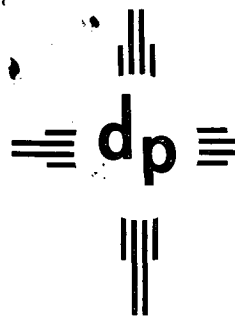


9/14/06

10/7/06

SWD-1047

PTRS062851152



# dugan production corp.

2006 SEP 21 PM 12:38

Mr. Will Jones  
New Mexico Oil Conservation Division - Engineering Bureau  
1220 South Saint Francis Street  
Santa Fe, New Mexico 87505

September 20, 2006

30-045-33932

(1256 PSC)

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**  
**7005 2570 0001 3771 6333**

Re: Application to Class 2, water disposal well, Cochran SWD #2 San Juan County, NM

Dear Mr. Jones:

Enclosed, is Dugan Production Corp.'s application for disposal of produced water in the Cochran SWD #2. In fulfilling the requirements of application, the following materials are provided herein:

1. Form C-108, Application for Authorization to Inject.
2. Tabular and schematic data on proposed injection well.
3. Lease and surface owner maps identifying all wells and leases within 2-miles of proposed injection well with a one-half mile radius circle drawn around the proposed injection well.
4. Data sheet of wells within 2-miles of proposed injection well, highlighting those wells inside one-half mile radius around the injection well.
5. Operations plan for proposed injection well.
6. Water Analysis of produced water to be disposed in proposed injection well (Fruitland Coal and Chacra).
7. Required geologic, stimulation, logging and test data and fresh water data from nearby wells.
8. Signed statement of geologic and engineering data.
9. Proof of notice in the form of notification letters sent to offsetting operators and surface owners and a copy of the Affidavit of Publication of the notice as it appeared in the Farmington Daily Times.

If you have questions or need additional information, please contact me.

Very Sincerely,

*Kurt Fagrelus*  
Kurt Fagrelus

Attachments

cc: Mr. Charlie Perrin-New Mexico Oil Conservation Division, 1000 Rio Bravo Rd, Aztec, NM 87410  
Mr. David Mankiewicz-Bureau of Land Management, 1235 La Plata Hwy, Farmington, NM 47401  
Ms. Debbie Padilla-New Mexico State Land Office, PO Box 1148, Santa Fe, NM 87504-1148  
Mr. James Miles-Federal Indian Minerals Office, 1235 La Plata Hwy, Farmington, NM 87401  
Navajo Nation Minerals Dept., PO Box 1910, Window Rock, AZ 86515  
The Blanco Co., PO Box 3010, Ruidosa, NM 88355  
Ms. Denise Greer-T,H, McElvain Oil and Gas, 1050 17<sup>th</sup> St., Suite 1800, Denver, CO 80265-1801  
Mr. David Poage-Energen Resources, 2198 Bloomfield Hwy, Farmington, NM 87401  
Koch Exploration, 610 South Main, Aztec, NM 87410  
Mr. Ben Malone-Burlington Resources, PO Box 4289, Farmington, NM 87499-4289

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: Secondary Recovery Pressure Maintenance ☒ Disposal Storage  
Application qualifies for administrative approval? Yes No
- II. OPERATOR: Dugan Production Corp.  
ADDRESS: 709 East Murray Drive, Farmington, New Mexico 87401  
CONTACT PARTY: Kurt Fagrelius PHONE: 505-325-1821
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? Yes ☒ No  
If yes, give the Division order number authorizing the project: \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: Kurt Fagrelius TITLE: Geology  
SIGNATURE: Kurt Fagrelius DATE: Sept. 15, 2006  
E-MAIL ADDRESS: kfagrelius@duganproduction.com
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

### III. WELL DATA

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

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

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

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

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

### XIV. PROOF OF NOTICE

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

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

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

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

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

Application for Authorization to Inject

Dugan Production Corp.

**Cochran SWD #2**

General Information

Dugan Production Corp. is hereby, making application for administrative approval to dispose of produced water by underground injection. The proposed disposal site is the Cochran SWD #2 well, located 1690' FNL & 1170' FEL, Sec. 16, Twn. 22N, Rng. 8W, San Juan Co., NM. Produced water will be injected into the Entrada Sandstone between 6280' and 6480'. The maximum injection pressure will be 1255 psi and the maximum injection rate will be 6,000 barrels of water daily.

The well will be a new drill for the purpose of salt water disposal. The permit to drill has been approved and plans are to begin drilling rig September or October of 2006. Upon approval of this application, an injection test will be conducted. If adequate rates are not found, it may be necessary to stimulate the proposed injection zone or perforate additional zones in the well.

Any change to the plans contained herein, will be approved by the New Mexico Oil Conservation Division prior to implementation.

Application for Authorization to Inject

Dugan Production Corp.

**Cochran SWD #2**

Part III. Well Data

A. Tabular Information

1. Name: Cochran SWD #2  
  
Location: 1690' FNL & 1170' FEL  
Sec. 16, T22N, R8W  
San Juan Co., NM
2. Surface Casing: 8-5/8" 24#, J-55 set @ 360'. Cemented with 250-cu.ft. Circulate cement to surface.  
Hole size – 12-1/4".  
  
Production Casing: 5-1/2" 17#, N-80 and 15.5# J-55 set @ 6600'.  
Cement in two stages with stage tool at 3200' using 630 cu.ft. in first stage and 800 cu.ft in the second stage. Circulate cement to surface on second stage.  
Hole size – 7-7/8".
3. Injection Tubing: 2-7/8", EUE, 6.5#, plastic lined tubing.
4. Packer: Baker Model AD-1 tension packer, plastic lined, will be set at 6230' or 50' above the upper most perforation.

B. Additional Information

1. Injection Interval: Entrada Sandstone.
2. The injection interval (Entrada 6280' – 6480') will be perforated.
3. The well (Cochran SWD #2) will be drilled for the purpose of injection.
4. Only the injection interval is to be perforated.
5. Fruitland Coal / Pictured Cliffs Sandstone – Approx. 690', Chacra – Approx. 945', Gallup Sandstone – Approx. 3920'.

## INJECTION WELL DATA SHEET

OPERATOR: Dugan Production Corp.WELL NAME & NUMBER: Cochran SMD #2WELL LOCATION: 1690' FNL and 1170' FEL

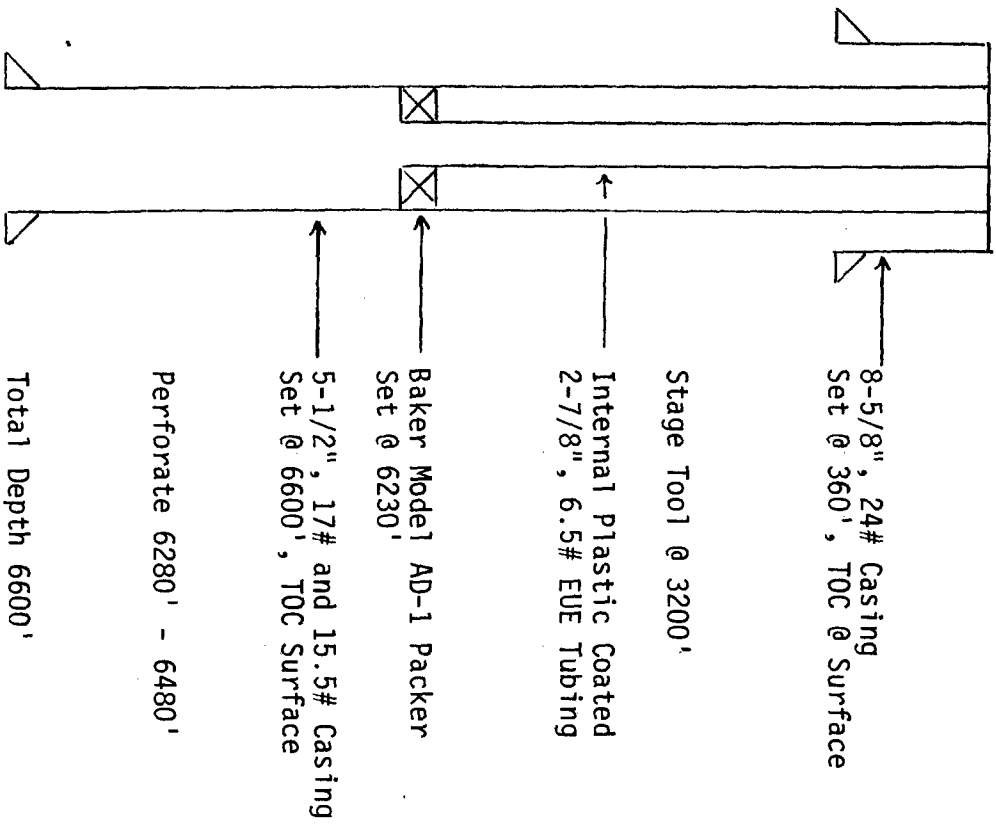
FOOTAGE LOCATION

UNIT LETTER

SECTION

TOWNSHIP

RANGE

WELLBORE SCHEMATIC

H

16

22N

8W

WELL CONSTRUCTION DATASurface CasingHole Size: 12-1/4"Casing Size: 8-5/8"Cemented with: 180 sx.or 250 ft<sup>3</sup>Top of Cement: SurfaceMethod Determined: Will CirculateIntermediate Casing

Hole Size: \_\_\_\_\_

Casing Size: \_\_\_\_\_

Cemented with: \_\_\_\_\_ sx.

or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: \_\_\_\_\_

Method Determined: \_\_\_\_\_

Production CasingHole Size: 7-7/8"Casing Size: 5-1/2"Cemented with: 700 sx.or 1525 ft<sup>3</sup>Top of Cement: SurfaceMethod Determined: Will CirculateTotal Depth: 6600'

Perforate 6280' - 6480'

Injection Interval6280 feet to 6480

(Perforated or Open Hole; indicate which)

Other Type of Tubing/Casing Seal (if applicable): Not Applicable

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

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

3. Name of Field or Pool (if applicable): Not Applicable

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. New well will be drilled for purpose of injection into Entrada Ss., no other zones will be perf'd.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Fruitland Coal 675', Chacra Ss. 975', Gallup Ss. 3975'.

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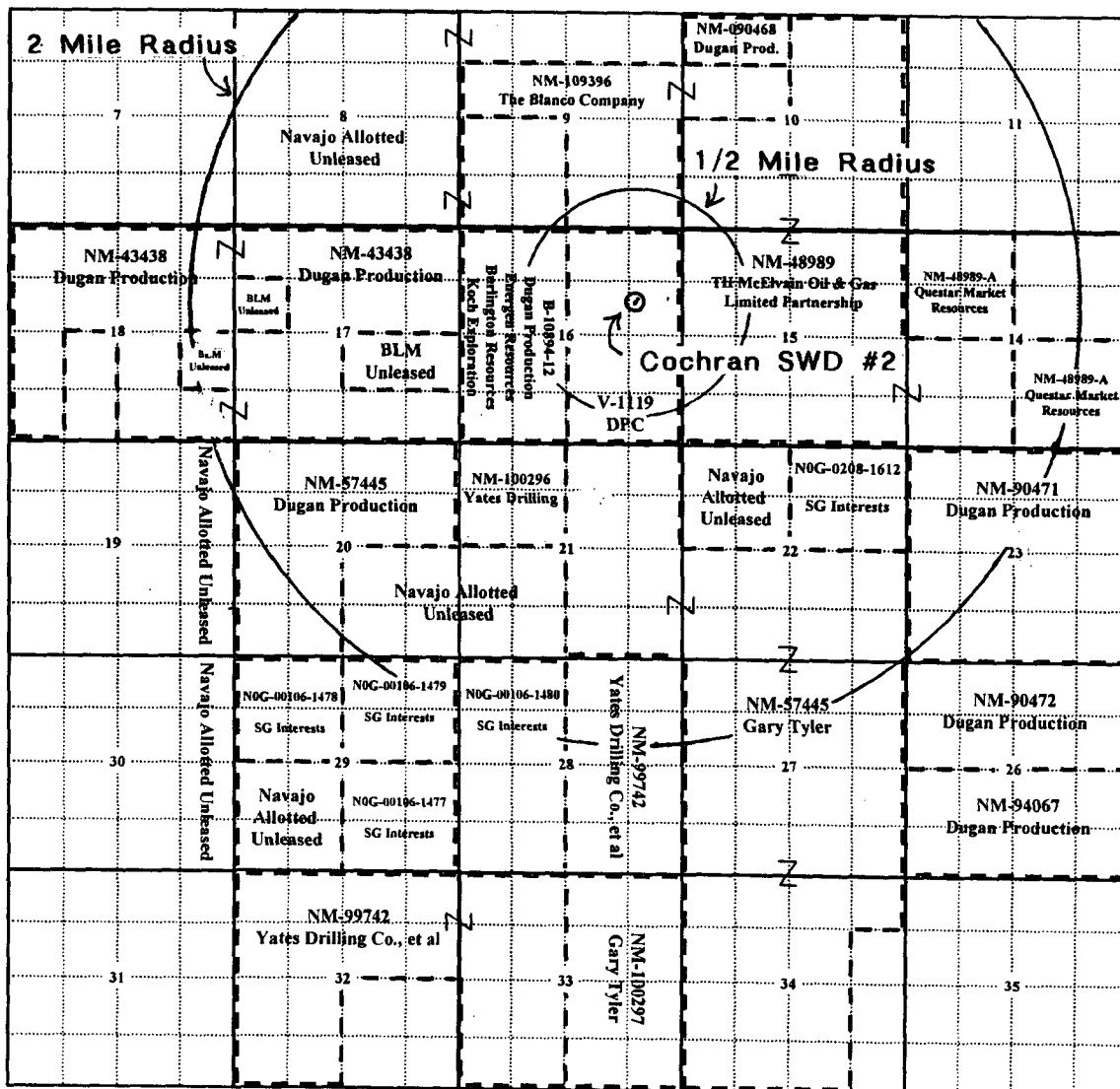
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# Va. Lease Owner Map

TOWNSHIP 22 NORTH, RANGE 8 WEST  
SAN JUAN COUNTY, NEW MEXICO

## OFFSET OPERATOR/LESSEE



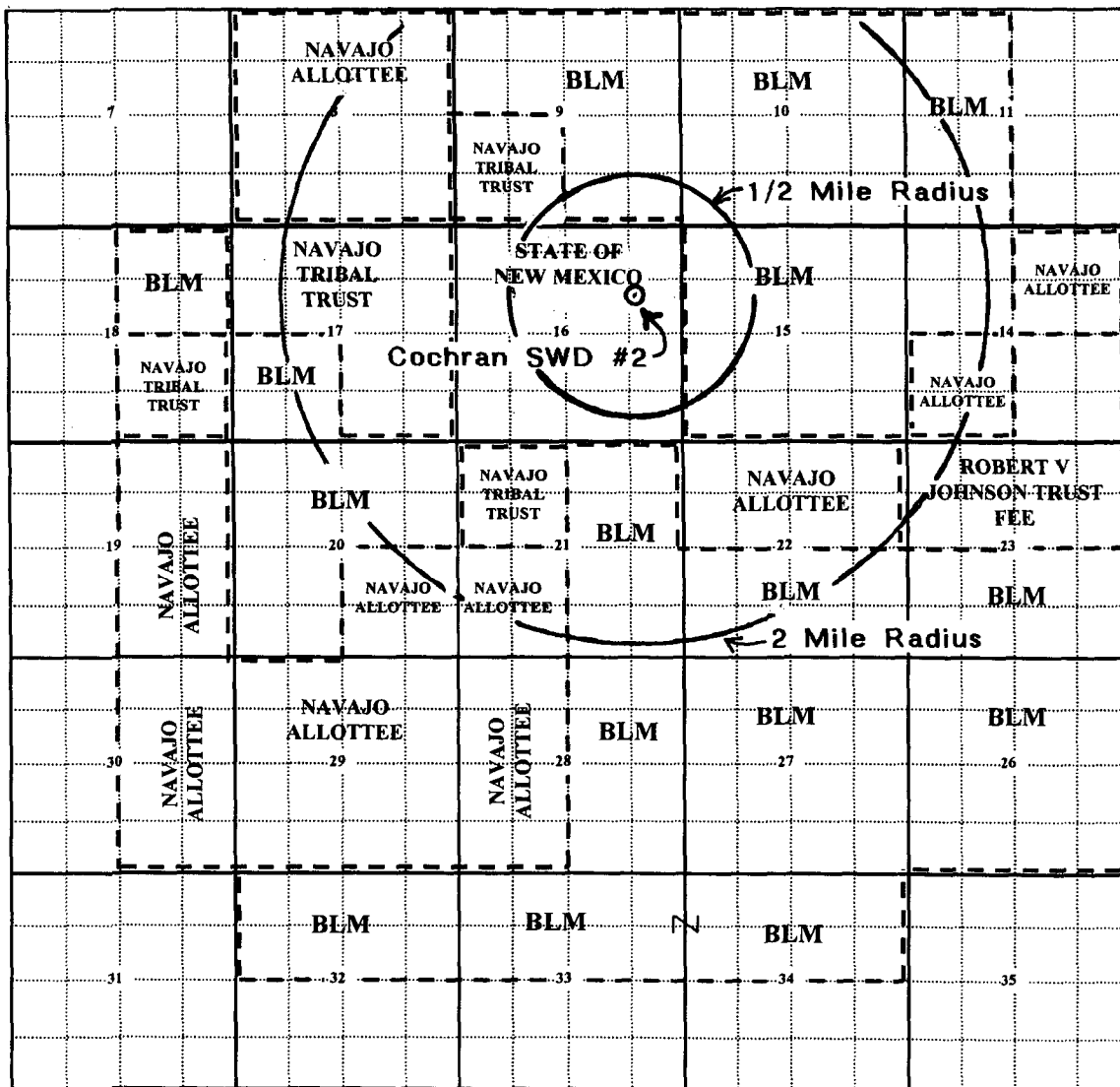
DPC = Dugan Production

Dugan Production Corp.  
Cochran SWD #2  
Sec. 16, T22N, R8W  
1690' FNL and 1170' FEL  
San Juan County, New Mexico  
Salt Water Disposal Application

## Vb. Surface Owner Map

TOWNSHIP 22 NORTH, RANGE 8 WEST  
SAN JUAN COUNTY, NEW MEXICO

### SURFACE OWNERSHIP



Dugan Production Corp.

Cochran SWD #2

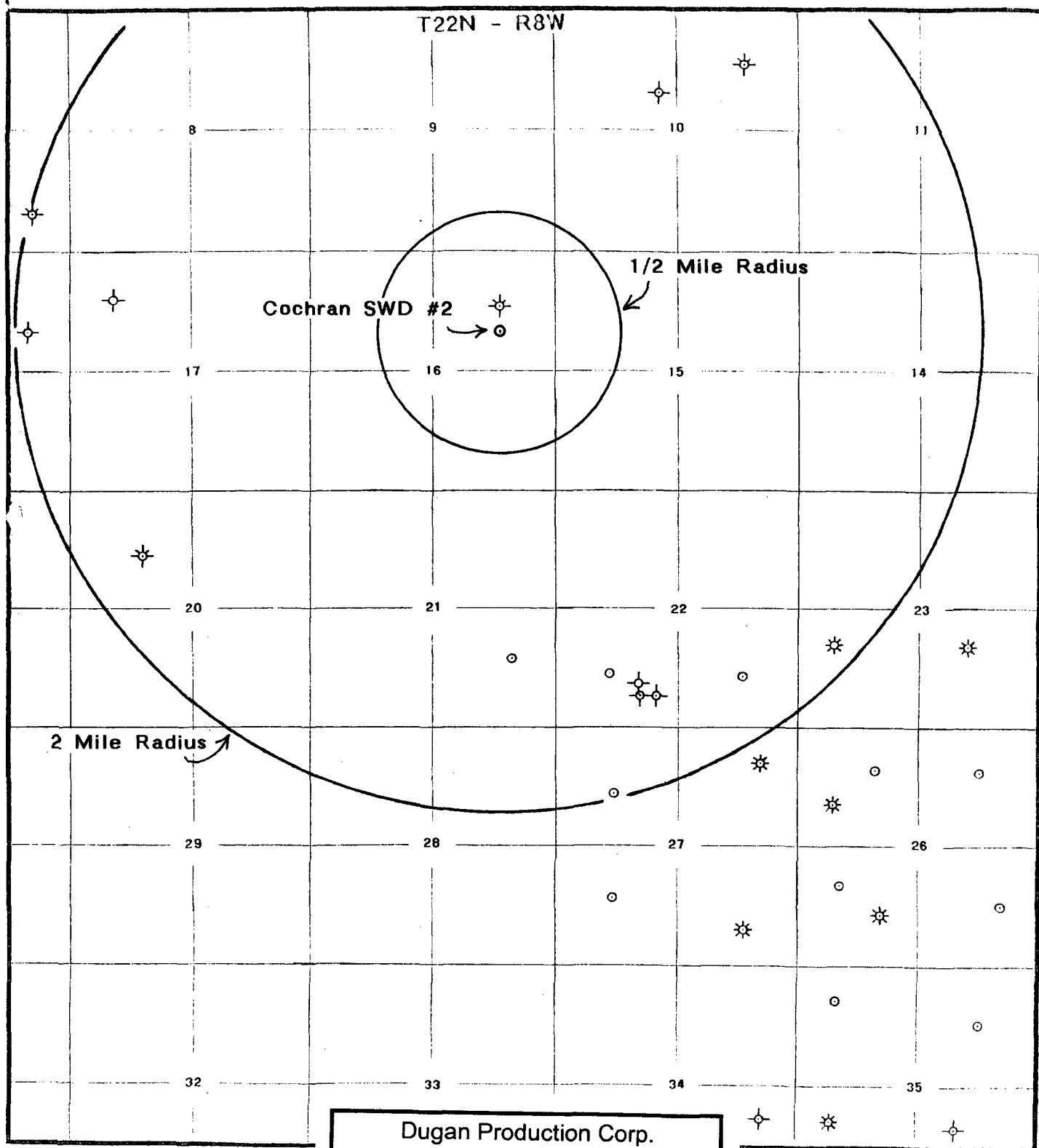
Sec. 16, T22N, R8W

1690' FNL and 1170' FEL

San Juan County, New Mexico

Salt Water Disposal Application

# Part Vc. Well Map



Dugan Production Corp.  
Cochran SWD #2  
Sec. 16, T22N, R8W  
1690' FNL and 1170' FEL  
San Juan County, New Mexico  
Salt Water Disposal Application

Application for Authorization to Inject

Dugan Production Corp.

**Cochran SWD #2**

Part VI. Data on offset wells

A tabulation of data on all existing, offset wells (shown on the Well Map Part Vc.) that highlights those wells that fall within the ½-mile area of review is presented on Attachment VIa. No wells within the area of review penetrate the proposed injection zone.

Attachment VIa. Tabulation of data on offset wells.

Dugan Production Corp., Cochran SWD #2, S.16, T22N, R8W

OPERATOR	WELL NAME	WELL NO	TWN	RGE	SEC	UL	FTAGE NS	FTAGE EW	STATUS	POOL	TD
DUGAN PRODUCTION CORP	PRESLEY	1	22N	08W	07	P	790/S	790/E	CO	BISTI CHACRA	1305
MCELVAIN O&G PROP INC	WARNER FEDERAL	1	22N	08W	10	A	1130/N	1130/E	SI	EAST BISTI CHACRA	5855
MCELVAIN O&G PROP INC	WARNER FEDERAL	1	22N	08W	10	A	1130/N	1130/E	TA	BISTI CHACRA	5855
MCELVAIN O&G PROP INC	WARNER FEDERAL	1	22N	08W	10	A	1130/N	1130/E	ZA	ALAMITO GALLUP	5855
BECHTEL & SCHULTZ	BECHSCHUL	1	22N	08W	10	F	1850/N	2310/W	PA	WC D3:MORRISON	5740
DUGAN PRODUCTION CORP	COCHRAN	1	22N	08W	16	A	1165/N	1170/E	SI	BISTI CHACRA	1700
DUGAN PRODUCTION CORP	COCHRAN SWD	2	22N	08W	16	H	1690/N	1170/E	PE	ENTRADA SWD	6600
BENSON MINERAL GROUP INC	FEDERAL 17-22-8	1	22N	08W	17	D	1060/N	950/W	PA	WC D3:CHACRA	1475
DUGAN PRODUCTION CORP	CLEVE KYLE	1	22N	08W	18	H	1735/N	900/E	PA	BISTI CHACRA	1350
DUGAN PRODUCTION CORP	ZAPPA	1	22N	08W	20	F	1450/N	1550/W	SI	BISTI CHACRA	1220
DUGAN PRODUCTION CORP	ZAPPA	2	22N	08W	20	F	1450/N	1600/W	SI	BASIN FRUITLAND COAL	813
SAN JUAN VENTURE	MIDWAY	2	22N	08W	22	N	717/S	2214/W	PA	WC D3:CHACRA	1450
SAN JUAN VENTURE	MIDWAY	3	22N	08W	22	N	990/S	1850/W	PA	WC D3:CHACRA	1449
SAN JUAN VENTURE	MIDWAY	1	22N	08W	22	N	790/S	1850/W	PA	WC D3:CHACRA	1468
DUGAN PRODUCTION CORP	GOODMAN	90	22N	08W	23	I	1830/S	1570/E	CO	BASIN FRUITLAND COAL	940
DUGAN PRODUCTION CORP	GOODMAN	2	22N	08W	23	L	1850/S	810/W	CO	RUSTY CHACRA	1340
DUGAN PRODUCTION CORP	DORSEY	1	22N	08W	26	E	1720/N	790/W	CO	RUSTY CHACRA	1360
DUGAN PRODUCTION CORP	ELLINGTON	1	22N	08W	26	N	1100/S	1850/W	CO	RUSTY CHACRA	1395
DUGAN PRODUCTION CORP	ZAPPA	91	22N	08W	27	A	790/N	790/E	CO	BASIN FRUITLAND COAL	700
DUGAN PRODUCTION CORP	ZAPPA	3	22N	08W	27	P	790/S	1190/E	CO	RUSTY CHACRA	1405
DUGAN PRODUCTION CORP	ZAPPA	3	22N	08W	27	P	790/S	1190/E	CO	BASIN FRUITLAND COAL	1405
DUGAN PRODUCTION CORP	DILLY	1	22N	08W	34	I	1850/S	790/E	PA	WC D3:CHACRA	1465
DUGAN PRODUCTION CORP	BILLIE	1	22N	08W	35	J	1650/S	1770/E	PA	WC D3:CHACRA	1460
DUGAN PRODUCTION CORP	BILLIE	2	22N	08W	35	L	1850/S	790/W	CO	RUSTY CHACRA	1480
DUGAN PRODUCTION CORP	ZAPPA	3-S	22N	08W	27	L	1500/S	1280/W	PE	BASIN FRUITLAND COAL	880
DUGAN PRODUCTION CORP	ZAPPA	93-S	22N	08W	22	P	1100/S	1200/E	PE	BASIN FRUITLAND COAL	850
DUGAN PRODUCTION CORP	ZAPPA	92	22N	08W	21	I	1550/S	850/E	PE	BASIN FRUITLAND COAL	810
DUGAN PRODUCTION CORP	ZAPPA	93	22N	08W	22	M	1200/S	1200/W	PE	BASIN FRUITLAND COAL	835

Wells within 1/2-mile area of review are shaded (grey). No wells within the area of review penetrate the proposed injection zone.

Attachment Via. Tabulation of data on offset wells.

Dugan Production Corp., Cochran SWD #2, S.16, T22N, R8W

OPERATOR	WELL NAME	WELL NO	TWN	RGE	SEC	UL	FTAGE	NS	FTAGE	EW	STATUS	POOL	TD
DUGAN PRODUCTION CORP	ZAPPA	91-S	22N	08W	27	E	1500/N		1280/W		PE	BASIN FRUITLAND COAL	855
DUGAN PRODUCTION CORP	DORSEY COM	90	22N	08W	26	B	950/N		1750/W		PE	BASIN FRUITLAND COAL	1000
DUGAN PRODUCTION CORP	DORSEY COM	90-S	22N	08W	26	L	1800/S		1000/W		PE	BASIN FRUITLAND COAL	960
DUGAN PRODUCTION CORP	ELLINGTON COM	90	22N	08W	26	B	1000/N		1320/E		PE	BASIN FRUITLAND COAL	1010
DUGAN PRODUCTION CORP	ELLINGTON COM	90-S	22N	08W	26	P	1320/S		790/E		PE	BASIN FRUITLAND COAL	940
DUGAN PRODUCTION CORP	BILLIE COM	90	22N	08W	35	A	1300/N		1280/E		PE	BASIN FRUITLAND COAL	860
DUGAN PRODUCTION CORP	BILLIE COM	91	22N	08W	35	D	790/N		900/W		PE	BASIN FRUITLAND COAL	860

Wells within 1/2-mile area of review are shaded (grey). No wells within the area of review penetrate the proposed injection zone.

Application for Authorization to Inject

Dugan Production Corp.

**Cochran SWD #2**

Part VII. Operations Plan

1. Average Injection Rate: 5,000 bwpd with a maximum of 6,000 bwpd.
2. The system will be closed.
3. Average Injection Pressure: 1150 psi and the maximum will be 1255 psi.
4. The source of injected water will be produced water from Fruitland Coal and Chacra wells in the area (T22N, R8W and R9W). Attachment VII-4a., VII-4b. and VII-4c. are analyses of the Fruitland Coal and Chacra water in the immediate area. The water to be injected is compatible with the water in the disposal zone.
5. Injection is for disposal purposes into a zone (Entrada Sandstone) that is not productive of oil or gas within one mile of the proposed injection well. An analysis of the disposal zone water is in not available.

## Key Pressure Pumping Services

## Water Analysis Result Form

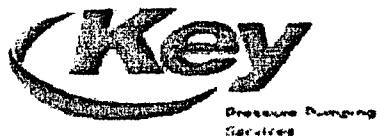
Farmington, NM.

708 S. Tucker

Phone:(505)325-4192

Fax:(505)564-3524

Zip:87401



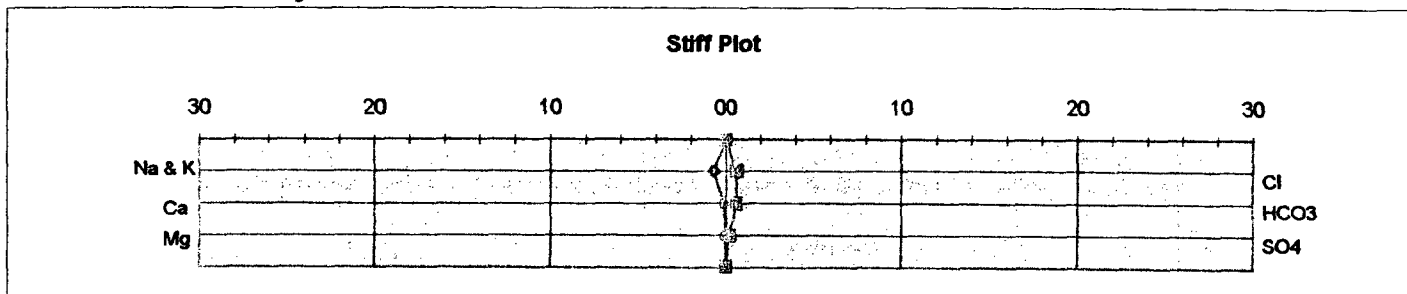
<b>Operator:</b>	Dugan Production	<b>Sample Date:</b>	August 21, 2006
		<b>Analysis Date:</b>	August 24, 2006
<b>Well :</b>	Hendrix #1	<b>District:</b>	Farmington
<b>Formation:</b>	Chacra	<b>Requested By:</b>	Marty Foutz
<b>County:</b>	San Juan	<b>Technician:</b>	Ben Barela
<b>Depth:</b>		<b>Source:</b>	Well

## PHYSICAL AND CHEMICAL DETERMINATION

<b>SPECIFIC GRAVITY:</b>	1.005	77 (°F)	<b>S.G. (Corrected):</b>	1.008
<b>pH:</b>	8.00		<b>MAGNESIUM:</b>	19 ppm
<b>RESISTIVITY:</b>	10.00 ohm/meter		<b>CALCIUM:</b>	48 ppm
<b>IRON:</b>	0.00 ppm		<b>BICARBONATES:</b>	728 ppm
<b>H2S:</b>	0 ppm		<b>CHLORIDES:</b>	5174 ppm
<b>POTASSIUM:</b>	18 ppm		<b>SODIUM :</b>	3545 ppm
<b>SULFATES:</b>	103 ppm		<b>TDS:</b>	9645 ppm

CaCO3 Scale Tendency = Remote

CaSO4 Scale Tendency = Remote



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



# Key Pressure Pumping Services

## Water Analysis Result Form

Farmington, NM.

708 S. Tucker

Phone: (505) 325-4192

Fax: (505) 564-3524

Zip: 87401



VII-4b.

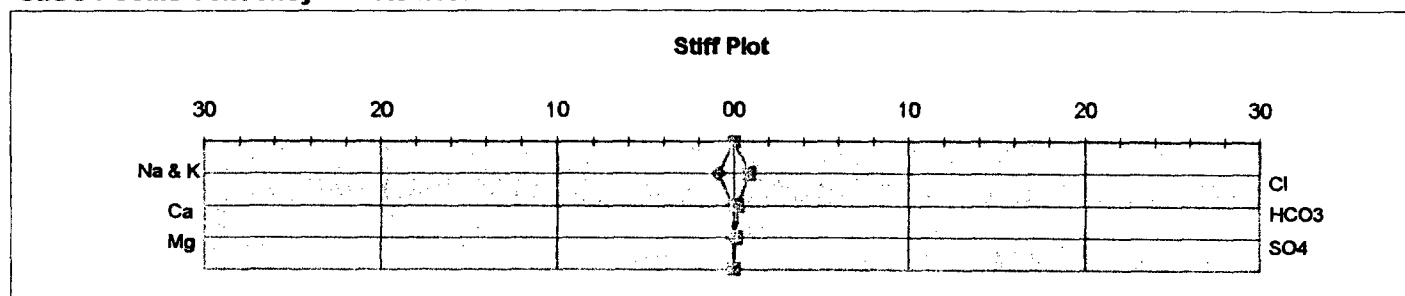
Operator:	Dugan Production	Sample Date:	August 21, 2006
		Analysis Date:	August 24, 2006
Well :	Presley #1	District:	Farmington
Formation:	Chacra	Requested By:	Marty Foutz
County:	San Juan	Technician:	Ben Barela
Depth:		Source:	Well

### PHYSICAL AND CHEMICAL DETERMINATION

SPECIFIC GRAVITY:	1.005	75 (°F)	S.G. (Corrected):	1.008
pH:	6.80		MAGNESIUM:	19 ppm
RESISTIVITY:	0.70 ohm/meter		CALCIUM:	24 ppm
IRON:	0.00 ppm		BICARBONATES:	243 ppm
H2S:	0 ppm		CHLORIDES:	7164 ppm
POTASSIUM:	26 ppm		SODIUM :	4678 ppm
SULFATES:	63 ppm		TDS:	12218 ppm

CaCO3 Scale Tendency = Remote

CaSO4 Scale Tendency = Remote



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



**Key Pressure Pumping Services**  
**Water Analysis Result Form**  
 Farmington, NM.  
 708 S. Tucker  
 Phone: (505) 325-4192  
 Fax: (505) 564-3524  
 Zip: 87401

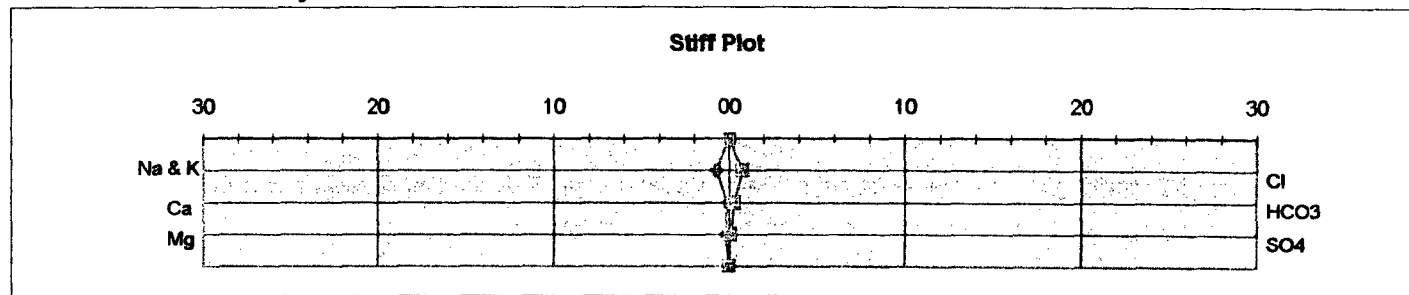
<b>Operator:</b>	Dugan Production	<b>Sample Date:</b>	August 21, 2006
		<b>Analysis Date:</b>	August 24, 2006
<b>Well :</b>	Zappa #3	<b>District:</b>	Farmington
<b>Formation:</b>	Fruitland Coal	<b>Requested By:</b>	Marty Foutz
<b>County:</b>	San Juan	<b>Technician:</b>	Ben Barela
<b>Depth:</b>		<b>Source:</b>	Well

**PHYSICAL AND CHEMICAL DETERMINATION**

<b>SPECIFIC GRAVITY:</b>	1.005	74 (°F)	<b>S.G. (Corrected):</b>	1.008
<b>pH:</b>	8.00		<b>MAGNESIUM:</b>	48 ppm
<b>RESISTIVITY:</b>	10.00 ohm/meter		<b>CALCIUM:</b>	40 ppm
<b>IRON:</b>	0.00 ppm		<b>BICARBONATES:</b>	364 ppm
<b>H2S:</b>	0 ppm		<b>CHLORIDES:</b>	5970 ppm
<b>POTASSIUM:</b>	16 ppm		<b>SODIUM :</b>	3891 ppm
<b>SULFATES:</b>	22 ppm		<b>TDS:</b>	10362 ppm

**CaCO3 Scale Tendency = Remote**

**CaSO4 Scale Tendency = Remote**



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

## Application for Authorization to Inject

Dugan Production Corp.

### **Zappa SWD #4**

#### Part VIII. Geologic Data

The proposed injection interval is the Entrada Sandstone from approximately 6200 – 6400 feet. The only known source of stock water in the area is encountered in existing arroyos at a depth of approximately 35 – 50 feet below the surface. The Ojo Alamo does not exist in this area and there are no known drinking water sources below the Mesaverde interval. The expected formation tops in the well are as follows:

Kirtland	Surface	Skelly	3980'
Fruitland	390'	Greenhorn	4880'
Pictured Cliffs	690'	Graneros	4920'
Lewis	815'	Dakota	4955'
Cliff House	1390'	Morrison	5255'
Menefee	1485'	Bluff	5760'
Point Lookout	2970'	Todilto	6220'
Mancos	3140'	Entrada	6280'
Gallup	3920'	<b>Total Depth</b>	<b>6600'</b>

#### Part IX. Stimulation Program

Following injection rate tests, it may be necessary to stimulate the Entrada Sandstone by acidizing or fracturing.

#### Part X. Logging and Test Data

All logs and test data for the injection well will be submitted to the New Mexico Oil Conservation Division in Aztec, NM

#### Part XI. Fresh Water Samples

A records search and field survey for existing water wells in the vicinity of the proposed disposal well were conducted. Three shallow water wells were located as follows:

Location and Distance From Proposed Disposal Well	Depth to Water	Water Source
NW/SE/SE S.14, T22N, R8W 2.1 Miles	est. 35 Feet	Arroyo
NW/SW/SE S. 15, T22N, R8W 0.9 Miles	est. 35 Feet	Arroyo
SE/SW/SE S.14, T22N, R8W 2.0 Miles	est. 35 Feet	Arroyo

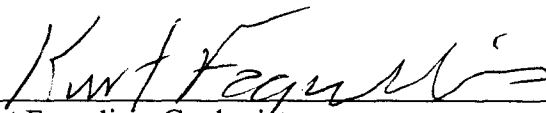
Application for Authorization to Inject

Dugan Production Corp.

**Cochran SWD #2**

Part XII. Statement of Geologic and Engineering Data

I have examined all available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

  
\_\_\_\_\_  
Kurt Fagrelus, Geologist

September 18, 2006  
Date

Application for Authorization to Inject

Dugan Production Corp.

**Cochran SWD #2**

Part XIII. Proof of Notice

Attached are proof's of notice that this application has been sent by certified mail, to the surface owner of the land which the injection well is to be located on and all leasehold operators within one-half mile of the well location. Also, proof of publication is enclosed showing the legal advertisement which was published in the Farmington Daily Times.

# AFFIDAVIT OF PUBLICATION

Ad No. 54023

## STATE OF NEW MEXICO County of San Juan:

ROBIN ALLISON, being duly sworn says:  
That she is the CLASSIFIED MANAGER 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 meaning of  
Chapter 167 of the 1937 Session Laws of the  
State of New Mexico for publication and  
appeared in the Internet at The Daily Times  
web site on the following day(s):

Friday, September 15, 2006.

And the cost of the publication is \$42.45.

Robin Allison

ON 9/19/06 ROBIN ALLISON  
appeared before me, whom I know personally  
to be the person who signed the above  
document.

Wynell Corey  
My Commission Expires November 17, 2008

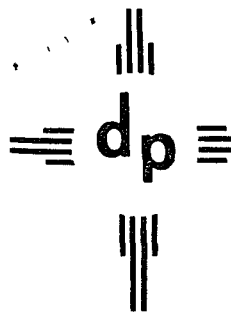


## COPY OF PUBLICATION

### NOTICE

Dugan Production Corp.,  
P.O. Box 420, Farmington,  
NM 87499 is making application for administrative approval to dispose of produced water by underground injection. Contact person is Kurt Fagrellius, phone 505-325-1821. The proposed disposal site is the Cochran SWD #2, located 1690' fnl & 1170' fel, Sec. 16, Twn. 22N, Rng. 8W, San Juan Co., NM. Water will be injected into the Entrada Sandstone between 6280' and 6480' below the surface. Maximum injection pressure is 1255 psi. Maximum injection rate is 3,000 barrels of water daily. Any interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

Legal No. 54023 published in The Daily Times, Farmington, New Mexico on Friday, September 15, 2006.



# dugan production corp.

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Mr. Charlie Perrin  
New Mexico Oil Conservation Division  
1000 Rio Bravo Rd  
Aztec, New Mexico 87410

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**  
**7005 2570 0001 3771 6340**

Re: Application to Class 2, water disposal well, Cochran SWD #2 San Juan County, NM

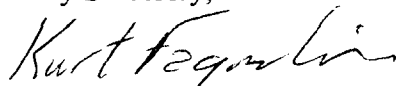
Dear Mr. Charlie Perrin:

Enclosed, is Dugan Production Corp.'s application for disposal of produced water in the Cochran SWD #2. In fulfilling the requirements of application, the following materials are provided herein:

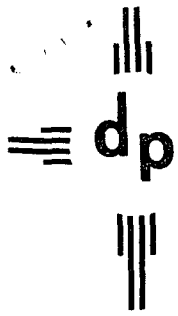
1. Form C-108, Application for Authorization to Inject.
2. Tabular and schematic data on proposed injection well.
3. Lease and surface owner maps identifying all wells and leases within 2-miles of proposed injection well with a one-half mile radius circle drawn around the proposed injection well.
4. Data sheet of wells within 2-miles of proposed injection well, highlighting those wells inside one-half mile radius around the injection well.
5. Operations plan for proposed injection well.
6. Water Analysis of produced water to be disposed in proposed injection well (Fruitland Coal and Chacra).
7. Required geologic, stimulation, logging and test data and fresh water data from nearby wells.
8. Signed statement of geologic and engineering data.
9. Proof of notice in the form of notification letters sent to offsetting operators and surface owner and a copy of the Affidavit of Publication of the notice as it appeared in the Farmington Daily Times.

If you have questions or need additional information, please contact me.

Very Sincerely,

  
Kurt Fagrelus

Attachments



dugan production corp.

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Ms. Debbie Padilla  
New Mexico State Land Office – Surface Resources  
PO Box 1148  
Santa Fe, New Mexico 87504-1148

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6265**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Ms. Padilla:

Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As a surface and oil and gas interest owner of the land the injection well is located on (Sec. 16, T22N, R8W) the New Mexico State Land Office is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelius  
Geologist  
Attachment





dugan production corp.

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Burlington Resources  
Att: Ben Malone  
P.O. Box 4289  
Farmington, NM 87499-4289

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6319**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Ben Malone:

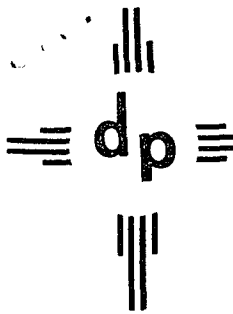
Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As an offsetting operator (Sec. 16, T22N, R8W) Burlington Resources is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelius  
Geologist



dugan production corp.

The Blanco Company  
P.O. Box 3010  
Ruisodo, NM 88355

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6272**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Blanco Company:

Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As an offsetting operator (Sec. 9, T22N, R8W) the Blanco Company is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelus  
Geologist



# dugan production corp.

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Energen Resources  
Attn: David Poage  
2198 Bloomfield Highway  
Farmington, NM 87401

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6289**

Re: Notice of Intent to Complete Salt Water Disposal Well


Dear David Poage:

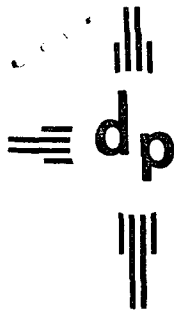
Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As an offsetting operator (Sec. 16, T22N, R8W) Energen Resources is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

  
Kurt Fagrelis  
Geologist



dugan production corp.

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Denise Greer  
T.H. McElvain  
1050 17<sup>th</sup> Street, Ste 1800  
Denver, CO 80265-1801

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6326**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Denise Greer:

Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As an offsetting operator (Sec. 15, T22N, R8W) T.H. McElvain is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelus  
Geologist



dugan production corp.

---

Mr. David Mankiewicz  
Bureau of Land Management  
1235 La Plata Highway  
Farmington, New Mexico 87401

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6241**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Mr. Mankiewicz:

Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As an offsetting surface owner of the land on which the injection well is to be located the Bureau of Land Management is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelis  
Geologist  
Attachment



dugan production corp.

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Mr. James Miles  
Federal Indian Minerals Office  
1235 La Plata Highway  
Farmington, NM 87401

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6258**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Mr. James Miles

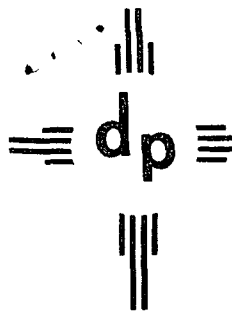
Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (NE/4, Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As an offsetting surface and lease owner (Sec. 8, T22N, R8W) of the land on which the injection well is to be located the Federal Indian Minerals Office is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelus  
Geologist



dugan production corp.

---

Koch Exploration  
610 S. Main  
Aztec, NM 87410

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6302**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Koch Exploration:

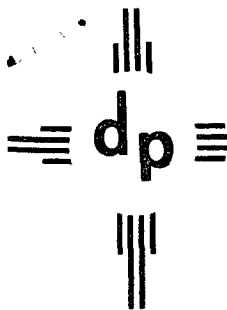
Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As an offsetting operator (Sec. 15, T22N, R8W) Koch Exploration is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelius  
Geologist



dugan production corp.

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The Navajo Nation Minerals Dept.  
P.O. Box 1910  
Window Rock, AZ 86515

September 20, 2006

**--CERTIFIED MAIL, RETURN RECEIPT REQUESTED--**

**7005 2570 0001 3771 6296**

Re: Notice of Intent to Complete Salt Water Disposal Well

Dear Navajo Nation Minerals Dept.:

Dugan Production Corp. has filed an application for administrative approval to complete the Cochran SWD #2 (Sec. 16, T22N, R8W, 1690' FNL and 1170' FEL) as a salt water disposal well. Injection will be into the Entrada Sandstone between 6280' and 6480'. A copy of the application is attached.

As a surface interest owner of offsetting land to the injection well the Navajo Nation Minerals Dept. is being notified of this application. If you wish to object or request the matter for hearing you must contact the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, NM 87505 within 15 days.

If you have questions or need additional information concerning this application, please contact me.

Sincerely,

Kurt Fagrelus  
Geologist  
Attachment