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PWAM 1607136 705

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**

			e-mail Address	
	••		brian@permitswest.co	
Print o	or Type Name	Signature	Title	Date
Bria	Note n Wood	: Statement must be completed by an individua	al with managerial and/or supervisory capac Consultant	ity. 3-11-16
	val is <b>accurate</b> a cation until the re	TION: I hereby certify that the information of the best of my knowledge equired information and notifications are	ge. I also understand that <b>no action</b> w submitted to the Division.	ill be taken on this
[3]		CURATE AND COMPLETE INFOR ATION INDICATED ABOVE.	MATION REQUIRED TO PROCE	ESS THE TYPE
F03	[F]	Waivers are Attached		
	[E]	X For all of the above, Proof of No	tification or Publication is Attached, a	nd/or,
	[D]	Notification and/or Concurrent A U.S. Bureau of Land Management - Commissioner	approval by BLM or SLO of Public Lands, State Land Office	
	[C]	X Application is One Which Requi	res Published Legal Notice	
	[B]	X Offset Operators, Leaseholders of	r Surface Owner	
[2]	NOTIFICAT [A]	TION REQUIRED TO: - Check Those X Working, Royalty or Overriding		
	[D]	Other: Specify		
	[C]	Injection - Disposal - Pressure Increas		
	Checl [B]	COne Only for [B] or [C] Commingling - Storage - Measurement DHC CTB PLC	<b>96/0 ン</b> nt PC OLS OLM	
[1]	TYPE OF AI [A]	PPLICATION - Check Those Which A Location - Spacing Unit - Simultaneo  NSL NSP SD	pply for [A] us Dedication Belco 1 (SWD-SWD; Delaward	services, LP-246 666) 30-015-25
	[DHC-Dow [PC-Po	andard Location] [NSP-Non-Standard P Inhole Commingling] [CTB-Lease Co Pool Commingling] [OLS - Off-Lease S [WFX-Waterflood Expansion] [PMX- [SWD-Salt Water Disposal] [IPI Bilified Enhanced Oil Recovery Certifica	mmingling] [PLC-Pool/Lease Comr torage] [OLM-Off-Lease Measuren Pressure Maintenance Expansion] -Injection Pressure Increase]	mingling] nent] sponse]
Appli	cation Acronym	ıs:		fination
Т	THIS CHECKLIST IS N	MANDATORY FOR ALL ADMINISTRATIVE APPLICA WHICH REQUIRE PROCESSING AT T		AND REGULATIONS
			***	

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

1.	PURPOSE: Secondary Recovery Pressure Maintenance XXX Disposal Storage Application qualifies for administrative approval? Yes No
II.	OPERATOR: BASIC ENERGY SERVICES, LP
	ADDRESS: P. O. BOX 1175, ARTESIA NM 88211
	CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-8120
III.	WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  Additional sheets may be attached if necessary.
IV.	Is this an expansion of an existing project? XXX Yes  If yes, give the Division order number authorizing the project: SWD-666
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:  Belco 1 30-015-25141
	<ol> <li>Proposed average and maximum daily rate and volume of fluids to be injected;</li> <li>Whether the system is open or closed;</li> <li>Proposed average and maximum injection pressure;</li> </ol>
	<ul> <li>4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,</li> <li>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</li> </ul>
	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: BRIAN WOOD TITLE: CONSULTANT
	SIGNATURE: DATE: MARCH 9, 2016
	E-MAIL ADDRESS: brian@permitswest.com
*	If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted.  Please show the date and circumstances of the earlier submittal:

### III. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
  - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
  - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
  - (3) A description of the tubing to be used including its size, lining material, and setting depth.
  - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
  - (1) The name of the injection formation and, if applicable, the field or pool name.
  - (2) The injection interval and whether it is perforated or open-hole.
  - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
  - (4). Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
  - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

### XIV. PROOF OF NOTICE

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

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

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

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

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

# INJECTION WELL DATA SHEET

WELL LOCATION: 2200 FNL & 660 FWL			23 S	28 E
WELL LOCATION: 2200 FNL & 660 FWL FOOTAGE LOCATION U	NIT LETTER	SECTION	TOWNSHIP	RANGE
WELLBORE SCHEMATIC		WELL CO Surface O	ONSTRUCTION DATA Casing	<u>1</u>
8.625" 24# in 12.25" hole @ 473'	Hole Size: 12.2	25"	Casing Size: 8.	625"
280 sx & TOC = GL	Cemented with:	280 sx.	or	ft <sup>3</sup>
	Top of Cement:	SURFACE	Method Determined	CIRC. 20 SX
.00		<u>Intermediat</u>	e Casing	
@ ≈2400'	Hole Size:		Casing Size:	
tpg set (	Cemented with:	SX.	or	ft <sup>3</sup>
	Top of Cement:		Method Determined	:
2.875"		<u>Production</u>	Casing	
lnstall packer @ ≈2400'	Hole Size:	7.875"	Casing Size:	5.5"
perforate Delaware	Cemented with:	1775 sx.	or	ft <sup>3</sup>
(Bell, Cherry, & Brushy Canyons) 2490' - 5809'	Top of Cement:	SURFACE	Method Determined	CIRC. 125
5.5" 17# in	Total Depth: 6521	' (PBTD = 6500	')	
7.875" hole @ 6500' 1775 sx & TOC = GL		<u>Injection</u>	Interval	
PBTD 6500' TD 6521'		to_5809'		
(not to scale)		(Perforated o <del>r Open H</del>	ole: indicate which)	

# INJECTION WELL DATA SHEET

Tub	ing Size: _	2.875"	Lining Material: PLASTIC
Тур	e of Packer:	ARROW SET NICKE	EL PLATED 2.875" X 5.5"
Pac	ker Setting	Depth: <u>≈2400'</u>	
Oth	er Type of	Tubing/Casing Seal (if	applicable):
			Additional Data
1.	Is this a ne	ew well drilled for injec	ction? Yes XXX No
	If no, for v	what purpose was the w	vell originally drilled? NOT A NEW WELL
			AN OIL WELL, IT HAS BEEN A SWD WELL SINCE 1999
2.	Name of t	he Injection Formation:	BELL, CHERRY, & BRUSHY CANYONS
3.	Name of F	Field or Pool (if applica	able): SWD; DELAWARE (96100.)
4.		-	d in any other zone(s)? List all such perforated l, i.e. sacks of cement or plug(s) used. NOT IN OTHER ZONES
5.		-	oil or gas zones underlying or overlying the proposed
	OVER:	NONE	
	UNDER:	BONE SPRING 600	04', WOLFCAMP 9272', ATOKA 11083', & MORROW 1178

I. Well was approved (SWD-666) in 1997 to dispose of 150-200 bwpd from 5726' to 5809' (Brushy Canyon) in the SWD; Delaware (96100). Basic became operator in 2007. An additional perforated interval (3950' – 4250') in the Cherry Canyon was added in 2009. Basic now seeks approval to dispose of 5600 bwpd in the Delaware from 2490' – 5809'. This interval is in the Bell, Cherry, and Brushy Canyon zones of the Delaware.

II. Operator: Basic Energy Services, LP (OGRID #246368)

Operator phone number: (575) 746-2072

Operator address: P. O. Box 1375, Artesia NM 88211 Contact for Application: Brian Wood (Permits West, Inc.)

Phone: (505) 466-8120

III. A. (1) Lease: fee

Well name & number: Belco 1

Location: 2200 FNL & 660 FWL 20-23s-28e

(see Exhibit A for map and C-102)

A. (2) Surface casing (8.625", 24#, J-55, S T & C) was set in 1985 at 473' in a 12.25" hole and cemented to the surface with 280 sacks Class C. Twenty sacks circulated to the pit.

Production casing  $(5.5^{\circ}, 17^{\sharp}, J-55)$  was set at 6500' in a 7.875" hole and cemented to surface in 2 stages with 1775 sacks. Circulated 125 sacks. TD = 6521'. PBTD = 6521'.

- A. (3) Tubing will be 2.875" J-55 interior plastic coated. Setting depth will be ≥2390'. (Disposal interval will be 2490' to 5809'.)
- A. (4) A 2.875" x 5.5" Arrow AS1-X with 2.25 F NP T-2 O/O SS tool will be set at  $\geq$ 2390' ( $\leq$ 100' above the highest perforation @ 2490').
- B. (1) Disposal zone will be the SWD; Delaware (96100).



- B. (2) Disposal interval will be 2490' to 5809'.
- B. (3) Well was originally drilled as a Delaware and Bone Spring oil well. It was completed only in the Delaware and produced 16,009 barrels of oil and 4830 Mcf of gas from 1985-1999. Over 6,180,422 barrels of water have been disposed in the well since 1999.
- B. (4) Perforation and isolation history follows.

DEPTH	NAME	STATUS	WHEN
3950' - 4250'	Cherry Canyon	active	2009
4184' - 4195'	Cherry Canyon	squeezed	1985
5218' - 5234'	Brushy Canyon	squeezed	1985
5242' - 5254'	Brushy Canyon	squeezed	1985
5726' - 5748'	Brushy Canyon	active	1985
5803' - 5809'	Brushy Canyon	active	1985

- B. (5) Closest Delaware producer (30-015-23340) is 5060' south. No zone above the Delaware produces within the area of review. Four producing zones are below the Delaware within the area of review. They are the Bone Spring (6004'), Wolfcamp (9272'), Atoka (11083'), and Morrow (11783'). Latter three tops are from 30-015-35569. It is 250' north of the Belco 1.
- IV. This is not an expansion of an existing injection project. It is disposal only.
- V. Exhibit B shows the five existing wells (4 gas + 1 Cherry Canyon SWD) within a half-mile radius. Exhibit C shows all 103 existing wells (36 oil or gas wells + 16 P & A wells + 3 SWD wells + 48 water wells) within a two-mile radius.



Exhibit D shows all leases (only fee) within a half-mile radius. Exhibit E shows all leases and lessors (only fee, State, and BLM) within a two-mile radius.

VI. Five existing wells are within a half-mile radius. All five wells penetrated the Bell Canyon (top = 2490'). The penetrators include 4 oil or gas wells and 1 SWD well. A table abstracting the well construction details and histories of the penetrators is in Exhibit F. The 5 existing wells (+ 1 approved, but not yet drilled, well) and their distances from the Belco 1 are:

АРІ	OPERATOR	WELL NAME	TYPE WELL	T23S- R28E UNIT- SECTION	TVD	ZONE	FEET FROM BELCO #1
3001535569	BC OPERATING	CRONOS FEE 001	G	E-20	12650	LOVING; MORROW, N	250
3001523351	BC OPERATING	LAKEY COM 001	G	L-20	12622	LOVING; MORROW, N	844
3001525433 BASIC		BELCO 002	S	F-20	√5930	SWD; DELAWARE	1330
3001523215 LEGACY RESERVES		GUITAR ESTATE COM 001	G	H-19	12580	LOVING; MORROW, N	1379
3001534241	BC OPERATING	MERCURY FEE 001	G	I-19	12730	LOVING; MORROW, N	2228
3001543016	BC OPERATING	MARINER FEE 001H	0	B-19	15550 MD (plan)	BLACK RIVER; WOLFCAMP, E	2310

- VII. 1. Average injection rate will be ≈5000 bwpd. Maximum injection rate will be 5600 bwpd.
  - 2. System will be open.
  - 3. Average injection pressure will be ≈475 psi
    Maximum injection pressure will be 498 psi (= 0.2 psi/foot x 2490'
    (highest perforation)).



- 4. Six million plus barrels of produced water have been disposed in Belco 1 and over two million barrels of produced water have been disposed of in Belco 2 without any reports of compatibility problems. Main source of disposal water will be water produced from Bone Spring and Wolfcamp wells. However, water produced from the Atoka, Pennsylvanian, Morrow, Delaware, etc. could also be disposed. Water analyses are in Exhibit G.
- 5. Brushy Canyon produced 16009 barrels of oil and 4830 Mcf of gas from this well before being converted to a disposal well.

VIII. The Delaware consists of poorly consolidated fine to very fine marine sands with some shale and dolomite layers. Disposal will occur in fine grain quartz sandstones.

Closest possible underground source of drinking water above the proposed disposal interval is the Quaternary. Nine water wells are within 1 mile according to the Office of the State Engineer (Exhibit H). Deepest of the water wells is 232'.

None of the water wells were found during February 12 and 13, 2016 field inspections. Interviews with 7 families indicated water wells had been abandoned due to a drop in the water table and the convenience of connecting with the Village of Loving's system. A water well  $\approx\!6000$ ' southeast of the Belco 1 was sampled. Its analysis is in Exhibit H. No underground source of drinking water is below the proposed disposal interval.

Estimated formation tops are:

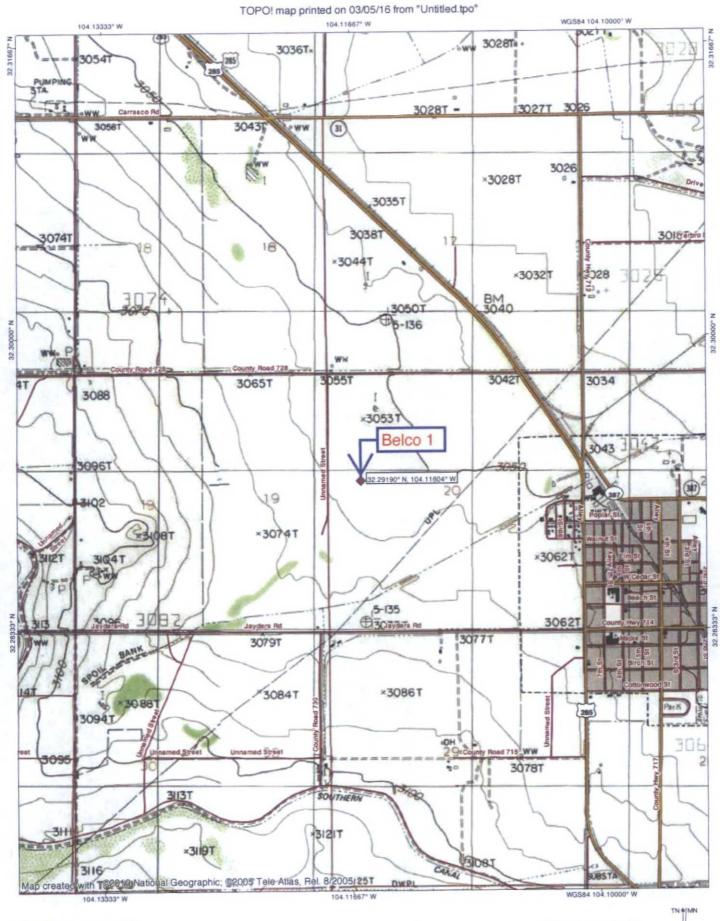
Quaternary = 0'
Salt = 1580'
(Base of) Salt = 2230'
Lamar = 2240'
Bell Canyon = 2490'
Cherry Canyon = 3220'
Brushy Canyon = 3908'
Disposal interval = 2490' - 5809'
Bone Spring = 6004'
PBTD = 6500'
TD = 6521'



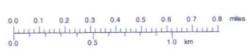
There will be 910' of vertical separation and 650' of anhydrite and salt between the bottom of the only likely underground water source (Quaternary) and the top of the Bell Canyon.

- IX. The well has been fractured and stimulated with acid to clean out scale or fill.
- X. Acoustic CBL/GR, DLL/MLL/GR/Caliper, and CNL/CDL/GR/Caliper logs are on file with NMOCD.
- XI. See Exhibit H for water well sample analysis and location.
- XII. Closest Quaternary fault (Guadalupe) is  $\approx 53$  miles southwest (Exhibit I). Based on a review (Exhibit I) by geologist Dennis Powers, Basic Energy Services, LP is not aware of any geologic or engineering data that may indicate the Delaware is in hydrologic connection with any underground sources of water. Hundreds of feet of evaporites prevent that from occurring.
- XIII. Legal ads (see Exhibit J) in Artesia and Carlsbad newspapers were published on March 9, 2016. Notice (this application) has been sent (Exhibit K) to the surface owner (Henry McDonald) and lessees or operators (BC, Chevron, COG, Featherstone, Legacy, Mewbourne, MRC) within a half-mile.









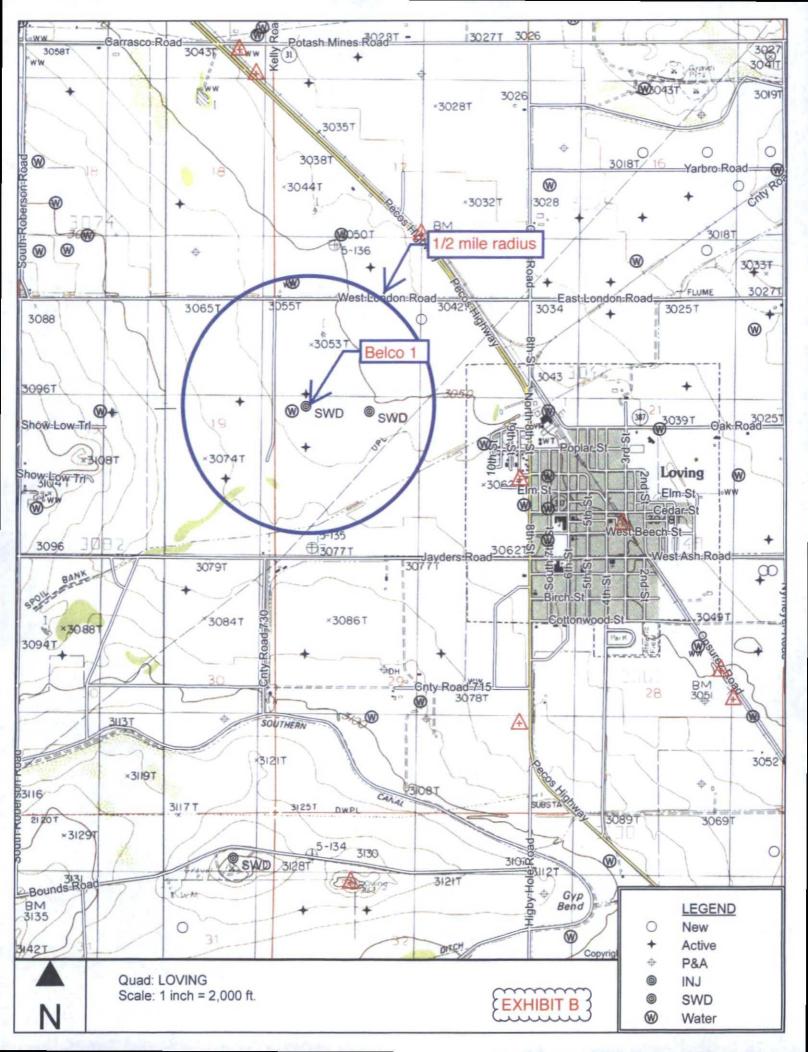


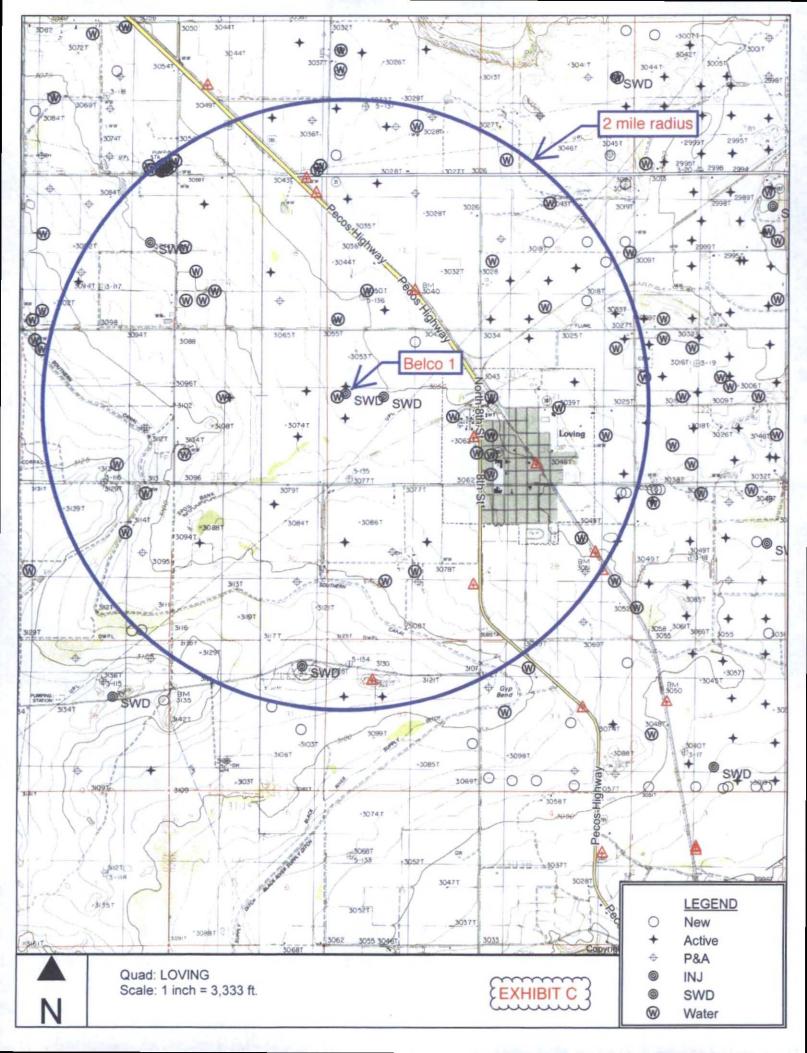
7.5°

# EW MEXICO OIL CONSERVATION COMMINION WHILL OCATION AND ACREAGE DEDICAL JUPI AT

Form C-102 Supersedes C-128 Filective 1-1-65

RECEIVED BY	#222 20C	אל מוא ווסוו אני	REAGE DEDICA	1. 14 1 6.2	`'	Effective 1-1-65
KECTIATO	All distance	s must be from the	outer boundaries of t	he Section		
JAN RAY WESTAL	<u> </u>	Lease	Belco			Well No.
Unit Letter C. D. Section 2	Township 23	South	28 East	County	Eddy	
Actual Footage Location of We	m. West	21	200		North	
100, 100,	ducing Formation	line and Pool	feet	from the	<del></del>	line dicated Acreage:
3060.	Bow Some	o So	uth Culebra B	luff_[	?5	80 Acres
1. Outline the acreag	e dedicated to the s	ubject well by	colored pencil or	hachure o	narks on the	plat below.
2. If more than one interest and royalty		the well, outl	ine each and iden	tily the a	wnership ther	eof (both as to working
3. If more than one le dated by communiti	ase of different owner zation, unitization, fo			ave the in	nterests of al	ll owners been consoli-
Yes No	If answer is "ye	s," type of cons	olidation			
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this form if necessa No allowable will b	•	l until all intere	ests have been co	onsolidate:	d (by commu	nitization, unitization,
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PO Box 2428 805 N. Richardson Roswell, NM 88202 Telephone (575) 625-0599 Fax (575) 625-0687

# REPORT

PROSPECT: Belco No. 1

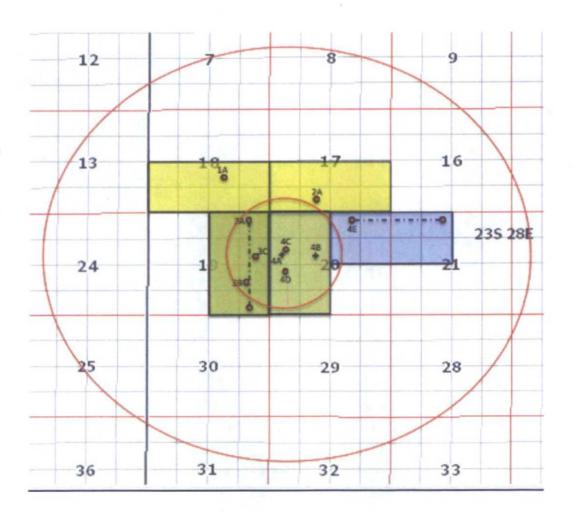
Producing Well Information for 1/2 Mile Radius
Township 23 South, Range 28 East, N.M.P.M.

This plat is not to scale, well locations are estimated. For more precise placement, see the attached written report.

Yellow = proration units for producing wells

Blue = proration units for active APD's, but the well has not been drilled

+ Salt Water Disposal



# **REPORT**

PROSPECT: Belco #1

### Producing Well Information for Delaware Formation

**RECORD DATE: 2/18/2016** REPORT DATE: 2/19/2016

LANDMAN: Sarah Spears

### 1. T23S-R38E Section 18: SE/4SE/4

A) Carter Gas Com #001 API: 30-015-22779 320.0 ac proration = S2

Location:

SHL: 1,980' FSL & 1,980' FEL

Spud Date: 7/28/1979 Depth: MD: 12,664' PB: 11.965' **Producing:** Atoka (11,176'-11,203') Operator:

Chevron U.S.A., Inc. P.O. Box 2100 Houston, TX 77252

### 2. T23S-R38E Section 17: S/2SW/4

A) Carter #001 API: 30-015-24105 320.0 ac proration = S2Location: SHL: 660' FSL & 1,980' FWL Spud Date:

1/20/1992 Depth: MD: 12,600' PB: 11,475' Producing: Atoka (11,368'-11,381')

Operator: COG Operating, LLC One Concho Center 600 W. Illinois Ave Midland, TX 79701

### 3. T23S-R38E Section 19: NE/4, N/2SE/4, SE/4SE/4

A) Mariner Fee #001H

New Not Drilled API: 30-015-43016

Horizontal 320.0 ac proration = E2

Location:

SHL: 250' FNL & 1,650' FEL BHL: 330' FSL & 1,650' FEL

Estimated Spud Date:

12/1/2015 Proposed Depth: Wolfcamp 15,550°

Operator: BC Operating, Inc. PO Box 50820 Midland, TX 79701



### B) Mercury Fee #001

API: 30-015-34241 320.0 ac proration = E2

Location:

SHL: 1,650' FSL & 990' FEL

**Spud Date:** 8/2/2005 Depth: MD: 12,730' PB: 12,634' Producing: Morrow

Operator: BC Operating, Inc. P.O. Box 50820 Midland, TX 79710

# C) Guitar Estate Com #001

(12,730' - 12,634')

API: 30-015-23215. 320.0 ac proration = E2Location: SHL: 2,100' FNL & 710' FEL Spud Date: 4/2/1980 Depth: MD: 12,580' PB: 12,539' Producing: Morrow

Operator: Legacy Reserves Operating, LP P.O. Box 10848

Midland, TX 79702

### 4. T23S-R38E Section 20: W2, NE

(12,410' - 12,509')

### A) Belco #001

API: 30-015-25141 Salt Water Disposal = SWNW Location: 660' FWL & 2,200' FNL

### B) Belco #002

API: 30-015-25433 Salt Water Disposal = SENW Location: 2,310' FNL & 1,980' FWL

Operator:

Operator:

P.O. Box 10460 Midland, TX 79701

Basic Energy Services, LP P.O. Box 10460 Midland, TX 79701

Basic Energy Services, LP

C) Cronos Fee #001 API: 30-015-35569 320.0 ac proration = W2

Location;

SHL: 1,950' FNL & 660' FWL

Spud Date: 6/13/2007 Depth: MD: 12,650' PB: 12,635' Producing: Cisco

(10,660'-10,783')

Operator:

BC Operating, Inc. P.O. Box 50820

Midland, TX 79710

EXHIBIT D

### D) Lakey Com #001

API: 30-015-23551 320.0 ac proration  $\approx$  W2

Location:

SHL: 2,280' FSL & 660' FWL

Spud Date: 11/13/1989 Depth: MD: 12,600'

PB: 12,265' Producing: **Bone Springs** (6,346'-6,370')

# E) Whitesnake 20 21 W2BC Fee #001H

New Not Drilled API: 30-015-43497

, Horizontal 160.0 proration = NWNE Sec 20, NENW Sec 21

**Proposed Location:** 

SHL: 354' FNL & 2,395' FEL BHL: 330' FNL & 2,310' FWL

**Estimated Spud Date:** 

1/20/2016 Proposed Depth:

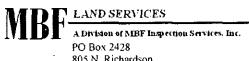
Wolfcamp 14,615

Operator:

BC Operating, Inc. PO Box 50820 Midland, TX 79710

### Operator:

Mewbourne Oil Company PO Box 5270 Hobbs, NM 88241



805 N. Richardson Roswell, NM 88202 Telephone (575) 625-0599 Fax (575) 625-0687

# **REPORT**

PROSPECT: Belco #1

TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M.

SECTION 20: NE/4SW/4

Containing: 40.00 acres, more or less

Eddy County, NM

RECORD DATE: 2/18/2016 REPORT DATE: 2/19/2016 LANDMAN: Sarah Spears

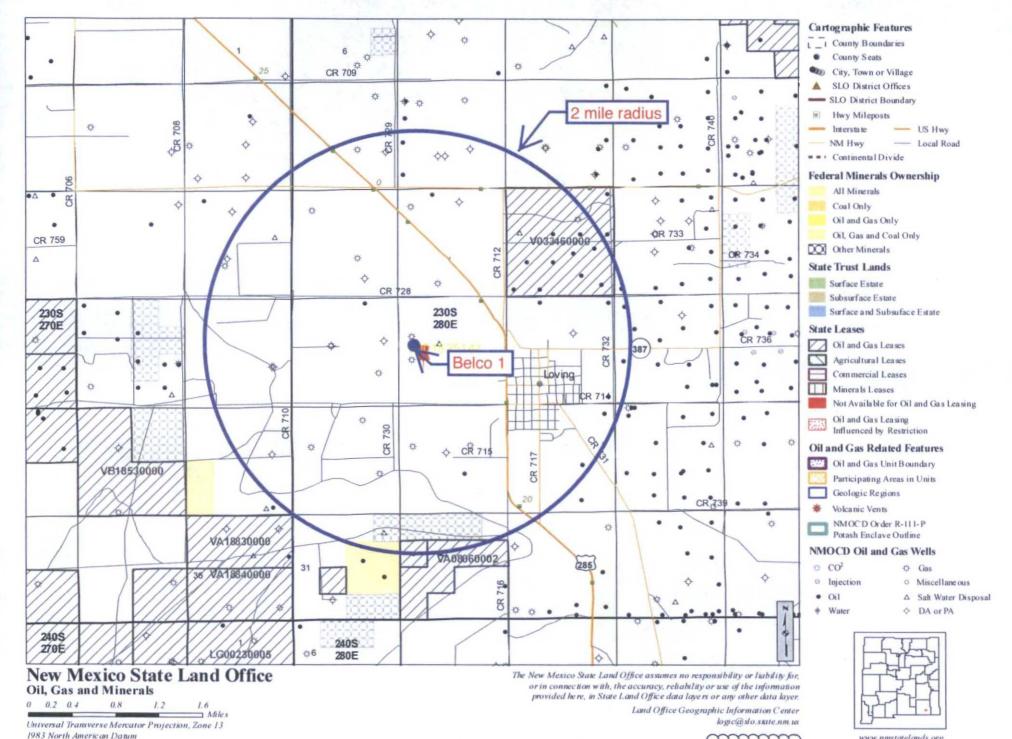
The conclusions reported herein are based upon the landman's review of the instruments recorded in the county as indexed by the abstractor used.

# LEASEHOLD OWNERSHIP for NE/4SW/4 All Depths

Featherstone Development Corporation PO Box 429 Roswell, NM 88202

MRC Permian LKE Co., LLC 5400 LBJ Freeway, Suite 1500 Dallas, TX 75240





# Sorted by Distance from Belco 1

WELL	SPUD	TD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET	CEMENT	тос	HOW DETERMINED
CRONOS FEE 001	6/13/07	12650	LOVING; MORROW, NORTH	G	17.5	13.375	400	225 sx	GL	Circ
3001535569					12.5	9.625	6000	1725 sx	GL	Circ 368 sx
E-20-23S-28E					8.75	5.5	12650	1207 sx	7650	CBL
LAKEY COM 001	6/15/80	12622	LOVING; MORROW, NORTH	G	20	16	450	750 sx	GL	NR
3001523351					14.75	10.75	2415	2175 sx	GL	Circ 200 sx
L-20-23S-28 E					9.875	7.625	9615	1610 sx	2048	No Report
					6.25	5	12621	730 sx	7343	No Report
BELCO 002	12/12/85	5930	SWD; DELAWARE	S	12.25	8.625	475	200 sx	GL	Circ 20 sx
3001525433					7.875	5.5	5930	665 sx	3870	No Report
F-20-23S-28E				<u> </u>						
ESTATE COM	4/2/80	12580	LOVING; MORROW, NORTH	G	20	16	368	900 sx	GL	Circ 200 sx
3001523215					14.75	10.75	2420	2300 sx	GL	Circ 300 sx
H-19-23S-28E	1				9.5	7	9660	1350 sx	2780	No Report
	-					5	9036	500 sx	9036	TOL
MERCURY FEE 001	8/2/05	12730	LOVING; MORROW, NORTH	G	17.5	13.375	420	400 sx	GL	Circ 56 sx
3001534241					12.25	9.625	6100	1600 sx	85	temp. survey
I-19 23S 28E					8.75	5.5	11428	1322 sx	6666	CBL
MARINER FEE 001H	not yet	15550	BLACK RIVER; WOLFCAMP, EAST	0	17.5	13.375	420 .	450 sx	GL	N/A
3001543016					12.25	9.625	6150	1600 sx	GL	N/A
B-19 23S 28E					7.875	5.5	15550	2000 sx	GL	N/A



# Martin Water Laboratories, Inc.

Analysts & Consultants since 1953
Bacterial & Chemical Analysis

TO: Jerry Woodward LABORATORY NO. 15-09-365

ADDRESS: 2810 Savoy Place, Midland, TX 79705 SAMPLE RECEIVED: 9/29/15

COMPANY: Smart Chemical RESULTS REPORTED: 9/29/15

LEASE: (Basic Energy Services) AREA: Carlsbad, NM

### FORMATION:

	DESCRIPTION OF SAN			
No. 1 Submitted water sample - taken 9				
No. 2 Submitted water sample - taken 9	/28/15 from Belco	State #2 SWD.		
No. 3				
No. 4				
Chemical and Physical Properties (milligrams per liter)	No. 1	No. 2	No. 3	No. 4
Specific Gravity @ 60°F.	1.1120	1.1110		
pH When Sampled				
pH When Received	8.6	8.6		
Bicarbonate as HCO <sub>3</sub>	915	1,281		
		60.400		····
Total Hardness, as CaCO3	23,600	23,400		
Calcium, as Ca	8,000	8,000		
Magnesium, as Mg	875	826		·
Sodium and/or Potassium	64,318	59,932		
Sulfate, as SO4	725	608		
Chloride, as Cl	113,630	106,529		
Iron, as Fe	6.9	4.2		
Barium, as Ba		0		
Total Dissolved Solids, Calculated	189,483	178,255		
Hydrogen Sulfide	0.0	0.0		
Resistivity, ohms/m @ 77°F.	0.060	0.062		
Carbonate, as CO3	1,020	1,080		
Hydroxide, as OH	0	1,080		
Corrosiveness	Moderate	Moderate		
Barium Sulfate Scaling Tendency	None!	None None		
Caldum Carbonate S.I. @ 77° F. (Stiff-Davis)*	3.73	3.72		
Calcium Carbonate S.I. @ 122* F. (Stiff-Davis)*	4.41	4.36		
Calcium Sulfate Scaling Tendency  Calcium Carbonote S.L A positive fig. signifies a scaling potential proportionate	None None	None		

REMARKS: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

/ By: Greg Ogden, B.S.

EXHIBIT G



# New Mexico Office of the State Engineer Water Column/Average Depth to Water

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

O⇒orphaned, C⇒the file is (quarters are 1=NW 2=NE 3=SW 4≈SE)

closed) (quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

		POD	<u> </u>										. <u></u>	<u>`</u>		
POD Number	Cod	Sub- e basin	County		Q 16		Sec	Tws	Rng	X		ſ <u> </u>	_Distance		Depth Water	Water Column
C 00312	0		ED		3			23S		583140	3573106	· 😜	94	230	70	160
C 00313			ED	3	3	3	17	23S	28E	583136	3573915	· 🚱	786	250	75	175
C 00851		С	ED			3	17	23S	28E	583438	3574217	. <b>છ</b>	1102	200	50	150
C 00911 POD2		С	ED	1	2	4	20	23S	28E	584359	3572911	. <b>D</b>	1150	69	34	35
C 00911 POD3		С	ED	1	2	4	20	235	28E	584359	3572911	· 🚱	1150	218	60	158
C 01992		С	ED	3	4	1	19	235	28E	581929	3573094	. 🚱	1301	232	45	187
C 03542 POD1		CUB	ED	2	4	4	20	23\$	28E	584615	357253	<b>(</b>	1511	22	16	6
C 03542 POD2		CUB	ED	2	4	4	20	23\$	28E	584620	357249	7 <b>9</b>	1528	30		
C 00544		С	ED	3	3	1	21	23S	28E	584762	3573120	· 🚱	1532	27		
C 02848			ED	3	3	1	21	238	28E	584762	3573120	. <b>છ</b>	1532	130		
C 00577		С	ED	3	1	3	21	23\$	28E	584764	3572714		1590	35	10	25
C 00578		С	ED	3	1	3	21	23\$	28E	584764	3572714	. <b>&amp;</b>	1590	28	18	10
C 00643	1610 meters	С	ED	3	1	3	21	238	28E	584764	3572714	· 🚱	1590	76	10	66
C 00650	= 5280 feet	С	ED	1	3	3	21	235	28E	584767	3572508		1659	32	12	20
C_00539		С	ED	3	3	3	21	238	28E	584767	3572308	· 🚱	1744	28	6	22
<u>C 02180</u>		С	ED			3	18	238	28E	581831	3574198	· ᢒ	1757	140	80	60
C 03922 POD1		С	ED	3	2	3	18	238	28E	581844	357423	9	1766	138	75	63
C 03779 POD1		С	ED	2	3	3	18	23\$	28E	581707	357410	€ 8	1805	110	70	40
C 01477			ED	1	3	3	19	238	28E	581532	3572484	. <b>&amp;</b>	1818	127	10	117
C 03082		С	ED	1	3	3	18	235	28E	581529	3574096	. <b>છ</b>	1954	220	217	3
C 00108		CUB	ED	1	1	4	29	23\$	28E	583974	3571285	· 🚱	1993	152	10	142
C 01648		С	ED		2	3	29	23S	28E	583667	3571184	. 🚱	1998	65	15	50
C 02037		С	ED		2	3	29	23S	28E	583667	3571184	. <b>&amp;</b>	1998	260		
C 00519		С	ED	2	1	1	28	23S	28E	584970	3572100		2024	250		
C 02697		С	ED		1	3	18	23S	28E	581629	3574401	<b>9</b>	2041	220	42	178
C 00520		С	ED	1	1	3	16	23\$	28E	584754	3574538	· 🚱	2072	115	33	82
*UTM location wa	s derived from PLS	SS - see	Help											إ }	EXHIE	IJŢĤ}

WATER COLUMN/ AVERAGE DEPTH TO WATER

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

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

closed)

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

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

(In feet)

water right life.	ciosed)	· · · · · · · · · · · · · · · · · · ·			<del></del>	Silialies			<u> </u>	700 011411		<del></del>	<u></u>		
	POD Sub-		Q	Q (	2							*	Depth	Depth	Water
POD Number	Code basin	County							X	<u> </u>		Distance	Well	Water	Column
C 00521	С	ED	1	11	3 1	3 23S	28E	58475	54 3	3574538*	•	2072	218	33	185
C 00333		ED	3	1	2 1	3 23S	28E	58232	25 3	3575118*	9	2180	147		
C 00716	С	ED			2	238	28E	58547	71 3	3573012*	Đ	2244	140	69	71
C 03762 POD1	CUB	ED	4	4	2 1	<b>7 23</b> S	28E	58531	14	3574066	0	2282	40	31	9
C 03753 POD1	С	ED	3	3	1 18	3 23\$	28E	58151	15	3574658	0	2294	210	60	150
C 00010	CUB	ED	1	2	2 2	238	27E	58112	29 3	3572075*	9	2352	250	103	147
C 00010 CLW191759	0	ED	1	2	2 2	238	27E	58112	29 3	3572075*	<b>()</b>	2352	259		
C 00010 ENLGD	CUB	ED	1	2	2 2	235	27E	58112	29 3	3572075*	<b>₽</b>	2352	259		
C 03472 POD1	С	ED	4	4	4 0	7 238	28E	58289	<del>)</del> 4	3575479	9	2369	140	40	100
C 02846 S		ED	4	4	4 0	235	28E	58292	26 3	3575527*	8	2412	150	40	110
C 02004	С	ED		3 .	4 2	238	27E	58082	25 3	3572378*	9	2521	232	190	42
C 00010 CLW191724	0	ED	2	3	2 2	238	27E	58092	26 3	3571666*	<b>⊕</b> `	2731	259		
C 00327	CUB	ED	3	2 4	1 2	238	28E	58597	74 3	3572728*	<b>@</b>	2773	212		
C 01885	С	ED		2	2 2	238	28E	58607	70 3	3573640*	0	2884	104	35	69
C 00504		ED	3	1 4	1 08	235	28E	58393	39 <u>3</u>	3575949*	9	2902	230	40	190
C 01472	C	ED	2	3 :	2 28	235	28E	58573	30	3571652	<b>9</b>	2906	162	10	152
C 00311	С	ED	4	2	1 10	235	28E	58535	53 S	3575152*	0	2929	163	55	108
C 03762 POD2	CUB	ED	4	4	2 17	238	28E	58489	93	3575598	9	. 2972	40	30	10
C 03888 POD3	CUB	ED	4	4	4 12	238	27E	58134	18	3575495	9	3019	35		
C 03819 POD4	CUB	ED	4	4	1 12	235	27E	58130	)6	3575464	<b>\$</b>	3021	35		
C 03888 POD2	CUB	ED	4	4	1 12	238	27E	58140	00	3575557	<b>9</b>	3036	30		
C 03819 POD5	CUB	ED	4	4	1 12	238	27E	58125	56	3575451	9	3043	36		
C 03819 POD1	CUB	ED	4	4	4 12	235	27E	58127	70	3575463	9	3044	36		
C 03819 POD2	CUB	ED	4	4	1 12	238	27E	58127	<b>7</b> 0	3575463	9	3044	34		
C 03888 POD5	CUB	ED	4	4	1 12	235	27E	58129	95	3575494	<b>P</b>	3052	35		
C 03888 POD1	CUB	ED	4	4	4 12	238	27E	58129	95	3575525	9	3076	35		
C 03819 POD3		ED	4	4 4	1 12	235	27E	58125	6	3575500	4	3081	35		
C 03888 POD4	CUB	ED	3	4	1 12	238	27E	58113	39	<b>3</b> 575462	<b>&amp;</b>	3129	35		
C 01253		ED	1	3	1 22	235	28E	58637	<b>'</b> 5 3	3573338*	<b>₽</b>	3151	179	50	129
*UTM location was derived	from PLSS - see l	Help												XHIB	

(A CLW#### in the POD suffix indicates the POD has been replaced & no longer serves a

(R=POD has been replaced,

O=orphaned,

C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

water right file.)	closed)	(0	(quarters are smallest to largest)							D83 UTM in me	ters)	(In feet)			
	POD Sub-		Q (	) Q					-		<u>,</u>	Depth	Depth	Water	
POD Number	Code basin Co	ounty	64 1	6 4	Sec	Tws	Rng	>	<u> </u>	Y	Distance	Well	Water	Column	
C 03053	C	ED	3 4	4 4	12	235	27E	58112	2	3575505* 🚱	3172	94	14	80	
C 03457	С	ED	3	4 4	12	<b>23</b> S	27E	58108	1	3575530 🚱	3219	200			

Average Depth to Water:

48 feet

Minimum Depth:

6 feet

Maximum Depth:

217 feet

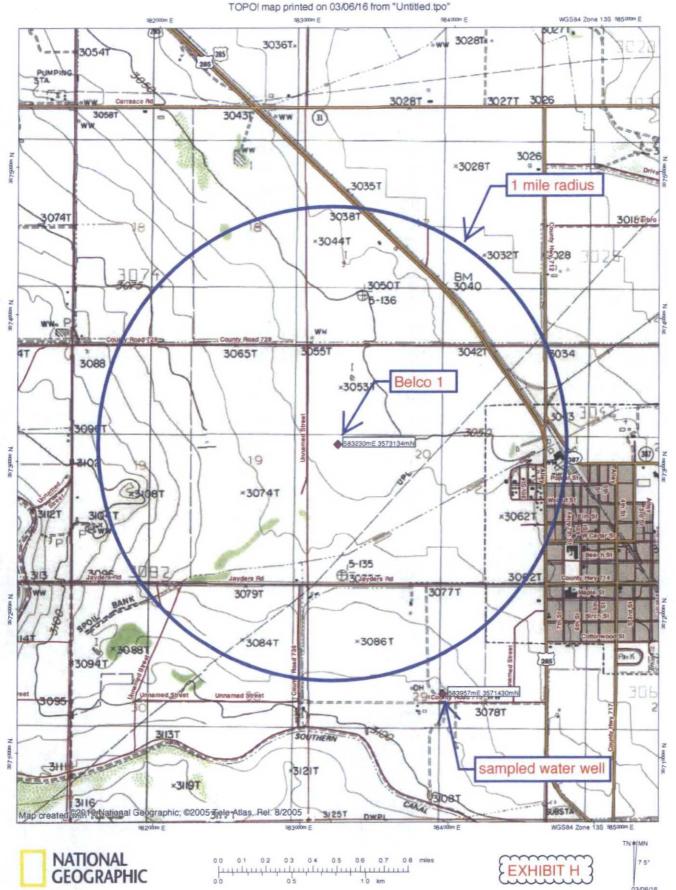
**Record Count: 57** 

UTMNAD83 Radius Search (in meters):

Easting (X): 583230

Northing (Y): 3573134

**Radius: 3220** 





# Basic Belco SWD Water Well Search Report

Water well search conducted on February 12 and 13, 2016.

One water well was sampled within a 2-mile radius circle.

The Brown Well was sampled at 13:19 on 2/13

Located at UTM NAD 83 583957, 357143

Other mapped well sites were investigated.

Results as follows:

There are several small ranches in Section 29. The Brown family has a water well which was sampled. Other residents in the area were contacted. They all indicated that the water table was depleted, and that they were on City of Loving water supply.

There are several small ranches in Sections 13, 18, 24 and 25. Several residents in the area were contacted. They all indicated that the water table was depleted, and that they were on City of Loving water supply.

Several mapped well sites in the town of Loving in Sections 21 and 28 were investigated.

The Kimbley residence in the NE of Section 29 was contacted. They said their well has been unused for at least a decade. They and other Loving residents are on Town of Loving municipal water supply.

No evidence of water wells was observed on the NE side of Hwy 285. Travis Carter, a resident of Loving told me that the farms in the area use irrigation water and that residents use City of Loving water.

Mrs. Dolores Wood, whose ranch is in Section 18, told me that the water table in the area is either contaminated or depleted and that the farms in the area use irrigation water and most residents use City of Loving water.

The Lewis Ranch in the SE of Section 13 was contacted. They told me that they had no active water well.

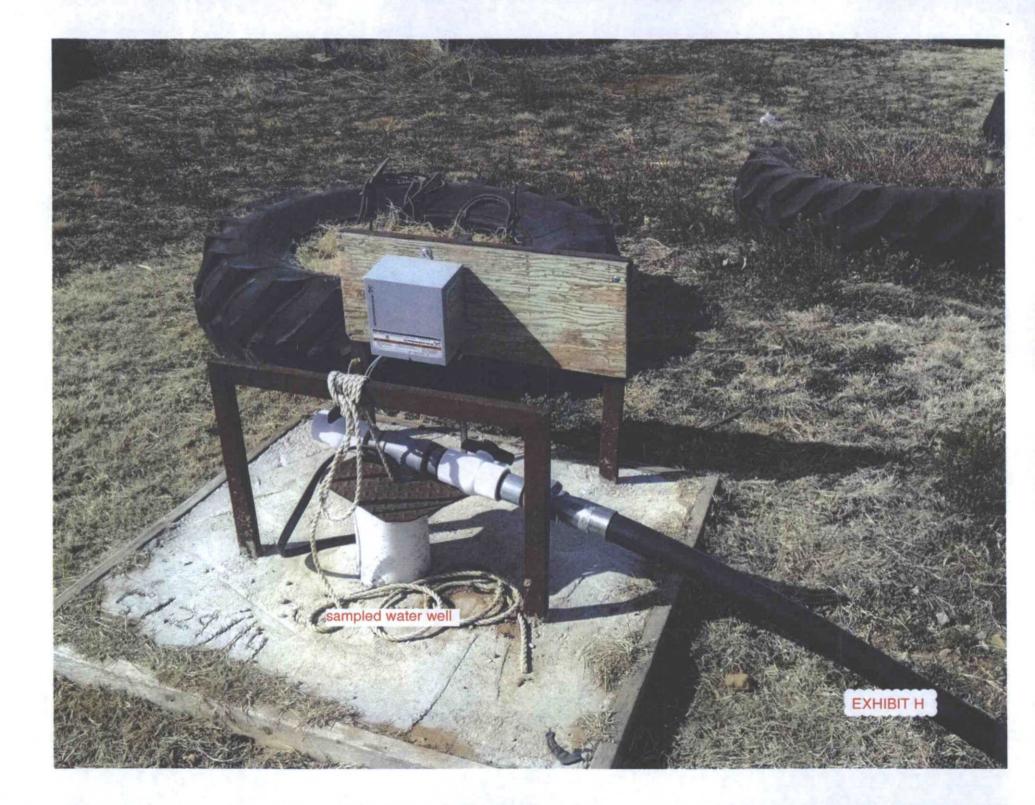
EXHIBIT H

The Torres Ranch in the SW of Section 18 was contacted. They told me that they had no active water well.

The location shown as the Nyman Ranch on the map in the NE corner of Section 25 was contacted, although they didn't know of the Nyman name. They showed me an old broken down windmill with a dry tank.

Charles Black





### **Analytical Report**

Lab Order 1602841

Date Reported: 3/2/2016

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Permits West

Client Sample ID:

. . Brown

Project: Matador SWD

Collection Date: 2/13/2016 1:19:00 PM

Lab ID: 1602841-002

Matrix: AQUEOUS

Received Date: 2/19/2016 11:47:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664A	<u> </u>					Analy	st: <b>tnc</b>
N-Hexane Extractable Material	ND	11		mg/L	1	2/19/2016 2:00:00 PM	23827
EPA METHOD 300.0: ANIONS						Analy:	st: LGT
Chloride	370	25	*	mg/L	50	3/1/2016 4:15:24 PM	R32498
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analys	st: KS
Total Dissolved Solids	1950	20.0	*	mg/L	1	2/22/2016 7:18:00 PM	23844

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
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

**EXHIBIT H** 

# **QC SUMMARY REPORT**

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1602841

02-Mar-16

Client:

Permits West

Project:

Matador SWD

Sample ID MB-23827

SampType: MBLK

TestCode: EPA Method 1664A

Client ID: PBW

Batch ID: 23827

PQL

10

RunNo: 32277

Prep Date: 2/19/2016

Analysis Date: 2/19/2016

SeqNo: 986658

Units: mg/L

Analyte

Result

ND

SPK value SPK Ref Val %REC

LowLimit HighLimit

**RPDLimit** 

N-Hexane Extractable Material

Sample ID LCS-23827 Client ID: LCsw

SampType: LCS Batch ID: 23827

RunNo: 32277

TestCode: EPA Method 1664A

Prep Date: 2/19/2016

Analysis Date: 2/19/2016

SeqNo: 986659 %REC

Units: mg/L HighLimit

%RPD **RPDLimit** 

Qual

N-Hexane Extractable Material

PQL 39

0

Analyte

10

40.00

SPK value SPK Ref Val

97.0

78

114

Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix В Analyte detected in the associated Method Blank

Е Value above quantitation range

Analyte detected below quantitation limits

Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

EXHIBIT H

# **OC SUMMARY REPORT**

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1602841

02-Mar-16

Client:

Permits West

Project:

Matador SWD

Sample ID MB

SampType: MBLK

TestCode: EPA Method 300.0: Anions

Client ID: PBW

Batch ID: R32498

RunNo: 32498

Prep Date:

Analysis Date: 3/1/2016

SeqNo: 994128

Units: mg/L

HighLimit

**RPDLimit** %RPD

Qual

Analyte Chloride

ND 0.50

Sample ID LCS Client ID: LCSW SampType: LCS Batch ID: R32498 TestCode: EPA Method 300.0: Anions RunNo: 32498

LowLimit

Analysis Date: 3/1/2016

Result

5.0

SeqNo: 994129

Units: mg/L

%RPD **RPDLimit** 

Qual

Analyte

Prep Date:

SPK value SPK Ref Val %REC **PQL** 

5.000

SPK value SPK Ref Val %REC LowLimit

100

110

Chloride

0.50

90

HighLimit

### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Ε Value above quantitation range
- Analyte detected below quantitation limits
- Sample pH Not In Range
- RLReporting Detection Limit
- Sample container temperature is out of limit as specified



# **QC SUMMARY REPORT**

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1602841

02-Mar-16

Client:

Permits West

Project:

Matador SWD

Sample ID MB-23844

SampType: MBLK

TestCode: SM2540C MOD: Total Dissolved Solids

Client ID: PBW

Batch ID: 23844

RunNo: 32312

Prep Date: 2/19/2016

Analysis Date: 2/22/2016

SeqNo: 987694

Units: mg/L

Analyte

Result PQL 20.0 ND

%REC LowLimit

%RPD **RPDLimit** 

Qual

Total Dissolved Solids

Sample ID LCS-23844

SampType: LCS Batch ID: 23844

RunNo: 32312

TestCode: SM2540C MOD: Total Dissolved Solids

Client ID: LCSW Prep Date: 2/19/2016

Analysis Date: 2/22/2016

SeqNo: 987695

Units: mg/L

HighLimit

Analyte

%REC LowLimit

**PQL** 

SPK value SPK Ref Val

HighLimit

**RPDLimit** 

Result

SPK value SPK Ref Val

Total Dissolved Solids

20.0

101

80

%RPD

Qual

1010

1000

0

120

### Qualifiers:

ND

S

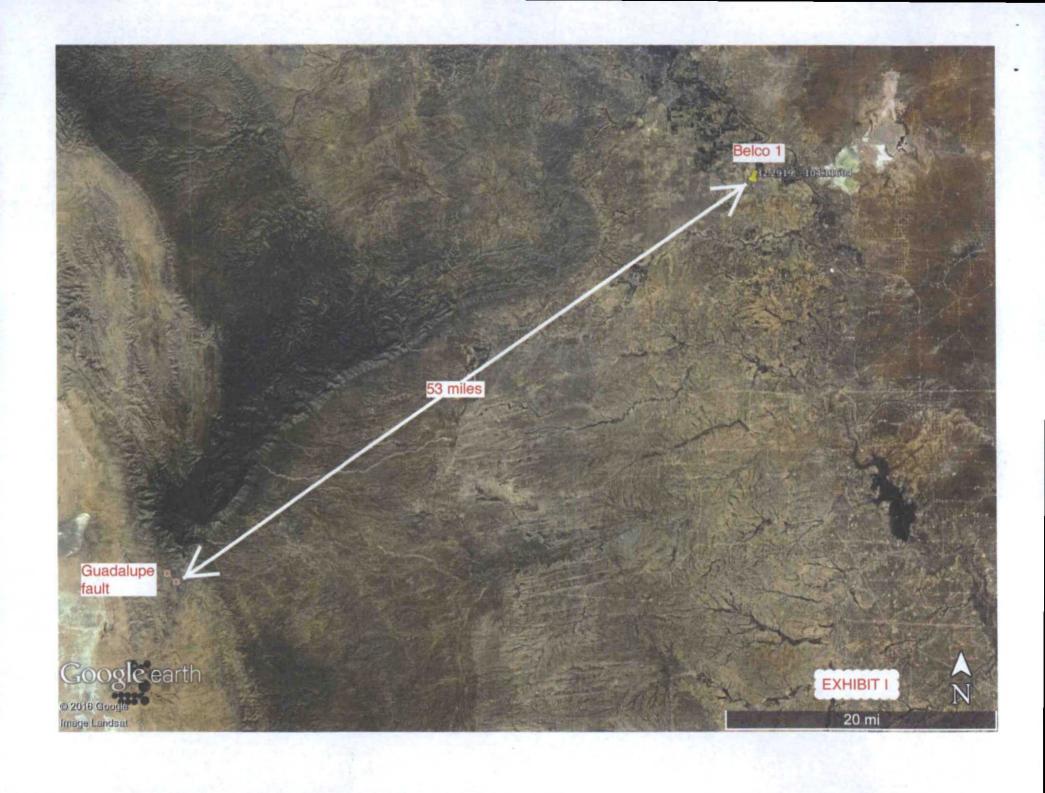
- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded

% Recovery outside of range due to dilution or matrix

Not Detected at the Reporting Limit R RPD outside accepted recovery limits

- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- Analyte detected below quantitation limits
- Sample pH Not In Range RLReporting Detection Limit
- Sample container temperature is out of limit as specified





# Brief Examination of Geology at and around Belco Federal 1 SWD (30-015-25141) near Loving, NM

Dennis W. Powers, Ph.D. Consulting Geologist Anthony, TX

February 25, 2016



This report is confidential to Basic Energy Services



# Belco #1 SWD Geology Evaluation Loving NM

# Summary

Geophysical logs in the vicinity of Belco #1 SWD (30-015-25141; sec 20, T23S, R28E) have been evaluated mainly to examine isolation from groundwater. In addition, the approximate stratigraphy of the Delaware Mountain Group (DMG) has been inferred for the well.

The elevation of the top of DMG/Bell Canyon Formation displays a general eastward dip ranging locally from ~50-100 ft/mile. There are minor local variations attributable to deposition and log data uncertainties about local elevation. There are no features indicating faulting of this horizon above injection intervals.

The elevation of the top of Bone Spring displays the same general dip as top of DMG although the data are locally more variable. There are no features indicating faulting of this horizon below injection intervals.

To further illustrate isolation of shallow groundwater, a smaller data set was developed showing that halite in the Castile is continuous in the vicinity of the injection well. Local groundwater is shallow, and the virtually impermeable halite beds provide a natural confining layer.

DMG stratigraphy in the subsurface has been inferred along a ~NW-SW-E log cross-section that follows the general depositional slope at the time. File data at OCD shows that the Brushy Canyon, Cherry Canyon, and Bell Canyon are not consistently assigned log formation boundaries. Boundaries are approximated here by log character considering experience in other fields and more consistent file data.

### General Information

I was contacted by email by David Alvarado in January 2016 to conduct a geological evaluation

of the area at and around the Belco #1 SWD well (Figure 1, base map) showing isolation from groundwater. The well of interest is the Belco #1 (API 30-015-25141). The location is ~1.25 mile west-northwest of Loving, NM.

The main natural pathways of injected water at this location to shallow ground water would be through faults. Geophysical logs from 123 wells in this area were interpreted for top of DMG to develop an elevation (structure) map (Figure 1, TopDMGEI). Of these wells, 99 were deep enough to interpret top of Bone Spring and construct a similar elevation map (Figure 1, TopBoneSpringEI).

As further evidence of isolation of shallow groundwater, the Castile Formation displays continuous anhydrite and halite beds in the lower part of the formation (Figure 2). High quality logs (e.g., density, acoustic, or even caliper) to shallow depths in this area reveal Salado halite as well, although this has not been displayed here. Density logs, such as 30-015-34353 (~3 miles west of the Belco #1 well), taken to shallow depths reveal halite at 450-500 ft below ground level.

To differentiate the formations of the DMG, I constructed a short log cross-section along a roughly NW-SW-E track (Figure 3) that includes the Belco #1 well as the next to last (to the east) log. OCD well records examined in this area most commonly did not show depths for the top of Brushy Canyon and top of Cherry Canyon. As I have found in cases, not all of the depths recorded for these formation contacts are consistent with log data. Some of those alternatives to my interpretation are displayed on Figure 3 (green dashed lines).

The Oil Conservation Division (OCD) of the New Mexico Energy, Minerals, and Natural



Resources Department maintains electronic records and geophysical logs for drillholes in the state. The information available locally is extensive as drilling has been significant in the area of the SWD for many years. Geophysical logs for a number of wells in the area are good to high quality and comparable, and a common suite of logs through the lower evaporite section and DMG includes natural gamma, density or sonic, and resistivity (especially dual laterolog or equivalent). These are very helpful for evaluating isolation of injection intervals for injection as a SWD well.

The Belco #1 well log is included in a short. N-S log cross-section (Figure 2) of lower Castile units and near the east end of the log cross-section (Figure 3) focusing on DMG stratigraphy.

### Geophysical Log Interpretation

Well logs of greatest use for interpreting porosity (and inferring permeability) are resistivity (of varying types, including dual laterolog, induction logs, etc) and neutron. Stratigraphic relationships are more commonly based on natural gamma, density, acoustic or sonic, and neutron. For this location, there are good logs for the section of interest that comprise a suite of natural gamma, caliper, density and/or sonic, and resistivity (mainly dual laterolog). For the log cross-sections here (Figures 2 and 3), the principal logs are natural gamma, caliper, density, and resistivity.

For Figure 2, natural gamma, density, and caliper logs are very effective indicators of the two lower Castile lithologies: halite and anhydrite. The density contrast (2.9 g/cc for anhydrite vs 2.15 g/cc for halite) produces easily interpreted logs. Because halite tends to enlarge during drilling (especially if drilling mud is undersaturated) and the caliper logs show marked responses. Natural gamma in open hole logs through

Castile is more diagnostic than in cased holes. Neutron logs in cased holes frequently also clearly indicate the lithologic differences. The lower Castile halite and anhydrite beds were easily interpreted and established as continuous across the Belco #1 location.

Mostly natural gamma and density logs were used for correlating DMG formations to the Belco #1 location.

### Stratigraphic Units

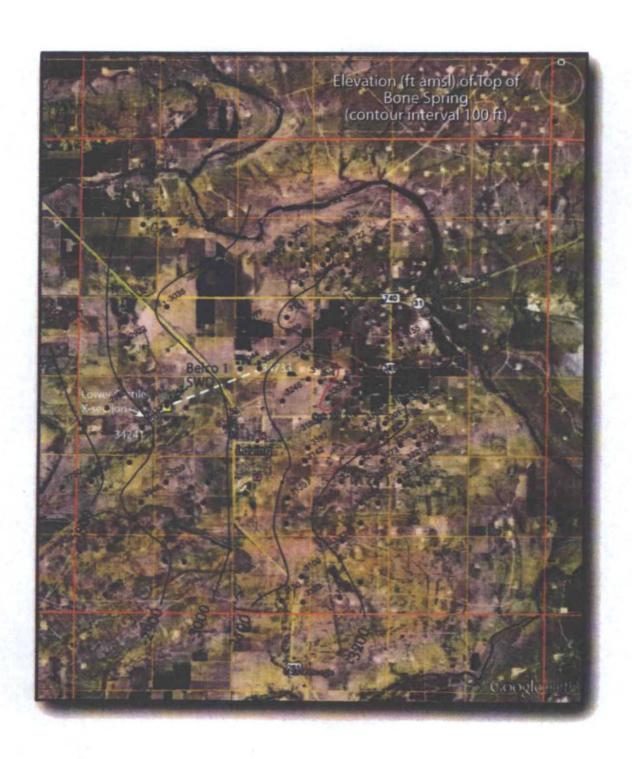
The stratigraphic units examined here are generally well defined in outcrops in southeastern New Mexico and west Texas. As mentioned above, the divisions of the DMG are not as consistent in the subsurface.

Sources for stratigraphic interpretation of DMG formations and top of Bone Spring include well records with OCD (e.g., Form C-105 or equivalent), markings on the scanned log images, and the data set on top of Bone Spring Formation (Broadhead and Gillard, 2005). Individual interpretations on scanned logs do vary.

### **Bone Spring Formation**

The Bone Spring is a thick and complex formation in this area. At the Belco #1 well, I interpret the top of Bone Spring at a log depth of 6004 ft (below KB). This log signature is one of the easiest in the area to interpret because of the sharp increase in density and a sharp decrease in natural gamma. Elsewhere the top of Bone Spring is sometimes interpreted at a higher point to include thinner layers of high density/low gamma interbedded with sandstones and siltstones. Some of the local variation shown in the elevation data (Figure 1) for top of Bone Spring is due to this variability.







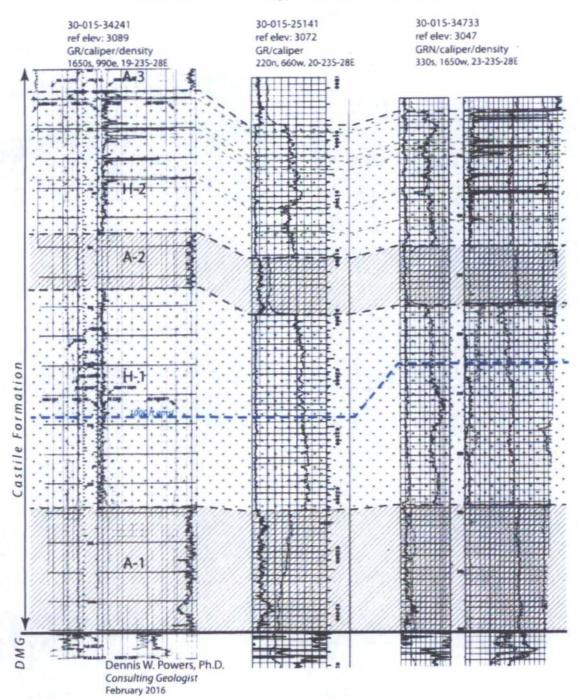


Figure 2. Log cross-section through the Belco #1 (30-015-25141) showing the continuity of lower Castile halite and anhydrite beds in the area. These beds are nearly impermeable and provide confinement or isolation of DMG fluids from shallow groundwater. Top of DMG is used as a common artificial elevation. A = anhydrite, H + halite.

### **Delaware Mountain Group**

The Delaware Mountain Group (DMG) comprises three formations, from the base: Brushy Canyon, Cherry Canyon, and Bell Canyon. These formations are mainly clastic units and are age-equivalent to the well known Guadalupian reefs and back-reef sequences of the Guadalupe Mountains and subsurface of the Delaware Basin. Numerous studies of these rocks have been undertaken, and their origin as deep water clastics, including density-driven channel to "overbank" deposits is well accepted (e.g., Harms, 1974).

A common feature of natural gamma in the DMG is relatively sharp drops in natural gamma from high gamma zones. Above the lowest natural gamma, the gamma increases gradually upward from the low to a high approaching 100 API units. These sequences (low to high upward) are interpreted principally as channel sands at the base with fining upwards to a finegrained shale or claystone ("overbank" deposit) at the top. Thicker intervals of many tens of feet of consistently low natural gamma are likely to be through the main body of a channel deposit, although interpreting adjacent logs is necessary to be more confident in that assessment.

Here the log cross-section shows these characteristics, but I emphasis the basis for differentiating the stratigraphic units.

### **Brushy Canyon Formation**

The Brushy Canyon (6.004-4,590 ft at Belco #1) mainly shows natural gamma between 40-100 API units, with thinner intervals exceeding 100 API units. Density has a relatively narrow range of ~2.4-2.6 g/cc. The contact as picked in Belco #1, consistent with a large proportion of records examined in OCD well files, is a relatively subtle signature at the base of a high gamma and a short triplet of increased density.

In Figure 3, several of the logs with density and natural gamma reveal a more marked change ~150-200 ft above this contact. Several logs show a very high natural gamma (200 API units or more) at the base of a lower natural gamm and density unit that is currently within the Cherry Canyon as defined here. This change is not as clear in some logs but would make a locally more clear lithologic basis for differentiating lithologic (formation) boundaries.

### Cherry Canyon Formation

The Cherry Canyon (4,590-3,470 ft) exhibits three general segments in the Belco #1 log. The basal 180 ft (mentioned above) is similar to Brushy Canyon. Above this is a 450-500 ft interval with generally reduced, less variable, natural gamma and density. The upper segment is similar to the lower segment, displaying higher and more variable gamma and density.

The top of Cherry Canyon picked in most logs is at the base of a 60 ft zone of lower gamma and at the base of one of several high density zones. These features are readily interpretable in most of the logs here. This lower natural gamm zone appears to be the equivalent of the Manzanita sand some consider to be correlated with the Queen Formation (e.g., Garber et al. 1989).

### **Bell Canyon Formation**

The Bell Canyon (3,470-2,400 ft at Belco #1) is similar to the Cherry Canyon in properties. It displays broader patterns of lower natural gamma overlain by thinner high natural gamma. The upper boundary here is taken as the base of the Castile Formation. Within OCD well files, the Lamar Limestone Member is frequently differentiated and "Delaware sand" begins below the Lamar.



### Castile Formation

The Castile Formation is the base of a thick evaporite sequence in this area that offers protection from vertical migration of injected fluids. These beds are extremely low porosity, and the potential for creep in halite beds means that faults do not provide any vertical pathway. The informal members identified here (Figure 3) are in general use and can be found in publications such as Anderson et al. (1972) and Bachman (1984).

### Interpretation and Discussion

### Faulting

Elevation maps of top of Bone Spring and top of DMG show no evidence of faulting at or in the vicinity of the Belco #1 well that would offer a natural pathway for injected fluids to reach the shallow groundwater. The halite in the Castile and overlying Salado also provide a practically impermeable natural barrier. There is no known surficial evidence of faulting in the area.

### Conclusion

Groundwater will be protected in the area of the Belco #1 well from migration of injected fluids through natural pathways. There is no evidence of faulting and the overlying salt beds provide confinement from fluids in the DMG.

### Notes for Figure 1

Figure 1 has multiple layers in which the elevation maps for top of Bone Spring and top of DMG can be turned on and off over the base of aerial photo plus section lines.

### References Cited

Anderson, R.Y. Dean, W. E., Jr., Kirkland, D. W., and Snider, H.I., 1972, Permian Castile varved evaporite sequence, West Texas and New Mexico: Geological Society of America Bulletin, v. 83, p. 59-86.

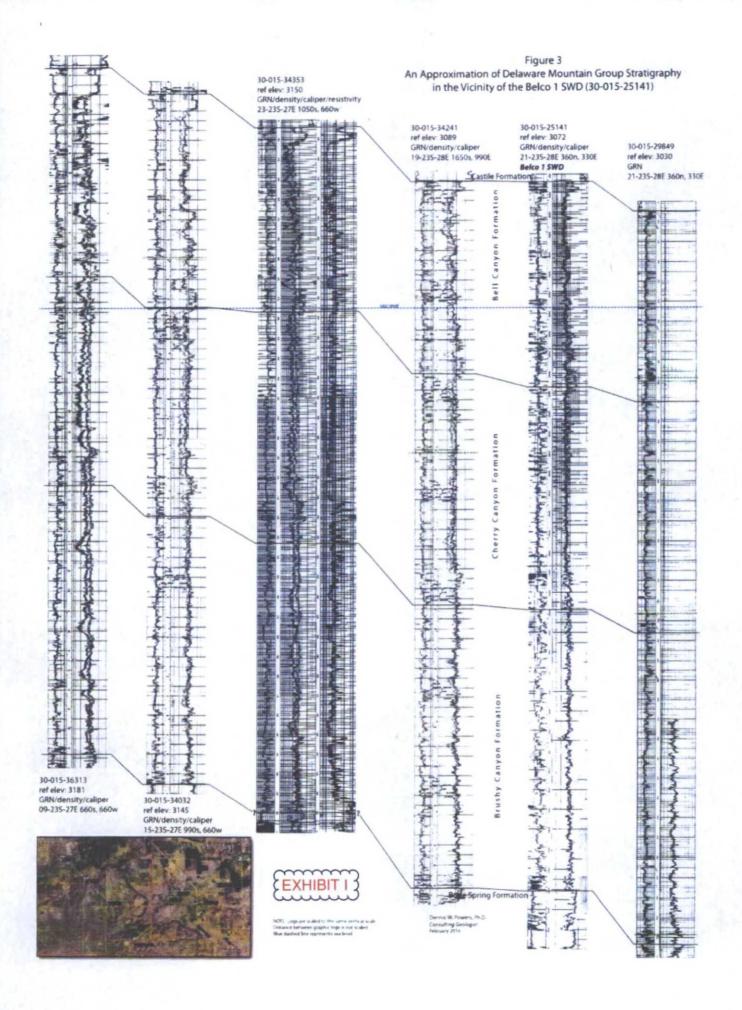
Bachman, G.O., 1984, Regional geology of Ochoan evaporites, northern part of Delaware Basin: Circular 184, New Mexico Bureau of Mines & Mineral Resources, Socorro, NM.

Broadhead, R.F., and Gillard, L., 2005, Structure contours on Bone Spring Formation (Lower Permian), Delaware Basin: Open file report 488, New Mexico Bureau of Geology and Mineral Resources, Socorro, NM.

Garber, R.A., Grover, G.A., and Harris, P.M., Geology of the Capitan shelf margin - subsurface data from the northern Delaware Basin, in Harris, P.M., and Grover, G.A., eds., Subsurface and Outcrop Examination of the Capitan Shelf Margin, Northern Delaware Basin: SEPM Core Workshop No. 13, p. 3-269.

Harms, J.C., 1974, Brushy Canyon Formation, Texas: A deep-water density current deposit: Geological Society of America Bulletin, v. 85, p. 1763-1784.





### LEGAL NOTICE

Basic Energy Services LP is applying to amend its existing Belco. I saltwater disposal well. The well is at 2200 FNL & 660 FWL Sec. 20, T. 23 S. R. 28 E. Eddy County and is 2/3 mile west of Loving NM. Disposal will be in the Delaware (Bell, Cherry, & Brushy Canyon zones) from 2,490 to 5,809. Maximum injection pressure will be 498 ps. Maximum disposal rate will be 5,600 bwpd. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division. 1220 South Saint Francis Dr. Santa Fe. NM 92,87505 within 15 days. Additional information can be obtained by contacting. Brian Wood. Permits West. Inc. 37 Verano Loop. Santa Fe. NM 87508. Phone number is (505) 466-8120.



March 9, 2016

Basic Energy Services LP is applying to amend Its existing Beloo 1 saltwater disposal well. The well is at 2200 FML & 660 FWL Sec. 20, T. 23 S., R. 28 E., Eddy County and is 2/3 mile west of Lowing, NM. Disposal will be in the Delaware (Bell, Cherry, & Brushy Canyon zones) from 2,490° to 5,809°. Maximum Injection pressure will be 498 Brushy Canyon zones from 2,490° to 5,809°. Maximum Injection pressure will be 490 be 100 by Maximum Injection pressure will be 498 for individual to 100 by Maximum Injection pressure will be 490 by Maximum Injection pressure





Chevron USA Inc. PO Box 2100 Houston TX 77252

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

TD = 6521'Well: Belco 1

Proposed Disposal Zone: Delaware (2490' to 5809')

Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM Applicant Name: Basic Energy Services, LP (575) 746-2072 Applicant's Address: P. O. Box 1375, Artesia NM 88211

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

Please call me if you have any questions.

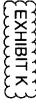
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LO 07 Brian Wood

Sincerely.

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March 9, 2016

Henry McDonald PO Box 597 Loving NM 88256

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules. I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

TD = 6521'Well: Belco 1

Proposed Disposal Zone: Delaware (2490' to 5809')

Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM

Applicant Name: Basic Energy Services, LP (575) 746-2072

Applicant's Address: P. O. Box 1375, Artesia NM 88211

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

Please call me if you have any questions.

Sincerely.





BC Operating, Inc. PO Box 50820 Midland TX 7.9710

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Belco 1 TD = 6521'

Proposed Disposal Zone: Delaware (2490' to 5809')

Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM Applicant Name; Basic Energy Services, LP (575) 746-2072 Applicant's Address; P. O. Box 1375, Artesia NM 88211

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

Please call me if you have any questions.

Sincerely,

Brian Wood







March 9, 2016

COG Operating, LLC 600 W. Illinois Ave. Midland TX 79701

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Belco 1

ID = 6521'

Proposed Disposal Zone: Delaware (2490' to 5809')

Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM

Applicant Name: Basic Energy Services, LP (575) 746-2072

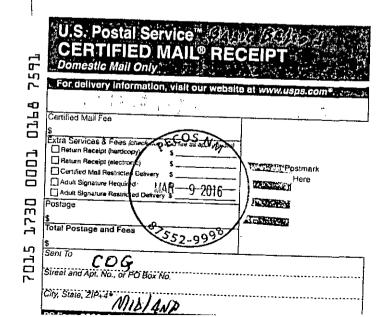
Applicant's Address: P. O. Box 1375, Artesia NM 88211

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

Please call me if you have any questions.

Sincerely,

Brian Wood





Featherstone Development PO Box 429 Roswell NM 88202

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Belco 1 TD = 6521'

Proposed Disposal Zone: Delaware (2490' to 5809')

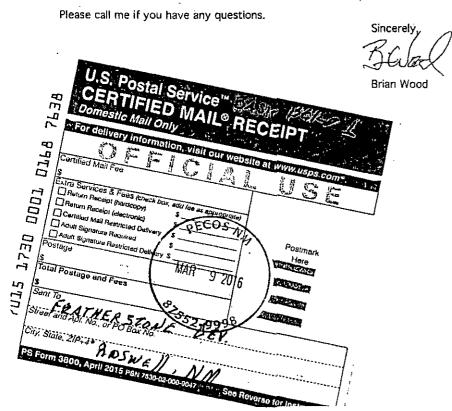
Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM

Applicant Name: Basic Energy Services, LP (575) 746-2072

Applicant's Address: P. O. Box 1375, Artesia NM 88211

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





March 9, 2016

MRC Permian LKE Co. LLC 5400 LBJ Freeway, Suite 1500 Dallas TX 75240

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Belco 1 <u>TD</u> = 6521'

Proposed Disposal Zone: Delaware (2490' to 5809')

Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM

Applicant Name: Basic Energy Services, LP (575) 746-2072

Applicant's Address: P. O. Box 1375, Artesia NM 88211

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

Please call me if you have any questions. Sincerely U.S. Postal Service™ CERTIFIED MAIL® RECEIP Domestic Mall Only \_ গুEor delivery information, visit our website at www.usps.com=. ১৩০০ চন 切 \_ Certified Mail Fee Extra Services & Fees (check box Return Receipt (hardcopy) 0001 A STREET, IS A STREET Return Receipt (electronic) Certified Mail Restricted Delty Adult Signature Required ALC: NO Adult Signature Restricted Deliv 30 A A LANGE  $\sim$ Total Postage and Fees  $\overline{\phantom{a}}$ 4 707 City, State, ZIP+4 PS Form 3800, April 2015 PSN 7530-02-000-8047

EXHIBIT K



Mewbourne Oil Company PO Box 5270 Hobbs NM 88241

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Belco 1 <u>TD</u> = 6521'

Proposed Disposal Zone: Delaware (2490' to 5809')

Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM

Applicant Name: Basic Energy Services, LP (575) 746-2072

Applicant's Address: P. O. Box 1375, Artesia NM 88211

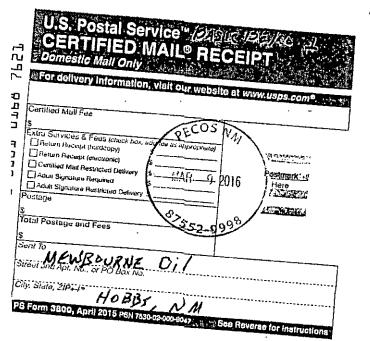
<u>Submittal Information</u>: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The New Mexico Oil Conservation Division address is 1220 South St.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

Please call me if you have any questions.

Sincerely,

BLUES

Brian Wood







March 9, 2016

Legacy Reserves PO Box 10848 Midland TX 79702

Basic Energy Services, LP is applying (see attached application) to increase the disposal volume and disposal interval in its existing Belco 1 saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Belco 1 <u>TD</u> = 6521'

Proposed Disposal Zone: Delaware (2490' to 5809')

Location: 2200' FNL & 660' FWL Sec. 20, T. 23 S., R. 28 E., Eddy County, NM

Approximate Location: ≈2/3 mile west of Loving, NM

Applicant Name: Basic Energy Services, LP (575) 746-2072

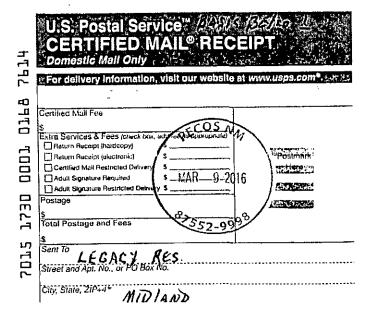
Applicant's Address: P. O. Box 1375, Artesia NM 88211

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

Please call me if you have any questions.

Sincerely,

Brian Wood



ADMINISTRATIVE ORDER SWD-666

# APPLICATION OF RAY WESTALL FOR SALT WATER DISPOSAL, EDDY COUNTY, NEW MEXICO.

## ADMINISTRATIVE ORDER OF THE OIL CONSERVATION DIVISION

Under the provisions of Rule 701(B), Ray Westall made application to the New Mexico Oil Conservation Division on May 15, 1997, for permission to complete for salt water disposal its Belco Well No.1 located 2200 feet from the North line and 660 feet from the West line (Unit E) of Section 20, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico.

### THE DIVISION DIRECTOR FINDS THAT:

- (1) The application has been duly filed under the provisions of Rule 701(B) of the Division Rules and Regulations;
- (2) Satisfactory information has been provided that all offset operators and surface owners have been duly notified;
- (3) The applicant has presented satisfactory evidence that all requirements prescribed in Rule 701 will be met; and
  - (4) No objections have been received within the waiting period prescribed by said rule.

### IT IS THEREFORE ORDERED THAT:

The applicant herein, is hereby authorized to complete its Belco Well No.1 located 2200 feet from the North line and 660 feet from the West line (Unit E) of Section 20, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico, in such manner as to permit the injection of salt water for disposal purposes into the Delaware formation at approximately 5,726 feet to 5,809 feet through 2 7/8-inch plastic-lined tubing set in a packer located at approximately 5,675 feet.

### IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

Prior to commencing injection operations into the well, the casing shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing, or packer.

The injection well or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection well to no more than 1145 psi.

The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Delaware formation. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to this office.

The operator shall notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment and of the mechanical integrity test so that the same may be inspected and witnessed.

The operator shall immediately notify the supervisor of the Artesia district office of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

PROVIDED FURTHER THAT, jurisdiction of this cause is hereby retained by the Division for the entry of such further order or orders as may be deemed necessary or convenient for the prevention of waste and/or protection of correlative rights; upon failure of the operator to conduct operations in a manner which will ensure the protection of fresh water or in a manner inconsistent with the requirements set forth in this order, the Division may, after notice and hearing, terminate the injection authority granted herein.

The operator shall submit monthly reports of the disposal operations in accordance with Rule Nos. 706 and 1120 of the Division Rules and Regulations.

The injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

Approved at Santa Fe, New Mexico, on this 7th day of July, 1997.

WILLIAM J. LEMAY, Director

WJL/BES

cc: Oil Conservation Division - Artesia

### McMillan, Michael, EMNRD

From:

McMillan, Michael, EMNRD

Sent:

Friday, March 11, 2016 1:16 PM

To:

'Brian Wood'

Subject:

RE: Basic Energy Services LP Belco SWD Well No.1

**Attachments:** 

Belco#1C103.pdf

### Brian:

The OCD need two more items that need to be addressed with the proposed SWD application

A before well diagram, showing existing perfs, casing, etc.

Basic Energy on the October 11, 2015 C-103 Sundry stated that a Casing Inspection Imaging Toll was ran, and the finding were to be reported to Artesia District Office, and Santa Fe. However, the Santa Fe Office has not received a copy of the report.

Thank You

### Michael A. McMillan

Engineering and Geological Services Bureau, Oil Conservation Division 1220 South St. Francis Dr., Santa Fe NM 87505 O: 505.476.3448 F. 505.476.3462 Michael.mcmillan@state.nm.us

From: McMillan, Michael, EMNRD Sent: Friday, March 11, 2016 10:21 AM

To: 'Brian Wood'

Subject: Basic Energy Services LP Belco SWD Well No.1

### Brian:

I received your Administrative Application for the Basic Energy Services LP Belco SWD Well NO. 1

### I need the following information

- Affidavit of publication
- Is the well active, and what is the surface pressure and average daily rate?

Thank You

### Michael A. McMillan

Engineering and Geological Services Bureau, Oil Conservation Division 1220 South St. Francis Dr., Santa Fe NM 87505 O: 505.476.3448 F. 505.476.3462

# Michael.mcmillan@state.nm.us



March 15, 2016

Michael McMillan NM Oil Conservation Division 1220 S. St. Francis Dr. Santa Fe NM 87505

Dear Michael,

As requested, I am enclosing the following information for Basic Energy Services' Belco 1 (30-015-25141) SWD application.

- 1. Affidavits of publication from the Carlsbad and Artesia newspapers are attached.
- 2. Well was last active in October 2015. Well has been TSI since then. Pressure is 880 psi. During the last full month of operations (September 2015), an average of 2,853 bwpd were disposed.
- 3. A "current" well diagram is attached.
- 4. The well was treated on October 15, 2015 to remove scale. A weighted bar on a slick line was run several times the next day. The bar hit something solid at 4783' each time. Rather than risk losing the casing inspection log as a fish, operations were suspended. The log was not run.

Please let me know if you need any other information.

Sincerely,

Brian Wood

Cc: Alvarado

NECEIVED OCD

### Affidavit of Publication

State of New Mexico, County of Eddy, ss.

Rynni Henderson, being first duly sworn, on oath says:

That she is the Publisher of the Current-Argus, Carlsbad newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may published: that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

March 9

2016

That the cost of publication is \$51.48 and that payment thereof has been made and will be assessed as court

Subscribed and sworn to before me this // day of // w.c.,

My commission Expires

**Notary Public** 

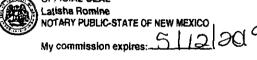


March 9, 2016

Basic Energy Services
LP is applying to amend its existing Belco 1 saltwater disposal well. The well is at 2200 FNL & 660 FWL'Sec. 20, T. 23, S., R. 288 E., Eddy County and is 2/3 mile west of Loving, NM. Disposial, will be tin; the Delaware (Bell, Cherry, & Brushy Canyon (zones) from 2,490 to 5,809. Maximum linjection pressure will be 498 psi: Maximum disposial rate will be 5,600 bwpd. binterested parties must file objections or requests for hearing with the NM Oll. Conservation Division, 1220. South Saint Francis Dr., Santa Fe NM 87505 within 15 days. "Additional information; can be obtained by contacting Brian, Wood," Permits West, Inc., 37, Verano Loop, Santa Fe, ANM 87508 Phone number (505) 466-8120.

## Affidavit of Publication

23854 State of New Mexico County of Eddy: **Danny Scott** being duly s sworn sayes the that she is the Publisher of the Artesia Daily Press, a daily newspaper of General circulation, published in English at Artesia, said county and state, and that the hereto attached Legal Ad was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for Consecutive weeks/day on the same day as follows: March 9, 2016 First Publication Second Publication Third Publication Fourth Publication Fifth Publication Sixth Publication Subscribed and sworn before me this 9th day of March 2016 OFFICIAL SEAL Latisha Romine



Latisha Romine

Notary Public, Eddy County, New Mexico

## Copy of Publication:

### LEGAL NOTICE

Basic Energy Services LP is applying to amend its existing Belco 1 saltwater disposal well. The well is at 2200 FNL & 660 FWL Sec. 20, T. 23 S., R. 28 E. Eddy County and is 2/3 mile west of Loving, NM. Disposal will be in the Delaware (Bell, Cherry, & Brushy Canyon zones) from 2,490 to 5,809. Maximum disposal rate will be 5,600 mum injection pressure, will be 498 psi Maximum disposal rate will be 5,600 mum disposal rate. mum injection pressure will be 498 psi Maximum disposal rate will be 5,000 bwpd. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505, within 15 days Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508, Phone number is (505) 466-8120

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Belco # 1 SWD Unit E, Sec 20, T23S, R28E Eddy County API #: 30-015-25141	10/16/15		
KB: GL		Tree Connection:	2-7/8" 8rd
Surface Hole Bit Size: 12 1/4"		Surface Casing: Setting Depth @	8 5/8" 24# 280sks circulated 473'
Inter. Hole Bit Size: None		Interm. Casing:	None
Production Hole Bit Size: 77/8"		Setting Depth:	None
Σ		119 jts Btm. PKR Arrow Set 27/8 x 5 1/2	@ 3824.45" 2 AS1-X w/ 2.25 F NP T-2 O/O SS Tool
Cement Data: Lead -		Perf (3950'- 4250 Perf (4184' - 419	0)' 15') squeezed 6-13-85
Tail -	1	— Tagged @ 4784' 10/16/15 wire line	
Note -	100		
			4') (5242' - 5254') squeezed 6-13-85 (8') (5803' - 5809') 2/8/85
		Production Csg:	5-1/2" 17#
	62	Setting Depth @	575 sxs Circulated 6500'
Bit Size: 7-7/8"		PBTD	6500'
<u>-</u> -	D @ 6521'		

Current

4 " "

Basic Energy Services L.P.