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Loureiro Engineering Associates, Inc.

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Via Electronic Mail

May 16, 2008

United States Environmental Protection Agency
Region 1 - New England Regional Office
One Congress Street, Suite 1100 (HBO)
Boston, Massachusetts 02114-2023

Attn: Anna Krasko, Project Manager

RE: Centredale Manor Restoration Project Superfund Site, North Providence, Rhode Island
Continued Discussion Regarding Sediment-Related Remedial Alternatives in Feasibility Study

Dear Ms. Krasko:

As you know, Emhart Industries, Inc.'s (Emhart's) consultants at Loureiro Engineering Associates, Inc. (LEA) and AMEC Earth and Environmental, Inc. (AMEC) have conferred directly with EPA technical staff and its consultants at Battelle, under the Administrative Settlement Agreement and Order on Consent, regarding the development of the sediment-related remedial alternatives for the Feasibility Study (FS). These discussions have included a meeting held on February 12, 2008 and subsequent conference calls between LEA and Battelle. The dialogue during the February 12, 2008 meeting proved to be invaluable to all parties and resulted in providing us with a better understanding of the conceptual development of the remedial alternatives by Battelle that are being evaluated in the FS. We believe that the meeting was equally beneficial to Battelle and EPA's technical staff in better understanding the alternatives that we have developed.

During the meeting, technical aspects of both the "dam-in-place" and "no-dam" alternatives under consideration were discussed, the specifics of which needed to be further evaluated and identified. While it is understood through subsequent conference calls between LEA and Battelle that some of these details have been more fully considered, we are unaware of the current status of the outstanding items that were discussed at the meeting. Therefore, at this time it is requested that another meeting be scheduled amongst the parties to identify what, if any, items still require further evaluation, consideration, or clarification.

Specifically, there are aspects regarding the constructability or practicability of the approach to implementing the alternatives that were previously discussed that now require follow-up to ensure that both the dam-in-place and no-dam alternatives identified through our coordinated efforts are evenly compared in the FS. A synopsis of each of the points raised in our prior

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discussions is presented below to identify the issues that we propose to discuss at the requested upcoming meeting.

I. THE CAPACITY OF THE PROPOSED UPLAND CONFINED DISPOSAL FACILITY (CDF)

Based on a review of the method proposed to remove the contaminated sediment, the assumptions regarding sediment moisture, and the anticipated footprint of the confined disposal facility (CDF) on potentially available upland property, the potential exists for under-estimating the capacity needed for the upland CDF. Further evaluation of the methods and assumptions is necessary to avoid under-estimating the capacity of the upland CDF.

Accurate and realistic estimates of the required capacity of the CDF are critical because any material excavated beyond the design capacity of the CDF must be disposed or treated off-site, adding significant cost to the project. First, the available upland property should be of sufficient size to site and construct a CDF of adequate capacity. Second, if the design capacity of the upland CDF is inadequate for all of the excavated material, then the costs presented in the FS for this disposal alternative should include the additional costs to dispose or treat the excess volume off-site.

An accurate estimate of the volume of sediment to be removed from the ponds, the river, the flood plain, and the Lyman Mill Stream Sediment and Floodplain Soil (Oxbow) Area is an overriding consideration in designing a CDF of sufficient capacity, and a sound excavation approach must be developed to accurately estimate the volume of sediment to be removed. The approach must be based on the known areal extent and depth of sediment to be removed. We are concerned that the "excavate and test" iterative approach to sediment removal proposed by Battelle does not allow for an accurate estimate of the volume of sediment to be removed.

Under Battelle's described approach, post-excavation sample results would be evaluated using a decision-tree analysis to guide what further action may be needed. Using this approach, the volume of sediment that ultimately would be removed would not be known until the remedy is complete. Without knowledge of the sediment volume, the capacity of the upland CDF cannot be accurately designed. Thus, the upland CDF may not be sized appropriately and the capacity of the CDF may be insufficient, resulting in the need to dispose or treat some sediment off-site. Moreover, the true cost of the remedy using the iterative approach outlined by Battelle, which may include the cost of off-site disposal or treatment, cannot be accurately estimated because the volume of sediment that may exceed the CDF capacity is unknown.

Also, if the reduction in sediment volume to be achieved through mechanical dewatering is less than Battelle currently assumes (up to 46%), then the capacity of the upland CDF may be under-designed, and, therefore, of insufficient size to contain all of the sediment to be excavated. A reduction in volume that is only six percent less than that assumed will result in the need for an

additional 10,000 cubic yards of capacity. If this capacity is not available, then the additional cost to dispose of the excess material at a Subtitle C landfill is estimated to be approximately $5,880,000 based on the preliminary costs provided by Battelle.

II. THE PROPOSED APPROACH TO MECHANICAL DEWATERING

Due to the limited area available for the dewatering operations on Cap No. 1, mechanical dewatering would result in a remediation schedule "bottleneck." Battelle has estimated that the throughput is severely limited to approximately 400 cubic yards of excavated sediment per day. To our knowledge, Battelle has not yet specified how sediment would be transported from Lyman Mill Pond to Cap No. 1. For the sediment excavation alternative to be successful, sediment removal activities must be implemented in an upstream-to-downstream manner. There are no other workable alternatives to this sequence of activities. Any other approach would significantly increase the potential for re-contamination of area that have been remediated. Thus, sediment excavation activities must begin at the upstream area and proceed downstream to other areas. This presents an insurmountable obstacle to conducting mechanical dewatering operations on Cap No. 1. Once the upstream areas of Allendale Pond and the Oxbow are remediated, it will not be possible to transport contaminated sediments excavated from Lyman Mill Pond over the site to the proposed location of the mechanical dewatering operations without re-contaminating the upstream areas that have been remediated. Further evaluation or clarification of the methods and assumptions for the proposed mechanical dewatering is necessary.

III. THE ITERATIVE APPROACH INCREASES THE POTENTIAL FOR CONTAMINANT TRANSPORT

The potential for downstream contaminant transport and/or recontamination of previously remediated or otherwise clean areas will be minimized by limiting the duration of sediment removal activities, thereby reducing the likelihood of rainwater inundation and re-contamination of any clean areas. However, the proposed iterative approach unnecessarily adds significant time to the remediation process, thereby increasing the probability of re-contamination. The time needed to collect and analyze post-excavation sediment samples and to validate data as part of the iterative approach alone would be a minimum of six weeks. During this time, areas of excavation that are clean may become re-contaminated. In contrast to the iterative approach, under a one-time removal and capping approach the remedy would be implemented quickly and would minimize the potential for re-contamination and/or downstream contaminant transport as capping can occur immediately following excavation of contaminated sediment. Further evaluation of the proposed iterative approach to sediment removal is needed.

IV. THE REACH OF THE RIVER BETWEEN ALLENDALE POND AND SMITH STREET

We understand that Battelle is evaluating the sediment excavation alternative for the reach of the river between Smith Street (Rout 44) and Allendale Pond with the assumption that the sediment would be excavated using a long-stick excavator without any water management controls. That is, as sediment is being excavated from the river bottom, the Woonasquatucket River would flow freely through the area being excavated. Clearly, this approach is not plausible. Potentially contaminated sediment would become suspended in the water column and would be transported downstream. Moreover, the Clean Water Act regulations and the United States Army Corps of Engineers prohibit excavation of this nature without adequate water management and sediment transport controls in place. The lack of proper water management controls makes the sediment excavation alternative difficult, if not impossible, to implement. In the absence of a water management plan, the schedule and, ultimately, the cost to perform the remedy will be considerably underestimated. Further evaluation of the methods and assumptions for sediment removal in this area of the site is needed.

V. LYMAN MILL STREAM SEDIMENT AND FLOODPLAIN SOIL (OXBOW) REMEDIATION

Based on the two-dimensional hydrodynamic assessment performed by Quantitative Environmental Analysis, LLC (QEA), and the widespread, thick vegetation and root mat in the Woonasquatucket floodplains, the Oxbow area is a net depositional sink. The predicted flows over the majority of the Oxbow channel, and through the emergent wetlands at the southern portion of the Oxbow, are not high enough to cause sediment erosion, even during a 100-year flood. Thus, there is no reason to excavate the emergent wetland as currently contemplated with the limited and partial excavation alternatives (Alternatives 5 and 6) being evaluated for this area of the site. Moreover, the results of the hydrodynamic modeling do not change significantly whether the dams remain in place or are removed. These factors should be considered in evaluating the constructability or practicability of the potential alternatives identified for this area of the site.

VI. POST-EXCAVATION MONITORING

Under the iterative approach outlined by Battelle, an initial volume of sediment would be removed. Upon removal, samples of sediment remaining *in-situ* would be collected for dioxin analysis. Battelle has stated that sampling and analysis is required not only to verify the concentrations of dioxin left in place (as discussed above), but to establish baseline conditions for long-term monitoring of the sediment excavation remedy. The approach should be clarified to explain how dioxin concentrations in sediment will provide a baseline for future monitoring. At a minimum, performance criteria and the basis for long-term monitoring should be defined.

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Thank you for the opportunity to provide input on aspects of the proposed FS. We look forward to continuing discussions with EPA's technical staff regarding the items presented above. It is believed that an on-going dialogue to further evaluate and fully consider all alternatives is vital to ensuring that both the dam-in-place and no-dam alternatives identified through our coordinated efforts are evenly compared. Thus far, EPA has sought the input of Emhart's technical consultants in developing the sediment-related remedial alternatives in the FS. A continuation of this approach is essential to increase the likelihood that implementable and practicable sediment-related alternatives are selected for the site.

We will contact you shortly to arrange a date for the next technical meeting. In the interim, please contact us should you have any questions.

Sincerely,

LOUREIRO ENGINEERING ASSOCIATES, INC.

David N. Scotti, P.G.
Project Manager

cc: Eve Vaudo (EPA)
Deirdre Dahlen (Battelle)
Louis Maccarone (RIDEM)
Russ Keenan (AMEC)
Patrick Gwinn (AMEC)
Jeffrey J. Loureiro (LEA)