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LETTER REGARDING SEACOAST ANTI-POLLUTION LEAGUE REVIEW COMMENTS ON
THE 2003 DRAFT SITE SCREENING INVESTIGATION REPORT OF SITE 34 NSY
PORTSMOUTH ME
2/5/2004
LEPAGE ENVIRONMENTAL SERVICES

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February 5, 2004

Ms. Marty Raymond
Portsmouth Naval Shipyard
Code 106.3 R, Building 44
Portsmouth, New Hampshire 03804-5000

Subject: Review of December 2003 Draft *Site Screening Investigation Report for Site 34*

Dear Ms. Raymond:

We are transmitting the following comments on behalf of the Seacoast Anti-Pollution League (SAPL) on the December 2003 Draft *Site Screening Investigation Report for Site 34*:

- 1. General Comment.** SAPL concurs with the majority of comments contained in the Maine Department of Environmental Protection's (MEDEP) letter dated January 23, 2004, and will not repeat the State's comments except where particular emphasis is desired.
- 2. General Comment.** As stated in previous comment letters regarding Site 34, SAPL supports the Navy's proposal to remove the ash pile and associated contaminated soil at Site 34.
- 3. Page 1-3, Section 1.3.1 Site Location and Description.** The third paragraph ends with the statement "A pile of ash is present along the northern side of Building 62 and Building 62 Annex." This is an incomplete description. As Figures 1-2 through 1-4 show, the ash pile also abuts a portion of the northern side of Building 63. Furthermore, the Ash Boundary shown on Figure 1-4 almost encircles the ash pile and the three buildings. The passage quoted above should be revised to more accurately represent both the extent of the ash pile and the boundaries of the ash. In addition, it would be helpful if the Navy provided a clear definition of the "ash pile" in contrast to the ash mapped outside the ash pile and the term "ash layer".
- 4. Page 1-3, Section 1.3.1 Site Location and Description.** "*The wash pad catch basin (Drain 49-1) and the storm drain east of the wash pad (Drain 49-2) are part of the storm water drainage system that leads to Outfall 49. No other drains are connected to this outfall.*"

How does the Navy know for certain that the statements above are correct? Was there testing performed? The Navy should provide the basis for these statements as they affect the assumptions for potential contaminant migration pathways. Furthermore, do these statements reflect current conditions only? SAPL has commented on previous Site 34 documents about the potential for floor drains and other drainage features as possible pathways for contaminant

migration. - both past and current. Given the site use for pesticide storage (and possibly mixing and handling), as well as the tar pit possibly located under Building 62, knowledge of historical drainage features (which may still exist today, even if not intentionally used for drainage) is needed to understand potential contaminant migration pathways.

5. Page 1-4, Section 1.3.1 Site Location and Description. The last paragraph in the section mentions a railroad line that ran north of Buildings 62 and 63. The railroad line was apparently removed in the late 1940s or early 1950s. A paved roadway is currently located where the railroad used to be. What additional information can the Navy provide regarding the construction and operation of the railroad, particularly with regard to the time of ash production at Building 62? Based on the historical information in Section 1.3.2, ash was generated at Site 34, and presumably disposed, from the 1870s to around 1930. SAPL is concerned that the Site 34 ash was disturbed, moved, spread, etc., by the construction, operation, or removal of the rail line and subsequent replacement with a road. This would increase the area adversely affected by Site 34 activities, possibly beyond what has been documented in the Investigation Report.

6. Pages 1-4 & 1-5, Section 1.3.2 Site History and Background. This section closes with the statement that more detailed information on site history and background can be found in the QAPP. SAPL believes that the detailed information should be included in the Site Screening Investigation Report. The Investigation Report should be more of a stand-alone document and should provide the justification and supporting information for future actions, including the Remedial Investigation (RI). Why should the reader have to go back to the QAPP to see what information has been dropped? For example, SAPL believes that the information about the oil gasification process and potential wastes (not just tar) should be included. This would allow the reviewer to be aware of the wood chip waste and limestone waste from a possible gas purifier, and was it encountered during the 2003 investigation. The specific pesticides listed in the QAPP as being stored in Building 62 should also be listed in the Investigation Report.

7. Page 1-4, Section 1.3.2 Site History and Background. The fourth bullet states that pesticides were stored at Building 62, beginning in the 1960s until 1985, and that the wash pad outside the building was reportedly used for flushing equipment and washing coveralls used in the pesticide shop. SAPL has raised concerns in past comment letters about the potential for other pesticide handling activities (such as mixing) to also have adverse environmental affects at Site 34. If the Navy has specific information that the pesticides were handled at another location during this time period, and not at Site 34, that information should be added to the Investigation Report. Otherwise, the assumption must be that pesticides were not just stored at Building 62, but were also mixed, transferred among containers, and perhaps disposed. The equipment that was reportedly rinsed on the wash pad had to be filled with pesticides somewhere. The potential for releases to floordrains or other discharge routes must also be considered (See Comment Number 4, above). SAPL believes that additional scrutiny for pesticides in Site 34 environmental media will be needed once the ash pile removal action is complete.

8. Page 1-5, Section 1.3.2 Site History and Background. *“The specific process used at this plant reportedly was very efficient and produced very small volumes of tar residue...”*

The basis for this statement should be cited in the second bullet and listed in the References section.

9. Page 1-5, Section 1.3.2 Site History and Background. The third bullet should also include pesticide handling as a site use that potentially led to waste generation and subsequent disposal at the site (See Comment Number 7, above). In addition, how were the pesticides stored? Were they in drums or other containers for liquids? In bags as solids? If pesticides were spilled during the approximately 25-year period they were stored in Building 62, how would they have been likely to be cleaned up and disposed?

10. Page 1-6, Section 1.4.1 Investigations. The results of the 1998 sampling, including the detection of pesticides in the ash, should be summarized in the second paragraph, rather than referring the reader to the QAPP. The last paragraph on page 1-6 should include a statement similar to that on page 1-17 of the QAPP, that sediments sampled as part of the interim offshore monitoring have levels of certain PAHs that show a potential impact from the site. It is also significant (and should be added to page 1-6) that levels of DDT in two of the three monitoring stations offshore of Site 34 are higher than any other interim offshore monitoring location (See MEDEP Comment Number 10).

11. Page 1-8, Section 1.4.2 Physical Characteristics, Site Topography and Surface Drainage. *“As discussed in Section 1.3.1, drains within and next to the abandoned wash pad on the souther side of Building 62 connect to Outfall 49.”*

Section 1.3.1 does not contain any discussion, just the two sentences quoted at the beginning of Comment Number 4, above. However, noted in Comment Number 4, additional information is needed about the current and historical drainage systems in order to address potential contaminant migration pathways.

12. Page 1-10, Section 1.5.1 Potential Sources of Contamination. *“The potential sources of contamination at the site have already been mentioned in the section [Section 1.3.2] on site background.”*

This passage reinforces SAPL's reasons, as stated above in Comment Number 6, that the site background information from the QAPP should be added to the Investigation Report. The text in Section 1.5.1 lists possible contaminants in the ash - metals, PAHs, creosote. The text should be amended to state that the ash is known to contain several pesticides as well. In the absence of information to the contrary, the sentence and bullet regarding pesticides should be revised to reflect the potential impact from pesticide handling and storage activities at the site.

13. Page 1-10, Section 1.5.2 Potential Contaminant Migration Mechanisms. The surface water runoff pathway in the first bullet should be expanded to include not just the ash pile, but also where ash is exposed on the surface of the steep bank, such as the location of ASH-1.

14. Pages 1-11 & 1-12, Section 1.5.3 Land Uses and Potential Exposure. The potential current and future exposures for human and ecological receptors also include where ash is exposed on the surface of the steep bank, such as the location of ASH-1. Please revise.

15. Page 1-27, Figure 1-7. The elevation of a water level datum, such as Mean High Water, should be noted on the figure; it could be added to the right-hand vertical scale.

16. Page 2-1, Section 2.1 NATURE AND EXTENT OF CONTAMINATION WITHIN THE ASH PILE AREA. *“The nature of the contamination in the ash layer ... is consistent with the chemical composition of coal ash described in the literature...”*

Please include the literature citation in the text and add the reference to the Reference section.

17. Page 2-2, Section 2.1 NATURE AND EXTENT OF CONTAMINATION WITHIN THE ASH PILE AREA, Volatile Organic Compounds (VOCs). *“One VOC, trichlorofluoromethane (Freon 11) was detected in every ash and soil sample collected in the investigation. ... It was not detected in the QA samples collected in the investigation. ... [It was also detected at the upgradient location and] may represent background levels for the area.”*

What is the contaminant migration scenario for the ubiquitous distribution of this one VOC at the detected concentrations? This comment also applies to the VOCs portion of Section 2.2 on page 2-6, and of Section 2.2.2 on page 2-8.

18. Page 2-3, Section 2.1 NATURE AND EXTENT OF CONTAMINATION WITHIN THE ASH PILE AREA, Pesticides and Polychlorinated Biphenyls (PCBs). The Navy concludes that the concentrations and locations of pesticides are consistent with topical applications or general use, rather than indicative of a specific disposal area. SAPL questions how pesticides detected at a depth greater than two feet below the ground surface can be consistent with topical applications, particularly if the ash disposal ceased around 1930, and DDT wasn't used until at least 1939 (date is based on the ATSDR's Toxicological Profile for DDT). Please provide additional clarification, including transport mechanisms and contaminant mobility.

19. Pages 2-4 & 2-5, Section 2.1 NATURE AND EXTENT OF CONTAMINATION WITHIN THE ASH PILE AREA. It appears that a couple of headings are missing after the Metals discussion.

20. Page 2-7, Section 2.2 NATURE AND EXTENT OF CONTAMINATION OUTSIDE THE ASH PILE AREA, Pesticides and Polychlorinated Biphenyls (PCBs). As in Comment Number 18, SAPL questions how pesticides detected from two to six feet below the ground surface are consistent with topical applications of pesticides. Please elaborate.

21. Page 2-8, Section 2.2.2 Soil Samples Collected beneath the Ash Layer Outside the Ash Pile, Pesticides and PCBs. The Navy reports that DDT and its metabolites DDD and DDE were found in soil beneath the ash layer, and attributes their presence to historic pesticide use. As with Comments 18 and 20 above, additional information is needed. If the ash production and disposal ceased in 1930, and DDT did not come into use until 1939, how did topical pesticide application result in the pesticides under the ash layer?

22. Pages 2-9 & 2-10, Section 2.2.3 Soil Samples In Which No Ash Was Observed, Surface Soil Samples with No Observed Ash. In the paragraph at the bottom of page 2-9 and at the top of Page 2-10, the Navy suggests that some locations may have been impacted by the use of the nearby railroad line. Please be more specific about the timing and nature of the railroad activities (including contaminants generated) and their possible impact on contaminant concentrations. This comment also applies to the Sample 34SB030206 section on page 2-11.

23. Page 2-3, Section 2.5 SUMMARY AND CONCLUSIONS Ash and Soil. This section ends with a statement about pesticide concentrations being indicative of general historical spraying and not because of storage or disposal activities. As stated in Comments 18, 20, and 21, above, SAPL questions this conclusion. Additional information must be provided to explain how general application results in pesticides occurring at depth within the ash and in soil below the ash. With regard to impacts from pesticide storage or disposal, please refer to SAPL Comments 7 and 9, above.

24. Pages 3-4 & 3-5, Section 3.2 BACKGROUND SCREENING OF ASH/SOIL AND SEDIMENT DATA. For SAPL's comments on the Navy's statistical approach, please see the comment below regarding Appendix B.

25. Page 3-7, Section 3.3 UNCERTAINTY ANALYSIS FOR RISK SCREENING. SAPL concurs with MEDEP Comment Number 18, dated January 23, 2004, that contaminants that exceed screening criteria cannot be eliminated from consideration for risk based on comparison with facility background concentrations.

26. Page 3-7 Section 3.4 SUMMARY OF RISK SCREENING. The last sentence in the second paragraph should be revised to reflect that screening criteria for pesticides are exceeded. The statement that no release has occurred to the soil from site-specific pesticide activities is not supported by the information provided so far (See Comment Number 23, above, for example), and should also be revised.

27. Page 3-9, Table 3-1. SAPL notes that the upper detection limit for Aldrin exceeds the residential screening criteria, and questions its elimination as a chemical of interest.

28. Pages 4-1 & 4-2, Section 4.0 CONCLUSIONS AND RECOMMENDATIONS, NATURE AND EXTENT OF CONTAMINATION. The second paragraph on page 4-1 should include the statement from page 3-8, that dioxin/furan values for TEQ and TEQ HALFND for the three ash samples exceed risk screening levels. SAPL's Comment Number 26 applies to the third paragraph on page 4-1. The last sentence in the section on page 4-2 states that pesticide concentrations in Site 34 sediment samples appear to be from runoff from soil in the area. This statement requires additional clarification. In previous chapters, the Navy has minimized the potential for exposure to contaminants because so much of the site is paved, occupied by buildings, or vegetated. Where is the runoff coming from? Is the Navy saying that the pesticides detected in offshore could not have been transported by other means, that drainage from the wash pad has had no effect? Please elaborate.

29. Page 4-2, Section 4.0 CONCLUSIONS AND RECOMMENDATIONS, RISK SCREENING RESULTS. Comment Number 26, above, applies to the pesticide portion of the third paragraph on page 4-2.

30. Page 4-3, Section 4.0 CONCLUSIONS AND RECOMMENDATIONS, RECOMMENDATIONS. SAPL disagrees with the Navy's recommendation in the second bullet that no further action for pesticides is needed at Site 34. Please see Comments 7 and 23, above, for example.

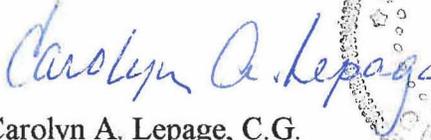
31. Page 4-4, Section 4.0 CONCLUSIONS AND RECOMMENDATIONS, RECOMMENDATIONS. In the bullet at the top of page 4-4, the Navy recommends no further investigation of groundwater in the RI. SAPL reserves judgement on this issue until the additional information needs identified in SAPL's comments in this letter are met and the results of the post-removal sampling and the additional investigations under the buildings are available. SAPL concurs with MEDEP Comment Number 19 regarding the additional investigation of the former tar pit.

32. Appendix B. Appendix B contains that Navy's basis for recommending that the samples currently on-hold for dioxin/furan analysis not be analyzed, and that dioxins/furans are not contaminants of concern for Site 34. During today's conference call, the Navy agreed that sampling for dioxins/furans analysis would occur after the ash pile removal action. Therefore, there was agreement that the samples currently on hold could be discarded without being analyzed.

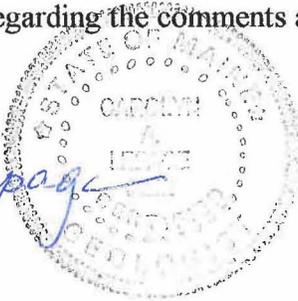
With regard to the rest of the Navy's proposal, SAPL has several concerns. As was discussed at the January 8, 2004 Technical Meeting (see MEDEP Comment Number 12), calculations of TEQ and TEQ HALFND should include dioxin-like PCB congeners. As was agreed to in today's conference call, additional discussions are needed to clarify this requirement before the Navy will commit to the additional analyses necessary to complete the calculations as requested. SAPL also concurs with the MEDEP (Comment Number 18) that contaminants cannot be eliminated from consideration based on PNSY facility background values, and any risk evaluation must include contaminants that exceed screening levels. SAPL's concerns regarding the Navy's statistical analysis are detailed in the attached copy of "SAPL Input for January 8, 2004 OU4 Technical Meeting".

If you have any questions regarding the comments above, please give me a call at 207-777-1049.

Sincerely,



Carolyn A. Lepage, C.G.
President



Attachment: SAPL Input for January 8, 2004 OU4 Technical Meeting

cc: James Horrigan, SAPL
Iver McLeod, MEDEP
Matt Audet, USEPA

SAPL Input for January 8, 2004 OU4 Technical Meeting

In November 2003, the Seacoast Anti-Pollution League (SAPL) provided the Navy with comments on the September 26, 2003, *Recommendations for Resolution of Selected Items Prior to the Round 1 through 7 Report, Interim Offshore Monitoring Program*. SAPL received the Navy's responses to comments, along with the Proposed Discussion Topics for the January 8th OU4 Technical Meeting, on December 24, 2003. In the two December documents, the Navy requested that additional information be provided prior to or at the meeting regarding: 1) SAPL's position that dioxin should be retained as an analytical parameter, and 2) SAPL's concerns with data limitations and the Navy's and statistical analysis.

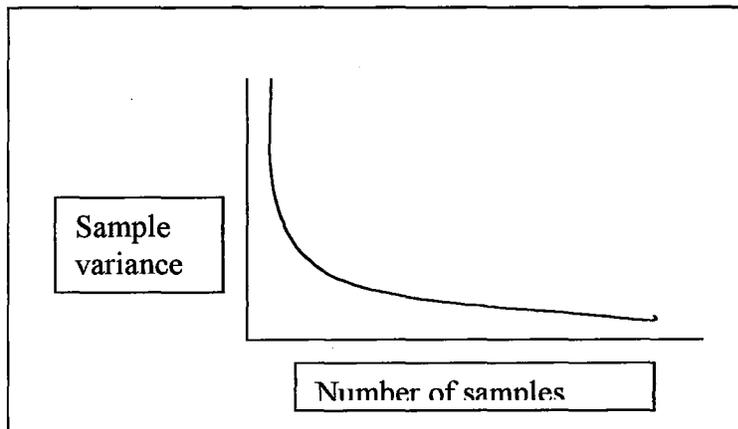
Because the September 26, 2003 OU4 Recommendations did not provide sufficient detail about the Navy's statistical approach, SAPL will illustrate its concerns with comments on the September 19, 2003 *Technical Memorandum, Evaluation of Dioxin Results for Ash and Recommendation Regarding Additional Dioxin Analysis for Site 34*. SAPL believes that its concerns regarding the basis for the Navy's proposal to drop dioxin analysis at Site 34 also apply to the Navy's approach to OU4.

The last four columns on Table 4 [of the September 19, 2003 Technical Memorandum] tabulate the findings from parametric and non-parametric statistical tests based on data tabulated in columns 2, 3, and 4 of the same table. This table appears to be offered as support for the argument "that the site samples and the background samples are statistically similar" as proposed in the text of the memorandum. It appears from the tables that the Navy is using estimates based on very small sample sizes. In Table 4, statistics are calculated based on THREE site samples for which measurements exceed detection levels in 0, 2 or 3 times, depending on the isomer or isomer average. It is not surprising that the tabulation in the last column of Table 4 shows that 18 tests do not statistically exceed background using this test rationale with small sample sizes.

This information is meaningful only if a difference is found; otherwise it is meaningless. Whether failure to reject that null hypothesis, "that the test sites are different from the background," is due to small sample numbers that inflate the variances in the test group, or due to actual differences, cannot be determined from these data. That is because the T value is dependent on the estimates of the variance of the data and the sample size when there are small numbers. For these extremely small data sets, sample size dominates that calculation.

$$\text{Variance} = \text{Sum } (X_i - \text{Mean}) / \text{sample number} - 1$$

When sample numbers are 2 and 3 the divisor is 1 or 2 respectively.



As shown above, very small sample sizes give inordinately large variances. The true population variance is only shown as the sample size increases in the figure. The number does not need to be large but when the number is very small the variance is over-estimated

In the next step of the hypotheses testing, the T statistic is calculated. The variance is divided into the differences between the mean of the sample and the mean of the reference group. The magnitude of the T values determines whether the difference is statistically significant. When the variance is "over-estimated", the T value declines and the conclusion reached is, "THE HYPOTHESIS THAT THE SAMPLES ARE DIFFERENT IS REJECTED". That does not mean that the sample and reference groups are the same but only that the given data sets do not detect a difference. To decide to accept that the data are from the same population is a Type II error, rejection of the null hypothesis when it is true. Studies with inordinately small sample sizes lack the power necessary to reject the null hypothesis that the samples are the same.

Notice the following:

$$T = \frac{\text{sqrt } N (\text{sample mean} - \text{reference mean})}{\text{Variance}}$$

Thus if the variance is very large, the T value declines and the test loses power. When sample numbers are very small the size of the variance reflects uncertainty due to the small number and the uncertainty in the actual variability of the unknown and reference populations.

That is exactly the case with the data shown in Table 4. It also will be a problem in the testing described in the Recommendations for OU 4.

The tests for the distribution shown in columns 13-15 found in Table 4 do not correct for this weakness.

These data can only be used to statistically test whether the site is above background statistically. Given the size of the sampling data, no statistical statement can be advanced with respect to whether the site is below background or equal to background.

There are three other serious problems with using these data to support statistical inferences in the manner shown.

1. Although there are 13 isomers tested at the laboratory, they are not independent of each other because they all came from the same three grab samples. They do not characterize the site differences.
2. The TEQ and isomer totals shown are taken from the samples above, and statistical testing of these samples a second time also cannot be considered an independent test.
3. The dates when the background samples are taken are different with respect to season, tide level and perhaps other factors. This increases the likelihood that the variance of the reference sample is increased.

Table 4 tabulations also show some use of non-parametric tests. These tests also lack power to reject the null hypothesis. They are very useful when they show differences statistically, as they do in some cases. They lack the power to support the conclusion that there are no differences.

This testing strategy is useful for screening when positive differences are found, but if there are not positive differences more information is needed before one can accept that the samples are essentially from the same population. This referred to as the "Type II error" or power of the test statistic. There is methodology to determine Type II errors. The Navy should explore those methods and logic.

SAPL does not believe that the findings in the September 19, 2003 Technical Memorandum can be used to support the dropping of dioxin from the testing at Site 34. With regard to the OU4 Recommendations, SAPL does not have confidence that the Navy's basis for decision-making is markedly better than for Site 34.

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