

Exploration & Production Waste Management Plan  
Land Application & Incorporation of Water-Based Bentonitic Drilling Fluids  
& Associated Drill Cuttings  
Synergy Resources Corporation  
SE ¼, SE ¼, Sec 30, T3N, R66W

**Subject Property:**  
**COGCC Facility ID:**  
NE ¼, SE ¼, Sec 30, T3N, R66W  
Weld County, Platteville, Colorado

This Exploration & Production (E&P) Waste Management Plan outlines the operational requirements for applying water-based bentonitic drilling fluids and associated drill cuttings to privately owned agricultural land to maintain compliance with COGCC Rule 907.a. (3). Only water-based bentonitic drilling fluids and associated drill cuttings generated by Synergy Resources Corporation are covered by this plan. The drilling fluids and drill cuttings will be applied to the agricultural cropland as a beneficial soil amendment and as a conservation method to prevent soil erosion. A topographic map showing the site location is provided as Figure 1. An aerial photograph showing the location of the proposed land application site is provided as Figure 2. The E&P Waste Management Plan is outlined as follows:

1. Synergy Resources Corporation will certify this plan by signing said plan and certifying compliance with the contents of this plan (Attachment A).
2. Synergy Resources Corporation shall obtain written authorization from the surface owner prior to land application of the water-based bentonitic drilling fluids and associated drill cuttings (Attachment B).
3. The agreement certifies that only water-based bentonitic drilling fluids and associated drill cuttings will be applied at this site. No other E&P waste shall be deposited at this site.
4. Water based bentonitic fluids and associated drill cuttings will be applied and spread at a minimum distance of approximately 50 feet from each property boundary to ensure protection to surrounding properties.
5. A 3-inch maximum lift of water-based bentonitic drilling fluids and associated drill cuttings will be applied prior to incorporation. The waste shall be applied to prevent ponding or erosion.
6. Synergy Resources Corporation personnel will ensure that the material is incorporated into the soil within 10 days (site and weather conditions permitting).

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7. Synergy Resources Corporation will maintain records of the following information:

- Name of the well where material was generated
- Date the material was transferred from the well to the land application site
- Volume of the material taken to the land application site
- Name of the transporter

8. Soil sampling:

- Baseline soil samples will be collected from a minimum of three (3) locations across the application area prior to the transfer/spreading of materials. Soil samples will be analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), inorganic analyses including electrical conductivity (EC), sodium adsorption ratio (SAR), and pH, and analyses of Table 910-1 priority metals.
  - Baseline samples will be collected in order to provide COGCC adequate capacity to establish pre-application soil conditions, especially as related to COGCC Table 910-1 footnote 1.
- If horizontal wells will be drilled, obtain a horizontal drilling composite soil sample to determine the presence/absence of petroleum hydrocarbons in soil from the horizontal portion of the well within the producing formation. The soil sample will be submitted to a contract laboratory to determine the presence/absence of BTEX and total volatile and extractable petroleum hydrocarbons (TVPH + TEPH) per COGCC reviewer requirements.
- Following incorporation of the drilling mud and cuttings, a representative composite soil sample will be collected from an interval of 0-12 inches below ground surface (bgs) from a minimum of three (3) locations across the application area.
- At a minimum, post incorporation soil samples will be analyzed for TVPH, TEPH, BTEX, EC, SAR, pH, and Table 910-1 priority metals to ensure compliance with COGCC Table 910-1.

9. Water-based bentonitic drilling fluids and associated drill cuttings will be applied at this site for a maximum of two years.

10. Upon closure of the site, Synergy Resources Corporation will submit a Form 4 Sundry Notice providing confirmation soil sample data and request closure for this site.

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**ATTACHMENT A**

**PLAN CERTIFICATION**


**NE ¼, SE ¼, Sec 30, T3N, R66W**

**Weld County, Platteville, Colorado**

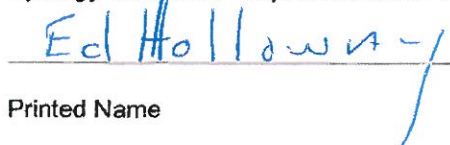
**Management Approval Statement:**

This Exploration & Production (E&P) Waste Management Plan is fully supported by the management of Synergy Resources Corporation. Synergy Resources Corporation is committed to the protection of surficial and subsurface environments, waters of the State, and public health, and maintains the highest standards for tracking drilling fluid applications, site subsurface monitoring, sampling and compliance with Colorado Oil and Gas Conservation Commission (COGCC) regulations. Synergy Resources Corporation ensures that E&P waste is properly stored, handled, transported, treated, recycled or disposed of to prevent threatened or actual adverse environmental impacts to air, water, soil or biological resources or to the extent necessary to comply with the concentration levels outlined in COGCC Table 910-1

Synergy Resources Corporation will implement this Plan at the referenced facility and will provide the means necessary to control impact to the environment as a result of the application of water based bentonitic drilling fluids as surficial soil amendments.

 Date: 6/10/14

Synergy Resources Corporation owner or authorized agent Signature

  
Printed Name



## Attachment B

## LAND USE AGREEMENT

I Glenn Miller, legally own the following property, \_\_\_\_\_

160 acres

located in section 30 in township 3N and range 266W

in Weid County

Agree to allow Synergy (Name of Operator) to have applied water based bentonitic clay drilling mud and cuttings from the following location/locations

(Lease/Leases) Starting 3/20, 20 14 and continuing through, 9/20, 20 14.  
Either party can cancel the agreement by delivering a thirty day written notice.

A description of the areas to be used as application sites are as follows:

Site Number	¼ Section	Section	Township	Range	Available Acreage
<u>1</u>	<u>SE</u>	<u>30</u>	<u>3N</u>	<u>66W</u>	<u>60</u>
<u>2</u>	<u>NE</u>	<u>30</u>	<u>3N</u>	<u>66W</u>	<u>10</u>

I am aware that as the land applicator, I am responsible to apply all of the cuttings and drill mud according to the management plan developed and submitted by a registered, professional engineer, \_\_\_\_\_, and as per the guidelines and conditions set forth by the Colorado Oil and Gas Conservation Commission. In addition to these guidelines the following compensation and or services must be provided: \_\_\_\_\_

Frank Estep - Wise Services  
Signed

Frank Estep  
Printed

\$7500 / Well

Glenn Miller  
Signed, Land Owner

Glenn Miller  
Printed, Land Owner

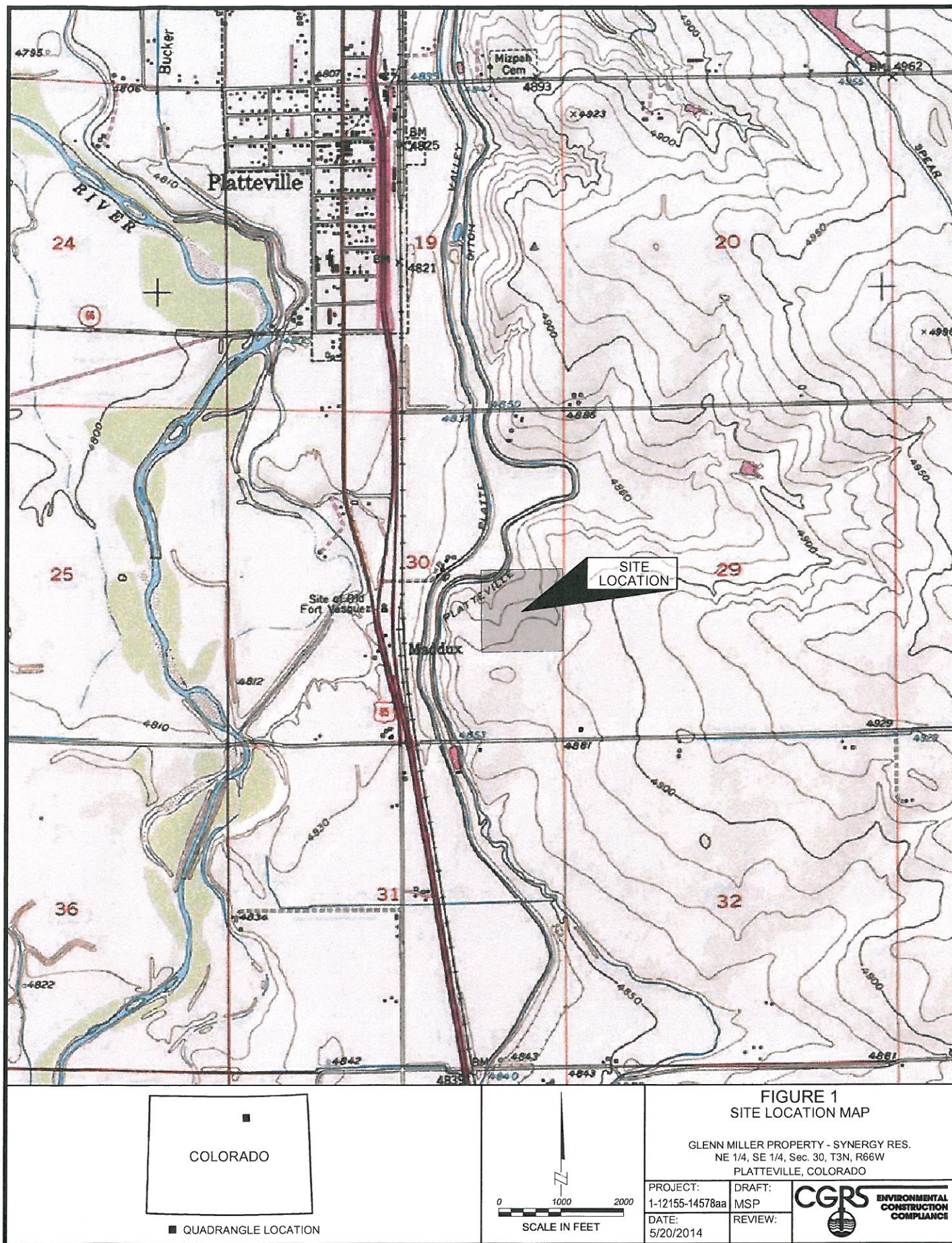
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**FIGURES**

Figure 1: Topographic Map

Figure 2: Aerial Site Conditions Map










**FIGURE 2**  
**SITE CONDITIONS MAP**

GLENN MILLER PROPERTY - SYNERGY RES.  
NE 1/4, SE 1/4, Sec. 30, T3N, R66W  
PLATTEVILLE, COLORADO

PROJECT:	DRAFT:	
1-12155-14578aa	MSP	
DATE:	REVIEW:	
5/20/2014		

0 100 200 300 400 500  
SCALE IN FEET

# Test Report

## **e**ANALYTICS L A B O R A T O R Y

May 15, 2014

Client: CGRS

Project: Glenn Miller Property 1-12155-14578aa

Lab ID: 1372

Date Samples Received: 5/13/2014

Number of Samples: 3

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method


The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you.

Sincerely,



Christopher Dieken  
Quality Assurance Manager



Todd Rhea  
Laboratory Manager

**eAnalytics Laboratory**

1767 Rocky Mountain Avenue Loveland CO 80538

The results contained within this report relate only to the items analyzed



## Chain of Custody

**e**ANALYTICS  
LABORATORY

Chain of Custody Form

[illegible]

WO# 1372

**eANALYTICS: Environmental testing made Easy**

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## eAnalytics Laboratory

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**e**ANALYTICS  
L A B O R A T O R Y

Client: CGRS

Lab ID: 1372

Project: Glenn Miller Property 1-12155-14578aa

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg				
SS-1	< 0.01	< 0.01	< 0.01	< 0.01	05/13/14	05/14/14	1372	1
SS-2	< 0.01	< 0.01	< 0.01	< 0.01	05/13/14	05/14/14	1372	2
SS-3	< 0.01	< 0.01	< 0.01	< 0.01	05/13/14	05/14/14	1372	3

**eAnalytics Laboratory**

1767 Rocky Mountain Avenue Loveland CO 80538

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**e**ANALYTICS  
L A B O R A T O R Y

Client: CGRS

Lab ID: 1372

Project: Glenn Miller Property 1-12155-14578aa

Analysis: pH  
EC  
SARMethod: EPA9045D  
USDA 60 (3)  
USDA 60 (20B)

Sample Name	pH	EC	SAR	Date	Date	Lab ID
	su	mmhos/cm	ratio	Sampled	Analyzed	
SS-1	6.3	0.168	1.40	05/13/14	05/14/14	1372 1
SS-2	6.0	0.096	0.67	05/13/14	05/14/14	1372 2
SS-3	6.2	0.116	1.40	05/13/14	05/14/14	1372 3

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**e**ANALYTICS  
LABORATORY

Client: CGRS

Lab ID: 1372

Project: Glenn Miller Property 1-12155-14578aa

Analysis: Table 910 metals

Method: EPA6010/7196/7471

Sample Name	As	Ba	B (HWS)	Cd	Cr (III)	Cr (VI)	Cu	Pb	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
SS-1	1.84	37.1	< 1.2	< 0.50	2.45	< 15	3.00	5.01	05/13/14	05/15/14	1372	1
SS-2	2.15	29.9	< 1.2	< 0.50	1.63	< 15	2.58	5.66	05/13/14	05/15/14	1372	2
SS-3	1.99	37.3	< 1.2	< 0.50	2.72	< 15	6.65	5.00	05/13/14	05/15/14	1372	3

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**e**ANALYTICS  
L A B O R A T O R Y

Client: CGRS

Lab ID: 1372

Project: Glenn Miller Property 1-12155-14578aa

Analysis: Table 910 metals

Method: EPA6010/7196/7471

Sample Name	Hg	Ni	Se	Ag	Zn	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
SS-1	< 5.0	<b>3.12</b>	< 0.80	< 0.50	<b>9.31</b>	05/13/14	05/15/14	1372	1
SS-2	< 5.0	<b>2.18</b>	< 0.80	< 0.50	<b>7.36</b>	05/13/14	05/15/14	1372	2
SS-3	< 5.0	<b>3.33</b>	< 0.80	< 0.50	<b>14.3</b>	05/13/14	05/15/14	1372	3

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**e**ANALYTICS  
L A B O R A T O R Y

Client: CGRS

Lab ID: 1372

Project: Glenn Miller Property 1-12155-14578aa

Method: EPA8260

Sample Name	Dibromo- fluoromethane	1,2 Dichloro- ethane-D4	Toluene-D8	Bromo- fluorobenzene	Date Sampled	Date Analyzed	Lab ID
	% Recovery	% Recovery	% Recovery	% Recovery			
SS-1	97	94	97	86	05/13/14	05/14/14	1372 1
SS-2	89	103	87	97	05/13/14	05/14/14	1372 2
SS-3	98	107	86	99	05/13/14	05/14/14	1372 3

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**e**ANALYTICS  
LABORATORY

Client: CGRS

Lab ID: 1372

Project: Glenn Miller Property 1-12155-14578aa

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene % Rec	Toluene % Rec	Ethyl- benzene % Rec	Total Xylenes % Rec	Date Analyzed	Lab ID
Laboratory Control Sample (70-130%)	91	104	102	104	05/14/14	LCS 1372 1
Method Blank	< 0.01 mg/kg	< 0.01 mg/kg	< 0.01 mg/kg	< 0.01 mg/kg	05/14/14	MB 1372 1

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