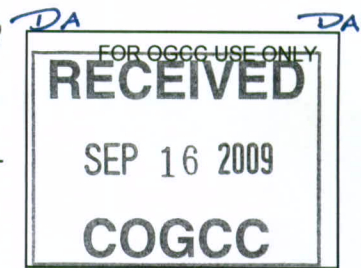


FORM
31
Rev 6/99



State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



Complete the
Attachment Checklist

Oper OGCC

UNDERGROUND INJECTION FORMATION PERMIT APPLICATION

1. Submit original and one copy of this form.
2. If data on this form is estimated, indicate as such.
3. Attachments – see checklist and explanation of attachments.
4. Aquifer exemption is required for all injection formations with water quality <10,000 TDS (Rule 322B). Immediately contact the Commission for further requirements if the total dissolved solids (TDS) as determined by water analysis for the injection zone is less than 10,000 ppm.
5. Attach a copy of the certified receipt to each notice to surface and mineral owner(s) or submit a sample copy of the notice and an affidavit of mailing or delivery with names and addresses of those notified. Each person notified shall be specified as either a surface or mineral owner as defined by C.R.S. 34-60-103(7).

Form 31 Original & 1 Copy	✓
Analysis fo Injection Zone Water	✓
Analysis of Injection Water	✓
Proposed Injection Program	✓
Resistivity or Induction Log	✓
Cement Bond Log	✓
Surface or Salt Water Displ Agrmt	✓
Notice to Surface/Mineral Owners	✓
Remedial Correction Plan for Wells	✓
Map Oil/Water Wells w/in 1/4 Mile	✓
List Oil/Gas Wells w/in 1/2 Mile	✓
Map Surface Owners w/in 1/4 Mile	✓
List Surface Owners w/in 1/4 Mile	✓
Map Mineral Owners w/in 1/4 Mile	✓
List Mineral Owners w/in 1/4 Mile	✓
Surface Facility Diagram	✓
Wellbore Diagram	✓
If Commercial Facility, Description of Ops & Area Served	
Unit Area Plat	

Project Name: GM 931-1D Injection Well Project Location: SWNE Sec 1 T7S R 96W 6th P.M.

Project Type: ☐ Enhanced Recovery ☒ Disposal ☐ Simultaneous Disposal

Single or Multiple Well Facility? ☒ Single ☐ Multiple

IF UNIT OPERATIONS, ATTACH PLAT SHOWING UNIT AREA

County: Garfield Field Name and Number: Grand Valley 31290

OGCC Operator Number: 96850

Name of Operator: Williams Production RMT Co.

Address: 1058 County Road 215

City: Parachute State: CO Zip: 81635

Contact Name and Telephone:
Karolina Blaney

No: (970) 683-2295

Fax: (970) 285 9573

Injection Fluid Type: ☒ Produced Water ☐ Natural Gas ☐ CO₂ ☐ Drilling Fluids

☐ Exempt Gas Plant Waste ☒ Used Workover Fluids ☐ Other Fluids (describe): _____

Commercial Facility? ☐ Yes ☒ No

If Yes, describe area of operation and types of fluids to be injected at this facility:

PROPOSED INJECTION FORMATIONS

FORMATION A (Name): Williams Fork Porosity: 7.8% 10.4%

Formation TDS: 27282 Frac Gradient: 0.786 psi/ft 0.781 psi/ft Permeability: 0.01

Proposed Stimulation Program: ☐ Acid ☒ Frac Treatment ☐ None EQUIVALENT AT TOP PERF (3627') DA

FORMATION B (Name): _____ Porosity: _____

Formation TDS: _____ Frac Gradient: _____ psi/ft Permeability: _____

Proposed Stimulation Program: ☐ Acid ☐ Frac Treatment ☐ None

Anticipated Project Operating Conditions

Under normal operating conditions, estimated fluid injection rates and pressures:

FOR WATER: A minimum of 50 bbls/day @ 100 psi to a maximum of 10,000 bbls/day @ 1261 psi. DA

FOR GAS: A minimum of _____ mcf/day @ _____ psi to a maximum of _____ bbls/day @ _____ psi.

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Karolina Blaney

Signed: Karolina Blaney

Title: Environmental Specialist

Date: 9/16/09

OGCC Approved: David Anderson

Title: PE II

Date: _____

Order No: _____

UIC FACILITY NO: 159297

CONDITIONS OF APPROVAL, IF ANY:

Facility No. 159297; Maximum Surface Injection Pressure = 1,261 psig; Maximum Injection Volume Limit = 59,418,783 bbl.

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Remedial Corrective Action Plan for Wells

There are 21 wells within $\frac{1}{4}$ mile of the bottom hole or surface location for proposed injection well GM 931-1D. All 21 wells are owned by Williams RMT and are gas producers completed in the Williams Fork Formation. The proposed injection formation is the Upper Williams Fork Formation (a.k.a. Ohio Creek member) of the upper part of the Mesaverde Group. There are no other wells (water, irrigation, domestic, etc.) located within $\frac{1}{4}$ mile of the proposed injection well.

Williams has reviewed the cement bond logs and determined that none of the wells require remediation. However, 8 wells show minimal cement. Williams RMT proposed Remedial Corrective Action Plan is to visually monitor surface pressures as part of routine operations for these 8 wells during injection. If changes in surface casing pressures indicate a potential issue then Williams RMT will shut off production and squeeze the well.

Well ID	Well Type		Depth Below Ground Level (ft)			Is Remediation Required?	Comment
			Depth, Top of Cement	Depth, Top of Williams Fork Injection Interval	Depth, Top of Williams Fork Producing Interval		
GM 22-1	Gas	Williams Fork Producing	3,616	3,693	4,961	No	Will monitor surface casing pressure while injecting
GM 238-36	Gas	Williams Fork Producing	4,200	3,766	5,037	No	Will monitor surface casing pressure while injecting
GM 240-1	Gas	Williams Fork Producing	4,370	3,581	4,829	No	Will monitor surface casing pressure while injecting
GM 241-1	Gas	Williams Fork Producing	3,400	3,612	4,827	No	
GM 244-1	Gas	Williams Fork Producing	3,500	3,816	5,076	No	
GM 245-1	Gas	Williams Fork Producing	3,500	3,527	4,932	No	Will monitor surface casing pressure while injecting
GM 246-1	Gas	Williams Fork Producing	3,800	3,537	4,728	No	Will monitor surface casing pressure while injecting
GM 31-1	Gas	Williams Fork Producing	3,560	3,631	3,833	No	Will monitor surface casing pressure while injecting
GM 32-1	Gas	Williams Fork Producing	3,268	3,673	4,711	No	
GM 33-1	Gas	Williams Fork Producing	3,518	3,624	4,881	No	
GM 332-1	Gas	Williams Fork Producing	2,540	3,622	4,661	No	
GM 341-1	Gas	Williams Fork Producing	5,074	3,733	4,953	No	Will monitor surface casing pressure while injecting
GM 344-36	Gas	Williams Fork Producing	2,550	3,836	4,843	No	
GM 41-1	Gas	Williams Fork Producing	4,406	3,759	5,023	No	Will monitor surface casing pressure while injecting
GM 421-1	Gas	Williams Fork Producing	2,600	3,639	4,918	No	
GM 423-1	Gas	Williams Fork Producing	3,090	3,720	4,824	No	
GM 441-1	Gas	Williams Fork Producing	2,250	3,634	4,752	No	
GM 442-1	Gas	Williams Fork Producing	2,550	3,501	4,667	No	
GM 512-1	Gas	Williams Fork Producing	2,640	3,938	4,816	No	
GM 521-1	Gas	Williams Fork Producing	2,330	3,606	4,903	No	
GM 542-1	Gas	Williams Fork Producing	2,480	3,542	4,652	No	

Andrews, David

From: Andrews, David
Sent: Wednesday, September 16, 2009 2:31 PM
To: 'Conger, Jeremy'
Cc: Blaney, Karolina ; Davis, Gregory ; Harris, Steven
Subject: RE: Request for Extension to Complete Disposal Permit Filing

Jeremy,

These UIC applications were originally received by COGCC Staff on March 26, 2009. Consider this email my approval to extend your final submittal deadline from September 26, 2009 to December 26, 2009.

Thanks,

David D. Andrews, P.E., P.G.
Engineering Supervisor - Northwest Area

State of Colorado
Oil and Gas Conservation Commission

NEW CONTACT INFORMATION:

707 Wapiti Court, Suite 204
Rifle, Colorado 81650
Office Phone: (970) 625-2497 Ext. 1
Cell Phone: (970) 456-5262
Fax: (970) 625-5682
E-mail: David.Andrews@state.co.us
Website: <http://www.colorado.gov/cogcc>

From: Conger, Jeremy [mailto:Jeremy.Conger@Williams.com]
Sent: Wednesday, September 16, 2009 8:27 AM
To: Andrews, David
Cc: Blaney, Karolina ; Davis, Gregory ; Harris, Steven
Subject: Request for Extension to Complete Disposal Permit Filing

Mr. Andrews,

This is a request by Williams to have the deadline to complete the submittal of our injection permit applications extended by an additional 90 days as allowed in Rule 325 (o). We have been performing continuous operations to complete these wells and have just finished the final MIT's. We need additional time beyond the upcoming expiration of Sept 26th to properly complete the permit documentation. This request is for the following wells:

Williams GM 923-1D, API 05-045-18424-00
Williams GM 931-1D, API 05-045-18425-00
Williams GM 943-1D, API 05-045-18426-00

Thank you for your consideration.

Regards,

Jeremy Conger

Jeremy Conger

Williams Production RMT Co.

Staff Petroleum Engineer -

Piceance Valley

303-606-4285 (Office)

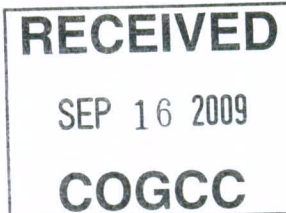
303-888-4515 (Mobile)



EXPLORATION AND PRODUCTION
1058 CR #215
P.O. Box 370
Parachute, Colorado 81635
970/285-9377 – 970/285-9573 (fax)

September 16, 2009

Mr. Dave Andrews
Engineering Supervisor
Colorado Oil and Gas Conservation Commission
707 Wapiti Ct, Suite 204
Rifle, CO 81650



Re: Permit Application for Underground Injection Well GM 931-1D

Dear Mr. Andrews:

On behalf of Williams Production RMT Company, I am providing this letter and the attached updated forms listed below, to permit the GM 931-1D well as a salt water disposal well. The proposed injection well is located on the GM 245-1 well pad in SWNE of Section 1, Township 7 South, Range 96 West, 6th P.M., Section 1, , Garfield County, Colorado.

Please feel free to call me at (970) 683-2295 or contact me by email at karolina.blaney@williams.com if you have any questions regarding this submittal.

Sincerely,

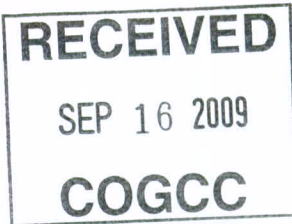
Karolina Blaney

Karolina Blaney
Environmental Specialist
Piceance - Valley Asset Team
(970) 683-2295 (Office)
(970) 589-0743 (Cell)
Karolina.Blaney@Williams.com

Attachments

Form 31 - Underground Injection Formation Permit Application
Form 33 – Injection Well Permit Application
Form 26 – Source of Produced Water for Disposal
Form 21 – Mechanical Integrity Test
Form 5A – Completed Interval Report

FORM 31 Attachments



1. Analysis of Injection Zone Water
2. Analyses of Injection Water
3. Proposed Injection Program
4. Induction Log
5. Cement Bond Log
6. Surface or Salt Water Disposal Agreement
7. Notice to Surface/Mineral Owners
8. Remedial Correction Plan for Wells
9. Map Oil/Water Wells within ¼ Mile
10. List Oil/Gas Wells within ½ Mile
11. Map Surface Owners within ¼ Mile
12. List Surface Owners within ¼ Mile
13. Map Mineral Owners within ¼ Mile
14. List Mineral Owners within ¼ Mile
15. Surface Facility Diagram
16. Wellbore Diagram

Analyses of Injection Zone Water

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Grand Junction, CO 970) 523-3692

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Water Analysis Report

Contact Information

Company Williams
Reported To Justin Skalla and Jeremy C
Reported By Joel Snoke

Date Received August 4, 2009
Date Tested August 4, 2009
Tested By Joel Snoke

Sample Physical Characteristics

Well Name	GM	Temperature	71 °F
Location	931-1D	pH	6.1
Specific Gravity	1.045	Color	Red
Corrected SG	1.047 at 60°F	Turbidity	Cloudy
TDS (calculated)	27282 ppm	Resistivity	0.37 Ω m

Sample Chemical Characteristics

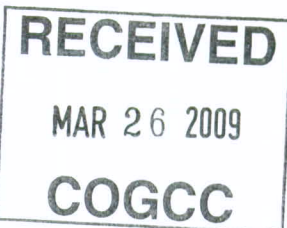
Anions	Chloride	10600	mg/L
	Sulfate	0	mg/L
	Bicarbonate	550	mg/L
	Carbonate	0	mg/L
	Hydroxide		mg/L

Cations	Total Iron	360.0	mg/L
	Ferrous Iron	300.0	mg/L
	Potassium	13000	mg/L
	Calcium	2700	mg/L
	Magnesium	1000	mg/L
	Sodium (calculated)	0	mg/L

General Comments

80BBLs Swab Sample: W275: Sample was filtered through 40 micron filter prior to analysis.

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Analyses of Injection Water

The injection water consists of produced water and used workover fluids stored in the evaporation pond located at the Parachute Centralized E&P Waste Management Facility (Facility ID 149015). Six sample results that are representative of the fluids stored in the evaporation pond water are attached.

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Water Analysis Report

Contact Information

Company Williams
Reported To Ty Woodworth
Reported By Deba Shafiee

Date Received September 11, 2008
Date Tested September 12, 2008
Tested By Deba Shafiee

Sample Physical Characteristics

Well Name	<u>Parachute Evap</u>	Temperature	<u>77</u> °F
Location	<u></u>	pH	<u>6.8</u>
Specific Gravity	<u>1.015</u>	Color	<u>gray</u>
Corrected SG	<u>1.018</u> at 60°F	Turbidity	<u>moderate</u>
TDS (calculated)	<u>32942</u> ppm	Resistivity	<u>0.29</u> Ω·m

Sample Chemical Characteristics

Anions	Chloride	<u>20400</u> mg/L	Cations	Total Iron	<u>19.8</u> mg/L
	Sulfate	<u>0</u> mg/L		Ferrous Iron	<u>4.7</u> mg/L
	Bicarbonate	<u>840</u> mg/L		Potassium	<u>80</u> mg/L
	Carbonate	<u>0</u> mg/L		Calcium	<u>1160</u> mg/L
	Hydroxide	<u></u> mg/L		Magnesium	<u>1360</u> mg/L
				Sodium (calculated)	<u>9572</u> mg/L

General Comments

W402

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Grand Junction, CO 970) 523-3692

Water Analysis Report**Contact Information**

Company Williams
Reported To Wayne Marcotte
Reported By Scott Lowe

Date Received December 13, 2008
Date Tested December 14, 2008
Tested By Scott Lowe

Sample Physical Characteristics

Well Name	<u>PA</u>	Temperature	<u>71</u> °F
Location	<u>Evap Pond</u>	pH	<u>6.9</u>
Specific Gravity	<u>1.025</u>	Color	<u>Black</u>
Corrected SG	<u>1.027</u> at 60°F	Turbidity	<u>Slight</u>
TDS (calculated)	<u>22079</u> ppm	Resistivity	<u>0.31</u> Ω·m

Sample Chemical Characteristics

Anions	Chloride	<u>13300</u>	mg/L
	Sulfate	<u>13</u>	mg/L
	Bicarbonate	<u>675</u>	mg/L
	Carbonate	<u>0</u>	mg/L
	Hydroxide	<u>0</u>	mg/L

Cations	Total Iron	<u>24.9</u>	mg/L
	Ferrous Iron	<u>7.8</u>	mg/L
	Potassium	<u>337</u>	mg/L
	Calcium	<u>980</u>	mg/L
	Magnesium	<u>270</u>	mg/L
	Sodium (calculated)	<u>7023</u>	mg/L

General Comments

Sample was clear when it was brought in, but turned black before analysis.

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Water Analysis Report

Contact Information

Company Williams
Reported To Ty Woodworth Wayne M
Reported By Ann Ekx

Date Received 12/14 & 12/24
Date Tested January 2, 2009
Tested By Ann Ekx

Sample Physical Characteristics

Well Name	<u>PA Evap Pit</u>	Temperature	<u>68</u> °F
Location	<u></u>	pH	<u>6.3</u>
Specific Gravity	<u>0.996</u>	Color	<u>Black</u>
Corrected SG	<u>0.998</u> at 60°F	Turbidity	<u>Severe</u>
TDS (calculated)	<u>18466</u> ppm	Resistivity	<u>0.34</u> Ω·m

Sample Chemical Characteristics

Anions	Chloride	<u>10800</u>	mg/L	Cations	Total Iron	<u>26.6</u>	mg/L
	Sulfate	<u>20</u>	mg/L		Ferrous Iron	<u>16.6</u>	mg/L
	Bicarbonate	<u>580</u>	mg/L		Potassium	<u>156</u>	mg/L
	Carbonate	<u>0</u>	mg/L		Calcium	<u>1200</u>	mg/L
	Hydroxide	<u>0</u>	mg/L		Magnesium	<u>160</u>	mg/L
					Sodium (calculated)	<u>5433</u>	mg/L

General Comments

W513 Filtered with 8 micron paper.

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Water Analysis Report

Contact Information

Company Williams
Reported To Ty Woodworth Wayne M
Reported By Ann Ekx

Date Received 12/14 & 12/24
Date Tested January 2, 2009
Tested By Ann Ekx

Sample Physical Characteristics

Well Name	<u>PA Evap Pit</u>	Temperature	<u>69</u> °F
Location	<u></u>	pH	<u>6.2</u>
Specific Gravity	<u>0.998</u>	Color	<u>Grey</u>
Corrected SG	<u>1.000</u> at 60°F	Turbidity	<u>Severe</u>
TDS (calculated)	<u>21286</u> ppm	Resistivity	<u>0.33</u> Ω·m

Sample Chemical Characteristics

Anions	Chloride	<u>12600</u>	mg/L	Cations	Total Iron	<u>14.6</u>	mg/L
	Sulfate	<u>20</u>	mg/L		Ferrous Iron	<u>14.6</u>	mg/L
	Bicarbonate	<u>620</u>	mg/L		Potassium	<u>0</u>	mg/L
	Carbonate	<u>0</u>	mg/L		Calcium	<u>1080</u>	mg/L
	Hydroxide	<u>0</u>	mg/L		Magnesium	<u>300</u>	mg/L
					Sodium (calculated)	<u>6594</u>	mg/L

General Comments

W518 Filtered with 8 micron paper.

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Water Analysis Report

Contact Information

Company Williams
Reported To Wayne Marcotte, Ty Wood
Reported By Andrew Whitcomb

Date Received January 6, 2009
Date Tested January 6, 2009
Tested By Andrew Whitcomb

Sample Physical Characteristics

Well Name	<u>Parachute Evap Pit</u>	Temperature	<u>71</u> °F
Location	<u>12-24-2008</u>	pH	<u>6.5</u>
Specific Gravity	<u>1.030</u>	Color	<u>Clear</u>
Corrected SG	<u>1.032</u> at 60°F	Turbidity	<u>None</u>
TDS (calculated)	<u>18610</u> ppm	Resistivity	<u>0.33</u> Ω·m

Sample Chemical Characteristics

Anions	Chloride	<u>11000</u>	mg/L
	Sulfate	<u>0</u>	mg/L
	Bicarbonate	<u>760</u>	mg/L
	Carbonate	<u>0</u>	mg/L
	Hydroxide		mg/L

Cations	Total Iron	<u>29.3</u>	mg/L
	Ferrous Iron	<u>16.6</u>	mg/L
	Potassium	<u>600</u>	mg/L
	Calcium	<u>984</u>	mg/L
	Magnesium	<u>144</u>	mg/L
	Sodium (calculated)	<u>5635</u>	mg/L

General Comments

W005 Not Filtered

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Grand Junction, CO 970) 523-3692

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Water Analysis Report

Contact Information

Company Williams
Reported To Wayne Marcotte, Ty Wood
Reported By Andrew Whitcomb

Date Received January 6, 2009
Date Tested January 6, 2009
Tested By Andrew Whitcomb

Sample Physical Characteristics

Well Name	<u>Parachute Evap Pit</u>	Temperature	<u>70</u> °F
Location	<u>12-31-2008</u>	pH	<u>5.3</u>
Specific Gravity	<u>1.012</u>	Color	<u>Black</u>
Corrected SG	<u>1.014</u> at 60°F	Turbidity	<u>Moderate</u>
TDS (calculated)	<u>20630</u> ppm	Resistivity	<u>0.33</u> Ω·m

Sample Chemical Characteristics

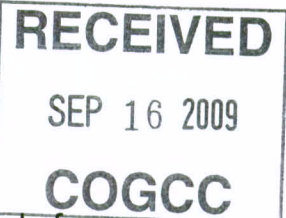
Anions	Chloride	<u>12000</u>	mg/L
	Sulfate	<u>20</u>	mg/L
	Bicarbonate	<u>800</u>	mg/L
	Carbonate	<u>0</u>	mg/L
	Hydroxide		mg/L

Cations	Total Iron	<u>34.4</u>	mg/L
	Ferrous Iron	<u>18.2</u>	mg/L
	Potassium	<u>800</u>	mg/L
	Calcium	<u>1070</u>	mg/L
	Magnesium	<u>250</u>	mg/L
	Sodium (calculated)	<u>5885</u>	mg/L

General Comments

W006 Not Filtered

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Williams GM 931-1D Injection Plan

The Williams Production RMT injection program is required for disposal of produced and used workover fluids that are in excess of the storage capacity of the Parachute Centralized E&P Waste Management Facility (CE&P WMF ID 149015). Stored fluids from the Facility will be piped to a two-stage filter system and then under a high pressure line injected into well GM 931-1D as shown on the Surface Facility Diagram accompanying this submittal.

Injection testing was not performed due to experience obtained on previous injection projects in the upper Williams Fork formation on nearby wells. Frac Gradient data was obtained by analysis of ISIP's from the fracture stimulation treatments performed on the well.

Williams intends to utilize a central pumping unit to inject water into multiple injection wells. There will be a high pressure pipeline to each wellsite, and wellhead monitoring of injection rates and pressures with independent controls/alarms to ensure each well stays within the approved rate and pressure limits. All water will be filtered at the injection pump. The source of water for injection will be from the CE&P WMF located approximately 3,600-feet northwest of the proposed injection well. All Williams Production RMT operated wells have their produced water sent to this CE&P WMF.

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GM 931-1D Fracture Gradient Determination

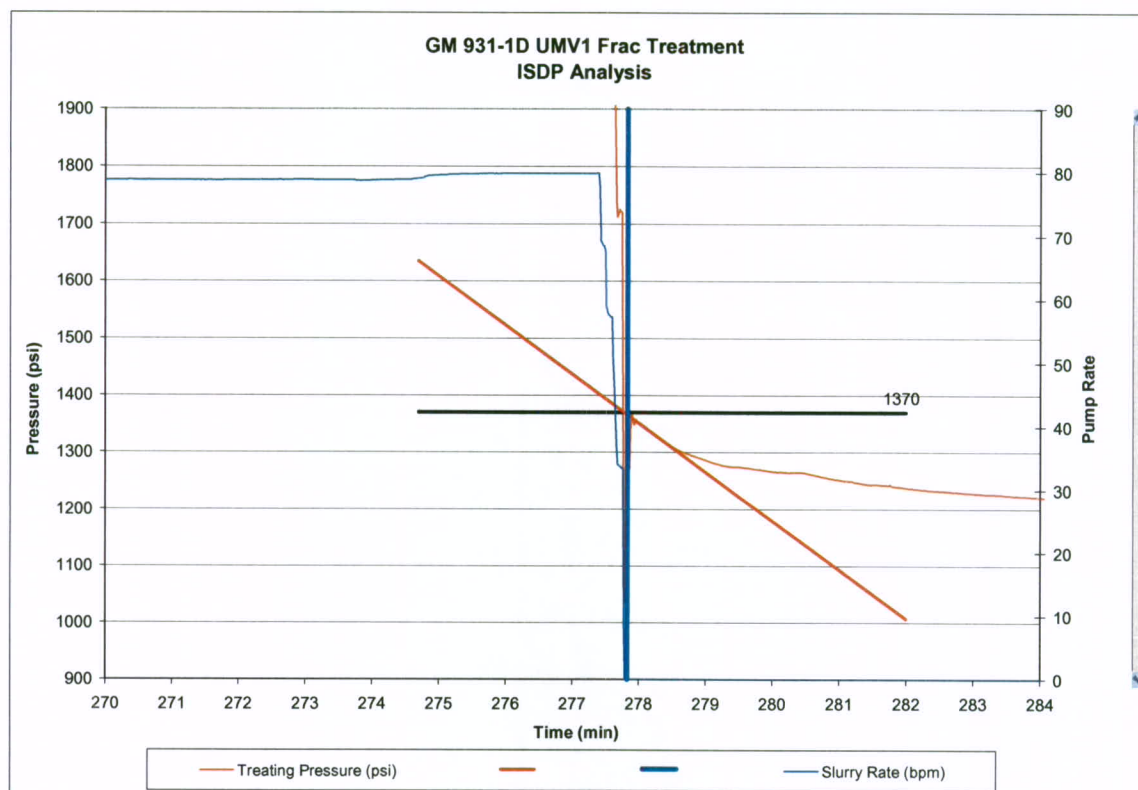
The following analysis will show the data from the ISIP's of the three frac stages performed on the subject well and how the frac gradients were calculated. An explanation of how the maximum surface injection pressure was determined is also given.

Summary of Calculations

Stage	Top Perf (ft)	Hydrostatic (psi)	ISIP (psi)	FG (psi/ft)	BHP (psi)
UMV1	4340	1902	1370	0.75	3272
UMV2	3865	1694	1261	0.76	2955
UMV3	3627	1590	1540	0.86	3130

UMV1 Frac Stage Analysis

The chart below shows the ISIP of the deepest frac stage. Top perf is at 4,340 ft.



The ISIP is shown to be 1,370 psi. Frac gradient is calculated as:

$$FG = (4,340 \times 8.43 \times 0.052 + 1,370) / 4,340 = 0.75 \text{ psi/ft}$$

$$BHP = (4,340 \times 8.43 \times 0.052) + 1,370 = 3,272 \text{ psi}$$

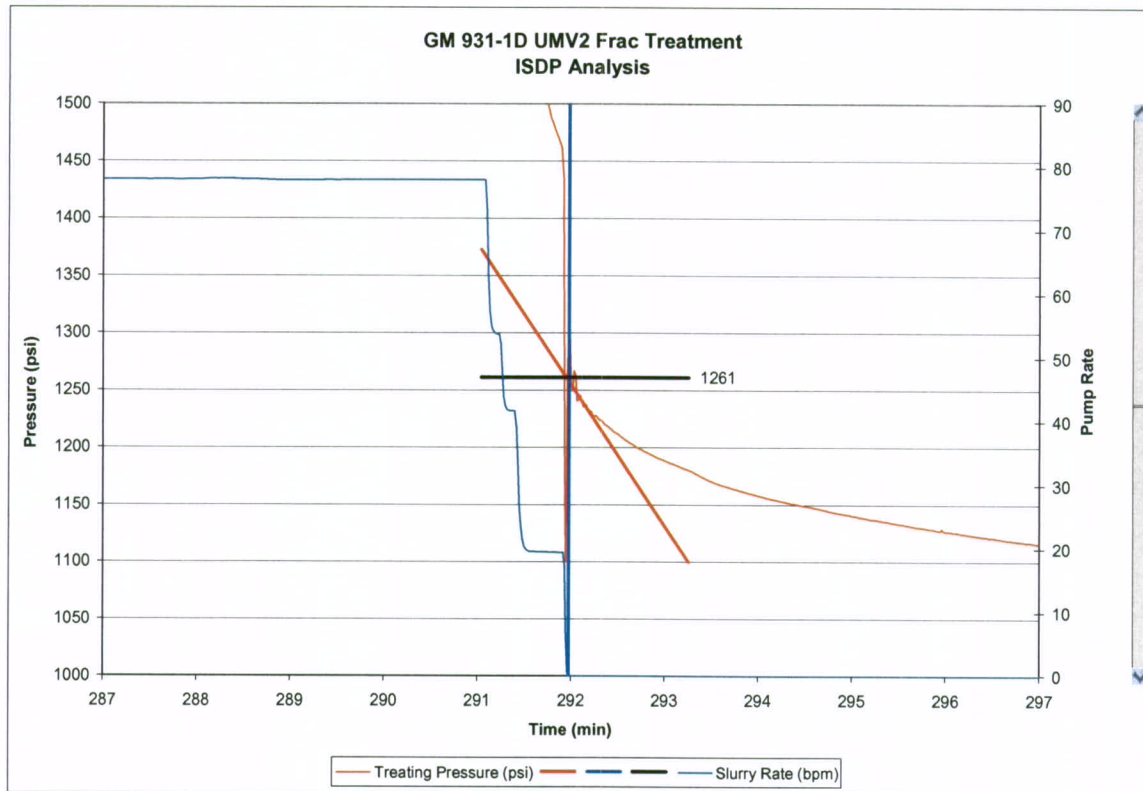
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COGCC

UMV2 Frac Stage Analysis

The chart below shows the ISIP of the middle frac stage. Top perf is at 3,865 ft.



The ISIP is shown to be 1,261 psi. Frac gradient is calculated as:

$$FG = (3,865 \times 8.43 \times 0.052 + 1,261) / 3,865 = 0.76 \text{ psi/ft}$$

$$BHP = (3,865 \times 8.43 \times 0.052) + 1,261 = 2,955 \text{ psi}$$

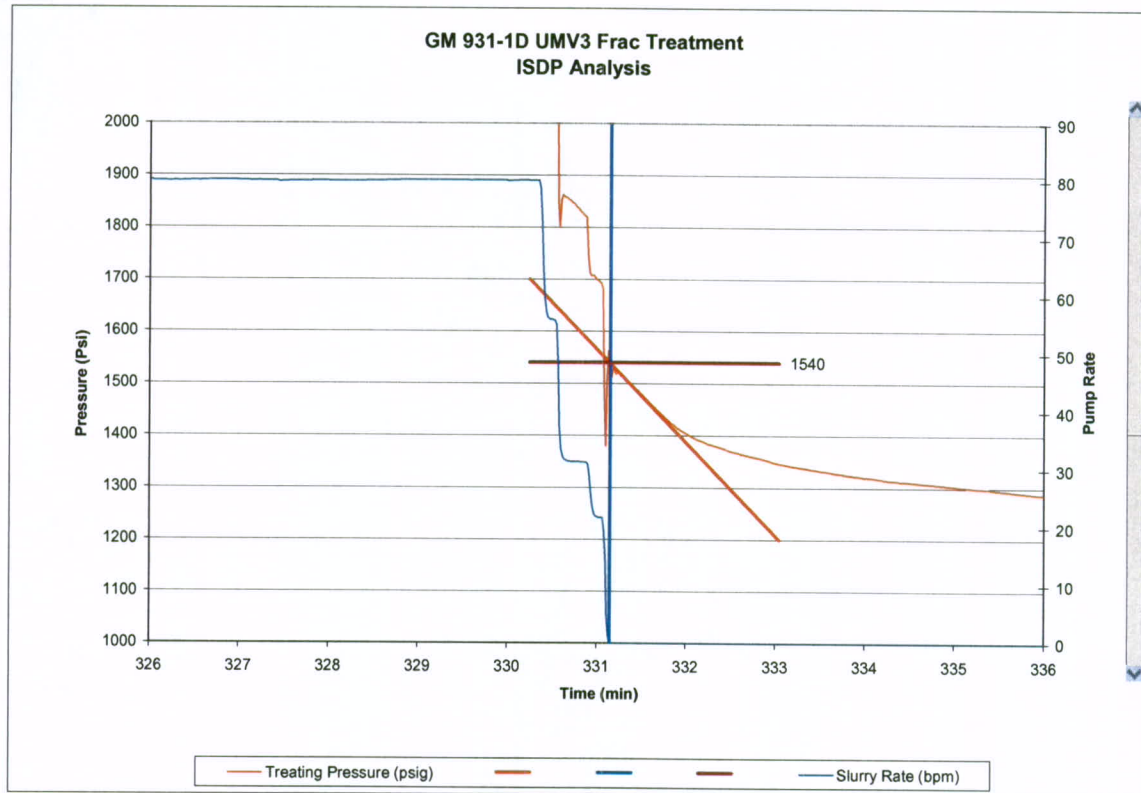
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UMV3 Frac Stage Analysis

The chart below shows the ISIP of the top frac stage. Top perf is at 3,627 ft.



The ISIP is shown to be 1,540 psi. Frac gradient is calculated as:

$$FG = (3,627 * 8.43 * 0.052 + 1,540) / 3,627 = 0.86 \text{ psi/ft}$$

$$BHP = (3,627 * 8.43 * 0.052) + 1,540 = 3,130 \text{ psi}$$

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Max Injection Pressure Analysis

Since the lowest BHP occurred at the middle set of perfs, the following is proposed to determine the max allowable surface injection pressure:

Calculate the Effective UMV3 BHP by reducing the UMV2 BHP by the hydrostatic pressure difference between the top perfs of the stages. Determine an effective UMV3 FG to be applied at the topmost injection perforation.

Hydrostatic Pressure to top perf = $3,627 * 8.34 * 0.052 = 1,573$ psi

Translate UMV2 BHP to UMV3 Depth:

$$\text{Effective UMV3 BHP} = 2,955 - [(3,865 - 3,627) * 8.34 * 0.052]$$

$$\text{Effective UMV3 BHP} = 2,955 - 133 = 2,852 \text{ psi}$$

$$\text{Effective UMV3 FG} = 2,852 / 3,627 = 0.786 \text{ psi / ft}$$

$$\text{Max Surface Injection Pressure} = 2,852 - 1,573 = 1,279 \text{ psi}$$

Max Pressure QC Checks:

$$\text{UMV1 Actual BHP} = 3,272 \text{ psi}$$

$$\text{UMV1 Calc @ Effective UMV3 BHP} = 2,852 + [(4,340 - 3,627) * 8.34 * 0.052]$$

$$\text{UMV1 Calc @ Effective UMV3 BHP} = 2,852 + 309 = 3,161 \text{ psi}$$

$3,161 < 3,272$ therefore measured UMV1 BHP not exceeded

$$\text{UMV3 Actual BHP} = 3,130 \text{ psi}$$

$$\text{UMV3 Calc BHP} = 2,852 \text{ psi}$$

$2,852 < 3,130$ therefore UMV3 BHP not exceeded

Since no measured BHP's are exceeded, it is proposed that the Maximum Allowable Surface Injection Pressure be set at **1,279 psi**.

INJECTION WELL NAME
API NUMBER

WILLIAMS GM 931-1D
05-045-18425-00

ZONE 1

	<u>UMV3</u>
TOP PERFORATION DEPTH	3627
BOTTOM PERFORATION DEPTH	3812
GROSS PERFORATION INTERVAL	185
GROSS SHALE INTERVAL IN PERFS	16
INJECTION ZONE THICKNESS	169
POROSITY	10.5%
1/4 MILE RADIUS MAX. INJECTION VOLUME (BBL)	17,299,201
INSTANTANEOUS SHUT-IN PRESSURE (ISIP)	1,540
FRACTURE GRADIENT	0.858
MAXIMUM INJECTION PRESSURE (PSI)	1,540

**Equivalent frac gradient using UMW2 pressure,
corrected to UMW3 top perforation**

3,627

0.781
1,261

ZONE 2

	<u>UMV2</u>
TOP PERFORATION DEPTH	3865
BOTTOM PERFORATION DEPTH	4128
GROSS PERFORATION INTERVAL	263
GROSS SHALE INTERVAL IN PERFS	61
INJECTION ZONE THICKNESS	202
POROSITY	10.0%
1/4 MILE RADIUS MAX. INJECTION VOLUME (BBL)	19,692,525
INSTANTANEOUS SHUT-IN PRESSURE (ISIP)	1,261
FRACTURE GRADIENT	0.759
MAXIMUM INJECTION PRESSURE (PSI)	1,261

**Equivalent frac gradient using UMW2 pressure,
corrected to UMW1 top perforation**

4,340

0.724
1,261

ZONE 3

	<u>UMV1</u>
TOP PERFORATION DEPTH	4340
BOTTOM PERFORATION DEPTH	4584
GROSS PERFORATION INTERVAL	244
GROSS SHALE INTERVAL IN PERFS	29
INJECTION ZONE THICKNESS	215
POROSITY	10.7%
1/4 MILE RADIUS MAX. INJECTION VOLUME (BBL)	22,427,057
INSTANTANEOUS SHUT-IN PRESSURE (ISIP)	1,370
FRACTURE GRADIENT	0.749
MAXIMUM INJECTION PRESSURE (PSI)	1,370

MIT PRESSURE (PSI)

2000

TOTAL MAX. INJECTION VOLUME (BBL)

59,418,783

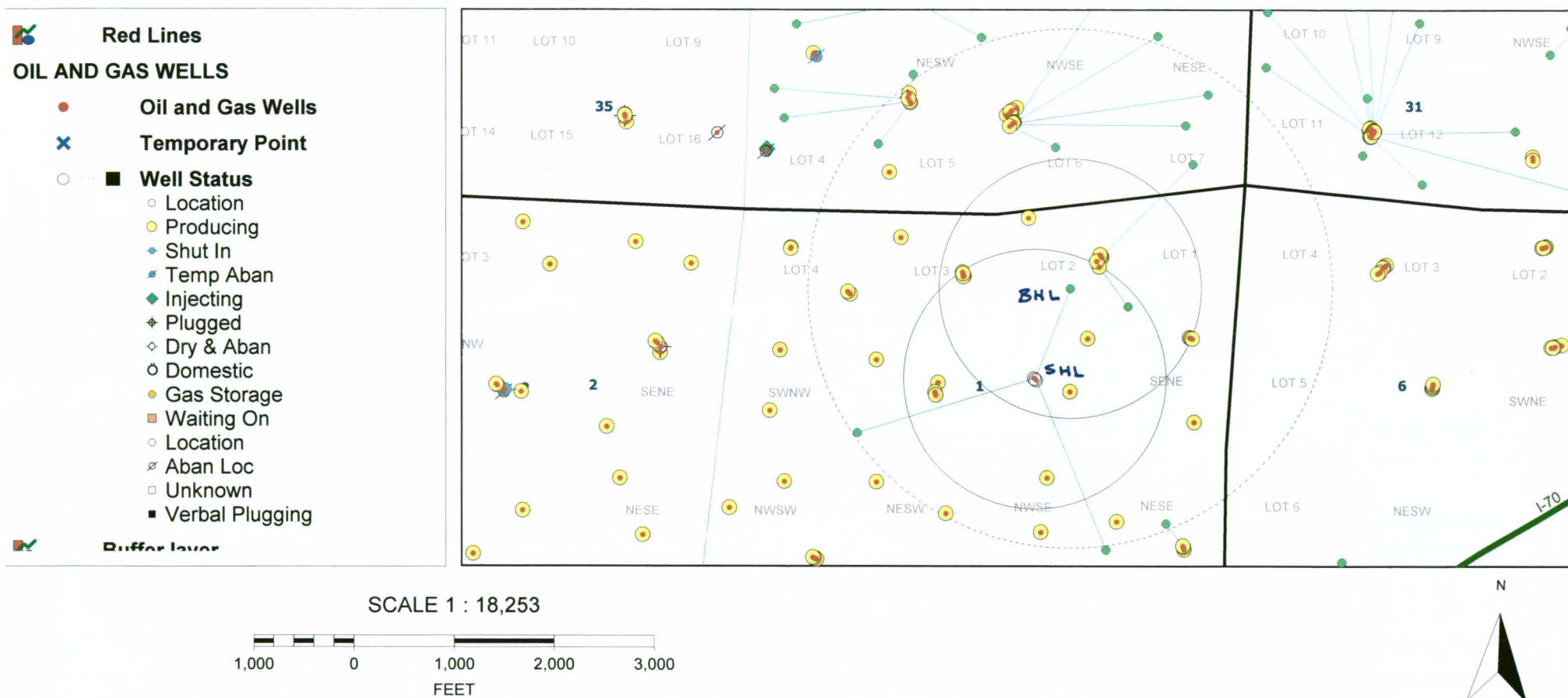
MAX. INJECTION PRESSURE, COMMINGLED (PSI)

1,261

WEIGHTED AVERAGE POROSITY (%)

10.4%

WILLIAMS 931-1D UIC PERMIT APPLICATION 1/4-MILE AND 1/2-MILE AOR



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COGCC

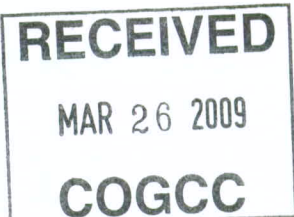
List of Oil and Gas Wells Located Within $\frac{1}{2}$ Mile

There are no oil or gas wells located within $\frac{1}{2}$ mile of the proposed injection well that are completed in the proposed injection zone.

TVD OF BOTTOM PERF IN
WILLIAMS GM 931-ID IS ABOVE
TVD OF TOP PERF IN ALL
OTHER WILLIAMS FORK PRODUCERS
WITHIN $\frac{1}{2}$ MILE.

D.A.

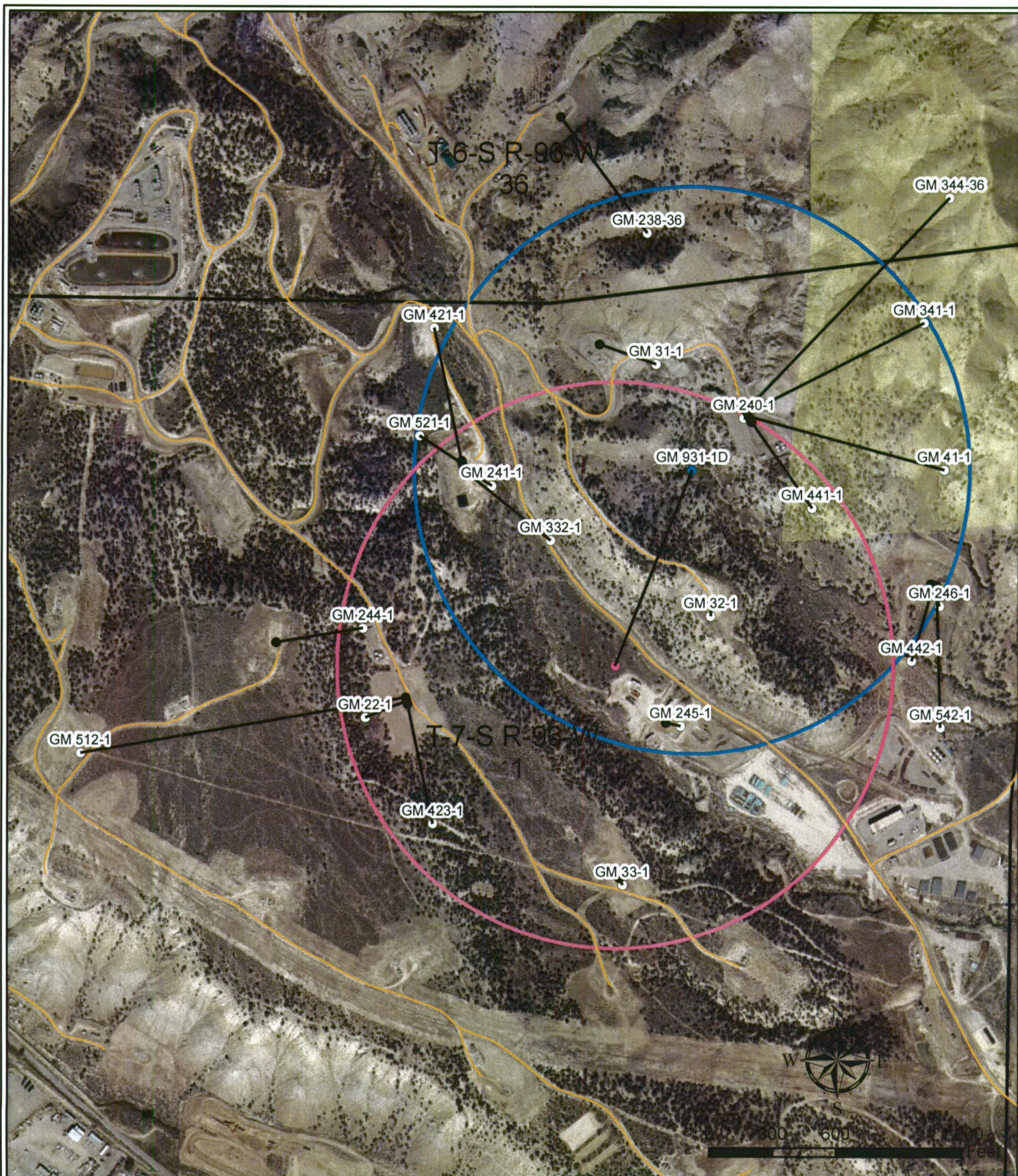
10/15/2009



Map of Oil/Water Wells Located Within ¼ Mile

There are 21 gas production wells located within ¼ mile of the bottom hole or surface location for proposed injection well (GM 931-1D) as shown on the attached map.

There are no water wells (domestic, irrigation, etc.) located within ¼ mile of the proposed injection well. The attached database search from the Colorado Division of Water Resources indicates no wells in the area of interest.



Legend

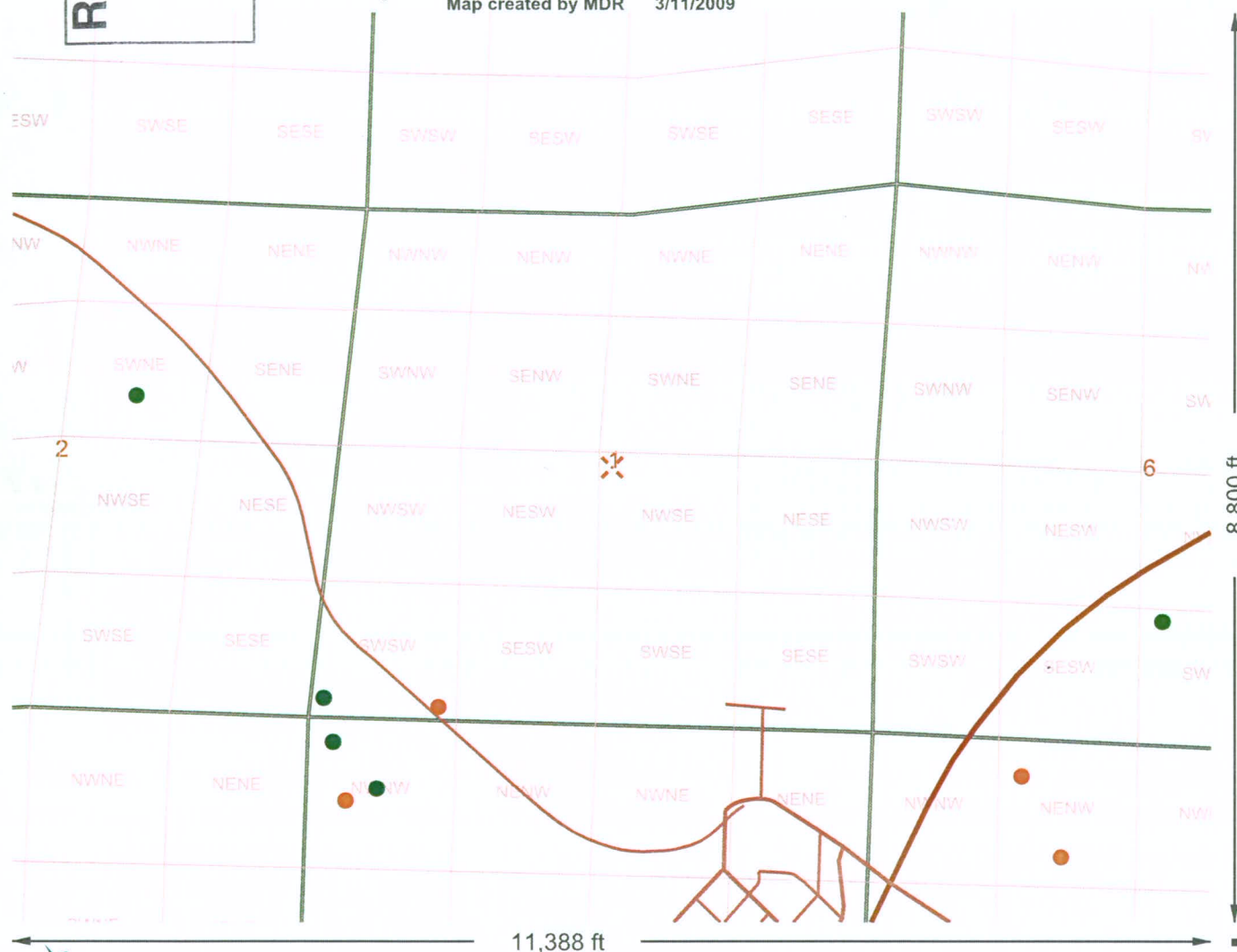
- Gas Well - Surface Location
- Proposed Injection Well - Surface Location
- Gas Well - Bottom Hole Location
- Proposed Injection Well - Bottom Hole Location
- Existing Road
- 1/4 Mile Buffer of Surface Location
- 1/4 Mile Buffer of Bottom Hole Location
- BLM Surface

Wells Inside 1/4 Mile Areas Surface and Bottom Hole Location Map for GM 931-1D



COGG

Map created by MDR 3/11/2009



Address location by Yahoo Maps
AquaMap Version 2.5 October 3, 2008

Click to create PDF

UTM X, Zone 13: 238659

UTM Y, Zone 13: 4371825

Long: -108° 2' 14.7"

Lat: 39° 27' 22.9"

UTM and Geographic(LL)
coordinates in NAD 83

☐ Background
 ☒ Counties
 ☒ Well Permits

☒ PLSS
 ☐ DWR Parcels

☒ Highways/Roads
 ☐ Hydrography
 ☐ County Parcels (No Public Access)

☒ Low
 ☐ High

Transparency

More Data

Section		Township		Range		Meridian	
1 ▼		7 ▼	S ▼	96 ▼	W ▼	Sixth ▼	
PLSS Locator				Quick Zoom			

Output Scale Page Size User
19,200 8.5x11 MDR

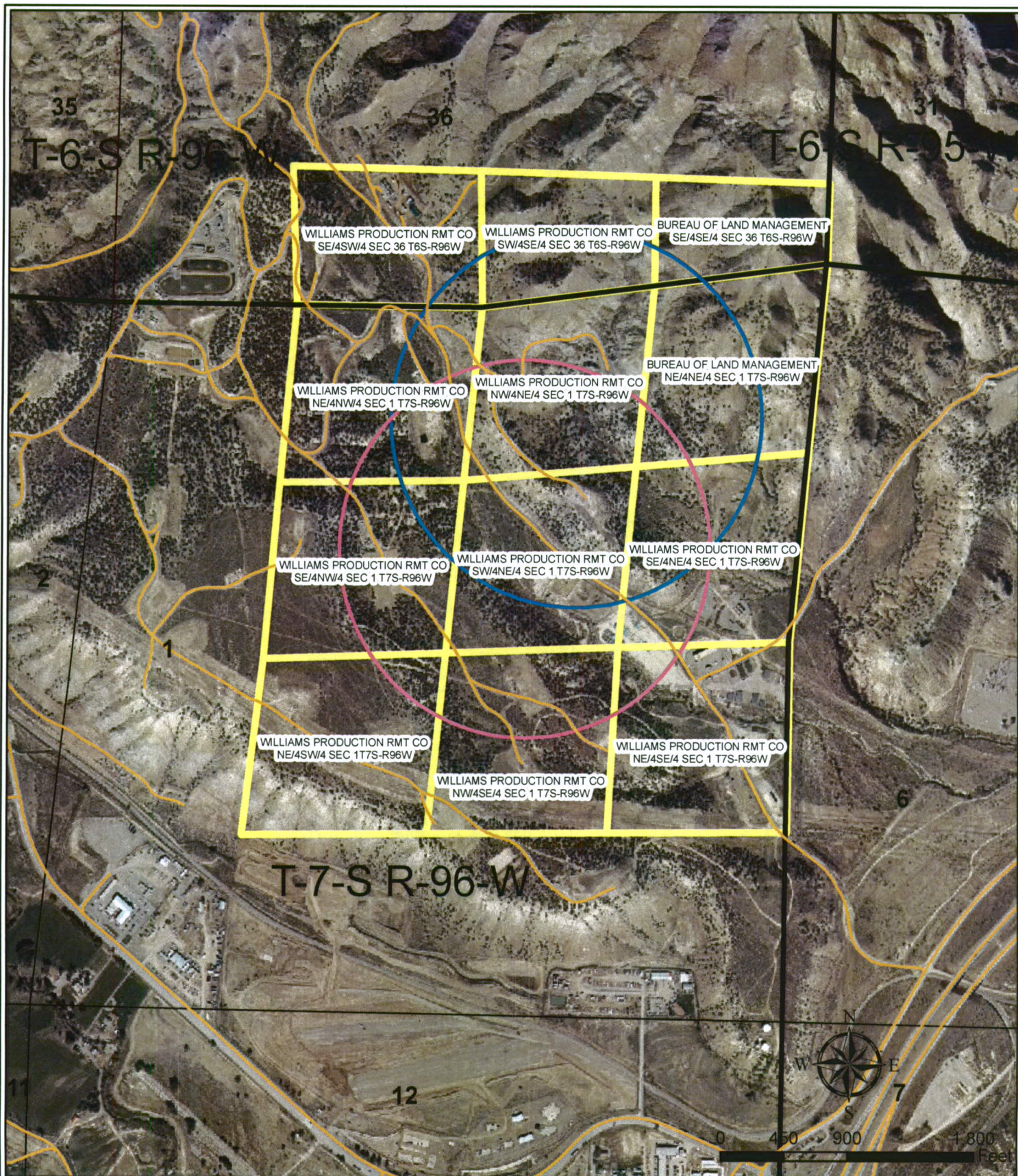


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MAR 26 2009

COGCCList of Surface Owners Located within ¼ Mile Radius
of the Surface and Bottom Hole of GM 931-1D

SURFACE OWNER(S)	LEGAL DESCRIPTION	ADDRESS
WILLIAMS PRODUCTION RMT CO	SE/4SW/4 SEC 36 T6S-R96W	1515 Arapahoe Street Tower 3, Suite 1000 Denver, CO 80202
WILLIAMS PRODUCTION RMT CO	SW/4SE/4 SEC 36 T6S-R96W	1515 Arapahoe Street Tower 3, Suite 1000 Denver, CO 80202
BUREAU OF LAND MANAGEMENT	SE/4SE/4 SEC 36 T6S-R96W	Minerals Management Service Attn: Royalty Management Program PO BOX 5810, Denver, CO 80217
WILLIAMS PRODUCTION RMT CO	NE/4NW/4 SEC 1 T7S-R96W	1515 Arapahoe Street Tower 3, Suite 1000 Denver, CO 80202
WILLIAMS PRODUCTION RMT CO	NW/4NE/4 SEC 1 T7S-R96W	1515 Arapahoe Street Tower 3, Suite 1000 Denver, CO 80202
BUREAU OF LAND MANAGEMENT	NE/4NE/4 SEC 1 T7S-R96W	Minerals Management Service Attn: Royalty Management Program PO BOX 5810, Denver, CO 80217
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WILLIAMS PRODUCTION RMT CO	NE/4SE/4 SEC 1 T7S-R96W	1515 Arapahoe Street Tower 3, Suite 1000 Denver, CO 80202



Legend

- Existing Road
- 1/4 Mile Buffer of Surface Location
- 1/4 Mile Buffer of Bottom Hole Location
- Surface Ownership

Surface Ownership Map GM 931-1D Injection Well



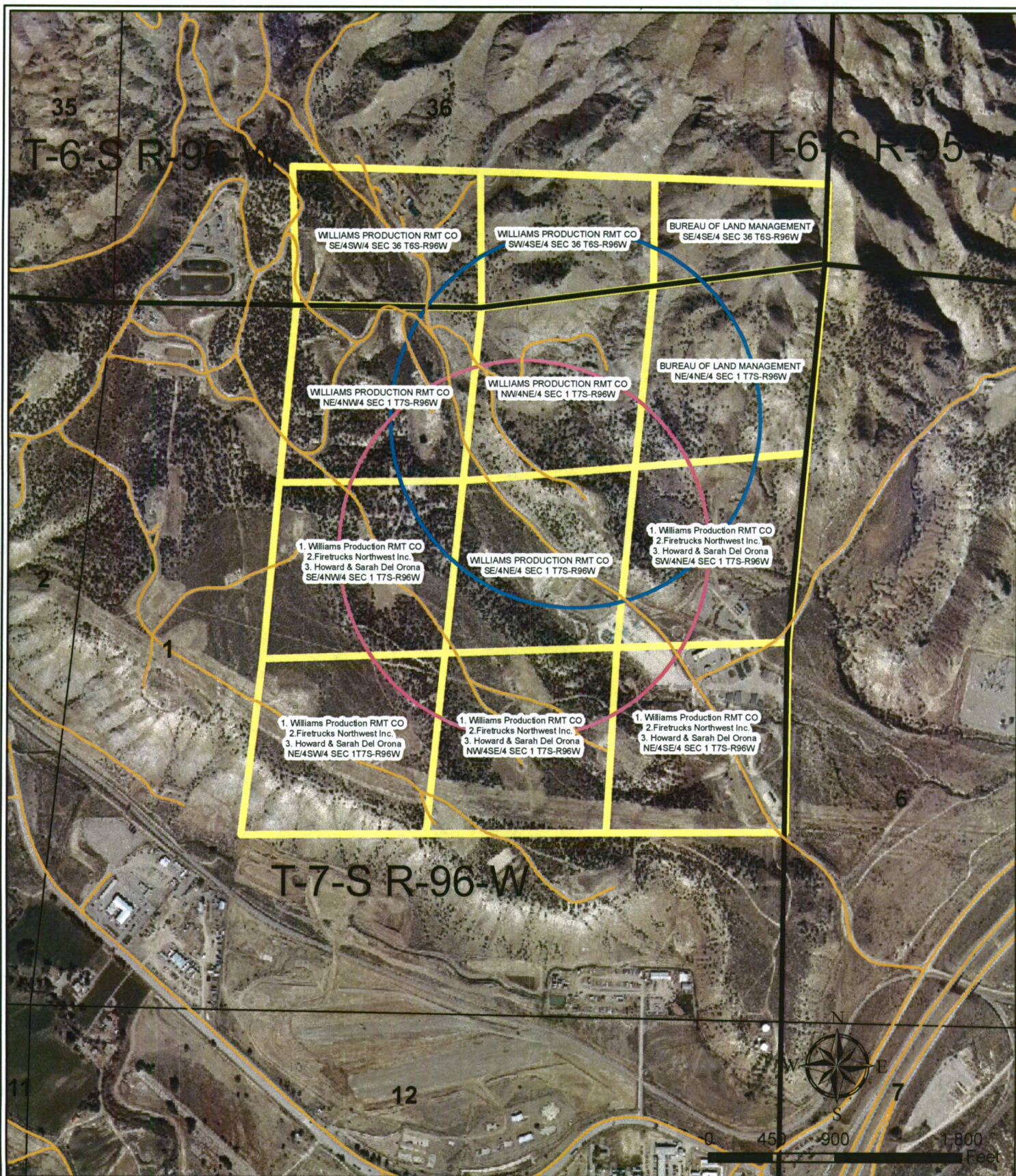
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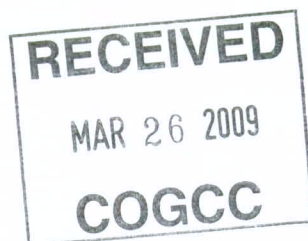
Mineral
List of ~~Surface~~ Owners Located within ¼ Mile Radius
of the Surface and Bottom Hole of GM 931-1D

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BUREAU OF LAND MANAGEMENT	SE/4SE/4 SEC 36 T6S-R96W	Minerals Management Service Attn: Royalty Management Program PO BOX 5810, Denver, CO 80217
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BUREAU OF LAND MANAGEMENT	NE/4NE/4 SEC 1 T7S-R96W	Minerals Management Service Attn: Royalty Management Program PO BOX 5810, Denver, CO 80217
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CERTIFIED MAIL

March 19, 2009



To: Minerals Management Service
Royalty Management Program
PO BOX 5810
Denver, CO 80217

EXPLORATION & PRODUCTION
1058 CR #215
P. O. Box 370
Parachute, CO 81635-0370
970/285-9377
970/285-9573 fax

Re: Application for **GM 931-1D** water injection well
Township 7 South, Range 96 West, 6th PM
Section 1: SW/4NE/4
Garfield County, CO

Dear Owner,

Williams Production RMT Company is filing an application with the Colorado Oil and Gas Conservation Commission (the COGCC) to drill the GM 923-1D for the purpose of saltwater disposal. Williams Production RMT Company is filing the application as part of its efforts to reduce water hauling for its oil and gas operations in the area. In accordance with the rules and regulations of the COGCC, this letter is notice of Williams's application to drill the GM 923-1D. This well will be a dedicated water injection well which will target the Upper Williams Fork formation (a.k.a. Ohio Creek member) of the upper part of the Mesaverde Group as the objective disposal interval.

Any person who would be directly and adversely affected or aggrieved by the authorization of the underground disposal into the proposed injection zone may file within fifteen (15) days of notification, a written request for a public hearing before the COGCC, provided such request meets protest requirements specified in subparagraph m of rule 325. Additional information on the operation of the proposed disposal well may also be obtained at the COGCC office.

If you have any questions concerning this application, please contact the undersigned at 970-683-2288.

Sincerely,

Williams Production RMT Company

A handwritten signature in blue ink that reads "Sandy Hotard".

Sandy Hotard CPL
Field Land Manager

CERTIFIED MAIL

March 19, 2009

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MAR 26 2009

COGCC



EXPLORATION & PRODUCTION

1058 CR #215

P. O. Box 370

Parachute, CO 81635-0370

970/285-9377

970/285-9573 fax

To: Howard & Sarah Del Orona
PO BOX 1
Parachute, CO 81635

Re: Application for **GM 931-1D** water injection well
Township 7 South, Range 96 West, 6th PM
Section 1: SW/4NE/4
Garfield County, CO

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Sandy Hotard CPL
Field Land Manager

CERTIFIED MAIL

March 19, 2009

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MAR 26 2009

COGCC



EXPLORATION & PRODUCTION

1058 CR #215

P. O. Box 370

Parachute, CO 81635-0370

970/285-9377

970/285-9573 fax

To: Firetrucks Northwest Inc.
808 County Road 215
Parachute, CO 81635

Re: Application for **GM 931-1D** water injection well
Township 7 South, Range 96 West, 6th PM
Section 1: SW/4NE/4
Garfield County, CO

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A handwritten signature in blue ink that reads "Sandy Hotard".

Sandy Hotard CPL
Field Land Manager

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00	MAR 19 2009
Total Postage & Fees	\$ 5.32	03/19/2009

Sent To
ExxonMobil Oil Corp
Attn: Mr. Ron Smith
Street, Apt. or PO Box No. 16825 Northchase Dr Suite 200
City, State, ZIP+4 Houston, TX 77060

PS Form 3800, August 2006

See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00	MAR 19 2009
Total Postage & Fees	\$ 5.32	03/19/2009

Sent To
Firetrucks Northwest
Street, Apt. No. or PO Box No. 808 CR 215
City, State, ZIP+4 Parachute, CO 81635

PS Form 3800, August 2006

See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00	MAR 19 2009
Total Postage & Fees	\$ 5.32	03/19/2009

Sent To
Minerals Management Service
Royalty Management Program
Street, Apt. or PO Box PO BOX 5810
City, State, ZIP+4 Denver, CO 80217

PS Form 3800, August 2006

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Total Postage & Fees	\$ 5.32	03/19/2009

Sent To
Leborgne Land Co LLC
Street, Apt. or PO Box 1014 Pritchard Mesa Ct.
City, State, ZIP+4 Grand Junction, CO 81505

PS Form 3800, August 2006

See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00	MAR 19 2009
Total Postage & Fees	\$ 5.32	03/19/2009

Sent To
Mr. & Mrs. Orona
Street, Apt. No. or PO Box No. PO BOX 1
City, State, ZIP+4 Parachute, CO 81635

PS Form 3800, August 2006

See Reverse for Instructions

3317657

Ad Ticket #5

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JUN 05 2009

COGCC

Acct: 1006421
Phone: (303)894-2100
E-Mail:
Client:
Caller: David Andrews
Receipt

Name: Colorado Oil & Gas Conservatio
Address: 1120 Lincoln St 801 Ste

City: Denver
State: CO

Zip: 80203**Ad Name:** 3317657A**Original Id:** 0**Editions:** 8CT/8PIN/**Class:** 0990**Start:** 04/23/09**Stop:** 04/23/09**Color:****Copyline:** 3317657 ct SWD_Pub-09-14-17(2)**Issue** 1**Rep:** Mary Borkenhagen

PUBLIC NOTICE
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO
NOTICE OF PROPOSED
UNDERGROUND INJECTION
CONTROL PERMIT

PURPOSE OF PUBLIC NOTICE:
 The purpose of this notice is to solicit public comments on a Class II injection permit application for the proposed Williams GM 931-1D well, which was submitted by Williams Production RMT Company. The proposed location of the Williams GM 931-1D well is 1743 feet from the North line and 1925 feet from the East line of Section 1, Township 7 South, Range 96 West, 6th P.M., Garfield County, Colorado.

BACKGROUND:
 Class II injection wells are permitted and regulated in such a manner as to prevent the contamination of underground sources of drinking water and to ensure fluid emplacement and confinement within the permitted injection zones. Class II injection wells are permitted to inject waste generated from oil and gas exploration and production operations.

Williams Production RMT Company proposes to dispose of produced water generated from their oil and gas operations in Garfield County and Rio Blanco County into the Williams GM 931-1D well. Williams Production RMT Company proposes to inject these fluids into the Upper Mesa Verde (Williams Fork) Formation at a depth of approximately 3200 feet to 3500 feet (true vertical depth).

Public comments are encouraged and will be accepted in writing at the Commission for a period of thirty (30) days after publication of this notice. If any data, information, or arguments submitted during the public comment period appear to raise substantial questions concerning the proposed injection permit, the Director may request that the Commission hold a hearing on the matter.

Additional information on the operation of the proposed injection well may be obtained at the Commission office.

IN THE NAME OF THE STATE OF COLORADO,

OIL AND GAS CONSERVATION COMMISSION
 OF THE STATE OF COLORADO
 By: David Andrews, Engineering Supervisor

Dated at 1120 Lincoln St., Suite 801
 Denver, Colorado 80203
 April 17, 2009

Published in the Citizen Telegram on April 23, 2009. (3317657)

Ad shown is not actual print size

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Columns: 1

Discount: 0.00

Commission: 0.00

Net: 0.00

Tax: 0.00

Total: 30.87

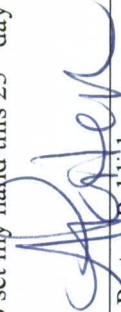
Payment: 0.00

**PROOF OF PUBLICATION
RIFLE CITIZEN TELEGRAM
STATE OF COLORADO, COUNTY OF GARFIELD**

I, **Andrea Porter**, do solemnly swear that I am a Publisher of The *Rifle Citizen Telegram*, that the same weekly newspaper printed, in whole or in part and published in the County of Garfield, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said County of Garfield for a period of more than fifty-two consecutive weeks next prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as a periodical under the provisions of the Act of March 3, 1879, or any amendments thereof, and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspaper for the period of **1** consecutive insertions; and that the first publication of said notice was in the issue of said newspaper dated **4/23/2009** and that the last publication of said notice was dated **4/23/2009** in the issue of said newspaper.

In witness whereof, I have here unto set my hand this 23rd day of April 2009.


Andrea Porter, Publisher

Subscribed and sworn to before me, a notary public in and for the County of Garfield, State of Colorado this 23rd day of April 2009.


Mary E. Borkenhagen, Notary Public
My Commission expires: **August 27, 2011**



Colorado Oil & Gas Conservatio

**PUBLIC NOTICE
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO
NOTICE OF PROPOSED
UNDERGROUND INJECTION
CONTROL PERMIT**

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Class II injection wells are permitted and regulated in such a manner as to prevent the contamination of underground sources of drinking water and to

ensure fluid emplacement and confinement within the permitted injection zones. Class II injection wells are permitted to inject waste generated from oil and gas exploration and production operations.

Williams Production RMT Company proposes to dispose of produced water generated from their oil and gas operations in Garfield County and Rio Blanco County into the Williams GM 931-1D well. Williams Production RMT Company proposes to inject these fluids into the Upper Mesa Verde (Williams Fork) Formation at a depth of approximately 3200 feet to 3500 feet (true vertical depth).

Public comments are encouraged and will be accepted in writing at the Commission for a period of thirty (30) days after publication of this notice. If any data, information, or arguments submitted during the public comment period appear to raise substantial questions concerning the proposed injection permit, the Director may request that the Commission hold a hearing on the matter.

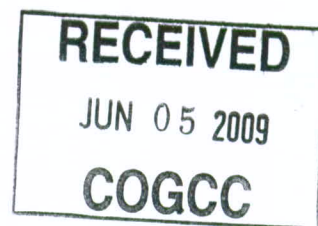
Additional information on the operation of the proposed injection well may be obtained at the Commission office.

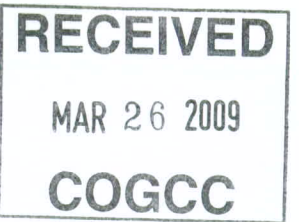
IN THE NAME OF THE STATE OF COLORADO,

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO
By: /s/ David Andrews, Engineering Supervisor

Dated at 1120 Lincoln St., Suite 801
Denver, Colorado 80203
April 17, 2009

Published in the Citizen Telegram on April 23, 2009. (3317657)



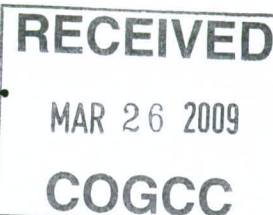


Surface or Salt Water Disposal Agreement

The land is owned by Williams RMT; see Parcel Detail Information for confirmation.

Garfield County Assessor/Treasurer

Parcel Detail Information



[Assessor/Treasurer Property Search](#) | [Assessor Subset Query](#) | [Assessor Sales Search](#)
[Clerk & Recorder Reception Search](#)

[Basic Building Characteristics](#) | [Tax Information](#)

[Parcel Detail](#) | [Value Detail](#) | [Sales Detail](#) | [Residential/Commercial Improvement Detail](#)
[Land Detail](#) | [Photographs](#) | [Mill Levy Revenues Detail](#)

Tax Area	Account Number	Parcel Number	2008 Mill Levy
026	R006514	240901400011	38.941

Owner Name and Mailing Address

WILLIAMS PRODUCTION RMT COMPANY
ATTN: LAND DEPT SANDY HOTARD
P.O. BOX 370
PARACHUTE,, CO 81635

Assessor's Parcel Description (Not to be used as a legal description)

SECT,TWN,RNG:1-7-96 DESC: LOTS
2,4,S2NW, S2NE, N2SW, N2SE. ALSO,
26 AC. IN THE SWSE AND 32 AC IN
THE SESE. ALSO A TR IN THE SWSW
CONT. 5.03 AC. PRE:R260381
PRE:R260350 TO:R006224 BK:657
PG:417 BK:657 PG:274 BK:654 PG:386
BK:641 PG:759 BK:591 PG:841 BK:578
PG:669 BK:326 PG:220 BK:1129 PG:50
RECPT:758966 RECPT:758960
RECPT:747104 BK:1795 PG:96
RECPT:697033 BK:1780 PG:409
RECPT:694081 BK:1769 PG:988
RECPT:691800 BK:1763 PG:705

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RECPT:690411 BK:1731 PG:127
RECPT:683317 BK:1655 PG:230
RECPT:666856 BK:1621 PG:903
RECPT:659636 BK:1555 PG:767
RECPT:645001 BK:1300 PG:448
RECPT:591324 BK:1300 PG:439
RECPT:591323 BK:1300 PG:431
RECPT:591322 BK:1300 PG:421
RECPT:591321 BK:1300 PG:414
RECPT:591320 BK:1300 PG:410
RECPT:591319 BK:1300 PG:392
RECPT:591318 BK:1300 PG:389
RECPT:591317

Location

Physical Address:		
Subdivision:		
Land Acres:		432.13
Land Sq Ft:		0
Section	Township	Range
1	7	96

2008 Property Tax Valuation Information

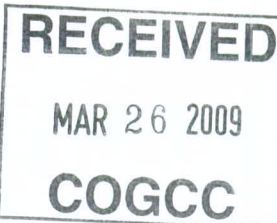
	Actual Value	Assessed Value
Land:	5,150	1,490
Improvements:	0	0
Total:	5,150	1,490

Additional Value Detail**Most Recent Sale**

Sale Date:	10/31/2001
Sale Price:	1,536,000

Additional Sales Detail**Basic Building Characteristics**

Number of Residential Buildings:	0
Number of Comm/Ind Buildings:	0



No Building Records Found

Tax Information

Tax Year	Transaction Type	Amount
2008	Tax Payment: First Half	(\$29.02)
2008	Tax Amount	\$58.04
2007	Tax Payment: Second Half	(\$27.08)
2007	Tax Payment: First Half	(\$27.08)
2007	Tax Amount	\$54.16
2006	Tax Payment: Second Half	(\$26.60)
2006	Tax Payment: First Half	(\$26.60)
2006	Tax Amount	\$53.20
2005	Tax Payment: Second Half	(\$26.65)
2005	Tax Payment: First Half	(\$26.65)
2005	Tax Amount	\$53.30
2004	Tax Payment: Second Half	(\$28.29)
2004	Tax Payment: First Half	(\$28.29)
2004	Tax Amount	\$56.58
2003	Tax Payment: Second Half	(\$30.33)
2003	Tax Payment: First Half	(\$30.33)
2003	Tax Amount	\$60.66
2002	Tax Payment: Second Half	(\$29.04)
2002	Tax Payment: First Half	(\$29.04)
2002	Tax Amount	\$58.08
2001	Tax Payment: Second Half	(\$30.98)
2001	Tax Payment: First Half	(\$30.98)
2001	Tax Amount	\$61.96
2000	Tax Payment: Whole	(\$1,355.54)
2000	Tax Amount	\$1,355.54

[Mill Levy Revenues Detail](#)

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[Assessor Database Search Options](#) | [Treasurer Database Search Options](#)
[Clerk & Recorder Database Search Options](#)

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The Garfield County Assessor and Treasurer's Offices make every effort to collect and maintain accurate data. However, Good Turns Software and the Garfield County Assessor and Treasurer's Offices are unable to warrant any of the information herein contained.

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State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax: (303) 894-2109



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MECHANICAL INTEGRITY TEST

Fill out Part II of this form if well tested is a permitted or pending injection well. Send original plus one copy.

1. Duration of the pressure test must be a minimum of 15 minutes.
2. A pressure chart must accompany this report if this test was not witnessed by a OGCC representative.
3. For production wells, test pressures must be at a minimum of 300 psig.
4. For injection wells, test pressures must be at 300 psig or minimum injection pressure, whichever is greater.
5. A minimum 300 psi differential pressure must be maintained between the tubing and tubing/casing annulus pressure.
6. Do not use this form if submitting under provisions of Rule 328.a. (1) B. or C.
7. OGCC notification must be provided prior to the test.
8. Packers or bridge plugs, etc., must be set within 250 feet of the perforated interval to be considered a valid test.

Complete the Attachment Checklist

OGCC

Pressure Chart	
Cement Bond Log	
Tracer Survey	N/A
Temperature Survey	N/A

OGCC Operator Number: 96850	Contact Name and Telephone
Name of Operator: Williams Production RMT Co.	Karolina Blaney
Address: 1058 County Road 215	No: (970) 683-2295
City: Parachute State: CO Zip: 81635	Fax: (970) 285-9573
API Number: 05-045-18425-00	Field Name: Grand Valley
Well Name: Williams	Field Number: 31290
Location (QtrQtr, Sec, Twp, Rng, Meridian): SWNE Sec 1 T7S R96W 6th P.M.	Number: GM 931-1D

☐ SHUT-IN PRODUCTION WELL ☒ INJECTION WELL Facility No.: _____

Part I Pressure Test

- ☒ 5-Year UIC Test ☐ Test to Maintain SI/TA Status ☐ Reset Packer
☐ Verification of Repairs ☐ Tubing/Packer Leak ☐ Casing Leak ☒ Other (Describe): _____

Final MIT for Injection Permit

Describe Repairs: _____

NA - Not Applicable	Wellbore Data at Time Test	Casing Test <input checked="" type="checkbox"/> NA
Injection/Producing Zone(s)	Perforated Interval: <input type="checkbox"/> NA Open Hole Interval: <input checked="" type="checkbox"/> NA	Use when perforations or open hole is isolated by bridge plug or cement plug
Williams Fork	3627' - 4584'	Bridge Plug or Cement Plug Depth
Tubing Casing/Annulus Test <input type="checkbox"/> NA		
Tubing Size: 3 1/2"	Tubing Depth: 3567 ft	Top Packer Depth: 3567 ft
Multiple Packers? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
Test Data		
Test Date: 9-15-09	Well Status During Test: Shut in	Date of Last Approved MIT: 22
Starting Casing Test Pressure: 2000	Casing Pressure - 5 Min: 1980	Casing Pressure - 10 Min: 1955
Initial Tubing Pressure: 45	Final Tubing Pressure: 40	Pressure Loss or Gain During Test: -63
Test Witnessed by State Representative? <input type="checkbox"/> YES <input type="checkbox"/> NO		
OGCC Field Representative: _____		

Part II Wellbore Channel Test

Complete only if well is or will be an injection well.

Indicate method used for cement integrity test, attach appropriate records, charts, or logs unless previously submitted.

- ☐ Tracer Survey Run Date: _____ ☒ CBL or Equivalent Run Date: July 6, 2009 ☐ Temperature Survey Run Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Kent Hejl

Signed: [Signature]

Title: Consultant

Date: 9-15-09

OGCC Approval: [Signature]

Title: N/A

Date: 9-15-09

Conditions of Approval, if any: Copy

WILLIAMS PRODUCTION RMT CO.
WILLIAMS GM 931-1D
SWNE 1-7S-96W, 6TH P.M.
GARFIELD COUNTY, COLORADO

SINGLE-WELL, NON-COMMERCIAL UNDERGROUND INJECTION PERMIT CHECKLIST

- 1) Receipt & approval dates for Form 2 – Application for Permit to Drill (325.a.)
REC'D 3/31/2009 APP'D 5/6/2009
- 2) Receipt & approval dates for Form 21 – Mechanical Integrity Test (325.e.)
REC'D 9/16/2009 APP'D 9/15/2009
 - i) Test used to check for vertical fluid movement in channels adjacent to well bore (326.a.(2))
7/6/2009 CBL TOP OF "GOOD" CMT @ 2560'
- 3) Receipt & approval dates for Form 26 – Source of Prod. Water for Disposal (325.c.(5))
REC'D 9/16/2009, APP'D 10/20/2009
- 4) Receipt & approval dates for Form 31 – Underground Inj. Form. Permit Ap. (325.a.)
REC'D 3/26/2009, REV. 9/16/2009, APP'D 10/20/2009
- 5) Receipt & approval dates for Form 33 – Injection Well Permit Application (325.a.)
REC'D 3/26/2009, REV. 9/16/2009, APP'D 10/20/2009
- 6) Hearing date, if approval withheld (325.b.) N/A
- 7) Name, description, and depth of injection formation (325.c.(1))
WILLIAMS FORK 3627' - 4584'
- 8) Underground sources of drinking water (325.c.(1))
SHALLOW (WASATCH)
- 9) Hydrologic information request to Division of Water Resources YES
- 10) Fracture gradient of the injection formation (325.c.(1)) 0.781 EQUIVALENT @ TOP PERF.
- 11) Water analysis of injection formation, TDS (mg/l) (325.c.(1)) 27,282
- 12) If TDS < 10,000 mg/l, is an aquifer exemption attached? (324B.) N/A
 - i) Was an aquifer exemption public notice published? (324B.b.) N/A
 - ii) Was a public hearing held? (324B.c.) N/A
 - iii) Was the aquifer exemption approved? (324B.d.) N/A
 - iv) Notice of approved aquifer exemption to Water Quality Control Commission N/A
- 13) Base plat (1/4-mile radius) with the following (325.c.(2)):
 - i) Location of disposal well YES
 - ii) location of all oil & gas wells YES
 - iii) location of water wells with depths NONE
 - iv) name and address of surface owners YES
 - v) name and address of mineral owners YES

**WILLIAMS PRODUCTION RMT CO.
WILLIAMS GM 931-1D
SWNE 1-7S-96W, 6TH P.M.
GARFIELD COUNTY, COLORADO**

SINGLE-WELL, NON-COMMERCIAL UNDERGROUND INJECTION PERMIT CHECKLIST

- 14) Base plat (1/2-mile radius) with oil & gas wells producing from the disp. zone (325.c.(2)) NONE
- 15) Base plat showing all surface and mineral owners of record if the well is part of a field-wide system (325.c.(2)) N/A
- 16) Remedial action plans for wells within 1/4-mile of the disposal well (325.c.(2)) NOT REQUIRED
- 17) A resistivity log, description of stratigraphy and/or testing data (325.c.(3)) INDUCTION LOG
- 18) A wellbore schematic showing casing, cement, bridge plugs, packers, perforations and any other relevant information (325.c.(4)) PROPOSED AND AS-BUILT
- 19) A surface facilities diagram showing pipelines, tanks and any other relevant information for the injection system (325.c.(4)) YES
- 20) Any proposed stimulation program (325.c.(6)) FRAC
- 21) Estimated daily minimum and maximum injection volume (325.c.(7)) 50 - 10,000 bpd
- 22) Maximum injection pressure, calculated by COGCC (325.c.(7)) 1261 psi
- 23) Names and addresses of persons notified and copies of the notices (325.i)
- i) Surface and mineral owners within 1/4-mile YES
 - ii) Owners and operators of wells producing in the inj. zone within 1/2-mile NONE
 - iii) Owners of cornering or contiguous units producing in the inj. zone, if greater than 1/2-mile
N/A
- 24) Were the notices delivered by certified mail or personal delivery? (325.k.) YES
- 25) Do the notices include instructions on public hearing requests? (325.l.) YES
- 26) Publish public notice with brief description of disposal application, including legal location, proposed injection zone, depth of injection and other relevant information (325.n.)
THE CITIZEN TELEGRAM 4/23/2009
- 27) Any written requests for public hearing as a result of the notices? (325.m. or 325.n.) NO
- 28) Was a surface owner agreement submitted? N/A - OWNED BY OPERATOR
- 29) Was all information received by the 6-month deadline? (325.o.) YES
- 30) Was a 90-day extension granted? (325.o.) YES (CONTINGENCY)