

Bayswater Exploration & Production, LLC E&P Waste Management Plan

In compliance with COGCC Rules 907 and 1000 Series Reclamation Regulations, and the Drill Cuttings Management Policy (9/15/14), the following describes Bayswater Exploration & Production, LLC's general plan for handling and disposing of E&P waste, including drilling mud and cuttings.

Water-based Bentonitic Drilling Fluids

Water-based bentonitic drilling fluids will be hauled off site by a licensed third party transporter to be re-used by spreading on COGCC approved land-farms per Rule 907.d., and as previously submitted by plan (attached).

Water-based Bentonitic Drill Cuttings

Water-based bentonitic drill cuttings will be hauled off site by a licensed third party transporter to be re-used by land application on COGCC approved land-farms per Rule 907.d., and as previously submitted by plan (attached).

Oil-based Drilling Fluids

Oil-based drilling fluids will be hauled off site by a licensed third party transporter to be disposed of at a properly permitted commercial waste facility per Rule 907.e.

Oil-based Drill Cuttings

Oil-based drill cuttings will be hauled off site by a licensed third party transporter to be disposed of at a properly permitted commercial waste facility per Rule 907.e., and as previously submitted by plan.

Land Application of Water-Based Bentonitic Drilling Fluids

This document outlines the operational requirements to be used when applying water-based Bentonitic drilling fluids and associated drill cuttings to private land application sites to maintain compliance with COGCC Rules 907 and 1000 Series Reclamation Regulations, and the Drill Cuttings Management Policy (9/15/14). These materials are being applied as a beneficial soil amendment.

The land application site covered under this Waste Management Plan is detailed in Table 1. Only water-based Bentonitic drilling fluids and associated drill cuttings generated by (Client Name) will be applied at this site. No other E&P waste shall be deposited at this site. Changes to Table 1 will be provided to the COGCC in a Form 4 Sundry Notice.

Mud Disposal:	Offsite
Method:	Land Application
Transporter:	Harlan Hankins Beneficial Reuse Area Shad Martin, Kinetic Energy Services, LLC (970) 290-0988 (mobile)

Land Application Site (Private)

1. Bayswater shall obtain written authorization from the surface owner prior to land application of water-based Bentonitic drilling fluids and associated drill cuttings. The signed agreement shall state that only Bayswater-generated materials will be accepted and that incorporation of the material will occur within 10 days of application
2. A 3-inch maximum lift of water-based Bentonitic drilling fluids and associated drill cuttings will be applied to this site. The volume of material transported to the land application site will be tracked to help ensure the 3-inch maximum lift is not exceeded.
3. Concentrations of contaminants of concern shall not exceed the levels in COGCC Table 910-1 after incorporation into native soil.
4. Daily tracking tickets will be used and will include the following information:
 - a. Name of well where material was generated.
 - b. Date of transfer of the material from the well to the spread Land Application Site.
 - c. Volume of material taken to the Land Application Site.
 - d. Name of transporter.
5. Bayswater personnel will ensure the material will be incorporated into the soil within 10 days, site and weather conditions permitting.

Table 1
Land Application Site Location(s)

<u>Facility Name</u>	<u>Facility ID #</u>	<u>Legal Description</u>
Harlan Hankins Beneficial Reuse Area	451005	E/2 Sec 22-5N-67W

**Bayswater Exploration & Production, LLC.****Land Application of Water-Based Bentonitic
Drilling Fluids & Associated Drill Cuttings
Harlan Hankins Beneficial Reuse Area**

LT Environmental, Inc. (LTE), under the direction of Bayswater Exploration & Production (Bayswater) and their contractor Kinetic Energy Services (Kinetic), has created this Exploration & Production (E&P) Waste Land Application Plan for the Harlan Hankins Beneficial Reuse Area (Site) which outlines the operational requirements for applying water-based bentonitic drilling fluids and associated drill cuttings to privately owned agricultural land to maintain compliance with Colorado Oil and Gas Conservation Commission (COGCC) Rule 907.d.(3) and the COGCC Land Application Plan – Checklist for Water-based Bentonitic Drilling Fluids and Associated Cuttings (Land Application Plan Checklist), dated September 15, 2014. The water-based bentonitic drilling fluids and associated drill cuttings are applied to the dryland crop land as a beneficial soil amendment.

The COGCC 900 Series rules are applicable only to E&P waste, as defined in § 34-60-103(4.5), C.R.S., or other solid waste where the Colorado Department of Public Health And Environment has allowed remediation and oversight by the COGCC.

Only water-based bentonitic drilling fluids and associated drill cuttings generated by Bayswater will be applied at the Site. No other E&P waste shall be deposited at this site. The plan detailed below follows the COGCC Land Application Plan Checklist, which is included as Attachment 1.

Disposal Location Information

1. The entrance to the Site is located at 40.392301, -104.872591.
2. The Site Location Map and Site Map illustrating governmental section, township, and range as well as nearby hydrologic features is included as Figure 1.
3. The current land use is dryland crop land.
4. The current land use is dryland crop land; therefore, additional justification for the land application of water-based bentonitic drilling fluids and drill cuttings is not necessary.
5. The proposed land application site is not in a sensitive area. Depth to groundwater is estimated to be 25 feet below ground surface (bgs) based on the closest water well permit information (Colorado Division of Water Resources Receipt Number 0047478). The two primary surface soil types at the Site are Weld Loam and Colby-Adena Loam. The nearest surface water features are the Loveland and Greeley Canal approximately 1,000 feet southwest from the southwest corner of the Site and the Sheep Draw approximately 2,380 feet east of the Site. The E&P waste will be incorporated into the soil; therefore, the risk of vertical migration to groundwater or lateral migration to surface water is minimal.
6. The land application facility is not in mapped Sensitive Wildlife Habitat or Restricted Surface Occupancy areas as defined by mapped areas on the COGCC GIS Online map.



7. The background sampling has been conducted and consisted of:
 - Collecting one 3-point composite sample from locations shown on Figure 2, from the SS-1, SS-2, and SS-3 area. The sample was collected ground surface to 18 inches below ground surface (bgs) in areas representative of where E&P waste will be land applied and incorporated into the soil. The sample was submitted for laboratory analysis of full Table 910-1 analytes. The 3 point composite sample location was comprised of representative soil collected from the identified 2017 plot, and is shown on Figure 2.
 - Collecting an additional (6) 3-point composite samples from areas SS-1, SS-3, SS-4, SS-5, SS-6, and SS-7 (Figure 2). Samples have been collected and analyzed as representative samples to characterize baseline conditions of the facilities prior to initiation of the Land Application as described in this management plan.
 - The laboratory analytical results for the background sampling detailed above has yet to be received, and data will be submitted to the COGCC on separate cover via a Form 4 Sundry Notice.
8. The surface owner of the property is Harlan P. Hankins, of L&T LLC. The written authorization from the surface owner to allow Bayswater to land apply water-based bentonitic drilling fluids and associated drill cuttings is included as Attachment 2.
9. Bayswater and Kinetic shall provide access when requested by the COGCC.
10. The Site is located in unincorporated Weld County. Land application is consistent with local zoning land use policy.
11. The Site has downgradient stormwater controls that will help prevent the migration of sediment offsite. Since the activity will be ongoing, Bayswater and Kinetic will install signs prohibiting unauthorized dumping.
12. The native soil will have the added benefit of increased clay content which will help retain more moisture.

Material Volume

1. Approximately 600 to 800 tons of cuttings per well and approximately 130 barrels of water-based bentonitic drilling fluids per well will be land applied at the Site. Currently, it is anticipated that the 2017 facility will receive beneficial reuse of cuttings and fluids for approximately 12 – 60 wells.

Material Handling

1. The water-based bentonitic drilling fluids and associated drill cuttings will be processed in a centrifuge to extract as much of the liquid as practicable prior to land application.
2. The water-based bentonitic drilling fluids and associated drill cuttings may be temporarily stockpiled at the Site; however, it will be land applied and incorporated into the soil within 10 days.





3. Bayswater and Kinetic will maintain records of the following information which will be available upon request:
 - Name of the well where the E&P waste was generated;
 - Date the E&P waste was transported from the well to the land application site;
 - Volume of the E&P waste transported to the land application site; and
 - Name of the transporter.
4. The water-based bentonitic drilling fluids and associated drill cuttings may be temporarily staged at the Site; however, it will be staged in an area where potential runoff will not leave the Site. The land applied E&P waste will be spread to a depth of no more than three inches using a manure spreader or equivalent prior to being incorporated into the soil using a till/disc tractor, or equivalent. The land applied E&P waste will be incorporated into the native soils within 10 days of being spread at the Site. The Site has stormwater controls along the downgradient perimeters and throughout the Site to prevent the migration of sediment and/or land applied E&P waste from the Site. If the water-based bentonitic drilling fluids and associated drill cuttings freeze, there will need to be a minimum of 15 consecutive days of above 55° F degree temperatures before the cuttings can be spread. Offsite tracking will be addressed by confining all traffic to a gravel access road which is approximately 0.5 miles from the nearest county road. Dust control will primarily be achieved by the landowner's operation of the irrigation equipment during crop season and water trucks may be used to address fugitive dust issues, when necessary. Odor control issues are not anticipated at the Site; however, they will be addressed, when necessary. The necessary odor control measures will be determined on a case-by-case basis.
5. The Site will not receive E&P waste for more than three years from the first land application date as reported via a Sundry Notice eForm 4.

Post-Application Sampling and Closure Requirements

1. Site closure soil sampling will consist of collecting soil samples from an area representative of the entire surface area used for incorporation. The soil samples will be analyzed for organic compounds, inorganics, and metals listed in COGCC Table 910-1 to ensure compliance with applicable COGCC Table 910-1 standards.
2. To receive closure Bayswater and Kinetic shall:
 - Submit a Sundry Notice eForm 4 to the COGCC requesting a closure status for the Site;
 - Submit closure soil sampling analytical results along with a site map illustrating sample locations;
 - Verify closure soil samples are in compliance with applicable COGCC Table 910-1 standards;
 - Verify that all cuttings and fluids have been thoroughly incorporated;
 - Verify that sediment controls have been removed, unless otherwise directed by the landowner;





- Verify that the surface owner is satisfied with the final condition of the property; and
- It is anticipated that the Site will continue to be used for agricultural activities; therefore, surface reclamation is not applicable.

Attachments

Figure 1 – Site Location Map

Figure 2 – Site Map

Attachment 1 – COGCC Land Application Plan Checklist

Attachment 2 – Surface Owner Approval



FIGURES



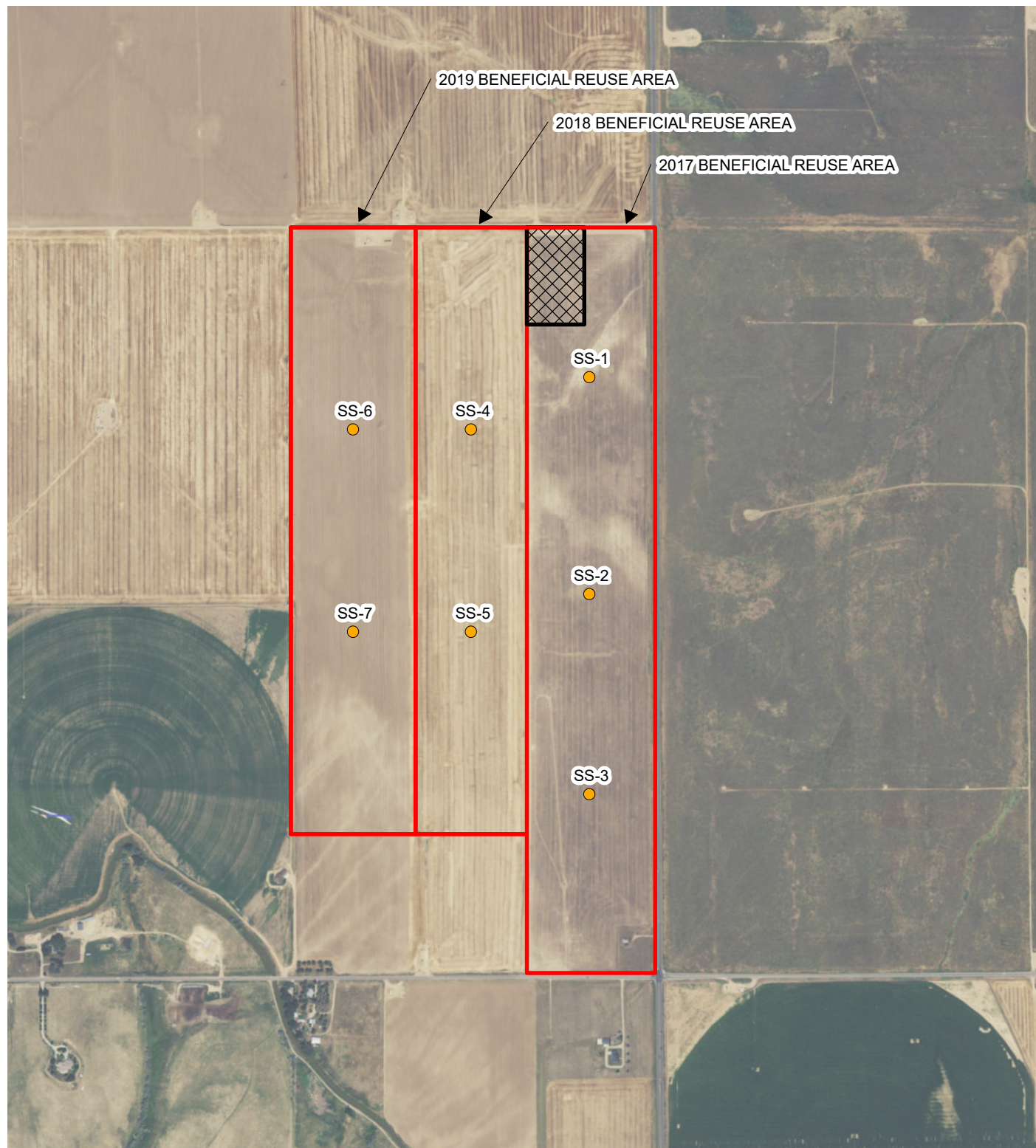


IMAGE COURTESY OF ESRI

LEGEND

- COMPOSITE SOIL SAMPLE
- BENEFICIAL REUSE AREA
- STAGING AREA

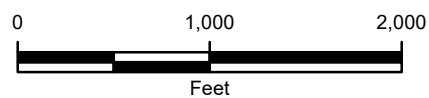


FIGURE 2
SITE MAP
HARLAN HANKINS BENEFICIAL REUSE AREA
WELD COUNTY, COLORADO

BAYSWATER EXPLORATION & PRODUCTION, LLC

