

RCVD AUG 30 '12
OIL CONS. DIV.
DIST. 3



San Juan

Request for Alternative Use of Produced Water

Calloway LS #2A

API # 3004535340
T31N R11W Sec 34 Unit H

August 29, 2012

Submitted by:

Paul Marken
Completion Supervisor

A handwritten signature in black ink that reads "Paul R. Marken".
29 AUGUST 2012

Please reply to: Dollie Busse at (505) 324-6104
Or: Dollie.L.Busse@conocophillips.com

Request for Alternative Use of Produced Water

1. COPC wishes to use 100% produced water as a base fluid for our stimulation of the Calloway LS #2A. Plans are to use only this water to stimulate the Dakota and Mesa Verde zones. The stimulation job will be completed no later than October 30, 2012. The legal description for the Calloway LS #2A is as follows:

**Location: 36° 51' 20.509"N 107° 58' 18.818" W : T31N R11W Sec 34 Unit H
API: 3004535340**

2. The source of the produced water for this alternative use pilot test will be the Vasaly SWD #2. The water will be taken downstream from the second stage filtration, just upstream from the injection wellhead. This treated and filtered water will be transferred by pipeline to two 500 Bbl holding tanks located on the Mar Vista SWD #1 site. Vacuum trucks will then haul this water to the Calloway LS #2A. This will be a mixture of produced water from Dakota, Mesa Verde, Pictured Cliffs and Fruitland formations. Historic water sample from the Vasaly SWD #2 have averaged less than 14,500 ppm TDS. Our standard stimulation fluid, 2% KCl, averages over 21,000 ppm TDS. Analysis of water from Vasaly SWD #2 sampled on 21 August 2012 is attached as Appendix A. The Vasaly SWD #2 is 100% owned by ConocoPhillips.

3. We do not anticipate any compatibility issues using water from Vasaly SWD #2 to fracture stimulate Calloway LS #2A. The bulk of the water transported to Vasaly SWD #2 originates from the same formations we will be stimulating. API analyses of water from Vasaly SWD #2 indicate negligible scaling tendencies. Water samples from the Bruington GC #1E, Bruington LS #4P, and Marx Fed #1M, which are near Calloway LS #2A and are completed in some of the same target formations (Dk, MV) as Calloway LS #2A, were analyzed for compatibility with the Vasaly SWD #2 water sample. The analysis was performed at three different mix ratios (25% / 75%, 50% / 50%, 75% / 25%). This analysis indicates negligible scaling tendencies at all mix ratios. These water sample analyses are available upon request.

4. A list of the wells disposing of water at the Vasaly SWD #2 is available upon request.

5. We anticipate that we will use approximately 5,200 bbls of water to stimulate this well.

6. We will be storing the produced water on location in thirteen (13) 400 bbl frac tanks.

7. All fluids flowed back after the stimulation will be contained in a flowback tank then transported to an approved disposal facility.

APPENDIX A

Water Analysis Vasaly SWD #2

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Vasaly SWD #2 ,Drilling

Representative: Sheperd, Dave

Sample Date: 08/21/2012

Lab Test No: 2012125753

Specific Gravity:	1.013	
TDS:	17770	
pH:	6.26	
Cations	mg/L	as:
Calcium:	131	Ca
Magnesium:	28	Mg
Sodium:	6091	Na
Iron:	6.57	Fe
Barium:	9.21	Ba
Strontium:	20	Sr
Manganese:	0.74	Mn
Anions	mg/L	as:
Bicarbonate:	1342	HCO3
Carbonate:	0	CO3
Sulfate:	650	SO4
Chloride:	9400	Cl
Gases:	mg/L	as:
Carbon Dioxide:	50	CO2
Hydrogen Sulfide:	17	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale

Prediction:	70	
	Saturation	
Mineral Scale	Index	Momentary Excess (lbs/1000 bbls)
Calcite (CaCO3)	0.19	-1.72
Strontianite (SrCO3)	0.12	-3.88
Anhydrite (CaSO4)	0.03	-2850.49
Gypsum (CaSO4*2H2O)	0.04	-2337.66
Barite (BaSO4)	165.99	15.56
Celestite (SrSO4)	0.18	-159.09
Siderite (FeCO3)	17.36	0.45
Halite (NaCl)	0	-494278.88
Iron sulfide (FeS)	6.8	2.18

APPENDIX B

Water Analysis from adjacent producing wells: Bruington GC #1E

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Bruington Gas C #1E ,Drilling

Representative: Sheperd, Dave

Sample Date: 01/23/2012

Lab Test No: 2012102313

Specific Gravity:	1.019	
TDS:	26896	
pH:	6.44	
Cations	mg/L	as:
Calcium:	216.14	Ca
Magnesium:	44.2	Mg
Sodium:	9168	Na
Iron:	86.12	Fe
Barium:	42.91	Ba
Strontium:	35.28	Sr
Manganese:	0	Mn
Anions	mg/L	as:
Bicarbonate:	488	HCO3
Carbonate:	0	CO3
Sulfate:	8	SO4
Chloride:	16700	Cl
Gases:	mg/L	as:
Carbon Dioxide:	100	CO2
Hydrogen Sulfide:	0	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale

Prediction: 180

Saturation

Mineral Scale	Index	Momentary Excess (lbs/1000 bbls)
Calcite (CaCO3)	0.65	-0.3
Strontianite (SrCO3)	0.08	-8.49
Anhydrite (CaSO4)	0	-1862.68
Gypsum (CaSO4*2H2O)	0	-2356.99
Barite (BaSO4)	0.69	-5.03
Celestite (SrSO4)	0	-548.56
Siderite (FeCO3)	861.8	0.65
Halite (NaCl)	0	-604999.69
Iron sulfide (FeS)	0	-0.09

APPENDIX B

Water Analysis from adjacent producing wells: Bruington LS #4P

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Bruington LS #4 P ,Drilling

Representative: Sheperd, Dave

Sample Date: 01/24/2012

Lab Test No: 2012102316

Specific Gravity:	1.007	
TDS:	8590	
pH:	6.59	
Cations	mg/L	as:
Calcium:	133.23	Ca
Magnesium:	10.94	Mg
Sodium:	2825	Na
Iron:	39.52	Fe
Barium:	9.35	Ba
Strontium:	21.71	Sr
Manganese:	1.48	Mn
Anions	mg/L	as:
Bicarbonate:	244	HCO3
Carbonate:	0	CO3
Sulfate:	9	SO4
Chloride:	5210	Cl
Gases:	mg/L	as:
Carbon Dioxide:	250	CO2
Hydrogen Sulfide:	0	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale

Prediction:	180	
	Saturation	
Mineral Scale	Index	Momentary Excess (lbs/1000 bbls)
Calcite (CaCO3)	0.49	-0.34
Strontianite (SrCO3)	0.07	-5.96
Anhydrite (CaSO4)	0	-1276.07
Gypsum (CaSO4*2H2O)	0	-1593.14
Barite (BaSO4)	0.46	-7.94
Celestite (SrSO4)	0	-347.11
Siderite (FeCO3)	492.12	0.38
Halite (NaCl)	0	-563188.69
Iron sulfide (FeS)	0	-0.06

APPENDIX B

Water Analysis from adjacent producing wells: Marx Fed #1M

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Marx Fed #1M ,Drilling

Representative: Sheperd, Dave

Sample Date: 01/23/2012

Lab Test No: 2012102314

Specific Gravity:	1.02	
TDS:	28826	
pH:	6.42	
Cations	mg/L	as:
Calcium:	299.4	Ca
Magnesium:	38.89	Mg
Sodium:	10018	Na
Iron:	106.64	Fe
Barium:	64.81	Ba
Strontium:	56.45	Sr
Manganese:	1.43	Mn
Anions	mg/L	as:
Bicarbonate:	366	HCO3
Carbonate:	0	CO3
Sulfate:	9	SO4
Chloride:	17700	Cl
Gases:	mg/L	as:
Carbon Dioxide:	350	CO2
Hydrogen Sulfide:	0	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale

Prediction:	180	
	Saturation	
Mineral Scale	Index	Momentary Excess (lbs/1000 bbls)
Calcite (CaCO3)	0.64	-0.23
Strontianite (SrCO3)	0.08	-5.96
Anhydrite (CaSO4)	0	-1785.68
Gypsum (CaSO4*2H2O)	0	-2274.33
Barite (BaSO4)	1.09	1.19
Celestite (SrSO4)	0	-541.45
Siderite (FeCO3)	721.4	0.46
Halite (NaCl)	0	-606178.38
Iron sulfide (FeS)	0	-0.08