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**DEPARTMENT OF THE ARMY**  
HEADQUARTERS, U. S. ARMY GARRISON COMMAND  
1733 PLEASANTON ROAD  
FORT BLISS, TEXAS 79916-6816

April 19, 2007

REPLY TO  
ATTENTION OF:

Directorate of Environment

Mr. James Bearzi, Bureau Chief  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303



RE: Response to Notice of Deficiency (NOD) and Work Plan Addendum  
Work Plan for Solid Waste Management Units  
SWMU 27B (Dona Ana Oxidation Lagoon) and 76 (Meyer Oxidation Lagoon)  
EPA ID No. NM4213720101

Dear Mr. Bearzi:

In response to your letter of March 9, 2007, the Fort Bliss Directorate of Environment addressed each of NMED's comments (italicized text) as follows:

**SPECIFIC COMMENTS**

- 1. The work plan does not describe the locations of the proposed monitoring wells to be installed in the regional aquifer at each oxidation lagoon. Monitoring well location descriptions are required to determine if the proposed locations are appropriately located downgradient of the oxidation lagoons. The Permittee must revise the work plan to include maps and descriptions of the proposed monitoring well locations.*

A map showing the location of the proposed monitoring well at the Dona Ana Oxidation Lagoon is provided as Figure 1-2, and a map showing the location of the proposed monitoring well at the Meyer Oxidation Lagoon is provided as Figure 1-3. Regional groundwater information indicates that groundwater flow is generally to the east near Dona Ana and off the flanks of the Franklin Mountains. At Meyer Range, the regional groundwater flow direction is generally to the west-southwest off the flanks of the Hueco Mountains. The regional groundwater converges in the central valley and then flows to the south and toward El Paso. Based on this regional information, the proposed monitoring wells have been located along the downgradient edge of each respective oxidation lagoon.

- 2. The Permittee states in Section 2.1 (Well Installation) that the monitoring wells will be installed using conventional air rotary or mud rotary drilling methods. The work plan must be revised to exclude mud rotary as a drilling method. The use of either hollow stem auger or*

*air rotary drilling methods is required, unless the Permittee receives prior approval for an alternative method.*

Fort Bliss has solicited knowledgeable and experienced well drilling firms in the area for this work, and a drilling firm has been selected for the well installation effort. In discussing the drilling methods and procedures, water/mud rotary drilling techniques are recommended for installation of the proposed wells. Hollow stem auger techniques are not feasible, given the planned depth of drilling (400+ feet). Unconsolidated gravel layers are anticipated during drilling of each monitoring well borehole, and air rotary methods are not believed to be effective in 1) removing the drill cuttings (gravel) from the borehole, particularly at depth, and 2) maintaining an open hole for pipe joint connections, any drill bit change-outs, and well installation. Air rotary also will not allow for effective lithologic sampling from cuttings and conventional split spoon samplers. Thus, Fort Bliss strongly requests that water/mud rotary drilling be allowed for completion of the proposed monitoring wells.

For water/mud rotary drilling, potable water will be used to initiate the borehole. According to the selected driller, a stainless steel water truck (reserved solely for transporting potable water for drilling water wells) will be used to transport potable water to the drill site. A containment (mud) pit will be used to capture and contain the drilling fluid (water and entrained cuttings) as it is recirculated and reused to advance the borehole. The mud pit will allow for separation and removal of drill cuttings. As the borehole is advanced into unconsolidated strata, gravels and sands, barite powder (Baroid<sup>®</sup>) will be added to the water in the mud pit to increase the weight and viscosity of the drilling fluid. This "drilling mud" will assist in stabilizing the walls of the borehole and will facilitate removal of drill cuttings as the boring is advanced. As the borehole is advanced, additional water and barite powder will be added to maintain a full level in the borehole. No other additives are planned or believed necessary for completion of the wells. On completion of the borehole and construction of the monitoring well, the drilling fluid will be transferred from the mud pit to an appropriate container for characterization sampling.

The wells will be developed using standard surging and pumping techniques (used for developing drinking water wells) until the discharge water is free of drilling mud. For development, Fort Bliss proposes to add an evaluation of turbidity to better determine when the well has been developed and the drilling fluid has been effectively removed from the well. The wells will be developed until the turbidity, as represented by nephelometric turbidity units (NTUs), is reduced in the discharge water. Typical guidance (from the U.S. Environmental Protection Agency) for turbidity is development until turbidity is less than 50 NTUs. Thus, Fort Bliss proposes to confirm that drilling fluids have been adequately removed by continuing to develop the wells until the turbidity of the discharge water is less than 50 NTUs.

- 3. The Permittee states in Section 2.1 (Well Installation) that field screening and lithologic information collected from the soil and rock cores will be used to construct geologic boring logs, with the understanding that only the bottom intervals of the borings will be described. The Permittee must revise the work plan to state that the entire length of each boring will be*

*logged and described.*

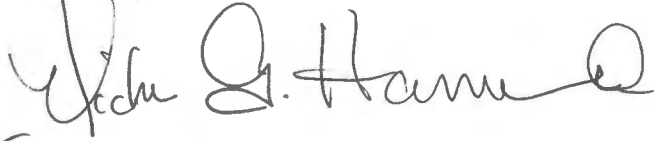
Fort Bliss acknowledges the comment and will continuously log each well boring using cuttings and lithologic cores from split spoon (or similar) sampling devices, to the extent practical and allowable. Fort Bliss notes that due to anticipated gravels and rock material, it may be difficult to obtain significant recoveries using conventional lithologic samplers. Thus, the drilling information (rate of penetration, weight on bit) along with cuttings retrieved from the mud pit at approximate 5-foot depth intervals may be heavily relied upon for creating the geologic log. If significant clay intervals are detected in logging of cuttings, or are anticipated based on rate of penetration, etc., a split spoon or similar device will be used as practicable to obtain lithologic samples to verify the clay content.

- 4. The Permittee describes in Section 3 (Investigation Derived Waste) that drilling cuttings, equipment rinsate water, and excess groundwater will be discharged directly into the respective oxidation lagoon. Once inside the oxidation lagoons, a composite sample will be collected for confirmation purposes. The Permittee must revise the work plan to state that all water (purge and development water, and equipment rinsate water) and drilling cuttings will be contained and sampled to determine if they contain contaminants at concentrations that require alternate disposal before they are placed into an oxidation lagoon. The Permitted may place the drill cuttings into the oxidation lagoons only if there are no contaminants present at concentrations greater than residential New Mexico Soil Screening Levels (NMSSLs). If the analysis determines that the drill cuttings contain contaminant concentrations greater than residential NMSSLs, then the drilling cuttings must be disposed of properly. Any purge or development water containing contaminants at concentrations greater than the New Mexico Water Quality Control Commission (WQCC) human health standards, drinking water maximum contaminant levels (MCLs), and EPA Region VI Human Health Medium-Specific Screening Levels (HHMSSL) for tap water, must be properly disposed off site.*

Fort Bliss acknowledges the comment and will properly contain, sample, characterize, and dispose of the investigation derived waste (IDW). The IDW will include drill cuttings, drilling fluid, decontamination water, development water, and pre-sample purge water. Fort Bliss anticipates using a lined roll-off box or similar container for the drill cuttings and drilling mud generated during the drilling activities. In addition, a large tank (e.g., fractionation [frac] tank) is planned for containing the fluids generated from the well development and sampling effort. The IDW will be sampled for Target Analyte List (TAL) metals (SW 846 6000 and 7000 series methods), volatile organic compounds (VOCs, SW 846 8260), and semivolatile organic compounds (SVOCs, SW 846 8270). Analytical results from the IDW samples will be compared to NMSSLs, NMWQCC MCLs, and EPA Region IV HHMSSLs for characterization and evaluation of appropriate disposal requirements.

If you have any questions concerning this letter, please do not hesitate to call Mr. Ron Baca at (915) 568-7979.

Sincerely,



Keith Landreth, Director  
Directorate of Environment

**Attachments:**

- A Figure 1-2, Proposed Groundwater Well Location, Dona Ana Range Camp
- Figure 1-3, Proposed Groundwater Well Location, Meyer Range Camp

**Copies Furnished:**

John Kieling, NMED HWB  
David Cobrain, NMED HWB  
Cheryl Frischkorn, NMED HWB  
Elza Cushing, Fort Bliss DOE  
Ron Baca, Fort Bliss DOE

**ATTACHMENT A**  
**FIGURE 1-2 AND FIGURE 1-3**  
**PROPOSED GROUNDWATER WELL LOCATIONS**



DONA ANA  
RANGE CAMP

OXIDATION  
PONDS



**LEGEND**

- ⊙ PROPOSED DEEP GROUNDWATER WELL



**FIGURE 1-2**  
**PROPOSED GROUNDWATER**  
**WELL LOCATION**  
**DONA ANA RANGE CAMP**  
**US ARMY CORP OF ENGINEERS**  
**FORT BLISS, NEW MEXICO**

DATE APR. 2007	PROJECT NO 03886.525.019.0110	SCALE AS SHOWN
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**OXIDATION  
PONDS**

**MEYER RANGE  
CAMP** →



**LEGEND**

- ⊙ PROPOSED DEEP GROUNDWATER WELL



**FIGURE 1-3**  
**PROPOSED GROUNDWATER**  
**WELL LOCATION**  
**MEYER RANGE CAMP**  
**US ARMY CORP OF ENGINEERS**  
**FORT BLISS, NEW MEXICO**

DATE	PROJECT NO	SCALE
APR. 2007	03886.525.019.0110	AS SHOWN