DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFGSC)

Colonel Eric H. Froehlich
377 ABW/CC
2000 Wyoming Blvd SE
Kirtland AFB, NM 87117-5600

Mr. John Kieling, Manager
RCRA Permits Management Program
Hazardous Waste Bureau (HWB)
New Mexico Environment Department (NMED)
2905 Rodeo Park Road
Santa Fe, New Mexico 87505

Dear Mr. Kieling,

Please find attached, "*Groundwater Disposition Letter Work Plan Addendum #1, Bulk Fuels Facility, Kirtland Air Force Base, New Mexico*". This addendum summarizes the variances to the work performed under the Groundwater Disposition Letter Work Plan.

If you have any questions or concerns, please contact Mr. L. Wayne Bitner at (505) 853-3484 or at ludie.bitner@us.af.mil or Ms. Victoria Branson at (505) 846-6362 or at victoria.branson@us.af.mil.

ERIC H. FROEHLICH, Colonel, USAF
Commander

cc:
NMED-EHD (Roberts, McQuillan, Agnew)
NMED-HWB (Cobrain, McDonald)
NMED-GWQB (Huddleson, Pullen, Hunter)
NMED-PSTB (Reuter)
NMED-OGC (Kendall)
SAF-IEE (Lynnes)
U.S.EPA Region 6 (King, Ellinger)
AFCEC-CZRX (Bodour)
USACE-ABQ District Office (Simpler, Phaneuf)
Public Info Repository (Central New Mexico Community College), Administrative Record/Information Repository (AR/IR), and File

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NMED
Albuquerque Field Office

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October 29, 2015

Subject: Groundwater Disposition Letter Work Plan Addendum #1, Bulk Fuels Facility, Kirtland Air Force Base, New Mexico

This Kirtland Air Force Base (KAFB) Bulk Fuel Facility (BFF) Groundwater Disposition Letter Work Plan Addendum #1 proposes different percolation test locations in Tijeras Arroyo and describes the use of a non-hazardous flocculant to well KAFB-7 to enhance visualization of the downhole camera evaluation. Variations to the procedures will be discussed in this letter Work Plan.

Percolation Location Variation

The Groundwater Disposition Letter Work Plan proposed two percolation locations in Tijeras Arroyo on KAFB property (U.S. Army Corps of Engineers [USACE], 2015). As shown in Figure 1, these proposed locations will need to be moved to facilitate the percolation tests. The westernmost location of percolation tests will need to be moved approximately 1,100 feet east so that it is closer to the access road. This relocation is due to concerns about personnel safety as further west the Tijeras Arroyo walls become steep cliffs and provide no safe way to evacuate in case of flash flooding. Additionally, the soft sandy soils further west in the Tijeras Arroyo will likely not support the weight of a drilling rig; however, the rig should be able to access the proposed new locations.

The easternmost location of percolation tests will need to be moved approximately 200 feet to the west due to limited accessibility to the bottom of the Tijeras Arroyo as shown on Figure 1. Furthermore, the gravel surface should be able to support the drilling rig at the test borehole locations.

KAFB-7 Evaluation Variation

Per the Groundwater Disposition Letter Work Plan, after the removal of the downhole equipment from well KAFB-7 a downhole camera would be used to collect video footage of the condition of the well (USACE, 2015). To help facilitate the visualization, a non-hazardous flocculant (i.e., BARAFLOC®) was introduced into the KAFB-7 well on October 22-23, 2015 to ensure that solids settled out and turbidity was minimized prior to sending a downhole video camera to assess the well's condition. A total of twenty (20) teaspoons of flocculant was added to the KAFB-7 well. Two teaspoons of flocculant was added to a five gallon bucket of potable water and poured into the well. This process was repeated a total of ten times and the concentration level in each bucket was approximately 378 mg/L. The 50 gallons of flocculant water would have been mixed with approximately 2,500 gallons of standing water in the well for an in-well concentration of approximately 7.56 mg/L. A Material Safety Data Sheet (MSDS) for the flocculant is provided as an Attachment. No further materials or variances will be performed on the KAFB-7 well without discussion and/or submittal of an addendum to New Mexico Environment Department.

In order to remove the flocculant, three well casing volumes of groundwater (8,100 gallons) will be purged from well KAFB-7. Purged water will be stored in a tank on site. During purging activities, field parameters will be collected for temperature, electrical conductivity, pH, dissolved oxygen, and oxygen redox potential. The well will then be sampled for primary drinking water standards such as metals (EPA Method 200.8 for 10 metals including barium), nitrate/nitrite (EPA Method 300.0), total nitrogen (by calculation), total Kjehldahl nitrogen (TKN) (EPA Method 351.2), volatile organic compounds (EPA

Method 524.2), and ethylene dibromide (EDB) (EPA Method 504.1). Following receipt of sampling results, the purged water will be transported and discharged to the BFF temporary treatment system.

References

USACE. 2015. *Rapid Response Action to Notice of Violation Groundwater Disposition Work Plan, Bulk Fuels Facility, Kirtland Air Force Base, New Mexico.* Prepared by CB&I Federal Services, Inc. for the USACE Omaha District, under Contract No. W9128F-12-D-0003, Task Order 0025. September.

40 CFR 270.11
DOCUMENT CERTIFICATION
OCTOBER 2015

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

ERIC H. FROEHLICH, Colonel, USAF
Commander, 377th Air Base Wing

This document has been approved for public release.

KIRTLAND AIR FORCE BASE
377th Air Base Wing Public Affairs

FIGURE

H:\Kirtland_AFB\GIS_Documents\Project_Maps\RAPID\KAFB_048_perc_test_locs2.mxd 10/26/15

Legend

- Original Proposed Percolation Test Borehole Location
- New Proposed Percolation Test Borehole Location
- Access Point
- Access Route
- Ephemeral Stream
- Original Percolation Testing Locations
- New Percolation Testing Locations

Testing locations shown are estimated and may be adjusted in the field based on observed site conditions and geology. Each location represents a soil boring to 50 feet bgs with percolation tests at the surface and a second depth to be determined based on lithology

bgs = below ground surface

N

Revision Date: 10/26/15

0 400 800 1,600

Feet

1 inch = 800 feet

Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

RAPID RESPONSE GROUNDWATER
DISPOSAL WORK PLAN
BULK FUELS FACILITY
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1

PERCOLATION TESTING LOCATIONS

ATTACHMENT

HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **BARAFLOC®**

Revision Date: 16-Jan-2014

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: BARAFLOC®
Synonyms: None
Chemical Family: Polymer
Application: Additive

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000
Emergency Telephone: (281) 575-5000

Prepared By

Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	ACGIH TLV-TWA	OSHA PEL-TWA
Contains no hazardous substances	Mixture	60 - 100%	Not applicable	Not applicable

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye irritation.

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Under normal conditions, first aid procedures are not required.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (F):	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

Fire Extinguishing Media Water fog, carbon dioxide, foam, dry chemical.

Special Exposure Hazards Decomposition in fire may produce toxic gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

NFPA Ratings: Health 0, Flammability 0, Reactivity 0
HMIS Ratings: Health 0, Flammability 0, Reactivity 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid creating or inhaling dust.

Storage Information Store away from oxidizers. Store in a dry location.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls A well ventilated area to control dust levels.

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:
Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection Normal work coveralls.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	White
Odor:	Mild
pH:	7-8
Specific Gravity @ 20 C (Water=1):	Not Determined
Density @ 20 C (lbs./gallon):	Not Determined
Bulk Density @ 20 C (lbs/ft3):	45
Boiling Point/Range (F):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (F):	Not Determined
Freezing Point/Range (C):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data: Stable

Hazardous Polymerization: Will Not Occur

Conditions to Avoid None known.

Incompatibility (Materials to Avoid) Strong oxidizers.

Hazardous Decomposition Products Oxides of nitrogen. Ammonia. Hydrocarbons. Carbon monoxide and carbon dioxide.

Additional Guidelines Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Sympotoms related to exposure

Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	None known.
Ingestion	None known

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances	Mixture	No data available	No data available	No data available

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity: Not determined
Acute Crustaceans Toxicity: Not determined
Acute Algae Toxicity: Not determined

Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Contains no hazardous substances	Mixture	No information available	No information available	No information available	No information available

12.2 Persistence and degradability
No information available

12.3 Bioaccumulative potential
No information available

12.4 Mobility in soil
No information available

12.5 Results of PBT and vPvB assessment
No information available.

12.6 Other adverse effects

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

DOT
Not restricted

Canadian TDG
Not restricted

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

US Regulations

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) Hazard Class	None
EPA SARA (313) Chemicals	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
EPA CERCLA/Superfund Reportable Spill Quantity	Not applicable.
EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
MA Right-to-Know Law	Does not apply.
NJ Right-to-Know Law	Does not apply.
PA Right-to-Know Law	Does not apply.

Canadian Regulations

Canadian DSL Inventory	All components listed on inventory or are exempt.
WHMIS Hazard Class	Un-Controlled

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Additional Information	For additional information on the use of this product, contact your local Halliburton representative. For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****