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U S NAVY RESPONSE TO U S EPA REGION III AND WEST VIRGINIA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION COMMENTS REGARDING DRAFT SAMPLING AND  
ANALYSIS PLAN FOR REMEDIAL INVESTIGATION ALLEGANY BALLISTICS LABORATORY  
NIROP ROCKET CENTER WV  
03/16/2011  
CH2M HILL

**Response to Comments on the Draft *Uniform Federal Policy Sampling and Analysis Plan, Site 13 Remedial Investigation, Allegany Ballistics Laboratory, Rocket Center, West Virginia*; November 2010, February 2011, February 2011, and March 2011**

This memorandum provides responses to comments received from USEPA via email on 11/22/10, 02/14/11, and 03/16/11 and from the WVDEP via email on 2/15/2011 regarding the document referenced above. These responses will be incorporated into a final version of the work plan which will be submitted upon acceptance of these responses. Comments are presented as received, followed by the Navy's responses, shown in **bold**.

**Comments from Brandon McDonald (Quality Assurance Reviewer - EPA)**

1. **November 2010 Comment:** New federal regulations in 40 CFR 136 have changed the preservation requirements to "less than or equal to 6 °C", but without freezing the sample. Please change the Preservation Requirements (page 95) accordingly in Worksheet #19. Additionally, the new temperature preservation requirements need to be updated where referenced in any/all SOPs in the Appendices.

**Response: The change will be made as suggested.**

2. **November 2010 Comment:** Worksheet 36 states that, "National Functional Guidelines will not be used for data validation". Further information is needed to better explain how data collected via field sampling and/or laboratory analyses will be evaluated through the data verification and data validation process. The SAP needs to explain what levels of review (peer review, data verification and/or data validation) will be used for both the field and laboratory analytical data generated for each site specific work plan. For example, data verification routinely involves a completeness check by verifying all field documents (sample numbers, sample tags, chain-of-custody logs, shipping documents, etc) are present and complete. On the other hand, data validation checks to see that proper methods and procedures (sampling, extraction, and analysis) were employed while creating the data package.

**Response: The statement that "National Functional Guidelines will not be used for data validation" will be revised to more accurately state the approach to be implemented. The approach will be to use the data qualifiers presented in Region III Modifications to the National Functional Guidelines. The National Functional Guidelines are geared towards CLP methodology. Because SW846 and various other analytical methodologies will be used to support the fieldwork, the QA/QC method performance criteria, as presented in the UFP-SAP, will be compared to the analytical data as it is specific to each individual method. By using the QA/QC method performance criteria in the UFP-SAP, the specific areas listed below will be addressed.**

**Data verification procedures such as completeness checks and field log reviews, which apply to both field and analytical data, are described in Worksheet #34. The “Internal/External” and “Responsible for Verification” fields indicate the level of review and responsible parties. Validation processes are detailed in Worksheet #35 and 36, including compliance with SOPs and comparison to criteria in the UFP-SAP.**

The following questions must be answered for data validation:

- a. Did the field testing or laboratory use proper and adequate QA/QC in analyzing the samples and producing the data?

**Response: According to Worksheet #35, the project chemist will verify that the correct number of QA/QC were collected in the field and submitted to the laboratory. As stated in Worksheet #36, the data validator will review the analytical data and qualify it as appropriate for use by the project team. Field data will be verified and validated by the contractor’s project team as stated in Worksheets #34 and 35.**

- b. Did the data produced meet all quality control standards prescribed in the method?

**Response: The QA/QC method performance criteria, as presented in the UFP-SAP, will be used ensure quality data is produced to support the field events.**

- c. Were the proper data quality flags applied to the data?

**Response: Region III Modifications to the National Functional Guidelines will be used to identify proper data quality flags to be applied to the data should there be non-conformances to method QA/QC criteria. The CH2M HILL project chemist will review the data validator’s report to ensure that the proper data quality flags were applied to the data.**

- d. Was measurement performance criteria that was established in the SAP compared to actual data collected?

**Response: The analytical method validation will compare measurement performance criteria as presented in the SAP against the actual data collected. The project chemist will review the data validator’s report and the laboratory’s quality control criteria to ensure that the proper method performance criteria were used.**

- e. It was mentioned that data validation would be performed independently of the data generator by a third party to avoid any conflicts of interest. Please state who will validate the data.

**Response: A CH2M HILL senior chemist, Ward Dickens, and his team will be responsible for the analytical data validation. This team will not be involved with the collection of the samples, and will not be in communication with the laboratory during analysis. The reference to a**

**third party will be removed. The validation will be performed utilizing the processes described in Worksheet #36 of the UFP-SAP. The chemist performing the validation will not be a part of the ABL project team and will simply be performing independent analytical validation from a technical standpoint.**

### **Comments from Nancy Rios-Jafolla (Toxicologist - EPA)**

- 1. November 2010 Comment:** Worksheet 11. It is stated that a quantitative risk assessment will not be performed if the MCLs are exceeded. Note that a quantitative risk assessment is required to assess the baseline risk at the site in addition to comparison with the MCLs.

**Response:** This approach was proposed because it is assumed that an action would be required if MCLs were exceeded and that risk would be quantified following removal of the ongoing source of contamination (i.e., alluvial groundwater contaminant reduction to concentrations below MCLs). In order to provide baseline values, quantitative risk assessments will be performed.

- 2. November 2010 Comment:** Worksheet 11. It is noted that the Project Action Limits (PALs - RSLs) will be used in the future to assess residual groundwater risk at the site. It is recommended that a groundwater performance-based remedy be considered for this site which takes into consideration the residual risk that remains after the MCLs and other applicable standards have been achieved. A groundwater performance-based remedy requires that a risk assessment of the residual contaminant levels be performed after the standards are met without having to report the RSLs in a decision document but rather the risk range that will be considered.

**Response:** As stated in Worksheet 11 the PALs were established for the site media with the expectation that they may be used to quantify risk once the ongoing source of contamination has been removed (i.e. alluvial groundwater contaminant concentrations are below MCLs). As such, these data would sufficient for evaluation of a groundwater performance based remedy, if one is considered for the site in the future.

- a. February 2011 Comment:** Note that since the PALs are expected to change as toxicity criteria change, they will not be applicable to a groundwater performance-based remedy where use of PALs/RSLs, etc. are not specified. As noted previously, "A groundwater performance-based remedy requires that a risk assessment of the residual contaminant levels be performed after the standards are met without having to report the RSLs in a decision document but rather the risk range that will be considered."

**Response:** The comment is noted. The PALs in Worksheet 11 are RSLs. The RSLs are specified to assure that analytical data will be of sufficient quality to allow performance of a quantifiable risk utilizing current toxicity criteria.

## Comments from Mindi Snoparsky (Hydrologist – EPA)

1. **November 2010 Comment:** The locations of deep wells GGW36 and GGW37 look fine. However, a third well is preferred on the south side of the plume. I realize that there may be issues with power lines, etc. However, the location of GGW38 may not be useful, especially if GGW37 comes up clean. It will also be impossible to get a water level map from the deep well configuration proposed in Figure 2.

**Response:** The location of GGW38 will be moved to the south side of the plume.

2. **November 2010 Comment:** Although it is noted in SAP Worksheet #14 that downhole geophysics as described in Appendix A17 will aid in screen placement, the SOP for downhole logging only describes each type of logging but it makes no mention of which particular logs will be used at the site or what the reporting will be to document the findings.

**Response:** Worksheet 14 will be revised to state that Caliper logging, temperature logging, and fluid resistivity logging will be used to aid monitoring well screen placement and that the results for these procedures will be included in the RI report.

- a. **February 2011 Comment:** The downhole techniques noted in Appendix A17 are caliper, temperature, fluid resistivity, brine injection, fluid conductivity and video. Yet the response indicates that only caliper, temperature and fluid resistivity will be used for this project. I would suggest adding brine tracing as this is one of the most important tools for fracture flow delineation, as correctly noted in the Appendix.

**Response:** The downhole techniques specified are most practical and are sufficient for their intended purpose, which is to locate fractures in order to select depths for well screen placement. If subsequent sampling of the bedrock aquifer at Site 13 indicates the presence of contamination at unacceptable levels, brine tracing or a similar technique will be considered to delineate fracture flow.

- b. **March 2011 Comment:** After further discussions with Mindi Snoparsky, we both feel strongly that the brine-tracing procedure should be conducted in the three bedrock wells proposed at Site 13 at ABL. Brine-tracing is an important test for delineating water producing and water receiving fractures. The following documents discuss the proper procedures to conduct brine-tracing. Please add the steps of this procedure in the SAP for Site 13.

- Methods of Flow Measurement in Well Bores, Water Resource Report 17, Reprinted 1974, Commonwealth of Pennsylvania Department of Environmental Resources by Eugene P. Patten, Jr. and Gordon D. Bennett.
- U.S. Geological Survey, Fact Sheet 218-95, Borehole Geophysical Logging for Water-Resources Investigations in Pennsylvania.

- CH2MHill, Standard Operating Procedure, Downhole Geophysical Logging, Reviewed on 03/2010.

**Response:** The various geophysical methods discussed in the UFP-SAP for Site 13 were designed to identify areas in the subsurface to set well screens. Rather than completing time consuming and costly brine tracing at this time when there is no evidence of bedrock contamination, the Navy proposes that the boreholes be left open to facilitate sample collection at various depths within the bedrock. PDB samples would be collected within the open borehole at approximately 35, 60, and 85 ft bgs (assuming depth to bedrock is 30 ft bgs). If contamination is found to be present in the bedrock following sample analysis, the Navy would coordinate with USEPA and WVDEP to explore fracture flow delineation options. If contamination is not detected, sampling would continue as planned for 3 additional quarterly rounds. This approach would provide additional characterization data of the bedrock aquifer and still allow the flexibility to conduct various geophysical tests in the future (including brine testing) should significant contamination be detected. Additionally, this approach would identify if there is stratified contamination and better allow for screen placement within the contaminated zone if present. The SAP will be modified to reflect this approach.

3. **November 2010 Comment:** It is not clear which particular drilling method will be used at the site. The SOP deals only with the details of each method and it is not clear which one will actually be used at the site.

**Response:** Worksheet 14 will be revised to state that a combination of air hammer and casing advancement drilling techniques will be used.

- February 2011 Comment:** It is not clear how the two techniques, air hammer and casing advancement, will be used, since it is noted that they will be used in combination. Will they both be used for each well for different depths, i.e. shallow one method, deep another? Or will just one be used depending on the driller?
- Response:** Worksheet 14 will be revised to state that air hammer techniques will be used; should borehole collapse occur using this technique, casing advancement will be used.
- March 2011 Comment:** This response is vague. There should be some understanding of the geology before the drilling method is chosen, especially if borehole collapse may occur. If the hammer does not work, will another rig be available or will there be down time? This should be planned better as down time to change a method will likely result in extra cost.

**Response:** We will mobilize to the site with a rig capable of both straight air hammer and casing advancement drilling. Because casing advancement is more time consuming and expensive, we first try to do regular air hammer drilling. If that fails we tool up and use casing advancement. It's the most cost effective approach available.

**Worksheet 14 will be revised to state "A drill rig capable of both air hammer and casing advancement drilling techniques will be used to install bedrock monitoring wells. Air-hammer drilling techniques will be the preferred method however, in the event of borehole collapse casing advancement techniques will be used. "**

### **Comments from Ji-Sun Yi (RPM - EPA)**

1. **November 2010 Comment:** Editorial comments are made electronically on the draft document by Ms. Yi.

**Response:** Editorial changes will be made as indicated on the CD provided by Ms. Yi.

2. **February 2011 Comment:** Page 3, third paragraph of the Executive Summary of the document (see excerpt below) should be revised and re-worded to remove the words 'remediate' and 'remedy', to avoid the appearance of pre-selecting a remedy without undergoing the formal CERCLA process, and specifically, the public's input in remedy selection.

**Response:** The text will be revised to eliminate the words remediate or remedy. The action taken to-date will be described as a pilot study.

### **Comments from WVDEP**

1. Page 3, Executive Summary, Site 13 Background: The discussion states that the pilot study is a remedy in place. This is in error. The pilot study by definition is "*A pretest or trial run of a program, evaluation instrument, or sampling procedure for the purpose of correcting any problems before it is implemented or used on a larger scale*" A remedy on a National Priority List site must solicit/involve public participation. Please modify the document to comply with the appropriate requirement. Note there are numerous locations throughout this document where remedy and remediate are utilized.

**Response:** The text will be revised to eliminate the words remediate or remedy.

2. Page 3, Executive Summary, Remedial Investigation: Remove the reference to VOC. It is acknowledged organic and inorganic data exist for this site. It is the reviews understanding all data collected to date will be included in the remedial investigation report and subsequent risk assessment. Therefore the subject of this UFP SAP should be the collection of information to fill data gaps.

**Response:** The text will be revised to remove the reference to VOCs and will state: "...extent of contamination...".

3. Page 11, number 6, Organizational partners (stakeholders) and connection with lead organization: It should be noted both agencies, the EPA and WVDEP are signatory to the FFA as well as Support Agencies. Please correct.

**Response: The text will be revised to identify both EPA and WVDEP as signatories to the FFA and as Support Agencies.**

4. Page 19, Worksheet #6, Communications with the WVDEP: A 24 hour response timeframe is not achievable. Within seven working days is a more appropriate response.

**Response: The procedure will be revised to state that the Navy RPM will communicate changes due to field conditions to the regulatory agencies, but no response from the agencies is required.**

5. Page 39, Worksheet #10, Problem Definition: The last paragraph of the discussion states "The remedy is enhanced bioremediation with the subsurface injection of emulsified oil..." At this point there is an ongoing pilot study not a remedy. Please correct this discussion.

**Response: The text will be revised to eliminate the words remediate or remedy.**

6. Page 43, Worksheet #10, Problem Definition, Additional Characterization Activities: The last paragraph of page 43 discusses the 2008 passive diffusion bag sampling effort. The sampling effort was designed to evaluate potential vertical stratification of VOC concentrations and not a comparison between the sampling techniques passive diffusion and low flow. The statement "...The results of the PDB sampling did not identify significant vertical stratification of VOC concentrations." is correct based on analysis of the collected data. Remove the discussion regarding the comparison between low flow and purge sampling techniques and passive diffusion techniques.

**Response: The final paragraph on page 43 will be revised as requested to state: "Additional data were collected from the alluvial aquifer in February 2008 using multiple passive diffusion bag (PDB) samplers within select individual monitoring wells (CH2M HILL, 2008c). These samples were collected to examine the vertical stratification of VOCs within the alluvial aquifer. The results of the PDB sampling did not identify significant vertical stratification of VOC concentrations (i.e., average percent difference of values within each well sampled was less than 15 percent)." .**

7. Page 45, Worksheet #10, Problem Definition, Human Health Risk Assessment: Although the discussion is correct there is an expectation the information will be presented in the formal risk assessment to be conducted as part of the RI report. Please clarify.

**Response: As stated in Worksheet #11, a risk assessment will be completed and documented in the RI report**

8. Page 46, Worksheet #10, Problem Definition, Potential Source Areas: The State cannot concur with the statement as written. To date no sources(s) have been identified at or near the location of the groundwater plume. The discussion should reflect the possibility of a source.

**Response: The paragraph will be revised as requested to state: "As noted above, previous investigations have concluded that an ongoing source of groundwater contamination is no longer present and has either degraded or already been leached from the soil. The RI data will be evaluated to determine if this conclusion is supported."**

9. Page 39, Worksheet #10, Problem Definition: The last paragraph of the discussion states "The remedy is enhanced bioremediation with the subsurface injection of emulsified oil..." At this point there is an ongoing pilot study not a remedy. Please correct this discussion.

**Response: The text will be revised to eliminate the words remediate or remedy.**

10. Page 47, Worksheet #10, Problem Definition, Project Objectives: Bullet (3) See comments 1 and 5.

**Response: The text will be revised to eliminate the words remediate or remedy.**

11. Page 48, Worksheet #10, Problem Definition, Environmental Questions/Problems to be addressed by the RI: The question 2 and 4 must change "Is the alluvial remedy effective at reducing bedrock ground water contamination (if present)?" Please provide the Record of Decision or modify the question.

**Response: The text will be revised to eliminate the words remediate or remedy.**

12. Page 49, Worksheet #11, Project Quality Objectives/Systematic Planning Process Statement: Third paragraph include MCL's as project action limit.

**Response: The MCLs are generally higher than tap water RSLs, however where the MCLs are lower than RSLs, the MCLs will be used as the PALs. The text will be revised to state "The PALs for the groundwater are the EPA tap water RSLs, adjusted for noncarcinogenic chemicals by dividing by 10 to address exposure to more than one noncarcinogenic chemical that may affect the same target organ (i.e., liver)s or MCLs, whichever is lower, are provided in Worksheet #15."**