

-11/26/01	-12/11/01	- DC	- KV	- SWD
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0133339519

ABOVE THIS LINE FOR DIVISION USE ONLY

## NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

### ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS

**Application Acronyms:**

[NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]  
 [DD-Directional Drilling] [SD-Simultaneous Dedication]  
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]  
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]  
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]  
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]  
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

**[1] TYPE OF APPLICATION - Check Those Which Apply for [A]**

[A] Location - Spacing Unit - Directional Drilling

☐ NSL ☐ NSP ☐ DD ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

**[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply**

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO

U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

**[3] INFORMATION / DATA SUBMITTED IS COMPLETE - Statement of Understanding**

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I further verify that all applicable API Numbers are included. I understand that any omission of data, information or notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with supervisory capacity

GARY BEINK

[Signature]

District SLO

11/19/01



November 19, 2001

Ms. Lori Wrotenberry  
New Mexico Oil Conservation Division  
1220 South Street Francis Drive  
Santa Fe, New Mexico 87504

RE: Administrative Approval to Inject  
Energen Resources Corporation  
Carson SWD #1  
895' FNL, 705' FWL, Sec. 26, T30N. R04W, N.M.P.M.  
Rio Arriba County, New Mexico

(30-039-26868)

Dear Ms. Wrotenberry:

Energen Resources Corporation requests administrative approval to inject produced water in its recently drill Salt Water Disposal Well. Attached is Form C-108 with the required data for application.

In accordance with New Mexico Oil Conservation Division Rules, the surface landowner and offset operators have been furnished a copy of this application by certified mail. Proof of legal notice has been requested for publication in both San Juan and Rio Arriba counties.

If additional information is needed, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary W. Brink", with a long horizontal flourish extending to the right.

Gary W. Brink  
District Superintendent

GWB/vd

cc: NMOCD - Aztec  
Offset Operators

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance \_\_\_\_\_X\_\_\_\_\_ Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval? \_\_\_\_\_X\_\_\_\_\_ Yes \_\_\_\_\_ No
- II. OPERATOR: Energen Resources Corporation  
ADDRESS: 2198 Bloomfield Highway – Farmington, NM 87401  
CONTACT PARTY: Gary Brink PHONE: 505-325-6800
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? \_\_\_\_\_ Yes \_\_\_\_\_X\_\_\_\_\_ No  
If yes, give the Division order number authorizing the project: \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: GARY W. BRINK, P.E. TITLE: District Superintendent  
SIGNATURE: [Signature] DATE: 11/19/01  
If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted.  
Please show the date and circumstances of the earlier submittal \_\_\_\_\_  
DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

### 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.

## INJECTION WELL DATA SHEET

OPERATOR: Energen Resources CorporationWELL NAME & NUMBER: Carson SWD #1WELL LOCATION: 895' FNL, 705' FWLUNIT LETTER D SECTION 26 TOWNSHIP 30N RANGE 04WWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface Casing

Hole Size: 12-1/4" Casing Size: 9-5/8", 36#, J-55     
 Cemented with: 250 sx. or 295    ft<sup>3</sup>  
 Top of Cement: surface Method Determined: circulated

Intermediate Casing

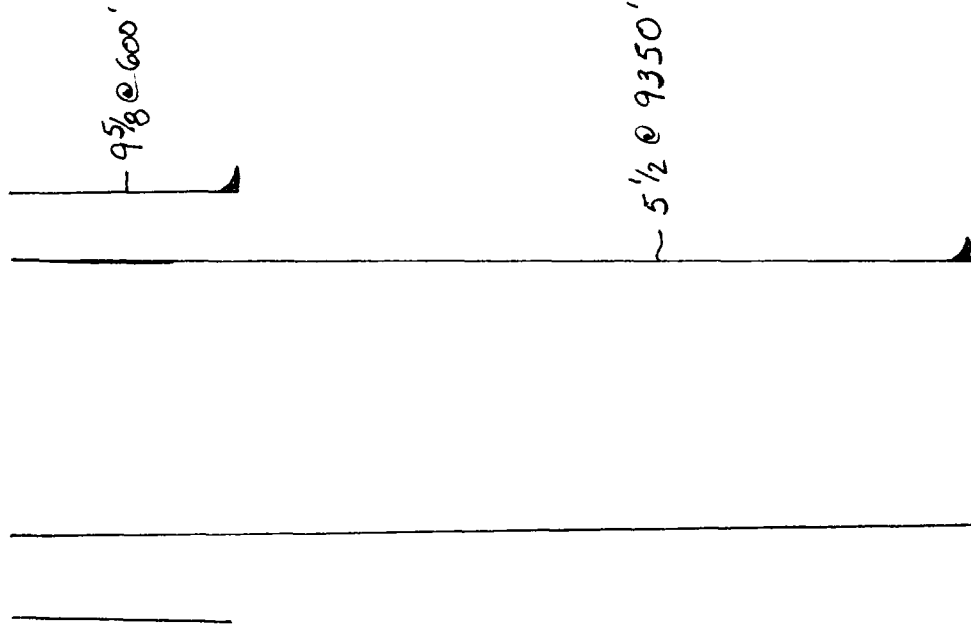
Hole Size:    Casing Size:     
 Cemented with:    sx. or    ft<sup>3</sup>  
 Top of Cement:    Method Determined:   

Production Casing

Hole Size: 8-3/4", 7-7/8" Casing Size: 5-1/2", 17#, J-55 & N-80  
 Cemented with: 1985 sx. or 2989 ft<sup>3</sup>  
 Top of Cement: surface Method Determined: circ. - 3<sup>rd</sup> stage

Total Depth: 9350Injection Interval8710 feet to 9300 est.   

(Perforated or Open Hole; indicate which)



**INJECTION WELL DATA SHEET**

Tubing Size: 3-1/2", 9.3#, N-80 Lining Material: IPC

Type of Packer: Baker Loc-set

Packer Setting Depth: 8650'

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

Additional Data

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

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

2. Name of the Injection Formation: Morrison & Bluff

3. Name of Field or Pool (if 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. No

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Pictured Cliffs 3745', Fruitland Coal 3670'



November 19, 2001

Daily Times  
P. O. Box 450  
Farmington, NM 87499

Re: Legal Notice for San Juan County

Dear Sir and Madam:

Please publish the following Legal Notice for one (1) day in the Classifieds of the Daily Times.

NOTICE

NOTICE is hereby given that Energen Resources Corporation at 2198 Bloomfield Highway, Farmington, New Mexico 87401, as the Operator of the hereinafter described well, has filed Application for Administrative Approval to convert said well to a salt water disposal well. Injection will be in the Morrison & Bluff Formations into perforations between 8710' and 9300'. Maximum injection will be 2,500 BWPD at less than 1800 psi.

Carson SWD #1

Location: 895' FNL, 705' FWL  
Sec. 26-T30N-R04W  
Rio Arriba, NM

Contact Party: Gary Brink

Any request for information or any objections should be filed with the Oil Conservation Division at 1220 South Street Francis Drive, Santa Fe, New Mexico 87504, within 15 days of this notice.

We understand that publications will be two (2) days after receipt. Please send an invoice and Affidavit of Publication to Energen Resources Corporation at 2198 Bloomfield Highway, Farmington, New Mexico 87401, Attn: Production Assistant.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Brink", written over the word "Sincerely,".

Gary Brink  
District Superintendent

GB/vd

DailyTimes12-14-00.doc



**APPLICATION FOR AUTHORIZATION TO INJECT  
ENERGEN RESOURCES CORPORATION  
CARSON SWD #1**

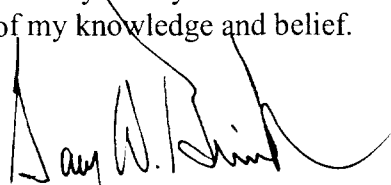
Attachment Data for C-108

- V. See Attached Map
- VI. No other wells in the area have penetrated the injection zone.
- VII. Initially, it is anticipated to inject about 1000 barrels per day of produced water from the Fruitland Coal, Pictured Cliffs and Mesaverde with a maximum rate of 2500 barrels per day upon development of the Fruitland Coal formation. The system will be an open system with disposal fluid trucked to storage tanks from producing wells around the San Juan 30-4 Unit. The injection facility will have enough storage capacity to store two days of injection fluid. It is anticipated to inject at 1.5 bpm at 1300 psi with a maximum injection pressure of 1800 psi. If insufficient rate is established, a step rate test will be performed at time of completion. Attached are relative water samples of produced injection fluids and a representative water sample from the Bluff, Morrison and secondary Dakota intervals.
- VIII. Bluff 9220' – 9370' Massive sandstone, white to off white to clear, moderately well sorted, fine to medium grained, moderately cemented with silica, most sub-angular grains. Porosity is 4-12%. Underlying unit is the Summerville formation and overlying unit is the Morrison formation.
- Morrison 8710' – 9220' Massive sandstone, moderately sorted, fine to medium grained, poorly to well cemented, lenticular sandstone with fissile to platy shales deposited in a continental fluvial environment. Porosity is 4-10%. Underlying unit is the Bluff formation and overlying unit is the Dakota formation.
- Burro Canyon 8475' – 8710' Lenticular sand stone, moderately sorted, fine grained quartzose sands, intermingled with shales and siltstones from overbank and swamp deposits from meandering streams and barrier bars. Porosity is 4-8%. Underlying unit is the Morrison formation and overlying unit is the Graneros Shale.
- Overlying Aquifers are the Ojo Alamo, Nacimiento and San Jose. The deepest in this wellbore is the Ojo Alamo from 3170' – 3400'.
- IX. It is anticipated following perforating to acidize each zone with 50 gallons of 15% HCL per foot of pay. Based on treating pressures and other wells completed in this formation, a fracture stimulation will be performed.
- X. Well logs will be submitted when the well is drilled.

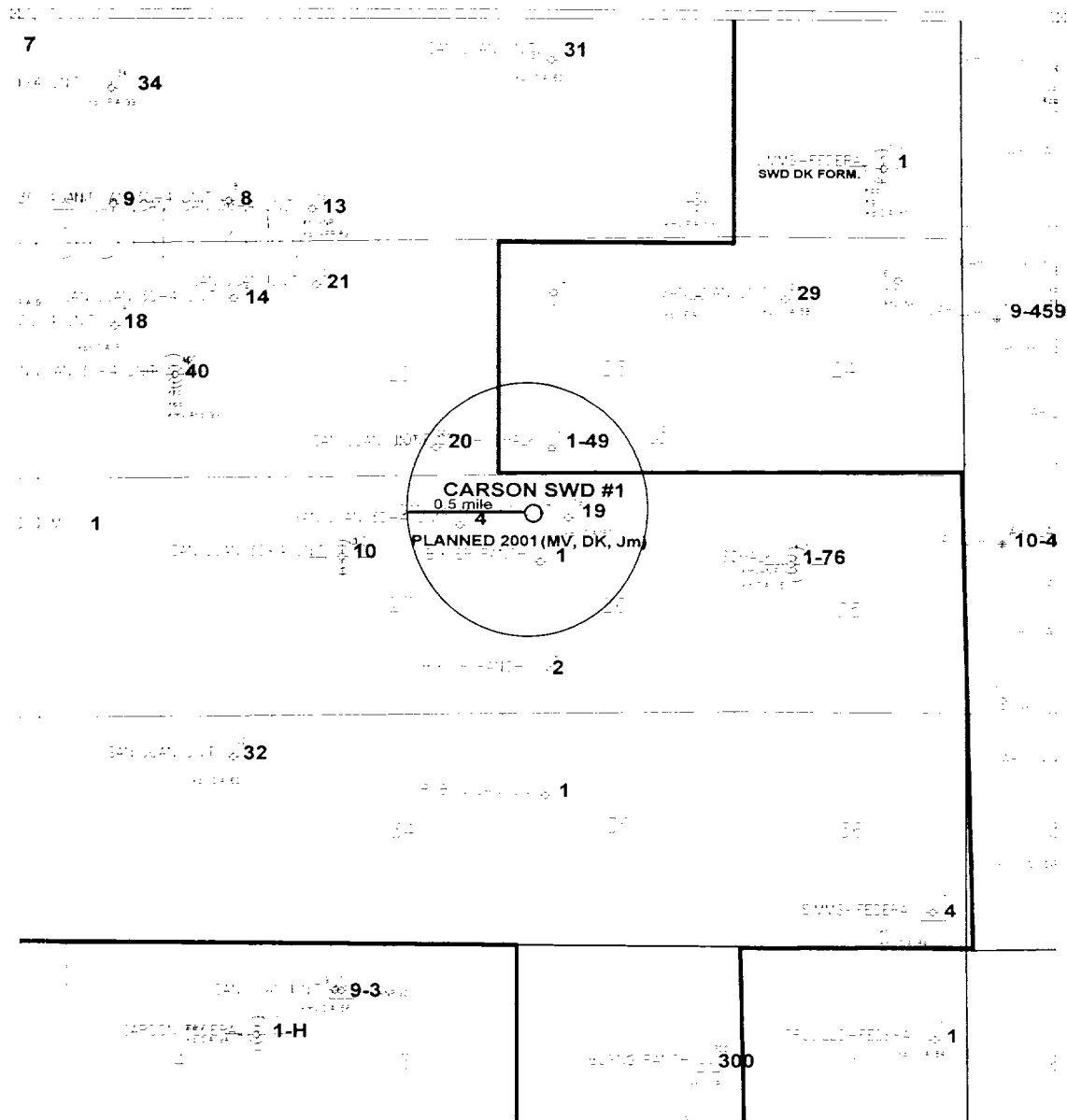


- XI. No fresh water wells exist within one mile of this well. See attached report from New Mexico State Engineer Office.
- XII. I, Gary W. Brink P.E., have examined all available geological and engineering data and find no evidence of open faults or any other hydrologic connection between the anticipated disposal zones and any underground sources of drinking water.
- XIII. Proof of legal notice has been sent to the Rio Grande Sun, Espanola, NM and the Farmington Daily Times, Farmington, NM for advertisement. In addition, Energen Resources is the surface owner of this well site and all offset operators have been notified of this application by certified mail.

I hereby certify that the information submitted with this application is true and correct to best of my knowledge and belief.



Gary W. Brink, P.E.  
District Superintendent



### LEGEND

- FRUITLAND COAL WELL
- PICTURED CLIFFS WELL
- MESAVERDE WELL
- GALLUP WELL

### ENERGEN RESOURCES

SAN JUAN BASIN  
30-4 UNIT  
CARSON SWD #1 LOCATION

2605  
DURANGO, CO 81302  
(303) 247-4220

ATTEN: TELL CORP.  
PO BOX 1237  
DURANGO, CO 81302  
(303) 247-0728

DATE SAMPLED: 01.1.87  
WELL NAME: NEBU UNIT 501  
LOCATION: 10-32N-7W  
FORMATION: ENTRADA WATER  
SAMPLED FROM:  
WELL ON/OFF:

CDS ID #: 1119

CONSTITUENT		ppm	epm
Sodium	Na +	4760	207.1
Potassium	K +	169	4.3
Calcium	Ca ++	1310	65.4
Magnesium	Mg ++	29.4	2.4
Iron Total	Fe++ & Fe+++	164	8.8

Item 2A  
SWD-339

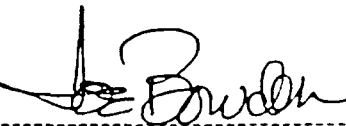
POSITIVE SUB-TOTAL 6432.4 287.9779

Chloride	Cl -	8280	233.5
Carbonate	CO3 =	0	0.0
Bicarbonate	HCO3-	152	2.5
Hydroxide	OH -	0	0.0
Sulfate	SO4 =	2100	43.7

NEGATIVE SUB-TOTAL 10532 277.70728

Total Dissolved Solids 19000 ppm  
pH 5.07 units  
Specific Gravity 1.01 @ 73 F.  
Resistivity 45 ohm-cm

APPROVED BY:



DR. JOE BOWDEN, DIRECTOR

This Laboratory report may not be published or used for advertising or in connection with advertising of any kind without prior written permission from CDS Laboratories.  
Results are based on analysis made at the time samples are received at the laboratory.

**BJ SERVICES COMPANY**  
**WATER ANALYSIS #FW01W718**  
**FARMINGTON LAB**

**GENERAL INFORMATION**

OPERATOR:	MALLON OIL	DEPTH:	
WELL:	SIMMS FED. #1	DATE SAMPLED:	11/15/99
FIELD:		DATE RECEIVED:	11/15/99
SUBMITTED BY:	J. ZELLITTI	COUNTY:	STATE: NM
WORKED BY:	D. SHEPHERD	FORMATION:	Mallison
PHONE NUMBER:			

**SAMPLE DESCRIPTION**

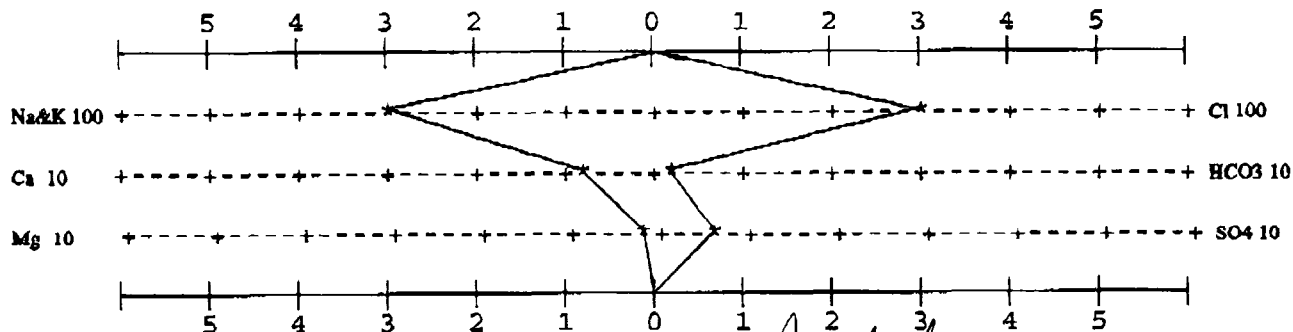
SAMPLE #1

**PHYSICAL AND CHEMICAL DETERMINATIONS**

SPECIFIC GRAVITY:	1.015	@ 72°F	PH:	7.10
RESISTIVITY (MEASURED ):	0.340	ohms @ 71°F		
IRON (FE++) :	0 ppm	SULFATE:		256 ppm
CALCIUM:	150 ppm	TOTAL HARDNESS		473 ppm
MAGNESIUM:	24 ppm	BICARBONATE:		180 ppm
CHLORIDE:	10,479 ppm	SODIUM CHLORIDE (Calc)		17,237 ppm
SODIUM+POTASS:	11,485 ppm	TOT. DISSOLVED SOLIDS:		22,873 ppm
H2S: NO TRACE		POTASSIUM (PPM):		15,600

**REMARKS**

**STIFF TYPE PLOT (IN MEQ/L)**



ANALYST

*D. Shepherd*  
D. SHEPHERD



# Water Analysis Report

To: Energen

Submitted by: Halliburton Energy Services

Attention: Dell Gunn

Well Name: Carson #4M  
19-30-4

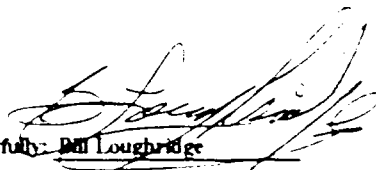
Date: 7/20/99

Date Rec: 7/20/99

Report #: WF-990-0168

Formation: Flow back - Dakota

Specific Gravity	1.010	
pH	7.28	
Resistivity	0.66	at 70° F
Iron (Fe)	50	Mg / L
Potassium (K)	500	Mg / L
Sodium (Na)	6227	Mg / L
Calcium (Ca)	337	Mg / L
Magnesium (Mg)	63	Mg / L
Chlorides (Cl)	9300	Mg / L
Sulfates (SO <sub>4</sub> )	2000	Mg / L
Carbonates (CO <sub>3</sub> )	0.0	Mg / L
Bicarbonates (HCO <sub>3</sub> )	285	Mg / L
Total Dissolved Solids	18763	Mg / L

Respectfully:   
Bill Loughridge

Title: Field Chemist II

Location: Farmington, NM

**NOTICE:**

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



## Water Analysis Report

To: Energen Date: 11/14/2001  
Submitted by: Halliburton Energy Services Date Rec: 11/14/2001  
Attention: Gary Brink 326-6112 Report #: FLMM1695  
Well Name: SJ 30-4 Carson #4 Formation: Mesa Verde

Anthrone Test for Broken Gel = NEGATIVE

Specific Gravity	1.010	
pH	6.65	
Resistivity	4.48	@ 70° F
Iron (Fe)	25	Mg / L
Potassium (K)	0	Mg / L
Sodium (Na)	2854	Mg / L
Calcium (Ca)	32	Mg / L
Magnesium (Mg)	0	Mg / L
Chlorides (Cl)	2678	Mg / L
Sulfates (SO <sub>4</sub> )	2000	Mg / L
Carbonates (CO <sub>3</sub> )	0.0	Mg / L
Bicarbonates (HCO <sub>3</sub> )	610	Mg / L
Total Dissolved Solids	8199	Mg / L

Respectfully:   
Bill Loughridge

Title: Senior Scientist

Location: Farmington, NM

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



## Water Analysis Report

To: Energen Date: 11/14/2001  
Submitted by: Halliburton Energy Services Date Rec: 11/14/2001  
Attention: Gary Brink 326-6112 Report #: FLMM1696  
Well Name: SJ 30-4 #8 Formation: PC

Anthrone Test for Broken Gel = NEGATIVE

Specific Gravity	1.020	
pH	8.48	
Resistivity	1.35	@ 70° F
Iron (Fe)	0	Mg / L
Potassium (K)	0	Mg / L
Sodium (Na)	4324	Mg / L
Calcium (Ca)	40	Mg / L
Magnesium (Mg)	20	Mg / L
Chlorides (Cl)	4166	Mg / L
Sulfates (SO <sub>4</sub> )	2000	Mg / L
Carbonates (CO <sub>3</sub> )	160.0	Mg / L
Bicarbonates (HCO <sub>3</sub> )	1830	Mg / L
Total Dissolved Solids	12540	Mg / L

  
Respectfully, Bill Loughridge

Title: Senior Scientist

Location: Farmington, NM

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

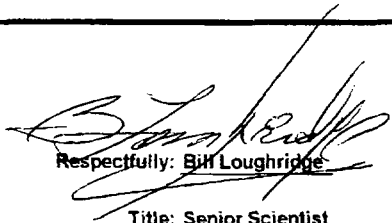


## Water Analysis Report

To: Energen Date: 11/14/2001  
Submitted by: Halliburton Energy Services Date Rec: 11/14/2001  
Attention: Gary Brink 326-6112 Report #: FLMM1697  
Well Name: Chicosa Canyon #1 Formation: Fruitland Coal

Anthrone Test for Broken Gel = NEGATIVE

Specific Gravity	10.150	
pH	8.14	
Resistivity	0.98	@ 70° F
Iron (Fe)	0	Mg / L
Potassium (K)	450	Mg / L
Sodium (Na)	4045	Mg / L
Calcium (Ca)	48	Mg / L
Magnesium (Mg)	10	Mg / L
Chlorides (Cl)	5357	Mg / L
Sulfates (SO <sub>4</sub> )	400	Mg / L
Carbonates (CO <sub>3</sub> )	120.0	Mg / L
Bicarbonates (HCO <sub>3</sub> )	1789	Mg / L
Total Dissolved Solids	12219	Mg / L

  
Respectfully: Bill Loughridge

Title: Senior Scientist

Location: Farmington, NM

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



**New Mexico Office of the State Engineer**  
**Well Reports and Downloads**

Township: 30N Range: 04W Sections: 22,23,24,25,26,27,34,35,36,

NAD27 X:        Y:        Zone:        ☐ Search Radius:       

County: RA ☐ Basin: SJ ☐ Number:        Suffix:       

Owner Name: (First)                      (Last)                      ☐ Non-Domestic ☐ Domestic  
☒ All

Well Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

WATERS Menu

Help

WELL DATA REPORT 07/30/2001

DB File Nbr      (acre ft per annum)  
                    Use      Diversion      Owner

(quarters are  
(quarters are  
Well Number

No Records found, try again