RECEIVED: 3109/2018	REVIEWER:	TYPESUD	APP NO: PMHm180	7236650
		ABOVE THIS TABLE FOR OCT DIVISION USE DIL CONSERVATION & Engineering Bure cis Drive, Santa Fe,	N DIVISION Bau -	
	ADMINISTRATI	VE APPLICATION C	CHECKLIST	
	T IS MANDATORY FOR ALL ADA REGULATIONS WHICH REQUIRE			SION RULES AND
Applicant: DJR Operating, I				umber: <u>371838</u>
Well Name: Central Bisti S	WD 161		<b>API:</b> <u>30-045-</u>	
Pool: SWD; Entrada			Pool Cod	<b>e</b> : <u>96436</u>
1) <b>TYPE OF APPLICATIO</b> A. Location – Spar NSL		ous Dedication		нR 09 2018 ам07:44
<ul> <li>DHC</li> <li>[II] Injection –</li> <li>WFX</li> <li>2) NOTIFICATION REQU</li> <li>A. Offset operco</li> <li>B. Royalty, ove</li> <li>C. Application</li> <li>D. Notification</li> <li>E. Notification</li> <li>F. Surface owr</li> </ul>	IRED TO: Check thos of the provided and/or concurrent of and/or concurrent of above, proof of not	PC OLS ncrease – Enhanced IPI EOR se which apply. rs, revenue owners totice approval by SLO approval by BLM	PPR	FOR OCD ONLY Notice Complete Application Content Complete and/or,
3) CERTIFICATION:   her	eby certify that the i	information submitte	ed with this appli	cation 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

TZ1	0
Attal	85)

.

3-8-18 Date

505 466-8120

Phone Number

brian@permitswest.com e-mail Address

Signature

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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

#### **APPLICATION FOR AUTHORIZATION TO INJECT**

	MT Brown of Control Mondal Mondal States		
I.	PURPOSE:       Secondary Recovery       Pressure Maintenance         Application qualifies for administrative approval?       XXX Yes       No	XXX_Disposal	Storage
II.	OPERATOR: DJR OPERATING, LLC		
	ADDRESS: P. O. BOX 156, BLOOMFIELD, NM 87413		
	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 pro Additional sheets may be attached if necessary.	posed for injection.	
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 drawn around each proposed injection well. This circle identifies the well's area of review.	well with a one-half mile	radius circle
VI.	Attach a tabulation of data on all wells of public record within the area of review which pene Such data shall include a description of each well's type, construction, date drilled, location, schematic of any plugged well illustrating all plugging detail.		
VII.	Attach data on the proposed operation, including:	<u>Central Bisti</u>	SWD 161
	1. Proposed average and maximum daily rate and volume of fluids to be injected;	30-045-31606	
	<ol> <li>Whether the system is open or closed;</li> <li>Proposed average and maximum injection pressure;</li> </ol>	<u>SWD-913</u>	
	4. Sources and an appropriate analysis of injection fluid and compatibility with the receivir	ng formation if other than	reinjected
	<ul> <li>produced water; and,</li> <li>5. If injection is for disposal purposes into a zone not productive of oil or gas at or within o chemical analysis of the disposal zone formation water (may be measured or inferred from wells, etc.).</li> </ul>		
*VIII.	Attach appropriate geologic data on the injection zone including appropriate lithologic detaidepth. Give the geologic name, and depth to bottom of all underground sources of drinking total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection known to be immediately underlying the injection interval.	water (aquifers containin	g waters with
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 D	Division, they need not be	resubmitted).
*X1.	Attach a chemical analysis of fresh water from two or more fresh water wells (if available an injection or disposal well showing location of wells and dates samples were taken.	d producing) within one	mile of any
XII.	Applicants for disposal wells must make an affirmative statement that they have examined a data and find no evidence of open faults or any other hydrologic connection between the dis sources of drinking water.	available geologic and en sposal zone and any unde	gineering rground
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 and belief.	I correct to the best of my	knowledge
	NAME: BRIAN WOOD Z. TITLE: C	CONSULTANT	
	SIGNATURE:DA	ATE: FEB. 12, 2	018
	E-MAIL ADDRESS: brian@permitswest.com		
*	If the information required under Sections VI, VIII, X, and XI above has been previously sub Please show the date and circumstances of the earlier submittal:	omitted, it need not be res	ubmitted.

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 I			INJECTION WELL DATA SHEET			
OPERATOR: _	ELM RIDGE	EXPLORATION COMPANY,	LLC			
WELL NAME & NUMBER:	& NUMBER:	CENTRAL BISTI SWD 161				
WELL LOCATION:	ION: 1067 FNL	FNL & 2286 FEL	В	16	25 N	12 W
		FOOTAGE LOCATION	UNIT LETTER	SECTION	<b>TOWNSHIP</b>	RANGE
	WELLBORE SCHEMATIC	CHEMATIC		<u>WELL CONSTR</u> Surface Casing	WELL CONSTRUCTION DATA Surface Casing	
		9.625" 36# J-55 in	Hole Size: 12-	12-1/4"	Casing Size: 9–5	9-5/8"
	pəuil :	12.25″ hole @ 416′ 230 sx TOC = GL	Cemented with:	230 sx.	or	ft <sup>3</sup>
	plastic		Top of Cement:	SURFACE	Method Determined: CIRC.	CIRC. 12 BBL
	08-N #E	80.90		Intermediate Casing	e Casing	TO GL
	3.6" 9.	7" 23# N-80 in 8 75" hole @ 7106'	Hole Size:		Casing Size:	
		1250 sx TOC = GL	Cemented with:	SX.	or	ft <sup>3</sup>
			Top of Cement:		Method Determined:	
-		¥8555		Production Casing	Casing	
will set packer & tbg @ 6,685' or deeper		99995	Hole Size:	8-3/4"	Casing Size:	7 "
			Cemented with:	1,250 sx.	or	ft <sup>3</sup>
		8988	Top of Cement:	SURFACE	Method Determined: CIRC.	CIRC. 130 BBL
will perf 6785' -		85555	Total Depth:	7,112'		TO GL
6940'				Injection Interval	Interval	
	PBTD 7106' TD 7112'			6,785' feet	feet to 6,940'	
	(not to scale)			(Perforated or Open Hole; indicate which)	(ole; indicate which)	

**INJECTION WELL DATA SHEET** 

Side 1

	<b>INJECTION WELL DATA SHEET</b>
Tul	Tubing Size:     3-1/2"     Lining Material:     PLASTIC
Ty	Type of Packer: ARROW SET DB OR ITS EQUIVALENT
Pa	Packer Setting Depth: 6, 685 ' OR DEEPER
Ot	Other Type of Tubing/Casing Seal (if applicable):
	Additional Data
1.	Is this a new well drilled for injection? XXX Yes No
	If no, for what purpose was the well originally drilled?
ſ	Nome of the Inication Ecumotion: ENTRADA
i	
Э.	Name of Field or Pool (if applicable): SWD; ENTRADA (96436)
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.
	NOT YET PERFORATED IN ANY ZONE
5.	Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:
	OVER: FRUITLAND (789'), PICTURE CLIFF (1,117'), & GALLUP (4,566')
	UNDER: NONE IN THE AREA OF REVIEW

Side 2

PAGE 1

- I. Purpose is water disposal in the Entrada from 6785' to 6940'.
- II. Operator: DJR Operating, LLC (OGRID 371838)
   Operator phone number: (505) 632-3476
   Operator address: PO Box 156, Bloomfield NM 87413
   Contact: Brian Wood (Permits West, Inc.)
   Phone: (505) 466-8120
- III. A. (1) Lease: NM State Land Office lease E-6597-2 Lease Size: 640 acres Lease Area: all Section 16, T. 25 N., R. 12 W. Closest Lease Line: 1067' Well Name & Number: Central Bisti SWD 161 Well Location: 1067' FNL and 2286' FEL Sec. 16, T. 25 N., R. 12 W. (see Exhibit A)
  - A. (2) Spud date was February 17, 2005. Well has been cased and cemented, but not yet perforated.

Surface casing (9.625", 36#, J-55) was set at 416' in a 12.25" hole and cemented to the surface with 230 sacks standard cement. Twelve barrels were circulated to the surface. Pressure tested to 1500 psi. Witnessed by Darell Davis of NMOCD.

Production casing (7", 23#, N-80) was set at 7106' in a 7112' deep 8.75" hole and cemented to the surface. Lead with slurry of 800 sacks 50/50/standard poz and circulated 70 barrels to the surface. Tailed with 450 sacks 65/35 standard poz and circulated 40 barrels to the surface. Pressure tested to 1500 psi.



30-045-31606

- A. (3) Tubing will be 3.5" 9.3# N-80 plastic lined injection string set at  $\geq$ 6685'. (Disposal interval will be 6785' to 6940'.)
- A. (4) Arrow Set Model DB packer or its equivalent will be set at  $\geq$ 6,685' (which would be 100' above top perforation of 6,785').
- B. (1) Disposal zone will be the Entrada sandstone. Fracture gradient is expected to be ≈0.70 psi per foot.
- B. (2) Disposal interval will be from 6785' to 6940'. Interval will be perforated (0.43") with four shots per foot.
- B. (3) Well has been drilled, but not yet perforated. It will be for the exclusive use by DJR and for the sole purpose of water disposal from present and future DJR wells. Water analyses from DJR wells in the Fruitland coal and Gallup sandstone are attached.
- B. (4) Well bore will be perforated from 6785' to 6940'.
- B. (5) Top of the Entrada is at 6781'. Oil is produced elsewhere in the San Juan Basin from the Entrada. Closest Entrada producer is 50 miles southeast in the Ojo Encino; Entrada Pool (48030). Bottom of the closest overlying actual productive formation (Gallup) is at 4885'. There will be a ≈1900' interval between the highest injection perforation and the bottom of the Gallup. Bottom of the closest overlying potentially productive formation (Dakota) is at ≈5900'. There will be a ≈885' interval between the highest injection perforation and the bottom of the Dakota. There is no underlying productive formation within at least a dozen miles.

IV. This is not an expansion of an existing injection project. (DJR has a water flood in the Central Bisti Unit, but it is in the Lower Gallup - not the Entrada.)



30-045-31606

V. Exhibit B shows all 13 well bores (7 P & A + 4 oil + 2 gas) within a half-mile radius (= area of review). The wells within the area of review are:

ΑΡΙ	wнo	WELL	ТҮРЕ	T25N- R12W- UNIT- SECTION	TVD	ZONE	FEET FROM CENTRAL BISTI SWD 161
3004505424	DJR	Central Bisti Unit 069	ο	B-16	4885	Bisti Lower- Gallup (O)	106
3004505445	Elm Ridge	Central Bisti Unit 040	P&A	C-16	4860	Bisti Lower- Gallup (O)	999
3004522383	Hixon	Kelly State 001	P&A	A-16	1330	Undesignated Pictured Cliffs	1193
3004505423	DJR	Central Bisti Unit 038	о	A-16	5150	Bisti Lower- Gallup (O)	1194
3004527763	DJR	Bisti Coal 16 001	G	G-16	1265	Basin Fruitland Coal (G)	1285
3004505394	Elm Ridge	Central Bisti Unit 044	P&A	F-16	4900	Bisti Lower- Gallup (O)	1361
3004505448	Elm Ridge	Central Bisti Unit 036	P&A	O-9	4930	Bisti Lower- Gallup (O)	1398
3004505447	DJR	Central Bisti Unit 071	0	P-9	4880	Bisti Lower- Gallup (O)	1902
3004505458	Elm Ridge	Central Bisti Unit 035	P&A	N-9	5011	Bisti Lower- Gallup (O)	2000
3004525871	DJR	Central Bisti Unit 096	ο	H-16	4960	Bisti Lower- Gallup (O)	2042
3004505432	Hixon	Central Bisti Unit 041	P&A	D-16	4900	Undesignated Mesa Verde	2369
3004505367	Hixon	Central Bisti Unit 047	P&A	K-16	4880	Bisti Lower- Gallup (O)	2453
3004527764	DJR	Bisti Coal 16 002	G	K-16	1265	Basin Fruitland Coal (G)	2509



### 30-045-31606

There are 187 (117 P & A + 66 oil or gas + 2 water injection + 2 water) wells within a two-mile radius (see Exhibit C). The two water injection wells, over a mile away, are water flood wells in the Bisti Lower Gallup, and are in DJR's Central Bisti Unit (CBU). Those two wells are:

CBU 57 (API 30-045-05528) 660 FSL & 1980 FEL 5-25n-12w CBU 63 (API # 30-045-05486) 1980 FNL & 660 FWL 8-25n-12w

Maps showing all leases (State, Navajo allotted, or BLM) within a half-mile (see Exhibit D) and all leases (State, Navajo allotted, or BLM) within two miles (see Exhibit E) are attached. Details on the leases within a half-mile are:

Aliquot Parts in Area of Review (T25N, R12W)	Lessor	Lease	Record Title Holder(s)	Well Operator
SE4 Sec. 9	FIMO	14-20-603- 1228	Burlington, Kelly Trust, Hilcorp	DJR
E2SW4 & SWSW Sec. 9	FIMO	14-20-603-306	DJR	DJR
SWSW Sec. 10	BLM	NMLC- 0070322A	Hilcorp	DJR
W2NW4 Sec. 15	BLM	NMLC- 0070322A	Hilcorp	DJR
N2 & N2S2 Sec. 16	NMSLO	E0-6597-0002	Hilcorp	DJR

VI. Thirteen wells are within a half-mile. Deepest well is 5150'. Entrada top is 6781'. None penetrated the Entrada.

- VII. 1. Average injection rate = 1000 bwpd. Maximum rate = 2000 bwpd.
  - 2. System will initially be open (water will be trucked). A pipeline will be laid at a later date. Facilities will include six 300 barrel water tanks, 2 filtration units, 2 injection pumps, and a 30' x 40' building.



PAGE 4

### 30-045-31606

- 3. Average injection pressure =1200 psi Maximum pressure =1357 psi
- 4. Water source will be present and future DJR wells in the San Juan Basin. Water analyses (Exhibit F) are attached. A summary follows.

Parameter	Fruitland	Gallup	Gallup	Entrada
bicarbonates	752.6	497.7	389.6	5612
calcium	258.7	517.4	239.5	176
carbonates				40
chlorides	5970.1	12736.3	13173.7	2200
H2S	0	0	0	
iron	0	0	5	0
magnesium	495.7	41	873.1	15
рН	7.5	7.8	7.4	8.4
potassium	160	100	150	200
resistivity	0.45	0.75	0.62	0.89
sodium	2919.8	7069.4	6760.6	4165
sulfates	0	0	0	2000
specific gravity	1.005	1.005	1.002	1.005
TDS	10557.4	21332.65	21592.05	14408

5. The Entrada has not been proven productive within two miles of the proposed well. In general, Entrada water near recharge zones (basin fringe) has a specific conductance of <1,500  $\mu$ mhos. Entrada water from deeper parts of the basin has a specific conductance of >10,000  $\mu$ mhos. Stone et al in <u>Hydrogeology</u> and water resources of San Juan Basin. New Mexico wrote, "Generally, however, water from the Entrada is not suitable for drinking, especially in deeper parts of the basin." Summaries of analyses of Entrada produced water follow. The samples (see Exhibit G) are from Dome's Santa Fe 20 1 (30-045-22291) in SW4NE4 20-21n-8w (≈31 miles southeast) and Merrion's Eagle Mesa 1 (30-043-20175) in SW4SW4 12-19n-4w (≈60 miles southeast).

<u>Parameter</u>	<u>Santa Fe 20 1</u>	<u>Eagle Mesa 1</u>
Bicarbonate	2546 mg/l	1220 mg/l
Calcium	27 mg/l	160 mg/l
Chloride	903 mg/l	1773 mg/l
Iron	0.9 mg/l	0 mg/l
Magnesium	8 mg/l	49 mg/l
рН	7.73	7.32



Sodium

Sulfate

Specific Gravity

**Total Dissolved Solids** 

VIII. The Entrada sandstone is very porous and permeable æolian sandstone. It

3228 mg/l

4400 ma/l

11,114 mg/l

1.009

produces oil elsewhere in the basin (e.g., Eagle Mesa, Leggs, Media, Ojo Encino, Papers Wash, Snake Eyes Fields). It is 331' thick in the well bore. Logged tops are:

> Nacimiento Formation: O' Fruitland Formation: 789' Pictured Cliffs Sandstone: 1117' Lewis Shale: 1270' Chacra Sandstone: 1445' Cliff house Sandstone: 1855' Menefee Formation: 2520' Point Lookout Sandstone: 3559' Mancos Shale: 3792' Gallup: 4566' Greenhorn: 5464' Dakota: 5519' Entrada: 6781' Total Depth: 7112' (still in Entrada)

One water is well within a 2-mile radius. It is >8,000' southeast and 40' deep. Depth to water is 8'. The well bore is in the Nacimiento Formation. No existing underground drinking water sources are below the Entrada within a 2-mile radius. There is over a mile of vertical separation between the bottom of the lowest existing underground water source and the top of the Entrada.

IX. The well will be stimulated with  $\approx$ 150,000 pounds 20/40 Ottawa sand + Ambormax gel.



3726 mg/l 5000 mg/l

11,928 mg/l

1.010

30-045-31606

PERMITS	WEST, INC.
PROVIDING PERMITS f	or LAND USERS

30-045-31606

X. Spectral Density Dual Spaced Neutron and High Resolution Induction logs are on file with NMOCD.

XI. State Engineer records show 2 water wells in T. 25 N., R. 12 W. Closest (2.9 miles northeast) is a 403' deep windmill. Second closest (3.0 miles southeast) is a 2550' deep P&A water supply well (30-045-30226) for a waterflood. Water samples (Exhibit H) were collected from the windmill and a hand pump (4 miles southeast) on January 4, 2018.

XII. DJR is not aware of any geologic or engineering data that may indicate the Entrada is in hydrologic connection with any underground sources of water. There is 6378' of vertical separation and at least three shale zones (Kirtland, Lewis, and Menefee) between the top (6781') of the Entrada and the bottom (403') of the closest water well. Closest Quaternary fault is >70 miles east in the Rio Grande Valley (Exhibit I). Two Entrada injection wells and 56 Entrada SWD wells are currently authorized by NMOCD.

XIII. A legal ad (see Exhibit J) was published on January 1, 2018. Notice (this application) has been sent (Exhibit K) to the surface owner (Western Refining Southwest Inc.), lessors (BLM, FIMO, NMSLO), and record title holders (Burlington, Hilcorp, Kelly Trust), and other interested parties (ConocoPhillips, Cross Timbers, Encana, Hess) within a half-mile.







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## State of New Mexico











American Energy Services Water Analysis Results Sheet Farmington NM 708 S. Tucker Phone:(505)325-4192 Fax:(505)564-3524 Zip:87401

Operator:	Elm Ridge	Date:	October 15, 2002
Well :	B.C. 28-1	District:	Farmington
Formation:	Coal	Requested by:	Tim Duggan
County:	San Juan	Technician:	Mike Brown
Depth:		1200 Source:	Well

#### PHYSICAL AND CHEMICAL DETERMINATION SPECIELC CRAVITY: 1005 AT 67 Decrees E

SPECIFIC GRAV	11Y: 1.0	05	A1 6/ Degrees F.			
pH:	7.5			SULFATES:	0 ppm	
ſ				CALCIUM:	258.7 ppm	
IRON:	0	ppm		BICARBONATES:	752.6 ppm	
				RESISTIVITY:	0.45 ohm/meter	
H2S:	0	ppm		CHLORIDES:	5970.1 ppm	
				SODIUM :	2919.8 ppm	
				POTASSIUM:	160.0 ppm	
MAGNESIUM:	495.7	ppm		TDS:	10557.4 ppm	

#### CaCO3 Scale Tendency = Remote CaSO4 Scale Tendency = Remote

REMARKS:

- 1		
- 1		
- 1		

Data contained in this document is based on the best information & most current test procedures and materials available. No liability is expressed or implied.



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AMERICAN ENERGY SERVICES **American Energy Services** 

Water Analysis Results Sheet Farmington NM 708 S. Tucker Phone:(505)325-4192 Fax:(505)564-3524 Zip:87401

Operator:	Elm Ridge	Date:	October 15, 2002
Well	C.T.B.	District:	Farmington
Formation:	Gallup	Requested by:	Tim Duggan
County:	San Juan	Technician:	Mike Brown
Depth:		4800 Source:	Weil

#### PHYSICAL AND CHEMICAL DETERMINATION

SPECIFIC GRAV	ITY: 1.0	005	AT 67 Degrees F.			
pH:	7.8			SULFATES:	0	ppm
				CALCIUM:	517.4	ppm
IRON:	C	ppm	ł	BICARBONATES:	497.7	ppm
				RESISTIVITY:	0.75	ohm/meter
H2S:	0	ppm	1	CHLORIDES:	12736.3	ppm
				SODIUM :	7069.4	ppm
				POTASSIUM:	100.0	ppm
MAGNESIUM:	411.0	ppm		TDS:	21332.65	ppm

CaCO3 Scale Tendency = Remote CaSO4 Scale Tendency = Remote

**REMARKS:** 

Data contained in this document is based on the best information & most current test procedures and materials available. No liability is expressed or implied.



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American Energy Services Water Analysis Results Sheet Farmington NM 708 S. Tucker Phone:(505)325-4192 Fax:(505)564-3524 Zip:87401

Operator:	Elm Ridge		Date:	October 15, 2002
Well :		Joe Hixou #1 SESW 22-25-12	District:	Farmington
Formation:	NHA AU		Requested by:	Tim Duggan
County:	San Juan		Technician:	Mike Brown
Depth:		480	00 Source:	Well

#### PHYSICAL AND CHEMICAL DETERMINATION SPECIFIC GRAVITY: 1.002 AT 67 Degrees F.

pH:	7.4		SULFATES:	0 ppm	
			CALCIUM:	239.5 ppm	
IRON:	5	ppm	BICARBONATES:	389.6 ppm	
§			RESISTIVITY:	0.62 ohm/meter	
H2S:	0	ppm	CHLORIDES:	13173.7 ppm	
			SODIUM :	6760.6 ppm	
			POTASSIUM:	150.0 ppm	
MAGNESIUM:	873.1	ppm	TDS:	21592.05 ppm	

CaCO3 Scale Tendency = Remote CaSO4 Scale Tendency = Remote

REMARKS:

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Data contained in this document is based on the best information & most current test procedures and materials available. No liability is expressed or implied.



# HALLIBURTON

# Water Analysis Report

30-045-33217

F-11-24n-11w

To:	Dugan Production	Date:	11/10/2005
Submitted by:	Halliburton Energy Services	Date Rec:	11/10/2005
Attention:	Darrin Steed	Report #:	FLMM5A44
Well Name:	Herry Monster #3 SWD	Formation:	Entrada/SWD

Total Dissolved Solids	14408	Mg / L
Bicarbonates (HCO3)	5612	Mg/L
Carbonates (CO3)	40	Mg/L
Sulfates (SO4)	2000	Mg / L
Chlorides (Cl)	2200	Mg/L
Magnesium (Mg)	15	Mg / L
Calcium (Ca)	176	Mg / L
Sodium (Na)	4165	Mg / L
Potassium (K)	200	Mġ/L
iron (Fe)	0	Mg / L
Resistivity	0.89	@ 70° F
рH	8.4	
Specific Gravity	1.005	

Respectfully:	Bill Loughridge
Title:	Senior Scientist
Location:	Farmington, NM



NOTICE: This report is limited to the described sample tested. Any person using or relying on this report agrees that Halliburton shall not be liable for any loss or damage whether due to act or omission resulting from such report or its use.



CORE LABORATORIES, INC.

RECEIVED

....

Petroleum Reservoir Engineering DALLAS, TEXAS WATER ANALYSIS

Miners's Management Inc.

Sp. Gr. 1.009 @ 70 °F.

Hydrogen Sulfide Present

G-20-2 111-0W		File <u>WA - 5</u>	
Company Dome Petroleum Corp.	Well Name Sante Fe 20 No.	1Sample NoSS-2	
Formation	/		
Location_Sec 20 T 21N R 8W	_Field	_County_San_JuanState	N.M.
Date Sampled 3-9-77	Date Analyzed 3-13-77	Engineer RGC	······
-			

Total Dissolved Solids 11, 114.5 mg/L\_\_\_\_\_

30-045-22291

G-20-21n-8w

Resistivity 1.0 ohm-meters @ 70 °F.

pH\_7.73

Constituents .	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	140.44	3228.7	Chloride	25.47	903.0
Calcium	1.35	27.0	Bicarbonate	41.73	2546.0
Magnesium	0.73	8.9	Sulfate	91.61	4400.0
Iron	0.03	0.9	Carbonate	ND	ND*
Barium	ND	ND	Hydroxide	ND	ND

<sup>\*</sup>ND = Less than 0.1 mg/L



All analyses except iron determination performed on a filtered sample.



#### THE WESTERN COMPANY OF NORTH AMERICA

#### API WATER ANALYSIS

ompany:	MERRION		W.C.N.A. Sample No.:	S106995
Field:		30-043-20175	Legal Description:	
Well:	#1	M-12-19n-4w	Lease or Unit:	EAGLE MESA
Depth:	_		Water.B/D:	
Formation:	ENTRADA?		Sampling Point:	
State:			Sampled By:	STEVE DUNN
County:			Date Sampled:	
		Type of Water(Pr	oduced, Supply, ect.):	PROD.

#### PROPERTIES

	7.32	Iron, Fe(total): 0
Specific Gravity:	1.010	Sulfide as H2S: 0
Resistivity (ohm-meter):	.81	Total Hardness:
Tempature:	64F	(see below)

### DISSOLVED SOLIDS

CATIONS Sodium, Na: Calcium, Ca: Magnesium, Mg: Barium, Ba: Potassium, K:	160 49	::	8	Sample(ml): Sample(ml):			.40 .20
ANIONS	mg/l		me/l				
i: .5000Chloride, Cl:	1773	:	50	Sample(ml):	1.0 ml	of AgNO3:	.10
Sulfate, SO4:	5000	:	104	• • •		2	
Carbonate, CO3:		:		Sample(ml):	1.0 ml	of H2SO4:	
Bicarbonate, HCO3:	1220	:	20	Sample(ml):	1.0 ml	of H2SO4:	.20
Total Dissolved Solids (calculated):							
Total Hardness:	600			Sample(ml):	1.0 m.	l of EDTA:	.60

REMARKS AND RECOMMENDATIONS:

TENTRADA WATTER



$\dots$	7
EXHIBIT G	۲
h	ر

SAMO 5/4 326-5900

## 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 replaced O=orpha C=the fil closed)	, ined,	(qเ					E 3=SW argest)	,	3 UTM in m	neters	s) (I	In feet)	
		POD Sub-		QQ	-				**	¥,				ater
POD Number	Code	basin	County	64 16				U U	X	Y		DepthWellDept	h Water Co	lumn
<u>SJ 00079</u>			SJ		4	13	25N	12W	<b>2256</b> 77	4032403*	÷ 🖌	2550		
<u>SJ 01716</u>			SJ	2	3	01	25N	12W	225189	4035835*	4	403	210	193
										Average De	pth to	o Water:	210 fee	t
										Mi	nimu	m Depth:	210 fee	t
										Max	ximu	m Depth:	210 fee	t
Record Count: 2			1 79 19, 91 19 ac ac ac ac ac	Na an an 14 m			****	****			n na sa aga i		****	

PLSS Search:

Township: 25N Range: 12W

#### \*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.

12/28/17 4:23 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER





Analytical Report Lab Order 1801270

### Hall Environmental Analysis Laboratory, Inc.

Date Reported: 1/23/2018

CLIENT:	Permits West			<b>Client Sampl</b>	e ID: DJRC	BU Sec 1
Project:	DJRCBU SWD 161			Collection ]	Date: 1/4/20	18 11:45:00 AM
Lab ID:	1801270-001	Matrix:	AQUEOUS	Received 1	Date: 1/5/20	18 1:08:00 PM
Analyses		Result	PQL Qua	d Units	DF	Date Analyzed
EPA MET	HOD 300.0: ANIONS					Analyst: MRA
Chloride		7.6	0.50	mg/L	1	1/8/2018 6:20:19 PM
EPA MET	HOD 1664B					Analyst: dbf
N-Hexan	e Extractable Material	ND	9.45	mg/L	1	1/15/2018 3:30:00 PM
SM2540C	MOD: TOTAL DISSOLVE	D SOLIDS				Analyst: KS
Total Dis	solved Solids	809	20.0 *	mg/L	1	1/11/2018 11:27:00 AM



Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1801270

## Hall Environmental Analysis Laboratory, Inc.

Date Reported: 1/23/2018

CLIENT: Permits West			<b>Client Sampl</b>	e ID: DJRC	BU Sec 13
Project: DJRCBU SWD 161			Collection l	Date: 1/4/20	18 1:51:00 PM
Lab ID: 1801270-002	Matrix:	AQUEOUS	Received I	Date: 1/5/20	18 1:08:00 PM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS					Analyst: MRA
Chloride	59	10	mg/L	20	1/8/2018 6:57:32 PM
EPA METHOD 1664B					Analyst: dbf
N-Hexane Extractable Material	ND	10.6	mg/L	1	1/15/2018 3:30:00 PM
SM2540C MOD: TOTAL DISSOLVE	D SOLIDS				Analyst: KS
Total Dissolved Solids	1660	20.0	mg/L	1	1/11/2018 11:27:00 AM



Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

23-Jan-18

Client: Permit Project: DJRCE	s West BU SWD 161		
Sample ID MB-36019 Client ID: PBW	SampType: MBLK Batch ID: 36019	TestCode: EPA Method 1664B RunNo: 48441	
Prep Date: 1/15/2018	Analysis Date: 1/15/2018	SeqNo: 1557338 Units: m	g/L
Analyte		SPK Ref Val %REC LowLimit HighLim	it %RPD RPDLimit Qual
N-Hexane Extractable Material	ND 10.0		
Sample ID LCS-36019	SampType: LCS	TestCode: EPA Method 1664B	
Client ID: LCSW	Batch ID: 36019	RunNo: 48441	
Prep Date: 1/15/2018	Analysis Date: 1/15/2018	SeqNo: 1557339 Units: m	g/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLim	it %RPD RPDLimit Qual
N-Hexane Extractable Material	36.2 10.0 40.00	0 90.5 78 11	4

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Page 3 of 5

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, Inc	:.

WO#: 1801270

23-Jan-18

Client: Project:	Permits West DJRCBU SWD 161	
Sample ID ME	SampType: mblk	TestCode: EPA Method 300.0: Anions
Client ID: PE	W Batch ID: R48312	RunNo: 48312
Prep Date:	Analysis Date: 1/8/2018	SeqNo: 1551460 Units: mg/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND 0.50	
Sample ID LC	S SampType: Ics	TestCode: EPA Method 300.0: Anions
Client ID: LC	SW Batch ID: R48312	RunNo: 48312
Prep Date:	Analysis Date: 1/8/2018	SeqNo: 1551461 Units: mg/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	4.6 0.50 5.000	0 92.0 90 110

Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



EXHIBIT H

## QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#: 1801270

23-Jan-18

# Client:Permits WestProject:DJRCBU SWD 161

Sample ID MB-35934	SampType: MBLK	TestCode: SM2540C MC	DD: Total Diss	olved Sol	ids	
Client ID: PBW	Batch ID: 35934	RunNo: 48368				
Prep Date: 1/9/2018	Analysis Date: 1/11/2018	SeqNo: 1554310	Units: mg/L			
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND 20.0					
Sample ID LCS-35934	ND 20.0 SampType: LCS	TestCode: SM2540C M	OD: Total Diss	olved Sol	lids	
		TestCode: <b>SM2540C M</b> 0 RunNo: <b>48368</b>	DD: Total Diss	olved Sol	lids	
Sample ID LCS-35934	SampType: LCS		DD: Total Diss Units: mg/L	olved Sol	lids	
Sample ID LCS-35934 Client ID: LCSW	SampType: LCS Batch ID: 35934 Analysis Date: 1/11/2018	RunNo: 48368		olved Sol	l <b>ids</b> RPDLimit	Qual

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Page 5 of 5



#### Ad No. 74640

### STATE OF NEW MEXICO County of San Juan:

SAMMY LOPEZ, being duly sworn says: That He IS the PRESIDENT of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Monday, January 1, 2018

And the cost of the publication is \$45.30

SAMMY LOPEZ appeared before me, whom I know personally to be the person who signed the above document on the 2<sup>nd</sup> of January, 2018.



Melissa Gonzalez

NOTARY PUBLIC

#### COPY OF PUBLICATION

DJR Operating, LLC is applying for a saitwa-ter disposal well. The Central Bisti SWD 161 will dispose into the Entrada from 6,785' to 6,940' It is located 17 miles west of Blan-co Trading Post at 1067 FNL & 2286 FEL Sec. 16, T, 25 N., R. 12 W., San Juan County. W., San Juan County. Maximum disposal rate will be 2,000 bwpd. Maximum in-jection pressure will bwpd. Maximum in-bwpd. Maximum in-be 1,357 psl. Interest-ed parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., San-ta Fe, NM 87505 with-in 15 days. Additional information can be obtained by contact-ing: Brian Wood, Per-mits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120. Legal No. 74640 pub-lished in The Daily Times on Jan. 1, 2018,





TYPICAL LETTER

February 12, 2018

Western Refining Southwest Inc. 1250 W. Washington St., Suite 101 Tempe, AZ 85281

DJR Operating, LLC is applying (see attached application) to activate its Central Bisti SWD 161 as a saltwater disposal well. As required by New Mexico 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: Central Bisti SWD 161Total Depth: 7,112'Proposed Disposal Zone: Entrada (from 6,785' to 6,940')Location: 1067' FNL & 2286' FEL Sec. 16, T. 25 N., R. 12 W.,<br/>San Juan County, NM on NM State Land Office lease EO-6597-0002Approximate Location:≈22 air miles south-southwest of Bloomfield, NM<br/>Applicant Name:DJR Operating, LLC(505) 632-3476Applicant's Address:P. O. Box 156, Bloomfield, NM 87413

<u>Submittal Information</u>: Application for a water 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. NMOCD address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Phone is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

Brian Wood



	U.S. Postal Service <sup>™</sup> CERTIFIED MAIL <sup>®</sup> RECEIPT
900	Domestic Mail Only
	For delivery information, visit our website at www.usps.com®.
0526	Certified Mail Fee
0 7000	Extra Services & Fees (check box, and fee as appropriate) Return Receipt (hardcopy) Certified Mail Restricted Delivery Adult Signature Required Adult Signature Restricted Delivery
000T	Postage s Burlington Resources Total Postage and Fees 3401 East 30th Street
717	Farmington NM 87402           Sent To         DJR Bisti 161
2	Street and Apt. No., or PO Box No. City, State, ZIP+4*
	PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions































#### Form C-108

#### **Affirmative Statement**

#### **DJR Operating, LLC**

#### Central Bisti Unit 161 SWD

#### Section 16 Township 12 North Range 25 West

San Juan County, New Mexico

Geologic and engineering data have been evaluated in the area surrounding DJR Operating's Central Bisti Unit 161 SWD. There is neither evidence of existing faults nor any connection between the Entrada formation injection zone and any known underground source of potable water.

VAL -

06/15/2018

Date

Jack Rosenthal

**VP** Geoscience

DJR Operating, LLC



	DRM C-108 Technical E RECORD: First Rec: 3/04/			-	
ORDER TYPE: WFX / PMX / SWD Number: Order Date: Legacy Permits/Orders:					
Well No. 16 Well Name(s): CCNTR-1 Bisti SLD					
API: 30-0 <u>45 3/606</u> Spud Date: <u>2-17-205</u> New or Old (EPA): <u>(UIC Class II Primacy 03/07/1982)</u>					
Footages 2286 FEC Lot or Unit B Sec 6 Tsp 25~ Rge 12w County 54cm					
General Location: 223miles Stremmingto Pool: 5wd Entradag Pool No.: 96436					
API: 30-0 <u>45-3/606</u> Spud Date: <u>2-17-205</u> New or Old (EPA): <u>(UIC Class II Primacy 03/07/1982)</u> Footages <u>2-256 FEL</u> Lot or Unit <u>B</u> Sec <u>6</u> Tsp <u>25</u> Rge <u>12</u> County <u>5647</u> General Location: <u>7-13</u> <u>165</u> <u>165</u> <u>165</u> <u>166</u> <u>16</u>					
COMPLIANCE PULLE 5 9: Total Walls: 765 Inactive E Finel Assur: RV Compl Order? V IS 59 0K2 V Date					
CONFLIANCE HOLE S.S. TOTAL WEIS.					
WELL FILE REVIEWED & Current Status: InActive I drilled, not completed					
WELL DIAGRAMS: NEW: Proposed () or RE-ENTER: Before Conv. () After Conv. () Logs in Imaging:					
Planned Rehab Work to Well:					
r	Sizes (in)	Setting		Cement	Cement Top and
Well Construction	on Details Borehole / Pipe	Depths (ft)	r	Sx or Cf	Determination Method
		1 4h 427	Stage Tool	230	SGREEL (Visgel
				1250	SUMFLLE/Vishal
Plannedor Existing _					
Plannedor Existing					
	Existing Liner		Inj Length		
Planned_or Existing OH PEBF 16785 16940				<u>Completion</u>	Operation Details:
Injection Lithostratigraphic Units: Depths (ft) Injection or Confining Tops				Drilled TD 7/12	PBTD7106
Adjacent Unit: Litho.	Struc. Por.		5464	NEW TD	NEW PBTD
Confining Unit: Litho.		DK	5575		) or NEW Perfs
,	Interval TOP:	EN	6781		in. Inter Coated?
Proposed Inj Inter					epth <u>6685</u> ft
Confining Unit: Litho.	whether the second s				6683 (100-ft limit)
Adjacent Unit: Litho.	Struc. Por. Additional Structure Por.	LONG A			ace Press. 200 psi 357 (0.2 psi per ft)
			Salt/Sal		
POTASH: R-111-P A A Noticed? BLM Sec Ord WIPP Noticed? Salt/Salado T: B: NW: Cliff House fm 299 FRESH WATER: Aquifer A fui cment Max Depth 20 HYDRO AFFIRM STATEMENT By Qualified Person					
NMOSE Basin: <u>Sea Jaco</u> CAPITAN REEF: thru adj NA No. GW Wells in 1-Mile Radius?					
Disposal Fluid: Formation Source(s) Mu Analysis? On Lease Operator Only (Dor Commercial O					
Disposal Interval: Inject Rate (Avg/Max BWPD): 1000/000 Protectable Waters?					
HC Potential: Producing Interval? MF Formerly Producing? Method: Logs/DST/P&A/Other 2-Mi Radius Pool Map					
AOR Wells: 1/2-M Radius Map and Well List? Y No. Penetrating Wells: [AOR Horizontals: 7 AOR SWDs 3					
Penetrating Wells: N	<b>lo. Active Wells</b> Num Repa	airs?on which well(s)?_		-	Diagrams?
Penetrating Wells:	No. P&A Wells D_Num Repair	s?on which well(s)?			Diagrams?
NOTICE: Newspaper Date July Mineral Owner Surface Owner Wisting N. Date 2-12-2018					
NOTICE: Newspaper Date <u>July</u> Mineral Owner <u>Surface Owner</u> Surface Owner <u>With Humining</u> N. Date <u>2-12-2</u> wight RULE 26.7(A): Identified Tracts? Affected Persons: <u>BLM</u> F7mD, <u>CUP</u> , <u>BhUAn</u> XTD, <u>BhUAn</u> 21220					
Order Conditions: Issues: SwAbtest					
Additonal COAs: V Pen Deniel Schezer Cynnent Acoz					