

BTA OIL PRODUCERS LLC  
Pardue D, 8808 JV-P #2  
Eddy County, New Mexico

Application for Authorization to Inject

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DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
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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 New Waterflood - Will Require Hearing
- [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

[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.**

<u>Pam Inskeep</u>	<u></u>	<u>Regulatory Administrator</u>	<u>08/17/2009</u>
Print or Type Name	Signature	Title	Date
		<u>pinskeep@btaoil.com</u>	
		e-mail Address	

## APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: X Secondary Recovery \_\_\_\_\_ Pressure Maintenance \_\_\_\_\_ Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval? \_\_\_\_\_ Yes \_\_\_\_\_ X No
- II. OPERATOR: BTA Oil Producers LLC  
ADDRESS: 104 S. Pecos, Midland, TX 79701  
CONTACT PARTY: Pam Inskeep PHONE: 432-682-3753
- 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 \_\_\_\_\_ X 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.).
- \*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: Pam Inskeep TITLE: Regulatory Administrator  
SIGNATURE: Pam Inskeep DATE: 8/14/2009  
E-MAIL ADDRESS: pinskeep@btaoil.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:

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

BTA OIL PRODUCERS LLC  
 Application for Authorization to Inject  
 Pardue D, 8808 JV-P #2  
 990' FNL & 660' FWL  
 Section 11, T23S, R28E  
 Eddy County, New Mexico

## Attachment A

### III. Well Data

#### Section A:

1. Lease Name: 8808 JV-P Pardue D #2  
 Location: 990' FNL & 660' FWL, Sec. 11, T23S-R28E, Eddy County, NM
  
2. Casing and Cement:  
EXISTING

<u>Csg Size</u>	<u>Setting Depth</u>	<u>SX Cmt</u>	<u>Hole Size</u>	<u>Top of Cement</u>
8-5/8"	510'	400	12-1/4"	Circ to Surface
5-1/2"	6250'	1300	7-7/8"	Circ to Surface

  
PROPOSED

<u>Csg Size</u>	<u>Setting Depth</u>	<u>SX Cmt</u>	<u>Hole Size</u>	<u>Top of Cement</u>
8-5/8"	510'	400	12-1/4"	Circ to Surface
5-1/2"	6250'	1300	7-7/8"	Circ to Surface
  
3. Tubing: 2-7/8", 6.5#, N80 EUE internally plastic coated set at ± 4650'.
  
4. Packer: Baker Loc-Set set at ± 4650'.

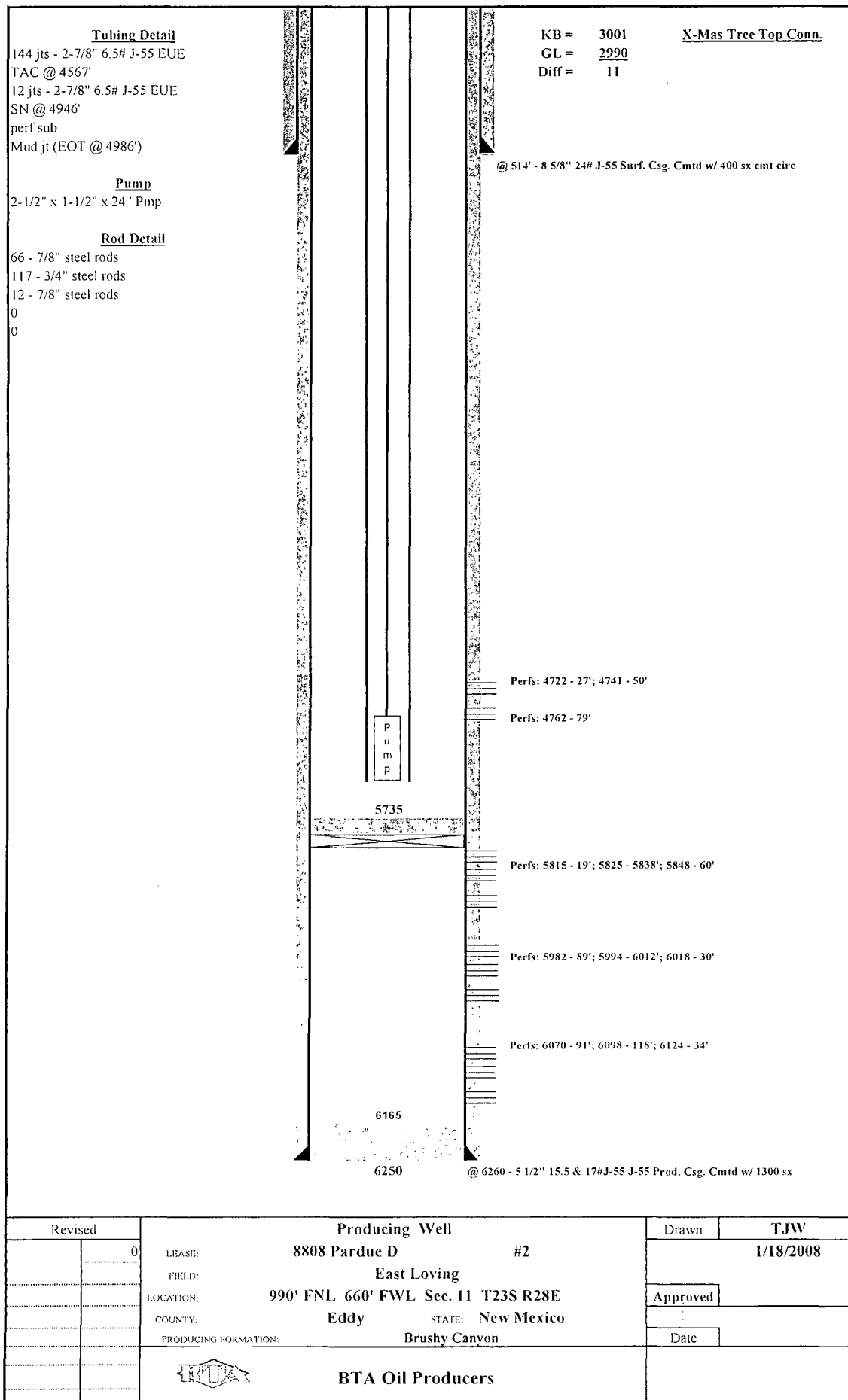
#### Section B:

1. Injection Formation: Productive Brushy Canyon sand  
 Field or Pool Name: Loving, Brushy Canyon, East
  
2. Injection Interval: 4722 – 6134'  
 Note: After testing injectivity and waterflood response in the upper Brushy Canyon (4722-4750' and 4762-4779'), BTA will evaluate injecting into the entire Brushy Canyon interval down to 6134'.
  
3. Original purpose of well: Oil and gas production
  
4. Other perforated intervals, bridge plugs, cement plugs:  
 5815 – 5860' Delaware B sand  
 5982 – 6030' Delaware D sand  
 6070 – 6134' Delaware Loving sand  
 CIBP @ 5775'
  
5. Next higher oil and gas zone: Cherry Canyon 3608'  
 Next lower oil and gas zone: Bone Springs 6188'

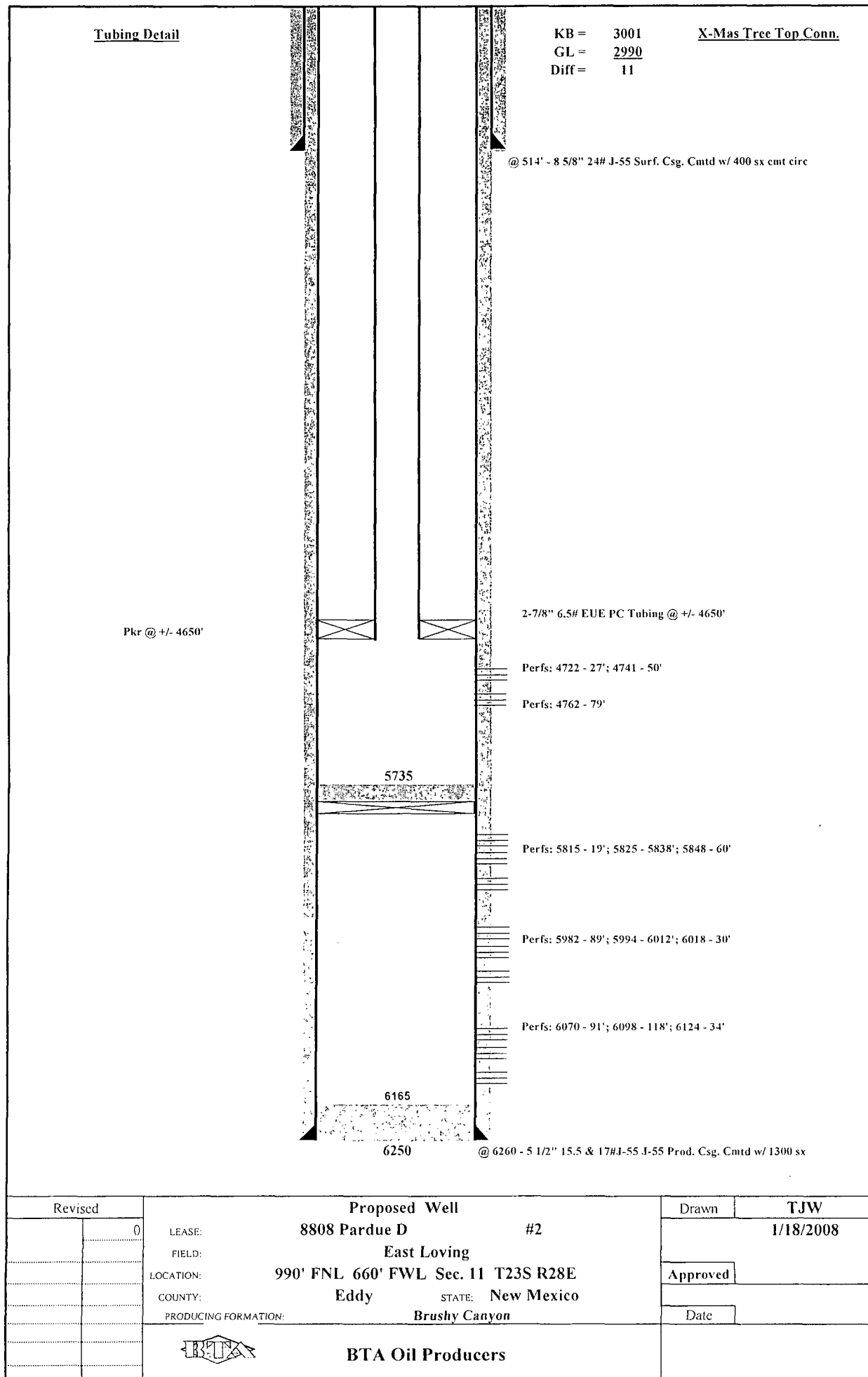
See current and proposed wellbore schematics (Attachments B and C)

See Structural Cross Section (Attachment E)

# III. Current Wellbore Schematic



### III. PROPOSED WELLBORE SCHEMATIC







VI. AOR Well Data

OPERATOR	WELL NAME	LOCATION	TYPE OF WELL	SPUD DATE	COMP DATE	TD PBTD	COMP INTERVAL	PROD FORM	CASING	CASING DEPTH	AMT CMT	HOLE SIZE	TOC
BTA Oil Producers, LLC.	8808 JV-P PARDUE B #2	1,980' FSL & 765' FWL, 11-23S-28E	Oil	5/14/1990	6/6/1990	6,250'	5726-6156'	BRUSHY CANYON	8-5/8"	515'	400	12-1/4"	Circ
			Gas	8/27/1988	11/24/1988	6,166'	11604-12481'	ATOKA, MORROW (NOTE: THIS WELL PRODUCES NO WATER)	5-1/2"	6,250'	1,300	7-7/8"	1100
BTA Oil Producers, LLC.	8808 JV-P PARDUE #1	2,310' FSL & 660' FWL, 11-23S-28E				12,740'			10-3/4"	433'	600	20"	Circ
			Oil	11/27/2002	12/22/2002	5,640'	4704-4760'	BRUSHY CANYON	7-5/8"	2,614'	2,400	9-1/2"	450
BTA Oil Producers, LLC.	8808 JV-P PARDUE B #3	2,310' FSL & 1,650' FWL, 11-23S-28E				5,547'			8-5/8"	447'	300	12-1/4"	Circ
			Oil	4/6/2006	6/3/2006	6,285'	5754-6068'	BRUSHY CANYON	5-1/2"	5,640'	1,210	7-7/8"	Circ
BTA Oil Producers, LLC.	8808 JV-P PARDUE B #5	2,310' FSL & 2,220' FWL, 11-23S-28E				6,189'			8-5/8"	451'	350	12-1/4"	Circ
			Oil	5/29/1990	6/15/1990	6,260'	4777-6154'	BRUSHY CANYON	5-1/2"	6,282'	1,450	7-7/8"	Circ
BTA Oil Producers, LLC.	8808 JV-P PARDUE D #1	1,980' FNL & 660' FWL, 11-23S-28E				6,170'			8-5/8"	538'	400	12-1/4"	Circ
			Oil	12/15/2007	2/25/2008	6,400'	4738-6302'	BRUSHY CANYON	5-1/2"	6,260'	1,300	7-7/8"	560
BTA Oil Producers, LLC.	8808 JV-P PARDUE D #3	1,655' FNL & 990' FWL, 11-23S-28E				4,980'			8-5/8"	450'	350	12-1/4"	Circ
									5-1/2"	6,400'	1,889	7-7/8"	Circ
Range Operating New Mexico Inc.	AMOCO 11 FEDERAL #5	1,977' FNL & 1,387' FEL, 11-23S-28E	Oil	3/6/1991	4/2/1991	6,500'	4746-6330'	BRUSHY CANYON	8-5/8"	575'	350	12-1/4"	Circ
									5-1/2"	6,500'	1st. sig 450 2nd sig 1,100	7-7/8"	Circ
Range Operating New Mexico Inc.	ONSUREZ #1	660' FNL & 1,980' FWL, 11-23S-28E	Oil	1/11/1981	6/24/1981	9,825'	4764-6632'	BRUSHY CANYON	13-3/8"	450'	800	17-1/2"	
						5,223'	9386-9646'		8-5/8"	2,656'	1,900	12-1/4"	
BTA Oil Producers, LLC.	8808 JV-P PARDUE D #2	990' FNL & 660' FWL, 11-23S-28E	Oil	7/17/1990	8/6/1990	6,250'	4772-6134'	BRUSHY CANYON	5-1/2"	9,825'	2,180	7-7/8"	
									8-5/8"	514'	400	12-1/4"	Circ
Chesapeake Operating Inc.	PARDUE FARMS #2	1,950' FNL & 660' FEL, 10-23S-28E	Oil	9/26/1990	10/20/1990	6,270'	6072-6160'	BRUSHY CANYON	5-1/2"	6,260'	1,300	7-7/8"	Circ
						6,250'			8-5/8"	525'	300	11"	Circ
Range Operating New Mexico Inc.	ONSUREZ #2	1,980' FNL & 1,980' FWL, 11-23S-28E	Oil	9/17/1990	10/13/1990	6,300'	4728-6182'	BRUSHY CANYON	5-1/2"	6,270'	1,550	7-7/8"	Circ
						6,090'			8-5/8"	548'	350	12-1/4"	
Chesapeake Operating Inc.	PARDUE FARMS #4	660' FNL & 660' FEL, 10-23S-28E	Oil	5/22/1991	8/16/1991	6,265'	6108-6146'	BRUSHY CANYON	5-1/2"	6,300'	1,450	7-7/8"	
						6,200'			8-5/8"	500'	400	12-1/4"	Circ
Chesapeake Operating Inc.	PARDUE MARTIN #1	330' FSL & 330' FWL, 2-23S-28E	Oil	7/24/1991	8/13/1991	6,350'	6163-6177'	BRUSHY CANYON	4-1/2"	6,243'	1,450	7-7/8"	Circ
						6,304'			8-5/8"	440'	270	12-1/4"	Circ
Chesapeake Operating Inc.	HALLWOOD FEDERAL #1	990' FSL & 660' FEL, 3-23S-28E	Oil	9/15/1992	10/10/1992	6,350'	6128-6178'	BRUSHY CANYON	5-1/2"	6,350'	1,255	7-7/8"	Circ
						6,298'			8-5/8"	314'	225	12-1/4"	Circ
Range Operating New Mexico Inc.	AMOCO 11 FEDERAL #9	330' FNL & 1,425' FEL, 11-23S-28E	Oil	6/14/2005	7/15/2005	6,490'	5996-6288'	BRUSHY CANYON	5-1/2"	6,350'	1,395	7-7/8"	Circ
						6,386'			8-5/8"	555'	500	12-1/4"	Circ

BTA OIL PRODUCERS LLC  
Application for Authorization to Inject  
Pardue D, 8808 JV-P #2  
990' FNL & 660' FWL  
Section 11, T23S, R28E  
Eddy County, New Mexico

VII. Operation Data

1.     Proposed average daily injection volume:       550 BWPD  
       Proposed maximum daily injection volume:     1500 BWPD
2.     This will be a closed system.
3.     Proposed average daily injection pressure:     500 psi  
       Proposed maximum daily injection pressure:    930 psi
4.     Sources of injection water will be produced water from area Brushy Canyon Producers:  
  
       8808 JV-P Pardue Lease – no wells on this lease currently produce water  
       8808 JV-P Pardue B Lease, Wells No. 1, 2  
       8808 JV-P Pardue C Lease, Wells No. 1-Y, 2  
       8808 JV-P Pardue D Lease, Wells No. 1, 2, 3  
       Any future wells drilled on any of these leases.  
  
       A water analysis from each well is attached.
5.     Not applicable.

DATE

9

CHEMLINK

WATER ANALYSIS REPORT

Lab ID No. : 121290B

Analysis Date: December 10, 1990

Company : BTA Oil Producers  
Field :  
Lease/Unit : Pardue "B"  
Well ID. : No. 1  
Sample Loc.:

Sampled By : Pro-Kem, Inc.  
Sample Date: \*  
Salesperson: Gerald Phillips  
Formation :  
Location : Lovington, N. M.

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	30,622	1,531	Hydroxyl as OH-	0	0
Magnesium as Mg++	3,191	262	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	76,307	3,318	Bicarbonate as HCO3-	73	1
Barium as Ba++	Below 5		Sulfate as SO4=	240	5
Oil Content	0		Chloride as Cl-	180,959	5,104

Total Dissolved Solids, Calculated:

291,393 mg/L.

Calculated Resistivity: 0.010 ohm-meters  
mg/L. Hydrogen Sulfide: 40  
mg/L. Carbon Dioxide: 200  
mg/L. Dissolved Oxygen: Not Determined

pH: 6.500  
Specific Gravity 60/60 F.: 1.205  
Saturation Index @ 80 F.: +2.355  
@ 140 F.: +3.455

Total Hardness: 89,498 mg/L. as CaCO3  
Total Iron: 100.00 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION  
COMPOUND MG/L MEQ/L

	Ca(HCO3)2	97	1.2
	CaSO4	340	5.0
Calcium Sulfate Scaling Potential Not Present	CaCl2	84,633	1,524.9
	Mg(HCO3)2	0	0.0
Estimated Temperature of Calcium Carbonate Instability is 51 F.	MgSO4	0	0.0
	MgCl2	12,456	261.6
	NaHCO3	0	0.0
	Na2SO4	0	0.0
Analyst	NaCl	193,953	3,317.7
07:04 PM			

DOXE

CHEMLINK

WATER ANALYSIS REPORT

Lab ID No. : 121290C

Analysis Date: December 10, 1990

Company : BTA Oil Producers  
Field :  
Lease/Unit : Pardue "B"  
Well ID. : No. 2  
Sample Loc.:

Sampled By : Pro-Kem, Inc.  
Sample Date: \*  
Salesperson: Gerald Phillips  
Formation :  
Location : Lovington, N. M.

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	28,477	1,424	Hydroxyl as OH-	0	0
Magnesium as Mg++	4,314	354	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	77,963	3,390	Bicarbonate as HCO3-	68	1
Barium as Ba++	Below 5		Sulfate as SO4=	260	5
Oil Content	0		Chloride as Cl-	182,959	5,161

Total Dissolved Solids, Calculated: 294,041 mg/L.

Calculated Resistivity: 0.010 ohm-meters  
mg/L. Hydrogen Sulfide: 40  
mg/L. Carbon Dioxide: 250  
mg/L. Dissolved Oxygen: Not Determined

pH: 6.400  
Specific Gravity 60/60 F.: 1.208  
Saturation Index @ 80 F.: +2.856  
@ 140 F.: +3.296

Total Hardness: 88,768 mg/L. as CaCO3  
Total Iron: 10.00 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION		
COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	91	1.1
CaSO4	369	5.4
CaCl2	78,660	1,417.3
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	16,839	353.6
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	198,161	3,389.7

Calcium Sulfate Scaling Potential  
Not Present

Estimated Temperature of Calcium  
Carbonate Instability is  
47 F.

Analyst 07:04 PM

709 W. INDIANA  
MIDLAND, TEXAS 79701  
PHONE 683-4521

### RESULT OF WATER ANALYSES.

To: Mr. Steve Salmon  
104 South Pecos, Midland, Texas

LABORATORY NO. 59048  
SAMPLE RECEIVED 5-7-90  
RESULTS REPORTED 5-10-90

COMPANY BTA Oil Producers LEASE Pardue "C" #1

FIELD OR POOL \_\_\_\_\_

SECTION \_\_\_\_\_ BLOCK \_\_\_\_\_ SURVEY \_\_\_\_\_ COUNTY Eddy STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Pit sample. 5-7-90

no. 2 Recovered water - top. 5-6-90

Recovered water - middle. 5-6-90

NO. 4 Recovered water - bottom. 5-6-90

REMARKS: DST #1 - Delaware - 5,636'-5,825'

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.2078	1.2069	1.2070	1.2072
pH When Sampled				
pH When Received	7.65	7.62	7.58	7.59
Bicarbonate as HCO <sub>3</sub>	226	214	171	128
Supersaturation as CaCO <sub>3</sub>				
Undersaturation as CaCO <sub>3</sub>				
Total Hardness as CaCO <sub>3</sub>	4,100	4,100	4,050	5,550
Calcium as Ca	1,620	1,640	1,600	2,160
Magnesium as Mg	12	0	12	36
Sodium and/or Potassium	132,722	131,310	130,805	130,867
Sulfate as SO <sub>4</sub>	4,853	4,800	4,693	4,373
Chloride as Cl	203,825	201,694	200,984	202,404
Iron as Fe	12.4	8.8	4.4	4.4
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	343,257	339,657	338,265	339,969
Temperature, °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen				
Hydrogen Sulfide	0.0	0.0	0.0	0.0
Resistivity, ohms/m at 77° F.	0.042	0.042	0.042	0.042
Suspended Oil				
Filtrable Solids, as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks

Form No. 3.

By \_\_\_\_\_



## CHEMLINK

## WATER ANALYSIS REPORT

Lab ID No. : 121290D

Analysis Date: December 10, 1990

Company : BTA Oil Producers  
 Field : Loving, East  
 Lease/Unit : Pardue "C" #2  
 Well ID. : Water Tank  
 Sample Loc.: SW/SW, Sec 11, T23S, R38E  
 Eddy County, New Mexico

Sampled By : Pro-Kem, Inc.  
 Sample Date: \*  
 Salesperson: Gerald Phillips  
 Formation : Delaware  
 Location : Loving, N. M.

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	29,062	1,453	Hydroxyl as OH-	0	0
Magnesium as Mg++	3,309	271	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	77,276	3,360	Bicarbonate as HCO3-	68	1
Barium as Ba++	Not Determined		Sulfate as SO4=	340	7
Oil Content	0		Chloride as Cl-	179,959	5,076

Total Dissolved Solids, Calculated:

290,016 mg/L.

Calculated Resistivity: 0.010 ohm-meters  
 mg/L. Hydrogen Sulfide: 40  
 mg/L. Carbon Dioxide: 300  
 mg/L. Dissolved Oxygen: Not Determined

pH: 6.200  
 Specific Gravity 60/60 F.: 1.199  
 Saturation Index @ 80 F.: +2.405  
 @ 140 F.: +3.105

Total Hardness: 86,093 mg/L. as CaCO3  
 Total Iron: 100.00 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION  
 COMPOUND MG/L MEQ/L

	Ca(HCO3)2	91	1.1
	CaSO4	482	7.1
Calcium Sulfate Scaling Potential Not Present	CaCl2	80,191	1,444.9
	Mg(HCO3)2	0	0.0
Estimated Temperature of Calcium Carbonate Instability is 49 F.	MgSO4	0	0.0
	MgCl2	12,918	271.3
	NaHCO3	0	0.0
	Na2SO4	0	0.0
Analyst	NaCl	196,416	3,359.8
07:05 PM			

## CHEMLINK

## WATER ANALYSIS REPORT

Lab ID No. : 121290E

Analysis Date: December 10, 1990

Company : BTA Oil Producers  
 Field :  
 Lease/Unit : Pardue "D"  
 Well ID. : No. 1  
 Sample Loc.:

Sampled By : Pro-Kem, Inc.  
 Sample Date: \*  
 Salesperson: Gerald Phillips  
 Formation :  
 Location : Lovington, N. M.

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	29,452	1,473	Hydroxyl as OH-	0	0
Magnesium as Mg++	3,309	271	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	76,797	3,339	Bicarbonate as HCO3-	64	1
Barium as Ba++	Below 5		Sulfate as SO4=	280	6
Oil Content	0		Chloride as Cl-	179,959	5,076

Total Dissolved Solids, Calculated:

289,862 mg/L.

Calculated Resistivity: 0.010 ohm-meters  
 mg/L. Hydrogen Sulfide: 40  
 mg/L. Carbon Dioxide: 250  
 mg/L. Dissolved Oxygen: Not Determined

pH: 6.300  
 Specific Gravity 60/60 F.: 1.200  
 Saturation Index @ 80 F.: +2.481  
 @ 140 F.: +3.181

Total Hardness: 87,066 mg/L. as CaCO3  
 Total Iron: 50.00 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION		
COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	85	1.0
CaSO4	397	5.8
CaCl2	81,347	1,465.7
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	12,918	271.3
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	195,199	3,339.0

Calcium Sulfate Scaling Potential  
 Not Present

Estimated Temperature of Calcium  
 Carbonate Instability is  
 49 F.

Analyst 07:05 PM

DBYE

9

# CHEMLINK

## WATER ANALYSIS REPORT

Lab ID No. : 121290F

Analysis Date: December 10, 1990

Company : BTA Oil Producers  
Field :  
Lease/Unit : Pardue "D"  
Well ID. : No. 2  
Sample Loc.:

Sampled By : Pro-Kem, Inc.  
Sample Date: \*  
Salesperson: Gerald Phillips  
Formation :  
Location : Lovington, N. M.

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	27,209	1,360	Hydroxyl as OH-	0	0
Magnesium as Mg++	4,255	349	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	76,323	3,318	Bicarbonate as HCO3-	82	1
Barium as Ba++	Not Determined		Sulfate as SO4=	320	7
Oil Content	0		Chloride as Cl-	177,960	5,020

Total Dissolved Solids, Calculated:

286,149 mg/L.

Calculated Resistivity: 0.010 ohm-meters  
mg/L. Hydrogen Sulfide: 40  
mg/L. Carbon Dioxide: 250  
mg/L. Dissolved Oxygen: Not Determined

pH: 6.000  
Specific Gravity 60/60 F.: 1.201  
Saturation Index @ 80 F.: +2.034  
@ 140 F.: +2.954

Total Hardness: 85,363 mg/L. as CaCO3  
Total Iron: 62.00 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION		
COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	109	1.3
CaSO4	454	6.7
CaCl2	75,060	1,352.4
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	16,609	348.8
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	193,993	3,318.4

Calcium Sulfate Scaling Potential  
Not Present

Estimated Temperature of Calcium  
Carbonate Instability is  
51 F.

Analyst 07:06 PM

BTA OIL PRODUCERS LLC  
Application for Authorization to Inject  
Pardue D, 8808 JV-P #2  
990' FNL & 660' FWL  
Section 11, T23S, R28E  
Eddy County, New Mexico

## Geologic Data

### **VIII. Geological Data**

Pardue –D- No. 2 Geological Discussion Regarding Proposed Injection Interval

#### **A. Injection Zone**

The Delaware Mountain Group has a total thickness in excess of 3,500 feet within this locality. It is comprised of alternating units of siltstone, sandstone and limestone with minor units of shale. Oil production occurs from sandstone located near the top of the Brushy Canyon Formation within the Delaware Mountain Group. The proposed injection interval lies within the Lower Brushy Canyon Formation, nearly 1,200 feet below the producing interval.

The Delaware Mountain Group was deposited within a deep marine basin. The cleaner units represent submarine channel/fan sequences deposited down dip of the shelf margin, which were mostly deposited during storm events. The siltstone, limestone and shale units represent the normal deposition that occurs within a marine basin during normal deposition.

#### **B. Fresh Water Sources**

Fresh water sands are present within the Quaternary aged sediments which are found from the surface down to the top of the Rustler Anhydrite at approximately 250 feet.

Byron Bachschmid  
August 18, 2009

## Summary Report

Skip Baca  
BTA Oil Producers  
104 S. Pecos  
Midland, TX 79701

Report Date: August 6, 2009

Work Order: 9080310



Project Location: Loving, NM  
Project Name: Pardue SWD  
Project Number: Env. 2009-042

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
204429	Tony Residence	water	2009-07-30	13:30	2009-08-03
204430	Pardue Dry Well	water	2009-07-30	13:55	2009-08-03
204431	#9 Donaldson Farm Rd.	water	2009-07-30	14:17	2009-08-03

**Sample: 204429 - Tony Residence**

Param	Flag	Result	Units	RL
Chloride		286	mg/L	0.500

**Sample: 204430 - Pardue Dry Well**

Param	Flag	Result	Units	RL
Chloride		166000	mg/L	0.500

**Sample: 204431 - #9 Donaldson Farm Rd.**

Param	Flag	Result	Units	RL
Chloride		304	mg/L	0.500

# TRACE ANALYSIS, INC.

6701 American Avenue, Suite 9 Lubbock, Texas 79424 800•376•1286 806•794•1286 FAX 806•794•1286  
 700 East Sunset Avenue, Suite E El Paso, Texas 79902 899•585•1447 915•585•3443 FAX 915•585•4941  
 5032 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313  
 2415 Harris Parkway, Suite 119 Ft. Worth, Texas 76132 817•261•6050  
 E-Mail: info@traceanalysis.com

## Certifications

WBENC: 237019 HUB: 1752439743100-86536 DBE: VN 20657  
 NCTRCA WFWB38444Y0909

## NELAP Certifications

Lubbock: T104704219-08-TX El Paso: T104704221-08-TX Midland: T104704392-08-TX  
 LELAP-02003 LELAP-02002  
 Kansas E-10317

## Analytical and Quality Control Report

Skip Baca  
 BTA Oil Producers  
 104 S. Pecos  
 Midland, TX, 79701

Report Date: August 6, 2009

Work Order: 9080310



Project Location: Loving, NM  
 Project Name: Pardue SWD  
 Project Number: Env. 2009-042

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
204429	Tony Residence	water	2009-07-30	13:30	2009-08-03
204430	Pardue Dry Well	water	2009-07-30	13:55	2009-08-03
204431	#9 Donaldson Farm Rd.	water	2009-07-30	14:17	2009-08-03

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 6 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



---

Dr. Blair Leftwich, Director  
Dr. Michael Abel, Project Manager

**Standard Flags**

**B** - The sample contains less than ten times the concentration found in the method blank.

## Case Narrative

Samples for project Pardue SWD were received by TraceAnalysis, Inc. on 2009-08-03 and assigned to work order 9080310. Samples for work order 9080310 were received intact at a temperature of 12.6 deg. C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	53037	2009-08-05 at 12:42	62195	2009-08-06 at 10:22

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9080310 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: August 6, 2009  
Env. 2009-042

Work Order: 9080310  
Pardue SWD

Page Number: 4 of 6  
Loving, NM

## Analytical Report

### Sample: 204429 - Tony Residence

Laboratory:	Midland	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2009-08-06	Analyzed By:	AR
QC Batch:	62195	Sample Preparation:	2009-08-05	Prepared By:	AR
Prep Batch:	53037				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		286	mg/L	50	0.500

### Sample: 204430 - <sup>Inj.</sup> Pardue ~~Dry~~ Well

Laboratory:	Midland	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2009-08-06	Analyzed By:	AR
QC Batch:	62195	Sample Preparation:	2009-08-05	Prepared By:	AR
Prep Batch:	53037				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		166000	mg/L	5000	0.500

### Sample: 204431 - #9 Donaldson Farm Rd.

Laboratory:	Midland	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2009-08-06	Analyzed By:	AR
QC Batch:	62195	Sample Preparation:	2009-08-05	Prepared By:	AR
Prep Batch:	53037				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		304	mg/L	50	0.500

### Method Blank (1)      QC Batch: 62195

QC Batch:	62195	Date Analyzed:	2009-08-06	Analyzed By:	AR
Prep Batch:	53037	QC Preparation:	2009-08-05	Prepared By:	AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.475	mg/L	0.5

Report Date: August 6, 2009  
Env. 2009-042

Work Order: 9080310  
Pardue SWD

Page Number: 5 of 6  
Loving, NM

#### Laboratory Control Spike (LCS-1)

QC Batch: 62195  
Prep Batch: 53037

Date Analyzed: 2009-08-06  
QC Preparation: 2009-08-05

Analyzed By: AR  
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	26.3	mg/L	1	25.0	<0.475	105	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	26.2	mg/L	1	25.0	<0.475	105	90 - 110	0	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Matrix Spike (MS-1) Spiked Sample: 204385

QC Batch: 62195  
Prep Batch: 53037

Date Analyzed: 2009-08-06  
QC Preparation: 2009-08-05

Analyzed By: AR  
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	<sup>1</sup> 138	mg/L	5	138	16.7	88	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	<sup>2</sup> 138	mg/L	5	138	16.7	88	90 - 110	0	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Standard (ICV-1)

QC Batch: 62195

Date Analyzed: 2009-08-06

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	25.5	102	90 - 110	2009-08-06

#### Standard (CCV-1)

QC Batch: 62195

Date Analyzed: 2009-08-06

Analyzed By: AR

<sup>1</sup> Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>2</sup> Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: August 6, 2009  
Env. 2009-042

Work Order: 9080310  
Pardue SWD

Page Number: 6 of 6  
Loving, NM

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	26.2	105	90 - 110	2009-08-06

---

LAB Order ID # 9080310

Page 1 of 1

# TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9  
Lubbock, Texas 79424  
Tel (806) 794-1296  
Fax (806) 794-1298  
1 (800) 378-1296

5002 Basin Street, Suite A1  
Midland, Texas 79703  
Tel (432) 689-6301  
Fax (432) 689-6313

200 East Sunset Rd., Suite E  
El Paso, Texas 79922  
Tel (915) 585-3443  
Fax (915) 585-4944  
1 (888) 588-3443

Company Name: <b>BTA Oil Producers</b>		Phone #: <b>(432) 553-5352</b>	
Address: <b>104 S. Pecos</b>		Fax #: <b>(432) 683-0325</b>	
Contact Person: <b>SKIP BACA</b>		E-mail:	
Invoice to: (If different from above)			
Project #: <b>ENV. 2009-042</b>			
Project Location (including state): <b>Padre SWD Loving, N. Mex</b>			
Project Name: <b>Padre SWD</b>			
Sampler Signature: <i>[Signature]</i>			
FIELD CODE		PRESERVATIVE METHOD	
LAB #	MATRIX	SAMPLING	
(LAB USE ONLY)		DATE	TIME
204429	Volume / Amount	7/30	1:30
204430	# CONTAINERS	7/30	1:55
204431		7/30	2:17
Volume / Amount		TIME	
1 1L		1:30	
1 1L		1:55	
1 1L		2:17	
WATER			
SOIL			
AIR			
SLUDGE			
HCl			
HNO <sub>3</sub>			
H <sub>2</sub> SO <sub>4</sub>			
NaOH			
ICE			
NONE			
DATE		TIME	
7/30		1:30	
7/30		1:55	
7/30		2:17	
Turn Around Time if different from standard			

**ANALYSIS REQUEST**  
(Circle or Specify Method No.)

MTBE 8021B / 602 / 8260B / 624	
BTEX 8021B / 602 / 8260B / 624	
TPH 418.1 / TX1005 / TX1005 EX(C35)	
TPH 8015 GRO / DRO / TVHC	
PAH 8270C / 625	
Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	
TCLP Metals Ag As Ba Cd Cr Pb Se Hg	
TCLP Volatiles	
TCLP Semi Volatiles	
TCLP Pesticides	
RCI	
GC/MS Vol. 8260B / 624	
GC/MS Semi. Vol. 8270C / 625	
PCBs 8082 / 608	
Pesticides 8081A / 608	
BOD, TSS, pH	
Moisture Content	

**LAB USE ONLY**

Intact	Q / N
Headspace	Y / N
Temp	12.6 °C
Log-In-Review	

REMARKS: All tests Midland.

☐ Dry Weight Basis Required  
☐ TRRP Report Required  
☐ Check If Special Reporting Limits Are Needed

Carrier # Canyu

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

ORIGINAL COPY

BTA OIL PRODUCERS LLC  
Application for Authorization to Inject  
Pardue D, 8808 JV-P #2  
990' FNL & 660' FWL  
Section 11, T23S, R28E  
Eddy County, New Mexico

**Attachment G**

XIII . Notice of Offset Operators Within ½ Mile

**WORKING INTEREST OWNERS**

BTA Oil Producers LLC

Chesapeake Expl Ltd Partnership  
P. O. Box 960165  
Oklahoma City, OK 73196-0165

**SURFACE OWNER**

Antonio Onsurez, et ux Gloria  
P. O. Box 598  
Loving, NM 88256

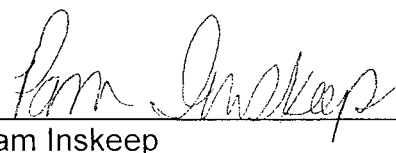
**OFFSET OPERATOR LIST**

Chesapeake Operating, Inc.  
P. O. Box 190  
Hobbs, NM 88241

Range Operating New Mexico, Inc.  
777 Main Street, Suite 800  
Fort Worth, TX 76102

I hereby certify that notification of BTA's application was mailed via certified mail on this 17<sup>th</sup> day of August to the above listed.

Signed:

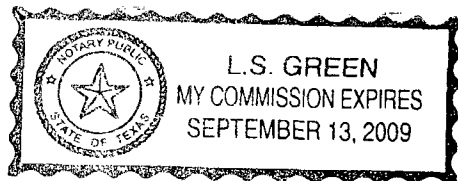
  
Pam Inskeep

STATE OF TEXAS

COUNTY OF MIDLAND

BEFORE ME, the undersigned authority on this day personally appeared Pam Inskeep, a Regulatory Administrator with BTA Oil Producers LLC, who being by me duly sworn, deposes and states that the persons listed on the foregoing attached list have been sent a copy on August 17, 2009 of the New Mexico Oil Conservation Division Form C-108, "Application for Authorization to Inject" for the 8808 JV-P Pardue D #2, located in Section 11, T23S, 283E, Eddy County, New Mexico.

SUBSCRIBED AND SWORN TO before me on this 17<sup>th</sup> day of August, 2009, to certify which witness my hand and seal of office.



A handwritten signature in black ink, appearing to read "Lou S. Green", written over a horizontal line.

Lou S. Green  
Notary Public, State of Texas

## Attachment H

### XIII. Legal Notice

#### **BTA OIL PRODUCERS LLC**

**Application for Authorization to Inject  
Pardue D, 8808 JV-P #2  
990' FNL & 660' FWL  
Section 11, T23S, R28E  
Eddy County, NM**

BTA OIL PRODUCERS LLC, 104 S. Pecos, Midland, Texas 79701, has filed a form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking approval for a water flood project covering 80 acres located in Section 11, T23S, R28E, Eddy County, NM.. Applicant seeks to utilize the 8808 JV-P Pardue D #2 located 990' FNL & 660' FWL of Section 11 to inject water from area wells producing from the Brushy Canyon zone into the Lower Brushy Canyon member of the Delaware formation at a depth of 4,722' – 6,134'. BTA proposes to inject at a maximum surface pressure of 930 psi and an average rate of 550 BWPD. BTA also seeks to qualify said project for the Recovered Oil Tax Rate pursuant to the Enhanced Oil Recovery Act. Additional information can be obtained by contacting Thomas J. Williams, Production Engineer, at 104 S. Pecos, Midland, TX 79701, or (432) 682-3753.