



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND - REGION I  
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BOSTON, MASSACHUSETTS 02114-2023

April 27, 2004

Lonnie Monaco (monacolj@efane.northdiv.navy.mil)  
Engineering Field Activity Northeast, Naval Facilities Engineering Command  
Code 1821/LM, 10 Industrial Highway, Mailstop 82  
Lester, PA 19113-2090

**Re: Draft Long-Term Monitoring Plan for Sites 1 and 3 and Eastern Plume,  
Naval Air Station, Brunswick, Maine**

Dear Mr. Monaco:

Pursuant to § 6 of the Naval Air Station Brunswick, Maine Federal Facility Agreement dated October 19, 1990, as amended (FFA), the Environmental Protection Agency has reviewed the subject document and comments are enclosed. Please provide contact information for the new RPM for this site IAW the FFA.

If you have any questions with regard to this letter, please contact me at (617) 918-1384.

Sincerely,

A handwritten signature in cursive script, appearing to read "Christine Williams".

Christine A.P. Williams, RPM  
Federal Facilities Superfund Section

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## EPA Comments on the Long-Term Monitoring Plan Sites 1 and 3 and Eastern Plume

### General Comments:

1. If Navy is appealing to MNA at both Sites 1 and 3 and the Eastern Plume (is this correct?), it is imperative that requirements for long-term groundwater and soil/sediment monitoring remain as flexible as possible in order to accommodate new data, changes in contaminant distributions and/or concentrations (as a result of either natural degradation or other, geochemical, processes, or active remediation), and modifications to the current 'conceptual models' for these sites.
2. Navy has demonstrated convincingly that passive diffusion samplers yield results that are quite comparable to those obtained by low-flow sampling for VOCs at these sites. However, it has been observed in previous review comments that field water quality parameters obtained by the two methods exhibit significant differences. While there is general agreement that use of passive diffusion samplers is satisfactory for monitoring the progress of VOC trends, complete and reliable field parameter characterization will be necessary if broader goals are identified for particular monitoring points (e.g., collection of data supporting MNA assessment).
3. The draft LTMP does not seem to acknowledge fully the evolving nature of the program focused on the Eastern Plume. In particular, several ongoing activities may bear on the LTMP:
  - a. *Reconfiguration of the extraction system:* A forthcoming investigation will perform additional characterization near P-106 and MW-331 for possible installation of new extraction wells. Better plume delineation based on this new work, as well as any changes to the extraction system, may require modification of the LTMP.
  - b. *Additional characterization at the leading edge:* Collection of new information is ongoing and is expected to improve resolution of the plume boundary, e.g. in the vicinity of MW-338 A,B,C. These new results may suggest changes to the LTMP.
  - c. *MNA assessment:* Initial results of an MNA assessment were reported with results from LTM Event 23 (March 2004). Presumably Navy remains interested in further assessment and discussion of MNA as a potential component of the long-term remedy for the Eastern Plume. Either the assessment or the adoption of MNA may require a shift in the focus of long-term monitoring (e.g., different well locations, different analytes, frequency of monitoring, etc.).
  - d. *Additional (or modifications to) remedial goals:* Recent discussion (stated in the ME-23 report, March 2004, p. 37, Sec. 3.1.1) has considered a shift in emphasis from containment to contaminant reduction through mass extraction. Whether this is regarded as a change in remedial goals, or simply an additional remedial goal, this change may require appropriate adjustments to the LTMP.

## **EPA Comments on the Long-Term Monitoring Plan Sites 1 and 3 and Eastern Plume**

Perhaps the LTMP could simply acknowledge these ongoing activities and potential changes to the monitoring program, and provide a mechanism for adjusting the monitoring program to optimize use of resources.

3. The design of the LTMP is conditioned upon conceptual models that, in turn, may influence number and location of monitoring points, selection of analytes, frequency of sampling and sample collection methodology, etc. There is a formal statement of a working conceptual model for the Eastern Plume and this LTMP is generally consistent with this model. Perhaps a similar effort should be initiated for Sites 1 and 3. For example, natural geochemical and hydrologic processes may play an important role in the behavior of inorganics observed in Sites 1 and 3 wells. It has been proposed that consistent changes in major-element chemistry in MW-217B reflect changes in local hydrology due to installation of the cap and slurry wall (e.g., upward seepage from the underlying clay). In addition, the downgradient well MW-218 has relatively high arsenic (between ~100 and 300 ppb) and MW-219 has little (mostly non-detects, at detection limits up to a few ppb). The reported oxidation-reduction potentials for these wells indicate that MW-218 intercepts reducing groundwater (ORPs < -100 mV) while MW-219 is oxidizing (generally > +150 mV). These observations may be attributed to naturally occurring geochemical processes (i.e., reductive dissolution of hydrous ferric oxides and release of sorbed constituents). There may be other, as-yet unidentified effects imposed by the cap and slurry wall on local hydraulic and geochemical conditions, such as changes in redox potential and consequences for degradation of organics, mobilization of trace metals, etc. A more formal working conceptual model would provide a framework against which to evaluate LTMP results for Sites 1 and 3. It is expected that this model, similar to that for the Eastern Plume, would be a "living document" and subject to continued revision and discussion as new information becomes available.

4. It is noted (p. 1-2, Sec. 1.1) that an added goal is the monitoring of water levels inside the Sites 1 and 3 slurry wall, in order to verify that the groundwater level remains below the waste. However, the LTMP does not identify any specific trigger(s) for potential problems if water levels inside the slurry wall rise to the level of the bottom of the waste. On p. 16, Sec. 2.2 of the ME-23 report (March 2004), these details are spelled out. EPA believes the LTMP is an appropriate document for codification of the agreements about comparisons to trigger values and the actions that such triggers will initiate.

5. The document does not summarize the remedial goals, as stated in the ROD, or possible modification or expansion of those goals (under current discussion). However, the remedial goals have an influence on the design of the LTMP. The LTMP document would be strengthened by such a summary and a discussion of how the design of the LTMP supports those goals.

## EPA Comments on the Long-Term Monitoring Plan Sites 1 and 3 and Eastern Plume

### Specific Comments:

6. p. 1-2, Sec. 1.1. The text states that “Periodic evaluations will provide a basis for continued sampling and refinements/alterations to the monitoring program or remedial activity, as appropriate. At a minimum, environmental monitoring will continue at Sites 1 and 3 for 30 years and be extended, if necessary, and at the Eastern Plume until no longer appropriate as decided in consultation with EPA, MEDEP, and the community.”

Please explain the basis for the decision to monitor for this period, i.e. please provide the reference to a document in which this decision can be found.

7. p. 1-7, Sec. 1.4.1. The designation of wells in the vicinity of the Eastern Plume as “sentinel,” “perimeter,” and “interior plume” appears to be based on conditions at the time these identifiers were established (1999). As the plume evolves, the status of some of these wells may change. For example, MW-1104 is designated a “perimeter” well, presumably because it detected exceedances of CoCs in the past. In 1995, 1,1,1-TCA was detected in this well at concentrations greater than 600 ppb, but recent rounds report non-detects for all CoCs. Should the designations of various wells in the program be updated periodically, according to their current status, or should they retain their ‘historical’ designations?

8. p. 1-7, Sec. 1.4, Tables 1-2 and 1-3. The text states that “... changes are summarized in Tables 1-2 and 1-3.” It might be more precise to state that these tables summarize the proposed monitoring plan, since they do not specifically identify *changes*. A table that details items that have been deleted from the existing LTMP, items that have been added in the current draft, and items that have been modified (e.g., sampling frequency, method, etc.) would be useful. Please consider.

9. p. 1-9, Sec. 1.4.4. The document refers to the pilot program to compare PDB and low-flow sampling in support of the change to PDBs for all VOC monitoring. Please provide a citation to the documentation of the comparative study to support this change.

10. Tables 1-3 and 3-2: The tables contain entries for MW-207A, with a note that this well was destroyed. However, it is still designated for water-level gauging. Please check for consistency.

11. p. 3-2, Sec. 3.1.1.1. Navy does not propose to monitor any deep wells inside the slurry wall. Please explain the rationale for this decision. The waste was left in place, leaving open the possibility of future releases of DNAPL to groundwater (e.g., through drum failures). Monitoring of the deep interval – possibly, by the addition of MW-217A to the network – should be considered.

12. p. 3-2, Sec. 3.1.1.1. This section indicates that the Sites 1 and 3 groundwater samples will be analyzed for TCL VOCs, TAL inorganic elements, and field parameters. The addition of

## **EPA Comments on the Long-Term Monitoring Plan Sites 1 and 3 and Eastern Plume**

chloride, sulfate, and alkalinity to the list of analytes should be considered, at least for a few rounds. These constituents will aid in interpreting long-term changes (such as the trends already observed in monitoring well MW-217B at this location) and may add support to MNA assessment in the future.

13. p. 3-2, Sec. 3.1.1.2 (see also Secs. 3.1.1.3, 3.1.2.2, 3.1.2.4, 3.3.2, and 3.3.3). These sections discuss sampling of surface water and leachate seeps. Past experience with this sampling, as well as similar sampling at Site 2, suggests that analytical results can be erratic due to variable turbidity. All surface water and leachate seep samples should be filtered in order to establish a uniform basis for comparison from location to location and from round to round. Some of the historical "exceedances" of inorganics observed in surface water may be attributed principally to suspended particulates. Unfiltered samples will be required at least for the 5-year review.

14. p. 3-3, Sec. 3.1.1.3. This section states the intent to collect leachate seep samples at Sites 1 and 3. Please explain the motivation for collecting these samples. It has been noted from seep sampling at other locations at NASB (for example, at Site 2) that the data obtained from such samples can be highly variable and are probably biased due to the amount of iron floc and/or other particulate material that may be present. If concurrence is reached among EPA, MEDEP, and RAB members that continued sampling of seeps is desirable, a uniform method of sample collection and analysis is needed. One suggestion is to filter such samples and request analysis of both the filtered solution and the corresponding filter cake. Another possibility that should be considered is to replace the leachate seep sampling with shallow well points, as has been suggested for Site 2.

15. p. 3-2, Sec. 3.1.1.1. The text notes that diffusion samplers will be used to collect groundwater from MW-217B. This well is also designated for TAL analysis (see, e.g., Table 3-1), implying that a low-flow sample will also be collected here. What is the rationale for collecting the VOC sample by PDB, when a low-flow sample is being collected, as well?

16. p. 3-3, Sec. 3.1.2.1. The LTMP proposes to continue the use of passive diffusion samplers for VOC samples from the Eastern Plume. While the comparison study showed that PDB results are comparable to low-flow sampling results, the program should proceed with an awareness that the field water quality parameters obtained in conjunction with the PDB sampling (i.e., by means of a downhole, multiparameter probe, inserted following withdrawal of the PDBs) yield data of questionable value. This is particularly true for the redox indicators, ORP and DO. These water-quality data could take on increased importance if further assessment of MNA as a possible component of the remedy is contemplated, or, of course, if MNA is adopted as part of the remedy.

17. Table 3-2: Several monitoring wells (MWs 335 through 339) are designated for sampling by both diffusion and low-flow sampling for two rounds (see footnote at bottom of Table 3-2), after which only diffusion samplers will be used. Will a comparison of results from the two methods

## **EPA Comments on the Long-Term Monitoring Plan Sites 1 and 3 and Eastern Plume**

be made prior to a final decision to drop the low-flow sampling? Are past comparisons, based on a different suite of wells, deemed adequate to support this change?

18. p. 3-4, Sec. 3.1.2.2. Why are Eh and DO considered 'optional' and 'may be recorded' for the surface water sampling? For completeness, these parameters should be recorded during every sampling event.

19. p. 3-5, Sec. 3.1.2.3. Please give the solid-phase sample digestion method that will be used for the sediment analyses (e.g., Method 3050 or other).

20. Page 3-6 of 3-9, Section 3.3 Sampling Procedures. This Section references the Base-Wide Quality Assurance Project Plan for the location of the sampling procedures. However, the sampling SOP number identification has not been included in the reference. Please include the sampling SOP number in the reference. Note the Plans (Site 1 - Orion Street landfill - North Site 3 - Hazardous Waste Burial Area & Site 2 - Orion Street Landfill - South) makes reference to the sampling SOP numbers so they can be quickly found in the Base-Wide Quality Assurance Project Plan.

21. Page 3-9 of 3-9, Section 3.5.2 Laboratory Quality Assurance and Quality Control. The last sentence states "the data evaluation will consider the applicability of the data to the LTMP objectives and recommend which data are not of sufficient quality for use in quantitative interpretation (i.e., management decisions)". Note data evaluation needs to include the field information and documentation before it is used for quantitative interpretation.