



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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June 14, 2002

Mr. Orlando Monaco
Department of Navy
Engineering Field Activity-Northeast
Code 1823/OM
10 Industrial Highway, Mailstop 82
Lester, PA 19113-2090

Re: Sites 1, 3 and Eastern Plume, 2000 Annual Report
Naval Air Station, Brunswick, Maine

Dear Mr. Monaco:

The Maine Department of Environmental Protection (MEDEP or Department) has reviewed the report entitled Draft 2000 Annual Report, Monitoring Events 16 & 17, Sites 1 and 3 and Eastern Plume, dated April 2002, prepared by EA Engineering, Science and Technology. Based on that review the Department has the following comments and issues.

General Comments:

1. MEDEP notes and appreciates that additional care is being taken in accurately describing the current status of pumping effects and concentration trends.
2. In working with the water-level data files on the 2002 ArcView GIS Update CD, erroneous data and duplicate data for many entries were found. For example, MW-1104 has a water elevation of 26 feet for one day when all other values are in the mid-40 range. Such problems are commonplace, and the data points should be checked in the appropriate event reports to confirm. For this to be a useful tool the Navy or its consultant needs to thoroughly review and confirm the water levels entered on the CD.

Specific Comments:

3. Figure 1-2, Location of Sites and Extraction Well Locations:

The extent of the Eastern Plume does not match that of Figure 1-1 and other later report figures along the southern boundary. Figure 1-1 represents the state of knowledge in 2000. Therefore, for consistency the old boundary should be used in Figure 1-2.

4. Table 1-2, Summary of the 2000 Long-Term Monitoring Program at Eastern Plume, p. 2 of 3:

Information on EW-05A does not belong in the 2000 report, as it was not installed until September 2001. Footnotes (d) and (e) are also not pertinent. Please remove these entries.

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5. Table 1-2, Summary of the 2000 Long-Term Monitoring Program at Eastern Plume, p. 3 of 3:

MEDEP could not find SEEP-10 or SEEP-11 on Figure 2-2. If missing, please add. Otherwise, describe their locations to facilitate locating them.

6. Section 2.1, Ground-Water Extraction and Treatment System 2000 Performance, Summary, p. 1 of 5, 3rd para:

"Extraction well EW-03 has remained inactive since identification of the well screen failure in December 1998."

It would be appropriate to add that pumping at this location is no longer needed, and that the well will not be replaced.

7. Section 2.1, Ground-Water Extraction and Treatment System 2000 Performance, Summary, p. 2 of 5, 1st para:

"The cumulative VOCs removed from the Eastern Plume continue to show a relatively consistent rate of VOC removal during 2000."

The word "continue" adds confusion to interpreting this statement. The rate of removal was fairly consistent for all months in 2000 except for July. But, in the perspective of the last 4 years, the 2000 monthly removal rates were quite low. The Navy needs to clarify what meaning it is addressing.

8. Section 2.2, Water Level Gauging Program, p. 3 of 5, explanation of graph:

The inset graph shows relationship between measured water elevation in MW-311 and the pumping rate of nearby extraction well EW-02A for the period of 1999 and 2000. The following statement is made: "The increasing water elevation at MW-311 is believed to be related to decreases in extraction well flow at EW-02A and the deactivation of EW-02 in September 2000."

Through September 1999, the Navy's interpretation appears valid, but after that the water elevation continues a relatively constant rising trend in MW-311 even through the extraction rate in EW-02A increases to higher values (18.4 and 18 gpm? [units not given]). Also, the deactivation of EW-02 in September 2000 does not make sense as an explanation, according to data presented in Table 2-1. Furthermore, since MW-311 exhibits confined aquifer behavior, one would not expect a time lag of months between cause and effect. On the other hand, MEDEP notes the following items which could potentially affect heads in the general area: (1) EW-01 extraction rate progressively dropped from 11.6 gpm in January 1999 to 4.1 gpm in September 2000, (2) in 1999 a long-term precipitation deficit began which would tend to oppose the MW-311 rising trend, and (3) well integrity problems at MW-207A (located 500 feet west of MW-311) where head elevation has been above land surface. Please review this situation, and modify/expand on the explanation.

9. Figure 2-5, Water Elevations within Sites 1 and 3 Landfill:

The present graphs indicate that, in general, shallow groundwater levels and the deeper potentiometric head are continuing to seek a lower equilibrium level. Although levels in two shallow wells, (MW-210B outside the slurry wall, and EP-16 inside the slurry wall) located near each other in the southeast part of Site 3, rebounded several feet during 1998 and 1999. The difference in well screen elevation between shallow and deep monitoring wells is only a few tens of feet. Also, a vertical line indicating when pumping of EW-6 and EW-7 ceased

should be added. What is the Navy's explanation for the rebound in one locality, and continued decline in other areas within the slurry walls?

10. Section 3.1, EW-01, 1st para:

In 2000, the pumping rate in this well declined significantly (6.2 gpm first half to 3.8 gpm second half). Was this fluctuation controlled by the plant operator to limit drawdown in the well, or did it occur automatically in response to system line pressure and was not directly related to the well production performance?

11. Section 3.1, EW-02 and EW-02A:

The term "abandoned" should be replaced by "decommissioned in accordance with State of Maine regulations", as MEDEP assumes this was the case..

Please make the same editing for EW-03 on the next page.

12. Section 3.1, EW-04, 2nd bullet:

The closest monitoring well to EW-04 is MW-330, approximately 200 feet east. MW-330 is screened at shallow depth just above clay overlying a bedrock high. However, it is mapped as being within the solvent plume, although the well has never had a laboratory detection of any contaminant of concern. The plume occurs at a lower elevation than the MW-330 screen, and likely migrated around this low permeability feature. The technical members should discuss whether the plume outline should be adjusted to reflect this geological control.

13. Section 3.1, EW-05, 3rd bullet:

Elsewhere in this report the date for decommissioning of EW-05 is given as January 2001. If this is the case it should not be included in the 2000 Annual Report. Please confirm and either delete or correct.

14. Section 3.2.1, Ground-Water Flow - General Observations:

MEDEP cannot endorse the Navy's theory without the results of the proposed field investigation scheduled for the summer of 2002. THEREFORE....

15. Section 3.2.1, Ground-Water Flow - General Observations:

A fifth bullet needs to be added that would read similar to the following:

"Precipitation, and very likely groundwater recharge, was significantly below normal in 2000. Precipitation was ___ inches below the long-term average of ___ inches. It is possible that low recharge affected the plume concentrations at some wells. For instance, at MW-319 the highest concentration of PCE was recorded since monitoring began in 1995. At MW 205, the highest concentrations of TCE and 1,1,1-TCA were measured for the 6-years of record."

16. Section 3.2.2, Effects of Remedial Measures - Sites 1 and 3, 2nd bullet:

"The interpreted 21-ft contour potentiometric surface lines in the deep interval downgradient of the landfill are deflected toward the southern end of the Sites 1 and 3 landfill."

"The presence of these remedial structures has resulted in an area of lower head downgradient of Sites 1 and 3."

Because the annual report does not contain a figure that shows potentiometric contours a reference must be provided.

Upon close scrutiny of the deep potentiometric contour maps in Monitoring Event 16 and 17 reports, deflections representing low downgradient heads due to the landfill remedial structures are not evident, and therefore MEDEP is puzzled by the above statements. The April and September contours (in particular the 21-ft lines) are quite dissimilar. MEDEP would not draw the 21-foot contours as shown on either map. The statement should be better explained, or removed.

17. 3.3.2.1, Volatile Organic Compound Concentrations and Distribution, p. 3-8, 6th bullet:

"Samples from 5 monitoring wells (MW-205 [deep], MW-225 [deep], MW-313 [deep], MW-331 [deep] and MW-333 [deep]) showed an increase in total VOC concentrations based on data collected in 2000."

MEDEP notes the following new highs from Appendix A-3:

- Total VOCs and 1,1,1-TCA concentrations in MW-205 for the April 2000 sampling were the highest since measurements began in 1995.
- Total VOCs and 1,1-DCA and 1,1-DCE concentrations in MW-313 for the September 2000 sampling were the highest since measurements began in 1995 although not above the MCL/MEGs.
- Total VOCs and PCE concentrations in MW-319 for the April 2000 sampling were the highest since measurements began in 1995.
- 1,2-DCE concentration in MW-331 for September 2000 sampling was the highest since measurements began in 1998.
- Total VOCs and 1,2-DCE in MW-333 for September 2000 sampling were the highest since measurements began in 1998 although not above the MCLs/MEGs.

The locations of these five monitoring wells are wide-spread in the southern "lobe" of the Eastern Plume. The only apparent explanation at this time is that the precipitation drought may have reduced groundwater migration rates and subsequently reduced dilution of contaminants.

18. Section 3.4.1.2, Eastern Plume, p. 3-9, last sentence:

"...VOCs from the Eastern Plume do not appear to be impacting surface water."

Please rewrite as "*VOCs from the Eastern Plume do not appear to pose a human health or environmental risk to surface water.*"

19. Section 3.6.3, Additional Data Collection and Review, p. 3-13, 1st bullet:

"...or whether the geologic units which act as preferential flow conduits in the Eastern Plume may naturally contain contamination migration."

MEDEP is uncomfortable with this statement. Please explain how the first condition (flow conduits) is compatible with the second condition (contain contamination). On the basis of data through 2000, a prominent trough in the top of clay has been identified that heads towards Harpswell Cove and is filled with silty sand or fine sand laminations. It is difficult to

conceive that this geologic environment can hydraulically contain a plume. The current remedial pumping has not created plume-wide inward gradients, according to potentiometric maps in the monitoring event reports. Possibly, plume concentrations may be attenuating sufficiently before discharging to downgradient surface water. The direct-push investigation hopefully will further refine geologic definition and help answer the degradation issue.

20. MEDEP agrees with the Navy's recommendations in Section 3.6.

Thank you for the opportunity to review this report. If you have any questions or comments please call me at (207) 287-7713.

Respectfully,



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