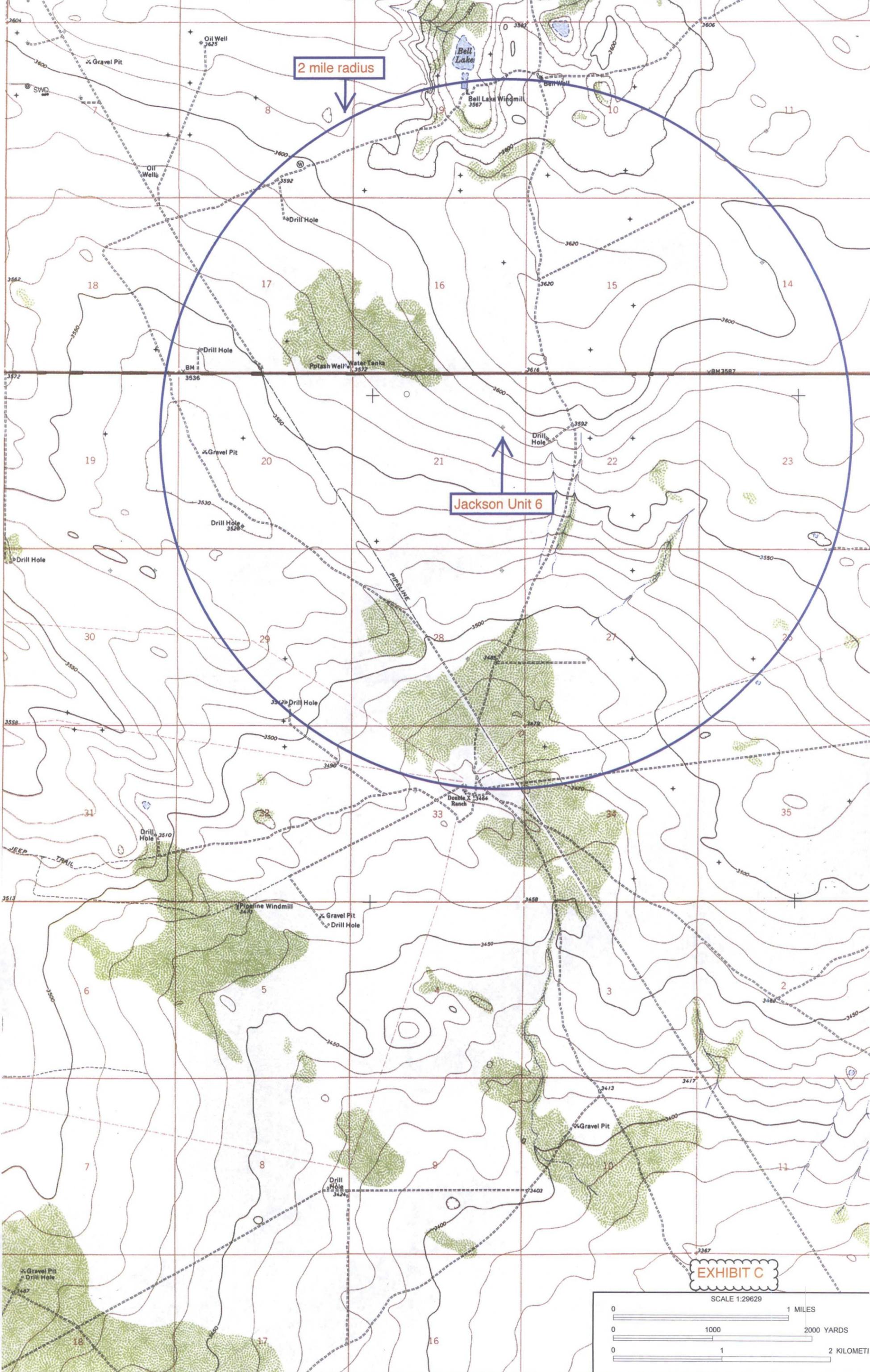
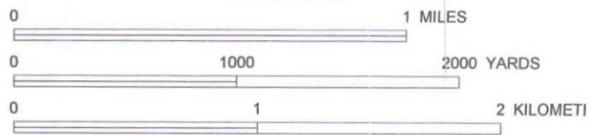


2 mile radius

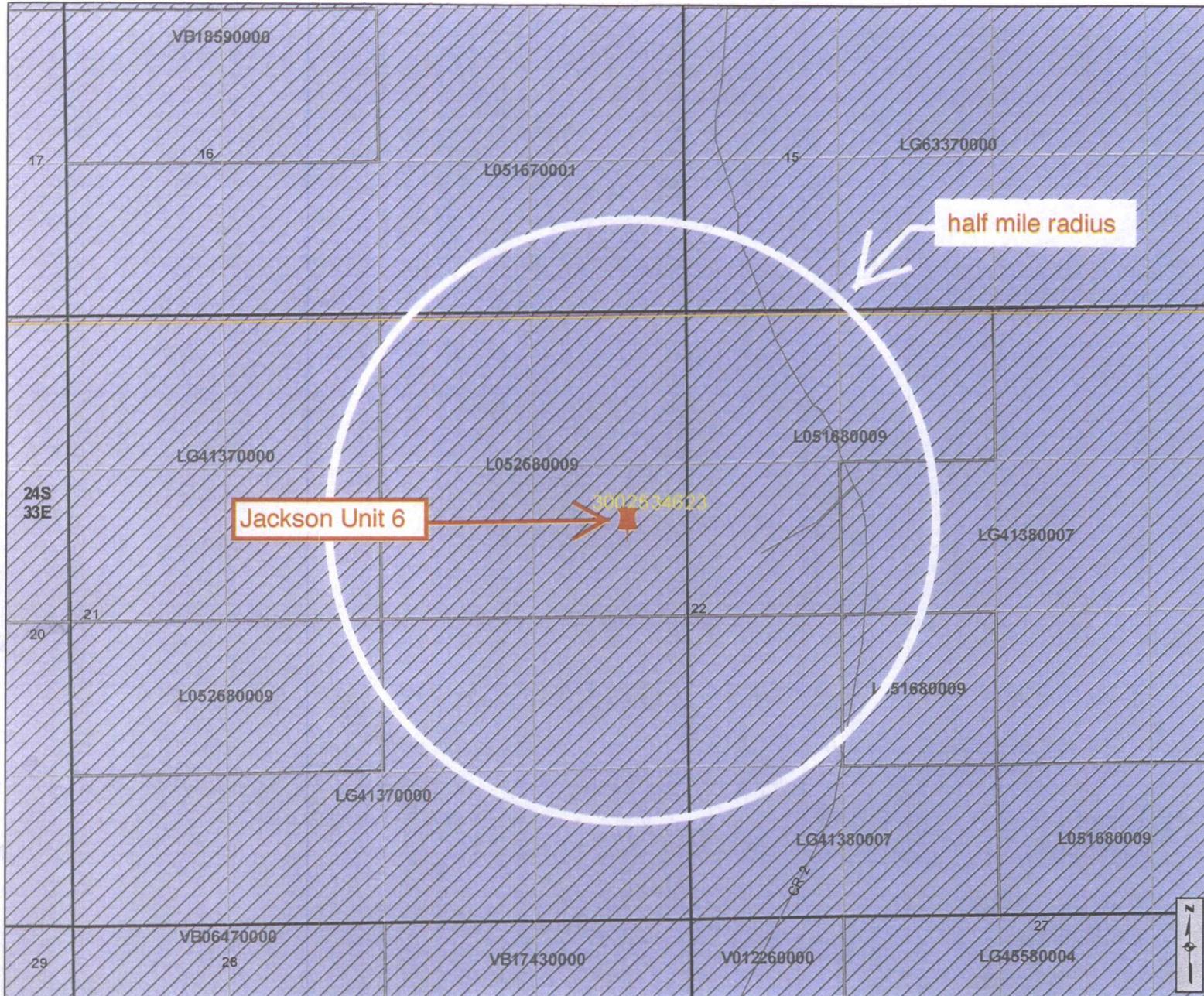
Jackson Unit 6

EXHIBIT C

SCALE 1:29629

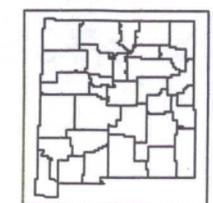






- Point Locations**
- County Seat
  - ▲ SLO District Offices
  - City, Town or Village
  - Volcanic Vents
  - Highway Mileposts
- NMOCD Oil and Gas Wells**
- Oil
  - Injection
  - ⊛ Carbon Dioxide
  - Miscellaneous
  - ⊛ Gas
  - ⊛ Water
  - ◇ DA or PA
  - △ Salt Water Disposal
- Federal Minerals**
- All Minerals
  - Coal Only
  - Oil and Gas Only
  - Oil, Gas and Coal Only
  - Other Minerals
- State Trust Lands**
- Surface Estate
  - Subsurface Estate
  - Both Estates
- NMSLO Leasing**
- Option Agreement
  - Commercial Lease
  - Minerals Lease
  - Oil and Gas Lease
  - Agricultural Lease
  - Not Available for Oil and Gas Leasing
  - Restriction Influences Oil and Gas Leasing
- Other Boundaries**
- Continental Divide
  - State Boundary
  - County Boundaries
  - Oil and Gas Unit Boundary
  - Participating Areas in Units
  - Geologic Regions
  - Potash Enclave (NMOCD R-111-P)

For detailed legend of the Geologic Map of New Mexico, please see <http://geoinfo.nmt.edu/>



**New Mexico State Land Office**  
**Oil, Gas, and Minerals**

0 0.04 0.09 0.18 0.27 0.36  
 Miles

Universal Transverse Mercator Projection, Zone 13  
 1983 North American Datum

**EXHIBIT D**

The New Mexico State Land Office assumes no responsibility or liability for, or in connection with, the accuracy, reliability or use of the information provided here, in State Land Office data layers or any other data layer.

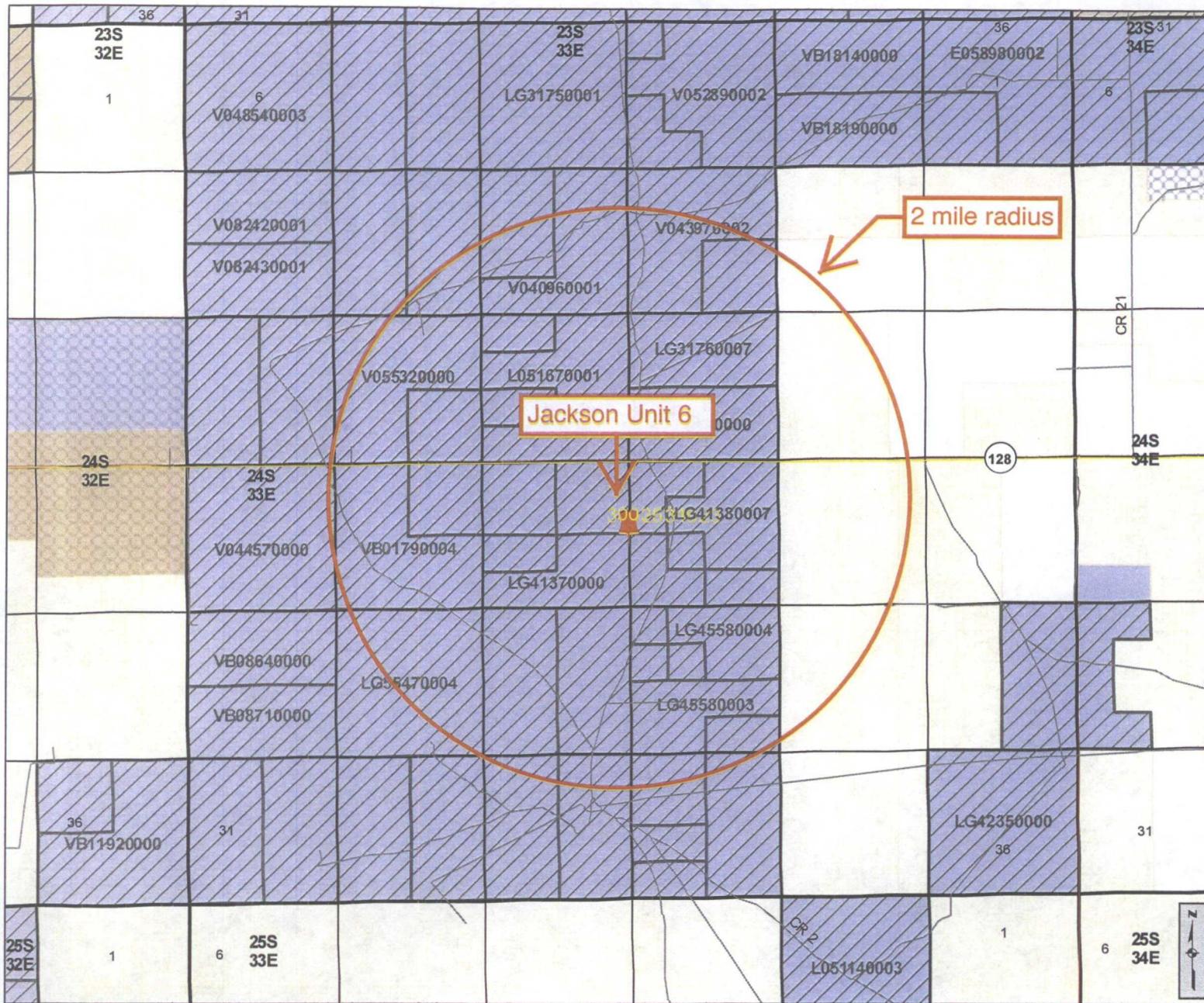
Land Office Geographic Information Center  
 logic@slo.state.nm.us

Created On: 3/17/2013 5:18:37 PM

[www.nmstatelands.org](http://www.nmstatelands.org)

E

[



**Point Locations**

- County Seat
- ▲ SLO District Offices
- City, Town or Village
- Volcanic Vents
- Highway Mileposts

**NMOCD Oil and Gas Wells**

- Oil
- Injection
- ⊛ Carbon Dioxide
- Miscellaneous
- ⊛ Gas
- ⊛ Water
- ◇ DA or PA
- △ Salt Water Disposal

**Federal Minerals**

- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

**State Trust Lands**

- Surface Estate
- Subsurface Estate
- Both Estates

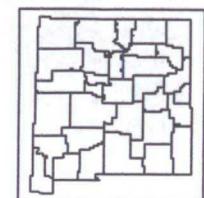
**NMSLO Leasing**

- Option Agreement
- Commercial Lease
- Minerals Lease
- Oil and Gas Lease
- Agricultural Lease
- Not Available for Oil and Gas Leasing
- Restriction Influences Oil and Gas Leasing

**Other Boundaries**

- Continental Divide
- State Boundary
- County Boundaries
- Oil and Gas Unit Boundary
- Participating Areas in Units
- Geologic Regions
- Potash Enclave (NMOCD R-111-P)

For detailed legend of the Geologic Map of New Mexico, please see <http://geoinfo.nmt.edu/>



[www.nmstatelands.org](http://www.nmstatelands.org)

**New Mexico State Land Office  
Oil, Gas, and Minerals**

0 0.2 0.4 0.8 1.2 1.6 Miles

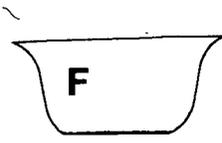
Universal Transverse Mercator Projection, Zone 13  
1983 North American Datum

**EXHIBIT E**

The New Mexico State Land Office assumes no responsibility or liability for, or in connection with, the accuracy, reliability or use of the information provided here, in State Land Office data layers or any other data layer.

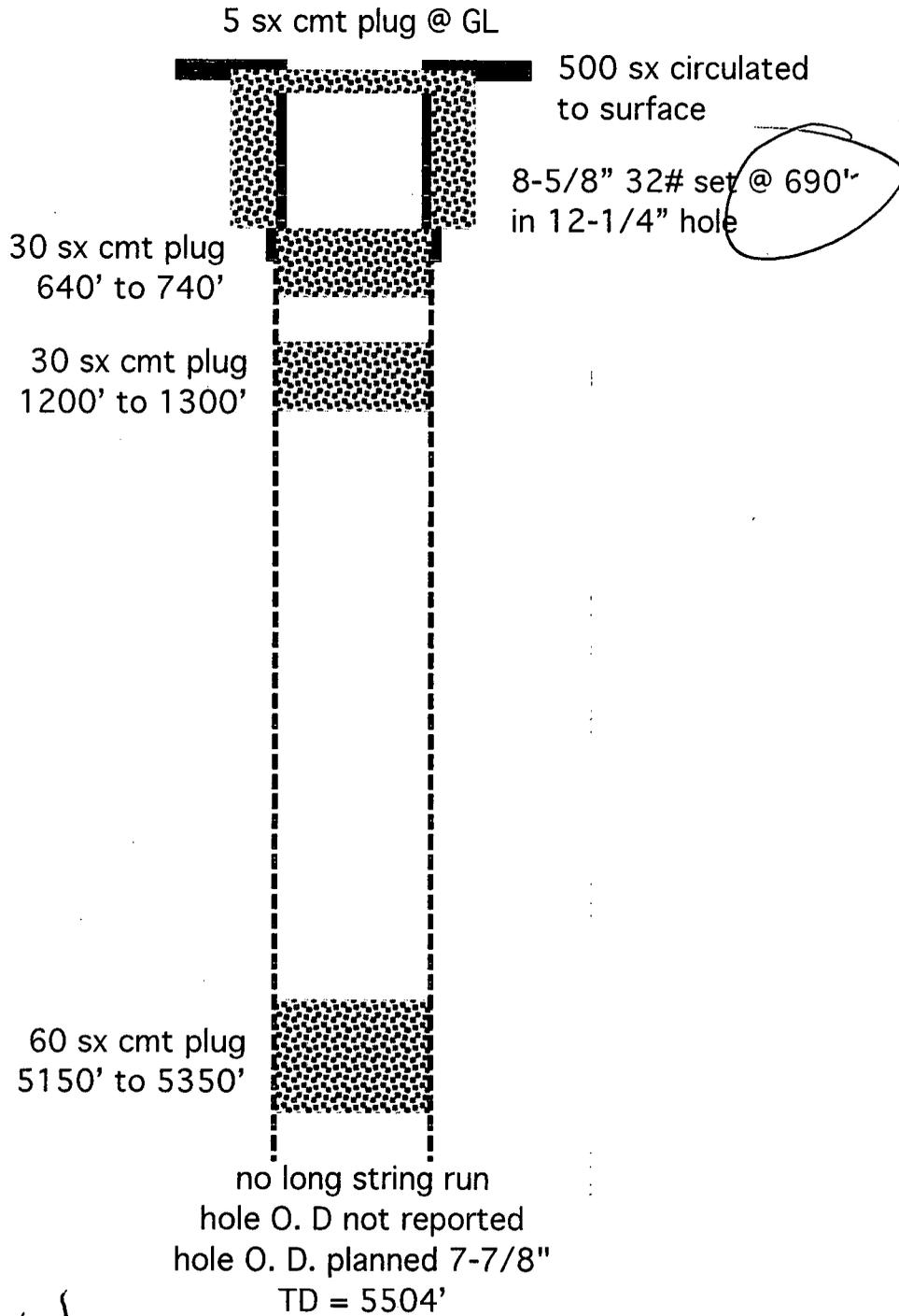
Land Office Geographic Information Center  
logic@slo.state.nm.us

Created On: 3/17/2013 5:36:17 PM





F. R. Jackson's  
F. R. Jackson State 1  
API 30-025-08373  
1980 FNL & 660 FWL 22-24s-33e  
Spud 5-17-58 and Plug 6-9-58



5573' - 6512'

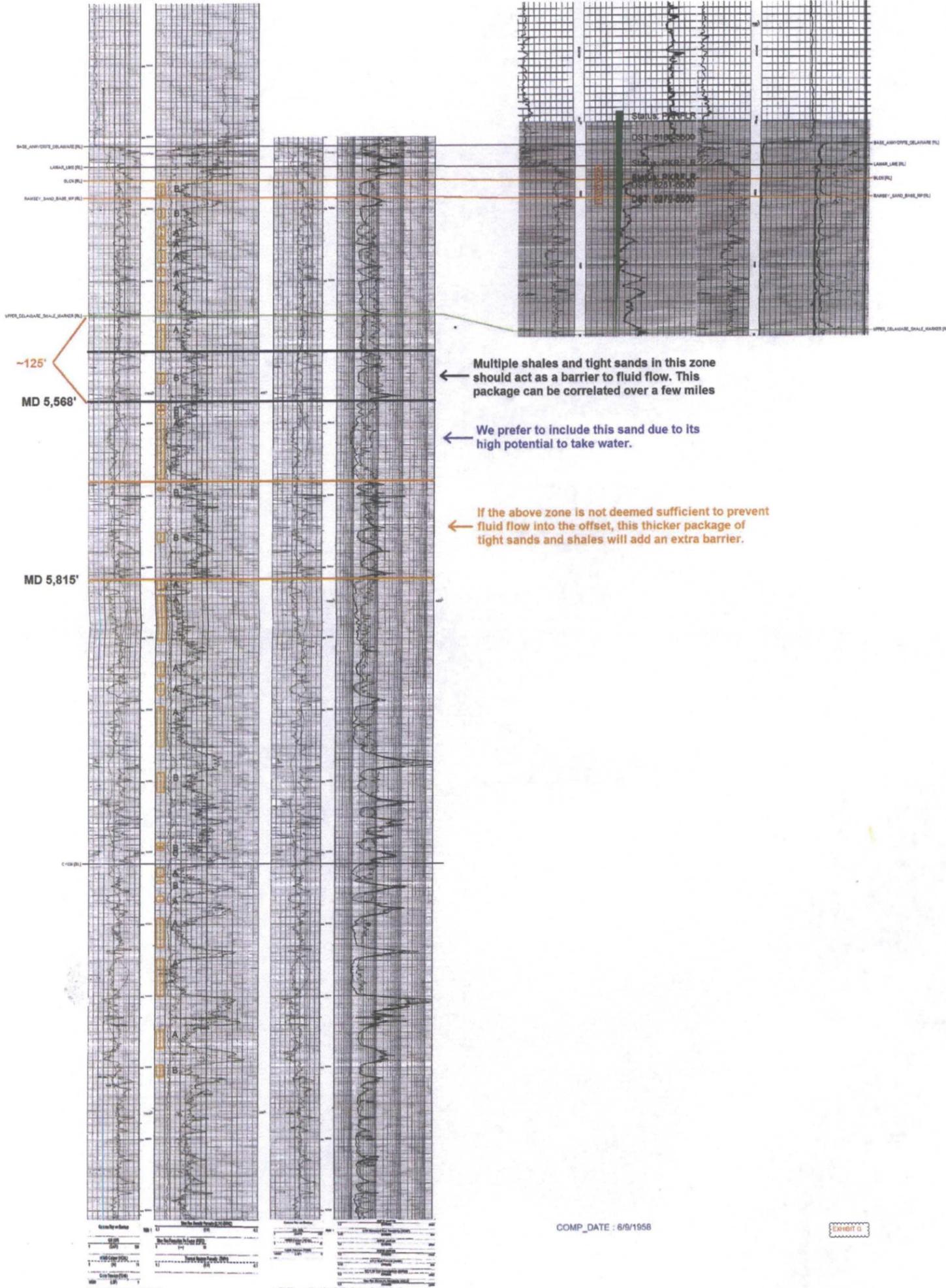
(not to scale)

EXHIBIT F



30025346230000  
JACKSON UNIT  
6  
MURCHISON O&G INC

30025083730000  
STATE  
1  
JACKSON F R







# New Mexico Office of the State Engineer

## Active & Inactive Points of Diversion

(with Ownership Information)

1 mile = 1,609 meters

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Code Grant	Source	q q q			X	Y	Distance		
									6416	4	Sec				Tws	Rng
<a href="#">C 03585</a>		EXP	0	INTERCONTINENTAL POTASH CORP	LE	<a href="#">C 03585 POD3</a> *1		1	2	3	15	24S	33E	635393	3565270	1324
						<a href="#">C 03585 POD2</a> *1		1	2	3	15	24S	33E	635418	3565363	1416
<a href="#">C 02430</a>	COM		64	PLAINS FEDERAL LAND BANK ASSOC	LE	<a href="#">C 02430</a> sampled	Shallow	3	3	3	16	24S	33E	633377	3564732*	1440
<a href="#">C 03585</a>	EXP		0	INTERCONTINENTAL POTASH CORP	LE	<a href="#">C 03585 POD1</a> *1		3	4	1	15	24S	33E	635368	3565544	1552
<a href="#">C 02431</a>	COM		15	PLAINS FEDERAL LAND BANK ASSOC	LE	<a href="#">C 02431</a> sampled	Shallow	4	4	4	17	24S	33E	633175	3564728*	1625
<a href="#">C 02432</a>	COM		128	MARK T. AND ANNETTE E. MCCLOY	LE	<a href="#">C 02432</a>	Shallow	4	4	4	17	24S	33E	633175	3564728*	1625
<a href="#">C 03565</a>	EXP		0	INTERNATIONAL POTASH CORP USA	LE	<a href="#">C 03565 POD8</a> *1		4	1	15	24S	33E	635484	3565610	1663	
<a href="#">C 03585</a>	EXP		0	INTERCONTINENTAL POTASH CORP	LE	<a href="#">C 03585 POD4</a> *1		4	4	1	15	24S	33E	635485	3565610	1664
<a href="#">C 03565</a>	EXP		0	INTERNATIONAL POTASH CORP USA	LE	<a href="#">C 03565 POD9</a> *1		4	4	15	24S	33E	636429	3565005	1937	
<a href="#">C 03585</a>	EXP		0	INTERCONTINENTAL POTASH CORP	LE	<a href="#">C 03585 POD6</a> *1		2	4	4	15	24S	33E	636431	3565007	1939
					LE	<a href="#">C 03585 POD5</a> *1		1	2	4	15	24S	33E	636245	3565387	1986

Record Count: 11

UTMNAD83 Radius Search (in meters):

Easting (X): 634693

Northing (Y): 3564147

Radius: 2000

Sorted by: Distance

\*1 = proposed 75' deep core hole for geotechnical foundation information

EXHIBIT H

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Code	Subbasin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 02430			LE	3	3	3	16	24S	33E	633377	3564732*	1440	643	415	228
C 02431	drilled	1959	LE	4	4	4	17	24S	33E	633175	3564728*	1625	525	415	110
C 02432	deepened	1980	LE	4	4	4	17	24S	33E	633175	3564728*	1625	640	415	225

Average Depth to Water: **415 feet**

Minimum Depth: **415 feet**

Maximum Depth: **415 feet**

**Record Count: 3**

**UTMNAD83 Radius Search (in meters):**

Easting (X): 634693

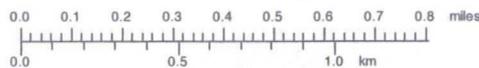
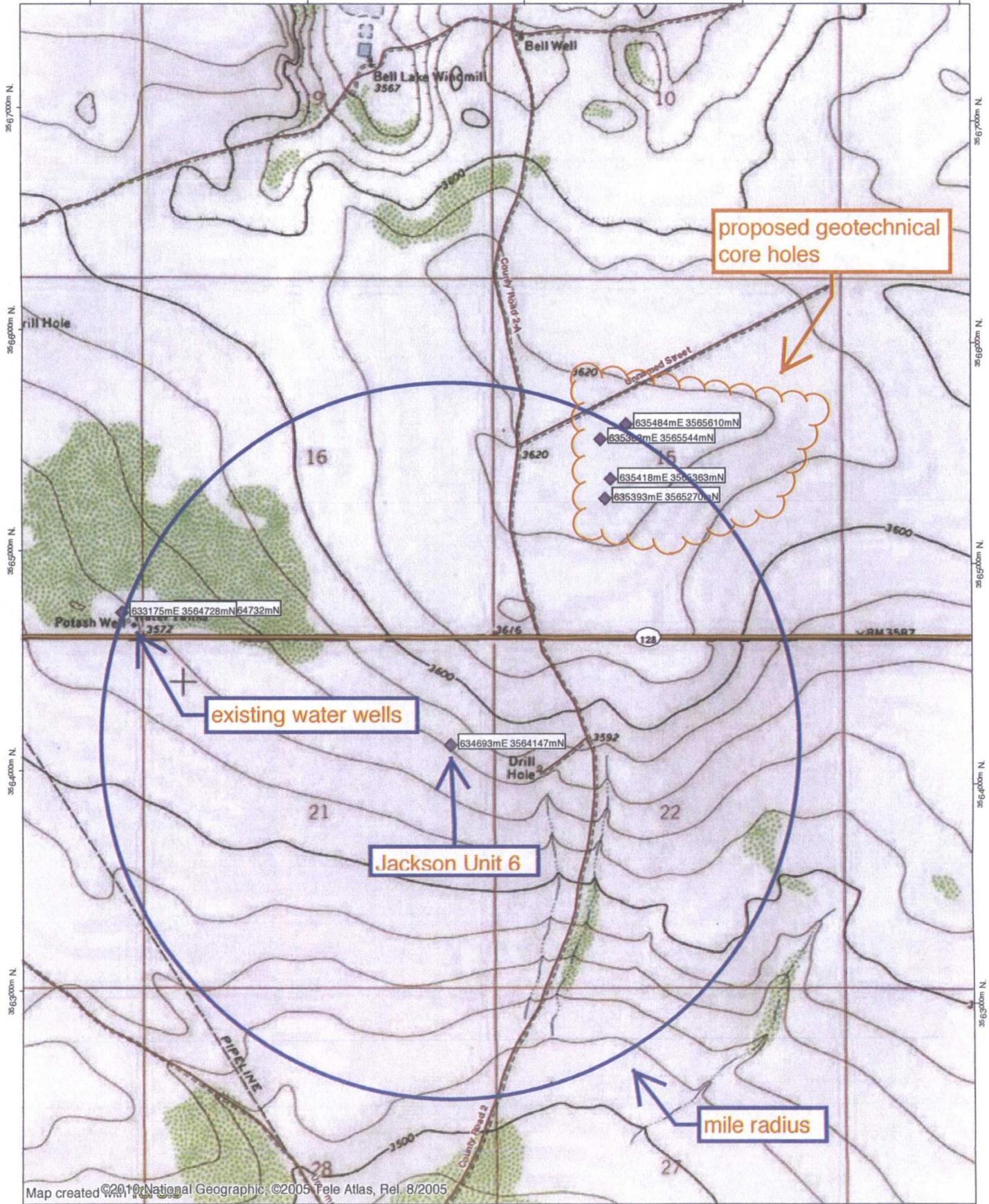
Northing (Y): 3564147

Radius: 2000

EXHIBIT H

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



**EXHIBIT H**



## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Permits West

Client Sample ID: McCloy Putash #1

Project: Jackson #6

Collection Date: 2/27/2013 12:45:00 PM

Lab ID: 1302910-001

Matrix: AQUEOUS

Received Date: 2/28/2013 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>SRM</b>
Chloride	25	10		mg/L	20	2/28/2013 2:19:41 PM
Sulfate	120	10		mg/L	20	2/28/2013 2:19:41 PM
<b>EPA METHOD 200.7: METALS</b>						Analyst: <b>JLF</b>
Barium	0.041	0.0020		mg/L	1	3/1/2013 12:52:23 PM
Calcium	26	1.0		mg/L	1	3/1/2013 12:52:23 PM
Iron	ND	0.020		mg/L	1	3/1/2013 12:52:23 PM
Magnesium	28	1.0		mg/L	1	3/1/2013 12:52:23 PM
Potassium	3.9	1.0		mg/L	1	3/1/2013 12:52:23 PM
Sodium	120	5.0		mg/L	5	3/1/2013 12:56:39 PM
<b>SM2340B: HARDNESS</b>						Analyst: <b>JLF</b>
Hardness (As CaCO <sub>3</sub> )	180	6.6		mg/L	1	3/1/2013 10:30:00 AM
<b>SM2320B: ALKALINITY</b>						Analyst: <b>JML</b>
Bicarbonate (As CaCO <sub>3</sub> )	250	20		mg/L CaCO <sub>3</sub>	1	2/28/2013 1:23:43 PM
Carbonate (As CaCO <sub>3</sub> )	ND	2.0		mg/L CaCO <sub>3</sub>	1	2/28/2013 1:23:43 PM
Total Alkalinity (as CaCO <sub>3</sub> )	250	20		mg/L CaCO <sub>3</sub>	1	2/28/2013 1:23:43 PM
<b>TOTAL SOLIDS BY SM2540B</b>						Analyst: <b>KS</b>
Residue, Total	500	20		mg/L	1	3/4/2013 7:30:00 AM

EXHIBIT H

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Permits West

Client Sample ID: McCloy Putash #2

Project: Jackson #6

Collection Date: 2/27/2013 12:55:00 PM

Lab ID: 1302910-002

Matrix: AQUEOUS

Received Date: 2/28/2013 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: SRM
Chloride	26	10		mg/L	20	2/28/2013 3:09:21 PM
Sulfate	120	10		mg/L	20	2/28/2013 3:09:21 PM
<b>EPA METHOD 200.7: METALS</b>						Analyst: JLF
Barium	0.037	0.0020		mg/L	1	3/1/2013 1:00:43 PM
Calcium	24	1.0		mg/L	1	3/1/2013 1:00:43 PM
Iron	ND	0.020		mg/L	1	3/1/2013 1:00:43 PM
Magnesium	28	1.0		mg/L	1	3/1/2013 1:00:43 PM
Potassium	3.9	1.0		mg/L	1	3/1/2013 1:00:43 PM
Sodium	120	5.0		mg/L	5	3/1/2013 1:04:59 PM
<b>SM2340B: HARDNESS</b>						Analyst: JLF
Hardness (As CaCO <sub>3</sub> )	180	6.6		mg/L	1	3/1/2013 10:30:00 AM
<b>SM2320B: ALKALINITY</b>						Analyst: JML
Bicarbonate (As CaCO <sub>3</sub> )	260	20		mg/L CaCO <sub>3</sub>	1	2/28/2013 1:36:27 PM
Carbonate (As CaCO <sub>3</sub> )	ND	2.0		mg/L CaCO <sub>3</sub>	1	2/28/2013 1:36:27 PM
Total Alkalinity (as CaCO <sub>3</sub> )	260	20		mg/L CaCO <sub>3</sub>	1	2/28/2013 1:36:27 PM
<b>TOTAL SOLIDS BY SM2540B</b>						Analyst: KS
Residue, Total	450	20		mg/L	1	3/4/2013 7:30:00 AM

EXHIBIT H

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Anne Thorne  
Hall Environmental Analysis Laborat  
4901 Hawkins NE  
Albuquerque, NM 87109

March 08, 2013

Date Received : March 01, 2013  
Description :  
Sample ID : 1302910-001C MCCLOY PUTASH #1  
Collected By :  
Collection Date : 02/27/13 12:45

ESC Sample # : L622620-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.2		su	9040C	03/04/13	1
Specific Conductance	870		umhos/cm	9050A	03/04/13	1
Hydrogen Sulfide	BDL	0.050	mg/l	4500S2-H	03/08/13	1
Sulfide, Dissolved	BDL	0.050	mg/l	4500S2 D-2011	03/02/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 03/08/13 12:40 Printed: 03/08/13 13:54  
L622620-01 (PH) - 8.2@18.7c

EXHIBIT H



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(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859  
Tax I.D. 62-0814289  
Est. 1970

REPORT OF ANALYSIS

March 08, 2013

Anne Thorne  
Hall Environmental Analysis Laborat  
4901 Hawkins NE  
Albuquerque, NM 87109

Date Received : March 01, 2013  
Description :  
Sample ID : 1302910-002C MCCLOY PUTASH #2  
Collected By :  
Collection Date : 02/27/13 12:55

ESC Sample # : L622620-02  
Site ID :  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.2		su	9040C	03/04/13	1
Specific Conductance	840		umhos/cm	9050A	03/04/13	1
Hydrogen Sulfide	BDL	0.050	mg/l	4500S2-H	03/08/13	1
Sulfide, Dissolved	BDL	0.050	mg/l	4500S2 D-2011	03/02/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit (PQL)  
Note:  
The reported analytical results relate only to the sample submitted.  
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Reported: 03/08/13 12:40 Printed: 03/08/13 13:54  
L622620-02 (PH) - 8.2@18.9c

EXHIBIT H



YOUR LAB OF CHOICE

Hall Environmental Analysis Laboratory  
 Anne Thorne  
 4901 Hawkins NE  
 Albuquerque, NM 87109

Quality Assurance Report  
 Level II

L622620

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

March 08, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Sulfide, Dissolved	< .05	mg/l			WG639069	03/02/13 14:49
Specific Conductance	0.760	umhos/cm			WG639140	03/04/13 14:05

Analyte	Units	Result	Duplicate		RPD	Limit	Ref Samp	Batch
			Duplicate	% Rec				
Sulfide, Dissolved	mg/l	0	0	0	0	20	L622620-02	WG639069
pH	su	8.90	8.90	0.225	1	1	L622477-02	WG639150
pH	su	6.60	6.70	1.66*	1	1	L622732-03	WG639150
Specific Conductance	umhos/cm	370.	380.	1.86	20	20	L622091-01	WG639140
Specific Conductance	umhos/cm	60.0	59.0	0.844	20	20	L622298-06	WG639140

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Sulfide, Dissolved	mg/l	.5	0.524	105.	85-115	WG639069
pH	su	5.7	5.70	100.	98.25-101.75	WG639150
Specific Conductance	umhos/cm	878	901.	103.	85-115	WG639140

Analyte	Units	Result	Laboratory Control Sample Duplicate		Limit	RPD	Limit	Batch
			Ref	% Rec				
Sulfide, Dissolved	mg/l	0.522	0.524	104.	85-115	0.382	20	WG639069
pH	su	5.73	5.70	100.	98.25-101.75	0.525	20	WG639150
Specific Conductance	umhos/	899.	901.	102.	85-115	0.222	20	WG639140

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Sulfide, Dissolved	mg/l	0.637	0	1	63.7*	80-120	L622620-01	WG639069

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	% Rec					
Sulfide, Dissolved	mg/l	0.667	0.637	66.7*	80-120	4.60	20	L622620-01	WG639069

Batch number / Run number / Sample number cross reference

WG639069: R2566257: L622620-01 02  
 WG639150: R2567597: L622620-01 02  
 WG639140: R2567957: L622620-01 02  
 WG639940: R2574457: L622620-01 02

\* \* Calculations are performed prior to rounding of reported values.  
 \* Performance of this Analyte is outside of established criteria.  
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

EXHIBIT H

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1302910

11-Mar-13

Client: Permits West

Project: Jackson #6

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	R8918	RunNo:	8918					
Prep Date:		Analysis Date:	3/1/2013	SeqNo:	254753	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Calcium	ND	1.0								
Iron	ND	0.020								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	R8918	RunNo:	8918					
Prep Date:		Analysis Date:	3/1/2013	SeqNo:	254754	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.9	85	115			
Calcium	51	1.0	50.00	0	102	85	115			
Iron	0.48	0.020	0.5000	0	96.2	85	115			
Magnesium	52	1.0	50.00	0	103	85	115			
Potassium	49	1.0	50.00	0	98.7	85	115			
Sodium	51	1.0	50.00	0	101	85	115			

EXHIBIT H

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1302910

11-Mar-13

**Client:** Permits West

**Project:** Jackson #6

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBW	Batch ID:	R8904	RunNo:	8904					
Prep Date:		Analysis Date:	2/28/2013	SeqNo:	254380	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSW	Batch ID:	R8904	RunNo:	8904					
Prep Date:		Analysis Date:	2/28/2013	SeqNo:	254381	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.7	90	110			
Sulfate	9.4	0.50	10.00	0	93.6	90	110			

EXHIBIT H

**Qualifiers:**

- |  |  |
|--|--|
| * Value exceeds Maximum Contaminant Level.   | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range             | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits | ND Not Detected at the Reporting Limit               |
| P Sample pH greater than 2                   | R RPD outside accepted recovery limits               |
| RL Reporting Detection Limit                 | S Spike Recovery outside accepted recovery limits    |

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1302910

11-Mar-13

Client: Permits West  
Project: Jackson #6

Sample ID	mb-1	SampType:	MBLK	TestCode:	SM2320B: Alkalinity					
Client ID:	PBW	Batch ID:	R8911	RunNo:	8911					
Prep Date:		Analysis Date:	2/28/2013	SeqNo:	254619					
				Units:	mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID	ics-1	SampType:	LCS	TestCode:	SM2320B: Alkalinity					
Client ID:	LCSW	Batch ID:	R8911	RunNo:	8911					
Prep Date:		Analysis Date:	2/28/2013	SeqNo:	254620					
				Units:	mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	99.4	90	110			

Sample ID	1302910-002a ms	SampType:	MS	TestCode:	SM2320B: Alkalinity					
Client ID:	McCloy Putash #2	Batch ID:	R8911	RunNo:	8911					
Prep Date:		Analysis Date:	2/28/2013	SeqNo:	254623					
				Units:	mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	330	20	80.00	257.3	86.4	65.3	113			

Sample ID	1302910-002a msd	SampType:	MSD	TestCode:	SM2320B: Alkalinity					
Client ID:	McCloy Putash #2	Batch ID:	R8911	RunNo:	8911					
Prep Date:		Analysis Date:	2/28/2013	SeqNo:	254624					
				Units:	mg/L CaCO3					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	330	20	80.00	257.3	87.7	65.3	113	0.306	10	

EXHIBIT H

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1302910

11-Mar-13

**Client:** Permits West  
**Project:** Jackson #6

Sample ID	MB-6290	SampType:	MBLK	TestCode:	Total Solids by SM2540B					
Client ID:	PBW	Batch ID:	6290	RunNo:	8938					
Prep Date:	3/1/2013	Analysis Date:	3/4/2013	SeqNo:	255287	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Residue, Total	ND	20								

Sample ID	LCS-6290	SampType:	LCS	TestCode:	Total Solids by SM2540B					
Client ID:	LCSW	Batch ID:	6290	RunNo:	8938					
Prep Date:	3/1/2013	Analysis Date:	3/4/2013	SeqNo:	255288	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Residue, Total	1100	20	1000	0	112	80	120			

Sample ID	1302910-001ADUP	SampType:	DUP	TestCode:	Total Solids by SM2540B					
Client ID:	McCloy Putash #1	Batch ID:	6290	RunNo:	8938					
Prep Date:	3/1/2013	Analysis Date:	3/4/2013	SeqNo:	255293	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Residue, Total	500	20						1.40	15	

Sample ID	1302910-001AMS	SampType:	MS	TestCode:	Total Solids by SM2540B					
Client ID:	McCloy Putash #1	Batch ID:	6290	RunNo:	8938					
Prep Date:	3/1/2013	Analysis Date:	3/4/2013	SeqNo:	255294	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Residue, Total	1600	20	1000	496.0	113	80	120			

EXHIBIT H

**Qualifiers:**

- |  |  |
|--|--|
| * Value exceeds Maximum Contaminant Level.   | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range             | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits | ND Not Detected at the Reporting Limit               |
| P Sample pH greater than 2                   | R RPD outside accepted recovery limits               |
| RL Reporting Detection Limit                 | S Spike Recovery outside accepted recovery limits    |

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Permits West

Client Sample ID: McCloy Patash #1

Project: Jackson #6

Collection Date: 3/8/2013 1:40:00 PM

Lab ID: 1303443-001

Matrix: AQUEOUS

Received Date: 3/11/2013 4:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 1664A</b>						Analyst: JDC
N-Hexane Extractable Material	ND	5.2		mg/L	1	3/19/2013
<b>SM2540C MOD: TOTAL DISSOLVED SOLIDS</b>						Analyst: KS
Total Dissolved Solids	504	20.0	*	mg/L	1	3/14/2013 5:11:00 PM

EXHIBIT H

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Permits West

**Client Sample ID:** McCloy Patash #2

**Project:** Jackson #6

**Collection Date:** 3/8/2013 1:50:00 PM

**Lab ID:** 1303443-002

**Matrix:** AQUEOUS

**Received Date:** 3/11/2013 4:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 1664A</b>						Analyst: JDC
N-Hexane Extractable Material	ND	5.1		mg/L	1	3/19/2013
<b>SM2540C MOD: TOTAL DISSOLVED SOLIDS</b>						Analyst: KS
Total Dissolved Solids	548	20.0	*	mg/L	1	3/14/2013 5:11:00 PM

EXHIBIT H

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	E Value above quantitation range	H Holding times for preparation or analysis exceeded
	J Analyte detected below quantitation limits	ND Not Detected at the Reporting Limit
	P Sample pH greater than 2	R RPD outside accepted recovery limits
	RL Reporting Detection Limit	S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1303443

21-Mar-13

Client: Permits West

Project: Jackson #6

Sample ID	MB-6532	SampType:	MBLK	TestCode:	EPA Method 1664A					
Client ID:	PBW	Batch ID:	6532	RunNo:	9290					
Prep Date:	3/18/2013	Analysis Date:	3/19/2013	SeqNo:	264899	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	ND	5.0								

Sample ID	LCS-6532	SampType:	LCS	TestCode:	EPA Method 1664A					
Client ID:	LCSW	Batch ID:	6532	RunNo:	9290					
Prep Date:	3/18/2013	Analysis Date:	3/19/2013	SeqNo:	264900	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	36	5.0	40.00	0	90.5	78	114			

Sample ID	MB-6532	SampType:	MBLK	TestCode:	EPA Method 1664A					
Client ID:	PBW	Batch ID:	6532	RunNo:	9291					
Prep Date:	3/18/2013	Analysis Date:	3/20/2013	SeqNo:	264921	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silica Gel Treated N-Hexane Extrac	ND	5.0								

Sample ID	LCS-6532	SampType:	LCS	TestCode:	EPA Method 1664A					
Client ID:	LCSW	Batch ID:	6532	RunNo:	9291					
Prep Date:	3/18/2013	Analysis Date:	3/20/2013	SeqNo:	264922	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silica Gel Treated N-Hexane Extrac	14	5.0	20.00	0	72.5	64	132			

**EXHIBIT H****Qualifiers:**

- |  |  |
|--|--|
| * Value exceeds Maximum Contaminant Level.   | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range             | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits | ND Not Detected at the Reporting Limit               |
| P Sample pH greater than 2                   | R RPD outside accepted recovery limits               |
| RL Reporting Detection Limit                 | S Spike Recovery outside accepted recovery limits    |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1303443

21-Mar-13

**Client:** Permits West  
**Project:** Jackson #6

Sample ID <b>MB-6454</b>	SampType: <b>MBLK</b>	TestCode: <b>SM2540C MOD: Total Dissolved Solids</b>								
Client ID: <b>PBW</b>	Batch ID: <b>6454</b>	RunNo: <b>9187</b>								
Prep Date: <b>3/13/2013</b>	Analysis Date: <b>3/14/2013</b>	SeqNo: <b>261208</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID <b>LCS-6454</b>	SampType: <b>LCS</b>	TestCode: <b>SM2540C MOD: Total Dissolved Solids</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>6454</b>	RunNo: <b>9187</b>								
Prep Date: <b>3/13/2013</b>	Analysis Date: <b>3/14/2013</b>	SeqNo: <b>261209</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	11.00	102	80	120			



**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits



# New Mexico Quaternary Faults



Cooperator New Mexico Bureau of Mines and Mineral Resources



Click a feature on the map to get more information about it or use the [Database Search](#).

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# PERMITS WEST, INC.

PROVIDING PERMITS for LAND USERS

37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

March 25, 2013

Nick Jaramillo  
New Mexico State Land Office  
P. O. Box 1148  
Santa Fe, NM 87504-1148

Dear Nick,

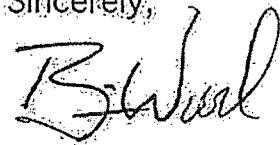
Murchison Oil & Gas, Inc. is applying (see attached application) to re-enter and convert its Jackson Unit 6 well to a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposed saltwater disposal well. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: Jackson Unit 6 (state lease) ID = 13,900'  
Proposed Injection Zone: Delaware (from 5,573' to 6,512')  
Location: 1650' FNL & 660' FEL Sec. 21, T. 24 S., R. 33 E., Lea County, NM  
Approximate Location: ≈23 air miles northwest of Jal, NM  
Applicant Name: Murchison Oil & Gas, Inc. (972) 931-0700  
Applicant's Address: 1100 Mira Vista Blvd., Plano TX 75093

Submittal Information: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The New Mexico Oil Conservation Division address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,



Brian Wood

7010 2780 0002 6818 6811

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**CERTIFIED MAIL RECEIPT**  
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For delivery information visit our website at www.usps.com

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Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 7.37

QUICK SEND CPU  
SANTA FE, NM  
MAR 2 2013  
Post Office

Sent To:  
Street, Apt. No., or PO Box No.  
City, State, ZIP+4

NMSLO

PS Form 3800, August 2006

EXHIBIT J

March 25, 2013

Chaparral Energy, LLC  
 701 Cedar Lake Blvd.  
 Oklahoma City, OK 73114

Murchison Oil & Gas, Inc. is applying (see attached application) to re-enter and convert its Jackson Unit 6 well to a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposed saltwater disposal well. This letter is a notice only. No action is needed unless you have questions or objections.

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Applicant's Address: 1100 Mira Vista Blvd., Plano TX 75093

Submittal Information: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The New Mexico Oil Conservation Division address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

*Brian Wood*

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Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$ 7.37</b>

Sent To: Chaparral

Street, Apt. No., or PO Box No.  
 City, State, ZIP+4

Postmark Here: MAR 25 2013 SANTA FE, NM

7010 2780 0002 6818 6835

EXHIBIT J

March 25, 2013

EOG Resources, Inc.  
 P. O. Box 2267  
 Midland, TX 79702

Murchison Oil & Gas, Inc. is applying (see attached application) to re-enter and convert its Jackson Unit 6 well to a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposed saltwater disposal well. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: Jackson Unit 6 (state lease) ID = 13,900'  
Proposed Injection Zone: Delaware (from 5,573' to 6,512')  
Location: 1650' FNL & 660' FEL Sec. 21, T. 24 S., R. 33 E., Lea County, NM.  
Approximate Location: ~23 air miles northwest of Jal, NM  
Applicant Name: Murchison Oil & Gas, Inc. (972) 931-0700  
Applicant's Address: 1100 Mira Vista Blvd., Plano TX 75093

Submittal Information: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The New Mexico Oil Conservation Division address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

*Brian Wood*

U.S. Postal Service  
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Postage	\$ 1.78
Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$ 7.37</b>

Sent To: EOG

Street, Apt. No., or PO Box No.  
 City, State, ZIP+4

Postmark Here: MAR 25 2013 SANTA FE, NM

7010 2780 0002 6818 6828



# Affidavit of Publication

State of New Mexico,  
County of Lea.

I, JUDY HANNA  
PUBLISHER

of the Hobbs News-Sun, a  
newspaper published at Hobbs, New  
Mexico, do solemnly swear that the  
clipping attached hereto was  
published in the regular and entire  
issue of said newspaper, and not a  
supplement thereof for a period

of 1 issue(s).

Beginning with the issue dated  
March 16, 2013  
and ending with the issue dated  
March 16, 2013

*Judy Hanna*  
\_\_\_\_\_  
PUBLISHER

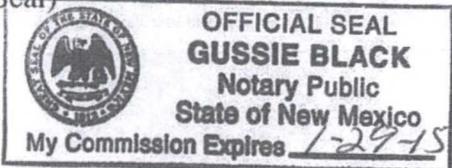
Sworn and subscribed to before me  
this 18th day of  
March, 2013

*Gussie Black*  
\_\_\_\_\_

Notary Public

My commission expires  
January 29, 2015

(Seal)



This newspaper is duly qualified to  
publish legal notices or  
advertisements within the meaning of  
Section 3, Chapter 167, Laws of  
1937 and payment of fees for said  
publication has been made.

**LEGAL**  
**Legal Notice**  
**March 16, 2016**  
Murchison Oil & Gas, Inc.  
will apply to re-enter and  
convert its Jackson Unit 6  
well to a saltwater disposal  
well. The well is at 1650  
FNL & 660 FEL Sec. 21, T.  
24 S., R. 33 E., Lea County  
and is 23 miles northwest of  
Jal. Disposal will be into the  
Delaware from 5573' to  
6512'. Maximum injection  
pressure will be 1,114 psi.  
Maximum disposal rate will  
be 5,000 bwpd. Interested  
parties must file objections  
or requests for hearing with  
the NM Oil Conservation  
Division, 1220 South Saint  
Francis Dr., Santa Fe, NM,  
87505 within 15 days.  
Additional information can  
be obtained by contacting:  
Brian Wood, Permits West,  
Inc., 37 Verano Loop, Santa  
Fe, NM 87508. Phone  
number is (505) 466-8120.  
#27995

02108485

00110848

BRIAN WOOD  
PERMITS WEST  
37 VERANO LOOP  
SANTA FE, NM 87508

EXHIBIT K

**Injection Permit Checklist:** Received 03/28/13 First Email Date: \_\_\_\_\_ Final Reply Date: \_\_\_\_\_ Final Notice Date: \_\_\_\_\_

**Issued Permit:** Type: WFX / PMX / SWD Number: 1414 Permit Date: 04/26/13 Legacy Permits or Orders: NA

Well No. 6 Well Name(s): Jackson Unit

API: 30-0 25-34623 Spud Date: 05/28/1999 New/Old: N (UIC CI II Primacy March 7, 1982)

Footages 1650 FNL & 660 FEL Lot Unit H Sec 21 Tsp 245 Rge 33E County Lea

General Location: ~19 miles NE of Jal on SR128 Pool: SWD-Delaware Pool No.: 96100  
P&A - Jackson Ranch Wolfcamp (79335)

Operator: Murchinson Oil & Gas OGRID: 15363 Contact: Brian Wood/Permits West

**COMPLIANCE RULE 5.9:** Inactive Wells: 1 Total Wells: 126 Fincl Assur: Yes Compl. Order? No IS 5.9 OK? Yes

Well File Reviewed:  Current Status: P&A gas well in 9/1999; CIBP at 13000' with 35' cmt cap;

Planned Rehab Work to Well: \* 7-inch long st cut at 3500 during P&A - pulled & plugged

Well Diagrams: Proposed \_\_\_\_\_ Before Conversion  After Conversion  Are Elogs in Imaging?: Yes 6512

Well Construction Details:	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Stage Tool	Cement Sx or Cf	Cement Top and Determination Method
Planned ___ or Existing ___ Cond	—	—	—	—	—
Planned ___ or Existing <input checked="" type="checkbox"/> Surface	17 1/2 / 13 3/8	0-685	—	685	Surface
Planned ___ or Existing <input checked="" type="checkbox"/> Interm	12 1/4 / 9 5/8	0-5224	—	1550	Surface
Planned ___ or Existing <input checked="" type="checkbox"/> LongSt	8 3/4 / 7	3500-12607*	?	1010	Wireline
Planned ___ or Existing <input checked="" type="checkbox"/> Liner	6 1/8 / 4 1/2	12166-13900	—	245	Wireline/Unknown
Planned ___ or Existing <input checked="" type="checkbox"/> VOH/PERF	perf / sea before	13166-13359	—	<b>Completion/Ops Details:</b> Drilled TD <u>13900</u> PBSD <u>13732</u> Open Hole ___ or Perfs <input checked="" type="checkbox"/> Tubing Size <u>4 1/2</u> Inter Coated? <u>Yes</u> Proposed Packer Depth <u>&lt;5473</u> Max Packer Depth <u>5473</u> (100-ft limit) Proposed Max. Surface Press <u>1114</u> Calc. Injt Press <u>1114.6</u> (0.2 psi per ft) Calc. FPP <u>3622</u> (0.65 psi per ft)	

Injection Formation(s):	Depths (ft)	Formation	Tops?
Above Top of Inject Formation	—	Salado	1290
Above Top of Inject Formation	—	Custile	NR
<b>Proposed Interval TOP:</b>	<u>5573 perf</u>	Delaware Sand	5214
<b>Proposed Interval BOTTOM:</b>	<u>6512 perf</u>	Delaware Sand	—
Below Bottom of Inject Formation	<u>2632 from perf</u>	Bone Spring	9144
Below Bottom of Inject Formation	—	Wolfcamp	12265

**AOR: Hydrologic and Geologic Information**

CAPITAN REEF: in NA thru NO POTASH NO Noticed? NO WIPP NO Noticed? NO SALADO Top 1230 Bot CLIFF HOUSE NA

Fresh Water: Max Depth: 650 FW Formation Alluvial / SR Wells? 2 > similar Analysis? Yes Hydrologic Affirm Statement Sec XII of CIOB application

Disposal Fluid: Formation Source(s) Wolfcamp & Bone Spring prod. On Lease Only from Operator X or Commercial

Disposal Interval: Protectable Waters? No H/C Potential: Log — / Mudlog — / DST — / Tested — / Depleted  Other 4 1/2 mile west prod in Delaware - no history locally

AOR Wells: 1/2-M Radius Map? Yes Well List? Yes Producing in Interval? No Formerly Produced in Interval? No

Penetrating Wells: No. Active Wells 2 Num Repairs? 0 on which well(s)? \_\_\_\_\_ Diagrams? Yes

Penetrating Wells: No. P&A Wells 1 Num Repairs? 0 on which well(s)? \_\_\_\_\_ Diagrams? Yes No 3000 ft #8

NOTICE: Newspaper Date 03/16/13 Mineral Owner Yes / State Surface Owner State N. Date March 25, 2013

RULE 26.7(A): Identified Tracts? Yes Affected Persons: RR submitted Adjoining operators Yes / RR submitted N. Date March 25, 2013

Permit Conditions: Production casing cut at 7,000 ft for P&A - cemented with plug above 7,067 to 6863'

Issues: \_\_\_\_\_