

**RESPONSE TO COMMENTS FROM THE  
MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION ON THE  
DRAFT 2000 ANNUAL REPORT, MONITORING EVENTS 16 AND 17,  
SITE 9: NEPTUNE DRIVE DISPOSAL SITE  
NAVAL AIR STATION, BRUNSWICK, MAINE**

**COMMENTOR: Claudia Sait**

**DATED: 4 January 2002**

The Maine Department of Environmental Protection (MEDEP or Department) has reviewed the draft report entitled *2000 Annual Report, Monitoring Events 16 and 17, Site 9: Neptune Drive Disposal Site*, dated October 2001, prepared by EA Engineering, Science, and Technology. Based on that review, the Department has the following comments and issues.

**GENERAL RESPONSE TO COMMENTS**

A review and optimization of the Long-Term Monitoring Program at Site 9 has been scheduled during 2002. As part of this review, it is anticipated that site stakeholders, including the Navy, EPA, MEDEP, and others will discuss specific sampling requirements and appropriate locations for each sampling point at Site 9. Project reporting issues will also be discussed such as the content of monitoring event reports and annual reports for the site. The findings and outcome of the program optimization will be summarized in a letter to be added to the Administrative Record for the site. It is anticipated that many of the issues raised in this comment letter will be addressed during this program optimization.

**GENERAL COMMENTS**

1. Based on the following comments, there appear to be enough technical issues regarding Site 9 to warrant a 4-hour discussion on trends and modification to the monitoring network at the next technical meeting. (MTG)

**Response**—We agree with this comment and look forward to resolving these technical issues during the Site 9 optimization meeting. Please see the General Response to Comments.

- 2a. MEDEP notes that the concentration of vinyl chloride has continued its gradual rise to a high of 60  $\mu\text{g/L}$  in September 2000, whereas 1,2-dichloroethene (DCE) has remained nearly steady around 50  $\mu\text{g/L}$  for the last three monitoring events. While it is encouraging to see the natural chemical degradation process working at Site 9 (as the selected remedy anticipated), MEDEP is anxious to see vinyl chloride levels in ground water begin to decrease. A permanent decrease would signify that the mass of parent compound is appreciably shrinking.

**Response**—Due to the complexity of any ground-water plume, it is very difficult to accurately predict or explain the low concentration changes over time, as have been observed at this site. We believe that a rise in vinyl chloride concentrations, which has been observed within the main portion of the plume, most likely reflects natural variations in ground-water chemistry. While concentration decreases would be most favorable, increases in VOC

concentrations should be expected as well. We believe the existing monitoring wells located downgradient of the plume are showing that the plume is not expanding, and that vinyl chloride concentrations have decreased considerably in the vicinity of the impoundment ponds. The Navy believes that the remedy in place is protective of human health and the environment, and that natural attenuation is occurring that will slowly degrade contaminants over time. We anticipate further discussions on this topic during the upcoming Site 9 Long-Term Monitoring Program optimization meeting.

- 2b. The higher the vinyl concentrations become at the deep-screened monitoring well near the center of the site, the more concern MEDEP has that the downgradient wells may not be intercepting the core of the plume and may not be truly representing concentrations that are entering the northern surface water impoundment. Only downgradient monitoring well MW-NASB-072 is screened just above the clay, and only one surface water station is now being sampled. If one or both of these monitoring sites is not located within the plume migration path, chemical impacts at the discharge area will not be correctly measured. This multi-year issue has not gone away, and MEDEP requests that it be discussed at the next technical meeting. (MTG)

*Response*—We agree that this topic should be discussed during a technical meeting. Please see the General Response to Comments above.

## SPECIFIC COMMENTS

3. *Long-Term Monitoring Program, Section 1.2, Pages 1 and 2, Bullets*—The five goals of the Long-Term Monitoring Program are outlined on Page 1-2 of the Long-Term Monitoring Plan (August 1999); this section should be revised to incorporate those goals verbatim. (ED)

*Response*—The bullets in this section have been revised to correspond with the goals listed in the Long-Term Monitoring Plan (August 1999).

4. *Long-Term Monitoring Program, Section 1.2, Page 1, 1<sup>st</sup> Paragraph*—The ROD, not the LTMP, established the requirement for monitoring, sampling, and institutional controls. Please restate. (ED)

*Response*—To clarify the section noted in the comment, the word “establishes” will be changed to “lists.” This change will eliminate the connotation that the Long-Term Monitoring Plan is the document that establishes requirements for monitoring at the site.

5. *Long-Term Monitoring Program, Section 1.2, Page 2, 1<sup>st</sup> Paragraph after Bullets*—“Ground-water elevation data were gathered to assess whether ground water from the Navy Exchange Service Station air sparging may be flowing toward Site 9.”

As written, the intent and meaning of this statement is confusing. MEDEP believes that it has been evident for several years that ground water flows from the NEX area into Site 9, and that the assessment is now one of delineating how this flowpath responds to changes in remedial activities at the NEX, and to wet versus dry periods. Our recommended revision of the above statement is: “Ground-water elevation data were gathered to assess changes in

*the pathway of ground-water flow from the Navy Exchange Service Station air sparging remedial area into Site 9.” (ED)*

**Response**—The text of this sentence has been changed as recommended in the comment.

6. **Long-Term Monitoring Program, Section 1.2, Page 2, 1<sup>st</sup> Paragraph after Bullets**—“A complete description of site geologic conditions is not presented in this Annual Report, but can be found in previous Annual Reports for Site 9.”

The Navy needs to reference a specific annual report, preferably the latest that applies. (ED)

**Response**—A reference has been added to the 1999 Annual Report for Site 9.

7. **Figure 1-3, Geologic Cross-Section of Site 9**—The Department is pleased to see a geologic section added to the Annual Report. MEDEP recommends the following to enhance the readers understanding.

First, the section follows nearly parallel with the interpreted movement of ground water on Figures 2-1 and 2-2 except for wells MW-NASB-074 and MW-NASB-077. The section line may be improved by dropping these two wells, and adding MW-NASB-072 (and possibly MW-NASB-078 to cross the lower end of the Upper Pond) follow the plume center to its surface water discharge. MEDEP believes that very little plume water discharges to the Upper Pond, as suggested by the potentiometric contour maps. (ED)

**Response**—We appreciate this suggestion, but feel the existing cross-section accurately depicts subsurface conditions at Site 9. MEDEP is invited to discuss the issue of changes in cross-section lines during the upcoming Site 9 optimization meeting scheduled for June 2002.

8. Secondly, another geologic cross-section is recommended to portray the subsurface perpendicular to ground-water flow. It is recommended to run this line through the “hot spot” (MW-NASB-069), and include wells MW-NASB-227, MW-NASB-079, and MW-NASB-70 for this Annual Report. (ED)

**Response**—Please see the response to Comment No. 7 above.

9. **Volatile Organic Compounds, Section 2.2.1, Page 2-1, 3<sup>rd</sup> Sentence**—“...(the highest reported vinyl chloride concentration detected in 2000).”

Please delete “reported” as the connotation is that other non-reported data exist. (ED)

**Response**—The word “reported” has been removed as suggested.

10. *Vinyl Chloride Trend Data, Section 2.2.2, Page 2-2*

- (a) The referenced Figure 2-1 should be Figure 2-3, in both cases. Please correct. (ED)

**Response**—Figure 2-1 has been changed to Figure 2-3 in both cases.

- (b) Also, in the trend table summary, please review the characterizations of “steady” for 1995-2000 and of “increasing” for 1999-2000 for MW-NASB-080. These seem to be reversed. (ED)

**Response**—After reviewing the data on Figure 2-3, we believe the summary of trends presented on Page 2-2 is correct. Vinyl chloride concentrations from 1995 to 2000 (the red regression line on Figure 2-3) is steady, while data from 1999 can be characterized as increasing.

11. *Vinyl Chloride/Total Dichloroethene Ratio, Section 2.2.3, Pages 2-2 and 2-3*

- (a) Please review all of the figure reference numbers in this section. Does the Navy intend to reference Figures 2-4 and 2-5? Please correct as necessary. (ED)

**Response**—The text has been changed to reference Figures 2-4 and 2-5.

- (b) “A decreasing concentration of total DCE (parent compound) and an increasing concentration of vinyl chloride (daughter product) indicated the rate of dechlorination process is increasing.”

The sloped straight lines on Figure 2-4 do not represent increasing rates of dechlorination; straight lines on arithmetic graphs imply that the rate for any specific line (or well) is constant over time. MEDEP suggests that this statement be removed or revised as written in the note on Figure 2-4.

*A higher vinyl chloride/total 1,2-DCE ratio indicates increasing dechlorination.*

**Response**—The text has been revised as requested.

- (c) DCE may not be the true parent compound, as it also is a daughter product of TCE. TCE has been detected historically between the MEG/MCL (5 µg/L) and 1 µg/L at MW-NASB-227 and MW-NASB-074, and at trace levels at MW-NASB-072, MW-NASB-075, and MW-NASB-076. Therefore, any reference to DCE as a parent compound needs to include the fact that DCE likely is a daughter product of TCE.

**Response**—We believe the text is accurate as written, as DCE is the direct parent material of vinyl chloride. While DCE may be the daughter product of TCE, the presence of DCE may be the result of dechlorination, or could be as the result of a release. In either case, the vinyl chloride at Site 9 is believed to originate from DCE via the dechlorination process.

12. **Figure 2-3, Total Volatile Organic Compounds and Vinyl Chloride Trends, 1995-2000**—  
In the graph for MW-NASB-080, the black trend line for 1998–2000 does not appear correctly drawn. Also, refer to Specific Comment No. 9. Please review and make the appropriate change. (ED)

**Response**—The slope and positioning of the trend line was inadvertently based on 1996–2000 data. This trend has been revised to show the data from 1998 to 2000 for this well.

13. **Figure 2-5, Sum of Vinyl Chloride and 1,2-Dichloroethene, Total Concentration, 1995–2000**

- (a) Because vinyl chloride is very likely derived from the degradation of total 1,2-dichloroethene, it would be better to show the DCE graph physically above the VC graph. (ED)

**Response**—We believe the graphs, as presented, are accurate. No changes were made to the 2000 Annual Report based on this comment.

- (b) Please add a clarifying footnote that says that the sum represents all monitoring wells sampled at Site 9 for each monitoring event. (ED)

**Response**—The title of this figure has been changed to the following to address this comment:

*Figure 2-5. Sum of the total concentrations of vinyl chloride and 1,2-dichloroethene for all site monitoring wells for monitoring events from 1995 to 2000.*

14. **Ground-Water Monitoring and Sampling Program, Section 3.1.2, Page 3-3, 1<sup>st</sup> Bullet**—  
“The source of the 1,2-DCE at Site 9 is not apparent, but may be related to changing geochemical conditions at the Navy Exchange Service Station, which have affected ground-water chemistry at Site 9.”

Please rewrite to indicate the following:

*The source of contamination at Site 9 has not been determined. The changing geochemical conditions related to the Navy Exchange Service Station do appear important and likely have aided degradation of 1,2-DCE at Site 9.* (ED)

**Response**—The text of this section has been revised as suggested.

15. **Ground-Water Monitoring and Sampling Program, Section 3.1.2, Page 3-3, 2<sup>nd</sup> Bullet**—  
“Ground water moving onto Site 9 from the west (i.e., the area near MW-NASB-227) does not appear to be contributing significant concentrations of VOCs to Site 9.”

MEDEP suggests that after the surface water drainage was dammed in early 1998 and after the air sparging began at the NEX, the ground-water flow pattern changed subtly but significantly. It seems likely that the flow into Site 9 had a stronger west to east component

prior to 1998. If the 42-in. drain pipe was actually removed as the Navy contends, this could have also lessened the draw of ground water from west of Site 9. Although potential solvent sources once existed in the current upgradient direction (e.g., the vehicle maintenance building and the waste oil storage tank at the NEX), past migration from the Flight Line to Site 9 is another possibility, as EPA has suggested. (NR)

**Response**—This comment is best addressed during the upcoming meeting to discuss the optimization of the Site 9 monitoring program. At that time, a complete review of ground-water flow patterns at the site is expected, and revisions to the monitoring program to account for the current understanding of the site is expected. No changes were made to the 2000 Annual Report based on this comment.

16. **Ground-Water Monitoring and Sampling Program, Section 3.1.2, Page 3-3, 4<sup>th</sup> Bullet**—  
“Therefore, if elevated concentrations of vinyl chloride were to occur in areas downgradient of MW-NASB-069, the existing monitoring well network is likely to effectively track changes in ground-water concentrations of VOCs.”

It is very possible that the existing monitoring network is not adequate. Only MW-NASB-072 has a well screen placed just above the clay and is also located between MW-NASB-069 and surface water. The mass of the vinyl chloride appears to be moving along the top of the clay. The graph of VOC concentrations at MW-NASB-072 (Appendix A, Figure 18) shows a gradual decline from a range of 5 to 10  $\mu\text{g/L}$  in the mid-1990s to non-detect after March 1999. This suggests to MEDEP that the flowpath containing vinyl chloride has shifted. It may now be north of MW-NASB-072, as can be interpreted from the potentiometric surface elevation maps in this report. The Department requests that the need for another monitoring well be discussed at the next technical meeting. (RR/MTG)

**Response**—We feel the existing groundwater monitoring well network is adequate for monitoring the vinyl chloride along the downgradient site boundary, and data from monitoring wells at Site 9 are sufficient to ensure the plume is not moving offsite. To address this comment, we would like to discuss the adequacy of the monitoring well network within Site 9 during the June 2002 technical meeting.

17. **Surface Water Sampling Program, Section 3.1.3, Page 3-4**—Both 1,2-DCE and vinyl chloride were detected at surface water station SW-10 in 2000. Given the substantial potential for volatilization and dilution of these compounds once they reach the stream, this finding is noteworthy. It may also be an indication that the flowpath has shifted north of MW-NASB-072 (see Specific Comment No. 15). It may be necessary to discuss an additional monitoring well. (RR/MTG)

**Response**—This issue should be discussed during the meeting to optimize the Site 9 Long-Term Monitoring Program. No changes were made to the 2000 Annual Report based on this comment.

18. **Recommendations, Section 3.2, Page 3-5**

(a) MEDEP agrees with the recommendations in Bullets 1, 2, 4, and 6. (NR)

*Response*—No response required.

- (b) **Bullet 3**—While MEDEP agrees in theory with expanding the use of aqueous diffusion samplers for Site 9, the number of rounds using multiple samplers and low flow sampling should be discussed and consensus reached among the Restoration Advisory Board members. Any change in sampling methods would then need to be incorporated into the Long-Term Monitoring Plan for Site 9. (MTG)

*Response*—The issue of diffusion samplers was discussed with MEDEP and EPA prior to initiation of the April 2002 monitoring event. A complete discussion of the sampled interval and number of samplers used for each monitoring well will be presented in the Monitoring Event 20 report.

- (c) **Bullet 5**—Please clarify what is meant by “further evaluation is recommended.” Is the Navy recommending investigating the possibility of a source of 1,2-DCE in the western part of Site 9? If so, the search should look for former releases of TCE and PCE, since both compounds have been consistently documented in ground-water samples from MW-NASB-227. Two and a half years of laboratory analytical data for this well indicate a flat trend in concentration. Ground-water samples from just above the clay upgradient of this well should be collected. (RR/MTG)

*Response*—The phrase “further evaluation is recommended” has been revised to read “further evaluation after additional sampling of MW-NASB-227 is recommended.” We would be interested in discussing this issue during the upcoming meeting to optimize the Long-Term Monitoring Program for Site 9. The need for additional sampling near MW-NASB-227 to identify the source of chlorinated volatile organic compounds does not appear warranted at this time due to the very low concentrations being recorded at MW-NASB-227.

- (d) **Bullet 6**—The elimination of SVOC analysis should be discussed and consensus reached at a RAB meeting prior to documenting the change in the Long-Term Monitoring Plan for Site 9.

*Response*—We would be interested in discussing this issue during the upcoming meeting to optimize the Long-Term Monitoring Program for Site 9.

- 19: **Appendix A, Figure 33, MW-NASB-227**—For MW-NASB-227, both TCE and PCE should be graphed, regardless if they are not designated as “chemicals of concern” site-wide. After all, it is very likely that 1,2-DCE, and subsequently vinyl chloride, are daughter degradation products of TCE and/or PCE. (ED)

*Response*—The graphs of Appendix A provide trends for only the Record of Decision specified chemicals of concern for the site. Therefore, we do not feel it is appropriate to add these compounds. Please note that the analytical database supplied with the Geographic Information System project includes the entire chemical database for Site 9, and can be used to graph any individual compound.