



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

June 13, 2019

Base Realignment and Closure Division

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

RE: Final Groundwater Supplemental RFI Work Plan Revision 4, dated March 23, 2018
Request for Work Plan and Risk Guidance Deviations, Fort Wingate Depot Activity, McKinley
County, New Mexico.

Dear Mr. Kieling:

This letter requests permission to deviate from field and reporting procedures for the Groundwater Supplemental Resource Conservation and Recovery Act (RCRA) Facility Investigation at Fort Wingate Depot Activity. The field procedures for this RCRA Facility Investigation (RFI) are provided in the Work Plan titled Final Groundwater Supplemental RFI Work Plan Revision 4, dated March 23, 2018 (WP). This WP was approved by NMED on April 18, 2018. This request pertains to use of field equipment for the RFI and the use of statistical methods for the background groundwater quality assessment. Details are provided below:

1. Replace Encore Soil Sampler with Terra Core Sampler (or 4 ounce jar as an exception)
Table 3-3 of the WP identifies use of the Encore Sampler or an equivalent method for collection of soil samples for volatile organic compound (VOC) analysis. The United States Army Corps of Engineers (USACE) prefers to use the Terra Core Sampler, which is equivalent to the Encore Sampler, for the following reasons:

- Encore Samplers require laboratory preservation within 48 hours of field collection. Due to lead time from sample collection to receipt and processing by the laboratory, the potential exists that holding times will be exceeded when using the Encore sampler. Holding time exceedances result in qualifiers during the validation process that require additional data evaluation and interpretation to determine the usability and representativeness of the data.
- The Terra Core Sampler is an equivalent soil sampling and analysis method to the Encore Sampler and the Terra Core Sampler allows for both low and high level analysis however the holding time for the field preserved sample is 14 days.
- There are situations where the matrix is not suited for either Terra Core or Encore samplers. If sampling in sand, gravel, very wet sediments, or even a muddy substrate, then the best available option is a 4 ounce jar for sample collection. The sample jar will be filled as completely as possible, leaving a minimum of headspace and equipped with a Teflon® lined lid. Chemical preservation is not required, but the samples will be cooled to $\leq 6^{\circ}\text{C}$ as soon as possible and kept at this temperature until sample preparation at the laboratory.

2. Replace Hollow Stem Auger with Rotosonic for Alluvial Borings

The Army would like to replace the use of the hollow-stem auger (HSA) drilling method (WP section 3.4.2) with the sonic drilling method for the following reasons:

- The HSA was described in the WP for the purpose of being able to collect a drive sample for soil sample collection. The Army proposes to use a Rotosonic drill rig which can be equipped with a drive sampler for soil sample collection as described in the WP.
- The benefits are that a single drill rig can be used at those locations where both alluvial and bedrock will be penetrated, and that a single drilling technology can be used for all well construction as part of this RFI. Use of a single technology standardizes field operations. Use of the Rotosonic drill rig equipped with a drive sampler is equivalent to the soil sampling methods described in the WP with the added benefit of a continuous core for complete lithologic logging.

3. Replace FROG 4000™ Field Analyzer with HAPSITE GC/MS

The Army would like to replace the use of the FROG 4000™ (WP section 3.5.4) with a HAPSITE Gas Chromatograph / Mass Spectrometer (GC/MS) for the following reasons:

- The chemical of concern, 1, 2-DCA, can't be detected using the FROG 4000™. The HAPSITE GC/MS will detect 1, 2 DCA and other volatile organic chemical thereby assisting with mapping of the soil gas plume. The GC/MS is the benchmark for positive identification of organic chemicals with the highest degree of accuracy of any available analytical technique. Using the HAPSITE GC/MS, the field staff will receive the highly accurate results within minutes. These results are necessary to make important field decisions regarding the placement of additional borings for the delineation of the soil gas plume.

4. Replace Upper Tolerance Limit with Upper Prediction Limit for Background Groundwater

The Army will utilize the upper prediction limit (UPL) to estimate groundwater background concentrations for metals. Section 2.7.2 of the Risk Assessment Guidance for Site Investigations and Remediation Volume I Soil Screening Guidance for Human Health Risk Assessments, dated March 7, 2019 (Risk Guidance), suggests using the upper tolerance limit (UTL) to estimate soil background concentrations. The Army prefers to use the UPL for the following reasons:

- The UPL is the statistic recommended by both the EPA's Unified Guidance (page 2-15) and ProUCL Version 5.0.00 Technical Guide.
- Use of the UPL is consistent with the ProUCL Guidance referenced in section 2.7.2 of the Risk Guidance
- Section 2.7.2 of the Risk Guidance allows for using a methodology reviewed and approved by NMED.

When testing for exceedances in background concentration levels it is important to (1) have adequate statistical power; and (2) avoid false positive errors by having a low predetermined site-wide false positive rate (SWFPR). Good statistical power means that the test correctly

identifies concentration increases above background. False positive (or Type I) errors are evaluations where one or more wells are falsely declared to be contaminated. Multiple groundwater constituents are being monitored and tested at FWDA twice per year. Each additional background comparison test increases the accumulative risk of making a false positive mistake, known statistically as the multiple comparisons problem. The strategies recommended in the Unified Guidance for meeting the two key performance characteristics are (1) re-testing and (2) adjusting each test's individual false positive rate accordingly to meet the SWFPR.

The construction of the UTL is highly similar to that of a UPL. The similarity is even more apparent for non-parametric limits. Often the maximum observed value in background can either be used as an UPL or an UTL, with only a difference in statistical interpretation. Still, UPLs are preferable to UTLs in detection monitoring for the following reasons:

- (Statistical Power) The mathematical underpinnings of the UPLs under re-testing strategies are well established while those for re-testing with tolerance limits are not. Re-testing strategies are not only encouraged but deemed necessary by the Unified Guidance. Retesting can be used to enhance power and meet the specified false positive objectives.
- Site-wide False Positive Rate (SWFPR) The ability to estimate a UTL which can control for Type I error rates when simultaneously testing an exact number of multiple future or independent observations is not precise as it is when estimating the appropriate UPL. UTLs lack the statistical properties that allow practitioners to modify tests in order to control the SWFPR. UPLs consider the actual number of comparisons in defining exact false positive error rates.

If you have any questions or require further information, please call me at (505) 721-9770.

Sincerely,

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Mark Patterson
BRAC Environmental Coordinator

Cc:

John Kieling, NMED HWB
Dave Cobrain, NMED HWB
Michiya Suzuki, NMED HWB
Chuck Hendrickson, U.S. EPA Region 6
Ian Thomas, BRACD
Steven Smith, USACE
Cheryl Montgomery, USACE ERDC
Saqib Khan, USACE
Dave Becker, USACE
Sharlene Begay-Platero, Navajo Nation
Mark Harrington, Pueblo of Zuni
Clayton Seoutewa, BIA Zuni
B.J. Howerton, DOI/BIA

