STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance __X__Disposal _____Storage
Application qualifies for administrative approval? __X__Yes _____No

II. OPERATOR: RB Operating Company

ADDRESS: 777 Main St., Suite 800

CONTACT PARTY: Mike McGinnis PHONE: 817-870-2601

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: Michael K. McGinnis TITLE: District Engineer

SIGNATURE: Michael K. McGinnis DATE: 6-10-04

E-MAIL ADDRESS: mmcginnis@rangeresources.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 (

BEFORE THE
OIL CONSERVATION DIVISION
Case No. 13313 Exhibit No. 6
Submitted By:
RB Operating Company
Hearing Date: August 19, 2004

Side 2

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.

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.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: RB Operating Company

WELL NAME & NUMBER: Candelario #1 SWD

WELL LOCATION: 660' FNL & 660' FWL | D | 24 | 23S | 28E

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC

Attached

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 12-1/4" Casing Size: 8-5/8"

Cemented with: 350 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circ.

Intermediate Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. *or* _____ ft³

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: 7-7/8" Casing Size: 5-1/2"

Cemented with: 1700 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circ.

Total Depth: _____

Injection Interval

4304' feet to 4656'

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 2-7/8" Lining Material: Internal Plastic Coated

Type of Packer: Arrowset I

Packer Setting Depth: 4200'

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

Additional Data

1. Is this a new well drilled for injection? _____ Yes X No

   If no, for what purpose was the well originally drilled? _____

   Producer from the Brushy Canyon

2. Name of the Injection Formation: Cherry Canyon

3. Name of Field or Pool (if applicable): East Loving - Delaware

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. _____

   See Schematic-attached

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

   No known zone above the proposed interval, Brushy Canyon - 4766'.

III. WELL DATA

A. See attached Injection Well Data sheet and schematics.

B. (1). Dispose of produced water into the Cherry Canyon member of the Delaware formation in the East Loving Delaware Pool. This interval was approved by the Oil Conservation Division for disposal in the South Culebra Bluff Well No. 6 under Administrative order No. SWD-413 in April of 1991. That well was not converted to a disposal well but has remained as a producer.

(2). The interval will be perforated from 4304' to 4656' overall.

(3). The well was drilled for oil and gas production.

(4). Details of perforated intervals and CIBP placement are shown in the attached schematics and Attachment B.

(5). The Brushy Canyon occurs at a depth of approximately 4766'.

VII. Data on Proposed Operation

(1). The proposed average daily and maximum injection rate is 2000 bwpd and 4000 bwpd, respectively.

(2). The system will be a closed system.

(3). The proposed average and maximum injection pressure is 1000 psi and 1900 psi respectively.

(4). The source of the water for disposal is the Brushy Canyon member of the Delaware formation. A water analysis is attached. Water from the Brushy Canyon formation is currently being disposed of in the Bird Creek Resources, Inc East Loving SWD Well No. 1 in the Cherry Canyon formation. This well is located in unit A, section 15, T23S, R28E.

(5). The Cherry Canyon is not produced within 2 miles of the proposed disposal well; therefore, a chemical analysis is not available. However, the characteristics should be similar to the Brushy Canyon due to the proximity of the two zones.

VIII. Geologic Data

The proposed disposal interval for the Candelario No. 1 is the Cherry Canyon Formation of the Delaware Mountain Group. The top of the Cherry Canyon in the Candelario No. 1 is at 3499 ft. The contact with the underlying Brushy Canyon Formation is at 4766 ft. The proposed injection interval in the Candelario No. 1 is 4304 to 4656 ft overall. The lithology of the proposed disposal interval is

fine- to very fine-grained sandstone that exhibits log porosities from 13 to 25%. The overall injection interval is bounded above and below by shale. The Cherry Canyon is not productive of oil and gas within the area of review.

Freshwater sandstones of recent alluvium and the Ogalalla Formation exist from near surface to approximately 500 ft in the vicinity of the Candelario No. 1 well. The lithology from approximately 500 ft to 2637 ft (top of the Delaware Mountain Group) in the Candelario No. 1 is interbedded salt and anhydrite.

IX. Proposed Stimulation Program

The perforations will be acidized as needed, volume to be determined, and if injection rates or pressures are not as anticipated, a hydraulic fracture stimulation may be performed.

X. Open-Hole Logs

The open-hole well logs were previously filed with the Division by RB Operating.

XI. Fresh Water Analysis

See Attached.

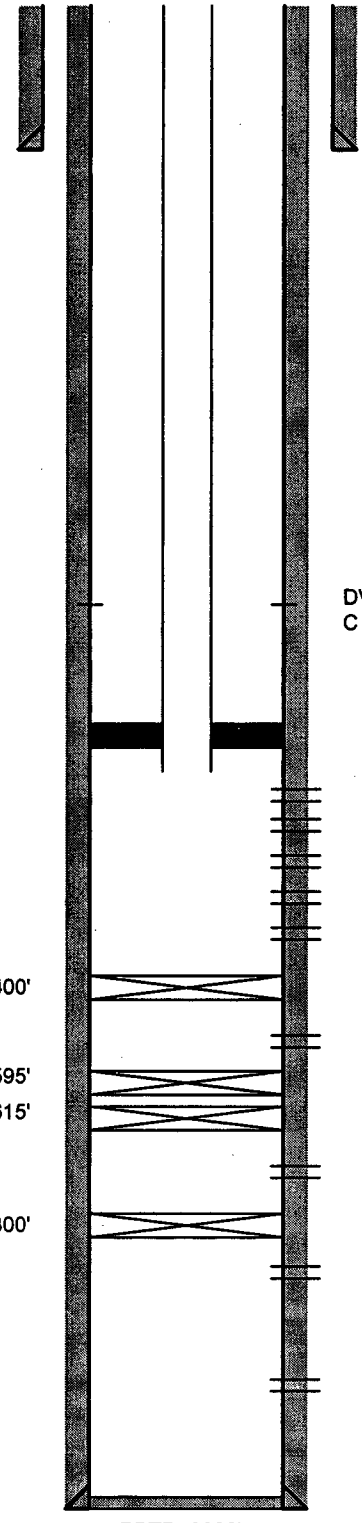
XII. No Evidence of Hydrologic Connection

Review of the existing geologic and engineering data do not indicate hydrologic connection between the proposed disposal interval and shallow, freshwater aquifers. No available data suggest connection between the two zones by conductive faults. The thick evaporate section between 500 and 2637 ft affords an impervious seal separating the freshwater zones and the disposal zone.

RB Operating Company

Well: Candelario "24" #1SWD - Proposed

Field: Loving East
County: Eddy **State:** New Mexico
Location: Section 24, T23S, R28E
API: 30-015-26536 **KB:** 15'
Spud Date: 11/7/90 **Comp. Date:** 12/14/90



8-5/8", 24#, J-55, ST&C @ 543' in a 12-1/4" hole cemented w/ 350 sx Class "C" + 2% CaCl + 0.25 pps Celloflake. TOC circulated

TOC @ circulated

Tubing: 2-7/8", 6.5#, J-55, 8rd, IPC

DV Tool @ 3491' : Stage 2 cement - 900 sx DS Lite C +10% salt lead and 100 sx Class C + 2% CC Tail.

Stage 1 TOC at DV tool

Arrowset I packer at 4200'

Cherry Canyon : 4304'-14', 4440'-70', 4514'-54', 4578'-94', 4636'-4656' - 232 holes

CIBP @ 5400'

CIBP @ 5595'

Comp. BP @ 5615'

Middle Brushy Canyon : 5456'-5514' - 86 holes (11/02), frac w/ 55,500 gals 25# x-link gel, 104,120# 16/30 brown sand and 44,055 16/30 RCS.

Weatherford composite BP - did not hold

Middle Brushy Canyon : 5626'-72' - 92 holes (10/02), frac w/ 46,914 gals 25# x-link gel, 80,000# 16/30 brown sand flush after 4# stage due to chem add pump breakdown.

CIBP @ 5800'

Brushy Canyon "AA": 5828'-5920' - 92 holes (1/93), frac w/ 29,000 gals 35# x-link gel, 77,000# 20/40 sand & 25,000# 20/40 RCS

Brushy Canyon "C": 6140'-6197' - perf 6150'-62' (12/90) frac w/ 4100 gals 30# gel & 10,000# 20/40 sand, reperf (1/93) 120 holes, frac w/ 29,000 gals 35# x-link gel, 77,000# 20/40 sand & 25,000# 20/40 RCS

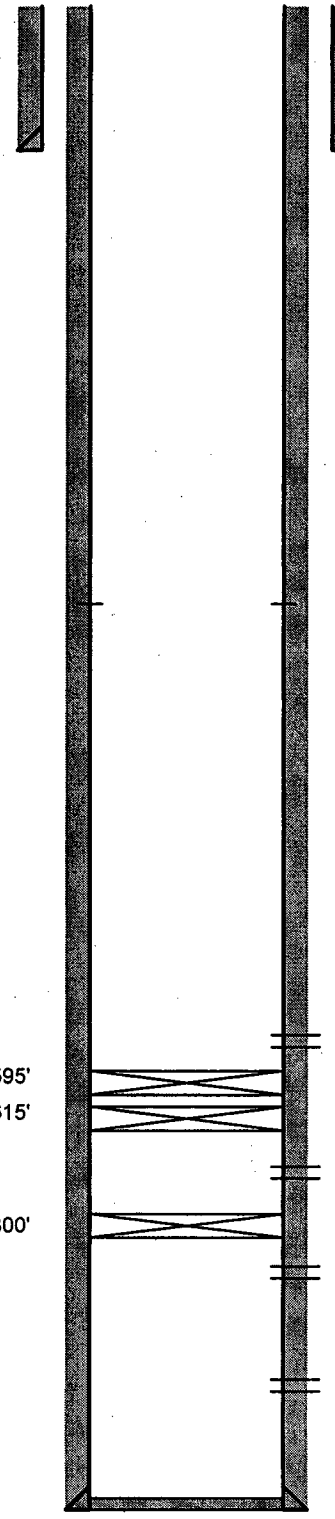
5-1/2", 17#, J-55, LT&C @ 6310' in a 7-7/8" hole cemented with 500 sx 50:50 Poz C + additives Lead and 200 sx Class C + additives Tail.

PBTD: 6228'
TD: 6310'

RB Operating Company

Well: Candelario "24" #1- Existing

Field: Loving East
County: Eddy **State:** New Mexico
Location: Section 24, T23S, R28E
API: 30-015-26536 **KB:** 15'
Spud Date: 11/7/90 **Comp. Date:** 12/14/90



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TOC @ circulated

Tubing: 2-7/8", 6.5#, J-55, 8rd

DV Tool @ 3491' : Stage 2 cement - 900 sx DS Lite C +10% salt lead and 100 sx Class C + 2% CC Tail.

Stage 1 TOC at DV tool

CIBP @ 5595'

Comp. BP @ 5615'

CIBP @ 5800'

Middle Brushy Canyon : 5456'-5514' - 86 holes (11/02), frac w/ 55,500 gals 25# x-link gel, 104,120# 16/30 brown sand and 44,055 16/30 RCS.

Weatherford composite BP - did not hold

Middle Brushy Canyon : 5626'-72' - 92 holes (10/02), frac w/ 46,914 gals 25# x-link gel, 80,000# 16/30 brown sand flush after 4# stage due to chem add pump breakdown.

Brushy Canyon "AA": 5828'-5920' - 92 holes (1/93), frac w/ 29,000 gals 35# x-link gel, 77,000# 20/40 sand & 25,000# 20/40 RCS

Brushy Canyon "C": 6140'-6197' - perf 6150'-62' (12/90) frac w/ 4100 gals 30# gel & 10,000# 20/40 sand, reperf (1/93) 120 holes, frac w/ 29,000 gals 35# x-link gel, 77,000# 20/40 sand & 25,000# 20/40 RCS

5-1/2", 17#, J-55, LT&C @ 6310' in a 7-7/8" hole cemented with 500 sx 50:50 Poz C + additives Lead and 200 sx Class C + additives Tail.

PBTD: 6228'
TD: 6310'

C-108 - Attachment B - 5/19/04
Candelario 24-1 SWD
Area of Review

Operator	Lease	Well #	Location	Date Drilled	TD	Perfs	Casing-Cement	Status	API No. 30-015
RB Operating Company	Candelario	1	660' FNL & 660' FWL	11/7/1990	6310'	5456'-6197'	8-5/8" @ 543' w/ 350 sx - TOC-Surf-circ 50 sx	SI	26536
			Sec 24, T23S, R28E				5-1/2" @ 6310' w/ 700 sx stage 1 - TOC-DV tool	E. Loving (Delaware)	
							DV tool @ 3491' 1000 sx 2nd stage-TOC-Surf-circ 95 sx	Brushy Canyon	
RB Operating Company	South Culebra Bluff	6B	1980' FNL & 660' FWL	7/11/1980	9506'	6174'-6249'	13-3/8" @ 485' w/ 600 sx - TOC-Surf-circ 35 sx	Active	23339
			Sec 24, T23S, R28E			CIBP 6323'	7-5/8" @ 7006' w/ 3055 sx - TOC-3900'-CBL	E. Loving (Delaware)	
						7693'-7734'	4-1/2" liner @ 6801'-9498' w/ 450 sx	Brushy Canyon	
						8820'-8842'	CIBP @ 6323' w/ 35' cement		
RB Operating Company	South Culebra Bluff	23-12	2140' FNL & 400' FEL	6/9/1990	6350'	6180'-6257'	8-5/8" @ 579' w/ 350 sx - TOC-Surf	Active	26368
			Sec 23, T23S, R28E				5-1/2" @ 6350' w/ 585 sx stage 1 -TOC-3760'-CBL	E. Loving (Delaware)	
							DV tool @ 3534' w/ 1200 sx 2nd stage-TOC-Surf-calc	Brushy Canyon	
RB Operating Company	South Culebra Bluff	4B	660' FNL & 560' FEL	8/9/1979	9802'	9706'-44'	13-3/8" @ 440 w/ 550 sx - TOC-Surf-circ 125 sx	Active	22931
			Sec 23, T23S, R28E			CIBP @ 9520'	7-5/8" @ 618' w/ 6200 sx - TOC-700'-Temp log	E. Loving (Delaware)	
						7055'-9490'	4-1/2" liner @ 5795'-9800' w/ 475 sx	Brushy Canyon	
						6362'-6778'	Ran bond log on 7-5/8" csg on 12/2/02 to depth of 3700',		
						CIBP @ 6300'	showed good bond to that depth.		
						6183'-6244'			
						CIBP @ 5790'			
						4762'-4810'			
RB Operating Company	South Culebra Bluff	1	1980' FNL & 1650' FEL	11/1/1977	11879'	Open hole	13-3/8" @ 418 w/ 500 sx - TOC-Surf-circ 160 sx	Active	22320
			Sec 23, T23S, R28E			11745'-876'	9-5/8" @ 6355' w/ 1065 sx stage 1 -TOC-Surf-circ 25 sx	S. Culebra Bluff Atoka	
							DV tool @ 2875' w/ 1640 sx 2nd stage-TOC-40'-top out w/ 1"	Atoka	
							and 30 sx.		
							7" @ 11745' w/ 1100 sx stage 1 - TOC-5710'-CBL		
							DV tool @ 6609' w/ 505 sx 2nd stage - TOC-5710'-CBL		
RB Operating Company	Reid	2	888' FSL & 925' FEL	1/24/1991	6300'	6144'-6268'	8-5/8" @ 509' w/ 310 sx - TOC-Surf-calc	Active	26592
			Sec 14, T23S, R28E				5-1/2" @ 6300' w/ 550 sx stage 1 - TOC-DV tool-circ 100 sx	E. Loving (Delaware)	
							DV tool @ 3933' 1150 sx 2nd stage-TOC-Surf	Brushy Canyon	
RB Operating Company	Candie '13'	1	560' FWL & 660 FSL	4/13/1991	6300'	6147'-6160'	8-5/8" @ 582' w/ 350 sx - TOC-Surf-circ 64 sx	Active	26709
			Sec 13, T23S, R28E			6108'-6155'	5-1/2" @ 6300' w/ 675 sx stage 1 - TOC-DV tool-calc	E. Loving (Delaware)	
						5804'-5871'	DV tool @ 3513' 820 sx 2nd stage-TOC-Surf- circ 26 bbls	Brushy Canyon	
						CIBP @5738'			
						5516'-69'			
						CIBP @5490'			
						5306'-5394'			
						CIBP @ 5347'			
						5306'-5326'			
						CIBP @ 5290'			
						4767'-4830'			

Calculations: Annular volume for 5-1/2" casing in 7-7/8" hole = depth x 0.1733 ft3/ft / 0.5 SF - cement volume = sacks x 1.32 ft3/sx
Annular volume for 8-5/8" casing in 12-1/4" hole = depth x 0.4127 ft3/ft / 0.5 SF

Baker Petrolite

North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(915) 495-7240

Water Analysis Report by Baker Petrolite

Company:	RBO OPERATING INC	Sales RDT:	33517
Region:	PERMIAN BASIN	Account Manager:	CURRY PRUIT (505) 910-9388
Area:	LOVING, NM	Sample #:	35599
Lease/Platform:	SCB UNIT	Analysis ID #:	43324
Entity (or well #):	6 B	Analysis Cost:	$40.00
Formation:	UNKNOWN - Brushy Canyon		
Sample Point:	WATER TANK		

Summary	
Sampling Date:	5/20/04
Analysis Date:	5/21/04
Analyst:	CURRY PRUIT
TDS (mg/l or g/m3):	300090.3
Density (g/cm3, tonne/m3):	1.2
Anion/Cation Ratio:	1
Carbon Dioxide:	275 PPM
Oxygen:	
Comments:	

Analysis of Sample 35599 @ 75 °F

Anions	mg/l	meq/l
Chloride:	187000.0	5274.59
Bicarbonate:	366.0	6.
Carbonate:	0.0	0.
Sulfate:	5.0	0.1
Phosphate:		
Borate:		
Silicate:		
Hydrogen Sulfide:		<5 PPM
pH at time of sampling:		5.5
pH at time of analysis:		
pH used in Calculation:		5.5

Cations	mg/l	meq/l
Sodium:	78232.3	3402.91
Magnesium:	4358.0	359.64
Calcium:	29604.0	1477.25
Strontium:		
Barium:		
Iron:	25.0	0.9
Potassium:		
Aluminum:		
Chromium:		
Copper:		
Lead:		
Manganese:		
Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										CO_2 Press
Temp	Gauge Press.	Calcite $CaCO_3$		Gypsum $CaSO_4*2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	0.30	19.96	-2.00	0.00	-1.93	0.00	0.00	0.00	0.00	0.00	5.01
100	0	0.38	24.97	-2.09	0.00	-1.95	0.00	0.00	0.00	0.00	0.00	5.81
120	0	0.46	29.70	-2.16	0.00	-1.94	0.00	0.00	0.00	0.00	0.00	6.54
140	0	0.55	34.43	-2.22	0.00	-1.91	0.00	0.00	0.00	0.00	0.00	7.17

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

Baker Petrolite

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Water Analysis Report by Baker Petrolite

Company:	RBO OPERATING INC	Sales RDT:	33517
Region:	PERMIAN BASIN	Account Manager:	CURRY PRUIT (505) 910-9388
Area:	LOVING, NM	Sample #:	35600
Lease/Platform:	SCB UNIT	Analysis ID #:	43325
Entity (or well #):	23 #2	Analysis Cost:	$40.00
Formation:	UNKNOWN - BRUSHY CANYON		
Sample Point:	WELLHEAD		

Summary	
Sampling Date:	5/20/04
Analysis Date:	5/21/04
Analyst:	CURRY PRUIT
TDS (mg/l or g/m3):	256058.3
Density (g/cm3, tonne/m3):	1.2
Anion/Cation Ratio:	1
Carbon Dioxide:	600 PPM
Oxygen:	
Comments:	

Analysis of Sample 35600 @ 75 °F

Anions	mg/l	meq/l	Cations	mg/l	meq/l
Chloride:	161000.0	4541.22	Sodium:	67869.3	2957.37
Bicarbonate:	97.0	0.91	Magnesium:	4260.0	369.82
Carbonate:			Calcium:	24720.0	1233.53
Sulfate:	15.0	0.31	Strontium:		
Phosphate:			Barium:		
Borate:			Iron:	45.0	1.63
Silicate:			Potassium:		
			Aluminum:		
Hydrogen Sulfide:		<5 PPM	Chromium:		
pH at time of sampling:		5.5	Copper:		
pH at time of analysis:			Lead:		
pH used in Calculation:		5.5	Manganese:		
			Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										CO_2 Press
		Calcite $CaCO_3$		Gypsum $CaSO_4*2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		
Temp	Gauge Press.	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	
°F	psi											psi
80	0	-0.88	0.00	-1.64	0.00	-1.59	0.00	0.00	0.00	0.00	0.00	0.56
100	0	-0.78	0.00	-1.71	0.00	-1.60	0.00	0.00	0.00	0.00	0.00	0.66
120	0	-0.70	0.00	-1.77	0.00	-1.58	0.00	0.00	0.00	0.00	0.00	0.76
140	0	-0.62	0.00	-1.82	0.00	-1.54	0.00	0.00	0.00	0.00	0.00	0.85

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

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Water Analysis Report by Baker Petrolite

Company:	R. B. OPERATING INCORPORATED	Sales RDT:	33517
Region:	PERMIAN BASIN	Account Manager:	CURRY PRUIT (505) 910-9368
Area:	HOBBS, NM	Sample #:	35632
Lease/Platform:	SCB UNIT	Analysis ID #:	43582
Entity (or well #):	WATER WELL 1 ~~Reid~~ Reid House	Analysis Cost:	$7.00
Formation:	UNKNOWN - FRESH WATER		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 35632 @ 75 °F					
Sampling Date:	6/1/04	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	6/2/04	Chloride:	3216.0	90.71	Sodium:	316.3	13.76
Analyst:	CURRY PRUIT	Bicarbonate:	62.0	1.02	Magnesium:	417.0	34.3
TDS (mg/l or g/m3):	4998.3	Carbonate:	0.0	0.	Calcium:	908.0	45.31
Density (g/cm3, tonne/m3):	1	Sulfide:	79.0	1.64	Strontium:		
Anion/Cation Ratio:	1.0000001	Phosphate:			Barium:		
		Borate:			Iron:	0.0	0.
		Silicate:			Potassium:		
Carbon Dioxide:	0.0 PPM				Aluminum:		
Oxygen:		Hydrogen Sulfide:		0.0 PPM	Chromium:		
Comments:		pH at time of sampling:		7.1	Copper:		
		pH at time of analysis:			Lead:		
		pH used in Calculation:		7.1	Manganese:		
					Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										CO_2
		Calcite $CaCO_3$		Gypsum $CaSO_4 * 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		
Temp	Gauge Press.	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Press
°F	psi											psi
80	0	-0.03	0.00	-1.32	0.00	-1.38	0.00	0.00	0.00	0.00	0.00	0.06
100	0	0.08	0.70	-1.33	0.00	-1.33	0.00	0.00	0.00	0.00	0.00	0.07
120	0	0.20	1.74	-1.32	0.00	-1.24	0.00	0.00	0.00	0.00	0.00	0.09
140	0	0.32	2.79	-1.30	0.00	-1.13	0.00	0.00	0.00	0.00	0.00	0.11

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

Baker Petrolite

North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(915) 495-7240

Water Analysis Report by Baker Petrolite

Company:	R. B. OPERATING INCORPORATED	Sales RDT:	33517
Region:	PERMIAN BASIN	Account Manager:	CURRY PRUIT (505) 910-9388
Area:	HOBBS, NM	Sample #:	35631
Lease/Platform:	SCB UNIT	Analysis ID #:	43563
Entity (or well #):	WATER WELL 2 WIND MILL NORTH	Analysis Cost:	$7.00
Formation:	UNKNOWN OF RB YARD		
Sample Point:	WELLHEAD FRESH WATER		

Summary	
Sampling Date:	6/1/04
Analysis Date:	6/2/04
Analyst:	CURRY PRUIT
TDS (mg/l or g/m3):	7283
Density (g/cm3, tonne/m3):	1
Anion/Cation Ratio:	1.0000001
Carbon Dioxide:	0.0 PPM
Oxygen:	
Comments:	

Analysis of Sample 35631 @ 75 °F

Anions	mg/l	meq/l
Chloride:	4575.0	129.16
Bicarbonate:	62.0	1.02
Carbonate:	0.0	0.
Sulfate:	95.0	1.98
Phosphate:		
Borate:		
Silicate:		
Hydrogen Sulfide:		0.0 PPM
pH at time of sampling:		7
pH at time of analysis:		
pH used in Calculation:		7

Cations	mg/l	meq/l
Sodium:	1145.7	49.84
Magnesium:	383.0	31.51
Calcium:	1018.0	50.8
Strontium:		
Barium:		
Iron:	0.3	0.01
Potassium:		
Aluminum:		
Chromium:		
Copper:		
Lead:		
Manganese:		
Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										CO_2 Press
		Calcite $CaCO_3$		Gypsum $CaSO_4*2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		
Temp	Gauge Press.	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	
°F	psi											psi
80	0	-0.13	0.00	-1.25	0.00	-1.32	0.00	0.00	0.00	0.00	0.00	0.07
100	0	-0.02	0.00	-1.26	0.00	-1.26	0.00	0.00	0.00	0.00	0.00	0.09
120	0	0.10	0.70	-1.25	0.00	-1.18	0.00	0.00	0.00	0.00	0.00	0.11
140	0	0.22	2.09	-1.24	0.00	-1.07	0.00	0.00	0.00	0.00	0.00	0.14

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

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Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

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Water Analysis Report by Baker Petrolite

Company:	R. B. OPERATING INCORPORATED	Sales RDT:	33517
Region:	PERMIAN BASIN	Account Manager:	CURRY PRUIT (505) 910-9366
Area:	HOBBS, NM	Sample #:	35630
Lease/Platform:	SCB UNIT	Analysis ID #:	43584
Entity (or well #):	WATER WELL 3 NEAR SCB #3B	Analysis Cost:	$7.00
Formation:	UNKNOWN FRESH WATER		
Sample Point:	WELLHEAD		

Summary	
Sampling Date:	6/1/04
Analysis Date:	6/2/04
Analyst:	CURRY PRUIT
TDS (mg/l or g/m3):	5683.1
Density (g/cm3, tonne/m3):	1
Anion/Cation Ratio:	0.9999999
Carbon Dioxide:	0.0 PPM
Oxygen:	
Comments:	

Analysis of Sample 35630 @ 75 °F

Anions	mg/l	meq/l
Chloride:	3642.0	102.73
Bicarbonate:	62.0	1.02
Carbonate:	0.0	0.
Sulfate:	80.0	1.67
Phosphate:		
Borate:		
Silicate:		
Hydrogen Sulfide:		0.0 PPM
pH at time of sampling:		7.2
pH at time of analysis:		
pH used in Calculation:		7.2

Cations	mg/l	meq/l
Sodium:	609.1	26.49
Magnesium:	434.0	35.7
Calcium:	866.0	43.21
Strontium:		
Barium:		
Iron:	0.0	0.
Potassium:		
Aluminum:		
Chromium:		
Copper:		
Lead:		
Manganese:		
Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite $CaCO_3$		Gypsum $CaSO_4 \cdot 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		CO_2 Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	0.03	0.35	-1.35	0.00	-1.41	0.00	0.00	0.00	0.00	0.00	0.04
100	0	0.14	1.05	-1.35	0.00	-1.35	0.00	0.00	0.00	0.00	0.00	0.06
120	0	0.25	1.74	-1.35	0.00	-1.27	0.00	0.00	0.00	0.00	0.00	0.07
140	0	0.37	2.79	-1.33	0.00	-1.16	0.00	0.00	0.00	0.00	0.00	0.09

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.