



Loureiro Engineering Associates, Inc.

31 August 2001

US Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Attn: Laureen Boročaner, P.E.

**RE: Response to BackCheck Comments - Implementation Work Plan – Amendment 02
Centredale Manor Restoration Superfund Site, North Providence, Rhode Island**

Dear Ms. Boročaner:

On behalf of the Centredale Manor Performing Parties Group, Loureiro Engineering Associates, Inc. (LEA) re-submitted the Implementation Work Plan for the Centredale Manor Restoration Superfund Site in North Providence, Rhode Island (IWP) on 6 August 2001. This IWP included a response to the comments received from your office on 25 July 2001. LEA has prepared this letter in response to additional comments (BackCheck of Review Comments) that were received from your office on 13 August 2001.

This letter represents Amendment 02 to the IWP. To facilitate your review of the applicable information, this letter presents the comments from your office in boldface type, with the corresponding response following immediately thereafter. Only those comments that require a response are addressed by this amendment, and are identified by the previously assigned comment number. The pages attached to this letter should be used to replace the corresponding pages in the IWP, as noted below.

Reviewer: Scott C. Michalak

1. **New Comment: The construction sequencing for the rock anchors needs to be clarified. It was stated at the pre-construction meeting that the anchors would be installed before the footing. This is completely reverse of the sequencing assumptions presented in the GEI Basis of Design Report. Hence, this sequencing could affect the sliding stability of the dam by having the stability be relying on the shear strength of the steel only. Additionally, a question arises as to how the anchors will be tensioned and grouted if they are installed prior to the footing construction.**

As presented in the *Basis of Design Report* prepared by GEI Consultants, Inc. (GEI) and provided as Appendix H of the IWP, the dam footing will be installed before the anchors. The proposed construction sequence is presented in Section 1.3 of this design report. To



clarify any issues regarding the proposed construction sequence, GEI has included additional language in the corresponding specifications and drawings. As Mike Walker of GEI Consultants, Inc. (GEI) previously discussed with Rose Schmidt and Mark Vance of the US Army Corps of Engineers (USACE), the following construction sequence is planned:

- Drill the rock bolt holes and pressure test/grout as required to pass the pressure test requirements.
 - Install a PVC sleeve into the drill hole. The sleeve will be embedded into the rock a minimum of four inches and grouted into place. Secure the sleeve to formwork/reinforcing for the dam foundation to maintain the sleeves verticality. The top of the sleeve should be capped with the cap projecting above the top of the foundation concrete.
 - Place the foundation concrete. When the compressive strength of the concrete is greater than 5,000 psi the tension test may be performed. We recommend high early cement to minimize impacts on the schedule.
 - Cut the sleeve flush with the top of the concrete install bolt and perform a tension test.
4. **Pg. 3-3 §3.4.3. Drawings C-1, C-2, C-3, C-4, & C-5 need to be updated to reflect LEA written response regarding the 8-ton load limit for the bridge spanning the river at Allendale Way.**

Drawings C-1, C-2, C-3, C-4, & C-5 have been revised to reflect an 8-ton load limit and are consistent with text of Section 3.4.3. Please replace your copy of the Design Drawings with the revised drawings that are attached to this document.

6. **Pg. 4-2 § 4.1.2. In the revision, the third sentence should be revised to read "... the soil will be pumped from the excavation of decontamination pad into closed-top 55 gallon containers."**

The third sentence has been revised to reflect this comment. Please replace Section 4 of your copy of the IWP with the replacement pages to Section 4 attached to this document. Also, please replace the Table of Contents to the IWP.

9. **Pg. 4-3 §4.2.2. Will the 40-mil liner extend up the walls to prevent leakage through floor and wall panel joints?**

Because the movement of drums in and out of the storage container using a portable drum trolley will result in damage to any liner placed on the floor, LEA has eliminated the planned use of the HDPE liner within the storage container. The spill containment pallets will provide the secondary containment needed to meet all local, state, and federal



requirements for the proper storage of hazardous materials. Section 4.2.2 has been revised accordingly.

19. **Appendix F Section 02227. This comment was not properly addressed (All backfill materials should be tested for chemical contamination). In the LEA response it cites that this is addressed in Specification 02220, however this is the remediation specification not the dam specification. The specifications for the dam are independent of the remediation.**

Section 02227, Paragraph 1.2 (Submittals) of the Dam Reconstruction Specifications included as Appendix F of the IWP has been revised to include a statement that the Engineer will be sampling and chemically analyzing the material to approve its use on the site. Please replace your copy of the Dam Reconstruction Specifications provided as Appendix F of the IWP with the replacement pages to the Technical Specifications attached to this document.

20. **Allendale Dam Drawings C-6 and C-7. Drawing C-7 needs to incorporate the LEA written response.**

Drawing C-7 has been revised to show that a maximum of six inches of gravel will be left in place at the completion of the cofferdam removal.

Editorial Comments.

LEA has made the necessary changes to address the following editorial comments:

1. §3.7.1.1 . Last sentence should read: “The project manager will **be** available to assist in corrections of any problems that arise and to provide assistance **to** the resident engineer as necessary.”
2. §3.7.1.2 2nd sentence. ...site representatives provided by EPA, RIDEM ~~of the~~ **and** USACE
3. §5.3.2 last sentence. All manually transmitted data will **????** against the hard-copy.
4. §5.4 3rd sentence. Blanks will be ~~sued~~ **used** to provide...
5. §6 last sentence. Correct reference to Appendix D & E to read Appendix C & D.
6. §8.3.2 last sentence. Topsoil will be ~~racked~~ **raked** to meet the grade prior to removal activities.
7. §8.3.5 last sentence. ... whether the fence needs ~~s~~replacement or...
8. §10.5 1st sentence. In the event that a deficiency ~~id~~ **is** identified...



9. §10.7 1st sentence. Pursuant to the UAO, ~~pre-final~~ **pre-final** and final...

Please replace the applicable pages of your copy of the IWP with the replacement pages attached to this document.

Reviewer: Mark Vance

Specifications

4. **02227-1.2. This comment was not properly addressed (Reference is made to section 022278, “Stone Protection”. This section is missing from the specifications). Work Plan does not incorporate the written response as presented in LEA Letter.**

Section 02278 (Stone Protection and Gravel Bedding) has been included in the revised Technical Specifications (attached).

5. **02272-2.1. This comment was not properly addressed (States that a 3-inch diameter anchor bar will be used. The design and drawings indicate only a 2-inch anchor. The specs and drawings should be consistent). Work Plan does not incorporate the written response as presented in LEA Letter.**

Paragraph 2.1 of Section 02272 (Rock Bolts) of the Dam Reconstruction Specifications has been revised to specify two-inch diameter rock bolts for the retaining wall. This specification is now consistent with the drawings and calculations.

6. **02227-3.2.B. This comment was not properly addressed (Include details for required pressure testing and pre-grouting). Work Plan does not incorporate the written response as presented in LEA Letter.**

Details of the required pressure testing and pre-grouting have been included in Paragraphs 3.2.C and 3.2.D of Section 02272 (Rock Bolts) of the revised Dam Reconstruction Specifications.

7. **This comment was not properly addressed (Specs missing for: stone protection, granite block wall reconstruction, lean concrete fill). Work Plan does not incorporate the written response as presented in LEA Letter.**

Section 02278 (Stone Protection and Gravel Bedding) and Section 04400 (Stone Masonry), have been included in the revised Technical Specifications (attached). In addition, Section 03300 (Cast-In-Place Structural Concrete) has been revised to provide specifications for lean concrete fill.



Drawings

- 9. Sheet C-7. This comment was not properly addressed (Section shows removing most of existing structure. Why?). Drawing does not incorporate the written response as presented in LEA Letter.**

Drawing C-7 has been revised to show that as little as possible of the structure shall be removed.

Other - Comments Discussed at 20 July 2001 Project Review Meeting

- 16. This comment was not properly addressed (Include specification requirements for the filter fabric to be placed under the cofferdams). Work Plan does not incorporate the written response as presented in LEA letter.**

Paragraph 2.3 (Filter Fabric) has been added to Section 02227 (Gravel Fills) of the revised Dam Reconstruction Specifications.

- 17. Acceptable Response however, this comment was not properly addressed (All off-site fill materials shall be chemically tested prior to use in the work to insure they are clean materials). In the Specifications Section 02227 for the dam it does not address this testing.**

Paragraph 1.2 (Submittals) of Section 02227 of the Dam Reconstruction Specifications has been revised to include a statement that the Engineer will be sampling and chemically analyzing the material to approve its use on the site.

- 18. This issue was discussed further during the pre-construction meeting (Excavation dewatering activities shall include adequate testing and treatment measures). However, a resolution is still pending regarding treatment and testing prior to discharge upstream.**

A plan to treat and test water that is generated during excavation dewatering activities has been added to Section 4.3.2 of the IWP. Generally, this plan provides for the establishment of discharge limits based on background measurements, treatment using bag filters and carbon adsorption polish, and discharge monitoring.

Reviewer: Patricia Sumner

Document: Site Specific Health and Safety Plan

- 1. General Comment – Based on the pre-construction meeting, LEA had stated that dermal protection would not be provided to worker working on repairs of the dam structure. Based on the toxicity of dioxin, ground personnel should be required to wear dermal protection (tyvek, gloves, and booties) when working in contaminated**



materials. Equipment operators should be required to wear gloves and boot protection in this area.

In accordance with the Site-Specific Health and Safety Plan, ground personnel working on repairs to the dam will be required to wear Modified Level D personal protective equipment when working in contaminated materials. This requirement includes donning tyvek coveralls, gloves, and booties for dermal protection.

2. **In LEA's Response to comments, LEA states that their standard confined space entry procedures would be inserted into the Plan, however, upon review this insertion is missing.**

LEA's standard confined space entry procedures have been added to the Site-Specific Health and Safety Plan (HASP) as Section 8. Please replace sections 3 – 7 of your copy of the HASP with the replacement pages to the HASP attached to this document. Also, please replace the Table of Contents to the HASP.

3. **Page 4-2, Site Worker Requirements and Personal Protective Equipment – Typically when working on or near the water the USACE requires personnel to wear PFDs regardless of the water depth.**

As provided in the HASP, field personnel working adjacent to or over water will be provided with USCG approved personal flotation devices (PFDs). Employees are required to wear these when working over water that is greater than three feet deep. It is anticipated that activities conducted over water that is greater than three feet deep will be very limited.

Because of the nature of the construction activities, a requirement to wear PFDs is deemed to present a greater hazard than the potential hazard of not wearing a PFD when working over water that is less than three feet deep. This greater hazard results from the restriction in physical movement during construction activities when wearing a PFD. A restriction in movement presents potential slip, trip, and fall hazards that outweigh the potential benefits of wearing a PFD in shallow water.

To ensure that adequate safety measures and protection are provided when working over water, the HASP stipulates that ring buoys with at least 90 feet of line will be available for emergency rescue operations. As always, all activities will be performed using the buddy system. These measures are deemed to provide an adequate measure of safety when working over water that is less than three feet deep.

4. **Page 4-5, Section 4.6.4 Site Evacuation – Although the Contractor within the introduction to this section identified specific triggers (air concentrations) to indicate an evacuation, the contractor did not address triggers within the subsections. Within the following sections Evacuation/withdrawal to upwind**



locations, Withdrawal from the site and Evacuation of nearby facilities specific action levels that trigger each of these responses needs to be identified.

The applicable sections of the HASP have been clarified to specify the conditions under which field personnel shall withdraw to an upwind location or withdraw from the site, and when nearby facilities shall be evacuated.

5. **Page 5-2, Section 5.3.1 Action Levels – The Contractor has identified action levels for dust and respirable dusts within this section. Typical dust monitors only measure respirable dust. How does the Contractor intend on quantifying total dust emissions? It is recommended that total dust action level be eliminated.**

As identified in my previous comments action levels for oxygen, lower explosive limits (LEL) and hydrogen cyanide need to be identified within this section. In addition, the table found in Section 5.4.1 should reflect these action levels as well.

In LEA's response to comments, it is indicated that text will be added to identify that air-sampling pumps may be used for baseline reading and/or to identify contaminants of concern (from nonspecific PID or dust meter readings) through lab analysis. This was not done in the revised Plan.

Section 5 of the HASP has been revised to eliminate any inconsistency, and to clarify air monitoring requirements and corresponding action levels. The total dust action level has been eliminated in the revised plan. LEA will monitor for respirable dust. LEA will also monitor for oxygen, hydrogen sulfide, and the lower explosive limit (LEL), as may be necessary and as presented in the revised air monitoring equipment specifications. The action levels for these monitoring parameters are presented in the revised air monitoring equipment specifications. The revised plan includes text identifying that air-sampling pumps may be used for baseline readings, and/or to identify specific contaminants of concern (from nonspecific PID or dust meter readings), through laboratory analysis.

6. **Page 5-7, Section 5.6 Basic control principles – As stated in my previous comments, the action level for respiratory upgrade should match that which has been identified in Sections 5.3 and 5.4.1. The current response to comments is not addressing the issue of inconsistency found within the Plan. Within this section it states that the HSO may exempt respirators in excavation areas if PID levels are 0 in the breathing zone. This action level should match those identified within previous sections.**

LEA has revised Section 5.6 so that the information presented is consistent with the action level specified in Sections 5.3 and 5.4.1.

7. **Page 5-13, Section 5.9.1 General Levels of Protection – Although changes were made to this section there is still inconsistencies in the action levels for Level C PPE.**



LEA has modified this section so that the information presented is consistent with the remainder of the HASP.

8. **Page 6-1, Section 6.1 Excavation and Trenching – LEA’s response to the following comment was unclear. The Contractor needs to address alternative measures to protect workers besides from sloping the excavation in areas near the dam repair since excavation will take place in wet sediment. Since this dam repairs may require excavations requiring sidewall support this section should address shoring or trench boxes as alternative controls measures.**

Based on previous discussions, the depth of the excavation needed to repair the dam structure will be at the requirements where excavation safety precautions should to be taken. An open cut that would meet the sloping requirements for unstable soils will be significant, the contractor should prepare/add information within this section for alternative excavation safety controls.

Excavation in areas surrounding the existing dam will not take place in wet sediment. The only excavation to exceed four feet in depth will occur along the embankment that is expected to be dry. Thus, use of an open cut that will be benched, sides sloped at 1:1 (horizontal to vertical), provides an adequate measure of safety during the construction of the dam. Information on alternative excavation safety controls, such as shoring or trench boxes, has been incorporated into Section 6 of the HASP.

Reviewer: Rosemary Schmidt

New Comments:

37/Rock Anchor Sequence/Schedule. Based on the schedule presented at the pre-con meeting, it appears that the rock anchor work is planned to be done prior to the concrete work. This sequence alters the design. See Scott Michalak’s and Mark Vance’s comments.

Details of sequencing of drilling, anchor installation, pre-tensioning, grouting, and concrete work need to be provided, in any case, as there are many logistical considerations that need to be accounted for, given the space limitations behind the dam once the concrete structure is present. Anchor installation after concrete placement must allow for curing of concrete.

Please see the response to Scott Michalak’s comment.

38/Emergency Medical Notification Form. Recommended having site workers fill out emergency medical notification forms. An example form will be provided at next week’s meeting.

The Medical Data Sheet form provided by Rose Schmidt will be completed by all on-site personnel and will be maintained in the on-site file along with the plan acceptance forms.



Work Plan:

4/pg 3-4/section 3.6 Decontamination Facilities. Revised text indicates that “Liquinox and brushes will be used only in the event that equipment requires decon beyond plain water washing.” It appears that decon with water alone is being proposed generally. **Recommend planning on using Liquinox, especially in the case of sampling equipment.**

Procedures for decontaminating sampling equipment include the use of Alkanox, or similar cleaning agent, as presented in the revisions to Section 3.6 of the IWP.

9/pg 4-4/section 4.3.2 Dewatering and Decontamination Wastewater. Agree that water generated from dewatering during excavation should be containerized, and treated prior to discharge to the river. Issue to be discussed and resolved a next weekly meeting.

A plan to treat and test water that is generated during excavation dewatering activities has been added to Section 4.3.2 of the IWP. Generally, this plan provides for the establishment of discharge limits based on background measurements, treatment using bag filters and carbon adsorption polish, and discharge monitoring.

12/pg 8-1/section 8.1.2 Excavation Area Layout. EPA may wish to review limits of proposed excavation limits, based on sample test data. Figures provided should include sufficient information (sample locations plotted) and level of detail for this type of review.

LEA will provide figures illustrating the limits of the proposed excavation that are based on the results of the delineation sampling. The sample locations will be plotted on the figures.

16/pg 15-1/section 15 Institutional Control Plans. Text in this section should include information provided in the response: “Structural (concrete wall) and geotechnical elements (embankment and fill behind dam) of the dam will be inspected visually on a monthly basis in addition to inspection of the spillway.”

The text in this section has been revised to include this information. Please replace Section 15 of your copy of the IWP with the replacement pages to Section 15 attached to this document.

Appendix C – Field Sampling Plan

22/pg 3-4/3.2.4, 3.3.4, 3.4.3, and 3.5.4 Generally agree with simplified sample numbering system. However, disagree with eliminating a field indicating the depth interval. It is helpful to know that samples 03-DEL-03A, 03-DEL-03B, and 03-DEL-03C were all collected from the same location, and that A is shallowest, and C is deepest. **Strongly recommend keeping the depth field in the sample number.**

Note that backfill (borrow) samples will also need to be collected; please indicate how they will be numbered.



Also, although delineation samples will be tested only by immunoassay, confirmation samples will be first tested by immunoassay, and then, if they screen clean, will be tested at a fixed lab. There will be two test results for one sample number; it's assumed that the database is set up to handle this situation. If not, consider adding a field to the sample number to indicate whether it was tested by immunoassay or fixed lab. Other types of samples also may be tested by either method, or both.

LEA will include the depth field (A, B, C) in the sample nomenclature. The following nomenclature will be used for backfill (borrow) samples:

Site	Material	Sample Number
CMS	- GRVL	- 001
CMS	- TPSL	- 001

Also, please note that the database is capable of handling results from two different laboratories for one sample. These changes have been incorporated into the revisions to Section 3 of the Field Sampling Plan (FSP). Please replace Section 3 of your copy of the FSP with the replacement pages to Section 3 attached to this document. Also, please replace the Table of Contents to the FSP.

23/Figure 3-4 Figures 3-3 and 3-4 were missing from the revised IWP. Concur that it is not vital to modify the Field Sampling Record, now that a simpler sample numbering system will be used.

LEA has included Figures 3-3 and 3-4 in the revised IWP. If these figures are not included in your copy of the Field Sampling Plan, then please insert Figures 3-3 and 3-4 attached to this document into your copy of the plan.

24/pg 3-5/3.2.5.1 Soil Sampling. Please ensure that it's clearly stated that Burmeister classification system was used in after action reports.

Section 3.2.5.1 has been revised so that it is clearly stated that samples will be logged using a Modified Burmeister System of description and classification.

Appendix E – Soil and Sediment Removal Specifications

31/Section 01330 Submittals. As discussed at the pre-con meeting, a copy of the dam reconstruction submittals should also be provided to Laureen Borochnan for review by Corps Engineering team members. It may be appropriate for submittals related to delineation and confirmation sampling (and eventually excavation and disposal) to also be submitted to Laureen for Corps Engineering review, in addition to the Corps on-site Construction engineer. This should be resolved at the weekly meeting.

LEA will provide one copy of the dam reconstruction submittals to Laureen Borochnan. Submittals related to delineation and confirmation sampling (and eventually excavation and



disposal) will also be submitted to Lauren Borocharer, in addition to submitting a copy to the Corps on-site Construction engineer. Please replace your copy of Section 01330 (Submittal Procedures) of the Soil and Sediment Removal Specifications with the replacement pages to Section 01330 that are attached to this document.

34/Section 02220 Earthwork. 2.2 – Borrow. Text states that borrow will be sampled and chemically analyzed by LEA to approve its use on site. Borrow should be tested to show that it is not contaminated and so should be sampled and analyzed for a suite of chemicals. Field Sampling Plan does not mention sampling of borrow material (sample designations or analytes). Please add this information to the Field Sampling Plan.

Additional testing (listed in paragraph 3.7) is required for the topsoil. Please add this sampling and testing to the Field Sampling Plan, also.

A section regarding backfill (borrow) material sampling has been added to the FSP. A list of the laboratory analytical methods that will be used to characterize the backfill (borrow) material is provided in this section. In addition, a description of the designations to be used for the backfill (borrow) material samples is also provided. The additional testing required for the topsoil, as presented in paragraph 3.7 of Section 02220 is referenced in this section of the FSP.

Appendix F – Dam Reconstruction Specifications

35/Section 02227 Gravel Fills. 3.1 – Preparation of Foundation. Details of the filter fabric/membrane material (color, strength, perviousness, etc.) could not be located in the specification. Please provide a description of the proposed material.

Paragraph 2.3 (Filter Fabric) has been added to Section 02227 (Gravel Fills) of the Dam Reconstruction Specifications provided as Appendix F of the IWP.

Reviewer: Marie Wojtas

Most of my comments have been satisfactorily addressed. There are still some inconsistencies between the text and Table 3-4 of the FSP and Tables 1-1, 1-2, and 1-3 of the QAPP (comments 5, 6, and 22). The discrepancies are not considered to be of major significance.

LEA has revised the IWP to eliminate the inconsistencies between the text and Table 3-4 of the FSP and Tables 1-1, 1-2, and 1-3 of the Quality Assurance Project Plan.

Ms. Borocharner, P.E., USACE
31 August 2001
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If you have any questions concerning the response provided to your comments, please do not hesitate to contact me at (860) 410-2976.

Sincerely,

LOUREIRO ENGINEERING ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "David N. Scotti", is written over a horizontal line.

David N. Scotti, P.G.
Project Manager

cc: Anna Krasko, USEPA
Sarah Martino, RIDEM

Attachments