



Anadarko E&P Company, LP/Kerr-McGee Oil & Gas Onshore LP

**Waste Management Plan
Land Application of Water-Based Bentonitic
Drilling Fluids & Associated Drill Cuttings**

This document outlines the operational requirements to be used when applying water-based bentonitic drilling fluids and associated drill cuttings to private or company-owned spread fields or the land treatment and application of water-based bentonitic drilling fluids and associated cuttings on the pad location where they were generated to maintain compliance with COGCC Rule 907.d.(3). These materials are being applied as a beneficial soil amendment.

The spread fields covered under this Waste Management Plan are detailed in Table 1. Only water-based bentonitic drilling fluids and associated drill cuttings generated by Kerr-McGee Oil & Gas Onshore LP/Anadarko E&P Company, LP (Kerr-McGee/Anadarko) will be applied at these sites. No other E&P waste shall be deposited at these sites. Changes to Table 1 will be provided to the COGCC in a Form 4 Sundry Notice.

Spread Fields (Private Surface or Company Owned)

1. Kerr-McGee/Anadarko shall obtain written authorization from the surface owner (if non- Kerr-McGee/Anadarko land) prior to land application of water-based bentonitic drilling fluids and associated drill cuttings. The signed agreement shall state that only Kerr-McGee/Anadarko-generated materials will be accepted and that incorporation of the material will occur within 10 days of application.
2. Each spread field will be divided into approximately equal sized pods. A 3-inch maximum lift of water-based bentonitic drilling fluids and associated drill cuttings will be applied.
3. Daily tracking tickets will be used and will include the following information:
 - * name of well where material was generated
 - * date of transfer of the material from the well to the spread field
 - * volume of material taken to the spread field
 - * name of transporter
 - * pod where drilling fluid was applied
4. The volume of material transported to the spread field will be tracked using a spreadsheet to help ensure the 3-inch maximum lift per pod is not exceeded.
5. Conditions permitting Kerr-McGee/Anadarko personnel will ensure the material will be incorporated into the soil within 10 days.

6. Soil sampling will be conducted following incorporation.
 - * A 4-point composite soil sample will be collected from an interval of 0-8 inches below ground surface (bgs), from every pod where material was applied.
 - * At a minimum, soil samples will be analyzed for total petroleum hydrocarbons (TPH – C6-C36), benzene, toluene, ethylbenzene, xylenes (BTEX), electrical conductivity (EC), sodium adsorption ratio (SAR), pH, arsenic, and barium to ensure compliance with COGCC Table 910-1 or applicable background levels of native soils.
7. In the event of any Table 910-1 exceedance, a COGCC Form 4 Sundry Notice will be prepared and submitted (along with supporting documentation) to explain the exceedance and outline appropriate remediation measures.

Land Treatment and Application Onsite (Private Surface or Company Owned)

1. Kerr-McGee/Anadarko shall obtain written authorization from the surface owner (if non- Kerr-McGee/Anadarko land) prior to onsite land treatment with solidification and/or bioremediation products and application of water-based bentonitic drilling fluids and associated cuttings to the well pad location. The signed agreement shall state that only Kerr-McGee/Anadarko-generated materials will be accepted and that incorporation of the material after treatment will occur within 10 days, weather permitting, after the conclusion of drilling and/or well completion activities at the well pad location.
2. During treatment, water-based bentonitic drilling fluids and associated cuttings will be stored in a temporary containment area.
3. Soil sampling will be conducted to ensure that resulting concentrations do not exceed Table 910-1 allowable levels or applicable background levels.
4. Soil sampling will be conducted following incorporation.
 - * A 4-point composite soil sample will be collected from an interval of 0-8 inches bgs, from every well pad where material was applied.
 - * At a minimum, soil samples will be analyzed for TPH, BTEX, EC, SAR, pH, arsenic, and barium to ensure compliance with COGCC Table 910-1 or applicable background levels of native soils.
5. In the event of any Table 910-1 or applicable background level exceedance, a COGCC Form 4 Sundry Notice will be prepared and submitted (along with supporting documentation) to explain the exceedance and outline appropriate remediation measures.

Table 1
Spread Field Locations
Kerr-McGee Oil and Gas Onshore LP

Spread Field	Legals	Directions
Drill Green	SE Sec 33-T3N-R66W	WCR 26 x WCR 31, N 0.3 mi, W into
Allan Frank SW	SW Sec 6-T3N-R66W	WCR 38 x WCR 25.5, S 0.5 mi, W into
Olin Farms	NE Sec 16-T3N-R66W	WCR 32 x WCR 31, N 0.6 mi, W into
Moser Farms NE	NE Sec 25-T3N-R65W	WCR 30 x WCR 49, W 0.45 mi, S into
Dechant Farms	SE Sec 36-T3N-R65W	WCR 22 x WCR 49, N 2 mi, W into
Allan Frank NW	NW Sec 6-T3N-R66W	WCR 38 x WCR 25.5, W 100 ft, S into
Kevin Moser	SE Sec 4-T2N-R65W	WCR 24 x WCR 41, N 0.1 mi, E into
Moser Farms SE	SE Sec 25-T3N-R65W	WCR 30 x WCR 49, S 1.15 mi, W into
Moser Farms Dairy	SW Sec 28-T3N-R65W	WCR 28 x WCR 41, N 0.2 mi, E into
Miller Farms East & West	NW & SW Sec 24-T3N-R66W	WCR 32 x WCR 35, E 0.5 mi, S into
KMG 19-3	SW Sec 3-T1N-R68W	WCR 12 x WCR 7, E 0.15 mi, N into
Hutchinson	NE Sec 10-T10N-R67W	WCR 118 x WCR 21, N 0.5 mi, W into
Dechant Farms NE	NE Sec 36-T3N-R65W	WCR 30 x WCR 49, S 1.5 mi, W into
Olin Farms-Liquids	NE Sec 17-T3N-R66W	WCR 34 x WCR 29, W 0.75 mi, S into
Dove	NE Sec 17-T3N-R66W	WCR 22 x WCR 37, N 0.75 mi, W into
NRC Section 8, North	SW Sec 8-T1N-R67W	WCR 10 x WCR 15, N 0.1 mi, E into