

March 1, 2002

Harding ESE PN: 54823.7

Mr. Joseph T. Martella, II
Rhode Island Department of Environmental Management
Office of Waste Management
235 Promenade Street
Providence, Rhode Island 02908-5025

Monthly Progress Report for January 2002
Soil Remediation Project
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

Dear Mr. Martella:

On behalf of Textron, Inc. (Textron), Harding ESE has prepared this second monthly summary of soil remediation activities for the month of January 2002 at the former Gorham Manufacturing Facility in Providence, Rhode Island. This report has been prepared in accordance with the requirements of the RIDEM Order of Approval for the Remedial Action Work Plan (RAP) for the Former Gorham facility dated October 11, 2001. Asphalt batching/stabilization of soils exceeding Upper Concentration Limits (UCLs) was the selected remedy in the approved RAP.

Through December 2001 approximately 3,000 tons of soil was treated. A summary of the December activities is included in the December 2001 Progress Report dated February 11, 2002.

EXCAVATION

Remediation locations (Areas 1, 2, 3, 4, and 5) are shown on Figure 1. Excavation activities began on December 4, 2001. Remediation of Areas 3, 4, and 5 was completed in December 2001. Excavation of the overburden in Areas 1 and 2 and the NAPL chase area was also completed to a depth of approximately twenty feet below ground surface (bgs). Delineation of the actual NAPL extent was estimated by test pitting at various locations around the perimeter. The approximate extent of this excavation as of December 31, 2001 is shown on Figure 2.

Delineation of the NAPL extent was initiated in January 2002. Test pits to the water table were dug in the NAPL chase area. If NAPL was encountered, the test pit was backfilled and additional test pits were dug in areas beyond until the extent of NAPL was established. In some cases (particularly southeast of Area 1) the NAPL extended further than expected, requiring substantial additional overburden removal to extend the bottom of the excavation to the NAPL edge. The actual NAPL area is shown on Figure 3. Due to the need to slope the excavation sidewalls, the

top of the excavation extended approximately 35 feet beyond the limits shown in red on Figure 3. Figure 3 also illustrates the grid system that was established to aid in mapping the excavation extent and locating the confirmatory soil samples.

Excavation of petroleum-saturated soil from the NAPL area began on January 14, 2002. Excavation began on the eastern edge of the NAPL area and proceeded west. Thickness of petroleum-saturated soil varied from less than 2 feet at the edges to as much as 9 to 11 feet within Area 1. In some locations petroleum-saturated soil was also found to extend as much as 5 feet below the water table. As the excavation progressed, soil samples were collected for on-site PetroFlag testing to confirm removal of soil above the UCL. As has been the case throughout the TPH UCL area, the visual contrast between petroleum-saturated and clean soils was dramatic. Once the PetroFlag sample confirmed the remedial goal had been reached, a split sample was sent to the offsite laboratory (ESS) for confirmatory analysis. Sample locations are shown on Figure 3, and the PetroFlag and corresponding offsite confirmatory results are included in Attachment A. All offsite confirmatory samples were below the TPH UCL of 30,000 mg/kg.

As the excavation progressed and the PetroFlag results confirmed that soils exceeding the TPH UCL had been removed, clean overburden soil was typically brought in to backfill the excavation from east to west behind the excavator. Initial backfill was placed from the bottom of the excavation to a depth just above the water table. This was done to minimize the amount of water present in the excavation and avoid potential freezing and dewatering conditions that may have complicated the backfilling activities. See the additional water management discussion below for more details.

Excavation activities were completed on January 21, 2002. The excavation was backfilled and compacted to a depth of 13 feet bgs by January 24, 2002. Treated material was returned to the excavation, and the backfilling was completed to a level surface by February 6, 2002. All of the clean overburden and treated soils were returned to the original excavation.

SAMPLING FREQUENCY

The approved RAP for the Former Gorham Facility specified a confirmatory sample frequency of one per 20 linear feet of excavation sidewall and one per 100 ft² along the bottom. During the NAPL excavation, it became apparent that the sampling frequency for the bottom of the excavation was unnecessary and impractical, due to the following factors. By this phase of the project, experience had shown that, as a practical matter, visual means alone were adequate to determine when sufficient petroleum-saturated soil had been removed. Furthermore, one sample per 100 ft² corresponded to one sample per 10-foot-by-10-foot grid square shown on Figure 3. At the typical pace of the NAPL soil excavation, this sampling frequency required that PetroFlag and confirmatory samples be collected every 4 minutes.

On January 14, 2002, we spoke with you and requested that the sampling frequency for the bottom of the excavation be decreased. We discussed how easily we could visually determine the extent of NAPL and soils with TPH above the UCL, and that this was demonstrated by the

PetroFlag sample results. PetroFlag samples collected after NAPL removal were typically between non-detect and 200 ppm TPH (See Attachment A). Following this discussion, you agreed that the PetroFlag and confirmatory sampling frequency throughout the base of the excavation could be decreased to one sample for every 20-foot-by-20-foot (400 ft²) area. This adjustment is illustrated by the change in sample density visible on Figure 3.

CONCRETE BUNKER

On January 14, 2002, Harding ESE discussed with you the concrete bunker that was found west of Area 1 and adjacent to Area 2. The petroleum-saturated soil associated with the pipe chase between the bunker and Area 1 was removed and treated during the month of December 2001. However, some of the petroleum had soaked into soil beneath the bunker itself. Accessible soil was removed, but additional petroleum-impacted soil was visually observed to extend a few feet further beneath the bunker. However, it was not practical to attempt to reach any additional soil without removing the bunker itself. We discussed with you the impracticality of removing the impacted soil and options for leaving this soil in place. Earlier excavation had shown that the petroleum in this area did not extend to the water table, and the amount of impacted soil was believed to be limited.

We also had previously dug two test pits within the bunker in December 2001 and encountered no evidence of petroleum in the soil or on the concrete floor of the bunker, located approximately 12 feet bgs. This finding was consistent with the results of another test pit dug elsewhere within the bunker during site investigation activities in 1989.

After observing the bunker and soil beneath during an onsite meeting with Harding ESE and Textron on January 15, 2002, you requested that we consider options to sample soil beneath the bunker to demonstrate the soil contamination was not extensive.

By January 18, 2002, excavation of NAPL soils had reached the western edge of the NAPL chase area near the bunker. While removing soil at the base of the excavation, additional soil from beneath the bunker was dislodged, exposing clean soil further beneath the bunker floor. A crack also developed in the bunker wall at this northeast corner, raising a safety concern for personnel adjacent to the bunker and in this area of the excavation. Photographs showing the clean white sand exposed beneath the bunker are included in Attachment B. The photographs show staining along the underside of the bunker floor beginning at the edge of the bunker and extending no more than 10 to 12 feet beneath. Likewise the majority of the stained soil initially visible during the January 15, 2002 site visit fell away (and was later removed and treated), revealing the clean underside of the bunker and clean, stratified layers of sand.

Based on the above evidence, additional soil sampling beneath the bunker is not warranted. The majority of the petroleum-stained soil initially visible beneath the bunker has been removed.

WATER MANAGEMENT

Harding ESE prepared applications to the Narragansett Bay Commission and the City of Providence for permits and permission to discharge treated groundwater to the sewer on Adelaide Avenue should dewatering of the excavation become necessary. However, dewatering and discharge was not required.

As you observed on January 15, 2002 during your site visit, despite our intention to backfill quickly to avoid buildup of groundwater, it was sometimes necessary to allow groundwater to accumulate in the excavation. This was particularly true near Area 1. This situation led to an accumulation of NAPL on the groundwater at the base of the excavation. On January 15, 2002, Clean Harbors, Inc. (Clean Harbors) provided a vacuum truck to aid in the removal of accumulated NAPL.

On January 18, 2002, Clean Harbors provided two additional vacuum trucks to remove the remaining floating NAPL and allow excavation of the petroleum-impacted soils beneath. In this manner it was possible to remove the floating NAPL, complete the NAPL excavation, and then backfill the area with clean overburden soil.

The contents of the three vacuum trucks were manifested (with the City of Providence listed as the generator) and transported offsite for proper disposal by Clean Harbors.

SOIL TREATMENT

During January 2002, approximately 2,440 tons of impacted overburden soil (most of which had been excavated in December 2001) from Area 1, Area 2 and the NAPL chase area were treated. Approximately 12,300 tons of soil from the NAPL area were treated in January 2002, and an additional 870 tons of NAPL soil were treated during the first week of February 2002.

Soil treatment was completed on February 5, 2002. Over the course of the entire remediation, approximately 82 tons of soil exceeding inorganic UCLs (copper or lead), and 18,580 tons of soil associated with TPH UCLs or NAPL were treated.

DEMOBILIZATION ACTIVITIES

All soil excavation was completed in January 2002, and final backfill, cleanup and treatment occurred in the first week of February. Demobilization of personnel and equipment was completed on February 6, 2002.

No additional analytical data was generated during February. Therefore all site data has been included in the December 2001 and January 2002 progress reports, and a progress report for February 2002 is not necessary.

Photographs of the January activities and final cleanup during February are included in Attachment B.

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Please do not hesitate to call me at (781) 245-6606 or Mr. David McCabe of Textron at (401) 457-6007 if you have any questions or need additional information.

Sincerely,
HARDING ESE, INC.



Mark J. Salvetti, P.E.
Project Manager



Robert Nicoloro, LSP
Program Manager

cc: D. McCabe, Textron Inc.
J. Schiff, Textron Inc.
G. Benik, Holland & Knight
J. Abbate, City of Providence
R. Nicoloro, Harding ESE
Harding ESE Project File

FIGURES

Figure 1 Soil and NAPL Treatment Areas
Figure 2 NAPL Excavation Extent - December 2001
Figure 3 Actual NAPL Extent and Sample Locations

ATTACHMENTS

Attachment A Results of Confirmatory Samples
Attachment B Photographs

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CERTIFICATION REQUIREMENTS


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The following certifications are provided pursuant to Rule 9.19 of the Remediation Regulations.

I, Mark J. Salvetti, as an authorized representative of Harding ESE preparer of this January 2002 Remedial Progress Report, certify that the information contained in this report is complete and accurate to the best of my knowledge.




Mark J. Salvetti, P.E.
Project Manager



Date:

We, Textron Inc., as the party responsible for submittal of the January 2002 Remedial Progress Report, certify that this document is complete and accurate and contains all known facts pertaining to the remediation performed during January 2002, to the best of our knowledge.

Certification on behalf of Textron Inc.



David M. McCabe, P.G.
Manager, Site Remediation



Date: